

An Analysis of Mental Health and Substance Abuse Disparities & Access to Treatment Services in the Appalachian Region

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Presented by:

Zhiwei Zhang, Ph.D.
Alycia Infante, M.P.A.
Michael Meit, M.A., M.P.H.
Ned English, M.S.

National Opinion Research Center (NORC)
at the University of Chicago

&

Michael Dunn, Ph.D.
Kristine Harper Bowers

East Tennessee State University



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For more information about the report, please contact either Gregory Bischak, Ph.D. of the Appalachian Regional Commission (202-884-7790, gbischak@arc.gov) or Michael Meit, M.A., M.P.H. of NORC (301-634-9324, meit-michael@norc.org)

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Appalachian Regional Commission

1666 Connecticut Avenue, NW, Suite 700
Washington, DC 20009-1068

The Appalachian Regional Commission's mission is to be an advocate for and partner with the people of Appalachia to create opportunities for self-sustaining economic development and improved quality of life.

National Opinion Research Center

4250 East-West Highway, Suite 800
Bethesda, MD 20814

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Executive Summary

This report presents an analysis of disparities in mental health status and substance abuse prevalence, as well as access to treatment services, in the 410 county Appalachian region comprising all or parts of 13 states.

Aim and Objectives

The aim of this research is to assist regional policy makers and public health practitioners in improving surveillance, research and health education, as well as to more effectively target investments designed to improve the delivery of substance abuse and mental health treatment and treatment outcomes. The specific objectives of this study are to:

Identify whether there are specific disparities in mental health and substance abuse diagnoses within the region, and any apparent incidence clusters within the region;

Identify and analyze available data to measure the accessibility of mental health services and substance abuse treatment services within the region and compare the region to other parts of the nation; and

Develop a set of criteria and protocols to identify relevant case study communities within the Appalachian region and conduct case study analyses accordingly.

Data and Analyses

This study utilizes state, sub-state, and county level data on diagnoses and treatment of mental health and substance abuse conditions. These data are used to analyze potential disparities across Appalachian sub-regions and economic development levels defined by the Appalachian Regional Commission (ARC). The analyses draw on four major sources of public information on mental health and substance abuse diagnoses and treatment:

National household survey of mental health and substance abuse (2002-2005);

Treatment episode data on admissions to substance abuse specialty treatment facilities (2000-2004);

Community hospital discharge reports of diagnoses and treatment of mental health conditions and substance abuse (2004); and

National survey of treatment services reported by participating substance abuse treatment facilities regarding mental health and substance abuse services (2005).

To supplement quantitative data sources, a series of case studies were also conducted in partnership with East Tennessee State University (ETSU). The purpose of these case studies was to gather additional information on how data are used to target mental health and substance abuse prevention and treatment resources, and to identify needed information to improve “on the ground” delivery of services.

Findings

Mental Health

There appears to be a higher prevalence of mental health disorders in the Appalachian region as compared to the rest of the nation, with proportionately more Appalachian adults reporting serious psychological distress and major depressive disorder.

Mental health problems are not equally distributed across the region, with higher rates of serious psychological stress and major depressive episodes in central, as compared to northern and southern, Appalachia.

Notably, mental health diagnoses for serious psychological distress and major depressive disorder are proportionately higher in Appalachia than in the rest of the nation, *independent from substance abuse*. That is, Appalachian disparities in mental health status do not appear to arise as a result of higher levels of co-occurrence with substance abuse. Community hospital discharge data, national household survey data, and treatment episode data all indicate this regional mental health disparity, independent of substance abuse. This disparity is particularly acute in more economically distressed areas of Appalachia.

While this mental health disparity is an important finding, the case studies and discussions with members of the Coalition on Appalachian Substance Abuse Policy (CASAP) provide additional depth to our analyses that may help to explain the apparent lack of co-occurring disorders in the region. These sources suggest that there could be biases in the medical care system within the region that encourage under-reporting of comorbidity rates for mental health and substance abuse diagnoses. For example, facilities may under-report comorbidities to ensure optimal reimbursement. This study has not identified any evidence that suggests that under-reporting of comorbidities happens more often in Appalachia than in other regions, however. Future work should explore whether there is any systematic bias in the way mental health care payment and coverage is managed within the Appalachian Region, and whether such a bias may lead to underreporting of co-occurring substance abuse and mental health illnesses.

Substance Use Problems

Alcohol is the predominant substance of abuse upon admission to treatment, nationally and in Appalachia. However, hospital discharge data show that Appalachian residents have a lower proportion of diagnoses for substance abuse only, and for co-occurring substance abuse and mental health problems, as compared to the rest of the nation.

Findings related to specific substances demonstrate the following:

This study *does not* support the belief that methamphetamine use is higher in Appalachia than elsewhere in the nation. Rather, methamphetamine use and admission rates are lower across Appalachia than in the rest of the nation. While regional trends show that methamphetamine use is rising, the rate of increase is similar to that of the rest of the nation so that rates in Appalachia remain lower. While there are likely to be “pockets of abuse” within the region, rates are lower within the region as a whole.

Other opiates and synthetics¹ admission rates for primary abuse are higher in Appalachia than the rest of the nation, especially in coal-mining areas. The trend is rising across the nation and in Appalachia, but at a faster pace in Appalachia. This is particularly the case in Appalachian coal mining areas.

Cigarette use rates² are higher in Appalachia than in the rest of the nation among both adolescents and adults.

Marijuana use rates are lower in Appalachian than in the rest of the nation among adults.

Cocaine use rates are lower in Appalachia than in the rest of the nation among adults.

Heroin admission rates are lower in Appalachia than in the rest of the nation, but the trend is rising, especially in coal-mining areas.

Proportionately fewer Appalachian adults than adults outside the region are classified as having alcohol abuse or dependence, or both alcohol and illicit drug abuse or dependence according to household survey responses.³

Proportionately more Appalachian adolescents report nonmedical use of psychotherapeutics⁴ than adolescents in the rest of nation.

Treatment of Substance Use and Mental Health Disorders

Overall, access to substance use and mental health treatment within the Appalachian region compares favorably to the United States as a whole. Overall, proportionately more adults in the Appalachian region with mental health problems received outpatient mental health treatment counseling services and prescription medical services in the past year, as compared to adults outside the Appalachian region. There is no significant difference between Appalachian adolescents and adults and adolescents and adults outside of the region in terms of the proportion of persons who need but do not receive treatment for an illicit drug problem.

Proportionately more patients entered community hospitals for substance abuse or mental health treatment via the emergency room in the Appalachian region. This was particularly the case in more economically distressed counties and in coal mining areas. This may be an indicator of fear or stigma associated with mental health and substance use treatment, which is consistent with findings from the national household survey.

In looking at treatment related to specific substances of abuse, findings related to other opiates or synthetics and alcohol are noteworthy:

The percentage of people in the Appalachian region admitted to treatment for the primary abuse of other opiates or synthetics is significantly higher than in other regions of the United

¹ These drugs include codeine, hydrocodone, hydromorphone, meperidine, morphine, opium, oxycodone, pentazocine, propoxyphene, tramadol, and any other drug with morphine-like effects except methadone.

² The rates cover the lifetime, past year, and past month use respectively.

³ The illicit drug abuse or dependence rate is also lower among Appalachian adults than adults outside the region, but the difference is not statistically significant.

⁴ Nonmedical use of prescription-type psychotherapeutics includes the nonmedical use of pain relievers, tranquilizers, stimulants, or sedatives and does not include over-the-counter drugs.

States. Within the Appalachian region, rates are highest in the central part of the Region and in coal mining areas.

Proportionately more Appalachian adults in need of alcohol treatment receive treatment, as compared to adults in the rest of nation.

When looking at services offered in substance abuse treatment facilities, findings demonstrate that:

Outpatient rehabilitation is the most common setting for substance abuse treatment in Appalachia.

Proportionately more Appalachian treatment facilities offer intensive outpatient care when compared to facilities outside of Appalachia.

In Appalachia, proportionately fewer facilities offer outpatient detoxification when compared to facilities outside of Appalachia.

Short-term non-hospital residential treatment is offered in proportionately fewer facilities in Appalachia than outside of Appalachia.

Long-term non-hospital residential treatment is offered in proportionately fewer facilities in Appalachia than outside of Appalachia.

Proportionately more treatment facilities in Appalachia offer services such as substance abuse family counseling and mental health assessment when compared to facilities outside of Appalachia.

In Appalachia, proportionately more treatment facilities accept Medicare, Medicaid, state financed insurance, and private insurance as payment when compared to facilities outside of Appalachia.

Case Study Findings

Case study findings in six Appalachian counties provide additional depth to quantitative findings showing a lack of access to inpatient treatment for both substance abuse and mental illnesses. The case studies revealed a number of specific barriers in to accessing treatment for substance abuse and mental health illnesses, including:

Stigma;

Transportation;

Payment options;

Privacy issues;

Choice of facilities; and

Cultural or family barriers.

The case study counties reported difficulties in getting access to inpatient and residential treatment facilities. No case study county had inpatient facilities for either substance abuse or mental health and most reported difficulty placing those needing long term outpatient treatment.

Recognizing the challenges confronting their communities, focus group participants noted the development of school-based prevention activities, after-school youth activities, anti-drug coalition activities, mentoring programs, parenting classes, agricultural extension programs, wellness classes, health camps, mentoring programs, sports, and recreational activities. Focus groups revealed a need for additional school-based interventions and prevention programs.

Findings from the case studies also showed that community-level substance abuse and mental health leaders do not generally use nationally-available data sets to make decisions about local response to substance abuse and mental health issues, nor do they have uniformly available county and state data from which to draw conclusions about the magnitude of substance abuse and mental health issues within their communities. While they may use state data, especially when it supports applications for grant funding for prevention programs, more often than not, anecdotal evidence is used as the basis for informing local decision making. These findings do not suggest a disregard for the data, but rather the lack of utility in how data are presented and a disconnect between the levels of analysis (generally state or regional) and the level of service delivery (local).

Conclusions

Overall, the findings from this study suggest that disparities do exist in the Appalachian region for specific substance use and mental health disorders. While some of these disparities exist across the Appalachian region, even more can be learned by looking at a more granular level. Specifically, findings demonstrate particular disparities related to Appalachian sub-region, county economic distress level, and within coal-mining areas. These findings are consistent across data sets and, when taken with region-wide findings, demonstrate the presence of place-based disparities. Key region-wide findings are that:

Mental health is a major area for concern in Appalachia, independent from substance abuse;

Alcohol is the predominant substance of abuse upon admission to treatment, nationally and in Appalachia;

Methamphetamine is not as large of a problem across Appalachia as is widely reported, although regional trends show that methamphetamine use is rising. The rate of increase, however, is similar to that of the rest of the nation so that rates in Appalachia remain lower when compared to the United States as a whole;

Primary abuse of other opiates and synthetics is a key issue in Appalachia. Admission rates for primary abuse of other opiates and synthetics are higher in Appalachia than the rest of the nation, and rates are increasing within the region at a faster pace when compared to the United States as a whole;

Outpatient rehabilitation is the most common setting for substance abuse treatment in Appalachia;

Access to inpatient treatment, and short and long-term non-hospital residential treatment for substance abuse or mental health illnesses, is less common within the Appalachian region; and

Access to treatment is better in Appalachia when compared to the rest of the nation in terms of accepted forms of payment, and the provision of services such as substance abuse family counseling and mental health assessment.

Whereas region-wide findings suggest opportunities to target resources across the Appalachian region, sub-regional findings suggest opportunities for states and communities to target resources to address more localized disparities. This point is noteworthy given case study findings demonstrating that community-level substance abuse and mental health leaders generally use anecdotal information in determining program priorities and resource allocation, due to a lack of uniformly available county and state data.

Key findings from the case studies revealed that:

There are regional difficulties in accessing inpatient facilities for substance abuse or mental health;

There are regional difficulties in accessing long-term outpatient treatment;

There are barriers to treatment for substance abuse and mental illnesses such as transportation, cultural factors, and stigma;

Communities in Appalachia are targeting resources to prevent substance abuse and mental health illness; and

Additional school-based interventions and prevention programs are needed in Appalachian communities.

The case study counties are currently using an array of prevention programs and activities – such as The Beginning Alcohol and Addictions Basic Education Studies (BABES), *Too Good For Drugs*TM (K–8), and D.A.R.E. (Drug Abuse Resistance Education), LifeSkills4Kids, among others – to educate children and adolescents about the personal and social consequences of substance abuse, and to reduce risk factors and enhance protective factors related to alcohol, tobacco and other drug use. Prevention programs are offered in a variety of settings such as schools, youth organizations, and the workplace. Anti-drug coalitions are also present in the case study counties.

The wide array of community programs available in Appalachian communities shows an appropriate recognition of, and focus on, the problems of substance abuse and mental illness. Future work should further explore community best practices in the prevention of substance abuse and mental health illness to address and prevent these problems in Appalachia.

CHAPTER 1: Introduction

NORC at the University of Chicago was commissioned by the Appalachian Regional Commission (ARC) to analyze disparities in substance abuse, mental health status, and access to treatment services in the Appalachian region.⁵ The Appalachian region is comprised of West Virginia and parts of 12 states: Alabama; Georgia; Kentucky; Maryland; Mississippi; New York; North Carolina; Ohio; Pennsylvania; South Carolina; Tennessee; and Virginia. Over four decades ago, the United States Congress established the ARC to facilitate economic development efforts in the Appalachian region in response to persistent issues of poverty, economic distress, joblessness, poor physical infrastructure, and cultural isolation. While some Appalachian communities have experienced economic and infrastructural improvements,¹ research has shown that disparities in health status exist between the Appalachian region and non-Appalachian U.S., with Appalachia experiencing more adverse health outcomes.² Through the current study we will determine the extent to which these disparities also exist relative to substance abuse and mental health status, and access to treatment services.

This is the first effort to study substance abuse and mental health issues and access to treatment services within Appalachia, and between Appalachia and the rest of the United States. The study draws upon data from a variety of government sources and information from local communities with the goal of providing health care researchers, practitioners, and policy makers with a detailed understanding of substance abuse and mental health issues and access to treatment services in Appalachia, including patterns across Appalachian sub-regions, across levels of economic development, and between Appalachia and the rest of the United States. The qualitative and quantitative results from this study augment the scant body of literature on substance abuse disorders and mental health status, and access to treatment services in Appalachia.

1.1 Substance Abuse and Mental Health Disorders in Appalachia

Research to date does not provide a comprehensive understanding of substance abuse prevalence and mental health status, and access to treatment services in Appalachia. While a body of research has explored the prevalence of substance abuse and mental health disorders in rural communities,^{3,4,5,6,7,8} little research has explored these issues in Appalachian communities specifically. Studies suggest that disparities in access to and utilization of treatment for substance abuse and mental health disorders result from a complex interplay of socioeconomic, cultural, and health system factors. Race and ethnicity may also play a role in driving disparities within certain Appalachian sub-regions and communities.

Research has identified some mechanisms to reduce treatment disparities in Appalachia, including cultural competency training for mental health and social service professionals⁹ and enhanced surveillance systems.¹⁰ Studies have explored the potential for health care system changes to reduce disparities in rural America, though not in Appalachia specifically. Such changes include mental health staff in rural health centers;¹¹ health care service delivery via telemedicine;¹² and self help groups.¹³ Additional research is necessary to explore disparities specific to the Appalachian Region and inform cost-effective ways to combat disparities related to treatment access for mental health

⁵ The Appalachian region is home to more than 23 million people, extending from southern New York to northeast Mississippi and covering over 200,000 square miles of 410 counties in 13 states.

and substance abuse disorders in the region. Further study is needed to inform policy makers in the design of targeted interventions to reduce disparities in Appalachia. Specifically, it will be necessary to have a better understanding of the prevalence and geographic distribution of substance abuse and mental health disorders at the sub-regional level within Appalachian states – ideally at the county level.

In order for policy makers to design targeted policy interventions to reduce disparities in Appalachia, it will be necessary to have a better understanding of the prevalence and geographic distribution of substance abuse and mental health disorders within the region.

1.2 Key Research Questions and Methodology

Recognizing the current gaps in the literature to date, this study strives to augment the body of literature on substance abuse and mental health issues and access to treatment services in Appalachia. Our study addresses four key research questions:

1. Are there disparities in mental health status and substance abuse prevalence, and access to treatment services, in the Appalachian region as compared to the rest of the United States?
2. Does socio-economic status, as measured by county economic development status, matter with respect to substance abuse and mental health issues and access to treatment services within Appalachia, and between Appalachia and areas outside of Appalachia?
3. Are there notable patterns or trends across the northern, central or southern Appalachian sub-regions for different mental health status and substance abuse indicators?
4. To the extent possible, can we identify county-level patterns in substance abuse prevalence and mental health status, and access to treatment services?

To investigate our research questions, we utilized the largest and most up-to-date survey and administrative record data available from several Federal government sources. We analyzed data from the National Survey on Drug Use and Health (NSDUH), the Treatment Episode Data Set (TEDS), the Healthcare Cost and Utilization Project (HCUP), and the National Survey of Substance Abuse Treatment Services (N-SSATS). This study also incorporates a qualitative component to augment our quantitative findings; we include case studies based on paired Appalachian counties that are closely matched based on socioeconomic indicators yet demonstrate differences in mental health and substance abuse status. The case studies were conducted as a pilot effort to develop and test a methodology for gathering qualitative substance abuse and mental health status information across Appalachian states.

Overall, our study incorporates the following data:

19,416,000 Appalachian household residents age 12 or older as represented by 22,000 Appalachian survey respondents (NSDUH);

500,000 Appalachian admissions to substance abuse treatment (TEDS);

8,000,000 community hospital inpatient discharges, including 168,000 Appalachian discharge records (HCUP);

980 Appalachian substance abuse treatment facilities (N-SSATS); and

Six qualitative community case studies in three of the 13 Appalachian states.

1.3 Importance of the Current Study

This study is unique for three key reasons. First, we explore a variety of mental health and substance abuse indicators, and other demographic and socio-economic variables, based on data from four different federal sources. In addition, NORC partnered with East Tennessee State University (ETSU) to conduct a complementary qualitative component of the study. Specifically, a pilot set of focus groups were conducted in six Appalachian counties in three states with county officials and stakeholders about mental health and substance abuse issues in their communities.

Second, as part of our process for conducting the study, we sought ongoing input and feedback from practitioners in the field. Specifically, we met with the Coalition on Appalachian Substance Abuse Policy (CASAP) – a leading group of mental health and substance abuse professionals in Central Appalachia – regarding their insights into the data sets, analyses, and findings.⁶ The feedback that was generated through discussions with CASAP is presented in each chapter in a section entitled “reflections from practitioners.” It is important to note that the information presented in these sections is based on the reflections, insights, and opinions of the CASAP members, based upon their experiences in the field.

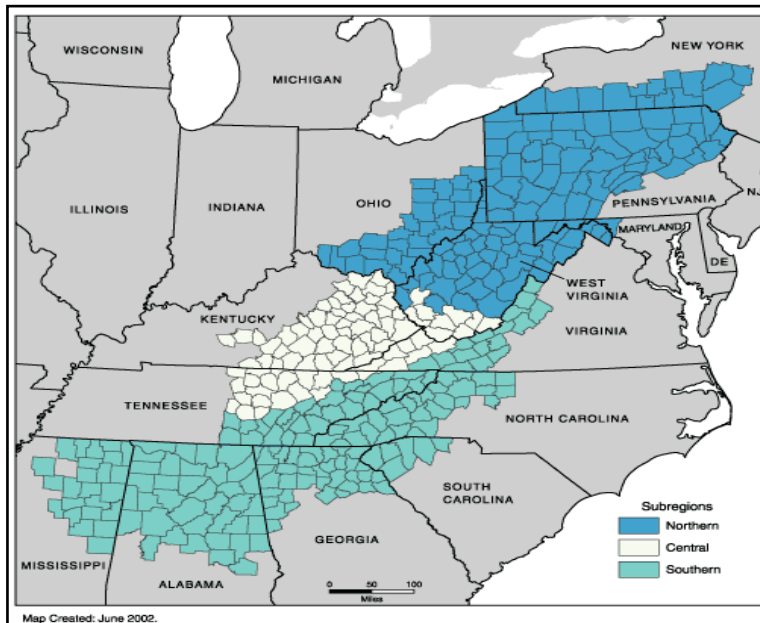
Third, wherever possible, analytic results are broken down by sub-region (northern, central, southern) and county economic development level (distressed, at-risk, transitional, competitive, and attainment) to identify patterns and trends across different geographic areas. Additionally, some data sets also allow results to be presented graphically through a series of maps, demonstrating differences across counties.

ARC divides the Appalachian region into three sub-regions – the northern, central, and southern sub-regions. Each region has relatively homogenous characteristics.

Map 1.1 shows the Appalachian sub-regions as defined by ARC. The northern region includes parts of New York, Pennsylvania, Ohio, Maryland, and West Virginia. The central region is comprised of counties within Kentucky, Virginia, West Virginia, and Tennessee. The southern region is comprised of parts of Tennessee, North Carolina, South Carolina, Georgia, Alabama, and Mississippi. Our research explores substance abuse and mental health indicators at the sub-regional level when possible to identify patterns and trends.

⁶ CASAP was established by the ARC via a Kentucky Flex-E-Grant.

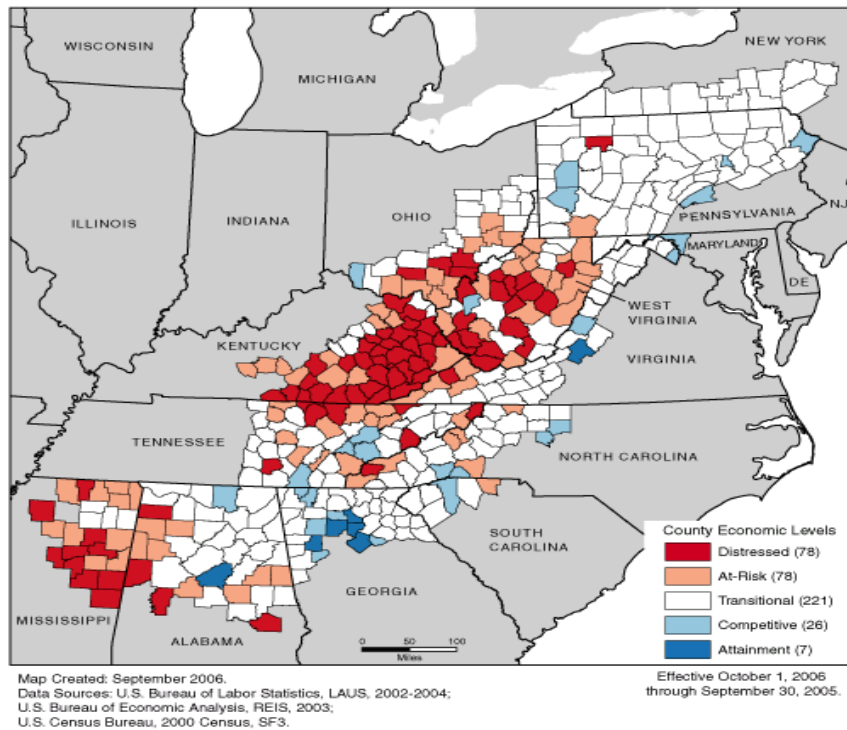
Map 1.1. Appalachian Subregions



In order to better understand needs of the Appalachian counties, and decide on spending and project activities for each fiscal year, the ARC determines the economic development status of each county. The ARC uses a structured process to designate county economic status. In short, economic indicators such as the three-year average unemployment rate, per capita market income, and poverty rate are used to assign all U.S. counties into economic development quartiles. Status is then assigned by comparing individual county performance to all other counties in the U.S. on these indicators.¹⁴ More information on the process for determining county economic development status can be found on the Appalachian Regional Commission’s website at www.arc.gov.

Map 1.2 below illustrates the economic development status for counties in Appalachia, based on ARC’s index-based county economic classification system. In FY 2007, seventy-eight of the 410 Appalachian counties are categorized as “distressed.” These counties (in red) rank among the lowest 10 percent of the nation’s counties on economic status indicators. Distressed counties have high poverty and unemployment rates and low per capita income rates in comparison to other counties. Another 78 counties are categorized as “at-risk.” At-risk counties (in orange) are at risk of becoming distressed counties. Over half of the counties (221) are characterized as transitional counties. These counties (in white) are areas transitioning between weak and strong economies. Twenty-six counties are “competitive.” These counties (in light blue) are competitive with counties nationally. Finally, a small number of counties are identified as “attainment counties.” Seven counties (in dark blue) are attainment counties, and considered among the strongest counties in the nation relative to economic development indicators.

Map 1.2 Appalachian County Economic Development Level



1.4 Structure of the Report

The remaining eight chapters of the report are structured to explore each of our research questions. Chapters 2 through Chapter 5 detail four independent but related studies, focusing on a variety of issues related to substance abuse, mental health status, and access to treatment services in the Appalachian region. Specifically, Chapter 2 presents estimates of substance use, mental disorder, and access to treatment services from household surveys conducted from 2001-2005. Chapter 3 provides findings on patient admissions to specialty treatment for abuse of alcohol and drugs in the Appalachian region during the period from 2000-2004. Chapter 4 discusses findings on health care access and service utilization for substance use and mental disorders by examining community hospital discharges in both the Appalachian region and elsewhere in the United States. Chapter 5 presents key features of substance abuse treatment services in the Appalachian region, using the most recent treatment facility survey data. In Chapter 6, we focus exclusively on the Appalachian region with the objective of comparing coal mining areas and other areas with respect to substance abuse and mental health status and access to the treatment services. In Chapter 7, we present a complementary qualitative study comprised of six community case studies in three Appalachian states. In Chapter 8, we offer conclusions resulting from this study. Appendix A at the end of the report provides detailed information about the data sources. Appendix B is a literature review about substance abuse and mental health issues, with a concentration on Appalachia and rural America. Appendix C provides additional data tables based on the National Survey on Drug Use and Health. Appendix D provides a series of county-level data profiles on key substance abuse and mental health indicators that were used during the qualitative study. Immediately following this introduction, we provide an overview of the data sources used to conduct this study, and short abstracts of Chapters 2 through 7 to help the reader to navigate this report.

Table 1.1 Overview of the Data Sets: Data Coverage, Data Reliability, and Characteristics

Overview of Data Sets	NSDUH	TEDS	N-SSATS	HCUP
Data Coverage				
Coverage of mental health issues	●	●	●	●
Coverage of substance abuse issues	●	●	●	●
Survey addresses co-occurring MH/SA disorders	●	●	●	●
Survey excludes some populations	●	●	●	●
Survey excludes some SM or MH treatment facilities	●	●	●	●
Reporting to the survey is limited to facilities that are funded and licensed by the state	●	●	●	
State accreditation and certification requirements, and state systems of licensure may contribute to exclusion of certain facilities		●	●	
Survey excludes some Appalachian counties	●	●	●	●
Survey was not designed to provide regional estimates	●	●	●	●
Confidentiality concerns that prohibit the state from releasing data on certain Appalachian counties	●	●	●	●
Private for-profit facilities, hospitals, and state correctional facilities may be excluded from the survey		●		
Data Reliability				
Due to institutional budgetary and reimbursement issues, MH/SA diagnoses may be under-coded or miscoded*		●		●
Data availability varies from state to state		●	●	●
Data Set Characteristics				
Annual survey	●	●	●	●
Pooled data from multiple annual surveys	●	●		
Survey is voluntary	●		●	
Survey is self-report	●	●	●	●
<p>This table provides a high-level overview of the characteristics of each data set that readers should be aware of in three areas: data coverage; data reliability; and survey design. Each data set offers a different set of strengths and limitations. We recognize the limitations to using the various available data sets to explore our research questions, and acknowledge these limitations in each chapter, as appropriate.</p> <p>NOTE: Issues with an asterisk (*) were mentioned by the Coalition on Appalachian Substance Abuse Policy (CASAP) as a data limitation.</p>				

Chapter Overview – The National Survey on Drug Use and Health (NSDUH)

Overview. Chapter 2 presents the comparative Appalachian regional analyses of substance abuse, mental health and related treatment access among the general population. The National Survey on Drug Use and Health (NSDUH) provides data on drug, alcohol, and tobacco use in the civilian, non-institutionalized population aged 12 or older in the U.S. While substance use (both alcohol and illicit drugs) and dependence are a key focus of the survey, NSDUH also provides self-reported information leading to the identification of serious psychological disorders and major depressive episodes as well as information about the receipt of specialty treatment for illicit drug or alcohol use, and mental health treatment/counseling in various settings.

Key Research Questions. Chapter 2 explores the following key research questions: (1) What proportions of people report substance use, abuse, or dependence in the Appalachian region as compared to outside of Appalachia? (2) What proportions of people in need of addiction or mental health treatment report having received treatment for substance abuse or mental health problems in the Appalachian region as compared to outside of Appalachia? (3) Are there patterns with respect to substance use or abuse and access to treatment across different sub-groups, depending on demographics, socio-economic characteristics, or age of population (age 12 to 17 versus age 18 and older)? (4) Are there patterns with respect to substance use or abuse and access to treatment across Appalachian sub-regions and/or by Appalachian county economic development status?

Sample. The survey is based on a random sample of households in the nation. The sample design includes the 50 states and the District of Columbia. The four most recent NSDUH surveys, 2002-2005, are pooled together to study substance abuse, mental disorders, and access to treatment by persons in the general population in Appalachia, as compared to the rest of the U.S., and to provide sufficient sample sizes for sub-regional analyses. A total of 271,978 respondents were included in the data (91,145 adolescents aged 12-17 and 180,833 adults aged 18 or older).

Limitations. The primary limitation of NSDUH is that it has been designed to provide national, and, more recently, state-level estimates on drug use. The survey was not designed to provide special regional estimates, and thus estimated totals, and weighted percentages to a lesser degree, for groupings of counties should be interpreted with caution. The NSDUH also only targets the civilian, non-institutionalized population aged 12 or older, potentially excluding other populations that may have different substance abuse patterns.

Findings. Non-medical use of psychotherapeutics was higher among adolescents than among adults overall; adolescents in the Appalachian region had even higher prevalence rates than adolescents outside of the Appalachian region. Both geographic variation and county economic status differences are observed in adolescents' non-medical use of prescription drugs – with the southern part of Appalachia, “distressed and at-risk,” and “transitional” counties having higher rates. The percentages of current or recent methamphetamine use for adults are similar between Appalachia and elsewhere, but the lifetime use of methamphetamine rate is lower in Appalachian than outside of Appalachia. For adolescents, the methamphetamine use prevalence rates are generally similar, although the rates in Appalachia for lifetime use and past month use are slightly higher in Appalachia than outside of Appalachia. Finally, those who receive substance abuse treatment in the Appalachian region are less likely to utilize inpatient rehabilitation than people outside of the Appalachian region.

Chapter Overview – Treatment Episode Data Set (TEDS)

Overview. We use the Treatment Episode Data Set (TEDS) to examine admissions to substance abuse treatment. Cross-tabulations are used to examine differences in admissions to substance abuse treatment within the Appalachian region. Analyses are conducted across subgroups based on Appalachian geographic sub-regions (Northern, Central, and Southern) and the ARC-defined economic development level of the counties where the admissions took place.

Research Questions. Key research questions explored include: (1) Are there regional and sub-regional differences in admissions to substance abuse treatment in Appalachia as compared to admissions to treatment outside of Appalachia? (2) Are there regional and sub-regional patterns in admissions to treatment across different socio-economic and demographic variables such as age, education, type of health insurance, etc? and (3) Are there regional and sub-regional patterns in admissions to treatment with respect to other variables, such as source of referral, number of prior treatment episodes, and primary reason for admission?

Sample. Chapter 3 provides an overview of the pooled annual admissions to treatment facilities in the Appalachian region, and in other regions nationally, during the 2000 – 2004 period. TEDS is based on over two million admissions reported by over 10,000 facilities to the 50 States, District of Columbia, and Puerto Rico, over a calendar year. Among the 410 Appalachian counties, 195 counties were in the pooled 2000-2004 TEDS data set, comprising 511,217 total admissions to treatment for abuse of alcohol and drugs in facilities that report to individual State administrative data systems. Twelve of the 13 Appalachian states were included in the data (excluding West Virginia).

Limitations. There are several limitations in using TEDS to explore substance abuse treatment issues in Appalachian counties as compared to other counties nationally. TEDS does not capture all of the substance abuse treatment facilities in the U.S., and the scope of facilities included differs from state to state. Second, states may vary in how they define an admission; thus, the absolute number of admissions may not be a valid measure for comparing states. Finally, different criminal justice practices at the state level may affect the way clients are referred to admission.

Findings. The central Appalachian region had the highest proportion of admissions with other opiates or synthetics as the primary reason for admission among Appalachian sub-regions. In addition, about two-thirds of admissions in Appalachia were associated with mood disorders – both those that were substance-related and non-substance-related. Finally, the highest prevalence of mood disorders occurs in “transitional” counties and in the northern Appalachian sub-region; the central sub-region of Appalachia has the greatest density of admissions for psychiatric problems (both substance-related and non-substance-related).

Chapter Overview – The Healthcare Cost and Utilization Project (HCUP)

Overview. Chapter 4 provides an overview of substance abuse and mental disorder discharges from Appalachian and other community hospitals. Analyses of the encounter-level administrative data for inpatient hospital stays are performed using the Healthcare Cost and Utilization Project (HCUP), the largest collection of longitudinal hospital care data in the United States.

Research Questions. In Chapter 4 we investigate the following key research questions: (1) Are there differences in substance abuse and mental disorder diagnoses among patients discharged from community hospitals in Appalachia, as compared to discharges from community hospitals outside of Appalachia? (2) Are there differences in discharges from community hospitals in Appalachia versus outside of Appalachia when taking county economic status into account? and (3) Do sub-regional differences exist across socio-economic status, health diagnoses, and other dimensions of hospital stays?

Sample. This study uses HCUP’s Nationwide Inpatient Sample (NIS) collected in 2004 to examine substance abuse and mental disorder discharges from community hospitals. The NIS is a stratified probability sample of non-rehabilitation, community hospitals in the United States. All U.S. community hospitals in the American Hospital Association’s hospital file are included in the hospital universe, except short-term rehabilitation hospitals. HCUP provides data that address both substance abuse and mental health issues. Given the NIS’s large sample size – 8,004,571 hospital discharges from 1,004 U.S. community hospitals – the NIS is ideal for exploring trends nationally and in the Appalachian region. The NIS sampling frame is representative of all U.S hospitals and includes data from 37 states, including ten of the 13 Appalachian states. Pennsylvania, Alabama, and Mississippi are excluded.

Limitations. The HCUP data is limited to only 37 states. In 2004, HCUP NIS data were only available in 10 of the 13 Appalachian states, excluding Pennsylvania, Mississippi, and Alabama. Missing data is a clear limitation, given that it would be ideal to make comparisons between Appalachian community hospitals and other community hospitals nationally based on data for all 13 Appalachian states and the rest of the nation. Also, the NIS includes general and specialty hospitals (e.g., pediatric, obstetrics-gynecology, short-term rehabilitation, and oncology), but excludes long-term care and psychiatric hospitals.

Findings. Findings include that patients in the Appalachian region are more likely to be admitted through the emergency department than patients outside of the Appalachian region. This disparity appears to be concentrated in “at-risk” and “transitional” counties as compared to other counties. In addition, over 67 percent of adult hospital stays in Appalachia were billed to the government in 2004, with Medicare being billed for the majority of stays. Finally, the percentage of admissions in Appalachia for patients with principal and/or secondary MH/SA diagnoses is higher than the percentage outside of Appalachia. The vast majority of the hospital stays with MH/SA diagnoses are mental health related, and the rate is higher in Appalachia than outside of Appalachia.

Chapter Overview – The National Survey of Substance Abuse Treatment Services (N-SSATS)

Overview. Chapter 5 examines the facility and services characteristics of the substance abuse treatment programs inside and outside of Appalachia. We use the National Survey of Substance Abuse Treatment Services (N-SSATS) collected in 2005 to obtain a snapshot of the character and composition of the substance abuse treatment delivery system in the United States. N-SSATS allows us to make comparisons across geographic areas and among different populations with substance abuse issues.

Research Questions. This chapter explores the following key research questions for facilities in Appalachia and facilities outside of Appalachia: (1) Do substance abuse facilities in Appalachia offer inpatient detoxification services? (2) What are the ownership structures for the Appalachian treatment facilities and how do they compare to those of other facilities? (3) What is the primary focus of Appalachian substance abuse facilities (e.g., substance abuse services, mental health services, general health care services, etc.)? (4) What types of health insurance do facilities accept (e.g., Medicare, Medicaid, state financed insurance, private health insurance)?

Sample. The sample analyzed in this study includes 13,367 substance abuse treatment facilities from which data were collected in 2005. Of all these facilities, 980 (7.3%) were from the Appalachian region, and 12,391 (92.7%), were from the rest of the country.

Limitations. There are several limitations with respect to using N-SSATS to explore the composition and characteristics of substance abuse treatment facilities in Appalachian counties as compared to other counties nationally. One serious limitation is that N-SSATS does not capture data from all of the substance abuse treatment facilities that may be relevant to this study. A second limitation is that N-SSATS is a point-prevalence survey, and as such, only reflects treatment facility composition and status at a single point in time. Additionally, there are limitations related to the survey's design and content that will be presented in more detail in the chapter. Finally, some financial data originally collected through the survey have been omitted from the public use file for confidentiality reasons. Despite these limitations, we view the N-SSATS as a limited, yet important data source for this study of substance abuse and mental health issues, and access to treatment services in Appalachia.

Findings. In Appalachia, proportionately more treatment facilities had a primary focus of providing mental health services, a mix of mental health services, and general health care services than treatment facilities outside of Appalachia. Non-hospital residential substance abuse care is provided in proportionately fewer facilities in Appalachia than outside of Appalachian. Long-term non-hospital residential treatment is offered in proportionately fewer facilities in Appalachia than outside of Appalachia. Analyses also show a significantly greater acceptance of government financed payment sources including Medicare, Medicaid, and state financed insurance. While proportionately more facilities accept these payment sources, we do not know the breadth of coverage within the region. Similarly, proportionately more Appalachian facilities accept private health insurance, but the breadth of coverage is also unknown. Future studies analyzing cost and insurance issues within the Appalachian region could provide more specificity in terms of facility rationale, breadth of coverage, and service implications.

Chapter Overview – Special Analysis: Substance Abuse and Mental Health – A Comparison of Appalachian Coal Mining Areas to Other Areas within the Appalachian Region

Overview. The coal mining industry has long been a vital part of the economy of Appalachia and remains a major industry within the region. Popular media has cited an increase in drug use in coal mining areas. This chapter is based on statistical analyses of data systematically collected by two agencies within the U.S. Department of Health and Human Services – the Substance Abuse and Mental Health Services Administration (SAMHSA) and the Agency for Healthcare Research and Quality (AHRQ). We focus exclusively on the Appalachian region with the objective of comparing coal mining areas and other areas with respect to substance abuse and mental health status and access to the treatment services.

Research Question. The key research question in Chapter 6 is: Do coal mining areas within Appalachia differ from other Appalachian areas in terms of the composition of patients admitted to specialty treatment services or discharged from community hospitals?

Sample. We merged the coal mining area coverage data from the National Coal Resources Data System (NCRDS) with the list of the Appalachian counties described by the Appalachian Region Commission (ARC) as of 2006. Among the 410 Appalachian counties, 176 counties were identified as being located in the coal mining area. The first analytic sample for this chapter includes all adult discharges from community hospitals within the Appalachian Region from the Healthcare Cost and Utilization Project (HCUP). There are a total of 167,957 admissions included in the analytic sample, including 76,083 (45.3%) from 25 coal mining counties and 91,874 (54.7%) from 20 other counties in the Appalachian region. The second analytic sample for this chapter includes all admissions to substance abuse treatment services in the Appalachian Region from the Treatment Episode Data Set (TEDS) from 2000-2004. Among the 195 counties covered by the Treatment Episode Dataset (TEDS) in 2000-2004, 86 counties were located in the coal mining area. Overall there were 211,380 admissions from the coal mining area and 299,837 admissions from other areas in the Appalachian region.

Limitations. Our coal mining area was defined as the area with the subsurface filled with coal instead of the actual coal-producing counties. The results should also be interpreted with caution because the units of analyses were admissions to treatment or hospital discharges made by people living in this area rather than actual coal miners.

Findings. The study in this chapter demonstrates that coal mining areas within the Appalachian region demonstrate higher rates of both heroin use and other opiates or synthetics use as the primary, secondary or tertiary reason for treatment, as compared to other areas within the region. Furthermore, while studies in previous chapters show that rates of both heroin and other opiates and synthetics as primary reasons for coming to treatment increased over the 2000-2004 period, the pace of these rate increases is even faster in coal mining areas than in other areas within the Appalachian region. Other illicit drug use and non-medical use of prescription drugs are also cited more as the primary, secondary or tertiary reasons for treatment in coal mining areas than in other areas.

Chapter Overview – Case Study of Disparities in Mental Health Status and Substance Abuse Prevalence in the Appalachian Region and Access to Mental Health and Substance Abuse Treatment Services

Overview. To supplement the quantitative findings presented in the previous chapters, NORC and East Tennessee State University conducted case studies using a “Socioeconomic Twins” methodology. The purpose of the study was to determine the extent of local assessments of the mental health and substance abuse situation as well as the perceived validity of nationally available quantitative data to serve as an index of the severity of local substance abuse prevalence, mental health status and access to treatment services.

Research Questions. Research questions for Chapter 7 include: Do community perceptions of mental health/substance abuse (MH/SA) issues match available data? What additional data sources are used at the community level? What has been the community’s response to substance abuse and mental health concerns? And, are there potential explanations for variance in community MH/SA indicators?

Sample. Statistical procedures were performed and matrices developed to calculate socio-demographic similarity/dissimilarity and MH/SA similarity/dissimilarity for all possible pairs of Appalachian counties within each state. Then, these “distance matrices” were transformed into pairs which were subsequently ranked and sorted based on the distance values. The twinned county sites were selected based upon the statistically twinned rankings produced by NORC and by consensus among ETSU, CASAP, and NORC, and modified by local/regional knowledge of local situations. Case studies were conducted with the six counties in Kentucky, Virginia, and West Virginia respectively.

Limitations. This study employed a case study methodology, which has inherent limitations. While we conducted discussions with a variety of stakeholders in each of the case study communities, these findings are not meant to provide a comprehensive understanding of every substance abuse and mental health issue and perception in every community

Findings. The case studies revealed that Appalachian communities have a sense of regional awareness of mental health and substance abuse issues and express willingness to share facilities and solutions. Local data sets are essential to understanding the depth of the substance use and mental health issues faced by residents at the county level, though better coordinated data collection, documentation and analysis are needed to access resources at state and federal levels. Barriers to the use of treatment services include social stigma for those who seek care, lack of transportation, non-recognition of the root causes of substance use behaviors, multi-generational patterns of substance abuse behaviors, and erosion of the power of family and community networks to assist in personal coping skills. Community leaders want better conditions for all citizens of their counties regardless of social class. The well-being of youth is of paramount importance to rural counties evidenced by the emphasis on prevention and awareness of substance abuse in schools and youth-programs settings.

CHAPTER 2: Substance Use, Mental Disorders, and Access to Treatment Services in Household Surveys, 2002 – 2005

2.1 Introduction

Drug misuse and abuse, and mental health disorders are major health and social issues in the United States. In Chapter 2, we provide our findings related to substance abuse, mental health problems, and access to treatment services among the general population in the Appalachian region, as compared to other parts of the United States. Where possible, findings are also presented by Appalachian sub-region and county economic development status. Data are from the National Survey on Drug Use and Health (NSDUH), the largest nationwide survey of the U.S. civilian non-institutionalized population. While substance use (both alcohol and illicit drugs) and dependence are a key focus of the survey, NSDUH also explores the prevalence and treatment of serious psychological disorders and major depressive episodes. NSDUH also provides data about health and emotional problems associated with substance use. Finally, NSDUH provides information about the receipt of specialty treatment for illicit drug or alcohol use, and mental health treatment/counseling in various settings.

This chapter explores the following key research questions:

What proportions of people report substance use, abuse, or dependence in the Appalachian region as compared to outside of Appalachia?

What proportions of people in need of addiction or mental health treatment report having received treatment for substance abuse or mental health problems in the Appalachian region as compared to outside of Appalachia?

Are there patterns with respect to substance use or abuse and access to treatment across different sub-groups, depending on demographics, socio-economic characteristics, or age of population (age 12 to 17 versus age 18 and older)?

Are there patterns with respect to substance use or abuse and access to treatment across Appalachian sub-regions and/or by Appalachian county economic development status?

An overview of data sources is presented in Section 2.2, including a description of the targeted population. General limitations and major data gaps specifically related to exploring substance use and mental health problems in the Appalachian region are also included in this section. Section 2.3 discusses the methods, including the analytic sample, measurement, and statistical methods. Section 2.4 contains the results of the analysis. Finally, Section 2.5 provides a discussion of key findings.

2.2 Data

2.2.1 Overview

The data used for this chapter is from the National Survey on Drug Use and Health (NSDUH). NSDUH is the largest nationwide survey of the U.S. civilian non-institutionalized population. Excluded from the sample are individuals with no household address (e.g., homeless and/or transient persons not in shelters), active duty military personnel, and residents of jails and

hospitals.⁷ Initiated in 1971 and authorized by the Public Health Service Act to collect data on substance abuse trends and patterns, NSDUH is the Federal government's primary source of national data on substance abuse issues related to alcohol, tobacco, and other illicit substances. NSDUH is funded and overseen by the Substance Abuse and Mental Health Services Administration (SAMHSA) to collect data about the status of the nation's drug usage.

The survey is based on a random sample of households in the nation. Households that have been randomly selected are visited by a NSDUH field representative. The sample design includes the 50 states and the District of Columbia. States designated as large sample states had sample sizes that ranged from 3,562 to 3,699 people.¹⁵ The large sample states – California, Florida, Illinois, Michigan, New York, Ohio, Pennsylvania, and Texas – were large enough to support direct state estimates (includes three Appalachian states). The other 42 states, including 10 of the 13 Appalachian states, were designated as small sample states; sample sizes for small sample states ranged from 840 to 978 people. One or two residents aged 12 or older from each household may be asked to complete an interview for the survey. Each individual selected to participate in the survey represents about 3,000 other residents in the United States.¹⁶

To provide a sufficient sample for analysis, we used pooled data from the four most recent National Surveys on Drug Use and Health (NSDUH), 2002-2005. In 2002-2005, NSDUH collected data from approximately 272,000 respondents aged 12 or older. A stratified sample was used to obtain sufficient representation from all 50 States and the District of Columbia. The survey was planned and managed by SAMHSA's Office of Applied Studies (OAS). In each year during 2002-2005, the nationwide surveys included close to 70,000 individuals.

2.2.2 Limitations of the NSDUH

The primary limitation of NSDUH is that it has been designed to provide national, and, more recently, state-level estimates on drug use. The survey was not designed to provide special regional estimates. As the Appalachian region is not part of the primary sampling unit or the sampling segment, the weights used for the national and state estimates are not ideal for a study of the Appalachian region. In addition, the NSDUH weighting process does not post-stratify at the county level; post-stratification of results involves weighting the data after collection when certain stratum may be over or under-represented. As a result, the estimated totals, and weighted percentages to a lesser degree, for groupings of counties – such as the 410 counties in the Appalachia region – should be interpreted with caution.

Another limitation of using the NSDUH survey for this study is that it only targets the civilian, non-institutionalized population aged 12 or older, potentially excluding other populations that may have different substance abuse patterns.¹⁷ For example, research shows that runaways have higher rates of drug abuse than their peers that live at home.^{18,19} Also, the NSDUH survey does not include people who are not in a homeless shelter on the survey date, potentially missing this population. Additionally, NSDUH excludes active military personnel and persons in institutional group quarters (e.g., prisons, long-term hospitals, residential drug treatment centers, etc.).

⁷ It is important to note that because this sample frame, persons who were residing in long-term psychiatric or other institutions at the time of interview were excluded from the NSDUH sample.

Third, NSDUH relies on people self-reporting their behavior with respect to drug use. Thus, data may be biased by interviewees either under-reporting or over-reporting their drug use. To mitigate this problem, NSDUH’s estimates are determined by interviewees’ responses to multiple questions about substance abuse. However, self-reporting may bias response tendencies, given that inconsistent responses for drug use questions are common in the survey.²⁰

Finally, although data from four consecutive annual surveys were pooled to conduct this study, no county-level estimations are produced because of the small sample sizes and related confidentiality concerns. This also remains a concern when conducting state level analyses, as noted in the literature.²¹

2.3 Methods

2.3.1 Analytic Sample

The data used for this study are the pooled cross-sectional annual National Surveys on Drug Use and Health (NSDUH) for the 2002-2005 period. As shown in Table 2.1, a total of 271,978 respondents were included in the pooled data, including 91,145 adolescents aged 12-17 and 180,833 adults aged 18 or older.

About 8.13% (n=22,109) of the total respondents were from the 410-county Appalachian region when the surveys were conducted during the 2002-2005 period. Of the 22,109 respondents from the Appalachian region, 7,336 were adolescents age 12 -17, and 14,833 were adults age 18 or older.

Table 2.1 Sample Sizes of the Pooled National Surveys on Drug Use and Health, by Age Group, Survey Year, and Appalachian Region Status

Age Group	Year of Data Collection				All 2002-2005	Region of Data Collection	
	2002	2003	2004	2005		Appalachian Region*	Non-Appalachian Region
12-17	23,645	22,665	22,301	22,534	91,145	7,336	83,809
18 or older	44,481	45,119	45,459	45,774	180,833	14,833	166,000
Total	68,126	67,784	67,760	68,308	271,978	22,109	249,809

Note: The Appalachian Region is comprised of the 410 counties located in 13 states -- Alabama, Georgia, Kentucky, Maryland, Mississippi, New York, North Carolina, Ohio, Pennsylvania, South Carolina, Tennessee, Virginia, and West Virginia. The only state located fully within the Appalachian region is West Virginia.

2.3.2 Measures

Tables and maps present population prevalence measures for the use of illicit drugs, alcohol, and tobacco products, as well as measures that indicate mental health issues and access to treatment services. Tables show estimates of drug use prevalence by lifetime (e.g., ever used), past year, and past month use. Prevalence measures showing the number of substance users are included in tables in Appendix C. Measures are analyzed across socio-demographic characteristics, including age, race/ethnicity, education, employment status, and health insurance status.

Substance Use

Substances studied here include alcohol and illicit drugs, such as marijuana, cocaine, heroin, methamphetamine, and non-medical use of prescription-type drugs. Respondents are classified as dependent on or abusing specific substances based on criteria specified in the Diagnostic and Statistical Manual of Mental Disorders, 4th edition (DSM-IV) (American Psychiatric Association, 1994). The questions on dependence ask about health and emotional problems associated with substance use, unsuccessful attempts to reduce use, tolerance, withdrawal, and other symptoms related to substance use. The questions on abuse ask about problems at work, home, and school; problems with family and friends; physical danger; and trouble with the law due to substance use. The survey also asks about treatment for substance use problems. Specialty treatment is defined as treatment received at drug or alcohol rehabilitation facilities, hospitals (inpatient only), or mental health centers.

Mental Disorders

Mental disorders studied here include the prevalence and treatment of serious psychological distress (SPD) and major depressive episodes (MDE). Past year SPD is an overall indicator of nonspecific psychological distress that is constructed from the K6 scale administered to adults aged 19 or older in the NSDUH. The K6 scale consists of six questions that gather information on how frequently a respondent experienced symptoms of psychological distress during the one month in the past year when he or she was at his or her worst emotionally. Responses to these six questions are combined to produce a score ranging from 0 to 24, where a score of 13 or greater is considered SPD.⁸ This cutoff is based on research suggesting that scores above this threshold provides an indicator of serious mental illness. MDE is defined as a period of at least two weeks when a person experienced a depressed mood or loss of interest or pleasure in daily activities and had symptoms that met the criteria for major depressive disorder as described in the 4th edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) (American Psychiatric Association, 1994)⁹. MDE, as defined here, can be caused by mental illness, bereavement, or substance use disorders.

Access to Treatment

Access to treatment measures studied here are past year receipt of specialty treatment for illicit drug or alcohol use, and mental health treatment/counseling in various settings. *Received Treatment at a Specialty Facility* refers to treatment received at a hospital (inpatient), alcohol or drug rehabilitation facility (inpatient or outpatient), or mental health center in order to reduce or stop alcohol or drug

⁸ The Serious Psychological Distress (SPD) measure reflects only 2004 and 2005 (unadjusted, Sample B) data, as 2002 and 2003 (long form) SPD measures are not comparable to 2005 (short form) SPD measures. This information is footnoted in the tables. Similarly, the Major Depressive Episode measure reflects only 2004 and 2005 data, as this measure was not available prior to 2004.

⁹ Although there is significant overlap between those meeting the criteria of SPD and MDE, there are important distinctions between the two. Meeting the criteria for SPD indicates that the respondent exhibited a high level of distress due to any type of mental problem, which may include general symptoms related to phobia, anxiety, or depression. However, meeting the criteria for MDE indicates that the respondent had the specific physical and emotional symptom profile indicative of major depression.

use, or for medical problems associated with alcohol use. It excludes treatment at an emergency room, private doctor's office, self-help groups, prison or jail, or hospital as an outpatient.

Respondents were classified as *Needing Treatment for an Illicit Drug or Alcohol Problem* if they met at least one of three criteria during the past year: (1) dependent on illicit drugs or alcohol; (2) abuse of illicit drugs or alcohol; or (3) received treatment for an illicit drug or alcohol problem at a specialty facility (i.e., drug and alcohol rehabilitation facilities [inpatient or outpatient], hospitals [inpatient only], and mental health centers). Illicit drugs include marijuana/hashish, cocaine (including crack), heroin, hallucinogens, inhalants, or prescription-type psychotherapeutics used nonmedically.

An individual defined as *Needing But Not Receiving Treatment* refers to respondents who are classified as needing treatment, but not receiving treatment for a problem at a specialty facility (e.g., drug and alcohol rehabilitation facilities [inpatient or outpatient], hospitals [inpatient only], and mental health centers).

An individual defined as *Felt Need for Treatment* includes persons who did not receive but felt they needed treatment, as well as persons who received treatment at a location other than a specialty facility but felt they needed additional treatment.

2.3.3 Statistical Methods

Two major types of analyses were conducted. First, analyses were conducted to identify disparities on substance abuse and mental disorder measures: (a) between Appalachia and non-Appalachia; (b) within Appalachian sub-regions (northern, central, and southern); and (c) across Appalachian Regional Commission (ARC) defined economic development level domains in the Appalachian region (distressed, at-risk, transitional, competitive, attainment). Second, analyses were conducted to identify patterns of more detailed geographic variations across counties. For the first type of analyses, we combine the 2002-2005 NSDUH data and estimate across the regional, sub-regional, and economic development domain groups. Analytic results from these analyses are presented in a series of analytic tables and bar charts, along with descriptions of the findings. For the second type of analyses, we use the 2002-2004 combined data and present estimates of the prevalence of substance use or mental health problems using regional maps.

Type 1 Analysis

Regional estimates, along with the associated variance components, were calculated by SAMHSA's survey contractor using the SUDAAN software based on a request from NORC to SAMHSA's Office of Applied Studies (OAS). SUDAAN was designed for the statistical analysis of data collected using stratified, multistage cluster sampling designs, as well as other observational and experimental studies involving repeated measures or studies subject to cluster correlation effects (RTI International, 2004). Although weights are used in the analyses, it is important to note that they were neither post-stratified at the county-level nor by Appalachian region. As such, drug use estimates could be biased.

The standard NSDUH suppression rules have been applied to the analytic tables in this chapter. Additionally, the NSDUH weighting process does not post-stratify at the county level; thus,

these estimated totals (and weighted percentages, to a lesser degree) should be interpreted with caution.

An adaptive analytic approach was used in the type 1 analyses. Adaptive analysis, a term used here that is similar to the concept of adaptive sampling technique in statistics, involves conducting appropriate analyses based on the analytic results at the prior stage. In this study, first, the numbers of respondents in each of the counties included in NSDUH were obtained and examined. Second, a set of demographics and substance use and mental disorder measures are estimated. Finally, selected measures on need for treatment and access to treatment are estimated. Note that in the first step, our analysis of county-level sample sizes indicated that, even with the combined four year data, response numbers are too small to produce useful county-level estimations of substance use and mental disorder prevalence.

Type 2 Analysis

SAMHSA, in collaboration with State treatment representatives, developed substate areas for each State in late 2005 and early 2006. The purpose of developing these substate areas was to provide substate-level estimates showing the geographic distribution of substance use prevalence for areas that States would find useful for treatment planning purposes.¹⁰ The final substate area boundaries were based on the recommendations of each State's staff, assuming the NSDUH sample sizes provided adequate precision. Most States defined areas in terms of counties or groups of counties.

We present estimated values for all selected substance use and serious psychological distress measures using the NSDUH defined sub-state area as the unit of analysis. As such, all counties within those NSDUH sub-state areas are applied the same estimate as generated by SAMHSA's Office of Applied Studies (OAS, 2006²²). These estimates are then mapped showing the full NSDUH sub-state areas, the ARC boundary, and state and county boundaries within Appalachia, to assist in pattern detection. Note that results from the type 2 analyses are only represented by maps shown in this chapter. All tables and their descriptions come from type 1 analysis.

2.4 Results

Demographic Characteristics of the NSDUH Population

Adolescents

Non-Hispanic whites accounted for more than four-fifths of the adolescents in Appalachia but less than two-thirds of the adolescents outside of Appalachia. Overall, adolescent minorities in Appalachia accounted for a larger percentage of the adolescent population than adult minorities accounted for in the adult population.

¹⁰ These areas were defined by officials from each state, typically based on the substance abuse treatment planning areas specified by states in their applications for a SAPT Block Grant administered by SAMHSA. There is extensive variation in treatment planning areas across states. In some, the planning areas are used more for administrative purposes rather than for planning purposes. In a number of states, the designated planning areas changed frequently in recent years. Because the estimation method required a minimum NSDUH sample size of 200 to provide adequate precision, planning areas with insufficient sample size were collapsed with adjacent areas until the minimum was obtained.

Most of the adolescents had private insurance (68%) in both Appalachia and outside of Appalachia. Proportionately, more adolescents in Appalachia had Medicaid/CHIP (26.8%) than adolescents outside of Appalachia (23.5%).

Adults

On average, 88.4% of adults in the Appalachian region and 69% of adults outside the Appalachian region are non-Hispanic/non-Latino whites. Non-Hispanic blacks account for 7.4% of the Appalachian population, and 11.5% of the population outside of Appalachia. Non-Hispanic Asians, American Indians, and Pacific Islanders accounted for 2.3% of the Appalachian population and 6.2 percent of the population outside the Appalachian region. Overall, only 2% of Appalachian residents are of Hispanic origin, while 13.3% of the residents outside of the Appalachian region are of Hispanic origin.

The educational backgrounds of adults were quite different between the Appalachian region and outside of Appalachia. Most of the adult residents in the Appalachian region (58.8%) had a high school education or less, while most of the residents outside the Appalachian region (51.9%) had attended some college or were college graduates.

About 51% of adult residents in Appalachia and 56% of adult residents outside of Appalachia had full-time jobs. Proportions of adults having private health insurance were similar between Appalachian and non-Appalachian regions (71.6% and 71.4% respectively), although more Appalachian adults received Medicare than other adults (21.6% vs. 17.6%).

Substance Use

Marijuana Use

The average of marijuana use was lower for adults in Appalachia than outside of Appalachia regardless of length of use – lifetime use (38.2% vs. 43.2%); past year use (8.4% vs. 10.3%); and past month use (4.9% vs. 6.8%).

The average of marijuana use among adolescents was only slightly lower in Appalachia than outside of Appalachia (14.4% vs. 14.7% for past year use; 7.0% vs. 7.7% for past month use).

Cocaine Use

Adult residents in Appalachia had lower rates of cocaine use as compared to adult residents outside of Appalachia, regardless of length of use – 11.7% vs. 16.0% for lifetime use; 2.2% vs. 2.5% for past year use; 0.8% vs. 1.0% for past month use.

The percentages of adolescents who had ever used cocaine in their lifetime were the same (2.5%) inside of Appalachia and outside of Appalachia.

Methamphetamine Use

Proportionately, fewer adults used methamphetamine in Appalachia than outside of Appalachia (lifetime: 4.0% vs. 5.4%; past year: 0.4% vs. 0.6%). The current use rates, however, were the same (0.2%).

The percentages of having ever used methamphetamine by adolescents were 1.4% in Appalachia and 1.3% outside of Appalachia.

For adults, the southern Appalachian sub-region had a higher current methamphetamine use rate (0.3%) than both the northern and central sub-regions (0.1%).

For adolescents, both the central (0.4%) and southern (0.5%) sub-regions had higher current methamphetamine use rates than northern sub-region (0.1%).

To assure an adequate sample size, results were compared across county economic development status using merged categories: “distressed/at-risk;” “transitional;” and “competitive/attainment.” For adults, the highest prevalence rate for current methamphetamine use was in the “competitive/attainment” counties (0.3%); for adolescents, the highest prevalence rate for current methamphetamine use was in the “distressed/at-risk” counties (0.6%).

Alcohol Use

Proportionately fewer Appalachian adults used alcohol in the past year compared to adults elsewhere (61.0% vs. 70.2%). Additionally, 20.6% of Appalachian adults were binge alcohol users in the past year as compared to 24.5% of non-Appalachia adults. In addition, 6.8% of Appalachian adults were heavy alcohol users in the past year compared to 7.3% of non-Appalachian adults.

The reporting of heavy alcohol use by adolescents was higher inside Appalachia (2.9%) than outside of Appalachia (2.5%).

Cigarette Use

Proportionately more adults used cigarettes in Appalachia than outside of Appalachia (lifetime use: 75.8% vs. 72.0%; past year use: 34.5% vs. 30.4%; past-month use: 30.9% vs. 26.5%).

Similarly, proportionately more adolescents used cigarettes in Appalachia than outside of Appalachia (lifetime use: 36.8% vs. 29.5%; past year use: 23.8% vs. 18.3%; past-month use: 16.3% vs. 11.6%).

Non-Medical Use of Psychotherapeutics

Among adults, the prevalence of the non-medical use of psychotherapeutics was slightly lower in the Appalachian region (5.6%) than outside of the Appalachian region (5.9%).

Among adolescents, however, the prevalence of the non-medical use of psychotherapeutics was higher in the Appalachian region (10.6%) than outside of the Appalachian region (8.7%).

Alcohol and Drug Dependence or Abuse

Proportionately, fewer adults in the Appalachian region had dependence or abuse problems as compared to adults outside of the Appalachian region: illicit drug dependence or abuse (2.5% vs. 2.7%), alcohol dependence or abuse (6.4% vs. 8.0%), both illicit drug and alcohol dependence or abuse (1.0% vs. 1.3%), and illicit drug or alcohol dependence or abuse (7.9% vs. 9.4%).

Access to Treatment

Access to Alcohol Treatment

During 2002-2005, the estimated percentage of persons age 18 or older needing but not receiving alcohol treatment in the Appalachian region was 6.1 percent; the estimated percentage of persons age 18 or older needing but not receiving alcohol treatment outside of the Appalachian region was 7.6 percent.

During 2002-2005, the estimated percentage of persons age 12-17 needing but not receiving alcohol treatment in the Appalachian region was 5.6 percent; the estimated percentage of persons age 12-17 needing but not receiving alcohol treatment outside of the Appalachian region was 5.5 percent.

Access to Drug Treatment

During 2002-2005, the estimated percentage of persons age 18 or older needing but not receiving drug treatment in the Appalachian region was 2.2 percent; the estimated percentage of persons age 18 or older needing but not receiving drug treatment outside of the Appalachian region was 2.4 percent.

During 2002-2005, the estimated percentage of persons age 12-17 needing but not receiving drug treatment in both the Appalachian region and outside of the Appalachian region was 4.8 percent.

Locations Where Substance Abuse Treatment Was Received

Among persons who received substance abuse treatment at a specialty facility, the most frequently reported locations are outpatient rehabilitation facilities (68%) for both the Appalachian region and outside of the region.

Among persons who received treatment at a specialty facility, the percentage being treated at inpatient rehabilitation facilities was 37% in the Appalachian region and 45% outside of the Appalachian region.

Mental Health

Mental Health Problems

Proportionately more adults in the Appalachian region (13.5%) encountered a serious psychological distress problem than adults outside of Appalachia (11.6%).

Proportionately more adults in the Appalachian region (8.2%) had a major depressive episode in the past year than adults outside of Appalachia (7.6%).

Access to Mental Health Treatment / Counseling

Receiving mental health treatment. In general, adults in the Appalachian region with mental health problems reported a somewhat greater likelihood of having received outpatient mental health treatment or counseling in the past year (13.6%) as compared to adults outside the Appalachian region (12.9%). This was seen in both the receipt of outpatient counseling services (7.3% vs. 7.1%) and prescription medication services (12.0% vs. 10.5%). The percentage of adults with mental health problems having ever received inpatient mental health treatment was the same in both the Appalachian region and outside of Appalachia.

Reasons for not receiving mental health treatment / counseling. Cost or insurance barriers were the primary self-reported reason why people did not receive mental health treatment or counseling. The percentage of persons reporting these barriers was slightly lower in the Appalachian region (44%) than outside of the region (48%). The second most frequently cited reason for not receiving mental health treatment or counseling was that people did not feel that it was needed and, rather, believed that they could handle the problem without treatment – proportionately more respondents in the Appalachian region (37%) than outside of the Appalachian region (33%) stated this reason. The third mostly reported reason for not receiving mental health treatment or counseling was stigma. The percentage of people reporting stigma as a reason for not receiving treatment/counseling was 28% in the Appalachian region, compared to 22% outside of the Appalachian region.

2.4.1 Tables

Demographic Characteristic/ Health Insurance	AGE GROUP			
	12-17		18 or Older	
	Appalachian Region ¹	Outside Appalachia	Appalachian Region ¹	Outside Appalachia
HISPANIC ORIGIN AND RACE				
Not Hispanic or Latino	97.4	82.3	98.0	86.7
White	84.2	60.0	88.4	69.0
Black or African American	11.3	15.3	7.4	11.5
Other ²	1.8	7.0	2.3	6.2
Hispanic or Latino	2.6	17.7	2.0	13.3
EDUCATION				
< High School	N/A	N/A	20.4	16.9
High School Graduate	N/A	N/A	38.4	31.1
Some College	N/A	N/A	22.8	25.3
College Graduate	N/A	N/A	18.4	26.6
CURRENT EMPLOYMENT				
Full-Time	N/A	N/A	51.1	55.6
Part-Time	N/A	N/A	11.9	13.2
Unemployed	N/A	N/A	3.4	3.6
Other ³	N/A	N/A	33.6	27.6
HEALTH INSURANCE				
Private	67.6	68.0	71.6	71.4
Medicare	0.8	0.9	21.9	17.6
Medicaid/CHIP ⁴	26.8	23.5	9.0	7.8

*Low precision; no estimate reported. N/A: Not applicable. ¹Appalachian region is defined as all areas covered by the 410 designated counties in 13 states.
² Includes respondents reporting American Indian or Alaska Native, Native Hawaiian or Other Pacific Islander, Asian, and Two or More Races.
³ The Other Employment category includes retired persons, disabled persons, homemakers, students, or other persons not in the labor force.
⁴ CHIP is the Children's Health Insurance Program. Individuals aged 19 or younger are eligible for this plan.
Source: SAMHSA, Office of Applied Studies, National Survey on Drug Use and Health, 2002, 2003, 2004, and 2005.

Table 2.3 Lifetime, Past Year, and Past Month Substance Use among Persons Aged 12 or Older, by Substance, Age Group, and Appalachian Region Status: Percentages, Annual Averages Based on 2002-2005

Substance	AGE GROUP			
	12-17		18 or Older	
	Appalachian Region ¹	Outside Appalachia	Appalachian Region ¹	Outside Appalachia
MARIJUANA USE				
Lifetime	19.0	19.1	38.2	43.2
Past Year	14.4	14.7	8.4	10.3
Past Month	7.0	7.7	4.9	6.0
COCAINE USE				
Lifetime	2.5	2.5	11.7	16.0
Past Year	1.9	1.8	2.2	2.5
Past Month	0.6	0.6	0.8	1.0
METHAMPHETAMINE USE				
Lifetime	1.4	1.3	4.0	5.4
Past Year	0.7	0.7	0.4	0.6
Past Month	0.3	0.2	0.2	0.2
ALCOHOL USE				
Past Year	33.8	34.0	61.0	70.2
Binge Alcohol Use ²	10.5	10.6	20.6	24.5
Heavy Alcohol Use ²	2.9	2.5	6.8	7.3
CIGARETTE USE				
Lifetime	36.8	29.5	75.8	72.0
Past Year	23.8	18.3	34.5	30.4
Past Month	16.3	11.6	30.9	26.5
PAST YEAR NONMEDICAL USE OF PSYCHOTHERAPEUTICS³	10.6	8.7	5.6	5.9

*Low precision; no estimate reported.

¹ Appalachian region is defined as all areas covered by the 410 designated counties in 13 states.

² Binge Alcohol Use is defined as drinking five or more drinks on the same occasion (i.e., at the same time or within a couple of hours of each other) on at least 1 day in the past 30 days. Heavy Alcohol Use is defined as drinking five or more drinks on the same occasion on each of 5 or more days in the past 30 days; all heavy alcohol users are also binge alcohol users.

³ Nonmedical use of prescription-type psychotherapeutics includes the nonmedical use of pain relievers, tranquilizers, stimulants, or sedatives and does not include over-the-counter drugs.

Source: SAMHSA, Office of Applied Studies, National Survey on Drug Use and Health, 2002, 2003, 2004, and 2005.

Table 2.4 Substance Dependence or Abuse, Mental Health Measures, and Receipt of Substance Use Treatment in the Past Year among Persons Aged 12 or Older, by Age Group and Appalachian Region Status: Percentages, Annual Averages Based on 2002-2005

Dependence or Abuse/Mental Health/Receipt of Treatment	AGE GROUP			
	12-17		18 or Older	
	Appalachian Region ¹	Outside Appalachia	Appalachian Region ¹	Outside Appalachia
DEPENDENCE OR ABUSE²				
Illicit Drugs ³	5.2	5.2	2.5	2.7
Alcohol	5.9	5.8	6.4	8.0
Both Illicit Drugs and Alcohol ³	2.5	2.3	1.0	1.3
Illicit Drugs or Alcohol ³	8.6	8.7	7.9	9.4
PAST YEAR SERIOUS PSYCHOLOGICAL DISTRESS⁴	N/A	N/A	13.5	11.6
PAST YEAR MAJOR DEPRESSIVE EPISODE⁵	8.8	8.9	8.2	7.6
PAST YEAR RECEIPT OF SPECIALTY TREATMENT FOR ILLICIT DRUG OR ALCOHOL USE^{3,6}	0.9	0.7	0.9	1.0
MENTAL HEALTH TREATMENT/COUNSELING⁷	N/A	N/A	13.6	12.9
Inpatient	N/A	N/A	0.9	0.9
Outpatient	N/A	N/A	7.3	7.1
Prescription Medication	N/A	N/A	12.0	10.5

*Low precision; no estimate reported.

N/A: Not applicable.

¹ Appalachian region is defined as all areas covered by the 410 designated counties in 13 states.

² Dependence or abuse is based on definitions found in the 4th edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV).

³ Illicit Drugs include marijuana/hashish, cocaine (including crack), heroin, hallucinogens, inhalants, or prescription-type psychotherapeutics used non-medically.

⁴ Serious Psychological Distress (SPD) is defined as having a score of 13 or higher on the K6 scale. Due to questionnaire changes, these combined 2004 and 2005 estimates are not comparable with 2004 and earlier estimates published in prior NSDUH reports. See Section B.4.4 in Appendix C of the *Results from the 2005 National Survey on Drug Use and Health: National Findings*. Estimates are based on combined 2004-2005 data.

⁵ Major Depressive Episode (MDE) is defined as a period of at least 2 weeks when a person experienced a depressed mood or loss of interest or pleasure in daily activities and had a majority of the symptoms for depression as described in the 4th edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV). Estimates are based on combined 2004-2005 data.

⁶ Received Substance Use Treatment at a Specialty Facility refers to treatment received at a hospital (inpatient), rehabilitation facility (inpatient or outpatient), or mental health center in order to reduce or stop illicit drug or alcohol use, or for medical problems associated with illicit drug or alcohol use. Estimates include persons who received treatment specifically for illicit drugs or alcohol, as well as persons who received treatment but did not specify for what substance(s).

⁷ Mental Health Treatment/Counseling is defined as having received inpatient care or outpatient care or having used prescription medication for problems with emotions, nerves, or mental health. Respondents were not to include treatment for drug or alcohol use. Respondents with unknown treatment/counseling information were excluded. Estimates were based only on responses to items in the Adult Mental Health Service Utilization module.

Source: SAMHSA, Office of Applied Studies, National Survey on Drug Use and Health, 2002, 2003, 2004, and 2005.

Table 2.5 Demographic Characteristics and Health Insurance among Persons Aged 12 or Older Residing in Appalachian Region, by Age Group and Appalachian Sub-Region: Percentages, Annual Averages Based on 2002-2005

Demographic Characteristic/Health Insurance	AGE GROUP					
	12-17			18 or Older		
	Northern	Central	Southern	Northern	Central	Southern
HISPANIC ORIGIN AND RACE						
Not Hispanic or Latino	97.9	98.0	96.8	98.9	98.7	97.1
White	91.1	94.7	75.2	93.7	95.5	81.8
Black or African American	4.5	1.1	20.2	3.4	1.7	12.4
Other ¹	2.3	2.1	1.4	1.8	1.5	2.9
Hispanic or Latino	2.1	2.0	3.2	1.1	1.3	2.9
EDUCATION						
< High School	N/A	N/A	N/A	16.3	30.7	22.3
High School Graduate	N/A	N/A	N/A	42.1	40.0	34.6
Some College	N/A	N/A	N/A	22.7	18.9	23.7
College Graduate	N/A	N/A	N/A	18.9	10.4	19.5
CURRENT EMPLOYMENT						
Full-Time	N/A	N/A	N/A	49.1	43.1	54.4
Part-Time	N/A	N/A	N/A	12.8	9.0	11.7
Unemployed	N/A	N/A	N/A	3.6	3.8	3.2
Other ²	N/A	N/A	N/A	34.4	44.1	30.7
HEALTH INSURANCE						
Private	72.3	50.1	66.3	74.0	63.8	70.8
Medicare	0.5	0.6	1.1	22.3	27.8	20.4
Medicaid/CHIP ³	22.4	42.2	28.0	8.1	14.4	8.7

*Low precision; no estimate reported.

NOTE: Appalachian region is defined as all areas covered by the 410 designated counties in 13 states.

N/A: Not applicable.

¹ Includes respondents reporting American Indian or Alaska Native, Native Hawaiian or Other Pacific Islander, Asian, and Two or More Races.

² The Other Employment category includes retired persons, disabled persons, homemakers, students, or other persons not in the labor force.

³ CHIP is the Children's Health Insurance Program. Individuals aged 19 or younger are eligible for this plan.

Source: SAMHSA, Office of Applied Studies, National Survey on Drug Use and Health, 2002, 2003, 2004, and 2005.

Table 2.6 Lifetime, Past Year, and Past Month Substance Use among Persons Aged 12 or Older Residing in Appalachian Region, by Substance, Age Group, and Appalachian Sub-Region: Percentages, Annual Averages Based on 2002-2005

Substance	AGE GROUP					
	12-17			18 or Older		
	Northern	Central	Southern	Northern	Central	Southern
MARIJUANA USE						
Lifetime	19.2	17.5	18.9	38.9	33.0	38.6
Past Year	15.1	12.5	14.1	9.0	6.6	8.1
Past Month	7.5	4.3	7.0	5.5	3.7	4.5
COCAINE USE						
Lifetime	2.2	2.3	2.9	11.8	7.7	12.4
Past Year	1.7	1.9	2.2	2.3	1.6	2.2
Past Month	0.6	0.5	0.5	0.8	0.4	0.8
METHAMPHETAMINE USE						
Lifetime	1.2	1.7	1.5	4.0	2.1	4.4
Past Year	0.5	0.6	0.9	0.3	0.3	0.6
Past Month	0.1	0.4	0.5	0.1	0.1	0.3
ALCOHOL USE						
Past Year	36.7	28.8	31.8	69.3	43.5	56.5
Binge Alcohol Use ¹	12.3	8.1	9.3	24.6	14.0	18.1
Heavy Alcohol Use ¹	3.3	2.4	2.5	8.2	4.1	5.9
CIGARETTE USE						
Lifetime	35.6	42.0	36.9	76.9	75.3	74.9
Past Year	23.8	24.3	23.7	35.2	37.0	33.4
Past Month	16.5	17.2	15.9	31.5	33.2	29.8
PAST YEAR NONMEDICAL USE OF PSYCHOTHERAPEUTICS²	9.1	10.4	12.1	5.0	6.4	6.2

*Low precision; no estimate reported. NOTE: Appalachian region is defined as all areas covered by the 410 designated counties in 13 states. ¹Binge Alcohol Use is defined as drinking five or more drinks on the same occasion (i.e., at the same time or within a couple of hours of each other) on at least 1 day in the past 30 days. Heavy Alcohol Use is defined as drinking five or more drinks on the same occasion on each of 5 or more days in the past 30 days; all heavy alcohol users are also binge alcohol users. ²Nonmedical use of prescription-type psychotherapeutics includes the nonmedical use of pain relievers, tranquilizers, stimulants, or sedatives and does not include over-the-counter drugs. Source: SAMHSA, Office of Applied Studies, National Survey on Drug Use and Health, 2002, 2003, 2004, and 2005.

Table 2.7 Substance Dependence or Abuse, Mental Health Measures, and Receipt of Substance Use Treatment in the Past Year among Persons Aged 12 or Older Residing in Appalachian Region, by Age Group and Appalachian Sub-Region: Percentages, Annual Averages Based on 2002-2005

Dependence or Abuse/Mental Health/Receipt of Treatment	AGE GROUP					
	12-17			18 or Older		
	Northern	Central	Southern	Northern	Central	Southern
DEPENDENCE OR ABUSE¹						
Illicit Drugs ²	5.3	3.1	5.5	2.4	3.1	2.4
Alcohol	6.5	4.3	5.6	7.2	4.8	6.0
Both Illicit Drugs and Alcohol ²	2.8	1.7	2.3	1.1	1.2	1.0
Illicit Drugs or Alcohol ²	9.0	5.7	8.8	8.5	6.7	7.5
PAST YEAR SERIOUS PSYCHOLOGICAL DISTRESS³	N/A	N/A	N/A	13.8	16.1	12.7
PAST YEAR MAJOR DEPRESSIVE EPISODE⁴	8.8	9.1	8.8	7.9	10.6	8.0
PAST YEAR RECEIPT OF SPECIALTY TREATMENT FOR ILLICIT DRUG OR ALCOHOL USE^{2,5}	0.8	0.7	1.0	1.0	0.5	0.8
MENTAL HEALTH TREATMENT/COUNSELING⁶	N/A	N/A	N/A	13.7	15.4	13.1
Inpatient	N/A	N/A	N/A	0.7	1.0	1.0
Outpatient	N/A	N/A	N/A	7.0	7.4	7.5
Prescription Medication	N/A	N/A	N/A	11.9	14.4	11.7

Table is continued on the next page

Table 2.7 Substance Dependence or Abuse, Mental Health Measures, and Receipt of Substance Use Treatment in the Past Year among Persons Aged 12 or Older Residing in Appalachian Region, by Age Group and Appalachian Sub-Region: Percentages, Annual Averages Based on 2002-2005

NOTES:

*Low precision; no estimate reported.

NOTE: Appalachian region is defined as all areas covered by the 410 designated counties in 13 states.

N/A: Not applicable.

¹ Dependence or abuse is based on definitions found in the 4th edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV).

² Illicit Drugs include marijuana/hashish, cocaine (including crack), heroin, hallucinogens, inhalants, or prescription-type psychotherapeutics used non-medically.

³ Serious Psychological Distress (SPD) is defined as having a score of 13 or higher on the K6 scale. Due to questionnaire changes, these combined 2004 and 2005 estimates are not comparable with 2004 and earlier estimates published in prior NSDUH reports. See Section B.4.4 in Appendix C of the *Results from the 2005 National Survey on Drug Use and Health: National Findings*. Estimates are based on combined 2004-2005 data.

⁴ Major Depressive Episode (MDE) is defined as a period of at least 2 weeks when a person experienced a depressed mood or loss of interest or pleasure in daily activities and had a majority of the symptoms for depression as described in the 4th edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV). Estimates are based on combined 2004-2005 data.

⁵ Received Substance Use Treatment at a Specialty Facility refers to treatment received at a hospital (inpatient), rehabilitation facility (inpatient or outpatient), or mental health center in order to reduce or stop illicit drug or alcohol use, or for medical problems associated with illicit drug or alcohol use. Estimates include persons who received treatment specifically for illicit drugs or alcohol, as well as persons who received treatment but did not specify for what substance(s).

⁶ Mental Health Treatment/Counseling is defined as having received inpatient care or outpatient care or having used prescription medication for problems with emotions, nerves, or mental health. Respondents were not to include treatment for drug or alcohol use. Respondents with unknown treatment/counseling information were excluded. Estimates were based only on responses to items in the Adult Mental Health Service Utilization module.

Source: SAMHSA, Office of Applied Studies, National Survey on Drug Use and Health, 2002, 2003, 2004, and 2005.

Table 2.8 Demographic Characteristics and Health Insurance among Persons Aged 12 or Older Residing in Appalachian Region, by Age Group and Appalachian Socioeconomic Status: Percentages, Annual Averages Based on 2002-2005

Demographic Characteristic/Health Insurance	AGE GROUP					
	12-17			18 or Older		
	At-Risk or Distressed	Transitional	Competitive or Attainment	At-Risk or Distressed	Transitional	Competitive or Attainment
HISPANIC ORIGIN AND RACE						
Not Hispanic or Latino	98.9	97.4	96.3	98.9	98.6	96.1
White	88.3	87.5	73.7	89.0	91.1	81.2
Black or African American	9.5	8.1	20.3	8.6	5.5	11.3
Other ¹	1.1	1.8	2.4	1.3	2.0	3.6
Hispanic or Latino	1.1	2.6	3.7	1.1	1.4	3.9
EDUCATION						
< High School	N/A	N/A	N/A	28.9	20.2	14.9
High School Graduate	N/A	N/A	N/A	41.8	39.5	33.4
Some College	N/A	N/A	N/A	18.4	23.7	23.7
College Graduate	N/A	N/A	N/A	10.9	16.7	28.0
CURRENT EMPLOYMENT						
Full-Time	N/A	N/A	N/A	43.8	51.3	55.5
Part-Time	N/A	N/A	N/A	9.7	12.3	12.7
Unemployed	N/A	N/A	N/A	4.5	3.3	3.1
Other ²	N/A	N/A	N/A	42.0	33.1	28.8

*Low precision; no estimate reported.

NOTE: Appalachian region is defined as all areas covered by the 410 designated counties in 13 states.

N/A: Not applicable.

¹ Includes respondents reporting American Indian or Alaska Native, Native Hawaiian or Other Pacific Islander, Asian, and Two or More Races.

² The Other Employment category includes retired persons, disabled persons, homemakers, students, or other persons not in the labor force.

Source: SAMHSA, Office of Applied Studies, National Survey on Drug Use and Health, 2002, 2003, 2004, and 2005.

Table is continued on the next page

Table 2.8 Demographic Characteristics and Health Insurance among Persons Aged 12 or Older Residing in Appalachian Region, by Age Group and Appalachian Socioeconomic Status: Percentages, Annual Averages Based on 2002-2005

HEALTH INSURANCE						
Private	52.4	69.4	73.5	63.2	72.8	74.4
Medicare	1.0	0.6	1.0	25.4	22.2	18.8
Medicaid/CHIP ³	40.4	25.4	20.8	14.1	8.6	6.3

*Low precision; no estimate reported.

NOTE: Appalachian region is defined as all areas covered by the 410 designated counties in 13 states.

N/A: Not applicable.

³ CHIP is the Children's Health Insurance Program. Individuals aged 19 or younger are eligible for this plan.

Source: SAMHSA, Office of Applied Studies, National Survey on Drug Use and Health, 2002, 2003, 2004, and 2005.

Table 2.9 Lifetime, Past Year, and Past Month Substance Use among Persons Aged 12 or Older Residing in Appalachian Region, by Substance, Age Group, and Appalachian Socioeconomic Status: Percentages, 2002-2005

Substance	AGE GROUP					
	12-17			18 or Older		
	At-Risk or Distressed	Transitional	Competitive or Attainment	At-Risk or Distressed	Transitional	Competitive or Attainment
MARIJUANA USE						
Lifetime	19.6	19.1	18.2	32.6	38.3	41.8
Past Year	13.8	14.8	14.0	5.9	8.9	8.7
Past Month	5.8	7.3	7.1	3.0	5.3	5.1
COCAINE USE						
Lifetime	3.1	2.8	1.5	8.2	11.6	14.3
Past Year	2.2	2.2	1.2	1.3	2.4	2.1
Past Month	0.9	0.5	0.4	0.4	0.9	0.7
METHAMPHETAMINE USE						
Lifetime	2.1	1.4	0.9	1.9	4.2	4.8
Past Year	0.9	0.7	0.4	0.4	0.5	0.3
Past Month	0.6	0.3	0.2	0.1	0.2	0.3
ALCOHOL USE						
Past Year	31.4	34.8	33.0	43.6	62.1	70.6
Binge Alcohol Use ¹	10.1	11.4	8.8	15.3	21.9	21.1
Heavy Alcohol Use ²	2.8	3.1	2.4	4.8	7.5	6.3
CIGARETTE USE						
Lifetime	43.6	37.8	30.0	75.0	76.1	75.7
Past Year	25.7	24.7	20.3	37.4	35.3	30.5
Past Month	18.9	16.8	13.4	33.8	31.6	27.1
PAST YEAR NONMEDICAL USE OF PSYCHOTHERAPEUTICS²	11.4	11.3	8.4	5.5	6.0	4.9

NOTES:

*Low precision; no estimate reported. Appalachian region is defined as all areas covered by the 410 designated counties in 13 states.

¹ Binge Alcohol Use is defined as drinking five or more drinks on the same occasion (i.e., at the same time or within a couple of hours of each other) on at least 1 day in the past 30 days. Heavy Alcohol Use is defined as drinking five or more drinks on the same occasion on each of 5 or more days in the past 30 days; all heavy alcohol users are also binge alcohol users.

² Nonmedical use of prescription-type psychotherapeutics includes the nonmedical use of pain relievers, tranquilizers, stimulants, or sedatives and does not include over-the-counter drugs.

Source: SAMHSA, Office of Applied Studies, National Survey on Drug Use and Health, 2002, 2003, 2004, and 2005.

Table 2.10 Substance Dependence or Abuse, Mental Health Measures, and Receipt of Substance Use Treatment in the Past Year among Persons Aged 12 or Older Residing in Appalachian Region, by Age Group and Appalachian Socioeconomic Status: Percentages, Annual Averages Based on 2002-2005

Dependence or Abuse/Mental Health/Receipt of Treatment	AGE GROUP					
	12-17			18 or Older		
	At-Risk or Distressed	Transitional	Competitive or Attainment	At-Risk or Distressed	Transitional	Competitive or Attainment
DEPENDENCE OR ABUSE¹						
Illicit Drugs ²	5.1	5.6	4.3	2.5	2.6	2.1
Alcohol	5.3	6.6	4.7	4.7	6.8	6.9
Both Illicit Drugs and Alcohol ²	2.0	3.0	1.7	0.9	1.2	0.9
Illicit Drugs or Alcohol ²	8.4	9.2	7.4	6.3	8.2	8.1
PAST YEAR SERIOUS PSYCHOLOGICAL DISTRESS³	N/A	N/A	N/A	17.4	11.8	15.3
PAST YEAR MAJOR DEPRESSIVE EPISODE⁴	9.9	8.3	9.5	10.5	6.9	9.7
PAST YEAR RECEIPT OF SPECIALTY TREATMENT FOR ILLICIT DRUG OR ALCOHOL USE^{2,5}	1.1	1.0	0.6	0.6	1.0	0.8
MENTAL HEALTH TREATMENT/COUNSELING⁶	N/A	N/A	N/A	16.0	13.1	12.9
Inpatient	N/A	N/A	N/A	1.1	0.8	1.0
Outpatient	N/A	N/A	N/A	8.6	7.2	6.6
Prescription Medication	N/A	N/A	N/A	14.2	11.6	11.6

*Low precision; no estimate reported.

NOTE: Appalachian region is defined as all areas covered by the 410 designated counties in 13 states.

N/A: Not applicable.

¹ Dependence or abuse is based on definitions found in the 4th edition of the *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV)*.

² Illicit Drugs include marijuana/hashish, cocaine (including crack), heroin, hallucinogens, inhalants, or prescription-type psychotherapeutics used non-medically.

³ Serious Psychological Distress (SPD) is defined as having a score of 13 or higher on the K6 scale. Due to questionnaire changes, these combined 2004 and 2005 estimates are not comparable with 2004 and earlier estimates published in prior NSDUH reports. See Section B.4.4 in Appendix C of the *Results from the 2005 National Survey on Drug Use and Health: National Findings*. Estimates are based on combined 2004-2005 data.

⁴ Major Depressive Episode (MDE) is defined as a period of at least 2 weeks when a person experienced a depressed mood or loss of interest or pleasure in daily activities and had a majority of the symptoms for depression as described in the 4th edition of the *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV)*. Estimates are based on combined 2004-2005 data.

⁵ Received Substance Use Treatment at a Specialty Facility refers to treatment received at a hospital (inpatient), rehabilitation facility (inpatient or outpatient), or mental health center in order to reduce or stop illicit drug or alcohol use, or for medical problems associated with illicit drug or alcohol use. Estimates include persons who received treatment specifically for illicit drugs or alcohol, as well as persons who received treatment but did not specify for what substance(s).

⁶ Mental Health Treatment/Counseling is defined as having received inpatient care or outpatient care or having used prescription medication for problems with emotions, nerves, or mental health.

Respondents were not to include treatment for drug or alcohol use. Respondents with unknown treatment/counseling information were excluded. Estimates were based only on responses to items in the Adult Mental Health Service Utilization module. Source: SAMHSA, Office of Applied Studies, National Survey on Drug Use and Health, 2002, 2003, 2004, and 2005.

Figure 2.1. Geographic Variation in Individuals' Health Insurance: Adolescents and Adults

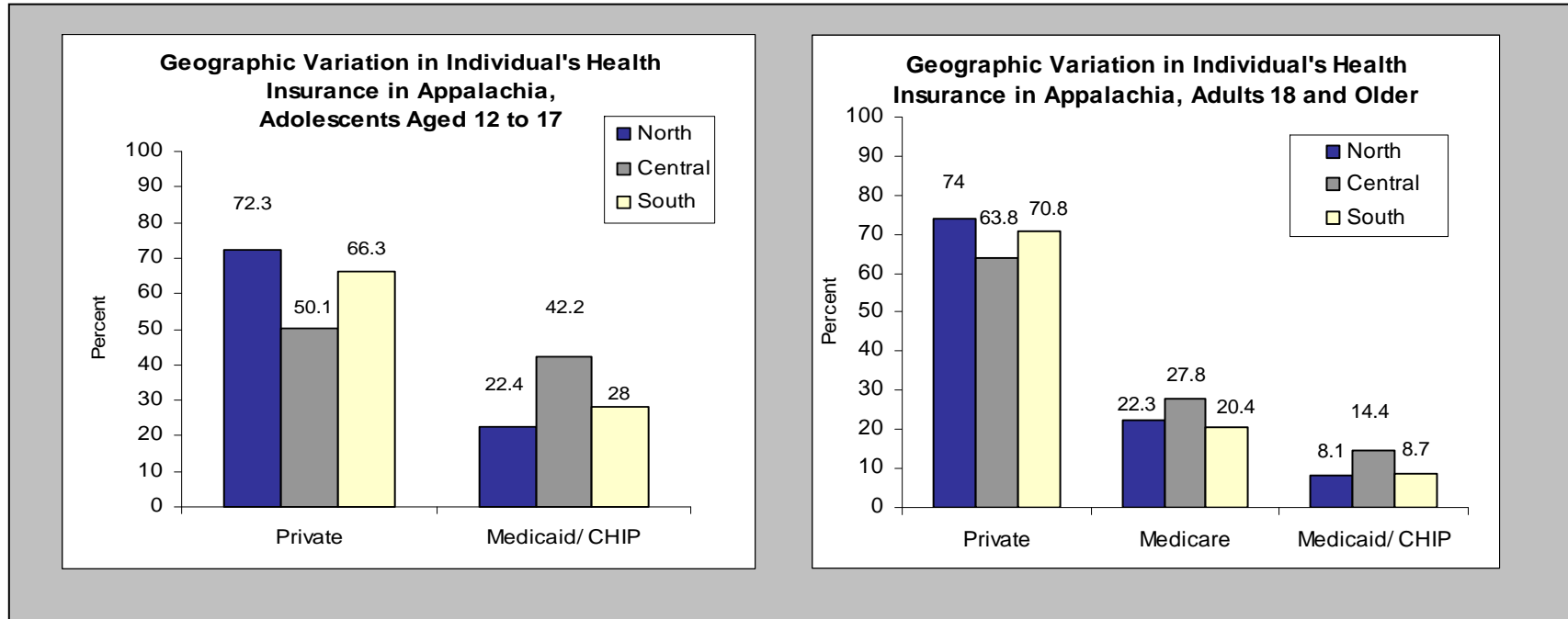


Figure 2.1 shows geographic variation in health insurance status among adolescents aged 12 to 17 and adults aged 18 and older. For private health insurance, the northern Appalachian sub-region has the highest rate of insurance for adolescents (72.3%) and adults (74%), while the central Appalachian sub-region has the lowest rates of insurance for adolescents (50.1%) and adults (63.8%). For Medicaid/CHIP, the northern sub-region has the lowest rates of insurance in adolescents (22.4%) and adults (8.1%). The central sub-region has the largest proportion of adults with Medicare (27.8%) followed by the northern sub-region (22.3%).

Figure 2.2. Geographic Variation in Individuals' Health Insurance: Adolescents and Adults

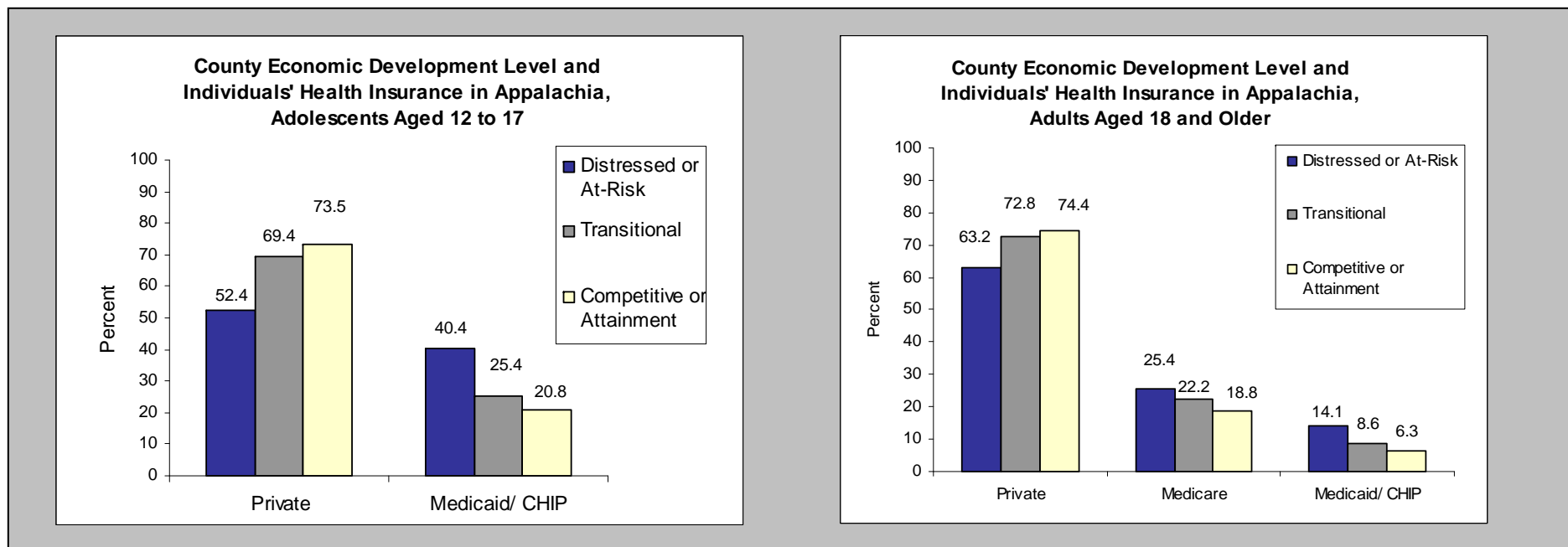


Figure 2.2 shows individual health insurance by county economic development level in Appalachia. There is a linear relationship between economic development level and insurance, and the directions of these relationships are different for each type of insurance. There is a positive relationship between economic development level and private insurance; distressed or at-risk counties have the lowest rates of private insurance for adolescents (52.4%) and adults (63.2%), and competitive or attainment counties have the highest rates of private insurance for adolescent (73.5%) and adults (74.4%). The trend for Medicaid/ CHIP is also linear, though the variables are inversely related. At-risk or distressed counties have the highest rates of Medicaid/ CHIP for adolescents (40.4%) and adults (14.1%), and Medicare for adults (25.4%). Conversely, rates for Medicaid/ CHIP and Medicare are lowest in competitive or attainment counties.

Figure 2.3. Non-Medical Use of Prescription Drugs Among Adolescents Aged 12 to 17

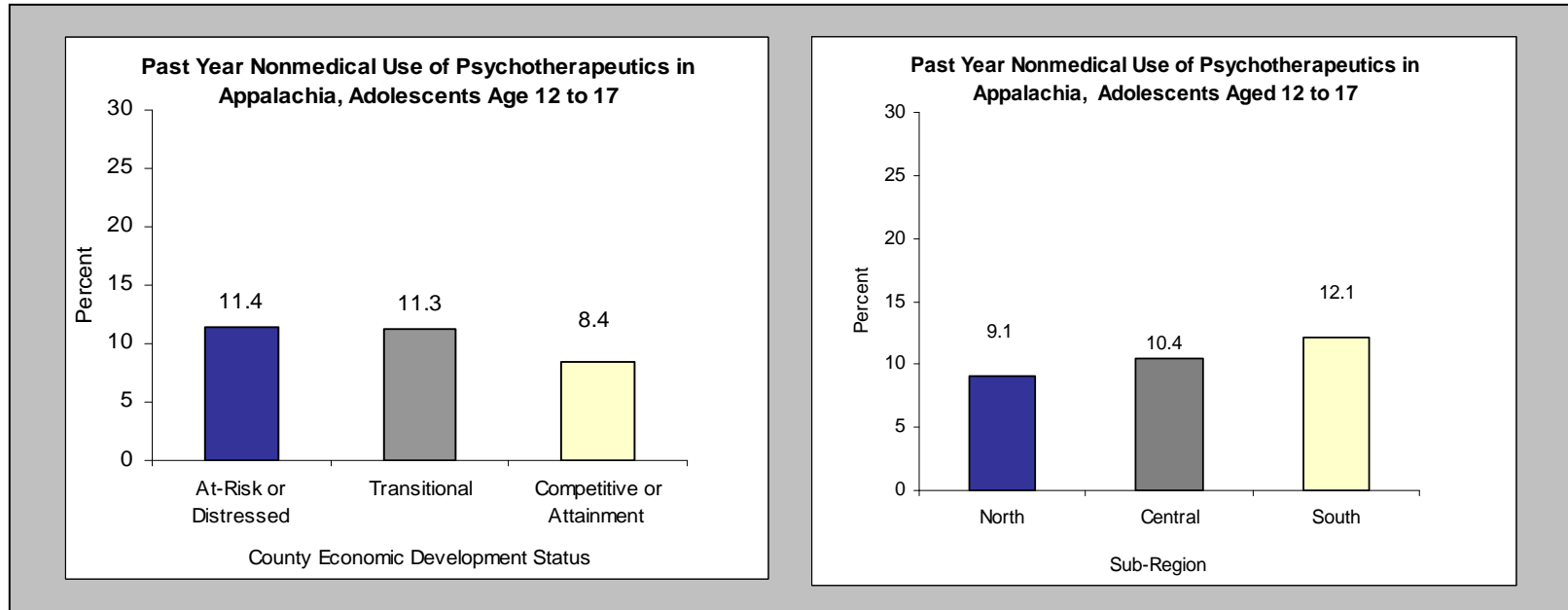


Figure 2.3 presents non-medical use of prescription drugs among adolescents age 12 to 17 by county economic development status and Appalachian sub-region. Non-medical use of prescription drugs among adolescents is higher in the central (10.4%) and southern sub-regions (12.1%) of Appalachia, as compared to the northern sub-region (9.1%). Across economic development status, we see that competitive or attainment counties have the lowest rate of non-medical use of prescription drugs among adolescents (8.4%), followed by transitional counties (11.3%) and distressed or at-risk counties (11.4%).

Figure 2.4. Mental Disorders Among Adults Aged 18 and Older in Appalachian Sub-Regions

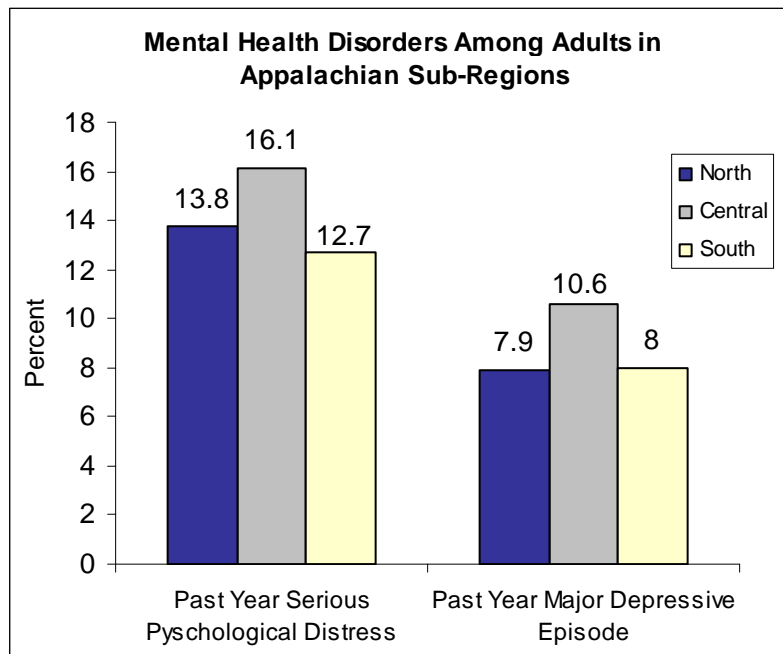


Figure 2.4 shows mental health disorders among adults aged 18 and older in Appalachia. The prevalence rates for serious psychological distress in the past year and major depressive episode in the past year are high across all sub-regions. The highest prevalence rates for both serious psychological distress and major depressive episode are in the central sub-region (16.1% and 10.6%, respectively). For the variable, serious psychological distress in the past year, the northern sub-region has a rate of 13.8%, and the southern sub-region has a rate of 12.7%. For the variable, major depressive episode in the past year, the northern and southern sub-regions have a prevalence rate of approximately 8%.

Table 2.11 Access to Alcohol Treatment among Persons Aged 12 or Older, by Age Group and Appalachian Region Status: Percentages, Annual Averages Based on 2002-2005

	Age 12-17		Age 18 or Older	
	Appalachian Region	Outside Appalachia	Appalachian Region	Outside Appalachia
Access to Alcohol Treatment^{1,2}				
Needed But Not Received Alcohol Treatment	5.6	5.5	6.1	7.6
Felt Need for Alcohol Treatment	0.2	0.2	0.3	0.4
Felt Need for Alcohol Treatment and Made No Effort	0.1	0.1	0.2	0.3

*Low precision; no estimate reported.

NOTE: Received Alcohol Treatment at a Specialty Facility refers to treatment received at a hospital (inpatient), rehabilitation facility (inpatient or outpatient), or mental health center in order to reduce or stop alcohol use, or for medical problems associated with alcohol use.

¹ Needing But Not Receiving Treatment refers to respondents classified as needing treatment for alcohol, but have not received treatment for an alcohol problem at a specialty facility (i.e., drug and alcohol rehabilitation facilities [inpatient or outpatient], hospitals [inpatient only], and mental health centers).

² Felt Need for Treatment includes persons who did not receive but felt they needed treatment for an alcohol problem, as well as persons who received treatment at a location other than a specialty facility but felt they needed additional treatment.

Source: SAMHSA, Office of Applied Studies, National Survey on Drug Use and Health, 2002, 2003, 2004, and 2005.

Table 2.12 Access to Drug Treatment among Persons Aged 12 or Older, by Age Group and Appalachian Region Status: Percentages, Annual Averages Based on 2002-2005

	Age 12-17		Age 18 or Older	
	Appalachian Region	Outside Appalachia	Appalachian Region	Outside Appalachia
Access to Drug Treatment^{1,2}				
Needed But Not Received Treatment for an Illicit Drug Problem	4.8	4.8	2.2	2.4
Felt Need for Treatment for an Illicit Drug Problem	0.3	0.3	0.3	0.4
Felt Need for Treatment for an Illicit Drug Problem and Made No Effort	0.2	0.2	0.2	0.2

*Low precision; no estimate reported.

NOTE: Illicit Drugs include marijuana/hashish, cocaine (including crack), heroin, hallucinogens, inhalants, or prescription-type psychotherapeutics used nonmedically.

NOTE: Received Illicit Drug Treatment at a Specialty Facility refers to treatment received at a hospital (inpatient), rehabilitation facility (inpatient or outpatient), or mental health center in order to reduce or stop illicit drug use, or for medical problems associated with illicit drug use.

¹ Needing But Not Receiving Treatment refers to respondents classified as needing treatment for illicit drugs, but have not received treatment for an illicit drug problem at a specialty facility (i.e., drug and alcohol rehabilitation facilities [inpatient or outpatient], hospitals [inpatient only], and mental health centers).

² Felt Need for Treatment includes persons who did not receive but felt they needed treatment for an illicit drug problem, as well as persons who received treatment at a location other than a specialty facility but felt they needed additional treatment.

Source: SAMHSA, Office of Applied Studies, National Survey on Drug Use and Health, 2002, 2003, 2004, and 2005.

Table 2.13 Reasons for Not Receiving Substance Use Treatment and Locations of Treatment among Persons Aged 12 or Older, by Age Group and Appalachian Region Status: Percentages, Annual Averages Based on 2002-2005

	Age 12-17		Age 18 or Older	
	Appalachian Region	Outside Appalachia	Appalachian Region	Outside Appalachia
Reasons for Not Receiving Drug or Alcohol Treatment among Persons Who Needed But Did Not Receive Treatment at a Specialty Facility¹				
Cost/Insurance Barriers ²	*	16.3	*	36.5
Not Ready to Stop Using	*	34.5	*	39.8
Stigma ^{3,7}	*	26.5	*	22.4
Did Not Know Where to Go for Treatment	*	12.4	*	12.7
Did Not Feel Need for Treatment/Could Handle the Problem Without Treatment ^{4,7}	*	17.4	*	14.2
Did Not Have Time ⁷	*	6.1	*	4.5
Treatment Would Not Help ⁷	*	6.5	*	4.1
Other Access Barriers ⁵	*	16.1	*	14.2
Locations Where Past Year Substance Treatment was Received among Persons Who Received Treatment at a Specialty Facility⁶				
Self-Help Group	*	51.0	57.5	64.8
Outpatient Rehabilitation	*	67.0	68.4	67.7
Inpatient Rehabilitation	*	41.2	37.1	44.9
Mental Health Center	*	42.1	48.2	42.1
Hospital Inpatient	*	36.0	34.9	33.4
Private Doctor's Office	*	15.8	19.3	12.7
Emergency Room	*	20.4	18.3	16.0
Prison or Jail	*	13.0	8.0	9.2

NOTES:
 *Low precision; no estimate reported.
 Needing But Not Receiving Treatment refers to respondents classified as needing treatment for illicit drugs or alcohol, but have not received treatment for an illicit drug or alcohol problem at a specialty facility.
 Felt Need for Treatment includes persons who did not receive but felt they needed treatment for an illicit drug or alcohol problem, as well as persons who received treatment at a location other than a specialty facility but felt they needed additional treatment.
¹ Respondents could indicate multiple reasons; thus, these response categories are not mutually exclusive.
² Includes reasons of "No health coverage and could not afford cost," "Had health coverage but did not cover treatment or did not cover cost," and other-specify responses of "Could not afford cost; health coverage not indicated."
³ Includes reasons of "Might cause neighbors/community to have negative opinion," "Might have negative effect on job," "Did not want others to find out," and other-specify responses of "Ashamed/embarrassed/afraid" and "Afraid would have trouble with the police/social services."
⁴ Includes reasons of "Did not feel need for treatment," "Could handle the problem without treatment," and other-specify responses of "Could do it with support of family/friends/ others," and "Could do it through religion/spirituality."
⁵ Includes reasons of "No transportation/inconvenient," "No program having type of treatment," "No openings in a program," and other-specify responses of "No program had counselor/doctors with whom you were comfortable," "Services desired were unavailable or you were currently ineligible," and "Attempted to get treatment but encountered delays."
⁶ Respondents could indicate multiple locations of treatment; thus, these response categories are not mutually exclusive.
⁷ Estimates are based only on combined 2003-2005 data.
 Source: SAMHSA, Office of Applied Studies, National Survey on Drug Use and Health, 2002, 2003, 2004, and 2005.

Table 2.14 Reasons for Not Receiving Mental Health Treatment among Persons Aged 12 or Older, by Age Group and Appalachian Region Status: Percentages, Annual Averages Based on 2002-2005

	Age 12-17		Age 18 or Older	
	Appalachian Region	Outside Appalachia	Appalachian Region	Outside Appalachia
Reasons for Not Receiving Mental Health Treatment/Counseling among Persons with an Unmet Need for Mental Health Treatment^{1,2}				
Cost/Insurance Barriers ²	N/A	N/A	44.1	47.6
Did Not Feel Need for Treatment/Could Handle the Problem Without Treatment ^{3,7}	N/A	N/A	37.1	33.4
Stigma ^{4,7}	N/A	N/A	27.6	22.2
Did not Know Where to Go for Services	N/A	N/A	12.4	18.9
Did Not Have Time ⁷	N/A	N/A	13.3	15.7
Treatment Would Not Help ^{5,7}	N/A	N/A	9.4	10.1
Fear of Being Committed/Have to Take Medicine	N/A	N/A	11.6	7.6
Other Access Barriers ^{6,7}	N/A	N/A	4.0	5.7

*Low precision; no estimate reported.

N/A: Not applicable.

NOTE: Unmet Need for Mental Health Treatment/Counseling is defined as a perceived need for treatment that was not received.

NOTE: Estimates represent reasons for not receiving mental health treatment/counseling for all persons aged 18 or older with an unmet need for treatment, including those with unknown mental health treatment/counseling information.

NOTE: Mental Health Treatment/Counseling is defined as having received inpatient care or outpatient care or having used prescription medication for problems with emotions, nerves, or mental health. Respondents were not to include treatment for drug or alcohol use. Respondents with unknown treatment/counseling information were excluded. Estimates were based only on responses to items in the Adult Mental Health Service Utilization module.

¹ Respondents could indicate multiple reasons; thus, these response categories are not mutually exclusive.

² Includes reasons of "Could not afford," "Health insurance does not pay enough," "Health insurance does not cover mental health treatment," and other-specify responses of "No health insurance."

³ Includes reasons of "Did not feel need for treatment," "Could handle problem without treatment," and other responses of "Work on problems with family/friends" and "Work on problems through religion/spirituality."

⁴ Includes reasons of "Might cause neighbors/community to have negative opinion," "Might have negative effect on job," "Concerned about confidentiality," "Did not want others to find out," and other-specify responses of "Ashamed/embarrassed/afraid," "Concerned how court system would treat me," and "Concerned how it would affect future insurability."

⁵ Includes reasons of "Did not feel need for treatment," "Could handle problem without treatment," and other-specify responses of "Work on problems with family/friends" and "Work on problems through religion/spirituality."

⁶ Includes reasons of "No transportation/inconvenient" and other-specify responses of "Too much red tape/hassle to get services," "No openings/long waiting lists/delays," "Services unavailable/limited in area," "Attempted to get treatment but unsuccessful in finding help," and "Could not find program/counselor comfortable with."

⁷ Estimates are based only on combined 2003-2005 data.

Source: SAMHSA, Office of Applied Studies, National Survey on Drug Use and Health, 2002, 2003, 2004, and 2005.

Table 2.15 Access to Alcohol Use Treatment among Persons Aged 12 or Older, by Age Group and Appalachian Sub-Region: Percentages, Annual Averages Based on 2002-2005

	Age 12-17			Age 18 or Older		
	Northern	Central	Southern	Northern	Central	Southern
Access to Alcohol Treatment^{1,2}						
Needed But Not Received Alcohol Treatment	6.2	4.2	5.3	6.8	4.6	5.8
Felt Need for Alcohol Treatment	0.2	0.5	0.1	0.4	0.5	0.3
Felt Need for Alcohol Treatment and Made No Effort	0.1	0.3	0.1	0.2	0.5	0.2

*Low precision; no estimate reported.

NOTE: Received Alcohol Treatment at a Specialty Facility refers to treatment received at a hospital (inpatient), rehabilitation facility (inpatient or outpatient), or mental health center in order to reduce or stop alcohol use, or for medical problems associated with alcohol use.

¹ Needing But Not Receiving Treatment refers to respondents classified as needing treatment for alcohol, but have not received treatment for an alcohol problem at a specialty facility (i.e., drug and alcohol rehabilitation facilities [inpatient or outpatient], hospitals [inpatient only], and mental health centers).

² Felt Need for Treatment includes persons who did not receive but felt they needed treatment for an alcohol problem, as well as persons who received treatment at a location other than a specialty facility but felt they needed additional treatment.

Source: SAMHSA, Office of Applied Studies, National Survey on Drug Use and Health, 2002, 2003, 2004, and 2005.

Table 2.16 Access to Drug Use Treatment among Persons Aged 12 or Older, by Age Group and Appalachian Sub-Region: Percentages, Annual Averages Based on 2002-2005

	Age 12-17			Age 18 or Older		
	Northern	Central	Southern	Northern	Central	Southern
Access to Drug Treatment^{1,2}						
Needed But Not Received Treatment for an Illicit Drug Problem	5.1	3.1	5.0	2.1	2.9	2.1
Felt Need for Treatment for an Illicit Drug Problem	0.3	0.3	0.2	0.2	0.5	0.3
Felt Need for Treatment for an Illicit Drug Problem and Made No Effort	0.1	0.2	0.2	0.2	0.5	0.3

*Low precision; no estimate reported.

NOTE: Illicit Drugs include marijuana/hashish, cocaine (including crack), heroin, hallucinogens, inhalants, or prescription-type psychotherapeutics used nonmedically.

NOTE: Received Illicit Drug Treatment at a Specialty Facility refers to treatment received at a hospital (inpatient), rehabilitation facility (inpatient or outpatient), or mental health center in order to reduce or stop illicit drug use, or for medical problems associated with illicit drug use.

¹ Needing But Not Receiving Treatment refers to respondents classified as needing treatment for illicit drugs, but have not received treatment for an illicit drug problem at a specialty facility (i.e., drug and alcohol rehabilitation facilities [inpatient or outpatient], hospitals [inpatient only], and mental health centers.

² Felt Need for Treatment includes persons who did not receive but felt they needed treatment for an illicit drug problem, as well as persons who received treatment at a location other than a specialty facility but felt they needed additional treatment.

Source: SAMHSA, Office of Applied Studies, National Survey on Drug Use and Health, 2002, 2003, 2004, and 2005.

Table 2.17 Reasons for Not Receiving Mental Health Treatment among Persons Aged 12 or Older, by Age Group and Appalachian Sub-Region: Percentages, Annual Averages Based on 2002-2005

	Age 12-17			Age 18 or Older		
	Northern	Central	Southern	Northern	Central	Southern
Reasons for Not Receiving Mental Health Treatment/Counseling among Persons with an Unmet Need for Mental Health Treatment^{1,2}						
Cost/Insurance Barriers ²	N/A	N/A	N/A	41.4	*	48.1
Did Not Feel Need for Treatment/Could Handle the Problem Without Treatment ^{3,7}	N/A	N/A	N/A	37.5	*	36.9
Stigma ^{4,7}	N/A	N/A	N/A	28.5	*	26.9
Did not Know Where to Go for Services	N/A	N/A	N/A	12.2	*	12.8
Did Not Have Time ⁷	N/A	N/A	N/A	12.3	*	15.4
Treatment Would Not Help ^{5,7}	N/A	N/A	N/A	12.6	*	*
Fear of Being Committed/Have to Take Medicine	N/A	N/A	N/A	9.9	8.2	14.0
Other Access Barriers ^{6,7}	N/A	N/A	N/A	4.9	*	4.1

*Low precision; no estimate reported.

N/A: Not applicable.

NOTE: Unmet Need for Mental Health Treatment/Counseling is defined as a perceived need for treatment that was not received.

NOTE: Estimates represent reasons for not receiving mental health treatment/counseling for all persons aged 18 or older with an unmet need for treatment, including those with unknown mental health treatment/counseling information.

NOTE: Mental Health Treatment/Counseling is defined as having received inpatient care or outpatient care or having used prescription medication for problems with emotions, nerves, or mental health. Respondents were not to include treatment for drug or alcohol use. Respondents with unknown treatment/counseling information were excluded. Estimates were based only on responses to items in the Adult Mental Health Service Utilization module.

¹ Respondents could indicate multiple reasons; thus, these response categories are not mutually exclusive.

² Includes reasons of "Could not afford," "Health insurance does not pay enough," "Health insurance does not cover mental health treatment," and other-specify responses of "No health insurance."

³ Includes reasons of "Did not feel need for treatment," "Could handle problem without treatment," and other-specify responses of "Work on problems with family/friends" and "Work on problems through religion/spirituality."

⁴ Includes reasons of "Might cause neighbors/community to have negative opinion," "Might have negative effect on job," "Concerned about confidentiality," "Did not want others to find out," and other-specify responses of "Ashamed/embarrassed/afraid," "Concerned how court system would treat me," and "Concerned how it would affect future insurability."

⁵ Includes reasons of "Did not feel need for treatment," "Could handle problem without treatment," and other-specify responses of "Work on problems with family/friends" and "Work on problems through religion/spirituality."

⁶ Includes reasons of "No transportation/inconvenient" and other-specify responses of "Too much red tape/hassle to get services," "No openings/long waiting lists/delays," "Services unavailable/limited in area," "Attempted to get treatment but unsuccessful in finding help," and "Could not find program/counselor comfortable with."

⁷ Estimates are based only on combined 2003-2005 data.

Source: SAMHSA, Office of Applied Studies, National Survey on Drug Use and Health, 2002, 2003, 2004, and 2005.

Table 2.18 Access to Alcohol Use Treatment among Persons Aged 12 or Older, by Age Group and Appalachian Socioeconomic Status: Percentages, Annual Averages Based on 2002-2005

	Age 12-17			Age 18 or Older		
	At-Risk or Distressed	Transitional	Competitive or Attainment	At-Risk or Distressed	Transitional	Competitive or Attainment
Access to Alcohol Treatment^{1,2}						
Needed But Not Received Alcohol Treatment	4.9	6.3	4.5	4.5	6.4	6.6
Felt Need for Alcohol Treatment	0.6	0.1	0.1	0.4	0.3	0.4
Felt Need for Alcohol Treatment and Made No Effort	0.3	0.1	0.0	0.3	0.2	0.2

*Low precision; no estimate reported.

NOTE: Received Alcohol Treatment at a Specialty Facility refers to treatment received at a hospital (inpatient), rehabilitation facility (inpatient or outpatient), or mental health center in order to reduce or stop alcohol use, or for medical problems associated with alcohol use.

¹ Needing But Not Receiving Treatment refers to respondents classified as needing treatment for alcohol, but have not received treatment for an alcohol problem at a specialty facility (i.e., drug and alcohol rehabilitation facilities [inpatient or outpatient], hospitals [inpatient only], and mental health centers).

² Felt Need for Treatment includes persons who did not receive but felt they needed treatment for an alcohol problem, as well as persons who received treatment at a location other than a specialty facility but felt they needed additional treatment.

Source: SAMHSA, Office of Applied Studies, National Survey on Drug Use and Health, 2002, 2003, 2004, and 2005.

Table 2.19 Access to Drug Treatment among Persons Aged 12 or Older, by Age Group and Appalachian Socioeconomic Status: Percentages, Annual Averages Based on 2002-2005

	Age 12-17			Age 18 or Older		
	At-Risk or Distressed	Transitional	Competitive or Attainment	At-Risk or Distressed	Transitional	Competitive or Attainment
Access to Drug Treatment^{1,2}						
Needed But Not Received Treatment for an Illicit Drug Problem	4.7	5.3	4.0	2.3	2.3	1.8
Felt Need for Treatment for an Illicit Drug Problem	0.5	0.2	0.3	0.3	0.3	0.3
Felt Need for Treatment for an Illicit Drug Problem and Made No Effort	0.3	0.1	0.2	0.3	0.2	0.3

*Low precision; no estimate reported.

NOTE: Illicit Drugs include marijuana/hashish, cocaine (including crack), heroin, hallucinogens, inhalants, or prescription-type psychotherapeutics used nonmedically.

NOTE: Received Illicit Drug Treatment at a Specialty Facility refers to treatment received at a hospital (inpatient), rehabilitation facility (inpatient or outpatient), or mental health center in order to reduce or stop illicit drug use, or for medical problems associated with illicit drug use.

¹ Needing But Not Receiving Treatment refers to respondents classified as needing treatment for illicit drugs, but have not received treatment for an illicit drug problem at a specialty facility (i.e., drug and alcohol rehabilitation facilities [inpatient or outpatient], hospitals [inpatient only], and mental health centers.

² Felt Need for Treatment includes persons who did not receive but felt they needed treatment for an illicit drug problem, as well as persons who received treatment at a location other than a specialty facility but felt they needed additional treatment.

Source: SAMHSA, Office of Applied Studies, National Survey on Drug Use and Health, 2002, 2003, 2004, and 2005.

Table 2.20 Reasons for Not Receiving Mental Health Treatment/Counseling among Persons Aged 12 or Older, by Age Group and Appalachian Socioeconomic Status: Percentages, Annual Averages Based on 2002-2005

	Age 12-17			Age 18 or Older		
	At-Risk or Distressed	Transitional	Competitive or Attainment	At-Risk or Distressed	Transitional	Competitive or Attainment
Reasons for Not Receiving Mental Health Treatment/Counseling among Persons with an Unmet Need for Mental Health Treatment^{1,2}						
Cost/Insurance Barriers ²	N/A	N/A	N/A	37.0	49.1	37.6
Did Not Feel Need for Treatment /Could Handle the Problem Without Treatment ^{3,7}	N/A	N/A	N/A	34.2	30.4	*
Stigma ^{4,7}	N/A	N/A	N/A	30.6	27.0	*
Did not Know Where to Go for Services	N/A	N/A	N/A	10.3	14.1	9.9
Did Not Have Time ⁷	N/A	N/A	N/A	11.5	13.8	14.0
Treatment Would Not Help ^{5,7}	N/A	N/A	N/A	5.6	8.7	*
Fear of Being Committed/Have to Take Medicine	N/A	N/A	N/A	15.0	10.7	11.0
Other Access Barriers ^{6,7}	N/A	N/A	N/A	2.1	5.0	3.6

*Low precision; no estimate reported.

N/A: Not applicable.

NOTE: Unmet Need for Mental Health Treatment/Counseling is defined as a perceived need for treatment that was not received.

NOTE: Estimates represent reasons for not receiving mental health treatment/counseling for all persons aged 18 or older with an unmet need for treatment, including those with unknown mental health treatment/counseling information.

NOTE: Mental Health Treatment/Counseling is defined as having received inpatient care or outpatient care or having used prescription medication for problems with emotions, nerves, or mental health. Respondents were not to include treatment for drug or alcohol use. Respondents with unknown treatment/counseling information were excluded. Estimates were based only on responses to items in the Adult Mental Health Service Utilization module.

¹ Respondents could indicate multiple reasons; thus, these response categories are not mutually exclusive.

² Includes reasons of "Could not afford," "Health insurance does not pay enough," "Health insurance does not cover mental health treatment," and other-specify responses of "No health insurance."

³ Includes reasons of "Did not feel need for treatment," "Could handle problem without treatment," and other-specify responses of "Work on problems with family/friends" and "Work on problems through religion/spirituality."

⁴ Includes reasons of "Might cause neighbors/community to have negative opinion," "Might have negative effect on job," "Concerned about confidentiality," "Did not want others to find out," and other-specify responses of "Ashamed/embarrassed/afraid," "Concerned how court system would treat me," and "Concerned how it would affect future insurability."

⁵ Includes reasons of "Did not feel need for treatment," "Could handle problem without treatment," and other-specify responses of "Work on problems with family/friends" and "Work on problems through religion/spirituality."

⁶ Includes reasons of "No transportation/inconvenient" and other-specify responses of "Too much red tape/hassle to get services," "No openings/long waiting lists/delays," "Services unavailable/limited in area," "Attempted to get treatment but unsuccessful in finding help," and "Could not find program/counselor comfortable with."

⁷ Estimates are based only on combined 2003-2005 data.

Source: SAMHSA, Office of Applied Studies, National Survey on Drug Use and Health, 2002, 2003, 2004, and 2005.

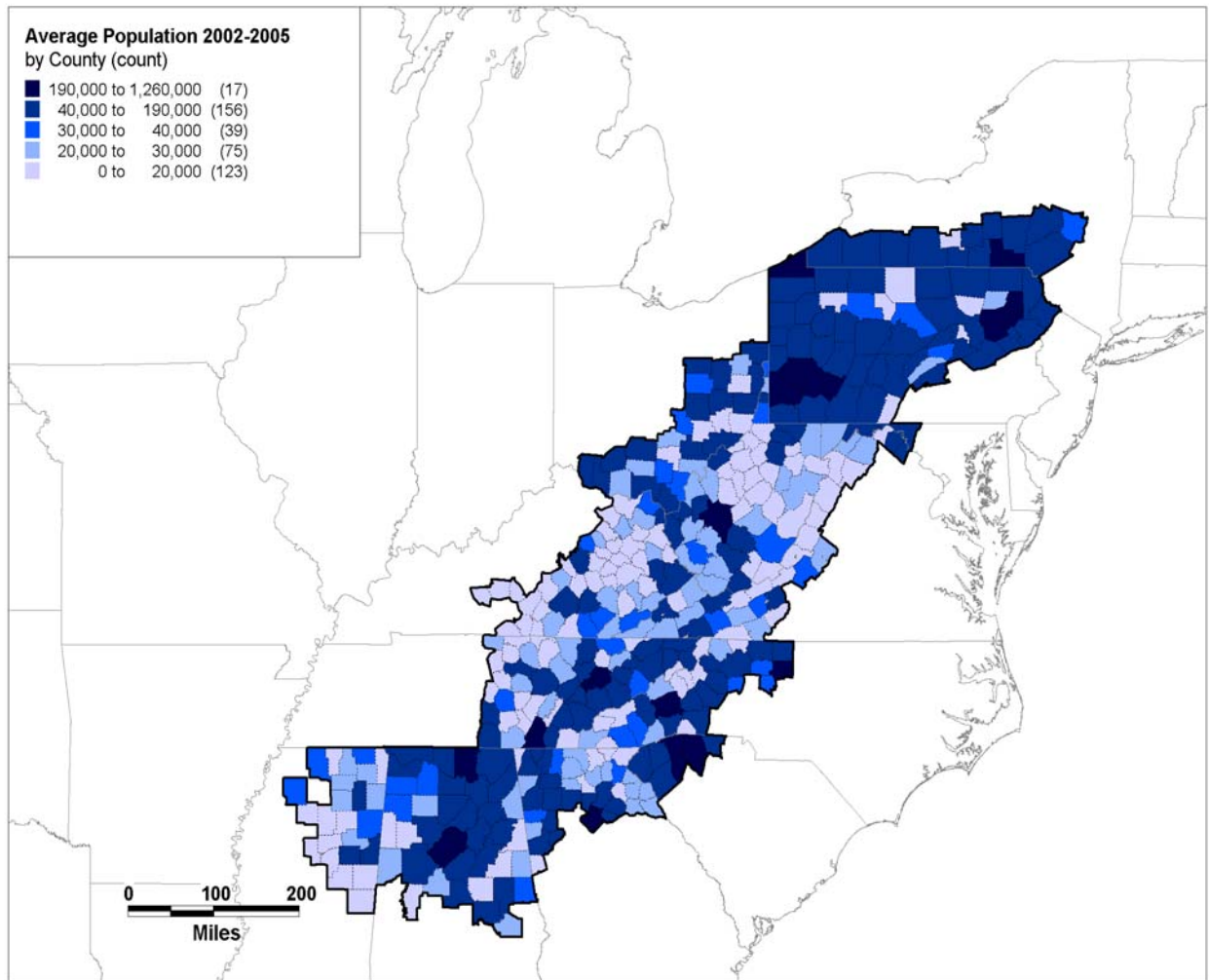
2.4.2 Maps

The first maps in this section present information relative to the county-level population of the 410 Appalachian counties, and the NSDUH sample sizes for each county for both adults and adolescents. Map 2.1 shows the average population for each of the 410 counties within the Appalachian region for the years 2002 to 2005. Maps 2.2 and 2.3 show the number of individuals sampled as part of the NSDUH survey for those same years; Map 2.2 shows the numbers of adults age 18 and over by county, and Map 2.3 shows the number of adolescents sampled by county. As would be expected, areas with higher populations are more likely to have residents included in the NSDUH sample. Note that several counties (58 among adult sample; 10 among adolescent sample) have zero respondents, and many others have between only 1 and 5 respondents (31 among adult sample; 76 among adolescent sample). The small sample sizes make county-level analyses impossible. To address this issue, and with the help of the SAMHSA Office of Applied Studies, we were provided with aggregated data based on Appalachian sub-region (northern, central, and southern) and ARC designated economic development status (distressed, at-risk, transitional, competitive, and attainment), and analyses were conducted accordingly, as presented earlier in this chapter. Also note that three Appalachian states, New York, Pennsylvania, and Ohio, are among the NSDUH large sample states, so that county samples in these states are higher.

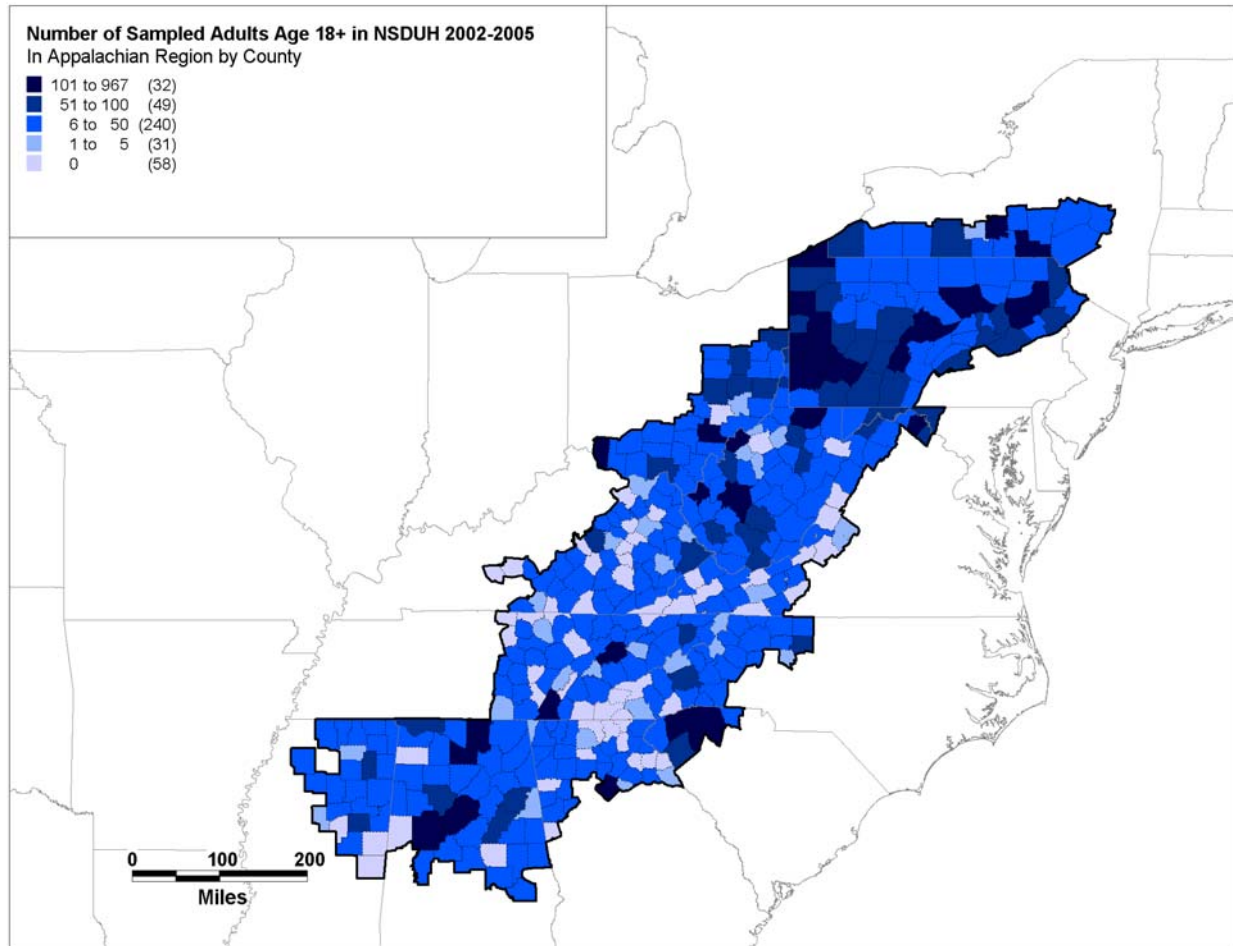
NORC was not provided with data for individual counties, however, so we are unable to map results using ARC-defined categories. Rather, the remaining maps in this section present data according to NSDUH-defined sub-regions (described earlier in the chapter), which do not perfectly correspond to the ARC region. To accurately portray these maps, we present estimated values for all selected substance use and serious psychological distress measures using the NSDUH defined region as the unit of analysis. As such, all counties within those regions are applied the same estimate as generated by SAMHSA's Office of Applied Studies (OAS, 2006²³). These estimates are then mapped showing the full NSDUH sub-state areas, the ARC boundary, and state and county boundaries within Appalachia, to assist in pattern detection. Readers should be cautious in generalizing regional estimates to the county level.

Population & Sample

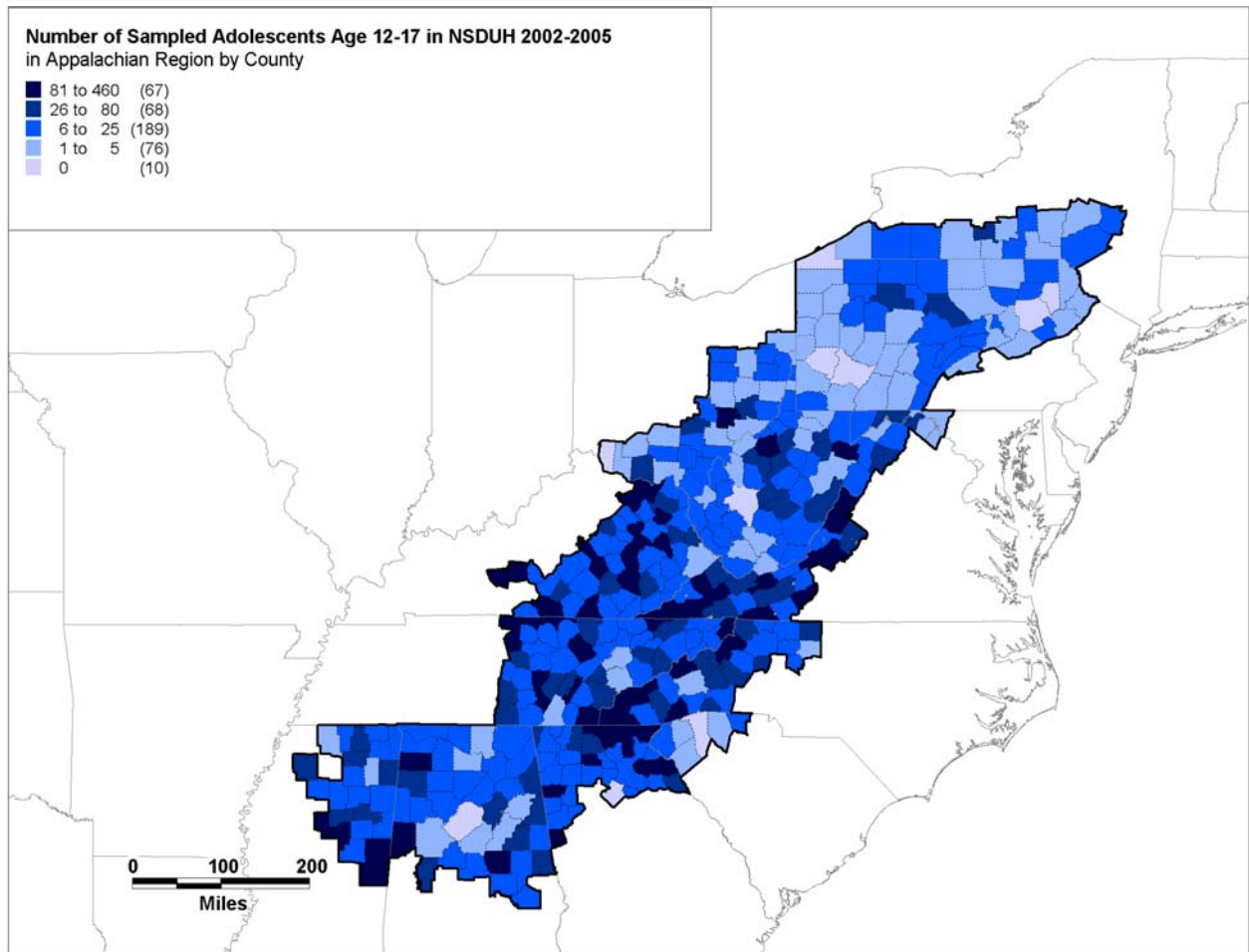
Map 2.1 Average Population 2002-2005, in the Appalachian Region by County



Map 2.2 Number of Sampled Adults Age 18 or older in NSDUH 2002-2005, in the Appalachian Region by County

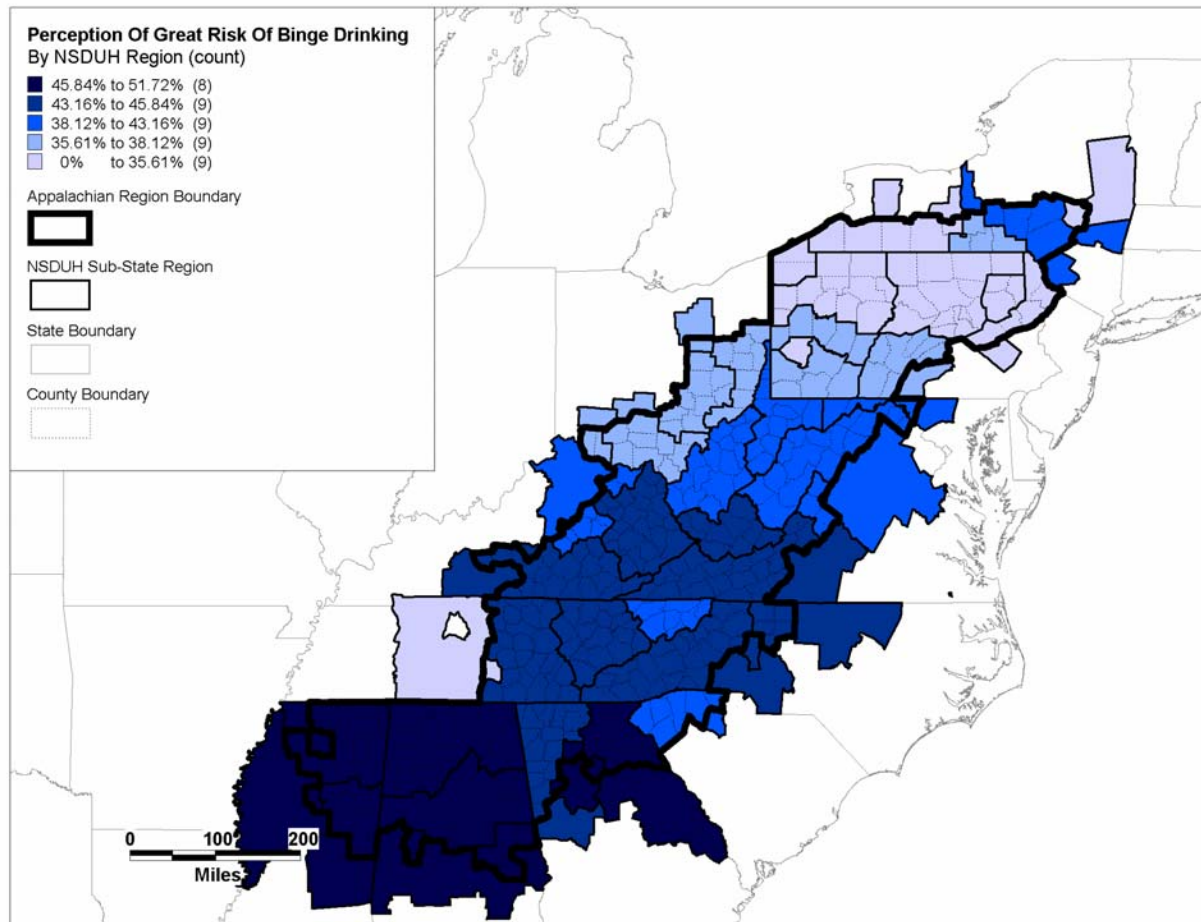


Map 2.3 Number of Sampled Adolescents Age 12 – 17 in NSDUH 2002-2005, in the Appalachian Region by County



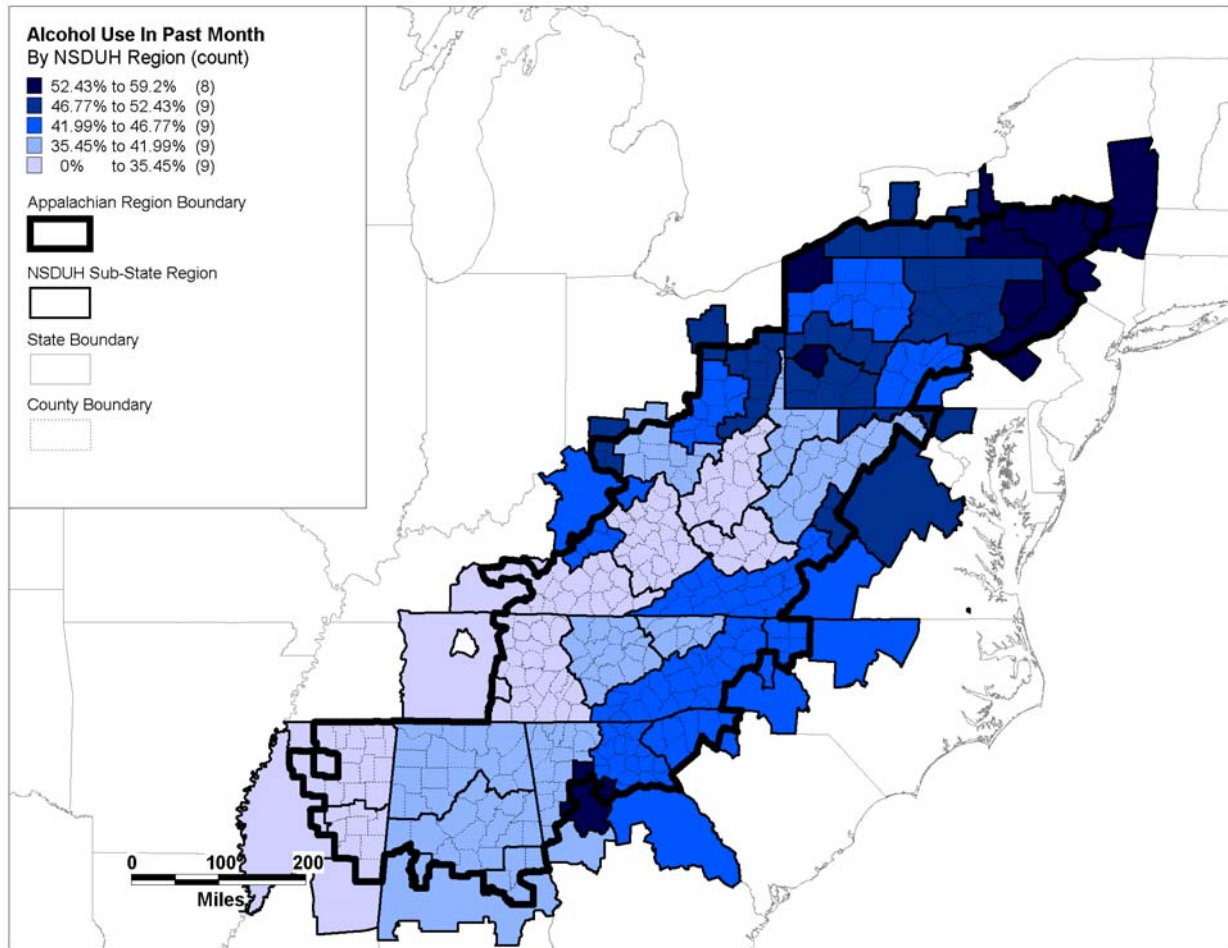
Alcohol Use

Map 2.4 Perception of Great Risk of Binge Drinking, by NSDUH Sub-Region, 2002-2005



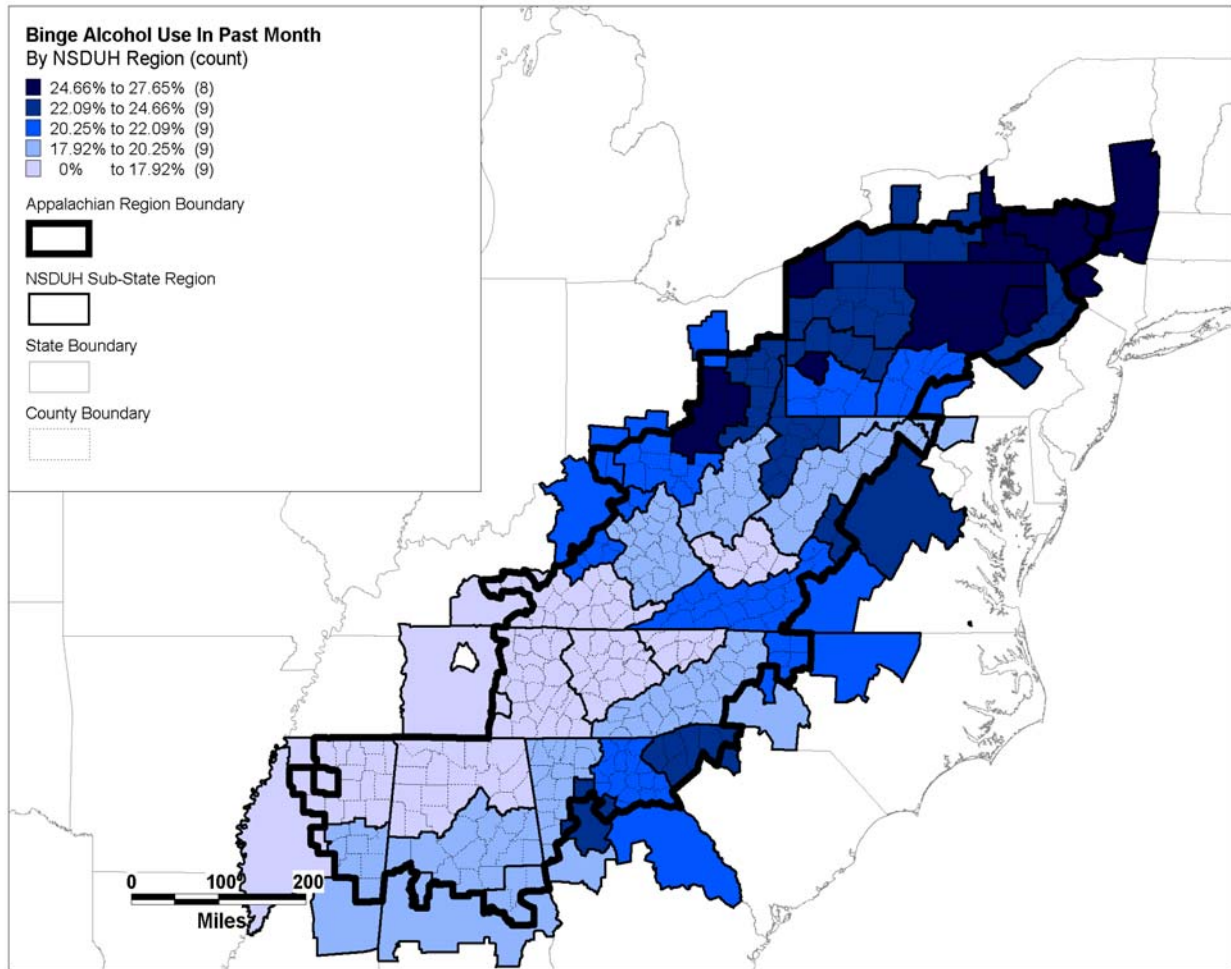
Map 2.4 shows the percentage distributions among persons age 12 or older who perceived the risk of binge drinking as a 'great risk.' NSDUH respondents were asked how much they thought people risk harming themselves by binge drinking (great risk, moderate risk, slight risk, no risk). Perceived great risk of binge drinking is higher in the NSDUH sub-state areas corresponding to central Appalachia, and highest in the NSDUH sub-state areas corresponding to southern Appalachia. Perception of great risk of binge drinking appears to be lowest for NSDUH sub-state areas that include northern Pennsylvania and the southern tier of New York State.

Map 2.5 Alcohol Use in Past Month, by NSDUH Sub-Region, 2002-2005



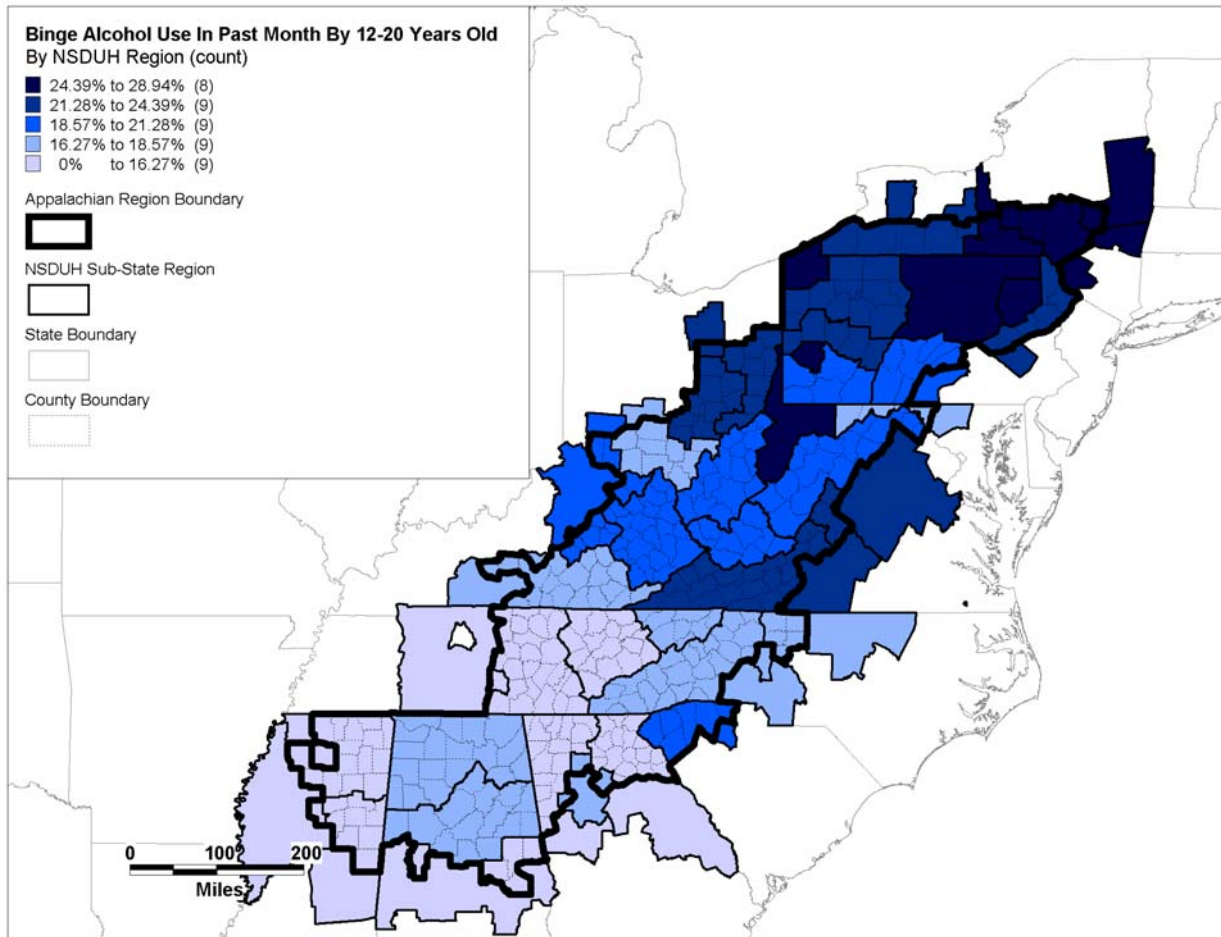
Map 2.5 shows the percentages of alcohol use in the past month among all persons age 12 or older, which appears highest in the NSDUH sub-state areas that include the Appalachian portions of Pennsylvania and New York.

Map 2.6 Binge Alcohol Use in Past Month, by NSDUH Sub-Region, 2002-2005



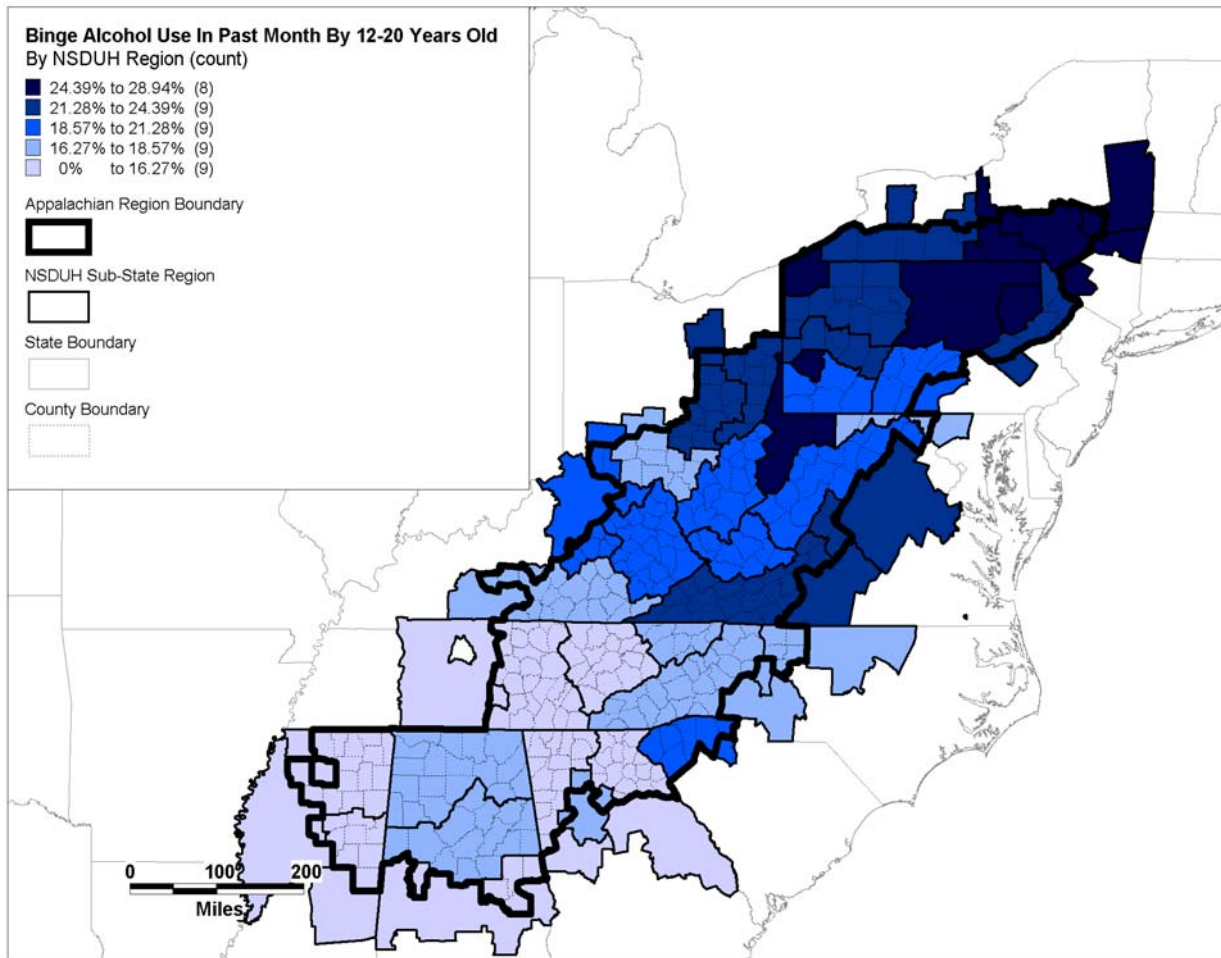
Map 2.6 shows binge drinking percentages among people age 12 or older in the past month. Rates are highest in the NSDUH sub-state areas corresponding to northern Appalachia, with particularly high rates in the southern tier of New York, northern Pennsylvania, and eastern Ohio. Notably, rates appear highest in those areas where perception of risk was lowest (i.e., northern Appalachia), and lowest in those areas where perception of risk as highest (i.e., southern Appalachia) (see Map 2.4).

Map 2.7 Alcohol Use in Past Month Among Persons Aged 12-20, by NSDUH Sub-Region, 2002-2005



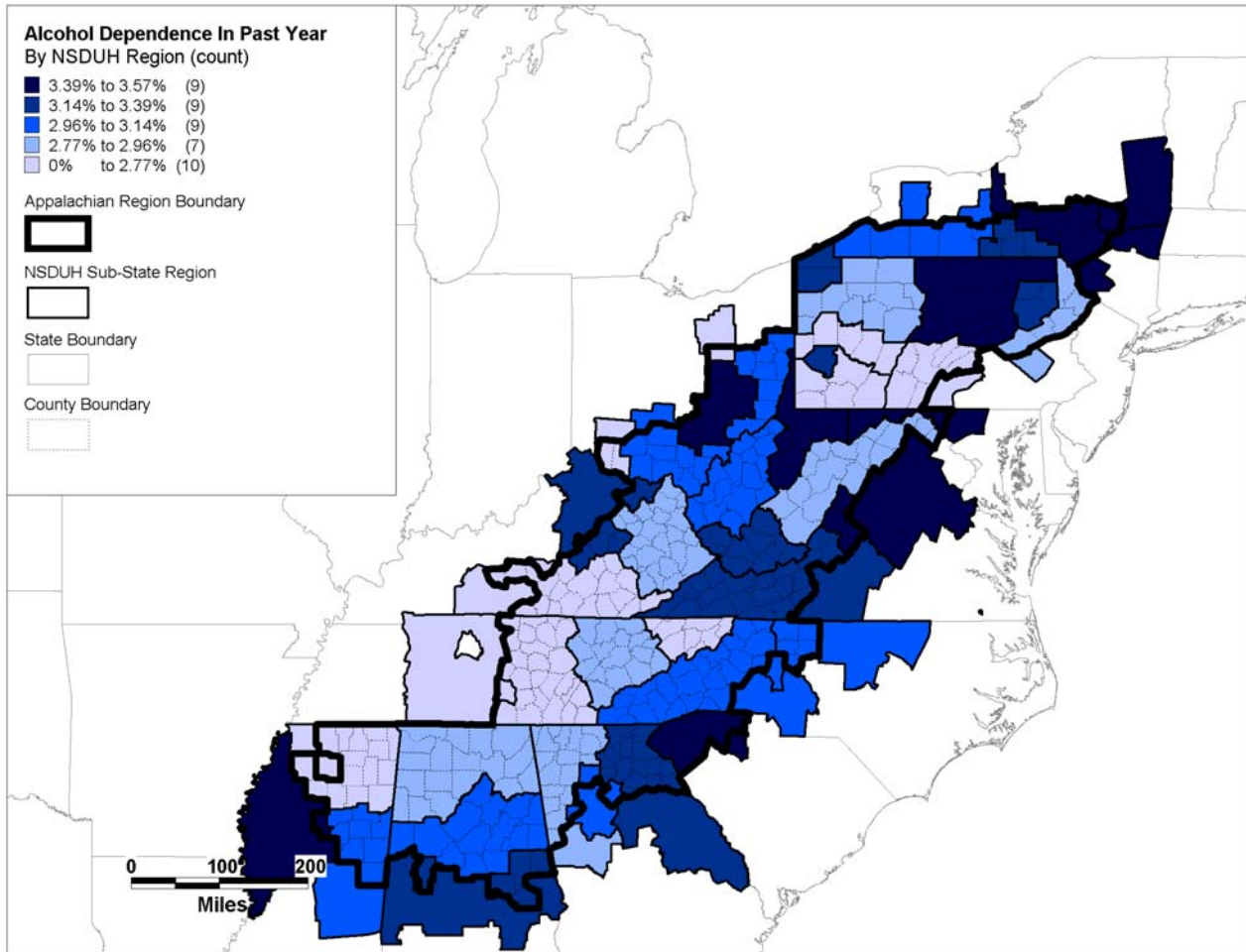
Map 2.7 shows percentages of alcohol use in the past month among youth or young adults age 12-20, which, as with those among all persons age 12 or older, appears highest in the NSDUH sub-state areas that include the Appalachian portions of Pennsylvania and New York. Additionally, rates appear higher among adolescents in NSDUH sub-state areas corresponding to central Appalachia as compared to adults, and somewhat lower in NSDUH sub-state areas corresponding to southern Appalachia as compared to adults.

Map 2.8 Binge Alcohol Use in Past Month, Persons Aged 12-20, by NSDUH Sub-Region, 2002-2005



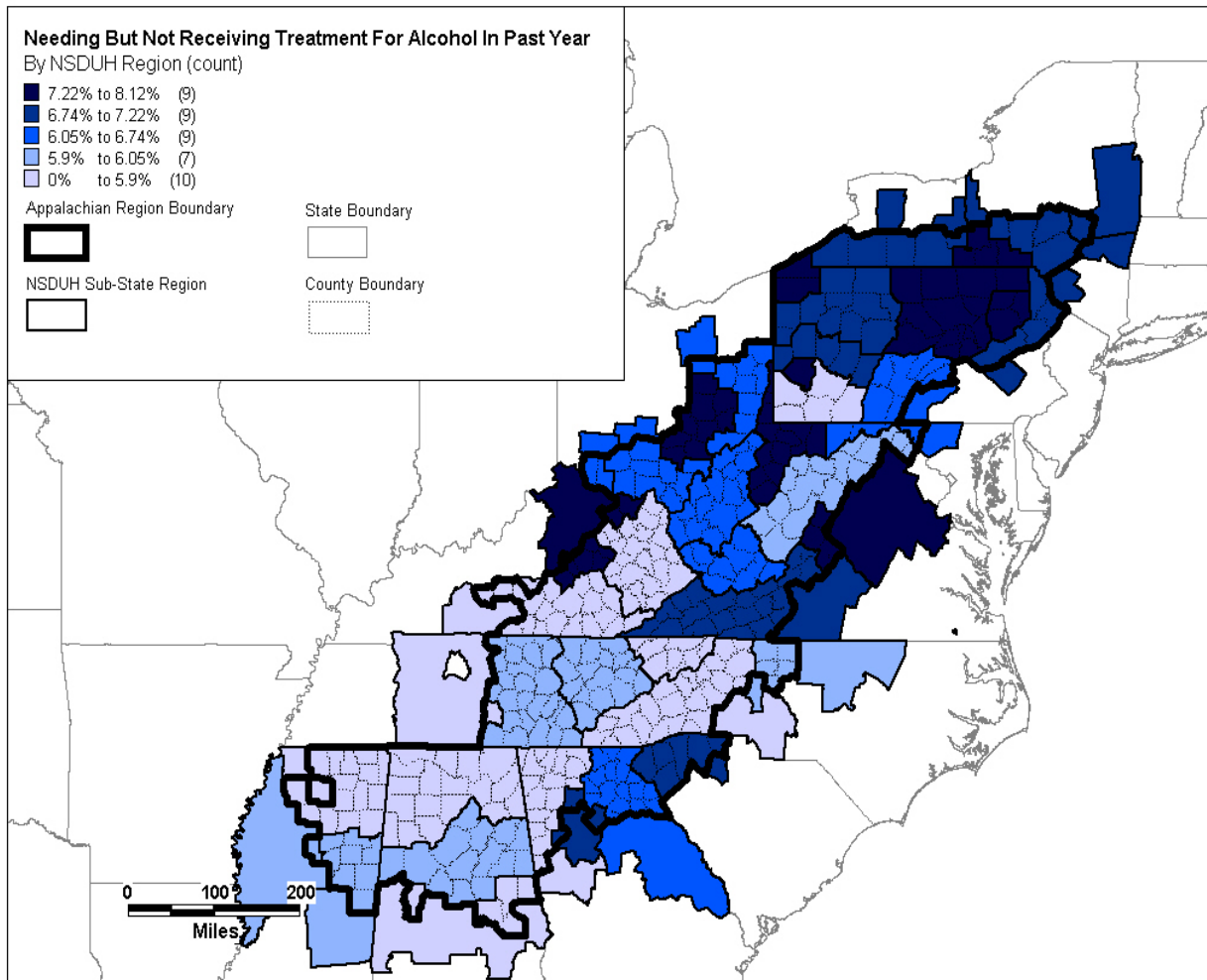
Map 2.8 shows binge drinking in the past month, among adolescents or young adults age 12-20 however. As before, rates are highest in the NSDUH sub-state areas corresponding to northern Appalachia, with particularly high rates in the southern tier of New York, northern Pennsylvania, and eastern Ohio. As compared to adults, however, rates also appear higher in NSDUH sub-state areas corresponding to central Appalachia. Also as before, rates appear highest in those areas where perception of risk was lowest (i.e., northern Appalachia), and lowest in those areas where perception of risk as highest (i.e., southern Appalachia) (see Map 2.4).

Map 2.9 Alcohol Dependence in Past Year, by NSDUH Sub-Region, 2002-2005



Map 2.9 shows alcohol dependence in the past year among persons age 12 or older. Rates fluctuate across the region, but appear highest in the NSDUH sub-state areas corresponding to northeast Pennsylvania, the Appalachian portions of Virginia and South Carolina, as well as areas within Ohio and West Virginia, and Georgia.

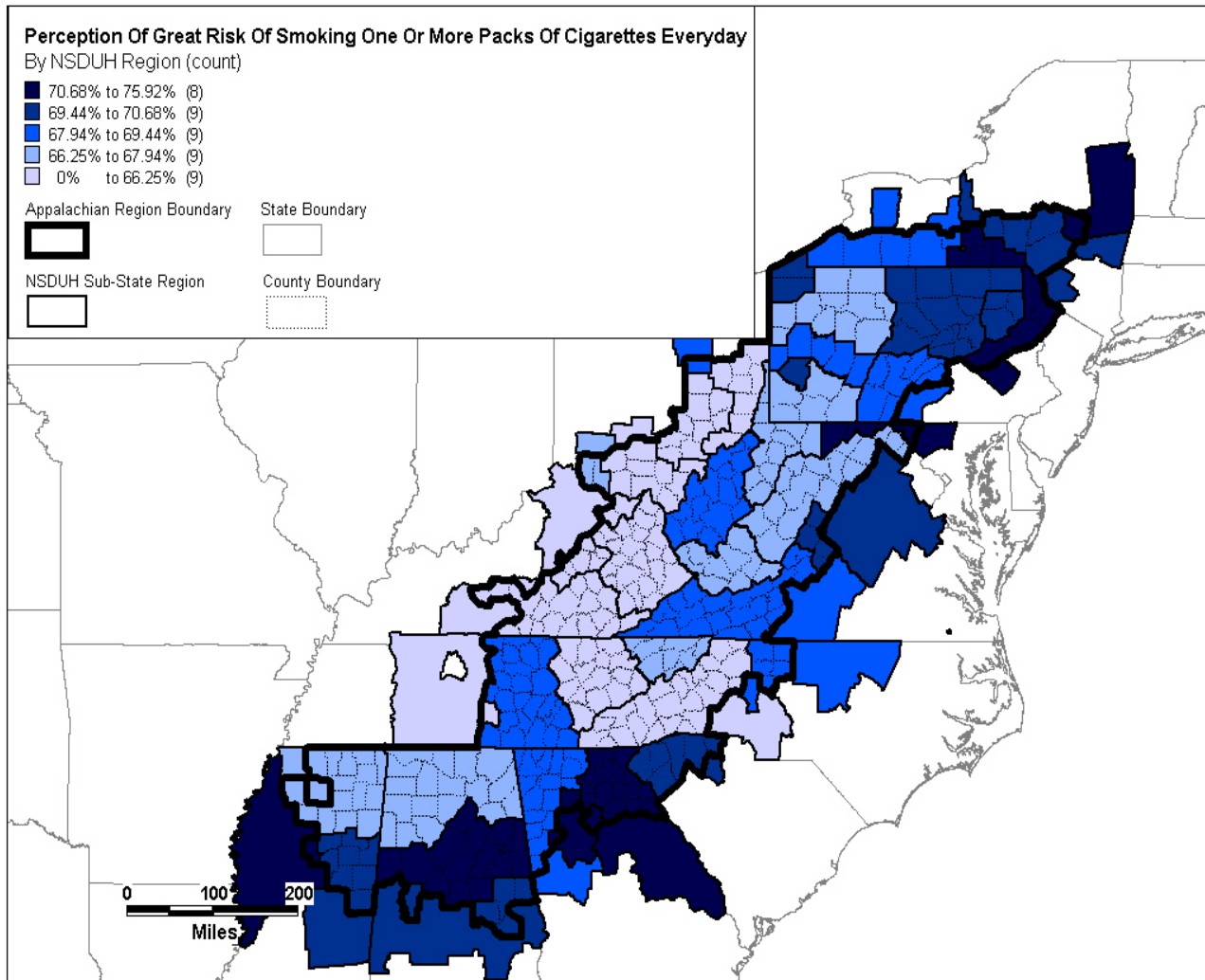
Map 2.10 Needing But Not Receiving Treatment in Past Year for Alcohol Use, by NSDUH Sub-Region, 2002-2005



Map 2.10 shows rates of individuals needing but not receiving treatment for alcohol in the past year among adults. Rates are highest in NSDUH sub-state areas corresponding to northern Appalachia, with particularly high rates in the northern portion of Pennsylvania, the southern tier of New York, and portions of Ohio and West Virginia. Rates appear low in most NSDUH sub-state areas corresponding to southern Appalachia, as well as eastern Kentucky.

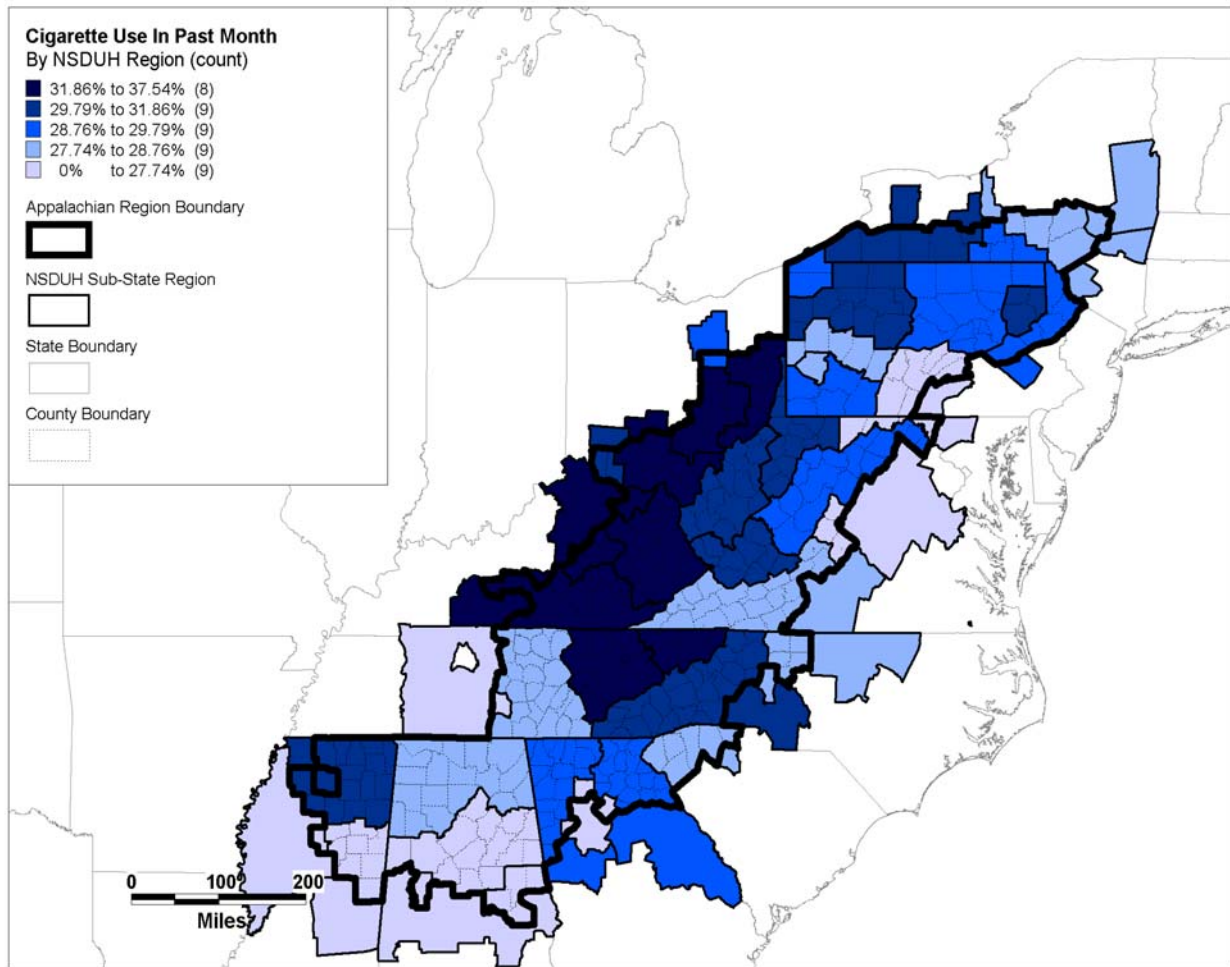
Cigarette Use

Map 2.11 Perception of Great Risk of Smoking One or More Packs of Cigarettes Everyday, by NSDUH Sub-Region, 2002-2005



Map 2.11 shows the percentages of persons age 12 or older who perceived ‘great risk’ of smoking one more packs of cigarettes per day. NSDUH respondents were asked how much they thought people risk harming themselves by smoking one or more packs of cigarettes per day (great risk, moderate risk, slight risk, no risk). Perceived risk is highest in NSDUH sub-state areas corresponding to the far southern portions of Appalachia, as well in the far northeastern portion of Appalachia. Perceived risk is low in the NSDUH sub-state areas corresponding to the Appalachian region of Ohio, eastern Kentucky, as well as in areas of Tennessee and North Carolina.

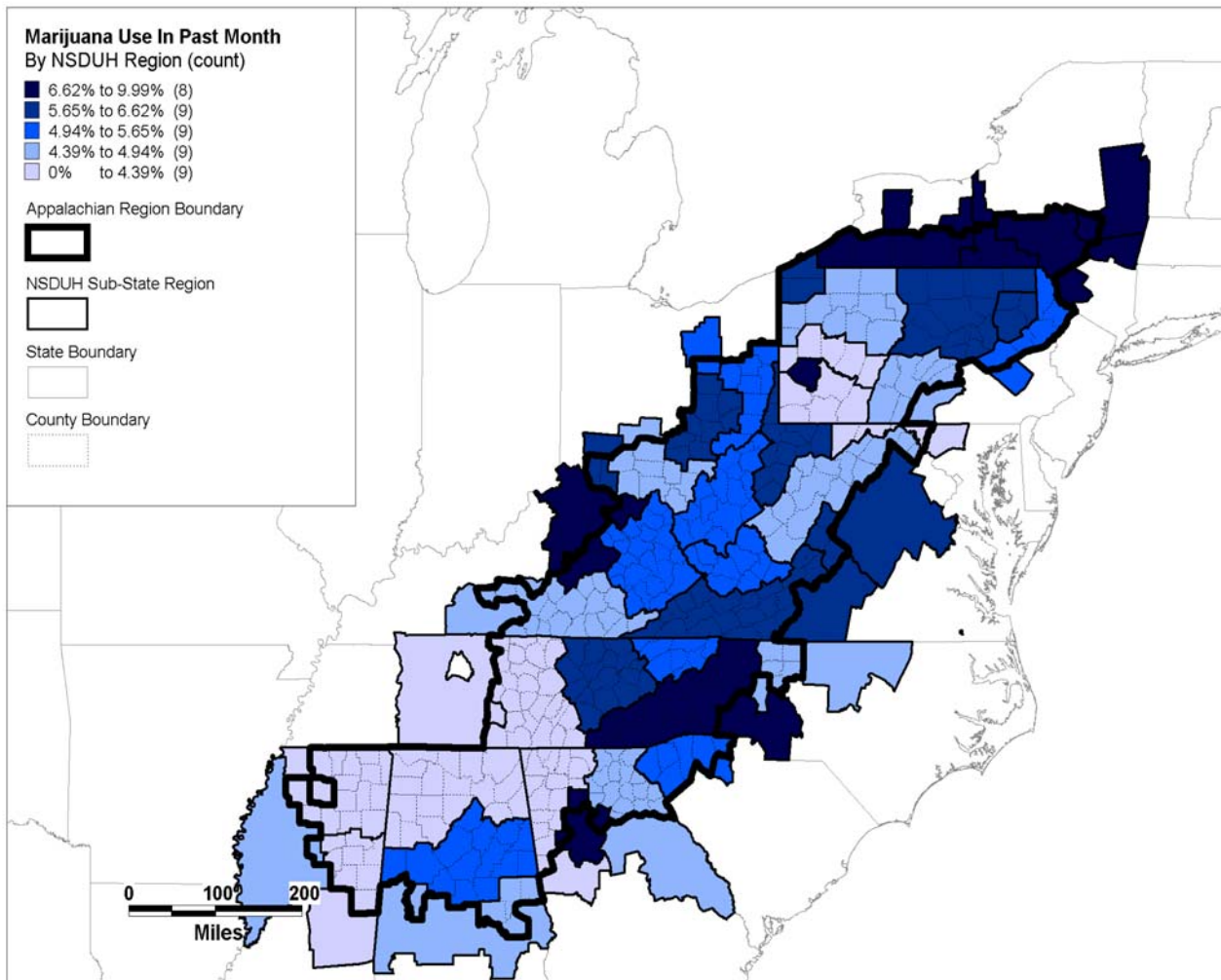
Map 2.12 Cigarette Use in Past Month, by NSDUH Sub-Region, 2002-2005



Map 2.12 presents actual cigarette use in the past month, which contrasts noticeably from the prior map. For areas where Map 2.11 shows low perceived risk, rates appear to actually be highest. This includes the Appalachian portions of Ohio, eastern Kentucky, eastern Tennessee, and western North Carolina.

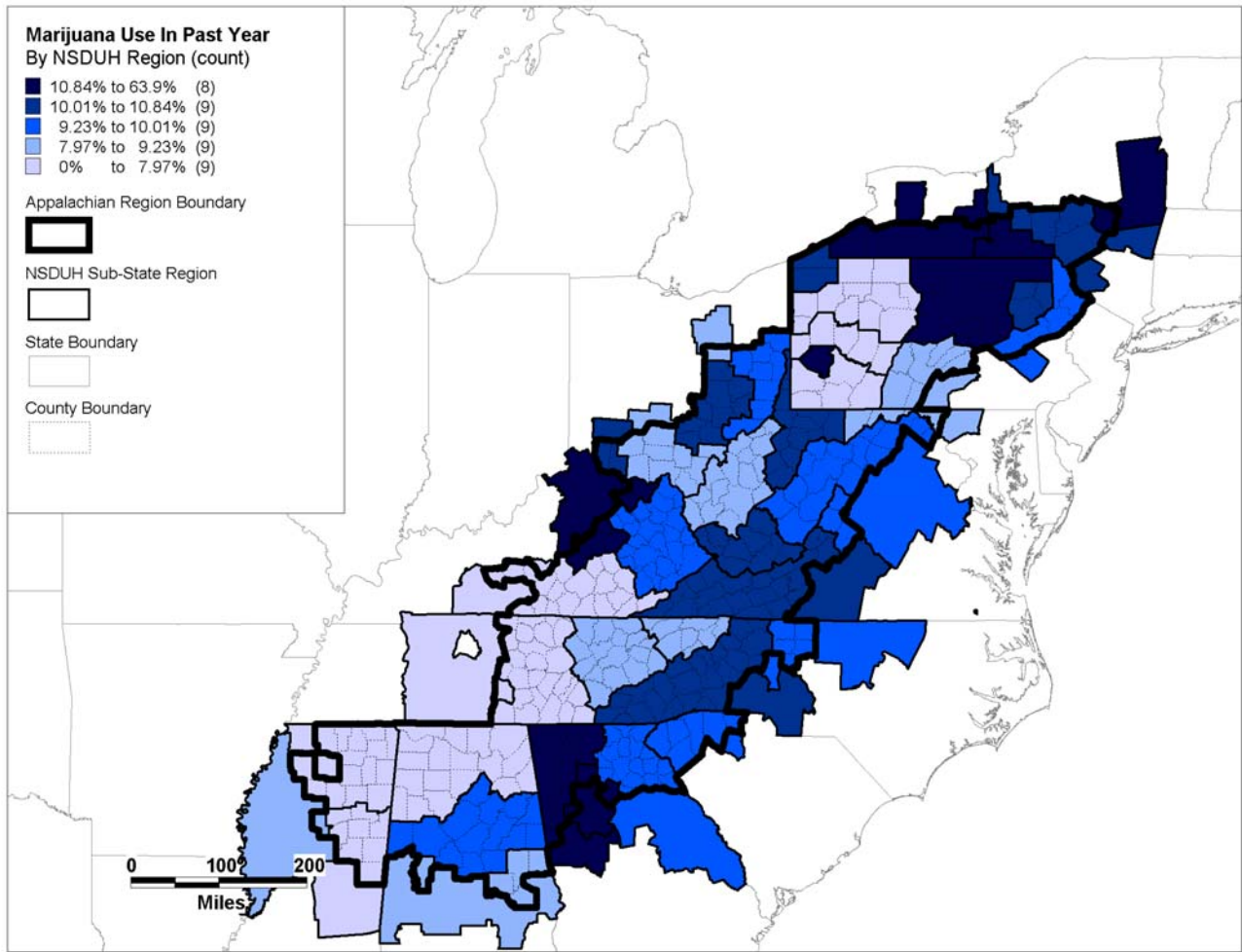
Marijuana Use

Map 2.13 Marijuana Use in Past Month, by NSDUH Sub-Region, 2002-2005



Map 2.13 shows past month marijuana use among persons age 12 or older, which appears highest in NSDUH sub-state areas corresponding to northern and central Appalachia. Highest rates appear in NSDUH sub-state areas corresponding to western North Carolina and the southern tier of New York.

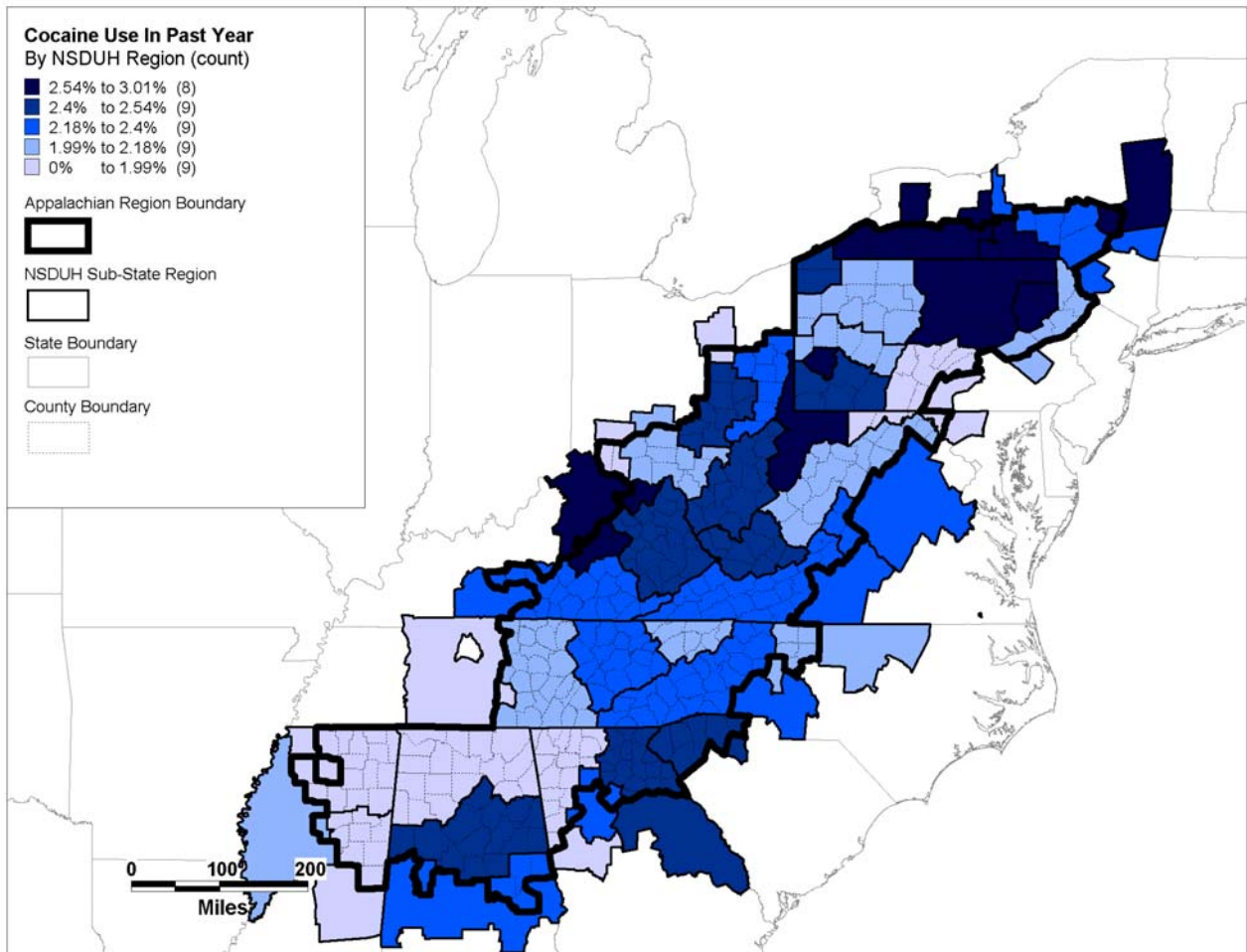
Map 2.14 Marijuana Use in Past Year, by NSDUH Sub-Region, 2002-2005



Map 2.14 shows past year marijuana use among persons age 12 or older. Patterns are similar to past month use, with additional high rate pockets in NSDUH sub-state areas corresponding to northwestern Georgia and northeastern Pennsylvania.

Cocaine Use

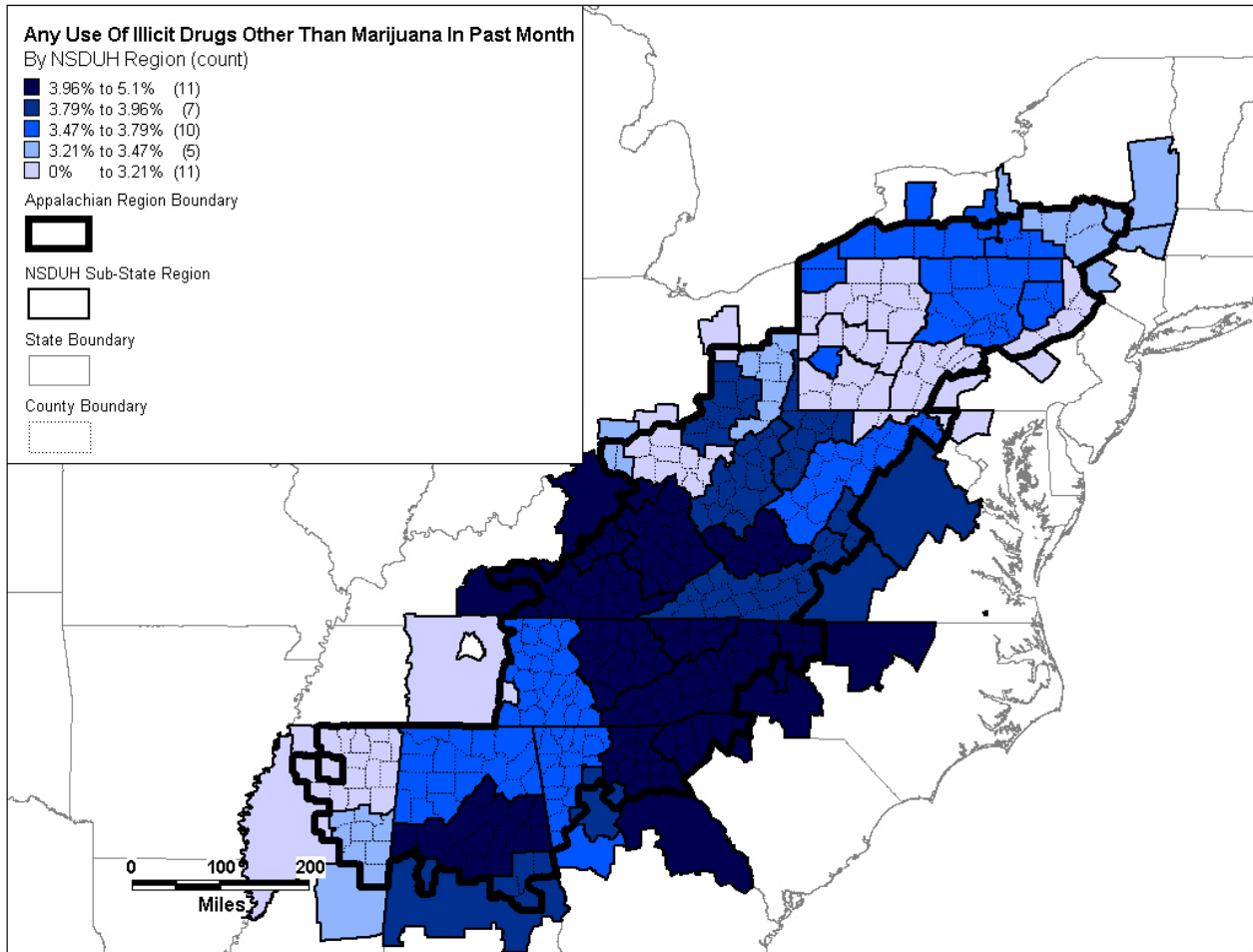
Map 2.15 Cocaine Use in Past Year, by NSDUH Sub-Region, 2002-2005



Map 2.15 shows past year cocaine use among persons age 12 or older. Rates appear highest in NSDUH sub-state areas corresponding to northern and central Appalachia, with particularly high rates in the southern tier of New York, northeastern Pennsylvania, northern West Virginia.

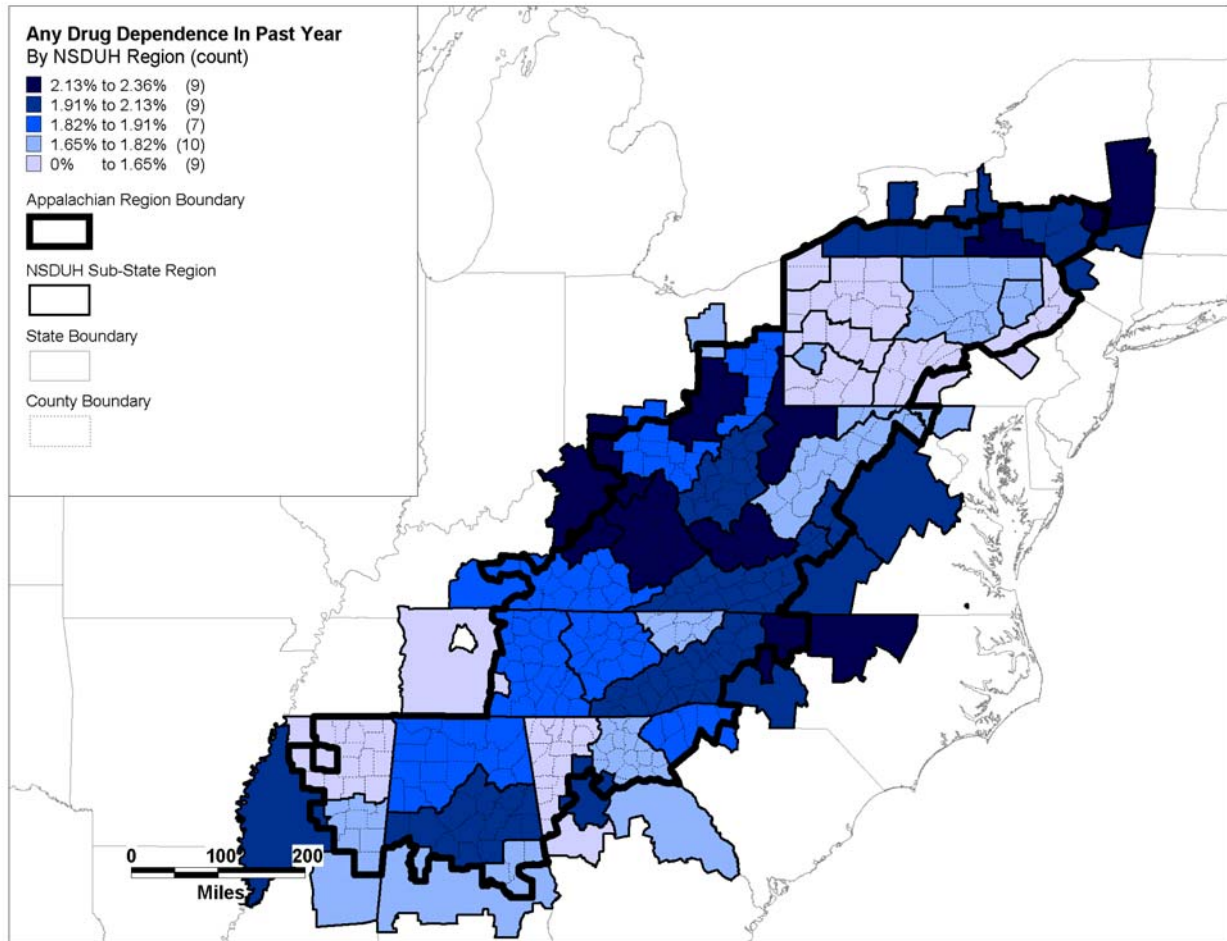
Illicit Drug Use Other Than Marijuana

Map 2.16 Any Use of Illicit Drugs Other Than Marijuana, Past Month, by NSDUH Sub-Region, 2002-2005



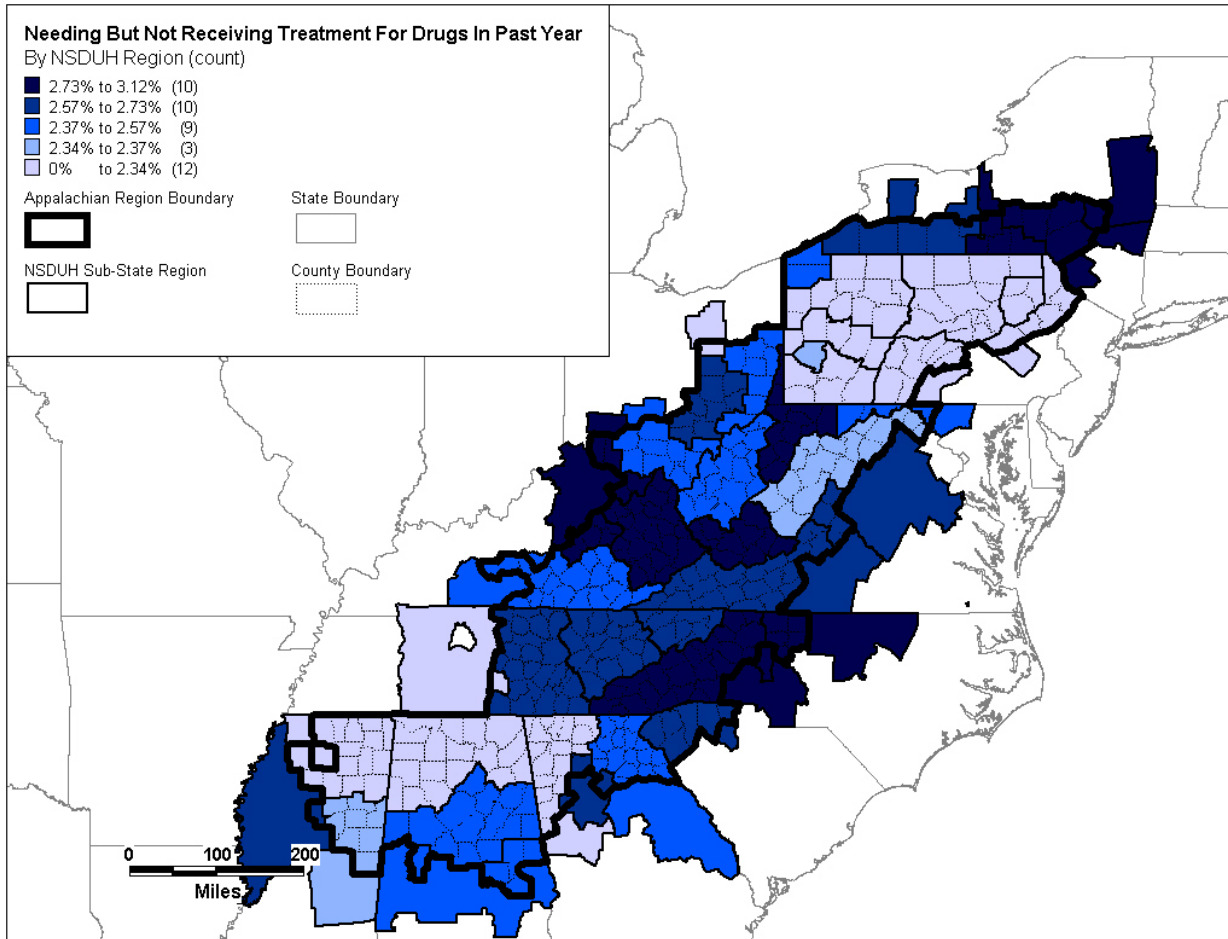
Map 2.16 shows rates of any use of illicit drugs other than marijuana over the past month among persons age 12 or older. Noticeably, the patterns change as compared to alcohol and marijuana use, with the highest rates in NSDUH sub-state areas corresponding to central and southern Appalachia. Rates are highest in NSDUH sub-state areas corresponding to eastern Kentucky, eastern Tennessee, western North Carolina, southern West Virginia, the Appalachian portion of South Carolina, and portions of Georgia and Alabama. Rates are lowest in the NSDUH sub-state areas corresponding to western Pennsylvania.

Map 2.17 Any Drug Dependence in Past Year, by NSDUH Sub-Region, 2002-2005



Map 2.17 shows any reported drug dependence in the past year among persons age 12 or older. Rates appear highest in NSDUH sub-state areas corresponding to central Appalachia, with particularly high rates in eastern Kentucky and southern West Virginia. Rates are also high in NSDUH sub-state areas corresponding to portions of Appalachian Ohio, North Carolina, along the southern tier of New York, and in northern West Virginia.

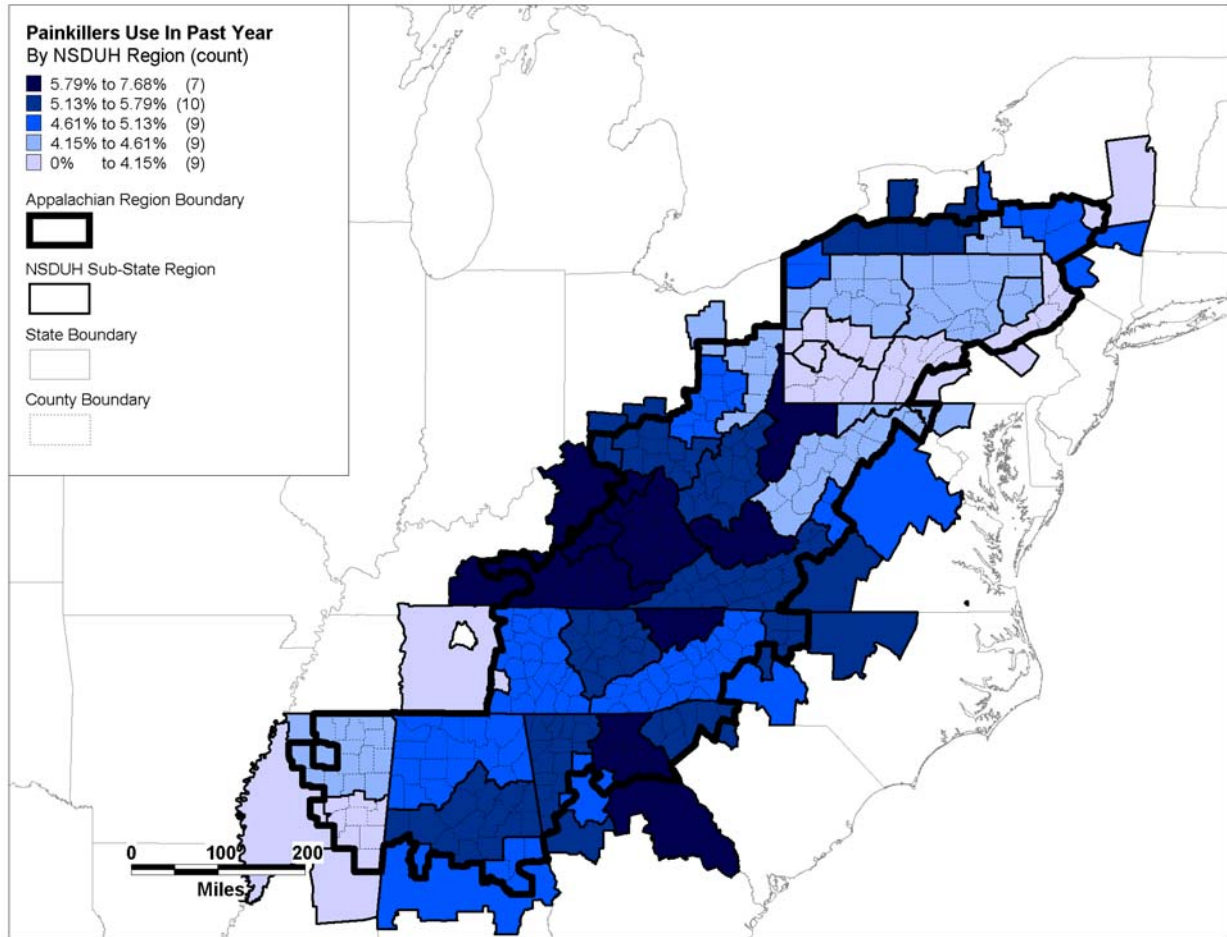
Map 2.18 Needing But Not Receiving Treatment for Drug Use in Past Year, by NSDUH Sub-Region, 2002-2005



Map 2.18 shows rates of individuals age 12 or older reporting needing but not receiving treatment for drug abuse in the past year. Rates appear highest in the NSDUH sub-state areas corresponding to eastern Kentucky, southern and northern West Virginia, eastern Tennessee, western North Carolina, and along the southern tier of New York. Rates appear lowest in Pennsylvania and areas corresponding to southern Appalachia, including portions of Mississippi, Alabama, and Georgia.

Non-Medical Use of Prescription Drugs

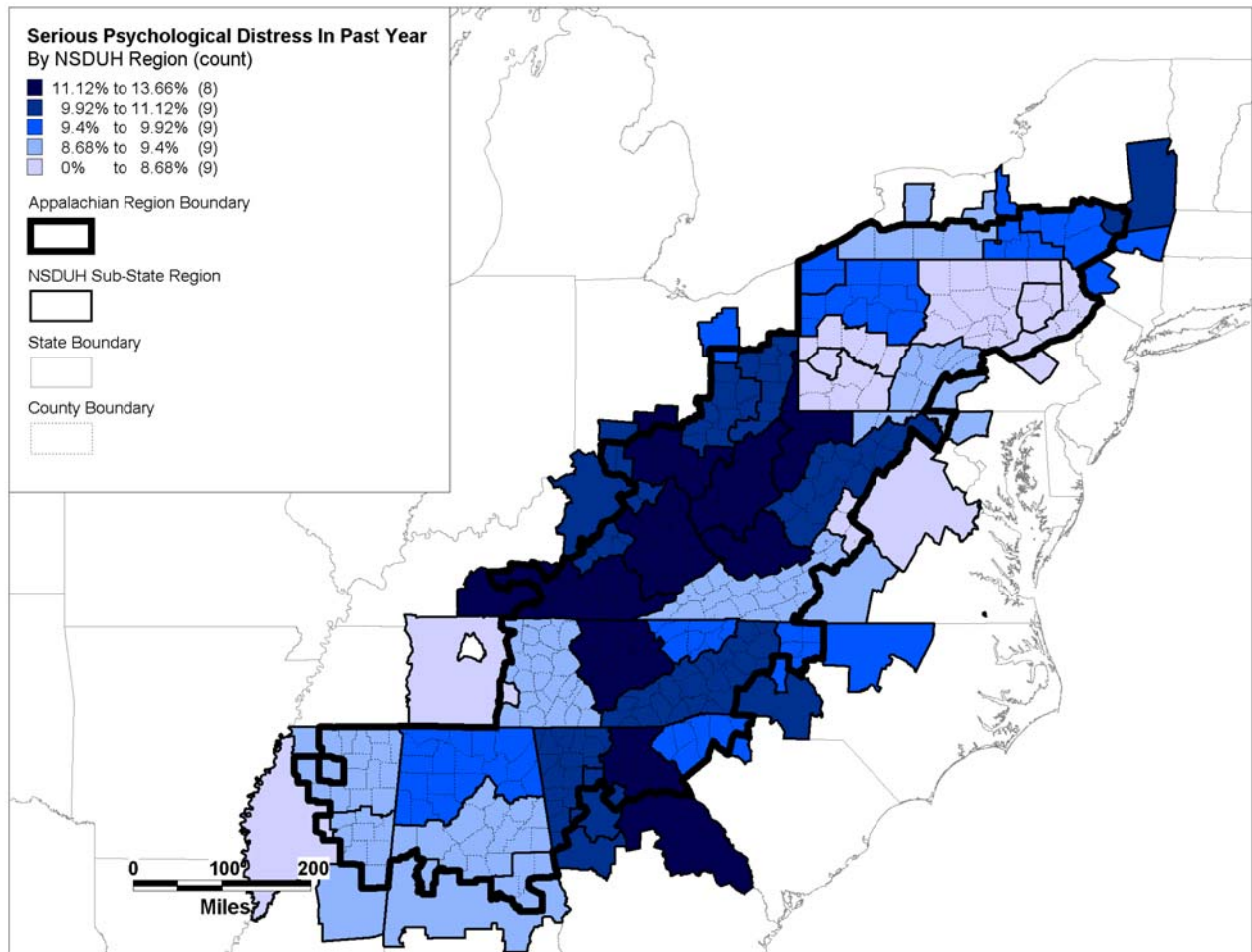
Map 2.19 Painkiller Use in Past Year, by NSDUH Sub-Region, 2002-2005



Map 2.19 shows the use of painkillers over the past year among persons age 12 or older. Rates are noticeably higher in the NSDUH sub-state areas corresponding to central Appalachia, with particularly high rates in eastern Kentucky and southern West Virginia. High rates are also seen in the easternmost portion of Tennessee, northeastern Georgia, and northern West Virginia. Rates appear lowest in NSDUH sub-state areas corresponding to southwestern and south central Pennsylvania.

Mental Health

Map 2.20 Serious Psychological Distress in Past Year, by NSDUH Sub-Region, 2002-2005



Map 2.20 shows serious psychological distress in the past year among persons age 12 or older. Rates are particularly high in the NSDUH sub-state areas corresponding to central Appalachia, including eastern Kentucky and southern West Virginia. Rates are also high in NSDUH sub-state areas adjacent to central Appalachia, including areas of Tennessee, West Virginia, and Ohio. Rates appear lowest in NSDUH sub-state areas corresponding to southwest and northeast Pennsylvania.

2.5 Discussion

This is the first time that a large-scale national household survey has been used to specifically address substance abuse and mental health problems at a regional level. The findings not only provide an overall and much needed contemporary view of the status of substance abuse and mental health within the Appalachian region, but they also highlight potential disparities when compared nationally.

This chapter reveals several noteworthy findings. First, regardless of age or the length of use, smoking is more prevalent in the Appalachian region than outside of Appalachia. Second, while the prevalence of the non-medical use of psychotherapeutics was higher among adolescents than among adults overall, adolescents in the Appalachian region had even higher prevalence rates than adolescents outside of the Appalachian region. Both geographic variation and economic level differences are observed in adolescents' non-medical use of prescription drugs – with the southern part of Appalachia, “distressed and at-risk,” and “transitional” counties having higher rates. In addition, evidence suggests that adolescents in Appalachia tend to engage in heavy alcohol use more than adolescents elsewhere.

This study also reveals that, proportionately, there are more severe mental health problems in the Appalachian region than outside of Appalachia. Further, the central Appalachian sub-region is found to have the highest prevalence rates of both serious psychological distress and major depressive episode.

Methamphetamine use has been of particular interest among news media and policy makers. The current study, however, does not support that methamphetamine use prevalence is higher in Appalachia than outside of Appalachia overall. Among adults, the percentages of current (past month) or recent (past year) methamphetamine use are similar between Appalachia and elsewhere, but the lifetime use of methamphetamine rate is lower in Appalachia than outside of Appalachia. For adolescents, the methamphetamine use prevalence rates are generally similar, although the rates in Appalachia for lifetime use and past month use are slightly higher as compared to rates outside of Appalachia. This finding should not minimize the issue of methamphetamine abuse within Appalachia, however. Rather, this may be a reflection of the granularity of the available data, which cannot be analyzed at the individual county level. We would expect, based on anecdotal evidence, that there are particular “hotspots” within Appalachia that cannot be gleaned from the NSDUH data set. Overall, however, the magnitude of methamphetamine use appears small across the region as compared to other substance use issues such as the non-medical use of prescription-type psychotherapeutics.

Inasmuch as the findings appear to suggest greater problems among Appalachian adolescents than among Appalachian adults, policy makers and community members should take notice. Adolescents grow into adults, and communities will need to be prepared to address the fact that smoking rates and extensive non-prescription drug use will be ongoing challenges. The implementation of effective prevention measures is recommended within schools and communities to mitigate these challenges in the future.

Although the findings also demonstrate that opportunities for outpatient mental health treatment and counseling comparable, or even slightly higher, within Appalachia as compared to areas outside of

Appalachia, determining the quality of care provided and the overall effectiveness of the treatment are beyond the scope of this project and are worthwhile areas to study further.


This study finds that outpatient rehabilitation is the most common setting for substance abuse treatment both in and outside of Appalachia. In addition, this study finds that, of the people seeking substance abuse treatment at a specialty facility, proportionately fewer people utilize inpatient rehabilitation services in Appalachia than people outside of the Appalachian region. At the same time, utilization rates of hospital inpatient services, the private doctor's office, and emergency room services are all higher in the Appalachian region than outside of the Appalachian region. The exact reasons behind this pattern need further study, but two possible explanations are: (1) those clients who could benefit more from inpatient rehabilitation do not get this treatment or substitute inpatient with outpatient services; or (2) those who have severe substance abuse problems have not received appropriate outpatient treatment or regular inpatient services, and as a result, use more expensive emergency room services.

This study shows that the negative perceptions about treatment appear to be more pronounced within the Appalachian region among those who need mental health treatment but have not received treatment. Education, communications, and special intervention methods and programs should be considered as ways to modify the perceptions of the people with mental illness needing treatment.

Efforts should also be made in Appalachian communities to reduce stigma arising from concerns such as "might cause neighborhood/community to have negative opinion," "might have negative effect on job," "someone may find out," "ashamed, embarrassed, or afraid," etc.

Regardless of substance abuse or mental disorders, the top reason for people who needed treatment but did not receive treatment was due to the absence of insurance or external payment methods. Followed by this extrinsic reason are two intrinsic reasons – people did not think they needed treatment, or were obstructed by the stigma attached, especially for the Appalachian patients accessing the mental health services. Assuming that the boundary between perception of no need for treatment and the fear of stigma was blurred, these intrinsic reasons would even surpass the insurance issue and become the number one hurdle for why people who need treatment do not actually receive treatment. Behind these intrinsic reasons, it is possible that mistrust of the treatment system would be another important issue, though this would need future study and is beyond the scope of our current investigation.

REFLECTIONS FROM PRACTITIONERS

From the Coalition on Appalachian Substance Abuse Policy 

Challenges Associated with Using the National Survey on Drug Use and Health (NSDUH), and Future Research on Substance Abuse and Mental Health in Appalachia

- CASAP highlighted the limitations of using NSDUH to explore substance abuse and mental health issues. NSDUH is a household survey; however, it is not comprehensive and excludes some populations. Weighting and sampling issues also create some limitations.
- CASAP indicated that there are few alternatives to psychiatric facilities for mental health treatment in some Appalachian counties. People do not seek assistance because they fear that they will be admitted to a psychiatric hospital. Stigma is also a key factor in not feeling the need for treatment.
- Future studies should explore mental health and substance abuse issues for coal-producing Appalachian counties. Research that explores economic development status against an indicator for coal-producing Appalachian counties will provide an important context for understanding substance abuse and mental health issues in the region.

It should be recognized that cost of treatment issues may be relatively more or less important depending on the economic status of the county. Poor counties could likely have access to governmental insurance (Medicaid, Medicare, CHIP), while well-off counties probably have higher rates of private insurance. “Transitional” counties may fall through the cracks.

As noted previously, this study has limitations and as such, should be interpreted with caution. The NSDUH was designed for national and state estimates and not for any specific user-defined region. Neither the counties, nor the Appalachian region, were part of the primary sampling unit (PSU) or stratification unit. Estimates across state boundaries are inefficient, involving highly variable weights.²⁴ In addition, the total weighted estimated numbers of persons for various measures may not be precise. For reference purpose or getting approximate estimates of the numbers of persons included, the weighted estimated totals using the existing weights are provided in Appendix C. However, since the Appalachian region is comprised of 13 states, and the sub-regions we investigated are also large domains, the biases caused by the innovative use of the NSDUH should not be a major concern.

CHAPTER 3: Patient Admissions to Treatment for Abuse of Alcohol and Drugs in Appalachia, 2000 – 2004

3.1 Introduction

Thousands of public and private treatment facilities are available across the United States to treat people with substance abuse and mental health disorders. Exploring data at the treatment facility level provides a unique opportunity to better understand populations with substance abuse and mental health disorders and to explore trends across geographic areas.

One of the data sets used to explore admissions to and discharges from substance abuse treatment is the Treatment Episode Data Set (TEDS), an annual national flow of information on the demographic and characteristics of admissions to (and more recently discharges from) treatment. TEDS provides highly specific data on treatment type and demographic data for patients, making this dataset particularly important to understanding the trends of patient admissions for substance abuse treatment. TEDS captures data on admissions that report use of the following substances: marijuana; cocaine; other opiates or synthetics which includes codeine, Dilaudid, morphine, Demerol, opium, oxycodone, and any other drug with morphine-like effects; heroin; methamphetamine or other stimulants which includes non-amphetamine stimulants; tranquilizers; other substances; sedatives; and inhalants. TEDS also includes data on admissions with psychological problems or mood disorders, and captures whether admissions have a psychiatric problem in addition to an alcohol or drug problem.

Chapter 3 provides an overview of the pooled annual admissions to treatment facilities in the Appalachian region, and in other regions nationally, during the 2000 – 2004 period. All analyses in this chapter are based on the TEDS series. Key research questions explored include:

Are there sub-regional differences of admissions to substance abuse treatment in Appalachia as compared to admissions to treatment outside of Appalachia?

What do the sub-regional differences of admissions to treatment look like across different socio-economic and demographic variables such as age, education, type of health insurance, etc?

What do the sub-regional differences of admissions to treatment look like with respect to other variables, such as source of referral, number of prior treatment episodes, and primary reason for admission?

In Section 3.2, we provide an overview of the TEDS series, its uses, the measures relevant to this study, and any limitations specifically related to exploring admissions to treatment of substance abuse in the Appalachian region. In Section 3.3, we discuss our methods. Section 3.4 contains the results of the analysis. Finally, Section 3.5 provides a discussion of key findings.

3.2 Data

3.2.1 Overview

The Treatment Episode Data Set (TEDS) is an administrative data system providing information on the demographic and substance abuse characteristics of admissions to and discharges from substance abuse treatment. The primary goal of this data set is to monitor and report treatment episodes for substance abusers.²⁵ While the TEDS Admissions Data Set has been operational for 15 years, the TEDS Discharge Data Set is new, reporting data for the first time in 2000. TEDS is sponsored by the Substance Abuse and Mental Health Services Administration (SAMHSA)'s Office of Applied Studies (OAS) at the U.S. Department of Health and Human Services. Collected since 1992, the TEDS series was designed to provide annual data on persons admitted to public and private substance abuse treatment facilities that are licensed or certified by state substance abuse agencies to provide treatment. Generally, the facilities reporting to state substance abuse agencies are those that receive public funds.

TEDS is one component of the Drug and Alcohol Services Information System (DASIS).²⁶ The DASIS is the primary source of national data on substance abuse treatment and includes TEDS as well as two other components, the National Survey of Substance Abuse Treatment Services (N-SSATS) and the Inventory of Substance Abuse Treatment Services (I-SATS).²⁷

TEDS data are collected by publicly financed substance abuse treatment programs from the 50 states, the District of Columbia, and Puerto Rico. State substance abuse agencies collect the administrative records from substance abuse treatment programs from states and jurisdictions and prepare the data in a standardized format. Data are then submitted to SAMHSA, which uses the data to report aggregated information on substance abuse treatment. The unit of analysis for the TEDS series is treatment admissions.²⁸

States vary in terms of the latest year for which they have complete data and the type of data they have submitted. Substance abuse treatment programs are required to report the Minimum Data Set (MDS) to their respective state substance abuse agency, but are not required to report data for the Supplemental Data Set (SuDS).

The MDS contains data on 19 items that include characteristics of clients admitted for substance abuse treatment, as well as the characteristics of the treatment episodes. Specifically, the data elements from the MDS include: transaction type; admission date; type of service at admission; number of (previous) treatment episodes; client age; sex; race; ethnicity; education; employment status; principal source of referral; substance problem; usual route of administration; frequency of use; age of first use; and whether medication-assisted opioid therapy is part of the client's treatment plan. Additional variables, such as calculated age and census region, are added to the state data. Substances abused include alcohol, marijuana and hashish, cocaine and crack, heroin, hallucinogens, nonprescription methadone, other opiates and synthetics, phencyclidine (PCP), methamphetamine, other amphetamines, other stimulants, benzodiazepines, other tranquilizers, barbiturates, other sedatives or hypnotics, inhalants, over-the-counter medications, and other substances.

SuDS data is optional for treatment programs to report. SuDS data include: whether the client is pregnant at time of admission; veteran status; whether the patient has a psychiatric problem in addition to alcohol or drug problem; the diagnosis of the substance abuse problem from the American Psychiatric Association's *Diagnostic and Statistical Manual of Mental Disorders*; marital status; living arrangement; source of income support; health insurance; expected/ actual

primary source of payment; detailed information about those clients who are coded as "Not in labor force" in the MDS; detailed information related to criminal justice referrals; number of days waiting to enter treatment; and detailed drug code.

TEDS is based on over 2 million admissions reported by over 10,000 facilities to the 50 States, District of Columbia, and Puerto Rico, over a calendar year.

3.2.2 Uses of TEDS

TEDS enables researchers to explore the demographic and substance abuse characteristics of admissions to and discharges from substance abuse treatment. TEDS data has been used to explore a number of research questions related to substance abuse issues. Recent studies have focused on abuse of opioid analgesics and methamphetamine,^{29,30} heroin use, changes in use over time, and the economic costs of heroin addiction,^{31,32,33} misuse of prescription drugs,³⁴ substance abuse during pregnancy,³⁵ and trends in methamphetamine and amphetamine use.³⁶ Researchers have also used TEDS data to explore characteristics of primary heroin injection and inhalation admissions and primary phencyclidine admissions.^{37,38}

A large body of research has applied TEDS data to study treatment for marijuana use disorders and methadone,³⁹ substance abuse prevention and treatment activities at the state level,⁴⁰ treatment trends,⁴¹ and treatment policy, more generally.⁴²

Given that TEDS data can be analyzed using geographic identifiers (e.g., metropolitan area, State, Census Region, Census Division, one State to all others), researchers have analyzed trends in treatment admissions in specific geographic areas.^{43,44} For example, recent studies have explored treatment admissions in urban and rural areas involving the abuse of narcotic painkillers⁴⁵ and substance abuse in mid-size cities and rural areas.⁴⁶

3.2.3 TEDS Measures Used in this Study

Next, we define the measures used from the TEDS dataset of pooled admissions from 2000 – 2004 period. We explore the following sets of variables: gender, race, education, and age; employment status, marital status, and pregnancy status upon admission; health insurance and primary source of referral; service setting; types of services and whether methadone was prescribed during treatment; number of prior treatment episodes and expected source of payment; substances abused as primary reason for admission; substances abused as one major reason for admission; and presence of psychological problems and mood disorders. We briefly describe each variable below.

The **gender** of the client admitted for treatment in a drug or alcohol program is described as male or female.

The **race** of the client is described as one of the following: Alaska Native (Aleut, Eskimo, Indian); American Indian (people of North, Central and South America who maintain cultural identification through tribal affiliation or community attachment); Asian or Pacific Islander (people of the Far East, the Indian subcontinent, Southeast Asia, or the Pacific Islands); Black or African American (any of the black racial groups of Africa); White (people of Europe, North Africa, or the Middle East); and Other (a default category for use in instances in which the client is not classified above).

The **education** of the client specifies the highest grade of school completed by the client admitted for treatment: less than high school; high school; and more than high school.

The **age** of the admission is specified as one of the following categories: 17 years old or younger; 18 to 24 years old; 25 to 34 years old; 35 to 44 years old; and 45 or older.

The **employment status** of the admission is specified as: full time (working 35 hours or more each week - includes members of the uniformed services); part time (working fewer than 35 hours each week); unemployed (looking for work during the past 30 days or a homemaker, student, disabled, retired, or an inmate of an institution); not in the labor force; or unknown.

The **marital status** of the admission is recorded as one of the following: never married; now married; separated; divorced/ widowed; and unknown.

The **pregnancy status** of the admission is recorded as yes or no at the time of admission.

The **health insurance** status of the admission is specified as one of the following: private health insurance; Blue Cross Blue Shield; Medicare; Medicaid; coverage by a health maintenance organization; other insurance; no insurance; or unknown.

The **primary source of referral** for the admission is recorded as: “individual,” which includes the client, a family member, friend, self-referral due to DWI/DUI, or another individual not included in other categories; “Alcohol or Drug Abuse (ADA) care provider,” which includes any program, clinic, or other health care provider whose activities are related to alcohol or other drug abuse prevention or treatment; “other health care provider,” which includes a physician, psychiatrist, licensed health care professional, general hospital, psychiatric hospital, mental health program, or nursing home; “school,” which includes a school principal, counselor, teacher, a student assistance program, the school system, or educational agency; “employer/ employee assistance program (EAP),” which includes a supervisor or employee counselor; “other community referral,” which includes community and religious organizations, Federal, State, or local agencies that provides aid in the areas of poverty relief, unemployment, shelter, or social welfare, self-help groups and defense attorneys; and “court/ criminal justice,” which includes any police official, judge, prosecutor, probation officer, or other person affiliated with a Federal, State, or county judicial system.

The **service setting** is specified as the type of treatment to which the client was admitted. “Hospital inpatient detoxification” is a 24 hour per day acute care service in a hospital setting for detoxification of persons with severe medical complications associated with withdrawal.

“Detoxification at a free-standing residential facility” is defined as a 24 hour per day service in non-hospital setting providing for safe withdrawal and transition to ongoing treatment. “Rehabilitation/ Residential at a hospital” is defined as 24 hour per day medical care in a hospital facility in conjunction with treatment services for alcohol and other drug abuse and dependency. A “short-term rehabilitation/ residential setting” is defined as typically 30 days or less of non-acute care in a setting with treatment services for alcohol and other drug abuse and dependency. A “long-term rehabilitation/ residential setting” is defined as typically more than 30 days of non-acute care in a setting with treatment services for alcohol and other drug abuse and dependency (this may include transitional living situations such as halfway houses). “Intensive outpatient ambulatory care” is defined as, at minimum, the client must receive treatment lasting two or more hours per day for three or more days per week. The “non-intensive outpatient ambulatory care setting” is defined as a

setting where ambulatory treatment services include individual, family, and/or group services (these may include pharmacological therapies). Finally, the “ambulatory detoxification setting” is defined as a setting where outpatient treatment services (pharmacological or non-pharmacological) are delivered.

The **types of services** variable specifies the services that the admission will receive during treatment including: ambulatory health care services; detoxification services; and rehabilitation/residential services.

Methadone use (planned as part of treatment) is a variable that specifies whether methadone is planned as part of the client’s treatment.

The **number of prior treatment episodes** indicates the number of previous treatment episodes the client has received in any drug or alcohol program. Categories include: no prior treatment episodes; 1 – 2 treatment episodes; 3 or more treatment episodes; or unknown.

The **expected source of payment** for the treatment episode is specified as one of the following (whether it is the expected or actual source of payment): other government payments; self-pay; Medicaid; Blue Cross Blue Shield and other health insurance; no charge; Medicare/ Workman’s Compensation; other; and unknown. For this variable, states operating under a split payment fee arrangement between multiple payment sources must default to the payment source with the largest percentage; if the payment percentages are equal, the state can choose either source.⁴⁷

The **primary substance of abuse** at the time of admission is defined as one of the following: alcohol; marijuana; cocaine; heroin; other opiates or synthetics (which includes codeine, Dilaudid, morphine, Demerol, opium, oxycodone, and any other drug with morphine-like effects); methamphetamine or other stimulants (which includes non-amphetamine stimulants); other substances; tranquilizers; sedatives; and inhalants.

The **substance of abuse as one major reason for admission** can be the following: alcohol; marijuana; cocaine; heroin; other opiates or synthetics (which includes codeine, Dilaudid, morphine, Demerol, opium, oxycodone, and any other drug with morphine-like effects); methamphetamine or other stimulants (which includes non-amphetamine stimulants); other substances; tranquilizers; sedatives; and inhalants. TEDS reports different types of substances as the primary, secondary, or tertiary substance of abuse at the time of admission. If the substance was mentioned as either the primary, secondary, or tertiary substance of abuse at the time of admission, this substance was then regarded as one major reason for admission into substance abuse treatment.

The **presence of psychological problems indicates** whether there is a psychological problem present in addition to an alcohol or drug problem upon admission.

The **presence of mood disorders** was derived from either the third edition revised or the fourth edition of the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders. This variable tells whether a mood disorder was present upon admission in addition to an alcohol or drug problem. However, due to reporting issues related to different types of drug abuse and dependence, the absence of a mood disorder in the data record upon admission may not necessarily mean the actual absence of mood disorder.

3.2.4 Limitations of the TEDS Series

There are several limitations with respect to using TEDS to explore substance abuse treatment issues in Appalachian counties as compared to other counties nationally. One critical limitation is that TEDS does not capture all of the substance abuse treatment facilities in the U.S., and the scope of facilities included differs from state to state. Facilities reporting into TEDS are generally those that receive State substance abuse treatment funds, including Federal Block Grant funds. To be included in TEDS, facilities must be licensed through the state substance abuse treatment agency. As a result, private-for-profit facilities, hospitals, and state correctional facilities may be excluded from TEDS. In addition, TEDS does not include data from facilities operated by Federal agencies. Finally, states have different certification and accreditation requirements and different state systems of licensure which may contribute to the exclusion of certain facilities.

The unit of measure in TEDS is the initial admission to treatment. Therefore, TEDS data may reflect multiple admissions for the same client in the same state or treatment site. In addition, one client could account for multiple admissions at multiple treatment sites in one state.⁴⁸ Another limitation is that states may vary in how they define an admission; thus, the absolute number of admissions may not be a valid measure for comparing states.

Next, public funding is a key external factor that affects the client mix at substance abuse programs. States that have more public funding may be able to accept more economically disadvantaged populations than states with limited public funding. In addition, public funding may also cause states to focus on a particular subset of the population, like pregnant women, for example.

Different criminal justice practices at the state level may affect the manner in which clients are referred to admission.

Another limitation to note is that there is a delay in the availability of the entire national TEDS data set for publication.⁴⁹ Results for each calendar year may be incomplete, and states can revise or replace historical data files. In addition, since states rely on substance abuse facilities to report the data, completeness may vary on a state by state basis.⁵⁰ Finally, direct identifiers have been removed in the TEDS public use file and disclosure analysis has been applied to remove the uniqueness of individual records within a file to prevent the identification of any individual.⁵¹ It is not possible to link variables between the TEDS and National Survey of Substance Abuse Treatment Services (N-SSATS) public-use files.

3.3 Methods

3.3.1 Study Sample

The data used for this study were pooled data for 2000-2004 provided under a data use agreement with the Office of Applied Study (OAS) of the Substance Abuse and Mental Health Services Administration (SAMHSA). The data were provided by SAMHSA contractor, Synectics for Management Decisions, Inc. Only admissions in the 410 Appalachian counties were included in the data. Data are entered based on county of admission rather than county of residence. Overall, 12 of the 13 Appalachian states were included in the data. The only state which was missing was West Virginia. Among the 410 Appalachian counties, 195 counties were in the pooled 2000-2004 TEDS

data set, comprising 511,217 total admissions to treatment for abuse of alcohol and drugs in facilities that report to individual State administrative data systems.

3.3.2 Statistical Methods

We use cross-tabulations to examine differences of admissions to substance abuse treatment within the Appalachian region. Various aspects of the admissions are analyzed including:

- Demographic information;
- Primary, secondary, and tertiary substances;
- Source of referral to treatment;
- Number of prior treatment episodes; and
- Service type, including planned use of methadone.

These are examined across admission subgroups based on Appalachian geographic sub-regions (Northern, Central, and Southern) and the economic development level of the counties where the admissions took place, as defined by the Appalachian Regional Commission (ARC).

ARC uses a county economic classification system to target counties in need of special economic assistance. The system classifies counties into five economic status designations—distressed, at-risk, transitional, competitive, and attainment—based on a comparison of county and national averages for three economic indicators: three-year average unemployment rate; per capita market income; and poverty rate. The economic status designations change from year to year. Among the 511,217 admissions analyzed, 48,684 (9.5%) were from the “Distressed” counties; 30,356 (5.9%) were from the “At-risk” counties; 6311,644 (61%) were from the “Transitional” counties; 67,383 (13.2%) were from the “Competitive” counties; and 53,150 (10.4%) were from the “Attainment” counties. In terms of geographic locations, about half (N=254,675, 49.8%) were in the Northern Appalachia, about two-fifths (N=195,289, 38.2%) were from the Southern Appalachia, and slightly more than one-tenth (N=61,253, 12.0%) were from the Central Appalachia.

3.4 Results

In Section 3.4, we present comparisons in admissions to substance abuse treatment within subsets of Appalachian counties defined by geographic sub-region (northern, central and southern) and economic status (distressed, at-risk, transitional, competitive, and attainment).

Data are presented in a series of tables that show differences in admissions by demographic factors such as gender, race, education, and age; employment status, marital status, and pregnancy status upon admission; health insurance and primary source of referral; service setting; types of services and whether methadone was prescribed during treatment; number of prior treatment episodes and expected source of payment; substances abused as primary reason for admission; substances abused as one major reason for admission; and presence of psychological problems and mood disorders.

After presenting the tables, we provide a series of figures that discuss trends in primary substance of abuse at admission. Finally, we provide a number of maps which offer a visual representation of our findings across sub-regions in Appalachia.

3.4.1 Tables

Table 3.1 below demonstrates differences in admissions by economic status and sub-region across demographic variables. Approximately 69% of admissions in Appalachia are male, while only about 31% are female. This finding is consistent across economic status levels and sub-regions. Overall, about 83% of admissions were white, 15% were black, and 1.8% were defined as being of a race other than white or black. The “other” category includes the following races: Alaskan Native; American Indian; and Asian or Pacific Islander. The percentage of admissions that are white is the highest in distressed counties and in the central sub-region of Appalachia, while it is the lowest in attainment counties and the southern sub-region. In contrast, the percentage of admissions that are black or of another race is the lowest in distressed counties and the highest in attainment counties. Approximately 23% of admissions in the southern sub-region of Appalachia are black, a stark contrast to the 3% of admissions that are black in the central sub-region.

In terms of educational attainment, overall, approximately 45% of clients admitted to treatment in Appalachia have a high school education, 36% have less than a high school education, and 19% have more than a high school education. Educational status tends to correspond with county economic status. Admissions with more than a high school education are higher in attainment counties versus distressed counties (22% versus 14%), while admissions with less than a high school education are higher in distressed counties versus attainment counties (48% versus 35%). Overall, 49% of admissions in the northern region have a high school education, followed by 41% of admissions in the southern region, and 38% in the central region. Admissions with a high school education comprise the greatest proportion of those receiving treatment in the northern and southern regions (49% and 41%), while admissions with less than a high school education comprise the greatest proportion of those receiving treatment in the central region (47%).

In terms of age, overall, about 29% of admitted clients are between 35 and 44 years of age, followed by 28% in the 25 to 34 age bracket, 22% in the 18 to 24 age bracket, 16% age 45 and older, and 4% age 17 and younger. By economic status, the majority of those admitted to treatment from distressed and at-risk counties are between the ages of 25 to 34, whereas the majority of those admitted in transitional, competitive, or attainment counties are between the ages of 35 to 44. Approximately 29% of admissions in the northern sub-region and 31% of admissions in the southern sub-region are between 35 and 44 years of age; the majority of admissions in the central region are between the ages of 25 and 34.

Table 3.1: Sub-regional Differences of Admissions to Substance Abuse Treatment in the Appalachian Region, By Demographics

	All		Economic Level										Sub-Region					
			Distressed		At-Risk		Transitional		Competitive		Attainment		Northern		Central		Southern	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Gender																		
Male	300,926	69.26	20,916	68.33	17,327	70.90	190,213	69.43	41,974	69.23	30,496	68.01	163,159	70.18	27,141	69.60	110,626	67.88
Female	133,555	30.74	9,693	31.67	7,113	29.10	83,742	30.57	18,660	30.77	14,347	31.99	69,342	29.82	11,856	30.40	52,357	32.12
All	434,481	100.00	30,609	100.00	24,440	100.00	273,955	100.00	60,634	100.00	44,843	100.00	232,501	100.00	38,997	100.00	162,983	100.00
Race																		
White	360,881	83.06	29,533	96.48	22,126	90.53	230,175	84.02	49,454	81.56	29,593	65.99	199,792	85.93	37,669	96.59	123,420	75.73
Black	65,794	15.14	877	2.87	2,171	8.88	38,792	14.16	10,033	16.55	13,921	31.04	27,823	11.97	1,041	2.67	36,930	22.66
Other	7,806	1.80	199	0.65	143	0.59	4,988	1.82	1,147	1.89	1,329	2.96	4,886	2.10	287	0.74	2,633	1.62
All	434,481	100.00	30,609	100.00	24,440	100.00	273,955	100.00	60,634	100.00	44,843	100.00	232,501	100.00	38,997	100.00	162,983	100.00
Education																		
Less than High School	156,520	36.02	14,578	47.63	10,233	41.87	93,403	34.09	22,777	37.56	15,529	34.63	72,349	31.12	18,461	47.34	65,710	40.32
High School	197,059	45.36	11,606	37.92	10,009	40.95	129,374	47.22	26,624	43.91	19,446	43.36	114,968	49.45	14,839	38.05	67,252	41.26
More than High School	80,902	18.62	4,425	14.46	4,198	17.18	51,178	18.68	11,233	18.53	9,868	22.01	45,184	19.43	5,697	14.61	30,021	18.42
All	434,481	100.00	30,609	100.00	24,440	100.00	273,955	100.00	60,634	100.00	44,843	100.00	232,501	100.00	38,997	100.00	162,983	100.00
Age																		
17 or younger	18,641	4.29	1,328	4.34	1,922	7.86	12,387	4.52	1,394	2.30	1,610	3.59	11,093	4.77	1,407	3.61	6,141	3.77
18-24	95,942	22.08	6,690	21.86	5,771	23.61	64,437	23.52	11,430	18.85	7,614	16.98	56,450	24.28	8,455	21.68	31,037	19.04
25-34	121,637	28.00	9,088	29.69	6,790	27.78	76,637	27.97	16,495	27.20	12,627	28.16	61,951	26.65	11,963	30.68	47,723	29.28
35-44	127,511	29.35	8,521	27.84	6,375	26.08	78,200	28.54	19,756	32.58	14,659	32.69	67,043	28.84	10,731	27.52	49,737	30.52
45 or older	70,750	16.28	4,982	16.28	3,582	14.66	42,294	15.44	11,559	19.06	8,333	18.58	35,964	15.47	6,441	16.52	28,345	17.39
All	434,481	100.00	30,609	100.00	24,440	100.00	273,955	100.00	60,634	100.00	44,843	100.00	232,501	100.00	38,997	100.00	162,983	100.00

Source: Treatment Episode Data Set (TEDS) 2000-2004. Office of Applied Studies, Substance Abuse and Mental Health Services Administration.

Table 3.2 below demonstrates differences in admissions by economic status and sub-region for employment status, marital status, and pregnancy status upon admission. Overall, approximately 33% of admissions are unemployed, meaning that they have been looking for work during the past 30 days or a homemaker, student, disabled, retired, or an inmate of an institution. About 28% are not in the labor force, 24% work full time (35 hours or more each week), and 6% work part time (fewer than 35 hours each week).

Approximately 19% of admissions in distressed counties work full time as compared to more than 25% of admissions in attainment counties. In the northern and southern sub-regions, about 25% of admissions are full time workers, as compared to slightly less than 20% in the central sub-region. About 36% of admissions in at-risk counties and 35% in transitional counties are unemployed. Surprisingly, approximately 36% of admissions in attainment counties are unemployed. In the northern sub-region, about 40% of admissions are unemployed, while only about 25% of admissions are unemployed in the central and southern sub-regions. About 40% of admissions in distressed counties are not in the labor force while only 16% of admissions in attainment counties are not in the labor force.

In terms of marital status, overall, 49% of admissions have never been married, 20% are divorced or widowed, 18% are now married, 8% are separated, and 5% are unknown. The majority of admissions in transitional (51%) and attainment counties (54%) have never been married. Across the sub-regions, 56% of admissions in the northern region have never been married, followed by 43% of admissions in the southern region, and 29% of admissions in the central region. In distressed counties, 22% of admissions are divorced/widowed, slightly more than the 21% in competitive counties and 20% in attainment counties.

Overall, less than 1% of clients were pregnant at the time of admission. Slightly more than 1% of admissions were pregnant in distressed, competitive, and attainment counties. Only 0.66% of admissions were pregnant in at-risk counties. Across the Appalachian region, 1.25% of admissions were pregnant in the southern sub-region, followed by 0.79% in the central sub-region and 0.74% in the northern sub-region.

Table 3.2: Sub-regional Differences of Admissions to Substance Abuse Treatment in the Appalachian Region, By Employment Status, Marital Status, and Pregnancy Status

	All		Economic Level										Sub-Region					
			Distressed		At-Risk		Transitional		Competitive		Attainment		Northern		Central		Southern	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Employment Status																		
Full-time ^a	106,250	24.45	5,884	19.22	5,689	23.28	68,213	24.90	14,761	24.34	11,703	26.10	58,529	25.17	7,710	19.77	40,011	24.55
Part-time ^b	25,303	5.82	1,936	6.32	1,600	6.55	16,143	5.89	3,061	5.05	2,563	5.72	14,777	6.36	2,315	5.94	8,211	5.04
Unemployed ^c	141,577	32.59	8,282	27.06	8,695	35.58	94,701	34.57	13,704	22.60	16,195	36.11	90,502	38.93	9,855	25.27	41,220	25.29
Not in labor force	122,112	28.11	12,407	40.53	7,963	32.58	77,203	28.18	17,532	28.91	7,007	15.63	66,231	28.49	16,437	42.15	39,444	24.20
Unknown	39,239	9.03	2,100	6.86	493	2.02	17,695	6.46	11,576	19.09	7,375	16.45	2,462	1.06	2,680	6.87	34,097	20.92
All	434,481	100.00	30,609	100.00	24,440	100.00	273,955	100.00	60,634	100.00	44,843	100.00	232,501	100.00	38,997	100.00	162,983	100.00
Marital Status																		
Never married	211,320	48.64	11,208	36.62	9,426	38.57	140,348	51.23	26,296	43.37	24,042	53.61	130,304	56.04	11,318	29.02	69,698	42.76
Now married	78,710	18.12	7,538	24.63	3,993	16.34	48,734	17.79	10,853	17.90	7,592	16.93	37,467	16.11	8,023	20.57	33,220	20.38
Separated	35,042	8.07	2,494	8.15	1,193	4.88	22,966	8.38	4,398	7.25	3,991	8.90	15,880	6.83	2,535	6.50	16,627	10.20
Divorced/widowed	85,752	19.74	6,778	22.14	4,005	16.39	53,021	19.35	12,804	21.12	9,144	20.39	39,755	17.10	7,926	20.32	38,071	23.36
Unknown	23,657	5.44	2,591	8.46	5,823	23.83	8,886	3.24	6,283	10.36	74	0.17	9,095	3.91	9,195	23.58	5,367	3.29
All	434,481	100.00	30,609	100.00	24,440	100.00	273,955	100.00	60,634	100.00	44,843	100.00	232,501	100.00	38,997	100.00	162,983	100.00
Pregnant At Admission																		
Yes	4,054	0.93	336	1.10	162	0.66	2,390	0.87	704	1.16	462	1.03	1,709	0.74	310	0.79	2,035	1.25
No	125,745	28.94	8,993	29.38	5,665	23.18	80,486	29.38	16,719	27.57	13,882	30.96	66,074	28.42	9,812	25.16	49,859	30.59
Not applicable	300,929	69.26	20,916	68.33	17,327	70.90	190,214	69.43	41,975	69.23	30,497	68.01	163,159	70.18	27,141	69.60	110,629	67.88
Unknown	3,753	0.86	364	1.19	1,286	5.26	865	0.32	1,236	2.04	2	0.00	1,559	0.67	1,734	4.45	460	0.28
All	434,481	100.00	30,609	100.00	24,440	100.00	273,955	100.00	60,634	100.00	44,843	100.00	232,501	100.00	38,997	100.00	162,983	100.00

a Working 35 hours or more each week; includes members of the uniformed services.

b Working fewer than 35 hours each week.

c Looking for work during the past 30 days or a homemaker, student, disabled, retired, or an inmate of an institution.

Source: Treatment Episode Data Set (TEDS) 2000-2004. Office of Applied Studies, Substance Abuse and Mental Health Services Administration.

In **Table 3.3**, we provide differences in health insurance for admissions across economic status levels and sub-regions in Appalachia. The variable, health insurance, specifies the type of insurance a client possesses, if any. However, the insurance may or may not cover the alcohol or drug treatment. Overall, approximately 8% of admissions have Medicaid, 5% have private insurance (other than Blue Cross/ Blue Shield insurance or a health maintenance organization (HMO)), 3% have Blue Cross/ Blue Shield insurance, 2% are covered by an HMO, and less than 1% have Medicare. About 10.75% of admissions have some other type of insurance. Almost a quarter of admissions were uninsured and insurance status was unknown for 47% of admissions.

While only 3% of admissions in distressed counties were uninsured, 39% of admissions were uninsured in attainment counties. Private insurance was most common for admissions in distressed counties (13%) and least common in attainment counties (3%). Medicaid was most common for admissions in transitional counties (8%). Medicare was most common among admissions in competitive (0.92%) and attainment counties (0.96%), as compared to distressed, at-risk, and transitional counties.

Looking across the Appalachian region, more than a quarter of admissions in the northern and southern sub-regions had no insurance. In the central sub-region, 45% admissions had some other type of health insurance, followed by 15% of admissions with private insurance. About 2% of admissions in the central sub-region reported Medicare as their insurer, as compared to less than 1% of admissions in the northern and southern sub-regions. About 10% of admissions in the northern sub-region were on Medicaid, followed by 7% of admissions in the central sub-region and 5% in the southern sub-region.

Next, we explore the primary source of referral – the person or agency referring the client to the alcohol or drug abuse treatment program. Overall, 37% of admissions were referred by the court or criminal justice system. This includes referrals from those affiliated with a Federal, State, or county judicial system, and referrals from DWI/DUI court. Clients referred in lieu of or for deferred prosecution, during pretrial release, or prior to or following official adjudication are also included. Finally, this figure also includes admissions on pre-parole, pre-release, work or home furlough, or in Treatment Alternatives for Safe Communities (TASC) programs. Next, about 23% of admissions were referred from an individual, which includes the client, a family member, friend, self-referral due to DWI/DUI, or other.

About 16% of admissions were from an alcohol/drug abuse (ADA) care provider, which includes any program, clinic, or other health care provider whose activities are related to alcohol or other drug abuse prevention, or treatment. About 10% of admissions were described as being referred by “other community referral,” which includes community and religious organizations or any Federal, State, or local agency that provides assistance in the areas of poverty relief, unemployment, shelter, or social welfare. This 10% also includes self-help groups such as Alcoholics Anonymous (AA), Al-Anon, and Narcotics Anonymous (NA), and defense attorneys. Another 10% of admissions were described as being referred by “other health care provider,” including a physician, psychiatrist, other licensed health care professional, general hospital, psychiatric hospital, mental health program, or nursing home. Slightly more than 1% were referred by someone at school, such as a school principal, counselor, teacher or from a student assistance program (SAP), the school system, or educational agency. Finally, slightly less than 1% of people were referred by an employer or employee counselor.

The court/criminal justice system was the common primary source of referral across all counties, regardless of economic status. Slightly less than 50% of admissions in distressed counties and slightly more than 50% of admissions in at-risk counties were referred by court/criminal justice systems. Referrals by court/criminal justice systems were lower in transitional (36%), competitive (32%), and attainment counties (27%).

Across sub-regions, the court/criminal justice system is the most common primary source of referral with the employer/ employee assistance program (EAP) being the least common. Around 31% of admissions in both the central and sub-regions were referred by an individual.

Table 3.3: Sub-regional Differences of Admissions to Substance Abuse Treatment in the Appalachian Region, By Health Insurance and Source of Referral

	All		Economic Level										Sub-Region					
			Distressed		At-Risk		Transitional		Competitive		Attainment		Northern		Central		Southern	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Health Insurance																		
Private	20,987	4.83	3,901	12.74	1,152	4.71	12,131	4.43	2,438	4.02	1,365	3.04	10,223	4.40	5,982	15.34	4,782	2.93
BC/BS	13,059	3.01	238	0.78	75	0.31	10,483	3.83	904	1.49	1,359	3.03	10,363	4.46	9	0.02	2,687	1.65
Medicare/ Other	3,314	0.76	773	2.53	80	0.33	1,474	0.54	557	0.92	430	0.96	1,228	0.53	918	2.35	1,168	0.72
Medicaid	33,551	7.72	2,152	7.03	755	3.09	24,108	8.80	3,313	5.46	3,223	7.19	22,979	9.88	2,659	6.82	7,913	4.86
HMO	6,896	1.59	.	.	951	3.89	3,314	1.21	1,297	2.14	1,334	2.97	5,970	2.57	.	.	926	0.57
Other	46,758	10.76	13,322	43.52	832	3.40	26,717	9.75	1,699	2.80	4,188	9.34	25,662	11.04	17,699	45.39	3,397	2.08
None	104,132	23.97	1,000	3.27	2,566	10.50	63,920	23.33	19,179	31.63	17,467	38.95	61,124	26.29	.	.	43,008	26.39
Unknown	205,784	47.36	9,223	30.13	18,029	73.77	131,808	48.11	31,247	51.53	15,477	34.51	94,952	40.84	11,730	30.08	99,102	60.81
All	434,481	100.00	30,609	100.00	24,440	100.00	273,955	100.00	60,634	100.00	44,843	100.00	232,501	100.00	38,997	100.00	162,983	100.00
Primary Source of Referral																		
Individual ^a	103,634	23.85	8,471	27.67	4,733	19.37	56,684	20.69	16,957	27.97	16,789	37.44	40,646	17.48	12,332	31.62	50,656	31.08
ADA care provider ^b	70,727	16.28	512	1.67	2,772	11.34	57,141	20.86	7,084	11.68	3,218	7.18	62,904	27.06	1,070	2.74	6,753	4.14
Other health care provider ^c	42,165	9.70	3,042	9.94	2,176	8.90	21,741	7.94	8,503	14.02	6,703	14.95	12,560	5.40	4,075	10.45	25,530	15.66
School ^d	4,585	1.06	479	1.56	468	1.91	3,017	1.10	322	0.53	299	0.67	2,434	1.05	525	1.35	1,626	1.00
Employer/EAP ^e	3,650	0.84	186	0.61	145	0.59	2,663	0.97	451	0.74	205	0.46	2,277	0.98	185	0.47	1,188	0.73
Other community referral ^f	43,194	9.94	2,786	9.10	1,473	6.03	28,721	10.48	6,223	10.26	3,991	8.90	26,689	11.48	3,430	8.80	13,075	8.02
Court/criminal justice ^g	158,826	36.56	14,710	48.06	12,533	51.28	99,410	36.29	19,646	32.40	12,527	27.94	83,859	36.07	16,351	41.93	58,616	35.96
Unknown	7,700	1.77	423	1.38	140	0.57	4,578	1.67	1,448	2.39	1,111	2.48	1,132	0.49	1,029	2.64	5,539	3.40
All	434,481	100.00	30,609	100.00	24,440	100.00	273,955	100.00	60,634	100.00	44,843	100.00	232,501	100.00	38,997	100.00	162,983	100.00

^a Includes the client, a family member, friend, self-referral due to DWU/DUI, or another individual not included in other categories; ^b Any program, clinic, or other health care provider whose activities are related to alcohol or other drug abuse prevention, or treatment; ^c A physician, psychiatrist, licensed health care professional, general hospital, psychiatric hospital, mental health program, or nursing home; ^d A school principal, counselor, or teacher; or a student assistance program, the school system, or educational agency; ^e A supervisor or employee counselor; ^f Community and religious organizations or any Federal, State, or local agency that provides aid in the areas of poverty relief, unemployment, shelter, or social welfare. Self-help groups and defense attorneys are included; ^g Any police official, judge, prosecutor, probation officer, or other person affiliated with a Federal, State, or county judicial system.

Source: Treatment Episode Data Set (TEDS) 2000-2004. Office of Applied Studies, Substance Abuse and Mental Health Services Administration.

In **Table 3.4**, we provide sub-regional differences to substance abuse treatment in the Appalachian region by service setting. First, we explore the type of treatment into which the client was admitted. Overall, approximately 13% of admissions were for detoxification services in a 24-hour per day, non-hospital setting that provides safe withdrawal and transition to ongoing treatment. Only about 2% of admissions were into 24-hour per day acute care services in a hospital setting for detoxification of persons with severe medical complications associated with withdrawal.

About 0.2% of admissions were for 24-hour per day medical care (but not detoxification services) in a hospital facility in conjunction with treatment services for alcohol and other drug abuse and dependency. About 10% of admissions were into a short-term (typically for 30 days or less) non-acute care setting with treatment services for alcohol and other drug abuse and dependency. Slightly less than 5% of admissions were for long-term non-acute care (more than 30 days) in a setting with treatment services for alcohol, drug abuse and dependency (this figure may also include transitional living situations such as halfway houses, etc.).

In the ambulatory care setting, about 15% of admissions were into an intensive outpatient setting where at a minimum the client must receive treatment for two or more hours per day for three or more days per week. About 57% of admissions were into the non-intensive outpatient ambulatory care setting; such admissions were for services including individual, family and/or group services and pharmacological therapies. Only about 0.10% of admissions were for outpatient treatment services providing detoxification in the ambulatory care setting (both pharmacological and non-pharmacological).

Admissions for inpatient detoxification tend to be in the competitive (2.92%) and attainment counties (2.15%) rather than the at-risk (0.01%) and transitional counties (0.71%). About 24% of admissions to free-standing residential facilities were in competitive counties and 16% in attainment counties. Admissions for short-term detoxification in a rehabilitation/residential setting were highest in at-risk (11%) and transitional counties (13%). Admissions to a long-term non-acute care setting were highest in competitive and attainment counties (approximately 5% for both). 91% of admissions to non-intensive outpatient ambulatory care were in distressed counties.

Across the sub-regions, the majority of admissions in the northern (61%) and central sub-regions (80%) were to non-intensive outpatient care settings. Admissions to a short-term or long-term rehabilitation/ residential care setting were much higher in the northern region (15%) than in the central and southern sub-regions (3% for both). Admissions to a free-standing residential setting were highest in the southern sub-region (16%), followed by the central (15%) and northern sub-regions (10%), respectively.

Table 3.4: Sub-regional Differences of Admissions to Substance Abuse Treatment in the Appalachian Region, By Service Setting

	All		Economic Level										Sub-Region					
			Distressed		At-Risk		Transitional		Competitive		Attainment		Northern		Central		Southern	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Service Setting																		
Detoxification																		
Hospital Inpatient ^a	4,672	1.08	.	.	3	0.01	1,932	0.71	1,771	2.92	966	2.15	3,916	1.68	.	.	756	0.46
Free-standing Residential ^b	55,267	12.72	616	2.01	3,210	13.13	29,533	10.78	14,712	24.26	7,196	16.05	23,830	10.25	5,687	14.58	25,750	15.80
Rehabilitation/ Residential																		
Hospital ^c	663	0.15	.	.	.	.	651	0.24	3	0.00	9	0.02	252	0.11	.	.	411	0.25
Short ^d	42,296	9.73	401	1.31	2,621	10.72	34,564	12.62	2,693	4.44	2,017	4.50	35,783	15.39	1,246	3.20	5,267	3.23
Long ^e	19,059	4.39	754	2.46	441	1.80	12,694	4.63	2,849	4.70	2,321	5.18	15,455	6.65	231	0.59	3,373	2.07
Ambulatory																		
Intensive outpatient ^f	65,593	15.10	756	2.47	7,129	29.17	46,820	17.09	5,897	9.73	4,991	11.13	11,102	4.78	731	1.87	53,760	32.99
Non-intensive Outpatient ^g	246,517	56.74	28,082	91.74	11,028	45.12	147,492	53.84	32,679	53.90	27,236	60.74	142,019	61.08	31,102	79.75	73,396	45.03
Detoxification ^h	414	0.10	.	.	8	0.03	269	0.10	30	0.05	107	0.24	144	0.06	.	.	270	0.17
All	434,481	100.00	30,609	100.0	24,440	100.00	273,955	100.00	60,634	100.00	44,843	100.00	232,501	100.00	38,997	100.00	162,983	100.00

NOTES

- ^a 24 hour per day acute care services in a hospital setting for detoxification of persons with severe medical complications associated with withdrawal.
- ^b 24 hour per day services in non-hospital setting providing for safe withdrawal and transition to ongoing treatment.
- ^c 24 hour per day medical care in a hospital facility in conjunction with treatment services for alcohol and other drug abuse and dependency.
- ^d Typically 30 days or less of non-acute care in a setting with treatment services for alcohol and other drug abuse and dependency.
- ^e Typically more than 30 days of non-acute care in a setting with treatment services for alcohol and other drug abuse and dependency; this may include transitional living such as halfway houses.
- ^f At minimum, the client must receive treatment lasting two or more hours per day for three or more days per week.
- ^g Ambulatory treatment services including individual, family, and/or group services; these may include pharmacological therapies.
- ^h Outpatient treatment services providing for safe withdrawal in an ambulatory setting (pharmacological or non-pharmacological).

Source: Treatment Episode Data Set (TEDS) 2000-2004. Office of Applied Studies, Substance Abuse and Mental Health Services Administration.

In **Table 3.5**, we provide sub-regional differences to substance abuse treatment in the Appalachian region by types of service and methadone use. Overall, approximately 72% of admissions received ambulatory care services, 14% received rehabilitational services, and 14% received detoxification services. 94% of admissions in distressed counties received ambulatory care services. The majority of at-risk, transitional, competitive, and attainment counties also received ambulatory care services. This finding was consistent across sub-regions as well. Admissions for detoxification services were most common in competitive counties (27%) and least common in distressed counties (2%). Rehabilitation and residential services were most common for admissions in at-risk (13%) and transitional counties (17%); these services were also five times more common in the northern region than in the central region, and four times more common in the northern region than in the southern region.

Next, we look at methadone use. Overall, methadone was specified as part of treatment for approximately 1.2% of admissions. For competitive and attainment counties, the percentages are larger, at 3% and 5% of admissions, respectively. Distressed counties are fairly consistent with the average across all Appalachian counties, at 1.44% of admissions. Methadone was specified as part of the treatment plan for less than 1% of admissions in at-risk counties and less than half a percent of admissions in transitional counties. Across Appalachia, methadone use was specified as part of the treatment plan for between 1 and 1.5% of admissions, with the smallest percentage of admissions in the northern sub-region and the greatest percentage of admissions in the southern sub-region.

Table 3.5: Sub-regional Differences of Admissions to Substance Abuse Treatment in the Appalachian Region, By Types of Services and Methadone Use As Part of Treatment

	All		Economic Level										Sub-Region					
			Distressed		At-Risk		Transitional		Competitive		Attainment		Northern		Central		Southern	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Types of Services																		
Ambulatory	312,524	71.93	28,838	94.21	18,165	74.32	194,581	71.03	38,606	63.67	32,334	72.10	153,265	65.92	31,833	81.63	127,426	78.18
Detoxification	59,939	13.80	616	2.01	3,213	13.15	31,465	11.49	16,483	27.18	8,162	18.20	27,746	11.93	5,687	14.58	26,506	16.26
Rehabilitation/ Residential	62,018	14.27	1,155	3.77	3,062	12.53	47,909	17.49	5,545	9.15	4,347	9.69	51,490	22.15	1,477	3.79	9,051	5.55
All	434,481	100.00	30,609	100.00	24,440	100.00	273,955	100.00	60,634	100.00	44,843	100.00	232,501	100.00	38,997	100.00	162,983	100.00
Methadone Use																		
Yes	5,308	1.22	444	1.45	176	0.72	619	0.23	1,845	3.04	2,224	4.96	2,413	1.04	430	1.10	2,465	1.51
No	400,729	92.23	26,889	87.85	18,386	75.23	257,678	94.06	57,690	95.14	40,086	89.39	230,063	98.95	31,984	82.02	138,682	85.09
Unknown	28,444	6.55	3,276	10.70	5,878	24.05	15,658	5.72	1,099	1.81	2,533	5.65	25	0.01	6,583	16.88	21,836	13.40
All	434,481	100.00	30,609	100.00	24,440	100.00	273,955	100.00	60,634	100.00	44,843	100.00	232,501	100.00	38,997	100.00	162,983	100.00
Source: Treatment Episode Data Set (TEDS) 2000-2004. Office of Applied Studies, Substance Abuse and Mental Health Services Administration.																		

Table 3.6 focuses on sub-regional differences in the number of previous treatment episodes that admissions received in any drug or alcohol program as well as the primary source of expected/ actual payment for this treatment episode. Overall, in Appalachia, approximately 37% of admissions had no prior treatment episodes in a drug or alcohol program, 30% had 1 or 2 prior treatments, and 18% had 3 or more prior treatments. The previous treatment for about 15% of admissions was unknown. This distribution is consistent across Appalachia regardless of county economic status with the exception of distressed counties. In distressed counties, we see that the majority of admissions had no prior treatment episodes and only 8% of admissions had three or more treatment episodes.

Looking across geographic sub-regions, we see that 67% of admissions in the central sub-region had no prior treatment episodes, followed by the northern (37%) and southern sub-regions (30%), respectively. About 26% of admissions with three or more treatment episodes are into programs in the northern sub-region, as opposed to the southern (9%) and central (7%) sub-regions.

Next, we review our findings for the primary source of payment (expected/actual) for the treatment episode. Note that for this variable, states operating under a split payment fee arrangement between multiple payment sources must default to the payment source with the largest percentage; if the payment percentages are equal, the state can choose either source.⁵² In Table 3.6, we see that overall, the primary source of payment is unknown for almost 30% of admissions. Other government payments are the primary source of payment for about 22% of admissions, followed by self-pay (20%), Medicaid (10%), other (8%), Blue Cross Blue Shield and other health insurance (7%), no charge (3%), and Medicare/ Workman's Compensation (1%).

The primary payer in distressed counties is other government payments for about 35% of admissions, while in attainment counties approximately 40% of admissions are self-pay. No charge admissions are more common in distressed (5%) and at-risk counties (6%) than in competitive (0.19%) and attainment counties (0.36%). Across the sub-regions, we see that 40% of admissions are self-pay in the southern sub-region as opposed to 16% of admissions in the northern and 6% in the central sub-regions. The primary source of payment for about 11% of admissions in the northern sub-region is Blue Cross Blue Shield and other types of health insurance, compared to slightly more than 2% of admissions in the southern sub-region and 0.17% of admissions in the central sub-region.

Table 3.6: Sub-regional Differences of Admissions to Substance Abuse Treatment in the Appalachian Region, By Prior Treatment Episodes and Expected Source of Payment

	All		Economic Level										Sub-Region					
			Distressed		At-Risk		Transitional		Competitive		Attainment		Northern		Central		Southern	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Number of Prior Treatment Episodes																		
No prior treatment	161,910	37.27	19,139	62.53	8,473	34.67	99,789	36.43	18,550	30.59	15,959	35.59	86,631	37.26	25,934	66.50	49,345	30.28
1-2 prior treatments	129,057	29.70	7,781	25.42	7,856	32.14	86,226	31.47	15,803	26.06	11,391	25.40	78,866	33.92	8,871	22.75	41,320	25.35
3 or more treatments	77,473	17.83	2,446	7.99	3,860	15.79	56,369	20.58	8,989	14.83	5,809	12.95	59,647	25.65	2,659	6.82	15,167	9.31
Unknown	66,041	15.20	1,243	4.06	4,251	17.39	31,571	11.52	17,292	28.52	11,684	26.06	7,357	3.16	1,533	3.93	57,151	35.07
All	434,481	100.00	30,609	100.00	24,440	100.00	273,955	100.00	60,634	100.00	44,843	100.00	232,501	100.00	38,997	100.00	162,983	100.00
Expected Source of Payment																		
Self pay	84,876	19.54	3,463	11.31	6,222	25.46	40,154	14.66	17,003	28.04	18,034	40.22	14,266	6.14	6,105	15.66	64,505	39.58
BC/BS/ Other health insurance	30,423	7.00	720	2.35	519	2.12	25,374	9.26	1,882	3.10	1,928	4.30	26,618	11.45	67	0.17	3,738	2.29
Medicare/ Workman's Comp	3,280	0.75	929	3.04	109	0.45	1,593	0.58	409	0.67	240	0.54	1,250	0.54	968	2.48	1,062	0.65
Medicaid	43,738	10.07	4,854	15.86	1,753	7.17	29,734	10.85	2,895	4.77	4,502	10.04	31,215	13.43	2,946	7.55	9,577	5.88
Other government payments ¹	92,343	21.25	10,795	35.27	2,474	10.12	68,489	25.00	6,737	11.11	3,848	8.58	53,040	22.81	12,261	31.44	27,042	16.59
No charge	12,992	2.99	1,556	5.08	1,558	6.37	9,604	3.51	114	0.19	160	0.36	12,255	5.27	6	0.02	731	0.45
Other	32,814	7.55	5,601	18.30	927	3.79	20,920	7.64	1,641	2.71	3,725	8.31	21,949	9.44	5,857	15.02	5,008	3.07
Unknown	134,015	30.84	2,691	8.79	10,878	44.51	78,087	28.50	29,953	49.40	12,406	27.67	71,908	30.93	10,787	27.66	51,320	31.49
All	434,481	100.00	30,609	100.00	24,440	100.00	273,955	100.00	60,634	100.00	44,843	100.00	232,501	100.00	38,997	100.00	162,983	100.00

¹ Programs other than Medicare and Medicaid.

Source: Treatment Episode Data Set (TEDS) 2000-2004. Office of Applied Studies, Substance Abuse and Mental Health Services Administration.

Table 3.7 shows the primary substance of abuse at the time of admission across sub-regions. We see that alcohol was the primary substance of abuse at the time of admission for 52% of admissions, followed by: marijuana (14%); cocaine (13%); heroin (7%); other opiates or synthetics (6%) which includes codeine, Dilaudid, morphine, Demerol, opium, oxycodone, and any other drug with morphine-like effects; methamphetamine or other stimulants (3%) which includes non-amphetamine stimulants; other substances (1.50%); tranquilizers (1%); sedatives (0.35%); and inhalants (0.12%).

For 50% or more of admissions, the primary substance of abuse at the time of admission was alcohol for all Appalachian counties, across all economic status levels.

The second most common primary substance of abuse was marijuana for distressed (14%), at-risk (16%), and transitional counties (14%), and cocaine for competitive (15%) and attainment counties (18%). Across the Appalachian sub-regions, alcohol is the most common primary substance of abuse at the time of admission, followed by cocaine in the southern sub-region (16%), other opiates and synthetics in the central sub-region (14%), and marijuana in the northern sub-region (13%).

Table 3.7: Sub-regional Differences of Admissions to Substance Abuse Treatment in the Appalachian Region, By Use as a Primary Reason for Admission

	All		Economic Level										Sub-Region					
			Distressed		At-Risk		Transitional		Competitive		Attainment		Northern		Central		Southern	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Use as Primary Reason for Admission																		
Alcohol	225,032	51.79	15,221	49.73	12,160	49.75	141,656	51.71	32,864	54.20	23,131	51.58	126,994	54.62	17,931	45.98	80,107	49.15
Cocaine/ Crack	56,447	12.99	1,481	4.84	1,826	7.47	36,083	13.17	9,200	15.17	7,857	17.52	27,903	12.00	1,702	4.36	26,842	16.47
Marijuana/ Hashish	62,649	14.42	4,785	15.63	4,081	16.70	39,593	14.45	7,913	13.05	6,277	14.00	31,372	13.49	5,525	14.17	25,752	15.80
Heroin	31,770	7.31	597	1.95	522	2.14	23,723	8.66	3,197	5.27	3,731	8.32	29,439	12.66	477	1.22	1,854	1.14
Other Opiates or Synthetics ¹	25,211	5.80	3,068	10.02	2,903	11.88	15,329	5.60	2,319	3.82	1,592	3.55	9,680	4.16	5,652	14.49	9,879	6.06
Methamphetamine/ Other stimulants ²	11,496	2.65	352	1.15	1,128	4.62	6,452	2.36	2,839	4.68	725	1.62	1,384	0.60	671	1.72	9,441	5.79
Tranquilizers ³	4,139	0.95	984	3.21	400	1.64	2,037	0.74	485	0.80	233	0.52	892	0.38	1,373	3.52	1,874	1.15
Sedatives ⁴	1,505	0.35	194	0.63	82	0.34	979	0.36	134	0.22	116	0.26	576	0.25	302	0.77	627	0.38
Inhalants ⁵	509	0.12	45	0.15	36	0.15	322	0.12	79	0.13	27	0.06	280	0.12	62	0.16	167	0.1
Other ⁶	6,519	1.50	464	1.52	82	0.34	3,435	1.25	1,451	2.39	1,087	2.42	879	0.38	538	1.38	5,102	3.13

¹ Includes codeine, Dilaudid, morphine, Demerol, opium, oxycodone, and any other drug with morphine-like effects.

² Includes amphetamines, MDMA, phenmetrazine, and other unspecified amines and related drugs.

³ Includes meprobamate and other non-benzodiazepine tranquilizers.

⁴ Includes chloral hydrate, ethchlorvynol, glutethimide, methaqualone, and other non-barbiturate sedative or hypnotics.

⁵ Includes chloroform, ether, gasoline, glue, nitrous oxide, paint thinner, etc.

⁶ Includes diphenylhydantoin/phenytoin, GHB/GBL, ketamine, etc.

Source: Treatment Episode Data Set (TEDS) 2000-2004. Office of Applied Studies, Substance Abuse and Mental Health Services Administration.

Table 3.8 presents data on “one major reason for admission to substance abuse programs” for Appalachia by economic level and sub-region. TEDS reports different types of substances as the primary, secondary, or tertiary substance of abuse at the time of admission. If the substance was mentioned as either the primary, secondary, or tertiary substance of abuse at the time of admission, this substance was then regarded as one major reason for admission into substance abuse treatment. We see that, overall, the substances included as one major reason for admission are alcohol (68%), followed by: marijuana (36%); cocaine (26%); other opiates or synthetics (10%) which includes codeine, Dilaudid, morphine, Demerol, opium, oxycodone, and any other drug with morphine-like effects; heroin (9%); methamphetamine or other stimulants (5%) which includes non-amphetamine stimulants; tranquilizers (4%); other substances (3%); sedatives (1%); and inhalants (1%).

Alcohol was most commonly one major reason for admission to substance abuse programs in Appalachia, regardless of county economic status. The second substance most commonly cited as one major reason for admission was marijuana for all counties, with the exception of attainment counties where cocaine was second to alcohol as one major reason for admission. Similarly, looking across sub-regions, alcohol was one major reason for admission for almost three-quarters of admissions in the northern sub-region, followed by 64% of admissions in the southern sub-region, and 59% of admissions in the central sub-region.

Table 3.8: Sub-regional Differences of Admissions to Substance Abuse Treatment in the Appalachian Region, By One Major Reason for Admission

	All		Economic Level										Sub-Region					
			Distressed		At-Risk		Transitional		Competitive		Attainment		Northern		Central		Southern	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Use as One Major Reason for Admission																		
Alcohol	296,266	68.19	19,298	63.05	16,192	66.25	188,032	68.64	42,734	70.48	30,010	66.92	168,726	72.57	23,186	59.46	104,354	64.03
Cocaine/ Crack	112,250	25.84	3,501	11.44	3,947	16.15	72,474	26.45	17,668	29.14	14,660	32.69	63,504	27.31	4,354	11.16	44,392	27.24
Marijuana/ Hashish	155,934	35.89	10,516	34.36	9,316	38.12	102,069	37.26	20,492	33.80	13,541	30.20	88,790	38.19	12,776	32.76	54,368	33.36
Heroin	39,309	9.05	862	2.82	729	2.98	28,921	10.56	4,144	6.83	4,653	10.38	35,740	15.37	760	1.95	2,809	1.72
Other Opiates or Synthetics ¹	43,412	9.99	4,923	16.08	4,478	18.32	27,359	9.99	3,994	6.59	2,658	5.93	19,192	8.25	8,853	22.70	15,367	9.43
Methamphetamine/ Other stimulants ²	20,631	4.75	791	2.58	1,830	7.49	12,426	4.54	4,131	6.81	1,453	3.24	4,335	1.86	1,458	3.74	14,838	9.10
Tranquilizers ³	18,186	4.19	3,327	10.87	2,366	9.68	9,445	3.45	1,975	3.26	1,073	2.39	5,032	2.16	5,694	14.60	7,460	4.58
Sedatives ⁴	4,801	1.1	448	1.46	293	1.2	3263	1.19	535	0.88	262	0.58	2,879	1.24	603	1.55	1,319	0.81
Inhalants ⁵	3,833	0.88	316	1.03	247	1.01	2617	0.96	481	0.79	172	0.38	2,584	1.11	389	1	860	0.53
Other ⁶	11,250	2.59	848	2.77	201	0.82	6,500	2.37	2,421	3.99	1,280	2.85	2,976	1.28	881	2.26	7,393	4.54

¹ Includes codeine, Dilaudid, morphine, Demerol, opium, oxycodone, and any other drug with morphine-like effects.

² Includes amphetamines, MDMA, phenmetrazine, and other unspecified amines and related drugs.

³ Includes meprobamate and other non-benzodiazepine tranquilizers.

⁴ Includes chloral hydrate, ethchlorvynol, glutethimide, methaqualone, and other non-barbiturate sedative or hypnotics.

⁵ Includes chloroform, ether, gasoline, glue, nitrous oxide, paint thinner, etc.

⁶ Includes diphenylhydantoin/phenytoin, GHB/GBL, ketamine, etc.

Source: Treatment Episode Data Set (TEDS) 2000-2004. Office of Applied Studies, Substance Abuse and Mental Health Services Administration.

Table 3.9 shows sub-regional differences for psychological problems or mood disorder upon admission. First, we explore whether there is a psychological problem present in addition to an alcohol or drug problem upon admission. Approximately 15% of admissions had a psychological problem present upon admission. In distressed counties, we see that 36% of admissions had a psychological problem, followed by 17% of admissions in attainment counties, 16% in at-risk counties, 13% in competitive counties, and 12% in transitional counties. In the central sub-region of Appalachia, more than 34% of admissions had a psychological problem, followed by northern and southern sub-regions with approximately 13% of admissions.

The mood disorder variable was derived from either the third edition revised or the fourth edition of the *American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders*. Our findings show whether a mood disorder was present upon admission in addition to an alcohol or drug problem. However, due to mutually-exclusive reporting of different types of drug abuse and dependence, the absence of mood disorder upon admission in the data record may not necessarily mean the actual absence of mood disorder. Therefore, these should be seen as conservative estimates. Overall, approximately 62% of admissions had a mood disorder (substance-related or non-substance-related) present upon admission. More than 70% of admissions had a mood disorder in transition counties, followed by 59% in competitive counties, 47% in attainment counties, 53% in at-risk counties, and 35% in distressed counties. In the central sub-region of Appalachia, almost 90% of admissions had a mood disorder.

Table 3.9: Sub-regional Differences of Admissions to Substance Abuse Treatment in the Appalachian Region, By Psychological Problem and Mood Disorder Upon Admission

	All		Economic Level										Sub-Region					
			Distressed		At-Risk		Transitional		Competitive		Attainment		Northern		Central		Southern	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Psychological Problem																		
Yes	64,018	14.73	11,072	36.17	3,913	16.01	33,573	12.25	7,651	12.62	7,809	17.41	29,503	12.69	13,309	34.13	21,206	13.01
No	190,377	43.82	14,637	47.82	9,980	40.83	101,682	37.12	42,585	70.23	21,493	47.93	54,986	23.65	16,687	42.79	118,704	72.83
Unknown	180,086	41.45	4,900	16.01	10,547	43.15	138,700	50.63	10,398	17.15	15,541	34.66	148,012	63.66	9,001	23.08	23,073	14.16
All	434,481	100.00	30,609	100.00	24,440	100.00	273,955	100.00	60,634	100.00	44,843	100.00	232,501	100.00	38,997	100.00	162,983	100.00
Mood Disorder																		
Yes	273,061	62.85	10,998	35.93	13,046	53.38	192,236	70.17	35,715	58.90	21,066	46.98	208,662	89.75	14,517	37.23	49,882	30.61
No	161,420	37.15	19,611	64.07	11,394	46.62	81,719	29.83	24,919	41.10	23,777	53.02	23,839	10.25	24,480	62.77	113,101	69.39
All	434,481	100.00	30,609	100.00	24,440	100.00	273,955	100.00	60,634	100.00	44,843	100.00	232,501	100.00	38,997	100.00	162,983	100.00

Note: Mood disorders represented here are substance-related and non-substance-related.

Source: Treatment Episode Data Set (TEDS) 2000-2004. Office of Applied Studies, Substance Abuse and Mental Health Services Administration.

3.4.2. Figures

Trends in Primary Substance of Abuse in Appalachia and the United States

This section provides TEDS data on the primary substance of abuse at the time of admission to treatment between 2000 and 2004, both in Appalachia and nationally. We provide results for all TEDS treatment admissions aged 12 and older for 11 substances: alcohol; marijuana/hashish; cocaine; heroin; other opiates/synthetics; phencyclidine (PCP); hallucinogens; amphetamines; tranquilizers; sedatives; and inhalants. In **Figure 3.1** and **Figure 3.2** we illustrate the trends of primary substance of abuse at the time of admission for the years 2000 through 2004 in the U.S. and the Appalachian region, respectively. **Figures 3.3 through 3.8** illustrate trends for the primary abuse of alcohol, marijuana/hashish, cocaine, heroin, other opiates/synthetics, and methamphetamine.¹¹ Key findings include the following:.

Alcohol as a primary substance accounted for 45% of all TEDS admissions in the Appalachian region in 2004, down from more than 56% in 2000. Between 2000 and 2004, the percentage of total admissions with alcohol as the primary substance of abuse also declined in United States as a whole, accounting for almost 26% of all TEDS admissions in 2000, declining to 22% of admissions in 2004. **Figure 3.3** illustrates this trend.

The proportion of admissions for primary *marijuana/hashish* abuse as the primary substance increased steadily from 14.2% of all TEDS admissions in the U.S. in 2000 to 15.5% of admissions in 2004. In Appalachia, admissions increased from 15.1% of all TEDS admissions in 2000 to 16.28% of admissions in 2002, and then declined to 14.24% of admissions in 2004. **Figure 3.4** illustrates this trend.

Admissions for primary abuse of *cocaine* in the U.S. declined from 13.5% of all admissions in 2000 to 12.9% in 2001 and 2002, and then increased to 13.8% by 2004. In Appalachia, admissions for primary cocaine abuse followed a similar trend, declining from 12.95% in 2000 to 11.78% in 2001, and then increasing to 12.45% in 2002. Admissions for primary cocaine abuse sharply increased between 2002 and 2004 to 13.66%. **Figure 3.5** illustrates this trend.

TEDS admissions for primary *heroin* abuse in the U.S. hovered around 15% of all admissions between 2000 and 2002, with a slight decrease to 14.1% in 2004. In Appalachia, admissions have increased steadily from 4.39% in 2000 to 10.19% in 2004. **Figure 3.6** illustrates this trend.

Admissions for primary abuse of *other opiates and synthetics*¹² more than doubled between 2000 and 2004 from 1.5% to 3.2% of all admissions in the U.S. In Appalachia, the proportion of admissions for primary abuse of other opiates and synthetics is considerably higher than in the U.S. between 2000 and 2004, and also more than doubled from 3.49% in 2000 to 7.54% in 2004. **Figure 3.7** illustrates this trend.

¹¹ Charts depicting the trends over the 2000 – 2004 period are not included below because admissions for primary abuse of PCP, hallucinogens, tranquilizers, sedatives, and inhalants were relatively stable.

¹² These drugs include codeine, hydrocodone, hydromorphone, meperidine, morphine, opium, oxycodone, pentazocine, propoxyphene, tramadol, and any other drug with morphine-like effects. These drugs exclude methadone.

The proportion of admissions for primary abuse of *methamphetamine* increased in both the U.S. and Appalachia between 2000 and 2004. In the U.S., primary methamphetamine abuse accounted for 3.8% of all admissions in 2000, and then rose steadily to almost 7% of admissions in 2004. In Appalachia, the proportion of admissions rose from 1.3% in 2000 to 4.25% in 2004. **Figure 3.8** illustrates this trend.

Phencyclidine (PCP) as a primary substance of abuse accounted for 0.2% of all admissions in the U.S. between 2000 and 2004. The proportion of admissions for PCP abuse in Appalachia has also remained fairly stable over the 2000 to 2004 time period at 0.02 to 0.03%.

Admissions for primary abuse of *hallucinogens* remained fairly stable in the U.S. over this time period, accounting for less than 0.2% of all TEDS admissions between 2000 and 2002, and 0.1% in 2003 and 2004. In Appalachia, admissions were approximately 0.2% in 2000 and 2001, declined to 0.15% in 2002, and then rose slightly to 0.18% in 2004.

Admissions for primary abuse of *tranquilizers* remained fairly consistent over the time period, accounting for 0.4% to 0.5% of all US admissions between 2000 and 2004. In Appalachia, primary abuse of tranquilizers accounted for 0.95% of all admissions in 2004, up from 0.88% of admissions in 2000.

TEDS admissions for primary abuse of *sedatives* remained at 0.2% between 2000 and 2004 in the U.S. In Appalachia, the proportion of admissions hovered around 0.39% in 2004, up from 0.33% in 2000.

The proportion of TEDS admissions for primary abuse of *inhalants* was approximately 0.1% between 2000 and 2004 in the U.S., and the Appalachian region.

Figure 3.1 Primary Substance of Abuse at Admission, Aged 12 and Older, in the U.S., TEDS 2000-2004

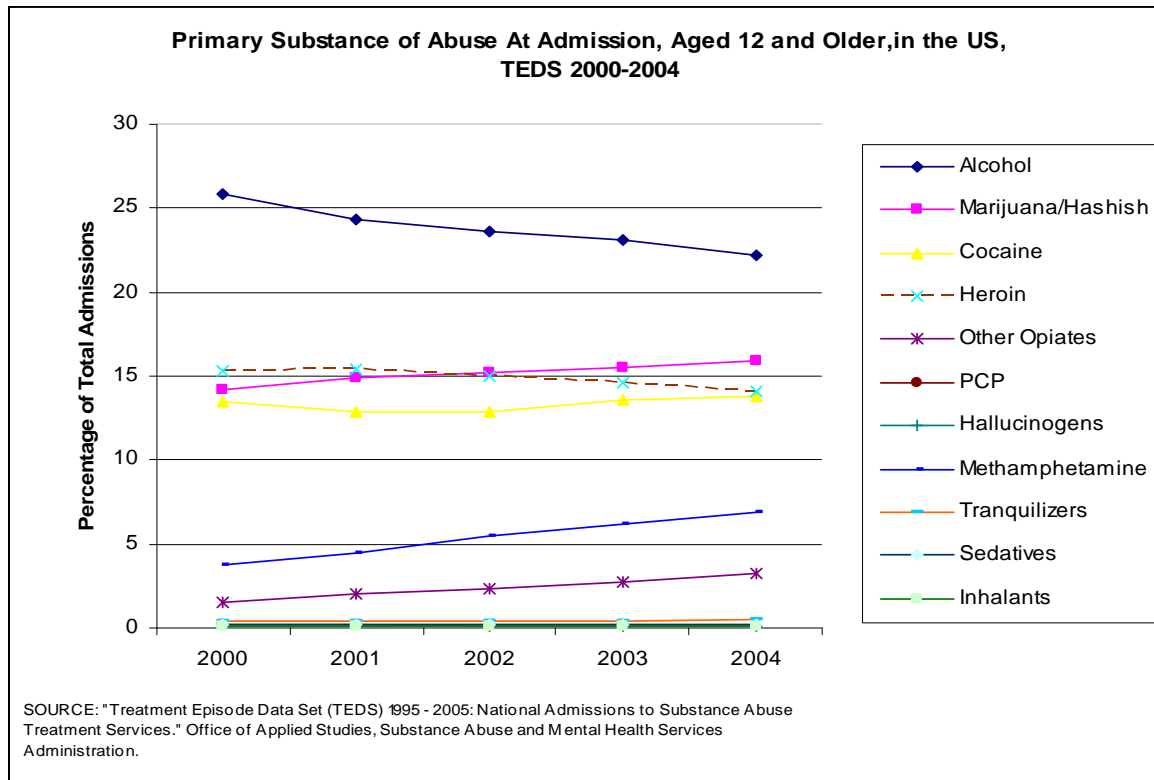


Figure 3.2 Primary Substance of Abuse at Admission, Aged 12 and Older, in the Appalachian Region, TEDS 2000-2004

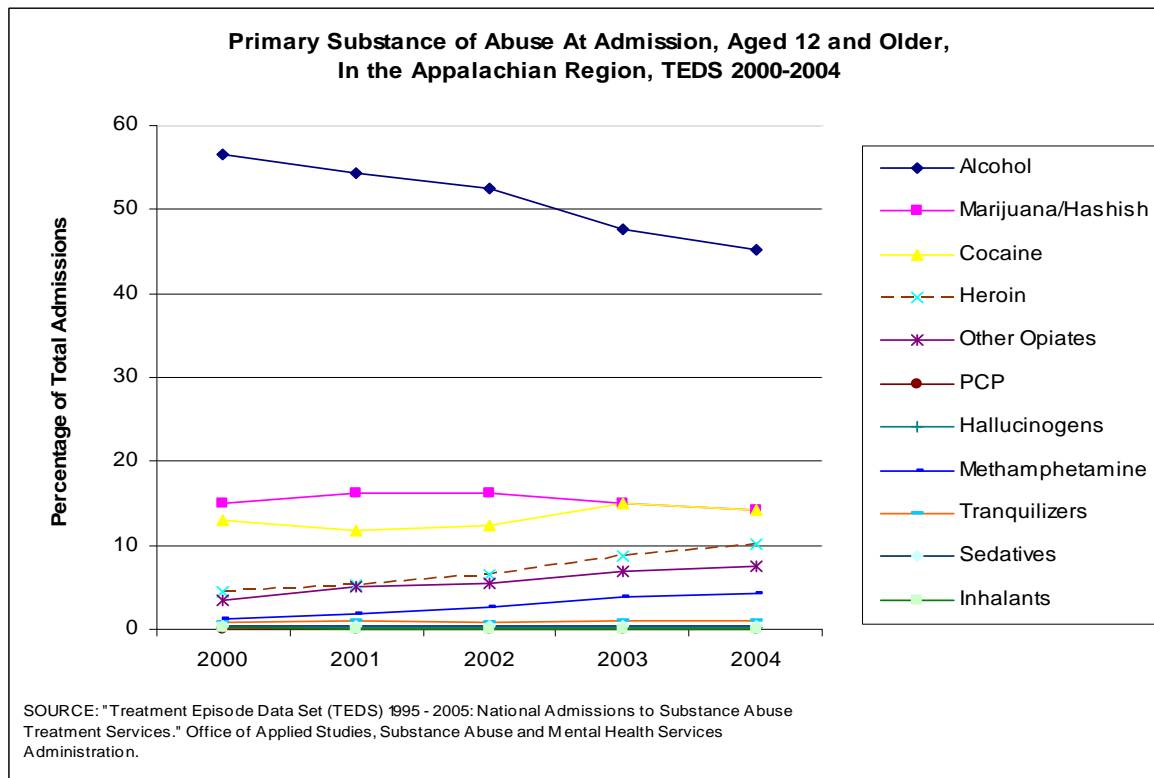


Figure 3.3 Admissions Aged 12 and Over for Primary Alcohol Abuse, in the U.S. and Appalachia, TEDS 2000 – 2004

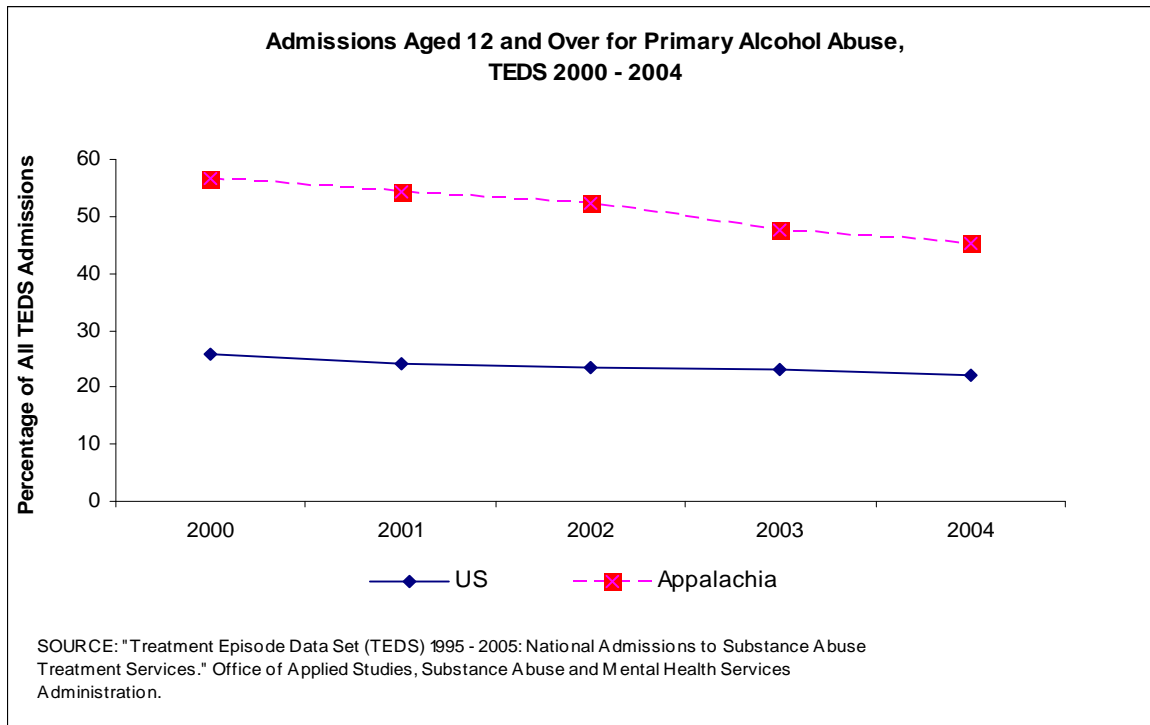


Figure 3.4 Admissions Aged 12 and Over for Primary Marijuana/Hashish Abuse, in the U.S. and Appalachia, TEDS 2000 – 2004

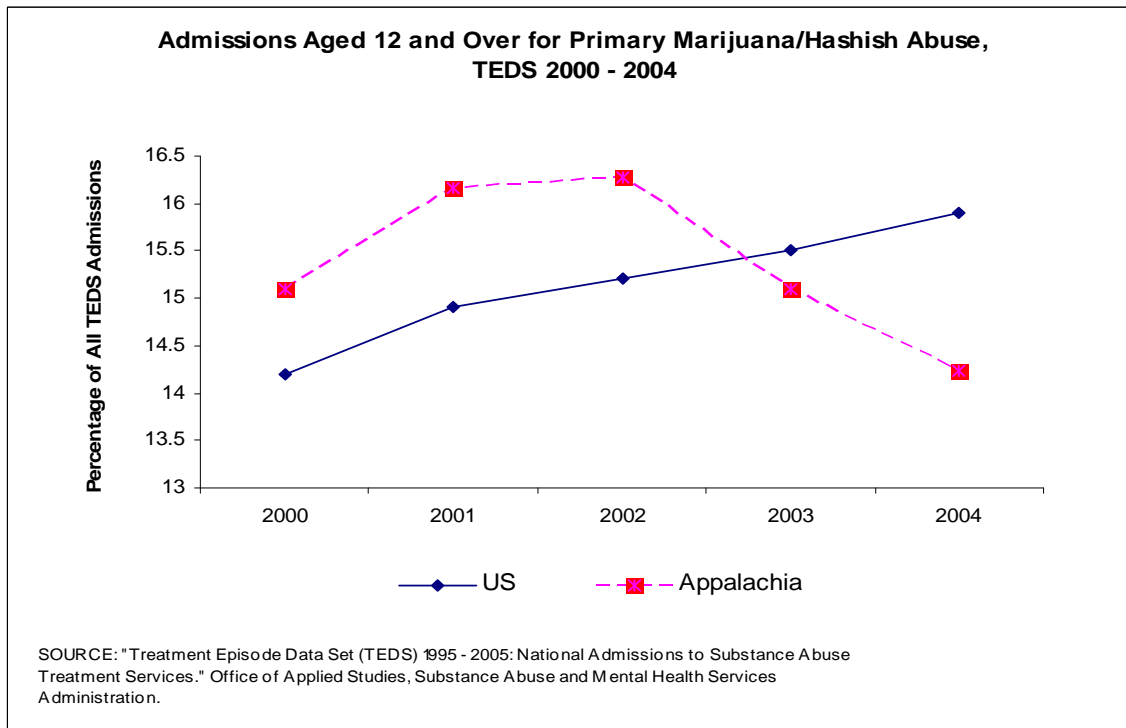


Figure 3.5 Admissions Aged 12 and Over for Primary Cocaine Abuse, in the U.S. and Appalachia, TEDS 2000 – 2004

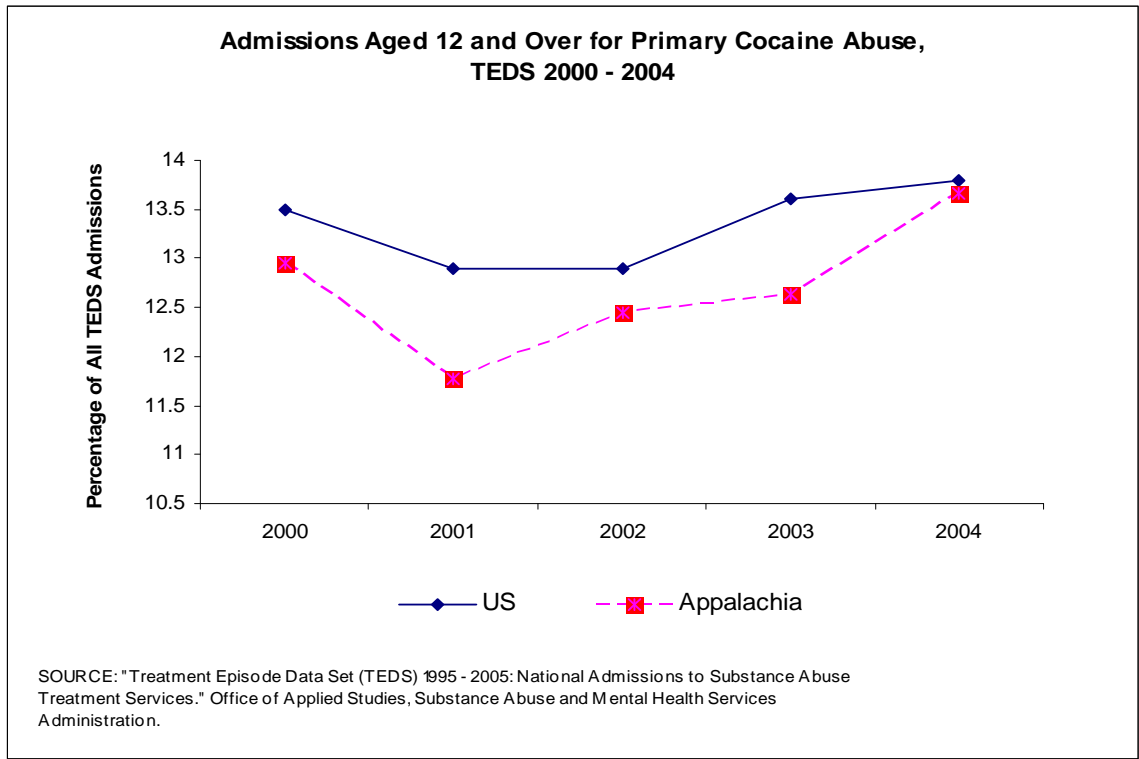


Figure 3.6 Admissions Aged 12 and Over for Primary Heroin Abuse, in the U.S. and Appalachia, TEDS 2000 – 2004

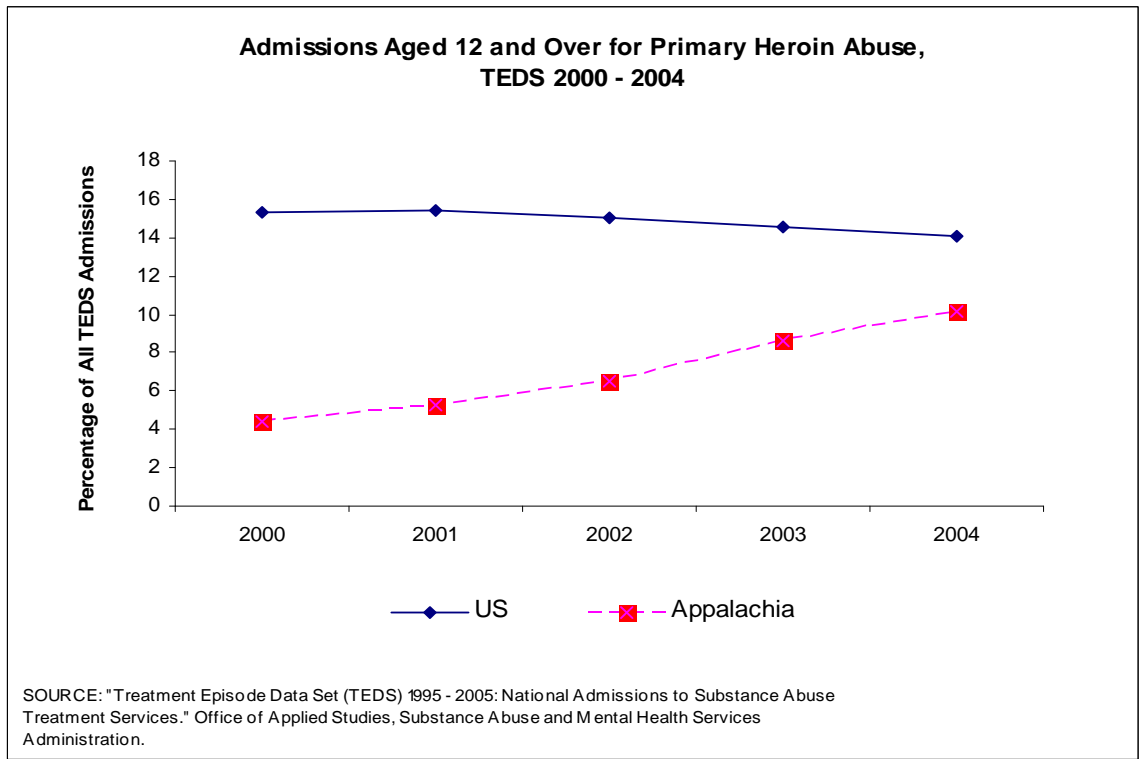


Figure 3.7 Admissions Aged 12 and Over for Primary Abuse of Other Opiates/Synthetics, in the U.S. and Appalachia, TEDS 2000 – 2004

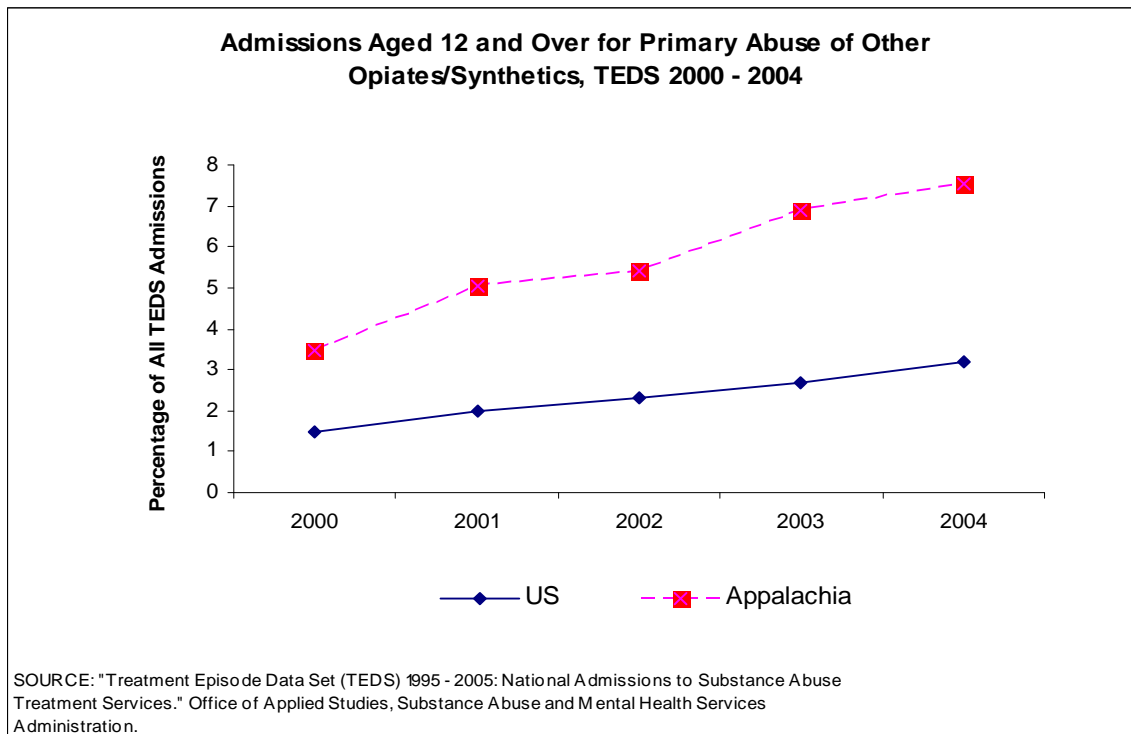
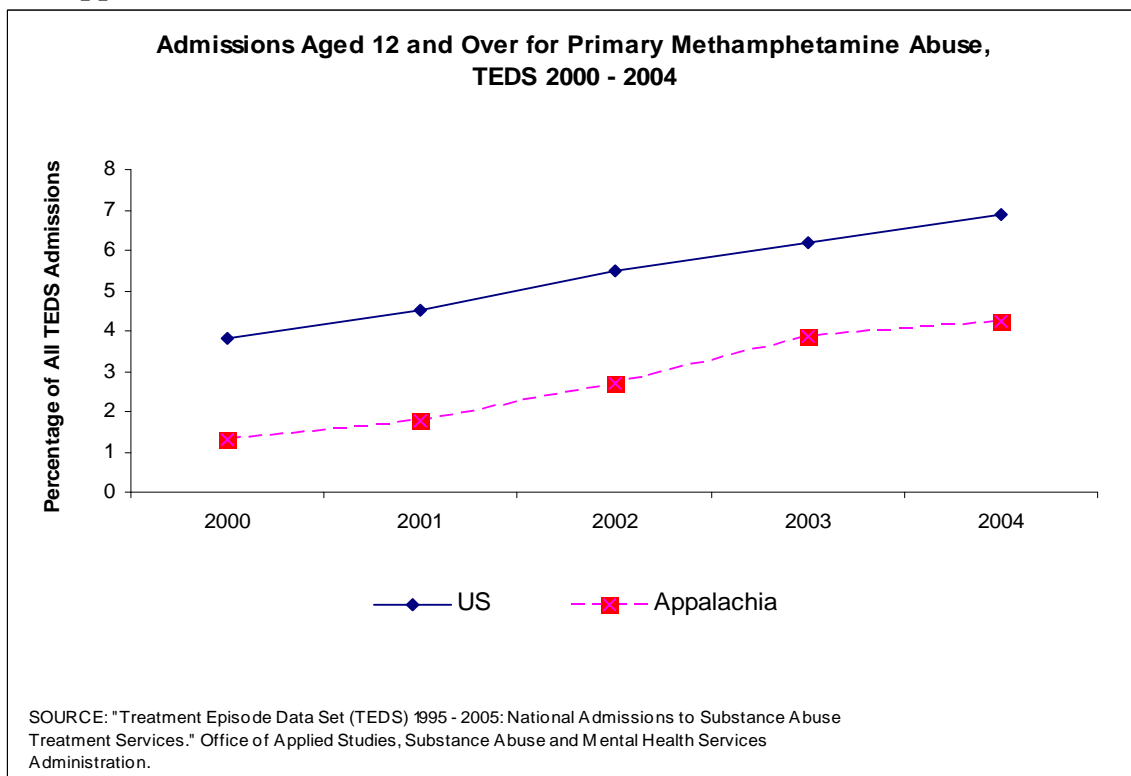


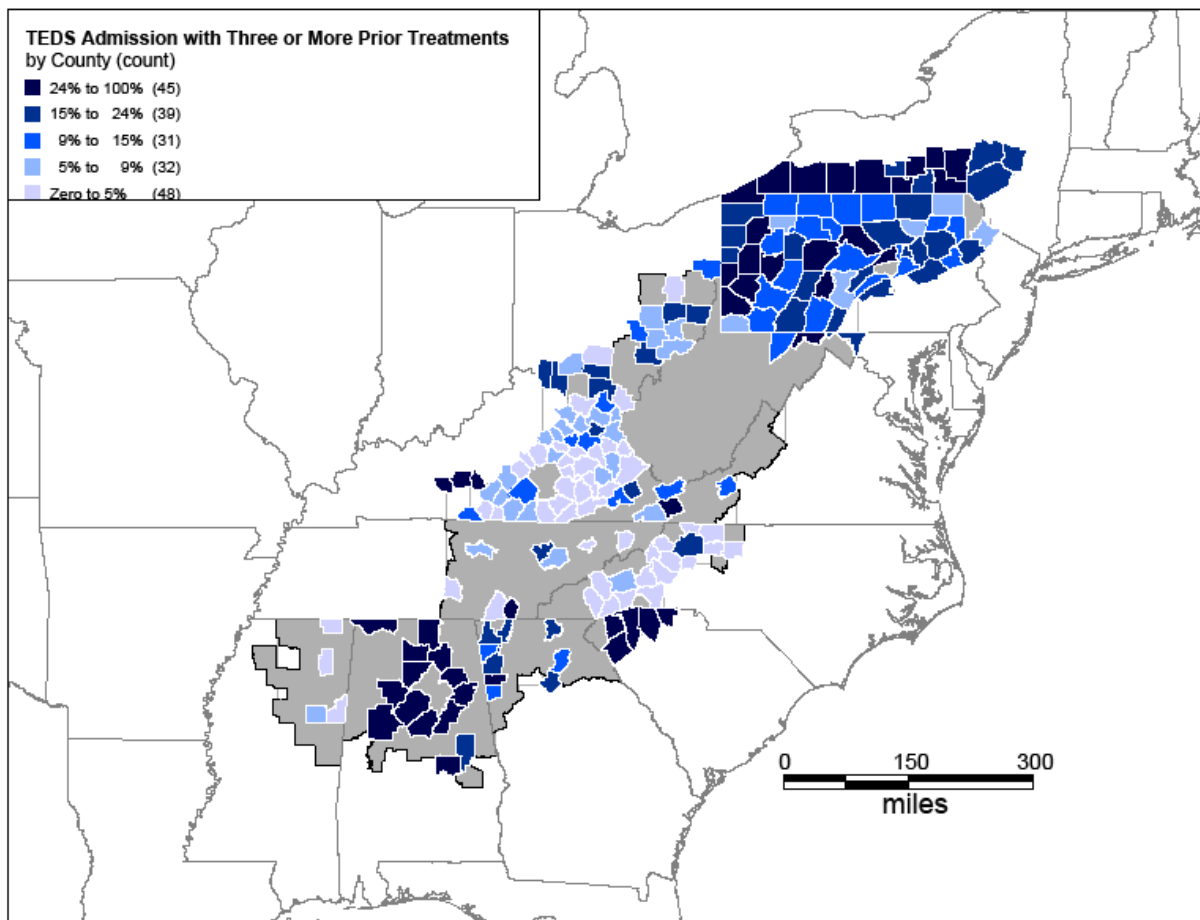
Figure 3.8 Admissions Aged 12 and Over for Primary Methamphetamine Abuse, in the U.S. and Appalachia, TEDS 2000 – 2004



3.4.3. Maps

Map 3.1, below, shows the geographical distribution of TEDS admissions with three or more prior treatment episodes for substance abuse. Counties with higher proportions of admissions with three or more treatments are concentrated in northern Appalachia, from the southern border of New York to Maryland. High levels of three or more admissions are also seen in southern Appalachia, particularly in South Carolina and Alabama. There are relatively few admissions with three or more prior treatments in central Appalachia.

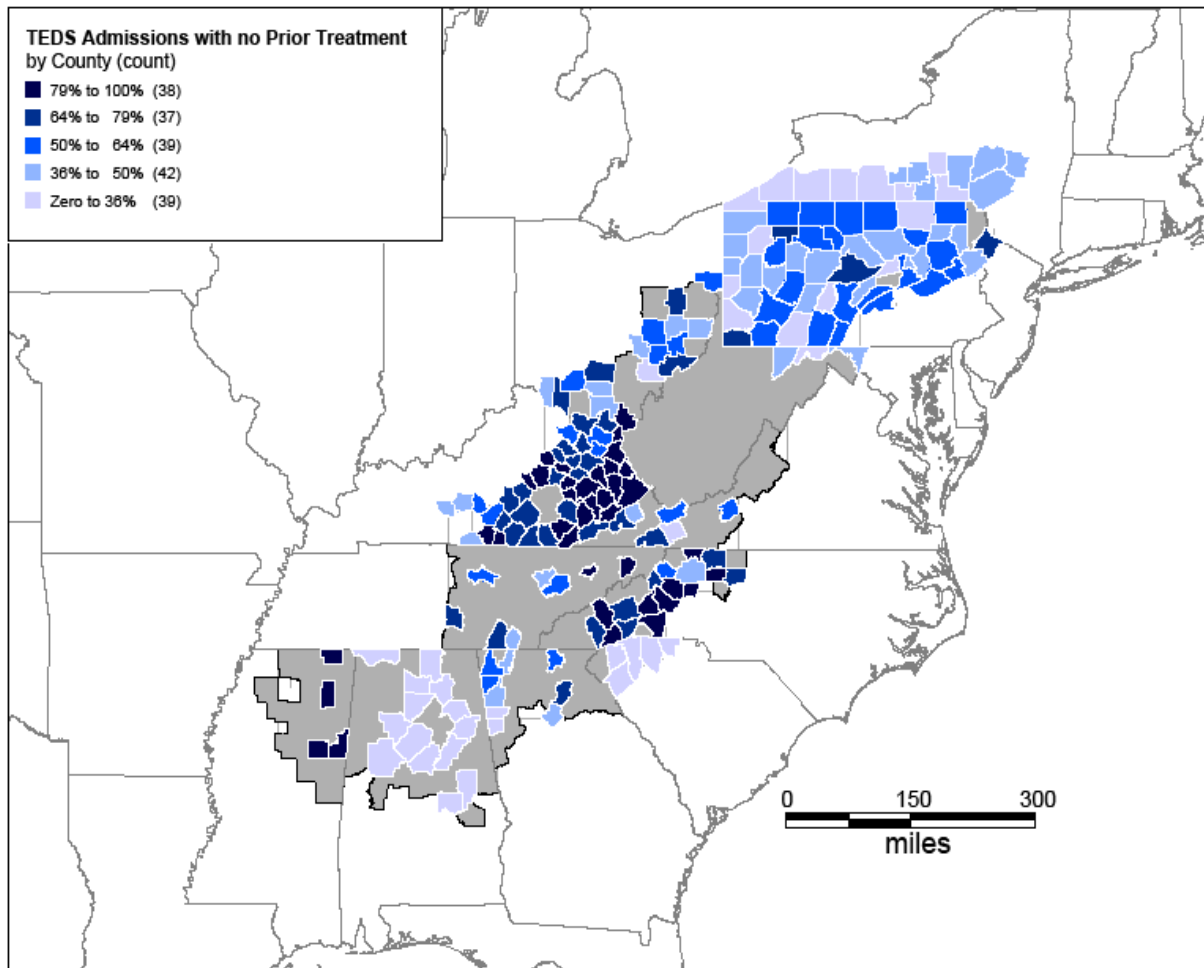
Map 3.1. Percentage of Persons with Three or More Prior Treatment Episodes



SOURCE: "Treatment Episode Data Set (TEDS) 2000 - 2004: National Admissions to Substance Abuse Treatment Services." Office of Applied Studies, Substance Abuse and Mental Health Services Administration.

Map 3.2, below, presents the distribution of admissions to substance abuse treatment in the Appalachian region with no prior treatment episodes. In contrast to Map 3.1, the highest distribution of new admissions is in central Appalachia, with the greatest concentration of admissions with no prior treatment in eastern Kentucky. Counties reporting TEDS data in western North Carolina and in Mississippi also show high levels of admissions with no prior treatment, while counties in Alabama and South Carolina show relatively lower levels of admissions with no prior treatment.

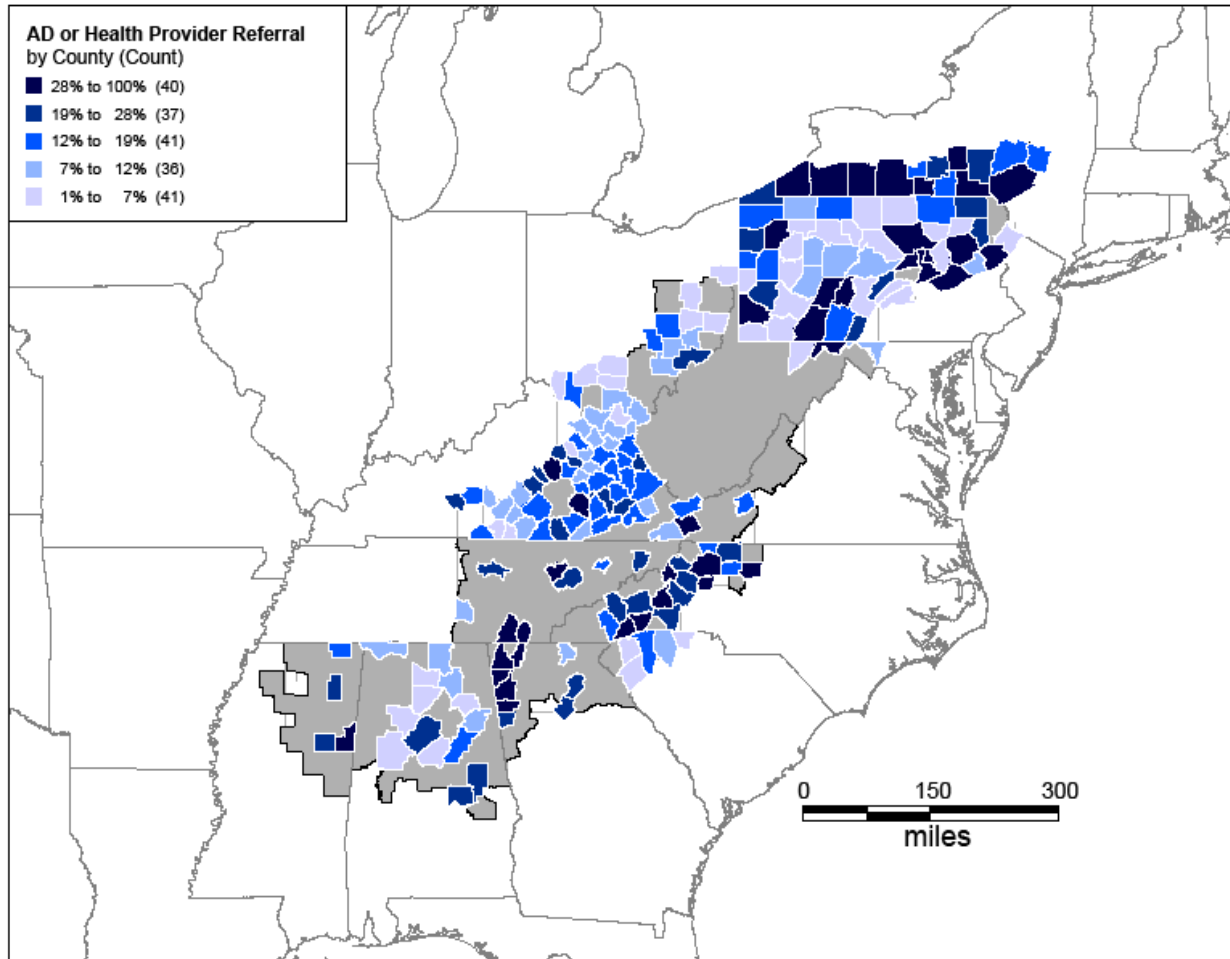
Map 3.2. Percentage of Persons with No Prior Treatment Episodes



SOURCE: "Treatment Episode Data Set (TEDS) 2000 - 2004: National Admissions to Substance Abuse Treatment Services." Office of Applied Studies, Substance Abuse and Mental Health Services Administration.

Map 3.3, below, shows patterns of referrals to substance abuse treatment. Northern Appalachia has the greatest concentration of referrals to treatment from health providers or substance abuse specialists, especially along the southern New York border and in central Pennsylvania. There are relatively fewer referrals from the central sub-region. Within the southern sub-region, there are relatively high referral levels among counties reporting TEDS data in Georgia, North Carolina and Mississippi.

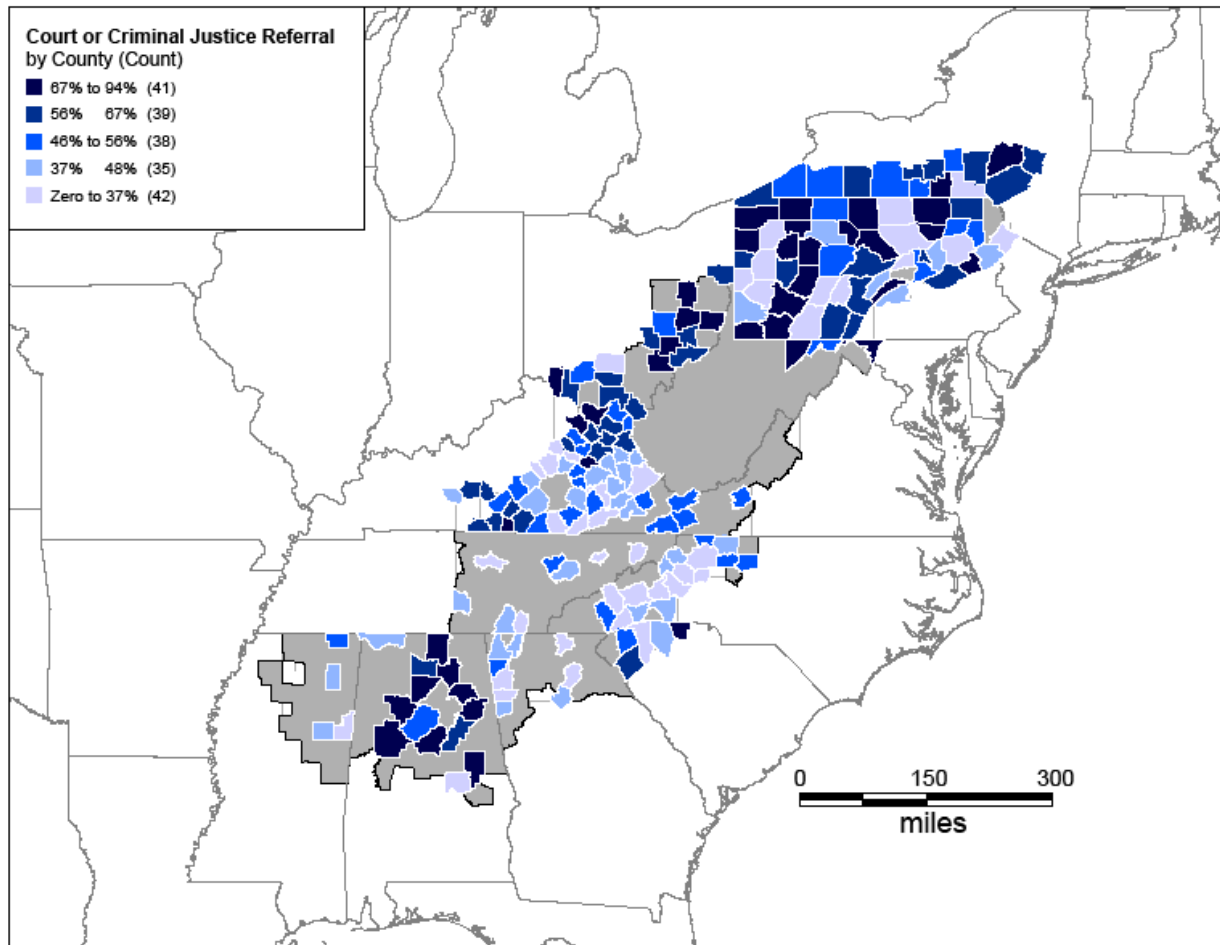
Map 3.3. Percentage of Persons Who Had an Alcohol and Drug or Health Provider Referral



SOURCE: "Treatment Episode Data Set (TEDS) 2000 - 2004: National Admissions to Substance Abuse Treatment Services." Office of Applied Studies, Substance Abuse and Mental Health Services Administration.

Map 3.4, below, shows the geographical patterns of criminal justice referrals to substance abuse treatment, and, for the most part, the distribution is not unlike the distribution presented in **Map 3.3**. The majority of criminal justice referrals to treatment are in the northern sub-region, especially in sections of Ohio and Pennsylvania. There is a small pocket of criminal justice referrals in the central sub-region, especially in eastern Kentucky. Finally, northern and central Alabama counties also show a number of counties with high levels of criminal justice referrals to treatment.

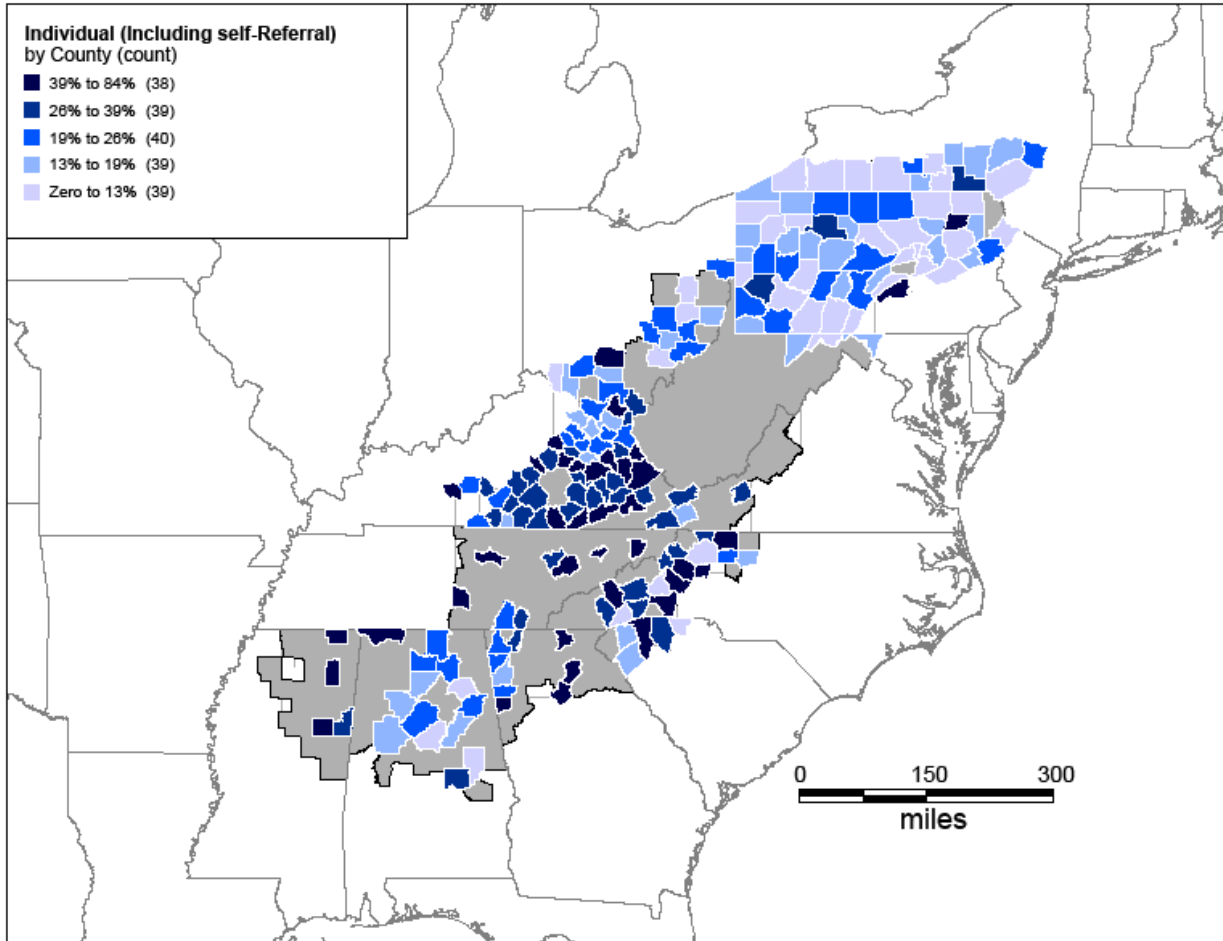
Map 3.4. Percentage of Persons Who Had a Court or Criminal Justice Referral



SOURCE: "Treatment Episode Data Set (TEDS) 2000 - 2004: National Admissions to Substance Abuse Treatment Services." Office of Applied Studies, Substance Abuse and Mental Health Services Administration.

Map 3.5, below, shows the distribution of individual and self-referrals to substance abuse treatment. The greatest density of individual referrals within Appalachia is found in the central sub-region, centering around eastern Kentucky and including counties in Tennessee. Counties reporting TEDS data in the southern sub-region, especially in the Carolinas and Mississippi, also show high levels of individual referrals. There is a lower concentration of individual referrals in the northern sub-region.

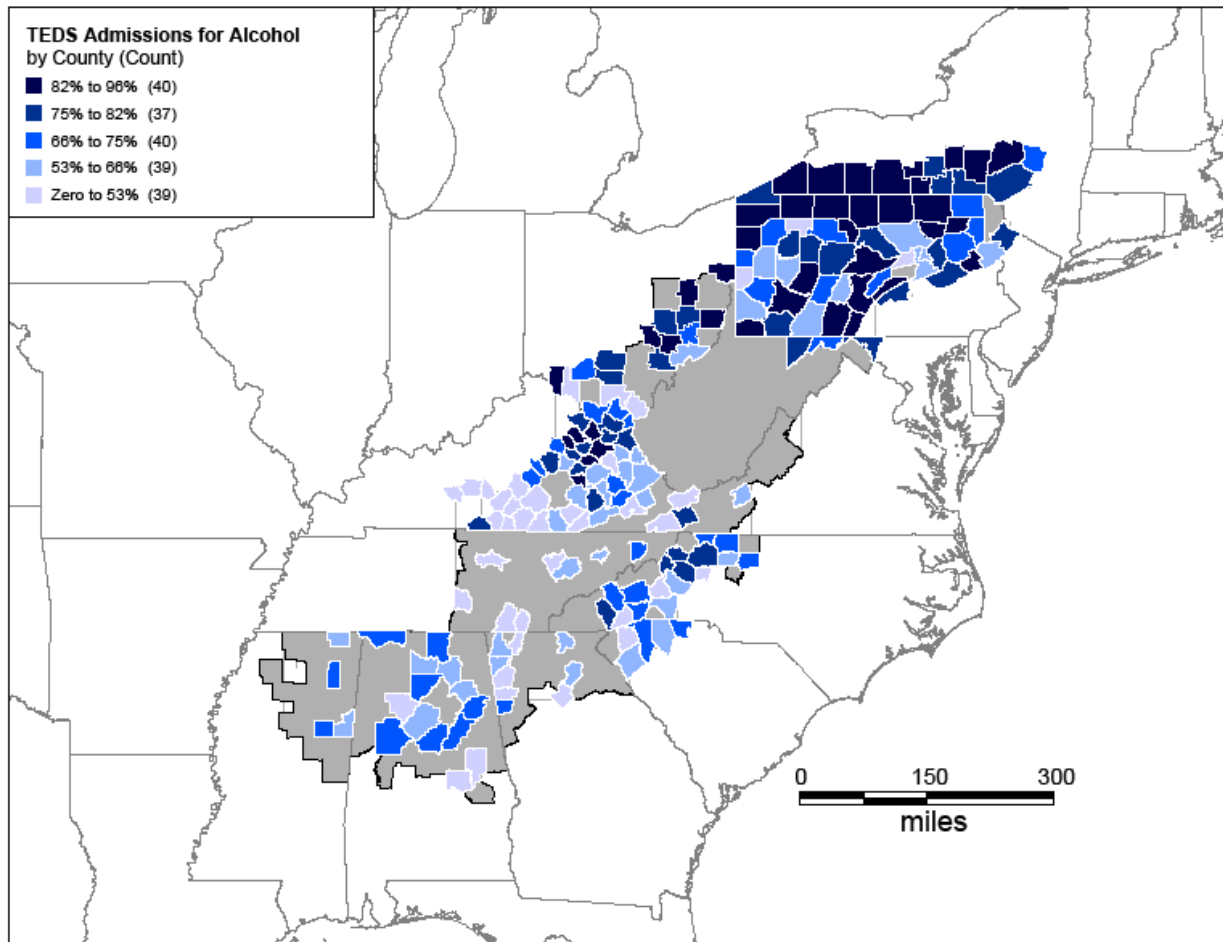
Map 3.5. Percentage of Persons Who Had an Individual Referral (Including Self-Referral)



SOURCE: "Treatment Episode Data Set (TEDS) 2000 - 2004: National Admissions to Substance Abuse Treatment Services." Office of Applied Studies, Substance Abuse and Mental Health Services Administration.

Map 3.6, below, shows the geographical distribution of substance abuse admissions for alcohol use. The greatest density of admissions for alcohol use is in the northern sub-region, especially along the southern New York border and into northern Pennsylvania. There are small pockets in the central sub-region.

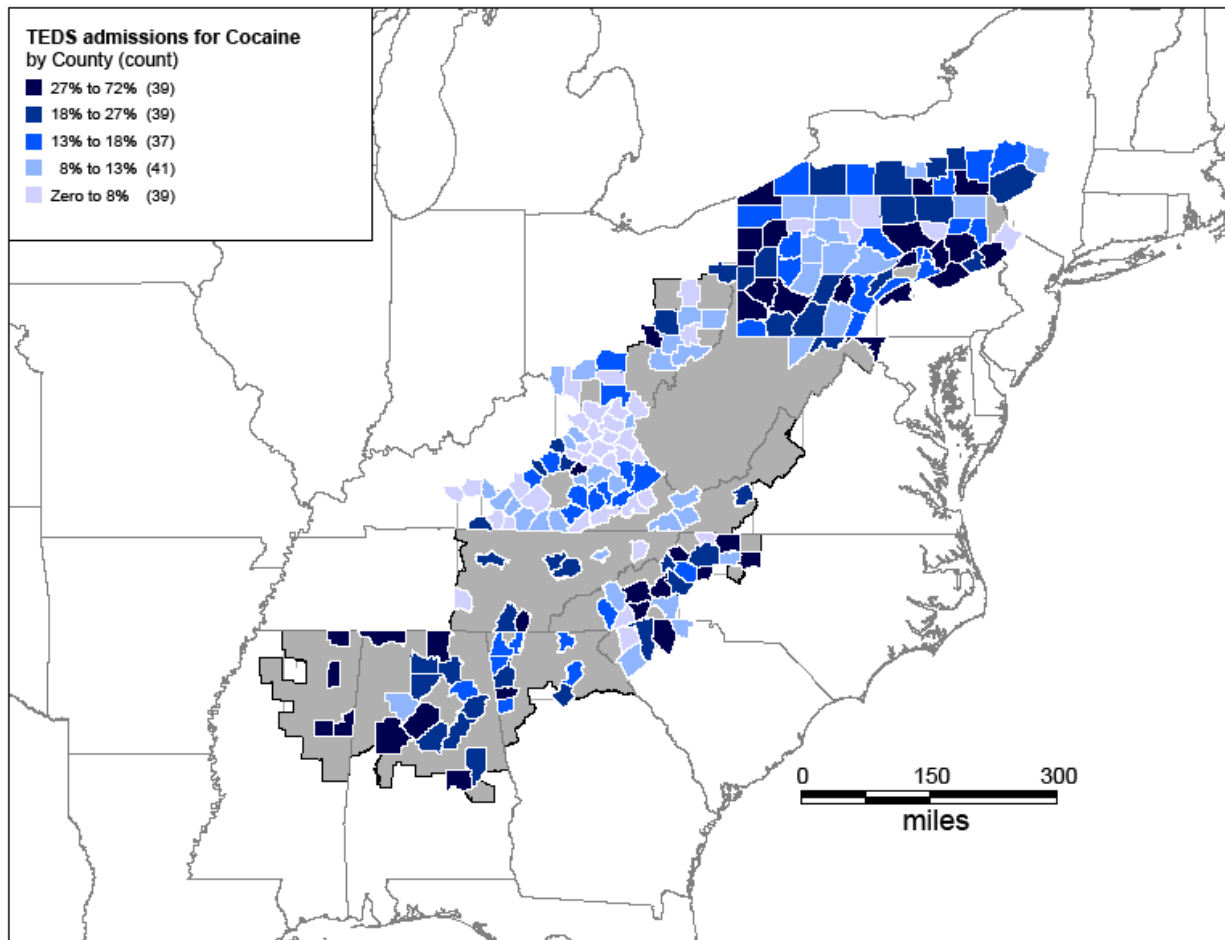
Map 3.6. Percentage of Persons Admitted to Treatment for Alcohol Use



SOURCE: "Treatment Episode Data Set (TEDS) 2000 - 2004: National Admissions to Substance Abuse Treatment Services." Office of Applied Studies, Substance Abuse and Mental Health Services Administration.

Map 3.7, below, presents the geographical distribution of substance abuse treatment admissions for cocaine use. Unlike **Map 3.6**, there are several pockets of high levels of admission for cocaine use in the southern sub-region, especially in Mississippi, Alabama, and the Carolinas. There are very few admissions for cocaine use in the central sub-region. In the northern sub-region, there are many pockets of high levels of admissions for cocaine use, especially in western and central Pennsylvania.

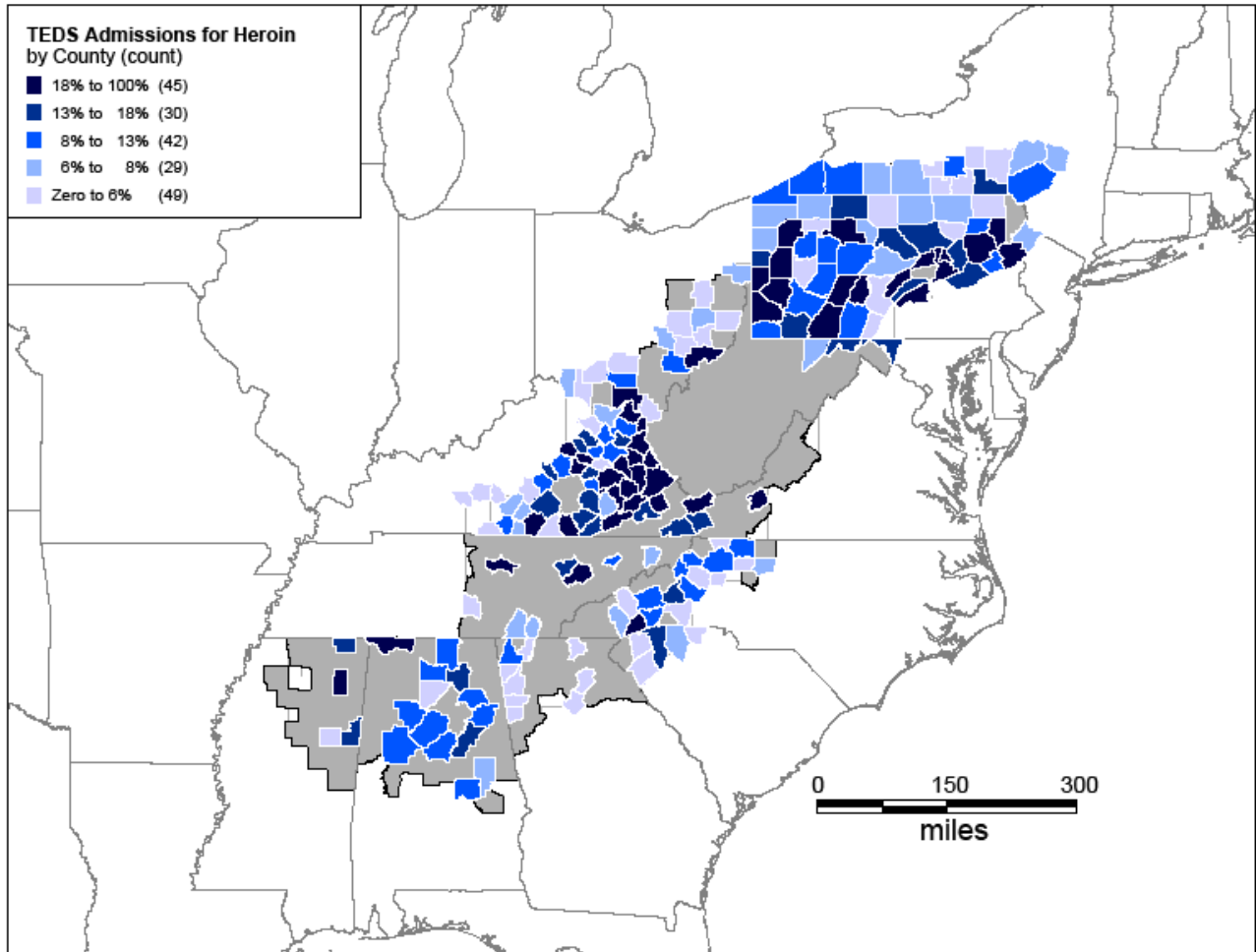
Map 3.7. Percentage of Persons Admitted to Treatment for Cocaine Use



SOURCE: "Treatment Episode Data Set (TEDS) 2000 - 2004: National Admissions to Substance Abuse Treatment Services." Office of Applied Studies, Substance Abuse and Mental Health Services Administration.

Map 3.8, below, depicts the geographical distribution of substance abuse admissions for heroin use. There are large areas of admission for heroin use in the northern sub-region in western and eastern Pennsylvania, as well as in the central region, in eastern Kentucky.

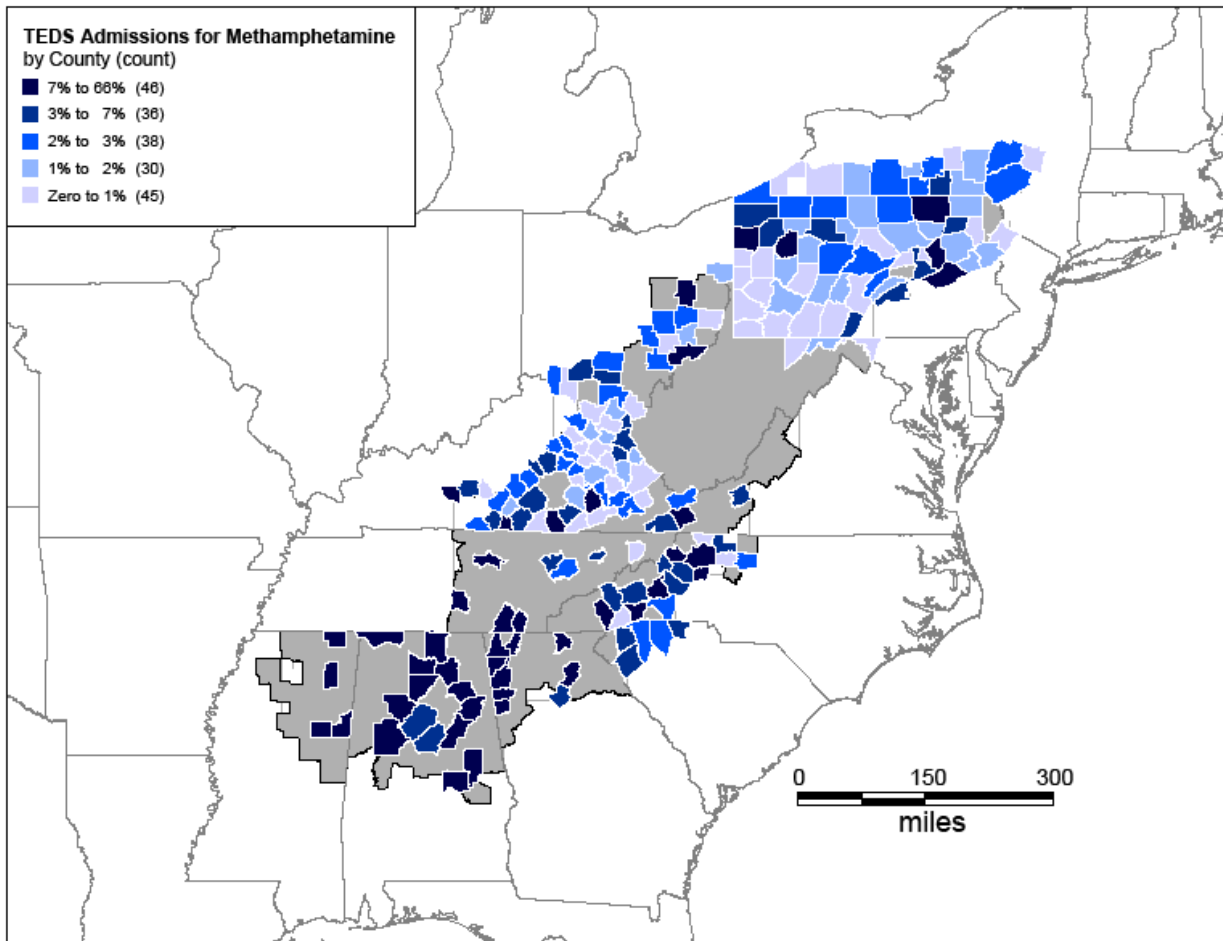
Map 3.8. Percentage of Persons Admitted to Treatment for Heroin Use



SOURCE: "Treatment Episode Data Set (TEDS) 2000 - 2004: National Admissions to Substance Abuse Treatment Services." Office of Applied Studies, Substance Abuse and Mental Health Services Administration.

Map 3.9, below, presents the geographical distribution of substance abuse admissions for methamphetamine use. Most admissions for methamphetamine use are clustered in the southern sub-region in Mississippi, Alabama, and Georgia. There are lower levels of admissions in the central region, as well as in the northern region, especially in western Pennsylvania.

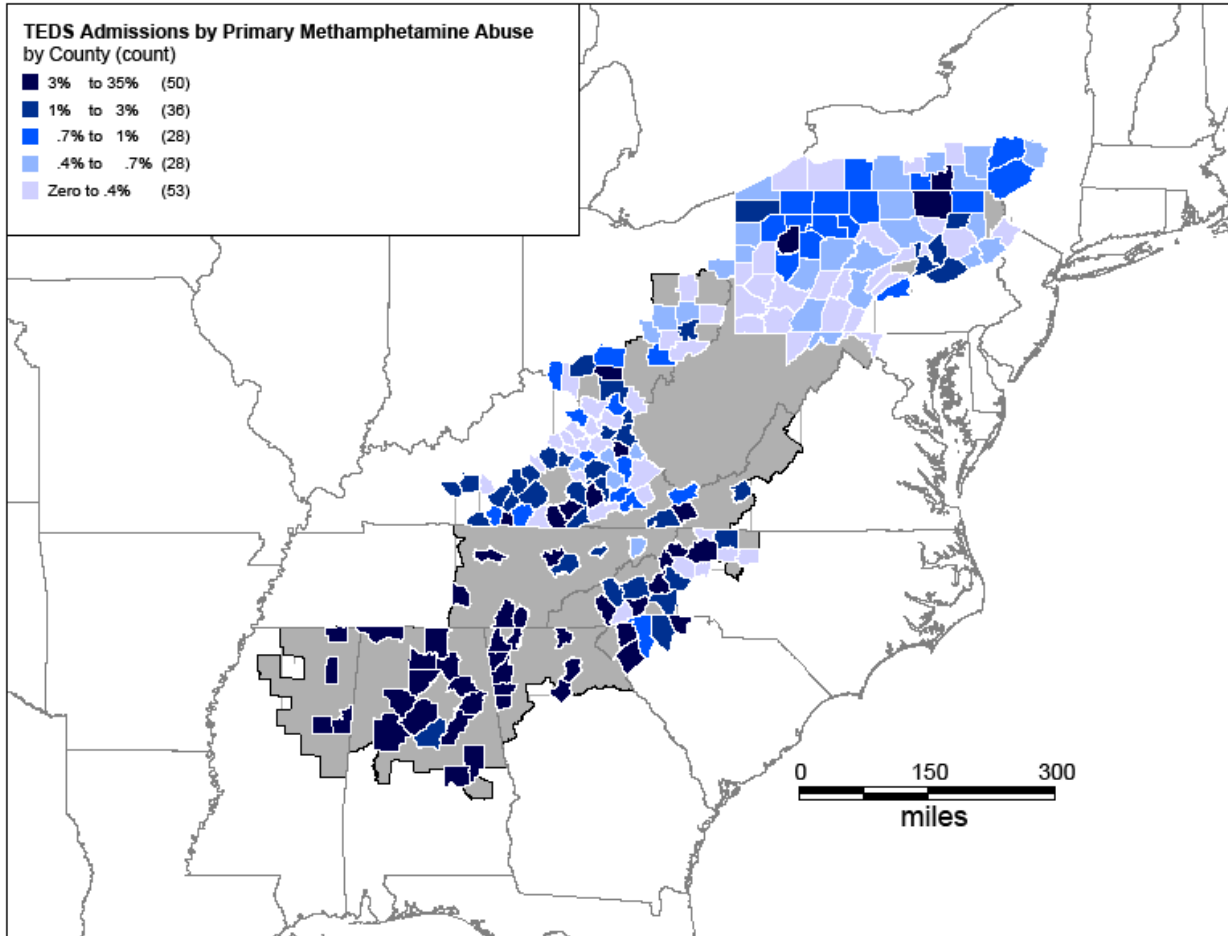
Map 3.9. Percentage of Persons Admitted to Treatment for Methamphetamine Use



SOURCE: "Treatment Episode Data Set (TEDS) 2000 - 2004: National Admissions to Substance Abuse Treatment Services." Office of Applied Studies, Substance Abuse and Mental Health Services Administration.

Map 3.10, below, shows the geographical distribution of substance abuse admissions by primary methamphetamine abuse. This map is quite similar to **Map 3.9**, with the highest concentration of admissions in the southern sub-region of Appalachia. Besides the concentration in Mississippi, Alabama, and Georgia, the Carolinas present a greater concentration of admissions by primary methamphetamine abuse.

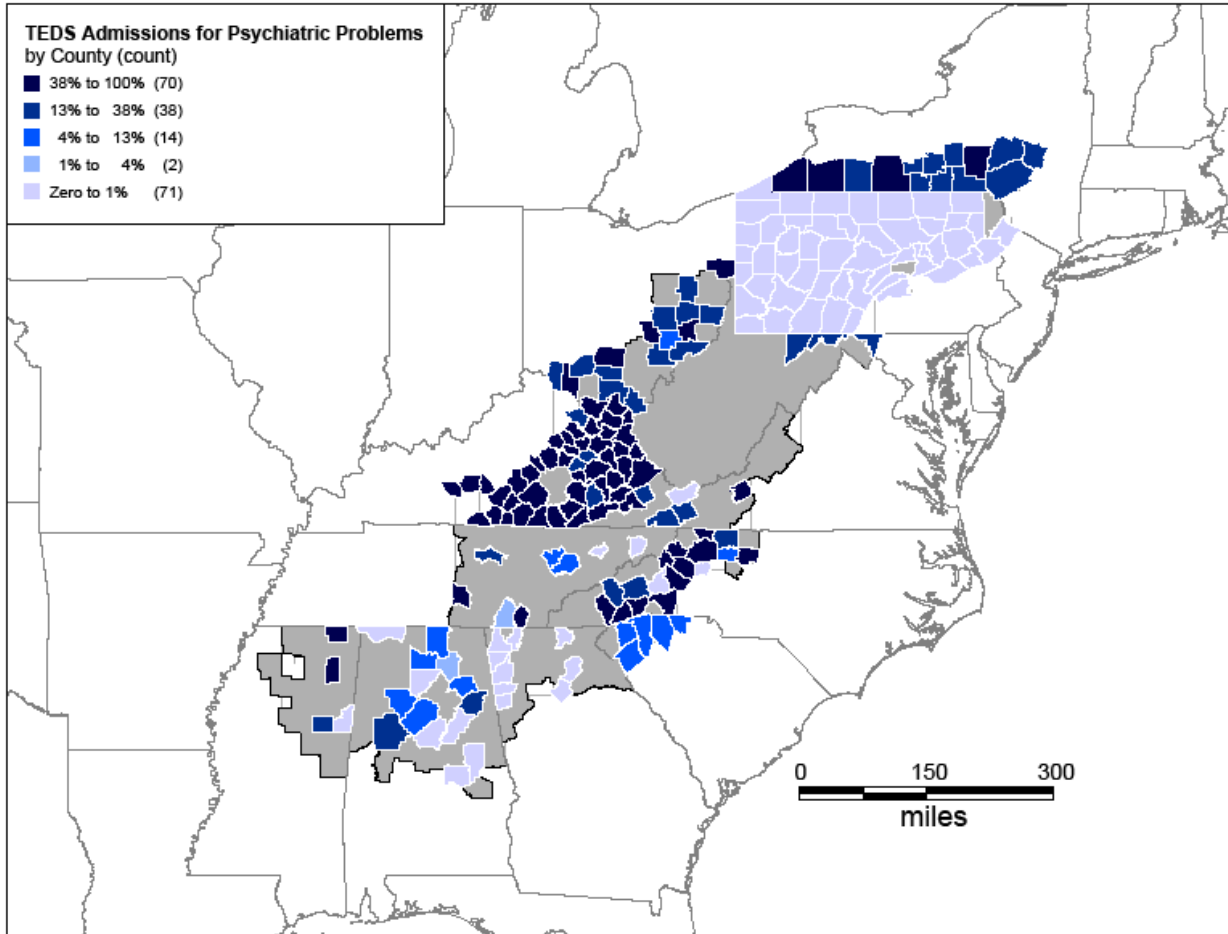
Map 3.10. Percentage of Persons Admitted to Treatment for Primary Methamphetamine Abuse



SOURCE: "Treatment Episode Data Set (TEDS) 2000 - 2004: National Admissions to Substance Abuse Treatment Services." Office of Applied Studies, Substance Abuse and Mental Health Services Administration.

Map 3.11, below, presents the geographical distribution of admission for psychiatric problems (both substance-related and non-substance-related). The central sub-region has the greatest density of admissions for psychiatric problems. Other pockets are seen in New York, Ohio and North Carolina.

Map 3.11. Percentage of Persons Admitted to Treatment for Psychiatric Problems



SOURCE: "Treatment Episode Data Set (TEDS) 2000 - 2004: National Admissions to Substance Abuse Treatment Services." Office of Applied Studies, Substance Abuse and Mental Health Services Administration.

3.5 Discussion

Consistent with estimations at the national level and with prior research findings, alcohol use stands as the most-cited primary reason for treatment in Appalachia at the time of admission to treatment.⁵³ This is followed by marijuana use, cocaine use, heroin use, and the use of other opiates or synthetics. This is not the case across counties when analyzing the data by economic development status, however. For counties at lower economic development status levels (“distressed” and “at risk”), other opiates or synthetics are the most-cited primary reason for admission after alcohol and marijuana use. Despite relatively low overall prevalence, the proportions of admissions citing tranquilizer and sedative use were also the highest in the “distressed” counties.

It is noteworthy that admissions to treatment for “other opiates or synthetics” include people using OxyContin. This finding supports recent media reports and other anecdotal evidence that OxyContin and non-medical use of prescription drugs have become serious problems in certain rural areas and within the Appalachian region.^{54,55,56} Furthermore, according to the Coalition on Appalachian Substance Abuse Policy (CASAP), TEDS data may actually understate the non-medical use of prescription drugs in Appalachia. CASAP noted that methadone treatment for prescription drug abuse is likely underreported in Appalachia because most methadone treatment is provided by private facilities. However, private facilities do not submit TEDS data. In the case of Kentucky, for example, CASAP indicated that there are nine facilities that offer methadone treatment – two of which are publicly funded. However, only one of the two publicly funded facilities submits TEDS data. As a result, TEDS data may not provide a comprehensive picture of the prescription drug problem in Appalachia due to the facility’s funding stream and/or reporting practices.

The TEDS data also show that the central Appalachian region had the highest proportion of admissions with other opiates or synthetics as the primary reason for admission among Appalachian sub-regions. This finding is also consistent with recent media reports.⁵⁷ TEDS data also showed that the proportion of adult admissions for primary abuse of other opiates and synthetics is considerably higher than in the U.S. between 2000 and 2004, and also more than doubled from 3.49% to 7.54% during this time period.

About two-thirds of admissions in Appalachia were associated with mood disorders – both those substance-related and non-substance-related – based on either the third edition revised or the fourth edition of the *American Psychiatric Association’s Diagnostic and Statistical Manual of Mental Disorders (DSM-III-R or DSM-IV)*. The highest prevalence of mood disorders occurs in “transitional” counties and in the northern Appalachian sub-region. The reasons for this pattern of comorbidity require further study. Furthermore, we also see that the central sub-region of Appalachia has the greatest density of admissions for psychiatric problems (both substance-related and non-substance-related). Other pockets are seen in New York, Ohio and North Carolina.

Treatment referral by the criminal justice system or the courts was more common in the “distressed” and “at-risk” counties than in the “transitional” and “competitive” counties, and least likely in “attainment” counties. In contrast, the “attainment” counties had the highest proportion of admissions referred by individual clients (e.g., self-referral). Additionally, the proportion of admissions that were referred from health care providers was considerably lower in “distressed” counties. Although different criminal justice practices at the state level may affect the ways in which clients are referred to admission, it appears that the economic development status of the

counties where the facilities were located may also impact how substance abuse clients come to be admitted to treatment.

The vast majority (94.21%) of the admissions in “distressed” counties were made into ambulatory care settings. Interestingly, while 14% of admissions across the Appalachian region were to rehabilitation or residential settings, only about 4% of admissions in “distressed” counties were to such settings. Future research should evaluate the effect of treatment settings on treatment outcomes by combining admissions and discharge data for the same clients.

REFLECTIONS FROM PRACTITIONERS

From the Coalition on Appalachian Substance Abuse Policy

Challenges Associated with Using the Treatment Episode Data Set (TEDS) to Explore Substance Abuse and Mental Health in Appalachia

- **The drug indicated as the “primary reason for admission” may not be the most relevant drug to the client’s treatment.** The counselor selects the “primary” drug upon admission – not the client. This is an important distinction. If the counselor believes that heroin is the most important drug, he/she may designate heroin as the primary drug upon admission.
- **Criminal justice clients and clients with multiple prior treatment episodes tend to do as well if not better in terms of treatment outcomes than their counterparts.** CASAP noted that criminal justice clients do well in treatment, if not better than clients who are not coming from the criminal justice system. In addition, CASAP noted that clients with multiple prior treatment episodes tend to have better outcomes in treatment, than clients with zero prior treatment episodes. Most clients have had a previous treatment episode.
- **TEDS may be missing important subgroups of the population.** For a client to qualify as a TEDS admission, he/she must meet certain required criteria. If certain peak fields in TEDS are missing, the client is not a TEDS admission. For example, court referred people are not counted because they have a limited number of treatment visits, and do not receive a treatment plan.
- **Facility reporting practices are often affected by payment.** Facilities may underreport or over-report specific conditions to secure payment. In Virginia, if a client is admitted with a co-occurring disorder, the facility may choose to report that he/she has a mental health condition to secure payment, although the client is receiving treatment for substance abuse issues as well. According to CASAP, the federal government should recognize co-occurring disorders to ameliorate payment concerns at treatment facilities.

About one-third of the admissions in distressed counties were clients who had previously accessed treatment at the facility. In contrast, about two-thirds of admissions across Appalachian counties were clients who had previously sought treatment. Drug users who have been in and out of treatment programs multiple times are of particular concern. Past research has suggested that multiple prior treatment episodes might be indicative of less effective current treatment, everything

else being equal.^{58,59,60} Interestingly, CASAP suggested that clients with multiple prior treatment episodes do well, if not better than clients with zero prior treatment episodes. Given the special geographic and economic contexts of the Appalachian region, future studies may examine the outcome of new treatments in economically distressed areas.

Item non-responses should be taken into consideration when interpreting admissions data. For example, unknown status of health insurance is quite common in TEDS. Health insurance is regarded as a key treatment access enabling factor and non-response to this item may affect overall admissions.⁶¹ Overall, the health insurance status was unknown for almost half of the admissions during the 2000-2004 period. Importantly, the distribution of this unknown status was uneven across sub-regions – while nearly two-thirds of admissions had unknown health insurance status in the southern Appalachian region, slightly less than one-third of admissions in the central Appalachian region had unknown health insurance status. Future data collection efforts should attempt to determine the reasons for the missing health insurance information and consistent patterns that may influence data interpretation.

Finally, it is important to note that TEDS data do not provide a comprehensive understanding of all of the facility-level factors that may affect access to and utilization of treatment services. Additional data elements that would be useful to collect through TEDS in future years include staff turnover rates at substance abuse and mental health treatment facilities, and staff shortages at the facility-level. Such information may reveal other important deficiencies and disparities in access to treatment across Appalachia.

CHAPTER 4: Substance Use and Mental Health Disorder Discharges from Appalachian and Other Community Hospitals in 2004

4.1 Introduction

In the United States, community hospitals provide treatment services for adolescents and adults with mental health and/or substance abuse disorders. Community hospitals are non-Federal, acute care hospitals that provide general and specialty care. Excluded from this definition are federal, rehabilitation, and psychiatric hospitals as well as alcoholism/chemical dependency treatment facilities. In 2004, adults diagnosed with mental health and/or substance abuse disorders accounted for approximately 7.6 million stays – 1 out of every 4 – at community hospitals in the U.S.⁶²

Given that community hospitals provide treatment for a large number of people with mental health and/or substance abuse disorders in the U.S., discharge data are a rich data source. Exploring the clinical and nonclinical data available at the community hospital-level provides an opportunity to better understand the demographics of patients with mental health and substance abuse disorders as well as other important characteristics such as their diagnoses, expected payment sources, and total charges.

Chapter 4 provides an overview of substance abuse and mental disorder discharges from Appalachian and other community hospitals in 2004. Analyses are based on data from the Healthcare Cost and Utilization Project (HCUP)'s 2004 Nationwide Inpatient Sample (NIS). The HCUP databases contain information on the vast majority of all hospital discharges in U.S. community hospitals, making them a powerful tool for exploring substance abuse and mental health issues in Appalachia and nationally. HCUP provides data that address both substance abuse and mental health issues. Specifically, we explore the following data elements from HCUP: client demographics; admission source and type; primary expected payer and secondary expected payer; presence of mental health and/or substance abuse (MHSA) disorder; subtype of MHSA disorder; comorbidity status; whether the diagnosis contains alcohol use disorder, drug use disorder, or mental health disorder; whether the principal reason for hospitalization was alcohol use; and whether the principal reason for hospitalization was drug use.

Chapter 4 will investigate the following key research questions:

Are there differences in discharges from community hospitals in Appalachia, as compared to discharges from community hospitals outside of Appalachia?

Are there differences in discharges from community hospitals in Appalachia versus outside of Appalachia when taking county economic status into account?

What do sub-regional differences look like across socio-economic status, health diagnoses, and other variables?

In Section 4.2, we provide an overview of the HCUP NIS, including its objectives, sampling design, uses, relevant measures, and limitations specifically related to exploring mental health and substance abuse issues in the Appalachian region. In Section 4.3, we discuss our methods. Section 4.4 contains the results of the analysis. Finally, Section 4.5 provides a discussion of key findings.

4.2 Data

4.2.1 Overview

The Healthcare Cost and Utilization Project (HCUP) is the largest collection of longitudinal hospital care data in the United States, providing encounter-level administrative data for inpatient hospital stays. HCUP is comprised of a variety of databases, software tools, and products that provide data on an array of clinical and non-clinical information from patient hospital discharge abstracts. Sponsored by the Agency for Healthcare Research and Quality (AHRQ), and supported by a number of partnerships at the federal, state, and industry levels, HCUP was designed to support health care research and decision making in the U.S.

According to AHRQ, the objectives of HCUP are three-fold: 1) to obtain data from state-wide information sources; 2) to design and develop multi-state health care databases for health services research and health policy analysis; and 3) to make data available to a broad set of public and private users.⁶³

AHRQ works closely with state data organizations in participating states to obtain data for the HCUP databases. A number of hospital associations and private organizations contribute to the development of these databases. HCUP is comprised of five databases: the State Inpatient Databases (SID); State Ambulatory Surgery Databases (SASD); State Emergency Department Databases (SEDD); the Nationwide Inpatient Sample (NIS); and the Kids' Inpatient Database (KID). For all of these databases, the unit of analysis is the inpatient stay in a community hospital – not an individual patient or medical procedure.⁶⁴

This study uses HCUP's Nationwide Inpatient Sample (NIS) to explore substance abuse and mental disorder discharges from community hospitals. Given the NIS's large sample size – 8,004,571 hospital discharges from 1,004 U.S. community hospitals – the NIS is ideal for exploring trends nationally and in the Appalachian region. As the largest all-payer inpatient care database in the U.S., the NIS affords researchers a unique opportunity to explore complex health policy issues such as access to care, medical practice patterns, cost and quality issues, and health care outcomes.

4.2.2 Sample Design

The NIS is a stratified probability sample of non-rehabilitation, community hospitals in the United States. All U.S. community hospitals in the American Hospital Association (AHA)'s hospital file are included in the hospital universe, except short-term rehabilitation hospitals. The sampling frame is constructed from the subset of universe hospitals that released data to AHRQ for the NIS. The sampling frame includes all AHA community hospitals that could be matched to discharge data provided to AHRQ. The objective of the NIS sampling design was to select a sample of hospitals that accurately represent the universe of hospitals and are geographically dispersed.

The NIS uses five characteristics to create a sample from the AHA's hospital files: 1) geographic region (Northeast, Midwest, West, and South); 2) control of hospital (public, private, not-for-profit, and proprietary); 3) location (urban or rural); 4) teaching status (teaching or non-teaching); and 5) bed size (small, medium, large).⁶⁵ Each year, no more than 20% of the total number of U.S. hospitals within each of the five categories above are randomly selected.

The NIS sampling frame is representative of all U.S hospitals. Over 75% of all U.S. hospitals and 87.5% of the U.S. population are accounted for in the NIS sampling frame. In 2004, the sampling frame contained data on 3,705 hospitals. The sample size for the 2004 survey was 1,004 hospitals – approximately 20.5% of 4,906 hospitals included in the total universe of U.S. community hospitals.⁶⁶ The NIS includes data on 37 states; ten of the 13 Appalachian states are included in the NIS. Pennsylvania, Alabama, and Mississippi are excluded.

4.2.3 Uses of the HCUP Nationwide Inpatient Sample

The NIS enables researchers to answer questions about the use and cost of hospital services, medical practice variation, health care cost inflation, hospital financial distress, analyses at the State and community levels, medical treatment effectiveness, quality of care, impact of health policy changes, access to care, diffusion of medical technology, and utilization of health services by special populations.⁶⁷

HCUP's databases have been used to explore research questions related to mental health and substance abuse issues. In July 2006, HCUP's NIS 2004 data was used as the basis for a fact book on care of adults with mental health and substance abuse disorders.⁶⁸ This fact book explored issues such as: what are the common reasons for hospitalization by type and diagnoses; how do hospital stays for this population vary by gender and age; how are patients admitted to the hospital; what is the mean length of stay; what is the cost of hospital stays; who is billed for hospital stays; where do patients go after they are discharged; and what percentage of hospital resource use is attributable to mental health and substance abuse disorders? Researchers have also used HCUP data to study psychiatric diagnoses,⁶⁹ trends in substance abuse detoxification,⁷⁰ and hospitalizations for alcohol abuse disorders,⁷¹ among other issues.

In addition, a large body of research has applied HCUP data to study racial and ethnic disparities in the inpatient setting,^{72,73,74} as well as hospitalization and treatment for health care problems.^{75,76,77,78} Finally, researchers have utilized HCUP hospital discharge data to study health care issues in specific geographic areas.^{79,80}

4.2.4 HCUP Measures Used in this Study

Next, we define the measures used from the 2004 HCUP NIS data set, and explore the potential limitations with respect to using these measures for our purpose – to explore substance abuse and mental health disorder discharges in Appalachian community hospitals and other community hospitals nationally. We explore the following variables: expected primary payer; total and average charges; length of stay; race; admission source; alcohol, drug, and mental health disorder status; teaching hospital status; and death during hospitalization. We provide a brief discussion of each of these variables.

Gender of the client discharged from a community hospital is described as male or female.

Age of the client discharged from a community hospital is specified as one of the following categories: 18 to 44 years old; 45 to 64 years old; 65 to 79 years old; and 80 or older.

Median household income quartile for the client's zip code is specified as one of the following categories: \$1 - \$35,999; \$36,000 - \$44,999; \$45,000 - \$58,999; and \$59,000 or more.

Patient location of discharges is described by a four category urban-rural designation for the patient's county of residence: (1) large metropolitan; (2) small metropolitan; (3) micropolitan; and (4) non-core. The categorization is a simplified adaptation of the 2003 version of the Urban Influence Codes (UIC). The 12 categories of the UIC are combined into four broader categories that differentiate between large and small metropolitan, micropolitan, and a non-urban residual as follows. A large metro area is defined as an area of 1 million residents or more. A small metro area is defined as an area of less than 1 million residents. A micropolitan area is adjacent to a large metro, small metro, or not adjacent to a metro area. A noncore area is defined as one of the following: adjacent to a small metropolitan area with its own town; adjacent to a small metropolitan area without its own town; adjacent to a micropolitan area with its own town; adjacent to micropolitan area without its own town; not adjacent to a metropolitan or micropolitan area with its own town; and not adjacent to a metropolitan or micropolitan area without its own town.

Admission source indicates the source of the hospital admission: the emergency department; transfer from another hospital (includes transfers within the same hospital and transfers between hospitals); from another health facility including long term care; court or law enforcement; and routine, birth and other (includes referrals from physicians, clinics, and HMOs).

Admission type indicates the type of hospital admission. Admission types are described as emergency or routine/ other (e.g., urgent, elective, newborn, trauma center, and other).

The variables, **primary expected payer** and **secondary expected payer**, identify who the hospital expects will be the primary and secondary payer of the hospital bill for patients with substance abuse and mental health disorders. While each hospitalization and related hospital bill is associated with an expected primary payer, the expected primary payer may not be the ultimate payer. The expected primary payer can be: Medicaid (includes fee-for-service and managed care Medicaid patients); Medicare (includes fee-for-service and managed care Medicare patients); Private Insurance (includes Blue Cross, commercial carriers, and private HMOs and PPOs); Other (includes Workers' Compensation, TRICARE/VA, Title V, and other government programs); Self Pay (uninsured); and No Charge (uninsured). A noteworthy limitation of this variable is that it does not capture dual-eligible patients.

Presence of mental health and/or substance abuse (MHSA) disorder indicates whether the discharge was diagnosed with at least one MHSA disorder or zero MHSA disorders.

Presence of any secondary mental health and/or substance abuse (MHSA) disorder indicates whether or not the discharge was diagnosed with any secondary MHSA diagnosis.

Subtype of mental health and/or substance abuse (MHSA) disorder indicates the client's diagnosis. Categories for this variable include: principal MHSA diagnosis only; principal and secondary MHSA diagnosis; secondary MHSA only; any principal MHSA diagnoses; and at least one principal MHSA diagnosis.

Comorbidity status indicates whether the client has a non-substance abuse and mental health diagnosis, a substance abuse diagnosis only, a mental health diagnosis only, or a comorbidity.

Diagnosis contains alcohol use disorder indicates that the client's diagnosis contains an alcohol use disorder.

Diagnosis contains drug use disorder indicates that the client's diagnosis contains a drug use disorder.

Diagnosis contains mental health disorder indicates that the client's diagnosis contains a mental health disorder.

Principal reason for hospitalization was alcohol use indicates that the principal reason for the client's hospitalization was alcohol use.

Principal reason for hospitalization was drug use indicates that the principal reason for the client's hospitalization was drug use.

4.2.5 Limitations of HCUP NIS Data

There are a few critical limitations that may affect the quality of the findings when using HCUP NIS data to explore substance abuse and mental health issues in Appalachia and nationally.

One obvious limitation is that HCUP data is only available for 37 states. Ideally, data would be available from every state in the U.S. Additionally, in 2004, HCUP NIS data were only available in 10 of the 13 Appalachian states, excluding Pennsylvania, Mississippi, and Alabama. Missing data is one clear limitation, given that it would be ideal to make comparisons between Appalachian community hospitals and other community hospitals nationally based on data for all 13 Appalachian states and the rest of the nation.

A second limitation is that the NIS is designed as a nationwide representation of inpatient hospital care. Most variables in the NIS are standardized to allow for national estimates. The NIS sampling frame is not designed with "county" or "state" as a stratification variable and therefore state and/or county-level analyses cannot be conducted.

It is also important to note that while the NIS includes general and specialty hospitals (e.g., pediatric, obstetrics-gynecology, short-term rehabilitation, and oncology), the survey excludes long-term care and psychiatric hospitals. Given that the NIS does not include data on patients in psychiatric hospitals, the data should not be perceived as a comprehensive picture of mental health issues associated with inpatient care in the U.S. Findings from this chapter likely provide an under-estimation of mental health problems in the U.S. Further exacerbating this problem, it is likely that MHSAs are under-coded at hospitals due to concerns regarding reimbursement and stigma associated with mental health and substance abuse (MHSAs) diagnoses.

Finally, due to confidentiality laws and other reasons, some states that contributed data to the NIS imposed restrictions on the release of certain data elements or on the number and types of hospitals that could be included in the database.⁸¹ Other states prohibited the release of certain data elements. In Virginia, data may not include more than 50% of hospitals. Georgia requested that patient race be set to missing in the NIS. To further secure confidentiality, Georgia, Ohio, and Tennessee did not report data on the teaching status of hospitals.⁸²

4.3 Methods

4.3.1 Study Sample

This study uses the 2004 HCUP Nationwide Inpatient Sample (NIS) database to analyze substance use and mental disorders in the Appalachian region. Because the NIS is limited to community hospital data, disorders treated in outpatient or ambulatory care settings, long-term care facilities, psychiatric hospitals, and substance abuse treatment facilities are not reflected in this report. Only adults age 18 or older were included; newborns, children, and adolescents were excluded.

Due to confidentiality concerns and the manner in which state data are submitted to the central distributor of HCUP National Inpatient Stay files, 11 states did not include county identifiers for the hospitals where patient discharge information were provided. Among these 11 states, four are associated with the Appalachian region – Ohio, South Carolina, Tennessee, and Georgia. These four Appalachian states were excluded from the analysis because the Appalachian region portion of these states could not be determined due to the absence of county identifiers.

4.3.2 Statistical Methods

Unit of Analysis

For this study, the unit of analysis is the inpatient stay in a community hospital rather than the patient or the procedure. For example, a patient admitted three times to a hospital is included three times in the NIS data. Thus, the same individual can account for more than one hospital stay.

Measure

Diagnoses are recorded within the NIS using the International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM). We apply the AHRQ-developed Mental Health and Substance Abuse Clinical Classification Software (CCS-MHSA) to aggregate ICD-9_CD MHSA diagnostic codes into a limited number of clinically meaningful categories. The CCS-MHSA, derived primarily from the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition*, assigns mental and substance-use ICD-9-CM codes to 1 of the 14 categories.

Table 4.1. AHRQ-developed Mental Health and Substance Abuse Clinical Classification Software (CCS-MHSA)

CCS-MHSA Code	Mental Health or Substance Abuse Disorders
650	Adjustment disorders
651	Anxiety disorders
652	Disruptive behavior disorders including conduct disorder, oppositional defiant disorder, attention-deficit disorder and attention-deficit/hyperactivity disorder
653	Delirium, dementia, and amnesic and other cognitive disorders
654	Developmental disorders including communication disorders, developmental disabilities, intellectual disabilities, learning disorders and motor skills disorders*
655	Disorders usually diagnosed in infancy, childhood, or adolescence such as elimination disorders,

CCS-MHSA Code	Mental Health or Substance Abuse Disorders
	separation anxiety disorders, pervasive developmental disorders, and tic disorders
656	Impulse control disorders
657	Mood disorders including bipolar disorders and depressive disorders
658	Personality disorders
659	Schizophrenia and other psychotic disorders
660	Substance-related disorders including alcohol-related disorders and substance-related disorders (e.g., amphetamine-related disorders; cannabis-related disorders; cocaine-related disorders; hallucinogen-related disorders; inhalant-related disorders; opioid-related disorders; phencyclidine-related disorders; sedative-, hypnotic-, or anxiolytic-related disorders; poly-substance-related disorders)
661	Miscellaneous mental disorders including dissociative disorders, eating disorders, factitious disorders, psychogenic disorders, sexual and gender identity disorders, sleep disorders, somatoform disorders, mental disorders due to general medical conditions not elsewhere classified, and other miscellaneous mental conditions
662	Suicide and intentional self-inflicted injury*
663	Screening and history of mental health and substance-related conditions*

* Suicide and intentional self-inflicted injury, as defined in the CCS-MHSA, is examined as a co-occurring condition with mental health and substance-related disorders.

* Both unweighted and weighted estimations are calculated. For draft report, only the unweighted estimates are presented.

4.4 Results

In Section 4.4, we present subregional differences for community hospital discharges in Appalachia and outside of Appalachia in 2004. In Section 4.4.1, we show a series of tables and charts that explore the following variables: the client’s gender and age; median household income quartile for the client’s zip code; patient location; admission source; admission type; primary expected payer and secondary expected payer; presence of mental health and/or substance abuse (MHSA) disorder; presence of any MHSA abuse disorder; subtype of MHSA abuse disorder; comorbidity status; whether the diagnosis contains alcohol use disorder, drug use disorder, or mental health disorder; whether the principal reason for hospitalization was alcohol use; and whether the principal reason for hospitalization was drug use. We also present a table of mental health diagnoses.

4.4.1 Tables

Tables 4.2a and 4.2b, below, present subregional differences in hospital discharges for community hospitals in the Appalachian region and outside of Appalachia for demographic variables among patients over 18 years of age. Table 4.2a shows the differences in discharges from community hospitals in Appalachian counties and outside of Appalachia, overall. Table 4.2b depicts differences in discharges from community hospitals by county economic development status. In Appalachia, about 60% of women are discharged from community hospitals in both the Appalachian region and outside of the Appalachian region (61.1%) as compared to about 40% of men in Appalachia and 39% of men outside of Appalachia. This result is consistent across county economic development status with the exception of attainment counties, where 50.0% of discharges from community hospitals are male.

Overall, patients discharged from community hospitals outside of Appalachia are slightly younger than patients discharged in the Appalachian region. Outside the Appalachian region, 32.7% of patients are between the ages of 18 and 44, compared to 26.4% within the Appalachian region. These results are consistent across levels of economic development, although the distribution shifts slightly. For example, overall 28.2% of patients in the Appalachian region are 45 to 64 years of age, while in attainment counties, 37.6% of patients are in this age range.

Overall, more patients discharged from community hospitals in the Appalachian region are in the lowest income category when compared to patients discharged from community hospitals outside of Appalachia (64.1% versus 26.5%). Furthermore, less than 10% of patients discharged from community hospitals in the Appalachian region have a median income over \$45,000, compared with 46% in the rest of the country. These results are even more pronounced in distressed and at-risk Appalachian counties. In distressed counties, nearly 90% of patients are in the lowest income quartile, while in at-risk counties, 83.7% of patients are in the lowest income bracket. By contrast, in attainment counties, only 36.6% of patients are in the lowest income bracket.

Less than 1% of patients discharged from hospitals in the Appalachian region are from large metropolitan areas as compared to patients outside of Appalachia (57.5%). Instead, 34.5% of patients are from small metropolitan areas in Appalachia (compared to 25.9% outside of Appalachia), 29.2% are from micropolitan areas (compared to 9.7% outside of Appalachia), and 31% of patients are from non-core areas (as compared to 6.5% outside of Appalachia). These results are consistent across counties, regardless of economic status.

Table 4.2a: Demographics of Community Hospital Discharges in the Appalachian Region (Unweighted)

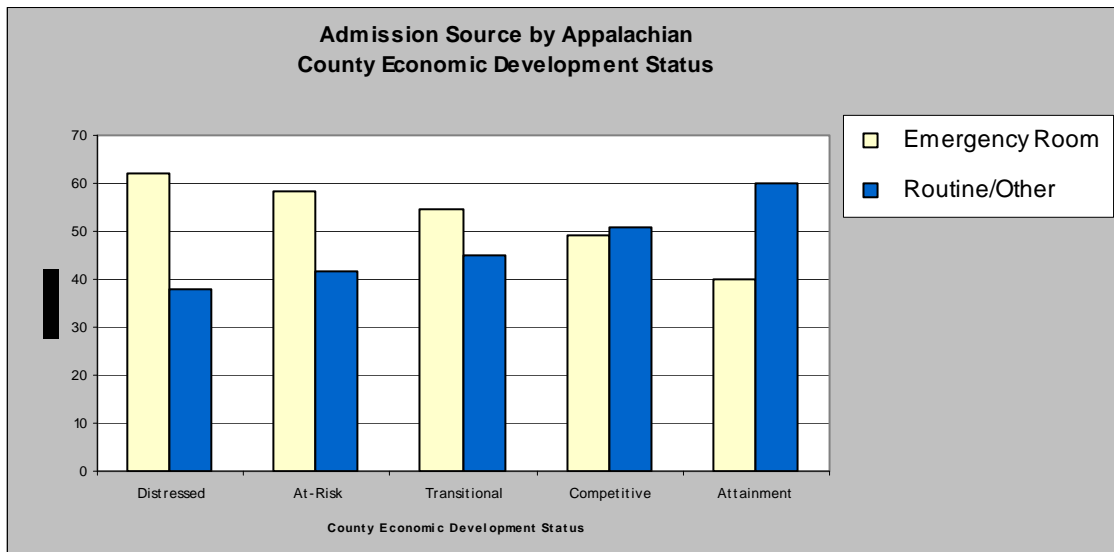
	All			
	Appalachian Region		Outside of Appalachia	
	N	%	N	%
Gender				
Male	67,258	40.04	2,133,917	38.73
Female	100,696	59.95	3,364,470	61.07
Age				
18-44	44,338	26.4	1,804,197	32.75
45-64	47,290	28.16	1,456,348	26.43
65-79	45,564	27.13	1,327,258	24.09
80 or older	30,765	18.32	921,743	16.73
Median Household Income Quartile for Patient's Zip Code				
\$1-\$35,999	107,695	64.12	1,461,759	26.53
\$36,000- \$44,999	36,641	21.82	1,400,755	25.42
\$45,000-\$58,999	13,548	8.07	1,208,375	21.93
\$59,000 or more	2,001	1.19	1,322,096	24
Patient Location				
Large metropolitan	1,322	0.79	3,167,482	57.49
Small metropolitan	58,014	34.54	1,425,579	25.87
Micropolitan	49,113	29.24	534,492	9.7
Non-core	59,000	35.13	358,486	6.51

Table 4.2b: Demographics of Community Hospital Discharges in the Appalachian Region (Unweighted) by County Economic Development Status, 2004

	County Economic Development Status Adults Age 18 or Older																			
	Distressed				At-Risk				Transitional				Competitive				Attainment			
	Appalachian Region		Outside of Appalachia		Appalachian Region		Outside of Appalachia		Appalachian Region		Outside of Appalachia		Appalachian Region		Outside of Appalachia		Appalachian Region		Outside of Appalachia	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Gender																				
Male	12,958	40.3	63,210	40.4	9,834	37.8	17,089	37.2	26,192	36.6	644,486	40.7	3,066	39.1	185,050	38.8	15,208	50	481,186	40
Female	19,216	59.7	93,408	59.6	16,151	62.2	28,809	62.8	45,365	63.4	939,653	59.3	4,778	60.9	292,107	61.2	15,186	50	722,178	60
Age																				
18-44	7,416	23.1	54,932	35.1	6,940	26.7	13,896	30.3	20,374	28.5	471,843	29.8	1,792	22.9	153,013	32.1	7,816	25.7	384,524	32
45-64	9,775	30.4	46,438	29.7	6,626	25.5	10,973	23.9	17,663	24.7	423,146	26.7	1,786	22.8	122,098	25.6	11,440	37.6	331,132	27.5
65-79	9,054	28.1	33,531	21.4	7,086	27.3	11,803	25.7	18,967	26.5	406,659	25.7	2,358	30.1	118,369	24.8	8,099	26.7	284,902	23.7
80 or older	5,930	18.4	21,720	13.9	5,333	20.5	9,226	20.1	14,554	20.3	282,508	17.8	1,908	24.3	83,679	17.5	3,040	10	202,820	16.9
Median Household Income Quartile for Patient's Zip Code																				
\$1-\$35,999	28,823	89.6	102,659	65.6	21,753	83.7	35,822	78.1	43,500	60.8	497,929	31.4	2,487	31.7	88,079	18.5	11,132	36.6	136,178	11.3
\$36,000-\$44,999	479	1.49	39,706	25.4	1,668	6.42	7,605	16.6	19,626	27.4	506,152	32	4,107	52.4	162,643	34.1	10,761	35.4	199,912	16.6
\$45,000-\$58,999	116	0.36	7,110	4.54	856	3.29	1,135	2.47	5,698	7.96	317,716	20.1	518	6.6	141,613	29.7	6,360	20.9	292,874	24.3
\$59,000 or more	38	0.12	6,268	4	50	0.19	187	0.41	491	0.69	229,717	14.5	59	0.75	73,909	15.5	1,363	4.48	554,603	46.1
Patient Location																				
Large metropolitan	101	0.31	134,446	85.8	119	0.46	623	1.36	528	0.74	787,722	49.7	73	0.93	226,573	47.5	501	1.65	917,412	76.2
Small metropolitan	997	3.1	4,133	2.64	876	3.37	3,128	6.82	30,621	42.8	445,733	28.1	6,893	87.9	149,744	31.4	18,627	61.3	208,647	17.3
Micropolitan	6,516	20.3	8,964	5.72	9,999	38.5	28,988	63.2	23,174	32.4	205,718	13	459	5.85	67,263	14.1	8,965	29.5	45,014	3.74
Non-core	24,190	75.2	8,806	5.62	14,954	58	13,129	28.6	17,136	24	138,420	8.74	419	5.34	30,759	6.45	2,301	7.57	28,174	2.34
SOURCE: Healthcare Cost and Utilization Project (HCUP) Nationwide Inpatient Sample (NIS), 2004.																				

Tables 4.3a and 4.3b, below, present differences in community hospital discharges by admission source, admission type, and expected payment for admissions over 18 years of age. In Table 4.3a, we provide findings overall for community hospitals in Appalachia and outside of Appalachia. Table 4.4b shows findings by economic county development status. The percentage of discharges from community hospitals that entered into hospitals via the emergency department was higher in the Appalachian region (53.7%) than in hospitals outside of Appalachia (48.8%). Results vary, however, based on economic development level. **Figure 4.1** visually shows these trends in Appalachia only. As the figure demonstrates, the emergency room is the most common source of admission to the hospital for patients in distressed counties in Appalachia, followed by at-risk, transitional, competitive, and attainment counties.

Figure 4.1 Admission Source by Appalachian County Economic Development Status

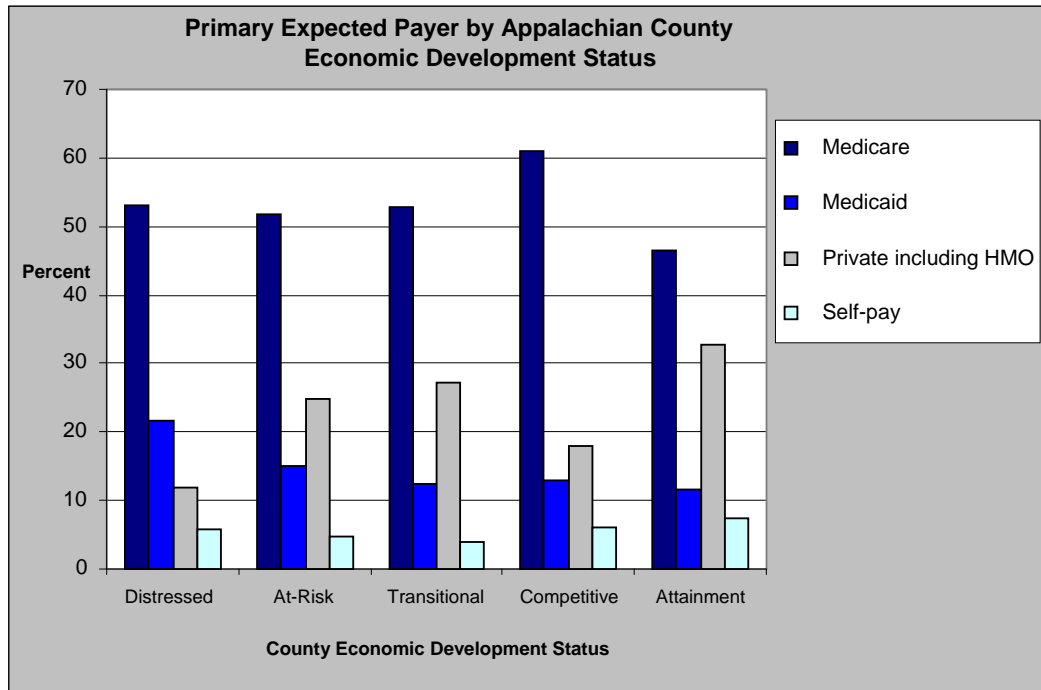


SOURCE: Healthcare Cost and Utilization Project (HCUP) Nationwide Inpatient Sample (NIS), 2004.

Overall, more patients in economically distressed counties enter the hospital through the emergency department, with 73.3% of patients in non-Appalachian counties entering the hospital in this manner and 62.1% of patients from the Appalachian region entering the hospital in this manner. In at-risk counties, 58.2% of patients in the Appalachian region enter the hospital through the emergency department, while 50.5% of patients in non-Appalachian counties enter in this way. There is little difference between Appalachian and non-Appalachian admission types for transitional and competitive counties, with approximately 50% of patients entering the hospital through the emergency department. Finally, in attainment counties, 39.8% of patients from the Appalachian region and 49.3% of non-Appalachian patients entered the hospital through the emergency department.

Medicare is the key primary expected payer in both Appalachian and non-Appalachian counties (51.9% versus 43.3%), followed by private insurance (24.4% in Appalachia and 33.7% outside of Appalachia), Medicaid (14.5% in Appalachia and 14.0% outside of Appalachia), self pay (5.1% in Appalachia and 5.2% outside of Appalachia), other forms of primary payment (3.8% in Appalachia and 3.2% outside of Appalachia), and, finally, no charge (0.03% in Appalachia and 0.5% outside of Appalachia). When the economic development level is taken into account, the profile changes slightly. **Figure 4.2** below highlights these trends.

Figure 4.2 Primary Expected Payer By Appalachian County Economic Development Status



SOURCE: Healthcare Cost and Utilization Project (HCUP) Nationwide Inpatient Sample (NIS), 2004.

Medicare continues to be the dominant primary expected form of payment in the Appalachian region, hovering around 50% of expected payments in the less economically developed counties (distressed, at-risk, and transitional), increasing to 61.1% of expected payments in competitive counties, and falling to 46.5% of expected payments in attainment counties. Less economically developed counties in Appalachia report a greater percentage of Medicaid expected payers than more economically developed counties. In distressed counties, 21.7% of expected payers utilized Medicaid, while 15.2% report utilizing Medicaid in at-risk counties. Around 12.5% of payers in transitional and competitive counties expect to use Medicaid, and 11.7% of payers in attainment counties expect to use Medicaid. In contrast, 35.8% of patients from economically distressed counties outside of Appalachia use Medicaid, while counties with higher levels of economic development report similar rates of coverage to their Appalachian counterparts.

The Appalachian region reports lower levels of private insurance coverage than their non-Appalachian counterparts at all levels of economic development, except in at-risk and transitional counties. Appalachian distressed counties report 11.9% private insurance coverage compared with 19.3% for non-Appalachian distressed counties. Appalachian competitive counties report 17.8% private insurance coverage, while non-Appalachian competitive counties report coverage rates of 33.9%. Finally, Appalachian attainment counties report private insurance coverage of 32.7%, while non-Appalachian attainment counties report coverage rates of 39.7%.

Table 4.3a: Admission Source, Type, and Expected Payment for Community Hospital Discharges in Appalachia (Unweighted), 2004

	Adults Age 18 or Older			
	Appalachian Region		Outside of Appalachia	
	N	%	N	%
Admission Source				
Emergency Room	90,158	53.68	2,688,219	48.79
Routine/Other	77,402	46.08	2,805,904	50.93
Admission Type				
Emergency Room	85,906	51.19	2,383,357	48.92
Routine/Other	81,925	48.81	2,488,366	51.08
Primary Expected Payer (uniform)				
Medicare	87,260	51.95	2,386,065	43.31
Medicaid	24,406	14.53	770,870	13.99
Private including HMO	41,042	24.44	1,856,881	33.7
Self-pay	8,644	5.15	287,340	5.22
No charge	48	0.03	29,195	0.53
Other	6,373	3.79	173,969	3.16
Secondary Expected Payer (uniform)				
Medicare	25,197	29.47	336,954	16.17
Medicaid	16,351	19.12	395,946	19
Private including HMO	25,581	29.92	857,683	4.11
Self-pay	11,601	13.57	405,953	19.48
No charge	46	0.05	7,373	0.35
Other	6,776	7.92	80,360	3.85
SOURCE: Healthcare Cost and Utilization Project (HCUP) Nationwide Inpatient Sample (NIS), 2004.				

Table 4.3b: Admission Source, Type, and Expected Payment for Community Hospital Discharges in Appalachia (Unweighted) by County Economic Development Status, 2004

	County Economic Development Status Adults Age 18 or Older																			
	Distressed				At-Risk				Transitional				Competitive				Attainment			
	Appalachian Region		Outside of Appalachia		Appalachian Region		Outside of Appalachia		Appalachian Region		Outside of Appalachia		Appalachian Region		Outside of Appalachia		Appalachian Region		Outside of Appalachia	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Admission Source																				
Emergency Room	19,988	62.12	114,818	73.31	15,118	58.18	23,202	50.55	39,087	54.62	805,370	50.84	3,855	49.15	241,069	50.52	12,110	39.84	592,997	49.28
Routine/Other	12,169	37.82	41,748	26.66	10,865	41.81	22,689	49.43	32,094	44.85	774,422	48.89	3,989	50.85	235,955	49.45	18,285	60.16	605,297	50.3
Admission Type																				
Emergency Room	17,035	52.99	116,763	74.6	15,822	60.89	22,625	49.47	36,870	51.55	784,108	49.58	2,116	27.01	201,416	42.7	14,063	46.34	613,815	51.06
Routine/Other	15,111	47.01	39,747	25.4	10,162	39.11	23,106	50.53	34,649	48.45	797,496	50.42	5,717	72.99	270,310	57.3	16,286	53.66	588,330	48.94
Primary Expected Payer (uniform)																				
Medicare	17,045	52.98	56,476	36.06	13,452	51.77	24,385	53.13	37,827	52.86	731,421	46.17	4,796	61.14	217,745	45.63	14,140	46.52	508,546	42.26
Medicaid	6,990	21.72	56,033	35.78	3,945	15.18	8,133	17.72	8,915	12.46	222,512	14.05	1,010	12.88	50,585	10.6	3,546	11.67	125,753	10.45
Private including HMO	3,818	11.87	30,249	19.31	6,469	24.9	7,551	16.45	19,420	27.14	480,661	30.34	1,400	17.85	161,855	33.92	9,935	32.69	477,995	39.72
Self-pay	1,893	5.88	12,839	8.2	1,229	4.73	2,754	6	2,840	3.97	80,338	5.07	468	5.97	20,570	4.31	2,214	7.28	53,351	4.43
No charge	6	0.02	54	0.03	.	.	77	0.17	42	0.06	16,320	1.03	.	.	6,076	1.27	.	.	3,596	0.3
Other	2,382	7.4	968	0.62	872	3.36	2,997	6.53	2,389	3.34	52,201	3.3	170	2.17	19,610	4.11	560	1.84	34,007	2.83
Secondary Expected Payer (uniform)																				
Medicare	974	12.51	30,258	27.85	4,634	35.36	2,209	9.89	6,184	15.22	108,043	14.69	105	1.54	20,307	18.09	13,300	79.7	119,412	20.7
Medicaid	3,726	47.85	37,289	34.32	4,195	32.01	6,088	27.25	6,474	15.94	141,152	19.2	803	11.77	19,113	17.03	1,153	6.91	90,445	15.68
Private including HMO	2,183	28.04	8,669	7.98	4,275	32.62	10,346	46.32	14,373	35.39	286,765	39	2,775	40.69	58,247	51.89	1,975	11.83	237,165	41.11
Self-pay	1	0	30,985	28.52	2	0.01	374	1.67	11,598	28.56	164,666	22.39	.	.	10,225	9.11	.	.	108,502	18.81
No charge	.	.	5	0	.	.	0	.	46	0.11	3,566	0.48	.	.	150	0.13	.	.	2,505	0.43
Other	902	11.58	1,446	1.33	498	3.8	3,694	16.54	1,979	4.87	31,101	4.23	3,137	46	4,200	3.74	260	1.56	18,909	3.28
SOURCE: Healthcare Cost and Utilization Project (HCUP) Nationwide Inpatient Sample (NIS), 2004.																				

Tables 4.4a and 4.4b, below, presents differences in community hospital discharges based on hospital stay characteristics for community hospital discharges in Appalachia and outside of Appalachia. Table 4.4a presents the findings overall, and Table 4.4b presents findings by county economic development status. Overall, 27.1% of inpatient hospital stays in the Appalachian region report mental health or substance abuse diagnoses, compared with 23.6% of inpatient hospital stays outside of Appalachia. The differences are most pronounced in distressed counties, where 26.6% of hospital stays in the Appalachian region report mental health or substance abuse diagnoses compared with 30.5% outside of Appalachia, and in competitive counties where 36.7% of hospital stays in the Appalachian region report mental health and substance abuse diagnoses compared with 22.3% of hospital stays outside of Appalachia.

Overall, among inpatient hospital stays with a substance abuse or mental health diagnosis, the majority had a mental health diagnosis only (77.96% in the Appalachian region; 69.23% outside of Appalachia).

Table 4.4a: Hospital Stay Characteristics for Community Hospital Discharges in Appalachia (Unweighted), 2004

	Adults Age 18 or Older			
	Appalachian Region		Outside of Appalachia	
	N	%	N	%
Presence of MHSA				
No MHSA diagnosis	122,401	72.88	4,211,090	76.43
At least one MHSA diagnosis	45,556	27.12	1,298,456	23.57
Subtype of MHSA Stays				
Principal MHSA only	2,476	5.44	98,803	7.61
Principal and secondary MHSA	6,357	13.95	224,415	17.28
Secondary MHSA only	36,723	80.61	975,238	75.11%
At Least One Principal MHSA				
Yes	8,833	5.26	323,218	5.87
No	159,124	94.74	5,186,328	94.13
Any Secondary MHSA`				
Yes	43,080	25.65	1,199,653	21.77
No	124,877	74.35	4,309,893	78.23
Coborbidity Status				
SA Diagnosis Only	5,113	11.22	189,006	14.56
MH Diagnosis Only	35,515	77.96	898,948	69.23
Comorbidity	4,928	10.82	210,502	16.21
SOURCE: Healthcare Cost and Utilization Project (HCUP) Nationwide Inpatient Sample (NIS)				

Table 4.4b: Hospital Stay Characteristics for Community Hospital Discharges in Appalachia by County Economic Development Status (Unweighted), 2004

	County Economic Development Status Adults Age 18 or Older																			
	Distressed				At-Risk				Transitional				Competitive				Attainment			
	Appalachian Region		Outside of Appalachia		Appalachian Region		Outside of Appalachia		Appalachian Region		Outside of Appalachia		Appalachian Region		Outside of Appalachia		Appalachian Region		Outside of Appalachia	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Presence of MHSA																				
No MHSA diagnosis	23,605	73.36	108,879	69.52	19,312	74.32	33,505	73	51,388	71.81	1,191,445	75.21	4,964	63.28	370,658	77.68	23,132	76.1	907,434	75.41
At least one MHSA diagnosis	8,570	26.64	47,742	30.48	6,673	25.68	12,393	27	20,170	28.19	392,711	24.79	2,880	36.72	106,501	22.32	7,263	23.9	295,944	24.59
Subtype of MHSA Stays																				
Principal MHSA only	377	4.6	6,139	12.86	623	9.34	723	5.83	906	4.7	33,667	8.57	137	4.76	6792	6.81	433	6.34	22,196	7.5
Principal and secondary MHSA	828	10.11	10,974	22.99	1,205	18.06	2,221	17.92	2,902	15.06	74,780	19.04	848	29.44	17,102	17.15	574	8.4	56,360	19.04
Secondary MHSA only	7,365	89.89	30,629	64.16	4,845	72.61	9,449	76.24	16,362	84.94	284,264	72.39	1,895	65.7986	82,607	82.85	6,256	91.6	217,388	73.46
At Least One Principal MHSA																				
Yes	1,205	3.75	17,113	10.93	1,828	7.03	2,944	6.41	3,808	5.32	108,447	6.85	985	12.56	23,894	5.01	1,007	3.31	78,556	6.53
No	30,970	96.25	139,508	89.07	24,157	92.97	42,954	93.59	67,750	94.68	1,475,709	93.15	6,859	87.44	453,265	94.99	29,388	96.69	1,124,822	93.47
Any Secondary MHSA																				
Yes	8,193	25.46	41,603	26.56	6,050	23.28	11,670	25.43	19,264	26.92	359,044	22.66	2,743	34.97	99,709	20.9	6,830	22.47	273,748	22.75
No	23,982	74.54	115,018	73.44	19,935	76.72	34,228	74.57	52,294	73.08	1,225,112	77.34	5,101	65.03	377,450	79.1	23,565	77.53	929,630	77.25
Coborbidity Status																				
SA Diagnosis Only	988	11.53	10,215	21.4	916	13.73	1,480	11.94	1,983	9.83	57,384	14.61	254	8.82	14,434	13.55	972	13.38	41,349	13.97
MH Diagnosis Only	6,943	81.02	25,661	53.75	4,926	73.82	8,993	72.57	15,889	78.78	269,795	68.7	2,061	71.56	76,431	71.77	5,696	78.42	202,110	68.29
Comorbidity	639	7.46	11,866	24.85	831	12.45	1,920	15.49	2,298	11.39	65,532	16.69	565	19.62	15,636	14.68	595	8.19	52,485	17.73
SOURCE: Healthcare Cost and Utilization Project (HCUP) Nationwide Inpatient Sample (NIS)																				

Tables 4.5a and 4.5b below show findings for diagnoses and principal reason for hospitalization for community hospital discharges in Appalachia and outside of Appalachia. Table 4.5a provides findings overall, while Table 4.5b shows findings by county economic development status. Approximately 4% of hospital discharges in Appalachian counties and outside of Appalachia involve an alcohol use disorder diagnosis. Non-Appalachian distressed counties report 8.9% of diagnoses containing an alcohol use disorder, compared with 3.0% in Appalachian distressed counties. For competitive counties, conversely, 6.3% of diagnoses in the Appalachian region involve an alcohol use disorder compared with 4.1% outside of Appalachia.

Approximately 3% of hospital discharges in Appalachia and 4% of discharges outside of Appalachia involve a drug use disorder diagnosis. These findings are consistent across economic development levels, with the exception of distressed counties. Non-Appalachian distressed counties report that 9.9% of discharges involve a drug use disorder, compared with 2.4% of discharges in Appalachian distressed counties.

Overall, 23.7% of discharges in the Appalachian region involve diagnoses of a mental health disorder, compared with 19.5% of discharges outside of Appalachia. For most economic development levels, both Appalachian and non-Appalachian counties report about 20% of diagnoses as having mental health disorders. However, Appalachian competitive counties report 33.2% of discharges as having a mental health disorder diagnosis, compared with 18.9% outside of Appalachia.

Overall, alcohol and drug use are reported minimally as principal causes of hospitalization. In the Appalachian region, 0.7% of hospitalizations are principally due to alcohol or drug use, compared to 0.8% outside the Appalachian region. Differences in hospitalizations principally due to alcohol use are most apparent in distressed and attainment counties, where rates of 2.0% and 0.9%, respectively are seen outside of Appalachia, compared with Appalachian rates of 0.4% and 0.2%. In competitive counties, on the other hand, the Appalachian region reports slightly higher percentages of alcohol-related hospitalizations at 0.8% compared to 0.6%. The greatest gap for drug-related hospitalizations is in distressed counties, where 2.8% of hospitalizations outside of Appalachia are principally due to drug use, compared with 0.5% within Appalachia.

Table 4.5a: Diagnoses and Principal Reason for Hospitalization for Community Hospital Discharges in Appalachia (Unweighted), 2004

Adults Age 18 or Older				
	Appalachian Region		Outside of Appalachia	
	N	%	N	%
Diagnoses Contain Alcohol Use Disorder				
Yes	6,358	3.79	247,550	4.49
No	6,495	3.87	226,276	4.11
Diagnoses Contain Drug Use Disorder				
Yes	5,159	3.07	224,855	4.08
No	6,471	3.85	221,578	4.02
Diagnoses Contain Mental Health Disorder				
Yes	39,784	23.69	1,075,012	19.51
No	1,749	1.04	64,130	1.16
Principal Reason for Hospitalization was Alcohol Use				
Yes	1,227	0.73	41,684	0.76
No	166,730	99.27	5,467,862	99.24
Principal Reason for Hospitalization was Drug Use				
Yes	1,176	0.7	45,888	0.83
No	166,781	99.3	5,463,658	99.17
SOURCE: Healthcare Cost and Utilization Project (HCUP) Nationwide Inpatient Sample (NIS), 2004.				

Table 4.5b: Diagnoses and Principal Reason for Hospitalization for Community Hospital Discharges in Appalachia (Unweighted), by County Economic Development Status, 2004

County Economic Development Status Adults Age 18 or Older																				
	Distressed				At-Risk				Transitional				Competitive				Attainment			
	Appalachian Region		Outside of Appalachia		Appalachian Region		Outside of Appalachia		Appalachian Region		Outside of Appalachia		Appalachian Region		Outside of Appalachia		Appalachian Region		Outside of Appalachia	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Diagnoses Contain Alcohol Use Disorder																				
Yes	956	2.97	13,883	8.86	978	3.76	2,147	4.68	2,963	4.14	75,250	4.75	492	6.27	19,686	4.13	969	3.19	60,127	5
No	978	3.04	9,218	5.89	1,281	4.93	1,801	3.92	2,606	3.64	74,577	4.71	738	9.41	17,017	3.57	892	2.93	52,317	4.35
Diagnoses Contain Drug Use Disorder																				
Yes	780	2.42	15,443	9.86	1,016	3.91	1,951	4.25	2,129	2.98	71,589	4.52	455	5.8	15,191	3.18	779	2.56	52,367	4.35
No	950	2.95	8,514	5.44	1,104	4.25	1,719	3.75	2,796	3.91	71,002	4.48	729	9.29	17,896	3.75	892	2.93	52,617	4.37
Diagnoses Contain Mental Health Disorder																				
Yes	7,517	23.4	32,908	21	5,634	21.7	10,625	23.2	17,866	25	323,434	20.4	2,602	33.2	90,279	18.9	6,165	20.3	246,436	20.5
No	266	0.83	6,470	4.13	588	2.26	716	1.56	687	0.96	25,100	1.58	61	0.78	3,329	0.7	147	0.48	15,302	1.27
Principal Reason for Hospitalization was Alcohol Use																				
Yes	140	0.44	3,212	2.05	301	1.16	681	1.48	644	0.9	15,490	0.98	66	0.84	3,101	0.65	76	0.25	10,357	0.86
No	32,035	99.6	153,409	98	25,684	98.8	45,217	98.5	70,914	99.1	1,568,666	99	7,778	99.2	474,058	99.4	30,319	99.8	1,193,021	99.1
Principal Reason for Hospitalization was Drug Use																				
Yes	176	0.55	4,402	2.81	510	1.96	705	1.54	356	0.5	19,293	1.22	47	0.6	2,033	0.43	87	0.29	12,031	1
No	31,999	99.5	152,219	97.2	25,475	98	45,193	98.5	71,202	99.5	1,564,863	98.8	7,797	99.4	475,126	99.6	30,308	99.7	1,191,347	99
SOURCE: Healthcare Cost and Utilization Project (HCUP) Nationwide Inpatient Sample (NIS), 2004.																				

Tables 4.6a and 4.6b below present differences in community hospital discharges for all principal and secondary mental health or substance abuse diagnoses. Results are for adults age 18 and older. Table 4.6a provides findings overall, while Table 4.6b provides specific findings by county economic development status. Diagnoses cover all principal and secondary mental health or substance abuse diagnoses. Overall, 10.6% of discharges in the Appalachian region and 13.7% of discharges outside of Appalachia were screened for mental health problems. Screening for mental health problems constitutes the majority of discharge diagnoses outside of Appalachia. The gap between Appalachia and areas outside of Appalachia is largest in the two most economically developed categories, with approximately 8% of discharges in competitive and attainment counties in Appalachia being attributed to screening, compared to 14.5% in non-Appalachian counties.

Overall, 5.6% of discharges in the Appalachian region are attributed to anxiety disorders, compared with 3.5% outside of Appalachia. No distinct pattern emerges based on the economic development status, with the largest gaps between Appalachian and non-Appalachian counties occurring in distressed counties (7.4% of discharges in the Appalachian region compared with 2.1% outside of Appalachia), and competitive counties (7.7% of discharges in the Appalachian region compared with 3.7% outside of Appalachia).

Overall, 5.9% of discharges in the Appalachian region are due to delirium, dementia, and amnesic and other cognitive disorders, compared with 5.2% outside of Appalachia. In less economically developed counties, there is little regional difference in rates of these diagnoses. In competitive counties, however, 7.2% of discharges in the Appalachian region are due to this type of diagnosis, compared with 4.9% outside of Appalachia. In attainment counties, conversely, 3.0% of diagnoses in the Appalachian region are due to delirium and other cognitive disorders, compared with 5.2% outside of Appalachia.

Overall, 12.3% of diagnoses in the Appalachian region and 10.1% of diagnoses outside of Appalachia are due to mood disorders. Mood disorders constitute the majority of diagnoses, overall, in Appalachia. The most striking regional difference occurs in competitive counties, where 20.1% of mental health and substance abuse diagnoses in the Appalachian region are due to mood disorders, compared to 10% outside of Appalachia.

Overall, 6.0% of discharges in the Appalachian region, and 7.2% of discharges outside of Appalachia are due to substance-related disorders. Strikingly, in non-Appalachian distressed counties, substance-related disorders constitute the predominant mental health diagnosis, comprising 14.1% of diagnoses. In contrast, only 5.1% of diagnoses in distressed Appalachian counties are attributed to substance-related disorders.

Table 4.6a: Differences Among All Principal and Secondary Mental Health or Substance Abuse Diagnoses for Discharges from Community Hospitals, 2004

	Adults Age 18 or Older			
	Appalachian Region		Outside of Appalachia	
	N	%	N	%
Adjustment disorders	384	0.23	21,318	0.39
Anxiety disorders	9,369	5.58	191,077	3.47
Attention-deficit, conduct, and disruptive behavior disorders	291	0.17	8,837	0.16
Delirium, dementia, and amnesic and other cognitive disorders	9,962	5.93	287,877	5.23
Developmental disorders	1,386	0.83	31,533	0.57
Disorders usually diagnosed in infancy, childhood, adolescence	54	0.03	1,927	0.03
Impulse control disorders, NEC	247	0.15	4,023	0.07
Mood disorders	20,718	12.34	556,748	10.11
Personality disorders	1,572	0.94	42,250	0.77
Schizophrenia, other psychotic disorders	3,480	2.07	143,039	2.6
Substance-related disorders	10,041	5.98	399,508	7.25
Miscellaneous mental disorders	1,612	0.96	56,812	1.03
Screening and history of mental health and substance abuse codes	17,742	10.56	755,481	13.71

SOURCE: Healthcare Cost and Utilization Project (HCUP) Nationwide Inpatient Sample (NIS), 2004.

Table 4.6b: Differences Among All Principal and Secondary Mental Health or Substance Abuse Diagnoses Discharged from Community Hospitals, by County Economic Development Status, 2004

	County Economic Development Status Adults Age 18 or Older																			
	Distressed				At-Risk				Transitional				Competitive				Attainment			
	Appalachian Region		Outside of Appalachia		Appalachian Region		Outside of Appalachia		Appalachian Region		Outside of Appalachia		Appalachian Region		Outside of Appalachia		Appalachian Region		Outside of Appalachia	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Adjustment disorders	57	0.18	868	0.55	54	0.21	92	0.2	177	0.25	7,561	0.48	19	0.24	2,107	0.4	77	0.25	4,808	0.4
Anxiety disorders	2,394	7.44	3,269	2.09	1,159	4.46	2,242	4.88	3,860	5.39	58,425	3.69	604	7.7	17,517	3.7	1,352	4.45	45,557	3.8
Attention-deficit, conduct, and disruptive behavior disorders	24	0.07	78	0.05	24	0.09	71	0.15	136	0.19	2,677	0.17	36	0.46	769	0.2	71	0.23	2,334	0.2
Delirium, dementia, and amnesic and other cognitive disorders	2,030	6.31	9,802	6.26	1,522	5.86	2,928	6.38	4,939	6.9	83,306	5.26	568	7.24	23,263	4.9	903	2.97	62,263	5.2
Developmental disorders	248	0.77	1,092	0.7	198	0.76	380	0.83	698	0.98	9,550	0.6	27	0.34	2,531	0.5	215	0.71	7,082	0.6
Disorders usually diagnosed in infancy, childhood, adolescence	3	0.01	61	0.04	6	0.02	8	0.02	24	0.03	549	0.03	4	0.05	164	0	17	0.06	511	0
Impulse control disorders, NEC	25	0.08	201	0.13	60	0.23	61	0.13	138	0.19	1,362	0.09	15	0.19	469	0.1	9	0.03	865	0.1
Mood disorders	3,074	9.55	12,903	8.24	2,858	11	5,481	11.94	9,324	13.03	164,347	10.37	1,576	20.1	47,578	10	3,886	12.78	135,478	11
Personality disorders	27	0.08	841	0.54	150	0.58	453	0.99	703	0.98	13,437	0.85	596	7.6	4,789	1	96	0.32	9,983	0.8
Schizophrenia, other psychotic disorders	762	2.37	9,084	5.8	519	2	1,046	2.28	1,463	2.04	45,583	2.88	273	3.48	9,070	1.9	463	1.52	29,100	2.4
Substance-related disorders	1,627	5.06	22,081	14.1	1,747	6.72	3,400	7.41	4,281	5.98	122,916	7.76	819	10.4	30,070	6.3	1,567	5.16	93,834	7.8
Miscellaneous mental disorders	239	0.74	694	0.44	192	0.74	278	0.61	941	1.32	16,994	1.07	102	1.3	6,417	1.3	138	0.45	11,791	1
Screening and history of mental health and substance abuse codes	3,184	9.9	12,299	7.85	2,234	8.6	6,031	13.14	9,650	13.49	199,570	12.6	694	8.85	69,182	15	1,980	6.51	174,767	15

SOURCE: Healthcare Cost and Utilization Project (HCUP) Nationwide Inpatient Sample (NIS), 2004.

Tables 4.7a and 4.7b, below, show sub-regional differences among community hospital discharges by substance abuse and mental health diagnoses as the major reason for hospitalization for adults over age 18. Table 4.7a provides findings overall for admissions from Appalachian community hospitals versus non-Appalachian community hospitals. Table 4.7b provides findings by county economic development status. Overall, 5.4% of all hospitalizations in the Appalachian region, and 6.1% of hospitalizations outside of Appalachia are attributed to mental health or substance abuse diagnoses. In Appalachia and outside of Appalachia, 0.2% of hospitalizations are attributed to screening for mental health disorders. There is little variation based on the level of economic development in the region.

Overall, 0.5% of diagnoses in the Appalachian region and 0.4% of diagnoses outside of Appalachia are due to delirium, dementia, and amnesic and other cognitive disorders. Appalachian transitional and competitive counties report around 0.7% of hospitalizations due to delirium and other cognitive disorders, compared with about 0.4% outside of Appalachia. Conversely, in attainment counties, only about 0.2% of diagnoses in the Appalachian region are related to cognitive disorders, compared with 0.4% outside of Appalachia.

Overall, 2.1% of hospitalizations in Appalachia and outside of Appalachia are due to mood disorders. Mood disorders, overall, are the leading mental health or substance abuse diagnosis associated with hospitalizations in Appalachia and outside of Appalachia. In Appalachian distressed counties, 1.1% of hospitalizations are due to mood disorders, compared with 2.0% in non-Appalachian distressed counties. Mood disorders are the leading mental health or substance abuse diagnosis associated with hospitalizations among distressed counties in Appalachia. Mood disorders are also the leading mental health or substance abuse diagnosis associated with hospitalization in transitional counties in Appalachia and outside of Appalachia (2.1% and 2.3% of hospitalizations, respectively). In competitive counties in the Appalachian region, 7.6% of hospitalizations are due to mood disorders, compared with 2.1% in competitive counties outside of Appalachia. Despite this gap, mood disorders constitute the main mental health or substance abuse diagnosis linked to hospitalizations in competitive counties both in Appalachian and outside of Appalachia. Mood disorders are also the main diagnosis associated with hospitalizations for attainment counties in Appalachia and outside of Appalachia.

Overall, 0.8% of hospitalizations in the Appalachian region and 1.3% of hospitalizations outside of Appalachia are associated with a diagnosis of schizophrenia and other psychotic disorders. There are no discernable patterns associated with level of economic development around this diagnosis. In distressed counties, 0.9% of diagnoses in the Appalachian region and 3.3% of hospitalizations outside of Appalachia are linked to this diagnosis. In competitive counties, on the other hand, these values are switched.

Overall, about 1.5% of hospitalizations in Appalachia and outside of Appalachia are due to substance-related disorders. In distressed counties, 1.0% of Appalachian and 4.9% of non-Appalachian hospitalizations are due to substance-related disorders. Outside of Appalachia, this constitutes the largest source of mental health or substance abuse diagnoses. Substance-related disorders also constitute the most frequent diagnosis associated with hospitalizations among mental health or substance abuse diagnoses in at-risk counties within Appalachia and outside of Appalachia (3.1% and 3.0% of hospitalizations, respectively).

Table 4.7a: Differences Among Community Hospital Discharges by Substance Abuse and Mental Health Diagnoses as the Major Reason for Hospitalization, 2004

	Adults Age 18 or Older			
	Appalachian Region		Outside of Appalachia	
	N	%	N	%
Adjustment disorders	92	0.05	6,637	0.12
Anxiety Disorders	248	0.15	6,664	0.12
Attention-deficit, conduct, and disruptive behavior disorders	3	0	186	0
Delirium, dementia, and amnesic and other cognitive disorders	915	0.54	22,526	0.41
Developmental disorders	12	0.01	267	0
Disorders usually diagnosed in infancy, childhood, adolescence	4	0	133	0
Impulse control disorders, NEC	38	0.02	1,268	0.02
Mood disorders	3,519	2.1	117,444	2.13
Personality disorders	17	0.01	790	0.01
Schizophrenia and other psychotic disorders	1,319	0.79	72,713	1.32
Substance-related disorders	2,403	1.43	87,572	1.59
Miscellaneous mental disorders	275	0.16	7,285	0.13
Screening and history of mental health and substance abuse codes	306	0.18	12,789	0.23

SOURCE: Healthcare Cost and Utilization Project (HCUP) Nationwide Inpatient Sample (NIS), 2004.

Table 4.7b: Differences Among Community Hospital Discharges by Substance Abuse and Mental Health Diagnoses as the Major Reason for Hospitalization by County Economic Development Status, 2004

	County Economic Development Status Adults Age 18 or Older																			
	Distressed				At-Risk				Transitional				Competitive				Attainment			
	Appalachian Region		Outside of Appalachia		Appalachian Region		Outside of Appalachia		Appalachian Region		Outside of Appalachia		Appalachian Region		Outside of Appalachia		Appalachian Region		Outside of Appalachia	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Adjustment disorders	13	0.04	349	0.22	21	0.08	48	0.1	43	0.06	2,752	0.17	1	0.01	580	0.12	14	0.05	1,536	0.13
Anxiety Disorders	34	0.11	108	0.07	70	0.27	83	0.2	97	0.14	2,135	0.13	18	0.23	830	0.17	29	0.1	1,648	0.14
Attention-deficit, conduct, and disruptive behavior disorders	.	.	7	0	2	0.01	1	0	.	.	75	0	.	.	19	0	1	0	45	0
Delirium, dementia, and amnestic and other cognitive disorders	139	0.43	482	0.31	105	0.4	147	0.3	560	0.78	6,563	0.41	50	0.64	1,698	0.36	61	0.2	5,348	0.44
Developmental disorders	1	0	19	0.01	.	.	1	0	7	0.01	99	0.01	1	0.01	32	0.01	3	0.01	49	0
Disorders usually diagnosed in infancy, childhood, adolescence	1	0	5	0	.	.	1	0	1	0	40	0	1	0.01	11	0	1	0	46	0
Impulse control disorders, NEC	6	0.02	94	0.06	22	0.08	18	0	7	0.01	440	0.03	1	0.01	184	0.04	2	0.01	257	0.02
Mood disorders	345	1.07	3,161	2.02	513	1.97	815	1.8	1,510	2.11	36,314	2.29	595	7.59	10,134	2.12	556	1.83	30,572	2.54
Personality disorders	.	.	27	0.02	1	0	1	0	10	0.01	252	0.02	4	0.05	74	0.02	2	0.01	217	0.02
Schizophrenia and other psychotic disorders	296	0.92	5,143	3.28	237	0.91	382	0.8	465	0.65	22,914	1.45	176	2.24	4,459	0.93	145	0.48	14,870	1.24
Substance-related disorders	316	0.98	7,614	4.86	811	3.12	1,386	3	1,000	1.4	34,783	2.2	113	1.44	5,134	1.08	163	0.54	22,388	1.86
Miscellaneous mental disorders	55	0.17	123	0.08	46	0.18	62	0.1	115	0.16	2,179	0.14	26	0.33	771	0.16	33	0.11	1,629	0.14
Screening and history of mental health and substance abuse codes	49	0.15	361	0.23	34	0.13	87	0.2	129	0.18	3,399	0.21	26	0.33	1,027	0.22	68	0.22	2,688	0.22

SOURCE: Healthcare Cost and Utilization Project (HCUP) Nationwide Inpatient Sample (NIS), 2004.

Table 4.8: Adult Patients Diagnosed with Mental Health Disorders in Community Hospitals, 2004

	Age 18 and older	
	Appalachian Region	Outside of Appalachia
	N=794,546 Count (Percent)	N=31,930,000 Count (Percent)
Adjustment disorders	1,862 (0.23%)*	121,197 (0.39%)*
Anxiety disorders	43,996 (5.54%)*	1,108,665 (3.56%)*
Attention-deficit, conduct, and disruptive behavior disorders	1,320 (0.17%)	50,105 (0.16%)
Delirium, dementia, and amnesic and other cognitive disorders	47,016 (5.92%)*	1,643,622 (5.28%)*
Developmental disorders	6,523 (0.82%)*	181,070 (0.58%)*
Disorders usually diagnosed in infancy, childhood, or adolescence	247 (0.03%)	10,786 (0.03%)
Impulse control disorders	1,196 (0.15%)*	24,056 (0.08%)*
Personality disorders	7,145 (0.90%)*	246,001 (0.79%)*
Schizophrenia and other psychotic disorders	16,368 (2.06%)*	804,620 (2.58%)*
Substance-related disorders	47,251 (5.95%)*	2,205,822 (7.08%)*
Miscellaneous mental disorders	7,887 (0.99%)*	326,184 (1.05%)*
Screening and history of mental health and substance abuse codes	83,813 (10.55%)*	4,368,709 (14.03%)*
SOURCE: Healthcare Cost and Utilization Project (HCUP) Nationwide Inpatient Sample (NIS), 2004.		
Notes:		
¹ Appalachian region is defined as all areas covered by the 410 designated counties in 13 states.		
² Analysis is limited to hospital discharges with patients age 18-59; Weighted length and charge estimates are presented.		
³ ***The individual coefficient is statistically significant at the 1% level using a two-sided test.		
⁴ **The individual coefficient is statistically significant at the 5% level using a two-sided test.		
⁵ *The individual coefficient is statistically significant at the 10% level using a two-sided test.		

Table 4.8 above provides data on adult patients diagnosed with mental health disorders in community hospitals in Appalachia and outside of Appalachia. More adults in Appalachian community hospitals were diagnosed with the following disorders than their non-Appalachian counterparts: anxiety disorders; delirium, dementia, and amnesic and other cognitive disorders; developmental disorders (includes communication disorders, developmental disabilities, intellectual disabilities, learning disorders, and motor skill disorders); impulse control disorders; and personality disorders. Results are statistically significant ($p < 0.01$).

4.5 Discussion

The Nationwide Inpatient Sample (NIS) data of the Healthcare Cost and Utilization Project (HCUP) provide important and unique information to understand the extent of substance use and mental disorders among patients discharged from the community hospitals. Findings described in this chapter point to several disparities between Appalachian and non-Appalachian community hospital discharges, as well as discharges across Appalachian sub-regions and county economic development levels. In addition, findings from this chapter emphasize that mental health problems are paramount in the Appalachian region.

Path to admission

Patients in the Appalachian region are more likely to be admitted through the emergency department (ED) than patients outside of the Appalachian region. This disparity appears to concentrate in “At-Risk” and “Transitional” counties as compared to other counties. Economic disadvantage is a likely factor in limiting people’s tendency to seek preventive care or get low cost, non-emergency health care.

Payment for services

In Appalachia, over 67 percent of adult hospital stays were billed to the government in 2004; Medicaid was billed for 15% of all stays and Medicare was billed for 52% of all stays. In comparison, 57 percent of adult hospital stays outside of Appalachia were billed to the government; Medicaid was billed for 14% of all stays and Medicare was billed for 43% of all stays. The percentages of inpatient hospital stays billed to Medicaid overall are almost the same between Appalachia and non-Appalachia counties. As expected, less economically developed counties in Appalachia report a greater percentage of Medicaid expected payers than more economically developed counties. However, fewer stays in Appalachian community hospitals in “Distressed,” “At-Risk,” and “Transitional” counties were billed to Medicaid than in non-Appalachian counties of similar economic development status. It appears that the delivery or utilization of government support across communities with differing economic development levels is uneven. It is notable that individuals in the most disadvantaged communities are actually less likely to benefit from government support.

Substance abuse and/or mental disorder diagnoses

Community hospitals play an important role in identifying and treating individuals with MHSA disorders, even when MHSA disorders are not the primary reason for an individual’s hospital visit. Overall, the percentage of admissions in Appalachia for patients with principal and/or secondary MHSA diagnoses is higher than the percentage outside of Appalachia.

This study also reveals that the vast majority of hospital stays with MHSA diagnoses are mental health related; and the rate is higher in Appalachia than outside of Appalachia. The rate of co-occurrence of substance abuse and mental disorders, however, is lower in Appalachia than outside of Appalachia, especially in economically-distressed areas. The high presence of admissions with mental health disorders in Appalachia is a likely challenge to Appalachian community hospitals as these facilities, by definition, are not mental health hospitals.

R

EFLECTIONS FROM PRACTITIONERS

From the Coalition on Appalachian Substance Abuse Policy



Challenges Associated with Using the Health Care Cost and Utilization Project (HCUP) National Inpatient Survey to Explore Substance Abuse and Mental Health in Appalachia

- **HCUP provides an underestimation of the mental health problems in Appalachia and nationally because mental health hospitals are not included in the data set.**
- **Facility reporting practices are often affected by payment.** CASAP noted that hospitals participating in HCUP are likely to underreport substance abuse issues for admissions. Hospitals are not paid if the primary reason for admission is related to a substance abuse problem. According to CASAP, hospitals may code the client's reason for admission as a physical or mental health problem, if possible, to secure payment. As a result, the HCUP data may significantly understate substance abuse problems.
- **CASAP noted that the findings from the HCUP data set were more consistent with their experiences than findings from TEDS, N-SSATS, and NSDUH.**

CHAPTER 5: Substance Abuse Treatment Services in the Appalachian Region, 2005

5.1 Introduction

The National Survey of Substance Abuse Treatment Services (N-SSATS) enables researchers to view an annual snapshot of the character and composition of the substance abuse treatment delivery system in the United States. N-SSATS allows us to make comparisons across geographic areas and among different populations with substance abuse issues. Chapter 5 provides an overview of substance abuse treatment services in and outside of Appalachia on the reference date of March 31, 2005. The sample analyzed in this study includes 13,367 substance abuse treatment facilities from which data were collected in 2005. Of all these facilities, 980 (7.3%) were from the Appalachian region,¹³ and 12,391 (92.7%), were from the rest of the country.¹⁴ All analyses in this chapter are based on N-SSATS data.

We explore the following key research questions for facilities in Appalachia and facilities outside of Appalachia:

Do substance abuse facilities in Appalachia offer inpatient detoxification services?

What are the ownership structures for the Appalachian treatment facilities and how do they compare to those of other facilities?

What is the primary focus of Appalachian substance abuse facilities (e.g., substance abuse services, mental health services, general health care services, etc.)?

What types of health insurance do facilities accept (e.g., Medicare, Medicaid, state financed insurance, private health insurance)?

In Section 5.2, we provide an overview of the N-SSATS series, its uses, the measures relevant to this study, and any limitations specifically related to exploring admissions to substance abuse treatment in the Appalachian region. In Section 5.3, we discuss our methods. Section 5.4 contains the results of the analysis. Finally, Section 5.5 provides a discussion of key findings.

5.2 Data

5.2.1 Overview

The National Survey of Substance Abuse Treatment Services (N-SSATS) collects data from public and private substance abuse treatment facilities in the United States. The term “facility” represents program-level, clinic-level, or multi-site respondents.⁸³ N-SSATS provides information such as substance abuse treatment facility characteristics and key characteristics of clients receiving substance abuse treatment or services.⁸⁴

¹³ The Appalachian region is defined as the 410 designated counties in all of West Virginia and parts of 12 other states: Alabama; Georgia; Kentucky; Maryland; Mississippi; New York; North Carolina; Ohio; Pennsylvania; South Carolina; Tennessee; and Virginia

¹⁴ The data description from the user’s guide showed 13,367 in-scope cases and our total analytic sample has 13,371 cases.

The objective of N-SSATS is to collect data that can be used by the Substance Abuse and Mental Health Services Administration (SAMHSA) and state and local governments to: (1) assist SAMHSA in assessing the nature and extent of services provided and in forecasting treatment resource requirements; (2) update SAMHSA's Inventory of Substance Abuse Treatment Services (I-SATS); (3) analyze general treatment services trends; and (4) generate the National Directory of Drug and Alcohol Abuse Treatment Programs and its online Abuse Treatment Facility Locator equivalent, the Substance Abuse Treatment Facility Locator.⁸⁵

Planned and directed by SAMHSA, N-SSATS was originally launched in the 1970s to collect information on the characteristics of treatment facilities, including their location and utilization of treatment facilities and services. N-SSATS collects data from the 50 states, the District of Columbia, and other U.S. jurisdictions (including the territories of American Samoa and Guam, the Federated States of Micronesia, the Republic of Palau, the Commonwealth of Puerto Rico, and the Virgin Islands of the United States). Data are collected on the following topics: ownership/operation; primary focus (substance abuse, mental health, both, general health, other); organizational setting; services offered; languages spoken other than English; programs or groups for special populations; type of treatment provided; types of payment accepted; managed care agreements; sources and amounts of revenue; number of clients under age 18; number of clients by age, sex, race and ethnicity; client substance abuse problem treated; and licensure/ certification of facility and staff.

The 2005 N-SSATS was conducted between March and October 2005. In 2005, a total of 13,371 substance abuse treatment facilities responded to N-SSATS.⁸⁶

5.2.2 Sample Design

N-SSATS is a point-prevalence survey, meaning that it provides information about the substance abuse treatment facilities on a particular reference date. For the 2005 N-SSATS, the reference date was March 31, 2005. The N-SSATS provides a snapshot of the substance abuse delivery system on this reference date.

The Inventory of Substance Abuse Treatment Services (I-SATS) provides the sampling frame for N-SSATS. The survey universe contains treatment facilities listed on the I-SATS six weeks prior to the reference data and those added by state substance abuse agencies or discovered during the first three weeks of the survey. The treatment facilities included are licensed, certified, or approved by the state substance abuse agency and facilities that state substance abuse agencies do not license or certify (e.g., private, for-profit, small group practices, or hospital-based programs).

Several features of N-SSATS are important to note. First, the total number of patients treated does not represent the annual total number of clients at these facilities. This is because N-SSATS provides a snapshot of treatment facilities on a single day. As a result, we do not have information about the annual number of clients treated, nor can we assume that facilities were treating clients at their full capacity. Second, N-SSATS collects data about substance abuse treatment facilities, rather than individual clients. Third, N-SSATS does not include treatment programs in jails or prisons. Finally, client data are aggregated for each facility that reports to N-SSATS.⁸⁷

Data for N-SSATS are collected by Mathematica Policy Research, Inc. For 2005, N-SSATS questionnaires were distributed via mail to 16,418 facilities.⁸⁸ The facilities that received the mail

questionnaire were believed to offer substance abuse treatment services. Approximately 10 percent of these facilities had closed or were not providing substance abuse treatment on the reference date, and were therefore deemed ineligible to participate. Of the remaining 14,747 facilities, 95.3% completed the survey.⁸⁹ Of these, an additional 680 facilities were considered out of scope or had no facility information. The final sample size was 13,367 (90.6 percent of the survey universe). The response rate was 44.5 percent for the mail survey.⁹⁰ The same survey was offered in telephone and Web-based formats. The response rate for the telephone survey was 22.1 percent, slightly lower than the 33.4 percent response rate for the Web-based questionnaire.⁹¹ Upon completion of data collection, Synectics for Management Decisions, Inc., prepares the file for release.

5.2.3 Uses of the N-SSATS

N-SSATS enables researchers to explore the demographic and substance abuse characteristics of admissions to and discharges from substance abuse treatment. SAMSHA releases an annual report based on the N-SSATS data as well as a national profile.^{92,93} The annual report explores trends in facility characteristics, client characteristics, and facility services. The national profile provides a high level overview of the N-SSATS data. N-SSATS data were also used to develop The National Directory of Drug and Alcohol Abuse Treatment Programs 2005, a searchable directory of 10,000 drug and alcohol treatment programs across the country.⁹⁴

N-SSATS data have been used to explore a number of research questions related to substance abuse treatment. A recent study used N-SSATS data to examine the relationships between state authorization type (certification/accreditation versus licensure with and without deemed status) and outpatient treatment program practices, for example.⁹⁵

N-SSATS has also been used to explore the distribution of specialized programs or groups in substance abuse treatment facilities across the United States. Studies have examined services and programs available for adolescents, criminal justice clients, and pregnant or postpartum women.^{96,97,98,99} Research has also focused on the availability of the treatment services (including clinical, social, and health services) for clients with co-occurring mental health and substance abuse disorders at these facilities.¹⁰⁰

Other studies that have applied N-SSATS data have explored profit status and the effects on the provision of drug treatment services,¹⁰¹ opioid treatment programs,¹⁰² and the role of state policies in the adoption of naltrexone for substance abuse treatment.¹⁰³

The Office of Applied Studies (OAS) at SAMHSA also releases the Drug and Alcohol Services Information System (DASIS) Series report annually on drug and alcohol services. The DASIS is the primary source of national data on substance abuse treatment, developed from N-SSATS, the Treatment Episode Data Set (TEDS), and the Inventory of Substance Abuse Treatment Services (I-SATS).

5.2.4 N-SSATS Measures Used in this Study

Next, we define the measures used from the 2005 N-SSATS, and explore the potential limitations with respect to using these measures for our purpose – exploring the characteristics of and services provided by substance abuse treatment facilities in the Appalachian region and other regions

nationally. We explore a number of variables related to services offered, groups treated, and payment/ insurance options.

We explored measures indicating which substance abuse treatment facilities offer inpatient detoxification and looked at the primary focus of facilities – specifically, whether they offered substance abuse services, mental health services, a mix of mental health and substance abuse services, or general health care services. Next, we looked at which facilities accept adolescents for treatment. In terms of payment, we examined which facilities use a sliding fee scale and which facilities offer free or no charge treatment. Finally, we provide N-SSATS data on facilities that accept Medicare, Medicaid, state financed health insurance, and private insurance.

5.2.5 Limitations of the N-SSATS

There are several limitations with respect to using N-SSATS to explore the composition and characteristics of substance abuse treatment facilities in Appalachian counties as compared to other counties nationally.

One serious limitation is that N-SSATS does not capture data from all of the substance abuse treatment facilities that may be relevant to this study. Several types of facilities were excluded from the 2005 N-SSATS analyses, including: halfway houses that do not provide substance abuse treatment; jails, prisons, or other organizations that treat incarcerated patients only; individual practitioners that were not recommended by the State substance abuse agency for inclusion; and other facilities whose client counts were included within the counts of other facilities.¹⁰⁴ In addition to excluding certain facilities, state licensure and certification policies also may affect which facilities are in the N-SSATS survey universe.¹⁵ Finally, N-SSATS is a voluntary survey, and thus, does not reflect all substance abuse treatment facilities in the United States. The response rate is very high overall (about 95%), however. In this study, no adjustments have been made for facility non-response (approximately 5%) so non-response bias may affect results.¹⁰⁵

For these reasons, it is important to note that the N-SSATS does not capture data from all of the facilities that may be relevant to this study. This limitation is particularly problematic for this study because we are making comparisons between the Appalachian counties and all other counties nationally. If facilities in states in the Appalachian region submit data less often than other states, then our findings may be skewed.

A second limitation is that N-SSATS is a point-prevalence survey. Thus, the data do not reflect the annual total number of clients receiving treatment at substance abuse facilities, but rather they provide a snapshot based on a single reference date.

There are several limitations related to the survey's design and content. For certain variables (e.g., services provided and specialized programs), facilities can enter multiple responses. However, the data only reflect the total number of treatment facilities that entered each response. In addition, N-SSATS only reports that a service, such as inpatient detoxification, is offered. The data do not in

¹⁵ According to project staff at the Office of Applied Studies, which funded and governed the data collection, the state licensure policies are not an important data concern. While the state is charged with helping to identify substance abuse treatment facilities, encouraging facilities to respond to the survey, and determining eligibility for inclusion in the published directory, they do not determine which agencies are actually surveyed.

any way reflect the quality of the service delivered, or whether the service has been received by the patient. Thus, our findings cannot speak to the quality of care received in Appalachian treatment facilities versus other facilities nationwide. One last limitation to note is that some financial data originally collected through the survey have been omitted from the public use file for confidentiality reasons.

5.3 Methods

5.3.1 Study Sample

The sample analyzed in this study includes 13,371 substance abuse treatment facilities from which data were collected in 2005. Of all these facilities, 891 (7.3%) were from the 318 counties in the Appalachian region,¹⁶ and 12,391 (92.7%), were from the rest of the country.¹⁷

5.3.2 Statistical Methods

Appalachian Regional Status. A key purpose of analyzing the N-SSATS is to obtain an overview of the characteristics of the substance abuse treatment facilities in the Appalachian region, as compared to substance abuse treatment facilities located outside of the Appalachian region. Our first step of the analysis is to match the census county FIPS codes in the 2005 N-SSATS with the FIPS codes of the 410 Appalachian counties as defined by the Appalachian Regional Commission. This creates a regional status flag variable to group all substance abuse treatment facilities into one of two groups – facilities located in the Appalachian region and facilities outside of the Appalachian region.

Research Variables. Research variables for the analysis covered the following characteristics of the substance abuse treatment facilities: availability of inpatient detoxification services; primary substance abuse treatment facility focus areas; provision of services for adolescents; availability of a sliding fee scale; availability of no-cost treatment; acceptance of Medicare; acceptance of Medicaid; acceptance of state financed health insurance; and acceptance of private health insurance.

Analysis. Data were analyzed using descriptive statistics. Cross-tabulations were examined to assess the distribution of aggregated frequencies and proportions of various facility characteristics between facilities in the Appalachian region and those outside of the Appalachian region. Chi-square tests were performed for tabulations to test for statistical significance of the differences. Data were compiled and analyzed with SPSS statistical software version 14.0 (SPSS Inc., Chicago, IL).

5.4 Results

Next, we present our results for substance abuse treatment facilities in Appalachia and outside of Appalachia. We present other findings in Section 5.4.1 about the ownership of substance abuse treatment facilities, characteristics of these facilities; a comparison of services offered in the

¹⁶ The Appalachian region is defined as the 410 designated counties in all of West Virginia and parts of 12 other states: Alabama; Georgia; Kentucky; Maryland; Mississippi; New York; North Carolina; Ohio; Pennsylvania; South Carolina; Tennessee; and Virginia

¹⁷ The data description from the user's guide showed 13,367 in-scope cases and our total analytic sample has 13,371 cases.

inpatient, outpatient, and non-hospital residential care settings; pharmacotherapies provided; and types of services offered at facilities, generally. In Section 5.4.2, we describe a series of figures that illustrate comparisons between Appalachian treatment facilities and non-Appalachian treatment facilities. We provide figures showing our findings related to inpatient detoxification services, the primary focus of facilities; and health insurance and payment options available at the treatment facilities (e.g., free or no charge, Medicare, Medicaid, state financed health insurance, and private health insurance).

5.4.1 Tables

	Region				p-value
	Appalachia N=891		Non-Appalachia N=12,480		
	N	%	N	%	
Ownership					
Private for-profit organization	204	22.90	3,367	26.98	<0.0001
Private non-profit organization	557	62.51	7,355	58.93	
State government	40	4.49	413	3.31	
Local, county, or community government	65	7.30	882	7.07	
Tribal government	3	0.34	167	1.34	
Federal government	22	2.47	296	2.37	
Other Characteristics					
Receives public funds ¹	868	70.05	12,480	65.32	0.0046
Arrangements/contracts with managed care organizations ²	842	58.08	11,869	49.10	<0.0001
NOTES:					
¹ Public funds include federal, state, county, or local government funds for substance abuse treatment programs.					
² Managed care organizations have agreements with certain health care providers who provide services to plan members (e.g., managed behavioral health care organizations, health maintenance organizations, and preferred provider organizations).					
SOURCE: U.S. Dept. of Health and Human Services, Substance Abuse and Mental Health Services Administration, Office of Applied Studies. National Survey of Substance Abuse Treatment Services (N-SSATS), 2005.					

Table 5.1 describes the ownership and other characteristics of substance abuse treatment facilities in the Appalachian region and in the non-Appalachian region in 2005. The majority of substance abuse treatment facilities in Appalachia (62.51%) and outside of Appalachia (58.93%) are owned by private non-profit organizations. Proportionately, more Appalachian facilities are owned by the federal government (2.47%) than facilities outside of the Appalachian region (2.37%). Proportionately more Appalachian facilities are owned by a state government (4.49%) or a local, county or community government (7.30%) than treatment facilities outside of Appalachia (3.31% and 7.07%, respectively). Fewer Appalachian facilities than non-Appalachian facilities are owned by a private-for-profit organization (22.90% vs. 26.98%) or tribal government (0.34% vs. 1.34%). Results are statistically significant at the 99% confidence level.

Proportionately more treatment facilities in Appalachia than outside of Appalachia receive public funds for their treatment programs, though more Appalachian facilities than non-Appalachian facilities receive these funds; results are statistically significant at the 95% confidence level. Proportionately more facilities in Appalachia have contracts or arrangements with managed care organizations (58.08%) than facilities outside of Appalachia (49.10%); results are statistically significant ($p < 0.0001$).

	Region				p-value
	Appalachia		Non-Appalachia		
	N	%	N	%	
Accredited by the Joint Commission on the Accreditation of Healthcare Organizations (JCAHO) ¹	891	27.38	12,480	22.92	0.0023
Accredited by Commission on Accreditation of Rehabilitation Facilities (CARF) ²	891	13.69	12,480	16.51	0.0277
Licensed/certified by public health department	891	44.78	12,480	38.65	0.0003
Licensed/certified by state mental health department	891	44.00	12,480	29.78	<0.0001
Licensed/certified by state substance abuse agency	891	69.14	12,480	81.35	<0.0001

NOTES:

¹ JCAHO sets standards for healthcare organizations and issues accreditation to organizations that meet those standards.

² CARF is an independent, non-profit organization that reviews and grants accreditation services nationally and internationally per the request of facilities or programs.

SOURCE: U.S. Dept. of Health and Human Services, Substance Abuse and Mental Health Services Administration, Office of Applied Studies. National Survey of Substance Abuse Treatment Services (N-SSATS), 2005.

Table 5.2 describes the characteristics of substance abuse treatment facilities in the Appalachian region and outside of Appalachia in 2005. Proportionately more Appalachian than non-Appalachian treatment facilities are accredited by the Joint Commission on the Accreditation of Healthcare Organizations (JCAHO) (27.38% vs. 22.92%) ($p < 0.05$). Proportionately less Appalachian facilities (13.6%) than non-Appalachian facilities (16.51%) are accredited by the Commission on Accreditation of Rehabilitation Facilities (CARF) ($p < 0.05$). Approximately 45% of Appalachian treatment facilities are licensed or certified by a public health department as compared to 38.65% of facilities outside of Appalachia ($p < 0.001$). Forty-four percent of Appalachian facilities are licensed or certified by the state mental health department, as opposed to 29.78% of non-Appalachian facilities ($p < 0.0001$). Proportionately fewer Appalachian facilities (69.14%) are licensed or certified by the state substance abuse agency than non-Appalachian facilities (81.35%); results are statistically significant ($p < 0.0001$).

Table 5.3: Inpatient, Outpatient, and Non-Hospital Residential Care Offered at Substance Abuse Treatment Facilities, 2005

	Region				p-value
	Appalachia		Non-Appalachia		
	N	%	N	%	
Hospital Inpatient Care					
Inpatient care located in or operated by a hospital	890	14.16	12,456	13.18	0.407
Inpatient substance abuse care offered	891	8.53	12,480	7.29	0.172
Inpatient detoxification care offered	891	7.74	12,480	6.13	0.0542
Outpatient Care					
Any outpatient substance abuse care offered currently	891	83.28	12,479	80.66	0.0548
Outpatient detoxification offered	891	7.41	12,478	11.13	0.0006
Regular outpatient care offered	891	72.36	12,479	72.49	0.93
Intensive outpatient care offered	891	38.95	12,479	42.88	0.0217
Non-Hospital Residential Care					
Non-hospital residential substance abuse care	891	21.66	12,480	27.92	<0.0001
Non-hospital residential short-term treatment	891	8.19	12,480	12.07	0.0005
Non-hospital residential long-term treatment	891	16.05	12,480	23.17	<0.0001
SOURCE: U.S. Dept. of Health and Human Services, Substance Abuse and Mental Health Services Administration, Office of Applied Studies. National Survey of Substance Abuse Treatment Services (N-SSATS), 2005.					

Table 5.3 describes the inpatient, outpatient, and non-hospital residential care services offered by substance abuse treatment facilities in the Appalachian region and outside of Appalachia in 2005.

In Appalachia, proportionately fewer facilities offer outpatient detoxification (7.41%) as opposed to facilities outside of Appalachia (11.13%). Approximately 38.95% of treatment facilities in Appalachia and 42.88% of facilities outside of Appalachia offer intensive outpatient care. Results are statistically significant ($p < 0.05$). Non-hospital residential substance abuse care is provided in proportionately fewer facilities in Appalachia (21.66%) than outside of Appalachian (27.92%). About 8% of facilities in Appalachia offer non-hospital short-term residential treatment, less than the 12% of facilities that offer this service outside of Appalachia. Long-term treatment is also offered in proportionately fewer facilities in Appalachia (16.05%) than outside of Appalachia (23.17%). Results are statistically significant ($p < 0.001$).

Table 5.4 Counseling and Pharmacotherapies Available at Treatment Facilities, 2005

	Region				p-value
	Appalachia		Non-Appalachia		
	N	%	N	%	
Pharmacotherapies Provided by Facility					
Antabuse	876	18.49	12,293	15.88	0.0417
Naltrexone	874	16.59	12,233	12.07	<0.0001
Campral	874	13.73	12,185	7.96	<0.0001
Methadone	874	8.24	12,270	9.94	0.103
Buprenorphine-Suboxone	871	8.15	12,190	7.85	0.75
Buprenorphine-Subutex	863	5.10	12,160	5.25	0.85
SOURCE: U.S. Dept. of Health and Human Services, Substance Abuse and Mental Health Services Administration, Office of Applied Studies. National Survey of Substance Abuse Treatment Services (N-SSATS), 2005.					

Table 5.4 describes the pharmacotherapies provided by substance abuse treatment facilities in the Appalachian region and outside of Appalachia in 2005. Naltrexone is provided at 16.59% in Appalachian and 12.07% of facilities outside of Appalachia ($p<0.0001$). Almost 14% of Appalachian treatment facilities provide Campral, compared to just under 8% of facilities outside of Appalachia ($p<0.0001$).

Table 5.5 Services Available at Treatment Facilities, 2005

	Region				p-value
	Appalachia		Non-Appalachia		
	N	%	N	%	
Substance abuse treatment	891	98.3	12480	98.2	0.719
Intake/ assessment/ referral	891	94.28	12,478	93.56	0.397
Assessment of mental health	847	51.59	11,918	44.66	<0.0001
Comprehensive substance abuse assessment	890	93.3	12434	93.0	0.793
After care counseling	875	80.3	12311	78.5	0.191
Substance abuse relapse prevention therapy	875	78.9	12325	81.4	0.062
Substance abuse individual therapy	888	95.6	12436	94.8	0.291
Substance abuse family counseling	886	83.07	12,309	76.19	<0.0001
Substance abuse group therapy	887	90.5	12403	90.3	0.842

SOURCE: U.S. Dept. of Health and Human Services, Substance Abuse and Mental Health Services Administration, Office of Applied Studies. National Survey of Substance Abuse Treatment Services (N-SSATS), 2005.

As depicted in **Table 5.5**, there were statistically significant differences between Appalachian and non-Appalachian facilities in terms of whether they offered assessment of mental health and substance abuse family counseling ($p < 0.0001$).

5.4.2 Figures

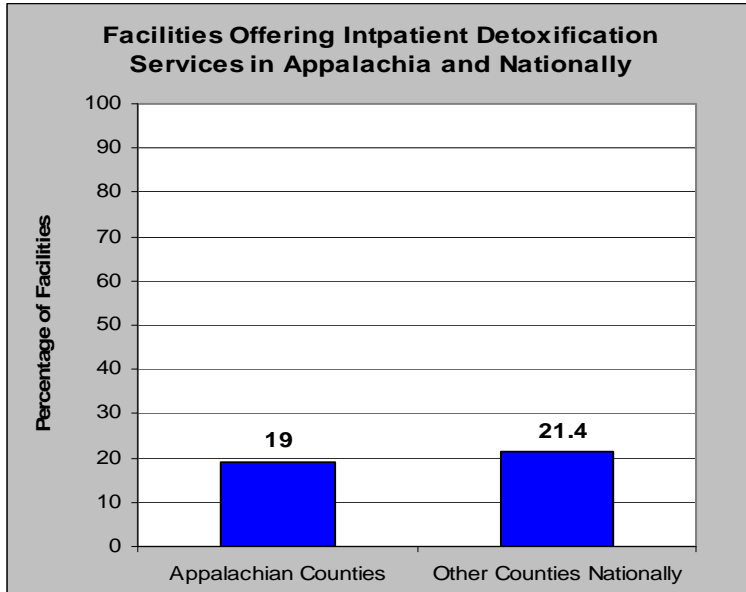


Figure 5.1: Facilities Offering Inpatient Detoxification Services

Figure 5.1 shows that 19% of the 891 substance abuse treatment facilities in Appalachian counties offered inpatient detoxification services, as compared to 21.4% of the 12,480 substance abuse treatment facilities in all other counties nationally.

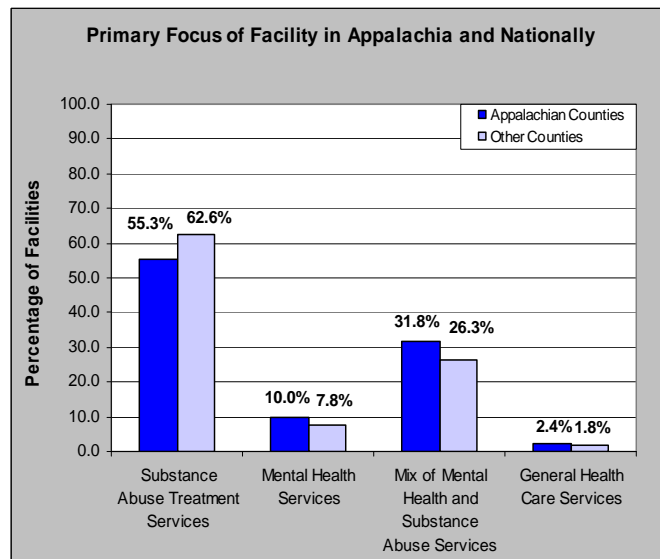
The 2.4% difference between Appalachian facilities and non-Appalachian facilities is not statistically significant ($p < 0.085$).

SOURCE: National Survey of Substance Abuse Treatment Services, 2005.

Figure 5.2: Primary Focus of Substance Abuse Facilities

Figure 5.2 shows the primary focus of substance abuse treatment facilities in Appalachian counties versus all other counties in the U.S. Treatment facilities were asked: “What is the primary focus of this facility?”

In Appalachia, proportionately more treatment facilities had a primary focus of providing mental health services, a mix of mental health services, and general health care services than treatment facilities outside of Appalachia. Fewer facilities in Appalachia had a primary focus of providing substance abuse treatment services than outside of Appalachia.



SOURCE: National Survey of Substance Abuse Treatment Services, 2005.

About 2% of facilities in Appalachia and other counties nationally reported general health care services as their primary focus. Results are statistically significant ($p < 0.0001$).

Figure 5.3: Facilities Using a Sliding Fee Scale

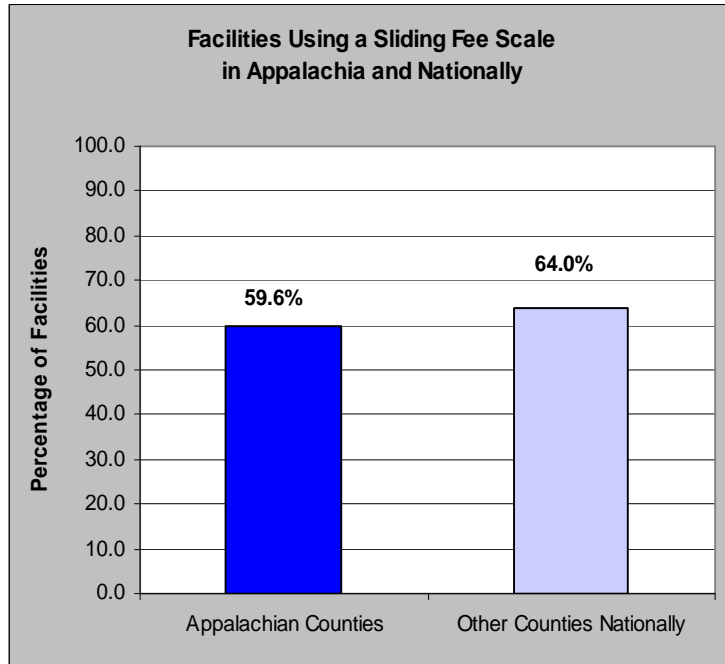


Figure 5.3 shows that proportionately fewer Appalachian substance abuse treatment facilities (59.6%) offered a sliding fee scale to clients than facilities outside of Appalachia (64%).

The total number of Appalachian facilities for this variable was 979. The total number for facilities outside of Appalachia was 12,343.

The difference between Appalachian facilities and non-Appalachian facilities is statistically significant ($p < 0.05$).

SOURCE: National Survey of Substance Abuse Treatment Services, 2005.

Figure 5.4: Facilities Offering Free or No Charge Treatment

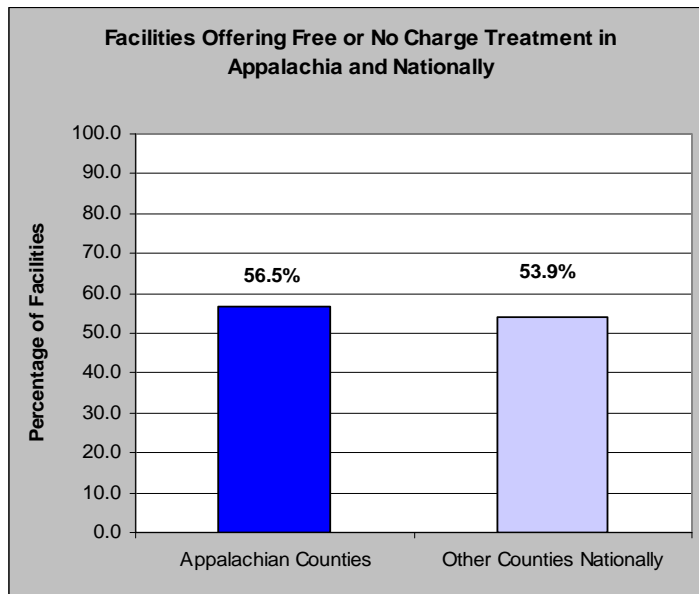


Figure 5.4 indicates that proportionately more substance abuse treatment facilities in Appalachian counties offered free or no charge treatment to clients who cannot afford to pay, in comparison to facilities in counties outside of Appalachia. Slightly more than half of the facilities (56.5% in Appalachia and 53.9% in other counties nationally) offered free or no charge treatment. Results were not statistically significant at the 95% confidence level.

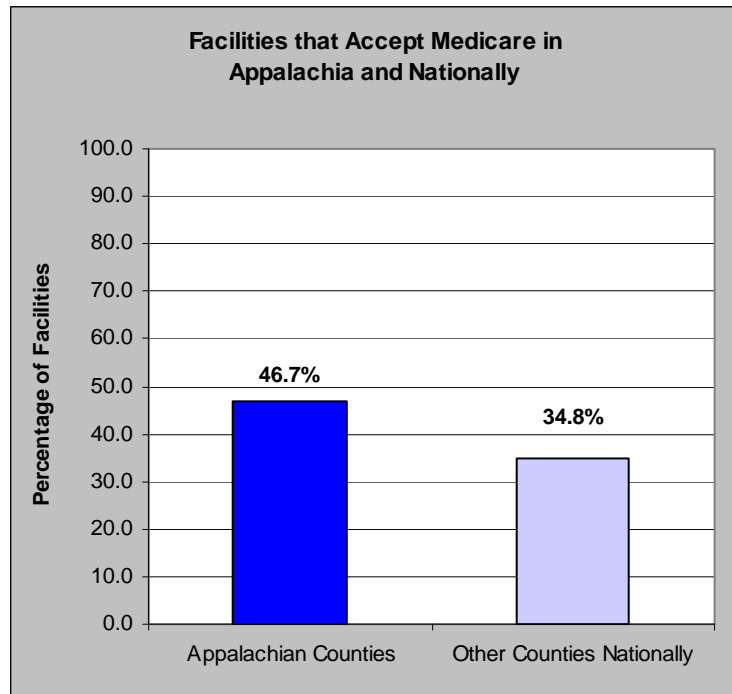
SOURCE: National Survey of Substance Abuse Treatment Services, 2005.

Figure 5.5: Facilities that Accept Medicare

Figure 5.5 indicates that proportionately more treatment facilities in Appalachian counties accepted Medicare as payment than facilities in other counties nationally.

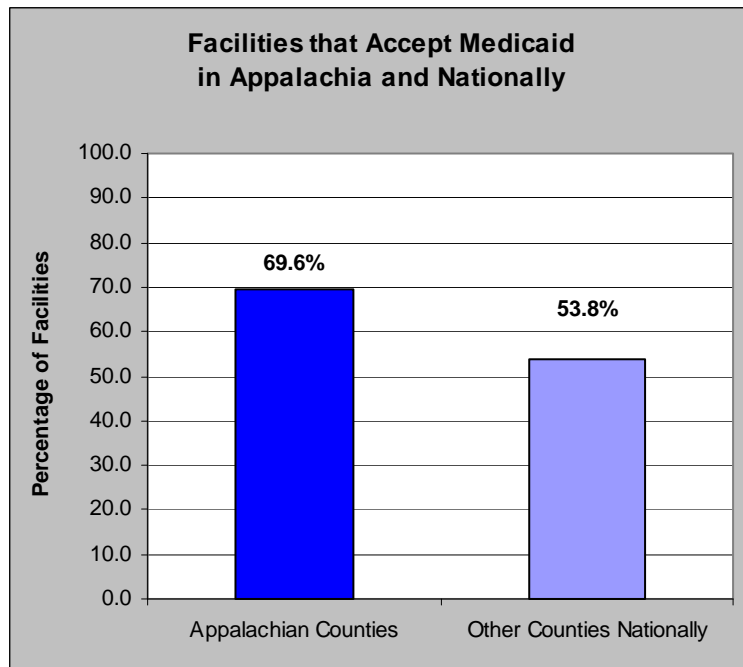
Of the 848 Appalachian facilities responding to this item, approximately 47% reported accepting Medicare for payment. About 35% of the 11,818 facilities in all other counties nationally accepted Medicare.

The difference is statistically significant at the 99% confidence level.



SOURCE: National Survey of Substance Abuse Treatment Services, 2005.

Figure 5.6: Facilities that Accept Medicaid



SOURCE: National Survey of Substance Abuse Treatment Services, 2005.

Figure 5.7 shows that proportionately more substance abuse treatment facilities in Appalachian counties accepted Medicaid than treatment facilities in other counties nationally.

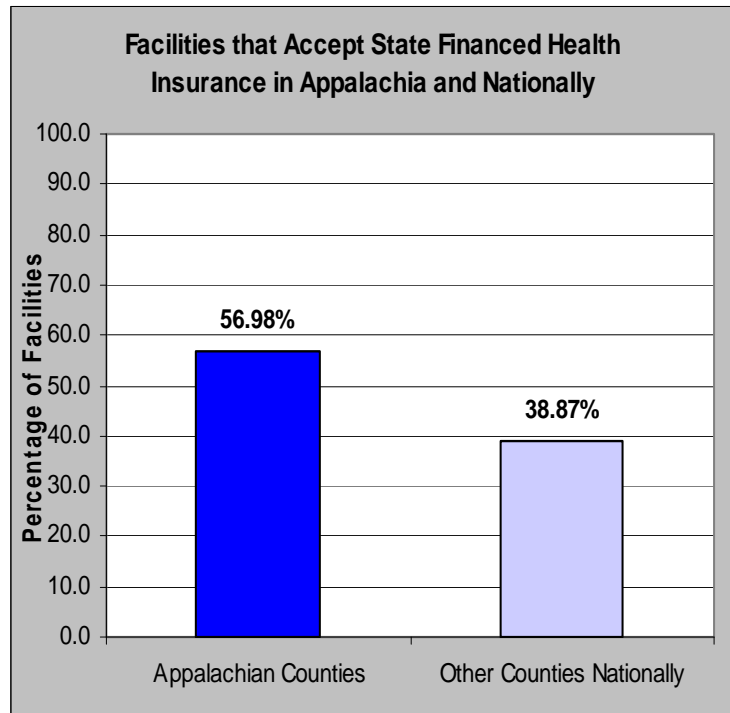
Of the 861 Appalachian facilities responding to this item, approximately 70% reported accepting Medicaid for payment. About 54% of the 12,027 facilities in all other counties nationally accepted Medicaid.

The difference is statistically significant at the 99% confidence level.

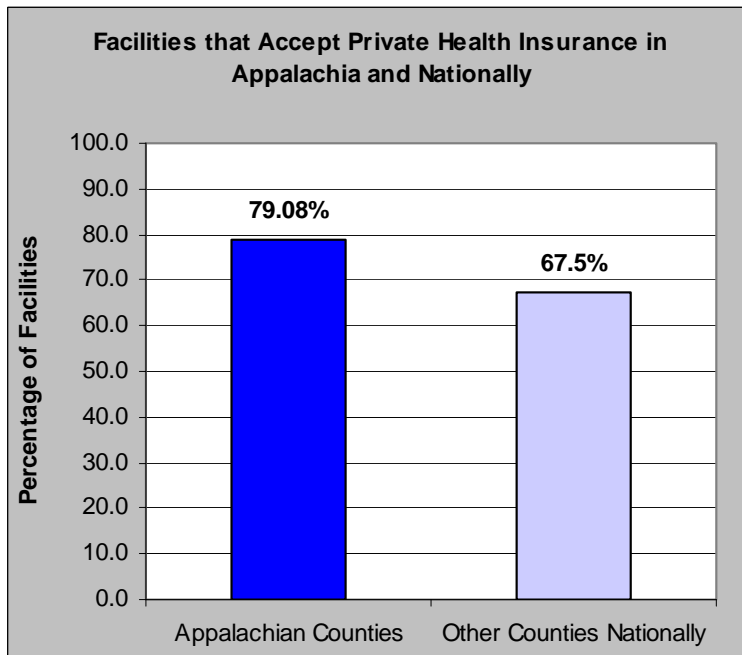
Figure 5.7: Facilities that Accept State Financed Health Insurance

Figure 5.7 demonstrates that proportionately more substance abuse treatment facilities in Appalachian counties accepted state financed health insurance than facilities in other counties nationally. For this variable, a state financed health insurance plan does not include Medicaid. Examples of state financed plans are the State Children's Health Insurance Program and other state financed high risk insurance pools.

Of the 809 Appalachian facilities responding to this item, approximately 57% reported accepting state financed health insurance for payment. About 39% of the 11,278 facilities in all other counties nationally accepted state financed health insurance. The difference is statistically significant ($p < 0.01$).



SOURCE: National Survey of Substance Abuse Treatment Services, 2005.



SOURCE: National Survey of Substance Abuse Treatment Services, 2005.

Figure 5.8: Facilities that Accept Private Health Insurance

Figure 5.8 shows that more substance abuse treatment facilities in Appalachian counties accepted private health insurance than facilities in other counties nationally.

Of the 870 Appalachian facilities responding to this item, approximately 79.08% reported accepting private health insurance for payment. About 67.5% of the 12,123 facilities in all other counties nationally accepted private health insurance. The difference is statistically significant ($p < 0.01$).

5.5 Discussion

In presenting our discussion of the findings for this chapter, we again want to recognize that the N-SSATS has limitations as a data source for this study. Due to the voluntary nature of the survey and differences in reporting practices within states, it is difficult to ascertain the reliability of the data. Despite the limitations of the survey, the N-SSATS is the only survey that explores substance abuse treatment services and practices at the facility level. Thus, we view the N-SSATS as a limited, yet important data source for this study of substance abuse and mental health issues, and access to treatment in Appalachia.

Our study found that the primary focus area of the majority of substance abuse treatment facilities was providing substance abuse treatment services only, rather than a mix of services. Even so, this was less likely to be the case among Appalachian facilities, with 55% listing substance abuse treatment only as their primary focus area, compared to approximately 63% for facilities nationally. In contrast, Appalachian substance abuse treatment facilities were more likely to list mental health treatment and a mix of substance abuse treatment and mental health treatment as the primary focus. Unique barriers to accessing treatment in the Appalachian region, such as distance and lack of public transportation, may provide the impetus for facilities to offer a broader array of co-located services.

A consistent finding from this chapter is that Appalachian facilities are significantly less likely than non-Appalachian facilities to use a sliding fee scale ($p < 0.01$). However, analyses also show a significantly greater acceptance of government financed payment sources including Medicare, Medicaid, and state financed insurance ($p < 0.01$). While proportionately more facilities accept these payment sources, we do not know the breadth of coverage within the region. Similarly, proportionately more Appalachian facilities accept private health insurance ($p < 0.05$), but the breadth of coverage is also unknown. Future studies analyzing cost and insurance issues within the Appalachian region could provide more specificity in terms of facility rationale, breadth of coverage, and service implications.

In terms of facility ownership, we found that the majority of substance abuse treatment facilities in Appalachia and outside of Appalachia are owned by private non-profit organizations. Proportionately, more Appalachian facilities are owned by the local, county or community government, state government, or federal government than facilities outside of Appalachia.

Of our findings related to the characteristics of services provided at treatment facilities, we found that more Appalachian treatment facilities are licensed or certified by a public health department than non-Appalachian treatment facilities ($p < 0.001$), and more Appalachian facilities receive public funds than non-Appalachian facilities ($p < 0.01$).

More than 98% of Appalachian facilities offered substance abuse treatment. More Appalachian facilities offered assessment of mental health and substance abuse family counseling than non-Appalachian facilities, and the differences are statistically significant ($p < 0.01$).


Future studies on substance abuse and mental health issues in Appalachia would benefit from better data at the substance abuse treatment facility level. The N-SSATS does provide important information about the types of services offered in facilities – for example, that Appalachian facilities are more likely to accept payment from Medicare, Medicaid, state financed health insurance, and private insurance. However, the N-SSATS does not provide data on other potentially useful topics such as wait-listing practices at different types of substance abuse facilities (residential, inpatient, and outpatient), cost of different services, and expected source of payment.

Upon review of our findings for this chapter, the Coalition on Appalachian Substance Abuse Policy (CASAP) suggested a brief consumer-oriented telephone survey of facilities within Appalachia in order to gather some of these data elements. While the suggested survey activity is outside the scope of this study, such an effort would be beneficial to future studies of substance abuse at the facility level. Furthermore, efforts to augment the data available at the substance abuse treatment facility level would provide new opportunities to explore trends within the Appalachian region, and across the nation.

Contrary to feedback from CASAP, according to staff at the Office of Applied Studies (OAS) (Alderks, 2008: through personal communication), the completeness of coverage of N-SSATS should have very little to do with state registration policies. Each year OAS and its data contractor perform augmentation activities using various directories such as the American Business Index and the American Hospital Association survey files in an effort to locate any unknown substance abuse treatment facilities. All identified and known facilities are then sent a survey at the location level. For example, a network of 15 facilities would receive 15 questionnaires, one for each facility location. In some cases, client count numbers may be combined for a few facilities, but it is known which facilities are included in those combined numbers. This would affect only information determining size of facility, not characteristics about services provided by the facility.

REFLECTIONS FROM PRACTITIONERS

From the Coalition on Appalachian Substance Abuse Policy



Challenges Associated with Using the National Survey for Substance Abuse Treatment Services (N-SSATS) to Explore Substance Abuse in Appalachia

- **The completeness of the N-SSATS data depends on state registration policies.** A substance abuse treatment facility with multiple sites may register each site individually with the state, or register all sites in aggregate. For example, Kentucky engages in site-based licensing: facilities register with the state individually, and therefore, each facility completes the N-SSATS. In contrast, in Ohio, multiple facilities in multiple counties may register with the state under one license. Thus, individual facilities do not complete the N-SSATS. N-SSATS data for each state may depend greatly on whether the data is aggregated across all facilities or reported by individual facilities.
- **The federal government does not exert pressure on states to comply with N-SSATS reporting.** The N-SSATS is a voluntary survey. According to CASAP, given that the federal government does not require states to complete the N-SSATS, the survey has limitations as a tool for decision making about substance abuse issues.
- **CASAP practitioners described the N-SSATS as not being a reliable source of data on referrals from one substance abuse facility to another, nor a reliable source of data regarding trends in access to substance abuse treatment.** These limitations are partly the due to states' differing reporting practices.

CHAPTER 6: Substance Abuse and Mental Health – A Comparison of Appalachian Coal Mining Areas to Other Areas within the Appalachian Region

6.1 Introduction

A key geographic and economic feature of the Appalachian region is that a large proportion of the region is coal producing. The coal mining industry has long been a vital part of the economy of Appalachia and remains a major industry within the region. Many residents of the Appalachian region are employed in the coal mining industry or are employed in other industries that depend upon coal mining for their business.¹⁰⁶ It has been reported in major news media that, with per-ton prices doubling in the past six years, mining is currently more profitable than any other time in the past generation. This has led to a coal boom, which has provided economic opportunity for many workers within the region, but has also been clouded by an increase in drug use, as reported by the media. The media's poignant stories about drug use in coal mining areas have cited abuse of painkillers, methadone overdoses, and addiction OxyContin¹⁰⁷ as major problems. Standard national estimates comparing major occupational groups indicate that people in occupations involving heavy physical labor tend to use substances more,^{108,109} yet workers in the coal mining industry have been reported as having only average prevalence of past month illicit drug use among major occupational groups.¹¹⁰ In addition to these seemingly contradictory results in media reporting and available research, questions also remain as to whether mining-concentrated areas feature differently in terms of treatment services access and health care utilization. This is an area in need of further study.

“The abuse and misuse of painkillers is the worst I have seen in the 16 years I have worked narcotics in this area,” said Lt. Richard Stallard of the Big Stone Gap police department, director of the Southwest Virginia Drug Task Force.¹¹¹

Experts say that whatever ground was gained against the illegal use of OxyContin is being lost, engulfed in a widening cycle of abuse that extends to pain-killers, antidepressants and other prescription drugs.

Washington Post, January 13, 2008

In this chapter, we conduct statistical analyses of data systematically collected by two agencies within the U.S. Department of Health and Human Services – the Substance Abuse and Mental Health Services Administration (SAMHSA) and the Agency for Healthcare Research and Quality (AHRQ). We focus exclusively on the Appalachian region with the objective of comparing coal mining areas and other areas with respect to substance abuse and mental health status and access to the treatment services. The key research question for this chapter is: Do coal mining areas within Appalachia differ from other Appalachian areas in terms of the composition of patients admitted to specialty treatment services or discharged from community hospitals?

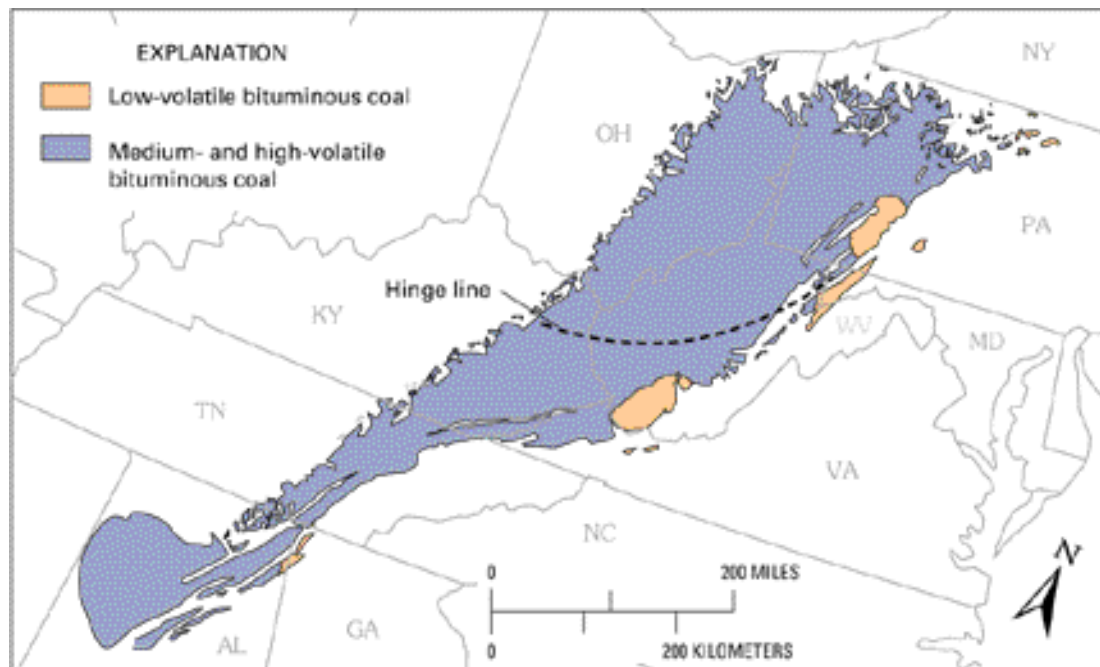
6.2 Data and Analytic Samples

Data sources utilized in this chapter are the current National Coal Resources Data System (NCRDS) from the U.S. Geological Survey, the Health Care Utilization Project's (HCUP) National Inpatient Stay (NIS) data set from AHRQ, and the Treatment Episode Data Set (TEDS).

Coal Mining Counties

We first identified the coal mining counties within the Appalachian Region by merging the coal mining area coverage data from the NCRDS with the list of the Appalachian counties described by the Appalachian Region Commission (ARC) as of 2006. Among the 410 Appalachian counties, 176 counties were identified as being located in the coal mining area (see **Figure 6.1**).

Figure 6.1 Coal Mining Area in the Appalachian Region



Source: National Coal Resources Data System, U.S. Geological Survey.

Community Hospital Discharges

The first analytic sample for this chapter includes all adult discharges from community hospitals within the Appalachian Region. There are a total of 167,957 admissions included in the analytic sample, including 76,083 (45.3%) from 25 coal mining counties and 91,874 (54.7%) from 20 other counties in the Appalachian region.¹⁸

Admissions to Substance Abuse Treatment Services

The second analytic sample for this chapter includes all admissions to substance abuse treatment services in Appalachian Region from 2000-2004. Among the 195 counties covered by the Treatment Episode Dataset (TEDS) in 2000-2004, 86 counties were located in the coal mining area. Overall there were 211,380 admissions from the coal mining area and 299,837 admissions from other areas in the Appalachian region.

¹⁸ Hospitals in five states with unknown county locations are excluded.

6.3 Results

A series of univariate and bivariate analyses were performed. Chi-square statistics were used to assess the statistical significance of the associations. Major findings from the HCUP NIS community hospital discharge sample are listed below (see **Table 6.3**):

Proportionately, there were more females among admissions in the coal mining area of Appalachia (62.4%) than in other areas of Appalachia (57.9%).

Patients admitted to coal mining area hospitals were older than patients elsewhere.

More than four-fifths of the admissions in the coal mining areas were among patients whose household incomes were less than \$35,000, while only slightly more than half of the admissions in other areas were from this income group.

While less than 10 percent of admissions (7.34%) from non-coal-mining areas were in distressed or at-risk counties, more than two-thirds (67.59%) of admissions from the coal-mining areas were in distressed or at-risk counties. None of the coal-mining area in Appalachia included competitive or attainment counties.

Proportionately more admissions in coal mining areas (56.82%) than admissions in other areas (51.35%) came through the Emergency Room (ER).

In 2004, 26.84 percent of hospital stays for adults in Appalachian coal mining area community hospitals and 27.36 percent in community hospitals located in other Appalachian areas were related to MH/SA disorders.

The rate of substance abuse-related disorders among all diagnoses was lower in community hospitals in coal mining areas (5.80%) than in other areas (6.13%).

The most common MH/SA disorders seen among hospital stays in coal mining area community hospitals were mood disorders (11.15%), delirium/dementia (6.28%), substance-related disorders (5.80%), anxiety disorders (5.72%), and schizophrenia (1.89%). The most common MH/SA disorders seen in hospital stays in non-coal mining area community hospitals were mood disorders (13.32%), substance-related disorders (6.13%), delirium/dementia (5.64%), anxiety disorders (5.46%), and schizophrenia (2.23%).

Among the MH/SA diagnoses, about 10 percent were co-occurring SA and MH diagnoses, accounting for 9.46% of diagnoses in coal mining areas and 13.32% of diagnoses in non-coal mining areas.

Major findings from the Substance Abuse Treatment Services Sample from TEDS are listed below:

Demographic Characteristics (see **Table 6.4**)

Females made up 32.48 percent of admissions in coal mining areas and 29.94 percent of admissions in other areas.

Overall, people less than 24 years of age accounted for more admissions in coal mining areas (32.89%) than other areas (29.59%).

Proportionately, fewer admissions were made by full-time employed workers in coal mining areas (19.67%) than other areas (29.21%). Conversely, more admissions were made by unemployed persons in coal mining areas (39.28%) than other areas (29.98%).

The majority of admissions were in transitional counties (59.1% in coal mining areas; 62.27% in other areas). Coal mining areas had proportionately more admissions (29.42%) in distressed or at-risk counties than other areas (5.62%), and fewer admissions (11.48%) in competitive or attainment counties than other areas (32.1%).

Treatment Service Related Characteristics (see **Table 6.5**)

There were no significant differences between coal mining area admissions and admissions in other areas related to most types of insurance coverage; rates of private health insurance, Blue Cross/Blue Shield, Medicare, Medicaid, and Health Maintenance Organization (HMO) coverage were all similar. However, while 30.47 percent of admissions in the coal mining area were made by people without any health insurance, more than half (52.36%) of the admissions were made by people without any health insurance in other areas of Appalachia. Proportionately, more admissions were paid by “other” insurances in coal mining areas (33.01%) than other areas (12.01%).

The most prevalent service setting for substance abuse treatment was non-intensive outpatient ambulatory services in both the coal mining areas (57.53%) and other areas (60.01%).

Proportionately, fewer admissions were self-referrals in coal mining areas (22.12%) than other areas (26.41%); proportionately more admissions were referred by court/criminal justice systems in coal mining areas (39.73%) than other areas (35.07%).

Less than 15% of coal mining area admissions were paid by individuals themselves, while four-fifths of the admissions in other areas were paid by individuals themselves; proportionately more admissions in coal mining areas were made by government payments other than Medicaid and Medicare (36.40%) than admissions in other areas (22.46%).

Primary, Secondary, and Tertiary Reasons for Substance Abuse Treatment Services (see **Table 6.6**)

The primary reason for seeking substance abuse treatment in Appalachia was alcohol use, although less so in coal mining areas (45.58%) than other areas within Appalachia (53.01%).

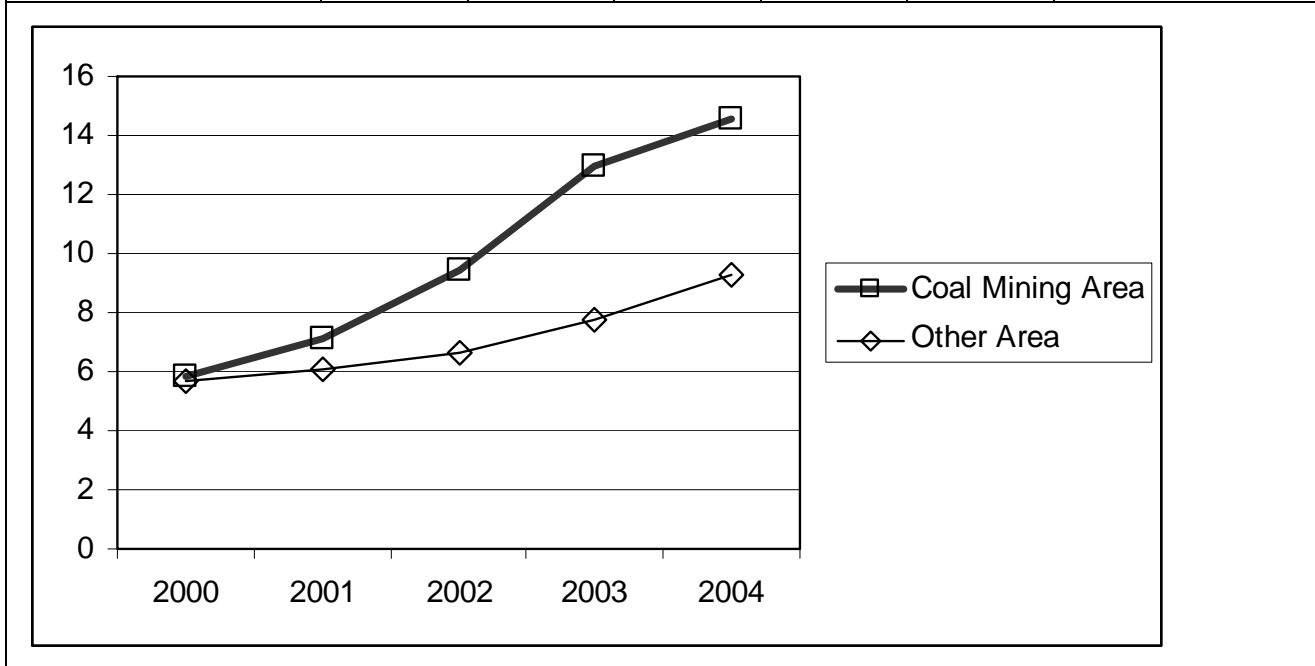
Heroin use as a primary, secondary, or tertiary reason for treatment accounted for proportionately more admissions in coal mining areas (10.34%) than for other areas within Appalachia (7.04%).

Trends of Heroin Use and Other Opiates or Synthetics Use in Appalachian Coal Mining Areas and Other Areas within the Region

In 2000, admissions for heroin use represent 5.84 percent of TEDS admissions in the coal mining area in Appalachia and 5.71 percent of TEDS admissions in other Appalachian areas. While admissions rates increased steadily over the 2000-2004 period for both the coal mining and non-coal mining areas, admissions rates in coal mining areas increased to a proportionately higher level. By 2004, heroin admissions accounted for 14.59 percent of the TEDS admissions in coal mining areas and 9.25 percent in other areas (see **Table 6.1**).

Table 6.1: Trend of Heroin Use as Primary, Secondary, or Tertiary Reason for Treatment, by Coal Mining Status of Patient Location

	2000	2001	2002	2003	2004	p-value
Coal Mining Area	5.84	7.16	9.43	12.95	14.59	<.0001
Other Area	5.71	6.07	6.66	7.76	9.25	<.0001

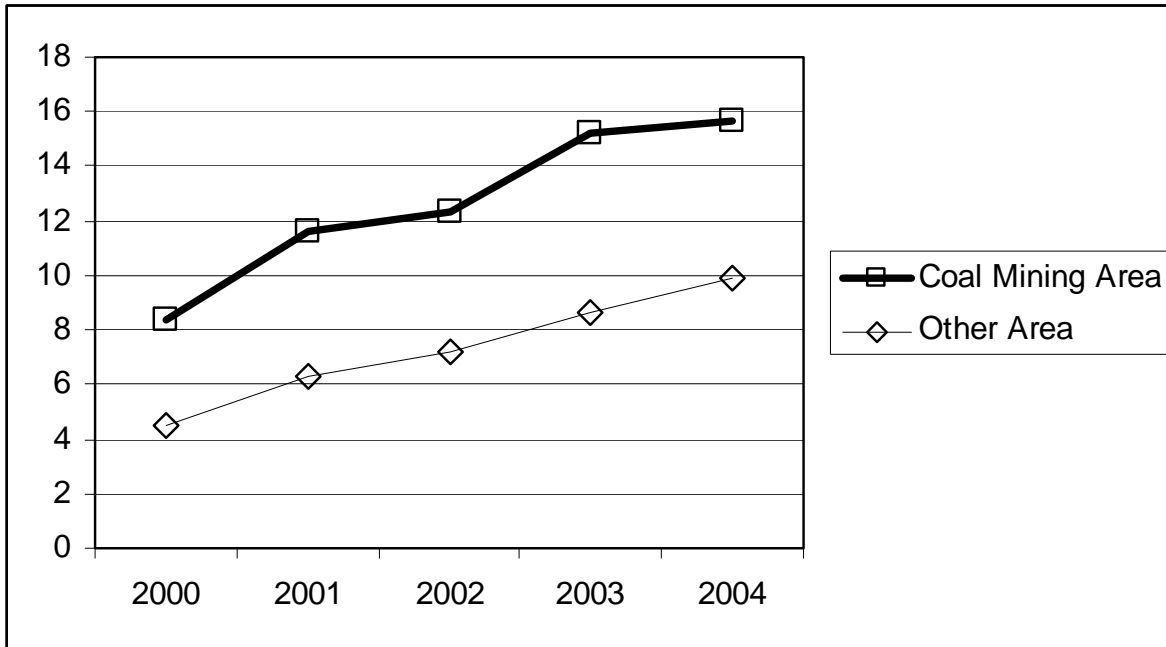


Source: Office of Applied Studies, Substance Abuse and Mental Health Services Administration, Treatment Episode Data Set (TEDS), 2000 – 2004.

In 2000, admissions for other opiates or synthetics use represented 8.41 percent of TEDS admissions in the coal mining area of Appalachia and 4.50 percent of TEDS admissions in other Appalachian areas. These percentages increased steadily over the 2000-2004 period for both coal mining and non-coal mining areas. By 2004, admissions for other opiates or synthetics accounted for 15.67 percent of the TEDS admissions in coal mining areas and 9.94 percent in the other areas (see **Table 6.2**).

Table 6.2: Trend of Other Opiates or Synthetics Use as Primary, Secondary, or Tertiary Reason for Treatment, by Coal Mining Status of Patient Location

	2000	2001	2002	2003	2004	p-value
Coal Mining Area	8.41	11.64	12.37	15.23	15.67	<.0001
Other Area	4.50	6.28	7.21	8.63	9.94	<.0001



Source: Office of Applied Studies, Substance Abuse and Mental Health Services Administration, Treatment Episode Data Set (TEDS), 2000 – 2004.

6.4 Conclusion

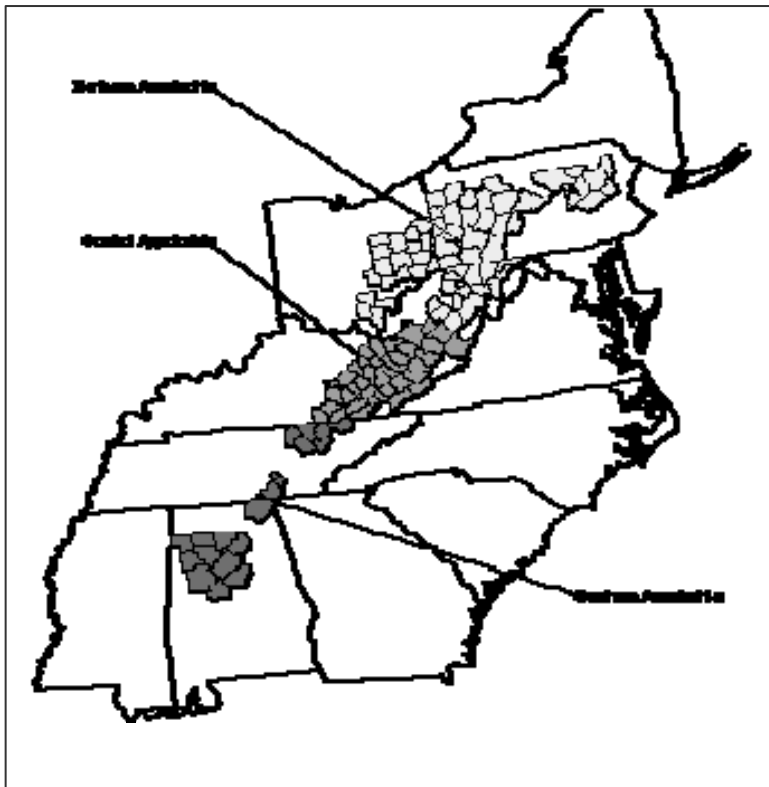
Our studies in previous chapters find that the percentage of admissions with heroin use and other opiates or synthetics use as the primary, secondary or tertiary reason for treatment is significantly higher in the Appalachian region, as compared to the rest of the nation. The study in this chapter adds granularity to these findings by demonstrating that coal mining areas within the Appalachian region demonstrate higher rates of both heroin use and other opiates or synthetics use as the primary, secondary or tertiary reason for treatment, as compared to other areas within the region. Furthermore, while studies in previous chapters show that rates of both heroin and other opiates and synthetics as primary reasons of coming to treatment increased over the 2000-2004 period, the pace of these rate increases is even faster in coal mining areas than in other areas within the Appalachian region.

Other illicit drug use and non-medical use of prescription drugs are also cited more as the primary, secondary or tertiary reasons for treatment in coal mining areas than in other areas. As coal mining areas have been found also to have a higher proportion of admissions paid for by government sources instead of self-payment, substance abuse problems have likely required more government resource investment in these areas as compared to elsewhere within the Appalachian region.

Our coal mining area was defined as the area with subsurface filled with coal instead of the actual coal-producing counties. The 176 coal mining counties retrieved thus covered not only the 118 coal-producing counties defined by the Appalachian Regional Commission in 2001 but also some closely-adjacent lands with coal mines as located by the National Coal Resource Data System.¹¹² The results should also be interpreted with caution because the units of analyses were admissions to treatment or hospital discharges made by people living in this area rather than actual coal miners.

In this study, we compared the coal mining area with other areas in Appalachia overall. Future studies could explore the coal mining area further by studying patterns across groups of similar counties. For example, analyses could focus on patterns in the northern, central and southern regions of Appalachia. These geographic sub-regions, used by the Appalachian Regional Commission, were employed in the previous analytic chapters to investigate patterns in Appalachia. Analyses based on the Appalachian sub-regions may be of special benefit to analysis of coal mining areas since the northern, central, and southern regions of Appalachia had, notably, different levels of production for different types of coal, both in the past and, predictably, will in the future as well.¹¹³

Figure 6.2 Coal Mining Appalachian Sub-Regions



SOURCE: Berge, M. and Thompson, E. (2001). A Study on the Current Economic Impacts of the Appalachian Coal Industry and Its Future in the Region. Washington, D.C.: Appalachian Regional Commission.

Table 6.3: Characteristics of Hospital Stays in Community Hospitals in the Appalachian Region, Adults Aged 18 or Older, by County Coal Mine Status

Characteristics of Hospital Stays (N=167,957 ¹⁹) in Community Hospitals, Adults, Aged 18 or older	Appalachian Coal Mining Counties	Other Appalachian Counties	p-value
Number of hospital stays	76,083	91,874	
Female (%)	62.42	57.91	<0.0001
Age (%)			
18 – 44	28.22	24.89	<0.0001
45 – 64	27.48	26.71	
65 – 79	26.43	27.71	
80 or older	17.87	18.69	
Household Income (%)			
\$1 - \$35,999	87.36	51.63	<0.0001
\$36,000 - \$44,999	9.01	33.86	
\$45,000 - \$58,999	3.24	12.59	
\$59,000 or more	0.40	1.92	
Economic Development Level (%)			
Distressed	38.47	3.17	<0.0001
At-Risk	29.12	4.17	
Transitional	32.41	51.05	
Competitive	0	8.54	
Attainment	0	33.08	
Patient Location (%)			
Large metropolitan	0.38	1.13	<0.0001
Small metropolitan	26.95	40.98	
Micropolitan	21.25	35.99	
Non-core	51.42	21.90	
ER as Admission Source (%)	56.82	51.30	<0.0001
At least one MHSA Diagnosis (%)	26.84	27.36	0.0186
Substance-related disorders (%)	5.80	6.13	0.0045
Mental Health ²⁰ (%)			
Anxiety disorders	5.72	5.46	0.02

¹⁹ The following five Appalachian states were not included due to the lack of the county identifiers in the data: Ohio, Tennessee, Georgia, Kansas, South Carolina.

²⁰ Only selected diagnoses are included. Multiple diagnoses can be marked for the same admission.

Characteristics of Hospital Stays (N=167,957¹⁹) in Community Hospitals, Adults, Aged 18 or older	Appalachian Coal Mining Counties	Other Appalachian Counties	p-value
Delirium, dementia, and amnesic and other cognitive disorders	6.28	5.64	<0.0001
Development disorders	0.72	0.92	<0.0001
Mood disorders	11.15	13.32	<0.0001
Personality disorders	0.23	1.52	
Schizophrenia and other psychotic disorders	1.89	2.23	<0.0001
Screening and history of mental health and substance abuse disorders	11.01	10.20	<0.0001
Comorbidity among MHSA admissions	9.46	11.89	<0.0001

Table 6.4: Characteristics of Admissions to Substance Abuse Specialty Treatment in the Appalachian Region, by County Coal Mine Status, 2000-2004

Characteristics of Admissions to Substance Abuse Specialty Treatment (N=511,217)	Appalachian Coal Mining Counties	Other Appalachian Counties	p-value
Number of Admissions	211,380	299,837	
Female (%)	32.48	29.94	<0.0001
Age (%)			
17 or younger	11.33	9.86	<0.0001
18 – 24	21.56	19.73	
25 – 34	26.08	26.24	
35 – 44	26.37	28.05	
45 or older	14.66	161.2	
Education (%)			
Less than High School	39.95	40.50	<0.0001
High School	43.32	41.82	
More than High School	16.72	17.68	
Employment Status			
Full-time	19.67	29.21	<0.0001
Part-time	6.23	6.26	
Unemployed	39.28	28.98	
Not in labor force	34.81	35.54	

Characteristics of Admissions to Substance Abuse Specialty Treatment (N=511,217)	Appalachian Coal Mining Counties	Other Appalachian Counties	p-value
Race			
White	84.27	83.43	<0.0001
Black	14.94	14.12	
Other	0.79	2.45	
Marital Status			
Never married	55.68	52.83	<0.0001
Now married	17.34	19.14	
Separated	7.88	8.07	
Divorced/widowed	19.10	19.96	
Sub-Region (%)			
Northern	55.80	45.60	<0.0001
Central	22.82	4.34	
Southern	21.38	50.06	
Economic Development (%)			
Distressed	18.65	3.09	<0.0001
At-risk	10.77	2.53	
Transitional	59.10	62.27	
Competitive	2.27	20.87	
Attainment	9.21	11.23	

Source: Office of Applied Studies, Substance Abuse and Mental Health Services Administration, Treatment Episode Data Set (TEDS), 2000 – 2004.

Table 6.5: Treatment-Related Characteristics of Admissions to Substance Abuse Treatment in the Appalachian Region, by County Coal Mine Status, 2000-2004

Treatment-Related Characteristics of Admissions to Substance Abuse Treatment	Appalachian Coal Mining Counties	Other Appalachian Counties	p-value
Health Insurance ²¹			
Private	9.58	10.35	<0.0001
BC/BS	5.57	5.64	
Medicare	2.03	1.38	
Medicaid	16.15	15.51	
HMO	3.19	2.76	
Other	33.01	12.01	
None	30.47	52.36	
Service Setting			
Detoxification: Hospital inpatient	0.79	1.75	<0.0001
Detoxification: Freestanding residential	6.98	14.83	
Rehabilitation/residential: Hospital	0.27	0.05	
Rehabilitation/residential: Short-term	9.24	9.04	
Rehabilitation/residential: Long-term	5.36	3.96	
Ambulatory: Intensive outpatient	19.76	10.26	
Ambulatory: Non-intensive outpatient	57.53	60.01	
Ambulatory Detoxification	0.08	0.10	
Primary Source of Referral			
Individual	22.12	26.41	<0.0001
ADA care provider	14.66	15.86	
Other health care provider	8.29	11.28	
School	1.75	1.81	
Employer/EAP	0.67	0.93	
Other community reference	12.77	8.64	
Court/criminal justice	39.73	35.07	
Number of Prior Treatment (%)			
No prior treatment	44.21	48.76	<0.0001
1 -2 prior treatment	32.71	32.75	
3 or more prior treatment	19.08	18.49	

²¹ A total of 236,800 records in the Appalachian Region during the 2000-2000.274 did not have the insurance information.

Treatment-Related Characteristics of Admissions to Substance Abuse Treatment	Appalachian Coal Mining Counties	Other Appalachian Counties	p-value
Primary Source of Payment (%)			
Self pay	14.44	40.96	<0.0001
B/BS/Other health insurance	10.14	10.14	
Medicare/Workmans Comp	1.53	1.06	
Medicaid	17.72	13.22	
Other government payments	36.40	22.46	
No charge	4.10	4.12	
Other	15.66	8.03	

Source: Office of Applied Studies, Substance Abuse and Mental Health Services Administration, Treatment Episode Data Set (TEDS), 2000 – 2004.

Table 6.6: Substance Abuse Characteristics of Admissions to Substance Abuse Treatment in the Appalachian Region, by County Coal Mine Status, 2000-2004

Substance Abuse Characteristics of Admissions to Substance Abuse Treatment²²	Appalachian Coal Mining Counties	Other Appalachian Counties	p-value
Number of admissions	195,409	291,553	
Primary Reason for Admission to Treatment (%)			
Alcohol use	45.58	53.01	<0.0001
Marijuana use	17.78	16.49	<0.0001
Cocaine use	13.17	11.62	<0.0001
Heroin use	8.62	5.56	<0.0001
Other opiates or synthetic drug use	7.49	4.19	<0.0001
Methamphetamine/other stimulant use	2.08	3.19	<0.0001
Tranquilizers use	1.23	0.75	<0.0001
Sedatives use	0.44	0.32	<0.0001
Other hallucinogens use	0.26	0.16	<0.0001
Inhalants use	0.14	0.13	=0.403
Phencyclidine use	0.04	0.02	=.0004
Other	0.74	2.82	<.0001
Primary, Secondary, or Tertiary Reason for Admission to Treatment (%)			
Alcohol use	63.98	67.87	<0.0001
Marijuana use	39.45	36.59	<0.0001
Cocaine use	25.47	23.26	<0.0001
Heroin use	10.34	7.04	<0.0001
Other opiates or synthetic drug use	12.92	7.25	<0.0001
Methamphetamine/other stimulant use	4.18	5.40	<0.0001
Tranquilizers use	5.47	3.16	<0.0001
Sedatives use	1.45	1.10	<0.0001
Other hallucinogens use	1.29	0.95	<0.0001
Inhalants use	1.17	0.93	<0.0001
Phencyclidine use	0.15	0.09	<0.0001
Other	1.82	3.93	<0.0001
Source: Office of Applied Studies, Substance Abuse and Mental Health Services Administration, Treatment Episode Data Set (TEDS), 2000 – 2004.			

²² Analyses in this table are based on 486,962 admissions because of the missing information on substance abuse for 24,255 cases.

CHAPTER 7: Case Study Analysis of Disparities in Mental Health Status and Substance Abuse Prevalence in the Appalachian Region and Access to Mental Health and Substance Abuse Treatment Services

Prepared By:

**Michael S. Dunn, PhD
Department of Public Health
East Tennessee State University**

&

**Kristine Harper Bowers
Office of Rural and Community Health
and Community Partnerships
East Tennessee State University**

7.1 Introduction

To supplement the quantitative findings presented in the previous chapters, NORC and East Tennessee State University conducted case studies using a “Socioeconomic Twins” methodology. The studies were purposively selected and bracketed with “twin” counties in Kentucky, Virginia, and West Virginia. Two counties in each state were selected that were socioeconomically similar, yet varied on measures of substance abuse and mental health. An in-depth discussion of the selection process is provided below. The case study approach provides for a comprehensive understanding of a complex instance or instances that is acquired by extensive description and analysis. Appropriate selection is crucial to internal consistency and the plausible comparison of the evidence in context. One unique feature of case studies is that data is concurrently collected and analyzed leading to “thick” descriptions from multiple data sources, particularly first hand observations.

The goals of the case studies were to:

- Determine if community perceptions of substance abuse/mental health (MH/SA) issues match available data;
- Identify additional data sources used at the community level;
- Learn first hand about the community’s response to substance abuse and mental health concerns including statistical presentations of local data; and
- Identify potential explanations for variance in community MH/SA indicators.

The purpose of the study was to determine the extent of local assessments of the mental health and substance abuse situation as well as the perceived validity of nationally available quantitative data to serve as an index of the severity of local substance abuse prevalence, mental health status and access to treatment services.

7.2 Case Study Process

ETSU and NORC developed and piloted a five phase process for the socioeconomic twins case study:

1. Identification of potential data sets/sources using a Dephi process.
2. Selection of the 6 paired Appalachian counties using a socio-economic twins methodology.
3. On-site focus group and key informant interviews with community leaders to:
 - Respond to secondary data identified by NORC that led to the initial selection of the county with respect to accuracy, reliability and validity of how the standard measures reflected the nature of the community’s issues; and
 - Assess overall impressions of substance abuse and mental health problems including community issues, systems capacities, recent incidents and community reaction and response to the research issues.
4. Development of a community resource inventory to identify available services for prevention and treatment.
5. Development of key findings based on an analysis of the textural data derived from the interviews and focus groups. Using an induction method the analysis focused on the organization of broad conceptual categories and then more refined coding for underlying themes. Finally, the textural data was triangulated with secondary data profiles, and county descriptors with researcher’s field notes to produce an understanding of the incidence of and

explanation for disparities in mental health status, substance abuse prevalence and access to treatment services in these Appalachian communities.

The following sections describe the identification of potential data sources, selection of the pairs of counties for the case study, descriptions of each pair of case study sites, the community responses to the county data profiles and focus group/key informant interview questions, and conclusions. The tables include county model programs, strength and treatment gaps, and in-depth descriptions of the model programs listed.

7.3 Phase 1: Identification of Potential Data Sets/Sources

A Delphi process with an expert panel was used to identify the data elements they considered to be most useful as key indicators in differentiating levels of substance use/abuse in Appalachian communities. The Delphi process created another tier of possible or ideal data sources.

In late spring of 2007, the following two questions were emailed to members of the Coalition on Appalachian Substance Abuse Policy (CASAP), a regional coalition of substance abuse practitioners, educators and researchers:

1. What do you believe are the most critical data elements (indicators) needed in determining high/low substance use/abuse in a community (list as many as appropriate)?
2. How readily available and reliable are these data elements (indicators)?

CASAP members were given two weeks to reply to Round One of the Delphi process. Round Two consisted of CASAP members ranking each data element received in Round One as: 1 = very important; 2 = somewhat important; or 3 = not important. From the Delphi process, the following substance use/abuse indicators were identified.

- Socio-economic status
- Poverty rates
- Per capita incarceration rate for drug offense
- Substance abuse related arrests per capita/1,000
- Drunk & impaired driving arrests
- Suicide rate
- Overdose death rates
- Child abuse and neglect reports
- Drug related child protective services interventions/ social service investigations
- Birth certificate data on maternal smoking and substance abuse
- Prescription rates of abused drugs
- Service utilization rates for substance abuse /mental health treatment
- Mortality from alcohol or drug related causes
- Accident rates from AOD related causes
- Substance abuse screening tests conducted by schools and employers
- Behavioral Risk Factor Survey

Once identified, data sets and elements were analyzed by the NORC team to assess sources available across the Appalachian region that could be integrated into community profiles for use in case study analyses.

7.4 Phase 2: Selection of Pairs of Counties for Case Study

This section describes the process used to select pairs of counties for inclusion in the qualitative component of this study. Counties were ranked in terms of socio-demographic characteristics and substance abuse and mental health characteristics. Databases of counties were developed accordingly. The objective was to select pairs of counties that are similar in terms of socio-demographic characteristics, but relatively dissimilar overall in terms of their mental illness and substance abuse indicators, medical care, and mental health professional shortage area statuses, using existing or derived measures. Selection involved a three step process:

1. Pertinent measures were identified and retrieved as the source variables;
2. Statistical procedures were performed and matrices developed to calculate socio-demographic similarity/dissimilarity and MH/SA similarity/dissimilarity for all Appalachian counties within each state. Then, these “distance matrices” were transformed into pairs which were subsequently ranked and sorted based on the distance values; and
3. Selection criteria were set up to identify pairs that were socio-demographically similar, but dissimilar on MH/SA indicators, and the final pairs were selected accordingly.

Data Sources

Measures utilized for the case study analyses were primarily from three major sources: the Appalachian Regional Commission (ARC); the Area Resource File (ARF); and the National Survey on Drug Use and Health (NSDUH).

1. County-level Socio-demographic Characteristics

The following county-level measures of socio-demographic characteristics are selected as the basis upon which to compare the similarities among counties.

- a. The 2003 population size estimates are from the 7/1/2003 County Population Estimates File for Internet Display from the U.S. Bureau of the Census.
- b. The 2000 population density per square mile estimates are from the 2000 Census.
- c. The 2000 percentage of urban population is from the 2000 Census.
- d. The 2003 Urban Influence Codes divide the counties, county equivalents, and the independent cities in the U.S. into 12 groups based on population and commuting data from the 2000 Census of the population, in the case of Metropolitan counties, and adjacency to metro area in the case of non-metropolitan counties.²³
- e. The 2000 median home value is from the 2000 census.
- f. The 2004 economic development level codes are provided by the Appalachian Regional Commission.

²³ The codes were originally from the U.S. Department of Agriculture’s Economic Research Service (ERS) website at <http://www.ers.usda.gov/Data/UrbanInfluenceCodes/>.

2. County-level Substance Abuse, Mental Health, and Service Delivery Statuses

The selected measures²⁴ and their original sources are listed in the following:

- a. *Alcohol abuse or dependence in past year* is from the 2002-2004 pooled National Survey on Drug Use and Health.
- b. *Abuse or dependence of any illicit drugs in past year* is from the 2002-2004 pooled National Survey on Drug Use and Health.
- c. *Non-prescription use of painkillers in past year* is from the 2002-2004 pooled National Survey on Drug Use and Health.
- d. The *percentage of persons having serious psychological distress problems in past year* is from the 2002-2004 pooled National Survey on Drug Use and Health.
- e. The *percentage of persons in correctional or juvenile institutions in past year* is calculated using measures from the Area Resource File
- f. The *percentage of persons in mental health hospitals or institutions* is calculated using measures from the Area Resource File
- g. The *suicide rate* is calculated using the average numbers of suicides in the past three years and population size from the Area Resource File.
- h. An *index on the Health Professional Shortage Area status* is created based on two measures – the 2003 codes for Health Professional Shortage Area (HPSA) for Primary Medical Care¹¹⁴ and the 2003 codes for Health Professional Shortage Area (HPSA) for Mental Health.¹¹⁵ Both were originally from the Bureau of Primary Health Care (BPHC) and are available in the Area Resource File.

Measuring the Similarities of County Pairs

The similarities between counties in terms of various pertinent county-level characteristics are measured quantitatively using the DISTANCE procedure in the Statistical Analysis System (SAS). Distance matrices are constructed to list the degree of similarity among all possible pairs of counties within each state¹¹⁶ based on source variables listed earlier. To address the potential issue that variables with large variances tend to have more of an effect than those with small variances, input variables with different measurement levels (interval, ordinal) have been taken into account through standardization before the similarity measures are computed. In order to rank the pairs of counties, the matrices are then transformed into a rectangular data structure in which all county-pairs are listed one by one within each state. The distance matrices were obtained separately through socio-demographic characteristics and through the substance abuse, mental health and service coverage measures. As a result of this procedure, two ranking indexes were created, namely, soc_rank and samh_rank, indicating the socio-demographic and substance abuse and mental health related similarities, separately. The lower the value from the ranking index, the more similarities the pair of counties shared.

²⁴ More measures were considered, including: cigarettes use, binge drinking, past month marijuana use, perceptions of risks of drinking and smoking from household surveys. After preliminary statistical analyses to identify patterns of variations (i.e., via factor analysis), these variables were dropped from being used to construct the similarity matrices.

Composite Ranking Scale and Selection of Final Pairs

We calculated a composite ranking scale by subtracting soc_rank from samh_rank. The resulting value was used to rank pairs of counties in such a way that the higher value would indicate greater dissimilarity on substance abuse and mental health related measures and greater similarity on socio-demographic characteristics. Through the composite ranking scale, three or four pairs of counties from each of the Appalachian states were selected as the candidates of case study sites (see Table 7.1).

After conferring among all NORC team partners, the top three pairs from Kentucky, Virginia, and West Virginia, with each pair having the highest composite ranking scale score in the corresponding state, were selected as the final sites for the case studies. Counties ultimately selected for inclusion in the study were:

Monroe County and Hardy County from West Virginia;
Bland County and Bath County from Virginia; and
Wayne County and Morgan County from Kentucky.

The detailed county-pairs selected at the final stage from the 11 Appalachian States are listed in the following.²⁵

Table 7.1. Selected Four Pairs of Counties Per State in the Appalachian Region Based on the Composite Ranking Score						
County Pairs		Distance		Index Rank		Composite Rank
County 1	County 2	Soc-demo	SAMH	Soc-demo	SAMH	
Alabama						
Tallapoosa	Talladega	0.09399	0.63828	58	662	604
Talladega	Marshall	0.10589	0.60212	75	651	576
Lawrence	Chilton	0.07074	0.53362	25	575	550
Georgia						
Stephens	Chattooga	0.086763	0.60025	76	654	578
Jackson	Gilmer	0.061062	0.46431	34	579	545
Jackson	Fannin	0.091484	0.52175	86	617	531
Kentucky						
Wayne	Morgan	0.041546	0.52521	23	1206	1183
Morgan	Monroe	0.059565	0.50804	42	1172	1130
Morgan	Adair	0.037319	0.48774	19	1115	1096
Mississippi						
Montgomery	Chickasaw	0.09058	0.64941	11	266	255
Winston	Montgomery	0.08435	0.49241	10	245	235
Noxubee	Montgomery	0.12209	0.4788	22	242	220
Winston	Tippah	0.12187	0.46412	21	240	219
New York						
Chautauqua	Allegany	0.56845	0.15715	84	14	70
Tioga	Steuben	0.19801	0.60495	21	87	66
Cattaraugus	Allegany	0.41395	0.0828	68	4	64
Tioga	Cattaraugus	0.17875	0.53048	16	73	57
North Carolina						
Surry	Rutherford	0.04658	0.65497	10	386	376
Yadkin	Madison	0.05974	0.64618	14	377	363
Davie	Alexander	0.06306	0.62176	16	366	350
Surry	McDowell	0.10259	0.67956	48	395	347
Ohio						
Morgan	Meigs	0.09381	0.41246	25	367	342
Noble	Monroe	0.09847	0.41375	28	368	340
Washington	Hocking	0.11086	0.40282	39	359	320
Ross	Hocking	0.11931	0.41563	50	369	319
Pennsylvania						

²⁵ As there are only 3 Appalachian counties in Maryland and 6 Appalachian counties in South Carolina, the “distance” values are not calculated and thus no county pairs are set up for these two states.

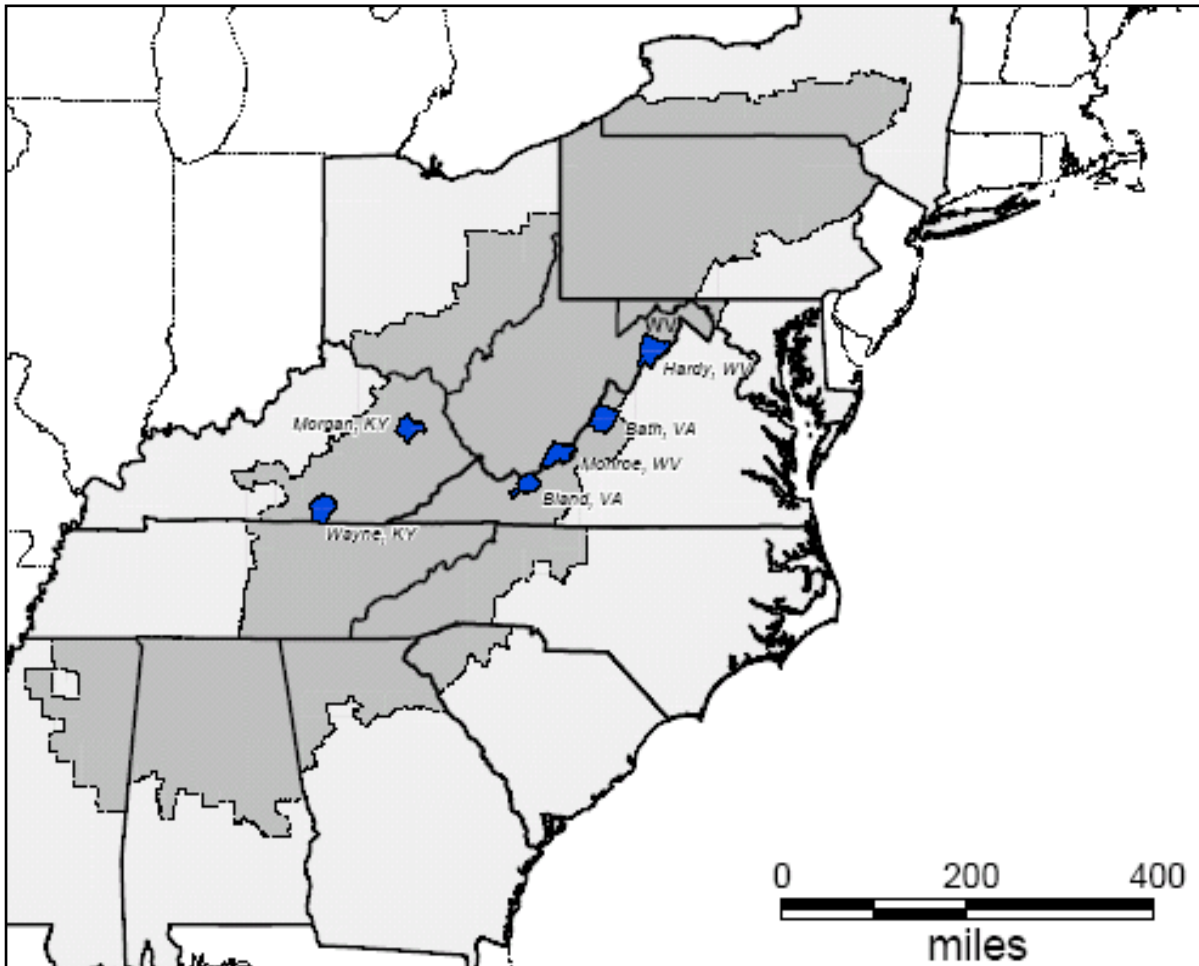
Table 7.1. Selected Four Pairs of Counties Per State in the Appalachian Region Based on the Composite Ranking Score						
County Pairs		Distance		Index Rank		Composite Rank
County 1	County 2	Soc-demo	SAMH	Soc-demo	SAMH	
Somerset	Crawford	0.024427	0.44986	14	1294	1280
Snyder	Juniata	0.045775	0.48158	39	1311	1272
Somerset	Bradford	0.01667	0.42379	6	1263	1257
Huntingdon	Crawford	0.016052	0.41279	5	1246	1241
Tennessee						
Franklin	Claiborne	0.055416	0.58012	32	1123	1091
Overton	Morgan	0.066463	0.58349	56	1130	1074
Scott	Grundy	0.070694	0.58661	64	1136	1072
Roane	Putnam	0.070714	0.58204	65	1126	1061
Virginia						
Bland	Bath	0.06587	0.78649	14	259	245
Highland	Bland	0.08249	0.72867	17	256	239
Highland	Floyd	0.0928	0.65025	20	240	220
Floyd	Bath	0.07618	0.61837	15	231	216
West Virginia						
Monroe	Hardy	0.043199	0.60952	23	1472	1449
Pendleton	Monroe	0.054856	0.61336	35	1475	1440
Lewis	Barbour	0.043253	0.54555	24	1416	1392
Wyoming	Barbour	0.045604	0.53389	26	1402	1376

Site Descriptions

The twinned county sites were selected from the lists above by consensus among ETSU, CASAP and NORC based upon the statistically twinned rankings produced by NORC and modified by local/regional knowledge of local situations.

The following brief descriptions paint a picture of each selected county that accents its uniqueness while illustrating the commonalities among the locations. Information about each county was procured from the County Profiles prepared by NORC (See Appendix D) from Epodunk.com and from maps and other county data available on-line. Figure 7.1 shows the geographic placement of the case study counties in Appalachia.

Figure 7.1 Map of Case Study Counties



MORGAN and WAYNE COUNTIES, KENTUCKY

Of the three sets of county twins selected, the two Kentucky counties, Morgan and Wayne were farthest apart geographically – one in the north central part of the state and one bordering Tennessee. Despite the relative distance, both contain portions of the Daniel Boone National Forest, part of a designated High Intensity Drug Trafficking Area by the Office of National Drug Control Policy. Both counties are non-metropolitan counties, not adjacent to a metropolitan area. Both are classified as economically distressed by the Appalachian Regional Commission. Morgan County is the location of a state medium/minimum correctional facility with a population of 1690 males and staff of 377, with another large facility in neighboring Elliott County.

Wayne County has a larger available labor force (8,767 vs. 5,043 persons) than Morgan County with manufacturing as the largest employment sector and lower unemployment for 2006 (6.7 vs. 8.8). Both Wayne County and Morgan County have a higher unemployment rate than the state rate of 5.7, with higher personal income and almost two thirds as many households. The high school graduation rates and median household income in Wayne County are nearly the same as in Morgan County. Both counties have lower graduation rates (Wayne County at 57.8% and Morgan at 56.4%) than the 74.1% state average in 2000. Both counties have experienced below average population growth (2.9% for

Wayne County and 2.6% for Morgan County) compared to the state of Kentucky. The percentage of persons below the poverty level for 2004 was 27.0% for Morgan County, compared to 24.3 % for Wayne County contrasting with 16.3 for the state.

Neither county is crossed by an interstate highway; transportation into and out of each county is through a rural landscape primarily via state or federal roads. Each county is served by a branch campus of state higher education and counts the local technical facility as a community center for training and education. Monroe County's facility, run by Morehead State University, also houses the public library. Wayne County's ASPIRE Center is a multipurpose community program center.

The state does not report crime on a county-by-county basis but Morgan County had almost twice as many juvenile court referrals in 2005 (33 vs.15). Morgan County has fewer low birth weight babies (7% vs. 10%). The 2004 Area Resource file data on the County Profile listed 11.93% of Morgan County's population in correctional or juvenile institutions vs. 0.1410% for Wayne County. In addition 0.0208% of Morgan County's population was reported to have used mental health hospitals or institutions while Wayne County's rate was 0.0251% contrasting with 0.0485% for the state. All of Morgan County is designated as both a mental health professional shortage area and a primary care health professional shortage area. Wayne County has no mental health professional shortage area designation. Both counties have only outpatient mental health or substance abuse treatment facilities within the county, and both have access to the same number of regional facilities.

Although Wayne County reported slightly more alcohol use or dependence (6.03% vs. 5.95%), both reported rates lower than the state average of 6.47%. Morgan County had greater abuse or dependence of any illicit drugs (3.37% vs. 2.74%), non-prescription use of painkillers (6.83% vs. 5.85%), serious psychological distress problems (12.61% vs. 11.49%) and a higher suicide rate (0.0215 vs. 0.0153) as compared to Wayne County. Morgan County also demonstrated higher rates of tobacco use and cigarette smoking, alcohol use in the past month by 12-20 year olds, binge alcohol use, and illicit drug use including marijuana and cocaine use. Both counties have active federally funded anti-drug coalitions and local programs targeting youth in the schools and community, though impressions from Wayne County indicated fewer extracurricular programs. Morgan County planned to host a rotating regional drug court by the end of the 2007.

BLAND and BATH COUNTIES, VIRGINIA

Bath County is located along the northern portion of Virginia's border with West Virginia. Bland County occupies a similar position on the border about three hours south. In 2003, the USDA classified Bath County as a non-metro, completely rural county with less than 2,500 urban population. Neither county has more than 7,000 people according to 2006 U.S. Census estimates. The Appalachian Regional Commission classifies Bland County as economically transitional and Bath County as competitive. Bland is bisected by I-77 which brackets access to the county by tunnels. Bath is served by one U.S. highway intersecting a state highway. Both counties contain portions of national forests and much forested recreational land. The Appalachian Trail crosses Bland County.

Personal income appears higher in Bath County (\$31,520 vs. \$22,200) with a greater proportion of the public with high school diplomas (74% v. 70.9%) and college degrees (11.1% vs. 9.2%) than Bland County. Poverty levels were higher in Bland County (11.9% vs. 7.3%). Bath County reported a population change of 4.6% in the 2000-2006 period while Bland had a slight change of 0.5%. Median home values in 2000 in Bath County were \$79,700 vs. \$71,500 in Bland County. There were slightly

more households in Bland County (2,568 vs. 2,053) and the labor force was larger (3,211 vs. 2,935) than in Bath County in 2006. USDA 2006 unemployment figures are similar at 3.6 for Bland County and 3.2 for Bath County compared to 3.0 for Virginia. Employment is mostly in the light manufacturing sector in Bland County and in the construction sector in Bath County, boosted by new luxury homes building. A major employer in the county is a nationally known luxury resort that provides high-end tourism activities.

The County Profile shows that Bland County has a greater percentage of its population in correctional/juvenile institutions (8.59% vs. 0.12% for Bath County), but neither county records anyone being treated in mental health institutions. Bland County is also the home of the Bland Correctional Center, a level 2, male-only prison. Bland County is wholly designated as both a mental health shortage area and a primary care health professional shortage area; Bath County has no designated mental health professional shortage areas, though it is wholly designated as a primary care health professional shortage area. There are over 100 substance abuse treatment facilities within a 100 mile radius of Bland County, but only 42 within 100 miles of Bath County. Bath County is served by two substance abuse out-patient offices, while Bland County has four.

Alcohol abuse or dependence rates are similar at 7.82% for Bath County and 7.52% for Bland County (7.67% is the average for Virginia). Rates are also similar for abuse or dependence of any illicit drugs (3.06% for Bath County vs. 2.95% for Bland County) and for the nonprescription use of painkillers (5.16% for Bath County vs. 4.94% for Bland County). Rates of serious psychological distress, however, are higher for Bland County (9.22%) versus Bath County (8.59%). Bath County shows slightly more people needing but not receiving treatment for alcohol use (7.36% vs. 7.05%) and needing but not receiving treatment for drug use (2.61% vs. 2.57%) than Bland County. Bland County residents used more past month tobacco (33.43% vs. 31.67%) and cigarettes (28.22% vs. 26.61%) as reported in 2002-2004, but Bath County showed more alcohol use (50.48% vs. 42.15%) though Bland was a little higher on past month binge drinking by 12-20 year olds at (23.61% vs. 23.22%). Bland County had slightly more past month marijuana use (5.84% vs. 5.65%), past year use (10.06% vs. 9.58%), and first use (2.14% vs. 1.82%). Cocaine use was also slightly higher in Bland County (2.37% vs. 2.31%). Bath County had a greater use of any illicit drug other than marijuana (3.92% vs. 3.79%).

Bath County reports some in-school drug prevention programs and the support of churches. The county administration, schools, the National Guard and the community services board have taken the lead in Bland County to provide in-school and after school programs. Bland County schools have an assigned sheriff's officer while Bath County schools are actively served by the sheriff's department. Bland County has a drug prevention coalition. Efforts to pull Bath County into the Rockbridge Area Community Service Board's Prevention Services have not been successful to date, especially since it is administered from an office over an hour away. Neither county has inpatient mental health or residential treatment facilities. Long term residential treatment is located 29 miles from Bland County and over 53 miles away for Bath residents. Both counties are served by regional community services offices which supply outpatient treatment and referrals.

MONROE and HARDY COUNTIES, WEST VIRGINIA

Hardy and Monroe Counties occupy comparable positions on the West Virginia border to the Virginia counties, also within national forest land. Neither is served by a limited access interstate highway, but Hardy County is well-linked about an hour each way to I-68 and I-81. Hardy County has a large proportion of residents of German ancestry and occupies a broad fertile swath of agricultural land in

the valley of the South Branch of the Potomac River. Monroe County is located only a half hour south from I-64 and the Greenbrier resort area.

While both counties have agricultural bases, Monroe County counts the public administration sector as its chief employer. Hardy County has several retail and natural resource production and processing plants, resulting in a larger labor force (7,271 persons vs. 5,962 persons) and a lower rate of unemployment for 2006 (3.9 vs. 5.5) compared to Monroe County. Virginia's unemployment rate is 4.9% by comparison. The poverty rate in Monroe County is higher at 14.3% vs. 12.5% for Hardy County. The counties have nearly identical populations (13,420-13,510), and are classified as economically transitional by the Appalachian Regional Commission.

Hardy County exhibits greater overall median home value (\$74,700 vs. \$64,700 for Monroe County) and median household income (\$35,361 vs. \$31,069 for Monroe County). While Hardy County experienced a 5.9% change in population, Monroe grew at 2.4%, both below the average for West Virginia as a whole in the 2000-2006 period. Monroe County has a greater percentage of high school graduates (73.7% vs. 70.3%), but Hardy County has a higher percentage of college graduates (9.4% vs. 8.2%). Representatives from Hardy County reported a growing influx of retirees and second home builders on its eastern border which is within two hours of Washington, D.C.

Monroe County's Profile reported that 9.53% of its population was housed in correctional or juvenile institutions while Hardy County showed no figures in that category according to the 2004 Area Resource File. Neither county reported any residents in mental health hospitals. Hardy County is wholly designated as mental health professional shortage area and partially designated as a primary care professional shortage area. Monroe County is wholly designated as primary care professional shortage area, but has no mental health professional shortage designation. More Monroe County residents needed but did not receive treatment for alcohol use (6.53% vs. 6.0%) and needed but did not receive treatment for drug use (2.91% vs. 2.35%) according to the National Survey on Drug Use and Health, 2002-2004. Monroe County had a greater proportion of residents reporting serious psychological problems (13.66% vs. 11.07%) and a greater suicide rate (0.014% vs. 0.0079%) than Hardy County. Hardy County has 135 substance abuse treatment facilities within a 100 mile radius while Monroe County has about 52. Neither has an in-patient facility located in the county though Monroe County's out-patient facility treats co-occurring mental health and substance abuse disorders and offers detoxification. Both counties have programs that treat adolescents.

Data for Monroe County show that 6.88% of residents exhibit alcohol abuse or dependence vs. 6.39% for Hardy County, both less than the 6.93% for the state. Monroe County has a 3.33% rate of abuse or dependence on any illicit drugs (compared to 2.77% for Hardy), which is greater than the state average of 3.08%. Monroe County also has a higher rate of past month nonprescription painkiller use (6.58% vs. 4.54%), past month tobacco use (39.45% vs. 37.88%) and past month cigarette smoking (31.58% vs. 29.74%) than Hardy County. However, Hardy County showed greater past month use of alcohol (39.05% vs. 28.58%) and past month binge alcohol use (19.65% vs. 17.39%). Monroe County had more past month use of marijuana (5.08% vs. 4.83%), greater past year use of marijuana (10.01% vs. 9.26%), greater past month use of illicit drugs (7.08% vs. 6.51%), greater past month illicit drug use other than marijuana (4.04% vs. 3.48%) and greater past year cocaine use (2.48% vs. 2.05%) than Hardy County.

Both counties have prevention coalitions and applied for funds through the state's Substance Abuse and Mental Health Services Administration Strategic Prevention Framework-State Incentive Grant

(SPF-SIG) initial planning program, though neither county was selected to receive funding for 2007-2008. Hardy County has a dedicated sheriff's deputy present in its schools. The 4-H program through the county extension offices organizes activities for youth in both counties. Both counties indicate that the faith community also provides support for prevention of substance abuse.

7.5 Phase 3: Onsite Focus Group and Key Informant Interviews

Community members were identified in the target counties using key leaders or contacts. Key contacts were the researcher's essential link "inside" the population of interest and were used to facilitate the recruitment of participants who could provide meaningful data. Identities of key leaders in each community were provided by members of the Coalition on Appalachian Substance Abuse Policy (CASAP). These leaders were asked to provide contact information for community members who were associated with substance abuse and mental health education, prevention, treatment, etc. as well as concerned citizens. All community members lived and/or worked in the targeted county and represented at least one predetermined stakeholder group. Multiple stakeholders are essential to integrating a broad-based coalition with values diversity for long-term effectiveness. Seeking out multiple community stakeholders was a condition of the methodology to ensure depth of data.

Focus groups were comprised of a diverse set of community members, including representatives of multiple stakeholder groups such as law enforcement, medical and mental health practitioners, school personnel, business representatives, county extension agents, social service providers and county administrators. These stakeholders were presumed to be aware of the county's substance abuse and mental health issues. Participants were contacted initially by mail. The letter was followed within a week by a personal telephone confirmation. In a few instances, email was used for contact when no address or phone number were supplied.

Six focus group interviews were conducted between July and September of 2007 in Kentucky, Virginia, and West Virginia. The six focus groups were conducted at neutral sites in the selected counties including county libraries, community colleges and, in one case, the county courthouse. Prior to data collection, the focus group moderator explained the purpose of session, ground rules for confidentiality, and conduct and methods that would assure anonymity of the participants. Each focus group discussion was audio-taped and transcribed with identifiers removed prior to analysis. Trained facilitators used structured focus group moderator guides that were developed specifically for the study. All discussions followed the predetermined format of the guides. Each of the focus groups lasted between 45 and 75 minutes with an average of 5.5 participants (range 4 to 7 persons). Following focus group interviews, key informant interviews were conducted by phone with selected members from each of the six counties. Key informant interviews were conducted with representatives of stakeholder groups that were underrepresented at the county's focus group. Key informant interviews also followed a structured interview guide and lasted between 25-35 minutes. The methodology was reviewed and approved by the ETSU Institutional Review Board to assure appropriate informed consent for participation.

The sections below provide a composite of the responses to questions from the focus group interview guides, supplemented by responses from the key informant interviews. Themes were captured around each question discussed in the focus group interviews. Each of the focus groups' notes was also classified and compared according to general themes within each state and between all the states. The concept of community dialog was incorporated into the focus group reports. The discussion among focus group participants who were deeply involved in the life of the communities indicated their

firsthand knowledge of the issues. Descriptions of the substance abuse or mental health issues or “themes” in the counties demonstrated familiarity with the topics. Key informant interviews reiterated many of these themes.

Prior to focus group and key informant interviews, county data profile sheets prepared by NORC (see Appendix D) were provided to each participating individual. The county profile sheet provided data on socio-economic characteristics, substance abuse and mental health problems, access to treatment, institutional characteristics (i.e., mental health institutions, correctional facility, etc), cigarette smoking and tobacco use, alcohol use and binge drinking, and marijuana and other illicit drug use.

Reactions to Secondary Data in County Profiles Provided by NORC

Four out of the six counties said the profiles (see Appendix D) were fairly accurate, but all expressed uncertainty about the definitions and data collection methods used. Both West Virginia counties noted inaccuracies in the population and population density numbers and raised questions about these specific numbers. The following are comments from the groups about the data profiles that were distributed and discussed.

Item #1: Socio-demographic characteristics

Median home value may not be a good indicator in rural counties with relative proximity to large urban areas (e. g., Washington DC) because of the influx of new residents for retirement or a second home. These individuals tend to be older, more educated and more affluent. Some may build homes with higher property values. One county representative noted: “People who retire here skew the county income data. The true local residents are poor.” Another person suggested that a different poverty indicator may provide a more reliable picture, such as the percentage of county students participating in the free lunch program at school: “Fifty percent of all students in the county are on the free or reduced school lunch program.” The high school graduation rate was questioned in two counties because the inclusion of individuals receiving a GED was not known.

Item #2: Overview of substance abuse and mental health

Some county representatives had questions about where and how the data were obtained for the county profiles. Some people expressed concern over how the measures were defined. For example, one measure looks at alcohol abuse and dependence as a single data element. One respondent mentioned that these are two distinctively different measures: “Alcohol abuse and alcohol dependence are two different things, so the data doesn’t reflect that.”

Item #3: Access to treatment

Questions were raised about how the access to treatment data was procured and the sources of the data. Sources for this item were not identified on the profiles. The difference between those needing help and those seeking help were stated as a simple percentage of the total population.

Item #4: Institutional characteristics

Representatives from each of the counties expressed confusion about what was meant by “institutional characteristics.” The presence of a correctional facility is a local determinant that

does not indicate if persons were incarcerated outside the county, and thus may have disproportionately increased the county percentage of persons in correctional/juvenile institutions when a correctional facility was located within county borders. The designation “health professional shortage area” was not understood by most respondents.

Item #5: Cigarette smoking and tobacco use/ Items #6: Alcohol use and binge drinking/ and Item #7: Marijuana and other illicit drug use

Respondents from most of the counties indicated that the data were fairly accurate, and the high perceived great risk of tobacco use was not a surprise. One respondent asked if the numbers included smokeless tobacco use. Some respondents questioned the data collection methods, citing the unreliability of self reporting known to be used in some data sources.

Most counties expressed a desire to be compared to other Appalachian counties in their states or to regional data.

Overall Impressions of Substance Abuse and Mental Health Problems in their Communities

All communities indicated that prescription drug abuse was prevalent. The use, acquisition, and distribution of the non-prescribed pain relievers contributed to criminal behavior and involved community social networks and created an alternative economic layer to the community. In addition, most communities believed that prescription drug use was a result of the relative ease of access to dealers or other procurement methods. One respondent noted that drugs are acquired or stolen from family members: “Prescription abusers first deplete the family. They empty out the medicine cabinets before seeking other sources for drugs.” Other common drugs of choice included alcohol, tobacco, marijuana, inhalants, and methamphetamine. Law enforcement officers and counselors confirmed a smaller presence for heroin, cocaine, ecstasy, and other illegal drugs but said use and choice was a function of ease of access, cost, and cultural preference.

Respondents from most of the communities indicated that drugs were easy to obtain and could be obtained locally. Participants reported that students seem to have a great deal of knowledge regarding drugs and many could identify local drug dealers. People from all of the communities indicated that in a small county “everyone knows everyone,” and as such, discretion was difficult. One respondent noted: “Drug dealers are on every street corner and we tend to know who they are.”

Some people discussed the procurement of drugs out-of-county and out-of-state. People from all of the counties reported that their emergency rooms, pharmacies, dentists and doctors have experienced people with habitual and extensive drug-seeking behaviors. Some counties’ offices and institutions have taken steps to curb this behavior through specific prescription dispensing management practices. The Kentucky counties were somewhat familiar with the Kentucky All Schedule Electronic Reporting System (KASPER) procedures. KASPER tracks controlled substance prescriptions dispensed within the state and shows all scheduled prescriptions for an individual over a specified time period, the prescriber, and the dispenser. Designed to be a source of information for practitioners and pharmacists, and an investigative tool for law enforcement, KASPER has some lag (real time) between filing and access by other system users that has been initially exploited by drug seekers.

Some community leaders indicated that substance abuse was underreported. Participants perceived a collective denial of substance abuse, contrasted with individual awareness of specific dealers, users, habits and behaviors. Multiple factors were identified that influence this finding:

Cultural and family factors contribute to the denial of the existence of substance abuse and its severity.

Small communities reported the existence of stigma for seeking help and that many parents reject complicity or accountability for the behavior of children or other family members.

Substance use is often seen as a coping mechanism and is sometimes accepted as a normal behavior in many communities.

Substance use is often not acknowledged as abuse until the behavior becomes harmful or criminal. As indicated by one focus group participant: "Substance abuse is significantly underreported and indication of abuse comes out in different kinds of ways such as unemployment."

All counties expressed knowledge of regional substance use problems and knew that other nearby counties experienced similar issues. Participants from counties were aware of national trends and noted that their area mirrored what was happening in the nation. The regional news media reach across state boundaries in most cases so that rural and urban people receive and share the same information.

No community was informed in advance of its status of being selected because of high or low county substance abuse indicators. Interestingly, all communities perceived that their own substance abuse was high. The following is a list of factors contributing to substance abuse cited by communities:

Substance abuse can often be the result of self-medication for underlying factors such as depression, anxiety, and deeper psychological trauma, such as child abuse;

Geographical isolation (limited transportation, rurality) and distance from services;

Societal and cultural factors like stoicism, self-reliance or pride;

Economic stressors like loss of community resources and scarcity of worthwhile employment;

The use of substances to escape from problems;

Intergenerational modeling of substance use behavior by parents engaging in the behavior, having a positive attitude towards the behavior, and/or allowing child substance use;

Societal factors including peer pressure, poor family values, expectations, and media marketing of prescription drugs as a "cure all";

The break-down of family and community values;

Boredom;

Limited recreational opportunities for youth; and

Few positive adult role models.

Participants in one focus group noted that children today lack goal-setting skills and that hope is in short supply. One person noted: "Our kids have generational poverty and they don't have a clue about how to achieve goals." On the other hand, participants from a few communities indicated that residing in a small rural community can also serve as a protective factor against substance use and creates a cohesive, self-aware unit where people are likely to know and help each other. One community representative noted the "presence of a lot of traditional 'moral people'" and that "families are close and churches are abundant." These were factors thought to contribute to lower rates of substance use. Conversely "poor moral fiber" was believed to be a factor that promotes substance abuse and

addiction. The availability of fulfilling employment and greater relative wealth was thought to be a deterrent in a few of the communities. Communities that reported broader educational opportunities, more after school programs (including sports and music), and awareness of the consequences of drug abuse were less likely to indicate higher levels of substance abuse.

Some state and local data are collected by counties or entities within counties, especially in preparing funding applications. Purchased or state-provided school youth surveys are primary sources of data that communities can use to gauge local situations and benchmark to national trends. The following is a list of surveys being used to collect primary data on substance use, as well as personal factors affecting substance use.

Parents' Resource Institute for Drug Education (PRIDE) Survey from National Survey Associates - the PRIDE survey measures the prevalence of alcohol, tobacco, and drug use by students in grades 6-12 and was reportedly used by one county in West Virginia and both Virginia counties in the last two years. Available at: <http://www.pridesurveys.com>

Kentucky Incentive for Prevention Survey (KIPS) - KIPS measures substance use among 6th, 8th, 10th, and 12th grade students. School specific data is provided to local school administrators and is publicly available in regional aggregated data sets. Available at: http://mhmr.ky.gov/MHSAS/sa_kipsurvey.asp

Search Institute's 40 Developmental Assets Survey - this survey measures such factors as positive relationships, skills enhancement, and health promoting activities among school aged children and was used by one county in West Virginia within the past four years. Available at: <http://www.search-institute.org>

In addition to surveys, some communities rely on other secondary data. The following are additional data items that were suggested.

Emergency Management Services - overdose response calls, overdose deaths.

Local Police Reports - DUI arrests, drug related arrests.

In most cases, the case study counties did not seem to seek out and use locally available data. While communities presumed a problem with substance abuse, additional data did not seem to be a valuable resource except for grant application purposes. One person from a Department of Social Services summarized this attitude, saying: "We need to get away from wasting money collecting and looking at data, and use this money on prevention."

In looking at mental health problems in their communities, most county groups observed that preexisting mental health issues often manifest as substance abuse problems; that is, people often abuse substances as a way to cope with a mental health issue. One focus group participant noted: "Mental health problems are often a result of a situation in one's life that results in substance use and abuse as a way to cope with one's problems." This "self-medication" is perceived to occur especially when depression and anxiety are the underlying issues. In one county, a treatment specialist reported that the majority of people seen for addiction have underlying depression. This complex relationship is seen to be affected both by the long term and often severe economic issues faced by mountain

communities and their resident families, and the documented prevailing Appalachian cultural attitudes of self-reliance.

Individuals from most counties indicated that they lacked adequate mental health services and that access to care was a contributing problem to the prevalence of mental health issues. None of the counties had inpatient treatment and most reported a limited scope of mental health services. Often treatment was provided by psychologists/psychiatrists practicing in the county for a few days per week. One individual noted: “For every 1,000 people who have trouble with alcohol, we have one bed. Their insurance card will tell you how long it will take to detox because that is how long they can stay.”

According to focus group participants, a cultural stigma is attached to seeking mental health care. Some people would not seek treatment even if the services were available because of fear of being observed, and judged, by family and peers. One person noted: “We are a proud people and do not typically ask for help.” Treatment costs were also reported to be a major barrier in most counties. Many Appalachian communities have large numbers of residents with no insurance or limited insurance benefit packages that prevent them from seeking or receiving services. One best practice strategy was identified in Kentucky: some anti-drug coalition groups provide one-time referrals and payment for substance abuse treatment with funding from federal sources. Transportation issues, parental denial of children’s mental health conditions, and multi-generational acceptance of mental health issues were mentioned as barriers in all counties.

Among mental health and substance abuse treatment services most often cited as missing was a lack of residential treatment facilities within the counties. Residential placement in other counties was difficult but was the typical avenue for people requiring residential treatment. Additionally, counties indicated that additional school prevention programs would be desirable. Only two of the six counties had well developed prevention programs. These counties were using nationally based model programs such as “Lifeskills Training” by Gilbert Botvin. Other counties had limited programs which were more modest in scope. Dearth of funding or state restrictions sometimes limited the institutional purchases of science-based classroom prevention packages.

The need for greater law enforcement resources was cited in several counties. Individuals across counties perceived that in rural areas, local, county and even state police presence are overwhelmed with day to day operations. Specifically, it was noted that police have insufficient funding for adequate law enforcement to address and control criminal activities related to substance use and distribution. For example, one county had two officers to patrol 575 square miles. Additionally, law enforcement professionals acknowledged that only a small percentage of criminal activity due to substance use was curbed due to their efforts. One individual noted: “We can’t keep up with the calls we do get, let alone prevent anything.” In one county, law enforcement facilities were used as a last resort for mental health emergencies (i.e., holding an individual in a county jail) when appropriate treatment was not immediately available.

7.6 Phase 4: Development of Community Resource Inventory

As part of the case study process, each county was asked to identify existing community programs that it considered “exceptional” or “best practices.” Existing research defines best practices as a technique, activity or methodology that, through research, experience and replication, reliably provides:

Effective and desired result(s);
Ethical and equitable outcome(s);
Adaptability to similar environments; and
Opportunities for innovation.

While few counties felt they provided adequate services to their communities, all were able to list mental health and substance abuse programs and services in their counties that met these criteria for “best practices.” However, some respondents noted that the use of best practice programs and services is limited by financial and other constraints.

Model services and program activities varied due to state and local financial and human resources. All counties but one had some form of anti-drug coalition comprised of concerned stakeholders. The presence of program activities by churches, schools and community groups also contributed to a sense that positive alternatives to substance abuse were available. Treatment services varied, but all counties had access to outpatient treatment. However, the degree of community utilization and perceived competence varied (see Tables 7.2 and 7.3).

The following programs were mentioned as available within the participating counties:

Mental Health

All counties in the study have access to outpatient treatment facilities within the county. However, individuals felt these facilities were underused and that the drug problem within the county was greater than reported. Only two counties (Wayne County, KY and Bland County, VA) had additional independent substance abuse/mental health providers within the county. No county had inpatient facilities for either substance abuse or mental health and most reported difficulty placing those needing long term outpatient treatment. Special programs include the Rockbridge Community Services Board *PACE* (Parenting Assessment Consultation and Education), which models appropriate parenting. The FMRS Health System in Monroe County (WV), a not-for-profit behavioral health organization, offers the Mother Program, a women’s substance abuse treatment program and ADAPT for adolescents.

Schools

Individuals across counties noted that the schools were integral to the dissemination of prevention programs and activities. In some counties, adolescent and family outpatient counseling took place at the schools because it was the most accessible environment for students and parents. Most school systems are bound to use evidence-based, proven prevention programs that may be purchased if funds are available. Only one school system reported using the DARE activities. Wayne County (KY) and Bland County (VA) were using LifeSkills4Kids. Beginning Alcohol and Addictions Basic Education Studies (BABES) is a classroom-based primary alcohol prevention program for children 5-8 years of age that is being implemented in Wayne County (KY). Other counties use Protecting Me/Protecting You from the Mothers Against Drunk Driving (MADD), a 5-year classroom alcohol prevention program for grades 1-5. Too Good for Drugs (Wayne County, KY) for elementary and middle school students and Parenting Wisely (Bland County, VA), for children 9-18 years, are both science-based, field-tested SAMHSA model programs. Monroe County (WV) touted having a school-based wellness center in each county school.

Justice and Law Enforcement

One county (Morgan County, KY) anticipated a drug court which will rotate regionally to ameliorate judicial overload. Wayne County also participates in the Kentucky Drug Court Program. Bath County (VA) combines its family and juvenile courts and Bland County (VA) has a youth case management worker. Bland County (VA) and Hardy County (WV) have had representatives of the sheriff's department in the schools; individuals in both counties indicated that they made a substantial contribution with respect to providing a needed law enforcement presence.

Faith Community Programs

Representatives from all counties said that church and faith-based programs were important to the quality of life and health in the community. Morgan County (KY) has an after school program called Lifeline that was considered an outstanding contribution, as was Bath County's (VA) Camp ACCOVAC, administered by the Adventist Christian church. Morgan County (KY) respondents said that the many vacation bible schools were a deterrent to drug activity. Both West Virginia counties actively use their ministerial association for referrals. Bland County (VA) worked with Hope Ministries Center, a Southern Baptist mission which provides some health and dental care.

Other Community Programs

Youth mentoring programs were present in all communities, provided by local community agencies and organizations such as Kiwanis clubs and county extension service 4-H programs. These programs often work through the schools or offer summer and weekend programs to alleviate boredom and provide esteem-building activities for youth. In Hardy County (WV), the school counselors actively partnered with county extension agencies involved extensively in youth programs to provide wellness activities including substance use prevention, wellness, health, and self-esteem activities.

Drug coalitions also play a visible role in attracting attention and money to address substance use issues and provide a focus for program activities in communities. Kentucky has received federal money to organize Operation UNITE anti-drug coalitions through the efforts of Congressman Hal Rogers. These coalitions are well-supported in the state and work closely with law enforcement agencies. In Virginia, Bland County has the advantage of a progressive county administration that has been assertive in organizing and seeking funding for prevention activities, while Bath County has relied on prevention efforts through the schools. The Hardy County (WV) Prevention Partnership and the Monroe County (WV) Prevention Coalition include tobacco, alcohol, and drug use prevention as part of their agendas, with funding from the West Virginia Tobacco Settlement Foundation. Wayne County (KY) and Bath County (VA) mentioned the presence of Assistance for Alcohol and Substance Abuse Prevention (ASAP) programs, a workplace education, prevention and testing service offered through employers, though only Virginia offers workmen's compensation for ASAP program use. The presence of an active multi-stakeholder prevention coalition is a function of community interest in the issues, but acquires significance and weight through state and federal recognition and funding. The degree of prevention awareness and treatment availability may be functions of that recognition (see Tables 7.2 and 7.3).

7.7 Phase 5: Key Findings

Key findings were developed based on an analysis of the textual data derived from the interviews and focus groups. Using an induction method, the analysis focused on the organization of broad conceptual categories and then more refined coding for underlying themes. Finally, the textual data was triangulated with secondary data profiles, and county descriptors with the researcher's field notes to produce an understanding of the incidence of and explanation for disparities in mental health status, substance abuse prevalence and access to treatment services in these Appalachian communities.

Key Findings

The national data sets used in the County Profiles painted a different picture of county problems than county representatives felt were important because the profiles did not clearly illustrate local factors. Local data sets are essential to understanding the depth of the substance use and mental health issues faced by residents at the county level. However, focus groups stated that local data is not always sought or used effectively in education or planning. Some stakeholders said that local data collection is not as important or useful as other applications because the issues are assumed to be well-understood and money used for data collection is more urgently needed for basic services. With better coordinated data collection, documentation and analysis, localities may be better equipped to access resources at state and federal levels.

Several common themes emerged from the case studies regarding barriers to use of services including social stigma for those who seek care, lack of transportation, non-recognition of roots of substance use behaviors, multi-generational patterns of substance abuse behaviors, and erosion of the power of family and community networks to assist in personal coping skills. These multiple factors must be taken into account when prescribing ways to increase access to mental health treatment and reduce the prevalence of substance abuse in Appalachia.

Appalachian communities have a sense of regional awareness of mental health and substance abuse issues and express willingness to share facilities and solutions. None of the six focus group sites had residential treatment facilities and those seeking treatment had to travel over 30 miles to receive even short term residential treatment. Individuals in these communities felt that substance use and mental health disparities were issues not only in their community but also throughout the rest of the state, and region.

Focus groups members were concerned with destruction of community social infrastructure, family values and workforce viability due to substance abuse, and wanted better conditions for all citizens of their counties. The well being of youth was of paramount importance to rural counties as evidenced by the emphasis on prevention and awareness of substance abuse in schools and youth-programs settings.

Solutions to mental health and substance use issues were understood by communities to be community-based and family-based; solutions were thought to be more effective when actively supported by other local institutions like schools, churches and courts. Communities with more diverse programs to address substance abuse and mental health seemed more confident that they were able to have a positive impact on their citizens.

Moral and cultural decline in general was noted most often as the reason for substance use. Factors such as irresponsible parenting, effects of the media, two-income families, decreased personal expectations, poverty, poor job prospects, easy access to prescription drugs, peer pressure, boredom and curiosity about drugs were cited as causes of this decline. Communities

saw solutions to substance use in programs or activities that addressed one or more of these issues.

Each of the sites reported that substance use and mental health problems were the result of co-occurrence and not the result of a single cause.

The following are some of the limitations or special considerations related to the case studies.

Respondents

The respondents who participated in the focus groups and key informant interviews were provided by contacts within the substance abuse/mental health arena in each county. Most respondents were members of local antidrug coalitions, treatment facilities or other public figures in the county. Focus groups met during the work day. Some potential respondents were unable to participate because of the time or personal schedules. While a comparable representation was sought from similar stakeholders or constituents in each county, not every stakeholder group was represented.

Counties

In this report the terms “county” and “community” are often used interchangeably. Both terms refer an Appalachian concept of cultural identity which defines the parameters of place identity. A community exhibits membership boundaries within a pattern of beliefs and behavior for the dominant cultural group. The unit of identity in a rural setting is the county where the largest “urban area” may be the county seat. In this study, all county seats were towns of fewer than 6,000. In Appalachian counties, the social constructs of a county seat seem to be representative of the county as a whole. The attachment is to the county “community.” Attachment to the Appalachian portion of the state or surrounding counties and to regional Appalachian affiliations which may cross state lines was evident in the focus groups when participants mentioned the desire for comparison to other counties in the region.

Though the counties selected for inclusion in the case study pilot were based on objective rankings, in fact, the four counties on the border of Virginia and West Virginia were close in geographic proximity and had similar demographic profiles with similarities in attitudes, concerns, issues, barriers, and services. The two Kentucky counties were farther apart in geographic proximity. Individuals from all counties expressed the desire to be measured against comparable rural Appalachian counties. Individuals from all six counties felt that the uniqueness of the Appalachian region made an accurate comparison of an Appalachian region to a non-Appalachian region difficult.

Substance abuse concentration

The problems associated with substance use seemed to be of greater importance to focus group participants than did problems associated with mental health. Substance abuse was the opening topic of discussion and featured in seven of the twelve survey protocol questions. It was a problem that touched more stakeholders in the community notwithstanding the interrelatedness of the issues.

Data sets comparison

Three sources of potential data emerged from the study: The data sets used by NORC to compile the County Profiles, the sets suggested by CASAP through a Delphi Process, and the data used by the counties in the case studies. NORC used nationally available, proven and accessible data sets to prepare the county profiles. Some of these numbers were calculated based on county population size. Not all of the data sets suggested by CASAP through the Delphi process are available nationally or state by state at the county level. Data is also not collected or reported consistently from state to state. However, these suggestions – gathered from Appalachian researchers, educators and practitioners – were examples of ideal data to use to measure high/low substance abuse prevalence and mental health access.

The county/community data postulated by local decision makers was reported in focus groups and key information interviews in the six Appalachian county case studies. While other data sets may also be used by counties, these were reported as being useful or desirable. Some data sets corresponded to sets from other sources and are grouped on the same line.

The use of secondary data, collected at state and local levels, is being encouraged by the Community Anti-Drug Coalitions of America (CADCA), the Robert Wood Johnson Foundation, Join Together, and Substance Abuse and Mental Health Services Administration’s Strategic Prevention Framework-State Incentive Grant program as the most reliable way for local agencies to assess current need and project the scope of substance abuse issues and treatments. The reality is that finding and using local data in a coherent way is difficult for some local groups because of cost, cooperation, presumptions of knowledge and small sample size. Table 7.4 below also demonstrates the gaps in available data for planning at the local level.

Researchers from ETSU drew the following conclusions about the case studies data:

Regional substance abuse and mental health leaders do not have uniformly available county and state data sets from which to draw conclusive measurements, but they do know what types of data would be useful to formulate a local response to the issues.

National researchers do not have enough reliable county-level data from which to draw conclusive analyses. This conclusion is based on questions and reactions to county profiles in the case study.

Appalachian counties and communities do not report using nationally-available data sets to make decisions about local responses to substance abuse and mental health issues. They may use state data, especially when it supports applications for grant funding of prevention programs, but anecdotal evidence informs decision making.

Assessing the Communities’ Dialogues: Strengths and Gaps in Prevention and Treatment

Each of the six focus groups and sets of key informant interviews represents a community’s dialogue about its substance abuse and mental health issues. Profiled below is the commentary regarding community perceptions of their own strengths and treatment gaps with regard to substance abuse and mental health needs and services. The final section summarizes elements of the six separate dialogues and offers conclusions.

In relation to prevention and treatment services available to address substance abuse and mental health issues, the counties chosen for this case study exhibited many strengths. These strengths are

characteristics of the counties that can be seen as deterrents to substance abuse behavior or those that promote local treatment options. These strengths are essentially features that contribute to preventive and protective factors in the community. The model programs listed in Table 7.2 represent some of these strengths. Additionally, a listing of strengths is provided in Table 7.3. The focus groups, informants and the inventories also identified areas of need and gaps in the prevention and treatment continuum. In Table 7.3, the gaps in the prevention/treatment continuum are concentrated under the “gaps identified from the interviews” and “gaps identified from the focus groups.”

Each community discussion demonstrated cognizance of both the protective factors and the disposition to risk associated with rurality and the Appalachian culture. Small town culture was mentioned as an asset by people representing each of the case study counties. One individual described the benefits of a rural community: “We look out for each other.” Another individual noted the close-knit nature of the community: “If you do something, [your] parents will know before you get home.” Additionally, focus group participants noted that other factors may affect a community’s disposition to risk, including the demands of single-parent households, dual-income families, poor parental examples, and normative risk behaviors in the media, music, films and television. Others noted that the propensity for youth to use drugs was exacerbated by the small town atmosphere, moral decline, peer pressure and proliferation of outside influences like television and the internet. According to participants, individuals and the community face internal and external realities that create tension and uncertainty, and may contribute to the use of drugs and alcohol.

Distance between the county and illicit drug distribution sources was not always seen as a protective factor, as the nearest medicine cabinet could be a pharmacopeia of useable or saleable drugs.

Poverty in rural areas was discussed as a potential protective factor to substance abuse. One focus group participant commented that relative rural poverty was a protective factor because it limited the purchase of drugs.

All communities saw a relationship between employment and substance abuse, whether the use was caused by addiction to painkillers resulting from job-related injury, recreational habituation, or the numbing depression from a dead end job. In one community with adequate employment opportunities, county officials said that employers learned to look the other way and only required drug testing when a safety violation or accident occurred, preferring a workforce that was functional regardless of substance use.

The risks posed by place are related to the perception of relative isolation from legal consequences, covert use of substances, lack of a range of activities for youth, and diminished employment opportunities. These risks were not listed as gaps but were seen as a conditional quality of the nature of the rural setting.

Common strengths among all the counties surveyed were the state-supported networks of behavioral health treatments services. These multi-county agencies furnish both mental health and substance abuse treatment on an outpatient basis. No county had any in-county residential treatment facility and relied on referrals to residential facilities at distances of at least 30 to 50 miles. Transportation to treatment on a sustainable basis was difficult for those with limited means.

Faith-based prevention activities and some informal counseling for substance abuse and mental health were provided in each of the counties. Stakeholders from each county mentioned that the presence of

churches, youth programs, a strong faith community, and positive adult and family models were factors that contributed to the moral fiber of the community and offered protective qualities.

The presence of school-based prevention activities, curriculum, after-school youth activities, and multi-generational events were central to the perception of a positive community atmosphere. Stakeholders from counties that had such activities noted that they felt the community was committed to creating a positive environment where drugs are not the answer to boredom, lack of jobs, and despair. Parenting classes, agricultural extension programs, wellness classes, health camps, mentoring programs, sports, and recreation were some ways that communities worked to prevent drug use and promote mental health.

The array of anti-drug coalition activities is an important strength of the rural communities surveyed. Operation UNITE, an organization that is active in both Kentucky counties, seeks to prevent illegal drug use, coordinate treatment, provide support to families and friends of substance abusers, and educate the public about the dangers of drugs. UNITE was started with federal funding. Bland, Hardy and Monroe Counties each had multi-stakeholder coalitions supported by state and regional agencies that functioned to raise awareness about the dangers of drug use.

Outstanding local leadership was a positive asset in several communities. Local “champions” mobilized action and coordinated prevention activities. Individuals working in the school systems, county governance, and public health noted that local leadership was a positive asset to their communities. Leaders became apparent as participants talked about the issues and solutions in their communities. These individuals could be a local county extension agent, the county executive, the school resource officer, a concerned counselor, or a public health official. Common to these individuals was recognition of the necessity to involve others from all parts of the community to tackle the problem on many fronts.

Access to treatment, including transportation, payment options, privacy issues, stigma, choice of facilities and cultural or family bias, were uniformly identified as gaps in the continuum of care for substance abuse and mental health. The paucity of long term care residential treatment facilities and after-care programs was also discovered. The continuity of treatment modalities was a concern. Counties recognized that treatment constituted a long term commitment to recovery and recovery maintenance. Some modalities are provided in volunteer settings (e.g. Alcoholics Anonymous and Narcotics Anonymous and local drop in centers). Counties lacked reliable volunteers and locations for the groups to meet, and experienced cultural barriers for women and youth.

The need for treatment options for women was suggested in two county focus groups, while the need for more school intervention and action prevention programs was mentioned in three county focus groups. Individuals from both Virginia counties noted the need for better emergency mental health plans because their counties are geographically situated far from appropriate emergency mental health care; county providers were often forced to improvise in emergency mental health situations. One county said that another access to treatment issue was that employed individuals had difficulty securing time off during work hours which added to the stigma attached to seeking care; thus, another gap to mental health treatment are the service hours available for treatment.

These Appalachian communities have strengths and assets within their counties and some gaps in services that are not evident from national data sets. Generalizing strengths and gaps in treatment and prevention from these six counties to other Appalachian counties may be speculative at this time.

Definitive descriptions can only be made through individual assessments of each Appalachian county's response to the substance abuse and mental health issues. However, we recognized from these communities that:

Substance abuse resulting from the distribution of prescription drugs as much or more than alcohol and tobacco is a prime concern to government officials, law enforcement and justice personnel, health departments, educators and the public.

Nearly every person interviewed admitted they had been touched in some way by substance abuse issues among family and friends.

Socioeconomic realities and community culture are two factors that affect substance abuse and mental health issues.

Individuals from case study communities indicated the need to address local problems locally. They are trying to implement successful new strategies to restore their communities and to help individuals to engage in healthy behaviors and lead productive lives.

7.8 Discussion and Conclusions

The case studies revealed that the deeper story about Appalachian substance abuse and mental health disparities cannot be captured using nationally available data sets only. Analyses of substance use prevalence and mental health status using national data must be supplemented by additional local data that contains information about the institutional populations, law enforcement, EMS, etc.

Through direct participation in focus groups and interviews, key respondents described the diversity of the rural Appalachian counties – despite their similarities across socio-economic indicators. The on-site visits to the six counties were important to understanding the variety of local substance abuse and mental health issues found in each county. Some leaders acknowledged that there are insufficient resources to cope with the effects of substance distribution, abuse, and addiction. Other leaders appeared to be in denial of the substance abuse and mental health issues in their communities.

Findings from the focus groups revealed that the steps needed to ameliorate substance use and mental health treatment access issues are largely dependent on the local community's recognition of these problems. In addition, other factors that also have an influence on access to treatment include state resources, local economic conditions, the community's culture and commitment to resolving the issues, transportation options, viable payment alternatives, and mobilization of key community members.

Individuals from each of the county sites reported that substance abuse and mental health issues are often co-occurring. These issues are complex and any approach must consider the relationship between mental health and substance abuse, as some people may abuse substances to deal with anxiety or other serious mental health problems. In other situations, substance abuse may precipitate or exacerbate mental health issues. Policy makers must address prevention and access to treatment issues as well. This research suggests that substance abuse and mental health issues are typically co-occurring disorders that impact the community at large. Additional research in other areas of Appalachia should be conducted to test the reliability of these results.

Table 7.2. Model Programs (Best Practices) from Appalachian Twinned-County Focus Groups

	Kentucky		Virginia		West Virginia	
	Morgan	Wayne	Bath	Bland	Hardy	Monroe
School	Champions for Drug-Free Kentucky Too Good for Drugs	LifeSkills4Kids BABES Second Step Too Good for Drugs Champions Against Drugs	Safe and Drug Free Schools program After Prom activities	LifeSkills4Kids Parenting Wisely DARE Protecting Me/Protecting You Character Education Tobacco Prevention	Health Choices Camp Drug and alcohol education K-12 Tobacco programs	School Partnerships School-based wellness center Sports After school activities Tobacco programs
Faith-based	Lifeline after school program Ministerial Association Church VBS programs	Church activities	Camp Kovacs Churches	Hope Ministries Churches	Ministerial Association Churches	Ministerial Association Churches
Law Enforcement			ACCESS emergency mental health care	School Enforcement Officer	Officer in Schools	
Community Prevention	Operation UNITE Hooked on Fishing School programs and clubs Summer activities Morgan Co. ASAP	Operation UNITE – DAAD Hooked on Fishing Celebrate Recovery Neighbors United Wayne Co. ASAP	Prevention Task Force ASAP alcohol prevention	Operation CADDY Family Resource Center Strengthening Families program	Hardy Co. Prevention Partnership Family Resource Center Community Action	Monroe Co. Prevention Coalition
Medical						
Mental Health	Pathways, Inc.	Adanta Behavioral Health Services Phoenix Preferred Health Care Narcotics Anonymous AA	Rockbridge Community Services Board: PEPPACE	Mt. Rogers Community Services Board. AA	Potomac Highlands Guild AA	FRMS Health Systems: Mother Program ADAPT for adolescents AA
Judicial	Drug court (rotating)	Drug Court	Bath Co. Combined Courts	Mt. Rogers Youth Case Mgt.		
Other	Kiwanis Club	Wayne Co. Hotline Youth Empowerment Network 4-H clubs Kiwanis Club	Parks and outdoor recreation 4-H	Virginia National Guard activities 4-H	Parks 4-H	4-H Summer programs West Virginia Prevention Resource

Table 7.3. Strengths and Treatment Gaps for Twinned Counties Study

	Kentucky		Virginia		West Virginia	
	Wayne	Morgan	Bath	Bland	Hardy	Monroe
Strengths (See also Model programs)	Strong faith community; school drug testing; nuclear families; small town culture	Church programs; positive adult and family models; after school programs; publicizing drug mortalities	Recreation opportunities; churches; youth programs; rurality; lack of jobs(income to buy drugs)	Parental involvement; churches; outreach programs; teachers who listen; lack of gang activity; small town atmosphere	Relative wealth; employment opportunities; education; strong rural families; churches; small community culture; mandatory employee drug screening	Summer youth programs; strict medication controls at health centers and mental health facilities; ruralness; small community setting and culture
Strengths from Inventories	Adanta Behavior Health Services including adolescent and female treatment; Phoenix Preferred Care services; UNITE coalition activities; in-school prevention programs; AA; county extension youth programs; community center; state Champions program	Pathways, Inc. mental health and counseling services, drug court; church involvement; state Champions program; UNITE coalition activities; school prevention programs; after school care; Kiwanis community programs	Rockbridge Community Services Board services; school prevention efforts; knowledgeable sheriff's drug officer; recreation facilities; concerned DHS personnel	Mt. Rogers Community Services Board services; school enforcement officer; classroom prevention programs; VA National Guard programs; vigorous county administration involvement; drug coalition activities	Potomac Highlands Guild services including adolescent treatment; sheriff officer in schools; Making Healthy Choices 4-H/ school camp; AA, county extension youth programs	FRMS Health System Mother program and adolescent program; school partnerships; school-based wellness centers; after school activities; concerned county health department; county extension youth programs
Profiles: Needing but not receiving treatment for alcohol use	5.81% of population	5.67% of population	7.36% of population	7.05% of population	6.00% of population	6.35% of population
Profiles: Needing but not receiving treatment for drug use	2.45% of population	2.91% of population	2.61% of population	2.575% of population	2.35% of population	2.91% of population
Gaps identified from focus groups	Residential treatment; more school prevention programs	30-day + Residential treatment; faith-based youth residence; half-way houses; treatment for women; Action programs in schools; more state involvement	Drug coalition; Prevention programs in schools; local residential beds; adequate emergency mental health plan	Local hot line that is not tied to 911; better total health care	More AA programs, more law enforcement; prevention programs for adults; treatment options for women	More treatment facilities; specific local data
Gaps identified from Inventories	Access* to residential treatment	Access* to residential treatment	Access* to residential and outpatient treatment; school prevention programs	Access* to treatment, residential treatment	Access* to treatment, residential treatment	Access* to treatment, residential treatment

*Access to treatment: transportation, payment options, privacy issues in rural community, and treatment choice within the community.

Table 7.4. Gaps In Available Data For Planning At the Local Level		
NORC** DATA SOURCES Used for Preparation of County Profiles and as measure of high/low substance abuse prevalence/mental health status in Appalachian counties	CASAP* DELPHI PROCESS DATA SETS suggested as measures of high/low substance abuse prevalence/mental health status in Appalachian counties	COMMUNITY/COUNTY DATA (from case studies) as measure of county level substance abuse prevalence/mental health status
2000 median home value from US Census*	Socio-economic status	
	Poverty rates	
Percentage of persons in correctional or juvenile institutions from Area Resource file (calculated)*	Per capita incarceration rate for drug offense	
	Substance abuse related arrests per capita/1,000	
	Drunk & impaired driving arrests	
Area Resource File (calculated from past 3 years and population size)	Suicide rate	
	Overdose death Rates	(Partial correlation) local EMS data (response calls, ODs)
	Child Abuse and Neglect reports	
	Drug related Child Protective Services interventions/ Social Service investigations	
	Birth Certificate data on maternal smoking and substance abuse	
	Prescription rates of abused drugs	
	Service utilization rates for Substance Abuse /Mental Health treatment	
	Mortality from alcohol or drug related causes	
	Accident rates from AOD related causes	
	Substance abuse screening tests conducted by schools and employers	
	Behavioral Risk Factor Survey	
Alcohol abuse or dependence in past year from 2002-2004 National Survey on Drug Use and Health (pooled)		
Abuse or dependence of any illicit drugs in past year from 2002-2004 National Survey on Drug Use and Health(pooled)		
Non-prescription use of pain killers in past year from 2002-2004 National Survey on Drug Use and Health(pooled)		
Percentage of persons having serious psychological distress problems in past year from 2002-2004 National Survey on Drug Use and Health (pooled)		

Table 7.4. Gaps In Available Data For Planning At the Local Level		
NORC** DATA SOURCES Used for Preparation of County Profiles and as measure of high/low substance abuse prevalence/mental health status in Appalachian counties	CASAP* DELPHI PROCESS DATA SETS suggested as measures of high/low substance abuse prevalence/mental health status in Appalachian counties	COMMUNITY/COUNTY DATA (from case studies) as measure of county level substance abuse prevalence/mental health status
Percentage of persons in mental health hospitals or institutions from Area Resource file (calculated)		
Index on Health Professional Shortage Area status from 2003 codes of HPSA for Primary Medical Care and for Mental Health from the Area Resource file		
		School Surveys: KIPS, PRIDE, Search Institute's 40 Developmental Assets
		Community Planning Assessments
		Local Police Reports
		Anecdotal information from teachers, churches, community members
Note: Variables marked with an asterisk (*) indicate that the variable used is a proxy for the variable suggested by CASAP through the Delphi process.		

Case Study Appendix of Model Programs

Model programs or best practices demonstrate a technique, activity or methodology that through research, experience and replication, reliably provides:

- Effective and desired result(s);
- Ethical and equitable outcome(s);
- Adaptability to similar environments; and
- Opportunities for innovation.

Through the National Registry of Evidence-based Programs and Practices (NREPP) (<http://nrepp.samhsa.gov>), the Substance Abuse and Mental Health Services Administration (SAMHSA) has designated the following programs as effective models to address substance abuse and mental health: Too Good for Drugs; Parenting Wisely; Life Skills Training; Protecting Me/Protecting You; and Strengthening Families.

The following are examples of programs being used in the focus group counties:

KY-ASAP (Agency for Substance Abuse Policy)

KY-ASAP was created in 2000 by the Kentucky General Assembly to promote the reduction of alcohol, tobacco and other drug use in Kentucky by working with communities to help them identify

existing needs and resources. There are currently 72 local ASAP boards that cover 111 of 120 counties in the Commonwealth. The local boards consist of stakeholders in each county or multi-county jurisdiction. ASAP has become a vital part of substance abuse prevention and treatment efforts in many of Kentucky's communities. <http://odcp.ky.gov/kyasap.htm>

Champions for a Drug Free Kentucky – Kentucky Office of Drug Control Policy

Champions for a Drug-Free Kentucky was established in 1986. The Champions coalitions promote the prevention of alcohol, tobacco and other drugs along with the reduction of violence in Kentucky communities. The Champions program provides assistance for communities desiring to form a coalition and provides state oversight and funding opportunities for established coalitions. Ninety-five Champions coalitions have been established in 104 counties throughout the state. Champions coalitions function as a substance abuse prevention catalyst. The coalitions are comprised of people who care about the quality of life in their communities. <http://odcp.ky.gov/champions.htm>

Life Skills 4 Kids

Life Skills 4 Kids from The Million Dollar Machine (MDM) is a comprehensive Life Skills Enrichment Program designed to benefit children in grades K-6 with Robot-Taught Assembly Programs. The program includes major components that also address the learning objectives of Character Education, Health Education and Drug Prevention. <http://www.lifeskills4kids.com>

BABES

The Beginning Alcohol and Addictions Basic Education Studies (BABES) is a primary prevention program designed to teach children how to live a happy, healthy, drug and tobacco free life. Trained volunteers using puppets impart information designed to enable children to grasp the importance of good decision making skills. This program is designed to help children understand and develop skills necessary to cope with unhappy situations, promote self-esteem, define peer pressure and make good choices. <http://www.aodc.org/BABES.html>

Second Step

Based on more than 15 years of classroom application and the most current academic, social, and emotional research, the Second Step curriculum focuses on three essential competencies: empathy, impulse control and problem solving, and anger management. The *Second Step* program teaches Elementary students how to deal with emotions, resist impulsive behavior, resolve conflict, solve problems and understand the consequences of their actions. Teachers model and reinforce the skills taught in the lesson. <http://www.cfchildren.org/programs/ssp/overview>

Too Good for Drugs

Too Good For Drugs[™] (K-8) is a school-based prevention program designed to reduce risk factors and enhance protective factors related to alcohol, tobacco and other drug (ATOD) use among students. *Too Good For Drugs*[™] (K-8) has a separate, developmentally-appropriate curriculum for each grade level. Each curriculum builds on earlier grade levels with an instructional design to enable students to learn and retain skills. <http://www.mendezfoundation.org/educationcenter/tgfd/index.htm>

Safe and Drug Free Schools

The Office of Safe and Drug-Free Schools (OSDFS) administers, coordinates, and recommends policy for improving quality and excellence of programs and activities that are designed to provide financial assistance for drug and violence prevention activities and activities that promote the health and well being of students in elementary and secondary schools, and institutions of higher education.

<http://www.ed.gov/about/offices/list/osdfs/index.html>

D.A.R.E.

D.A.R.E. (Drug Abuse Resistance Education) is a collaborative program between local law enforcement and local schools to educate students about the personal and social consequences of substance abuse and violence. D.A.R.E.'s primary mission is to provide children with the information and skills they need to live drug-and-violence-free lives, to equip them with tools to enable children to avoid negative influences, and to allow them to focus on their strengths. It seeks to establish positive relationships between students and law enforcement, teachers, parents, and other community leaders.

<http://www.dare.com>

Parenting Wisely

Parenting Wisely is a self-administered, interactive, multimedia CD-ROM program that reduces family conflict and child behavior problems by improving parenting skills and enhancing family communication and mutual support, supervision, and discipline. Parents can use it alone, in a group, or with a practitioner. The program targets parents with children 9 to 18 years of age.

Parenting Wisely, developed at Ohio University, is an alternative or complement to existing family interventions. The developer used his knowledge of the Functional Family Therapy model and experience with program dissemination to create a program that would reduce or eliminate many of the barriers that keep at-risk families from receiving good family interventions. The resulting prototype, an interactive computer disk, was field-tested in 11 southern (Appalachia) Ohio counties under an Office of Juvenile Justice and Delinquency Prevention Formula Grant. <http://www.familyworksinc.com/>

Protecting Me/Protecting You

Protecting You/Protecting Me® (PY/PM®) is an alcohol use prevention curriculum for children in grades 1-5. *PY/PM* works to reach children before they have fully shaped their attitudes and opinions about alcohol use and educates them about their role in preventing it. The curriculum focuses on the effects of alcohol on the developing brain during the first 21 years of life. <http://www.pypm.org>

Virginia Tobacco Settlement

Funds from the Virginia Tobacco Settlement Foundation fund programs like All Stars, Al's Pals, Creating Lasting Families, Not On tobacco, Positive Action, Project Alert, Project EX, Project Toward No Tobacco Use, Ending Nicotine Dependence, Helping Teens Stop Using Tobacco (TAP),

Intervening with Teen Tobacco Users (TEG), Know Your Body, Life Skills Training, Project Toward No Drug Use, Skills for Adolescence, and Too Good for Drugs. <http://www.vtsf.org>

Virginia National Guard Drug Demand Reduction Program (DDRP)

The Virginia National Guard supports coordinated community education and prevention programs and works with at-risk youth to develop values, skills and self discipline.

<http://vko.va.ngb.army.mil/VirginiaGuard>

Drug Coalitions

Operation UNITE

Launched in April 2003 by Fifth District Congressman Harold “Hal” Rogers, Operation UNITE serves 29 counties in southern and eastern Kentucky. It is divided into five coalition service regions. Every county has at least one UNITE coalition and conducts its own program activities. Morgan and Wayne Counties each have a volunteer coalition. Operation UNITE’s mission is to rid communities of illegal drug use through undercover narcotics investigations and the coordination of treatment for substance abusers; the goal is to provide support to families and friends of substance abusers and public education about the dangers of drug use. UNITE educates and activates individuals by developing and empowering community coalitions to refuse to accept or tolerate drug culture.

Wayne County Operation UNITE: Sponsors Neighbors UNITED, a community watch activity; Celebrate Recovery, a faith-based support program; Hooked on Fishing Not on Drugs and Kid’s Fishing Derby (<http://www.futurefisherman.org>), a copyrighted program of the Future Fisherman Organization; three school anti-drug clubs; Red Ribbon Week at the schools; a Back-to-School Bash fair; the safe and drug-free graduation bowling activity; safe Halloween activities; and a Christmas parade.

Morgan County UNITE: Sponsors six school anti-drug clubs; Hooked on Fishing; various speakers; joint activities with other community groups and schools and the Kentucky Drug Endangered Children network; EMT training about drugs; neighborhood watch training; Red Ribbon Week activities; and safe Halloween activities. Morgan County UNITE also helps to fund a local adult circuit drug court. <http://www.operationunite.org>

Bland County (VA) CADDY: Organized in 2006 with help from a matching grant from the Appalachian Regional Commission as a result of participation in a regional Appalachian substance abuse conference, Operation CADDY (Coalition Against Drugs Destroying Youth) in Bland County (VA) seeks to increase the knowledge of community leaders about the importance of providing positive alternatives and protective factors for youth, young adults and their families and effective implementation of comprehensive prevention programs.

Hardy County (WV) Prevention Partnership: A function of the West Virginia Prevention Resource Center Office community development initiative, the partnership counts over 50 stakeholders from education, medicine, law enforcement, county extension offices, the media, mental and behavioral treatment, churches, and government as members.

Monroe County (WV) Prevention Coalition: A community wide partnership dedicated to reducing substance abuse, underage use, and associated risky behaviors through effective prevention strategies that include: policy setting; education; communication; programming; mentoring; and role modeling.

Community Services

ASAP programs

Alcohol and Substance Abuse Prevention (ASAP), a workplace substance abuse and prevention program available in Kentucky and Virginia, was developed to implement and maintain programs which aim to reduce the incidence of drug and alcohol abuse in the workplace and deter drug and alcohol use. <http://www.asap-programs.com>

County Extension Services

State county extension services with offices in each U.S. county function as agencies within the U.S. Department of Agriculture through state land grant colleges. Children and families at risk for negative outcomes such as infant mortality, malnourishment, child abuse and neglect, poor health, substance abuse, teenage pregnancy, crime, violence, and academic underachievement are served by these agencies. 4-H clubs and activities are [youth organizations](#) administered by the [Cooperative Extension System](#) with the mission of "engaging youth to reach their fullest potential while advancing the field of youth development."

While all counties in the study have active cooperative extension services, Hardy County (WV) cooperative extension co-sponsors a Health Choices camp for elementary and middle school youth during the school day, in conjunction with school staff, that reinforces healthy behaviors including alcohol, substance use and tobacco prevention activities. <http://www.csrees.usda.gov/Extension>

Alcoholics Anonymous (AA)

Alcoholics Anonymous® groups are locally organized and based on a fellowship of men and women who share experiences to support each other to solve common problems and help others recover from alcoholism. Bath, Bland, Hardy, Monroe, and Wayne counties all have active AA meetings. Narcotics Anonymous is a similarly organized community-based association of recovering drug addicts. Only Wayne County (KY) has meetings of Narcotics Anonymous. <http://www.alcoholics-anonymous.org>

County Profiles

The county profiles used during the site visits are included as Appendix D at the end of this report.

CHAPTER 8: Conclusions

As the first effort to explore substance abuse and mental health issues and access to treatment services within Appalachia, and between Appalachia and the rest of the United States, this report augments the scant body of literature in these areas. In doing so, we hope to inform the direction of substance abuse and mental health research and policy in Appalachia, and provide information to better allocate and target resources to eliminate substance use and mental health disparities within the region. Analyses included in this report explore patterns across Appalachian sub-regions, across levels of economic development within the region, within Appalachian coal-mining areas, and between Appalachia and the rest of the United States.

Overall Conclusions

This study provides an in-depth synthesis of the available data on substance abuse and mental health disorders, and access to treatment services, in Appalachia. There are several findings worthy of emphasis given their consistency across the Appalachian region, and across data sets. The consistency of these findings suggests possible areas of focus for targeting region-wide resources to eliminate Appalachian mental health and substance use disparities. Findings demonstrate that:

Mental health is a key area of concern in Appalachia. Independent from substance abuse, mental health diagnoses for serious psychological distress and major depressive disorder are proportionately higher in Appalachia than in the rest of the nation. This is an important finding in that it suggests that Appalachian disparities in mental health status do not appear to arise as a result of higher levels of co-occurrence with substance abuse. Consistent with this finding, hospital discharge data show that Appalachian residents have a lower proportion of diagnoses for substance abuse only, and for co-occurring substance abuse and mental health problems, as compared to the rest of the nation.

It is important to note, however, that findings from the case studies and from discussions with members of the Coalition on Appalachian Substance Abuse Policy (CASAP) suggest that medical care system factors related to reimbursement could encourage under-reporting of comorbidity rates within the region. While this study has not identified any evidence that suggests that under-reporting happens more often in Appalachia than in other regions, future work should explore this issue. Specifically, studies should investigate whether any systematic bias exists in the way mental health and substance abuse coverage and payment is managed within the Appalachian Region.

While alcohol is the predominant substance of abuse both nationally and within Appalachia, use patterns differ. Proportionately fewer Appalachian adults used alcohol in the past year, as compared to adults nationally. Among those who did use alcohol, proportionately fewer Appalachian adults reported binge alcohol use and heavy alcohol use in the past year as compared to adults nationally. Among adolescents, however, heavy alcohol use was a greater problem within Appalachia than outside of Appalachia. For Appalachian coal mining areas, the proportion of people entering treatment for alcohol abuse is lower than in other areas of Appalachia.

Methamphetamine is not as large of a problem within Appalachia as is widely believed. Findings do not support that methamphetamine use is higher in Appalachia than elsewhere in the nation.

Rather, methamphetamine use and admission rates are demonstrably lower across Appalachia. While regional trends show that methamphetamine use is rising, the rate of increase is similar to that of the rest of the nation. While there are likely to be “pockets of abuse” within the region, rates are lower within the region as a whole.

The growing proportion of admissions for primary abuse of other opiates and synthetics is a key issue in Appalachia. Admission rates for the primary abuse of other opiates and synthetics²⁶ are higher in Appalachia than in the rest of the nation. Further, while rates are rising both across the nation and in Appalachia, the rate of increase in Appalachia is greater. This is particularly the case in Appalachian coal mining areas.

In many ways, access to treatment is better in Appalachia when compared to the rest of the nation. In terms of accepted forms of payment, and availability of substance abuse family counseling and mental health assessment upon admission, we see that access to treatment is better in Appalachia when compared to the rest of the U.S. Overall, proportionately more adults in the Appalachian region with mental health problems received outpatient mental health treatment counseling services and prescription medical services in the past year, as compared to adults outside the Appalachian region. There is no significant difference between Appalachian adolescents and adults and adolescents and adults outside of the region in terms of the proportion of persons who need but do not receive treatment for an illicit drug problem.

Outpatient rehabilitation is the most common setting for substance abuse treatment in Appalachia. Access to inpatient treatment, and short and long-term non-hospital residential treatment for substance abuse or mental health illnesses, is less common within the Appalachian region. Findings from the national household survey indicate that outpatient rehabilitation is the most common setting for substance abuse treatment in Appalachia. Of the people over age 18 who received substance abuse treatment at a specialty facility in the past year, proportionately fewer people in Appalachia received treatment at an inpatient rehabilitation facility than people outside of Appalachia. At the same time, utilization rates of hospital inpatient services, the private doctor’s office, and emergency room services are all higher in the Appalachian region than outside of the Appalachian region. One interpretation of this finding is that people who have severe substance abuse problems have not received appropriate outpatient treatment or regular inpatient services, and as a result, use more expensive emergency room services. The case study counties also reported having access to outpatient treatment, but difficulties in getting access to inpatient and long-term residential treatment facilities. In fact, no case study county had inpatient facilities for either substance abuse or mental health and most reported difficulty placing those needing long term outpatient treatment. Results from the survey of substance abuse treatment facilities indicate that significantly fewer Appalachian facilities offer short term and long-term non-hospital residential substance abuse treatment when compared to facilities outside the Appalachian region.

Barriers to treatment for substance abuse and mental illnesses exist within the Appalachian region, including transportation issues, cultural factors, and stigma. The case studies revealed a number of specific barriers to accessing treatment for substance abuse and mental health illnesses, including: stigma; transportation availability; limited payment options; privacy issues; choice of facilities; and cultural and family barriers.

²⁶ These drugs include codeine, hydrocodone, hydromorphone, meperidine, morphine, opium, oxycodone, pentazocine, propoxyphene, tramadol, and any other drug with morphine-like effects except methadone.

Better data are needed at the local level to inform policy and allocate resources to more effectively address substance abuse and mental health problems in the Appalachian region.

Findings from the case studies showed that community-level substance abuse treatment and mental health leaders do not have uniformly available county and state data from which to draw conclusions about the magnitude of substance abuse and mental health issues within their communities. Additionally, they do not generally use nationally-available data sets to make decisions about local response to substance abuse and mental health issues. While they may use state data, especially when it supports applications for grant funding for prevention programs, more often than not, anecdotal evidence is most often used as the basis for informing local decision making. These findings do not suggest a disregard for the data, but rather the lack of utility in how data are presented and a disconnect between the levels of analysis (generally state or regional) and the level of service delivery (local). Improved data collection at the national, state and local levels, including larger sample sizes, may lead to more informed community-level decision making with respect to resource allocation and program development.

Taken together, these findings suggest that disparities do exist in the Appalachian region for specific substance use and mental health disorders. While some of these disparities exist across the Appalachian region, even more can be learned by looking at a more granular level. Specifically, findings demonstrate particular disparities related to Appalachian sub-region, county economic distress level, and within coal-mining areas. A sampling of these findings is highlighted below:

Findings Across Appalachian Sub-Regions (Northern; Central; Southern)

The central Appalachian region had the highest proportion of admissions with other opiates or synthetics as the primary reason for admission.

The highest prevalence of mood disorders occurs in the northern Appalachian sub-region.

The central sub-region of Appalachia has the greatest density of admissions for psychiatric problems – both substance-related and non-substance-related.

Non-medical use of prescription drugs among adolescents is higher in the central and southern sub-regions of Appalachia, as compared to the northern sub-region.

Findings Across Economic Status Levels (Attainment; Competitive; Transitional; At-Risk; Distressed)

There is a positive relationship between the economic development levels and private insurance for both adults and adolescents; distressed and at-risk counties have the lowest rates of private insurance, and competitive and attainment counties have the highest rates of private insurance.

Medicare and Medicaid/CHIP payments are highest in at-risk and distressed counties and lowest in competitive and attainment counties.

Competitive and attainment counties have the lowest rates of non-medical use of prescription drugs among adolescents, followed by transitional counties and distressed and at-risk counties.

Patients in the Appalachian region are more likely to be admitted through the emergency department than patients outside of the Appalachian region. This disparity appears to be concentrated in at-risk and transitional counties, as compared to other counties.

Findings for the Appalachian Coal Mining Region

Proportionately more females than males were admitted to treatment in coal mining areas than in other areas of Appalachia.

People less than 24 years of age accounted for more admissions in coal mining areas than in other areas.

The percentage of admissions with heroin use and other opiates or synthetics use as the primary, secondary or tertiary reason for treatment is significantly higher in coal mining areas than in other parts of the Appalachian region.

Other illicit drug use and non-medical use of prescription drugs are also cited more as the primary, secondary or tertiary reasons for treatment in coal mining areas than in other areas.

Implications for Policy Interventions

Among the notable findings from this study were differences in patterns of substance use and mental health status among adolescents as compared to adults. This suggests that targeted interventions are needed for the prevention and treatment of both substance abuse and mental health concerns.

Adolescents

While Appalachian adolescents demonstrate similar substance use patterns for cocaine, marijuana, and methamphetamine, rates of non-medical use of psychotherapeutics, cigarettes, and heavy alcohol use are higher as compared to adolescents across the United States. Non-medical use of psychotherapeutics is a problem for adolescents nationwide, with rates exceeding those of adults. Rates for Appalachian adolescents are even higher. Similarly, for adolescents, rates of heavy alcohol use were higher in Appalachia than outside of Appalachia.

The picture of substance use and mental health concerns among Appalachian adolescents becomes even clearer when analyses are conducted by county economic status level, suggesting that economic status plays a key role in mental health and substance abuse issues. Findings demonstrate that adolescents in distressed and at-risk Appalachian counties – compared to adolescents in other Appalachian counties – have the highest rate of non-medical use of psychotherapeutics. Cigarette and alcohol use are also key concerns for adolescents in Appalachia. Proportionately more adolescents reported heavy alcohol use inside Appalachia than outside of Appalachia. Similarly, proportionately more adolescents used cigarettes in Appalachia than outside of Appalachia; usage was higher for lifetime use, past year use, and past-month use.

On the positive side, proportionately more treatment facilities in Appalachia offer substance abuse family counseling than in facilities outside of Appalachia. This suggests a regional understanding of the need for treatment services for adolescents and their families. While adolescents in at-risk and

distressed counties have the lowest rate of private health insurance, we see that across Appalachia, more adolescents have Medicaid/ CHIP coverage than adolescents in other areas of the country.

Several federally-commissioned nationwide efforts are underway to explore substance use and mental health challenges facing adolescents, and to raise awareness about mental health, and alcohol and drug abuse.²⁷ Such efforts are needed, and should be expanded/targeted toward at-risk and distressed areas in Appalachia. Both quantitative and qualitative findings from this study suggest that preventive measures are needed to address substance abuse and mental health issues among Appalachian adolescents. While treatment is important, there is a clear need for an “upstream” approach focused on prevention. Given that our case study findings suggest that problems often arise due to issues such as boredom and lack of hope, community interventions may appropriately focus on school/after-school settings.

This is not to say that medical treatment is unimportant, however. Given the magnitude of many of the problems seen among Appalachian adolescents, treatment is clearly needed. While many Appalachian facilities do treat adolescents, there still remain cost/insurance barriers that need to be addressed. It is essential that policymakers and community leaders consider both treatment and prevention measures as they craft interventions to reduce the burden of substance use and mental health concerns among Appalachian adolescents.

Many Appalachian communities are clearly doing their part in working to prevent drug use and promote mental health. Case study communities report active school-based prevention activities, after-school youth activities, anti-drug coalition activities, mentoring programs, wellness classes, health camps, mentoring programs, sports, and recreational activities. Community representatives from the case study counties have described the utility of and growing demand for programs such as Beginning Alcohol and Addictions Basic Education Studies (BABES), *Too Good For Drugs*TM (K–8), D.A.R.E. (Drug Abuse Resistance Education), LifeSkills4Kids, and others. Future work should explore the effectiveness of community-based prevention programs in Appalachia.

Adults

Whereas substance abuse issues are of primary concern among Appalachian adolescents, overall substance abuse rates among Appalachian adults are proportionately lower as compared to adults nationally. This is true across substances, including alcohol, non-medical use of psychotherapeutics, marijuana, methamphetamine, and cocaine. While substance use rates are lower, however, we see proportionately higher rates of serious psychological distress and major depressive episodes as compared to adults nationally, suggesting that mental health concerns may be of primary interest when targeting efforts towards Appalachian adults. Importantly, these mental health concerns occur independent from substance use, rather than as a result of co-occurring disorders.

A look at hospital discharge data shows specific mental health conditions that appear more prevalent within the Appalachian region, with significantly more Appalachian adults having diagnoses of: anxiety disorders; delirium, dementia, and amnesic and other cognitive disorders; developmental disorders (includes communication disorders, developmental disabilities, intellectual

²⁷ <http://www.helpingamericasyouth.gov/conf-tsu.cfm>

disabilities, learning disorders, and motor skill disorders); impulse control disorders; and personality disorders.

In looking at treatment, an important finding is that Appalachian adults are more likely to access treatment through the emergency room, especially in distressed and at-risk counties. This suggests that Appalachian adults are more likely to seek treatment later, and may be less likely to recognize the magnitude of their mental health and substance use issues. This is consistent with findings that Appalachian residents are more likely to report stigma, not feeling the need for treatment, and fear of commitment, as reasons for not seeking treatment. Similar findings are also reflected in the case studies, where community participants reported cultural barriers, stigma, and stoicism as reasons for Appalachian residents not seeking treatment.

Among substances of abuse, alcohol remains the predominant concern among Appalachian adults. While overall use rates, heavy use rates and binge drinking rates are all lower as compared to adults nationally, alcohol is the mostly widely used and abused substance within the region, and the primary reason for Appalachian adults seeking substance abuse treatment. Interestingly, the dynamics of substance use and abuse differ within the coal mining region of Appalachia, with treatment rates for alcohol use being lower than in other parts of the region. The percentage of admissions for heroin use and other opiates or synthetics use as the primary, secondary or tertiary reason for treatment is significantly higher in coal mining areas than in other parts of the Appalachian region, however.

As with adolescents, these findings suggest the need for targeted initiatives to address mental health and substance abuse issues among Appalachian adults. The nature of these issues differs among adolescents and adults, however, with mental health concerns rising as a primary area of concern among adults. Perhaps the most critical finding relative to Appalachian adults is the need to focus on these mental health concerns, independent from substance abuse, and to develop programs to overcome cultural barriers to treatment and issues of stigma that may result in more admissions occurring through emergency room settings.

One caveat to this recommendation is the finding that, within the coal mining region of Appalachia, abuse of heroin and other opiates and synthetics appears to be a primary substance abuse concern. Targeted prevention and treatment efforts are needed to address these concerns.

Key Recommendations to Guide Future Policy and Research Efforts

This study is the first effort to investigate the state of mental health status and substance abuse prevalence at the most granular level possible across Appalachia. While our research has provided a picture of the state of the region, much remains to be learned about mental health status and substance abuse prevalence in Appalachia, and access to treatment services.

We believe there are any number of recommendations that could be offered to guide future policy and research efforts. We offer four key recommendations to stimulate and improve future research efforts, and thereby inform mental health and substance abuse policy and community-level programs:

1. Richer data are needed to enable analyses at the county and community levels to fully understand the extent of substance abuse and mental health problems in Appalachia.

Recognizing that interventions take place at the community level, and that substance use and mental health patterns differ from community to community, local-level data are clearly needed to most appropriately target initiatives and ensure the optimal use of limited resources. While our findings are instructive in guiding the allocation of region-wide resources, and targeting resources based on factors such as Appalachian sub-region and county economic development level, local-level data are needed to inform local interventions. Our case study findings also revealed that better coordinated data collection, documentation and analysis are needed for Appalachian communities to access resources at state and federal levels. This study serves as a call to action to improve primary data collection with representative sampling in and for the Appalachian region. Leadership from the federal, regional, and local levels is needed to ensure that researchers and practitioners have access to more comprehensive data sets to explore these issues across the Appalachian region.

2. Studies are needed to determine the quality of substance abuse and mental health services being delivered in Appalachian treatment facilities.

Studies are needed to determine the quality of services being delivered in Appalachian treatment facilities. The data only tell us that a service, such as inpatient detoxification, is offered; we do not know about the quality of the service delivered, or whether the service has been received by the patient. Thus, our findings cannot speak to the quality of care received in Appalachian treatment facilities versus other facilities nationwide. Such studies would answer questions such as:

How do we measure the quality of services delivered across the region?

Do patients perceive the services they receive to be of a high quality?

Are there differences in the quality of services being delivered for co-occurring and non-co-occurring disorders?

3. Future work should include outcome assessments and other evaluations of the effectiveness of clinical and community-based mental health and substance abuse interventions in Appalachia.

We know little about the effectiveness of clinical treatments and community-based prevention programs and interventions in Appalachia. Outcome assessments and evaluations of the

effectiveness of mental health and substance abuse interventions in Appalachia are needed. Studies are needed to address the following questions:

Are interventions perceived as effective in treating mental health and substance abuse disorders in the region?

Are community-based interventions effective in preventing illness?

Are patients placed on waiting lists for certain services?

What are the clinical outcomes of specific interventions?

4. Creative solutions should be explored to address concerns over the lack of available inpatient care.

Findings indicate that there are regional difficulties in accessing inpatient treatment services. At the same time, the data show that utilization rates of hospital inpatient services, private physicians, and emergency room services are all higher in the Appalachian region than outside of the Appalachian region. One possible interpretation of these findings is that people who have severe substance abuse problems have not received appropriate outpatient treatment and may not have access to inpatient services at drug treatment facilities, and as a result, use more expensive hospital inpatient and emergency room services. The case study findings were consistent with this interpretation, as counties reported difficulties in accessing inpatient facilities for either substance abuse or mental health, and difficulties in placing those needing long term outpatient treatment. One possible cost effective way to create an inpatient treatment infrastructure in the Appalachian region may be to pool resources across counties and develop regional inpatient treatment units.

By providing an in-depth analysis and synthesis of available data on substance abuse and mental health disorders, and access to treatment services in Appalachia, we believe this study can be useful in targeting region-wide resources to eliminate Appalachian mental health and substance abuse disparities. At the same time, however, we recognize that more work needs to be done to promote *community level* analyses. Only then will Appalachian communities have sufficient understanding of the nature of the substance use and mental health issues *within their communities* to address these concerns effectively. A major finding of this study is that data collection efforts should be strengthened to encourage such granular analyses at the county and community levels. When supplemented with studies exploring the quality of services being delivered and the effectiveness of both medical and community-based interventions in Appalachia, communities will be fully empowered to make effective decisions on resource allocation and develop both prevention and treatment initiatives responsive to the unique and complex interplay of socioeconomic, cultural, and health system factors in the Appalachian region.

APPENDIX A: Data Sources

Source Information	Population and Contents of Investigation	Characteristics of the Data	Comparing Regional Data to the U.S.
<p>CHAPTER 2: National Survey on Drug Use and Health (NSDUH), Substance Abuse and Mental Health Services Administration (SAMHSA)</p> <p>Years: 2002 – 2005</p> <p>Type of source: Household survey data</p>	<p>Substance use and mental disorders among civilian, non-institutionalized population of the U.S., age 12 or older.</p>	<p>Number of Appalachian States Included: 13</p> <p>Number of Appalachian Counties Included: 352</p> <p>Number of Appalachian Facilities Included: N/A</p> <p>Sample Size: 217,978 respondents</p>	<p>Appalachian counties are compared to non-Appalachian counties for the following variables: demographic characteristics; health insurance status; lifetime, past year, and past month substance use; substance dependence or abuse, mental health measures, and receipt of substance use treatment; access to alcohol treatment; access to drug treatment; reasons for not receiving substance use treatment; and reasons for not receiving mental health treatment.</p>
<p>CHAPTER 3: Treatment Episode Data Set (TEDS), Substance Abuse and Mental Health Services Administration (SAMHSA)</p> <p>Years: 2000 – 2004</p> <p>Type of source: Data from treatment facilities</p>	<p>Location, characteristics, and utilization of all alcohol and drug treatment facilities and services, both public and private, throughout the 50 States, the District of Columbia, and other U.S. jurisdictions.</p>	<p>Number of Appalachian States Included: 12 (<i>Excludes WV</i>)</p> <p>Number of Appalachian Counties Included: 195</p> <p>Number of Appalachian Facilities Included: N/A</p> <p>Sample Size: 511,217 total admissions</p>	<p>Data from Appalachia is compared to U.S. data for the primary substance of abuse at the time of admission to treatment between 2000 and 2004.</p>
<p>CHAPTER 4: Healthcare Cost and Utilization Project, (HCUP), Nationwide Inpatient Sample, Agency for Healthcare Research and Quality (AHRQ)</p> <p>Years: 2004</p> <p>Type of source: Discharge data from community hospitals</p>	<p>Substance abuse and mental disorder related clinical and resource use information available from discharge abstracts of records of hospital stays from about 1,000 hospitals sampled to approximate a 20 percent stratified sample of U.S. community hospitals.</p>	<p>Number of Appalachian States Included: 6 (<i>Includes NC, KY, VA, WV, NY, MD</i>)</p> <p>Number of Appalachian Counties Included: 45</p> <p>Number of Appalachian Hospitals Included: 52</p> <p>Sample Size: 5,666,341 inpatient stays total</p>	<p>Appalachian counties are compared to non-Appalachian counties for the following variables: demographic characteristics across economic development status level; hospital stay characteristics; presence of MHSAs; subtype of MHSAs; comorbidity status; diagnoses contain alcohol use disorder; diagnoses contain mental health disorder; principal reason for hospitalization was alcohol use; principal reason for hospitalization was drug use; and types of SAMH diagnoses for adolescents and adults.</p>
<p>CHAPTER 5: National Survey of Substance Abuse Treatment Services (N-SSATS), Substance Abuse and Mental Health Services Administration (SAMHSA)</p>	<p>Demographic and substance abuse characteristics of annual admissions to treatment for abuse of alcohol and drugs in facilities that report to individual State administrative data systems.</p>	<p>Number of Appalachian States Included: 13</p> <p>Number of Appalachian Counties Included: 318</p> <p>Number of Appalachian Facilities Included: 891</p>	<p>Appalachian counties are compared to non-Appalachian counties for the following variables: Ownership of substance abuse treatment facilities; characteristics of substance abuse treatment facilities (accredited by Commission on Accreditation of Rehabilitation Facilities, licensed/certified by public health department, arrangements/ contracts with managed</p>

Source Information	Population and Contents of Investigation	Characteristics of the Data	Comparing Regional Data to the U.S.
<p>Years: 2005</p> <p>Type of source: Data on admissions to substance abuse treatment services</p>		<p>Sample Size: 13,367 substance abuse treatment facilities</p>	<p>care organizations, receives public funds); services offered at substance abuse treatment facilities, facilities offering inpatient detoxification services; primary focus of substance abuse facilities; facilities accepting adolescents; facilities using a sliding fee scale; facilities offering free or no charge treatment; facilities that accept Medicare; facilities that accept Medicaid; facilities that accept state financed health insurance; and facilities that accept private health insurance.</p>
<p>CHAPTER 6: Coal Mining Data from HCUP and TEDS</p> <p>Years: 2004, 2005</p> <p>Type of source: Data from HCUP and TEDS, see above</p>	<p>See above in HCUP and TEDS.</p>	<p><u>HCUP</u></p> <p>Number of Appalachian Counties Included: 45 (<i>25 coal mining, 20 non-coal mining</i>)</p> <p>Sample Size: 167,957 total hospital admissions (<i>76,083 admissions from coal mining Appalachian counties; 91,874 from non-coal mining Appalachian counties</i>)</p> <p><u>TEDS</u></p> <p>Number of Appalachian Counties Included: (<i>86 coal mining</i>)</p> <p>Sample Size: 511,317 total hospital admissions (<i>211,380 admissions from coal mining Appalachian counties; 299,837 from non-coal mining Appalachian counties</i>)</p>	<p>No comparisons are made between the Appalachian region and the U.S., as this was not the scope of this chapter. Rather, we compare coal-producing Appalachian counties to non-coal producing Appalachian counties for the following variables: heroin use as primary, secondary, or tertiary reason for treatment; other opiates or synthetics use as primary, secondary, or tertiary reason for treatment; characteristics of hospital stays; characteristics of admissions to substance abuse specialty treatment; treatment-related characteristics of admissions to substance abuse treatment; and substance abuse characteristics of admissions to substance abuse treatment.</p>
<p>CHAPTER 7: Case Studies with Twinned Appalachian Counties</p>	<p>Six counties were selected using a 'socioeconomic twinning' methodology, and community stakeholders participated in discussions about perceptions of mental health and substance abuse issues in their communities.</p>	<p>Number of Appalachian Counties Included: 6</p> <p>Number of Appalachian States Included: 3</p>	<p>While this chapter was qualitative in nature, NORC produced county profiles of substance abuse and mental health characteristics that compared county-level data for six Appalachian counties in three states to state-level data.</p>

APPENDIX B: Literature Review of the Prevalence of Substance Abuse and Mental Health Disorders, Access to Treatment Services, and Disparities in Appalachia

Introduction

In Appendix B, we provide a review of the literature related to substance abuse and mental health disorders in Appalachia, access to treatment services, and related disparities in Appalachia. When Appalachia-specific literature has not been available, we have referenced literature on rural substance abuse and mental health disparities as a proxy for Appalachia.

Methods

In order to obtain the most relevant articles for this review, we conducted extensive searches using PubMed, Sociological Abstracts, Lexis/Nexis and Google Scholar. We also used articles cited in relevant journals as sources of information and drew upon reports commissioned by government agencies such as ARC and SAMHSA. Finally, we obtained recommended literature sources from experts in Appalachian research, rural research, and mental health and substance abuse research. A special focus was placed on articles with an Appalachia-wide focus, articles with county-level data obtained from nationally-representative datasets, and articles that offered potential solutions for reducing mental health and substance abuse disparities.

We have organized our findings using Kilbourne et al's conceptual framework for advancing health disparities research (Kilbourne et al, 2006). Using an epidemiological framework, Kilbourne et al divided disparities research into three phases: **detection** (defining disparities and identifying vulnerable populations), **understanding** (identifying the causes and contributing factors of disparities), and **reducing disparities** (identifying successful interventions and policies which lead to a reduction in disparities).

DETECTION

Overall Prevalence of Substance Abuse and Mental Health Disorders

Though substance abuse is often assumed to be an urban problem, data have consistently shown no significant difference in rates of mental health disorders and drug and alcohol abuse between rural and non-rural areas (Hartley, Bird and Dempsey 1999, Robertson and Donnermeyer 1998, Leuekefeld et al 2002). These findings have also been supported by large national surveys: data from the 2004 National Survey on Drug Use and Health found that 8.2% of those living in non-metropolitan areas met criteria for past year alcohol and/or drug abuse, compared to 9.6% in metropolitan areas (SAMHSA Office of Applied Studies, 2005) and the 1991 Comorbidity Survey found no statistical difference in the prevalence of mental health or substance use disorders between urban and rural residents (Simmons and Havens 2006).

Differences in prevalence do exist based on type of substance used, however. For example, many states in the Appalachian region have smoking rates that are higher than the national average (Doescher et al 2006) and women in West Virginia were found to have the highest rate of pre-natal

smoking (Song and Fish 2006). OxyContin® has been mentioned frequently in the media as a major problem in Appalachia and rural areas, and the data, while scant, support that contention. Leukenfeld et al (2005) explored prescription drug use, health services utilization, and health problems in rural Appalachian Kentucky. As part of a larger project designed to examine the effectiveness of two HIV/AIDS risk reduction interventions, Leukenfeld et al studied 295 subjects on felony probation from one of 30 Appalachian counties in Eastern Kentucky. Subjects were divided into two groups: those who had ever used OxyContin and those who had never used OxyContin. Findings suggested statistical differences between the OxyContin-using and non-using subjects. OxyContin users reported greater use of other substances and more emergency room treatments for drug overdose more often than the non-users. Additionally, OxyContin users sought detoxification and self-help more often than the non-users.

In addition, research conducted by the Maine Rural Health Research Center has demonstrated that 2.8% of young adults in the smallest rural areas use OxyContin® as compared to 1.7% of urban young adults, and similarly that young adults in the smallest rural areas report methamphetamine use at nearly twice the rate of urban young adults (2.9% vs. 1.5%). Differences for both OxyContin and methamphetamine, while appearing small, were in fact statistically significant (Maine Rural Health Research Center, June 2007).

Findings from the Maine Rural Health Research Center also noted that while OxyContin and methamphetamine rates were higher in small rural areas, the rates of alcohol abuse were particularly striking. Children aged 12-17 from the smallest rural areas are more likely to have used alcohol, engaged in binge drinking (defined as having 5 or more drinks on a single occasion), heavy drinking (defined as binge drinking on 5 or more occasions within a month) and driving under the influence (DUI) than urban children. Among young adults, the highest rates of binge drinking, heavy drinking, and DUI are seen in larger, non-adjacent rural areas. Findings demonstrated that forty-eight percent of young adults in larger rural areas have engaged in binge drinking in the past month (Maine Rural Health Research Center, 2007).

Though there are many nationally representative surveys that provide insight into the prevalence of mental health and substance use disorders in Appalachia and rural areas, it is important to understand the limitations of these data. Hartley et al (2002) suggest that survey data based on self report may represent an underestimation of true mental health and substance use disorder prevalence. For example, rural areas have higher suicide rates which may be indicative of greater unreported prevalence of depressive disorders. Furthermore, hospital based data may under-report drug and alcohol related injury due to the restrictions of laws that allow insurers to refuse payment for services rendered due to drug or alcohol use. Prescription drug data may also be problematic. For example, Anglin and White's 1999 study of prescription drug problems in Eastern Kentucky describe a scenario where Eastern Kentucky clinics were chastised for seemingly over prescribing Tylenol Three (a specific dosage of Tylenol with Codeine), when in reality, they had a majority of patients who were insured through Medicaid and Tylenol Three was the only pain medicine on the formulary. It appeared that they were over-prescribing this medication, but in fact, they were under-prescribing the wider variety of painkillers.

Disparities in Treatment Utilization and Access

Kilbourne et al define disparities as “observed clinically and statistically significant differences in health outcomes or health care use between socially distinct vulnerable and less vulnerable

populations that are not explained by the effect of selection bias.” The authors identify vulnerable populations as people who face physical, psychological and/or social health risks because of “differences in underlying social status” due to multiple factors such as race/ethnicity, gender, rural residence and Appalachian residence. Rurality is likely a key factor driving disparities in treatment access and utilization for Appalachian residents, and race/ethnicity may also play a role in driving disparities within certain Appalachian sub-regions.

Several studies have found that compared to urban residents, rural individuals are less likely to utilize drug and alcohol treatment (Warner and Leukefeld 2001, Simmons and Havens 2006). This is likely at least partially attributable to the availability of specialty mental health treatment and substance abuse treatment, which has been shown to be significantly lower in rural areas (Hartley et al 1999, SAMHSA 2003). Further, Fortnay et al found that increased travel time, a common rural concern, was associated with poor treatment compliance and health outcomes regarding chronic conditions (Fortnay et al 1999). However, distance from treatment services may be a less important factor than access to a car for personal use or having a friend or relative willing to provide transportation (Arcury et al 2005).

Disparities in treatment utilization may be higher among nonwhite Appalachian residents. The Great Smoky Mountains Study, which compared white and Native American Appalachian youth in Western North Carolina, found similar opportunities to access treatment among white and Native American children, but that Native American children utilized fewer services (Costello et al 1997). They also found that Native American children had higher rates of substance abuse and co-morbid substance abuse and mental health disorders. Another study, based on the Great Smoky Mountains study, compared white children with African-American children (Angold et al 2002), finding that despite similar prevalence of mental health and substance use disorders and no difference in ability to access treatment, African-American youth had lower usage of specialty mental health services.

UNDERSTANDING

The Relationship Between Rural Residence and Disparities in Treatment Access in Appalachia

We have described above that despite having similar prevalence of mental health and substance use disorders, rural residents experience disparities in treatment utilization and access. Socioeconomic conditions as well as cultural factors serve as barriers to treatment utilization in Appalachia. Factors relating to the health care system also contribute to the problems of substance abuse and lack of treatment.

It is impossible to discuss disparities in Appalachia without a discussion of socioeconomic conditions. Economic decline based on struggles in the mining and farming industries have resulted in out-migration and dismantling of kinship networks (Goodrum et al 2004). Recently, researchers have drawn comparisons between these rural areas and highly distressed urban ghettos, describing their similar problems of economic deprivation, lack of opportunity, social isolation and disintegrating kinship networks (Schoenberger et al 2006).

Cultural factors also contribute to the disparities in treatment utilization and access among rural and Appalachian people. Multiple authors have cited the rural values of individualism and self reliance as a barrier to treatment utilization (Leukefeld et al 2002, Schoenberger et al 2006). For example,

Warner and Leukefeld's study of rural-urban differences in substance abuse treatment utilization among prisoners in Kentucky found that the most common reason that rural prisoners did not seek substance abuse treatment was because they did not think they had a problem. This was the key determinant of lower rates of treatment utilization among rural prisoners, even though rural prisoners indicated higher rates of substance use than urban prisoners. Data from the Treatment Episode Data Set (TEDS) found that people in rural treatment centers were more likely to have been referred to treatment through the criminal justice system than people in urban treatment centers (SAMHSA, 2005), indicating that those attending rural treatment centers may have not recognized that they had a substance abuse problem. High rates of co-morbid substance abuse and mental health disorders can also be explained by the problem of lack of recognition of a need for treatment. Simmons and Havens have suggested that these high rates of co-morbid conditions are caused by people with mental health disorders not knowing to seek treatment for their mental health conditions, and instead, medicating with drugs and alcohol.

Lack of adequate insurance and other health care system issues also contribute to both the prevalence of substance use disorders and access/utilization. Anglin and White's study of an Eastern Kentucky community clinic serving a distressed uninsured and under-insured Appalachian area identified various problems with prescription drug misuse. They found that due to financial constraints, informal networks of prescription sharing develop, causing prescription misuse. This misuse is not due to patients wanting to abuse drugs, but because patients are unable to afford appropriate supplies of their medications and have to pool their resources within their communities. They also state that some who become reliant on pain medication did so because they were unable to afford treatment for the chronic condition causing their pain. Havens et al (2006) found that the highest rates of OxyContin® prescribing among Kentucky Medicaid recipients occurred in the ARC-designated distressed Appalachian counties as opposed to non-Appalachian counties and non-distressed Appalachian counties and called for further research into the cause of this over-prescribing.

Clearly, disparities in treatment access and utilization in Appalachia result from a complex interplay of rurality, socioeconomic, cultural, and health system factors.

REDUCING DISPARITIES

Key strategies for reducing disparities are education (both geared towards prevention and treatment options), improved surveillance tools, criminal justice system issues (treatment in prison, drug courts) and health system issues (culturally-competent healthcare delivery and increased staffing in rural areas). The literature related to substance abuse and mental health disparities in Appalachia suggests several methods to reduce disparities related to prevalence and treatment.

Education is a critical method for overcoming disparities in both prevalence and treatment access. Leukefeld et al found that rural substance abusers in a Kentucky prison had a much later onset of drug and alcohol use than urban prisoners. This indicates that there is a greater window of opportunity for rural young people and that preventive efforts may be a good option for Appalachian youth. This becomes especially critical because rates of methamphetamine and OxyContin® use are higher among rural youth, as described above. Educating both providers and consumers regarding signs of a substance abuse or mental health disorder is also critical because of the lack of recognition of having a substance abuse problem described above. Community-level

education about the benefits of treatment would provide a great benefit in rural and Appalachian areas. Mental health-related education may also be helpful for African-American and Native American parents due to the lower rates of mental health services utilization among African-American and Native American children with mental health disorders.

Improved surveillance systems are also needed to allow policymakers and stakeholders to better understand of the impact of substance abuse in Appalachia. Cicero et al describe a surveillance system set up to detect high rates of OxyContin® and other prescription drug diversion. Using a network of key informants, the authors developed a surveillance system to show when an area is having an increased problem, allowing stakeholders to know when a particular diverted drug is becoming a problem in their community. Leukefeld et al used a unique method to improve estimation of drug injection prevalence in rural Kentucky (2002) which also provided insight regarding the numbers of injection drug users who are not in treatment. This type of data will allow state and local governments to more effectively allocate resources and address disparities.

A best practice to reduce the impact of substance abuse (and especially methamphetamine abuse) in Appalachia may be the use of drug courts. This recommendation was generated through a meeting of Appalachian stakeholders organized by East Tennessee State University in 2005. The potential benefits of this strategy can be seen based on the TEDS data described above, which found that people in rural treatment centers were more likely in treatment as a result of a court order. Other authors (Kubiak et al 2006, Mateyoke-Schivner et al 2004, Warner and Leukefeld 2001) found the usage of drug courts and/or treatment within prisons and jails to be a key opportunity for reducing disparities in treatment utilization among rural and Appalachian substance abusers. Given that a lack of recognition of a substance abuse problem is a key barrier to treatment entry, drug courts and prison/jail in-house treatment offer a unique opportunity to ensure treatment access for a population that is hard to identify and unlikely to self-select into treatment.

Finally, the health care system also can provide opportunities to address substance use and mental health disparities in the Appalachian region. Rural areas have fewer available treatment facilities and those that do exist are often understaffed. Mental health staff in rural health centers can access a large number of vulnerable patients and are essential to improving access to mental health services (Van Hook and Ford 1998). Telemedicine and self help groups may also reduce these disparities, although transportation may be a problem in accessing self-help groups in rural areas (Ralph in Hartley, 1999).

Health care providers in Appalachia, especially when providing information about sensitive topics such as mental health and substance abuse, should be trained in effective communication and culturally competent healthcare delivery (Behringer and Friedell 2006, Anglin and White 1999). Clinicians who are able to gain the trust of patients can be more effective in increasing awareness of these issues. Furthermore, clinicians who are more familiar with Appalachian cultural norms will be better equipped to understand their patient's struggles. Anglin and White also call for greater oversight regarding written prescriptions of commonly diverted drugs so that providers who are over prescribing for financial benefit are identified, a key issue in areas with high rates of prescription drug diversion.

WHAT HAVE WE LEARNED?

Much remains to be learned about mental health status and substance abuse prevalence in Appalachia. Studies have found that substance use is higher in Appalachia than the rest of the nation for certain types of substances. While a body of research has explored mental health status in rural communities, few studies have explored mental health status in Appalachian communities specifically. Future research should explore geographic and demographic trends across Appalachian sub-regions and states, and within Appalachian counties.

The literature also suggests that disparities in access to and utilization of treatment for substance abuse and mental health disorders in Appalachia result from a complex interplay of socioeconomic, cultural, and health system factors. Some studies indicate that there is a relationship between rural residence and disparities in treatment access in Appalachia, but further research must be done on this topic. Research should also investigate the impact of socioeconomic, cultural and health system factors on treatment access and utilization at the state and county levels in Appalachia.

Studies have suggested that race and ethnicity may play a role in driving disparities within certain Appalachian sub-regions. Specifically, studies have demonstrated that non-white Appalachian residents have lower utilization of treatment services, including specialty mental health services, and higher rates of substance abuse and co-morbid substance abuse and mental health disorders. Literature has identified various mechanisms to reduce disparities related to treatment access and utilization in Appalachia – methods include education, cultural competency training for providers, surveillance systems, and changes to the health care system (e.g., more mental health staff in rural health centers, health care via telemedicine, and treatment via self help groups). Future research should explore the effectiveness of these methods in specific Appalachian communities.

Overall, research to date does not provide a comprehensive understanding of substance abuse prevalence and mental health status, and disparities in access to and utilization of treatment services in Appalachia. Moving forward, research should investigate more granular patterns and trends related to substance abuse prevalence and mental health status in Appalachia. The identification of geographic and demographic patterns within specific sub-regions, counties, and communities will enable policy makers to design targeted policy interventions to reduce disparities and improve access to treatment services.

Bibliography

Anglin MK and White JC. (1999) Poverty, Healthcare and Problems of Prescription Medication: A Case Study. *Substance Use and Misuse* 34(14) 2073-2093.

Angold A, Erkanli A, Farmer EMZ, Fairbank JA, Burns BJ, Keeler G, and Costello EJ. (2002) Psychiatric Disorder, Impairment and Service Use in Rural African American and White Youth. *Arch Gen Psychiatry*, 59, 893-901.

Arcury TA, Preisser JS, Gesler WM, and Powers JM. (2005). Access to Transportation and Health Care Utilization in a Rural Region. *The Journal of Rural Health*, 21(1), 31-38.

Behringer B and Friedell GH. (2006) Appalachia: Where Place Matters In Health. *Preventing Chronic Disease: Public Health Research, Practice and Policy*. 3(4), 1-4.

Black DA and Sanders SG. (2004). Labor Market Performance, Poverty and Income Inequality in Appalachia. Report to the Appalachian Regional Commission.

Bradley DH, Herzenberg SA and Wial H. (2001) An Assessment of Labor Force Participation Rates and Underemployment in Appalachia. Report to the Appalachian Regional Commission.

Cicero TJ, Inciardi JA and Muñoz A. (2005) Trends in Abuse of OxyContin® and Other Opioid Analgesics in the United States: 2002-2004. *The Journal of Pain* 6(10), 662-672.

Diala CC, Muntaner C and Walrath C. (2004) Gender, Occupational and Socioeconomic Correlates of Alcohol and Drug Abuse among U.S. Rural, Metropolitan and Urban Residents. *The American Journal of Drug and Alcohol Abuse* 30(2), 409-428.

Doescher MP, Jackson JE, Jerant A, and Hart LG. (2006) Prevalence and Trends in Smoking: A National Rural Study. *The Journal of Rural Health*, 22(2), 112-118.

Feldman JJ, Makuc DM, Kleinman JC and Cornoni-Huntley J. (1989). National Trends in Educational Differentials in Mortality. *American Journal of Epidemiology*, 129(5), 919-933.

Feser E and Sweeney S. (2003) Out-Migration, Depopulation, and the Geography of US Economic Distress. *International Regional Science Review*, 26(1), 38-67.

Garrity TF, Hiller ML, Staton M, Webster JM and Leukefeld CG. (2002) Factors Predicting Illness and Health Services Use among Male Kentucky Prisoners with a History of Drug Abuse. *The Prison Journal*, 82(3), 295-313.

Goodrum S, Wiese HJ and Leukefeld CG. (2004). Urban and Rural Differences in the Relationship Between Substance Abuse and Violence. *International Journal of Offender Therapy and Comparative Criminology*, 48(5), 613-628.

Halverson, J. (2004) An Analysis of Disparities in Health Status and Access to Care in the Appalachian Region. Report to Appalachian Regional Commission, September 2004.

Hartley D, Britain C and Sulzbacher S. (2002). Behavioral Health: Setting the Rural Health Research Agenda. *The Journal of Rural Health*, 18(Suppl), 242-255.

Hartley D, Bird DC, and Dempsey P. Rural Mental Health and Substance Abuse. *Rural Health in the United States*. New York: Oxford University Press, 1999.

Hartley D, Agger M and Miller M. (1998). Effects of Managed Mental Health Care on Service Use in Rural Areas. Working Paper #16. Maine Rural Research Center.

Hartley D. (2004) Rural Health Disparities, Population Health and Rural Culture. *American Journal of Public Health*, 94(10), 1675-1678.

Havens JR, Talbert JC, Walker R, Leedham C and Leukefeld CG. (2006). Trends in Controlled-Release Oxycodone (OxyContin®) Prescribing among Medicaid Recipients in Kentucky, 1998-2002. *The Journal of Rural Health* 22(3) 276-278.

Herman-Stahl MA, Krebs CP, Kroutil LA, and Heller DC. (2006) Risk and Protective Factors for Nonmedical Use of Prescription Stimulants and Methamphetamine among Adolescents. *Journal of Adolescent Health* 39, 374-380.

Isserman AM. (2005) In the National Interest: Defining Rural and Urban Correctly in Research and Public Policy. *International Regional Science Review*, 28(4), 465-499.

Isserman AM and Westervelt J. (2006) 1.5 Million Missing Numbers: Overcoming Employment Suppression in *County Business Patterns* Data. *International Regional Science Review*, 29(3), 311-335.

Keefe, S. (2005). *Appalachian Cultural Competency: A Guide For Medical, Mental Health, And Social Service Professionals*. Knoxville: University of Tennessee Press, 2005.

Kubiak SP, Arfken CL, Swartz JA and Koch AL. (2006) Treatment at the front end of the criminal justice continuum: the association between arrest and admission into specialty substance abuse treatment. *Substance Abuse Treatment, Prevention and Policy* 1:20.

Leukefeld C, McDonald HS, Mateyoke-Scribner A, Roberto H, Walker R, Webster M, and Garrity T. (2005) Prescription Drug Use, Health Services Utilization, and Health Problems in Rural Appalachian Kentucky. *Journal of Drug Issues* Summer 2005, 631-644.

Leukefeld CG, Narevic E, Hiller ML, Staton M, Logan TK, Gillespie W, Webster JM, Garrity TF and Purvis R. (2002) Alcohol and Drug Use among Rural and Urban Incarcerated Substance Abusers. *International Journal of Offender Therapy and Comparative Criminology* 46(6), 715-728.

Leukefeld CG, Logan TK, Farabee D and Clayton, R. (2002) Drug Use and AIDS: Estimating Injection Prevalence in a Rural State. *Substance Use and Misuse*, 37(5-7), 767-782.

Logan TK, Schenck JE, Leukefeld CG, Meyers J and Allen S. (1999) Rural Attitudes, Opinions and Drug Use. *Substance Abuse and Misuse* 34(4&5), 545-565.

Maine Rural Health Research Center. (June 2007) Substance Abuse Among Rural Youth: A Little Meth and a Lot of Booze. Research and Policy Brief. University of Southern Maine, Muskie School of Public Health. *Supported by the federal Office of Rural Health Policy, Health Resources and Services Administration, U.S. Department of Health and Human Services, CA#U1CRH03716.*

Mateyoke-Scrivner A, Webster JM, Staton M and Leukefeld C. (2004) Treatment Retention Predictors of Drug Court Participants in a Rural State. *The American Journal of Drug and Alcohol Abuse* 30(3), 605-625.

Miller JW, Gfroerer JC, Brewer RD, Naimi TS, Mokdad A and Giles WH. (2004) Prevalence of Adult Binge Drinking: A Comparison of Two National Surveys. *American Journal of Preventive Medicine* 27(3), 197-204.

Partridge MD and Rickman DS. (2005) High Poverty Nonmetropolitan Counties in America: Can Economic Development Help? *International Regional Science Review*, 28(4), 41-440.

Pollard KM (2003). Appalachia at the Millennium: An Overview of Results from Census 2000. Report for Appalachian Regional Commission.

Plein LC. (2001). Welfare Reform in a Hard Place: The West Virginia Experience. *Rockefeller Report*, No. 13.

Probst JC, Moore CG and Baxley EG. (2005) Update: Health Insurance and Utilization of Care Among Rural Adolescents. *The Journal of Rural Health*, 21(4), 279-287.

Robertson E and Donnermeyer JF. (1998). Patterns of Drug Use among Nonmetropolitan and Rural Adults. *Substance Use and Misuse* 33(10), 2109-2129.

Robertson EB, Sloboda Z, Boyd GM, Beatty L and Kozel NJ, eds. (1997) Rural Substance Abuse: State of Knowledge and Issues. *NIDA Research Monograph* 168.

Office of Applied Studies. Substance Abuse and Mental Health Services Administration. Treatment Admissions in Rural Areas: 2003. *The DASIS Report*, September 30, 2005.

Office of Applied Studies. Substance Abuse and Mental Health Services Administration. Distance to Substance Abuse Treatment Facilities among Those with Alcohol Dependence or Abuse. *The DASIS Report*, August 23, 2002.

Office of Applied Studies. Substance Abuse and Mental Health Services Administration. Methamphetamine/Amphetamine Treatment Admissions in Urban and Rural Areas: 2004. *The DASIS Report*, Issue 27, 2006.

Office of Applied Studies. Substance Abuse and Mental Health Services Administration. Substance Abuse or Dependence in Metropolitan and Non-Metropolitan Areas: 2004 Update. *The NSDUH Report*, October 7, 2005.

Schoeneberger ML, Leukefeld CG, Hiller ML and Godlaski T. (2006). Substance Abuse among Rural and Very Rural Drug Users at Treatment Entry. *The American Journal of Drug and Alcohol Abuse*, 32, 87-110.

Smedley BD, Stith AY and Nelson AR, eds. (2003) *Unequal Treatment: Confronting Racial and Ethnic Disparities in Healthcare*. Washington DC: The National Academies Press, 215-234.

Song H and Fish M. (2006) Demographic and Psychosocial Characteristics of Smokers and Nonsmokers in Low-Socioeconomic Status Rural Appalachian 2-Parent Families in Southern West Virginia. *The Journal of Rural Health*, 22(1), 83-87.

Van Hook MP and Ford ME. (1998) The linkage model for delivering mental health services in rural communities: benefits and challenges. *Health & Social Work* 23(1), 53-60.

Warner, BD and Leukefeld CG. (2001) Rural-Urban Differences in Substance Use and Treatment Utilization among Prisoners. *American Journal of Drug and Alcohol Abuse* 27(2), 265-280.

Weber B, Jensen L, Miller K, Mosley J, and Fisher M. (2005). A Critical Review of Rural Poverty Literature: Is There Truly a Rural Effect? *International Regional Science Review*, 28(4), 381-414.

Wood LE. (2005). Trends in National and Regional Economic Distress: 1960-2000. Report to the Appalachian Regional Commission.

Wood LE and Bischak GA. (2000). Progress and Challenges in Reducing Economic Distress in Appalachia: An Analysis of National and Regional Trends Since 1960. Report to the Appalachian Regional Commission.

Woodward A. (2004). Access to Substance Abuse Treatment and Mental Health Services: A Literature Review. In *Health Services Utilization by Individuals with Substance Abuse and Mental Disorders*. Council, CL, ed., Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, Office of Applied Studies.
<http://oas.samhsa.gov/HSR/ch2.htm>

APPENDIX C: Results from the 2005 National Survey on Drug Use and Health: National Findings

Note: Estimates are based on combined 2004 – 2005 data.

Table 2.1A Demographic Characteristics and Health Insurance among Persons Aged 12 or Older, by Age Group and Appalachian Region Status: Numbers in Thousands, Annual Averages Based on 2002-2005

Demographic Characteristic/Health Insurance	AGE GROUP			
	12-17		18 or Older	
	Appalachian Region ¹	Outside Appalachia	Appalachian Region ¹	Outside Appalachia
HISPANIC ORIGIN AND RACE				
Not Hispanic or Latino	1,826	19,099	17,590	170,094
White	1,579	13,922	15,851	135,270
Black or African American	212	3,545	1,330	22,629
Other ²	34	1,632	408	12,195
Hispanic or Latino	49	4,106	351	26,025
EDUCATION				
< High School	N/A	N/A	3,653	33,182
High School Graduate	N/A	N/A	6,889	61,045
Some College	N/A	N/A	4,090	49,674
College Graduate	N/A	N/A	3,308	52,219
CURRENT EMPLOYMENT				
Full-Time	N/A	N/A	9,161	109,116
Part-Time	N/A	N/A	2,144	25,854
Unemployed	N/A	N/A	616	7,047
Other ³	N/A	N/A	6,020	54,103
HEALTH INSURANCE				
Private	1,268	15,771	12,844	140,071
Medicare	14	202	3,928	34,575
Medicaid/CHIP ⁴	502	5,442	1,607	15,331

Source: SAMHSA, Office of Applied Studies, National Survey on Drug Use and Health, 2002, 2003, 2004, and 2005.

*Low precision; no estimate reported.

N/A: Not applicable.

¹ Appalachian region is defined as all areas covered by the 410 designated counties in 13 states.

² Includes respondents reporting American Indian or Alaska Native, Native Hawaiian or Other Pacific Islander, Asian, and Two or More Races.

³ The Other Employment category includes retired persons, disabled persons, homemakers, students, or other persons not in the labor force.

⁴ CHIP is the Children's Health Insurance Program. Individuals aged 19 or younger are eligible for this plan.

Table 2.2A Lifetime, Past Year, and Past Month Substance Use among Persons Aged 12 or Older, by Substance, Age Group, and Appalachian Region Status: Numbers in Thousands, Annual Averages Based on 2002-2005

Substance	AGE GROUP			
	12-17		18 or Older	
	Appalachian Region ¹	Outside Appalachia	Appalachian Region ¹	Outside Appalachia
MARIJUANA USE				
Lifetime	355	4,440	6,855	84,818
Past Year	270	3,402	1,498	20,283
Past Month	131	1,777	878	11,820
COCAINE USE				
Lifetime	47	581	2,097	31,432
Past Year	36	409	389	4,913
Past Month	10	131	139	1,899
METHAMPHETAMINE USE				
Lifetime	26	296	714	10,656
Past Year	13	170	75	1,140
Past Month	6	58	32	479
ALCOHOL USE				
Past Year	633	7,897	10,948	137,605
Binge Alcohol Use ²	198	2,454	3,697	47,995
Heavy Alcohol Use ²	54	588	1,216	14,326
CIGARETTE USE				
Lifetime	690	6,844	13,606	141,234
Past Year	446	4,256	6,191	59,583
Past Month	306	2,690	5,543	51,961
PAST YEAR NONMEDICAL USE OF PSYCHOTHERAPEUTICS³	198	2,027	1,013	11,632

Source: SAMHSA, Office of Applied Studies, National Survey on Drug Use and Health, 2002, 2003, 2004, and 2005.

*Low precision; no estimate reported.

¹ Appalachian region is defined as all areas covered by the 410 designated counties in 13 states.

² Binge Alcohol Use is defined as drinking five or more drinks on the same occasion (i.e., at the same time or within a couple of hours of each other) on at least 1 day in the past 30 days. Heavy Alcohol Use is defined as drinking five or more drinks on the same occasion on each of 5 or more days in the past 30 days; all heavy alcohol users are also binge alcohol users.

³ Nonmedical use of prescription-type psychotherapeutics includes the nonmedical use of pain relievers, tranquilizers, stimulants, or sedatives and does not include over-the-counter drugs.

Table 2.3A Substance Dependence or Abuse, Mental Health Measures, and Receipt of Substance Use Treatment in the Past Year among Persons Aged 12 or Older, by Age Group and Appalachian Region Status

Dependence or Abuse/Mental Health/Receipt of Treatment	AGE GROUP			
	Numbers in Thousands, Annual Averages Based on 2002-2005			
	12-17		18 or Older	
	Appalachian Region ¹	Outside Appalachia	Appalachian Region ¹	Outside Appalachia
DEPENDENCE OR ABUSE²				
Illicit Drugs ³	97	1,202	444	5,277
Alcohol	111	1,351	1,156	15,686
Both Illicit Drugs and Alcohol ³	47	542	187	2,470
Illicit Drugs or Alcohol ³	162	2,010	1,414	18,493
PAST YEAR SERIOUS PSYCHOLOGICAL DISTRESS⁴	N/A	N/A	2,426	22,999
PAST YEAR MAJOR DEPRESSIVE EPISODE⁵	165	2,043	1,460	14,970
PAST YEAR RECEIPT OF SPECIALTY TREATMENT FOR ILLICIT DRUG OR ALCOHOL USE^{3,6}	17	163	155	1,879
MENTAL HEALTH TREATMENT/COUNSELING⁷	N/A	N/A	2,429	25,304
Inpatient	N/A	N/A	160	1,668
Outpatient	N/A	N/A	1,303	13,891
Prescription Medication	N/A	N/A	2,155	20,645

*Low precision; no estimate reported.
N/A: Not applicable.

¹ Appalachian region is defined as all areas covered by the 410 designated counties in 13 states.

² Dependence or abuse is based on definitions found in the 4th edition of the *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV)*.

³ Illicit Drugs include marijuana/hashish, cocaine (including crack), heroin, hallucinogens, inhalants, or prescription-type psychotherapeutics used non-medically.

⁴ Serious Psychological Distress (SPD) is defined as having a score of 13 or higher on the K6 scale. Due to questionnaire changes, these combined 2004 and 2005 estimates are not comparable with 2004 and earlier estimates published in prior NSDUH reports. See Section B.4.4 in Appendix B of the *Results from the 2005 National Survey on Drug Use and Health: National Findings*. Estimates are based on combined 2004-2005 data.

⁵ Major Depressive Episode (MDE) is defined as a period of at least 2 weeks when a person experienced a depressed mood or loss of interest or pleasure in daily activities and had a majority of the symptoms for depression as described in the 4th edition of the *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV)*. Estimates are based on combined 2004-2005 data.

⁶ Received Substance Use Treatment at a Specialty Facility refers to treatment received at a hospital (inpatient), rehabilitation facility (inpatient or outpatient), or mental health center in order to reduce or stop illicit drug or alcohol use, or for medical problems associated with illicit drug or alcohol use. Estimates include persons who received treatment specifically for illicit drugs or alcohol, as well as persons who received treatment but did not specify for what substance(s).

⁷ Mental Health Treatment/Counseling is defined as having received inpatient care or outpatient care or having used prescription medication for problems with emotions, nerves, or mental health. Respondents were not to include treatment for drug or alcohol use. Respondents with unknown treatment/counseling information were excluded. Estimates were based only on responses to items in the Adult Mental Health Service Utilization module.

Source: SAMHSA, Office of Applied Studies, National Survey on Drug Use and Health, 2002, 2003, 2004, and 2005.

Table 2.4A Demographic Characteristics and Health Insurance among Persons Aged 12 or Older Residing in Appalachian Region, by Age Group and Appalachian Sub-region

Demographic Characteristic/Health Insurance	AGE GROUP					
	Numbers in Thousands, Annual Averages Based on 2002-2005					
	12-17			18 or Older		
	Northern	Central	Southern	Northern	Central	Southern
HISPANIC ORIGIN AND RACE						
Not Hispanic or Latino	835	165	826	7,875	1,597	8,117
White	777	160	642	7,463	1,546	6,842
Black or African American	38	2	172	269	28	1,034
Other ¹	19	4	12	143	24	242
Hispanic or Latino	18	3	28	86	21	243
EDUCATION						
< High School	N/A	N/A	N/A	1,296	497	1,861
High School Graduate	N/A	N/A	N/A	3,352	648	2,889
Some College	N/A	N/A	N/A	1,806	306	1,978
College Graduate	N/A	N/A	N/A	1,507	169	1,633
CURRENT EMPLOYMENT						
Full-Time	N/A	N/A	N/A	3,911	698	4,552
Part-Time	N/A	N/A	N/A	1,023	146	975
Unemployed	N/A	N/A	N/A	288	62	266
Other ²	N/A	N/A	N/A	2,739	713	2,568
HEALTH INSURANCE						
Private	617	84	566	5,893	1,032	5,918
Medicare	4	1	9	1,775	451	1,702
Medicaid/CHIP ³	191	71	239	647	233	727

^{*}Low precision; no estimate reported.

NOTE: Appalachian region is defined as all areas covered by the 410 designated counties in 13 states.

N/A: Not applicable.

¹ Includes respondents reporting American Indian or Alaska Native, Native Hawaiian or Other Pacific Islander, Asian, and Two or More Races.

² The Other Employment category includes retired persons, disabled persons, homemakers, students, or other persons not in the labor force.

³ CHIP is the Children's Health Insurance Program. Individuals aged 19 or younger are eligible for this plan.

Source: SAMHSA, Office of Applied Studies, National Survey on Drug Use and Health, 2002, 2003, 2004, and 2005.

Table 2.5A Lifetime, Past Year, and Past Month Substance Use among Persons Aged 12 or Older Residing in Appalachian Region, by Substance, Age Group, and Appalachian Sub-region

Substance	AGE GROUP					
	Numbers in Thousands, Annual Averages Based on 2002-2005					
	12-17			18 or Older		
	Northern	Central	Southern	Northern	Central	Southern
MARIJUANA USE						
Lifetime	164	30	162	3,094	535	3,226
Past Year	128	21	121	713	107	678
Past Month	64	7	59	438	61	379
COCAINE USE						
Lifetime	19	4	25	937	125	1,035
Past Year	15	3	19	181	27	181
Past Month	5	1	4	65	7	67
METHAMPHETAMINE USE						
Lifetime	10	3	13	315	34	365
Past Year	4	1	8	21	5	50
Past Month	1	1	4	5	1	26
ALCOHOL USE						
Past Year	313	49	272	5,515	705	4,727
Binge Alcohol Use ¹	105	14	79	1,958	226	1,513
Heavy Alcohol Use ¹	28	4	21	654	66	496
CIGARETTE USE						
Lifetime	304	71	315	6,125	1,219	6,262
Past Year	203	41	202	2,799	598	2,794
Past Month	141	29	136	2,511	537	2,495
PAST YEAR NONMEDICAL USE OF PSYCHOTHERAPEUTICS²	77	18	103	395	104	514

*Low precision; no estimate reported.

NOTE: Appalachian region is defined as all areas covered by the 410 designated counties in 13 states.

¹ Binge Alcohol Use is defined as drinking five or more drinks on the same occasion (i.e., at the same time or within a couple of hours of each other) on at least 1 day in the past 30 days. Heavy Alcohol Use is defined as drinking five or more drinks on the same occasion on each of 5 or more days in the past 30 days; all heavy alcohol users are also binge alcohol users.

² Nonmedical use of prescription-type psychotherapeutics includes the nonmedical use of pain relievers, tranquilizers, stimulants, or sedatives and does not include over-the-counter drugs.

Source: SAMHSA, Office of Applied Studies, National Survey on Drug Use and Health, 2002, 2003, 2004, and 2005.

Table 2.6A Substance Dependence or Abuse, Mental Health Measures, and Receipt of Substance Use Treatment in the Past Year among Persons Aged 12 or Older Residing in Appalachian Region, by Age Group and Appalachian Sub-region

Dependence or Abuse/Mental Health/Receipt of Treatment	AGE GROUP					
	Numbers in Thousands, Annual Averages Based on 2002-2005					
	12-17			18 or Older		
	Northern	Central	Southern	Northern	Central	Southern
DEPENDENCE OR ABUSE¹						
Illicit Drugs ²	46	5	47	192	50	202
Alcohol	56	7	48	574	78	504
Both Illicit Drugs and Alcohol ²	24	3	19	87	20	81
Illicit Drugs or Alcohol ²	77	10	75	680	108	626
PAST YEAR SERIOUS PSYCHOLOGICAL DISTRESS³	N/A	N/A	N/A	1,123	270	1,034
PAST YEAR MAJOR DEPRESSIVE EPISODE⁴	74	15	76	638	177	645
PAST YEAR RECEIPT OF SPECIALTY TREATMENT FOR ILLICIT DRUG OR ALCOHOL USE^{2,5}	7	1	9	79	9	67
MENTAL HEALTH TREATMENT/COUNSELING⁶	N/A	N/A	N/A	1,085	248	1,095
Inpatient	N/A	N/A	N/A	57	16	87
Outpatient	N/A	N/A	N/A	554	120	628
Prescription Medication	N/A	N/A	N/A	946	232	977

*Low precision; no estimate reported.

NOTE: Appalachian region is defined as all areas covered by the 410 designated counties in 13 states.

N/A: Not applicable.

¹ Dependence or abuse is based on definitions found in the 4th edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV).

² Illicit Drugs include marijuana/hashish, cocaine (including crack), heroin, hallucinogens, inhalants, or prescription-type psychotherapeutics used non-medically.

³ Serious Psychological Distress (SPD) is defined as having a score of 13 or higher on the K6 scale. Due to questionnaire changes, these combined 2004 and 2005 estimates are not comparable with 2004 and earlier estimates published in prior NSDUH reports. See Section B.4.4 in Appendix B of the *Results from the 2005 National Survey on Drug Use and Health: National Findings*. Estimates are based on combined 2004-2005 data.

⁴ Major Depressive Episode (MDE) is defined as a period of at least 2 weeks when a person experienced a depressed mood or loss of interest or pleasure in daily activities and had a majority of the symptoms for depression as described in the 4th edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV). Estimates are based on combined 2004-2005 data.

⁵ Received Substance Use Treatment at a Specialty Facility refers to treatment received at a hospital (inpatient), rehabilitation facility (inpatient or outpatient), or mental health center in order to reduce or stop illicit drug or alcohol use, or for medical problems associated with illicit drug or alcohol use. Estimates include persons who received treatment specifically for illicit drugs or alcohol, as well as persons who received treatment but did not specify for what substance(s).

⁶ Mental Health Treatment/Counseling is defined as having received inpatient care or outpatient care or having used prescription medication for problems with emotions, nerves, or mental health. Respondents were not to include treatment for drug or alcohol use. Respondents with unknown treatment/counseling information were excluded. Estimates were based only on responses to items in the Adult Mental Health Service Utilization module.

Source: SAMHSA, Office of Applied Studies, National Survey on Drug Use and Health, 2002, 2003, 2004, and 2005.

Table 2.7A Demographic Characteristics and Health Insurance among Persons Aged 12 or Older Residing in Appalachian Region, by Age Group and Appalachian Socioeconomic Status

Demographic Characteristic/ Health Insurance	AGE GROUP					
	Numbers in Thousands, Annual Averages Based on 2002-2005					
	12-17			18 or Older		
	At-Risk or Distressed	Transitional	Competitive or Attainment	At-Risk or Distressed	Transitional	Competitive or Attainment
HISPANIC ORIGIN AND RACE						
Not Hispanic or Latino	306	1,073	446	2,981	10,463	4,146
White	273	964	341	2,683	9,665	3,503
Black or African American	29	89	94	258	586	486
Other ¹	3	20	11	40	211	157
Hispanic or Latino	3	29	17	33	148	170
EDUCATION						
< High School	N/A	N/A	N/A	871	2,142	641
High School Graduate	N/A	N/A	N/A	1,261	4,186	1,443
Some College	N/A	N/A	N/A	554	2,511	1,025
College Graduate	N/A	N/A	N/A	329	1,771	1,208
CURRENT EMPLOYMENT						
Full-Time	N/A	N/A	N/A	1,321	5,445	2,395
Part-Time	N/A	N/A	N/A	292	1,305	547
Unemployed	N/A	N/A	N/A	137	346	133
Other ²	N/A	N/A	N/A	1,265	3,514	1,241
HEALTH INSURANCE						
Private	162	765	341	1,906	7,725	3,212
Medicare	3	6	5	765	2,352	811
Medicaid/CHIP ³	125	280	96	426	911	270

*Low precision; no estimate reported. NOTE: Appalachian region is defined as all areas covered by the 410 designated counties in 13 states. N/A: Not applicable.

¹ Includes respondents reporting American Indian or Alaska Native, Native Hawaiian or Other Pacific Islander, Asian, and Two or More Races.

² The Other Employment category includes retired persons, disabled persons, homemakers, students, or other persons not in the labor force.

³ CHIP is the Children's Health Insurance Program. Individuals aged 19 or younger are eligible for this plan.

Source: SAMHSA, Office of Applied Studies, National Survey on Drug Use and Health, 2002, 2003, 2004, and 2005.

Table 2.8A Lifetime, Past Year, and Past Month Substance Use among Persons Aged 12 or Older Residing in Appalachian Region, by Substance, Age Group, and Appalachian Socioeconomic Status

Substance	AGE GROUP					
	Numbers in Thousands, Annual Averages Based on 2002-2005					
	12-17			18 or Older		
	At-Risk or Distressed	Transitional	Competitive or Attainment	At-Risk or Distressed	Transitional	Competitive or Attainment
MARIJUANA USE						
Lifetime	61	210	84	983	4,065	1,806
Past Year	43	163	65	178	945	374
Past Month	18	80	33	91	566	221
COCAINE USE						
Lifetime	9	31	7	248	1,233	616
Past Year	7	24	6	40	258	91
Past Month	3	6	2	13	94	32
METHAMPHETAMINE USE						
Lifetime	6	16	4	59	448	208
Past Year	3	8	2	12	50	14
Past Month	2	3	1	4	16	12
ALCOHOL USE						
Past Year	97	383	153	1,314	6,586	3,047
Binge Alcohol Use ¹	31	126	41	462	2,324	910
Heavy Alcohol Use ¹	9	34	11	144	800	271
CIGARETTE USE						
Lifetime	135	416	139	2,260	8,079	3,267
Past Year	79	272	94	1,127	3,746	1,319
Past Month	58	186	62	1,018	3,357	1,168
PAST YEAR NONMEDICAL USE OF PSYCHOTHERAPEUTICS²	35	124	39	166	636	211

*Low precision; no estimate reported.

NOTE: Appalachian region is defined as all areas covered by the 410 designated counties in 13 states.

¹ Binge Alcohol Use is defined as drinking five or more drinks on the same occasion (i.e., at the same time or within a couple of hours of each other) on at least 1 day in the past 30 days. Heavy Alcohol Use is defined as drinking five or more drinks on the same occasion on each of 5 or more days in the past 30 days; all heavy alcohol users are also binge alcohol users.

² Nonmedical use of prescription-type psychotherapeutics includes the nonmedical use of pain relievers, tranquilizers, stimulants, or sedatives and does not include over-the-counter drugs.

Source: SAMHSA, Office of Applied Studies, National Survey on Drug Use and Health, 2002, 2003, 2004, and 2005.

Table 2.9A Substance Dependence or Abuse, Mental Health Measures, and Receipt of Substance Use Treatment in the Past Year among Persons Aged 12 or Older Residing in Appalachian Region, by Age Group and Appalachian Socioeconomic Status

Dependence or Abuse/Mental Health/Receipt of Treatment <i>Numbers in Thousands, Annual Averages Based on 2002-2005</i>	AGE GROUP					
	12-17			18 or Older		
	At-Risk or Distressed	Transitional	Competitive or Attainment	At-Risk or Distressed	Transitional	Competitive or Attainment
DEPENDENCE OR ABUSE¹						
Illicit Drugs ²	16	62	20	77	279	89
Alcohol	16	73	22	142	717	297
Both Illicit Drugs and Alcohol ²	6	33	8	28	123	37
Illicit Drugs or Alcohol ²	26	102	34	191	873	349
PAST YEAR SERIOUS PSYCHOLOGICAL DISTRESS³	N/A	N/A	N/A	521	1,265	640
PAST YEAR MAJOR DEPRESSIVE EPISODE⁴	28	93	45	313	745	402
PAST YEAR RECEIPT OF SPECIALTY TREATMENT FOR ILLICIT DRUG OR ALCOHOL USE^{2,5}	3	11	3	17	102	36
MENTAL HEALTH TREATMENT/COUNSELING⁶	N/A	N/A	N/A	480	1,392	557
Inpatient	N/A	N/A	N/A	34	83	42
Outpatient	N/A	N/A	N/A	258	761	284
Prescription Medication	N/A	N/A	N/A	427	1,229	499

*Low precision; no estimate reported.

NOTE: Appalachian region is defined as all areas covered by the 410 designated counties in 13 states.

N/A: Not applicable.

¹ Dependence or abuse is based on definitions found in the 4th edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV).

² Illicit Drugs include marijuana/hashish, cocaine (including crack), heroin, hallucinogens, inhalants, or prescription-type psychotherapeutics used nonmedically.

³ Serious Psychological Distress (SPD) is defined as having a score of 13 or higher on the K6 scale. Due to questionnaire changes, these combined 2004 and 2005 estimates are not comparable with 2004 and earlier estimates published in prior NSDUH reports. See Section B.4.4 in Appendix B of the *Results from the 2005 National Survey on Drug Use and Health: National Findings*. Estimates are based on combined 2004-2005 data.

⁴ Major Depressive Episode (MDE) is defined as a period of at least 2 weeks when a person experienced a depressed mood or loss of interest or pleasure in daily activities and had a majority of the symptoms for depression as described in the 4th edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV). Estimates are based on combined 2004-2005 data.

⁵ Received Substance Use Treatment at a Specialty Facility refers to treatment received at a hospital (inpatient), rehabilitation facility (inpatient or outpatient), or mental health center in order to reduce or stop illicit drug or alcohol use, or for medical problems associated with illicit drug or alcohol use. Estimates include persons who received treatment specifically for illicit drugs or alcohol, as well as persons who received treatment but did not specify for what substance(s).

⁶ Mental Health Treatment/Counseling is defined as having received inpatient care or outpatient care or having used prescription medication for problems with emotions, nerves, or mental health. Respondents were not to include treatment for drug or alcohol use. Respondents with unknown treatment/counseling information were excluded. Estimates were based only on responses to items in the Adult Mental Health Service Utilization module.

Source: SAMHSA, Office of Applied Studies, National Survey on Drug Use and Health, 2002, 2003, 2004, and 2005.

Table 2.10A Access to Alcohol Treatment among Persons Aged 12 or Older, by Age Group and Appalachian Region Status: Numbers in Thousands

Annual Averages Based on 2002-2005	Age 12-17		Age 18 or Older	
	Appalachian Region	Outside Appalachia	Appalachian Region	Outside Appalachia
Access to Alcohol Treatment^{1,2}				
Needed But Not Received Alcohol Treatment	105	1,286	1,103	14,901
Felt Need for Alcohol Treatment	4	42	63	796
Felt Need for Alcohol Treatment and Made No Effort	2	28	41	505

*Low precision; no estimate reported.

NOTE: Received Alcohol Treatment at a Specialty Facility refers to treatment received at a hospital (inpatient), rehabilitation facility (inpatient or outpatient), or mental health center in order to reduce or stop alcohol use, or for medical problems associated with alcohol use.

¹ Needing But Not Receiving Treatment refers to respondents classified as needing treatment for alcohol, but have not received treatment for an alcohol problem at a specialty facility (i.e., drug and alcohol rehabilitation facilities [inpatient or outpatient], hospitals [inpatient only], and mental health centers).

² Felt Need for Treatment includes persons who did not receive but felt they needed treatment for an alcohol problem, as well as persons who received treatment at a location other than a specialty facility but felt they needed additional treatment.

Source: SAMHSA, Office of Applied Studies, National Survey on Drug Use and Health, 2002, 2003, 2004, and 2005.

Table 2.11A Access to Drug Treatment among Persons Aged 12 or Older, by Age Group and Appalachian Region Status: Numbers in Thousands

Annual Averages Based on 2002-2005	Age 12-17		Age 18 or Older	
	Appalachian Region	Outside Appalachia	Appalachian Region	Outside Appalachia
Access to Drug Treatment^{1,2}				
Needed But Not Received Treatment for an Illicit Drug Problem	91	1,124	388	4,763
Felt Need for Treatment for an Illicit Drug Problem	5	72	51	729
Felt Need for Treatment for an Illicit Drug Problem and Made No Effort	3	55	43	462

*Low precision; no estimate reported.

NOTE: Illicit Drugs include marijuana/hashish, cocaine (including crack), heroin, hallucinogens, inhalants, or prescription-type psychotherapeutics used nonmedically.

NOTE: Received Illicit Drug Treatment at a Specialty Facility refers to treatment received at a hospital (inpatient), rehabilitation facility (inpatient or outpatient), or mental health center in order to reduce or stop illicit drug use, or for medical problems associated with illicit drug use.

¹ Needing But Not Receiving Treatment refers to respondents classified as needing treatment for illicit drugs, but have not received treatment for an illicit drug problem at a specialty facility (i.e., drug and alcohol rehabilitation facilities [inpatient or outpatient], hospitals [inpatient only], and mental health centers.

² Felt Need for Treatment includes persons who did not receive but felt they needed treatment for an illicit drug problem, as well as persons who received treatment at a location other than a specialty facility but felt they needed additional treatment.

Source: SAMHSA, Office of Applied Studies, National Survey on Drug Use and Health, 2002, 2003, 2004, and 2005.

Table 2.12A Reasons for Not Receiving Substance Use Treatment and Locations of Treatment by Age Group and Appalachian Region Status

<i>Numbers in Thousands, Annual Averages Based on 2002-2005</i>	Age 12-17		Age 18 or Older	
	Appalachian Region	Outside Appalachia	Appalachian Region	Outside Appalachia
Reasons for Not Receiving Drug or Alcohol Treatment among Persons Who Needed But Did Not Receive Treatment at a Specialty Facility¹				
Cost/Insurance Barriers ²	*	11	*	366
Not Ready to Stop Using Stigma ^{3,7}	*	24	*	399
Did Not Know Where to Go for Treatment	*	18	*	223
Did Not Feel Need for Treatment/Could Handle the Problem Without Treatment ^{4,7}	*	9	*	127
Did Not Have Time ⁷	*	11	*	141
Treatment Would Not Help ⁷	*	4	*	45
Other Access Barriers ⁵	*	4	*	41
	*	11	*	143
Locations Where Past Year Substance Treatment was Received among Persons Who Received Treatment at a Specialty Facility⁶				
Self-Help Group	*	83	89	1,218
Outpatient Rehabilitation	*	109	106	1,273
Inpatient Rehabilitation	*	67	57	843
Mental Health Center	*	69	75	791
Hospital Inpatient	*	59	54	628
Private Doctor's Office	*	26	30	239
Emergency Room	*	33	28	301
Prison or Jail	*	21	12	173

*Low precision; no estimate reported.

¹ Needing But Not Receiving Treatment refers to respondents classified as needing treatment for illicit drugs or alcohol, but have not received treatment for an illicit drug or alcohol problem at a specialty facility.

² Felt Need for Treatment includes persons who did not receive but felt they needed treatment for an illicit drug or alcohol problem, as well as persons who received treatment at a location other than a specialty facility but felt they needed additional treatment.

³ Respondents could indicate multiple reasons; thus, these response categories are not mutually exclusive.

⁴ Includes reasons of "No health coverage and could not afford cost," "Had health coverage but did not cover treatment or did not cover cost," and other-specify responses of "Could not afford cost; health coverage not indicated."

⁵ Includes reasons of "Might cause neighbors/community to have negative opinion," "Might have negative effect on job," "Did not want others to find out," and other-specify responses of

"Ashamed/embarrassed/afraid" and "Afraid would have trouble with the police/social services."

⁶ Includes reasons of "Did not feel need for treatment," "Could handle the problem without treatment," and other-specify responses of "Could do it with support of family/friends/ others," and "Could do it through religion/spirituality."

⁷ Includes reasons of "No transportation/inconvenient," "No program having type of treatment," "No openings in a program," and other-specify responses of "No program had counselor/doctors with whom you were comfortable," "Services desired were unavailable or you were currently ineligible," and "Attempted to get treatment but encountered delays."

⁸ Respondents could indicate multiple locations of treatment; thus, these response categories are not mutually exclusive.

⁹ Estimates are based only on combined 2003-2005 data. Source: SAMHSA, Office of Applied Studies, National Survey on Drug Use and Health, 2002, 2003, 2004, and 2005.

Table 2.13A Reasons for Not Receiving Mental Health Treatment among Persons Aged 12 or Older, by Age Group and Appalachian Region Status: Numbers in Thousands

Annual Averages Based on 2002-2005	Age 12-17		Age 18 or Older	
	Appalachian Region	Outside Appalachia	Appalachian Region	Outside Appalachia
Reasons for Not Receiving Mental Health Treatment/Counseling among Persons with an Unmet Need for Mental Health Treatment^{1,2}				
Cost/Insurance Barriers ²	N/A	N/A	406	4,745
Did Not Feel Need for Treatment/Could Handle the Problem Without Treatment ^{3,7}	N/A	N/A	339	3,293
Stigma ^{4,7}	N/A	N/A	253	2,193
Did not Know Where to Go for Services	N/A	N/A	114	1,881
Did Not Have Time ⁷	N/A	N/A	122	1,549
Treatment Would Not Help ^{5,7}	N/A	N/A	86	993
Fear of Being Committed/Have to Take Medicine	N/A	N/A	107	755
Other Access Barriers ^{6,7}	N/A	N/A	37	558

*Low precision; no estimate reported.

N/A: Not applicable.

NOTE: Unmet Need for Mental Health Treatment/Counseling is defined as a perceived need for treatment that was not received.

NOTE: Estimates represent reasons for not receiving mental health treatment/counseling for all persons aged 18 or older with an unmet need for treatment, including those with unknown mental health treatment/counseling information.

NOTE: Mental Health Treatment/Counseling is defined as having received inpatient care or outpatient care or having used prescription medication for problems with emotions, nerves, or mental health. Respondents were not to include treatment for drug or alcohol use. Respondents with unknown treatment/counseling information were excluded. Estimates were based only on responses to items in the Adult Mental Health Service Utilization module.

¹ Respondents could indicate multiple reasons; thus, these response categories are not mutually exclusive.

² Includes reasons of "Could not afford," "Health insurance does not pay enough," "Health insurance does not cover mental health treatment," and other-specify responses of "No health insurance."

³ Includes reasons of "Did not feel need for treatment," "Could handle problem without treatment," and other-specify responses of "Work on problems with family/friends" and "Work on problems through religion/spirituality."

⁴ Includes reasons of "Might cause neighbors/community to have negative opinion," "Might have negative effect on job," "Concerned about confidentiality," "Did not want others to find out," and other-specify responses of "Ashamed/embarrassed/afraid," "Concerned how court system would treat me," and "Concerned how it would affect future insurability."

⁵ Includes reasons of "Did not feel need for treatment," "Could handle problem without treatment," and other-specify responses of "Work on problems with family/friends" and "Work on problems through religion/spirituality."

⁶ Includes reasons of "No transportation/inconvenient" and other-specify responses of "Too much red tape/hassle to get services," "No openings/long waiting lists/delays," "Services unavailable/limited in area," "Attempted to get treatment but unsuccessful in finding help," and "Could not find program/counselor comfortable with."

⁷ Estimates are based only on combined 2003-2005 data.

Source: SAMHSA, Office of Applied Studies, National Survey on Drug Use and Health, 2002, 2003, 2004, and 2005.

Table 2.14A Access to Alcohol Use Treatment among Persons Aged 12 or Older, by Age Group and Appalachian Sub-Region: Numbers in Thousands						
Annual Averages Based on 2002-2005	Age 12-17			Age 18 or Older		
	Northern	Central	Southern	Northern	Central	Southern
Access to Alcohol Treatment^{1,2}						
Needed But Not Received Alcohol Treatment	53	7	46	541	74	488
Felt Need for Alcohol Treatment	2	1	1	28	9	26
Felt Need for Alcohol Treatment and Made No Effort	1	1	0	12	8	20
*Low precision; no estimate reported.						
NOTE: Received Alcohol Treatment at a Specialty Facility refers to treatment received at a hospital (inpatient), rehabilitation facility (inpatient or outpatient), or mental health center in order to reduce or stop alcohol use, or for medical problems associated with alcohol use.						
¹ Needing But Not Receiving Treatment refers to respondents classified as needing treatment for alcohol, but have not received treatment for an alcohol problem at a specialty facility (i.e., drug and alcohol rehabilitation facilities [inpatient or outpatient], hospitals [inpatient only], and mental health centers).						
² Felt Need for Treatment includes persons who did not receive but felt they needed treatment for an alcohol problem, as well as persons who received treatment at a location other than a specialty facility but felt they needed additional treatment.						
Source: SAMHSA, Office of Applied Studies, National Survey on Drug Use and Health, 2002, 2003, 2004, and 2005.						

Table 2.15A Access to Drug Use Treatment among Persons Aged 12 or Older, by Age Group and Appalachian Sub-Region: Numbers in Thousands

Annual Averages Based on 2002-2005	Age 12-17			Age 18 or Older		
	Northern	Central	Southern	Northern	Central	Southern
Access to Drug Treatment^{1,2}						
Needed But Not Received Treatment for an Illicit Drug Problem	43	5	42	170	46	172
Felt Need for Treatment for an Illicit Drug Problem	3	1	2	19	8	24
Felt Need for Treatment for an Illicit Drug Problem and Made No Effort	1	0	1	13	8	23

*Low precision; no estimate reported.

NOTE: Illicit Drugs include marijuana/hashish, cocaine (including crack), heroin, hallucinogens, inhalants, or prescription-type psychotherapeutics used nonmedically.

NOTE: Received Illicit Drug Treatment at a Specialty Facility refers to treatment received at a hospital (inpatient), rehabilitation facility (inpatient or outpatient), or mental health center in order to reduce or stop illicit drug use, or for medical problems associated with illicit drug use.

¹ Needing But Not Receiving Treatment refers to respondents classified as needing treatment for illicit drugs, but have not received treatment for an illicit drug problem at a specialty facility (i.e., drug and alcohol rehabilitation facilities [inpatient or outpatient], hospitals [inpatient only], and mental health centers).

² Felt Need for Treatment includes persons who did not receive but felt they needed treatment for an illicit drug problem, as well as persons who received treatment at a location other than a specialty facility but felt they needed additional treatment.

Source: SAMHSA, Office of Applied Studies, National Survey on Drug Use and Health, 2002, 2003, 2004, and 2005.

Table 2.16A Reasons for Not Receiving Mental Health Treatment among Persons Aged 12 or Older, by Age Group and Appalachian Sub-Region: Numbers in Thousands

Annual Averages Based on 2002-2005	Age 12-17			Age 18 or Older		
	Northern	Central	Southern	Northern	Central	Southern
Reasons for Not Receiving Mental Health Treatment/Counseling among Persons with an Unmet Need for Mental Health Treatment^{1,2}						
Cost/Insurance Barriers ²	N/A	N/A	N/A	172	*	198
Did Not Feel Need for Treatment/Could Handle the Problem Without Treatment ^{3,7}	N/A	N/A	N/A	160	*	145
Stigma ^{4,7}	N/A	N/A	N/A	121	*	106
Did not Know Where to Go for Services	N/A	N/A	N/A	51	*	53
Did Not Have Time ⁷	N/A	N/A	N/A	53	*	60
Treatment Would Not Help ^{5,7}	N/A	N/A	N/A	54	*	*
Fear of Being Committed/Have to Take Medicine	N/A	N/A	N/A	41	8	58
Other Access Barriers ^{6,7}	N/A	N/A	N/A	21	*	16

*Low precision; no estimate reported.

N/A: Not applicable.

NOTE: Unmet Need for Mental Health Treatment/Counseling is defined as a perceived need for treatment that was not received.

NOTE: Estimates represent reasons for not receiving mental health treatment/counseling for all persons aged 18 or older with an unmet need for treatment, including those with unknown mental health treatment/counseling information.

NOTE: Mental Health Treatment/Counseling is defined as having received inpatient care or outpatient care or having used prescription medication for problems with emotions, nerves, or mental health. Respondents were not to include treatment for drug or alcohol use. Respondents with unknown treatment/counseling information were excluded. Estimates were based only on responses to items in the Adult Mental Health Service Utilization module.

¹ Respondents could indicate multiple reasons; thus, these response categories are not mutually exclusive.

² Includes reasons of "Could not afford," "Health insurance does not pay enough," "Health insurance does not cover mental health treatment," and other-specify responses of "No health insurance."

³ Includes reasons of "Did not feel need for treatment," "Could handle problem without treatment," and other-specify responses of "Work on problems with family/friends" and "Work on problems through religion/spirituality."

⁴ Includes reasons of "Might cause neighbors/community to have negative opinion," "Might have negative effect on job," "Concerned about confidentiality," "Did not want others to find out," and other-specify responses of "Ashamed/embarrassed/afraid," "Concerned how court system would treat me," and "Concerned how it would affect future insurability."

⁵ Includes reasons of "Did not feel need for treatment," "Could handle problem without treatment," and other-specify responses of "Work on problems with family/friends" and "Work on problems through religion/spirituality."

⁶ Includes reasons of "No transportation/inconvenient" and other-specify responses of "Too much red tape/hassle to get services," "No openings/long waiting lists/delays," "Services unavailable/limited in area," "Attempted to get treatment but unsuccessful in finding help," and "Could not find program/counselor comfortable with."

⁷ Estimates are based only on combined 2003-2005 data.

Source: SAMHSA, Office of Applied Studies, National Survey on Drug Use and Health, 2002, 2003, 2004, and 2005.

Table 2.17A Access to Alcohol Use Treatment among Persons Aged 12 or Older, by Age Group and Appalachian Socioeconomic Status: Numbers in Thousands

Annual Averages Based on 2002-2005	Age 12-17			Age 18 or Older		
	At-Risk or Distressed	Transitional	Competitive or Attainment	At-Risk or Distressed	Transitional	Competitive or Attainment
Access to Alcohol Treatment^{1,2}						
Needed But Not Received Alcohol Treatment	15	69	21	135	681	286
Felt Need for Alcohol Treatment	2	1	0	13	31	19
Felt Need for Alcohol Treatment and Made No Effort	1	1	0	9	24	8

*Low precision; no estimate reported.

NOTE: Received Alcohol Treatment at a Specialty Facility refers to treatment received at a hospital (inpatient), rehabilitation facility (inpatient or outpatient), or mental health center in order to reduce or stop alcohol use, or for medical problems associated with alcohol use.

¹ Needing But Not Receiving Treatment refers to respondents classified as needing treatment for alcohol, but have not received treatment for an alcohol problem at a specialty facility (i.e., drug and alcohol rehabilitation facilities [inpatient or outpatient], hospitals [inpatient only], and mental health centers).

² Felt Need for Treatment includes persons who did not receive but felt they needed treatment for an alcohol problem, as well as persons who received treatment at a location other than a specialty facility but felt they needed additional treatment.

Source: SAMHSA, Office of Applied Studies, National Survey on Drug Use and Health, 2002, 2003, 2004, and 2005.

Table 2.18A Access to Drug Treatment among Persons Aged 12 or Older, by Age Group and Appalachian Socioeconomic Status: Numbers in Thousands

Annual Averages Based on 2002-2005	Age 12-17			Age 18 or Older		
	At-Risk or Distressed	Transitional	Competitive or Attainment	At-Risk or Distressed	Transitional	Competitive or Attainment
Access to Drug Treatment^{1,2}						
Needed But Not Received Treatment for an Illicit Drug Problem	14	58	18	68	240	79
Felt Need for Treatment for an Illicit Drug Problem	1	2	1	9	29	13
Felt Need for Treatment for an Illicit Drug Problem and Made No Effort	1	1	1	8	23	12

*Low precision; no estimate reported.

NOTE: Illicit Drugs include marijuana/hashish, cocaine (including crack), heroin, hallucinogens, inhalants, or prescription-type psychotherapeutics used nonmedically.

NOTE: Received Illicit Drug Treatment at a Specialty Facility refers to treatment received at a hospital (inpatient), rehabilitation facility (inpatient or outpatient), or mental health center in order to reduce or stop illicit drug use, or for medical problems associated with illicit drug use.

¹ Needing But Not Receiving Treatment refers to respondents classified as needing treatment for illicit drugs, but have not received treatment for an illicit drug problem at a specialty facility (i.e., drug and alcohol rehabilitation facilities [inpatient or outpatient], hospitals [inpatient only], and mental health centers.

² Felt Need for Treatment includes persons who did not receive but felt they needed treatment for an illicit drug problem, as well as persons who received treatment at a location other than a specialty facility but felt they needed additional treatment.

Source: SAMHSA, Office of Applied Studies, National Survey on Drug Use and Health, 2002, 2003, 2004, and 2005.

Table 2.19A Reasons for Not Receiving Mental Health Treatment/Counseling among Persons Aged 12 or Older, by Age Group and Appalachian Socioeconomic Status: Numbers in Thousands, Annual Averages Based on 2002-2005

	Age 12-17			Age 18 or Older		
	At-Risk or Distressed	Transitional	Competitive or Attainment	At-Risk or Distressed	Transitional	Competitive or Attainment
Reasons for Not Receiving Mental Health Treatment/Counseling among Persons with an Unmet Need for Mental Health Treatment^{1,2}						
Cost/Insurance Barriers ²	N/A	N/A	N/A	68	260	79
Did Not Feel Need for Treatment/Could Handle the Problem Without Treatment ^{3,7}	N/A	N/A	N/A	67	152	*
Stigma ^{4,7}	N/A	N/A	N/A	60	135	*
Did not Know Where to Go for Services	N/A	N/A	N/A	19	75	21
Did Not Have Time ⁷	N/A	N/A	N/A	23	69	30
Treatment Would Not Help ^{5,7}	N/A	N/A	N/A	11	44	*
Fear of Being Committed/Have to Take Medicine	N/A	N/A	N/A	27	56	23
Other Access Barriers ^{6,7}	N/A	N/A	N/A	4	25	8

*Low precision; no estimate reported.

N/A: Not applicable.

NOTE: Unmet Need for Mental Health Treatment/Counseling is defined as a perceived need for treatment that was not received.

NOTE: Estimates represent reasons for not receiving mental health treatment/counseling for all persons aged 18 or older with an unmet need for treatment, including those with unknown mental health treatment/counseling information.

NOTE: Mental Health Treatment/Counseling is defined as having received inpatient care or outpatient care or having used prescription medication for problems with emotions, nerves, or mental health. Respondents were not to include treatment for drug or alcohol use. Respondents with unknown treatment/counseling information were excluded. Estimates were based only on responses to items in the Adult Mental Health Service Utilization module.

¹ Respondents could indicate multiple reasons; thus, these response categories are not mutually exclusive.

² Includes reasons of "Could not afford," "Health insurance does not pay enough," "Health insurance does not cover mental health treatment," and other-specify responses of "No health insurance."

³ Includes reasons of "Did not feel need for treatment," "Could handle problem without treatment," and other-specify responses of "Work on problems with family/friends" and "Work on problems through religion/spirituality."

⁴ Includes reasons of "Might cause neighbors/community to have negative opinion," "Might have negative effect on job," "Concerned about confidentiality," "Did not want others to find out," and other-specify responses of "Ashamed/embarrassed/afraid," "Concerned how court system would treat me," and "Concerned how it would affect future insurability."

⁵ Includes reasons of "Did not feel need for treatment," "Could handle problem without treatment," and other-specify responses of "Work on problems with family/friends" and "Work on problems through religion/spirituality."

⁶ Includes reasons of "No transportation/inconvenient" and other-specify responses of "Too much red tape/hassle to get services," "No openings/long waiting lists/delays," "Services unavailable/limited in area," "Attempted to get treatment but unsuccessful in finding help," and "Could not find program/counselor comfortable with."

⁷ Estimates are based only on combined 2003-2005 data.

Source: SAMHSA, Office of Applied Studies, National Survey on Drug Use and Health, 2002, 2003, 2004, and 2005.

Table 2.1B Demographic Characteristics and Health Insurance among Persons Aged 12 or Older, by Age Group and Appalachian Region Status: Standard Errors of Percentages, Annual Averages Based on 2002-2005

Demographic Characteristic/Health Insurance	AGE GROUP			
	12-17		18 or Older	
	Appalachian Region ¹	Outside Appalachia	Appalachian Region ¹	Outside Appalachia
HISPANIC ORIGIN AND RACE				
Not Hispanic or Latino	0.30	0.28	0.27	0.20
White	0.85	0.36	0.69	0.29
Black or African American	0.80	0.27	0.55	0.20
Other ²	0.25	0.17	0.24	0.14
Hispanic or Latino	0.30	0.28	0.27	0.20
EDUCATION				
< High School	N/A	N/A	0.61	0.20
High School Graduate	N/A	N/A	0.68	0.21
Some College	N/A	N/A	0.54	0.19
College Graduate	N/A	N/A	0.71	0.27
CURRENT EMPLOYMENT				
Full-Time	N/A	N/A	0.73	0.24
Part-Time	N/A	N/A	0.39	0.13
Unemployed	N/A	N/A	0.20	0.07
Other ³	N/A	N/A	0.71	0.24
HEALTH INSURANCE				
Private	0.92	0.32	0.68	0.24
Medicare	0.18	0.05	0.72	0.25
Medicaid/CHIP ⁴	0.86	0.28	0.42	0.13

*Low precision; no estimate reported.
N/A: Not applicable.

¹ Appalachian region is defined as all areas covered by the 410 designated counties in 13 states.

² Includes respondents reporting American Indian or Alaska Native, Native Hawaiian or Other Pacific Islander, Asian, and Two or More Races.

³ The Other Employment category includes retired persons, disabled persons, homemakers, students, or other persons not in the labor force.

⁴ CHIP is the Children's Health Insurance Program. Individuals aged 19 or younger are eligible for this plan.

Source: SAMHSA, Office of Applied Studies, National Survey on Drug Use and Health, 2002, 2003, 2004, and 2005.

Table 2.2B Lifetime, Past Year, and Past Month Substance Use among Persons Aged 12 or Older, by Substance, Age Group, and Appalachian Region Status: Standard Errors of Percentages, Annual Averages Based on 2002-2005

Substance	AGE GROUP			
	12-17		18 or Older	
	Appalachian Region ¹	Outside Appalachia	Appalachian Region ¹	Outside Appalachia
MARIJUANA USE				
Lifetime	0.60	0.18	0.64	0.23
Past Year	0.53	0.16	0.29	0.11
Past Month	0.38	0.12	0.21	0.09
COCAINE USE				
Lifetime	0.23	0.07	0.41	0.16
Past Year	0.20	0.06	0.14	0.05
Past Month	0.09	0.04	0.09	0.03
METHAMPHETAMINE USE				
Lifetime	0.17	0.05	0.25	0.09
Past Year	0.13	0.04	0.05	0.02
Past Month	0.12	0.02	0.04	0.02
ALCOHOL USE				
Past Year	0.70	0.22	0.74	0.23
Binge Alcohol Use ²	0.43	0.15	0.51	0.18
Heavy Alcohol Use ²	0.22	0.07	0.29	0.10
CIGARETTE USE				
Lifetime	0.70	0.22	0.61	0.21
Past Year	0.61	0.18	0.64	0.20
Past Month	0.55	0.15	0.61	0.19
PAST YEAR NONMEDICAL USE OF PSYCHOTHERAPEUTICS³	0.51	0.13	0.23	0.09

*Low precision; no estimate reported.

¹ Appalachian region is defined as all areas covered by the 410 designated counties in 13 states.

² Binge Alcohol Use is defined as drinking five or more drinks on the same occasion (i.e., at the same time or within a couple of hours of each other) on at least 1 day in the past 30 days. Heavy Alcohol Use is defined as drinking five or more drinks on the same occasion on each of 5 or more days in the past 30 days; all heavy alcohol users are also binge alcohol users.

³ Nonmedical use of prescription-type psychotherapeutics includes the nonmedical use of pain relievers, tranquilizers, stimulants, or sedatives and does not include over-the-counter drugs.

Source: SAMHSA, Office of Applied Studies, National Survey on Drug Use and Health, 2002, 2003, 2004, and 2005.

Table 2.3B Substance Dependence or Abuse, Mental Health Measures, and Receipt of Substance Use Treatment in the Past Year among Persons Aged 12 or Older, by Age Group and Appalachian Region Status

Dependence or Abuse/Mental Health/Receipt of Treatment (Standard Errors of Percentages, Annual Averages Based on 2002-2005)	AGE GROUP			
	12-17		18 or Older	
	Appalachian Region ¹	Outside Appalachia	Appalachian Region ¹	Outside Appalachia
DEPENDENCE OR ABUSE²				
Illicit Drugs ³	0.32	0.10	0.16	0.05
Alcohol	0.37	0.11	0.26	0.10
Both Illicit Drugs and Alcohol ³	0.23	0.07	0.08	0.03
Illicit Drugs or Alcohol ³	0.43	0.13	0.29	0.10
PAST YEAR SERIOUS PSYCHOLOGICAL DISTRESS⁴	N/A	N/A	0.74	0.22
PAST YEAR MAJOR DEPRESSIVE EPISODE⁵	0.61	0.19	0.57	0.18
PAST YEAR RECEIPT OF SPECIALTY TREATMENT FOR ILLICIT DRUG OR ALCOHOL USE^{3,6}	0.14	0.04	0.09	0.04
MENTAL HEALTH TREATMENT/COUNSELING⁷	N/A	N/A	0.43	0.14
Inpatient	N/A	N/A	0.13	0.04
Outpatient	N/A	N/A	0.33	0.11
Prescription Medication	N/A	N/A	0.41	0.13

*Low precision; no estimate reported.

N/A: Not applicable

¹ Appalachian region is defined as all areas covered by the 410 designated counties in 13 states.

² Dependence or abuse is based on definitions found in the 4th edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV).

³ Illicit Drugs include marijuana/hashish, cocaine (including crack), heroin, hallucinogens, inhalants, or prescription-type psychotherapeutics used nonmedically.

⁴ Serious Psychological Distress (SPD) is defined as having a score of 13 or higher on the K6 scale. Due to questionnaire changes, these combined 2004 and 2005 estimates are not comparable with 2004 and earlier estimates published in prior NSDUH reports. See Section B.4.4 in Appendix B of the *Results from the 2005 National Survey on Drug Use and Health: National Findings*. Estimates are based on combined 2004-2005 data.

⁵ Major Depressive Episode (MDE) is defined as a period of at least 2 weeks when a person experienced a depressed mood or loss of interest or pleasure in daily activities and had a majority of the symptoms for depression as described in the 4th edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV). Estimates are based on combined 2004-2005 data.

⁶ Received Substance Use Treatment at a Specialty Facility refers to treatment received at a hospital (inpatient), rehabilitation facility (inpatient or outpatient), or mental health center in order to reduce or stop illicit drug or alcohol use, or for medical problems associated with illicit drug or alcohol use. Estimates include persons who received treatment specifically for illicit drugs or alcohol, as well as persons who received treatment but did not specify for what substance(s).

⁷ Mental Health Treatment/Counseling is defined as having received inpatient care or outpatient care or having used prescription medication for problems with emotions, nerves, or mental health. Respondents were not to include treatment for drug or alcohol use. Respondents with unknown treatment/counseling information were excluded. Estimates were based only on responses to items in the Adult Mental Health Service Utilization module.

Source: SAMHSA, Office of Applied Studies, National Survey on Drug Use and Health, 2002, 2003, 2004, and 2005.

Table 2.4B Demographic Characteristics and Health Insurance among Persons Aged 12 or Older Residing in Appalachian Region, by Age Group and Appalachian Subregion: Standard Errors of Percentages, Annual Averages Based on 2002-2005

Demographic Characteristic/Health Insurance	AGE GROUP					
	12-17			18 or Older		
	North	Central	South	North	Central	South
HISPANIC ORIGIN AND RACE						
Not Hispanic or Latino	0.32	0.83	0.55	0.20	0.77	0.51
White	0.93	1.21	1.61	0.56	1.30	1.36
Black or African American	0.77	0.48	1.55	0.41	0.87	1.11
Other ¹	0.30	0.86	0.42	0.27	0.42	0.43
Hispanic or Latino	0.32	0.83	0.55	0.20	0.77	0.51
EDUCATION						
< High School	N/A	N/A	N/A	0.71	2.26	0.98
High School Graduate	N/A	N/A	N/A	0.83	2.52	1.14
Some College	N/A	N/A	N/A	0.70	1.48	0.91
College Graduate	N/A	N/A	N/A	0.75	1.80	1.30
CURRENT EMPLOYMENT						
Full-Time	N/A	N/A	N/A	0.92	2.61	1.18
Part-Time	N/A	N/A	N/A	0.48	1.15	0.68
Unemployed	N/A	N/A	N/A	0.26	0.75	0.34
Other ²	N/A	N/A	N/A	0.89	2.69	1.09
HEALTH INSURANCE						
Private	0.99	2.90	1.66	0.76	2.34	1.19
Medicare	0.14	0.32	0.35	0.81	2.71	1.19
Medicaid/CHIP ³	0.87	3.05	1.60	0.50	2.05	0.68

*Low precision; no estimate reported.

NOTE: Appalachian region is defined as all areas covered by the 410 designated counties in 13 states.

N/A: Not applicable.

¹ Includes respondents reporting American Indian or Alaska Native, Native Hawaiian or Other Pacific Islander, Asian, and Two or More Races.

² The Other Employment category includes retired persons, disabled persons, homemakers, students, or other persons not in the labor force.

³ CHIP is the Children's Health Insurance Program. Individuals aged 19 or younger are eligible for this plan.

Source: SAMHSA, Office of Applied Studies, National Survey on Drug Use and Health, 2002, 2003, 2004, and 2005.

Table 2.5B Lifetime, Past Year, and Past Month Substance Use among Persons Aged 12 or Older Residing in Appalachian Region, by Substance, Age Group, and Appalachian Subregion

Substance <i>Standard Errors of Percentages, Annual Averages Based on 2002-2005</i>	AGE GROUP					
	12-17			18 or Older		
	North	Central	South	North	Central	South
MARIJUANA USE						
Lifetime	0.75	1.75	1.01	0.84	1.90	1.02
Past Year	0.64	1.50	0.91	0.40	0.81	0.46
Past Month	0.50	0.70	0.66	0.29	0.60	0.34
COCAINE USE						
Lifetime	0.25	0.63	0.41	0.46	1.01	0.72
Past Year	0.23	0.61	0.36	0.19	0.36	0.24
Past Month	0.12	0.30	0.15	0.12	0.17	0.17
METHAMPHETAMINE USE						
Lifetime	0.20	0.57	0.29	0.30	0.52	0.45
Past Year	0.10	0.32	0.27	0.05	0.20	0.09
Past Month	0.06	0.28	0.24	0.03	0.04	0.08
ALCOHOL USE						
Past Year	0.84	1.99	1.21	0.80	2.42	1.28
Binge Alcohol Use ¹	0.56	0.92	0.72	0.65	1.44	0.85
Heavy Alcohol Use ¹	0.33	0.63	0.36	0.42	0.71	0.47
CIGARETTE USE						
Lifetime	0.85	2.39	1.19	0.66	1.70	1.10
Past Year	0.76	1.92	1.03	0.78	1.95	1.09
Past Month	0.69	1.47	0.92	0.76	1.90	1.03
PAST YEAR NONMEDICAL USE OF PSYCHOTHERAPEUTICS²	0.48	1.24	0.96	0.26	0.75	0.40

*Low precision; no estimate reported. NOTE: Appalachian region is defined as all areas covered by the 410 designated counties in 13 states.

¹ Binge Alcohol Use is defined as drinking five or more drinks on the same occasion (i.e., at the same time or within a couple of hours of each other) on at least 1 day in the past 30 days. Heavy Alcohol Use is defined as drinking five or more drinks on the same occasion on each of 5 or more days in the past 30 days; all heavy alcohol users are also binge alcohol users.

² Nonmedical use of prescription-type psychotherapeutics includes the nonmedical use of pain relievers, tranquilizers, stimulants, or sedatives and does not include over-the-counter drugs.

Source: SAMHSA, Office of Applied Studies, National Survey on Drug Use and Health, 2002, 2003, 2004, and 2005.

Table 2.6B Substance Dependence or Abuse, Mental Health Measures, and Receipt of Substance Use Treatment in the Past Year among Persons Aged 12 or Older Residing in Appalachian Region, by Age Group and Appalachian Subregion: Standard Errors of Percentages, Annual Averages Based on 2002-2005

Dependence or Abuse/Mental Health/Receipt of Treatment	AGE GROUP					
	12-17			18 or Older		
	North	Central	South	North	Central	South
DEPENDENCE OR ABUSE¹						
Illicit Drugs ²	0.39	0.64	0.56	0.19	0.50	0.27
Alcohol	0.45	0.88	0.67	0.38	0.54	0.41
Both Illicit Drugs and Alcohol ²	0.27	0.50	0.40	0.11	0.28	0.13
Illicit Drugs or Alcohol ²	0.53	0.94	0.73	0.41	0.66	0.47
PAST YEAR SERIOUS PSYCHOLOGICAL DISTRESS³	N/A	N/A	N/A	0.82	2.38	1.31
PAST YEAR MAJOR DEPRESSIVE EPISODE⁴	0.73	1.59	1.04	0.66	2.05	1.02
PAST YEAR RECEIPT OF SPECIALTY TREATMENT FOR ILLICIT DRUG OR ALCOHOL USE^{2,5}	0.13	0.35	0.26	0.12	0.14	0.14
MENTAL HEALTH TREATMENT/COUNSELING⁶	N/A	N/A	N/A	0.52	1.48	0.71
Inpatient	N/A	N/A	N/A	0.14	0.33	0.24
Outpatient	N/A	N/A	N/A	0.38	0.98	0.57
Prescription Medication	N/A	N/A	N/A	0.50	1.44	0.68

*Low precision; no estimate reported.

NOTE: Appalachian region is defined as all areas covered by the 410 designated counties in 13 states.

N/A: Not applicable.

¹ Dependence or abuse is based on definitions found in the 4th edition of the *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV)*.

² Illicit Drugs include marijuana/hashish, cocaine (including crack), heroin, hallucinogens, inhalants, or prescription-type psychotherapeutics used nonmedically.

³ Serious Psychological Distress (SPD) is defined as having a score of 13 or higher on the K6 scale. Due to questionnaire changes, these combined 2004 and 2005 estimates are not comparable with 2004 and earlier estimates published in prior NSDUH reports. See Section B.4.4 in Appendix B of the *Results from the 2005 National Survey on Drug Use and Health: National Findings*. Estimates are based on combined 2004-2005 data.

⁴ Major Depressive Episode (MDE) is defined as a period of at least 2 weeks when a person experienced a depressed mood or loss of interest or pleasure in daily activities and had a majority of the symptoms for depression as described in the 4th edition of the *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV)*. Estimates are based on combined 2004-2005 data.

⁵ Received Substance Use Treatment at a Specialty Facility refers to treatment received at a hospital (inpatient), rehabilitation facility (inpatient or outpatient), or mental health center in order to reduce or stop illicit drug or alcohol use, or for medical problems associated with illicit drug or alcohol use. Estimates include persons who received treatment specifically for illicit drugs or alcohol, as well as persons who received treatment but did not specify for what substance(s).

⁶ Mental Health Treatment/Counseling is defined as having received inpatient care or outpatient care or having used prescription medication for problems with emotions, nerves, or mental health. Respondents were not to include treatment for drug or alcohol use. Respondents with unknown treatment/counseling information were excluded. Estimates were based only on responses to items in the Adult Mental Health Service Utilization module.

Source: SAMHSA, Office of Applied Studies, National Survey on Drug Use and Health, 2002, 2003, 2004, and 2005.

Table 2.7B Demographic Characteristics and Health Insurance among Persons Aged 12 or Older Residing in Appalachian Region, by Age Group and Appalachian Socioeconomic Status: Standard Errors of Percentages, Annual Averages Based on 2002-2005

Demographic Characteristic/Health Insurance	AGE GROUP					
	12-17			18 or Older		
	At-Risk or Distressed	Transitional	Competitive or Attainment	At-Risk or Distressed	Transitional	Competitive or Attainment
HISPANIC ORIGIN AND RACE						
Not Hispanic or Latino	0.37	0.40	0.57	0.44	0.25	0.82
White	1.40	0.88	2.48	1.63	0.67	1.97
Black or African American	1.35	0.76	2.44	1.39	0.55	1.49
Other ¹	0.30	0.27	0.73	0.37	0.29	0.65
Hispanic or Latino	0.37	0.40	0.57	0.44	0.25	0.82
EDUCATION						
< High School	N/A	N/A	N/A	1.58	0.77	1.24
High School Graduate	N/A	N/A	N/A	1.44	0.89	1.44
Some College	N/A	N/A	N/A	1.06	0.75	1.11
College Graduate	N/A	N/A	N/A	1.01	0.79	1.89
CURRENT EMPLOYMENT						
Full-Time	N/A	N/A	N/A	1.83	0.90	1.55
Part-Time	N/A	N/A	N/A	0.69	0.55	0.84
Unemployed	N/A	N/A	N/A	0.52	0.26	0.42
Other ²	N/A	N/A	N/A	1.97	0.86	1.39
HEALTH INSURANCE						
Private	1.99	1.14	2.04	1.83	0.72	1.71
Medicare	0.33	0.15	0.57	1.70	0.91	1.42
Medicaid/CHIP ³	1.88	1.14	1.73	1.21	0.51	0.83

*Low precision; no estimate reported.

NOTE: Appalachian region is defined as all areas covered by the 410 designated counties in 13 states. N/A: Not applicable.

¹ Includes respondents reporting American Indian or Alaska Native, Native Hawaiian or Other Pacific Islander, Asian, and Two or More Races.

² The Other Employment category includes retired persons, disabled persons, homemakers, students, or other persons not in the labor force.

³ CHIP is the Children's Health Insurance Program. Individuals aged 19 or younger are eligible for this plan.

Source: SAMHSA, Office of Applied Studies, National Survey on Drug Use and Health, 2002, 2003, 2004, and 2005.

Table 2.8B Lifetime, Past Year, and Past Month Substance Use among Persons Aged 12 or Older Residing in Appalachian Region, by Substance, Age Group, and Appalachian Socioeconomic Status, 2002 - 2005

Substance	AGE GROUP					
	12-17			18 or Older		
	At-Risk or Distressed	Transitional	Competitive or Attainment	At-Risk or Distressed	Transitional	Competitive or Attainment
MARIJUANA USE						
Lifetime	1.54	0.82	1.19	1.47	0.79	1.38
Past Year	1.25	0.72	1.13	0.50	0.39	0.59
Past Month	0.70	0.53	0.83	0.32	0.29	0.46
COCAINE USE						
Lifetime	0.51	0.33	0.31	0.72	0.50	0.97
Past Year	0.42	0.30	0.26	0.22	0.20	0.27
Past Month	0.29	0.12	0.14	0.14	0.13	0.18
METHAMPHETAMINE USE						
Lifetime	0.52	0.25	0.22	0.30	0.32	0.64
Past Year	0.31	0.20	0.12	0.14	0.07	0.10
Past Month	0.28	0.18	0.10	0.07	0.04	0.10
ALCOHOL USE						
Past Year	1.61	0.91	1.78	1.71	0.86	1.67
Binge Alcohol Use ¹	0.97	0.58	0.79	1.08	0.66	1.07
Heavy Alcohol Use ¹	0.45	0.30	0.47	0.53	0.37	0.65
CIGARETTE USE						
Lifetime	1.75	0.92	1.41	1.29	0.77	1.38
Past Year	1.56	0.85	1.13	1.51	0.78	1.35
Past Month	1.33	0.77	1.06	1.51	0.74	1.28
PAST YEAR NONMEDICAL USE OF PSYCHOTHERAPEUTICS²	1.00	0.70	0.86	0.47	0.30	0.53

*Low precision; no estimate reported. Standard Errors of Percentages, Annual Averages Based on 2002-2005. NOTE: Appalachian region is defined as all areas covered by the 410 designated counties in 13 states.
¹Binge Alcohol Use is defined as drinking five or more drinks on the same occasion (i.e., at the same time or within a couple of hours of each other) on at least 1 day in the past 30 days. Heavy Alcohol Use is defined as drinking five or more drinks on the same occasion on each of 5 or more days in the past 30 days; all heavy alcohol users are also binge alcohol users.
² Nonmedical use of prescription-type psychotherapeutics includes the nonmedical use of pain relievers, tranquilizers, stimulants, or sedatives and does not include over-the-counter drugs.
Source: SAMHSA, Office of Applied Studies, National Survey on Drug Use and Health, 2002, 2003, 2004, and 2005.

Table 2.9B Substance Dependence or Abuse, Mental Health Measures, and Receipt of Substance Use Treatment in the Past Year among Persons Aged 12 or Older Residing in Appalachian Region, by Age Group and Appalachian Socioeconomic Status: Standard Errors of Percentages, Annual Averages Based on 2002-2005

Dependence or Abuse/Mental Health/Receipt of Treatment	AGE GROUP					
	12-17			18 or Older		
	At-Risk or Distressed	Transitional	Competitive or Attainment	At-Risk or Distressed	Transitional	Competitive or Attainment
DEPENDENCE OR ABUSE¹						
Illicit Drugs ²	0.71	0.46	0.53	0.34	0.21	0.32
Alcohol	0.70	0.50	0.61	0.45	0.33	0.61
Both Illicit Drugs and Alcohol ²	0.41	0.33	0.30	0.16	0.11	0.17
Illicit Drugs or Alcohol ²	0.88	0.58	0.73	0.56	0.36	0.72
PAST YEAR SERIOUS PSYCHOLOGICAL DISTRESS³	N/A	N/A	N/A	1.62	0.82	1.93
PAST YEAR MAJOR DEPRESSIVE EPISODE⁴	1.52	0.69	1.53	1.35	0.64	1.67
PAST YEAR RECEIPT OF SPECIALTY TREATMENT FOR ILLICIT DRUG OR ALCOHOL USE^{2,5}	0.34	0.20	0.20	0.16	0.12	0.18
MENTAL HEALTH TREATMENT/COUNSELING⁶	N/A	N/A	N/A	1.19	0.54	0.92
Inpatient	N/A	N/A	N/A	0.32	0.14	0.35
Outpatient	N/A	N/A	N/A	0.94	0.42	0.66
Prescription Medication	N/A	N/A	N/A	1.11	0.52	0.87

NOTES:

*Low precision; no estimate reported. NOTE:Appalachian region is defined as all areas covered by the 410 designated counties in 13 states. N/A: Not applicable.

¹ Dependence or abuse is based on definitions found in the 4th edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV).

² Illicit Drugs include marijuana/hashish, cocaine (including crack), heroin, hallucinogens, inhalants, or prescription-type psychotherapeutics used nonmedically.

³ Serious Psychological Distress (SPD) is defined as having a score of 13 or higher on the K6 scale. Due to questionnaire changes, these combined 2004 and 2005 estimates are not comparable with 2004 and earlier estimates published in prior NSDUH reports. See Section B.4.4 in Appendix B of the *Results from the 2005 National Survey on Drug Use and Health: National Findings*. Estimates are based on combined 2004-2005 data.

Table 2.9B Substance Dependence or Abuse, Mental Health Measures, and Receipt of Substance Use Treatment in the Past Year among Persons Aged 12 or Older Residing in Appalachian Region, by Age Group and Appalachian Socioeconomic Status: Standard Errors of Percentages, Annual Averages Based on 2002-2005

⁴ Major Depressive Episode (MDE) is defined as a period of at least 2 weeks when a person experienced a depressed mood or loss of interest or pleasure in daily activities and had a majority of the symptoms for depression as described in the 4th edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV). Estimates are based on combined 2004-2005 data.

NOTES (Cont):

⁵ Received Substance Use Treatment at a Specialty Facility refers to treatment received at a hospital (inpatient), rehabilitation facility (inpatient or outpatient), or mental health center in order to reduce or stop illicit drug or alcohol use, or for medical problems associated with illicit drug or alcohol use. Estimates include persons who received treatment specifically for illicit drugs or alcohol, as well as persons who received treatment but did not specify for what substance(s).

⁶ Mental Health Treatment/Counseling is defined as having received inpatient care or outpatient care or having used prescription medication for problems with emotions, nerves, or mental health. Respondents were not to include treatment for drug or alcohol use. Respondents with unknown treatment/counseling information were excluded. Estimates were based only on responses to items in the Adult Mental Health Service Utilization module.

Source: SAMHSA, Office of Applied Studies, National Survey on Drug Use and Health, 2002, 2003, 2004, and 2005.

Table 2.10B Access to Alcohol Treatment among Persons Aged 12 or Older, by Age Group and Appalachian Region Status: Standard Errors of Percentages, Annual Averages Based on 2002-2005

	Age 12-17		Age 18 or Older	
	Appalachian Region	Outside Appalachia	Appalachian Region	Outside Appalachia
Access to Alcohol Treatment^{1,2}				
Needed But Not Received Alcohol Treatment	0.37	0.11	0.26	0.09
Felt Need for Alcohol Treatment	0.05	0.02	0.07	0.02
Felt Need for Alcohol Treatment and Made No Effort	0.03	0.02	0.05	0.02

*Low precision; no estimate reported.

NOTE: Received Alcohol Treatment at a Specialty Facility refers to treatment received at a hospital (inpatient), rehabilitation facility (inpatient or outpatient), or mental health center in order to reduce or stop alcohol use, or for medical problems associated with alcohol use.

¹ Needing But Not Receiving Treatment refers to respondents classified as needing treatment for alcohol, but have not received treatment for an alcohol problem at a specialty facility (i.e., drug and alcohol rehabilitation facilities [inpatient or outpatient], hospitals [inpatient only], and mental health centers).

² Felt Need for Treatment includes persons who did not receive but felt they needed treatment for an alcohol problem, as well as persons who received treatment at a location other than a specialty facility but felt they needed additional treatment.

Source: SAMHSA, Office of Applied Studies, National Survey on Drug Use and Health, 2002, 2003, 2004, and 2005.

Table 2.11B Access to Drug Treatment among Persons Aged 12 or Older, by Age Group and Appalachian Region Status: Standard Errors of Percentages, Annual Averages Based on 2002-2005

	Age 12-17		Age 18 or Older	
	Appalachian Region	Outside Appalachia	Appalachian Region	Outside Appalachia
Access to Drug Treatment^{1,2}				
Needed But Not Received Treatment for an Illicit Drug Problem	0.32	0.10	0.15	0.05
Felt Need for Treatment for an Illicit Drug Problem	0.06	0.02	0.05	0.02
Felt Need for Treatment for an Illicit Drug Problem and Made No Effort	0.05	0.02	0.05	0.02

*Low precision; no estimate reported.

NOTE: Illicit Drugs include marijuana/hashish, cocaine (including crack), heroin, hallucinogens, inhalants, or prescription-type psychotherapeutics used nonmedically.

NOTE: Received Illicit Drug Treatment at a Specialty Facility refers to treatment received at a hospital (inpatient), rehabilitation facility (inpatient or outpatient), or mental health center in order to reduce or stop illicit drug use, or for medical problems associated with illicit drug use.

¹ Needing But Not Receiving Treatment refers to respondents classified as needing treatment for illicit drugs, but have not received treatment for an illicit drug problem at a specialty facility (i.e., drug and alcohol rehabilitation facilities [inpatient or outpatient], hospitals [inpatient only], and mental health centers).

² Felt Need for Treatment includes persons who did not receive but felt they needed treatment for an illicit drug problem, as well as persons who received treatment at a location other than a specialty facility but felt they needed additional treatment.

Source: SAMHSA, Office of Applied Studies, National Survey on Drug Use and Health, 2002, 2003, 2004, and 2005.

Table 2.12B Reasons for Not Receiving Substance Use Treatment and Locations of Treatment among Persons Aged 12 or Older, by Age Group and Appalachian Region Status: Standard Errors of Percentages, Annual Averages Based on 2002-2005

	Age 12-17		Age 18 or Older	
	Appalachian Region	Outside Appalachia	Appalachian Region	Outside Appalachia
Reasons for Not Receiving Drug or Alcohol Treatment among Persons Who Needed But Did Not Receive Treatment at a Specialty Facility¹				
Cost/Insurance Barriers ²	*	3.46	*	2.39
Not Ready to Stop Using	*	4.21	*	2.36
Stigma ^{3,7}	*	4.55	*	2.29
Did Not Know Where to Go for Treatment	*	2.35	*	1.42
Did Not Feel Need for Treatment/Could Handle the Problem Without Treatment ^{4,7}	*	3.77	*	1.78
Did Not Have Time ⁷	*	2.00	*	1.17
Treatment Would Not Help ⁷	*	2.23	*	0.94
Other Access Barriers ⁵	*	3.09	*	1.61
Locations Where Past Year Substance Treatment was Received among Persons Who Received Treatment at a Specialty Facility⁶				
Self-Help Group	*	2.54	4.88	1.77
Outpatient Rehabilitation	*	2.20	4.46	1.67
Inpatient Rehabilitation	*	2.62	4.65	1.81
Mental Health Center	*	2.48	5.14	1.86
Hospital Inpatient	*	2.48	4.95	1.71
Private Doctor's Office	*	1.73	3.63	1.24
Emergency Room	*	2.01	3.35	1.30
Prison or Jail	*	1.75	1.96	0.93

*Low precision; no estimate reported.

NOTE: Respondents were classified as needing treatment for an illicit drug or alcohol problem if they met at least one of three criteria during the past year: (1) dependent on illicit drugs or alcohol; (2) abuse of illicit drugs or alcohol; or (3) received treatment for an illicit drug or alcohol problem at a specialty facility (i.e., drug and alcohol rehabilitation facilities [inpatient or outpatient], hospitals [inpatient only], and mental health centers). Illicit Drugs include marijuana/hashish, cocaine (including crack), heroin, hallucinogens, inhalants, or prescription-type psychotherapeutics used nonmedically.
 NOTE: *Needing But Not Receiving Treatment* refers to respondents classified as needing treatment for illicit drugs or alcohol, but have not received treatment for an illicit drug or alcohol problem at a specialty facility. *Felt Need for Treatment* includes persons who did not receive but felt they needed treatment for an illicit drug or alcohol problem, as well as persons who received treatment at a location other than a specialty facility but felt they needed additional treatment.

¹ Respondents could indicate multiple reasons; thus, these response categories are not mutually exclusive.

² Includes reasons of "No health coverage and could not afford cost," "Had health coverage but did not cover treatment or did not cover cost," and other-specify responses of "Could not afford cost; health coverage not indicated."

³ Includes reasons of "Might cause neighbors/community to have negative opinion," "Might have negative effect on job," "Did not want others to find out," and other-specify responses of "Ashamed/embarrassed/afraid" and "Afraid would have trouble with the police/social services."

⁴ Includes reasons of "Did not feel need for treatment," "Could handle the problem without treatment," and other-specify responses of "Could do it with support of family/friends/ others," and "Could do it through religion/spirituality."

⁵ Includes reasons of "No transportation/inconvenient," "No program having type of treatment," "No openings in a program," and other-specify responses of "No program had counselor/doctors with whom you were comfortable," "Services desired were unavailable or you were currently ineligible," and "Attempted to get treatment but encountered delays."

⁶ Respondents could indicate multiple locations of treatment; thus, these response categories are not mutually exclusive.

⁷ Estimates are based only on combined 2003-2005 data.

Source: SAMHSA, Office of Applied Studies, National Survey on Drug Use and Health, 2002, 2003, 2004, and 2005.

Table 2.13B Reasons for Not Receiving Mental Health Treatment among Persons Aged 12 or Older, by Age Group and Appalachian Region Status: Standard Errors of Percentages, Annual Averages Based on 2002-2005

	Age 12-17		Age 18 or Older	
	Appalachian Region	Outside Appalachia	Appalachian Region	Outside Appalachia
Reasons for Not Receiving Mental Health Treatment/Counseling among Persons with an Unmet Need for Mental Health Treatment^{1,2}				
Cost/Insurance Barriers ²	N/A	N/A	2.36	0.81
Did Not Feel Need for Treatment/Could Handle the Problem Without Treatment ^{3,7}	N/A	N/A	2.89	0.87
Stigma ^{4,7}	N/A	N/A	2.35	0.72
Did not Know Where to Go for Services	N/A	N/A	1.40	0.63
Did Not Have Time ⁷	N/A	N/A	1.80	0.65
Treatment Would Not Help ^{5,7}	N/A	N/A	1.79	0.58
Fear of Being Committed/Have to Take Medicine	N/A	N/A	1.44	0.36
Other Access Barriers ^{6,7}	N/A	N/A	0.93	0.46

*Low precision; no estimate reported.

N/A: Not applicable.

NOTE: Unmet Need for Mental Health Treatment/Counseling is defined as a perceived need for treatment that was not received.

NOTE: Estimates represent reasons for not receiving mental health treatment/counseling for all persons aged 18 or older with an unmet need for treatment, including those with unknown mental health treatment/counseling information.

NOTE: Mental Health Treatment/Counseling is defined as having received inpatient care or outpatient care or having used prescription medication for problems with emotions, nerves, or mental health. Respondents were not to include treatment for drug or alcohol use. Respondents with unknown treatment/counseling information were excluded. Estimates were based only on responses to items in the Adult Mental Health Service Utilization module.

¹ Respondents could indicate multiple reasons; thus, these response categories are not mutually exclusive.

² Includes reasons of "Could not afford," "Health insurance does not pay enough," "Health insurance does not cover mental health treatment," and other-specify responses of "No health insurance."

³ Includes reasons of "Did not feel need for treatment," "Could handle problem without treatment," and other-specify responses of "Work on problems with family/friends" and "Work on problems through religion/spirituality."

⁴ Includes reasons of "Might cause neighbors/community to have negative opinion," "Might have negative effect on job," "Concerned about confidentiality," "Did not want others to find out," and other-specify responses of "Ashamed/embarrassed/afraid," "Concerned how court system would treat me," and "Concerned how it would affect future insurability."

⁵ Includes reasons of "Did not feel need for treatment," "Could handle problem without treatment," and other-specify responses of "Work on problems with family/friends" and "Work on problems through religion/spirituality."

⁶ Includes reasons of "No transportation/inconvenient" and other-specify responses of "Too much red tape/hassle to get services," "No openings/long waiting lists/delays," "Services unavailable/limited in area," "Attempted to get treatment but unsuccessful in finding help," and "Could not find program/counselor comfortable with."

⁷ Estimates are based only on combined 2003-2005 data.

Source: SAMHSA, Office of Applied Studies, National Survey on Drug Use and Health, 2002, 2003, 2004, and 2005.

Table 2.14B Access to Alcohol Use Treatment among Persons Aged 12 or Older, by Age Group and Appalachian Sub-Region: Standard Errors of Percentages, Annual Averages Based on 2002-2005

	Age 12-17			Age 18 or Older		
	North	Central	South	North	Central	South
Access to Alcohol Treatment^{1,2}						
Needed But Not Received Alcohol Treatment	0.43	0.88	0.66	0.37	0.54	0.41
Felt Need for Alcohol Treatment	0.07	0.27	0.07	0.11	0.21	0.10
Felt Need for Alcohol Treatment and Made No Effort	0.05	0.20	0.04	0.05	0.21	0.09

*Low precision; no estimate reported.

NOTE: Received Alcohol Treatment at a Specialty Facility refers to treatment received at a hospital (inpatient), rehabilitation facility (inpatient or outpatient), or mental health center in order to reduce or stop alcohol use, or for medical problems associated with alcohol use.

¹ Needing But Not Receiving Treatment refers to respondents classified as needing treatment for alcohol, but have not received treatment for an alcohol problem at a specialty facility (i.e., drug and alcohol rehabilitation facilities [inpatient or outpatient], hospitals [inpatient only], and mental health centers).

² Felt Need for Treatment includes persons who did not receive but felt they needed treatment for an alcohol problem, as well as persons who received treatment at a location other than a specialty facility but felt they needed additional treatment.

Source: SAMHSA, Office of Applied Studies, National Survey on Drug Use and Health, 2002, 2003, 2004, and 2005.

Table 2.15B Access to Drug Use Treatment among Persons Aged 12 or Older, by Age Group and Appalachian Sub-Region: Standard Errors of Percentages, Annual Averages Based on 2002-2005

	Age 12-17			Age 18 or Older		
	North	Central	South	North	Central	South
Access to Drug Treatment^{1,2}						
Needed But Not Received Treatment for an Illicit Drug Problem	0.38	0.64	0.55	0.18	0.49	0.26
Felt Need for Treatment for an Illicit Drug Problem	0.08	0.15	0.08	0.06	0.23	0.08
Felt Need for Treatment for an Illicit Drug Problem and Made No Effort	0.05	0.15	0.08	0.05	0.23	0.08

*Low precision; no estimate reported.

NOTE: Illicit Drugs include marijuana/hashish, cocaine (including crack), heroin, hallucinogens, inhalants, or prescription-type psychotherapeutics used nonmedically.

NOTE: Received Illicit Drug Treatment at a Specialty Facility refers to treatment received at a hospital (inpatient), rehabilitation facility (inpatient or outpatient), or mental health center in order to reduce or stop illicit drug use, or for medical problems associated with illicit drug use.

¹ Needing But Not Receiving Treatment refers to respondents classified as needing treatment for illicit drugs, but have not received treatment for an illicit drug problem at a specialty facility (i.e., drug and alcohol rehabilitation facilities [inpatient or outpatient], hospitals [inpatient only], and mental health centers).

² Felt Need for Treatment includes persons who did not receive but felt they needed treatment for an illicit drug problem, as well as persons who received treatment at a location other than a specialty facility but felt they needed additional treatment.

Source: SAMHSA, Office of Applied Studies, National Survey on Drug Use and Health, 2002, 2003, 2004, and 2005.

Table 2.16B Reasons for Not Receiving Mental Health Treatment among Persons Aged 12 or Older, by Age Group and Appalachian Sub-Region: Standard Errors of Percentages, Annual Averages Based on 2002-2005

	Age 12-17			Age 18 or Older		
	North	Central	South	North	Central	South
Reasons for Not Receiving Mental Health Treatment/Counseling among Persons with an Unmet Need for Mental Health Treatment^{1,2}						
Cost/Insurance Barriers ²	N/A	N/A	N/A	2.86	*	4.19
Did Not Feel Need for Treatment/Could Handle the Problem Without Treatment ^{3,7}	N/A	N/A	N/A	3.42	*	5.17
Stigma ^{4,7}	N/A	N/A	N/A	3.04	*	4.12
Did not Know Where to Go for Services	N/A	N/A	N/A	1.84	*	2.36
Did Not Have Time ⁷	N/A	N/A	N/A	2.07	*	3.40
Treatment Would Not Help ^{5,7}	N/A	N/A	N/A	2.46	*	*
Fear of Being Committed/Have to Take Medicine	N/A	N/A	N/A	1.63	2.53	2.64
Other Access Barriers ^{6,7}	N/A	N/A	N/A	1.31	*	1.65

*Low precision; no estimate reported.

N/A: Not applicable.

NOTE: Unmet Need for Mental Health Treatment/Counseling is defined as a perceived need for treatment that was not received.

NOTE: Estimates represent reasons for not receiving mental health treatment/counseling for all persons aged 18 or older with an unmet need for treatment, including those with unknown mental health treatment/counseling information.

NOTE: Mental Health Treatment/Counseling is defined as having received inpatient care or outpatient care or having used prescription medication for problems with emotions, nerves, or mental health. Respondents were not to include treatment for drug or alcohol use. Respondents with unknown treatment/counseling information were excluded. Estimates were based only on responses to items in the Adult Mental Health Service Utilization module.

¹ Respondents could indicate multiple reasons; thus, these response categories are not mutually exclusive.

² Includes reasons of "Could not afford," "Health insurance does not pay enough," "Health insurance does not cover mental health treatment," and other-specify responses of "No health insurance."

³ Includes reasons of "Did not feel need for treatment," "Could handle problem without treatment," and other-specify responses of "Work on problems with family/friends" and "Work on problems through religion/spirituality."

⁴ Includes reasons of "Might cause neighbors/community to have negative opinion," "Might have negative effect on job," "Concerned about confidentiality," "Did not want others to find out," and other-specify responses of "Ashamed/embarrassed/afraid," "Concerned how court system would treat me," and "Concerned how it would affect future insurability."

⁵ Includes reasons of "Did not feel need for treatment," "Could handle problem without treatment," and other-specify responses of "Work on problems with family/friends" and "Work on problems through religion/spirituality."

⁶ Includes reasons of "No transportation/inconvenient" and other-specify responses of "Too much red tape/hassle to get services," "No openings/long waiting lists/delays," "Services unavailable/limited in area," "Attempted to get treatment but unsuccessful in finding help," and "Could not find program/counselor comfortable with."

⁷ Estimates are based only on combined 2003-2005 data.

Source: SAMHSA, Office of Applied Studies, National Survey on Drug Use and Health, 2002, 2003, 2004, and 2005.

Table 2.17B Access to Alcohol Use Treatment among Persons Aged 12 or Older, by Age Group and Appalachian Socioeconomic Status: Standard Errors of Percentages, Annual Averages Based on 2002-2005

	Age 12-17			Age 18 or Older		
	At-Risk or Distressed	Transitional	Competitive or Attainment	At-Risk or Distressed	Transitional	Competitive or Attainment
Access to Alcohol Treatment^{1,2}						
Needed But Not Received Alcohol Treatment	0.67	0.49	0.61	0.44	0.33	0.58
Felt Need for Alcohol Treatment	0.25	0.05	0.08	0.14	0.07	0.19
Felt Need for Alcohol Treatment and Made No Effort	0.17	0.03	0.03	0.12	0.07	0.11

*Low precision; no estimate reported.

NOTE: Received Alcohol Treatment at a Specialty Facility refers to treatment received at a hospital (inpatient), rehabilitation facility (inpatient or outpatient), or mental health center in order to reduce or stop alcohol use, or for medical problems associated with alcohol use.

¹ Needing But Not Receiving Treatment refers to respondents classified as needing treatment for alcohol, but have not received treatment for an alcohol problem at a specialty facility (i.e., drug and alcohol rehabilitation facilities [inpatient or outpatient], hospitals [inpatient only], and mental health centers).

² Felt Need for Treatment includes persons who did not receive but felt they needed treatment for an alcohol problem, as well as persons who received treatment at a location other than a specialty facility but felt they needed additional treatment.

Source: SAMHSA, Office of Applied Studies, National Survey on Drug Use and Health, 2002, 2003, 2004, and 2005.

Table 2.18B Access to Drug Treatment among Persons Aged 12 or Older, by Age Group and Appalachian Socioeconomic Status: Standard Errors of Percentages, Annual Averages Based on 2002-2005

	Age 12-17			Age 18 or Older		
	At-Risk or Distressed	Transitional	Competitive or Attainment	At-Risk or Distressed	Transitional	Competitive or Attainment
Access to Drug Treatment^{1,2}						
Needed But Not Received Treatment for an Illicit Drug Problem	0.69	0.46	0.50	0.32	0.20	0.30
Felt Need for Treatment for an Illicit Drug Problem	0.19	0.06	0.12	0.11	0.06	0.13
Felt Need for Treatment for an Illicit Drug Problem and Made No Effort	0.15	0.05	0.09	0.11	0.05	0.13

*Low precision; no estimate reported.

NOTE: Illicit Drugs include marijuana/hashish, cocaine (including crack), heroin, hallucinogens, inhalants, or prescription-type psychotherapeutics used nonmedically.

NOTE: Received Illicit Drug Treatment at a Specialty Facility refers to treatment received at a hospital (inpatient), rehabilitation facility (inpatient or outpatient), or mental health center in order to reduce or stop illicit drug use, or for medical problems associated with illicit drug use.

¹ Needing But Not Receiving Treatment refers to respondents classified as needing treatment for illicit drugs, but have not received treatment for an illicit drug problem at a specialty facility (i.e., drug and alcohol rehabilitation facilities [inpatient or outpatient], hospitals [inpatient only], and mental health centers.

² Felt Need for Treatment includes persons who did not receive but felt they needed treatment for an illicit drug problem, as well as persons who received treatment at a location other than a specialty facility but felt they needed additional treatment.

Source: SAMHSA, Office of Applied Studies, National Survey on Drug Use and Health, 2002, 2003, 2004, and 2005.

Table 2.19B Reasons for Not Receiving Mental Health Treatment/Counseling for Persons with an Unmet Need for Mental Health Treatment, by Age Group and Appalachian Socioeconomic Status: Based on 2002-2005

	Age 12-17			Age 18 or Older		
	At-Risk or Distressed	Transitional	Competitive or Attainment	At-Risk or Distressed	Transitional	Competitive or Attainment
Reasons for Not Receiving Mental Health Treatment/Counseling among Persons with an Unmet Need for Mental Health Treatment^{1,2}						
Cost/Insurance Barriers ²	N/A	N/A	N/A	4.29	3.26	4.70
Did Not Feel Need for Treatment/Could Handle the Problem Without Treatment ^{3,7}	N/A	N/A	N/A	5.71	3.26	*
Stigma ^{4,7}	N/A	N/A	N/A	4.66	2.92	*
Did not Know Where to Go for Services	N/A	N/A	N/A	2.27	1.93	3.16
Did Not Have Time ⁷	N/A	N/A	N/A	3.26	2.42	4.04
Treatment Would Not Help ^{5,7}	N/A	N/A	N/A	2.16	2.03	*
Fear of Being Committed/Have to Take Medicine	N/A	N/A	N/A	3.67	1.63	3.34
Other Access Barriers ^{6,7}	N/A	N/A	N/A	1.34	1.34	2.02

*Low precision; no estimate reported.

N/A: Not applicable.

NOTE: Unmet Need for Mental Health Treatment/Counseling is defined as a perceived need for treatment that was not received.

NOTE: Estimates represent reasons for not receiving mental health treatment/counseling for all persons aged 18 or older with an unmet need for treatment, including those with unknown mental health treatment/counseling information.

NOTE: Mental Health Treatment/Counseling is defined as having received inpatient care or outpatient care or having used prescription medication for problems with emotions, nerves, or mental health. Respondents were not to include treatment for drug or alcohol use. Respondents with unknown treatment/counseling information were excluded. Estimates were based only on responses to items in the Adult Mental Health Service Utilization module.

¹ Respondents could indicate multiple reasons; thus, these response categories are not mutually exclusive.

² Includes reasons of "Could not afford," "Health insurance does not pay enough," "Health insurance does not cover mental health treatment," and other-specify responses of "No health insurance."

³ Includes reasons of "Did not feel need for treatment," "Could handle problem without treatment," and other-specify responses of "Work on problems with family/friends" and "Work on problems through religion/spirituality."

⁴ Includes reasons of "Might cause neighbors/community to have negative opinion," "Might have negative effect on job," "Concerned about confidentiality," "Did not want others to find out," and other-specify responses of "Ashamed/embarrassed/afraid," "Concerned how court system would treat me," and "Concerned how it would affect future insurability."

⁵ Includes reasons of "Did not feel need for treatment," "Could handle problem without treatment," and other-specify responses of "Work on problems with family/friends" and "Work on problems through religion/spirituality."

⁶ Includes reasons of "No transportation/inconvenient" and other-specify responses of "Too much red tape/hassle to get services," "No openings/long waiting lists/delays," "Services unavailable/limited in area," "Attempted to get treatment but unsuccessful in finding help," and "Could not find program/counselor comfortable with."

⁷ Estimates are based only on combined 2003-2005 data.

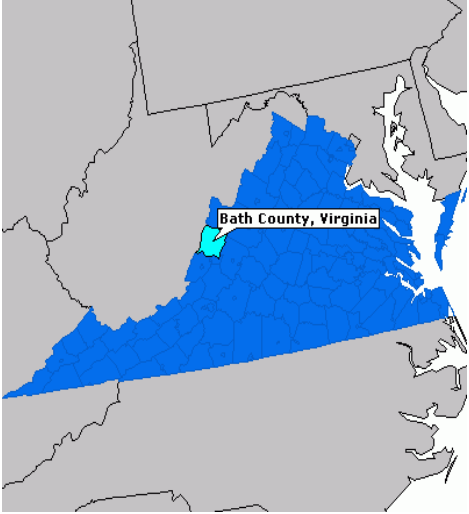
Source: SAMHSA, Office of Applied Studies, National Survey on Drug Use and Health, 2002, 2003, 2004, and 2005.

APPENDIX D: County-Level Data Profiles for Appalachian Case Studies

Profile of Bath County, VA

1. Sociodemographic Characteristics

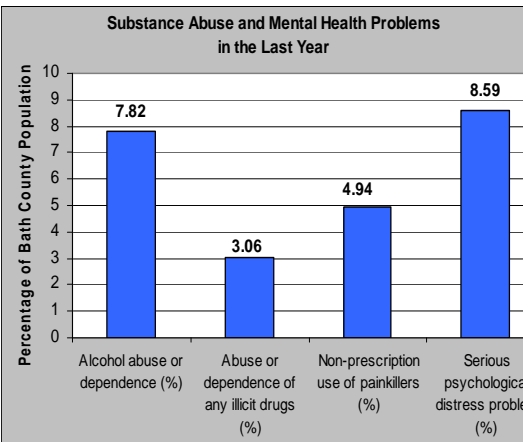
Socio-Demographics	Bath County	Virginia
Population, 2006 estimate	4,814	7,642,884
Population density per square mile, 2000	9.5	178.8
Percentage of urban population, 2000	0%	84.9%
Median home value, dollars, 2000	\$79,700	\$125,400
Persons below poverty, percent, 2004	7.3%	9.5%
High school graduates, percent of persons age 25+, 2000	74%	81.5%



Sources: Population estimates from U.S. Census Bureau State & County Facts. State-level urban population variable from U.S. Department of Agriculture. All other variables from the U.S. Census Bureau, 2000. Map from www.epodunk.com.

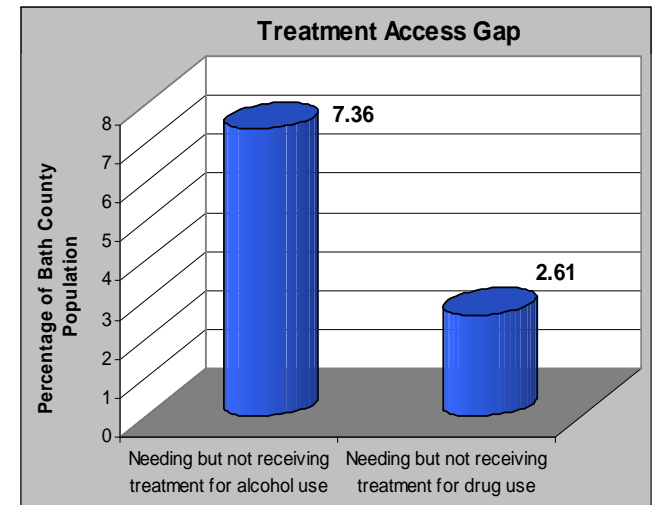
2. Overview of Substance Abuse and Mental Health

Substance Abuse or Mental Health Problem in the Past Year	Bath County	Virginia
Alcohol abuse or dependence (%)	7.82	7.67
Abuse or dependence of any illicit drugs (%)	3.06	3.01
Non-prescription use of painkillers (%)	4.94	5.05
Serious psychological distress problem (%)	8.59	8.91
Suicide rate (%)	0	0.018



Sources: National Survey on Drug Use and Health, 2002-2004, and the Area Resource File, 2004.

3. Access to Treatment



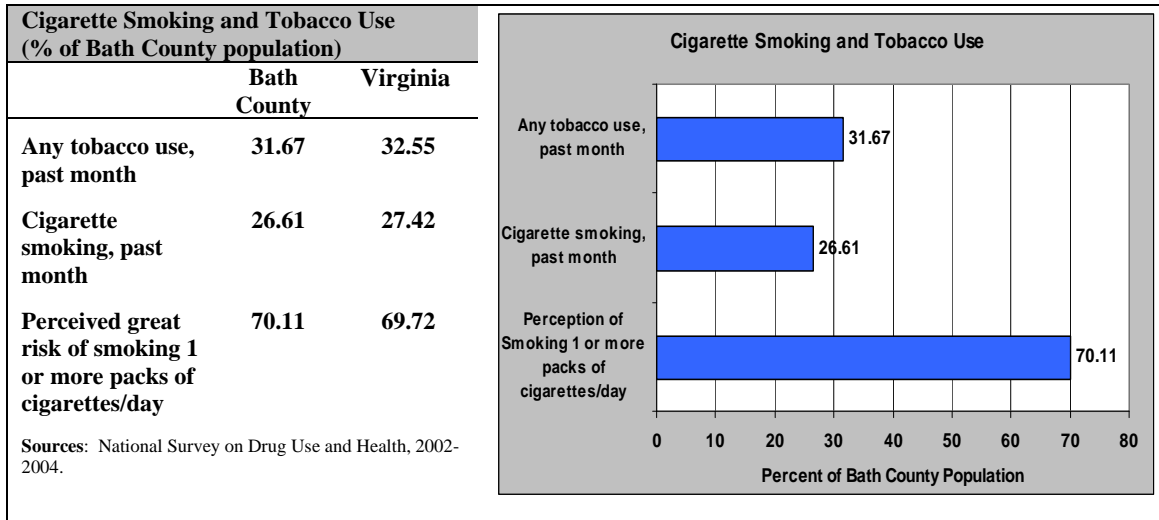
Source: National Survey on Drug Use and Health, 2002-2004.

4. Institutional Characteristics

Institutional Characteristics	Bath County	Virginia	
% In correctional/juvenile institutions	0.12	1.21	
% In mental health hospitals/institutions	0	0.028	
Proportion of mental health professional shortage area	None	None	39.13
		Partial	0.00
		Whole	60.87
Proportion of primary care health professional shortage area	Whole	None	26.09
		Partial	26.09
		Whole	47.83

Source: Area Resource File, 2004.

5. Cigarette Smoking and Tobacco Use

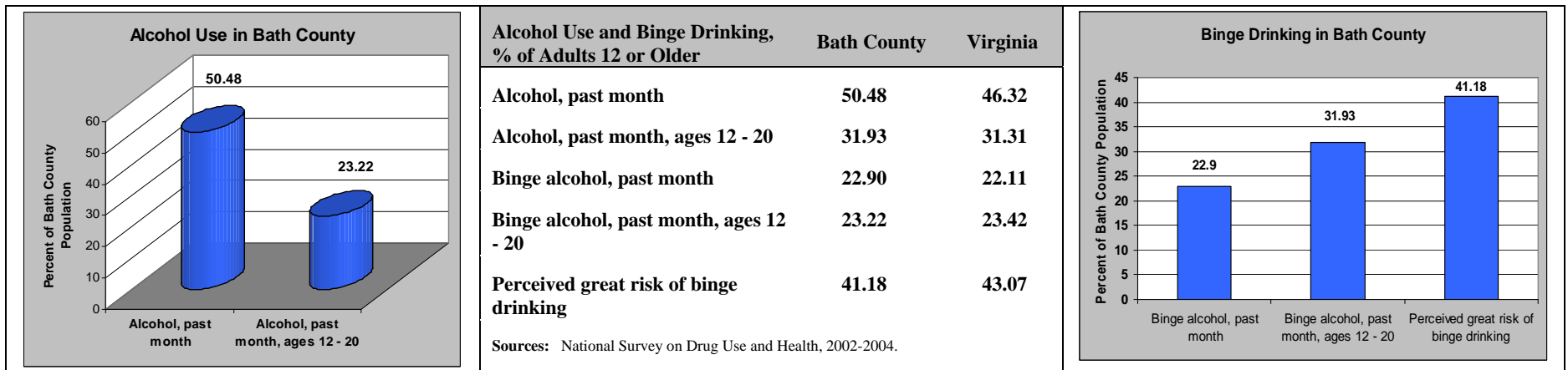


7. Marijuana and Other Illicit Drug Use

% of Adults Age 12 or Older Who Used Illicit Drug Use		
	Bath County	Virginia
Any illicit drug use in the past month	7.63	7.63
Any illicit drug use other than marijuana in the past month	3.92	3.86
Cocaine use in the past year	2.31	2.34
% of Adults Age 12 or Older Who Used Marijuana		
Marijuana use, past month	5.65	5.75
Marijuana use, past year	9.58	9.82
Annual rate of first use of marijuana	1.82	1.98

Sources: National Survey on Drug Use and Health, 2002-2004..

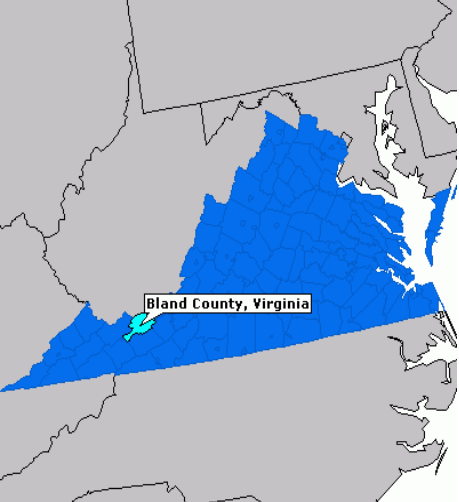
6. Alcohol Use and Binge Drinking



Profile of Bland County, VA

1. Socio-demographic Characteristics

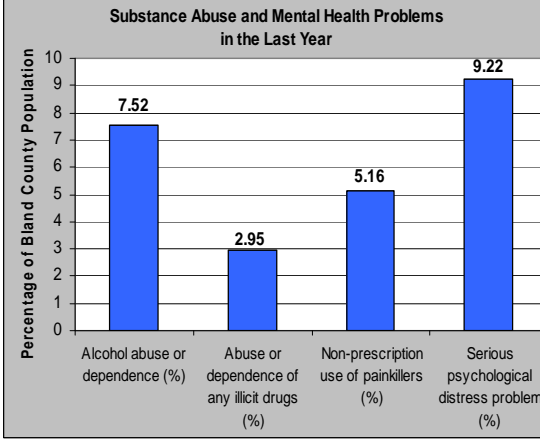
Socio-Demographics	Bland County	Virginia
	Population, 2006 estimate	6,903	7,642,884
Population density per square mile, 2000	19.1	178.8
Percentage of urban population, 2000	0%	84.9%
Median home value, dollars, 2000	\$71,500	\$125,400
Persons below poverty, percent, 2004	11.9%	9.5%
High school graduates, percent of persons age 25+, 2000	70.9%	81.5%



Sources: Population estimates from U.S. Census Bureau State & County Facts. State-level urban population variable from U.S. Department of Agriculture. All other variables from the U.S. Census Bureau, 2000. Map from www.epodunk.com.

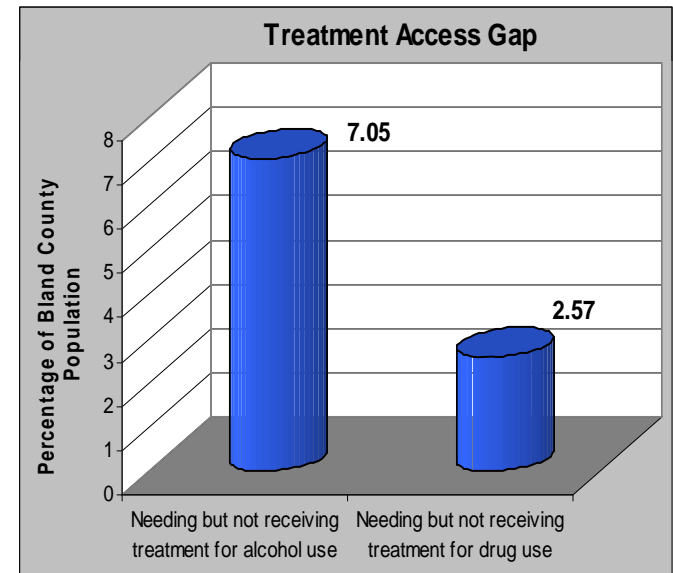
2. Overview of Substance Abuse and Mental Health

Substance Abuse or Mental Health Problem in the Past Year	Bland County	Virginia
	Alcohol abuse or dependence (%)	7.52	7.67
Abuse or dependence of any illicit drugs (%)	2.95	3.01
Non-prescription use of painkillers (%)	5.16	5.05
Serious psychological distress problem (%)	9.22	8.91
Suicide rate (%)	0.029	0.018



Sources: National Survey on Drug Use and Health, 2002-2004, and the Area Resource File, 2004.

3. Access to Treatment



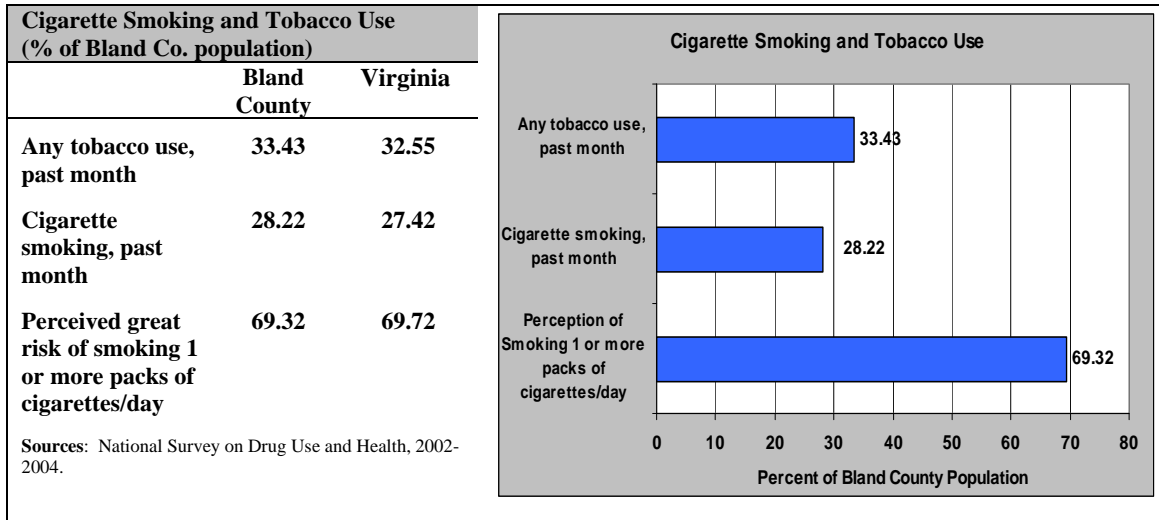
Source: National Survey on Drug Use and Health, 2002-2004.

4. Institutional Characteristics

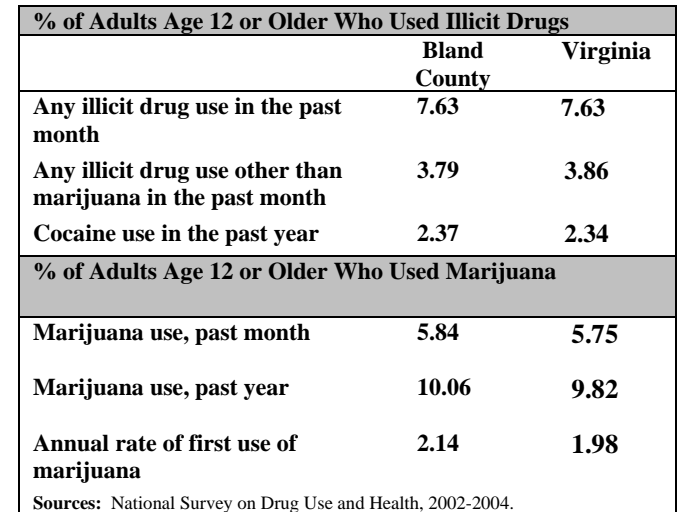
Institutional Characteristics			
	Bland County	Virginia	
% In correctional/juvenile institutions	8.59	1.21	
% In mental health hospitals/institutions	0	0.028	
Proportion of mental health professional shortage area	Whole	None	39.13
		Partial	0
		Whole	60.87
Proportion of primary care health professional shortage area	Whole	None	26.09
		Partial	26.09
		Whole	47.83

Source: Area Resource File, 2004.

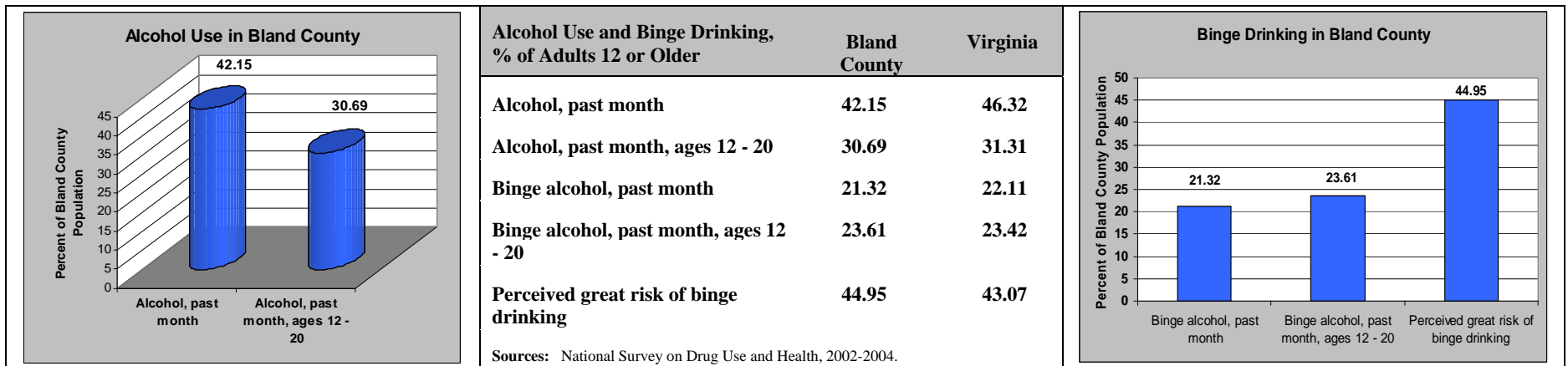
5. Cigarette Smoking and Tobacco Use



7. Marijuana and Other Illicit Drug Use



6. Alcohol Use and Binge Drinking



Profile of Hardy County, WV

1. Socio-demographic Characteristics

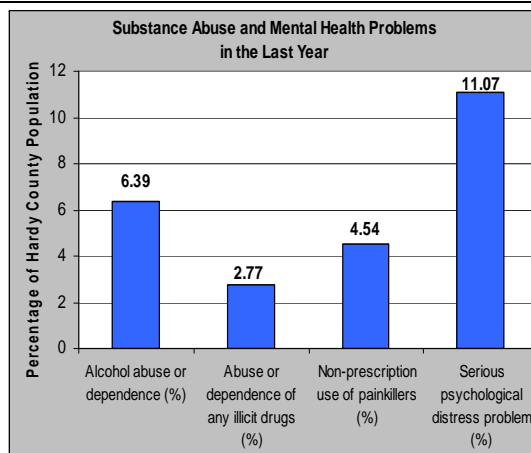
Socio-Demographics	Hardy County	West Virginia
	Population, 2006 estimate	13,420	1,818,470
Population density per square mile, 2000	21.7	75.1
Percentage of urban population, 2000	0%	55.18%
Median home value, dollars, 2000	\$74,700	\$ 72,800
Persons below poverty, percent, 2004	12.5%	16.2%
High school graduates, percent of persons age 25+, 2000	70.3%	75.2%

Sources: Population estimates from U.S. Census Bureau State & County Facts. State-level urban population variable from U.S. Department of Agriculture. All other variables from the U.S. Census Bureau, 2000. Map from www.epodunk.com.

2. Overview of Substance Abuse and Mental Health

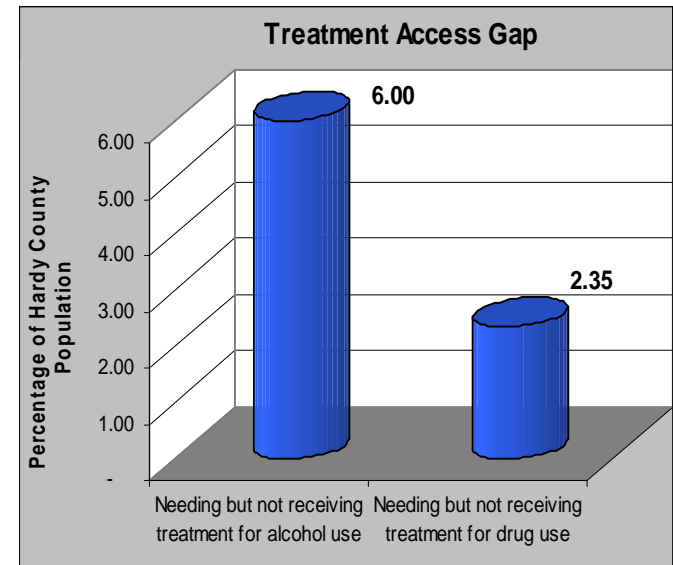
Substance Abuse or Mental Health Problem in the Past Year	Hardy County	West Virginia
Alcohol abuse or dependence (%)	6.39	6.93
Abuse or dependence of any illicit drugs (%)	2.77	3.08
Non-prescription use of painkillers (%)	4.54	5.67
Serious psychological distress problem (%)	11.07	12.26
Suicide rate (%)	0.0079	0.013

Sources: National Survey on Drug Use and Health, 2002-2004, and the Area Resource File, 2004.



Prepared by Zhiwei Zhang, Ph.D., Alycia Infante, M.P.A., Michael Meit, M.A., M.P.H., NORC

3. Access to Treatment



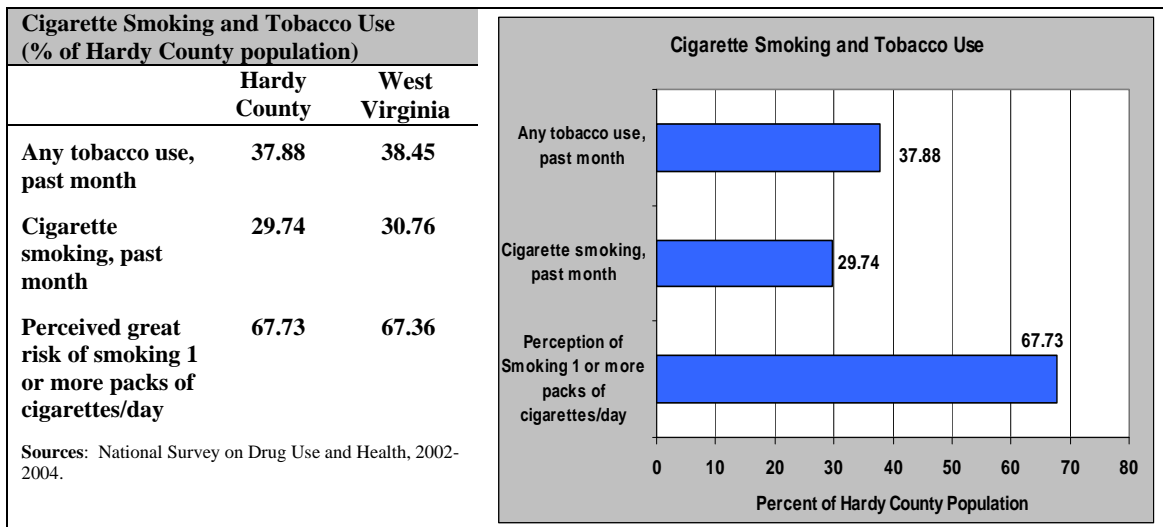
Source: National Survey on Drug Use and Health, 2002-2004.

4. Institutional Characteristics

Institutional Characteristics	Hardy County	West Virginia	
% In correctional/juvenile institutions	0	0.63	
% In mental health hospitals/institutions	0	0.066	
Proportion of mental health professional shortage area	Whole	None	25.45%
		Partial	40.00%
		Whole	34.55%
Proportion of primary care health professional shortage area	Part	None	54.55%
		Partial	1.82%
		Whole	43.64%

Source: Area Resource File, 2004.

5. Cigarette Smoking and Tobacco Use



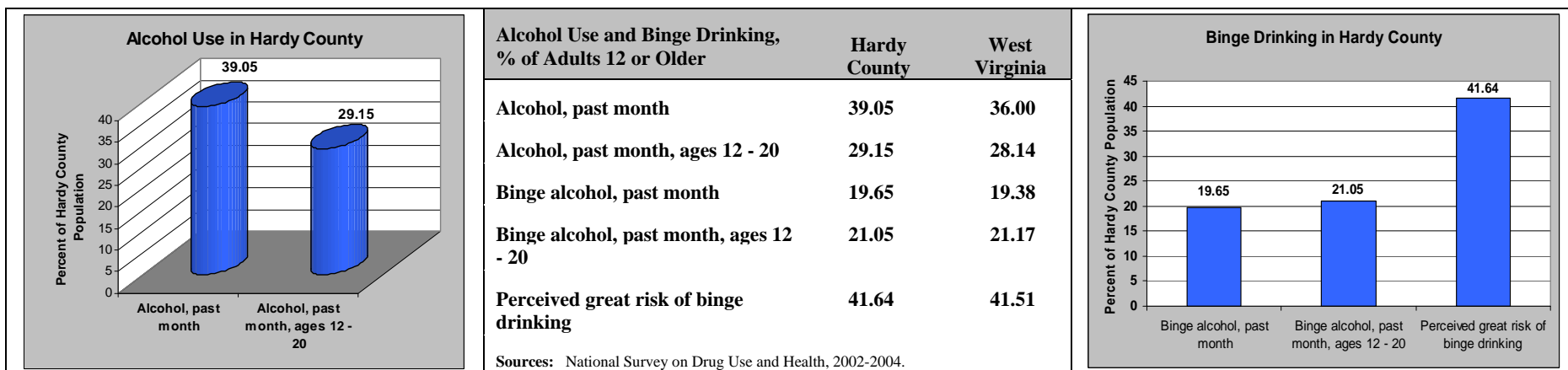
7. Marijuana and Other Illicit Drug Use

% of Adults Age 12 or Older Who Used Illicit Drug Use		
	Hardy County	West Virginia
Any illicit drug use in the past month	6.51	7.12
Any illicit drug use other than marijuana in the past month	3.48	3.82
Cocaine use in the past year	2.05	2.51

% of Adults Age 12 or Older Who Used Marijuana		
	Hardy County	West Virginia
Marijuana use, past month	4.83	5.32
Marijuana use, past year	9.26	9.74
Annual rate of first use of marijuana	1.54	1.53

Sources: National Survey on Drug Use and Health, 2002-2004.

6. Alcohol Use and Binge Drinking



Profile of Monroe County, WV

1. Socio-demographic Characteristics

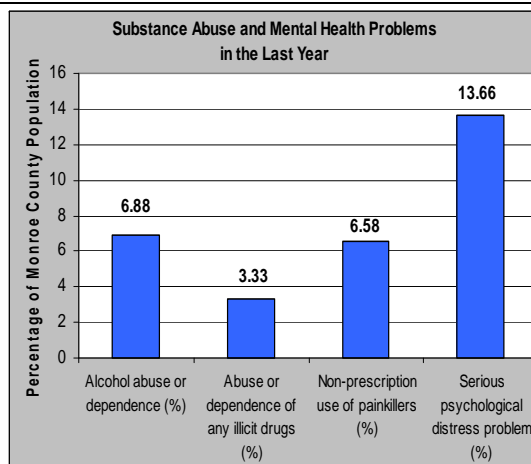
Socio-Demographics	Monroe County	West Virginia
Population, 2006 estimate	13,510	1,818,470
Population density per square mile, 2000	30.8	75.1
Percentage of urban population, 2000	10.3%	55.18%
Median home value, dollars, 2000	\$64,700	\$72,800
Persons below poverty, percent, 2004	14.3%	16.2%
High school graduates, percent of persons age 25+, 2000	73.7%	75.2%

Sources: Population estimates from U.S. Census Bureau State & County Facts. State-level urban population variable from U.S. Department of Agriculture. All other variables from the U.S. Census Bureau, 2000. Map from www.epodunk.com.

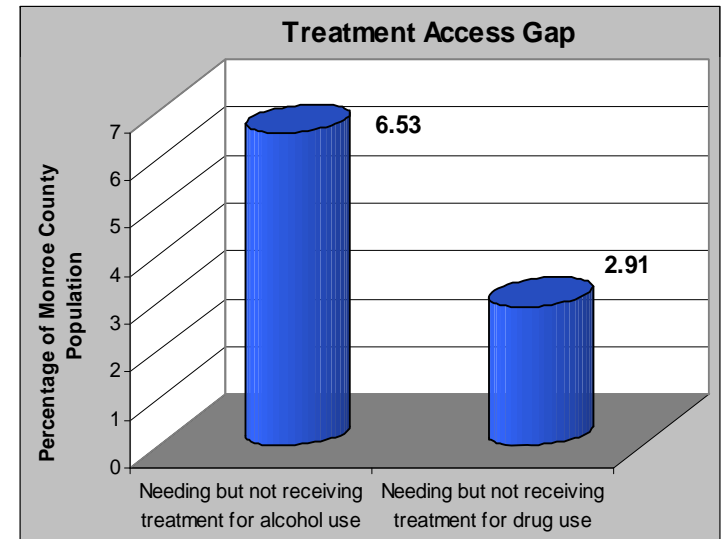
2. Overview of Substance Abuse and Mental Health

Substance Abuse or Mental Health Problem in the Past Year	Monroe County	West Virginia
Alcohol abuse or dependence (%)	6.88	6.93
Abuse or dependence of any illicit drugs (%)	3.33	3.08
Non-prescription use of painkillers (%)	6.58	5.67
Serious psychological distress problem (%)	13.66	12.26
Suicide rate (%)	0.014	0.013

Sources: National Survey on Drug Use and Health, 2002-2004, and the Area Resource File, 2004.



3. Access to Treatment



Source: National Survey on Drug Use and Health, 2002-2004.

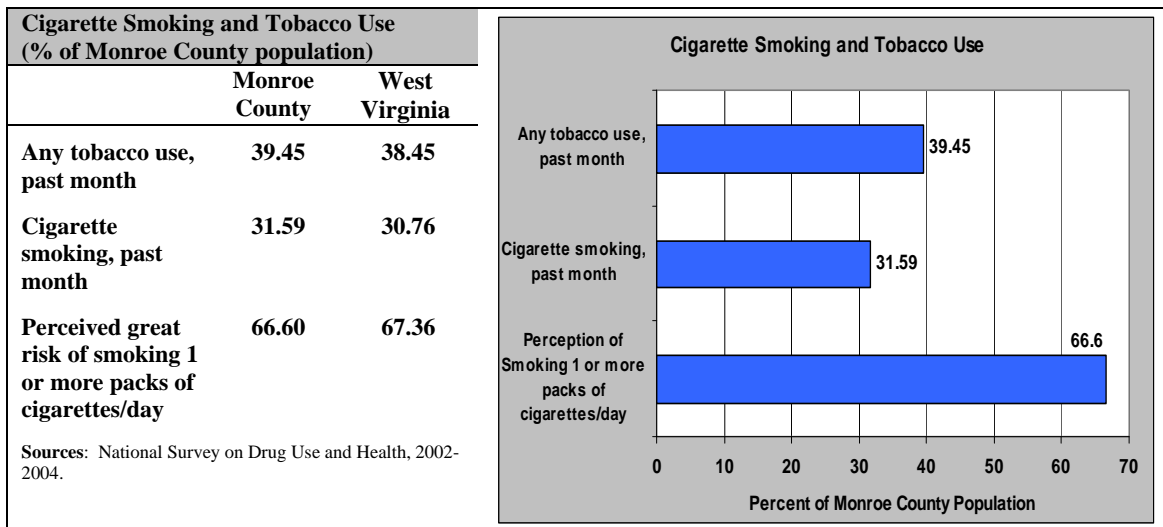
4. Institutional Characteristics

Institutional Characteristics	Monroe County	West Virginia	
% In correctional/juvenile institutions	9.53	0.63	
% In mental health hospitals/institutions	0	0.066	
Proportion of mental health professional shortage area	None	None	25.45%
		Partial	40.00%
		Whole	34.55%
Proportion of primary care health professional shortage area	Whole	None	54.55%
		Partial	1.82%
		Whole	43.64%

Source: Area Resource File, 2004.

Prepared by Zhiwei Zhang, Ph.D., Alysia Infante, M.P.A., Michael Meit, M.A., M.P.H., NORC

5. Cigarette Smoking and Tobacco Use

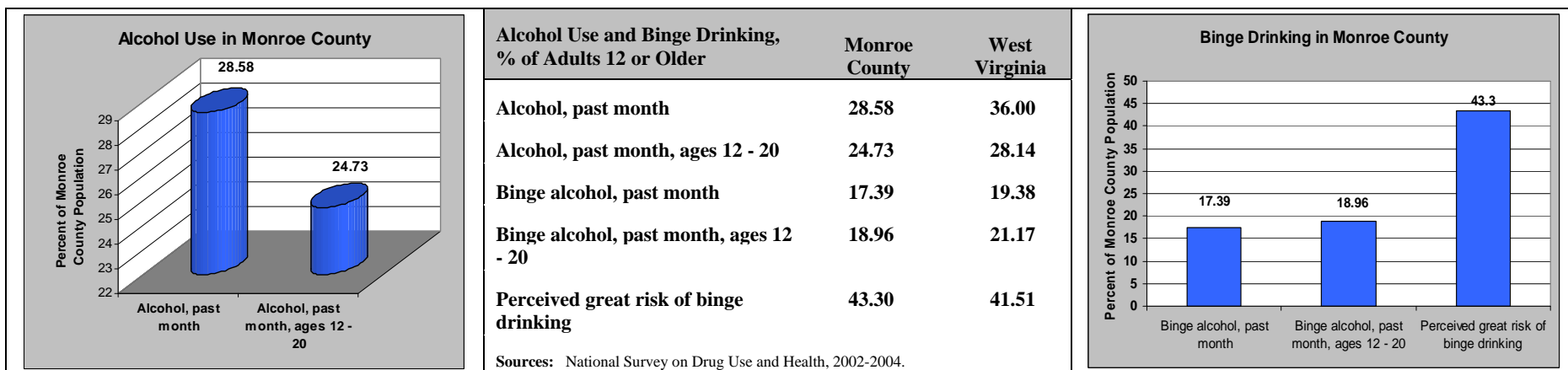


7. Marijuana and Other Illicit Drug Use

% of Adults Age 12 or Older Who Used Illicit Drug Use		
	Monroe County	West Virginia
Any illicit drug use in the past month	7.08	7.12
Any illicit drug use other than marijuana in the past month	4.04	3.82
Cocaine use in the past year	2.48	2.51
% of Adults Age 12 or Older Who Used Marijuana		
Marijuana use, past month	5.08	5.32
Marijuana use, past year	10.01	9.74
Annual rate of first use of marijuana	1.35	1.53

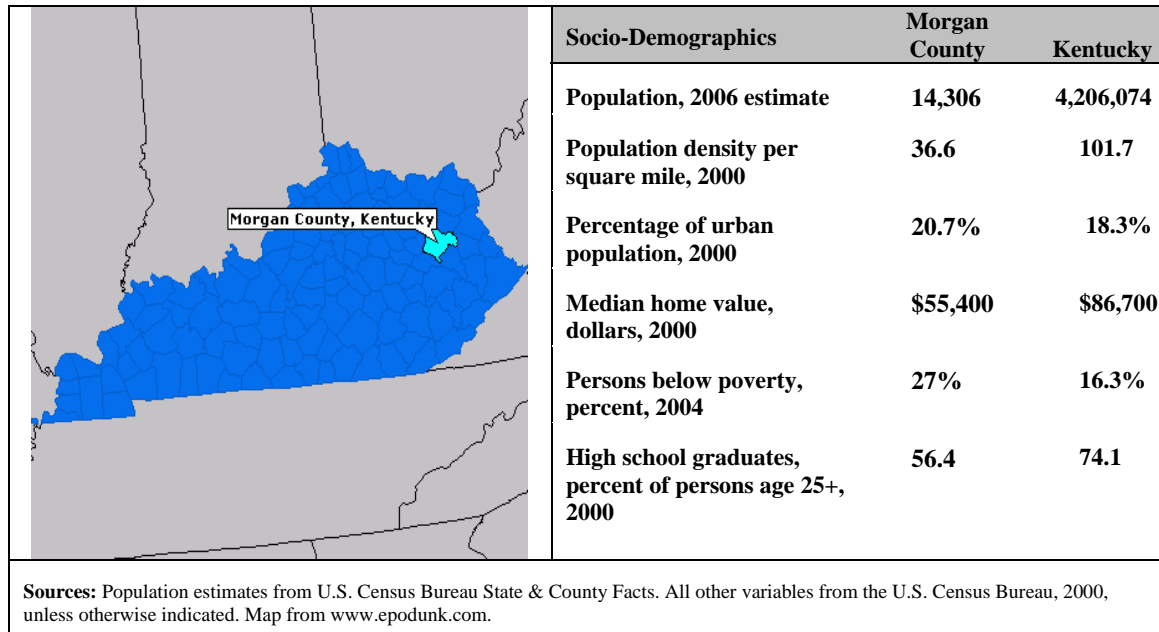
Sources: National Survey on Drug Use and Health, 2002-2004.

6. Alcohol Use and Binge Drinking

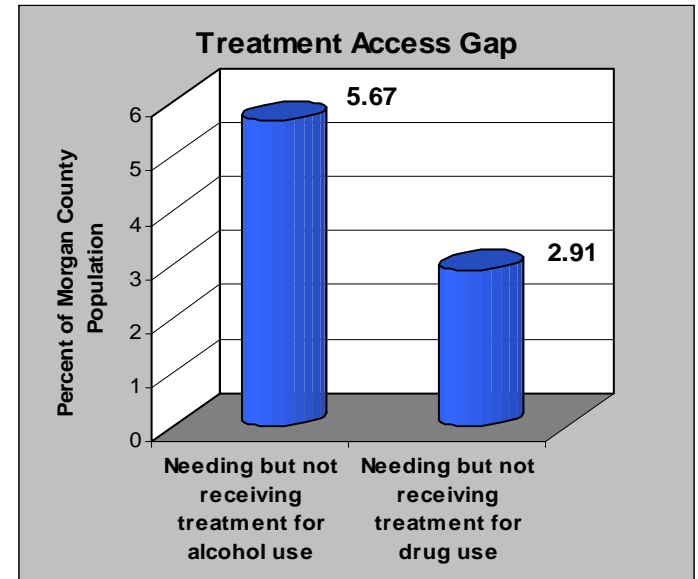


Profile of Morgan County, KY

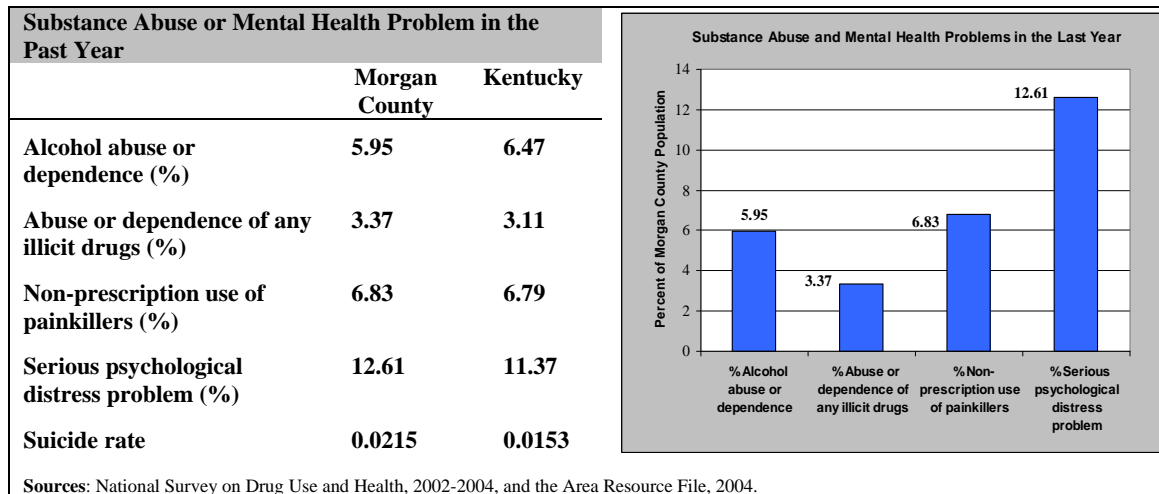
1. Socio-demographic Characteristics



3. Access to Treatment



2. Overview of Substance Abuse and Mental Health

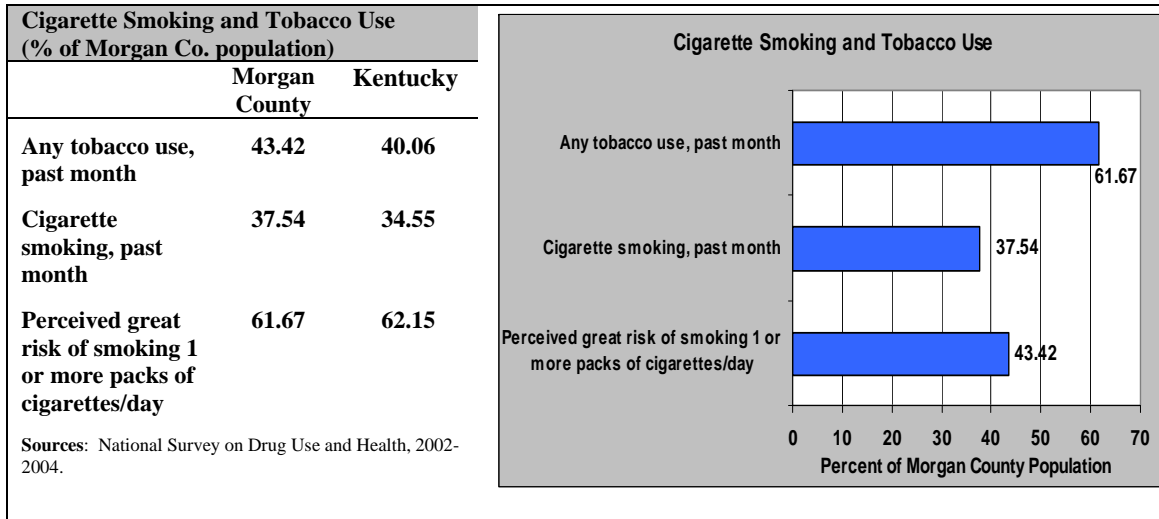


4. Institutional Characteristics

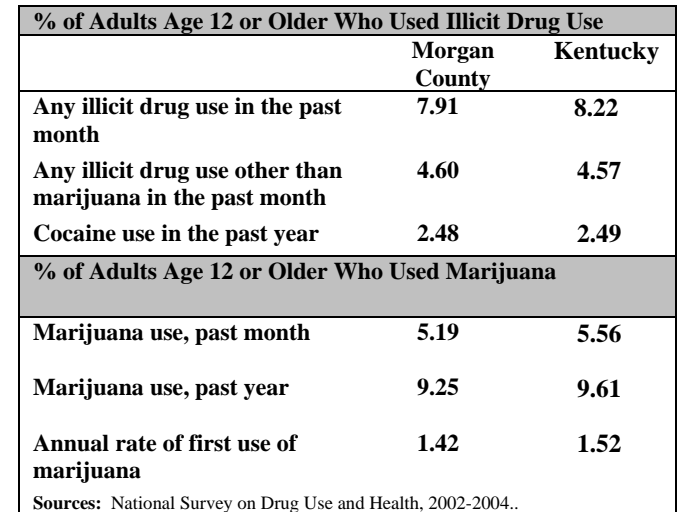
Institutional Characteristics			
	Morgan County	Kentucky	
% In correctional/juvenile institutions	11.93	0.798	
% In mental health hospitals/institutions	0.208	0.0485	
Proportion of mental health professional shortage area	Whole	None	45.1%
		Whole	54.9%
Proportion of primary care health professional shortage area	Whole	None	25.5%
		Partial	3.9%
		Whole	70.6%

Source: Area Resource File, 2004.

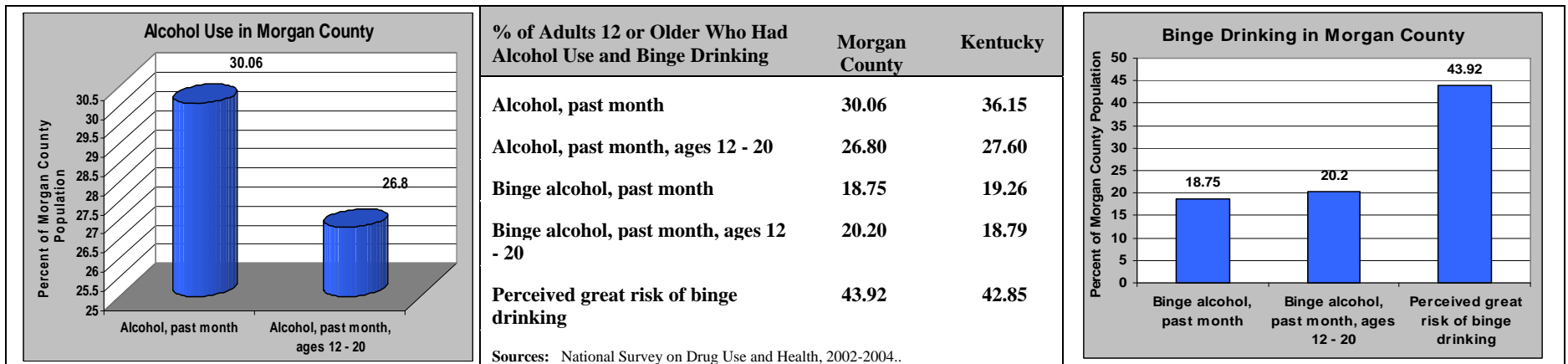
5. Cigarette Smoking and Tobacco Use



7. Marijuana and Other Illicit Drug Use

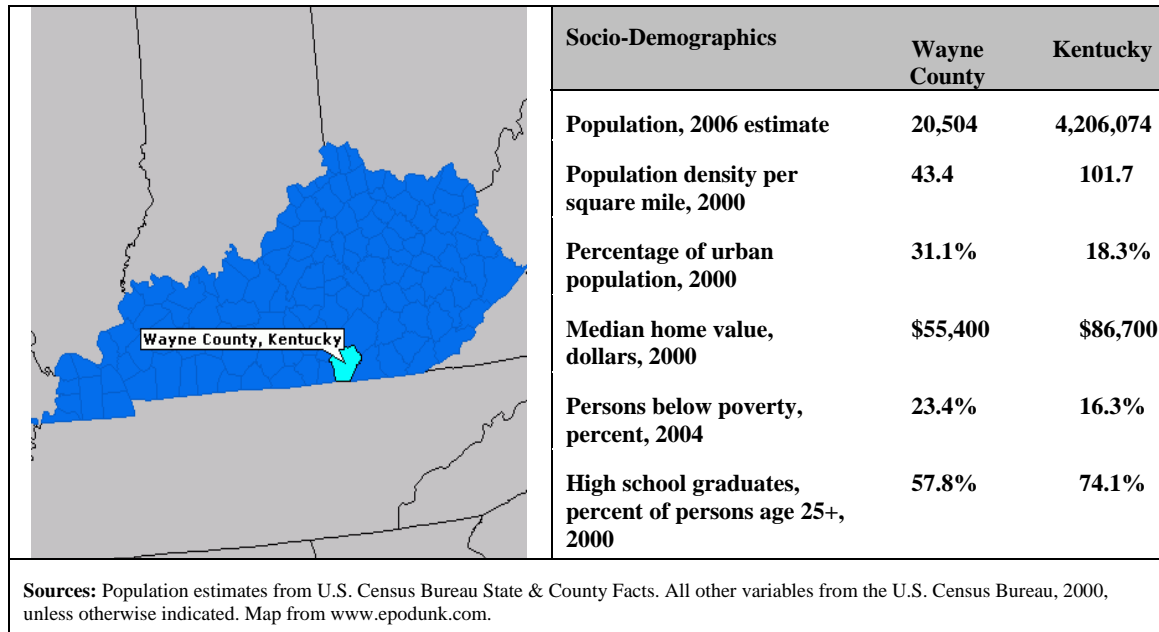


6. Alcohol Use and Binge Drinking

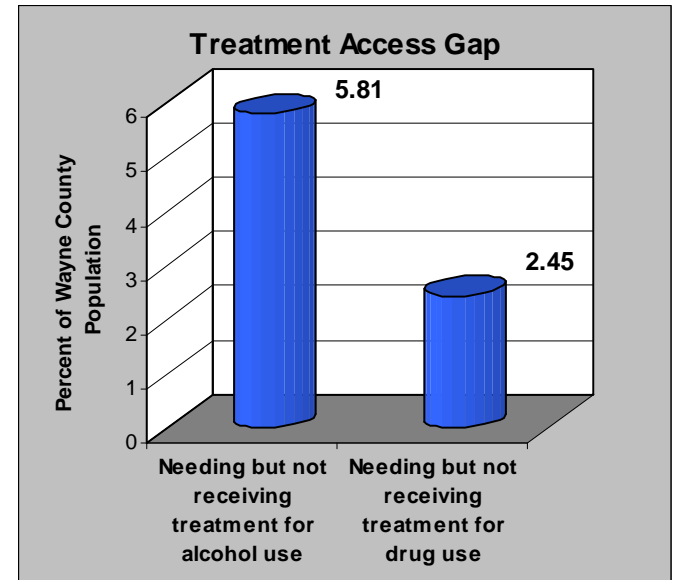


Profile of Wayne County, KY

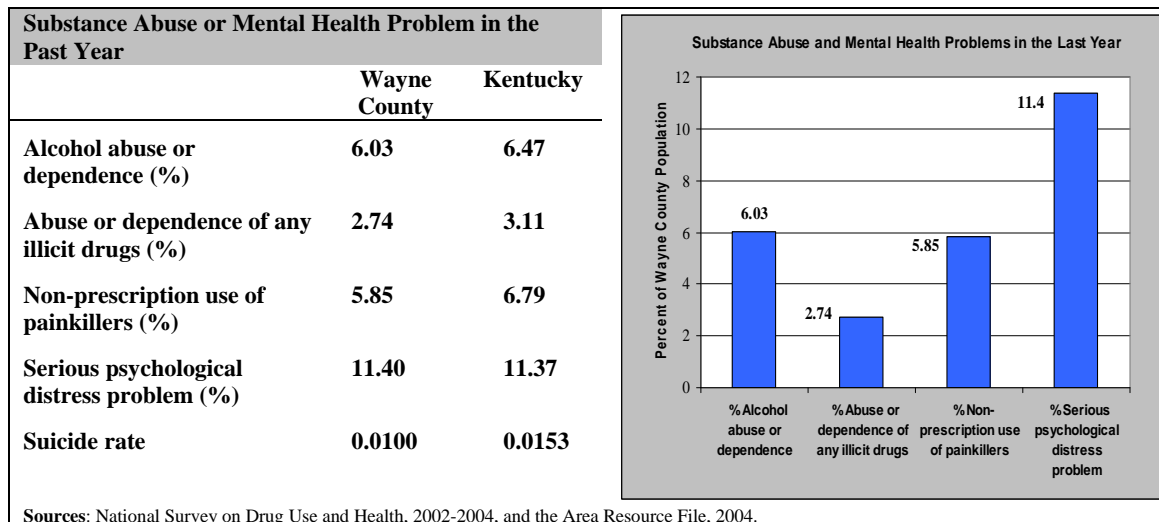
1. Socio-demographic Characteristics



3. Access to Treatment



2. Overview of Substance Abuse and Mental Health

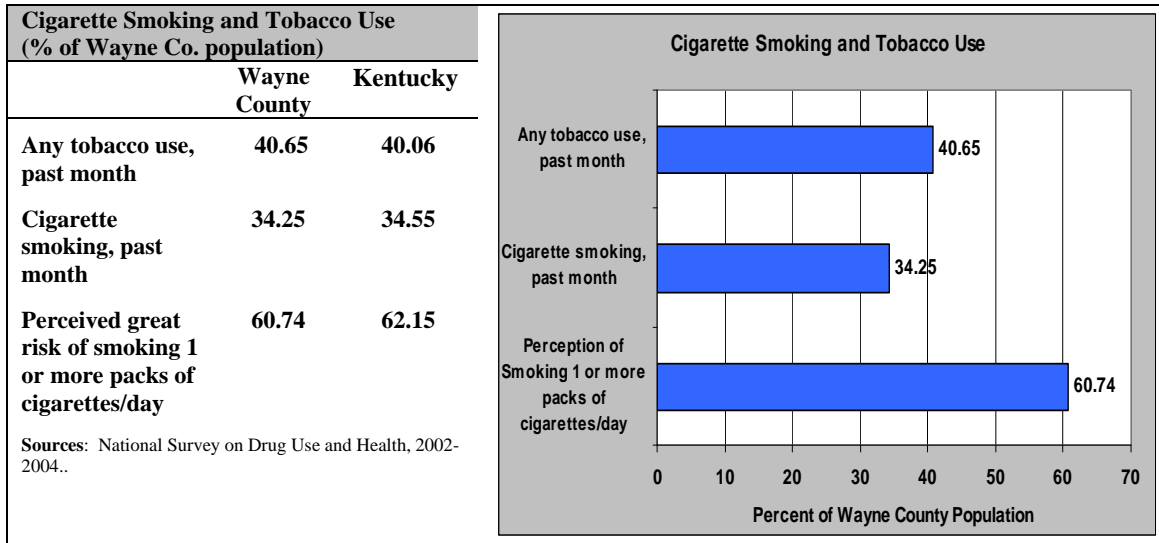


4. Institutional Characteristics

Institutional Characteristics	Wayne County	Kentucky	
% In correctional/juvenile institutions	0.141	0.798	
% In mental health hospitals/institutions	0.0251	0.0485	
Proportion of mental health professional shortage area	None	45.1%	
	Whole	54.9%	
Proportion of primary care health professional shortage area	Whole	None	25.5%
		Partial	3.9%
	Whole	70.6%	

Source: Area Resource File, 2004.

5. Cigarette Smoking and Tobacco Use



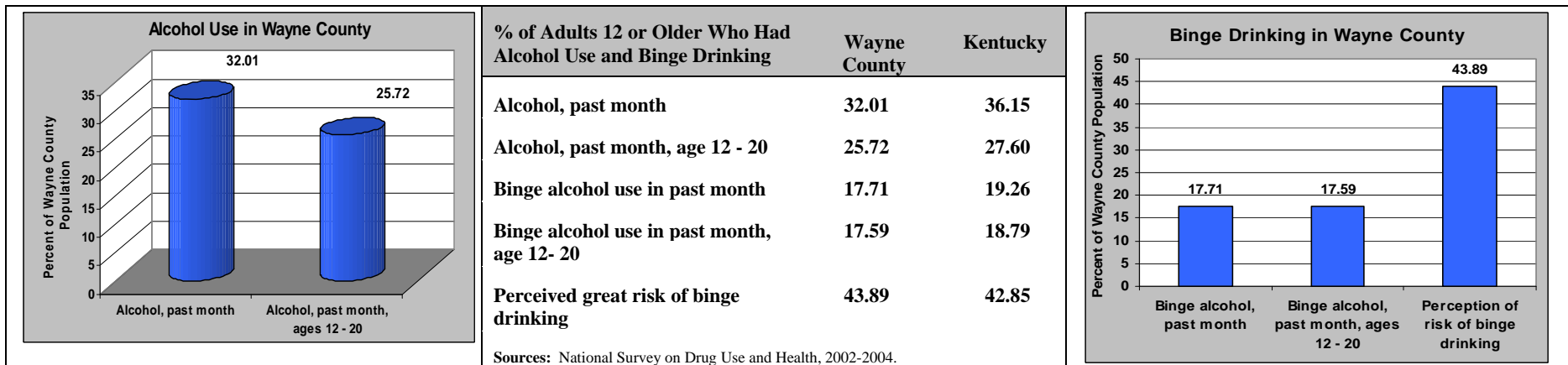
7. Marijuana and Other Illicit Drug

% of Adults Age 12 or Older Who Used Illicit Drug Use		
	Wayne County	Kentucky
Any illicit drug use in the past month	6.43	8.22
Any illicit drug use other than marijuana in the past month	4.01	4.57
Cocaine use in the past year	2.19	2.49

% of Adults Age 12 or Older Who Used Marijuana		
	Wayne County	Kentucky
Marijuana use, past month	4.40	5.56
Marijuana use, past year	7.42	9.61
Annual rate of first use of marijuana	1.42	1.52

Sources: National Survey on Drug Use and Health, 2002-2004..

6. Alcohol Use and Binge Drinking



References

- ¹ Economic Overview. 2008. Appalachian Regional Commission. <http://www.arc.gov/index.do?nodeId=26>.
- ² Halverson JA, Byrd RC, Ma L, Harner EJ. November 2004. An Analysis of Disparities in Health Status and Access to Health Care in the Appalachian Region. Appalachian Regional Commission. www.arc.gov.
- ³ Maine Rural Health Research Center. June 2007. Substance Abuse Among Rural Youth: A Little Meth and a Lot of Booze. Research and Policy Brief. University of Southern Maine, Muskie School of Public Health. Supported by the federal Office of Rural Health Policy, Health Resources and Services Administration, U.S. Department of Health and Human Services, CA#U1CRH03716.
- ⁴ Robertson EB, Sloboda Z, Boyd GM, Beatty L and Kozel NJ, eds. 1997. Rural Substance Abuse: State of Knowledge and Issues. *NIDA Research Monograph* 168.
- ⁵ Office of Applied Studies. 2006. Substance Abuse and Mental Health Services Administration. Methamphetamine/Amphetamine Treatment Admissions in Urban and Rural Areas: 2004. *The DASIS Report*, Issue 27.
- ⁶ Van Hook MP and Ford ME. 1998. The linkage model for delivering mental health services in rural communities: benefits and challenges. *Health & Social Work* 23(1), 53-60.
- ⁷ Warner, BD and Leukefeld CG. 2001. Rural-Urban Differences in Substance Use and Treatment Utilization among Prisoners. *American Journal of Drug and Alcohol Abuse* 27(2), 265-280.
- ⁸ Logan TK, Schenck JE, Leukefeld CG, Meyers J and Allen S. 1999. Rural Attitudes, Opinions and Drug Use. *Substance Abuse and Misuse* 34(4&5), 545-565.
- ⁹ Keefe S. (2005). *Appalachian Cultural Competency: A Guide For Medical, Mental Health, And Social Service Professionals*. Knoxville: University of Tennessee Press, 2005.
- ¹⁰ Cicero TJ, Inciardi JA and Muñoz A. 2005. Trends in Abuse of OxyContin® and Other Opioid Analgesics in the United States: 2002-2004. *The Journal of Pain* 6(10), 662-672.
- ¹¹ Van Hook MP and Ford ME. 1998. The linkage model for delivering mental health services in rural communities: benefits and challenges. *Health & Social Work* 23(1), 53-60.
- ¹² Hartley D, Bird DC, and Dempsey P. Rural Mental Health and Substance Abuse. *Rural Health in the United States*. New York: Oxford University Press, 1999.
- ¹³ Hartley D, Bird DC, and Dempsey P. Rural Mental Health and Substance Abuse. *Rural Health in the United States*. New York: Oxford University Press, 1999.
- ¹⁴ County Economic Status and Distressed Areas in the Appalachian Region, Fiscal Year 2007. Appalachian Regional Commission, September 2006. <http://gold.ky.gov/NR/rdonlyres/A86FCF1F-6FDE-4B45-AE77-AA46451F50A6/0/ARCCountyEconomicStatusDistAreasFY2007Kentucky.pdf>.
- ¹⁵ U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration. Office of Applied Studies. National Survey on Drug Use and Health. Sample Design. <https://oas.samhsa.gov/nsduh>.
- ¹⁶ U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration. National Survey on Drug Use and Health. <https://nsduhweb.rti.org>.
- ¹⁷ U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration. Office of Applied Studies. Statistical Methods and Limitations of the Data. <http://www.oas.samhsa.gov/nhsda/2k2nsduh/Results/appB.htm>.
- ¹⁸ Whitbeck K, Johnson D, HA Cauce. 1998. Mental disorder and comorbidity among runaway and homeless adolescents. *Journal of Adolescent Health* (35)2: 132-140.
- ¹⁹ Bailey SL, Camlin CS, Ennett ST. 1998. Substance use and risky behavior among homeless and runaway youth. *Journal of Adolescent Health* 23:378-388.
- ²⁰ U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration. Office of Applied Studies. Statistical Methods and Limitations of the Data. <http://www.oas.samhsa.gov/nhsda/2k2nsduh/Results/appB.htm>.
- ²¹ Gfroerer J, Epstein J, Wright D. August 2004. Estimating substance abuse treatment need by state. Editorial in *Addiction* 99(8):938-939.
- ²² Office of Applied Studies. 2006. *Substate estimates from the 2002-2004 National Surveys on Drug Use and Health*. Rockville, MD: Substance Abuse and Mental Health Services Administration.
- ²³ Office of Applied Studies. 2006. *Substate estimates from the 2002-2004 National Surveys on Drug Use and Health*. Rockville, MD: Substance Abuse and Mental Health Services Administration.
- ²⁴ Marker D. 2001. Producing small area estimates from national surveys: methods for minimizing use of indirect estimators. *Survey Methodology*, 27, 2, 183-188.

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- ²⁵ U.S. Dept. of Health and Human Services, Substance Abuse and Mental Health Services Administration, Office of Applied Studies. TREATMENT EPISODE DATA SET (TEDS), 2004, Chapter 1. Prepared by Synectics for Management Decisions, Incorporated. ICPSR04626-v1. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [producer and distributor], 2007-02-22.
<http://www.oas.samhsa.gov/TEDSdischarges/2k4/TEDSD2k4Chp1.htm#limit>
- ²⁶ U.S. Dept. of Health and Human Services, Substance Abuse and Mental Health Services Administration, Office of Applied Studies. <http://www.oas.samhsa.gov/dasis.htm>.
- ²⁷ U.S. Dept. of Health and Human Services, Substance Abuse and Mental Health Services Administration, Office of Applied Studies. <http://www.oas.samhsa.gov/dasis.htm>.
- ²⁸ Treatment Episode Data Set (TEDS), 2005. Substance Abuse and Mental Health Data Archive. Study No. 4626. University of Michigan, Inter-University Consortium for Political and Social Research
<http://www.icpsr.umich.edu/cocoon/SAMHDA/STUDY/04626.xml#methodology>.
- ²⁹ Birnbaum HG, Reynolds J, Jetley G, Zhang M, Vallow S. Sept. 2004. "Costs of prescription opioid analgesic abuse in the United States in 2001: A societal perspective." *Annals of Epidemiology* 14(8):616 – 617.
- ³⁰ "Increasing morbidity and mortality associated with abuse of methamphetamine--United States, 1991-1994." Dec. 1995. *Morbidity and Mortality Weekly Report* 44 (47):882 - 886.
- ³¹ Hopper CJ, Mikulich SK, Crowley TJ. Oct. 2000. "Heroin use among adolescents in treatment for substance use disorders." *Journal of the American Academy of Child and Adolescent Psychiatry* 39 (10):1316 - 1323.
- ³² Office of Applied Studies, "Heroin--Changes In How It Is Used: 1995-2005." *The DASIS Report*. Rockville, MD: Substance Abuse and Mental Health Services Administration, April 26, 2007.
- ³³ Mark TL, Woody GE, Juday T, Kleber HD. 2001. "The economic costs of heroin addiction in the United States." *Drug and Alcohol Dependence* 61 (2):195 - 206.
- ³⁴ Colliver JD, Kroutil LA, Dai L, Gfroerer JC. Sept. 2006. "Misuse of Prescription Drugs: Data from the 2002, 2003, and 2004 National Surveys on Drug Use and Health." *Analytic Series A-28*. SMA 06-4192, Rockville, MD: United States Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, Office of Applied Studies.
- ³⁵ Howell EM, Heiser N, Cherlow A, Mason M, Ewell D, Rotwein. Winter 2000. "Identifying pregnant substance abusers and studying their treatment using birth certificates, Medicaid claims, and state substance abuse treatment data." *Journal of Drug Issues* 30 (1):205 - 224.
- ³⁶ Office of Applied Studies. Jan. 7, 2005. "Smoked Methamphetamine/Amphetamines: 1992-2002." *The DASIS Report*. Rockville, MD: Substance Abuse and Mental Health Services Administration.
- ³⁷ Office of Applied Studies. Dec 3, 2004. "Characteristics of Primary Heroin Injection and Inhalation Admissions: 2002." *The DASIS Report*. Rockville, MD: United States Department of Health and Human Services, Substance Abuse and Mental Health Services Administration.
- ³⁸ Office of Applied Studies. May 7, 2004. "Characteristics of Primary Phencyclidine (PCP) Admissions: 2001." *The DASIS Report*. Rockville, MD: Substance Abuse and Mental Health Services Administration, Office of Applied Studies.
- ³⁹ Dennis ML, Babor T, Roebuck, C.; Donaldson, J., "Changing the focus: The case for recognizing and treating marijuana use disorders." *Addiction*. Forthcoming.
- ⁴⁰ Office of National Drug Control Policy. Nov 2006. "Inventory of State Substance Abuse Preventions and Treatment Activities and Expenditures." NCJ 216918, Washington, DC: Executive Office of the President.
- ⁴¹ National Institute of Drug Abuse. April 2005. "Treatment Trends." *NIDA Infofacts*. Bethesda, MD: United States Department of Health and Human Services, National Institutes of Health, National Institute of Drug Abuse.
- ⁴² Stoil MJ. 1999. "Treatment policy... What treatment policy?." *Behavioral Health Management* 19(5):6 - 7.
- ⁴³ Office of Applied Studies. Sept. 30, 2003. "Treatment Admissions in Rural Areas: 2003." *The DASIS Report*. Rockville, MD: Substance Abuse and Mental Health Services Administration, Office of Applied Studies.
- ⁴⁴ Substance Abuse and Mental Health Services Administration, Office of Applied Studies. May 9, 2003. "Analyzing Geographic Areas Within TEDS ." *The DASIS Report*. Arlington, VA: Synectics for Management Decisions, Inc.
- ⁴⁵ Office of Applied Studies. Aug 6, 2004. "Treatment Admissions in Urban and Rural Areas Involving Abuse of Narcotic Painkillers: 2002 Update." *The DASIS Report*. Rockville, MD: Substance Abuse and Mental Health Services Administration.
- ⁴⁶ Foster SE. Jan 2000. "No place to hide: Substance abuse in mid-size cities and rural America." New York: National Center on Addiction and Substance Abuse (CASA) at Columbia University.
- ⁴⁷ U.S. Dept. of Health and Human Services, Substance Abuse and Mental Health Services Administration, Office of Applied Studies. TREATMENT EPISODE DATA SET (TEDS), 2005 [Computer file]. Prepared by Synectics for Management Decisions, Incorporated. ICPSR04626-v1. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [producer and distributor], 2007-02-22.

-
- ⁴⁸ U.S. Dept. of Health and Human Services, Substance Abuse and Mental Health Services Administration, Office of Applied Studies. <http://www.dasis.samhsa.gov/webt/information.htm>.
- ⁴⁹ U.S. Dept. of Health and Human Services, Agency for Healthcare Research and Quality. Data Sources: Substance Abuse and Mental Health Services Administration. http://www.ahrq.gov/qual/nhdr06/datasources/Substance_Abuse_and_Mental_Health_Services_Administration.htm
- ⁵⁰ U.S. Dept. of Health and Human Services, Substance Abuse and Mental Health Services Administration, Office of Applied Studies. <http://www.dasis.samhsa.gov/webt/information.htm>.
- ⁵¹ U.S. Dept. of Health and Human Services, Substance Abuse and Mental Health Services Administration, Office of Applied Studies. <http://www.oas.samhsa.gov/2k3/disclosureTX/disclosureTX.cfm>.
- ⁵² U.S. Dept. of Health and Human Services, Substance Abuse and Mental Health Services Administration, Office of Applied Studies. TREATMENT EPISODE DATA SET (TEDS), 2005 [Computer file]. Prepared by Synectics for Management Decisions, Incorporated. ICPSR04626-v1. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [producer and distributor], 2007-02-22.
- ⁵³ Gerstein D. R. and Zhang Z. 2001. *Treatment Outcomes for Different Types of Substance Abuse*. Caliber/NED Contract no. 270-97-7016. Rockville, MD: Substance Abuse and Mental Health Services Administration, Center for Substance Abuse Treatment, Department of Health and Human Services.
- ⁵⁴ Bass F. Pain medicine use has nearly doubled. *The Washington Post*. August 20, 2007. Available online at <http://www.washingtonpost.com/wp-dyn/content/article/2007/08/20/AR2007082000147.html>. Accessed April 4, 2008.
- ⁵⁵ Hammack L. Overdose deaths rise sharply. *The Roanoke Times*. September 16, 2007. Available online at <http://www.roanoke.com/news/roanoke/wb/xp-132191>. Accessed April 4, 2008.
- ⁵⁶ Miroff N. A dark addiction. *The Washington Post*. January 14, 2008. Available online at <http://www.washingtonpost.com/wp-dyn/content/story/2008/01/12/ST2008011201184.html>. Accessed April 4, 2008.
- ⁵⁷ Miroff N. A dark addiction. *The Washington Post*. January 14, 2008. Available online at <http://www.washingtonpost.com/wp-dyn/content/story/2008/01/12/ST2008011201184.html>. Accessed April 4, 2008.
- ⁵⁸ Anglin, M.D., Hser, Y.-I. & Grella, C.E. 1997. Drug addiction and treatment careers among clients in DATOS. *Psychology of Addictive Behaviors*, 11, 308-323.
- ⁵⁹ Hser, Y.-I., Grella, C. E., Hsieh, S.-C., Anglin, M.D. & Brown, B.S. 1999. Prior treatment experience related to process and outcomes in DATOS. *Drug and Alcohol Dependence*, 57, 137-150.
- ⁶⁰ Zhang, Z., Friedmann, P.D. & Gerstein, D.R. 2003. Does retention matter? Treatment duration and improvement in drug use. *Addiction*, 98, 673-684.
- ⁶¹ Andersen, R. & Newman, J. F. 1973. Societal and individual determinants of medical care utilization in the United States. *Milbank Memorial Fund Quarterly: Health and Society*, 51(1), 95-124.
- ⁶² "Care of Adults With Mental Health and Substance Abuse Disorders in U.S. Community Hospitals, 2004." HCUP Fact Book No. 10: (1). <http://www.ahrq.gov/data/hcup/factbk10/factbk10a.htm#ExecSumm>.
- ⁶³ Overview of HCUP. Agency for Healthcare Research and Quality, Rockville, MD. <http://www.hcup-us.ahrq.gov/overview.jsp>.
- ⁶⁴ HCUP Fact Book No. 10: Care of Adults With Mental Health and Substance Abuse Disorders in U.S. Community Hospitals, 2004. <http://www.ahrq.gov/data/hcup/factbk10/factbk10d.htm#Source>.
- ⁶⁵ HCUP: The Design of the Nationwide Inpatient Sample, 2004. Agency for Healthcare Research and Quality. August 8, 2006. Accessed September 6, 2007. http://www.hcup-us.ahrq.gov/db/nation/nis/reports/NIS_2004_Design_Report.pdf.
- ⁶⁶ HCUP: The Design of the Nationwide Inpatient Sample, 2004. Agency for Healthcare Research and Quality. August 8, 2006. Accessed September 6, 2007. http://www.hcup-us.ahrq.gov/db/nation/nis/reports/NIS_2004_Design_Report.pdf.
- ⁶⁷ HCUP NIS Database Documentation. Healthcare Cost and Utilization Project (HCUP). August 2007. Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/db/nation/nis/nisdbdocumentation.jsp.
- ⁶⁸ CA Russo, RM Andrews, and R M Coffey. July 2006. "Racial and Ethnic Disparities in Potentially Preventable Hospitalizations." *HCUP Statistical Brief* no. 12. <http://www.hcup-us.ahrq.gov/reports/statbriefs/sb10.pdf>.
- ⁶⁹ HJ Chen. 2005. "Mental Illness and Principal Diagnoses Among Asian American and Pacific Islander Users of Emergency Services." *Issues in Mental Health Nursing* 26:1061-1079.
- ⁷⁰ TL Mark, JD Dilonardo, M Chalk, RM Coffey. 2002. "Trends in inpatient detoxification services, 1992-1997." *Journal of Substance Abuse Treatment* 23(4):253-260.
- ⁷¹ Russo CA and Elixhauser A. Hospitalizations for Alcohol Abuse Disorders, 2003. HCUP Statistical Brief # 4. May 2006. Agency for Healthcare Research and Quality. Rockville, MD. <http://www.hcup-us.ahrq.gov/reports/statbriefs/sb4.pdf>.

-
- ⁷² CA Russo, RM Andrews, and R M Coffey. July 2006. "Racial and Ethnic Disparities in Potentially Preventable Hospitalizations." *HCUP Statistical Brief* no. 12. Available at <http://www.hcup-us.ahrq.gov/reports/statbriefs/sb10.pdf>.
- ⁷³ Elixhauser A, Weinick RM, Betancourt JR, Andrews RM. 2002. "Differences between Hispanics and Non-Hispanic Whites in Use of Hospital Procedures for Cerebrovascular Disease." *Ethnicity and Disease*. 12(1):29–37.
- ⁷⁴ Xiao H, Campbell ES, Song KS. 2002. "A Trend Analysis of Organ Transplantation Among Ethnic Groups." *Journal of the National Medical Association* 94(1):15–20.
- ⁷⁵ Fischer TK, Viboud C, Parashar U, Malek M, Steiner C, Glass R, and Simonsen L. 2007. "Hospitalizations and Deaths from Diarrhea and Rotavirus among Children <5 Years of Age in the United States, 1993–2003." *The Journal of Infectious Diseases* 195: 1117–1125.
- ⁷⁶ Hospitalizations for Ambulatory Care–Sensitive Conditions. The Commonwealth Fund. December 2006. http://www.commonwealthfund.org/snapshotscharts/snapshotscharts_show.htm?doc_id=375794
- ⁷⁷ Kuo C, Jamieson DJ, McPheeters ML, Meikle SF, and Posner SF. February 2007. "Injury hospitalizations of pregnant women in the United States, 2002." *American Journal of Obstetrics & Gynecology* 196(2):161e1-161e6.
- ⁷⁸ Janjua N, Nasar A, Lynch JK, Qureshi AI. June 2007. "Thrombolysis for Ischemic Stroke in Children: Data From the Nationwide Inpatient Sample." *Stroke* 38(6):1850-1854.
- ⁷⁹ VY Dombrovskiy. November 2005. "Facing the challenge: Decreasing case fatality rates in severe sepsis despite increasing hospitalizations." *Critical Care Medicine* 33(11):2555-2562.
- ⁸⁰ SS Saleh and EL Hannan. January 2004. "Carotid endarterectomy utilization and mortality in 10 states." *American Journal of Surgery* 187(1):14-20.
- ⁸¹ HCUP NIS Database Documentation. Healthcare Cost and Utilization Project (HCUP). Sources of NIS Data and State Specific Restrictions. August 2007
Agency for Healthcare Research and Quality, Rockville, MD. http://www.hcup-us.ahrq.gov/db/nation/nis/nis_2004_stspecific_restr.jsp
- ⁸² HCUP NIS Database Documentation. Healthcare Cost and Utilization Project (HCUP). Sources of NIS Data and State Specific Restrictions. August 2007
- ⁸³ Uniform Facility Data Set Survey. 1999. Available at: http://www.dasis.samhsa.gov/99ufds/ch_1_0.htm
- ⁸⁴ Chapter 1: Description of the National Survey of Substance Abuse Treatment Services (N-SSATS). Available at <http://www.dasis.samhsa.gov/05nssats/NSSATS2k5Chp1.htm>.
- ⁸⁵ U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, Office of Applied Studies. NATIONAL SURVEY OF SUBSTANCE ABUSE TREATMENT SERVICES (N-SSATS), 2004: [UNITED STATES] [Computer file]. ICPSR04256-v2. Arlington, VA: Synectics for Management Decisions, Inc. [producer], 2004. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor], 2006-08-01.
- ⁸⁶ Facilities Offering Special Treatment Programs or Groups, 2005. Drug and Alcohol Services Information System (DASIS). June 14, 2007. <http://www.oas.samhsa.gov/2k7/ServicesTX/servicesTX.htm>
- ⁸⁷ U.S. Dept. of Health and Human Services, Substance Abuse and Mental Health Services Administration, Office of Applied Studies. NATIONAL SURVEY OF SUBSTANCE ABUSE TREATMENT SERVICES (N-SSATS), 2005: [UNITED STATES] [Computer file]. ICPSR04469-v1. Arlington, VA: Synectics for Management Decisions, Inc. [producer], 2005. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor], 2006-10-24.
- ⁸⁸ Office of Applied Studies, "National Survey of Substance Abuse Treatment Services (N-SSATS): 2005. Data on Substance Abuse Treatment Facilities." *Data on Substance Abuse Treatment Facilities, DASIS Series: S-34*. (SMA) 06-4206, Rockville, MD: Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, Office of Applied Studies, Jul 2006. <http://www.dasis.samhsa.gov/05nssats/NSSATS2k5TOC.htm>.
- ⁸⁹ Office of Applied Studies, "National Survey of Substance Abuse Treatment Services (N-SSATS): 2005. Data on Substance Abuse Treatment Facilities." *Data on Substance Abuse Treatment Facilities, DASIS Series: S-34*. (SMA) 06-4206, Rockville, MD: Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, Office of Applied Studies, Jul 2006. <http://www.dasis.samhsa.gov/05nssats/NSSATS2k5TOC.htm>.
- ⁹⁰ Office of Applied Studies, "National Survey of Substance Abuse Treatment Services (N-SSATS): 2005. Data on Substance Abuse Treatment Facilities." *Data on Substance Abuse Treatment Facilities, DASIS Series: S-34*. (SMA) 06-4206, Rockville, MD: Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, Office of Applied Studies, Jul 2006. <http://www.dasis.samhsa.gov/05nssats/NSSATS2k5TOC.htm>.
- ⁹¹ Office of Applied Studies, "National Survey of Substance Abuse Treatment Services (N-SSATS): 2005. Data on Substance Abuse Treatment Facilities." *Data on Substance Abuse Treatment Facilities, DASIS Series: S-34*. (SMA) 06-

-
- 4206, Rockville, MD: Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, Office of Applied Studies, Jul 2006. <http://www.dasis.samhsa.gov/05nssats/NSSATS2k5TOC.htm>.
- ⁹² Office of Applied Studies, "National Survey of Substance Abuse Treatment Services (N-SSATS): 2005. Data on Substance Abuse Treatment Facilities." *Data on Substance Abuse Treatment Facilities, DASIS Series: S-34*. (SMA) 06-4206, Rockville, MD: Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, Office of Applied Studies, Jul 2006. <http://www.dasis.samhsa.gov/05nssats/NSSATS2k5TOC.htm>.
- ⁹³ Office of Applied Studies, "National Survey of Substance Abuse Treatment Services." *N-SSATS Profile - United States 2005*. Rockville, MD: United States Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, 2005. http://www.dasis.samhsa.gov/webt/state_data/US05.pdf.
- ⁹⁴ U.S. Department of Health and Human Services, Substance Abuse & Mental Health Services Administration. Substance Abuse Treatment Locator. <http://findtreatment.samhsa.gov/>
- ⁹⁵ Chriqui JF, Terry-McElrath Y, McBride DC, Eidson SS, VanderWaal CJ. July 2007. Does State Certification or Licensure Influence Outpatient Substance Abuse Treatment Program Practices? *Journal of Behavioral Health Services & Research* 34(3):309-328.
- ⁹⁶ Office of Applied Studies, "Facilities Offering Special Treatment Programs or Groups: 2005." *The DASIS Report*. Rockville, MD: Substance Abuse and Mental Health Services Administration, Jun 14, 2007. <http://www.icpsr.umich.edu/cgi/CITATIONS/search?&study=4469&method=study&path=SAMHDA>.
- ⁹⁷ Office of Applied Studies, "Facilities Offering Special Programs or Groups for Women: 2005." *The DASIS Report*. 35, Rockville, MD: United States Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, 2005. <http://www.oas.samhsa.gov/2k6/womenTx/womenTX.cfm>.
- ⁹⁸ Mark T, Song X, Vandivort R, Duffy S, Butler J, Coffey R, Schabert V. Characterizing substance abuse programs that treat adolescents. *Journal of Substance Abuse Treatment* 31(1): 59-65.
- ⁹⁹ Olmstead T and Sindelar J. To what extent are key services offered in treatment programs for special populations? *Journal of Substance Abuse Treatment* 27(1): 9-15.
- ¹⁰⁰ Mojtabai R. Which Substance Abuse Treatment Facilities Offer Dual Diagnosis Programs? August 2004. *American Journal of Drug & Alcohol Abuse* 30(3):525-536.
- ¹⁰¹ Montoya ID. Differences in Drug Treatment Services Based on Profit Status. Sept. 2006. *Journal of Psychoactive Drugs*, 38(3): 219-228.
- ¹⁰² Office of Applied Studies, "Facilities Operating Opioid Treatment Programs: 2005." *The DASIS Report*. Rockville, MD: United States Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, 2006. <http://www.icpsr.umich.edu/cgi/CITATIONS/search?&study=4469&method=study&path=SAMHDA>.
- ¹⁰³ Heinrich CJ and Hill CJ. The Role of State Policies in the Adoption of Naltrexone for Substance Abuse Treatment. Presentation to the AcademyHealth Annual Research Meeting, Orlando FL. June 4, 2007. <http://209.85.165.104/search?q=cache:HVeZC8E1NwoJ:www.academyhealth.org/2007/monday/oceanic1/hillc.ppt+N-SSATS&hl=en&ct=clnk&cd=53&gl=us>.
- ¹⁰⁴ Chapter 1: Description of the National Survey of Substance Abuse Treatment Services (N-SSATS). Available at <http://www.dasis.samhsa.gov/05nssats/NSSATS2k5Chp1.htm>.
- ¹⁰⁵ 1999 Uniform Facility Data Set (UFDS) Survey. Rockville, MD: Department of Health and Human Services, Substance Abuse and Mental Health Services Administration. http://www.dasis.samhsa.gov/99ufds/ch_4_0.htm.
- ¹⁰⁶ Berge, M. and Thompson, E. (2001) A Study on the Current Economic Impacts of the Appalachian Coal Industry and Its Future in the Region. Washington, D.C.: Appalachian Regional Commission.
- ¹⁰⁷ Miroff, Nick. 2008. A dark addiction: Miners Caught in Western VA's Spiraling Rates of Painkiller Abuse. *Washington Post*, January 13, 2008 A1, A9-A11.
- ¹⁰⁸ Zhang, Z., Huang, L.X., & Brittingham, A.M. 1999. *Worker Drug Use and Workplace Policies and Programs: Results from the 1994 and 1997 NHSDA*, (DHHS Publication No. SMA 99-3352, Analytic Series, A-11). Rockville, MD: Substance Abuse and Mental Health Services Administration, Office of Applied Studies.
- ¹⁰⁹ Zhang, Z. & Snizek, W.E. 2003. Occupation, job characteristics, and the use of alcohol and other drugs. *Social Behavior and Personality* 31:395-412.
- ¹¹⁰ Larson, S. L., Eyerman, J., Foster, M. S., & Gfroerer, J. C. 2007. *Worker Substance Use and Workplace Policies and Programs* (DHHS Publication No. SMA 07-4273, Analytic Series A-29). Rockville, MD: Substance Abuse and Mental Health Services Administration, Office of Applied Studies.
- ¹¹¹ Miroff N. A dark addiction. *The Washington Post*. January 14, 2008. Available online at <http://www.washingtonpost.com/wp-dyn/content/story/2008/01/12/ST2008011201184.html>. Accessed April 4, 2008.
- ¹¹² U.S. Geological Survey (2008) *National Coal Resources Data System*. <http://energy.er.usgs.gov/products/databases/CoalQual/index.htm>.

¹¹³ Berge, M. and Thompson, E. 2001. A Study on the Current Economic Impacts of the Appalachian Coal Industry and Its Future in the Region. Washington, D.C.: Appalachian Regional Commission.

¹¹⁴ Health Professional Shortage Area. Primary Medical Care Designation Area. Health Services and Resources Administration. U.S. Department of Health and Human Services. <http://bhpr.hrsa.gov/Shortage/hpsacritpcm.htm>

¹¹⁵ Health Professional Shortage Area. Primary Medical Care Designation Area. Health Services and Resources Administration. U.S. Department of Health and Human Services. <http://bhpr.hrsa.gov/Shortage/hpsacritmental.htm>

¹¹⁶ As there are only three counties in Maryland and six counties in South Carolina in the Appalachian region and also due to the lack of measurement variability, the Maryland socio-demographic distance matrix, the Maryland substance and mental health distance matrix, and the South Carolina substance abuse and mental health matrix were not calculated.