

10-5-2007

Distribution of Substance Abuse Treatment Facilities Across the Rural-Urban Continuum [Working Paper]

John A. Gale MS

University of Southern Maine, Maine Rural Health Research Center

Jennifer D. Lenardson MHS

University of Southern Maine, Maine Rural Health Research Center

Follow this and additional works at: https://digitalcommons.usm.maine.edu/behavioral_health

Recommended Citation

Lenardson, J., & Gale, J. A. (2007). Distribution of substance abuse treatment facilities across the rural-urban continuum. (Working Paper #35). Portland, ME: University of Southern Maine, Muskie School of Public Service, Maine Rural Health Research Center.

This Working Paper is brought to you for free and open access by the Maine Rural Health Research Center (MRHRC) at USM Digital Commons. It has been accepted for inclusion in Mental Health / Substance Use Disorders by an authorized administrator of USM Digital Commons. For more information, please contact jessica.c.hovey@maine.edu.

**Distribution of Substance Abuse
Treatment Facilities Across the
Rural—Urban Continuum**

October 2007



UNIVERSITY OF
SOUTHERN MAINE

**Distribution of Substance Abuse Treatment
Facilities Across the Rural – Urban Continuum**

October 2007

Maine Rural Health Research Center

Working Paper #35

Jennifer D. Lenardson, M.H.S.
John A. Gale, M.S.

Institute for Health Policy
Muskie School of Public Service
University of Southern Maine

This study was funded under a Cooperative Agreement with the federal Office of Rural Health Policy, Health Resources and Services Administration, DHHS (CA#U1CRH03716). The conclusions and opinions expressed in the paper are the authors' and no endorsement by the University of Southern Maine or the sponsor is intended or should be inferred.

TABLE OF CONTENTS

EXECUTIVE SUMMARY	i
Introduction.....	i
Methods.....	i
Findings.....	i
Discussion and Policy Implications	i
Conclusion	ii
INTRODUCTION	1
METHODS	1
FINDINGS	2
Overall Distribution of Substance Abuse Treatment Facilities	2
Primary Focus	3
Core Services Offered.....	5
Intensity of Services.....	5
Forms of Payment Accepted.....	7
DISCUSSION	8
CONCLUSION.....	9

EXECUTIVE SUMMARY

Introduction

Though historically substance abuse prevalence has been lower in rural areas compared to urban, recent work suggests growing substance abuse among various rural populations, particularly among rural youth. Considering these rural use trends together with the documented scarcity of rural health resources, this study examines the distribution of substance abuse treatment services across the continuum of rural and urban counties, identifying the type and intensity of services provided.

Methods

We examined the 2004 National Survey of Substance Abuse Treatment Services for variables of interest, including primary focus of treatment services, core services, intensity of services, opioid treatment programs, and accepted forms of payment. To determine degree of rurality, we identified counties based on their metro status, population size, and adjacency to a metro area. We compared our variables of interest to the proportion of treatment facilities by degree of rurality.

Findings

Only 8.9% of all treatment facilities are located in a rural non-adjacent county. Most facilities (91.1%) were located in an urban county or adjacent rural county. Comparing facilities and treatment beds to population reveals that rural areas are home to more treatment facilities; however, within these rural facilities, far fewer beds are available. Urban counties had a larger proportion of facilities with a primary focus on substance abuse, while rural counties had a greater proportion of facilities with a primary focus on combined mental health and substance abuse. Across both urban and rural counties, nearly all facilities provide intake, assessment, referral and treatment; however, few facilities in rural non-adjacent counties provide detoxification or transitional housing services. Few rural facilities offer intensive outpatient care and nearly all opioid treatment programs are located in urban areas. Rural facilities accept a wide range of third party payers and offer a greater proportion of discounted or free care.

Discussion

Few substance abuse treatment facilities operate outside of urban and rural adjacent areas. The limited availability of intensive services in rural areas may negatively impact continued treatment and post-treatment abstinence and require patient travel to receive appropriate care. Additionally, the narrow range of services available in rural areas may preclude the individualized treatment approach and long-term follow-up recommended by professional organizations and other experts. We hypothesize that rural facilities' primary focus on combined mental health and substance abuse may confer an advantage in addressing the full complement of patient needs; however, this is an area for further study. The payment options available in rural treatment facilities appear to reflect higher rates of uninsurance and underinsurance in these locations.

Conclusion

Substance abuse treatment overall and intensive services in particular is limited in rural areas, especially among counties not adjacent to metro areas. Less populated areas with greater commuting distances contain a small proportion of facilities offering a range of core services and varying levels of outpatient care. This situation is particularly striking for opioid treatment programs, which are nearly absent in rural areas. The greater proportion of rural-based facilities accepting public payers and providing discounted care may indicate greater challenges to financing treatment in rural areas.

INTRODUCTION

Historically, rates of alcohol and illicit substance use are the same or slightly less among rural residents compared to urban residents.^{1,2,3} Recent studies, however, have found greater variation in use patterns among different subpopulations. For example, past year use of alcohol, oxycontin, and methamphetamine is higher among rural youth than urban.⁴ Similarly, rural children in eighth grade are more likely than their urban counterparts to use amphetamines, crack cocaine, cocaine, marijuana, and alcohol.² In general, alcohol problems are more prevalent than drug problems overall and this difference is more acute in rural areas.^{5,6}

Compared to urban areas, residents of rural areas experience a greater need for health services combined with a more limited capacity to meet those needs. Though they have higher rates of chronic conditions, rural residents have fewer overall physician visits and fewer specialist visits than urban residents.^{7,8} Rural residents face limited access to ambulatory,⁹ dental,¹⁰ trauma,¹¹ and specialty care⁷ compared to their urban counterparts. Rural residents are also more likely to delay getting needed care because of financial barriers, to experience a disruption in their usual provider, and to travel longer distances to medical appointments.^{7,12} These difficulties inherent in the delivery of general health care in rural areas also apply to substance abuse treatment. Because the treatment literature emphasizes finding an appropriate fit between patient needs and characteristics and the type of treatment,^{13,14,15} it is likely that rural areas lack the full continuum of services needed to assess, diagnose, treat, and follow substance abuse patients.

Growing substance use in rural areas and the documented scarcity of rural health resources leads us to question how substance abuse treatment services are distributed between rural and urban areas. Few studies have examined the presence and characteristics of substance abuse treatment in rural areas. We do know that treatment availability for co-occurring mental and substance use disorders varies by state¹⁶ and that rural substance abusers in specific geographic areas and among certain subpopulations (e.g., prisoners) are less likely to receive treatment compared to urban substance abusers.^{17,18} This study examines the distribution of substance abuse treatment services across the continuum of rural and urban counties, identifying the type and intensity of services provided.

METHODS

The National Survey of Substance Abuse Treatment Services (N-SSATS) is designed to collect data on the location, characteristics, and use of services from each substance abuse facility within the United States. These facilities include treatment centers licensed, certified or approved by the state substance abuse agency to provide treatment, programs operated by Federal agencies such as the Indian Health Service and Department of Veteran's Affairs, and facilities not certified by the state including hospital-based and private-for-profit facilities. Conducted annually by the federal Substance Abuse and Mental Health Services Administration, the N-SSATS is a point-prevalence survey, collecting data from substance abuse treatment facilities on a reference date of the last weekday in March. The N-SSATS questions all facilities contained within the Inventory of Substance Abuse Treatment Services, a continuously updated, comprehensive list of all known substance abuse treatment facilities in the U.S.

We examined data from the 2004 N-SSATS with a reference date of March 31st of that year. Variables of interest include primary focus of treatment services, core services, intensity of services, opioid treatment programs, and accepted forms of payment. We included only those treatment facilities located in the 50 states and the District of Columbia, excluding facilities located in U.S. outlying areas.

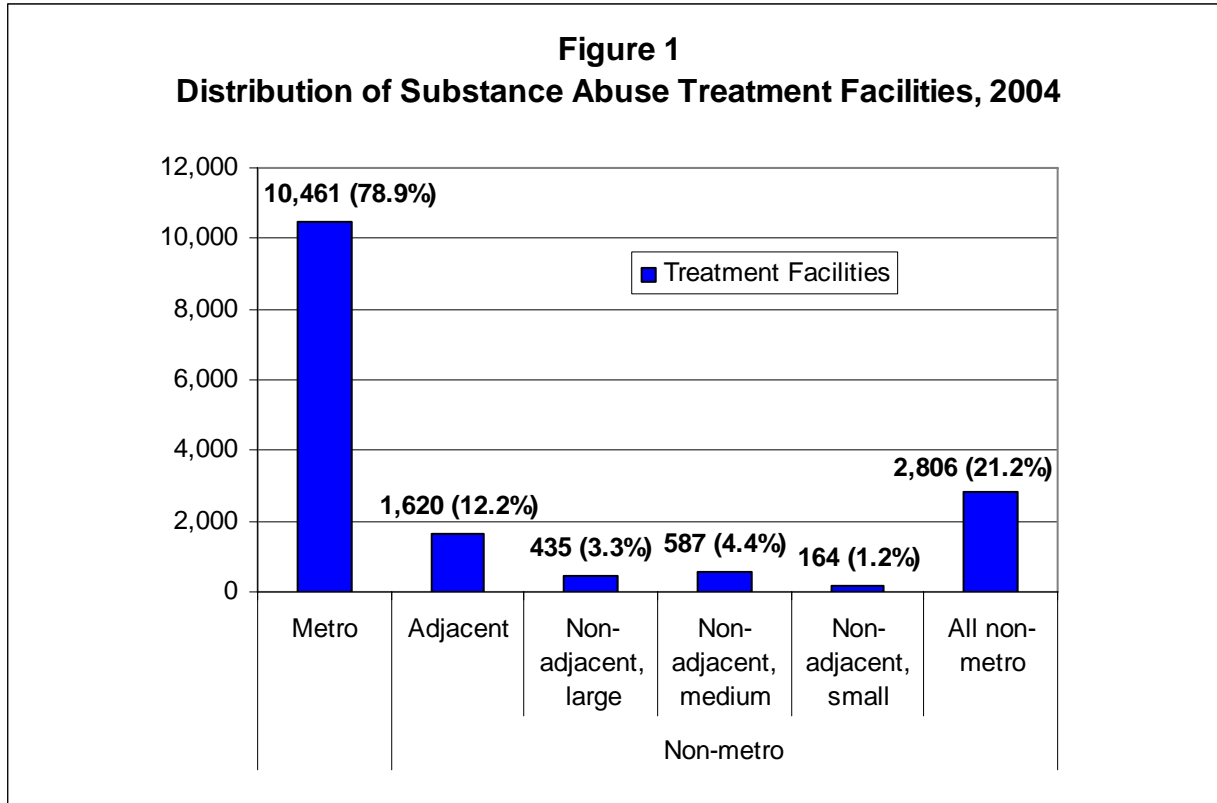
To determine degree of rurality, we linked the N-SSATS to the 2003 Rural-Urban Continuum Codes (RUCCs). Developed by the Department of Agriculture, the RUCCs distinguish counties based on their metropolitan (metro) and non-metropolitan (non-metro) status, population size, and adjacency and non-adjacency to a metro area. The RUCCs sub-divide counties into three metro and six non-metro groupings, resulting in a nine county classification.* For our analysis, we combined the three metro groupings into a single category. We then combined the six non-metro groupings into four categories: non-metro counties adjacent to metro counties; non-metropolitan, non-adjacent counties with a population of 20,000 or more (hereafter referred to as non-adjacent large); non-metro, non-adjacent counties with a population of 2,500 to 19,999 (hereafter referred to as non-adjacent medium); and non-metro, non-adjacent counties with a population of 2,500 or less (hereafter referred to as non-adjacent small). In particular, we wanted to isolate the rural adjacent areas from non-adjacent areas since the former have a higher degree of social and economic integration with adjoining urban areas.¹⁹ Evidence suggests that rural adjacent counties have lower levels of poverty, higher economic performance, and greater in-migration patterns than rural non-adjacent counties.^{20,21,22} We compared the distribution of our variables of interest to the overall distribution of facilities by degree of rurality. We also included data on the general distribution of facilities between metro and non-metro areas.

FINDINGS

Overall Distribution of Substance Abuse Treatment Facilities

Of the total 13,267 substance abuse treatment facilities across the U.S., the vast majority (nearly 80%) are located in metro counties (shown in Figure 1). When considering both metro counties and adjacent, non-metro counties, that figure rises to 91.1%. Only 8.9% of all treatment facilities (n=1,186) are located in a non-metro, non-adjacent county. Just over one percent (n =164) of all treatment facilities are located within non-metro counties with a population count below 2,500.

* The 2003 Rural-Urban Continuum Codes are based on the 2000 Census. The three metropolitan (metro) county groupings are (1) counties in metro areas of 1 million population or more; (2) counties in metro areas of 250,000 to 1 million population; and (3) counties in metro areas of fewer than 250,000 population. The six non-metropolitan (non-metro) groupings are (4) urban population of 20,000 or more, adjacent to a metro area; (5) urban population of 20,000 or more, not adjacent to a metro area; (6) urban population of 2,500 to 19,999, adjacent to a metro area; (7) urban population of 2,500 to 19,999, not adjacent to a metro area; (8) completely rural or less than 2,500 urban population, adjacent to a metro area; and (9) completely rural or less than 2,500 urban population, not adjacent to a metro area.



Though few treatment facilities are located in rural non-adjacent areas, comparing facilities to population reveals a greater supply of treatment facilities in rural areas, with 5.8 inpatient and outpatient facilities per 100,000 population in non-metro and 4.5 facilities in metro areas (shown in Figure 2). However, limited service availability remains apparent for rural residents. Fewer inpatient beds are located in non-metro areas (27.9 beds per 100,000 population) compared to metro areas (42.8 beds per 100,000 population).

Primary Focus

We examined whether substance abuse treatment facilities are primarily focused on substance abuse, mental health, a combination of the two, general health care, or some other focus. Though the majority of facilities focus on substance abuse treatment, more metro facilities (64.3%) compared to non-metro facilities (51.9%) have this as their primary objective (Table 1). As population size decreases among non-adjacent rural counties, a greater proportion of facilities offer a combined mental health and substance abuse focus. For example, about two-thirds of metro facilities have a substance abuse focus and one-fourth have a combined focus in contrast to non-adjacent small areas where one-third focus on substance abuse and over half have a combined focus. Given the difficulties in recruiting and retaining providers in rural locations,^{23,24,25} facilities may need a broader service base than substance abuse treatment alone in order to remain economically viable.²⁶

Figure 2
Supply of Substance Abuse Treatment Services, 2004

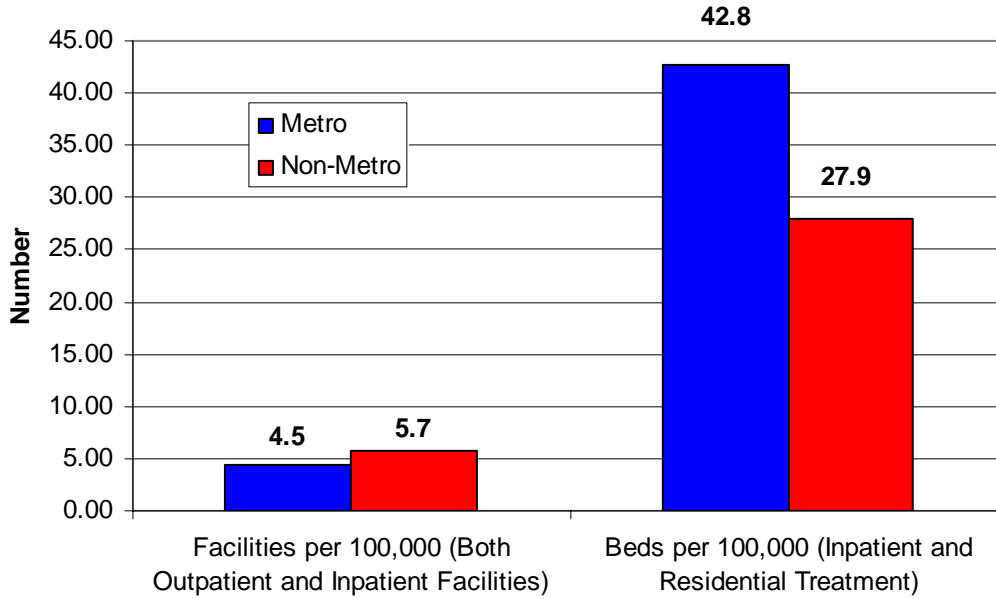


Table 1
Primary Focus of the Treatment Facility

Primary Focus	Metro Percent (N)	Non-Metro				All Non-Metro Categories Percent (N)
		Adjacent Percent (N)	Non-Adjacent Large Percent (N)	Non-Adjacent Medium Percent (N)	Non-Adjacent Small Percent (N)	
Substance Abuse Treatment	64.3% (6726)	52.5% (851)	63.7% (277)	46.2% (271)	35.4% (58)	51.9% (1457)
Mental Health Services	7.7 (802)	9.6 (156)	10.6 (46)	13.8 (81)	10.4 (17)	10.7 (300)
Mixed MH/SA Services	24.5 (2564)	35.1 (569)	22.1 (96)	36.8 (216)	53.7 (88)	34.5 (969)
General Health Care	1.6 (167)	1.5 (25)	2.3 (10)	2.7 (16)	0.0	1.8 (51)
Other	1.9 (202)	1.2 (19)	1.4 (6)	0.5 (3)	0.6 (1)	1.0 (29)
OVERALL	78.9% (10461)	12.2% (1620)	3.3% (435)	4.4% (587)	1.2% (164)	21.2 (2806)

Core Services Offered

Examining the core substance abuse services, nearly all facilities provide intake, assessment, referral, and substance abuse treatment across the rural-urban categories (Table 2). Few facilities overall provide detoxification and transitional housing and, as the location of the facility becomes more rural, a decreasing percentage of facilities provide these specialized services. The literature shows that it is not unusual for rural areas to lack detoxification services and that jail may function as an observational site for substance abuse and psychiatric symptoms.¹⁴ Interestingly, 14.4% of facilities in non-metro, non-adjacent large counties offer transitional housing, a slightly higher proportion than the 10.9% offering this service in metro facilities. Historically, transitional housing has been located in metro and adjacent areas; however, in more recent years, we speculate that urban areas have become more rigid in zoning ordinances regulating the development of these properties, pushing these services into non-adjacent areas. Additionally, shifts in local economics and housing preferences in large, non-adjacent rural areas may provide housing stock that suits transitional housing structures.

Table 2
Core Services Offered

Core Services	Metro Percent (N)	Non-Metro				
		Adjacent Percent (N)	Non-Adjacent Large Percent (N)	Non-Adjacent Medium Percent (N)	Non-Adjacent Small Percent (N)	All Non-Metro Categories Percent (N)
Intake, Assessment, or Referral	93.9% (9817)	95.9% (1553)	94.5% (411)	97.1% (570)	98.8% (162)	96.1% (2696)
Detoxification*	22.4 (2339)	15.9 (251)	18.6 (81)	14.8 (87)	7.9 (13)	15.4 (432)
SA Treatment	98.0 (10252)	98.3 (1593)	97.5 (424)	99.0 (581)	98.2 (161)	98.3 (2759)
Halfway House or Other Transitional Housing	10.9 (1140)	7.4 (119)	14.4 (62)	4.6 (27)	3.1 (5)	7.6 (213)
Other SA Services (e.g., administration)	45.3 (4696)	47.3 (758)	45.7 (197)	50.0 (289)	48.8 (79)	47.7 (1323)
OVERALL	78.9% (10461)	12.2% (1620)	3.3% (435)	4.4% (587)	1.2% (164)	21.2 (2806)

* Detoxification is closely supervised withdrawal from alcohol, opioids, barbiturates or sedatives, and amphetamines using medication to prevent or treat withdrawal symptoms. Detoxification is typically a first step toward further assessment and treatment.

Intensity of Services

Examining services by level of intensity reveals a difference in the proportion of facilities providing outpatient services and residential services between urban and rural areas. A greater proportion of facilities in non-metro counties provide regular outpatient care compared to metro counties (Table 3). However, among more intensive services -- such as detoxification, day treatment, and

methadone treatment -- the proportion of rural facilities providing these services declines as the rural area becomes less populous. The smallest rural areas provide very few intensive services, though nearly all (92.7%) offer regular outpatient services. Likewise, non-metro areas overall provide fewer non-hospital residential and inpatient detoxification and treatment services than metro areas; however, facilities in non-adjacent large communities kept pace with metro-based facilities. For example, a comparable 11.8% of metro facilities and 13.3% of non-adjacent large facilities offer short-term residential treatment. The same pattern is true for hospital inpatient detoxification and treatment.

The number of facilities offering opioid treatment programs (OTPs) further describes the trend toward limited intensive services in rural areas. OTPs use methadone and other medications to

**Table 3
Intensity of Services**

Intensity of Services	Metro Percent (N)	Non-Metro				
		Adjacent Percent (N)	Non-Adjacent Large Percent (N)	Non-Adjacent Medium Percent (N)	Non-Adjacent Small Percent (N)	All Non-Metro Categories Percent (N)
Outpatient						
• Regular#	69.3% (7249)	83.9% (1359)	77.9% (339)	87.9% (516)	92.7% (152)	84.3% (2366)
• Intensive#	42.9 (4481)	41.1 (665)	39.3 (171)	43.3 (254)	29.9 (49)	40.6 (1139)
• Detoxification	11.3 (1181)	7.4 (119)	4.8 (21)	4.4 (26)	4.3 (7)	6.2 (173)
• Day Tx/Partial Hospitalization*	15.2 (1593)	9.1 (147)	11.0 (48)	9.5 (56)	7.3 (12)	9.4 (263)
• Methadone/LAAM^ Maintenance@	8.3 (863)	1.5 (25)	0.9 (4)	0.9 (5)	0.6 (1)	1.3 (35)
Non-hospital Residential+						
• Detoxification	7.0 (729)	5.0 (81)	9.9 (43)	8.2 (48)	3.7 (6)	6.4 (178)
• Short-term Tx (</=30 days)	11.8 (1229)	8.6 (139)	13.3 (58)	12.3 (72)	4.3 (7)	9.8 (276)
• Long-term Tx (>30 days)	23.8 (2487)	13.4 (217)	21.8 (95)	12.3 (72)	6.7 (11)	14.1 (395)
Hospital Inpatient						
• Detoxification	6.9 (722)	4.9 (79)	6.4 (28)	4.9 (29)	1.2 (2)	4.9 (138)
• Treatment	5.7 (598)	4.0 (64)	5.1 (22)	4.3 (25)	0.6 (1)	4.0 (112)
OVERALL	78.9% (10461)	12.2% (1620)	3.3% (435)	4.4% (587)	1.2% (164)	21.2 (2806)

#Outpatient and intensive outpatient programs provide treatment at the program site with the patient living elsewhere. Intensive programs require patient attendance at 9 to 20 hours of treatment activities per week.

*Day treatment or partial hospitalization programs provide treatment within a hospital or clinic for 4 to 8 hours a day with the patient living at home; treatment typically lasts for at least 3 months.

^Levo-alpha acetyl methadol, an alternative to methadone in the treatment of opiate addiction.

@Maintenance refers to exchanging an illegal substance for a legally-prescribed medication, which moderates withdrawal symptoms without inducing the high of the illegal substance.

+Non-hospital residential treatment provides a living environment with treatment services.

treat heroin and other addictions. Nearly all OTPs (96%) are located in metro areas (data not shown). Of the total 1,063 facilities offering OTPs, 3.1% (n=33) of facilities are located a non-metro, adjacent county and only 1.9% (n=11) facilities are located in a non-adjacent county. The extremely limited supply of OTPs in rural areas could be related to the need for an adequate supply of patients to fund this type of program as well as perceived lack of privacy for specialty substance abuse treatment.²⁷ Additionally, rural areas may have difficulty recruiting specialty providers to staff these programs or face resistance from residents in having these services located in their community. The urban location of OTPs may deter treatment for rural patients since opioid treatments are typically dispensed on a daily basis, requiring considerable travel.²⁸ Where non-metro facilities do offer OTPs, a percentage comparable to that of metro facilities provides maintenance, detoxification, or both.

Forms of Payment Accepted

Across rural and urban counties, more rural facilities than urban offer free treatment, a sliding fee scale, or accept cash or self-payment (Table 4). A greater proportion of facilities in the smallest rural categories offer a sliding fee scale – 78.7% of facilities in small, non-adjacent counties offer a sliding fee scale compared to 63.5% of metro facilities. More non-metro facilities accept Medicare, Medicaid, or private health insurance compared to metro counties. A smaller patient population in rural areas may necessitate greater acceptance of various payment arrangements among treatment providers.

Table 4
Forms of Payment Accepted

Payment Accepted	Metro Percent (N)	Non-Metro				
		Adjacent Percent (N)	Non-Adjacent Large Percent (N)	Non-Adjacent Medium Percent (N)	Non-Adjacent Small Percent (N)	All Non-Metro Categories Percent (N)
Offers no charge or free treatment	52.7% (5487)	59.7% (962)	53.3% (225)	59.6% (350)	59.2% (97)	58.7% (1634)
Uses a sliding fee scale	63.5 (6626)	71.5 (1156)	60.8 (264)	75.0 (440)	78.7 (129)	71.0 (1989)
Cash or self payment	91.2 (9444)	94.5 (1510)	91.6 (381)	94.7 (550)	93.3 (153)	94.0 (2594)
Medicare	33.3 (3289)	45.1 (696)	34.0 (134)	45.8 (255)	54.5 (85)	44.2 (1170)
Medicaid	51.5 (5172)	67.5 (1059)	54.4 (221)	67.6 (382)	77.4 (123)	66.2 (1785)
State health plan (other than Medicaid)	34.5 (3206)	59.4 (853)	51.7 (198)	62.1 (326)	69.7 (106)	59.4 (1483)
Federal military insurance	33.6 (3099)	55.8 (801)	47.7 (184)	60.0 (316)	69.4 (102)	56.2 (1403)
Private health insurance	66.4 (6711)	81.4 (1283)	79.2 (328)	83.0 (478)	83.8 (134)	81.6 (2223)
Other	16.8 (1100)	14.2 (131)	23.4 (59)	16.0 (57)	20.9 (19)	16.4 (266)
OVERALL	78.9% (10461)	12.2% (1620)	3.3% (435)	4.4% (587)	1.2% (164)	21.2 (2806)

DISCUSSION

While it may be obvious to practitioners of rural health that the vast majority of substance abuse treatment facilities are located in urban areas, this study documents the number and distribution of treatment facilities across the rural-urban continuum. Only 1,186 out of 13,267 substance abuse treatment facilities are located in a rural county not adjacent to a metro area, representing 8.9% of the total universe of treatment facilities. Compared to the population, more treatment facilities are located in rural than urban areas; however, access to rural substance abuse treatment remains limited since fewer treatment beds are available in these facilities.

The American Society of Addiction Medicine (ASAM), both in its Patient Placement Criteria and its public policy statement on substance abuse treatment, highlight the need to focus not only on a patient's substance dependency but also on his/her medical, psychological, and social needs.^{29,30} This departs from the more traditional focus that considers a patient's substance abuse issues only. We found that a greater proportion of facilities in rural areas have a primary focus on combined mental health and substance abuse compared to urban facilities and a smaller proportion of rural facilities focus solely on substance abuse. With a smaller volume of patients, rural treatment facilities may need to provide more generalized services in order to capture adequate reimbursement. Since a significant portion of persons with serious mental illness have a co-occurring substance use disorder,³¹ a focus on substance abuse and mental health may confer an advantage to rural facilities in addressing the full complement of patient needs; however, this is an area for further study.

Rural areas have a smaller proportion of facilities offering outpatient intensive services, such as detoxification, day treatment / partial hospitalization, and methadone maintenance. Since the use of specialty and intensive substance abuse services has been shown to positively affect access to continuing treatment³² and post-treatment abstinence,^{33,34} the limited availability of these services in rural areas may negatively impact long-term success. Additionally, the range of services available in rural areas may preclude the individualized treatment approach and long-term follow-up recommended by professional organizations and other experts.^{29,35,36,30} Regardless of urban or rural location, facilities treating special populations such as adolescents, gays and lesbians, and those with co-occurring disorders often do not meet expert standards or offer recommended services.^{37,38} Patients requiring intensive treatment or any type of customized care to meet their personal circumstances may need to leave their home community to receive appropriate services.

Rural substance abuse treatment facilities accept a wider range of payers than urban facilities. In addition to the well-known payers – including Medicare, Medicaid, private health insurance, and self-pay – a larger proportion of rural facilities accept state health plans and military coverage. The very small number of rural facilities may make it difficult for these facilities to turn away patients because of insurance status or type, where urban facilities may have greater opportunities to provide care to select clients. Though smaller in absolute number, a greater proportion of rural facilities offer a sliding fee scale. These payment policies may be a necessity of rural practice, because rural residents have lower rates of private health insurance,³⁹ higher rates of uninsurance,⁴⁰ and underinsurance.⁴¹

A potential limitation of our study data is the exclusion of facilities that treat only incarcerated patients and the exclusion of solo practitioners unless a state substance abuse office specifically requests otherwise. Since we are focused on the use of substance abuse treatment to improve community-based functioning, omitting incarcerated patients may not affect our analysis. The proportion of substance abuse treatment providers who are solo practitioners is unknown; however, they likely represent a small subset of providers.

A major limitation of this study is that it does not examine whether the distribution of substance abuse treatment meets the needs of those requiring care. Other research has shown a vast disconnect between the number of persons with a substance abuse problem and the receipt of treatment. The National Survey on Drug Use and Health (NSDUH) defines need for treatment as substance dependency or abuse within the past year, or based on the receipt of specialty substance use treatment within the past year. Results from the 2004 NSDUH estimate that over 23 million Americans aged 12 or older needed treatment for an alcohol or illicit drug use problem (9.8% of the total U.S. population); an estimated 2.33 million of these people received treatment at an inpatient facility, rehabilitation facility, or mental health center. Thus, over 21 million persons (8.8% of the total population) needed treatment but did not receive it during 2004.⁴² Given the poor health and social outcomes and high costs associated with unmet need for substance abuse treatment,¹² further research should examine whether the distribution of treatment facilities meets the need for services across rural and urban areas. This study suggests that the small proportion of facilities located in rural areas may be inadequate to address substance abuse prevalence in more isolated areas. Further research might also consider alternative delivery models of substance abuse treatment for rural areas without sufficient population density to support treatment services. For example, opioid-dependent patients have been successfully treated in primary care sites with limited resources.⁴³ These models might include offering treatment through primary care practices, federally qualified health centers, rural health clinics, critical access and other rural hospitals, schools, and public health departments, with electronic or tele-health links between these agencies and urban-based OTPs or other specialty programs and addiction specialists.

CONCLUSION

Substance abuse treatment overall and intensive services in particular is limited in rural areas, especially among counties not adjacent to metro areas. Less populated areas with greater commuting distances contain a small proportion of facilities offering a range of core services and varying levels of outpatient care while rural areas generally contain far fewer inpatient and residential beds compared to urban. This situation is particularly striking for opioid treatment programs, which are nearly absent in rural areas. This study suggests that policymakers concerned with access to the full range of substance abuse treatment should focus attention on the availability of outpatient intensive services and OTPs in rural areas not adjacent to urban areas. The lack of intensive care in these areas may require patients to travel to receive appropriate services. Alternative delivery models that build on existing rural health providers should be considered in expanding substance abuse treatment options. The greater proportion of rural-based facilities accepting public payers and providing discounted care may indicate greater challenges to financing treatment in rural areas. It may also indicate that rural providers understand and account for the coverage gaps left by high rates of uninsurance and underinsurance.

REFERENCES

1. Office of Applied Studies: The NHSDA Report. Illicit Drug Use In Metropolitan And Non-Metropolitan Areas. Substance Abuse and Mental Health Services Administration; 2002.
2. The National Center on Addiction and Substance Abuse at Columbia University; *No Place to Hide: Substance Abuse in Mid-Size Cities and Rural America*. New York: 2000.
3. Gale J, Lambert D. *Substance Abuse in Rural America: Findings from the National Survey on Drug Use and Health*. Presented at the Annual Meeting of the National Organization of State Offices of Rural Health. Portland, ME: 2006.
4. Maine Rural Health Research Center: *Substance Abuse Among Rural Youth: A Little Meth and a Lot of Booze*. Portland, ME: University of Southern Maine, Edmund S. Muskie School of Public Service, Maine Rural Health Research Center; 2007.
5. McAuliffe W, Dunn R. Substance abuse treatment needs and access in the USA: Interstate variations. *Addiction*. 2004;99:999-1014.
6. Jackson J, Doescher M, Hart LG. Problem drinking: Rural and urban trends in America, 1995/1997 to 2003. *Prev Med*. 2006;43:122-124.
7. Schur C, Franco S. Access to Health Care. In: Ricketts T, ed. *Rural Health in the United States*. New York, NY: Oxford University Press; 1999: 25-37.
8. Chan L, Hart L, Goodman D. Geographic access to health care for rural Medicare beneficiaries. *J Rural Health*. 2006;22:140-146.
9. Probst J, Moore C, Braxley E. Update: health insurance and utilization of care among rural adolescents. *J Rural Health*. 2005;21:279-287.
10. Vargas C, Moore C, Baxley E. Oral health care utilization by US rural residents, National Health Interview Survey 1999. *J Public Health Dent*. 2003;63:150-157.
11. Branas CC, MacKenzie EJ, Williams JC, Schwab CW, Teter HM, Flanigan MC, Blatt AJ, ReVelle CS. Access to trauma centers in the United States. *JAMA*. 2005;293:2626-2633.
12. Rockett I, Putnam S, Jia H, Chang C, Smith G. Unmet substance abuse treatment need, health services utilization and cost: A population-based emergency department study. *Ann Emerg Med*. 2005;45:118-27.
13. Rasmussen S. *Addiction Therapy: Theory and Practice*. Thousand Oaks, CA: Sage Publications; 2000.
14. Cellucci T, Vik P, Nirenberg T. Substance abuse in the rural community. In: Stamm B, ed. *Rural Behavioral Health Care: An Interdisciplinary Guide*. Washington, DC:

American Psychological Association; 2003.

15. Center for Substance Abuse Treatment. What is Substance Abuse Treatment? A Booklet for Families. DHHS Publication No. (SMA) 04-3955. Rockville, MD: Substance Abuse and Mental Health Services Administration; 2004.
16. McFarland B, Gabriel R. Service availability for persons with co-occurring conditions. *Psych Serv.* 2004;55:978.
17. Metsch L, McCoy C. Drug treatment experiences: Rural and urban comparisons. *Subst Use Misuse.* 1999;34:763-784.
18. Warner B, Leukefeld C. Rural-urban differences in substance use and treatment utilization among prisoners. *Am J Drug Alcohol Abuse.* 2001;27:265-280.
19. Hugo G, Champion A, Lattes A. *New conceptualization of settlement for demography: Beyond the rural/urban dichotomy.* [Web Page]. June, 2001. Available at: http://iussp.org/Brazil2001/s40/S42_01_Hugopapx.pdf. Accessed November 6, 2006.
20. Porter M, Ketels C, Miller K, and Bryden R. *Competitiveness in Rural US Regions: Learning and Research Agenda.* [Web Page]. February 25, 2004. Available at: http://www.eda.gov/ImageCache/EDAPublic/documents/pdfdocs/eda_5frural_5regions_2epdf/v1/eda_5frural_5fregions.pdf. Accessed November 6, 2006.
21. Miller K, Crandall M, Weber B. *Persistent Poverty and Place: How Do Persistent Poverty and Poverty Demographics Vary Across the Rural-Urban Continuum?* [Web Page]. 2002. Available at: http://srdc.msstate.edu/measuring/series/miller_weber.pdf. Accessed November 6, 2006.
22. Weber B, Jensen L, Miller K, Mosely J, and Fischer M. *A Critical Review of Rural Poverty Literature: Is There Truly a Rural Effect?* [Web Page]. October, 2005. Accessed November 6, 2006.
23. Committee on the Future of Rural Health Care IoM. *Quality Through Collaboration: The Future of Rural Health.* Washington, DC: National Academies Press; 2005.
24. Rosenblatt RA, Hart LG. Physicians and Rural America. In: Ricketts T, ed. *Rural Health in the United States.* New York, NY: Oxford University Press; 1999:38-51.
25. Rosenblatt RA, Andrilla CHA, Curtin T, Hart LG. Shortages of medical personnel at community health centers: implications for planned expansion. *JAMA.* 2006;295:1042-1049.
26. Geller J, Beeson P, and Rodenhiser R. *Frontier Mental Health Strategies: Integrating, Reaching Out, Building Up, and Connecting: Letter to the Field no. 6.* [Web Page]. Available at: <http://www.wiche.edu/mentalhealth/frontier/letter6.html>. Accessed July 11, 2007.

27. Fortney J, Mukherjee S, Curran G, Fortney S, Han X, Booth B. Factors associated with perceived stigma for alcohol use and treatment among at-risk drinkers. *J Behav Health Serv Res.* 2004;31:418-29.
28. Mann B. Heroin in America: life with methadone. *National Public Radio* (Morning Edition). February 26, 2004.
29. American Society of Addiction Medicine. *American Society of Addiction Medicine's Patient Placement Criteria.* 2nd, Revised (ASAM PPC-2R). Chevy Chase, MD: ASAM; 2001.
30. American Society of Addiction Medicine. *Public Policy Statement on Treatment for Alcoholism and Other Drug Dependencies.* Chevy Chase, MD: ASAM; 2005.
31. Office of Applied Studies: The NSDUH Report: *Results from the 2002 National Survey on Drug Use and Health: Summary of National Findings.* (DHHS Publication No. SMA 03-3836, NSDUH series H-22). Rockville, MD: Substance Abuse and Mental Health Services Administration; 2003.
32. Straussner SLA. Assessment and Treatment of Clients with Alcohol and Other Drug Abuse Problems: An Overview. In: Straussner SLA, ed. *Clinical Work with Substance-Abusing Clients.* 2nd ed. New York, NY: The Guilford Press; 2004:3-36.
33. Greenfield L , Burgdorf K, Chen X, Porowski A, Roberts T, Herrell J. Effectiveness of long-term residential substance abuse treatment for women: Findings from three national studies. *Am J Drug Alcohol Abuse.* 2004;30:537-50.
34. Mojtabi R. Use of specialty substance abuse and mental health services in adults with substance use disorders in the community. *Drug Alcohol Depend.* 2005;78:345-54.
35. Sowers W, Pumariega A, Huffine C, Fallon T. Level-of-care decision making in behavioral health services: The LOCUS and the CALOCUS. *Psychiatr Serv.* 2003;54:1461-3.
36. Center for Substance Abuse Treatment. *Changing the Conversation: Improving Substance Abuse Treatment.* No. (SMA) 00-3480. Rockville, MD: The National Treatment Plan Initiative, DHHS; 2000.
37. Mark TL, Song X, Vandivort R, Duffy S, Butler J, Coffey R, Schabert VF. Characterizing substance abuse programs that treat adolescents. *J Subst Abuse Treat.* 2006;31:59-65.
38. Olmstead T, Sindelar J. To what extent are key services offered in treatment programs for special populations. *J Subst Abuse Treat.* 2004;27:9-15.
39. Larson SL, Hill SC. Rural-urban differences in employment-related health insurance. *J Rural Health.* 2005;21:21-30.
40. Ziller EC, Coburn AF, Yousefian AE. Out-of-pocket health spending and the rural underinsured. *Health Aff (Millwood).* 2006;25:1688-1699.

41. Ziller EC, Coburn AF, Loux SL, Hoffman C, McBride TD. *Health Insurance Coverage in Rural America: A Chartbook*. Washington, DC: Kaiser Commission on Medicaid and the Uninsured; 2003.
42. Substance Abuse and Mental Health Services Administration. *Results from the 2004 National Survey on Drug Use and Health: National Findings*. (DHHS Publication No. SMA 05-4062; NSDUH Series H-28). Rockville, MD: Office of Applied Studies, SAMHSA; 2005.
43. Mintzer IL, Eisenberg M, Terra M, MacVane C, Himmelstein DU, Woolhandler S. Treating opioid addiction with buprenorphine-naloxone in community-based primary care settings. *Ann Fam Med*. 2007;5:146-150.