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Use of Mental Health Services by Rural Children

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Overview

Twenty percent of all children have a diagnosable mental illness and between five and nine percent have an illness severe enough to result in impaired functioning. The majority of children in both groups go untreated, and the gap between need and service use is assumed to be wider in rural than urban areas. However, there have been few national studies of rural-urban differences in children's mental health service use, and which factors, including insurance, may mediate or reduce differences. Such studies are important for policymakers as they decide which approaches and strategies to use to meet the mental health needs of children in rural areas.

This study seeks to address this gap by examining rural and urban differences in the use of children's mental health services and the role that family income, health insurance, and mental health status play in explaining these differences. The analysis is based on three years of pooled data (1997, 1999, 2002) from the National Survey of America's Families (NSAF). Three research questions, comparing children in rural and urban areas, are examined: (1) What is the mental health need of children, age 6 to 17? (2) What percentage of children, with an identified mental health need, used a mental health service in the past year? What is the average number of mental health visits they received in the past year? (3) What role does family income and type of insurance have on the use of mental health services by children? Our study has two dependent variables: parent-report of their child having a mental health and/or behavioral problem and parent-report of their child's use of mental health services. Use is measured in two ways: any

mental health visit in the past year and the number of outpatient mental health visits in the past year.

Findings

As expected, rural children differ slightly from urban children in terms of socioeconomic and insurance characteristics. Rural children are more likely to be poor or near-poor and have Medicaid, be enrolled in the State Children's Health Insurance Program (SCHIP), or be uninsured. Urban children are more likely to have parents with higher education and with employer-based health insurance. The percentage of children with a parent-reported mental health problem is very similar in rural and in urban areas (7.5%), which is consistent with the broader epidemiological literature.

Rural children are slightly less likely to have a mental health visit than are urban children (7% of all rural children versus 8% urban; Table 3). This difference is driven by greater use of mental health services by urban children without a reported mental health problem; among those with an identified mental or behavioral health issue, rural-urban rates of service use are the same (about 36.5%). Among all children with a reported mental health problem or illness, rural children have the same number of annual mental health visits as urban children (12.4).

Having public health insurance coverage (Medicaid or SCHIP) increases the likelihood that a child will receive services and this is particularly pronounced in rural areas (OR: 2.4 versus 1.4 for urban children*).* Having private health insurance does not play a significant role in whether a child receives services. This may be, in part, because many children's mental health services are provided through state and locally financed non-mental health specialty systems, including schools and child welfare agencies. Rural children are 20% less likely to have a mental health visit than urban children (OR: 0.80;

CI: 0.68-0.94), when variables known to affect access to mental health services are controlled in a logistic regression.

Discussion and Policy Implications

Rural and urban children both face substantial barriers to use of mental health services. We expected that rural children would have lower mental health service use than urban children but that this difference would be modest for "initial access" (at least one visit) and would be larger for the total number of visits in a year. Our findings largely confirm this expectation for initial access, but we were not able to examine the number of annual mental health visits with confidence because of the way the data was collected for this variable in the NSAF.

Medicaid and SCHIP help all children, but particularly rural children, receive mental health care. This suggests that these public health insurance programs are important policy vehicles for enhancing the access of rural children to mental health care. It is also important for policymakers to continue to build and fund services and care systems at the community level. Here the policy levers and routes may not be as direct and we have less direct empirical evidence of what types of services and care systems work best and where. Finally, to better meet the mental health needs of rural children we need to conduct national surveys with better information on their mental health care needs and access to and use of services. Surveys should be large enough to have sufficient statistical power to examine these issues across the rural continuum.

INTRODUCTION

Twenty percent of all children have a diagnosable mental illness and between five and nine percent have an illness severe enough to result in impaired functioning (Costello, Mustillo, Keller, & Angold, 2004; United States Public Health Service, 2000). The majority of children in both groups go untreated, and the gap between need and service use is assumed to be wider in rural than urban areas (United States Public Health Service, 2000; New Freedom Commission on Mental Health, 2003). Two features of rural areas support this assumption: there are fewer child mental health specialists in rural than in urban areas (Koppelman, 2004) and access to and use of mental health services is lower for adults in rural than in urban areas (Lambert & Agger, 1995; New Freedom Commission on Mental Health, 2003). However, there have been few studies, particularly at the national level, of rural-urban differences in use of children's mental health services.

Use of children's mental health services may or may not be appreciably lower in rural than in urban areas. Access to children's mental health services is limited in urban areas and is generally considered inadequate relative to need. It may be that both rural and urban children in need of mental health care face an uphill, but more or less equally difficult, path to get the mental health care they need. The rural-urban disparity in mental health service use may be less for children than for adults because of Medicaid and the State Children's Health Insurance Program (SCHIP). Medicaid and SCHIP have been found to significantly enhance access to children's mental health services (Howell, 2004) and rural children are more likely to be enrolled in these programs than urban children (Ziller et al., 2003).

It is important for policymakers to better understand how rural children access and use mental health services and what factors may inhibit or promote this use. A major obstacle has been the lack of national-level data to examine these issues. The relatively few studies on the use of mental health services by rural children are based on single communities or areas. While some national surveys contain information about the use of mental health services by children, the number of rural respondents has generally been too small to support national-level analysis (Kessler et al., 1994). As a result, policymakers usually must fall back to anecdotes, vignettes, or the assumption of lower access for rural children.

This paper examines rural and urban differences in the use of children's mental health services and whether family income, health insurance, and mental health status are associated with these differences, based on three years of data (1997, 1999, 2002) from the National Survey of America's Families (NSAF) conducted by the Urban Institute. The NSAF provides information on mental health need and service use of children, age 6 to 17, and allows us to compare rural-urban service use based on a national sample. We examine the following questions:

1. What is the mental health need, among children, age 6 to 17, in rural and urban areas?

2. What percentage of children, with an identified mental health need, used a mental health service in the past year in rural and in urban areas? What is the average number of mental health visits they received in the past year?

3. What role does family income and type of insurance have on the use of mental health services by children in rural and urban areas?

BACKGROUND

Prevalence, Need, and Service Use

Research has produced a range of estimates of children's mental health needs and their use of services that vary based on problem definition and severity. One in five U.S. children has a behavioral or mental health problem that meets diagnostic criteria (Burns et al., 1995; United States Public Health Service, 2000). A portion of these children (5% to 9%) have a problem significant enough to be considered a serious emotional disturbance (Simpson et al., 2005; United States Public Health Service, 2000). The research literature consistently reports that between 60% and 80% of children in both groups have their mental health needs go unmet (Howell, 2004; Kataoka, Zhang, & Wells, 2002; Sturm, Ringel, & Andreyeva, 2003). Unmet need is usually defined in terms of the relatively low-threshold criteria of not receiving a mental health visit in the previous year.

As one would expect, use of mental health services is higher among children with severe emotional, physical, and social needs. Children with serious emotional disturbances use ten times as many services as youth with a less severe mental health need (Burns et al., 1997). Children with special needs, such as having a disability or living within the foster care system, use mental health services more frequently than children without these characteristics (United States Public Health Service, 2000; Witt, Kasper, & Riley, 2003).

Few studies have considered rural location in examining children's need and use of mental health services. Those that did focused on specific regions or communities and found that in rural communities there was more limited use of mental health services, (Cohen & Hesselbart, 1993), high prevalence of serious mental health problems (Sears,

2004), and higher stigma associated with using mental health services (Starr, Campbell, & Herrick, 2002). The Great Smoky Mountains Study of Youth in Western North Carolina found urban and rural children equally as likely to use any mental health service, with rural children less likely to access specialty mental health services (Burns et al., 1995). In a related study, Cunningham and Freiman (1996) found that the likelihood of having a specialty ambulatory mental health visit was greater for children living in counties with a relatively large number of child psychiatrists.

Effect of Low-income and Poverty

The characteristics of rural families may place their children at greater risk, relative to urban children, of having a mental health need, and/or having that need go unmet. Rural families tend to have lower incomes (Ziller et al., 2003) and poverty is associated with greater prevalence of mental health problems and barriers to mental health care. In 2002, the prevalence of mental health problems among poor children was 12%, compared to 9% and 6% of near-poor and non-poor children, respectively (Howell, 2004). Children in rural North Carolina whose families moved out of poverty over the eight-year study period showed a significant decrease in the mean number of psychiatric symptoms, while children of formerly poor families had the same number of psychiatric symptoms as those who were never poor and fewer symptoms than those who were still poor (Costello et al., 2003). Persistent poverty can yield lasting and deteriorating depressive symptoms in young children as time in poverty increases (McLeod & Shanahan, 1993; McLeod & Shanahan, 1996). Children with poor mental health in high-income families were three times as likely to have a mental health visit as similar children in poor families. The number of mental health visits and likelihood of specialty visits also increased with family income (Cunningham & Freiman, 1996).

The prevalence of mental health problems is associated with insurance status. Uninsured children or those with public coverage have higher rates of serious emotional disturbances than those with private insurance (Glied et al., 1997). Among children ages 6-17, 12% of children with Medicaid or SCHIP had identified mental health problems compared to 8.5% of uninsured children and 6% of children with some other form of coverage. Even among non-poor children, those covered by Medicaid or SCHIP had higher rates of mental health problems than non-poor children covered by other types of insurance (Howell, 2004). Since rural children are more likely to be uninsured or to have public coverage (Ziller et al, 2003), it may be that rural children will have a higher rate of identified mental health problems than urban children.

The use of mental health services is also associated with insurance status, although research has yielded mixed results. Most studies find that children with Medicaid coverage are significantly more likely to receive services than children with private insurance or who or are uninsured, and that children without insurance are least likely to receive care (Burns et al., 1997; Cunningham & Freiman, 1996; Ringel & Sturm, 2001). Glied and colleagues (1997) found children with private insurance to be less likely to receive care than either children with public insurance or without insurance. Howell (2004), using NSAF data, found that children with Medicaid, SCHIP, or private insurance were equally as likely to use mental health services and three times as likely as children without insurance to receive care. This finding may reflect both higher need for mental health services among Medicaid children and Medicaid's more generous coverage compared to private insurance plans (Ringel & Sturm, 2001; Howell, 2004).

Burns and colleagues (1997) found that the difference in service use between children covered by Medicaid and by private insurance was not that children with Medicaid coverage received a high level of services, but that privately insured children received very few services. While rural children may face more barriers to mental health care than urban children, their higher rates of coverage by Medicaid and/or SCHIP may enhance access enough so that rural-urban service use is similar.

Service System and Supply

Children with mental illness must seek care from different parts of the health care system that often are not easily accessible or well coordinated (Glied & Cuellar, 2003). Many children with mental health problems do not receive any care at all and those children who do get care are more likely to receive it through schools, the child welfare system, or the juvenile justice system than from the specialty mental health system (Ibid.). Children with serious emotional disturbances are likely to be seen by multiple specialty agencies, but not necessarily have their care well coordinated (Ibid.). The increased availability of antidepressant and other psychotropic drugs have contributed to an increase in the number of children being "treated" for a mental health problem, but not necessarily being seen on a regular basis by specialty or primary care providers (Knitzer & Cooper, 2006). The undersupply of child psychiatrists has been a chronic and long term problem and has resulted in pediatricians and other primary care physicians being asked to assume more of the responsibility in prescribing psychotropic medication to children than they prefer or about which they feel confident (Koppelman, 2004).

The confusion and uncertainty families and caregivers face in seeking help for children with mental health problems has been described in academic journals (Glied & Cuellar, 2003; Knitzer & Cooper, 2006) as well as in the media (NY Times, 2006). The

disturbing picture contained in these descriptions is a national picture. The elements of under-service relative to need and uncoordinated care have often been assumed to be a bigger problem in rural than urban areas. However, these problems may be equally present in rural and urban areas, even though the vast majority of specialty mental health providers are in urban areas.[1]

METHODS

Data

To examine our research questions, we used data from the National Survey of America's Families (NSAF), a nationally representative survey that over-samples both low-income households[2] and households in 13 states.[3] The NSAF was fielded in 1997, 1999, and 2002 and contains detailed data on children's perceived mental health status, socioeconomic data, and service use. To enhance the sample of rural children, we pooled the data from each of the three survey years. The total sample has 66,982 children: 53,782 in urban areas and 13,200 in rural areas.[4] The sample was weighted to population totals and the weights were adjusted for the design features of the sample, including non-response.

Dependent Variables

Our study had two dependent variables: the parent-perceived presence of mental health and/or behavioral problems among children, and use of mental health services. The

[1] More than 90 percent of all psychologists and psychiatrists and 80 percent of all MSWs work exclusively in urban areas. Over 60 percent of rural Americans live in mental health professional shortage areas. (New Freedom Commission, 2003).
[2] Low-income households have incomes at or below 200 percent of the federal poverty level (FPL).
[3] The 13 states are Alabama, California, Colorado, Florida, Massachusetts, Michigan, Minnesota, Mississippi, New Jersey, New York, Texas, Washington, and Wisconsin.
[4] For more information on the NSAF, go to www.urban.org/center/anf/nsaf.cfm.

perceived mental health of children is based on six questions in the NSAF about the emotional and behavioral well-being of children ages 6 to 17 based on a short version of the Child Behavior Checklist (CBCL) from the National Health Interview Survey conducted by the National Center for Health Statistics.[5] Questions varied for children based on age, with those aged 6 to 11 receiving one series and older children (12-17) receiving another. Based upon parental responses to these questions, the NSAF provides an index score with a range of 6 (serious mental health problems) to 18 (no mental health problems). In keeping with prior research using the NSAF, we defined children as having a mental health need if their score was 12 or lower (Ehrle & Moore, 1999; Howell, 2004; Sturm, Ringel, & Andreyeva, 2003).[6]

Our second dependent variable, the use of mental health services, is also based upon parental report. The NSAF defines a mental health visit as any visit to a psychologist or mental health professional, or a visit to a physician or mental health counselor if the purpose of the visit was to receive mental health care. Using this definition, we categorized children as using mental health services if their parents reported at least one visit in the past year and as not using services if there was no parental report. We also included a measure of the number of mental health visits a child received in the past year, based on parental report.

Independent Variable

Our major independent variable in this study is rural or urban residence as defined by the federal Office of Management and Budget (OMB). The OMB divides U.S.

[5] The CBCL was based, in turn, on a longer instrument called the Behavior Problems Index, used in the National Longitudinal Survey of Youth.

[6] The rate of children with mental health problems using this index falls between national estimates of about 20 percent of children with some mental health problem, and 5 percent with serious problems. Thus the index detects both children with serious conditions and some with milder conditions.

counties into those containing a Metropolitan Statistical Areas (MSAs, or urban counties) and counties that are non-metropolitan (non-MSAs, or rural). Although we recognize that this definition may mask important intra-rural variation in mental health need and use of services, we were limited by small sub-samples of rural children with mental health needs that used services.

Analyses

Using bivariate and multivariate analyses, we sought to address the question of whether or not rural-urban differences in parent-reported mental health problems and use of mental health services among children exist. At the bivariate level, we used *t* tests to estimate whether or not the rate of mental health need and service use differed by residence, and by characteristic within residence.

Our multivariate analyses used two logistic regressions to estimate (1) the likelihood that a child had a mental health problem (as reported by a parent) and (2) the likelihood that a child had a mental health visit, controlling for key variables that may affect the prevalence of mental health problems and the use of mental health services. For each regression, we ran separate models for rural and urban children and then a pooled model with rural residence included as a dichotomous variable. Covariates included the age of the child, gender, race/ethnicity, health insurance status, and family income as a proportion of the federal poverty level, parental education, region of residence, and the mental health status of the responding parent. To aid in interpretation, we transformed the regression coefficients into odds ratios with 95% confidence intervals. We included a dummy variable for survey year in the logistic regressions for predicting (1) whether a child had a mental health problem and (2) whether a child received a mental health visit

to account for differences in potentially important, but unmeasured variables, such as provider supply or Medicaid or SCHIP mental health benefit level that may vary over time and impact the likelihood of being identified with a mental health problem or receiving a mental health visit.

FINDINGS

Sample

Rural children in our pooled NSAF analytic file differed from urban children in anticipated ways (Table 1). Rural children were more likely to live in poor or near-poor families (48% versus 37% for urban) and to have parents with lower levels of education. Rural children were more likely to live in homes with both parents present, yet less likely to have employer-sponsored health insurance (59% versus 69% for urban). Rural children were more likely to have Medicaid or SCHIP and to be uninsured, although fewer children throughout our pooled sample were covered by Medicaid/SCHIP and more were uninsured than in recent estimates. This likely reflects that much of the sample was drawn in the very early years of SCHIP (1997 and 1999). Rural children were more likely to be White, not Hispanic and to live in the mid-western and southern regions of the country.

Prevalence of Mental Health Problems

The proportion of children with a parent-reported behavioral or mental health problem did not differ by rural or urban residence (Table 2). This is consistent with the broader epidemiological literature that shows no statistically significant rural-urban differences in prevalence (Kessler et al., 1994). For both groups of children, about 7.5% had mental health scores suggestive of mental health problems and, on average, the

emotional/behavioral problem index scores were the same. This translates into roughly two million rural children with a likely mental health problem. While the prevalence of mental health problems differed by child and family characteristics (e.g. poor children had higher rates), they did not differ by residence across these characteristics. Children with Medicaid or SCHIP had a higher reported prevalence of mental health or behavioral problems; however, the rate was the same for this group regardless of residence.

Use of Health and Mental Health Services

Rural children had mixed access to physical health care compared to their urban counterparts (Table 3). Rural children are slightly more likely to have a usual source of care than urban children are (94% versus 92% for urban). However, rural children are less likely to have had a medical visit in the past year (74% versus 81% for urban). Children with mental health problems are more likely to have had a medical visit, and the rates do not differ statistically by residence. However, children with mental health problems and rural children are more likely to have visited the emergency room (ER); rural children with mental health problems have the highest rate of ER use (42%). Compared to children without mental health problems, those with problems are much more likely to have an unmet need for medical care in both rural and urban areas.

These findings suggest that being rural and having a mental health problem represent different, and perhaps additive, burdens for children receiving the physical health care they need. The high ER use rate of rural children with a mental health problem may reflect more limited availability of children's mental health services in rural areas.

Rural children are slightly less likely to have a mental health visit than are urban children (7.1% versus 8.2%, $p < .05$). This difference is driven by greater use of mental

health services by urban children without a reported mental health problem; among those with an identified mental or behavioral health issue, rural-urban rates of service use are the same (about 36.5%).

Children with at least one mental health visit in the past year may be assumed to have "initial access" to mental health care. Given the role of schools in helping to identify mental health problems and providing at least some care or contact about that problem, it is not surprising that there is not a difference in initial access between rural and urban children with an identified mental health problem. As a measure of on-going access, however, we would expect to see a larger rural-urban difference in the number of mental health visits seen over a year for children with an identified mental health problem. Our analyses did not support this hypothesis, as we found that rural children have, on average the same number of annual mental health visits as urban children (12.4 visits per year).

We report this finding with some caution, as examination of the distribution frequency of annual mental health visits shows a number of high "outliers". The number of annual visits reported in Table 3 is based on a cut-off of 52 annual visits, to eliminate obvious outliers. Choosing higher cut-off levels for eliminating outliers does not change the direction of the rural-urban difference. However lowering the level to 40 annual visits does reverse this difference (with rural children having 7.8 and urban children having 10.0 annual visits). It is likely that this variability in the distribution of mental health visits and direction and magnitude of rural-urban differences reflects variability in what parents report as a mental health visit and differences in the availability, type, and reimbursement of outpatient mental health services for children. There are more specialty outpatient mental health services in urban than in rural areas. It may be that urban and

rural parents are reporting the number of annual mental health visits their child received based on different interpretations of the question and are using different criteria for what constitutes a mental health visit (with urban parents more likely to recall and report visits to a mental health specialist). It also may be that there are relatively more rural, than urban, very high outpatient mental health users. In the absence of a more specific definition of "visit" based on utilization data, it is difficult to reach a clear conclusion about whether rural children have less follow-up care than urban children.

Factors Associated with Having Mental Health Problems

The prevalence of mental health or behavioral problems among rural and urban children does not differ, controlling for child and family characteristics (see Table 4; OR: 0.91, CI: 0.77-1.07). In many cases, the characteristics associated with the likelihood of having a problem were the same in the separate rural and urban models. For example, both rural and urban children had higher prevalence of mental health problems if they were: older, male, living with one or no parent, or if their parent had a self-reported mental health problem. Controlling for other factors, income had no effect on mental health scores for either rural or urban children.

Despite these similarities there were several key differences in the characteristics associated with the prevalence of mental health problems in rural compared to urban children. While region of residence has no relationship to prevalence among rural children, living in the south increases the likelihood of having a problem among urban children. Among urban children, parental education and being uninsured are not associated with a change in prevalence, but among rural children having parents without a high school diploma dramatically decreases the odds of having a problem (OR: 0.56, CI: 0.35-0.87) and being uninsured increases the odds of having a problem (OR: 1.69; CI:

1.08-2.64). The former may mean that rural parents with lower education are having a harder time recognizing mental health problems, or may be less likely to acknowledge them (perhaps because of stigma), than comparably educated urban parents.

Survey year did not increase the likelihood of a child having a mental health problem. This suggests that there were not significant, but unmeasured policy or environmental changes affecting whether or not a child was identified as having a mental health problem over the five years during which the three waves of the NSAF were administered.

Factors Associated with Use of Mental Health Services

As with prevalence, a number of the factors associated with use of mental health services are the same for rural and urban children. As expected, having a mental health problem increases the odds of having a visit by sevenfold for urban children and ninefold for rural children. Controlling for other factors, having fewer than two parents in the household also increases the odds of having a mental health visit, perhaps because these children are receiving other social services. Similarly, having public coverage (Medicaid or SCHIP) increases the likelihood that a child will receive services and this is particularly pronounced in rural areas (OR: 2.4 versus 1.4 for urban children). Compared to those with excellent or very good general health status, children in good and in fair/poor health are also more likely to receive mental health services. The general relationship between health status and having a mental health problem shown in Table 4 is not surprising, given that mental health problems often present as physical health problems, and that children with physical health problems are more likely to have contact with the health care system and be in a position to be referred for mental health assessment or care. This relationship between health status and probability of a mental

health problem is relatively similar in rural and urban areas (although somewhat stronger for rural than urban children in fair/poor health: OR 5.50 versus, 4.67).

Hispanic children are less than half as likely as Whites to use mental health services, regardless of residence. For urban children, being Black, having a parent with poorer mental health, or living in poverty reduces the odds of receiving mental health services; among rural children these relationships are not statistically significant (likely reflecting small rural samples) but point estimates are similar.

Rural children are 20% less likely to have a mental health visit than urban children (OR: 0.80; CI: 0.68-0.94) when variables known to affect access to mental health services, are held constant (Table 5). There are several rural-urban differences in the factors associated with service use. In urban areas, male children are more likely to use services, while in rural areas there are no statistically significant gender differences in service use and the point estimate shows a negative relationship for males. While region of residence has no relationship to service use for urban children, rural children living in the Midwest and especially the South have much lower odds of accessing mental health care. Survey year did not increase the likelihood of a child having a mental health visit, suggesting that there were not unmeasured policy or environmental changes occurring over time that affected mental health service use.

LIMITATIONS

There are several limitations to our study. The mental health index for children is based on parent perception and not on a clinical diagnosis. While this provides a broader measure of need than one based strictly on diagnosis (which requires that children have

had formal contact with the medical or mental health system), it may increase measurement error. Some parents may be reluctant to admit that their child has a problem because of stigma. This reluctance could vary by urban/rural residence, to an unknown degree, biasing our comparisons. The literature tends to suggest, but has not clearly demonstrated that stigma is stronger in rural than in urban areas. In addition, while bivarate rural-urban differences in having a mental health visit are relatively small, we were limited in our ability to look beyond a simple dichotomous measure of access (any visit versus no visits). If we had been able to delve more deeply into patterns and volume of mental health service use, we may have found greater rural-urban differences. Finally we do not have a measure of state level policy factors or of market supply that would enhance our estimates of mental health service use.

DISCUSSION AND POLICY IMPLICATIONS

Both rural and urban children face substantial barriers to use of mental health services. We expected, based on the literature, that rural children would have lower mental health service use than urban children but that this difference would be modest for "initial access" (at lease one visit) and would be larger for the total number of visits in a year. Our findings largely confirm this expectation for initial access, but we were not able to examine the number of annual mental health visits with confidence, because the question upon which the number of visits is based, may have been interpreted differently by rural and urban respondents.

Private health insurance does not seem to play the same role enabling access to children's mental health services that it does for general health services. This may be, in

part, because many children's mental health services are provided through state and locally financed non-mental health specialty systems, e.g., schools, child welfare agencies. However, Medicaid and SCHIP help all children, but particularly rural children, receive mental health care. This suggests that these public health insurance programs are important policy vehicles for enhancing the access of rural children to mental health care.

Federal and state policymakers have two major ways to help promote children's mental health care: providing insurance and funding services and systems of care in the community (Glied & Cuellar, 2003). Our findings suggest the importance of retaining public health insurance coverage of children's mental health services. It is also important for policymakers to continue to build and fund services and care systems at the community level. Here the policy levers and routes may not be as direct and we have less direct empirical evidence of what types of services and care systems work best and where. Even with the boost to access provided to rural children by Medicaid and SCHIP, a rural-urban disparity remains. It is likely that several long-standing barriers to mental health services probably contribute to this disparity including supply, stigma (interwoven with cultural differences), and insufficient infrastructure to allow multiple entry points to care and to coordinate care over time.

To better meet the mental health needs of rural children we need to conduct national surveys with better information on their mental health care needs and access to and use of services. Surveys should have a more reliable measure of number of mental health visits. (If this measure is based on self-report, it would helpful to have a more explicit and narrower definition of "mental health visit" included in the question.) Surveys should be large enough to have sufficient statistical power to examine these

issues across the rural continuum. It would also be helpful to have state level information on the supply of mental health services, public mental health, and children's social welfare programs to understand the barriers to care.

Table 1: Characteristics of Children by Rural-Urban Residence

Characteristics	Rural (%)	Urban (%)	U.S Total (%)	Unweighted U.S. Total
Age				
6-11	49.0	50.8	50.5	33,564
12-17	51.0	49.2	49.5	33,418
Poverty Level				
< 100%	21.7	16.4	17.4	10,844
100-199%	26.1	20.7	21.7	15,781
200-299%	22.6	18.9	19.6	12,953
300+%	29.6	44.0	41.3	27,404
Family Structure				
No Parent	4.6	4.1	4.2	3,041
Single Parent	23.9	27.9	27.2	19,682
Two Parents	71.5	68.0	68.6	44,163
Parent Education				
Less than high school	12.1	9.8	10.2	5,784
High school graduate	46.1	36.5	38.3	26,027
Any college	41.8	53.7	51.5	34,818
Parental Employment				
Full time	84.2	85.6	85.3	56,455
Part time	6.3	5.5	5.6	4,213
Unemployed	9.5	9.0	9.1	6,241
Ethnicity				
White	78.5	60.4	63.8	46,071
Black	10.5	16.9	15.7	9,112
Hispanic	7.7	17.2	15.5	9,416
Other	3.4	5.4	5.1	2,383
Insurance				
Medicaid or SCHIP	18.7	16.0	16.5	11,426
Employer-Sponsored	59.0	69.1	67.2	45,099
Other	4.9	4.2	4.3	3,046
Uninsured	17.4	10.7	12.0	7,411
Physical Health Status				
Excellent/Very Good	80.6	81.3	81.2	54,470
Good	14.8	13.7	13.9	9,220
Fair/Poor	4.7	5.1	5.0	3,292
Primary Parent Mental Health Status				
Good Mental Health	81.1	83.1	82.7	53,861
Poor Mental Health	18.9	17.0	17.3	11,909
Region				
Northeast	9.9	20.1	18.2	15,070
Midwest	33.5	21.2	23.5	19,491
South	42.0	33.5	35.1	18,045
West	14.7	25.3	23.3	14,376
Unweighted Sample Size	13,200	53,782	66,982	
Weighted Sample Size	27.1 million	117.8 million	144.9 million	

Source: Urban Institute Tabulations of NSAF Data from 1997, 1999, and 2002.

Table 2: Percent of Children Ages 6-17 with an Emotional/Behavioral Problem by Rural-Urban Residence and Child Characteristics

Characteristics	Rural (%)	Urban (%)	U.S Total (%)	Unweighted U.S. Total
Overall	7.6	7.4	7.4	65,497
Age				
6-11	6.5	6.7	6.7	32,865
12-17	8.7	8.1	8.2	32,632
Poverty Level				
< 100%	11.8	13.5	13.1	10,444
100-199%	8.1	8.9	8.7	15,369
200-299%	6.1	6.4	6.4	12,703
300+%	5.1	4.9	5.0	26,981
Insurance Status				
Medicaid or SCHIP	14.2	14.0	14.1	11,077
Employer-Sponsored	5.3	5.6	5.6	44,273
Other	4.6	5.9	5.6	2,979
Uninsured	9.1	9.9	9.7	7,168
Mean Child Emotional/ Behavioral Problem Index	15.92	15.98	15.97	65,497
Unweighted Sample Size	12,959	52,538	65,497	
Weighted Sample Size	26.6 million	114.8 million	141.4 million	

Note: Significance Testing involves comparing the rural category to the urban category.
* - Significant at a 0.10 level
** - Significant at a 0.05 level
*** - Significant at a 0.01 level
Source: Urban Institute Tabulations of NSAF Data from 1997, 1999, and 2002

Table 3: Access to Physical and Mental Health Care for Children ages 6-17 by Rural-Urban Residence and Presence of Mental Health Problem

	Rural						Urban				U.S Total			
	With Mental Health Problem (%)			Without Mental Health Problem (%)		All (%)	With Mental Health Problem (%)		Without Mental Health Problem (%)	All (%)	With Mental Health Problem (%)		Without Mental Health Problem (%)	All (%)
Physical Health Care														
Has usual source of care	93.6	++		93.7	+	93.7	++	89.9	***	92.6	92.4	90.6	**	92.8	92.6
Medical visit in past 12 months	79.5		*	73.6	+++	74.0	+++	83.2	**	80.7	80.9	82.5	***	79.3	79.6
ER visit in past 12 months	42.4	+	***	23.9	+++	25.3	+++	35.4	***	19.8	21.0	36.7	***	20.6	21.8
Unmet need for Medical Care	10.9		***	2.6		3.3		6.6	***	2.6	2.9	7.4	***	2.6	3.0
Mental Health Care														
Had mental health visit in past12 months	36.4		***	4.7	+++	7.1	++	36.6	***	6.0	8.2	36.5	***	5.7	8.0
Mean number of mental health visits in past 12 months	12.4							12.4				12.4			
Unweighted Sample Size	1,041			11,918		12,959		4,131		48,407	52,538	5,172		60,325	65,497

Notes:

1) For significance testing between categories (With Mental Health Problem, Without Mental Health Problem, All) between Rural and Urban with Urban as the reference category:

\+ - Significant at a 0.10 level

++ - Significant at a 0.05 level

+++ - Significant at a 0.01 level

2) For significance testing between With Mental Health Problem and Without Mental Health Problem within the Rural, Urban, and All categories where without a mental health problem is the reference category:

* - Significant at a 0.10 level

** - Significant at a 0.05 level

*** - Significant at a 0.01 level

Table 4: Logistic Regression Predicting Probability of a Mental Health Problem

Control Variable	Rural		Urban		All U.S Children	
	O.R	95% C.I	O.R	95% C.I	O.R	95% C.I
Age						
6-11	1.00	--	1.00	--	1.00	--
12-17	1.38	(1.03, 1.84)	1.17	(1.02, 1.34)	1.21	(1.07, 1.36)
Gender						
Male	1.66	(1.24, 2.22)	1.67	(1.46, 1.91)	1.67	(1.47, 1.88)
Female	1.00	--	1.00	--	1.00	--
Poverty Level						
<100%	0.81	(0.48, 1.37)	1.14	(0.90, 1.45)	1.08	(0.87, 1.34)
100-199%	0.86	(0.56, 1.34)	1.08	(0.89, 1.32)	1.05	(0.87, 1.25)
200-299%	0.98	(0.64, 1.51)	1.01	(0.83, 1.21)	1.01	(0.85, 1.20)
300+%	1.00	--	1.00	--	1.00	--
Family Composition						
Less than two parents	1.86	(1.37, 2.52)	1.51	(1.30, 1.76)	1.57	(1.37, 1.80)
Two parents	1.00	--	1.00	--	1.00	--
Parental Education						
No high school	0.55	(0.35, 0.87)	0.87	(0.68, 1.13)	0.80	(0.64, 1.00)
High School/GED	0.77	(0.58, 1.04)	1.00	(0.86, 1.16)	0.96	(0.84, 1.09)
Some College	1.00	--	1.00	--	1.00	--
Race/Ethnicity						
White(non-H)	1.00	--	1.00	--	1.00	--
Black (non-H)	0.82	(0.51, 1.34)	0.96	(0.79, 1.17)	0.94	(0.79, 1.13)
Hispanic	0.73	(0.46, 1.16)	0.71	(0.59, 0.87)	0.72	(0.61, 0.86)
Other	1.42	(0.58, 3.47)	0.89	(0.63, 1.26)	0.95	(0.69, 1.32)
Health Insurance						
Public	1.85	(1.22, 2.79)	1.44	(1.17, 1.76)	1.51	(1.26, 1.82)
Private	1.00	--	1.00	--	1.00	--
Other	0.90	(0.46, 1.77)	0.91	(0.64, 1.29)	0.90	(0.66, 1.23)
None	1.69	(1.08, 2.64)	1.14	(0.92, 1.42)	1.23	(1.00, 1.50)
Child Health Status						
Excellent/Very Good	1.00	--	1.00	--	1.00	--
Good	1.70	(1.21, 2.40)	2.29	(1.94, 2.71)	2.16	(1.86, 2.51)
Fair/Poor	5.50	(3.55, 8.51)	4.67	(3.74, 5.84)	4.74	(3.89, 5.79)
Parent MH Status						
Good	1.00	--	1.00	--	1.00	--
Poor	3.15	(2.36, 4.21)	3.15	(2.72, 3.66)	3.15	(2.76, 3.59)
Region						
Northeast	1.00	--	1.00	--	1.00	--
Midwest	0.74	(0.47, 1.16)	1.19	(0.97, 1.45)	1.11	(0.92, 1.33)
South	0.97	(0.61, 1.55)	1.22	(1.03, 1.45)	1.18	(1.01, 1.39)
West	0.86	(0.47, 1.56)	1.06	(0.88, 1.28)	1.04	(0.88, 1.25)
Residence						
Rural	-	-	-	-	0.91	(0.77, 1.07)
Urban	-	-	-	-	1.00	--
Year						
1997	0.95	(0.68, 1.34)	1.03	(0.88, 1.21)	1.02	(0.88, 1.18)
1999	0.88	(0.64, 1.21)	0.92	(0.79, 1.07)	0.91	(0.79, 1.05)
2002			1.00	--	1.00	--

Table 5: Logistic Regression Predicting Probability of a Having a Mental Health Visit

Control Variable	Rural		Urban		All U.S Children	
	O.R	95% C.I	O.R	95% C.I	O.R	95% C.I
Has Mental Health Problem						
Yes	9.35	(6.61, 13.21)	7.11	(5.99, 8.45)	7.39	(6.33, 8.64)
No	1.00	--	1.00	--	1.00	--
Age						
6-11	1.00	--	1.00	--	1.00	--
12-17	1.27	(0.95, 1.70)	1.19	(1.04, 1.36)	1.19	(1.06, 1.35)
Gender						
Male	0.97	(0.73, 1.30)	1.24	(1.08, 1.41)	1.19	(1.06, 1.34)
Female	1.00	--	1.00	--	1.00	--
Poverty Level						
<100%	0.81	(0.47, 1.40)	0.75	(0.58, 0.97)	0.76	(0.60, 0.96)
100-199%	0.86	(0.59, 1.25)	1.03	(0.84, 1.25)	0.99	(0.83, 1.19)
200-299%	0.83	(0.57, 1.22)	0.89	(0.74, 1.07)	0.89	(0.75, 1.05)
300+%	1.00	--	1.00	--	1.00	--
Family Composition						
Less than two parents	2.02	(1.41, 2.90)	2.28	(1.97, 2.65)	2.24	(1.95, 2.58)
Two parents	1.00	--	1.00	--	1.00	--
Parental Education						
No high school	0.67	(0.37, 1.22)	0.57	(0.43, 0.76)	0.58	(0.45, 0.75)
High School/GED	0.84	(0.62, 1.12)	0.85	(0.74, 0.99)	0.85	(0.74, 0.97)
Some College	1.00	--	1.00	--	1.00	--
Race/Ethnicity						
White(non-H)	1.00	--	1.00	--	1.00	--
Black (non-H)	0.58	(0.33, 1.04)	0.57	(0.45, 0.71)	0.56	(0.45, 0.69)
Hispanic	0.41	(0.23, 0.74)	0.49	(0.40, 0.60)	0.47	(0.39, 0.57)
Other	1.24	(0.61, 2.51)	0.51	(0.35, 0.74)	0.60	(0.43, 0.84)
Health Insurance						
Public	2.36	(1.52, 3.68)	1.41	(1.16, 1.73)	1.56	(1.29, 1.87)
Private	1.00	--	1.00	--	1.00	--
Other	0.43	(0.23, 0.80)	1.05	(0.79, 1.41)	0.95	(0.73, 1.25)
None	0.55	(0.32, 0.93)	0.50	(0.38, 0.66)	0.51	(0.40, 0.66)
Child Health Status						
Excellent/Very Good	1.00	--	1.00	--	1.00	--
Good	1.79	(1.24, 2.58)	1.44	(1.20, 1.72)	1.48	(1.26, 1.73)
Fair/Poor	1.90	(1.15, 3.13)	1.79	(1.36, 2.37)	1.77	(1.38, 2.28)
Parents Mental Health Status						
Good	1.00	--	1.00	--	1.00	--
Poor	1.22	(0.85, 1.73)	1.59	(1.35, 1.88)	1.50	(1.29, 1.75)
Region						
Northeast	1.00	--	1.00	--	1.00	--
Midwest	0.56	(0.37, 0.85)	0.83	(0.69, 1.00)	0.81	(0.69, 0.96)
South	0.39	(0.25, 0.61)	0.98	(0.83, 1.15)	0.88	(0.75, 1.02)
West	0.70	(0.41, 1.18)	0.97	(0.81, 1.16)	0.95	(0.80, 1.12)
Rural/Urban Residence						
Rural	-	-	-	-	0.80	(0.68, 0.94)
Urban	-	-	-	-	1.00	--
Year						
1997	0.63	(0.44, 0.92)	0.83	(0.70, 0.98)	0.79	(0.68, 0.93)
1999	1.16	(0.85, 1.61)	0.91	(0.78, 1.05)	0.95	(0.83, 1.09)
2002	1.00	--	1.00	--	1.00	--

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