

Race and Ethnicity and Rural Mental Health Treatment

Stephen Petterson, PhD
Ishan Canty Williams, PhD
Emily J. Hauenstein, PhD, LCP, MSN, RN
Virginia Rovnyak, PhD
Elizabeth Merwin, PhD, RN, FAAN

Abstract: Objective. Research has shown that there is less use of mental health services in rural areas even when availability, accessibility, demographic, and need factors are controlled. This study examined mental health treatment disparities by determining treatment rates across different racial/ethnic groups. **Methods.** Data from the first four panels of the Medical Expenditure Panel Survey (MEPS) were used for these analyses. The sample consisted of 36,288 respondents yielding 75,347 person-year observations. The Economic Research Service's Rural-Urban Continuum was used as a measure of rurality. **Results.** Findings show that rural residence does little to contribute to existing treatment disparities for racial/ethnic minorities living in these areas. **Conclusions.** Findings suggest that characteristics of the rural environment may disadvantage all residents with respect to mental health treatment. In more populated areas where mental health services are more plentiful, complex racial and service system factors may play a greater role in evident ethnic/racial treatment disparities.

Key words: Rural, race/ethnicity, mental health services, mental health treatment.

There is accumulating evidence of rural-urban disparities in mental health treatment. Data from the National Comorbidity Survey Replication (NCS-R) for example, showed that residents of small towns not adjacent to larger metropolitan areas reported significantly less treatment for their stated mental health disorders than did residents of rural areas adjacent to a metropolitan area, suburban areas, and central cities.¹ Similar rural-urban treatment disparities were detected using data from the Medical Expenditure Panel Survey (MEPS).² Like the NCS-R data, the MEPS data revealed that respondents residing in rural areas with low population density, regardless of adjacency, obtained less mental health treatment than residents of metropolitan areas and more

DR. PETERSON is affiliated with the Robert Graham Center in Washington, D.C. **DR. WILLIAMS, DR. HAUENSTEIN, DR. ROVNYAK, and DR. MERWIN** are all affiliated with the University of Virginia, School of Nursing. **DR. HAUENSTEIN** is also affiliated with the Southeastern Rural Mental Health Center, and **DR. MERWIN** with the Rural Health Care Research Center. Any correspondence should be addressed to Dr. Emily Hauenstein, University of Virginia, School of Nursing, PO Box 800782, 202 Jeanette Lancaster Way, Charlottesville, VA 22908-0782; (434) 924-0093; ejh7m@virginia.edu.

urbanized rural areas. Other studies have confirmed rural-urban differences in mental health treatment rates using less precise measures of rurality.³⁻⁶

There are also reports of racial and ethnic disparities in receipt of health care in general and mental health care in particular.^{3,8-11} Specifically, African Americans and Hispanics receive less mental health treatment even when such factors as age, gender, and insurance status are controlled for in the analysis.¹²⁻¹⁵ For instance, results from the Mexican American Prevalence and Services Survey (MAPSS) indicate that 71% of Mexican Americans with DSM-III-R defined disorders received no mental health services in the past 12 months.¹⁶ Using MEPS data, Harman, Edlund and Fortney¹⁷ showed that African Americans and Latinos were about half as likely as non-Hispanic Whites to fill a prescription for an antidepressant. Hans and Liu,¹⁴ also using the MEPS showed that African Americans were 8.3% less likely than non-Hispanic Whites to fill a prescription for psychotropic medications used to treat mental illness, which cost, on average, \$600 less annually.

Considerably less is known about racial disparities in mental health treatment in rural areas. Vega and colleagues¹⁶ found that the pattern of services use was different for Mexican Americans living in rural areas when compared to those of urban users. Specifically, rural Mexican Americans were more likely to use general practitioners or informal service providers for their mental health problems. Using data from the National Comorbidity Survey, another study showed that rural residence was associated with less mental health treatment for African Americans and Latinos. Results from the same study conclude that African Americans who were not poor also had lower odds of receiving specialty care than Whites who were not poor.¹⁸

Other studies have shown that both race and rurality are associated with fewer mental health treatment visits.^{1-3,19} Frieman and Zuvekas,³ for example, showed that African Americans and Latinos received fewer mental health specialty visits and were prescribed fewer psychotropic medications but rural residents received no fewer psychotropic prescriptions than did urban residents. Rural residents in this study did receive fewer specialty visits than their urban counterparts. Zimmerman¹⁹ showed that rural and Latino children, but not African American children, received fewer mental health specialty visits than urban residents and non-Hispanic Whites.

There are multiple factors that combine with both race and rurality to affect mental health treatment. For example, rural residents, African Americans, Latinos, and members of other minority groups are more likely to be impoverished than are non-Hispanic Whites. Poverty rates for Latinos, African Americans, and Native Americans ranged from 21.8 to 26.8% during 2004; the poverty rate for residents of non-metropolitan areas during the same time frame was 14.5%.²¹ Insurance, both public and private, increases the likelihood of mental health services use, but both rural residents and members of minority groups are less likely to have it.^{2,11,18,22,23} Others have shown that neighborhood factors, gender, insurance eligibility group, and personal attitudes contribute to both ethnic and rural-urban treatment disparities.^{9,11,15,19,25-27}

The findings also suggest that urban non-Hispanic Whites are more likely to receive mental health treatment than are rural residents of any other race/ethnicity. This inference is supported by the findings of Alegria and colleagues¹⁸ who showed that urban non-Latino Whites were more likely to receive specialty mental health treatment than

were Latinos or African Americans regardless of income status, but that race was not a significant factor in receiving treatment in rural areas among those classified as non-poor. One potential explanation for the finding of these investigators is that access to care is restricted for all people in rural areas and that non-Hispanic Whites' relative advantage in obtaining care in urban areas disappears in areas where few mental health professionals and facilities exist. Another suggestion is that ethnicity and race may be components of a more complex construct of social position that requires further research.

The present research examines the extent to which mental health treatment rates differ across level of rurality and by race and ethnicity. Our primary database includes 4 panels of the MEPS (1996–1999) which were aggregated to increase the number of rural minority respondents available for analysis. Building on Alegria's argument, we expect that non-Hispanic Whites residing in metropolitan areas will receive more mental health treatment than members of racial/ethnic minority groups. We expand on this argument, by hypothesizing that this relative treatment advantage for non-Hispanic Whites will not be evident in non-metropolitan areas because of the absence of services.

Methods

Data source and sample. The sample was derived by pooling four panels (1996–1999) of the household component of Medical Expenditure Panel Survey, a national survey designed to provide estimates of health services use, medical expenditures, and sources of payment, including insurance coverage for the civilian non-institutionalized population residing in the United States.^{29,30} A new household MEPS sample is selected annually from a nationally representative sub-sample of the households participating in the National Health Interview Survey (NHIS) of the preceding year. Data collected in the household survey include demographic characteristics, use of medical care services, payments, access to care, income, and employment. Interviews are conducted with one member of each household, who reports on the health care experiences for the entire household. The sample, or *panel*, for each year is interviewed for five non-overlapping periods over the next two and a half years, roughly at six-month intervals. Since a new panel is formed each year, the panels overlap, altering the effective sample size at any given point in time. The overall response rate, combining the NHIS response rate and the response rate for Round 1 of the MEPS, ranges between 73% and 78% for the 1996–1999 panels.

The MEPS has a complex multistage sample design that uses stratification, cluster sampling, and over-sampling of certain population groups. To ensure representative samples of ethnic minority strata (areas identified in each state representing metropolitan and non-metropolitan areas and poverty rates) with higher densities of Blacks and/or Hispanics are sampled at higher rates. Among housing units chosen for sampling, there is further selection to increase the number of Black and Hispanic people in the sample.

The 1996–1999 panel data were aggregated using weights included in the MEPS for this purpose. We used strata and primary sampling unit variables specifically provided by MEPS for purposes of pooling data across years. In addition, the survey weights

and design variables were adjusted to take multiple observations of an individual into account resulting in 75,347 person-year observations.

Despite the over sampling strategies used in the MEPS and aggregating several panels of these data, certain groups (Asian/Pacific Islanders, American Indians, Puerto Ricans, Cubans and Other Latin Americans), are under-represented in the rural sample and prevent a full analysis. For instance, there are just 16 respondents of Asian origin and three Puerto Rican respondents in the sample who reside in the most rural counties. Because of the under-representation of American Indians, Asian Americans, and all Hispanic ethnic groups except Mexican Americans in the most rural areas, only non-Hispanic Whites, African Americans, and Mexican Americans are included our multivariate analyses.

Measures. Race/ethnicity. The detailed racial and ethnic breakdown of our sample is presented in Table 1. For non-MSAs (metropolitan statistical areas), it is important to note that more Mexican Americans in our sample live in less rural non-MSA counties than in the most rural non-MSA counties. By contrast, African Americans are roughly evenly distributed between the most and least rural non-MSA counties.

Rurality. The 1994 Rural-Urban Continuum Codes (RUCC) developed by the Department of Agriculture²⁸ was used to discriminate levels of rurality. As shown in Table 2, all counties in the United States are grouped by the population size of their

Table 1.
RACIAL/ETHNIC DESCRIPTION OF SAMPLE
BY LEVEL OF RURALITY

| | MSA | | Non-MSA least rural | | Non-MSA most rural | | Total |
|-------------------------------|---------------|------------|------------------------|------------|-----------------------|------|---------------|
| | N | % | N | % | N | % | |
| Non-Hispanic | | | | | | | |
| African American ^a | 8,188 | 14.0 | 877 | 8.0 | 791 | 13.4 | 9,856 |
| White ^a | 34,917 | 59.8 | 8,156 | 74.2 | 4,845 | 81.9 | 47,918 |
| American Indian | 305 | 0.5 | 119 | 1.1 | 54 | 0.9 | 478 |
| Asian American | 1,856 | 3.1 | 104 | 1.0 | 16 | 0.3 | 1,976 |
| Hispanic | | | | | | | |
| Mexican American ^a | 8,524 | 14.6 | 1,540 | 14.0 | 170 | 2.9 | 10,234 |
| Puerto Rican | 1,317 | 2.3 | 25 | 0.2 | 3 | — | 1,345 |
| Cuban | 673 | 1.2 | 35 | 0.3 | 2 | — | 710 |
| Other LA | 2,649 | 4.5 | 142 | 1.3 | 37 | 0.6 | 2,828 |
| Total | 58,431 | 100 | 10,998 | 100 | 5,918 | | 75,347 |

^aRacial/ethnic groups are included in multivariate analyses.

MSA = metropolitan statistical area

LA = Latin Americans

Table 2.
RURAL-URBAN CONTINUUM CODES

| Code | Description |
|---|--|
| Metropolitan Counties (Metropolitan Statistical Area) | |
| 0 | Central counties of metro areas of 1 million population or more |
| 1 | Fringe counties of metropolitan areas with a population of 1 million or more |
| 2 | Counties in metropolitan areas with a population of 250,000 to 1 million |
| 3 | Counties in metropolitan areas with a population of less than 250,000 |
| Nonmetropolitan Counties (Non-Metropolitan Statistical Area) | |
| Least rural | |
| 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 |
| Most rural | |
| 7 | Urban population of 2,500 to 19,999, not adjacent to a metro area |
| 8 | Completely rural or with an urban population of less than 2,500 adjacent to a metro area |
| 9 | Completely rural or with an urban population of less than 2,500 not adjacent to a metro area |

Source: Butler MA, Beale CL. Rural-urban continuum codes for metro and non-metro counties. Washington, DC: U.S. Department of Agriculture, Agriculture and Rural Economy Division, Publication 9425, 1994.

metropolitan area and by the degree of urbanization and adjacency to a metropolitan area or areas.³¹ Three metropolitan and six non-metropolitan areas are defined in this typology. Non-metropolitan counties are further classified by the aggregate size of their urban population and adjacency to one or more metropolitan areas. An adjacent county is one where the area physically adjoins one or more metropolitan areas and has at least 2% of its employed labor force commuting to central metropolitan counties. The advantage of using this typology when examining mental health services use is that counties that have sizeable populations and those adjacent to larger metropolitan areas may be more likely to have mental health and other economic resources.³² In order to maximize the sample of ethnic minorities in rural areas and to provide robust estimates the nine rural-urban levels were collapsed into three distinct categories for the purposes of group comparisons and multivariate analyses. These include: metropolitan or MSA (Rural-Urban Continuum Codes 0–3), Least Rural Non-MSA (Codes 4–6), and Most Rural Non-MSA (Codes 7–9), in order.²⁸ Of the 75,347 person-year observations in our sample, 58,431 reside in MSAs, 10,998 reside in more urbanized non-MSAs (hereafter *least rural*) and 5,918 reside in less urbanized non-MSAs (hereafter *most rural*).

The publicly available MEPS database contains only two designations for rurality—metropolitan and non-metropolitan. The use of the RUCC typology in these analyses

is made possible by linking publicly available data from the MEPS in our dataset to encrypted geocodes available only at the data center at the Agency for Healthcare Research and Quality Data Center (AHRQ).

Mental health treatment. At each MEPS interview, primary respondents were asked to identify their own and other household members' physical and mental health problems, whether treated or untreated, in the reference period preceding the interview. These conditions were recorded verbatim by the interviewer and subsequently categorized by trained coders into *International Classification of Diseases, Version 9 (ICD-9)* codes.³³ Included in reported analyses are all mental health conditions classified as ICD-9 codes between 290 and 315 as well as the codes 797 (senility without psychosis) and V40 (mental/behavioral problem) (N = 1,306 person year observations). When queried about medication use for health conditions in a separate section of the interview, any additional mental health conditions not mentioned earlier was added to the respondent's list of existing mental health conditions. The latter procedure added 486 person year observations, an increase of 37%.

Mental health treatment is categorized as receipt of *any treatment* or *specialty treatment*. Any visit made by a respondent to a health care provider (including in-patient visits) during a calendar year for a mental health condition was classified for the purposes of these analyses as having had *any treatment*. A respondent was considered to have specialty treatment when specific treatments for a mental health condition were reported during a calendar year including psychotherapy or mental health counseling, drug or alcohol treatment, and psychotherapy/counseling. Visits to a non-physician mental health specialist (psychologist, social worker, or counselor) were also considered specialty treatment. Since the 1996–1999 MEPS survey does not distinguish physicians and psychiatrists, physician visits for a mental health condition were classified as *any treatment* resulting in overlap between the two categories; the extent to which the two categories overlap is not known. These definitions of mental health treatment are similar to that used by Zuvekas²³ in a recent analysis of MEPS data.

Covariates. Treatment rates are adjusted in multivariate analyses by several variables that could confound the relationship among race/ethnicity, rurality and mental health treatment. Self-reported mental and physical health was used to control for the association between health and use of mental health care services. These were obtained by asking, *How would you rate your overall mental (physical) health?* Health status was rated on a 5-point Likert scale where responses ranged from *excellent* to *poor*, with 5 representing an excellent score. As noted above, in cases where the respondent was not present at the interview, the primary respondent for the household survey was asked to report the mental health status of other household members. These proxy reports account for 37.5% of respondent reports. To control for potential bias, we included a dummy variable to flag these cases; *Self Reported* is equal to 1 for self-reports and 0 for proxy reports.

Multivariate analyses also included controls for several sociodemographic characteristics, including gender, age, education, employment status, and marital status. Gender is coded 1 for female and 0 for male. Age is divided into three categories: 18–24, 25–44, 45–64, and 65 years old and above. Education is a continuous variable equal to the number of years of schooling completed by the respondent. Employment is coded as

1 if the respondent was employed and 0 otherwise. Income-to-needs is calculated by dividing family income during the calendar year by the family's poverty line (based on family size and composition). The income-to-needs ratios include values imputed for cases with missing income. The resulting percentages are grouped into five categories: poor (below 100% of the federal poverty level), near poor (100–124% of the federal poverty level), low (125–199% of the federal poverty level), middle (200–399% of the federal poverty level) and high (400% of the federal poverty level or higher).^{*} Health insurance is classified into five categories: not insured, privately insured, Medicaid, Medicare, and other public. Individuals are considered privately insured if they are covered by any private insurance plan, regardless of any public insurance that they might have. The uninsured are individuals without public or private insurance.

This research was reviewed by the University of Virginia's Internal Review Board and was found to be exempt. The Agency for Healthcare Research and Quality has a data use agreement with specific requirements concerning protection of the identity of respondents, to which we have adhered.

Statistical analysis. All analyses were done using the survey (svy) commands in STATA 8.2, which take into account the complex survey design of the MEPS as well as the pooling of data across years (see description under data source and sample).²⁴ STATA uses linearization-based variance estimators which are appropriate for the design variables provided with the MEPS data. To test multidimensional hypotheses, we carried out an adjusted Wald test, which uses the approximate F statistic $(d - k + 1)W/(kd)$, where W is the Wald test statistic, k the dimension of the hypothesis test, and d the total number of sampled PSUs minus the number of strata. Multivariate regression models are used to estimate racial and ethnic differences in treatment within each level of rurality. These models include controls for demographic characteristics, measures of access to care, and reported mental health (cf. Table 5). It is important to note that the small sample of most rural non-MSA Mexican American respondents available for analysis may yield unreliable estimates thus interpretation of these data should be made with caution.

Results

Rurality and race/ethnicity. Sample characteristics for the racial/ethnic comparison groups considered here appear in Table 3. Both rural residents and African American and Mexican American minorities are disadvantaged in many respects. For instance, all residents of the most rural areas have less schooling than residents in MSAs; however, more than 50% of Mexican Americans report less than 12 years of schooling no matter where they live. Similarly, being uninsured is more characteristic of the most rural residents than of those living in MSAs, but again 43.1–46.8% of Mexican Americans report being uninsured. Income declines across all racial/ethnic group in the most rural areas in comparison with the incomes of those living in MSAs; however, income

^{*} We report the 1996 coding of poverty status in the MEPS here. Subsequent years adjusted the range by 1% (e.g., 100–125% of poverty line, 126–200%, etc.).

Table 3.**DESCRIPTIVE STATISTICS: NON-HISPANIC (NH) WHITES, AFRICAN AMERICANS, AND MEXICAN AMERICANS BY LEVEL OF RURALITY (PERSON/YEAR OBSERVATIONS)**

| | Metropolitan Statistical Area (MSA) | | | Least rural, non-MSA | | | Most rural, non-MSA | | |
|-----------------------------------|-------------------------------------|----------------------|----------------------------|--------------------------|---------------------|----------------------------|--------------------------|---------------------|--------------------------|
| | African American (n=8,188) | White, NH (n=34,917) | Mexican American (n=8,524) | African American (n=877) | White, NH (n=8,156) | Mexican American (n=1,540) | African American (n=791) | White, NH (n=4,845) | Mexican American (n=170) |
| Reported mental health (%) | | | | | | | | | |
| Excellent | 42.3 | 43.3 | 37.3 | 35.4 | 39.1 | 27.5 | 27.4 | 37.9 | 35.3 |
| Very good | 26.8 | 31.1 | 29.5 | 27.4 | 30.4 | 31.2 | 26.2 | 29.9 | 31.4 |
| Good | 23.9 | 20.5 | 26.2 | 25.3 | 24.0 | 32.6 | 35.5 | 24.9 | 27.8 |
| Fair | 5.7 | 4.1 | 5.6 | 6.6 | 4.9 | 7.1 | 8.6 | 5.7 | 5.4 |
| Poor | 1.3 | 1.1 | 1.4 | 5.3 | 1.6 | 1.6 | 2.3 | 1.6 | 0.0 |
| Proxy report of mental health (%) | 63.3 | 65.2 | 54.2 | 58.6 | 65.4 | 52.8 | 59.0 | 64.1 | 64.7 |
| Reported physical health (%) | | | | | | | | | |
| Excellent | 26.3 | 31.4 | 24.6 | 24.7 | 27.6 | 20.8 | 18.6 | 28.0 | 23.0 |
| Very good | 29.8 | 33.4 | 30.1 | 24.4 | 31.1 | 27.2 | 23.1 | 29.7 | 28.8 |
| Good | 28.8 | 24.1 | 30.2 | 28.9 | 27.3 | 32.0 | 35.6 | 26.2 | 35.1 |
| Fair | 11.4 | 8.1 | 11.8 | 14.6 | 9.7 | 15.7 | 16.4 | 10.8 | 9.6 |
| Poor | 3.7 | 3.0 | 3.3 | 7.4 | 4.4 | 4.3 | 6.3 | 5.2 | 3.6 |
| Female (%) | 55.4 | 51.7 | 49.3 | 51.6 | 52.0 | 49.9 | 54.5 | 52.0 | 42.9 |
| Age (%) | | | | | | | | | |
| 18-24 | 16.7 | 12.2 | 22.8 | 15.7 | 12.4 | 22.2 | 22.1 | 11.6 | 29.7 |
| 25-44 | 47.2 | 41.1 | 51.3 | 43.8 | 38.0 | 51.3 | 40.1 | 34.5 | 45.5 |
| 45-64 | 25.3 | 29.2 | 19.6 | 26.1 | 30.1 | 19.2 | 24.3 | 33.2 | 20.0 |
| 65+ | 10.8 | 17.5 | 6.3 | 14.4 | 19.5 | 7.3 | 13.5 | 20.7 | 4.8 |

(Continued on p. 670)

Table 3. (continued)

| | Metropolitan Statistical Area (MSA) | | | Least rural, non-MSA | | | Most rural, non-MSA | | |
|--------------------|-------------------------------------|-------------------------|-------------------------------|-----------------------------|------------------------|-------------------------------|-----------------------------|------------------------|-----------------------------|
| | African American (n=8,188) | White, NH (n=34,917) | Mexican American (n=8,524) | African American (n=877) | White, NH (n=8,156) | Mexican American (n=1,540) | African American (n=791) | White, NH (n=4,845) | Mexican American (n=170) |
| Region (%) | | | | | | | | | |
| South | 50.1 | 31.2 | 33.8 | 77.8 | 36.9 | 53.4 | 97.8 | 45.2 | 68.2 |
| North East | 20.4 | 23.0 | 1.7 | 3.7 | 14.2 | 0.4 | 0.0 | 9.5 | 0.0 |
| Midwest | 20.5 | 24.6 | 7.0 | 13.9 | 32.5 | 3.7 | 2.2 | 36.0 | 10.5 |
| West | 9.0 | 21.3 | 57.5 | 4.6 | 16.4 | 42.5 | 0.0 | 9.3 | 21.3 |
| Income/needs (%) | | | | | | | | | |
| <100 | 18.9 | 7.0 | 22.7 | 21.9 | 11.1 | 27.7 | 30.2 | 12.8 | 26.0 |
| 100-125 | 5.4 | 3.0 | 9.0 | 7.7 | 4.6 | 9.4 | 13.5 | 5.4 | 9.3 |
| 126-200 | 16.3 | 10.4 | 21.7 | 23.0 | 14.8 | 29.2 | 21.8 | 17.1 | 28.3 |
| 201-400 | 31.8 | 31.0 | 31.3 | 35.6 | 36.3 | 25.3 | 19.0 | 36.1 | 24.4 |
| >400 | 27.6 | 48.5 | 15.3 | 11.8 | 33.2 | 8.4 | 15.4 | 28.5 | 12.1 |
| Schooling (%) | | | | | | | | | |
| 0-11 | 25.1 | 15.9 | 54.0 | 38.8 | 26.3 | 59.9 | 42.9 | 28.8 | 52.9 |
| 12 | 38.6 | 32.8 | 27.0 | 40.7 | 38.0 | 23.2 | 36.3 | 38.8 | 34.3 |
| 13+ | 36.3 | 51.3 | 19.1 | 20.5 | 35.6 | 16.9 | 20.8 | 32.4 | 12.9 |
| Not employed (%) | 33.0 | 30.5 | 34.0 | 37.3 | 35.3 | 38.2 | 40.9 | 37.3 | 29.8 |
| Married (%) | 34.6 | 58.1 | 55.5 | 39.0 | 61.9 | 64.5 | 37.8 | 64.5 | 45.1 |
| Insurance type (%) | | | | | | | | | |
| Private | 50.2 | 64.3 | 40.8 | 40.2 | 57.7 | 36.3 | 40.7 | 52.1 | 43.9 |
| Not insured | 23.7 | 12.6 | 43.1 | 31.1 | 15.3 | 46.8 | 27.0 | 18.7 | 46.7 |
| Medicaid | 14.3 | 3.8 | 10.8 | 13.9 | 5.9 | 12.5 | 20.7 | 6.7 | 6.1 |
| Medicare | 13.4 | 18.8 | 7.1 | 18.6 | 21.7 | 8.6 | 17.5 | 23.5 | 5.4 |
| Other public | 1.8 | 1.8 | 1.2 | 1.1 | 1.8 | 0.2 | 1.4 | 1.9 | 0.0 |

at or below 200% of the federal poverty line is almost twice as common among African Americans (65.5%) and Mexican Americans (63.6%) than among non-Hispanic Whites (35%) living in the most rural areas. Nearly all rural African Americans in the MEPS sample live in the South; the majority of rural Mexican Americans also live in the South; 21% live in the West. In the Northeast, our sample includes only Whites in the most rural counties.

There is evidence that the Mexican American respondents in our sample are different from African Americans and non-Hispanic Whites in ways that may affect how they use mental health services. In addition to less schooling and their greater propensity for being uninsured, Mexican Americans are more likely to be employed in the most rural areas and, as a whole, are younger than non-Hispanic Whites and African Americans no matter where they live. Non-Hispanic Whites residing in the most rural areas are more likely to be older and married; this is not characteristic of Mexican Americans.

The descriptive results also show considerable variation across groups in reported mental health. With the exception of Mexican American respondents, fewer rural residents report excellent mental health; Mexican Americans living in more urban non-MSA counties and African Americans living in the most rural non-MSAs are least likely to report excellent mental health. Only 27.5% and 27.4% of these groups, respectively, reported excellent mental health. At the other end of the spectrum, 7.3% of non-Hispanic Whites and 10.9% of African Americans in the most rural non-MSAs report fair or poor mental health. Similar racial and ethnic differences are evident with respect to physical health, with a disproportionate number of African Americans and Mexican Americans reporting fair or poor health.

Mental health treatment. Treatment rates for any type of mental health visit and for specialized mental health visits by race/ethnicity and level of rurality are presented in Table 4. Mental health treatment rates of non-Hispanic Whites in the most rural areas are significantly lower than those of their counterparts in more urbanized areas. There is not a comparable decline for African Americans; the low rate of mental health treatment for this racial group is similar across all levels of rurality. The estimate for Mexican Americans in the most rural counties is imprecise because of the small cell size. The difference in treatment rates between Mexican Americans in metropolitan counties (4.9%) and less rural non-MSA counties (4.7%) is not statistically significant. These findings indicate that while African Americans and Mexican Americans are receiving less mental health treatment in comparison to non-Hispanic Whites no matter where they live, in rural areas only non-Hispanic Whites are disadvantaged in obtaining mental health treatment when compared with urban residents.

Table 5 reflects multivariate logistical regression models that were generated to examine differences in treatment rates for each racial/ethnic group at each of the three levels of rurality. Like other studies examining racial/ethnic disparities in mental health treatment, ours find that in MSAs the odds of any type of mental health treatment for Mexican Americans are roughly half the odds of treatment for non-Hispanic Whites (odds ratio [OR] = .502). In less rural non-MSAs, the odds of treatment for African Americans are almost one-third of the odds for non-Hispanic Whites (OR = .373). The difference between African Americans and non-Hispanic Whites narrows in the most rural non-MSA areas, but remains statistically significant (OR = .578). We find a similar

Table 4.**MENTAL HEALTH TREATMENT RATES
BY LEVEL OF RURALITY AND RACE/ETHNICITY**

| | MSA | 95% CI | Non-MSA less rural | 95% CI | Non-MSA most rural | 95% CI |
|---------------------------------------|-----|------------|--------------------------|------------|--------------------------|------------|
| A. Any mental health treatment | | | | | | |
| Non-Hispanic (%) | | | | | | |
| White | 9.4 | [8.9-10.0] | 9.2 | [8.4-10.1] | 7.3% | [6.1-8.5] |
| African American | 5.3 | [4.7-6.0] | 5.8 | [3.9-7.7] | 4.8% | [3.6-6.0] |
| Hispanic | | | | | | |
| Mexican American | 4.9 | [4.1-5.6] | 4.7 | [3.3-6.2] | 5.3% | [1.0-11.6] |
| B. Specialized treatment (%) | | | | | | |
| Non-Hispanic | | | | | | |
| White | 5.7 | [5.2-6.1] | 4.3 | [3.5-5.0] | 3.4% | [2.4-4.4] |
| African American | 3.2 | [2.7-3.7] | 3.2 | [1.8-4.7] | 2.3% | [0.8-3.8] |
| Hispanic | | | | | | |
| Mexican American | 2.6 | [2.1-3.2] | 2.0 | [0.5-3.4] | 3.7% | [0.0-7.9] |

MSA = metropolitan statistical area
CI = confidence interval

pattern in models predicting specialized mental health visits, with the exception that the estimated difference between African Americans and Whites in the most rural areas is not statistically significant.

Discussion

Like findings reported by other investigators, findings from this research point to racial/ethnic disparities in the receipt of mental health treatment.^{9,10,34,35} Compared with non-Hispanic Whites, African Americans and Mexican Americans receive significantly less mental health treatment for reported mental health conditions. Furthermore, non-Hispanic Whites living in most rural non-MSA areas receive significantly less mental health treatment than non-Hispanic Whites living in MSAs and more urban non-MSAs. Declines in mental health treatment attributable to rural residence are not apparent for the other two racial/ethnic groups studied in this research. Thus, these findings indicate that declining rates of mental health treatment in rural areas are due primarily to diminished treatment rates among non-Hispanic Whites. These results mirror an earlier paper by our research team showing that women living in the most rural areas receive substantially less treatment than do MSA women.²

One possible explanation for rural-urban disparities in treatment for non-Hispanic Whites is that they are socioeconomically disadvantaged and, like members of racial/

Table 5.

LOGISTIC MODELS FOR “ANY TYPE OF MENTAL HEALTH TREATMENT” AND “SPECIALTY TREATMENT” (12-MONTH PERIOD), BY LEVEL OF RURALITY (PERSON/YEAR OBSERVATIONS)

| | Any visit OR | Specialized OR |
|--|---------------------------------------|---------------------------------------|
| A. MSA (n=56,268) | | |
| Non-Hispanic White ^a | 1.0 | 1.0 |
| Mexican American | 0.502** [0.420–0.601] ^b | 0.494** [0.389–0.626] ^b |
| African American | 0.415** [0.354–0.486] ^b | 0.433** [0.355–0.529] ^b |
| B. Least rural non-MSA (n=10,775) | | |
| Non-Hispanic White ^a | 1.0 | 1.0 |
| Mexican American | 0.443** [0.287–0.683] ^b | 0.400 [0.157–1.020] ^b |
| African American | 0.373** [0.244–0.570] ^b | 0.478** [0.286–0.800] ^b |
| C. Most rural non-MSA (n=5,848) | | |
| Non-Hispanic White ^a | 1.0 | 1.0 |
| Mexican American | 0.988 [0.301–3.239] ^b | 1.197 [0.333–4.300] ^b |
| African American | 0.578* [0.354–0.944] ^b | 0.620 [0.275–1.394] ^b |

*Significant at 5%

**Significant at 1%

^aNon-Hispanic White is the reference Group

^b95% confidence intervals in parentheses

Note: Based on 6 different models logistic regression models; person/year observations. The analysis is restricted to Non-Hispanic Whites and African Americans, and Mexican Americans. All models include controls for reported mental and physical health, gender, age, region, income/needs ratio, education, employment status, insurance type and year of participation in survey.

MSA = metropolitan statistical area

OR = odds ratio

ethnic minority groups, are less able to purchase services. Inspection of descriptive data shows that non-Hispanic Whites living in the most rural areas have lower incomes, are less likely to hold health insurance, and tend to have less education than those living in MSAs; however they are still relatively advantaged socioeconomically in comparison with African Americans and Mexican Americans. Because our multivariate models control for SES, the persistence of the racial/ethnic differences in rural areas suggests other factors are also important. Poor treatment rates among rural non-Hispanic Whites

may be a consequence of stigma, or perceived cultural dissimilarities between professional providers and consumers, and other traditional rural values that decrease the use of formal health care services, as they are for members of racial/ethnic minority groups.³⁶⁻³⁹ Further research is needed to determine personal and social characteristics that affect patterns of mental health care use in rural areas and among racial/ethnic minorities.

Rural service system characteristics also may contribute to the rural-urban mental health treatment disparities reported here. There is compelling evidence of an insufficient supply of mental health and generalist health providers as well as treatment facilities in rural areas.^{32,40,41} These systemic shortfalls result in rural residents traveling long distances to obtain care, a factor they report as limiting their access to care.^{42,43} This inaccessibility of rural mental health services affects all racial and ethnic groups and could account for the relatively similar treatment rates in the most rural areas for the three racial/ethnic groups examined. This view is reinforced by Alegria and colleagues¹⁸ finding that mental health treatment was lower among those rural residents, poor Latinos, and African Americans who were not low-income; presumably these groups had more resources with which to purchase mental health services. Philo and colleagues³⁷ also point that few mental health facilities results in the greater visibility of the few services to members of the community. This in itself can deter treatment if rural residents perceive that their anonymity is threatened.

There are notable limitations in our research approach that should be noted. First, as noted above, the MEPS is restricted to the civilian, non-institutionalized population and thus does not include many users of mental health services who are homeless or who reside in long-term residence or military facilities, including psychiatric hospitals, prisons, and jails. The overlap of *any treatment* and specialty mental health treatment is another limitation of the dataset we use. Similarly, because only one person reports for the entire family, the MEPS relies on proxy reports of mental health status, which could bias estimates of racial and ethnic differences in treatment rates. Again similarly, the absence of additional information about the severity of a persons' mental health condition, aside from this self-report, could bias our estimates to the extent that racial and ethnic groups differ in terms of severity. The MEPS does not discriminate between psychiatrists and generalist physicians; thus we were unable to obtain independent estimators for these two facets of treatment. The Rural-Urban Continuum Codes were used to define rurality in this report. While use of this refined measure of rurality is part of the innovation of this research the coding scheme does have limitations. Counties are coded by size and by adjacency to an urban center. A key assumption then is that size and adjacency matter in the receipt of mental health care, when other facets of rurality may matter more in obtaining mental health care. The key limitation of this research, however, is the insufficient sample of African American and Mexican Americans residing in the most rural counties and the limited number of other racial and ethnic minorities available for analysis. These data limitations resulted in examining rural-urban disparities in only three racial/ethnic groups and in constraining our rural analysis to only two non-metropolitan groups. Previous research by our research team⁴⁴ shows distinct differences in treatment rates in the most rural counties (RUCC codes 8 and 9) but the small samples available in these two RUCC categories neces-

sitated grouping 8 and 9 with RUCC code 7 counties. Counties of the latter type tend to be more densely populated than 8 and 9 coded counties and thus some power to detect differences for remote rural samples may have been lost.

Despite these limitations, findings of this research suggest variation in patterns of mental health services utilization attributable to both race/ethnicity and rurality. It is incumbent that future research in this area establishes the factors underlying observed patterns of services use that lead to mental health treatment disparities for both of these groups. Individuals from rural or urban areas underutilize mental health services differently and health care providers must be attuned to these differences in order to improve access to needed health care. In order to reduce these disparities, understanding by researchers of what is necessary to treat Latino and African American communities effectively is essential to ensuring the availability of mental health services tailored to meet the needs of these groups. As other researchers have noted, future research must also focus on how best to target the inequalities that exist among rural, urban, and racial and ethnic community groups in order to increase one's access to care.¹⁹ As a consequence of these concurrent disparities, racial and ethnic minorities and those who live in the most isolated geographic regions (i.e., rural and the most rural areas) experience higher levels of negative mental and physical health outcomes. The key to finding solutions for mental health disparities is learning how to reduce stigmatization of mental illness through education, improve access to and availability of mental health services, and enhance the numbers of providers to the underserved. The need to find corrective measures for disparities in mental health care must be forthcoming.

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