Intersection of Living in a Rural Versus Urban Area and Race/Ethnicity in Explaining Access to Health Care in the United States

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Objectives. To examine whether living in a rural versus urban area differentially exposes populations to social conditions associated with disparities in access to health care.

Methods. We linked Medical Expenditure Panel Survey (2005–2010) data to geographic data from the American Community Survey (2005–2009) and Area Health Resource File (2010). We categorized census tracts as rural and urban by using the Rural–Urban Commuting Area Codes. Respondent sample sizes ranged from 49 839 to 105 306. Outcomes were access to a usual source of health care, cholesterol screening, cervical screening, dental visit within recommended intervals, and health care needs met.

Results. African Americans in rural areas had lower odds of cholesterol screening (odds ratio[OR] = 0.37; 95% confidence interval[CI] = 0.25, 0.57) and cervical screening (OR = 0.48; 95% CI = 0.29, 0.80) than African Americans in urban areas. Whites had fewer screenings and dental visits in rural versus urban areas. There were mixed results for which racial/ethnic group had better access.

Conclusions. Rural status confers additional disadvantage for most of the health care use measures, independently of poverty and health care supply. (*Am J Public Health.* 2016;106:1463–1469. doi:10.2105/AJPH.2016.303212)

Racial and ethnic disparities in access to and receipt of quality health care are urgent policy challenges.[1] Independent of clinical appropriateness, insurance status, and socioeconomic correlates, African Americans and Hispanics generally have poorer access to and lower quality health care.[2] It is also well documented that people in rural areas have worse access to health care than those in urban areas,[3,4] but little is known about the interaction of race/ethnicity and rural residence. We used a nationally representative sample to examine access to health care among African Americans, Hispanics, and Whites in rural compared with urban areas.

Although many studies have focused on person-level characteristics that may affect care seeking, few attempt to explain how living in a rural area may exacerbate or attenuate racial/ethnic disparities in access to health care. Today, approximately one fifth of the US population lives in a rural area, and racial/ethnic minorities represent 20% of the rural population.[5,6] Although slower than urban growth, rural population gains have shown increasing diversity. In the past decade, racial/ethnic minorities accounted for more than 80% of the rural population growth.[6] Yet estimates of racial/ethnic health care disparities continue to be reported for the nation as a whole or for urban areas only.

The available literature indicates that African Americans and Hispanics in rural areas may have poorer access to medical care, be less likely to have health insurance, and make fewer physician visits, compared with their urban counterparts or rural non-Hispanic Whites (hereafter Whites).[7,8] Findings are mixed for other outcomes. In rural areas, African Americans were more likely to have up-to-date cancer screenings than were Whites.[9] Within rural areas, rates of health insurance and preventive visits may be similar across racial/ethnic groups.[10] These studies often use county-level measurements of rural and urban, focus on women or older adults, and typically use urban Whites as the reference group.[7,9,11–13]

We argue that living in a rural area may heighten exposure to unequal social conditions that perpetuate disparities in access to health care. We use the Institute of Medicine's definition of disparities in access to health care as differences in access that are not justified by underlying health status.[2] In rural areas, common explanations for racial/ethnic disparities in access to health care include that a greater proportion of African Americans and Hispanics live in areas with fewer collective resources, higher rates of poverty, and lower levels of health care supply.[8,14,15] Inequalities by race/ethnicity also influence resource distribution. Whereas 65% of rural counties overall are designated as Health Professional Shortage Areas, 81% and 83% of Hispanic- and African American–majority rural counties have that designation.[8] Areas with lower health care supply correspond with lower access to health care and worse health outcomes.[16,17]

Racial/ethnic disparities in access to health care that result from unequal exposure to

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poverty and restricted health care supply occur in urban areas as well, but we expect that the intensity of disadvantage and dispersion of resources will be greater in rural areas. We argue that in rural areas geographic isolation from population centers because of increasing economic globalization, population out-migration, and aging populations may lead to declining infrastructures.[6,18] The isolation of rural areas leaves people needing to travel farther for health care and facing difficulties accessing transportation.[19] Regardless of place, historical legacies of racial oppression and subjection may also perpetuate stigma of racial/ethnic minorities and new "outsider" groups.[20,21] These experiences may present barriers within and outside the health care system.[22]

Because rural areas remain less understood and less included in public health research than urban areas, we investigated access to health care for African Americans, Hispanics, and Whites living in rural versus urban areas. We hypothesized an added disadvantage for African Americans and Hispanics living in rural areas in the United States compared with their urban counterparts because of geographical isolation. Because social conditions may operate differently across geographical contexts, clarifying place disparities with less visible place types, such as rural areas, is essential to address health disparities.

METHODS

The Agency for Healthcare Research and Quality's Medical Expenditure Panel Survey (MEPS) Household Component File provided information about access to health care from a nationally representative sample with in-person interviews. We pooled the 2005–2010 annual MEPS data to minimize the variance in our analysis that is attributable solely to smaller sample sizes. We used geographic identifiers to match data from 94.5% of MEPS respondents to information about their census tracts and counties, supplied by the American Community Survey (2005–2010) and the Area Health Resource File (2010). Because geographic identifiers were encrypted by the Agency for Healthcare Research and Quality, we were unable to reassign tract and county information. We excluded respondents with missing data. When we compared them with the analytic samples, more excluded respondents were non-White. We suspect that excluding these respondents made it more difficult to identify group differences, which improves our confidence in the identified associations. We used separate analytic samples of adults aged 18 to 64 years for each of the 5 outcomes, ranging in size from 49 839 to 105 306.

The Agency for Healthcare Research and Quality linked the MEPS data with American Community Survey and Area Health Resources File. We conducted the analyses of this merged data file at the California Census Research Data Center.

Measures

Five outcome variables captured different dimensions of self-reported access to health care, defined as one's subjective ability to access health care services (usual source of health care and health care needs met) and achieved access (preventive screenings and dental visit). All outcomes were dichotomous, coded to indicate a desirable situation, and were age- and gender-specific. Outcomes followed the US Preventive Services Task Force guidelines, Healthy People 2020, and American Cancer Society.

The first outcome, usual source of health care, was assessed by asking respondents, "Is there a particular doctor's office, clinic, health center, or other place that you usually go to if you are sick or need advice about your health?" Response options were "yes," "no," or "more than one place." "Yes" and "more than one place" were coded as 1, and "no" as 0. The second outcome, health care needs met, assessed any barriers that prevented or delayed a respondent from seeking medical care, dental care, or prescription medication. Respondents were asked, "In the last 12 months, was anyone in the family unable to obtain medical care, tests, or treatments they or a doctor believed necessary?" and "In the last 12 months, was anyone in the family delayed in getting medical care, tests or treatments they or a doctor believed necessary?" Respondents were asked about dental and prescription medication needs similarly. We considered health care needs not met when respondents answered "yes" to any 1 of the 6 questions (relating to medical care, dental care, and prescription medication, coded as 0) and met when respondents answered "no" to all questions (coded as 1).

The third outcome, cholesterol screening, was assessed by asking, "About how long has it been since [person] had [person]'s blood cholesterol checked by a doctor or other health professional?" Response options ranged from 1 = past year to 6 = never, and we collapsed them to create 2 categories: within the past 5 years (coded as 1) and more than 5 years ago (coded as 0). We restricted this outcome to adults aged 35 to 64 years. The fourth outcome, dental visit, was assessed by asking, "On average, how often [do/does] [person] receive a dental check-up?" Response options ranged from 1 = twice a year or more to 4 = never go to the dentist, and we collapsed them to create 2 categories: at least once a year (coded as 1) and less than once a year (coded as 0). The final outcome, cervical screening, asked women, "When did [person] have [person]'s most recent Pap test?" Response options ranged from 1 = within the past year to 6 = never, and we collapsed them to create 2 categories: within the past 3 years (coded as 1) and more than 3 years ago (coded as 0). We restricted this outcome to women aged 21 to 64 years.

We characterized census tracts as urban, large rural, or rural by using the Rural–Urban Commuting Area Codes (RUCA). We used the secondary RUCA, which is composed of 30 codes and designates the rurality of a tract on the basis of population density, urbanization, and daily commuting patterns. We applied the RUCA to all tracts of the respondents and collapsed them into 3 categories based on the Washington, Wyoming, Alaska, Montana, and Idaho Rural Health Research Center[23,24]; urban was contiguous built-up areas of 50 000 or more persons corresponding to the Census Bureau's Urbanized Areas, large rural was suburban or large rural towns with populations of between 10 000 and 49 999 with high commuting levels to urban cores, and rural was towns with populations less than 10 000 and their surrounding commuter areas and other isolated rural areas with more than a 1-hour drive to a nearest city. We did not include large rural areas in the final tables because our primary interest was capturing isolated rural areas.

TABLE 1—Descriptive Statistics by Rural and Urban Area, Adults Aged 18–64 Years: Medical Expenditure Panel Survey, United States, 2005–2010

Variable	National, Mean (SE) or %	Rural,[a] Mean (SE) or %	Urban,[b] Mean (SE) or %	P
County level				
Primary care physicians per 10 000 population	7.3 (0.1)	4.9 (0.2)	8.0 (0.1)	<.001
Hospital beds per 10 000 population	32.5 (0.7)	32.2 (2.4)	32.8 (0.5)	<.001
Tract level				
Percentage of residents at or below the FPL	18.0 (0.2)	23.8 (0.7)	17.7 (0.3)	<.001
Individual level				
Gender				
Male	49.4	49.7	49.2	
Female	50.6	50.3	50.8	
Age, y	40.4 (0.1)	42.5 (0.3)	39.9 (0.1)	<.001
Race/ethnicity				<.001
Non-Hispanic White	66.6	81.7	59.6	
Non-Hispanic Black	12.0	7.5	14.3	
Hispanic	14.7	7.7	17.9	
Non-Hispanic other	6.8	3.2	8.1	
Marital status				<.001
Married	54.2	60.3	51.2	
Divorced, widowed, or separated	15.5	17.4	15.5	
Single	30.3	22.3	33.4	
Educational attainment				<.001
< high school	9.9	13.2	9.8	
High school or GED	40.6	50.1	37.4	
≥ bachelor's degree	34.2	23.1	37.1	
Highest degree inapplicable or younger than 25 years	15.3	13.6	15.7	
Income relative to FPL				<.001
< 125%	15.4	19.6	15.3	
125%–199%	12.2	14.1	11.9	
200%–400%	30.9	36.8	29.6	
> 400%	41.5	29.5	43.2	
Employed	78.9	76.2	79.3	<.01
Insurance				<.001
Private	63.6	58.3	63.4	
Public	6.9	9.3	6.9	
Uninsured any time past year	29.5	32.4	29.7	
Self-reported health				<.001
Excellent or very good	61.7	54.4	62.9	
Good	27.1	31.1	26.6	
Fair or poor	11.1	14.5	10.5	
No. of chronic conditions				<.001
0	67.8	62.2	69.4	
1	23.0	25.0	22.3	
≥ 2	9.2	12.8	8.4	

Continued

We also assessed individual-, tract-, and county-level covariates. The main individual-level variable was self-reported race/ethnicity, categorized as non-Hispanic White, non-Hispanic African American or Black, Hispanic, and non-Hispanic other race. Other individual-level variables included age, gender, educational attainment, household income relative to the federal poverty level, whether the respondent was employed, and family size. We categorized insurance type hierarchically as uninsured at any time in the past year, insured private, and insured public. Health status was self-reported and recoded as excellent or very good, good, and fair or poor; chronic conditions were categorized as none, 1, and 2 or more. English proficiency was categorized as English only, English proficient (does not speak English at home and comfortable speaking English), and limited-English proficient (does not speak English at home and not comfortable speaking English). Any out-of-pocket medical expenses were coded yes or no.

To estimate the independent associations between residence in a rural area and each outcome, we controlled for area-level poverty and health care supply. We measured tract-level poverty as the percentage of the population living below the federal poverty threshold and standardized it with a mean of zero and standard deviation of 1. We captured health care supply at the county level, and measured it as the number of primary care physicians per 10 000 population and the number of hospital beds per 10 000 population. We also included region of residence and survey year.

Statistical Analyses

Three-level random intercept logistic regression models (with random intercepts for tracts and counties) estimated the 5 outcomes. This method accounted for respondents being more similar to those in their own tract and county. With 5 samples, each tract had an average of 4.1 to 6.5 respondents, and each county 37.4 to 69.4 respondents. We dummy coded rural–urban area and race/ethnicity, and tested an interaction term.

Linear combinations examined differences in the coefficients between groups. We incorporated the MEPS individual-level sampling

TABLE 1—*Continued*

Variable	National, Mean (SE) or %	Rural,[a] Mean (SE) or %	Urban,[b] Mean (SE) or %	*P*
No. of household members	2.9 (0.0)	2.9 (0.7)	2.8 (0.3)	
Any out-of-pocket medical expense[c]	77.6	79.3	76.6	< .001
English proficiency				< .001
English only	87.1	94.6	83.6	
English proficient	5.1	1.7	6.5	
Limited English proficient	7.8	3.7	9.9	
Region				< .001
Northeast	18.8	10.7	21.5	
Midwest	22.2	33.0	18.9	
South	36.8	40.5	34.3	
West	22.2	15.8	25.2	

Note. FPL = federal poverty level; GED = general equivalency diploma; National = all census tracts (urban, large rural, and rural). Sample is for health care needs met (n = 105 306). Large rural not included (suburban or large rural towns with populations of between 10 000 and 49 999 with high commuting levels to urban cores; 20.0%; n = 21 019). Weighted data.

[a]Towns with populations < 10 000 and their surrounding commuter areas and other isolated rural areas with more than 1-hour drive to a nearest city (8.5%; n = 8943).

[b]Contiguous built-up areas of ≥ 50 000 persons corresponding to the Census Bureau's Urbanized Areas (71.5%; n = 75 344).

[c]Direct payment for medical services, excluding payments for health insurance premiums or contributions made to group health plans.

weights into the models to account for the study design and unequal selection probabilities. We scaled the weights to sum to the level-3 (county) cluster sample size.[25] We conducted all multilevel analyses by using the GLLAMM (generalized linear latent and mixed models) program in Stata software, version 13 (StataCorp LP, College Station, TX).

RESULTS

Table 1 describes the weighted descriptive statistics nationally and by rural or urban area. Adults in rural areas were less racially/ethnically diverse, with 18% of adults self-reporting as African American, Hispanic, or other race, compared with 40% of adults in urban areas. Adults in rural areas were older, in poverty, and in poorer health compared with adults in urban areas. The South contained the largest proportion of rural respondents (41%).

Unadjusted frequencies for the 5 outcomes are presented in Table 2. Nationally, living in a rural area corresponded with lower levels of screenings and dental visits even though rural respondents were more likely to report a usual source of health care. There were mixed results when we compared racial/ethnic groups. Proportionately fewer African Americans and Hispanics had a usual source of health care compared with Whites in both urban and rural areas. Although as many or more African Americans and Hispanics self-reported that their health care needs were met relative to Whites, fewer had a dental visit in both urban and rural areas.

Sizable variation existed when we stratified the data by both race/ethnicity and rural–urban area in the unadjusted analysis (Table 2). More Whites and African Americans in rural areas reported a usual source of health care than their urban counterparts. African Americans in rural areas had the highest reports of their health care needs being met (91%). In rural areas, African Americans and Hispanics had fewer cholesterol screenings than rural Whites (74% vs 81%). The gap between rural and urban areas was substantially larger for African Americans (15.6%). Cervical screening showed less variation, with rates varying between 81% and 86% among rural women, and 87% and 91% among urban women. Among rural Hispanics, only 39% reported a dental visit in the past year.

Table 3 shows that, after we held all other individual-, tract-, and county-level covariates constant, African Americans in rural areas had lower odds of a cholesterol screening (odds ratio [OR] = 0.37; 95% confidence interval [CI] = 0.25, 0.57) and lower odds of a cervical screening (OR = 0.48; 95% CI = 0.29, 0.80) than did those in urban areas. Among Hispanics, access to health care was similar in rural and urban areas after we adjusted for covariates. Whites in rural areas had higher odds of a usual source of health care than Whites in urban areas. However, Whites in rural areas had lower odds of a cholesterol screening (OR = 0.66; 95% CI = 0.53, 0.81), cervical screening (OR = 0.76; 95% CI = 0.62, 0.95), and dental visit (OR = 0.76; 95% CI = 0.66, 0.88) than their urban counterparts.

Subsequent analysis (not shown here) indicated that, after adjustment, cholesterol screenings and cervical screenings were similar, if not better, for African Americans and Hispanics relative to Whites in both rural and urban areas. For instance, in rural areas, rates of cervical screening were similar for African Americans and higher for Hispanics (OR = 1.65; 95% CI = 1.07, 2.55), relative to Whites in urban areas. Also, more African Americans in rural areas reported that their health care needs were met (OR = 1.93; 95% CI = 1.21, 3.09) relative to Whites in urban areas.

DISCUSSION

We sought to understand whether access to and use of 5 types of health care services varied for racial/ethnic minorities living in rural versus urban areas. For all racial/ethnic groups at the bivariate level, rural areas experienced disadvantaged rates of reported health care use (screenings and dental visit) relative to urban areas. There was a rural advantage for the more subjective outcomes of having a usual source of health care and, for African Americans, reporting that their health care needs were met. We found mixed results for which racial/ethnic group had better access depending on the outcome. After we controlled for poverty and health care supply, rural status maintained a negative association with most of the health care use measures. This confirmed our hypothesis that geographical isolation may help explain disparities in access to health care.

TABLE 2—Unadjusted Estimates of Access to Health Care by Race/Ethnicity and Rural–Urban Area: Medical Expenditure Panel Survey, United States, 2005–2010

Outcome	National, %	Rural, %	Urban, %	Rural–Urban Gap
Usual source of health care (ages 18–64 y; n = 104 334)				
All	73.0	78.6	71.6	7.0[a]
Non-Hispanic White	77.9	80.6	77.2	3.4[a]
Non-Hispanic African American	69.5[b]	75.1[b]	69.6[b]	5.5[a]
Hispanic	56.5[b]	60.0[b]	56.3[b]	3.7
Health care needs met (ages 18–64 y; n = 105 306)				
All	86.8	85.8	87.0	−1.2
Non-Hispanic White	86.2	85.1	86.4	−1.3
Non-Hispanic African American	86.7[b]	90.8[b]	86.5	4.3[a]
Hispanic	88.6[b]	87.6	88.6[b]	−1.0
Cholesterol screening (ages 35–64 y; n = 62 743)				
All	85.8	80.3	87.2	−6.9[a]
Non-Hispanic White	86.5	81.3	88.2	−6.9[a]
Non-Hispanic African American	88.0[b]	74.0[b]	89.6[b]	−15.6[a]
Hispanic	80.7[b]	74.1[b]	82.0[b]	−7.9[a]
Cervical screening (women ages 21–64 y; n = 49 839)				
All	86.0	81.3	87.3	−6.0[a]
Non-Hispanic White	85.8	80.8	87.7	−6.9[a]
Non-Hispanic African American	90.2[b]	85.6	90.7[b]	−5.1
Hispanic	86.6	81.1	87.0	−5.9
Dental visit (ages 18–64 y; n = 104 528)				
All	62.3	52.2	64.4	−12.2[a]
Non-Hispanic White	65.9	53.7	69.7	−16.0[a]
Non-Hispanic African American	57.7[b]	50.1	59.1[b]	−9.0[a]
Hispanic	50.0[b]	38.6[b]	51.1[b]	−12.5[a]

Note. All = White, African American, Hispanic, and non-Hispanic other race. National = all census tracts (urban, large rural, and rural). Weighted data.

[a]Indicates significantly different ($P < .05$) from urban by race/ethnicity.

[b]Indicates significantly different ($P < .05$) than non-Hispanic White within national, rural, and urban areas.

Rural residence appeared to worsen access to the 3 objective, quantifiable outcomes, whereas access to the 2 subjective, qualitative outcomes was improved compared with urban residence. Relative to their urban counterparts, African Americans and Whites in rural areas had lower levels of screenings and Whites had lower levels of dental visits. Other studies show that both African Americans and Whites had lower odds of breast, cervical, and colorectal screenings in areas characterized by greater rurality.[9,11] Our findings differ from a study of cervical screening that found similar rates for Whites in rural versus urban areas, whereas African Americans had marginally higher rates in rural (90.3%) versus urban areas (89.0%).[13] That study included a broader universe (women aged ≥ 18 years) and used county-level rural–urban designations rather than tract-level. Despite the rural disadvantage for screenings, our unadjusted estimates showed that, compared with their urban counterparts, more African Americans and Whites in rural areas had a usual source of health care, and more African Americans in rural areas reported that their health care needs were met. These findings corroborate the broader rural–urban health literature, that rural populations have higher odds of a usual source of health care than urban populations.[26] For rural residents, although relatively few physicians may be available in a local area, the restricted choice of providers could lead to the ability to more easily identify one.

There were mixed results in terms of which race/ethnicity had better access to health care, which is an important finding for health care delivery. In rural and urban areas, we found more minorities had screenings than did Whites after adjustment. One study found that more African Americans than Whites had cancer screenings in both urban and rural areas.[9] We also found that fewer Whites reported that their health care needs were met, relative to African Americans, aligning with work that minority groups may report fewer delays or missed medical care relative to Whites.[27] However, according to unadjusted estimates, fewer African Americans and Hispanics had a usual source of health care relative to Whites in both rural and urban areas. Although racial/ethnic minorities report fewer resources, they may access what health care is available and correspondingly report a lower level of unmet needs.

Many of the differences between racial/ethnic groups, particularly for Hispanics, were attenuated from unadjusted to adjusted analyses. These changes are expected on the basis of explanations that living in areas with higher levels of poverty and lower levels of health care supply contribute to disparities in access to health care.[8,14] Several studies report sizable health care disparities for African Americans and Hispanics compared with Whites, but many disparities are reduced in severity after socioeconomic characteristics were controlled.[9–11,13] A significant factor in health disparities is the persistence of racial/ethnic patterning of socioeconomic status.[20,28] In rural areas, the distribution of socially disadvantaged populations are uneven and racial and ethnic minority groups disproportionately reside in high-poverty areas where there are few resources.[18,29,30] As such, after we accounted for poverty and health care supply, we were able to explain many of the disparities in access to health care.

Controlling for poverty and health care supply helped to isolate the associations of residence in a rural area to the outcomes. For all racial/ethnic groups, geographical isolation may be a key driver of rural–urban disparities in screenings, with possibly longer travel times to medical care and difficulty with transportation.[19] Isolation and declining infrastructure of rural areas may restrict the availability of screenings in nontraditional health care settings. For instance, clinics in retail settings, often within grocery stores and drugstore clinics, may offer fewer locations in rural areas.[31] Particularly for African Americans, lower levels of screening may also indicate that rural isolation is coupled with

TABLE 3—Adjusted Odds Ratio of Access to Health Care Comparing Living in a Rural Area to an Urban Area by Race/Ethnicity: Medical Expenditure Panel Survey, United States, 2005–2010

Outcome	Rural,[a] AOR[b] (95% CI)
Usual source of health care	
All	1.52 (1.29, 1.78)
Non-Hispanic White	1.55 (1.30, 1.86)
Non-Hispanic African American	1.29 (0.91, 1.84)
Hispanic	1.28 (0.86, 1.88)
Health care needs met	
All	1.15 (0.98, 1.35)
Non-Hispanic White	1.12 (0.94, 1.33)
Non-Hispanic African American	1.35 (0.84, 2.16)
Hispanic	1.06 (0.70, 1.62)
Cholesterol screening	
All	0.62 (0.51, 0.74)
Non-Hispanic White	0.66 (0.53, 0.81)
Non-Hispanic African American	0.37 (0.25, 0.57)
Hispanic	0.63 (0.35, 1.15)
Cervical screening	
All	0.79 (0.65, 0.96)
Non-Hispanic White	0.76 (0.62, 0.95)
Non-Hispanic African American	0.48 (0.29, 0.80)
Hispanic	0.89 (0.58, 1.36)
Dental visit	
All	0.78 (0.69, 0.89)
Non-Hispanic White	0.76 (0.66, 0.88)
Non-Hispanic African American	0.97 (0.71, 1.34)
Hispanic	0.74 (0.51, 1.07)

Note. All = White, African American, Hispanic, and non-Hispanic other race; AOR = adjusted odds ratio; CI = confidence interval. Weighted data.

[a]Reference group = urban.

[b]AOR derived from a 3-level random intercept model, which controls for primary care physicians per 10 000 population, hospital beds per 10 000 population, tract-level percentage of residents at or below the federal poverty level, gender, age, race/ethnicity, marital status, educational attainment, poverty, unemployment, insurance status, self-reported health, number of chronic conditions, out-of-pocket medical expenses, English proficiency, survey year, and region.

a long history of medical testing and treatment scandals that continue to perpetuate racial inequities of distrust of the health care system across the United States.[32] Although we did not test for these experiences, we recognize that, regardless of place, systemic and historical racism continues to shape access to and use of health care. For instance, particularly among African Americans, higher reports of distrust of one's own physician were found to be associated with lower preventive service use.[33]

By pooling the MEPS data across years, we were able to examine African Americans and Hispanics in rural areas. The MEPS oversampling of racial/ethnic minorities better ensures the generalizability of our findings. The use of confidential data to match a MEPS respondent's place of residence to the tract-level RUCA enabled us to capture isolated rural areas. Other studies that use public-use files often exclude counties with fewer than 10 000 residents, leading to an underrepresentation of rural areas. Use of 5 measures of access to health care better reveals the multidimensionality of access to health care.

Limitations

Capturing rural and urban areas at the tract level could be problematic because tracts are not standardized and populations may be sparser in some areas, such as the West. Although our RUCA categorization captures isolated rural areas, caution should be taken not to generalize findings to large rural areas. The data are also cross-sectional, and because people, to some extent, choose where they live, person-level attributes may confound the study's findings.

Finally, the selected outcomes could be subject to recall bias.[34] We have no reason to expect underreporting of outcomes to differ by race/ethnicity or rural–urban area. Furthermore, we based our analysis on comparative and not absolute rates; therefore, underreporting should not bias findings.

Conclusions

Race/ethnicity and geography are well-documented factors associated with access to health care and health outcomes. This study demonstrates the associations of living in a rural versus urban area for disparities in access to health care. Numerous states with sizable rural areas and racial/ethnic minorities refused to expand Medicaid under the Affordable Care Act, and these policy decisions, coupled with geographic isolation, may continue to restrict access to health care for vulnerable groups. Access to primary health care corresponds with reduced costs, less emergency department use, and decreased disability; therefore, timely access to health care should remain a concern for employers, health insurers, and policymakers.[35]

To adequately address health disparities, rural areas need to be better incorporated into discussions of spatial and racial inequality. Future research should consider the historical specificities of rural areas by focusing on systemic racism, Native Americans, and the South. Examination of employment and education opportunities may help determine the need for area-specific rural development programs, particularly in persistently poor counties that have high concentrations of racial/ethnic minorities. AJPH

CONTRIBUTORS

J. T. Caldwell conceptualized the study, conducted the analysis, and led the writing of the article. C. L. Ford, S. P. Wallace, M. C. Wang, and L. M. Takahashi assisted in conceptualizing the study, interpreting the findings, and writing the article.

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Note. All errors and omissions are the responsibility of the authors.

HUMAN PARTICIPANT PROTECTION

The UCLA institutional review board determined that this study meets the criteria for an exemption from review because data were accessed through the California Census Research Data Center and Agency for Healthcare Research and Quality Data Center.

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