

## ORIGINAL ARTICLE

## Differences by Rurality in Satisfaction with Care Among Medicare Beneficiaries

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### Abstract

**Purpose:** There are stark differences between rural and urban areas in demographic characteristics, health status, and health care, yet less is known about rural-urban differences in Medicare beneficiaries' satisfaction with care. We seek to identify rural-urban differences in satisfaction with care for Medicare beneficiaries and whether those differences are explained by differences in beneficiary characteristics.

**Methods:** We used data from the 2016 Medicare Current Beneficiary Survey (n = 10,625), in which beneficiaries indicated their level of satisfaction for 9 measures related to quality and access/affordability of care. We first assessed bivariate differences in satisfaction with care by rural-urban location (metropolitan, rural micropolitan, and rural noncore) across each measure. We then used logistic regression to assess whether differences remained after adjusting for sociodemographic and health characteristics.

**Results:** For nearly all measures, satisfaction with care decreased with increasing rurality. Differences in satisfaction persisted for satisfaction with ease of getting to the doctor from home (adjusted odds ratio [AOR] micropolitan: 0.63,  $P = .037$ ; AOR noncore: 0.61,  $P = .023$ ) and availability of care by specialists (AOR micropolitan: 0.51,  $P = .001$ ; AOR noncore: 0.61,  $P < .001$ ) after adjusting for sociodemographic and health characteristics.

**Conclusions:** Rural Medicare beneficiaries reported lower satisfaction with care than their urban counterparts across a variety of measures, and some of these differences remained after adjustments were made for sociodemographic and health characteristics. These findings may have implications for access to and quality of care that rural Medicare beneficiaries receive and their subsequent health outcomes.

**Key words** access, Medicare, rural, satisfaction with care.

Patient satisfaction is a key indicator of healthcare quality.<sup>1</sup> Such measures are increasingly reported publicly and included in pay-for-performance reimbursement. For example, patient-reported data from the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey are used to calculate value-based incentive payments in Medicare's Hospital Value-Based Purchasing program.<sup>2</sup> Although some healthcare providers have objected to the use of

patient experience metrics such as satisfaction—arguing that they too often reflect subjective experiences and perceptions rather than “true” quality of care—existing literature shows patient satisfaction with care to be positively correlated with health outcomes, adherence to treatment recommendations, patient safety, and other objective measures of care quality.<sup>1,3-6</sup>

There are various factors that might influence a patient's perception of their own care, and these factors

are closely tied with sociodemographic characteristics (of both patients and providers), as well as with structural characteristics of healthcare facilities. For instance, research suggests that patients who experience racial or ethnic discrimination in medical settings from providers and staff report lower satisfaction with care, as do patients whose providers do not speak their language.<sup>4,7,8</sup> Patient satisfaction is also associated with organizational characteristics and capacity of the healthcare facility, as well as with interpersonal communication from providers and staff.<sup>9</sup> For these reasons, it is important to investigate multiple dimensions of satisfaction of care, and to understand how various sociodemographic characteristics might be associated with patient experience. Geographic differences in patient satisfaction may be particularly relevant, both as demographic characteristics of patients themselves and as an important mechanism by which structural features of care are patterned.

Rural Medicare beneficiaries face unique challenges to obtaining good health care and good health outcomes. In particular, rural areas are older, on average, than urban areas, and they have higher rates of mortality and morbidity.<sup>10-12</sup> Rural populations also tend to have fewer economic resources and face particular constraints in accessing care, including transportation barriers, hospital closures, and workforce shortages.<sup>13-16</sup> Even when access is relatively similar between rural and urban areas, such as is the case with use of electronic health records, rural residents may use care differently or less often than urban residents.<sup>17</sup> For example, some research shows that rural residents use less of specific services, such as home health and hospice in the last 6 months of life, compared to their urban peers.<sup>18</sup> Still, other research shows similar rates of service utilization among rural and urban Medicare beneficiaries,<sup>19</sup> necessitating additional study of differences, or lack thereof, in experiences of care by geography.

Additionally, there are notable geographic differences in the quality of care for Medicare beneficiaries, with data indicating that quality outcomes are often lower in rural areas compared to urban areas.<sup>20,21</sup> Each of these contextual factors could impact patient experience and overall satisfaction. Given overall stark differences between rural and urban areas in the accessibility and availability of care, demographic characteristics, and healthcare workforce shortages, one might expect patient satisfaction to differ as well.

Yet, a 2012 MedPAC (Medicare Payment Advisory Commission) report found little, if any, difference between rural and urban Medicare beneficiaries in their satisfaction with care.<sup>22</sup> This report examined differences in satisfaction with access to care (eg, night and weekend hours and ease of getting to the doctor) and communica-

tion with their provider. Subsequent research has found mixed results on whether or not there are differences by geography in satisfaction with care among Medicare beneficiaries. One study, using 2012 Medicare Current Beneficiary Survey (MCBS) data, also found no difference by rurality in satisfaction with care, both before and after adjusting for individual- and community-level characteristics.<sup>21</sup> However, another study, also using 2012 MCBS data, found significantly lower satisfaction with Medicare Part D among rural Medicare beneficiaries, compared with their urban counterparts, which was not explained by differences in sociodemographic and health characteristics, but was related to differences in type of prescription drug coverage (eg, Medicare Advantage [MA] vs traditional Part D prescription plans).<sup>23</sup>

These research results are dated, however, especially in light of current policy discussions about the future and potential expansion of the Medicare program. Further, shifting demographics necessitate an updated analysis of patient satisfaction. As baby boomers age into Medicare, overall enrollment is projected to increase from 54 million beneficiaries today to over 80 million by 2030.<sup>24</sup> Already, characteristics of the Medicare population are changing, with a rapid increase in MA enrollment, increasing racial and ethnic diversity among enrollees, and a younger age profile.<sup>25,26</sup> Additionally, much of the prior research uses only 1 or 2 measures of satisfaction, which does not fully address the multifaceted nature of patients' experiences. In this study, we address that gap by examining rural-urban differences in 9 measures of satisfaction with care across 2 domains (quality of care and access/affordability of care) and by seeking to identify whether those differences can be explained away by observable differences in beneficiary characteristics.

## Methods

### Data

We used data from the 2016 MCBS, a nationally representative survey of Medicare beneficiaries, to assess rural-urban differences in various measures of satisfaction with care. The MCBS collects data from Medicare beneficiaries age 65 and older and those who are 64 and younger, but who qualify for Medicare with certain disabilities or conditions (eg, end-stage renal disease). The MCBS is a longitudinal, continuous survey that occurs in-person, 3 times a year. For the current study, "ever enrolled" beneficiary data were used (ie, beneficiaries who were enrolled in Medicare during some point of the survey year and resided in the contiguous United States or Puerto Rico). After excluding those who were younger than 65 (as the experience of nonelderly Medicare

beneficiaries is qualitatively different from that of older adults), the sample consisted of 10,625 beneficiaries age 65 and older who were community dwelling at the time of the survey. Additionally, because the MCBS uses a stratified, unequal-probability, multistage sampling process to select beneficiaries for data collection, full-sample and replicate weights were used for all analyses to account for the MCBS's complex sampling design and to calculate standard errors.

### Dependent Variables

The MCBS measured satisfaction on a Likert scale of 1-4 (very dissatisfied, dissatisfied, satisfied, and very satisfied). Satisfaction was measured with all care in the past year (both outpatient and inpatient settings), although questions do not specifically ask about satisfaction with one setting versus another. Beneficiaries were asked how satisfied they were with quality of, access to, and affordability of care. Five quality of care measures included satisfaction with the quality of medical care in the last year, information about what was wrong, follow-up after initial treatment, doctor's concern with the beneficiary's overall health, and phone answers for treatment or prescription questions. Four additional questions related to access to and affordability of care measures included satisfaction with medical care availability on nights and weekends, ease of getting to the doctor from the beneficiary's home, availability of care by specialists, and out-of-pocket costs for medical services. Please see Appendix A (available online only) for a detailed table showing each of the dependent variables.

### Independent Variables

We classified beneficiaries' county of residence as urban or rural (including micropolitan and noncore) in order to identify bivariate differences in satisfaction using the 4-point scale by location. The measures for rurality were provided in the MCBS demographic data and use the Core-Based Statistical Area (CBSA) designations provided by the Office of Management and Budget's (OMB) definitions of rurality. In brief, the CBSA designations place counties into 3 categories based on population: metropolitan counties (urban), rural micropolitan counties (generally, having a population core of fewer than 50,000 people), and rural noncore counties (generally, having a population core of fewer than 10,000 people).<sup>27</sup>

### Analysis

We used weighted chi-squared tests to determine bivariate differences between geographic designation

(metropolitan, rural micropolitan, and rural noncore) and level of satisfaction on the 4-point Likert scale for 9 measures of satisfaction with care. Individuals indicating they had no experience with a measure of satisfaction were excluded from the analysis.

To determine if the associations between rurality and satisfaction remained after adjusting for covariates, we collapsed the Likert scale for each item into 2 categories of satisfied/very satisfied versus dissatisfied/very dissatisfied. Collapsing the variable is common in analyses of satisfaction<sup>28,29</sup> and allows a clear comparison between those who chose "satisfied" versus those who chose "dissatisfied." In a sensitivity analysis, ordinal logistic regression was also considered for the full 4-point scale; however, the proportional odds assumption did not hold. As a result, logistic regression models using the 2-category collapsed scale were used to assess whether differences in satisfaction by rurality remained after adjusting for age, gender, race and ethnicity, income, marital status, educational attainment, self-rated health, number of chronic health conditions, and MA status for each of the 9 measures of satisfaction. We included sociodemographic variables for the reasons described above, in which patients differ in their perceptions and experiences of the health-care setting. We included health variables because those might influence how often a patient interacts with health care. And, we included MA status because of demonstrated differences among those enrolled in MA versus in traditional Medicare.<sup>30</sup> For the multivariate analyses, we checked for any potential multicollinearity, finding that the various inflation factor was <1.21 for all variables included, indicating no potential issues.

### Results

There were several significant differences by rurality in sociodemographic and health characteristics (Table 1). Rural Medicare beneficiaries, both micropolitan and noncore, were more likely to be currently or formerly married, and more likely to be non-Hispanic white, compared with metropolitan Medicare beneficiaries. Rural Medicare beneficiaries also had significantly lower incomes, lower rates of educational attainment, and lower enrollment in MA plans. We also observed differences in health, with rural Medicare beneficiaries having higher numbers of chronic conditions and worse self-rated health.

Across each of the 9 measures of satisfaction, rural micropolitan and noncore Medicare beneficiaries generally had significantly lower satisfaction, compared to their metropolitan counterparts. This included lower satisfaction with all 5 measures of quality of care

**Table 1** Weighted Descriptive Statistics of Medicare Beneficiaries 65 and Older by Rurality

	Metropolitan (80.3%; N = 8,133)	Rural Micropolitan (12.8%; N = 1,598)	Rural Noncore (7.0%; N = 894)	P-value
Age	74.1	73.9	74.7	.167
Female	55.5%	52.7%	54.3%	.152
Marital status				<.001
Married	57.1%	57.8%	57.8%	
Widowed	22.4%	23.3%	23.5%	
Divorced/separated	15.0%	16.0%	16.8%	
Never married	5.5%	2.9%	1.9%	
Race and ethnicity				<.001
Non-Hispanic white	76.1%	86.5%	93.2%	
Hispanic	10.4%	2.6%	1.1%	
Non-Hispanic black	9.8%	7.1%	4.1%	
Other	3.7%	3.8%	1.6%	
Mean income	\$58,499	\$45,819	\$38,895	<.001
Educational attainment				<.001
Less than high school	14.9%	20.1%	18.0%	
High school degree	23.7%	29.5%	38.6%	
Some college	23.0%	25.0%	23.3%	
College degree or higher	38.4%	25.4%	20.1%	
Medicare advantage	46.0%	26.0%	33.3%	<.05
Count of chronic conditions	2.9	3.0	3.1	<.05
Self-rated health				.016
Good/very good/excellent	82.9%	82.3%	78.9%	
Fair/poor	17.1%	17.8%	21.1%	

N = 10,625

(Figure 1A-E): quality of medical care in the past year, information about what was wrong, follow-up after initial treatment, doctor’s concern about overall health, and phone answers for treatment or prescription.

Differences were also significant by rurality for satisfaction with access to and affordability of care for a majority of the measures (Figure 2A-D), including satisfaction with medical care availability, ease of getting to the doctor from home, and availability of care by specialists. However, there was no significant difference in satisfaction with out-of-pocket costs for medical services.

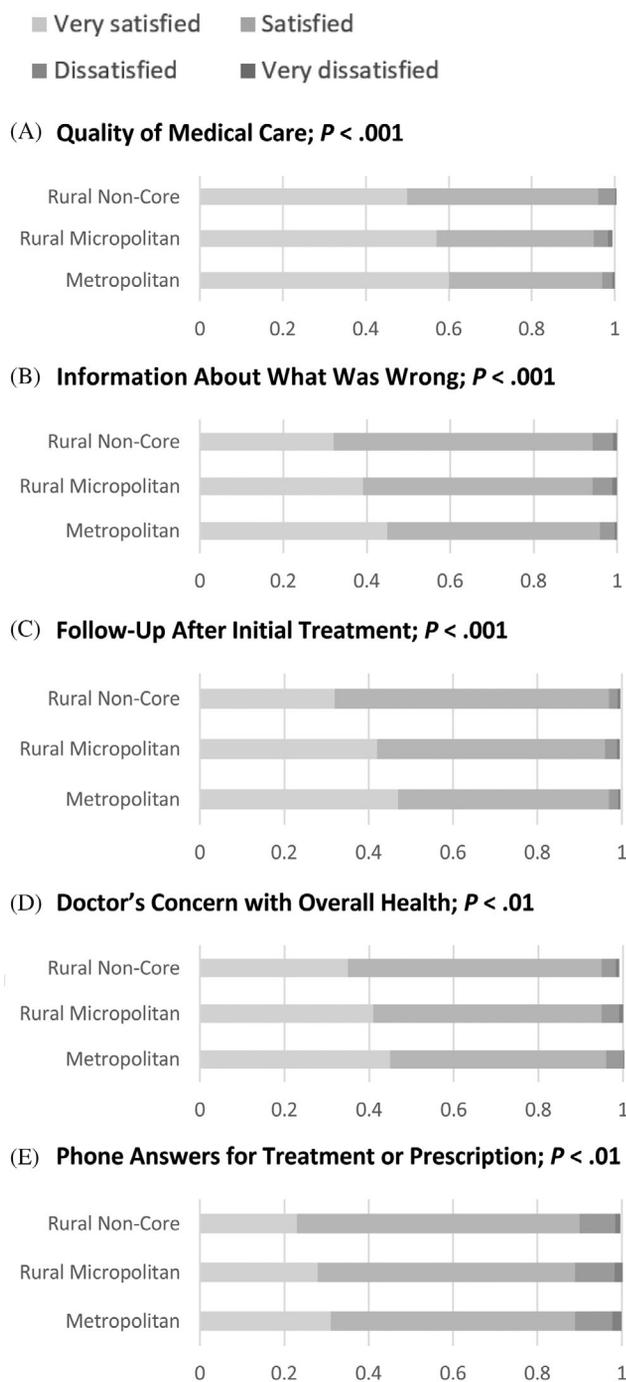
After adjusting for sociodemographic and health variables, significant differences in satisfaction remained for some measures, especially for rural micropolitan beneficiaries (Figure 3). Specifically, after adjusting for sociodemographic and health characteristics, Medicare beneficiaries residing in rural micropolitan areas had 43% lower odds of reporting satisfaction with ease of getting to the doctor from home, and rural noncore beneficiaries had 48% lower odds of the same measure compared to their urban counterparts (adjusted odds ratio [AOR] micropolitan: 0.57, *P* = .020; AOR noncore: 0.52, *P* = .005). Rural micropolitan beneficiaries had 58% lower odds and rural noncore beneficiaries had 49% lower odds of reporting satisfaction with availability of care by specialists (AOR micropolitan: 0.42, *P* < .001;

AOR noncore: 0.51, *P* < .001). Additionally, rural micropolitan beneficiaries had 37% lower odds of reporting satisfaction with medical care availability (AOR = 0.63; *P* = .001) and 31% lower odds of reporting satisfaction with the quality of medical care in the last year (AOR = 0.69; *P* = .035), compared to their metropolitan counterparts. Other demographic and health characteristics were also associated with satisfaction with care. For example, being divorced or separated was significantly associated with lower odds of reporting satisfaction with quality of medical care, whereas being in good/very good/excellent health was associated with better odds of the same measure. An example of full logistic regression coefficients can be seen in Appendix B (available online only).

## Discussion

Patient satisfaction is an increasingly important and more widely used measure of quality of care. Our study found that for 8 of 9 measures of satisfaction, assessing beneficiaries’ perceptions of the quality, accessibility, and affordability of care, satisfaction rankings were consistently lower for rural Medicare beneficiaries compared with their urban counterparts. (The difference for satisfaction with out-of-pocket medical costs was not significant.) This was true for both rural micropolitan beneficiaries

Figure 1 A-E, Satisfaction with Quality of Care.

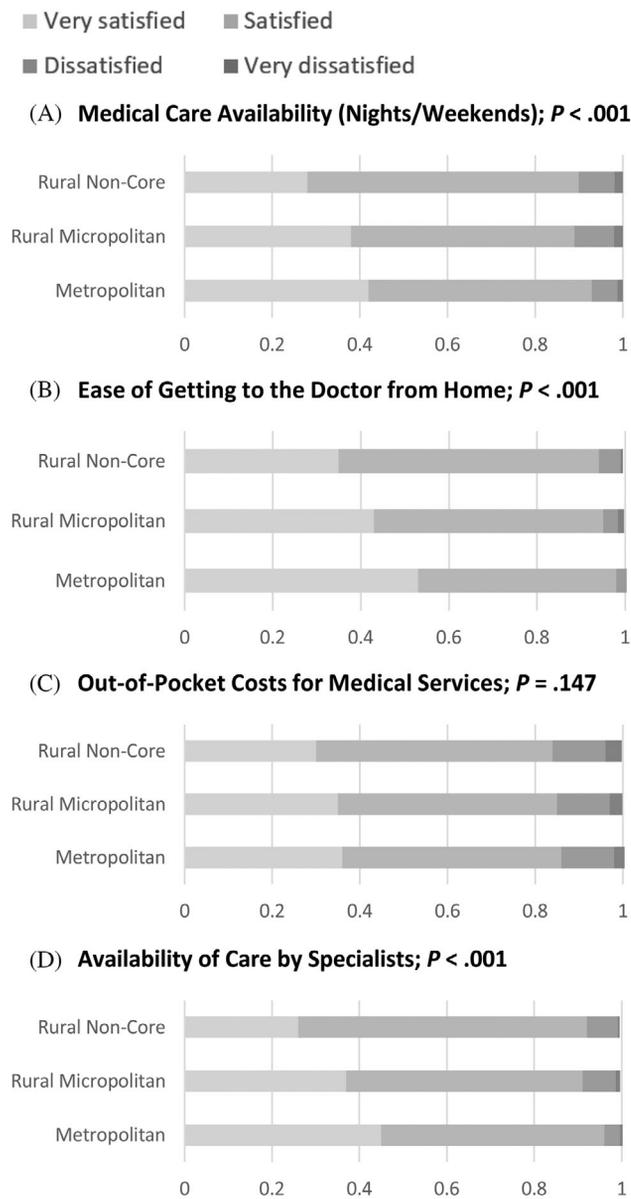


Note: P values indicate significant differences by rurality.

and rural noncore beneficiaries. Notably, for all 9 measures of satisfaction, the percentage of beneficiaries who said they were “very satisfied” went down markedly by degree of rurality. Differences in satisfaction remained for rural beneficiaries (both micropolitan and non-core)

in 2 of the measures after adjusting for sociodemographic and health characteristics: satisfaction with ease of getting to the doctor from home and satisfaction with the availability of care by specialists. For rural micropolitan beneficiaries, satisfaction also remained significantly

Figure 2 A-D, Satisfaction with Access to Care.

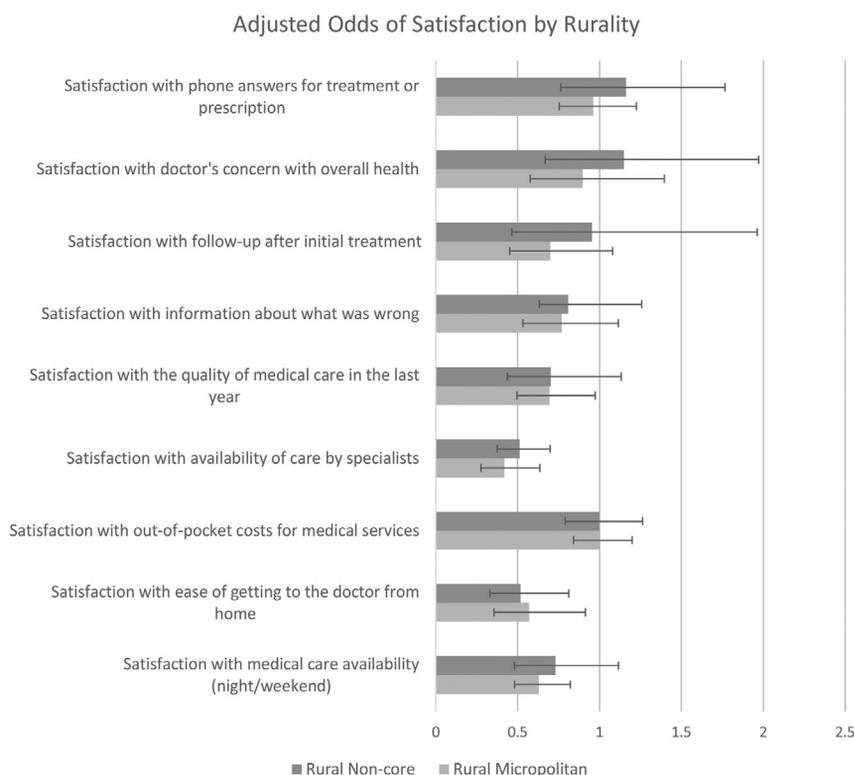


Note: P values indicate significant differences by rurality.

lower than that of their metropolitan counterparts after adjusting for covariates on 2 other measures: medical care availability and quality of medical care received in the past year.

These findings should raise concern for the quality and availability of care for rural Medicare beneficiaries. Some of these findings, including those around ease of getting to the doctor from home, may be reflective of structural and infrastructure barriers in rural areas, such as transportation. In general, rural areas have limited public transportation availability and fewer resources related to

private transportation.<sup>13</sup> Rural residents are more likely than their urban counterparts to list cost (eg, of gasoline and vehicle maintenance) as their biggest transportation concern,<sup>31</sup> likely due to lower incomes in rural areas,<sup>32</sup> and rural residents with travel-limiting medical conditions (eg, disabilities that make driving difficult) are less likely to stop driving, likely owing to a lack of other options.<sup>31</sup> Further, many rural areas have experienced hospital and service line closures in recent years, further constraining ease of travel to health care.<sup>33,34</sup> As a result, simply getting to the doctor, especially when distances to

**Figure 3** Adjusted Odds of Satisfaction by Rurality.

*Note: Adjusted odds ratios generated from logistic regression models controlling for age, gender, marital status, race and ethnicity, income, educational attainment, number of chronic conditions, self-rated health, and whether or not the beneficiary had Medicare Advantage. Reference category=metropolitan location. Error bars represent 95% confidence intervals.*

healthcare facilities are often greater, may be more problematic for rural Medicare beneficiaries than urban.<sup>35,36</sup> Recent technological advances, such as an increase in the availability of telemedicine, online consults, and mail order prescriptions, may help to alleviate geographic disparities in such access barriers, but they clearly have not yet closed the gap.

We also found that satisfaction with the availability of specialty care was significantly lower for both rural micropolitan and rural noncore Medicare beneficiaries, compared with their urban counterparts. This aligns with research showing that specialists are sparser in rural areas and rural residents need to travel much farther to reach most specialty services.<sup>36</sup> In rural areas, there are 30 specialists per 100,000 rural individuals, compared to 263 specialists for every 100,000 urban individuals.<sup>37</sup> To improve access to specialty care in rural areas, a variety of changes could be made to improve workforce issues, including direct incentives for providers or changes in payment policies to encourage more clinicians to work in rural areas.<sup>38</sup> In considering how to best recruit and retain a rural workforce, attention also needs to be paid

to community and quality of life factors in rural areas, such as availability of child care for providers' families.<sup>39</sup> Greater utilization of telehealth services and changes in reimbursement policies for telehealth services could also improve access issues for rural Medicare beneficiaries, provided that rural areas have sufficient access to broadband Internet and technological devices to facilitate the use of such services.<sup>40,41</sup>

For 2 measures (satisfaction with availability of care and quality of care in the past year), we found that the difference between rural noncore and metropolitan Medicare beneficiaries was explained by adjusting for sociodemographic and health characteristics, but the difference remained for rural micropolitan beneficiaries. Rural noncore beneficiaries were in the worst health of the 3 geographic groups and had the lowest incomes and educational attainment; accounting for those differences may remove any differences in satisfaction on those measures. However, the fact that differences remained for rural micropolitan beneficiaries warrants additional attention to better understand what policy and programmatic levers could help to improve their satisfaction. In

particular, future research should explore the mechanisms for lower satisfaction rates among micropolitan beneficiaries in order to inform policy. Potential policy implications might include addressing clinic and hospital hours to improve availability, as well as implementing quality-improvement efforts at micropolitan facilities. Each of these will likely require additional staffing, thereby necessitating additional attention to workforce constraints in micropolitan areas, including programs to assist with healthcare workforce recruitment and retention.<sup>39,42,43</sup>

Importantly, our finding of consistently lower satisfaction among rural Medicare beneficiaries (vs urban) is a notable departure from previous research that had found few, if any, differences in satisfaction.<sup>22</sup> The differences we found may be related to our use of more detailed measures of satisfaction across more domains. However, they may also be indicative of real differences in satisfaction between rural and urban beneficiaries, which may be driven, at least in part, by the changing sociodemographic and health profiles of Medicare beneficiaries in recent years.<sup>24</sup> In particular, a new cohort of individuals have aged into the Medicare program in recent years. And, the healthcare landscape has changed dramatically in the years following the passage and implementation of the Affordable Care Act.<sup>44</sup> Together, those differences in the patient population and health services delivery may have led to the differences in satisfaction that we found here relative to prior research. Regardless, to the extent that satisfaction is related to future patient outcomes, and research indicates that it is,<sup>1,3-6</sup> these findings should raise concern about the well-being of rural Medicare beneficiaries and their access to health.

## Limitations

In this study, we identified stark and concerning differences in satisfaction with care by geographic location for Medicare beneficiaries. Still, as with any research, these findings should be considered in light of their potential limitations. First, we used cross-sectional data and could only identify differences at one point in time; we also could not determine any causal mechanisms (eg, did poor health cause worse satisfaction or vice versa?). Second, we only included data on Medicare beneficiaries, so these findings should not be generalized beyond that population. Additional research should explore whether geographic differences in satisfaction persist in younger populations. Third, the patient satisfaction measures we examined were self-reported and may not necessarily corresponded with quality or patient outcomes. They are also subject to recall bias. We also did not adjust for frequency of service utilization, as the satisfaction

measures were broad and not connected with any specific service line. We did adjust for health status and count of chronic conditions in order to get at healthcare needs. Further, previous research has shown a strong association between satisfaction and outcomes.<sup>3,4</sup> Fourth, the sample size for rural, noncore respondents was relatively small compared with their urban and micropolitan counterparts. This may have led to less precise estimates, although we were still able to detect significant differences across groups. Finally, it is important to note that rural areas are heterogeneous. Although we found broad distinctions between rural and urban beneficiaries here, they may belie considerable diversity within each level of geography.

## Conclusion

Rural Medicare beneficiaries reported lower satisfaction across a number of quality and access to care measures, relative to their urban counterparts. These findings may be due, in part, to changes in the Medicare population (eg, those caused by middle-aged adults aging into Medicare, many of whom may have different expectations, experiences, and needs than generations of Medicare beneficiaries in the past). They may also be due to changes in the rural healthcare landscape in the past decade, including worsening health outcomes, hospital closures, and diminishing access to care. Regardless of the mechanisms at play, the finding that rural Medicare beneficiaries are less satisfied than their urban counterparts should raise concern about the quality of care they receive and their subsequent health outcomes.

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## Supporting Information

Additional supporting information may be found online in the Supporting Information section at the end of the article.

Supporting Information