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## Rural/Urban Disparities in the Utilization of Health and Behavioral Assessments/Interventions in the Fee-for-Service Medicare Population

Christian Rhudy; Eugene Shin; Jeffery Talbert, PhD

### Overview of Key Findings

- In 2016, rural county residents represented 21.8% of the fee-for-service (FFS) Medicare population, but only 1.6% of rural FFS beneficiaries live in a county with local utilization of Health and Behavioral Assessments and Interventions (HBAI) services.
- Utilization of HBAI services in 2016 occurred in 19 (9.7%) rural counties and 176 (90.3%) urban counties.
- Average utilization rates of HBAI services were higher in rural counties than urban counties (0.7% vs. 0.4%).

### Introduction

Identifying behaviors that contribute to a disease state and modifying them can be an important step in the treatment process. For this reason, it is recommended that primary care providers conduct Health and Behavioral Assessments and Interventions (HBAI) for many conditions, including poor diet, diabetes, obesity, cancer, and HIV.<sup>1-6</sup> HBAI begins with an assessment of the need for an intervention, which may come in the form of an interview or questionnaire. If an intervention is deemed necessary, the patient may be provided education or behavioral counseling, or referred to counseling groups or other resources.<sup>2,3</sup>

The benefits of HBAI and similar applications of psychological assessment and counseling in primary care can have a substantial impact on patient outcomes. In diabetes, psychological factors have been shown to influence control of blood sugar, and provision of counseling services as needed for diabetics is recommended.<sup>4</sup> Group counseling sessions for HIV and cancer, provided as the result of HBAI, have been tied to positive changes in immunologic and endocrine function, especially when provided early.<sup>6</sup> Many patients also feel there is value in counseling and express interest in assessment and counseling services for weight management, smoking cessation, chronic pain, and general health management.<sup>7</sup> HBAI is covered by Medicare during evaluation and management visits for patients with a variety of chronic conditions when a biopsychosocial factor may be affecting therapy. Up to 4, 15-minute units of HBAI may be submitted before documentation of medical necessity is required.<sup>8</sup>

While a significant number of patients may express interest in counseling, fewer utilize counseling resources, reporting barriers such as cost.<sup>7</sup> Disparities in the provision of counseling on diet and nutrition have been shown to exist based upon certain demographic factors including gender, ethnicity, education level, and insurance coverage.<sup>9</sup> Geographic location in the U.S. has also been proposed as a predictor of utilization, with patients in the Northeast being more likely than those in the Midwest, South, and West to receive diet/nutrition and exercise counseling services. Patients in metropolitan areas were also observed to receive diet/nutrition counseling.<sup>10</sup> The objective of this study was to further investigate geographic disparities and identify the availability of HBAI services in rural and urban communities by examining the population of FFS Medicare beneficiaries in 2016.

## Methods

The Medicare Physician and Other Supplier Public Use File (PUF) provides information on services and procedures provided to fee-for-service (FFS) Medicare beneficiaries by physicians and other health care providers (including pharmacies and nurse practitioners).<sup>11</sup> The PUF data contain information on utilization, payment, and charges by National Provider Identifier (NPI), Healthcare Common Procedure Coding System (HCPCS) code, and provider type for all providers delivering services to FFS Medicare beneficiaries. At the time of the study, 2016 was the most recent PUF available. The 2016 Medicare provider data were extracted and CPT codes 96150-96154 were used to determine the number of units of HBAI services provided, the number of health care providers administering the service, and the number of beneficiaries served by each provider. Provider services and beneficiaries were then aggregated at the county level using provider location data. Rural-Urban Continuum Codes (RUCCs) were used to assign counties to rural versus urban designations, with codes 1-3 designated as urban and codes 4-9 designated as rural.<sup>12</sup> The 2016 FFS Medicare enrollment data were observed in aggregate and applied at the county level to calculate the county utilization rate.<sup>12</sup>

## Findings

**Table 1. Rural/Urban Enrollment in FFS Medicare Nationwide and Counties Utilizing HBAI Services, 2016**

Category	Total	RUCC 1-3		RUCC 4-9	
	Enrollees	Enrollees	Percentage	Enrollees	Percentage
All	33,851,996	26,455,562	78.2%	7,396,434	21.8%
In counties with HBAI utilization	11,136,195	10,952,480	98.4%	183,715	1.6%

FFS Medicare enrollment increased to 33.9 million in 2016, with a roughly 4:1 ratio of enrollees residing in urban (RUCC 1-3) to rural (RUCC 4-9) counties (Table 1). In 2016, less than a third (11.1 million, 32.8%) of Medicare enrollees resided within a county utilizing HBAI services. Of those 11.1 million enrollees, 1.7% resided in rural regions, versus 98.3% in urban areas. As compared to the 1:4 ratio observed in total Medicare enrollment, this suggests rural enrollees may be less likely to utilize HBAI services.

In 2016, a total of 497 unique providers administered 195,371 units of HBAI to 29,571 unique beneficiaries (Table 2). Rural HBAI providers represented 3.3% of the total provider population, 2.4% of the service units, and 2.9% of all beneficiaries. Comparatively, 96.7% of all HBAI providers were located in an urban county and provided 97.6% of all HBAI service units to 97.1% of the beneficiary population.

On average, HBAI beneficiaries utilized 6.6 units of HBAI services in 2016. Rural beneficiaries utilized fewer units on average (5.5 units) compared to urban beneficiaries (6.6 units). The national average of HBAI units billed by an HBAI provider was 393.1. Urban providers billed more HBAI units on average (401.3 units) as compared to providers practicing in rural counties (216.0 units).

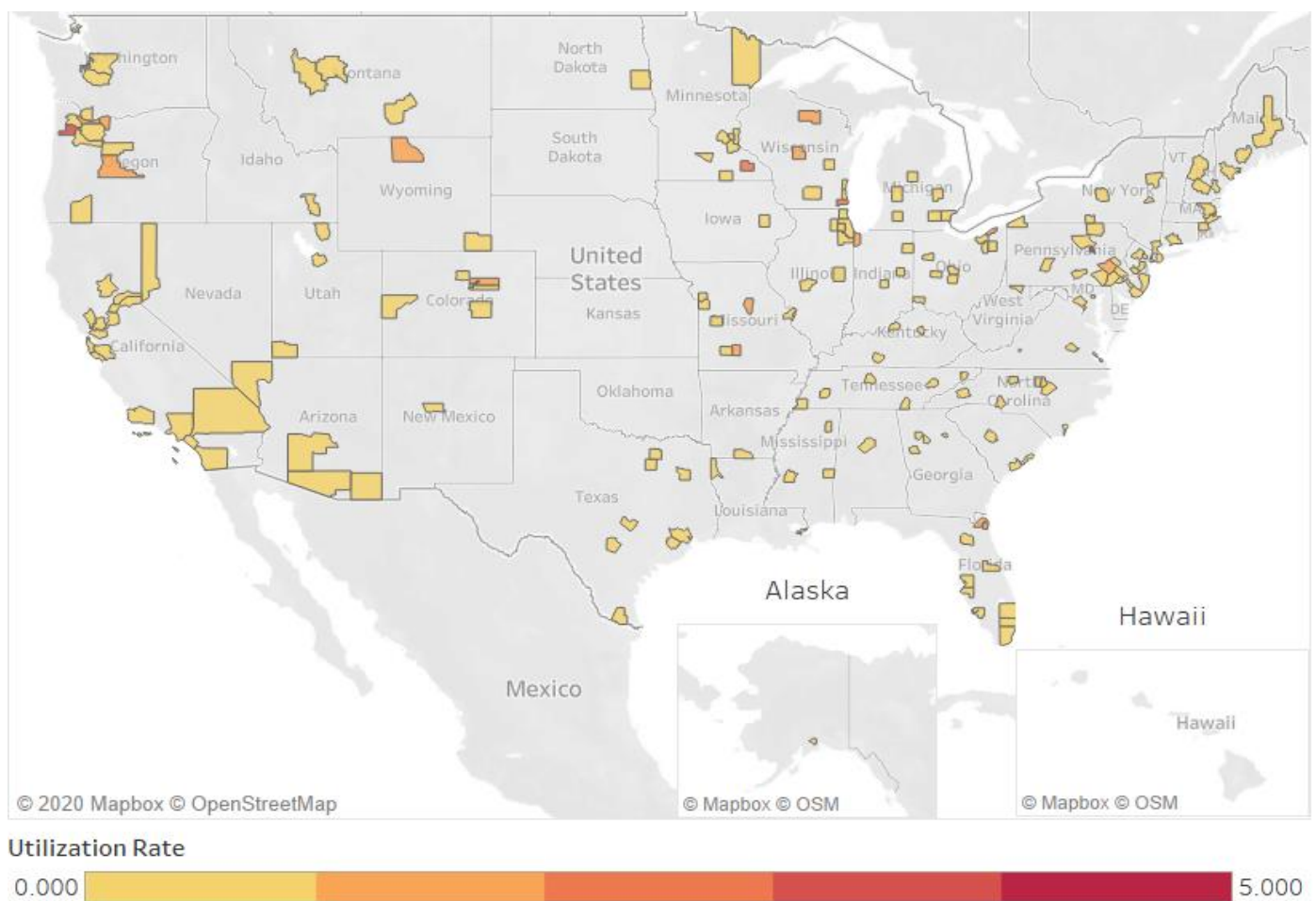
HBAI service utilization was observed in a total of 195 counties (176 urban; 19 rural). County utilization rates were calculated as the number of Medicare FFS beneficiaries using HBAI services divided by the number of Medicare FFS beneficiaries residing in a county. The average utilization rate for all counties was 0.4% in 2016. In rural counties the average utilization rate was 0.7%, while the mean urban utilization rate was 0.4%.

**Table 2. FFS Medicare HBAI Providers, Service Hours, and Beneficiaries in 2016**

Category	Total	RUC 1-3 (Urban)	RUC 4-9 (Rural)
Providers	497	475	22
Service Units	195,371	190,618	4,753
Beneficiaries	29,571	28,700	871
Average County Utilization Rate	0.4%	0.4%	0.7%

The geographic distribution of counties providing HBAI services in 2016 and their associated utilization rate can be observed in Figure 1. Services are concentrated around cities in the Northeast and West and are notably completely absent from states in the Midwest such as Nebraska and South Dakota. Interactive maps depicting the HBAI providers, service hours, beneficiaries, and utilization rates at the county level can be found at <https://ruhrc.uky.edu/infographics/>.

**Figure 1. FFS Medicare HBAI Providers, Service Hours, and Beneficiaries in 2016.**



## Conclusion/Discussion

The data collected suggest a significant difference between the utilization of HBAI services in rural and urban counties in 2016. The average HBAI utilization rate is higher in rural counties; however, HBAI utilization occurs in disproportionately fewer rural than urban counties. Beneficiaries who utilized HBAI services in rural counties also typically utilized fewer units of services than beneficiaries in urban counties. The lack of utilization in many rural counties may be explained by limited access to services in these counties, or that rural beneficiaries are traveling to urban locations to receive services. However, the exact cause cannot be determined by this analysis. Regardless, the pattern of lower utilization in rural counties may cause a disparity in outcomes between rural and urban residents. Using emerging technology or other methods to promote greater rural access to HBAI services may be important in addressing this disparity.

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