Characteristics, Utilization Patterns, and Expenditures of Rural Dual Eligible Medicare Beneficiaries

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KEY FINDINGS

Characteristics

- Rural beneficiaries were more likely to be dual eligible than were urban beneficiaries (17.9 percent vs. 15.8 percent; $p < .0001$).
- Among white and African American beneficiaries, the rate of dually enrolled beneficiaries increased as rurality increased, reaching 48.3 percent among African American residents of remote rural counties. For other racial/ethnic beneficiaries, the rate of dual eligibility was either lower in rural areas (Hispanic and "other" beneficiaries), or approximately the same regardless of residence (American Indian/Alaska Native beneficiaries).
- The East South Central Census division (KY, TN, LA, MS) had the highest overall rate of dual eligible beneficiaries, 20.5 percent, while the Mountain division (IS, MT, WY, CO, UT, NV, AZ, NM) had the lowest, 11.5 percent.

Expenditures

- Within dual eligible beneficiaries, 86.7 percent of rural versus 76.4 percent of urban beneficiaries incurred Medicare expenditures ($p<.001$); the proportion of beneficiaries with expenditures reached 90.3 percent in remote rural counties.
- . Among dual eligible beneficiaries with Medicare expenditures, rural beneficiaries had lower median total expenses than urban beneficiaries ($3,002 versus $3,439; $p<.001$).

High Cost Dual Eligible persons

- Rural residents comprised 25.4 percent of dual eligible beneficiaries with Medicare expenditures, but only 20.4 percent of the high cost population.
- Within rural dual eligible persons, those in the upper tenth percentile had median expenditures of $51,523, versus $2,507 among those in the remaining 90 percent.

Introduction

Medicare enrolls approximately 52 million Americans, or 16 percent of the total U.S. population.[1] Medicare beneficiaries can become eligible for Medicaid coverage by meeting low-income, disability, or other requirements. Medicaid typically pays the premiums and cost-sharing responsibility of dual eligible individuals, as well as for long-term care services and other services not covered by Medicare, such as vision or dental care.[2] Approximately 19 percent of Medicare beneficiaries were also covered by Medicaid in 2011.[2]

Dual eligible beneficiaries are known to have a higher disease burden: a higher proportion of dual eligible beneficiaries are disabled, have three or more chronic conditions, report being in fair or

[1] U.S. Department of Health and Human Services, 2013 CMS Statistics. Baltimore MD. Available for download at http://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/CMS-Statistics-Reference-Booklet/2013.html. Census data for 2013 accessed at http://www.census.gov/popclock/.

[2] Medicare Payment Advisory Commission. Report to the Congress, June 2013, Chapter 6, Care needs for dual-eligible beneficiaries.

poor health, or report difficulties with activities of daily living.[3] As a result, Medicare per capita expenditures for dual eligible beneficiaries are nearly double those for other Medicare beneficiaries.[2]

The Affordable Care Act (ACA) includes several provisions aimed at improving care and reducing costs of care for dual eligible beneficiaries, including the creation of the Federal Coordinated Health Care Office (FCHCO) and the Center for Medicare and Medicaid Innovation. Located within the Centers for Medicare and Medicaid Services, the FCHCO is tasked with monitoring and improving benefit coordination, expenditures, access, and outcomes of dual eligible beneficiaries. The Center for Medicare and Medicaid Innovation is charged with examining alternative models of care delivery, such as integration of services and joint financing models.

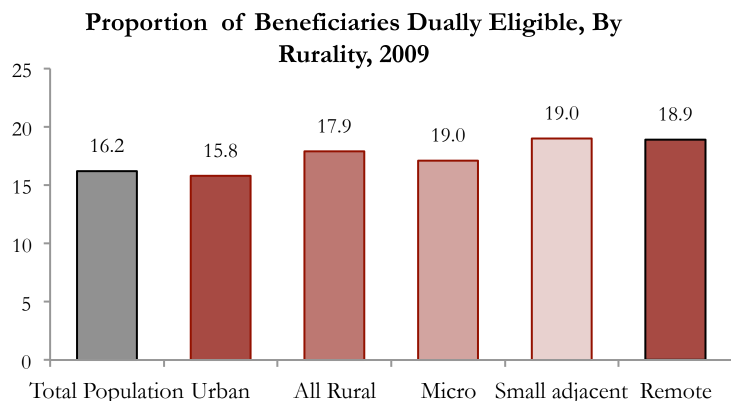
Given the pressing need to improve care while simultaneously reducing costs for dual eligible beneficiaries, it is important to ascertain how rural dual eligible beneficiaries may differ from their urban peers, and to examine potential differences associated with race/ethnicity and region of residence. We used a 5 percent sample of Medicare fee for service beneficiaries for 2009 to examine three related questions about the dual eligible population:

- What was the 2009 distribution of dual eligible beneficiaries by rurality, race/ethnicity, and region?
- What was the aggregate and median per capita Medicare spending for dual eligible beneficiaries, and did either differ by rurality, race/ethnicity, or region?
- What were the characteristics of "high cost" (upper tenth percentile in Medicare expenditures) dual eligible beneficiaries, by rurality, race/ethnicity, or region?

Details on the methods used for the study are provided in the Technical Appendix. Briefly, our analysis uses all categories of expenditures for Medicare fee for service beneficiaries, with the exception of Part D claims. We excluded beneficiaries who died during 2009 so that we could study a full year of expenditures. We also excluded beneficiaries who were dually eligible for only part of the year. Findings are provided in the sections that follow.

Demographic characteristics of persons studied

Nationally, 16.2 percent of the study population was dually eligible for both Medicare and Medicaid throughout 2009 (Table 1 and figure at right). This proportion was higher for rural residents than for urban residents (17.9 percent vs. 15.8 percent ; p <.0001); the proportion was higher in small adjacent and remote rural counties than in micropolitan counties.



A lower proportion of white beneficiaries were dually eligible (12.5 percent) compared to African American (33.3 percent), Hispanic (55.4 percent), American Indian/ Alaska Native (33.6 percent), and other non-white beneficiaries (33.4 percent; p<.0001). The East Central Census

[3] Jacobson G, Neuman T, Daminco A, Lyons B. *The Role of Medicare for the People Dually Eligible for Medicare and Medicaid.* The Kaiser Family Foundation Program on Medicare Policy, 2011.

division had the highest overall proportion of dual eligible beneficiaries (20.5 percent), while the Mountain division had the lowest (11.5 percent). Dual eligibility was more common among beneficiaries under the age of 65, female beneficiaries, beneficiaries with chronic conditions, and beneficiaries with a behavioral health diagnosis (See Table 1). For example, dual eligible status was more common among persons with two or more chronic conditions than among those with no such conditions (23.2 percent versus 11.2 percent, respectively; $p < .0001$). Dual eligible status was also more likely among persons with a behavioral health diagnosis (33.9 percent) than Medicare only beneficiaries (11.2 percent).

The proportion of beneficiaries who were dual eligible varied by both race/ethnicity and rurality, although effects were not consistent across population groups (Table 2, next page). Among white and African American beneficiaries, the pro-portion of dually enrolled bene-ficiaries increased as rurality increased, to 48.3 percent among African American residents of remote rural counties. Among Hispanic beneficiaries and persons of "other" race/ethnicity, however, the rate of dual eligible beneficiaries was lower across all rural categories, compared to urban residents. A third of American Indian/Alaska Native beneficiaries (33.6 percent) were dual eligible, with no consistent variations across geography.

Table 1: Characteristics of study population and proportion who are dual eligible (DE), 2009

	Total (n=2,369,339)	DE persons, percent (n=383,917)
Nationwide Total	100.0%	16.2%
Rurality		
Urban	79.0%	15.8%
All Rural	21.0%	17.9%
Micropolitan	12.2%	17.1%
Small Adjacent	5.3%	19.0%
Remote	3.5%	18.9%
Race/Ethnicity		
White, NH*	84.4%	12.5%
African American, NH*	9.5%	33.3%
Hispanic	2.1%	55.4%
Amer. Ind./Alaska Native	0.4%	33.6%
Other, NH*	3.7%	33.4%
Region		
Northeast	19.8%	17.0%
New England	5.3%	19.1%
Mid Atlantic	14.5%	16.3%
Midwest	23.1%	14.6%
East North Central	16.0%	15.5%
West North Central	7.1%	12.6%
South	36.6%	16.5%
South Atlantic	19.5%	14.7%
East South Central	6.8%	20.5%
West South Central	10.3%	17.5%
West	20.5%	16.6%
Mountain	6.4%	11.5%
Pacific	14.1%	18.9%
Age Group		
< 65	17.0%	36.7%
65 - 74	42.5%	9.7%
75-84	28.4%	13.1%
85+	12.1%	17.6%
Sex		
Male	41.6%	13.7%
Female	58.4%	18.0%
Number of Chronic Conditions		
0	47.9%	11.2%
1	19.4%	16.7%
2+	32.7%	23.2%
Behavioral Health Diagnosis		
Yes	14.2%	33.9%
No	85.8%	13.3%

*NH: Non-Hispanic Source: 5 percent sample of Medicare beneficiaries.

Table 2: Proportion of Medicare beneficiaries who were dual eligible, by race/ethnicity and rurality, 2009

	All US, 2009	Urban	Rural	By Level of Rurality		
				Micro-politan	Small Adjacent	Remote
White, NH	12.5%	11.6%	15.7%	14.9%	16.5%	17.0%
African American, NH	33.3%	31.6%	43.7%	42.3%	44.6%	48.3%
Hispanic	55.4%	55.9%	48.6%	48.3%	49.1%	49.7%
American Indian/Alaska Native	33.6%	32.3%	35.0%	33.4%	37.4%	34.7%
Other, NH	33.4%	34.6%	18.0%	17.4%	19.6%	19.9%
Source: 5% sample of Medicare beneficiaries.						

Per Capita and Aggregate Medicare Expenditures

Beneficiaries with expenditures

Nearly 66 percent of all beneficiaries studied had expenditures in 2009. The proportion of persons with expenditures was higher among rural residents (76.1 percent) than among urban residents (63.2 percent:, p <.0001;), and among dual eligible versus other beneficiaries (78.8 percent versus 63.4 percent; p<.0001; Table 3, next page). Within dual eligible beneficiaries, 86.7 percent of rural versus 76.4 percent of urban beneficiaries incurred Medicare expenditures (p <.0001); the proportion of dual eligible beneficiaries with expenditures reached 90.3 percent in remote rural counties. This rural pattern was similar across eligibility types: Medicare only beneficiaries living in rural counties were also more likely to have had some expenditure during the year than their urban counterparts. Among Medicare only beneficiaries, 73.8 percent rural residents had Medicare expenditures during 2009, compared to 60.7 percent among urban residents (p <.0001). This pattern was consistent across all race/ethnicity and residence categories.

Median per capita expenditures

Among all Medicare beneficiaries with health care expenditures, the median per capita expenditure was $2,245 (See Table 4, page 6). Median expenditures were lower among rural than urban residents (rural, $1986, urban $2,331; p <.0001); expenditures were similar across levels of rurality.

Rural residence was associated with lower expenditure patterns. Among Medicare-only beneficiaries, median expenditures were lower for rural than for urban beneficiaries ($1,804 vs. $2,151; p <0001). Among dual eligible persons the same was true: rural individuals had a median per capita expenditure of $3,002, versus $3,439 among urban dual eligible recipients (p <.0001; see Table 4, page 6).

When examined jointly, race/ethnicity and rurality show additional differences (See Table 4, page 6). While African American dual eligible beneficiaries had a higher median expenditure than whites among urban residents, rural white and African American dual eligible beneficiaries did not differ statistically. Hispanic dual eligible beneficiaries had higher median expenditures than white beneficiaries in urban areas, but lower median expenditures than white beneficiaries in rural areas (p <.0001). Dual eligible beneficiaries had higher median expenditures than other beneficiaries across all Census divisions, with considerable variation. The highest median expenditure was found in the West South Central division ($4,449), followed by the Mid Atlantic ($3,587) and the South Atlantic ($3,559). The lowest ($2,609) was found in the Mountain division.

Table 3: Percentage of beneficiaries with Medicare expenditures, by selected characteristics, 2009

		All beneficiaries	Dual Eligible Only	Medicare only
Nationwide Total		65.9%	78.8%	63.4%
Rurality	Urban	63.2%	76.4%	60.7%
	All Rural	76.1%	86.7%	73.8%
	Micropolitan	75.0%	85.8%	72.7%
	Small Adjacent	76.3%	86.3%	74.0%
	Remote	80.0%	90.3%	77.6%
Race/Ethnicity and residence	White, NH	67.0%	80.1%	65.2%
	Urban	64.3%	77.4%	62.3%
	Rural	76.5%	87.0%	74.5%
	African American, NH	60.9%	75.1%	53.9%
	Urban	58.8%	72.9%	52.3%
	Rural	74.0%	84.9%	65.4%
	Hispanic	57.8%	73.9%	37.7%
	Urban	56.8%	73.2%	36.0%
	Rural	72.5%	86.9%	58.9%
	Amer. Indian/Alaska Native	73.1%	87.5%	65.8%
	Urban	67.7%	82.9%	60.4%
	Rural	78.8%	91.9%	71.7%
	Other, NH	56.8%	80.8%	44.8%
	Urban	56.3%	80.7%	43.5%
	Rural	62.7%	81.7%	58.6%
Region	Northeast	62.5%	76.5%	59.6%
	New England	69.8%	86.2%	65.9%
	Mid Atlantic	59.8%	72.4%	57.4%
	Midwest	70.8%	84.0%	68.5%
	East North Central	69.7%	84.7%	67.0%
	West North Central	73.1%	82.3%	71.8%
	South	71.1%	79.2%	69.5%
	South Atlantic	70.8%	78.2%	69.5%
	East South Central	72.2%	79.4%	70.4%
	West South Central	70.9%	80.5%	68.9%
	West	54.6%	75.2%	50.5%
	Mountain	58.3%	65.8%	57.4%
	Pacific	52.9%	77.8%	47.1%

Source: 5 percent Medicare beneficiary sample. All differences are significant at $p<.0001$.

Table 4: Median Medicare expenditures among beneficiaries with expenditures, by demographic descriptors and dual-eligibility status, 2009				
		Total (n=1,561,869)	**Dual Eligible (n=302,502)**	**Medicare Only (n=1,259,367)**
Total	All beneficiaries	$2,245	$3,321	$2,065
Rurality	Urban	$2,331	$3,439	$2,151
	Rural (all)	$1,986	$3,002	$1,804
	Micropolitan	$1,983	$2,974	$1,815
	Small Adjacent	$1,991	$3,098	$1,783
	Remote	$1,986	$2,951	$1,796
Race/Ethnicity and residence	White, NH			
	Urban	$2,329	$3,550	$2,194
	Rural	$1,983	$3,037	$1,824
	African American, NH			
	Urban	$2,511	$3,876	$1,959
	Rural	$2,118	$2,932	$1,534
	Hispanic			
	Urban	$3,150	$3,838	$1,819
	Rural	$2,107	$2,769	$1,408
	American Indian/Alaska Native			
	Urban	$2,447	$3,402	$2,017
	Rural	$2,333	$3,293	$1,963
	Other (NH)			
	Urban	$1,763	$2,216	$1,400
	Rural	$1,285	$1,737	$1,182
Region	Northeast	$2,508	$3,407	$2,330
	New England	$2,318	$3,077	$2,135
	Mid Atlantic	$2,593	$3,587	$2,410
	Midwest	$2,028	$3,251	$1,856
	East North Central	$2,118	$3,437	$1,913
	West North Central	$1,849	$2,763	$1,745
	South	$2,311	$3,692	$2,114
	South Atlantic	$2,401	$3,559	$2,248
	East South Central	$2,106	$3,246	$1,889
	West South Central	$2,267	$4,449	$1,997
	West	$2,121	$2,749	$1,974
	Mountain	$1,976	$2,609	$1,903
	Pacific	$2,195	$2,783	$2,014
Source: 5 percent Medicare beneficiary sample. All differences are significant at p<.0001.				

Aggregate expenditures

The total study population had expenditures of $13.45 billion. Rural residents accounted for 21.5 percent of total expenditures, close to their proportion in the study population (21.0 percent; see Table 1). The dual eligible population, in aggregate, had expenditures of $3.73 billion (27.7 percent of all expenditures), while constituting only 16.2 percent of the population. Rural dual eligible beneficiaries accounted for 28.0 percent of all rural expenditures, while constituting 17.9 percent of the rural population. Other Medicare beneficiaries in the sample generated $9.72 billion in expenditures.

The proportion of expenditures made for dual eligible beneficiaries varied across levels of rurality in parallel with their proportion of the population. Thus, dual eligible persons accounted for 29.8 of expenditures in Small Adjacent counties, followed by 28.5 percent in remote rural counties and 27.1 percent in micropolitan counties. Their proportions in the population were, respectively, 19.0 percent in small adjacent counties, 18.9 percent in remote rural counties, and 17.1 percent in micropolitan counties.

The proportion of all Medicare expenditures represented by dual eligible beneficiaries was markedly higher among non-white than white beneficiaries. This was particularly the case among Hispanic beneficiaries, among whom 80.5 percent of Medicare expenditures involved dual eligible persons. In rural counties, 72.0 percent of expenditures for Hispanic residents were incurred by dual eligible beneficiaries, versus 24.4 percent among white beneficiaries ($p < .0001$).

Characteristics of High Cost Full Year Dual Eligible Beneficiaries

To help identify potential populations for intervention, we subset the full year dual eligible population into high and low cost beneficiaries. We set the high cost group as the upper 10 percent of persons with expenditures (i.e. 90th percentile and above), and set the comparison groups as persons who were below the 90th, 50th, and 10th percentiles for expenditures. Within these groups, we analyzed median per capita expenditures.

Rural residents comprised 25.4 percent of dual eligible beneficiaries with Medicare expenditures, but only 20.4 percent of the high cost population ($p < .0001$; Table 6, next page). Conversely, rural dual eligible beneficiaries were slightly over-represented in the lowest 10 percent of annual expenditures (27.1 percent of lowest cost group, versus 25.4 percent of all beneficiaries with expenditures). The top 10 percent cost group of full year dual eligible beneficiaries had a higher proportion of African American and Hispanic beneficiaries, urban beneficiaries, and Southern beneficiaries, compared to the comparison groups. The upper 10th percentile of full year dual eligible persons also had a lower proportion of Midwestern and Western beneficiaries than their representation in the population.

Considered jointly, race/ethnicity and rurality interacted in differing directions. Urban African American beneficiaries were overrepresented in the high cost group (20.2 of expenditures vs. 14.8 of the population), as were urban Hispanics but to a lesser degree (See Table 6). Among rural residents, white beneficiaries were underrepresented in the high cost group (15.8 percent of the high cost group vs. 20.4 percent of population); non-white rural beneficiaries were proportionally represented.

Table 5: Aggregate expenditures and Relative Proportions of Spending among Dual Eligible Beneficiaries, by demographic descriptors, 2009

		As a proportion of all dual expenditures	As proportion of category
Total	All beneficiaries	100.0%	27.7%
Rurality	Urban	78.5%	27.6%
	All Rural	21.5%	28.0%
	Micropolitan	11.9%	27.1%
	Small Adjacent	5.9%	29.8%
	Remote	3.7%	28.5%
Race/Ethnicity and residence	White, NH	63.6%	21.3%
	Urban	46.8%	20.3%
	Rural	16.8%	24.4%
	African American, NH	22.7%	54.5%
	Urban	19.0%	53.2%
	Rural	3.7%	62.2%
	Hispanic	7.3%	80.5%
	Urban	6.9%	81.1%
	Rural	0.4%	72.0%
	American Indian/Alaska Native	0.9%	51.0%
	Urban	0.5%	50.0%
	Rural	0.5%	52.0%
	Other (NH)	5.5%	56.9%
	Urban	5.3%	58.6%
	Rural	0.2%	29.0%
Region	Northeast	20.6%	28.0%
	New England	6.3%	29.9%
	Mid Atlantic	14.3%	27.2%
	Midwest	21.2%	25.2%
	East North Central	16.3%	27.2%
	West North Central	4.9%	20.2%
	South	39.7%	27.6%
	South Atlantic	18.8%	24.8%
	East South Central	7.6%	30.6%
	West South Central	13.3%	31.0%
	West	18.5%	31.1%
	Mountain	3.2%	17.6%
	Pacific	15.3%	36.9%

Source: 5 percent sample of Medicare beneficiaries.

The distribution of expenditures per person among dual eligible persons in the top tenth percentile markedly exceeded those of other beneficiaries, at a median of $55,492 versus a median of $2,654 among other dual eligible beneficiaries (Table 7, page 9). Within rural dual eligible persons, those in the upper tenth percentile had median expenditures of $51,523, versus $2,507 among those in the remaining 90 percent. This pattern repeated across all levels of rurality, all racial-ethnic groups, and all regions. Unfortunately, a single year of data is insufficient to ascertain

whether expenditures by these beneficiaries were a continuation of years of poor health, or resulted from unpredictable costs, such as cancer treatment, that occurred during the study year.

Table 6: Comparison of demographic characteristics of high cost and other full-year dual eligible beneficiaries with Medicare expenditures, in percentiles, 2009

		All	By Percentiles:		
			Upper 10th Percentile	50th Percentile	Lower 10th Percentile
Rurality	Urban	74.6%	79.6%	73.4%	73.0%
	All Rural	25.4%	20.4%	26.6%	27.1%
	Micropolitan	14.0%	11.4%	14.7%	15.2%
	Small Adjacent	6.8%	5.6%	7.0%	6.8%
	Remote	4.6%	3.4%	4.9%	5.0%
Race/ Ethnicity and Residence	White, NH	66.1%	63.1%	65.6%	64.6%
	Urban	45.7%	47.3%	44.4%	43.1%
	Rural	20.4%	15.8%	21.2%	21.4%
	Afr. American, NH	18.6%	23.9%	18.0%	19.2%
	Urban	14.8%	20.2%	13.9%	15.0%
	Rural	3.8%	3.7%	4.0%	4.2%
	Hispanic	6.6%	7.3%	6.2%	6.2%
	Urban	6.2%	7.0%	5.8%	5.7%
	Rural	0.4%	0.3%	0.5%	0.5%
	AI/AN	0.9%	0.9%	0.9%	1.0%
	Urban	0.45%	0.5%	0.4%	0.5%
	Rural	0.5%	0.4%	0.5%	0.5%
	Other (NH)	7.7%	4.8%	9.3%	9.1%
	Urban	7.5%	4.7%	8.9%	8.7%
	Rural	0.35	0.2%	0.4%	0.5%
Region	Northeast	20.2%	20.3%	19.9%	16.7%
	New England	6.8%	6.2%	7.0%	5.6%
	Mid Atlantic	13.4%	14.1%	12.9%	11.2%
	Midwest	22.3%	20.7%	22.5%	23.4%
	E. N. Central	16.5%	16.0%	16.2%	16.5%
	W.N. Central	5.8%	4.7%	6.3%	7.0%
	South	37.5%	41.2%	35.9%	36.9%
	South Atlantic	17.6%	19.7%	17.0%	16.5%
	E.S. Central	8.6%	7.4%	8.7%	9.3%
	W.S. Central	11.4%	14.1%	10.2%	11.1%
	West	20.1%	17.8%	21.8%	22.9%
	Mountain	3.8%	3.1%	4.2%	5.3%
	Pacific	16.3%	14.8%	17.6%	17.6%

Source: 5 percent sample of Medicare beneficiaries.

Table 7: Comparison of median per capita expenditures among high cost and other dual eligibility beneficiaries, by demographic characteristics, 2009

		Upper 10th Percentile	Lower 90th	Lower 50th	Lower 10th
Nationwide		$55,492	$2,654	$1,031	$162
Rurality	Urban	$56,644	$2,705	$1,043	$161
	All Rural	$51,523	$2,507	$999	$164
	Micropolitan	$51,442	$2,460	$980	$163
	Small Adjacent	$52,028	$2,583	$1,031	$161
	Remote	$51,039	$2,526	$1,014	$169
Race/Ethnicity and Residence	White, NH	$54,146	$2,740	$1,051	$161
	Urban	$55,334	$2,821	$1,071	$160
	Rural	$51,007	$2,557	$1,010	$163
	African American, NH	$58,433	$2,653	$992	$159
	Urban	$59,259	$2,746	$1,001	$157
	Rural	$53,192	$2,330	$958	$168
	Hispanic	$59,230	$2,913	$1,060	$162
	Urban	$59,251	$2,965	$1,067	$162
	Rural	$57,714	$2,388	$982	$169
	Amer. Ind./Alaska Native	$58,857	$2,781	$1,044	$147
	Urban	$58,725	$2,796	$1,030	$144
	Rural	$58,857	$2,758	$1,068	$148
	Other (NH)	$56,954	$1,953	$956	$175
	Urban	$57,231	$1,968	$964	$176
	Rural	$55,334	$2,821	$1,071	$160
Region	Northeast	$55,334	$2,821	$1,071	$160
	New England	$56,831	$2,788	$1,160	$168
	Mid Atlantic	$55,449	$2,589	$1,158	$175
	Midwest	$57,720	$2,906	$1,162	$165
	East North Central	$54,417	$2,619	$1,007	$156
	West North Central	$54,919	$2,743	$1,028	$159
	South	$52,712	$2,263	$944	$151
	South Atlantic	$54,516	$2,838	$1,002	$161
	East South Central	$55,869	$2,771	$1,056	$164
	West South Central	$51,746	$2,658	$967	$157
	West	$54,580	$3,157	$944	$161
	Mountain	$57,779	$2,277	$987	$165
	Pacific	$53,441	$2,193	$900	$157
Source: 5 percent sample of Medicare beneficiaries.					

Policy Implications

Rural dual eligible beneficiaries differed from their urban counterparts. A higher proportion of rural than of urban Medicare beneficiaries were eligible for Medicaid (dual eligibility), and a higher proportion of rural than urban dual beneficiaries actually incurred Medicare-funded expenditures. However, rural beneficiaries had lower median expenditure levels when they did incur expenses, and were less likely to fall in the upper ten percent of all Medicare dual eligible beneficiaries as regards expenditures. Further research is needed to ascertain reasons for observed differences. Rural dual eligible beneficiaries may be less expensive because they utilize services at a lower frequency, utilize higher cost services at a lower frequency, or use services that with lower Medicare payments per unit. These differences may be due to patient or provider preferences, or may stem from transportation barriers or provider shortages faced by rural beneficiaries. All these factors are worth exploring in future research, to ensure that rural dual eligible beneficiaries are not receiving lower intensity or quality of care.

The Federal Coordinated Health Care Office (FCHCO) and the Center for Medicare and Medicaid Innovation (CMMI) do not currently consider rural/urban differences in beneficiary expenditure patterns, but may wish to ensure that their activities and programs take these differences into account. Additional effort may be needed to recruit rural participants for innovation grants and other demonstrations. For example, of the Advanced Payment Accountable Care Organizations funded by the CMMI in 2012, only two of 20 projects were located in rural areas.

Technical Notes

Data Sources

This analysis used the Medicare Beneficiary Annual Summary File (BASF) for 2009, as well as the Medicare Beneficiary A/B/D file for 2009. We delimited the overall study population to include full-year dual eligible and Medicare-only beneficiaries who remained alive for the entirety of 2009 (n = 2,369,339). We then used this population to calculate the proportions of each of the three populations by rurality, race/ethnicity, and region in terms of demographic and clinical descriptors of interest.

Our second analysis examined aggregate and median per capita Medicare spending of dual eligible beneficiaries, again comparing dual eligible beneficiaries to Medicare-only beneficiaries. We began with the study population above, then removed all beneficiaries with no Medicare expenditures. We then calculated aggregate expenditures and median per capita expenditures by rurality, race/ethnicity, and region in terms of demographic and clinical descriptors of interest.

Our final analysis examined characteristics of "high cost" dual eligible beneficiaries by rurality, race/ethnicity, and region. We defined "high cost" beneficiaries as those beneficiaries with Medicare expenditures within the upper tenth percentile of full-year dual eligible beneficiaries, Medicare-only beneficiaries, and the study population as a whole, respectively. We compared demographic and clinical distributions, as well as median per capita expenditures, of these "high cost" beneficiaries to demographic and clinical distributions and median per capita expenditures of the bottom ninetieth, bottom fiftieth, and bottom tenth percentile of each subpopulation.

Geographic definitions

Our geographic analysis is based on the ZIP Code in which each beneficiary resided. We assigned beneficiaries to counties based on ZIP Codes, using an algorithm developed by the US Department of Housing and Urban Development. Counties were characterized based on level of rurality using Urban Influence Codes: Metropolitan (UICs 1, 2), Micropolitan (UICs 3, 5, 8), Small Adjacent (UICs 4, 6, 7), and Remote rural counties (UICs 9, 10,11, & 12). (For detailed definitions, see http://www.ers.usda.gov/data-products/urban-influence-codes.aspx).