

C H A P T E R

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**Congressional request:
Vulnerable Medicare
beneficiaries' access to care
(final report)**

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Chapter summary

In July 2020, the House Committee on Ways and Means submitted a bipartisan request for the Commission to update its June 2012 report on rural beneficiaries' access to care and examine trends that may have affected rural communities since the 2012 report. The Committee also requested information on beneficiaries who reside in a medically underserved area (MUA), are dually eligible for Medicare and Medicaid, or have multiple chronic conditions. The Committee requested an interim report by June 2021 and a final report by June 2022.

In our June 2021 report to the Congress, the Commission issued an interim report that focused on rural beneficiaries' access to care. We found that rural and urban beneficiaries had similar utilization of care, although some minor differences existed. Beneficiaries in rural areas used more hospital outpatient services but had fewer encounters with specialists, whom they often travel substantial distances to visit. (By contrast, rural beneficiaries had similar use of primary care services, which they more commonly access locally.) Although utilization data are only a proxy for access to care (since they can tell us only what services were used, not what services might have been forgone), most surveys of Medicare beneficiaries find that rural beneficiaries' satisfaction with access to care is similar to that of urban beneficiaries. Our June 2021

In this chapter

- Similar service use in full, partial, and non-MUAs suggests that using MUAs to direct additional Medicare funding is inefficient
- Dual-eligible beneficiaries had higher service use compared with other Medicare beneficiaries, reflecting greater health needs
- Beneficiaries with more reported chronic conditions used more services than those with fewer conditions, reflecting greater health needs

report also discussed trends in rural hospital closures before the coronavirus pandemic and the establishment of a new type of rural hospital designation—rural emergency hospital—designed to maintain access to emergency and other outpatient services in rural areas.

In this report, as a proxy for access to care, we use descriptive statistics on the service utilization of beneficiaries who reside in an MUA, are dually eligible for Medicare and Medicaid, or have multiple chronic conditions. As in our June 2021 report, the utilization data we present here date from before the coronavirus pandemic, to avoid any idiosyncratic effects of the pandemic, and are not risk adjusted due to our concerns about differential diagnosis coding practices in rural and urban areas. Overall, we found that beneficiaries residing in full and partial MUAs had average utilization rates that were similar to those living in non-MUAs. In addition, we found that beneficiaries who were dually eligible for Medicare and Medicaid used more services than non-dual-eligible beneficiaries, and beneficiaries with multiple chronic conditions used more services than beneficiaries without multiple chronic conditions.

The results of our analysis suggest that some definitions of *vulnerable beneficiaries*—such as those living in an MUA—are imprecise, and employing those definitions to identify providers who merit additional support likely leads to poor targeting of Medicare’s financial resources. Further, though we found that dual-eligible beneficiaries and those with multiple chronic conditions used substantially more services on average, given their higher health care needs, we cannot rule out the possibility that these beneficiaries needed more care than they received or that they faced difficulties in accessing care they did receive. Further research is needed to better understand the sufficiency of vulnerable beneficiaries’ access to care. Thus, the Committee’s inquiry has prompted the Commission to undertake a broader examination of how to identify vulnerable Medicare populations and to evaluate Medicare’s policies to support safety-net providers who care for them. The first installment of that work focuses on safety-net hospitals (see Chapter 3).

Utilization by beneficiaries who reside in MUAs

MUAs were designed in the 1970s to identify areas with a shortage of personal health services. State Primary Care Offices conduct needs assessments in their states, determine what areas are eligible for MUA designation, and submit applications to the Health Resources and Services Administration (HRSA). HRSA reviews the MUA applications submitted by states and—if they meet the eligibility criteria—designates areas as MUAs. The criteria used to designate

areas as MUAs are the number of primary care physicians per 1,000 people, share of the population with incomes at or below 100 percent of the federal poverty level, share of the population age 65 and over, and infant mortality rate. Entire counties and subdivisions within counties (e.g., towns, census tracts) can be designated as MUAs. We analyzed MUAs at the county level to align with our rural-urban classifications. “Full MUAs” are entire-county MUAs. “Partial MUAs” are counties within which at least one area has been designated as an MUA, and “non-MUAs” are counties without any areas designated as an MUA.

Across the types of services we examined—evaluation and management (E&M) encounters with clinicians, hospital inpatient and outpatient visits, skilled nursing facility days, and home health episodes—beneficiaries generally received a similar volume of care regardless of whether they lived in full, partial, or non-MUAs. For example, in 2018, urban beneficiaries who lived in full, partial, or non-MUA counties averaged 13.4, 13.4, and 13.3 E&M encounters, respectively.

Our finding aligns with previous research on this topic, as researchers have consistently found that MUAs are not accurate predictors of service use. While there are several reasons why MUAs might not predict service use (e.g., beneficiaries travel to access care and MUAs are not statutorily required to be updated), we explore one increasingly important reason why residence in an MUA may not be correlated with less service use: the fact that neither advanced practice registered nurses (APRNs) nor physician assistants (PAs) are incorporated in the measure of primary care supply.

In 2018, we found that about 41 percent of nurse practitioners (the most common type of APRN) and 27 percent of PAs practiced in primary care. We found that APRNs and PAs, despite predominantly practicing in specialty care, still represented about a third of all primary care clinicians who billed Medicare in 2018 and almost half of such clinicians in rural areas. This finding suggests that the measure of primary care supply incorporated into the calculation of MUAs—primary care physicians per capita—is unlikely to reflect the current mix of primary care clinicians.

Utilization by dual-eligible beneficiaries

Medicare beneficiaries who were eligible for full Medicaid benefits had substantially higher service use compared with other Medicare beneficiaries. For example, dual-eligible beneficiaries had about twice the number of hospital inpatient admissions compared with other Medicare beneficiaries and about

five times the number of skilled nursing facility days per beneficiary. The differences in use between dual-eligible beneficiaries and other Medicare beneficiaries were relatively consistent across our rural and urban categories. Experiences accessing care may differ for other Medicare beneficiaries, such as partial-benefit dual-eligible beneficiaries or other low-income beneficiaries.

Higher use rates among full-benefit dual-eligible beneficiaries are likely attributable to their greater health care needs. The Commission has found that, compared with other Medicare beneficiaries, dual-eligible beneficiaries are substantially more likely to be in poor health, live in an institution, and have limitations in activities of daily living. We are unable to make any judgment regarding whether the higher level of service use we observed for full-benefit dual-eligible beneficiaries was sufficient to meet their clinical needs.

Utilization by beneficiaries with multiple chronic conditions

In our analysis of beneficiaries with multiple chronic conditions, we found that beneficiaries with more reported chronic conditions had substantially higher service use compared with those with fewer reported chronic conditions. For example, among one group of rural beneficiaries, those with six or more reported chronic conditions averaged 0.87 hospital inpatient admissions in 2018 compared with an average of 0.03 for those with zero or one reported chronic condition. Our results were generally consistent across our rural and urban categories. As with the service use patterns of dual-eligible beneficiaries, we are unable to make any judgment regarding whether the higher level of service use we observed for beneficiaries with multiple chronic conditions was sufficient to meet their clinical needs. ■

In July 2020, the House Committee on Ways and Means submitted a bipartisan request for the Commission to update its June 2012 report on rural beneficiaries' access to care and to examine trends that may have affected rural communities since the 2012 report. The Committee also requested information on beneficiaries who reside in a medically underserved area (MUA), are dually eligible for Medicare and Medicaid, or have multiple chronic conditions. The Committee requested an interim report by June 2021 and a final report by June 2022.

In its June 2021 report to the Congress, the Commission issued an interim report that focused on rural beneficiaries' access to care. The report found that rural and urban beneficiaries had similar access to care, although some minor differences existed (see text box, pp. 30–31, for a summary of our June 2021 report findings). The report also discussed pre-coronavirus pandemic trends in rural hospital closures and the establishment of a new type of rural hospital designation—rural emergency hospital—that is designed to maintain access to emergency and other outpatient services in rural areas.¹

In this final report, in response to the congressional request, we present descriptive statistics on the service utilization (a proxy for access to care) of beneficiaries who reside in an MUA, are dually eligible for Medicare and Medicaid, or have multiple reported chronic conditions. As part of the Commission's ongoing work related to safety-net providers, we also discuss the drawbacks of using MUA designations to direct additional Medicare funding to providers. As a complement to this chapter, we discuss alternative ways to define and pay safety-net providers in Chapter 3 of this report.

Background

As in our 2012 and 2021 reports, we classify counties as rural or urban based on Office of Management and Budget metropolitan statistical area designations and further stratify rural counties to examine the effects of increasing rurality. MUAs were designed to identify areas with a shortage of personal health services. The Health Resources and Services Administration (HRSA) designates areas as MUAs based on four metrics: the

number of primary care physicians per 1,000 people, share of the population with incomes at or below 100 percent of the federal poverty level, share of the population age 65 and over, and infant mortality rate.²

Rural and urban classifications

In this report, we primarily rely on county-level designations established by the Office of Management and Budget to determine whether a beneficiary or provider is located in a rural or urban area. We consider all metropolitan counties to be urban and all other counties rural. We stratify rural counties by whether they are micropolitan or not; we describe rural counties that are not micropolitan as either adjacent to a metropolitan area (i.e., rural adjacent) or not adjacent to a metropolitan area (i.e., rural nonadjacent) (Table 2-1, p. 32).

To supplement our main rural and urban classifications, we also separately analyze frontier counties. A county is classified as frontier if the population density within that county is six or fewer people per square mile.³ These areas are more sparsely populated than most counties and therefore merit careful consideration.

Medically underserved areas

MUAs were first established by the Health Maintenance Organization Act of 1973, which provided grants and loans to entities to create or expand HMOs. The legislation gave priority access to federal funding to applicants that planned to draw at least 30 percent of their members from MUAs. The law directed the Secretary to identify MUAs based on criteria that included the available health resources in an area, population-based health indices, economic factors affecting access to care, and demographic factors that affect the demand for health services (Health Resources Administration 1975). (Currently, Medicare uses MUAs as one criterion to qualify as a Federally Qualified Health Center and Rural Health Clinic.)

In 1975, the Secretary established the Index of Medical Underservice to identify MUAs. For each area, the index was calculated using four measures:

- number of primary care physicians per 1,000 people,

Summary of the Commission's June 2021 report on rural beneficiaries' access to care

In its June 2021 report, the Commission examined rural beneficiaries' access to care primarily using Medicare claims data, supplemented with survey data and interviews with rural stakeholders. Overall, we found that rural and urban beneficiaries had similar utilization of care, although some minor differences existed. Further, although utilization data are a proxy for access to care (since they can tell us only what services were used, not what services might have been forgone), most surveys of Medicare beneficiaries find that rural beneficiaries' satisfaction with access to care is similar to that of urban beneficiaries. Our June 2021 report also examined rural hospital closures, a trend that had become more prominent since the Commission's 2012 report and could affect access to care. Our analysis of 40 recently closed hospitals found large declines in all-payer inpatient admissions in the years before closure—mostly due to patients bypassing their local hospital in favor of other, more distant hospitals. The overall effects of these hospital closures on beneficiaries' service use were difficult to discern, but rural hospital closures could require beneficiaries to travel farther to access care, which is especially concerning for emergency care. However, beginning in 2023, a new “rural emergency hospital” designation will allow certain rural hospitals to maintain access to emergency and outpatient care without the need to support a low-volume inpatient department.

Comparing rural and urban beneficiaries' access to care

The Commission's annual survey of Medicare beneficiaries and CMS's Medicare Current Beneficiary Survey suggest that rural and urban beneficiaries have similar access to care, although some minor differences exist and those differences may increase as rurality increases.⁴

Likewise, the Commission's analysis of Medicare claims data from 2018 indicates that rural and urban beneficiaries generally had comparable utilization rates among the types of services examined—clinician visits, hospital inpatient admissions, hospital outpatient visits, home health episodes, and skilled

nursing facility days. Similar to what was found in the Commission's 2012 report on rural access to care, the variation across geographic regions of the country was substantial, and regional differences often were far larger than differences between rural and urban beneficiaries within a given region. The findings by type of service included the following:

- For clinician services, rural beneficiaries had fewer evaluation and management (E&M) encounters in 2018 than urban beneficiaries after accounting for substantial amounts of regional variation. Rural beneficiaries' lower E&M use was mainly attributable to fewer visits with specialist physicians, which may in turn be related to the longer distances that rural beneficiaries travel to access specialists.
- For hospital inpatient services, utilization rates in 2018 were very similar between rural and urban beneficiaries. Hospital inpatient use varied substantially across geographic regions of the country, but differences between rural and urban beneficiaries within regions were relatively small.
- For hospital outpatient services, rural beneficiaries had greater use in 2018 than urban beneficiaries, and regional variation was very large. Variation in the use of hospital outpatient department services between rural and urban beneficiaries likely reflected differences in where patients received their care, as opposed to how much care they received. For example, rural beneficiaries might have received more of their imaging services at hospitals (which were included in the analysis) rather than freestanding imaging centers (which were not).
- For home health and skilled nursing facility services, rural beneficiaries had similar or higher utilization rates in 2018 than urban beneficiaries. However, service use varied substantially across the nation's geographic regions. Variation in home health use was particularly notable, with utilization rates varying by sixfold to eightfold across regions.

(continued next page)

Summary of the Commission's June 2021 report on rural beneficiaries' access to care (cont.)

Across our claims-based analyses, beneficiaries living in the most remote areas—frontier counties—tended to use fewer services compared with urban and (oftentimes) other rural beneficiaries. Beneficiaries residing in frontier areas represent about 1 percent of the Medicare population, are concentrated in a small number of states that generally have lower use of services (e.g., Montana and Wyoming), and appear to be somewhat healthier than other rural beneficiaries. These factors make it difficult to discern the extent to which lower utilization rates among frontier beneficiaries are attributable to access issues, regional provider practice patterns, beneficiary preferences, differences in health status, or some combination of those factors.

Examining the causes and effects of recent rural hospital closures

The Commission found that rural hospital closures increased since 2013. To study the causes and effects of those closures, the Commission conducted interviews with stakeholders (including community members, hospital executives, and clinician leaders) from three communities that experienced a recent hospital closure and analyzed a cohort of 40 rural hospitals that closed between 2015 and 2019.

Among the cohort of 40 recently closed hospitals, the Commission found large declines in all-payer inpatient admissions in the years before closure. From 2005 to 2014 (a period that began at least a decade before closure), the cohort averaged a 54 percent decline in all-payer inpatient admissions. By 2014, the median number of annual all-payer admissions at the 40 hospitals had fallen to 488—about 1.3 admissions per day. Most of this decline was attributable to patients bypassing their local hospital in favor of other, more distant hospitals. In contrast, up to the date of closure, Medicare beneficiaries continued to use these 40 hospitals regularly to access emergency department (ED) and outpatient care.

The effects of these hospital closures on beneficiaries' service use were difficult to discern.

Beneficiaries residing in the market areas of the 40 closed hospitals experienced faster declines in the number of hospital inpatient admissions and hospital outpatient visits per beneficiary after the closure occurred relative to beneficiaries living in rural areas without a hospital closure. However, even before the closures occurred, hospital inpatient and outpatient service use had been declining faster in the 40 market areas of the closed hospitals compared with markets in other rural areas. Therefore, factors other than hospital closure (such as changes in physician practice patterns before and after closure) may have affected service use for beneficiaries in those communities. In addition, some of the decline in hospital outpatient visits in areas with a closure could have represented shifts to other settings, such as freestanding clinician offices and Federally Qualified Health Centers, rather than beneficiaries forgoing needed care. In that vein, the Commission found that areas with a closure experienced faster growth after the closure occurred in the number of E&M visits across all settings compared with areas without a closure. Regardless of the effect on service use, rural hospital closures could require beneficiaries to travel farther to access care, which is especially concerning for emergency care.

To maintain access to ED and outpatient care (without the need to support a low-volume inpatient department), the Congress enacted a program that will allow certain rural hospitals to convert to “rural emergency hospitals” beginning in 2023. These new hospitals will not provide inpatient care but will provide round-the-clock ED care and will be able to furnish other services, such as outpatient services, nursing facility services, and ambulance services. Medicare will pay these new providers a monthly fixed subsidy, enhanced outpatient rates, and standard rates for other types of care. The new rural emergency hospital designation is consistent with the Commission's 2018 recommendation that Medicare allow isolated freestanding EDs to bill Medicare and provide such EDs with annual payments to assist with fixed costs. ■

**TABLE
2-1**

Definitions of rural and urban counties used in this report

Category		Definition of category
Urban		Urban (i.e., metropolitan) counties contain an urban cluster of 50,000 or more people.
Rural	Rural micropolitan	Rural micropolitan counties contain a cluster of 10,000 to 50,000 people.
	Rural adjacent	Rural adjacent counties are adjacent to urban areas and do not have a city with at least 10,000 people.
	Rural nonadjacent	Rural nonadjacent counties are not adjacent to an urban area and do not have a city with at least 10,000 people.

Note: A rural county is defined as adjacent to an urban area if it physically adjoins one or more metropolitan areas and has at least 2 percent of its employed labor force commuting to central metropolitan counties.

Source: Office of Management and Budget and USDA's Urban Influence Codes.

- share of the population with incomes below 100 percent of the federal poverty level,
- share of the population age 65 and over, and
- infant mortality rate.

Once these metrics were calculated for each area, they were combined into a single score that ranged from 0 to 100 based on experts' opinions about how much each of the measures mattered in terms of accessing medical care. Certain measures had a greater weight in the index and (within a measure) points were not awarded on a linear scale (e.g., a 1 percentage point

difference in the share of an area's population that was at least 65 years old could mean a change ranging from 0 to 1.7 points). The Secretary established a cutoff point that designated areas as MUAs versus non-MUAs as the median index score among all counties in the United States. The median value was 62.0, meaning that all areas with a score at or below 62.0 were considered MUAs and all areas above 62.0 were considered non-MUAs.

Since the development of the Index of Medical Underservice, the Secretary has issued two proposed rules with the intention of substantially reforming

**FIGURE
2-1**

Medically underserved area criteria, 2021

Primary care physicians per 1,000 population	+	Share of population <100% FPL	+	Share of population age 65+	+	Infant mortality rate	=	IMU score
28.7 points maximum		25.1 points maximum		20.2 points maximum		26.0 points maximum		Scores ≤62.0 qualify as MUAs

Note: FPL (federal poverty level), IMU (Index of Medical Underservice), MUA (medically underserved area).

Source: Health Resources and Services Administration.

**TABLE
2-2**

Three-fourths of Medicare FFS beneficiaries lived in a full or partial MUA county in 2018

Share of Medicare FFS beneficiaries

Type of county	Full MUA	Partial MUA	Non-MUA
Total (all counties)	18%	60%	21%
Urban	11	70	19
Rural micropolitan	35	32	33
Rural adjacent	62	23	16
Rural nonadjacent	60	21	18
Frontier	46	25	28

Note: FFS (fee-for-service), MUA (medically underserved area). Percentages are calculated using a different denominator for each row. Percentages may not sum to 100 percent due to rounding. Table includes all FFS beneficiaries.

Source: MedPAC analysis of Medicare enrollment data and Health Resources and Services Administration data.

the process used to designate MUAs. In addition, the Affordable Care Act of 2010 required the Secretary to use the negotiated rule-making process to reform MUAs. However, both proposed rules were withdrawn due to negative reactions from stakeholders, and the negotiated rule-making committee failed to come to a consensus on a reform proposal (and therefore no reforms were undertaken). As a result, the basic metrics used to designate areas as MUAs are the same in 2021 as they were in 1975 (Figure 2-1) (Health Resources and Services Administration 2021).

Different types of areas can be designated as MUAs, including counties, county subdivisions (e.g., towns or townships), and census tracts. As a result, MUAs and non-MUAs are often located directly adjacent to one another and served by the same providers. In this chapter, we analyze MUAs at the county level to align with our rural-urban classifications. We have three county-level MUA categories:

- **Full MUA:** The entire county is designated as an MUA.
- **Partial MUA:** The entire county has not been designated as an MUA, but at least one area within the county has been designated as an MUA.

- **Non-MUA:** Neither the entire county nor any area within the county has been designated as an MUA.

In 2018, about three-fourths of Medicare fee-for-service (FFS) beneficiaries lived in full or partial MUAs—18 percent in full MUAs and 60 percent in partial MUAs (Table 2-2). The share of beneficiaries living in an MUA varied based on rurality. Beneficiaries who lived in rural counties (especially nonmicropolitan rural counties) were more likely to live in full MUAs, whereas urban beneficiaries were more likely to live in partial MUAs.

MUA designations have been criticized by some stakeholders as imprecise measures of areas in which substantial access issues exist. Criticisms have included that MUA designations:

- are too broad (i.e., too many areas are considered MUAs);
- are not routinely updated to reflect changes in the demographics or supply of clinicians in an area;
- do not incorporate advanced practice registered nurses (APRNs) and physician assistants (PAs) in the supply of primary care clinicians; and

**TABLE
2-3**

Beneficiaries who lived in full, partial, or non-MUA counties had a similar number of total and primary care physician E&M encounters, 2018

Beneficiary residence, by type of county	Total E&M encounters per beneficiary			E&M primary care physician encounters per beneficiary		
	Full MUA	Partial MUA	Non-MUA	Full MUA	Partial MUA	Non-MUA
Urban	13.4	13.4	13.3	3.7	3.5	3.4
Rural micropolitan	11.9	11.1	11.5	3.4	3.1	3.3
Rural adjacent	11.7	10.4	11.3	3.3	2.8	3.1
Rural nonadjacent	11.0	10.0	9.9	3.0	2.7	2.7
Frontier	9.2	9.0	8.8	2.1	2.3	2.3

Note: MUA (medically underserved area), E&M (evaluation and management). Metropolitan (urban) counties contain an urban cluster of 50,000 or more people, rural micropolitan counties contain a cluster of 10,000 to 50,000 people, rural adjacent counties are adjacent to urban areas and without a city of at least 10,000 people, rural nonadjacent counties are not adjacent to urban areas and do not have a city with at least 10,000 people, and frontier counties have 6 or fewer people per square mile. Only beneficiaries with 12 months of Part B fee-for-service coverage in 2018 are included in the table. E&M encounters include E&M visits billed under the physician fee schedule or critical access hospital method II billing; the category also includes all visits to Federally Qualified Health Centers and Rural Health Clinics. "Total E&M encounters" includes all clinician types, including all physician specialties, advanced practice registered nurses, physician assistants, and other clinicians.

Source: MedPAC analysis of carrier file, outpatient file, and enrollment data from CMS.

- do not incorporate a measure of proximity to health care resources (e.g., a census tract that is considered an MUA may be located directly adjacent to a wealthy area with substantial health care resources).

Similar service use in full, partial, and non-MUAs suggests that using MUAs to direct additional Medicare funding is inefficient

Across most types of services we examined, beneficiaries received a similar volume of care regardless of whether they lived in full, partial, or non-MUAs. For the few service types that varied based on residence in an MUA, we did not find consistent patterns that suggest access issues: Beneficiaries in MUAs had higher average utilization in some cases and lower rates in others. Instead, these differences were likely driven by other factors, such as differences in where beneficiaries received care (e.g., hospital outpatient departments vs. clinician offices) and regional variation in service use.

Our findings align with previous research on this topic. Since MUAs were developed, researchers have consistently found that MUAs are not accurate predictors of service use (Kleinman and Wilson 1977, Kviz and Flaskerud 1984). While there are several reasons why MUA designations do not reliably predict service use (e.g., beneficiaries travel out of their area to access care), we explore one increasingly important reason—the fact that APRNs and PAs are not incorporated in the measure of primary care supply. While most APRNs and PAs practice in specialty care, these clinicians still represented about a third of all primary care clinicians who billed Medicare in 2018, and almost half of such clinicians in rural areas.

Beneficiaries in full and partial MUAs had similar average utilization rates compared with those in non-MUAs

Urban Medicare FFS beneficiaries had a similar average number of evaluation and management (E&M) encounters, regardless of whether they lived in a full, partial, or non-MUA county. In 2018, urban beneficiaries who lived in full, partial, or non-MUA counties averaged 13.4, 13.4, and 13.3 E&M encounters, respectively (Table 2-3). Among rural beneficiaries,

**TABLE
2-4**

Beneficiaries in MUAs had a similar number of inpatient admissions but generally had fewer hospital outpatient claims compared with those in other areas, 2018

Beneficiary residence, by type of county	Hospital inpatient admissions per beneficiary			Hospital outpatient claims per beneficiary		
	Full MUA	Partial MUA	Non-MUA	Full MUA	Partial MUA	Non-MUA
Urban	0.20	0.20	0.19	3.0	3.2	3.3
Rural micropolitan	0.21	0.20	0.20	3.8	5.2	4.7
Rural adjacent	0.21	0.19	0.20	4.1	5.8	4.7
Rural nonadjacent	0.21	0.19	0.19	4.6	6.0	5.3
Frontier	0.19	0.17	0.17	4.9	4.5	4.5

Note: MUA (medically underserved area). Metropolitan (urban) counties contain an urban cluster of 50,000 or more people, rural micropolitan counties contain a cluster of 10,000 to 50,000 people, rural adjacent counties are adjacent to urban areas and without a city of at least 10,000 people, rural nonadjacent counties are not adjacent to urban areas and do not have a city with at least 10,000 people, and frontier counties have 6 or fewer people per square mile. Only beneficiaries with 12 months of Part A fee-for-service coverage in 2018 are included in the table.

Source: MedPAC analysis of Medicare Provider and Analysis Review file and outpatient file from CMS.

those who lived in MUAs had a similar or slightly higher number of E&M encounters compared with beneficiaries who lived in partial or non-MUAs. These encounters include E&M visits billed under the physician fee schedule or critical access hospital method II billing; the category also includes all Federally Qualified Health Center (FQHC) and Rural Health Clinic (RHC) visits.

Because MUAs are partly based on a deficit of primary care physicians in an area, we also examined the extent to which the rate of E&M encounters furnished by primary care physicians varied based on the MUA status of the county in which beneficiaries lived. We again found few differences in utilization rates across MUA categories. For example, among rural adjacent beneficiaries, those who lived in full MUA counties had a slightly higher number of E&M encounters compared with those who lived in non-MUA counties (3.3 and 3.1 encounters per beneficiary, respectively) (Table 2-3).⁵ These results suggest that relying on MUA designations does not accurately predict clinician underservice, even for the services most directly related to the identification of MUAs—visits with primary care physicians.

As we found in our June 2021 report to the Congress, rural beneficiaries had fewer E&M encounters compared with urban beneficiaries, with the most pronounced differences observed in frontier areas (Medicare Payment Advisory Commission 2021a). Rural beneficiaries' lower E&M utilization was mainly attributable to fewer encounters with specialist physicians. In contrast, rural and urban beneficiaries had a similar number of E&M encounters with primary care physicians after controlling for state-level variation (data not shown). Rural beneficiaries also averaged more visits with APRNs and PAs. Rural beneficiaries' E&M visits with APRNs and PAs are more likely to be related to primary care compared with urban beneficiaries' visits because APRNs and PAs who furnish care in rural areas are more likely to practice in primary care.

In line with our findings for E&M encounters, we found that beneficiaries had a similar number of hospital inpatient admissions regardless of whether they lived in a full, partial, or non-MUA county. For example, in 2018, rural micropolitan beneficiaries who lived in full, partial, or non-MUA counties averaged 0.21, 0.20, and 0.20 admissions, respectively (Table 2-4).

**TABLE
2-5**

Beneficiaries in MUAs had a similar number of SNF days but more home health episodes compared with those in other areas, 2018

Beneficiary residence, by type of county	Skilled nursing facility days per beneficiary			Home health episodes per beneficiary		
	Full MUA	Partial MUA	Non-MUA	Full MUA	Partial MUA	Non-MUA
Urban	1.3	1.4	1.4	0.18	0.18	0.16
Rural micropolitan	1.5	1.5	1.6	0.18	0.12	0.16
Rural adjacent	1.6	1.5	1.7	0.19	0.10	0.13
Rural nonadjacent	1.6	1.3	1.4	0.17	0.08	0.10
Frontier	1.3	1.0	0.9	0.09	0.08	0.05

Note: MUA (medically underserved area), SNF (skilled nursing facility). Metropolitan (urban) counties contain an urban cluster of 50,000 or more people, rural micropolitan counties contain a cluster of 10,000 to 50,000 people, rural adjacent counties are adjacent to urban areas and without a city of at least 10,000 people, rural nonadjacent counties are not adjacent to urban areas and do not have a city with at least 10,000 people, and frontier counties have 6 or fewer people per square mile. SNF figures include only beneficiaries with 12 months of Part A fee-for-service (FFS) coverage; home health figures include only beneficiaries with 12 months of Part B FFS coverage.

Source: MedPAC analysis of the home health standard analytic file and Medicare Provider and Analysis Review file.

In contrast, the number of hospital outpatient claims per beneficiary varied based on MUA status. Beneficiaries who lived in full MUA counties generally averaged fewer outpatient claims than those who lived in partial or non-MUA counties, with the differences being more pronounced among rural beneficiaries (Table 2-4, p. 35). These differences are unlikely to represent inadequate access to hospital outpatient services in MUAs. Instead, they likely reflect differences in the sites where beneficiaries receive care in areas with and without a local hospital and the impact hospitals have on recruiting primary care physicians (especially in rural areas). Specifically, beneficiaries who live in counties with access to a local hospital are more likely to access care in the hospital outpatient setting rather than other settings, such as FQHCs, clinician offices, or imaging centers.⁶ In addition, areas with a local hospital (and greater use of hospital outpatient departments) are more likely to be non-MUAs because rural hospitals are often instrumental in recruiting primary care physicians, and the presence of more primary care physicians in an area makes it less likely that the area is designated as an MUA.

For skilled nursing facility (SNF) services, we found that beneficiary utilization was similar across full,

partial, and non-MUA counties. For example, in 2018, rural adjacent beneficiaries who lived in full, partial, or non-MUA counties averaged 1.6, 1.5, and 1.7 SNF days, respectively (Table 2-5).

For home health episodes, we found that utilization rates were similar across full, partial, and non-MUA counties for urban beneficiaries. In contrast, among rural beneficiaries, the average number of home health episodes per beneficiary was substantially higher in full MUAs compared with partial and non-MUAs. For example, in 2018, rural nonadjacent beneficiaries who lived in full MUA counties averaged 0.17 home health episodes per beneficiary, which is substantially above the rates in partial and non-MUAs (0.08 episodes and 0.10 episodes per beneficiary, respectively). These differences were likely driven by large regional variations in the use of home health services rather than access issues in partial and non-MUAs. For example, four states—Alabama, Florida, Louisiana, and Mississippi—whose per beneficiary utilization rates of home health services range from about double to triple the national average make up about 16 percent of all rural adjacent beneficiaries who live in full MUA counties but only about 1 percent of rural adjacent beneficiaries who live in partial and non-MUA counties.

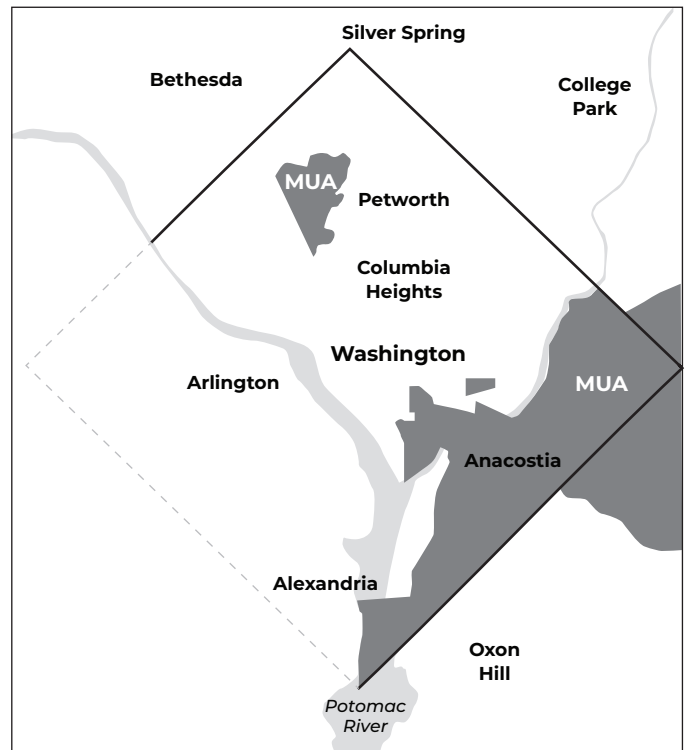
Researchers consistently have found that the MUA designation is a poor predictor of service use

Our finding that service use among Medicare FFS beneficiaries who lived in MUAs was similar to those who lived in non-MUAs is consistent with previous research on this topic. Since MUAs were originally developed, researchers have concluded that the measure is not well suited to identifying areas where services are underprovided. Only a few years after MUAs were created, academic researchers found no difference between MUA and non-MUA residents in terms of the number of physician visits per year or the proportion with at least one visit in the past year (Kleinman and Wilson 1977). Nearly two decades later, the Government Accountability Office concluded that MUAs did not effectively identify areas with primary care shortages or help target federal resources to benefit those who are underserved (Government Accountability Office 1995).⁷ Even if MUAs were useful for identifying underserved areas, they are not routinely updated to reflect changes in the demographics or supply of clinicians in an area. Currently, neither statute nor regulation allows HRSA to require recurring updates of MUAs. In practice, the lack of regular updates means that many MUAs were designated a decade or more ago and have not been reevaluated since.

Researchers have cited several reasons why MUAs do not always predict service use accurately. One simple explanation is that beneficiaries often travel to access care. In 2018, the Commission found that beneficiaries traveled a median of 7.1 miles (among urban beneficiaries) to 15.6 miles (among rural adjacent beneficiaries) for visits with primary care physicians (Medicare Payment Advisory Commission 2021a). The granular nature of MUAs (which are often designated at the census tract level) means that beneficiaries residing in MUAs often do not have to travel far to access care. For example, much of Southeast Washington, DC, is considered an MUA despite being located within a few miles of providers in other parts of the city. In addition, two census tracts in a relatively affluent area of Northwest Washington, DC, are also designated as MUAs and have even more proximate access to health care providers (Figure 2-2). Thus, living in an MUA might mean that beneficiaries need to travel farther to access care, but the increase in travel distance is often modest and might not affect utilization rates.

FIGURE 2-2

Map of medically underserved areas in Washington, DC



Note: MUA (medically underserved area).

Source: Health Resources and Services Administration, 2022.

APRNs and PAs are not counted in the supply of primary care clinicians when MUA determinations are made, likely making the designations increasingly inaccurate

Another increasingly important reason why MUAs do not reliably predict service use (especially of clinician services) is that the measure of the supply of primary care clinicians in an area—which has the largest effect on whether an area is considered an MUA (see Figure 2-1, p. 32)—does not include APRNs and PAs.

The supply of APRNs and PAs has been increasing rapidly. From 2010 to 2017, the number of nurse practitioners (NPs) (the most common type of APRN) and PAs billing under the physician fee schedule grew

Methodology used to classify APRNs and PAs as practicing in primary care or specialty care

When advanced practice registered nurses (APRNs) and physician assistants (PAs) enroll in Medicare, they do not have to indicate the specialty in which they practice. We therefore used claims data to classify these clinicians as practicing in primary care or specialty care. We started with a list of all APRNs and PAs who billed fee-for-service (FFS) Medicare in 2018 under the physician fee schedule or through Federally

Qualified Health Centers, Rural Health Clinics, or critical access hospital method II billing. If an APRN or PA met any of our three criteria based on the types of services they billed for or the type of groups in which they practiced, we considered them to practice in specialty care (Table 2-6). If an APRN or PA met none of these criteria, we considered them to practice in primary care.⁸ ■

(continued next page)

by average annual rates of 14 percent and 10 percent, respectively (Medicare Payment Advisory Commission 2019). To determine APRNs' and PAs' potential impact on MUA determinations, we estimated the share of NPs and PAs that practice in primary care and, subsequently, the share of all primary care clinicians that are APRNs or PAs (see text box for methodology).⁹

In 2018, we found that about 62,000 NPs who practiced in primary care and 89,000 who practiced in specialty care billed the Medicare program, meaning that about 41 percent of NPs who billed Medicare were practicing in primary care. In the same year, we found that about 24,000 PAs who practiced in primary care and 66,000 who practiced in specialty care billed the Medicare program, meaning that about 27 percent of PAs who billed Medicare were practicing in primary care (Table 2-7, p. 40).

While less than half of NPs and PAs who billed Medicare practiced in primary care, NPs and PAs who billed in certain settings were more likely to practice in primary care. In 2018, more than 80 percent of the NPs and PAs who billed under FQHCs and about two-thirds who billed under RHCs practiced in primary care (Table 2-7, p. 40).

While most APRNs and PAs do not practice in primary care, they made up 34 percent of primary care

clinicians who billed Medicare in 2018 (Table 2-8, p. 40).¹⁰ In rural areas, they represented an even higher share of primary care clinicians. In 2018, APRNs and PAs accounted for 44 percent of primary care clinicians who billed Medicare in rural micropolitan areas and about half of primary care clinicians in rural adjacent, rural nonadjacent, and frontier areas.¹¹ These findings suggest that the measure of primary care supply used in the identification of MUAs likely fails to account for a third to a half of all primary care clinicians. In addition, the underestimate will continue to grow in magnitude if the supply of APRNs and PAs continues to expand and the supply of primary care physicians continues to remain flat, as it has over the last several years (Medicare Payment Advisory Commission 2021b).

Dual-eligible beneficiaries had higher service use compared with other Medicare beneficiaries, reflecting greater health needs

In 2018, dual-eligible beneficiaries had a substantially higher number of E&M encounters compared with other Medicare beneficiaries.¹² For example, among rural nonadjacent beneficiaries, dual-eligible beneficiaries had 57 percent more E&M encounters

Methodology used to classify APRNs and PAs as practicing in primary care or specialty care (cont.)

**TABLE
2-6**

Methodology used to classify APRNs and PAs as practicing in primary care or specialty care in 2018

Sorting order	Criteria	Rationale
1	If 75 percent or more of an APRN's/PA's total payments were billed in the hospital inpatient setting, emergency department, or ambulatory surgical center OR were associated with anesthesia, imaging, procedures, treatments, tests, or certain types of E&M services, then consider the APRN/PA to practice specialty care.	Primary care is largely performed in outpatient settings (e.g., clinician offices and hospital outpatient departments) and predominantly involves E&M services.
2	Else if 75 percent or more of total payments associated with an APRN's/PA's practice (i.e., tax ID or provider number) were billed by clinicians other than primary care clinicians (after excluding services billed by APRNs/PAs), then consider the APRN/PA to practice specialty care.	This criterion is designed to sort into the specialty care category APRNs/PAs who largely bill E&M visits in the outpatient setting for specialist physicians.
3	Else if an APRN/PA billed for more than 15 beneficiaries AND 75 percent or more of their total payments fell into any of the following high-level diagnosis categories: a. Infectious and parasitic diseases b. Neoplasms c. Diseases of the blood, blood-forming organs, and certain disorders involving the immune mechanisms d. Endocrine, nutritional, and metabolic diseases e. Mental, behavioral, and neurodevelopmental disorders f. Diseases of the nervous system g. Diseases of the eye and adnexa h. Diseases of the ear and mastoid process i. Diseases of the circulatory system j. Disease of the respiratory system k. Diseases of the digestive system l. Diseases of the skin and subcutaneous tissue m. Diseases of the musculoskeletal system and connective tissue n. Diseases of the genitourinary system o. Pregnancy, childbirth, and the puerperium; certain conditions originating in the perinatal period p. Congenital malformations, deformations, and chromosomal abnormalities* then consider the APRN/PA to practice specialty care.	Primary care is characterized as being an entry point into the health care system, so primary care APRNs/PAs are likely to see a variety of conditions. If nearly all of their payments are for one type of condition, they are likely practicing specialty care. For example, an NP whose payments are 95 percent related to skin is likely practicing in a dermatologist's office.
4	Else consider the APRN/PA to practice in primary care.	

Note: APRN (advanced practice registered nurse), PA (physician assistant), E&M (evaluation and management), ID (identification). Because this methodology relies on national provider identifiers reported on claims, it does not account for "incident to" billing. "Certain types of E&M services" includes critical care services, emergency department services, hospital inpatient services, observation services, and ophthalmological services.

* We do not use all the high-level International Classification of Diseases 10th Revision disease categories to classify APRNs and PAs as practicing in specialty care because not all the categories directly correlate to a specialty.

Source: MedPAC.

**TABLE
2-7****Most nurse practitioners and physician assistants who billed Medicare practiced in specialty care, 2018**

Number of APRNs or PAs who billed Medicare,
by billing pathway
(in thousands)

Clinician specialty	Physician fee schedule	Federally Qualified Health Center	Rural Health Clinic	Critical access hospital (method II billing)	Total unique APRNs or PAs (in thousands)
NPs (primary care)	56	9	5	3	62
NPs (specialty care)	88	2	2	4	89
Other APRNs (primary care)	2	1	<1	<1	2
Other APRNs (specialty care)	52	<1	<1	<1	52
PAs (primary care)	22	3	2	1	24
PAs (specialty care)	66	<1	1	3	66

Note: APRN (advanced practice registered nurse), PA (physician assistant), NP (nurse practitioner). These numbers do not account for "incident to" billing. The rows do not sum to "total unique APRNs or PAs" because of rounding and the fact that clinicians can bill under multiple billing pathways (e.g., physician fee schedule and Rural Health Clinics). The "Other APRNs" categories include certified registered nurse anesthetists, certified nurse midwives, and clinical nurse specialists.

Source: MedPAC analysis of carrier and outpatient standard analytic files.

than did other Medicare beneficiaries (Table 2-9).¹³ The differences in use between dual-eligible beneficiaries and other Medicare beneficiaries were relatively

consistent across our rural and urban categories, with dual-eligible beneficiaries using 51 percent to 57 percent more services.

**TABLE
2-8****One-third of all primary care clinicians who billed Medicare were APRNs or PAs, 2018**

Location where clinician performed services	Number (in thousands)				Share of total primary care clinicians made up of APRNs and PAs
	Primary care physicians	APRNs (primary care)	PAs (primary care)	Total primary care clinicians	
Urban	148	52	19	219	32%
Rural micropolitan	12	7	3	22	44
Rural adjacent	5	3	1	9	49
Rural nonadjacent	3	2	1	7	51
Frontier	1	1	1	3	52
Total	168	64	24	257	34

Note: APRN (advanced practice registered nurse), PA (physician assistant), NP (nurse practitioner). These numbers do not account for "incident to" billing. "Total primary care clinicians" comprises primary care physicians and APRNs and PAs who practiced in primary care. Numbers do not sum to the totals because of rounding, because the frontier designation is not mutually exclusive from the other categories, and because a small number of primary care clinicians could not be sorted into rural or urban locations; they are excluded from the rural and urban categories but are included in the totals.

Source: MedPAC analysis of carrier and outpatient standard analytic files.

**TABLE
2-9**

Dual-eligible beneficiaries had a higher number of E&M clinician encounters per beneficiary compared with non-dual-eligible beneficiaries, 2018

E&M clinician encounters per beneficiary

Beneficiary residence, by type of county	Dual-eligible beneficiaries	Other Medicare beneficiaries	Percent higher utilization among dual-eligible beneficiaries
Urban	18.8	12.4	51%
Rural micropolitan	16.6	10.6	56
Rural adjacent	16.2	10.4	55
Rural nonadjacent	15.3	9.8	57
Frontier	13.2	8.5	56

Note: E&M (evaluation and management). Metropolitan (urban) counties contain an urban cluster of 50,000 or more people, rural micropolitan counties contain a cluster of 10,000 to 50,000 people, rural adjacent counties are adjacent to urban areas and without a city of at least 10,000 people, rural nonadjacent counties are not adjacent to urban areas and do not have a city with at least 10,000 people, and frontier counties have 6 or fewer people per square mile. Only beneficiaries with 12 months of Part B fee-for-service coverage in 2018 are included in the table. E&M encounters include E&M visits billed under the physician fee schedule or critical access hospital method II billing; the category also includes all visits to Federally Qualified Health Centers and Rural Health Clinics. E&M encounters include all clinician types, including all physician specialties, advanced practice registered nurses, physician assistants, and other clinicians.

Source: MedPAC analysis of carrier and outpatient standard analytic files.

Dual-eligible beneficiaries also had substantially higher utilization of all the other types of services we examined compared with other Medicare beneficiaries. For example, dual-eligible beneficiaries averaged about twice the number of hospital inpatient admissions compared with other Medicare beneficiaries and about five times the number of SNF days (Table 2-10, p. 42).¹⁴

Dual-eligible beneficiaries' higher utilization rates are likely attributable to their greater health care needs. The Commission has found that, compared with other Medicare beneficiaries, dual-eligible beneficiaries are more likely to:

- report being in poor health (14 percent vs. 4 percent),
- have limitations in activities of daily living (54 percent vs. 20 percent), and
- live in an institution (18 percent vs. 3 percent) (Medicare Payment Advisory Commission and

the Medicaid and CHIP Payment and Access Commission 2022).

Our finding that dual-eligible beneficiaries used substantially more services than other Medicare beneficiaries is positive in terms of access to care: Providers accepted them as patients and furnished a higher volume of care. However, given their higher health care needs, we cannot rule out the possibility that dual-eligible beneficiaries needed more care than they received or faced difficulties in accessing the care they did receive. In addition, this chapter examines Medicare beneficiaries who are eligible for full Medicaid benefits. Experiences accessing care may differ for other Medicare beneficiaries, such as partial-benefit dual-eligible beneficiaries or other low-income beneficiaries.¹⁵ We explore these issues further in our work on safety-net providers, the first installment of which focuses on safety-net hospitals (see Chapter 3).

**TABLE
2-10**

Dual-eligible beneficiaries had higher use of hospital inpatient, SNF, and home health services compared with other Medicare beneficiaries, 2018

Beneficiary residence, by type of county	Hospital inpatient admissions per beneficiary		Skilled nursing facility days per beneficiary		Home health episodes per beneficiary	
	Dual- eligible beneficiaries	Other Medicare beneficiaries	Dual- eligible beneficiaries	Other Medicare beneficiaries	Dual- eligible beneficiaries	Other Medicare beneficiaries
Urban	0.35	0.17	4.4	0.9	0.31	0.15
Rural micropolitan	0.36	0.18	5.2	0.9	0.27	0.13
Rural adjacent	0.36	0.18	5.8	1.0	0.28	0.14
Rural nonadjacent	0.35	0.18	5.0	0.9	0.27	0.12
Frontier	0.31	0.16	3.7	0.8	0.16	0.07

Note: SNF (skilled nursing facility). Metropolitan (urban) counties contain an urban cluster of 50,000 or more people, rural micropolitan counties contain a cluster of 10,000 to 50,000 people, rural adjacent counties are adjacent to urban areas and without a city of at least 10,000 people, rural nonadjacent counties are not adjacent to urban areas and do not have a city with at least 10,000 people, and frontier counties have 6 or fewer people per square mile. Hospital inpatient and SNF figures include only beneficiaries with 12 months of Part A fee-for-service (FFS) coverage; home health figures include only beneficiaries with 12 months of Part B FFS coverage.

Source: MedPAC analysis of the Medicare Provider and Analysis Review file, outpatient file, and home health standard analytic file from CMS.

Beneficiaries with more reported chronic conditions used more services than those with fewer conditions, reflecting greater health needs

To examine service use among beneficiaries with multiple chronic conditions, we identified beneficiaries as having any one of 21 reported chronic conditions using Medicare claims data. These conditions ranged from very common, such as high blood pressure and diabetes, to less common, such as HIV/AIDS.¹⁶ We grouped beneficiaries into categories based on how many of these 21 reported chronic conditions they had: 0-1, 2-3, 4-5, or 6 or more. One limitation of our analysis of reported chronic conditions is that we used conditions recorded in claims data. Rural beneficiaries have lower life expectancy and lower self-reported health status but have fewer chronic conditions coded in claims data. This disparity makes comparing risk-adjusted rural and urban service use problematic (see text box, pp. 44-45).

We found that Medicare FFS beneficiaries with more reported chronic conditions compared with those with fewer reported chronic conditions had substantially more E&M encounters. For example, among rural micropolitan beneficiaries, those with 6 or more reported chronic conditions had about 6 times the number of E&M encounters than did those with 0 or 1 reported chronic condition (25.7 E&M encounters vs. 4.4 E&M encounters per beneficiary, respectively) (Table 2-11). Similar to our findings among dual-eligible beneficiaries, our results were generally consistent across our rural and urban categories.

Beneficiaries with more reported chronic conditions also had substantially higher utilization of all the other types of services we examined compared with those with fewer reported chronic conditions. The magnitude of the difference between the sickest and the healthiest beneficiaries was even greater for hospital inpatient, SNF, and home health utilization than for E&M encounters.¹⁷ For example, among beneficiaries in rural nonadjacent counties, those

**TABLE
2-11****Beneficiaries with more reported chronic conditions had a higher average number of E&M encounters compared with those with fewer reported chronic conditions, 2018**

Beneficiary residence, by type of county	E&M encounters per beneficiary by count of chronic conditions			
	0-1	2-3	4-5	6+
Urban	4.8	10.8	16.0	30.7
Rural micropolitan	4.4	9.6	14.1	25.7
Rural adjacent	4.3	9.5	14.0	25.5
Rural nonadjacent	4.2	9.3	13.6	24.2
Frontier	4.0	9.0	13.5	23.3

Note: E&M (evaluation and management). Metropolitan (urban) counties contain an urban cluster of 50,000 or more people, rural micropolitan counties contain a cluster of 10,000 to 50,000 people, rural adjacent counties are adjacent to urban areas and without a city of at least 10,000 people, rural nonadjacent counties are not adjacent to urban areas and do not have a city with at least 10,000 people, and frontier counties have 6 or fewer people per square mile. Only beneficiaries with 12 months of Part B fee-for-service coverage and who met the CMS-established chronic condition coverage criteria are included in the table. E&M encounters include E&M visits billed under the physician fee schedule or critical access hospital method II billing; the category also includes all visits to Federally Qualified Health Centers and Rural Health Clinics. E&M encounters include all clinician types, including all physician specialties, advanced practice registered nurses, physician assistants, and other clinicians.

Source: MedPAC analysis of the carrier standard analytic file, outpatient standard analytic file, and Master Beneficiary Summary File (chronic conditions segment).

with 0 or 1 reported chronic condition averaged 0.03 hospital inpatient admissions compared with 0.87 admissions among those with 6 or more reported chronic conditions (Table 2-12).

Within each reported chronic condition category, the average number of inpatient admissions generally increased with rurality. For example, among beneficiaries with 4-5 reported chronic conditions, the

**TABLE
2-12****Beneficiaries with more reported chronic conditions had a higher average number of inpatient admissions, SNF days, and home health episodes, 2018**

Beneficiary residence, by type of county	Hospital inpatient admissions per beneficiary, by number of chronic conditions				Skilled nursing facility days per beneficiary, by number of chronic conditions				Home health episodes per beneficiary, by number of chronic conditions			
	0-1	2-3	4-5	6+	0-1	2-3	4-5	6+	0-1	2-3	4-5	6+
Urban	0.02	0.10	0.24	0.85	0.1	0.4	1.3	7.7	0.02	0.07	0.18	0.65
Rural micropolitan	0.03	0.11	0.25	0.84	0.1	0.4	1.5	8.2	0.01	0.06	0.17	0.59
Rural adjacent	0.02	0.11	0.26	0.85	0.1	0.5	1.6	8.6	0.01	0.07	0.18	0.62
Rural nonadjacent	0.03	0.12	0.27	0.87	0.1	0.5	1.6	8.3	0.01	0.06	0.17	0.57
Frontier	0.03	0.14	0.32	0.91	0.1	0.5	1.8	7.6	0.01	0.05	0.13	0.42

Note: SNF (skilled nursing facility). Metropolitan (urban) counties contain an urban cluster of 50,000 or more people, rural micropolitan counties contain a cluster of 10,000 to 50,000 people, rural adjacent counties are adjacent to urban areas and without a city of at least 10,000 people, rural nonadjacent counties are not adjacent to urban areas and do not have a city with at least 10,000 people, and frontier counties have 6 or fewer people per square mile. Only beneficiaries with 12 months of Part A fee-for-service (FFS) coverage (for hospital inpatient admissions and SNF days), 12 months of Part B FFS coverage (for home health episodes), and who met the CMS-established chronic condition coverage criteria are included in the table.

Source: MedPAC analysis of the Medicare Provider and Analysis Review file, outpatient file, home health standard analytic file, and Master Beneficiary Summary File (chronic conditions segment).

Difficulty in comparing risk-adjusted rural and urban service use

In this report, we compare rural and urban service use by whether beneficiaries reside in a medically underserved area (MUA), are dually eligible for Medicare and Medicaid, or have multiple chronic conditions. One possible next step would be to use the reported chronic conditions as risk adjusters and evaluate, on a risk-adjusted basis, how many services rural and urban beneficiaries who are dually eligible or who live in MUAs use relative to expectations, given their mix of reported chronic conditions. However, as discussed in our June 2021 report, we are reluctant to compare risk-adjusted service use among rural and urban beneficiaries due to apparent differences in diagnosis coding.

We and others have found that rural beneficiaries tend to have lower risk scores compared with urban beneficiaries, but that they also tend to have lower life expectancy and lower self-reported health status. The most plausible explanation for this paradox is that rural beneficiaries' chronic conditions are underreported (Malone et al. 2020). This discrepancy may in part be due to having fewer physician visits (likely attributable to a greater travel distance to specialists), but in part it could

also represent differences in coding practices. Rural patients often receive care in critical access hospitals, where fully recording diagnosis codes does not yield additional revenue for the provider. In contrast, urban patients tend to receive care in hospitals paid under the inpatient prospective payment system (under which fully documenting diagnosis codes translates into more revenue from Medicare) and are more likely to be seen by physicians participating in managed care plans (which have an incentive to get physicians to fully document diagnosis codes).

We can see a likely manifestation of this problem in our descriptive data. On average, rural beneficiaries have slightly fewer reported chronic conditions, based on Medicare claims data. For example, compared with urban beneficiaries, beneficiaries in rural nonadjacent counties had, on average, about 7 percent fewer reported chronic conditions: 3.17 conditions and 2.94 conditions, respectively (Table 2-13).¹⁸ At the same time, we found that in a given reported chronic condition category, rural beneficiaries averaged more hospital inpatient admissions (see Table 2-12, p. 43). One explanation

(continued next page)

average number of inpatient admissions increased from 0.24 among urban beneficiaries to 0.32 among frontier beneficiaries (Table 2-12, p. 43). However, we suggest caution when interpreting these data because systematic coding differences between hospitals paid under the inpatient prospective payment system (which predominantly serve urban beneficiaries) and critical access hospitals (which predominantly serve rural beneficiaries) likely mean that rural beneficiaries within each reported

chronic condition category are somewhat sicker than urban beneficiaries in the same category (e.g., rural beneficiaries in the 2–3 reported chronic conditions category are slightly sicker than urban beneficiaries in the same category). As a result, higher inpatient use among rural beneficiaries in a given chronic condition category is likely at least in part attributable to less complete diagnosis coding of rural beneficiaries' chronic conditions rather than actual greater use of inpatient care than urban

Difficulty in comparing risk-adjusted rural and urban service use (cont.)

**TABLE
2-13**

Rural beneficiaries had fewer reported chronic conditions compared with urban beneficiaries, 2018

Beneficiary residence, by type of county	Average number of reported chronic conditions per beneficiary
Urban	3.17
Rural micropolitan	3.10
Rural adjacent	3.09
Rural nonadjacent	2.94
Frontier	2.44

Note: Metropolitan (urban) counties contain an urban cluster of 50,000 or more people, rural micropolitan counties contain a cluster of 10,000 to 50,000 people, rural adjacent counties are adjacent to urban areas and without a city of at least 10,000 people, rural nonadjacent counties are not adjacent to urban areas and do not have a city with at least 10,000 people, and frontier counties have 6 or fewer people per square mile. Only beneficiaries who met the CMS-established chronic condition coverage criteria are included in the table.

Source: MedPAC analysis of the Master Beneficiary Summary File (chronic conditions segment).

for these two sets of facts is that rural beneficiaries are indeed healthier than urban beneficiaries and that, given their number of reported chronic conditions, they use more hospital care. However, we contend that this explanation is improbable and that, more likely, rural beneficiaries are as sick as (or

sicker than) urban beneficiaries but have somewhat fewer encounters with the health care system (e.g., specialist physicians), and their encounters are more likely to be with providers that lack incentives to document diagnosis codes fully. ■

beneficiaries. (See the text box for more information on how coding affects the results presented in this chapter.) As with the service use patterns of dual-eligible beneficiaries, we are unable to make

any judgment regarding whether the higher levels of service use we observe for beneficiaries with multiple chronic conditions are sufficient to meet their clinical needs. ■

Endnotes

- 1 The coronavirus pandemic and the Congress's subsequent fiscal support of rural hospitals substantially reduced the number of rural hospital closures in 2021.
- 2 As part of HRSA's cooperative agreement with state Primary Care Offices (PCOs), state PCOs conduct needs assessments in their states, determine what areas are eligible for MUA designation, and submit designation applications to HRSA.
- 3 Our frontier designation is not exclusive from our primary rural and urban categories. We classify counties as urban or as one of our three primary rural categories (micropolitan, rural adjacent, or rural nonadjacent). In addition, we categorize all counties as frontier or not frontier. In our primary classification scheme, frontier counties are in all three rural categories, and a small number of frontier counties are considered urban. A county can be urban due to having one large city but still be considered "frontier" if the county is large enough so that the population per square mile in the county is below 6.
- 4 The Commission annually surveys 4,000 Medicare beneficiaries and 4,000 privately insured individuals to assess the extent to which they had difficulty accessing care. Survey respondents are drawn from across the country, from both urban and rural areas. For more information on the survey, see the Commission's March 2022 report to the Congress.
- 5 Some may argue that E&M use rates would be lower in MUAs compared with non-MUAs if the federal government did not provide enhanced funding for FQHCs and RHCs, which are predominantly located in MUAs. However, the magnitude of this effect is likely too small to substantially affect our results; in 2018, only 2 percent of E&M encounters among urban beneficiaries were billed by FQHCs or RHCs. Among rural beneficiaries, 10 percent of E&M encounters were billed by FQHCs or RHCs.
- 6 For example, in the Commission's June 2021 report, we found that the per beneficiary number of FQHC visits grew substantially faster in rural markets with a hospital closure compared with rural markets without a hospital closure (11.4 percent per year vs. 6.7 percent per year), suggesting that beneficiaries sought care in alternative settings when hospital outpatient departments were not available.
- 7 The Government Accountability Office's report said that Health Professional Shortage Area (HPSA) designations were similarly deficient. We do not analyze HPSAs in this chapter.
- 8 We used Medicare claims data on the type and location of the services billed by APRNs and PAs to categorize them as predominantly practicing in primary care or specialty care. See the text box (pp. 38–39) for the methodology. We defined *primary care clinicians* as primary care physicians plus APRNs and PAs who practiced in primary care.
- 9 In 2018, we found that 27 percent of PAs who billed Medicare practiced in primary care. Similarly, the National Commission on Certification of Physician Assistants found that 26 percent of PAs practiced in primary care in 2018 (National Commission on Certification of Physician Assistants 2019). Estimates of the share of NPs who practice in primary care are more dated and vary more widely. Industry representatives suggest that 70 percent of NPs provide primary care, while government researchers in 2010 and 2012 found that 52 percent and 48 percent of NPs practiced in primary care, respectively (Agency for Healthcare Research and Quality 2011, American Association of Nurse Practitioners 2022, Health Resources and Services Administration 2014). Our estimate of the share of NPs who practiced in primary care in 2018 (41 percent) more closely aligns with the previous governmental research, although it suggests that the share of NPs practicing in primary care has declined since 2010.
- 10 Further, because our analysis does not account for "incident to" billing, the 34 percent figure likely represents a lower bound. For example, if an NP exclusively bills under a physician's national provider identifier (i.e., bills "incident to" the physician), our data do not include that NP. For more information on the potential magnitude of this effect, see the Commission's June 2019 report to the Congress.
- 11 We sorted clinicians into urban and rural categories based on the ZIP code in which they performed services. If a clinician billed for services in multiple ZIP codes, we distributed that clinician to ZIP codes on a full-time equivalent (FTE) basis. For example, if an NP billed half their services in urban ZIP codes and half in rural micropolitan ZIP codes, we counted 0.5 FTE in each of the urban and micropolitan categories.
- 12 Our measure of dual-eligible beneficiaries includes Medicare beneficiaries who are eligible for full Medicaid coverage (i.e., full-benefit dual-eligible beneficiaries). In 2018, about 14 percent of Medicare FFS beneficiaries were dually eligible for Medicaid and Medicare. Dual-eligible beneficiaries were relatively evenly distributed across rural and urban areas.
- 13 Our analysis of clinician services is limited to E&M services. Patterns may differ for other types of clinician services, such as procedures and tests.

- 14 Results for hospital outpatient claims per beneficiary are not included in the table, but the results were substantially similar to results for the other categories of services.
- 15 Partial-benefit dual-eligible beneficiaries do not receive full Medicaid benefits but qualify for assistance with Medicare cost sharing through one of four Medicare Savings Programs: the Qualified Medicare Beneficiary Program, Specified Low-Income Medicare Beneficiary Program, Qualifying Individual Program, and Qualified Disabled and Working Individuals Program.
- 16 The 21 conditions include alcohol abuse, Alzheimer's disease/dementia, arthritis (including rheumatoid and osteoarthritis), asthma, atrial fibrillation, autism spectrum disorders, cancer (breast, colorectal, lung, and prostate), chronic kidney disease, chronic obstructive pulmonary disease, depression, diabetes, drug abuse/substance abuse, heart failure, hepatitis (chronic viral B and C), HIV/AIDS, high cholesterol, high blood pressure, ischemic heart disease, osteoporosis, schizophrenia/other psychotic disorders, and stroke/transient ischemic attack.
- 17 Results for hospital outpatient claims per beneficiary are not included in the table, but the results were substantially similar to results for the other categories of services.
- 18 The difference between urban and frontier beneficiaries is even larger. Part of this difference is likely due to coding differences between critical access hospitals and prospective payment system hospitals. However, part of the difference may also reflect the fact that frontier beneficiaries may actually be healthier, in certain regards, compared with urban beneficiaries.

References

- Agency for Healthcare Research and Quality. 2011. *Primary care workforce facts and stats, no. 2: The number of nurse practitioners and physician assistants practicing primary care in the United States*. Rockville, MD: AHRQ.
- American Association of Nurse Practitioners. 2022. NP facts. https://storage.aanp.org/www/documents/NPFacts__40722.pdf.
- Government Accountability Office. 1995. *Health care shortage areas: Designations not a useful tool for directing resources to the underserved*. Washington, DC: GAO.
- Health Resources Administration, Department of Health, Education, and Welfare. 1975. Health maintenance organization: designation of medically underserved areas and population groups. *Federal Register* 40, no. 170 (September 2): 40306.
- Health Resources and Services Administration, Department of Health and Human Services. 2021. *Scoring shortage designations*. Rockville, MD: HRSA. <https://bhwh.hrsa.gov/workforce-shortage-areas/shortage-designation/scoring>.
- Health Resources and Services Administration, Department of Health and Human Services. 2014. *Highlights from the 2012 National Sample Survey of Nurse Practitioners*. Rockville, MD: HRSA. <https://bhwh.hrsa.gov/health-workforce-analysis/nssnp>.
- Kleinman, J. C., and R. W. Wilson. 1977. Are “medically underserved areas” medically underserved? *Health Services Research* 12, no. 2 (Summer): 147–162.
- Kviz, F. J., and J. H. Flaskerud. 1984. An evaluation of the index of medical underservice. Results from a rural consumer survey. *Medical Care* 22, no. 10 (October): 877–889.
- Malone, T., D. Kirk, R. Randolph, et al. 2020. *Association of CMS-HCC risk scores with health care utilization among rural and urban Medicare beneficiaries*. Findings brief. Chapel Hill, NC: North Carolina Rural Health Research Program.
- Medicare Payment Advisory Commission. 2021a. *Report to the Congress: Medicare and the health care delivery system*. Washington, DC: MedPAC.
- Medicare Payment Advisory Commission. 2021b. *Report to the Congress: Medicare payment policy*. Washington, DC: MedPAC.
- Medicare Payment Advisory Commission. 2019. *Report to the Congress: Medicare and the health care delivery system*. Washington, DC: MedPAC.
- Medicare Payment Advisory Commission and the Medicaid and CHIP Payment and Access Commission. 2022. *Data book: Beneficiaries dually eligible for Medicare and Medicaid*. Washington, DC: MedPAC/MACPAC.
- National Commission on Certification of Physician Assistants. 2019. *2018 statistical profile of certified physician assistants: Annual report*. Johns Creek, GA: NCCPA.