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FINDINGS BRIEF

RURAL & MINORITY Health Research Center

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Availability of Medicare-Certified Hospice Services in Minoritized Racial / Ethnic Group Areas

- Minoritized Areas: "Minoritized areas" were defined at the ZIP Code Tabulation Area (ZCTA) level. ZCTAs were considered a top minoritized place if the proportion of persons in the ZCTA who identified as a specific minoritized racial/ethnic group (MRG) met or exceeded the 95th percentile for the proportion of those residents in all rural or urban ZCTAs respectively.
- Access to hospice care in minoritized areas: Across all ZCTAs, 9.4% of rural ZCTAs were not served by any hospice agency compared to 2.4% of urban ZCTAs. Additional findings:
  - Three rural ZCTA categories were particularly likely to lack hospice services: top American Indian/Alaska Native ZCTAs (32.6%), top Asian ZCTAs (27.2%), and ZCTAs falling into the top group for more than one minoritized group (14.1%; all $p < 0.000$).
  - Top Black rural ZCTAs were *less* likely to be unserved ($p = 0.001$).
- Access to hospice care in highly rural areas: Increasing rurality, measured either through Rural Urban Commuting Area (RUCA) codes or Frontier & Remote (FAR) area designation, was associated with reduced levels of hospice service.
  - Among the most urban ZCTAs (RUCA category 1), only 2.1% were not served by any hospice. In contrast, in the most rural areas (RUCA category 10), 14.2% of ZCTAs were unserved.
  - All FAR designated ZCTAs are highly rural. Within this group, 15.6% of ZCTAs at the least remote level (FAR level 1) lacked any hospice service increasing. to 26.6% among rural ZCTAs classified as FAR Level 4.

The current findings brief is one of a series of reports documenting disparities in geographic access to health services for places that have a relatively high proportion of residents from minoritized racial and ethnic groups (MRG). We use the term "minoritized" to refer to groups that have historically been marginalized by society and government institutions. This wording, rather than the terms "minority" or "minorities," highlights the intentional social, economic, and political discrimination that these populations have experienced.[1] Other work from this series has been adapted into a web visualization[2] and a peer reviewed publication,[3] both in *Health Affairs*.

INTRODUCTION

The hospice movement began in the 1960's with the goal of providing palliative care, rather than intrusive and ineffective medical intervention, for persons at the end of life. The Medicare Hospice benefit was initiated in 1983.[4] The hospice benefit facilitates death at home which patients prefer.[5] Family members of decedents who were enrolled in hospice, as well as patients themselves, perceive that their relative received better end of life care.[2] For funders, hospice care reduces the overall cost of care at the end of life.[6]

Individuals entering Medicare-funded hospice must meet two conditions: a physician must have certified that they have only 6 months or less to live and the person must waive all right to treatment for their condition, as opposed to palliative care, while they are in hospice. Once the patient has entered hospice, a full range of medical and social service supports for the individual and the family are provided with the goal of making the person's final days as comfortable as possible (see box, below).[7] Of note, hospices, unlike other healthcare providers, are required to involve volunteers in the provision of supports and services.[8]

Across time, multiple studies have shown that both rural residents and persons from minoritized racial/ethnic groups are less likely to have received a hospice benefit before death.[9, 10, 11, 12] The Medicare Payment Advisory Commission (MedPAC) has documented a decline in hospice providers located in rural areas from 950 organizations in 2010 to 859 in 2019.[7] However, even prior analyses focused on rural hospice care[13] have not directly explored the availability of care to rural and minoritized persons.

To assist patients and providers in making hospice care choices, the Centers for Medicare & Medicaid Services (CMS) provides a website, CMS Hospice Compare, that lists all CMS-approved hospice providers.[14] Providers contribute to this site by listing the ZIP Codes for which they provide services. We used this information to ascertain whether rural and urban Zip Code Tabulation Areas (ZCTAs), and, in particular, ZCTAs with a higher concentration of minoritized residents, have equitable access to hospice services.

Medicare Hospice Services *

- Physician and/or nurse practitioner care
- Nursing care
- Medical equipment
- Medical supplies
- Drugs to manage pain and symptoms
- Hospice aide and homemaker services
- Physical therapy
- Occupational therapy
- Speech-language pathology services
- Medical social services
- Dietary counseling
- Spiritual counseling
- Individual and family or just family grief and loss counseling before and after the patient's death
- Short-term inpatient pain control and symptom management and respite care

* https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/Hospice

METHOD

Defining ZCTAs with a high proportion of minoritized racial/ethnic group (MRG) residents

ZCTAs (n = 32,670) were first classified as rural or urban using Rural Urban Commuting Area definitions with ZCTAs classified as 1 through 3 defined as urban and those classified as 4 through 10 classified as rural.[15] Given differences in the demographic profile of rural and urban places, rural and urban ZCTAs were examined separately.

ZCTAs were classified as a "top" MRG place if the proportion of persons in the ZCTA who identified as a specific MRG group met or exceeded the 95th percentile for the proportion of those residents in all rural or all urban ZCTAs. The "top 5%" for any one population group was consistently less than a majority and for some populations was fairly low (Table 1, at right).

Table 1. Proportion of residents needed to meet or exceed the 95 percentile[a] by race/ethnicity and rurality

	Rural	Urban
Non-Hispanic Black	34.4%	49.3%
Hispanic	23.8%	34.1%
Non-Hispanic American Indian/Alaska Native	11.8%	2.2%
Non-Hispanic Asian	2.5%	15.3%
Non-Hispanic White	100.0%	100.0%

[a] Percentiles derived from population data obtained from the American Community Survey.

"Hispanic" included all persons of Hispanic ethnicity regardless of race. ZCTAs that fell in the top category for more than one MRG population were grouped separately so that categories do not overlap. Thus, the final analysis included six separate categories within both rural and urban ZCTAs: top ZCTAs for Black, Asian, American Indian/Alaska Native, Hispanic, and multiple MRG populations, and a referent category which included all other ZCTAs (see Table 2 and Figure 1). Note that MRG ZCTAs are not "majority minoritized" places; rather, they are ZCTAs in which the proportion of each group is at the top of the distribution compared to other ZCTAs. The geographic location of MRG ZCTAs is shown in Figure 1 at the top of the next page.

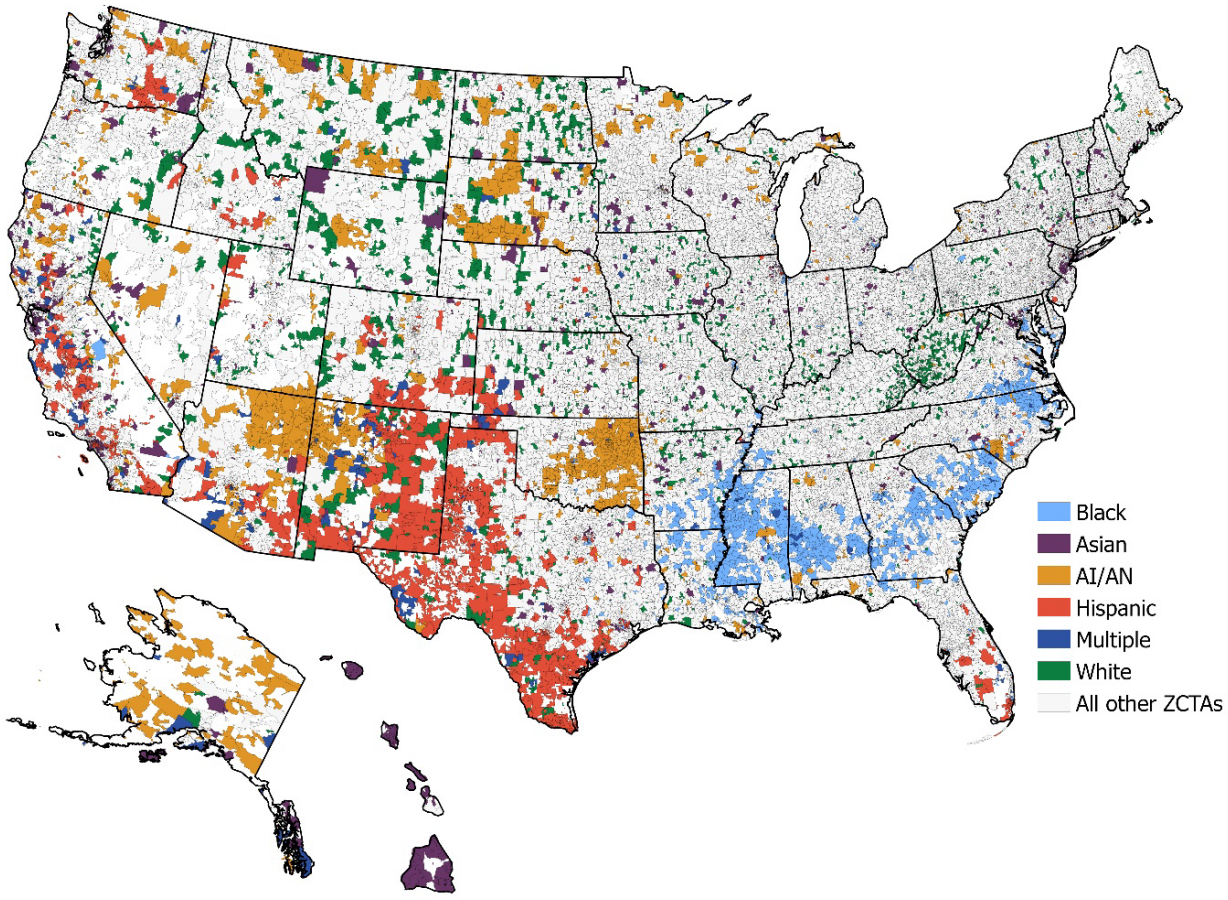
Table 2. Distribution of ZCTAs in the top 5th percentile for minoritized racial/ethnic group population by rurality and racial/ethnic group (2015-2019 American Community Survey)

Racial/ethnic group categories:	Urban ZCTAs		Rural ZCTAs		Total, all ZCTAs	
Minoritized groups	n	%	n	%	n	%
Hispanic*	755	4.2	594	4.0	1,349	4.1
NH* American Indian/Alaska Native.	825	4.6	668	4.5	1,493	4.6
NH* Asian	851	4.8	622	4.2	1,473	4.5
NH* Black	874	4.9	709	4.8	1,583	4.9
> 1 MRG	127	0.7	156	1.1	283	0.9
Non-minoritized						
NH* White	1,203	6.8	2,177	14.6	3,380	10.3
All other ZCTAs (excludes NH White)	13,160	74.0	9,949	66.9	23,109	70.7
Total	17,795	100.0	14,875	100.0	32,670	100.0

Note: Percentiles derived from population data obtained from the 2015-2019 American Community Survey. More than 5% of ZCTAs in both urban and rural areas had 100% white populations; all such ZCTAs were classified as high NH white ZCTAs.

*Hispanic includes all racial identities. All other racial/ethnic groups classified as Non-Hispanic (NH)

Figure 1. Locations of Top Minoritized Racial/Ethnic Group (MRG) Population ZCTAs, 2015-2019 American Community Survey (meeting the 95th percentile threshold)



How we studied hospice availability

Hospice providers paid through Medicare must be certified by the Centers for Medicare & Medicaid Services (CMS). As part of this certification process, each hospice indicates the ZIP Codes for which it could provide service. ZIP Codes are listed *even if the hospice has no patients in that ZIP Code* at the time of reporting. Thus, the summaries reported here may overestimate hospice availability since an agency may list a ZIP Code even if it rarely accepts patients from that area.

We downloaded a complete list of CMS-certified hospices and associated ZIP Codes as of November 2020. ZIP Codes were translated into ZIP Code Tabulation Areas using the Uniform Data System (UDS) crosswalk, a mapping project funded by the Health Resources and Services Administration.[16] Hospice agencies were designated as rural-serving versus urban-only based on the ZCTAs that they serve not the location of their administrative offices.

For each ZCTA, we tallied the total number of hospices including that ZCTA in their service area. The number of hospice providers serving each ZCTA varied from 0 – 235 with a mean of 8.8 and a median of 4 hospices. To focus on service availability or its absence, we grouped the hospice count into 4 categories:

- 0 hospices, indicating that the ZCTA is not served at all
- 1 hospice, suggesting that the ZCTA has service but could lose access if that single provider decides to withdraw from the area.
- 2 – 3 hospices, suggesting that services are available with a reduced risk from one hospice dropping the ZCTA
- 4+ hospices, the ZCTA at or above the national median as of November 2020

We did not adjust hospice counts for population. Hospice providers, because they are not restricted to a single facility, can adjust staffing to be sufficient to patient population. The CMS Provider file, the source for ZIP Code coverage, does not contain information regarding number of hospice direct care employees; in addition, contract staff could be used to supplement employees.

FINDINGS

Characteristics of Hospices Serving Rural and Urban ZCTAs

The majority of hospices nationally (70.4%) operate as for-profit entities (Table 3, below). Among rural-serving hospices; however, for-profit organizations make up less than half of all hospices (46.4%). Non-profit, government, combination, and "other" organizational forms are more common in rural-serving organizations.

Table 3. Characteristics of CMS-Certified Hospices by hospice services in any rural ZCTAs, November 2020

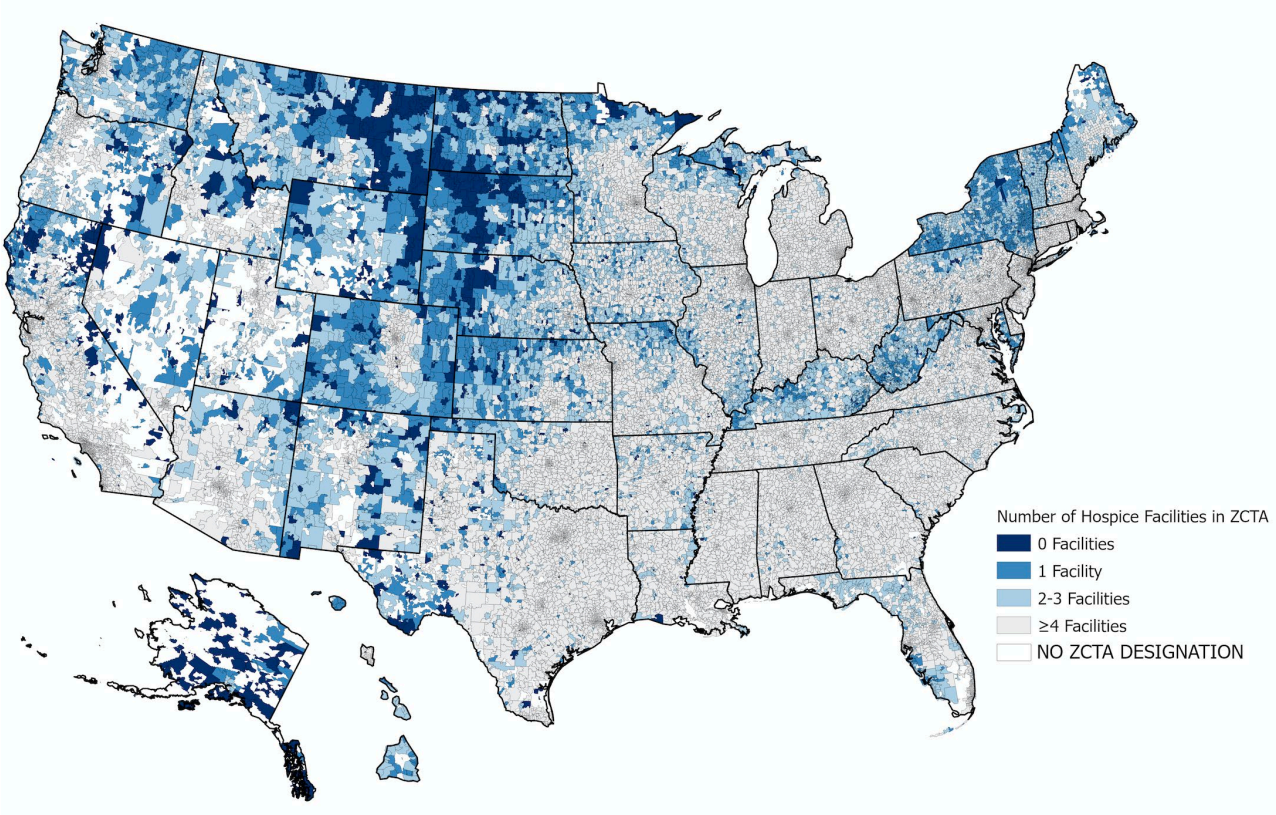
	Total		Rural serving		Urban serving only		P value
	N	%	N	%	N	%	
All Facilities							
	4,426	100%	856	100.0%	3,570	100.0%	
Ownership							
For-Profit	3,116	70.4%	397	46.4%	2,719	76.2%	<0.0001
Non-Profit	822	18.6%	282	32.9%	540	15.1%	<0.0001
Government	88	2.0%	70	8.2%	18	0.5%	<0.0001
Combination Government & Non-Profit	30	0.7%	19	2.2%	11	0.3%	<0.0001
Other	370	8.4%	88	10.3%	282	7.9%	0.0210
Services offered							
Routine home care plus other services	1,896	60.2%	448	57.8%	1,448	60.9%	0.1245
Quality metrics	**mean**	**SD**	**mean**	**SD**	**mean**	**SD**	
Hospice provider process quality score	89.5	12.1	89.6	12.0	89.5	12.1	0.9509
Percent of consumers ranking agency 9 or 10	81.0%	6.4	83.7%	5.6	80.1%	6.4	<0.0001
Percent of consumers who would definitely recommend the hospice	84.4%	6.9	87.7%	5.6	83.3%	6.9	<0.0001

To help patients and families make informed choices regarding hospice providers, CMS makes data from the Consumer Assessment of Healthcare Providers & Systems (CAHPS)[17] available for each provider. Rural-serving and urban-only hospice organizations did not differ with regard to the CMS hospice provider process quality score (rural-serving, 89.6/100, urban-only, 89.5/100 quality points). However, rural-serving hospices were more likely to be highly ranked by consumers with 83.7% of rural-serving versus only 80.1% of urban-only hospices receiving a 9 or 10 on a 10-point assessment score. Similarly, a higher percentage of clients of rural serving hospices (87.7%) than urban-only hospices (83.3%) would definitely recommend the hospice to others. Thus, when rural residents are able to access hospice care, the quality of this care would appear to match or exceed that in urban areas.

Hospice availability across the U.S.

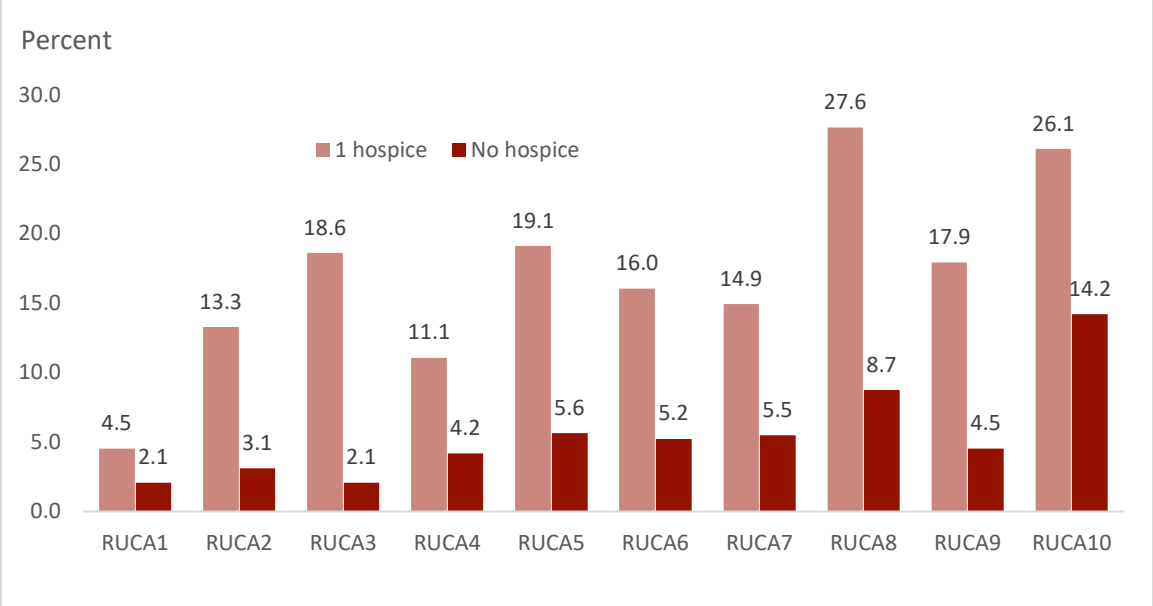
Nationally, most ZCTAs have at least one CMS-certified hospice reporting that it provides services to persons within that ZCTA with only 5.6% of ZCTAs lacking any service. However, some states are less well served than others (Figure 2). The proportion of in-state ZCTAs lacking any hospice serving the ZCTA was highest in Alaska (83.4% ZCTAs unserved), North Dakota (30.7%) and Wyoming (30.4%). A state summary for the proportion of ZCTAS served by 4 or more, 2 – 3, 1, or no hospice is provided as Appendix Table A-1. Using American Community Survey population estimates approximately 1.1 million persons live in areas that are not served by any hospice of whom 690 thousand or 63% live in rural ZCTAs.

Figure 2. Hospice service availability by ZCTAs, November 2020



While only 5.6% of ZCTAs totally lack hospice services, an additional 14.2% of ZCTAs are served by only a single hospice. Areas that have only one provider are vulnerable to loss of services should that organization choose to drop service to the area. As shown in Figure 3, below, the likelihood that a ZCTA will have no hospice or only a single hospice increases as the area becomes more rural. Rural ZCTAs were more likely than urban ZCTAs to totally lack hospice services in 2020 with 9.4% of all rural ZCTAs versus 2.4% of all urban ZCTAs having no service (Table 4, next page).

Figure 3. Percent of ZCTAs served by a single hospice and with no hospice service by Rural Urban Commuting Area Codes, October 2020



The "frontier and remote" (FAR) designation is also helpful for examining which ZCTAs lack hospice services.[18] This designation is applied to ZCTAs using a combination of the number of persons living in the ZCTA plus distance to the nearest urbanized area (see chart at right). The majority of all ZCTAs with a FAR Level 4 designation are rural (98.1%). While 15.6% of rural ZCTAs that are designated FAR Level 1 lack a hospice provider, this increases to 26.6% among rural ZCTAs that are classified as FAR Level 4.

Frontier & Remote Area Designations
Level 1—FAR areas consist of rural areas and urban areas up to 50,000 people that are 60 minutes or more from an urban area of 50,000 or more people
Level 2—FAR areas consist of rural areas and urban areas up to 25,000 people that are: 45 minutes or more from an urban area of 25,000-49,999 people; and 60 minutes or more from an urban area of 50,000 or more people
Level 3—FAR areas consist of rural areas and urban areas up to 10,000 people that are: 30 minutes or more from an urban area of 10,000-24,999; 45 minutes or more from an urban area of 25,000-49,999 people; and 60 minutes or more from an urban area of 50,000 or more people.
Level 4—FAR areas consist of rural areas that are: 15 minutes or more from an urban area of 2,500-9,999 people; 30 minutes or more from an urban area of 10,000-24,999 people; 45 minutes or more from an urban area of 25,000-49,999 people; and 60 minutes or more from an urban area of 50,000 or more people.

Hospice availability in top MRG ZCTAs

Within urban ZCTAs, areas in the top 5% for American Indian/Alaska Native residents (3.8%) and Asian/Pacific Islander residents (3.3%) were more likely to lack hospice services than those in the referent group of "all other" ZCTAs (1.5%; Table 4, below). Other MRG areas did not vary from the comparison group. Urban ZCTAs in the top fifth percentile for non-Hispanic white residents also differed from the reference group and were most likely to lack any hospice service (12.1%).

All rural ZCTAs were more likely to lack all hospice services than were urban ZCTAs falling into the same MRG category. Within rural ZCTAs, top areas for American Indian/Alaska Native (32.6%), Asian/Pacific Islander (12.9%), and multiple MRG groups (23.1%) were each more likely than the comparison group to lack any hospice service (4.5%). ZCTAs in the top 5% for the proportion of non-Hispanic white residents also had poorer hospice coverage with 24.7% of these ZCTAs being unserved.

Table 4. Level of hospice service within ZCTAs by rurality* and MRG status, November 2020

ZCTA Categories	n	Percent of ZCTAs served by indicated number of hospice providers			
		4+ hospices %	2-3 hospices %	1 hospice %	No hospice %
Rural ZCTAs					
Hispanic	594	44.1	29.6	19.5	6.7
NH Am. Ind./Alaska Nat.	668	24.3	23.4	19.8	32.6 [a]
NH Asian	622	31.7	28.3	27.2	12.9 [a]
NH Black	709	68.7	18.3	8.5	4.5
NH White	2,177	7.1	32.2	36.1	24.7 [a]
>1 MRG	156	43.0	19.9	14.1	23.1 [a]
All other (referent)	9,949	42.7	33.9	18.9	4.5
Total	14,875	37.5	31.9	21.3	9.4
Urban ZCTAs					
Hispanic	755	90.9	5.8	2.0	1.3
NH Am. Ind./Alaska Nat.	825	63.8	22.9	9.6	3.8 [b]
NH Asian	851	91.4	3.4	1.9	3.3 [b]
NH Black	874	86.7	7.0	4.0	2.3
NH White	1,203	17.5	34.8	35.6	12.1 [b]
>1 MRG	127	92.1	6.3	0.8	0.8
All other (referent)	13,160	77.3	14.4	6.9	1.5
Total	17,795	74.4	14.8	8.3	2.4

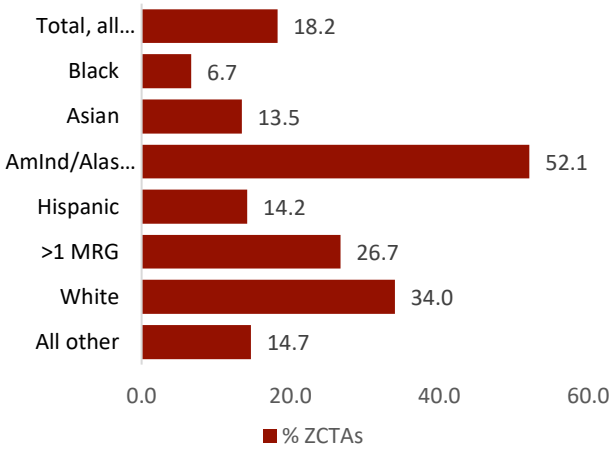
*Note: All rural-urban differences within racial/ethnic categories are significant at $p<0.000$; Chi Square test.

[a] Indicated group differs significantly from the rural comparison value, 8.2%.

[b] Indicated group differs significant from the urban comparison value, 2.4%

The FAR designation is helpful for understanding variation in hospice availability across top MRG population ZCTAs. Over half (52.1%) of all rural ZCTAs that fall into the top category for American Indian Alaska Native population, for example, fall into FAR Level 4, the most remote rural designation (See Figure 4, right). Thus, of the high proportion of rural American Indian/Alaska Native ZCTAs that lack hospice service 32.6% may stem from the combination of population demographics and a unique, sparsely populated landscape.

Figure 4. Percent of Rural ZCTAs that meet FAR 4 definition



It is possible that areas with top AI/AN representation are receiving hospice services from organizations not certified by CMS such as the Indian Health Service (IHS). IHS agencies can provide up to 29 different long-term services and supports (LTSS) to their service population including financial advice, home maintenance, and a variety of similar services in addition to hospice. To explore IHS LTSS as an alternative to CMS-certified hospice providers, we downloaded the list of LTSS providers and services.[19] We were not able to pair providers to ZCTAs as service areas were not included in the file. Nationally, however, only 18 out of 427 reporting agencies (4.2%) offered hospice services. Agencies offering hospice were located in Alaska (2), Arizona (2), California (1), Connecticut (1), Minnesota (1), Montana (1), Nebraska (1), Nevada (1), New Mexico (1), Oregon (1), South Dakota (1), Washington (4), and Wisconsin (1).

CONCLUSIONS

Multiple studies have assessed differences in hospice use across racial/ethnic groups and across rurality generally finding that hospice use is lower among minoritized than among white populations and lower among rural than urban residents.[20, 21] While researchers have suggested that resources for hospice may be inadequate in minoritized areas[eg 22, 23] little previous research has focused directly on hospice availability in minoritized communities. Our findings remedy that absence and contribute to the overall understanding of differences in hospice use; they are summarized in the following paragraphs.

First, the availability of hospice services is lower in rural than in urban ZCTAs, across the board, regardless of the specific population being studied. Most routine hospice care is provided in the home and thus inaccessible to those living in ZCTAs not served by any hospice.[24] Even taking into consideration that not all hospice participants actually die at home,[25] absence of service availability may be a contributing factor to lower levels of hospice use among rural versus urban Medicare beneficiaries and others. Lack of service is a form of inequity that can contribute to the perception that hospice is "an idea that only becomes reality for the few who are privileged enough to have access to it." [26, p 89.]

Second, availability of hospice services is lower for residents of ZCTAs in the top 5th percentile for the proportion of the population that is AI/AN than for any other population category. While the shortfall is modest for urban ZCTAs (3.5% of ZCTAs lack hospice), it is markedly higher

(32.6% lack hospice) for rural ZCTAs. The limited number of Indian Health Service agencies offering hospice services nationwide (4.2% of agencies) is unlike to remedy this shortfall for residents of these areas. Further research is needed to ascertain whether the absence of hospice service in high American Indian/Alaska Native areas reflects local cultural preferences or is an ongoing inequity.

Third, it is interesting to note that ZCTAs falling into the top 5th percentile for non-Hispanic Black residents do not experience a shortfall in hospice availability defined as differing from the referent group of "all other ZCTAs" in either rural or urban areas. This finding suggests that lower utilization of hospice services among black decedents is not necessarily tied to service availability and may be related to other factors in the health care system (e.g., lack of health insurance, Medicaid coverage of hospice for younger decedents, poorer referral systems within institutions serving minoritized populations). Further research is needed to clarify these issues.

Fourth, assessment of hospice availability by MedPAC revolves around whether payment levels generate sufficient profit for providers to retain their interest in remaining active as CMS hospice providers. The MedPAC 2021 report[9] asserted that rural access to hospice service was probably adequate as providers located in urban areas could care for rural patients. However, the analysis documented here shows marked gaps in coverage with the burden of "no hospice available" disproportionately falling on rural and minoritized populations. The simple technique used here, tabulating ZCTAs reported as served by hospice agencies, may offer an alternative assessment of service adequacy.

Fifth, additional research into the availability of hospice services across rural populations is essential. Two parallel sources of change, the growth of private equity firms in the hospice field[27] and the COVID-19 pandemic, may combine to create levels of hospice availability in 2022 that are markedly different from the 2020 values provided in this brief. These two issues are discussed below.

Hospice care has evolved from a volunteer-centered, charity-oriented service to a for-profit industry.[28] The consistent hospice profit margins noted by MedPAC have attracted private equity firms to the hospice segment of the healthcare industry. These firms are not committed to any particular industry but to buying and selling organizations to generate turnover profits; further, they often leave the flipped asset in debt.[25]

The COVID-19 pandemic placed strain on health care providers. Hospice providers report multiple workforce impacts such as the need for hospice workers to quarantine.[29] It is possible that individual hospice staffers may have left the profession forcing agencies to make cutbacks in the geographic spread of their services. Given the "windshield time" associated with rural care, rural ZCTAs may be disproportionately affected by such cutbacks. Reassessment of the availability of hospice once the nation has returned to a less constrained condition is essential.

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RURAL & MINORITY Health Research Center

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APPENDIX

Data Sources

Data on the racial/ethnic composition of ZCTAs and their socioeconomic conditions comes from the U.S. Census Bureau's American Community Survey, 5-year estimates. Information on home health agencies was derived from the Centers for Medicare and Medicaid Services (CMS) Provider data set and was current as of October, 2020. [30] [https://data.cms.gov/provider-data] CMS supplies two data sets: a listing of all providers with their address, ownership, and services provided, as well as, a list of all ZIP Codes reported as being service by each HH agency. The two files were linked using the CMS Provider ID number.

Key Definitions

Rurality was defined using the ZIP-approximated Rural Urban Commuting Area (RUCA) codes. Specifically, ZCTAs were assigned the RUCA code for the matching ZIP even if additional ZIP Codes were included in the creation of the ZCTA boundary. RUCA codes 1 – 3 were defined as urban and codes 4 – 10 as rural.

Minoritized racial/ethnic group area: ZCTAs were defined as "top" proportion of residents of a specific racial/ethnic identity if the proportion of persons reporting that identity within the ZCTA was at or above the 95th percentile of that group's proportion of the population across all ZCTAs. Because we created mutually exclusive categories for ZCTAs that fall into the top 5th percentile for each minoritized racial/ethnic group (MRG), the total proportion of MRG ZCTAs equals 18.9% of all ZCTAs.

Previous researchers have used a "majority minority" cut-point to define a geographic area as a minority community.[31, 32] However, these studies have been conducted in a limited number of highly urbanized areas. For most of the U.S., and particularly for rural ZCTAs and racial/ethnic individuals who form only a small proportion of the population, the 50% cut-point would leave very few ZCTAs for study. Hence, we refer to studied ZCTAs as "top" areas rather than implying a majority-minority place.

Demographic characteristics of top MRG ZCTAs

Top MRG ZCTAs could differ from other ZCTAs in the U.S. on characteristics that affect both demand for and local ability to support and retain hospice services. To provide context for our hospice availability results, we compared MRG ZCTAs defined as those in the 95th percentile for the proportion of each group to all other ZCTAs (labeled "all other;" Table A-1).

- Across both rural and urban ZCTAs, the proportion of the population that is age 65 or older is significantly lower in MRG ZCTAs than in "all other" ZCTAs. A younger population base may have less need for hospice services.
- We examined vehicle availability within the household as an indicator of residents' ability to leave home for care particularly in rural places.
    - Within rural MRG ZCTAs, ZCTAs in the top group for AI/AN, Black, and multiple MRG population had higher proportions of households that lacked a vehicle; the Asian ZCTAs did not differ from the "all other" group.

    - The top AI/AN ZCTAs were the only group for which the proportion of households without a vehicle was significantly higher among rural than among urban ZCTAs (rural 19.0%, urban 5.8%).
- Broadband access is important for residents' ability to access telehealth and telemedicine services as a supplement to or alternative for hospice care.
    - All rural ZCTAs within each racial/ethnic category had a lower proportion of households with broadband access than among the equivalent urban ZCTAs.
    - Within urban and rural places, all top MRG ZCTAs, except the Asian group, had lower access to broadband than the "all other" category. Within top rural Black ZCTAs, only 58.2% of households reported broadband access.
- Community poverty can make an area unattractive for health care providers of all kinds. Persons who are uninsured or whose care is funded by lower-paying insurers, such as Medicaid, offer lower payment for the provider. The proportion of households with incomes at or below 200% of the Federal Poverty Level was higher among MRG ZCTAs than the "all other" group for all except top Asian ZCTAs.
- As with poverty, high proportions of uninsured persons within a population can reduce the willingness of providers to locate in or serve the area. The proportion of the population lacking health insurance was higher among MRG ZCTAs than the "all other" group for all except top Asian ZCTAs.

Table A-1. Characteristics of Top MRG ZCTAs when compared to all other ZCTAs by rurality[1]

ZCTA (n)[2]	Percent population that is ≥65 years of age			Percent households with no vehicle			Percent households with broadband access			Percent households at or above 200% of the Federal Poverty Level			Percent population without health insurance		
Rural (14,875)	%	SE		%	SE		%	SE		%	SE		%	SE	
>1 MRG (156)	16.6%	1.0%	c,***	11.6%	1.4%	c	66.6%	1.4%	c,***	45.0%	1.2%	b,*	15.6%	0.9%	c
Hispanic (594)	17.2%	0.4%	c,***	5.2%	0.3%	***	68.5%	0.7%	c,***	45.4%	0.7%	c,**	15.1%	0.5%	c,***
NH Am. Ind./ Alaska Nat. (668)	16.6%	0.4%	c	19.0%	1.1%	c, ***	60.9%	0.7%	c,***	49.9%	0.7%	c,***	20.5%	0.5%	c,***
NH Asian (622)	20.5%	0.4%	c,***	4.7%	0.2%	***	78.1%	0.5%	c,***	32.8%	0.6%	c,***	7.4%	0.3%	a,***
NH Black (709)	19.3%	0.4%	c,***	10.5%	0.4%	c, ***	58.2%	0.6%	c,***	51.6%	0.6%	c,**	12.6%	0.4%	c,***
All other ZCTAs (12,126)	22.5%	0.1%	***	4.7%	0.1%	***	74.0%	0.1%	***	34.5%	0.1%	***	8.2%	0.1%	***
Urban (17,795)															
>1 MRG (127)	12.3%	0.6%	c	11.5%	0.9%	c	74.5%	1.0%	c	49.3%	1.2%	c	14.6%	0.6%	c
Hispanic (755)	12.1%	0.2%	c	10.5%	0.5%	c	73.8%	0.5%	c	48.1%	0.5%	c	17.0%	0.3%	c
NH Am. Ind./ Alaska Nat. (825)	17.4%	0.3%	c	5.8%	0.2%		74.8%	0.5%	c	36.7%	0.6%	c	11.2%	0.3%	c
NH Asian (851)	14.0%	0.3%	c	12.1%	0.6%	c	89.0%	0.4%	c	21.6%	0.5%	c	5.3%	0.1%	c
NH Black (874)	15.0%	0.3%	c	17.8%	0.5%	c	68.7%	0.5%	c	49.0%	0.6%	c	11.3%	0.2%	c
All other ZCTAs (14,363)	18.2%	0.1%		5.6%	0.1%		81.8%	0.1%		27.5%	0.1%		7.1%	0.1%	

[1] Data from the 2015-2019 American Community Survey

[2] Values are not equal for each group due to the placement of some ZCTAs in the multiple MRG category.

[a] Value differs from referent group, "all other," at p <.05 * Rural differs from urban at p < .05

[b] Value differs from referent group, "all other," at p <0.01 ** Rural differs from urban at p < .01

[c] Value differs from referent group, "all other," at p < 0.001 *** Rural differs from urban at p < .001

Table A-2. Count of ZCTAs at various hospice service levels by state, November, 2020

	4+ hospices		2-3 hospices		1 hospice		Not served		Total
STATE	N	%	N	%	N	%	N	%	
AK	0	0.0%	18	7.7%	21	8.9%	196	83.4%	235
AL	561	88.1%	38	6.0%	18	2.8%	20	3.1%	637
AR	318	54.2%	181	30.8%	63	10.7%	25	4.3%	587
AZ	276	69.7%	78	19.7%	26	6.6%	16	4.0%	396
CA	1,274	73.2%	192	11.0%	151	8.7%	123	7.1%	1,740
CO	216	42.0%	99	19.3%	146	28.4%	53	10.3%	514
CT	242	86.7%	22	7.9%	10	3.6%	5	1.8%	279
DC	20	66.7%	1	3.3%	2	6.7%	7	23.3%	30
DE	54	81.8%	8	12.1%	0	0.0%	4	6.1%	66
FL	619	63.5%	270	27.7%	74	7.6%	12	1.2%	975
GA	644	88.7%	49	6.7%	19	2.6%	14	1.9%	726
HI	28	30.1%	27	29.0%	32	34.4%	6	6.5%	93
IA	405	43.4%	354	37.9%	139	14.9%	35	3.8%	933
ID	121	44.2%	83	30.3%	43	15.7%	27	9.9%	274
IL	831	60.1%	378	27.4%	132	9.6%	41	3.0%	1,382
IN	608	79.0%	104	13.5%	33	4.3%	25	3.2%	770
KS	285	41.1%	192	27.7%	171	24.7%	45	6.5%	693
KY	105	13.8%	382	50.3%	244	32.1%	28	3.7%	759
LA	424	83.1%	60	11.8%	16	3.1%	10	2.0%	510
MA	429	80.3%	75	14.0%	22	4.1%	8	1.5%	534
MD	215	46.4%	108	23.3%	123	26.6%	17	3.7%	463
ME	149	35.1%	185	43.5%	73	17.2%	18	4.2%	425
MI	762	78.1%	139	14.2%	53	5.4%	22	2.3%	976
MN	446	50.7%	256	29.1%	124	14.1%	53	6.0%	879
MO	608	59.7%	269	26.4%	100	9.8%	41	4.0%	1,018
MS	362	86.6%	29	6.9%	15	3.6%	12	2.9%	418
MT	46	12.7%	114	31.6%	98	27.1%	103	28.5%	361
NC	595	74.2%	163	20.3%	33	4.1%	11	1.4%	802
ND	14	3.7%	110	28.9%	140	36.7%	117	30.7%	381
NE	165	28.4%	214	36.8%	139	23.9%	63	10.8%	581
NH	132	53.2%	80	32.3%	32	12.9%	4	1.6%	248
NJ	537	90.6%	33	5.6%	10	1.7%	13	2.2%	593
NM	103	28.5%	140	38.8%	79	21.9%	39	10.8%	361
NV	104	61.9%	31	18.5%	19	11.3%	14	8.3%	168
NY	385	21.9%	454	25.9%	844	48.1%	73	4.2%	1,756
OH	885	74.4%	189	15.9%	82	6.9%	34	2.9%	1,190
OK	453	70.1%	123	19.0%	48	7.4%	22	3.4%	646

OR	192	46.4%	128	30.9%	75	18.1%	19	4.6%	414
PA	1,167	65.5%	356	20.0%	189	10.6%	71	4.0%	1,783
RI	60	77.9%	12	15.6%	3	3.9%	2	2.6%	77
SC	373	88.4%	17	4.0%	17	4.0%	15	3.6%	422
SD	46	12.4%	96	25.9%	133	35.9%	95	25.7%	370
TN	534	85.7%	64	10.3%	14	2.2%	11	1.8%	623
TX	1,554	81.1%	175	9.1%	111	5.8%	77	4.0%	1,917
UT	153	53.7%	77	27.0%	40	14.0%	15	5.3%	285
VA	597	67.0%	193	21.7%	69	7.7%	32	3.6%	891
VT	7	2.8%	172	67.7%	67	26.4%	8	3.1%	254
WA	169	28.7%	224	38.1%	165	28.1%	30	5.1%	588
WI	488	63.3%	205	26.6%	59	7.7%	19	2.5%	771
WV	56	8.0%	359	51.0%	263	37.4%	26	3.7%	704
WY	3	1.8%	48	28.1%	68	39.8%	52	30.4%	171
Total	18,820	57.6%	7,374	22.6%	4,647	14.2%	1,828	5.6%	32,669

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