

## FINAL REPORT

February 25, 2025

# Rural Health Disparities and Differences in Definitions of Rurality

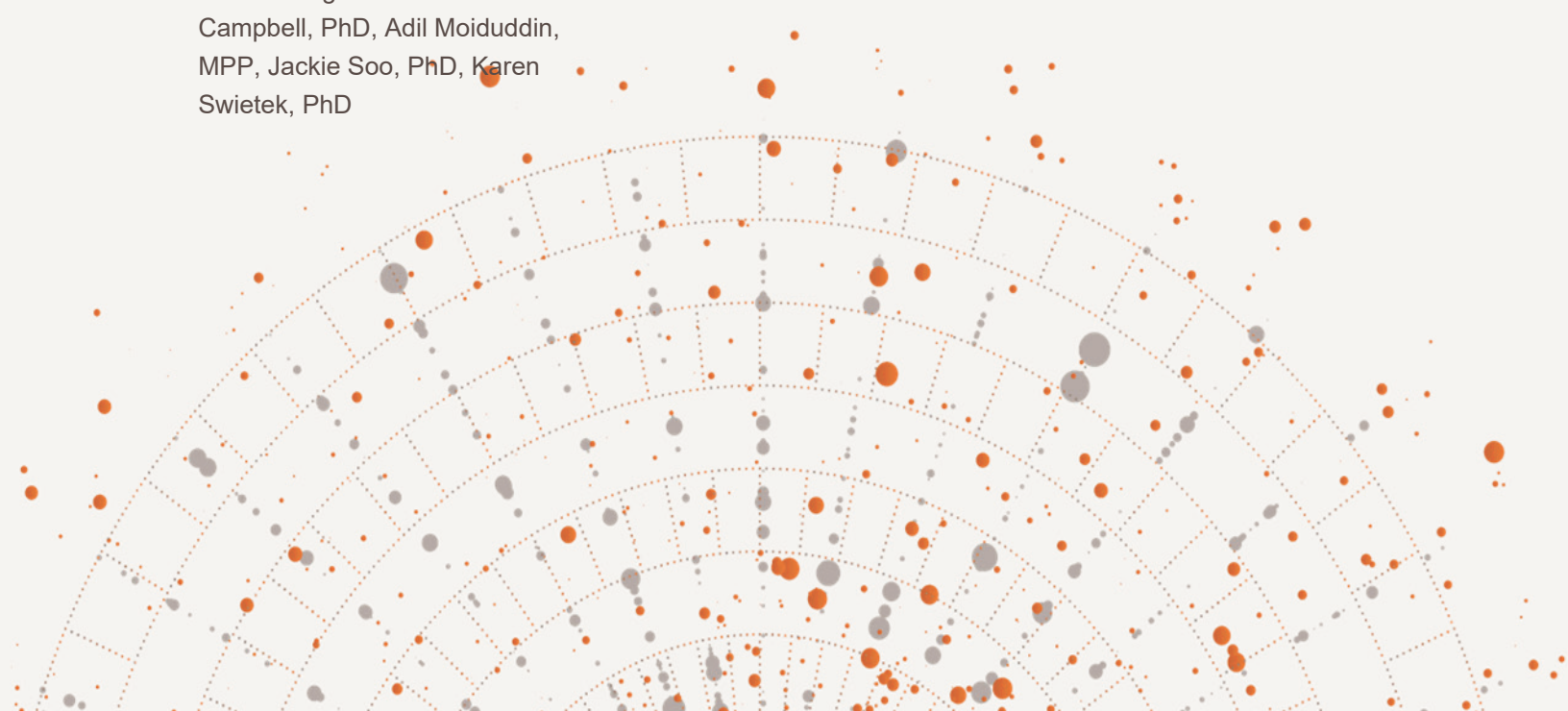
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# Rural Health Disparities and Differences in Definitions of Rurality

The Physician-Focused Payment Model Technical Advisory Committee (PTAC) conducted a theme-based discussion on encouraging rural participation in population-based total cost of care models during the Committee's September 18-19, 2023, public meeting. Following the September 2023 public meeting, the Office of the Assistant Secretary for Planning and Evaluation (ASPE) requested an analysis on "Rural Health Disparities and Differences in Definitions of Rurality" to provide an overview of health disparities between rural and nonrural areas and a comparison of definitions of rurality under different urban/rural classification systems. This analysis was prepared under Contract Number HHSP233201500048I75P00123F37023 between the Department of Health and Human Services' Office of Health Policy of the ASPE and NORC at the University of Chicago. The opinions and views expressed in this analysis are those of the authors. They do not reflect the views of the Department of Health and Human Services, the contractor, or any other funding organizations. This analysis was completed in February 2025.

# Executive Summary

This report was prepared at the request of the Office of the Assistant Secretary for Planning and Evaluation (ASPE) as supplemental information to the Physician-Focused Payment Model Technical Advisory Committee (PTAC) September 2023 theme-based discussion on encouraging rural participation in population-based total cost of care (PB-TCOC) models.

This report has two key objectives: to examine potential health disparities between rural and nonrural areas, and to compare how geographic designation of rural varies across different urban/rural classification systems.

Two datasets were used to obtain information regarding county-level health and health care characteristics: County Health Rankings (CHR), 2023<sup>i</sup> and Area Health Resources Files (AHRF), 2021–2022.<sup>ii</sup> Select variables from the CHR and AHRF were chosen to provide a representative view of community health and health care characteristics. Two primary urban/rural classification systems were used to examine county-level health disparities by rural versus nonrural designation: Rural-Urban Continuum Codes (RUCC), 2013<sup>iii</sup> and Core Based Statistical Areas (CBSAs), July 2023.<sup>iv</sup> Two additional county-level urban/rural classification systems were used to explore agreement in definitions of rurality: National Center for Health Statistics (NCHS) Urban-Rural Classification Scheme for Counties, 2013<sup>v</sup> and Urban Influence Codes (UIC), 2013.<sup>vi</sup> A total of 3,142 counties were included in this analysis.<sup>vii</sup>

Substantial disparities in community health and health care characteristics were observed between rural and nonrural counties. Exhibits 1 and 2 summarize the specific health (CHR) and health care characteristics (AHRF) measures with significant mean differences between rural and nonrural counties based on rural/nonrural county classification using the RUCC.<sup>viii</sup> In terms of community health disparities (Exhibit 1), rural counties had poorer social and economic conditions, health behaviors, and clinical care but better physical environment conditions than nonrural counties.<sup>ix</sup> Residents of rural counties also had lower length of life and quality of life compared with those in nonrural counties.

<sup>i</sup> University of Wisconsin Population Health Institute. 2023 County Health Rankings National Data file. Accessed September 25, 2023. <https://www.countyhealthrankings.org/explore-health-rankings/rankings-data-documentation>

<sup>ii</sup> Health Resources and Services Administration (HRSA). 2021–2022 Area Health Resources Files (AHRF) County Level Data file. Accessed November 16, 2023. <https://data.hrsa.gov/data/download>

<sup>iii</sup> United States Department of Agriculture (USDA) Economic Research Service. 2013 Rural-Urban Continuum Codes data file. Accessed August 3, 2023. <https://www.ers.usda.gov/data-products/rural-urban-continuum-codes/>

<sup>iv</sup> United States Census Bureau. July 2023 Core Based Statistical Areas (CBSAs), Metropolitan Divisions, and Combined Statistical Areas (CSAs) data file. Accessed October 3, 2023. <https://www.census.gov/geographies/reference-files/time-series/demo/metro-micro/delineation-files.html>

<sup>v</sup> Centers for Disease Control and Prevention (CDC) National Center for Health Statistics (NCHS). 2013 NCHS Urban-Rural Classification Scheme for Counties data file. Accessed October 6, 2023. [https://www.cdc.gov/nchs/data\\_access/urban\\_rural.htm](https://www.cdc.gov/nchs/data_access/urban_rural.htm)

<sup>vi</sup> United States Department of Agriculture (USDA) Economic Research Service (ERS). 2013 Urban Influence Codes data file. <https://www.ers.usda.gov/data-products/urban-influence-codes/>

<sup>vii</sup> In 2019, Valdez-Cordova, AK, county was split into Chugach, AK, county and Copper River, AK, county. Because only the combined Valdez-Cordova, AK, county was available in the three 2013 urban/rural classification systems, Chugach, AK, and Copper River, AK, were combined to create the earlier Valdez-Cordova, AK, county in the CBSAs for consistency across the four classification systems.

<sup>viii</sup> Significant differences reported are those with mean differences involving nonoverlapping 95% confidence intervals. Findings were similar using rural/nonrural county designation based on the CBSAs.

<sup>ix</sup> There was one noteworthy exception: a lower proportion of households in rural counties had broadband access compared with households in nonrural counties (78.1% vs. 84.7%).

Related to community health care characteristics (Exhibit 2), rural counties had fewer health care providers but more Federally Qualified Health Centers (FQHCs)/Rural Health Clinics (RHCs) and short-term hospital beds relative to the population size compared with nonrural counties.

### Exhibit 1. Disparities in Community Health Between Rural and Nonrural Counties (Defined Based on 2013 RUCC Codes)

Measure	Rural County Mean*	Nonrural County Mean*
<b>Health Factors</b>		
<b>Social and Economic Factors</b>		
Median household income, \$	\$53,743	\$67,758
Firearm fatalities, rate per 100,000 population	18.4	14.3
Motor vehicle crash deaths, rate per 100,000 population	22.3	14.7
<b>Health Behaviors</b>		
Adult smoking, %	21.2	18.3
Food insecurity, %	13.0	11.4
Limited access to healthy foods, %	9.4	7.2
<b>Physical Environment</b>		
Drinking water violations (0/1 indicator)	0.30	0.41
Long commute—driving alone, %	29.9	37.6
Households with severe housing cost burden, %	10.1	11.7
<b>Clinical Care</b>		
Mammography screening, % female Medicare FFS	35.9	38.4
Flu vaccinations, % Medicare FFS	41.3	50.3
<b>Health Outcomes</b>		
<b>Length of Life</b>		
Life expectancy, years	76.5	77.6
Premature death, rate per 100,000 population	9,403.1	8,104.6
<b>Quality of Life</b>		
Adults who consider themselves to be in poor or fair health, %	16.8	14.8
Adult diabetes, %	10.7	10.0

Abbreviation: FFS, fee-for-service

Note: Nonrural counties were defined by RUCC codes 1-3. Rural counties were defined by RUCC codes 4-9.

Sources: University of Wisconsin Population Health Institute. 2023 County Health Rankings National Data file. Accessed September 25, 2023. <https://www.countyhealthrankings.org/explore-health-rankings/rankings-data-documentation>; United States Department of Agriculture (USDA) Economic Research Service. 2013 Rural-Urban Continuum Codes data file. Accessed August 3, 2023. <https://www.ers.usda.gov/data-products/rural-urban-continuum-codes/>

## Exhibit 2. Disparities in Community Health Care Characteristics Between Rural and Nonrural Counties (Defined Based on 2013 RUCC Codes)

Measure	Rural County Mean	Nonrural County Mean
<b>Health Professions</b>		
PCPs per 100,000 population	38.0	53.6
Specialists per 100,000 population	46.7	149.3
CVD specialists per 100,000 population	1.1	4.4
Gastroenterology specialists per 100,000 population	0.5	3.0
Neurological surgery specialists per 100,000 population	0.2	1.4
Advanced practice registered nurses per 100,000 population	88.0	106.8
Nurse practitioners per 100,000 population	76.3	88.0
<b>Health Facilities</b>		
FQHCs and RHCs per 100,000 population	23.4	6.7
Short-term hospital beds per 100,000 population	286.8	193.1

Abbreviations: CVD, cardiovascular disease; FQHC, Federally Qualified Health Center; PCP, primary care physician; RHC, Rural Health Clinic

Note: Nonrural counties were defined by RUCC codes 1-3. Rural counties were defined by RUCC codes 4-9.

Sources: Health Resources and Services Administration (HRSA). 2021–2022 Area Health Resources Files (AHRF) County Level Data file. Accessed November 16, 2023. <https://data.hrsa.gov/data/download>; United States Department of Agriculture (USDA) Economic Research Service. 2013 Rural-Urban Continuum Codes data file. Accessed August 3, 2023. <https://www.ers.usda.gov/data-products/rural-urban-continuum-codes/>

There was substantial agreement (96.1 percent) in county rural/nonrural designation across the four urban/rural classification systems examined (see Exhibit 3). Three of the systems—RUCC, NCHS, and UIC—showed complete agreement in the designation of counties as rural or nonrural. Only CBSAs yielded different rural/nonrural designation for a small number of counties (124 counties, 3.9 percent).

## Exhibit 3. Rural/Nonrural Designation Across Four Urban/Rural Classification Systems

Agreement/Disagreement in Rural/Nonrural Designation	Number of Counties	Percent of Counties
Agreement in designation across all four classification systems	3,018	96.1%
Disagreement in designation between CBSAs and the other three systems	124	3.9%
<b>Total (all counties)</b>	<b>3,142</b>	<b>100.0%</b>

Sources: United States Department of Agriculture (USDA) Economic Research Service. 2013 Rural-Urban Continuum Codes data file. Accessed August 3, 2023. <https://www.ers.usda.gov/data-products/rural-urban-continuum-codes/>; United States Census Bureau. July 2023 Core Based Statistical Areas (CBSAs), Metropolitan Divisions, and Combined Statistical Areas (CSAs) data file. Accessed October 3, 2023. <https://www.census.gov/geographies/reference-files/time-series/demo/metro-micro/delineation-files.html>; Centers for Disease Control and Prevention (CDC) National Center for Health Statistics (NCHS). 2013 NCHS Urban-Rural Classification Scheme for Counties data file. Accessed October 6, 2023. [https://www.cdc.gov/nchs/data\\_access/urban\\_rural.htm](https://www.cdc.gov/nchs/data_access/urban_rural.htm); United States Department of Agriculture (USDA) Economic Research Service (ERS). 2013 Urban Influence Codes data file. <https://www.ers.usda.gov/data-products/urban-influence-codes/>

# Introduction

This report was prepared at the request of the Office of the Assistant Secretary for Planning and Evaluation (ASPE) as supplemental information to the Physician-Focused Payment Model Technical Advisory Committee (PTAC) September 2023 theme-based discussion on encouraging rural participation in population-based total cost of care (PB-TCOC) models.

This report has two key objectives:

## **Objective 1: Examine potential health disparities between rural and nonrural areas**

This analysis used data from the County Health Rankings (CHR) and Area Health Resources Files (AHRF) to explore potential differences in community health and health care characteristics between rural and nonrural counties using two different county-level urban/rural classification systems: Rural-Urban Continuum Codes (RUCC) and Core Based Statistical Areas (CBSAs).

This analysis addressed the following research questions:

1. Are there differences in health (i.e., health factors and health outcomes) between populations that reside in rural versus nonrural communities? Do these differences vary based on the urban/rural classification system (RUCC versus CBSA) used to identify rural counties?
2. Are there differences in health care characteristics (i.e., health professions and health facilities) between populations that reside in rural versus nonrural communities? Do these differences vary based on the urban/rural classification system (RUCC versus CBSA) used to identify rural counties?

## **Objective 2: Compare how geographic designation of rural varies across different urban/rural classification systems**

This analysis used four county-level urban/rural classification systems—RUCC, CBSA, National Center for Health Statistics (NCHS) Urban-Rural Classification Scheme for Counties, and Urban Influence Codes (UIC)—to examine the level of agreement in counties designated as rural versus nonrural.

This analysis addressed the following research question:

1. What is the level of agreement in county-level rural designation across different urban/rural classification systems?

Results of the primary county-level analysis of U.S. health care disparities between rural and nonrural areas and concordance across county-level urban/rural classification systems are presented in this report. Appendix A provides supplemental county-level rural/nonrural analyses, including health care disparities results by U.S. census division. Appendix B presents a secondary analysis of concordance in ZIP Code-based urban/rural classification systems. Appendix C provides the file layout for two analytic files of urban/rural codes and rurality designation, which are provided as supplements to this report.



# Data and Methods

## Data

This report involves two types of geographic-level datasets: community health and health care characteristics data, and urban/rural classification data. The most recent version of each data file available at the time of this analysis was used.

Two datasets were used to obtain information regarding county-level health and health care characteristics:

1. County Health Rankings (CHR), 2023<sup>x</sup>
2. Area Health Resources Files (AHRF), 2021–2022<sup>xi</sup>

Two primary classification systems were used to examine county-level health disparities by rural versus nonrural designation:

1. Rural-Urban Continuum Codes (RUCC), 2013<sup>xii</sup>
2. Core Based Statistical Areas (CBSAs), July 2023<sup>xiii</sup>

In addition to the RUCC and CBSA, two other county-level urban/rural classification systems were used to explore agreement in definitions of rurality:

1. National Center for Health Statistics (NCHS) Urban-Rural Classification Scheme for Counties, 2013<sup>xiv</sup>
2. Urban Influence Codes (UIC), 2013<sup>xv</sup>

Detailed descriptions of each data source used in the primary analyses are described in the following sections of this report.

In a secondary analysis, two datasets that use ZIP Code as the geographic unit for urban/rural classification were examined for agreement in definitions of rural isolation or remoteness:

1. Rural-Urban Commuting Area (RUCA) Codes, 2010<sup>xvi</sup>
2. Frontier and Remote (FAR) Area Codes, 2010<sup>xvii</sup>

<sup>x</sup> University of Wisconsin Population Health Institute. 2023 County Health Rankings National Data file. Accessed September 25, 2023. <https://www.countyhealthrankings.org/explore-health-rankings/rankings-data-documentation>

<sup>xi</sup> Health Resources and Services Administration (HRSA). 2021–2022 Area Health Resources Files (AHRF) County Level Data file. Accessed November 16, 2023. <https://data.hrsa.gov/data/download>

<sup>xii</sup> United States Department of Agriculture (USDA) Economic Research Service. 2013 Rural-Urban Continuum Codes data file. Accessed August 3, 2023. <https://www.ers.usda.gov/data-products/rural-urban-continuum-codes/>

<sup>xiii</sup> United States Census Bureau. July 2023 Core Based Statistical Areas (CBSAs), Metropolitan Divisions, and Combined Statistical Areas (CSAs) data file. Accessed October 3, 2023. <https://www.census.gov/geographies/reference-files/time-series/demo/metro-micro/delineation-files.html>

<sup>xiv</sup> Centers for Disease Control and Prevention (CDC) National Center for Health Statistics (NCHS). 2013 NCHS Urban-Rural Classification Scheme for Counties data file. Accessed October 6, 2023. [https://www.cdc.gov/nchs/data\\_access/urban\\_rural.htm](https://www.cdc.gov/nchs/data_access/urban_rural.htm)

<sup>xv</sup> United States Department of Agriculture (USDA) Economic Research Service (ERS). 2013 Urban Influence Codes data file. <https://www.ers.usda.gov/data-products/urban-influence-codes/>

<sup>xvi</sup> United States Department of Agriculture (USDA) Economic Research Service. 2010 Rural-Urban Commuting Area Codes, ZIP Code file. Accessed October 13, 2023. <https://www.ers.usda.gov/data-products/rural-urban-commuting-area-codes/>

<sup>xvii</sup> United States Department of Agriculture (USDA) Economic Research Service. 2010 Frontier and Remote Area Codes Data Files: Excel file containing ZIP Code-level FAR codes and related data file. Accessed October 3, 2023. <https://www.ers.usda.gov/data-products/frontier-and-remote-area-codes/>

Details on these ZIP Code-level datasets and the secondary analysis are provided in Appendix B.

County-Level Health and Health Care Characteristics Data

Information on the county-level health of the community was obtained from the CHR, and county-level health care characteristics were obtained from the AHRF. A subset of variables from these data files was selected for this analysis to provide a representative view of health and health care characteristics that may differ among rural versus nonrural communities. Variables also were selected based on ease of interpretability and data completeness. These data files and the specific variables selected for analysis are described below.

County Health Rankings (CHR), 2023

The County Health Rankings (CHR), from the University of Wisconsin Population Health Institute, have been produced annually since 2010.<sup>xviii</sup> The CHR provide county-level statistics on health-related population outcomes and factors that may affect population health. CHR data are culled from multiple data sources, including National Center for Health Statistics files, the Behavioral Risk Factor Survey System, the American Community Survey, County Business Patterns, and Bureau of Labor statistics. Because of the myriad data sources, the data year of the underlying statistics may differ.

Exhibit 4 lists the CHR community health variables (including the data source year) that were used in this analysis.<sup>xix</sup>

Exhibit 4. County Health Rankings (CHR) Select Variables

Construct & Measure	Sub-Construct Area	Data Year
Demographics		
Percentage of population 65 and older	Demographics	2021
Health Factors		
Median household income	Social & Economic Factors	2021
Rate of motor vehicle crash deaths per 100,000 population	Social & Economic Factors	2020
Rate of firearm fatalities per 100,000 population	Social & Economic Factors	2020
Percentage of adults who smoke	Health Behaviors	2020
Percentage of population facing food insecurity	Health Behaviors	2020
Percentage of population with limited access to healthy foods	Health Behaviors	2019
Percentage of households with broadband access	Physical Environment	2017–2021

<sup>xviii</sup> University of Wisconsin Population Health Institute. County Health Rankings & Roadmaps Technical Documentation. Updated March 20, 2023. Accessed July 26, 2024.  
<https://www.countyhealthrankings.org/sites/default/files/media/document/2023%20CHRR%20Technical%20Document.pdf>

<sup>xix</sup> University of Wisconsin Population Health Institute. County Health Rankings 2023 Data Dictionary. Accessed July 26, 2024.  
<https://www.countyhealthrankings.org/sites/default/files/media/document/2023%20Data%20Dictionary%20%28PDF%29.pdf>

Construct & Measure	Sub-Construct Area	Data Year
Indicator for presence of drinking water violations	Physical Environment	2021
Percentage of commuters with a long commute—driving alone for more than 30 minutes	Physical Environment	2017–2021
Percentage of households with severe housing cost burden (spending 50% or more of income on housing)	Physical Environment	2017–2021
Percentage of mammography screening, among female Medicare FFS enrollees ages 65–74	Clinical Care	2020
Percentage of flu vaccinations, among Medicare FFS enrollees	Clinical Care	2020
Rate of preventable hospital stays per 100,000 Medicare FFS enrollees	Clinical Care	2020
<b>Health Outcomes</b>		
Life expectancy	Length of Life	2018–2020
Rate of premature death before age 75 per 100,000 population	Length of Life	2018–2020
Percentage of adults who consider themselves to be in poor or fair health	Quality of Life	2020
Average poor mental health days	Quality of Life	2020
Percentage of adults with diabetes aged 20 and above	Quality of Life	2020
Percentage of live births with low birth weight (<2,500 grams)	Quality of Life	2014–2020

### *Area Health Resources Files (AHRF), 2021–2022*

The Area Health Resources Files (AHRF), from the Bureau of Health Workforce (BHW) at the Health Resources and Services Administration (HRSA), are released annually.<sup>xx</sup> The AHRF provide county-level statistics on prevalence of various types of health care providers and facilities. AHRF data are compiled from multiple data sources, including National Center for Health Statistics files, the American Medical Association, the Centers for Medicare & Medicaid Services, and the U.S. Census Bureau. Because of the multiple data sources, the data year of the underlying statistics may differ.

Exhibit 5 lists the AHRF population, health professions, and health facilities variables (including the data source year) that were used in this analysis.<sup>xxi</sup>

<sup>xx</sup> Health Resources and Services Administration (HRSA). AHRF 2021–2022 Technical Documentation. Accessed August 8, 2024. [https://data.hrsa.gov/DataDownload/AHRF/AHRF%202021-2022\\_User\\_Tech.zip](https://data.hrsa.gov/DataDownload/AHRF/AHRF%202021-2022_User_Tech.zip)

<sup>xxi</sup> Health Resources and Services Administration (HRSA). User Documentation for the County Area Health Resources Files (AHRF) 2021–2022 Release. Updated July 2022. Accessed August 8, 2024. [https://data.hrsa.gov/DataDownload/AHRF/AHRF%202021-2022\\_User\\_Tech.zip](https://data.hrsa.gov/DataDownload/AHRF/AHRF%202021-2022_User_Tech.zip)

**Exhibit 5. Area Health Resources Files (AHRF) Select Variables**

Variable	Data Year
<b>Population</b>	
Number of the population under age 65 years without health insurance	2019
Population estimate	2019, 2021
Census population	2020
<b>Health Professions</b>	
Number of primary care physicians (PCPs)	2020
Number of specialists	2020
Number of cardiovascular disease (CVD) specialists	2020
Number of gastroenterology specialists	2020
Number of neurological surgery specialists	2020
Number of advanced practice registered nurses	2021
Number of nurse practitioners	2021
<b>Health Facilities</b>	
Number of Federally Qualified Health Centers (FQHCs) and Rural Health Clinics (RHCs) combined	2021
Number of short-term general hospital beds	2020

The county-level population variables (2019 and 2021 population estimates and 2020 census population) were used to convert county-level demographic and provider values to rate per 100,000 population for analysis. The population estimates corresponding with the data year for the demographic or provider variable were used.

**County-Level Urban/Rural Classification Data**

Four county-level urban/rural classification systems were used in this report: RUCC, CBSA, NCHS Urban-Rural Classification Scheme for Counties, and UIC. Each system classifies counties according to varying degrees of urbanicity/rurality using its own independent methodology and assumptions. These systems and specific code values are described below. Additionally, a Yes/No flag is included to indicate whether each code value was designated as rural for this analysis.

*Rural-Urban Continuum Codes (RUCC), 2013*

The RUCC, from the United States Department of Agriculture (USDA) Economic Research Service (ERS), were developed in 1974, and their definitions are updated once per decade.<sup>xxii</sup> All U.S. counties

<sup>xxii</sup> United States Department of Agriculture (USDA) Economic Research Service. 2013 Rural-Urban Continuum Codes data file. Updated December 10, 2020. Accessed August 1, 2023. <https://www.ers.usda.gov/data-products/rural-urban-continuum-codes/>

are assigned to one of nine RUCC that comprise three metropolitan codes (RUCC 1–3) based on county population size and six nonmetropolitan codes (RUCC 4–9) based on county urban population size and adjacency to a metropolitan area.<sup>xxiii</sup> The RUCC and descriptions are provided in Exhibit 6, along with whether each code was designated as rural for this analysis.

**Exhibit 6. Rural-Urban Continuum Codes (RUCC), 2013**

RUCC	Description	Rural?
1	Metro - Counties in metro areas of 1 million population or more	No
2	Metro - Counties in metro areas of 250,000 to 1 million population	No
3	Metro - Counties in metro areas of fewer than 250,000 population	No
4	Nonmetro - Urban population of 20,000 or more, adjacent to a metro area	Yes
5	Nonmetro - Urban population of 20,000 or more, not adjacent to a metro area	Yes
6	Nonmetro - Urban population of 2,500 to 19,999, adjacent to a metro area	Yes
7	Nonmetro - Urban population of 2,500 to 19,999, not adjacent to a metro area	Yes
8	Nonmetro - Completely rural or less than 2,500 urban population, adjacent to a metro area	Yes
9	Nonmetro - Completely rural or less than 2,500 urban population, not adjacent to a metro area	Yes

### *Core Based Statistical Areas (CBSAs), July 2023*

The CBSAs, from the Office of Management and Budget (OMB) and used by the U.S. Census Bureau, include all counties that meet the criteria to be classified as either metropolitan or micropolitan statistical areas according to the population residing in that area.<sup>xxiv</sup> The CBSAs constitute a subset of all U.S. counties.

Descriptions of the CBSAs are provided in Exhibit 7. Micropolitan statistical areas were designated as rural for the purpose of this analysis. In addition, all other counties not included in the CBSAs—those that do not have an urban core population of 10,000 or more—were considered “noncore.” These non-CBSA “noncore” counties also are designated as rural for this analysis.

**Exhibit 7. Core Based Statistical Areas (CBSAs), July 2023**

CBSA	Description	Rural?
Metropolitan statistical areas	Have at least one urban area of 50,000 or more population, plus adjacent territory that has a high degree of social and economic integration with the core as measured by commuting ties.	No
Micropolitan statistical areas	Have at least one urban cluster of at least 10,000 but less than 50,000 population, plus adjacent territory that has a high degree of social and economic integration with the core as measured by commuting ties.	Yes

<sup>xxiii</sup> Adjacency is defined based on being physically adjoined and employed labor commuting patterns.

<sup>xxiv</sup> Office of Management and Budget (OMB). OMB Bulletin No. 23-01. July 21, 2023. <https://www.whitehouse.gov/wp-content/uploads/2023/07/OMB-Bulletin-23-01.pdf>

### *National Center for Health Statistics (NCHS) Urban-Rural Classification Scheme for Counties, 2013*

The NCHS Urban-Rural Classification Scheme for Counties is based on metropolitan and micropolitan statistical areas delineated by the OMB.<sup>xxv</sup> All U.S. counties are assigned to one of six categories that comprise four metropolitan codes (codes 1–4) and two nonmetropolitan codes (codes 5–6) based on OMB statistical area classification, metropolitan statistical area (MSA) population size, and principal city population location within MSAs of one million people or larger. The NCHS codes and descriptions are provided in Exhibit 8, along with whether each code was designated as rural for this analysis.

**Exhibit 8. NCHS Urban-Rural Classification Scheme for Counties, 2013**

Urban-Rural Classification	Description	Rural?
1	Metro - Large central metro: Counties in MSAs of 1 million or more population that: 1) contain the entire population of the largest principal city of the MSA, or 2) have their entire population contained in the largest principal city of the MSA, or 3) contain at least 250,000 inhabitants of any principal city of the MSA	No
2	Metro - Large fringe metro: Counties in MSAs of 1 million or more population that did not qualify as large central metro counties	No
3	Metro - Medium metro: Counties in MSAs of populations of 250,000 to 999,999	No
4	Metro - Small metro: Counties in MSAs of populations less than 250,000	No
5	Nonmetro - Micropolitan: Counties in micropolitan statistical areas	Yes
6	Nonmetro - Noncore: Nonmetropolitan counties that did not qualify as micropolitan	Yes

### *Urban Influence Codes (UIC), 2013*

The UIC, from the USDA ERS, were developed in 1996 and are updated once per decade.<sup>xxvi</sup> The UIC are based on the OMB statistical area classification and provide a more granular description of metropolitan and nonmetropolitan areas. All U.S. counties are assigned to one of 12 UIC that comprise two metropolitan codes (UIC 1–2) based on population size and 10 nonmetropolitan codes (UIC 3–12) based on adjacency to a metropolitan or micropolitan area and size of the largest town.<sup>xxvii</sup> The UIC and descriptions are provided in Exhibit 9, along with whether each code was designated as rural for this analysis.

<sup>xxv</sup> Centers for Disease Control and Prevention (CDC) National Center for Health Statistics (NCHS). 2013 NCHS Urban-Rural Classification Scheme for Counties. Vital and Health Statistics. April 2014;2(166). [https://www.cdc.gov/nchs/data/series/sr\\_02/sr02\\_166.pdf](https://www.cdc.gov/nchs/data/series/sr_02/sr02_166.pdf)

<sup>xxvi</sup> United States Department of Agriculture (USDA) Economic Research Service (ERS). Documentation. Accessed July 26, 2024. <https://www.ers.usda.gov/data-products/urban-influence-codes/documentation/#background>

<sup>xxvii</sup> Adjacency is defined based on being physically adjoined and employed labor commuting patterns.

**Exhibit 9. Urban Influence Codes (UIC), 2013**

UIC	Description	Rural?
1	Metro – Large metro area of 1+ million residents	No
2	Metro – Small metro area of less than 1 million residents	No
3	Nonmetro – Micropolitan area adjacent to large metro area	Yes
4	Nonmetro – Noncore adjacent to large metro area	Yes
5	Nonmetro – Micropolitan area adjacent to small metro area	Yes
6	Nonmetro – Noncore adjacent to small metro area and contains a town of at least 2,500 residents	Yes
7	Nonmetro - Noncore adjacent to small metro area and does not contain a town of at least 2,500 residents	Yes
8	Nonmetro - Micropolitan area not adjacent to a metro area	Yes
9	Nonmetro - Noncore adjacent to micro area and contains a town of at least 2,500 residents	Yes
10	Nonmetro - Noncore adjacent to micro area and does not contain a town of at least 2,500 residents	Yes
11	Nonmetro - Noncore not adjacent to metro or micro area and contains a town of at least 2,500 residents	Yes
12	Nonmetro - Noncore not adjacent to metro or micro area and does not contain a town of at least 2,500 residents	Yes

## Methods

This report consists of two separate county-level analyses: 1) an examination of rural health disparities using CHR (community health) and AHRF (community health care characteristics) data, stratified by rural designation based on the county-level RUCC and CBSA urban/rural classification systems; and 2) a comparison of county-level rural designation using four urban/rural classification systems: RUCC, CBSA, NCHS, and UIC. The analytic methods used for these two different county-level analyses are described below.

The analyses include county-level information for all 50 states plus Washington, DC. U.S. territories are not consistently available across datasets and were excluded. The most recent version of the four county-level urban/rural classification systems represented different timeframes: 2013 data for RUCC, NCHS, and UIC, and July 2023 data for CBSA. There were several changes to the name or demarcation of counties during the intervening timeframe. In particular, in 2015 West Hampton, AK, (Federal Information Processing System [FIPS] county code 02270) was changed to Kusilvak, AK, (02158), and Shannon, SD, (46113) was changed to Oglala Lakota, SD, (46102). These county changes were mapped for consistency across the four urban/rural classification systems. In 2019, Valdez-Cordova, AK, (02261) was split into Chugach, AK, (02063) and Copper River, AK, (02066). Because only the combined Valdez-Cordova, AK, county was available in the three 2013 urban/rural classification systems, Chugach, AK, and Copper River, AK, were combined to create the prior Valdez-



Cordova, AK, county in the CBSA for consistency across the four classification systems. Thus, this analysis was based on 3,142 total counties (rather than the current existing 3,143 U.S. counties).<sup>xxviii</sup>

Rural Health Disparities Analysis

The first analysis examined disparities between rural and nonrural counties across a variety of community health and health care characteristics using two different rural classification systems (RUCC and CBSA). Community health and health care characteristics measures were obtained from the CHR and AHRF data files.

Exhibit 10 presents the definition of rural and nonrural that was used in this analysis based on classifying the RUCC and CBSA codes.

Exhibit 10. Rural/Nonrural Designation Based on Rural-Urban Continuum Codes (RUCC) and Core Based Statistical Area (CBSA) Codes

Urban/Rural Classification System	Rural Codes	Nonrural Codes
RUCC	4, 5, 6, 7, 8, 9	1, 2, 3
CBSA	Micropolitan, Noncore	Metropolitan

The CHR and AHRF data files were merged with the RUCC and CBSA files using FIPS county codes. Descriptive statistics (county-level mean and 95 percent confidence interval) were generated for each of the CHR and AHRF community health and health care characteristics measures for the United States overall and by rural versus nonrural counties using the RUCC and CBSA rural/nonrural designations separately. Only differences for which 95 percent confidence intervals were nonoverlapping are considered significant and discussed in the results.

Additionally, the same descriptive statistics were generated by the nine U.S. census divisions (see Exhibit 11).<sup>xxix</sup> Results of the census divisions analyses are provided in Appendix A.

Exhibit 11. U.S. Census Divisions

Census Division	States
New England	Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont
Middle Atlantic	New Jersey, New York, Pennsylvania
East North Central	Illinois, Indiana, Michigan, Ohio, Wisconsin
West North Central	Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota
South Atlantic	Delaware, District of Columbia, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, West Virginia
East South Central	Alabama, Kentucky, Mississippi, Tennessee

<sup>xxviii</sup> In addition, in 2013, Bedford City, VA, (51515) merged to become part of Bedford County, VA, (51019). The three 2013 urban/rural classification systems included both counties, but the code applied to both counties was identical within each classification system. Thus, only Bedford County, VA, was used for the analysis.

<sup>xxix</sup> U.S. Census Bureau, U.S. Department of Commerce Economics and Statistics Administration. Census Regions and Divisions of the United States. Accessed August 29, 2024. [https://www2.census.gov/geo/pdfs/maps-data/maps/reference/us\\_regdiv.pdf](https://www2.census.gov/geo/pdfs/maps-data/maps/reference/us_regdiv.pdf)



Census Division	States
West South Central	Arkansas, Louisiana, Oklahoma, Texas
Mountain	Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, Wyoming
Pacific	Alaska, California, Hawaii, Oregon, Washington

Rural Definitions Comparison

The second analysis examined concordance in rural designation based on the four county-level rural classification systems (RUCC, CBSA, NCHS, and UIC).

Exhibit 12 summarizes the definitions of rural that were used in this analysis based on classifying the codes for each of the four urban/rural classification systems.

Exhibit 12. Rural/Nonrural Designation Based on Four County-Level Urban/Rural Classification Systems

Urban/Rural Classification System	Rural Codes	Nonrural Codes
RUCC	4, 5, 6, 7, 8, 9	1, 2, 3
CBSA	Micropolitan, Noncore	Metropolitan
NCHS	5, 6	1, 2, 3, 4
UIC	3, 4, 5, 6, 7, 8, 9, 10, 11, 12	1, 2

The four urban/rural classification systems were merged using FIPS county codes and included 3,142 U.S. counties, as described above. The analysis examined whether each county was identically classified as rural/nonrural across the four classification systems.

# Results

Results are reported for each of the two analyses conducted:

- Rural Health Disparities Analysis
- Rural Definitions Comparison

## Rural Health Disparities Analysis

This analysis examined potential rural/nonrural disparities in community (county-level) health and health care characteristics using select variables from the CHR and AHRF files, respectively. The mean and 95 percent confidence intervals are provided for CHR and AHRF health measures for rural versus nonrural counties based on county classification from two different urban/rural classification systems: RUCC and CBSA. Overall, the results were similar between the two urban/rural classification systems.

Appendix A provides supplemental rural/nonrural analyses, including statistics by U.S. census division using the RUCC, which provide a more granular characterization of rurality than the CBSAs.

## Community Health Disparities

Exhibit 13 presents community health statistics for select demographic, health factor, and health outcome variables from the 2023 CHR using rural/nonrural county designation based on the RUCC.

**Exhibit 13. County Health Rankings (CHR) Health Statistics by Rural/Nonrural Designation Based on County-Level Rural-Urban Continuum Codes (RUCC)**

Measure	National	Nonrural Subtotal (RUCC 1-3)	Rural		
			Rural Subtotal (RUCC 4-9)	Large Rural (RUCC 4-6)	Small Rural (RUCC 7-9)
Demographics					
Age 65 and older, % of population	20.04 (19.87, 20.21)	18.03 (17.78, 18.28)	21.22 (21.02, 21.43)	19.87 (19.62, 20.12)	22.35 (22.05, 22.66)
Health Factors					
Social and Economic Factors					
Median household income, \$	58,931.62 (53,397.54, 59,465.71)	67,758.34 (66,768.41, 68,748.27)	53,742.98 (53,236.56, 54,213.39)	54,174.21 (53,480.33, 54,868.09)	53,349.64 (52,665.65, 54,033.63)
Firearm fatalities, rate per 100,000 population	16.47 (16.16, 16.78)	14.34 (13.94, 14.74)	18.36 (17.92, 18.80)	16.71 (16.21, 17.21)	21.21 (20.44, 21.98)

Measure	National	Nonrural Subtotal (RUCC 1-3)	Rural		
			Rural Subtotal (RUCC 4-9)	Large Rural (RUCC 4-6)	Small Rural (RUCC 7-9)
Motor vehicle crash deaths, rate per 100,000 population	19.15 (18.80, 19.51)	14.71 (14.29, 15.13)	22.34 (21.87, 22.82)	20.13 (19.57, 20.68)	25.13 (24.37, 25.89)
<b>Health Behaviors</b>					
Adult smoking, %	20.04 (19.90, 20.19)	18.29 (18.07, 18.51)	21.08 (20.91, 21.25)	21.21 (20.98, 21.44)	20.97 (20.72, 21.22)
Food insecurity, %	12.44 (12.31, 12.57)	11.44 (11.26, 11.62)	13.02 (12.85, 13.20)	13.30 (13.08, 13.52)	12.79 (12.54, 13.05)
Limited access to healthy foods, %	8.54 (8.27, 8.80)	7.15 (6.85, 7.44)	9.36 (8.98, 9.73)	8.37 (7.96, 8.79)	10.17 (9.59, 10.76)
<b>Physical Environment</b>					
Drinking water violations (0/1 indicator)	0.34 (0.32, 0.35)	0.41 (0.38, 0.44)	0.30 (0.28, 0.32)	0.35 (0.32, 0.39)	0.25 (0.23, 0.28)
Households with broadband access, %	80.54 (80.27, 80.82)	84.70 (84.33, 85.08)	78.09 (77.75, 78.42)	79.17 (78.72, 79.62)	77.18 (76.70, 77.66)
Long commute—driving alone, %	32.72 (32.28, 33.17)	37.57 (36.81, 38.32)	29.86 (29.35, 30.38)	31.15 (30.49, 31.81)	28.79 (28.04, 29.55)
Households with severe housing cost burden, %	10.68 (10.56, 10.80)	11.73 (11.52, 11.94)	10.06 (9.91, 10.20)	10.82 (10.62, 11.02)	9.42 (9.22, 9.61)
<b>Clinical Care</b>					
Mammography screening, % female Medicare FFS	36.81 (36.53, 37.09)	38.37 (38.00, 38.75)	35.88 (35.49, 36.26)	36.67 (36.18, 37.17)	35.20 (34.64, 35.77)
Flu vaccinations, % Medicare FFS	44.65 (44.28, 45.03)	50.27 (49.83, 50.71)	41.32 (40.84, 41.80)	45.20 (44.62, 45.78)	38.03 (37.35, 38.70)
Preventable hospital stays, rate per 100,000 Medicare FFS enrollees	2,998.93 (2,958.22, 3,039.64)	2,984.82 (2,932.56, 3,037.09)	3,007.51 (2,950.24, 3,064.77)	3,092.30 (3,018.03, 3,166.56)	2,932.27 (2,846.75, 3,017.79)
<b>Health Outcomes</b>					
<b>Length of Life</b>					
Life expectancy, years	76.90 (76.78, 77.01)	77.63 (77.47, 77.79)	76.46 (76.29, 76.60)	76.09 (75.90, 76.27)	76.77 (76.53, 77.00)
Premature death, rate per 100,000 population	8,912.66 (8,808.70, 9,016.62)	8,104.59 (7,965.12, 8,244.07)	9,403.06 (9,263.45, 9,542.68)	9,376.81 (9,200.65, 9,552.98)	9,426.22 (9,214.05, 9,638.39)

Measure	National	Nonrural Subtotal (RUCC 1-3)	Rural		
			Rural Subtotal (RUCC 4-9)	Large Rural (RUCC 4-6)	Small Rural (RUCC 7-9)
Quality of Life					
Adults who consider themselves to be in poor or fair health, %	16.04 (15.88, 16.19)	14.78 (14.57, 15.00)	16.78 (16.57, 16.98)	17.14 (16.86, 17.42)	16.47 (16.18, 16.77)
Poor mental health days, days	4.80 (4.78, 4.82)	4.79 (4.76, 4.83)	4.80 (4.77, 4.83)	4.92 (4.88, 4.96)	4.71 (4.67, 4.75)
Low birthweight, %	8.21 (8.14, 8.29)	8.19 (8.09, 8.28)	8.23 (8.13, 8.33)	8.40 (8.26, 8.53)	8.08 (7.93, 8.23)
Adult diabetes, %	10.48 (10.40, 10.56)	10.07 (9.96, 10.18)	10.72 (10.62, 10.83)	10.95 (10.80, 11.10)	10.54 (10.40, 10.68)

Abbreviation: FFS, fee-for-service

Note: Statistics presented are the mean and 95% confidence interval.

Sources: University of Wisconsin Population Health Institute. 2023 County Health Rankings National Data file. Accessed September 25, 2023. <https://www.countyhealthrankings.org/explore-health-rankings/rankings-data-documentation>; United States Department of Agriculture (USDA) Economic Research Service. 2013 Rural-Urban Continuum Codes data file. Accessed August 3, 2023. <https://www.ers.usda.gov/data-products/rural-urban-continuum-codes/>

## Demographics

Adults aged 65 years and older constituted a higher proportion of the population in rural versus nonrural counties (21.2 vs. 18.0 percent).

## Health Factors

Rural counties had poorer social and economic conditions than nonrural counties. The median income was lower in rural than nonrural counties (\$53,743 vs. \$67,758). Compared with nonrural counties, rural counties had a higher rate of firearm fatalities (18.4 vs. 14.3 per 100,000 population) and motor vehicle crash deaths (22.3 vs. 14.7 per 100,000 population). Small rural areas had the highest rates of firearm fatalities and motor vehicle crash deaths (21.2 and 25.1 per 100,000 population, respectively).

Rural counties had poorer health behaviors than nonrural counties. The percentage of adults who smoked was higher in rural than nonrural counties (21.1 vs. 18.3 percent). Compared with nonrural counties, rural counties also had a higher proportion of the population facing food insecurity (13.0 vs. 11.4 percent) and having limited access to healthy foods (9.4 vs. 7.2 percent).

Rural counties generally had better physical environment conditions than nonrural counties. Drinking water violations were lower in rural than nonrural counties (0.30 vs. 0.41 on a 0/1 indicator scale). A lower proportion of residents in rural counties had a long commute driving alone compared with those residing in nonrural counties (29.9 vs. 37.6 percent). A lower proportion of households in rural counties faced severe housing costs—spending at least half of their income on housing—compared with households in nonrural counties (10.1 vs. 11.7 percent). Small rural areas had the lowest proportion of households facing severe housing costs (9.4 percent). However, in one aspect, the physical

environment conditions were poorer for rural than nonrural residents: a lower proportion of households in rural areas had broadband access compared with households in nonrural areas (78.1 vs. 84.7 percent).

Rural counties had poorer clinical care than nonrural counties. A lower percentage of Medicare fee-for-service (FFS) females in rural counties received a mammography screening compared with those in nonrural counties (35.9 vs. 38.4 percent). Similarly, a lower percentage of Medicare FFS beneficiaries in rural counties received a flu vaccination compared with those in nonrural counties (41.3 vs. 50.3 percent). Small rural areas had the lowest proportion of Medicare FFS beneficiaries who received a flu vaccine (38.0 percent).

### Health Outcomes

Length of life was lower in rural than nonrural counties. Compared with nonrural counties, residents of rural counties had a lower life expectancy (76.5 vs. 77.6 years) and a higher rate of premature death (9,403.1 vs. 8,104.6 per 100,000 population).

Quality of life was lower in rural than nonrural counties for two measures. Compared with adults in nonrural counties, a higher percentage of adults residing in rural counties considered themselves to be in poor or fair health (16.8 vs. 14.8 percent) and had diabetes (10.7 vs. 10.0 percent).

Exhibit 14 presents community health statistics for select demographic, health factor, and health outcome variables from the 2023 CHR using rural/nonrural county designation based on the CBSAs.

#### Exhibit 14. County Health Rankings (CHR) Health Statistics by Rural/Nonrural Designation Based on County-Level Core-Based Statistical Areas (CBSAs)

Measure	National	Nonrural	Rural	
			Micropolitan	Noncore
Demographics				
Age 65 and older, % of population	20.04 (19.87, 20.21)	18.03 (17.79, 18.28)	19.46 (19.16, 19.77)	22.16 (21.90, 22.42)
Health Factors				
Social and Economic Factors				
Median household income, \$	58,931.62 (58,397.54, 59,465.71)	67,553.46 (66,569.84, 68,537.09)	55,951.17 (55,029.04, 56,873.30)	52,568.97 (52,009.03, 53,128.91)
Firearm fatalities, rate per 100,000	16.47 (16.16, 16.78)	14.45 (14.04, 14.85)	15.98 (15.44, 16.53)	20.46 (19.82, 21.10)
Motor vehicle crash deaths, rate per 100,000	19.15 (18.80, 19.51)	14.95 (14.52, 15.38)	18.08 (17.51, 18.65)	25.04 (24.40, 25.68)
Health Behaviors				
Adult smoking, %	20.04 (19.90, 20.19)	18.34 (18.12, 18.55)	20.42 (20.15, 20.70)	21.41 (21.19, 21.63)
Food insecurity, %	12.44 (12.31, 12.57)	11.46 (11.28, 11.64)	13.05 (12.79, 13.31)	13.01 (12.79, 13.24)

Measure	National	Nonrural	Rural	
			Micropolitan	Noncore
Limited access to healthy foods, %	8.54 (8.27, 8.80)	7.17 (6.88, 7.46)	8.66 (8.14, 9.18)	9.72 (9.22, 10.23)
<b>Physical Environment</b>				
Drinking water violations (0/1 Indicator)	0.34 (0.32, 0.35)	0.40 (0.38, 0.43)	0.36 (0.32, 0.40)	0.27 (0.24, 0.29)
Households with broadband access, %	80.54 (80.27, 80.82)	84.66 (84.28, 85.03)	80.55 (80.04, 81.06)	76.78 (76.37, 77.20)
Long commute—driving alone, %	32.72 (32.28, 33.17)	37.61 (36.86, 38.36)	27.68 (26.88, 28.48)	30.81 (30.16, 31.45)
Households with severe housing cost burden, %	10.68 (10.56, 10.80)	11.71 (11.50, 11.91)	10.97 (10.71, 11.22)	9.59 (9.42, 9.77)
<b>Clinical Care</b>				
Mammography screening, % female Medicare FFS	36.81 (36.53, 37.09)	38.26 (37.89, 38.64)	37.13 (36.53, 37.73)	35.30 (34.81, 35.79)
Flu vaccinations, % Medicare FFS	44.65 (44.28, 45.03)	50.18 (49.74, 50.62)	46.45 (45.78, 47.13)	38.64 (38.04, 39.23)
Preventable hospital stays, rate per 100,000 Medicare FFS enrollees	2,998.93 (2,958.22, 3,039.64)	2,971.14 (2,919.22, 3,023.06)	2,924.68 (2,838.13, 3,011.23)	3,064.32 (2,989.09, 3,139.56)
<b>Health Outcomes</b>				
<b>Length of Life</b>				
Life expectancy, years	76.90 (76.78, 77.01)	77.62 (77.46, 77.78)	76.52 (76.28, 76.76)	76.40 (76.19, 76.60)
Premature death, rate per 100,000 population	8,912.66 (8,808.70, 9,016.62)	8,100.22 (7,964.32, 8,236.13)	9,139.10 (8,927.94, 9,350.26)	9,567.71 (9,383.11, 9,752.30)
<b>Quality of Life</b>				
Adults who consider themselves to be in poor or fair health, %	16.04 (15.88, 16.19)	14.86 (14.64, 15.07)	16.47 (16.14, 16.80)	16.90 (16.64, 17.16)
Poor mental health days, days	4.80 (4.78, 4.82)	4.80 (4.76, 4.83)	4.84 (4.79, 4.88)	4.79 (4.75, 4.82)
Low birthweight, %	8.21 (8.14, 8.29)	8.20 (8.11, 8.30)	8.36 (8.20, 8.52)	8.15 (8.02, 8.28)
Adult diabetes, %	10.48 (10.40, 10.56)	10.10 (9.99, 10.21)	10.62 (10.45, 10.79)	10.76 (10.63, 10.89)

Abbreviation: FFS, fee-for-service

Note: statistics presented are the mean and 95% confidence interval.

Sources: University of Wisconsin Population Health Institute. 2023 County Health Rankings National Data file. Accessed September 25, 2023. <https://www.countyhealthrankings.org/explore-health-rankings/rankings-data-documentation>; United States Census Bureau. July 2023 Core Based Statistical Areas (CBSAs), Metropolitan Divisions, and Combined Statistical Areas (CSAs) data file. Accessed October 3, 2023. <https://www.census.gov/geographies/reference-files/time-series/demo/metro-micro/delineation-files.html>

## *Demographics*

Adults aged 65 years and older constituted the highest proportion of the population in noncore counties (22.2 percent), followed by micropolitan (19.5 percent) and nonrural (18.0 percent) counties.

## *Health Factors*

Rural counties had poorer social and economic conditions than nonrural counties. The median income was lowest in noncore counties (\$52,569), followed by micropolitan (\$55,951) and nonrural (\$67,553) counties. Compared with nonrural counties, noncore counties had a higher rate of firearm fatalities (20.5 vs. 14.5 per 100,000 population) and motor vehicle crash deaths (25.0 vs. 15.0 per 100,000 population). Micropolitan counties also had a higher rate of firearm fatalities and motor vehicle crash deaths (16.0 and 18.1 per 100,000 population, respectively) compared with nonrural counties.

Rural counties had poorer health behaviors than nonrural counties. The percentage of adults who smoked was highest in noncore counties (21.4 percent), followed by micropolitan (20.4 percent) and nonrural (18.3 percent) counties. Compared with nonrural counties, noncore and micropolitan counties had a higher proportion of the population facing food insecurity (13.0 and 13.1 percent, respectively, vs. 11.5 percent). The percentage of the population with limited access to healthy foods was highest in noncore counties (9.7 percent), followed by micropolitan (8.7 percent) and nonrural (7.2 percent) counties.

Rural counties generally had better physical environment conditions than nonrural counties. Drinking water violations were lower in noncore counties (0.27 on a 0/1 indicator scale) than micropolitan or nonrural counties (0.36 and 0.40, respectively). A lower proportion of residents in micropolitan counties had a long commute driving alone (27.7 percent), followed by noncore (30.8 percent) and nonrural (37.6 percent) counties. A lower proportion of households in noncore counties (9.6 percent) faced severe housing costs—spending at least half of their income on housing—followed by micropolitan (11.0 percent) and nonrural (11.7 percent) counties. However, in one aspect, the physical environment conditions were poorer for rural than nonrural residents: a lower proportion of households in noncore counties had broadband access (76.8 percent), followed by micropolitan (80.6 percent) and nonrural (84.7 percent) counties.

Rural counties had poorer clinical care than nonrural counties. The percentage of Medicare fee-for-service (FFS) females who received a mammography screening was lowest in noncore counties (35.3 percent), followed by micropolitan (37.1 percent) and nonrural (38.3 percent) counties. Similarly, the percentage of Medicare FFS beneficiaries who received a flu vaccination was lowest in noncore counties (38.6 percent), followed by micropolitan (46.5 percent) and nonrural (50.2 percent) counties.

## *Health Outcomes*

Length of life was lower in rural than nonrural counties. Compared with nonrural counties, residents of noncore and micropolitan counties had a lower life expectancy (76.4 and 76.5 vs. 77.6 years). Residents of noncore counties also had the highest rate of premature death (9,567.7 per 100,000 population), followed by micropolitan (9,139.1) and nonrural (8,100.2) counties.

Quality of life was lower in rural than nonrural counties for two measures. Compared with adults in nonrural counties, a higher percentage of adults residing in noncore and micropolitan counties

considered themselves to be in poor or fair health (16.9 and 16.5 percent, respectively, vs. 14.9 percent) and had diabetes (10.8 and 10.6 percent, respectively vs. 10.1 percent).

## Community Health Care Characteristics Disparities

Exhibit 15 presents community health care characteristics for select population, health profession, and health facility variables from the 2021–2022 AHRF using rural/nonrural county designation based on the RUCC.

**Exhibit 15. Area Health Resources Files (AHRF) Health Care Characteristics by Rural/Nonrural Designation Based on County-Level Rural-Urban Continuum Codes (RUCC)**

Variable	National Total	Nonrural Subtotal	Rural Subtotal
<b>Population</b>			
Persons under age 65 without health insurance, %	11.94 (11.77, 12.12)	10.62 (10.35, 10.88)	12.73 (12.49, 12.96)
<b>Health Professions</b>			
PCPs per 100,000 population	43.78 (42.57, 44.99)	53.57 (51.43, 55.70)	38.01 (36.62, 39.40)
Specialists per 100,000 population	84.73 (78.81, 89.64)	149.25 (137.77, 160.74)	46.65 (43.89, 49.42)
CVD specialists per 100,000 population	2.32 (2.15, 2.49)	4.35 (3.99, 4.72)	1.13 (0.98, 1.27)
Gastroenterology specialists per 100,000 population	1.41 (1.26, 1.53)	3.01 (2.73, 3.28)	0.47 (0.40, 0.54)
Neurological surgery specialists per 100,000 population	0.64 (0.55, 0.72)	1.43 (1.22, 1.63)	0.17 (0.13, 0.22)
Advanced practice registered nurses per 100,000 population	94.98 (92.37, 97.60)	106.83 (101.43, 112.23)	87.99 (85.36, 90.61)
Nurse practitioners per 100,000 population	80.66 (78.63, 82.69)	87.99 (84.13, 91.84)	76.34 (74.06, 78.61)
<b>Health Facilities</b>			
FQHCs and RHCs per 100,000 population	17.19 (16.45, 17.93)	6.73 (6.18, 7.29)	23.37 (22.33, 24.41)
Short-term hospital beds per 100,000 population	251.95 (237.19, 266.70)	193.06 (180.52, 205.59)	286.70 (264.57, 308.83)

Abbreviations: CVD, cardiovascular disease; FQHC, Federally Qualified Health Center; PCP, primary care physician; RHC, Rural Health Clinic

Note: Statistics presented are the mean and 95% confidence interval.

Sources: Health Resources and Services Administration (HRSA). 2021–2022 Area Health Resources Files (AHRF) County Level Data file. Accessed November 16, 2023. <https://data.hrsa.gov/data/download>; United States Department of Agriculture (USDA) Economic Research Service. 2013 Rural-Urban Continuum Codes data file. Accessed August 3, 2023. <https://www.ers.usda.gov/data-products/rural-urban-continuum-codes/>



## Population

The proportion of individuals under age 65 without health insurance was higher in rural than in nonrural counties (12.7 vs. 10.6 percent).

## Health Professions

Rural counties had a lower rate of health care providers per 100,000 population than nonrural counties: primary care physicians (PCPs, 38.0 vs. 53.6), specialists (46.7 vs. 149.3), cardiovascular disease (CVD) specialists (1.1 vs. 4.4), gastroenterology specialists (0.5 vs. 3.0), neurological surgery specialists (0.2 vs. 1.4), advanced practice registered nurses (88.0 vs. 106.8), and nurse practitioners (76.3 vs. 88.0).

## Health Facilities

Compared with nonrural counties, rural counties had a higher rate of Federally Qualified Health Centers (FQHCs) and Rural Health Clinics (RHCs) (23.4 vs. 6.7 per 100,000 population) and short-term hospital beds (286.8 vs. 193.1 per 100,000 population).

Exhibit 16 presents community health care characteristics for select population, health profession, and health facility variables from the 2021–2022 AHRF using rural/nonrural county designation based on the CBSAs.

**Exhibit 16. Area Health Resources Files (AHRF) Health Care Characteristics by Rural/Nonrural Designation Based on County-Level Core Based Statistical Areas (CBSAs)**

Variable	National	Nonrural	Rural	
			Micropolitan	Noncore
Population				
Proportion under age 65 without health insurance	11.94 (11.77, 12.12)	10.70 (10.44, 10.97)	11.94 (11.56, 12.33)	13.08 (12.79, 13.37)
Health Professions				
PCPs per 100,000 population	43.78 (42.57, 44.99)	52.70 (50.69, 54.70)	44.98 (42.66, 47.30)	35.04 (33.20, 36.87)
Specialists per 100,000 population	84.73 (79.81, 89.64)	144.62 (134.58, 154.67)	89.08 (77.51, 100.65)	27.84 (25.87, 29.81)
CVD specialists per 100,000 population	2.32 (2.15, 2.49)	4.20 (3.86, 4.53)	2.60 (2.22, 2.98)	0.48 (0.32, 0.63)
Gastroenterology specialists per 100,000 population	1.41 (1.29, 1.53)	2.89 (2.66, 3.13)	1.25 (0.95, 1.55)	0.15 (0.09, 0.20)
Neurological surgery specialists per 100,000 population	0.64 (0.55, 0.72)	1.36 (1.19, 1.54)	0.50 (0.29, 0.71)	0.04 (0.01, 0.07)
Advanced practice registered nurses per 100,000 population	94.98 (92.37, 97.60)	105.13 (100.23, 110.03)	106.10 (99.87, 112.33)	80.09 (77.09, 83.09)

Variable	National	Nonrural	Rural	
			Micropolitan	Noncore
Nurse practitioners per 100,000 population	80.66 (78.63, 82.69)	87.15 (83.44, 90.86)	87.55 (83.22, 91.87)	71.25 (68.52, 73.97)
<b>Health Facilities</b>				
FQHCs and RHCs per 100,000 population	17.19 (16.45, 17.93)	7.01 (6.41, 7.61)	12.73 (11.65, 13.81)	28.75 (27.37, 30.13)
Short-term hospital beds per 100,000 population	251.95 (237.19, 266.70)	191.36 (179.81, 202.92)	233.02 (214.03, 252.01)	316.83 (284.43, 349.23)

Abbreviations: CVD, cardiovascular disease; FQHC, Federally Qualified Health Center; PCP, primary care physician; RHC, Rural Health Clinic

Note: Statistics presented are the mean and 95% confidence interval.

Sources: Health Resources and Services Administration (HRSA). 2021–2022 Area Health Resources Files (AHRF) County Level Data file. Accessed November 16, 2023. <https://data.hrsa.gov/data/download>; United States Census Bureau. July 2023 Core Based Statistical Areas (CBSAs), Metropolitan Divisions, and Combined Statistical Areas (CSAs) data file. Accessed October 3, 2023. <https://www.census.gov/geographies/reference-files/time-series/demo/metro-micro/delineation-files.html>

## Population

The proportion of individuals under age 65 without health insurance was highest in noncore counties (13.1 percent), followed by micropolitan (11.9 percent) and nonrural (10.7 percent) counties.

## Health Professions

Rural counties had a lower rate of health care providers per 100,000 population than nonrural counties. The population rate increased with increasing level of urbanization, with noncore counties having the lowest rate, followed by micropolitan and then nonrural counties, for the following provider types: PCPs, (35.0 for noncore counties, 45.0 for micropolitan counties, and 52.7 for nonrural counties), specialists (27.8, 89.1, 144.6), cardiovascular disease (CVD) specialists (0.5, 2.6, 4.2), gastroenterology specialists (0.2, 1.3, 2.9), and neurological surgery specialists (0.0, 0.5, 1.4). The population rate was lowest for noncore counties and similar for micropolitan and rural counties for advanced practice registered nurses (80.1 vs. 106.1 and 105.1), and nurse practitioners (71.2 vs. 87.6 and 87.2).

## Health Facilities

Rural counties had a higher rate of FQHCs/RHCs and short-term hospital beds per 100,000 population than nonrural counties. The population rate decreased with increasing level of urbanization, with noncore counties having the highest rate, followed by micropolitan and then nonrural counties: FQHCs and RHCs (28.8 for noncore counties, 12.8 for micropolitan counties, 7.0 for nonrural counties), and short-term hospital beds (316.8, 233.0, 191.4).

## Rural Definitions Comparison

This analysis examined the level of agreement across four different urban/rural classification systems: RUCC, CBSA, NCHS, and UIC.

Exhibit 17 summarizes the number of counties designated as rural and the total U.S. population in rural counties based on four urban/rural classification systems.

**Exhibit 17. Rural Counties and Population Based on Rural Designation Using Four County-Level Urban/Rural Classification Systems**

Urban/Rural Classification System	Counties		Population	
	Number of Counties Designated as Rural	Percent of All U.S. Counties (3,142)	Total U.S. Population Residing in Rural Counties	Percent of Total U.S. Population (331,449,281)
RUCC	1,976	62.89	46,005,635	13.88
CBSA	1,956	62.25	45,776,994	13.81
NCHS	1,976	62.89	46,005,635	13.88
UIC	1,976	62.89	46,005,635	13.88

Note: Population values are based on the 2020 U.S. census population.

Sources: United States Department of Agriculture (USDA) Economic Research Service. 2013 Rural-Urban Continuum Codes data file. Accessed August 3, 2023. <https://www.ers.usda.gov/data-products/rural-urban-continuum-codes/>; United States Census Bureau. July 2023 Core Based Statistical Areas (CBSAs), Metropolitan Divisions, and Combined Statistical Areas (CSAs) data file. Accessed October 3, 2023. <https://www.census.gov/geographies/reference-files/time-series/demo/metro-micro/delineation-files.html>; Centers for Disease Control and Prevention (CDC) National Center for Health Statistics (NCHS). 2013 NCHS Urban-Rural Classification Scheme for Counties data file. Accessed October 6, 2023. [https://www.cdc.gov/nchs/data\\_access/urban\\_rural.htm](https://www.cdc.gov/nchs/data_access/urban_rural.htm); United States Department of Agriculture (USDA) Economic Research Service (ERS). 2013 Urban Influence Codes data file. <https://www.ers.usda.gov/data-products/urban-influence-codes/>; Health Resources and Services Administration (HRSA). 2021–2022 Area Health Resources Files (AHRF) County Level Data file. Accessed November 16, 2023. <https://data.hrsa.gov/data/download>

Based on the categorization of the urban/rural codes used in this analysis for the four urban/rural classification systems, three of the four systems—RUCC, NCHS, and UIC—were identical in designating 1,976 counties as rural (62.9 percent of the total 3,142 U.S. counties). The population residing in rural counties represented 13.9 percent of the total 331.4 million U.S. population.

The fourth classification system, CBSA, was not consistent with the other three classification systems in the designation of rural and nonrural counties. With CBSA, 1,956 counties were designated as rural; however, these were not all the same counties designated as rural by the other three systems (see Exhibit 18). The total U.S. population residing in counties designated as rural by CBSA was 13.8 percent. Of note, the RUCC, NCHS, and UIC classification systems were from 2013, whereas CBSA was from July 2023.

Exhibit 18 summarizes the level of agreement in designating counties as rural versus nonrural across the four urban/rural classification systems.

## Exhibit 18. Rural Designation Agreement Across Four County-Level Urban/Rural Classification Systems

Number of Sources	Number of Counties	Percent of All U.S. Counties (3,142)
All 4 classification systems agree on rural/nonrural designation for the county	3,018*	96.06
1 classification system (CBSA) designates the county as rural versus 3 systems (RUCC, NCHS, UIC) designate the county as nonrural	52	1.65
3 classification systems (RUCC, NCHS, UIC) designate the county as rural versus 1 system (CBSA) designates the county as nonrural	72	2.29
<b>Total</b>	<b>3,142</b>	<b>100.00</b>

Note: Population values are based on the 2020 U.S. census population.

\* 1,904 rural counties and 1,114 nonrural counties

Sources: United States Department of Agriculture (USDA) Economic Research Service. 2013 Rural-Urban Continuum Codes data file. Accessed August 3, 2023. <https://www.ers.usda.gov/data-products/rural-urban-continuum-codes/>; United States Census Bureau. July 2023 Core Based Statistical Areas (CBSAs), Metropolitan Divisions, and Combined Statistical Areas (CSAs) data file. Accessed October 3, 2023. <https://www.census.gov/geographies/reference-files/time-series/demo/metro-micro/delineation-files.html>; Centers for Disease Control and Prevention (CDC) National Center for Health Statistics (NCHS). 2013 NCHS Urban-Rural Classification Scheme for Counties data file. Accessed October 6, 2023. [https://www.cdc.gov/nchs/data\\_access/urban\\_rural.htm](https://www.cdc.gov/nchs/data_access/urban_rural.htm); United States Department of Agriculture (USDA) Economic Research Service (ERS). 2013 Urban Influence Codes data file. <https://www.ers.usda.gov/data-products/urban-influence-codes/>; Health Resources and Services Administration (HRSA). 2021–2022 Area Health Resources Files (AHRF) County Level Data file. Accessed November 16, 2023. <https://data.hrsa.gov/data/download>

As noted above (Exhibit 17) three of the urban/rural classification systems—RUCC, NCHS, and UIC—yielded a consistent rural/nonrural designation for all 3,142 counties. Across all four systems, including CBSA, there was a high level of agreement in rural/nonrural designation (96.1 percent, 3,018 counties). The four systems yielded a consistent designation of rural for 1,904 counties and a designation of nonrural for 1,114 counties. For the remaining 124 counties (3.9 percent), the rural/nonrural designation was different between CBSA and the other three classification systems: 52 counties were designated as rural for CBSA but as nonrural for the other three systems, and 72 counties were designated as nonrural for CBSA but as rural for the other three systems.

# Conclusion

This report focused on examining potential health disparities between rural and nonrural counties and assessing whether county-level designation of rurality differed based on the urban/rural classification system that was used.

The health disparities analysis examined differences in community health and health care characteristics from two publicly available aggregate data sources—County Health Rankings (CHR) and Area Health Resources Files (AHRF)—for rural versus nonrural counties based on two urban/rural classification systems—Rural-Urban Continuum Codes (RUCC) and Core Based Statistical Areas (CBSAs). Compared with nonrural counties, rural counties had:

- poorer social and economic conditions (household income, firearm fatalities, and motor vehicle crash deaths);
- poorer health behaviors (smoking, food insecurity, and access to healthy foods);
- poorer clinical care (mammography screening and flu vaccinations);
- better physical environment conditions (drinking water violations, commuting, and housing cost burden);
- lower length of life (life expectancy, premature death);
- lower quality of life (self-assessment of poor/fair health, diabetes);
- fewer health care providers relative to size of population (e.g., primary care physicians [PCPs], specialists, nurse practitioners); and
- more Federally Qualified Health Centers (FQHCs)/Rural Health Clinics (RHCs) and short-term hospital beds relative to size of population.

Findings were similar based on rural definitions derived from the RUCC and CBSA urban/rural classification systems.

The rural definitions comparison analysis revealed complete agreement in designation of rurality based on three of four urban/rural classification systems examined: RUCC, National Center for Health Statistics (NCHS) Urban-Rural Classification Scheme by County, and Urban Influence Codes (UIC). The fourth classification system, CBSA, yielded agreement with the other three systems in rural/nonrural designation for 96.1 percent of counties and disagreement for 3.9 percent of counties.

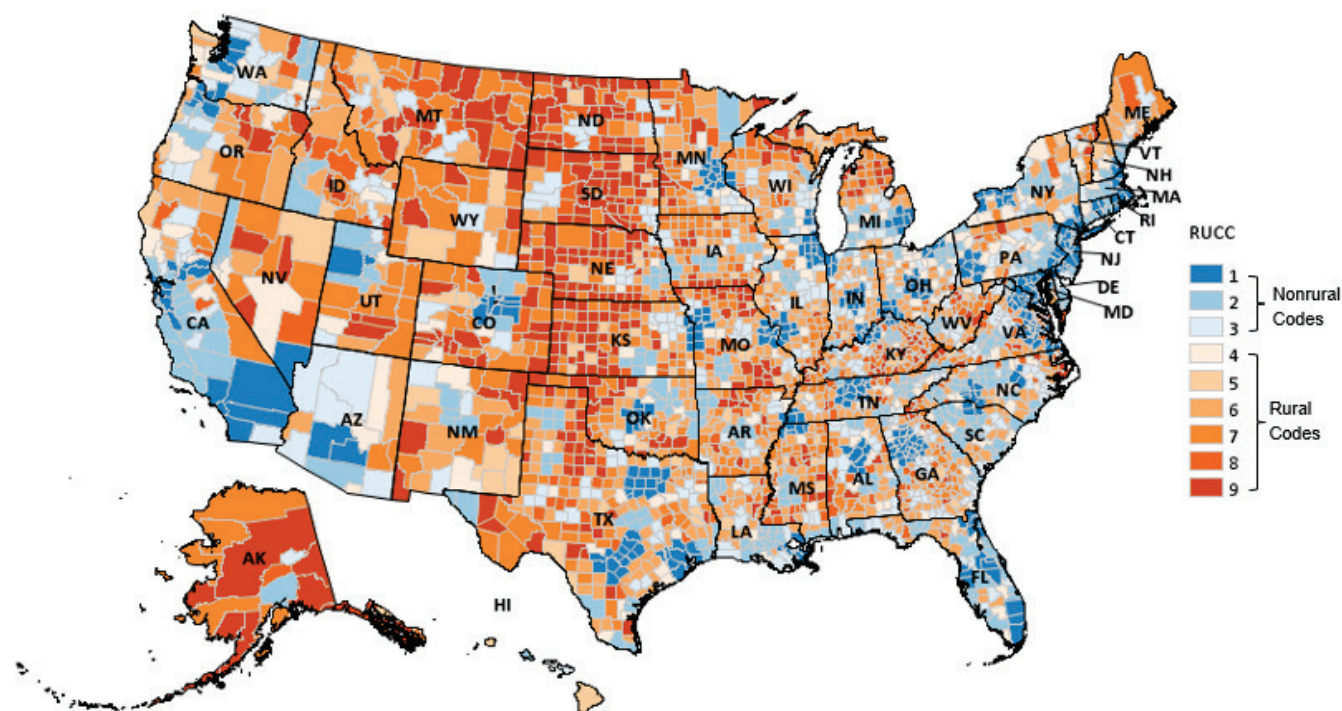
It is important to note that the CBSA had the least granular level of coding, with only two gradations—metropolitan and micropolitan—with counties not included in the CBSA file considered to be “noncore.” In contrast, the other three urban/rural classification systems had finer levels of urban/rural gradation: NCHS (six levels), RUCC (nine levels), and UIC (12 levels). Additionally, the four urban/rural classification systems are updated at differing intervals. For this analysis, the most recently available data were from 2013 for the RUCC, NCHS, and UIC versus 2023 for the CBSA.

## Appendix A: Supplemental County-Level Rural/Nonrural Analyses

This appendix provides supplemental details on community health disparities, including statistics by U.S. census division, for rural versus nonrural counties based on the Rural-Urban Continuum Codes (RUCC). The RUCC provide a more granular (9-level gradation) urban-rural distinction than the CBSA (3-level gradation).

### Geographic Definitions

**Exhibit A1. Rural/Nonrural Designation Based on County-Level Rural-Urban Continuum Codes (RUCC)**



Note: Nonrural counties (RUCC codes 1–3) are depicted in blue, and rural counties (RUCC codes 4–9) are depicted in orange. Darker shading indicates greater degrees of urbanization or rurality.

Source: Map generated in SAS using the rural/nonrural designations in this report. Based on RUCC source data: United States Department of Agriculture (USDA) Economic Research Service. 2013 Rural-Urban Continuum Codes data file. Accessed August 3, 2023. <https://www.ers.usda.gov/data-products/rural-urban-continuum-codes/>



**Exhibit A2. Distribution of U.S. Counties and Population by County-Level Rural-Urban Continuum Codes (RUCC)**

RUCC	Counties		Population	
	Number	Percent	Number	Percent
RUCC 1: Metro - Counties in metro areas of 1 million population or more	432	13.75	184,809,301	55.76
RUCC 2: Metro - Counties in metro areas of 250,000 to 1 million population	378	12.03	70,836,448	21.37
RUCC 3: Metro - Counties in metro areas of fewer than 250,000 population	356	11.33	29,797,897	8.99
<b>Nonrural Subtotal</b>	<b>1,166</b>	<b>37.11</b>	<b>285,443,646</b>	<b>86.12</b>
RUCC 4: Nonmetro - Urban population of 20,000 or more, adjacent to a metro area	214	6.81	13,696,520	4.13
RUCC 5: Nonmetro - Urban population of 20,000 or more, not adjacent to a metro area	92	2.93	5,079,578	1.53
RUCC 6: Nonmetro - Urban population of 2,500 to 19,999, adjacent to a metro area	593	18.87	14,526,311	4.38
RUCC 7: Nonmetro - Urban population of 2,500 to 19,999, not adjacent to a metro area	433	13.78	8,100,642	2.44
RUCC 8: Nonmetro - Completely rural or less than 2,500 urban population, adjacent to a metro area	220	7.00	2,094,257	0.63
RUCC 9: Nonmetro - Completely rural or less than 2,500 urban population, not adjacent to a metro area	424	13.49	2,508,327	0.76
<b>Rural Subtotal</b>	<b>1,976</b>	<b>62.89</b>	<b>46,005,635</b>	<b>13.88</b>
<b>National Total</b>	<b>3,142</b>	<b>100.00</b>	<b>331,449,281</b>	<b>100.00</b>

Note: Population values are based on the 2020 U.S. census population.

Sources: United States Department of Agriculture (USDA) Economic Research Service. 2013 Rural-Urban Continuum Codes data file. Accessed August 3, 2023. <https://www.ers.usda.gov/data-products/rural-urban-continuum-codes/>; Health Resources and Services Administration (HRSA). 2021–2022 Area Health Resources Files (AHRF) County Level Data file. Accessed November 16, 2023. <https://data.hrsa.gov/data/download>

**Exhibit A3. Distribution of U.S. Counties and Population by Geographic Division and by Rural/Nonrural Designation Based on County-Level Rural-Urban Continuum Codes (RUCC)**

Geographic Division	Percent of U.S. Total Counties			Percent of U.S. Total Population		
	% of Total Counties (3,142)	% of Nonrural Counties (1,166)	% of Rural Counties (1,976)	% of Total Population (331,449,281)	% of Nonrural Population (285,443,646)	% of Rural Population (46,005,635)
New England (CT, ME, MA, NH, RI, VT)	2.13	2.92	1.67	4.56	4.68	3.84
Middle Atlantic (NJ, NY, PA)	4.77	8.23	2.73	12.82	13.90	6.10
East North Central (IL, IN, MI, OH, WI)	13.91	14.92	13.31	14.29	13.59	18.67
West North Central (IA, KS, MN, MO, NE, ND, SD)	19.67	10.98	24.80	6.52	5.31	14.02
South Atlantic (DE, DC, FL, GA, MD, NC, SC, VA, WV)	18.71	26.93	13.87	19.94	20.62	15.75
East South Central (AL, KY, MS, TN)	11.58	10.55	12.20	5.85	4.67	13.23
West South Central (AR, LA, OK, TX)	14.96	13.29	15.94	12.30	12.13	13.38
Mountain (AZ, CO, ID, NM, MT, UT, NV, WY)	8.94	5.57	10.93	7.52	7.30	8.88
Pacific (AK, CA, HI, OR, WA)	5.32	6.60	4.55	16.19	17.81	6.14

Note: Population values are based on the 2020 U.S. census population.

Sources: United States Department of Agriculture (USDA) Economic Research Service. 2013 Rural-Urban Continuum Codes data file. Accessed August 3, 2023. <https://www.ers.usda.gov/data-products/rural-urban-continuum-codes/>; Health Resources and Services Administration (HRSA). 2021–2022 Area Health Resources Files (AHRF) County Level Data file. Accessed November 16, 2023. <https://data.hrsa.gov/data/download>



## Community Health Statistics – County Health Rankings (CHR) Data

**Exhibit A4. County Health Rankings (CHR) Health Statistics by County-Level Rural-Urban Continuum Codes (RUCC)**

Measure	Nonrural			Rural					
	RUCC 1	RUCC 2	RUCC 3	RUCC 4	RUCC 5	RUCC 6	RUCC 7	RUCC 8	RUCC 9
<b>Demographics</b>									
Age 65 and older, % of population	16.78 (16.46, 17.10)	18.49 (18.07, 18.91)	19.06 (18.52, 19.59)	19.32 (18.80, 19.83)	17.78 (16.97, 18.59)	20.39 (20.10, 20.69)	20.63 (20.21, 21.06)	23.16 (22.54, 23.77)	23.70 (23.24, 24.20)
<b>Health Factors</b>									
<b>Social and Economic Factors</b>									
Median household income, \$	78,172.33 (76,320.42, 80,024.24)	63,317.13 (62,023.67, 64,610.60)	59,814.49 (58,683.73, 60,945.25)	56,401.65 (55,025.44, 57,777.87)	57,136.98 (54,605.71, 59,668.24)	52,910.72 (52,083.49, 53,737.96)	53,529.98 (52,431.30, 54,628.65)	52,895.51 (51,365.30, 54,425.72)	53,401.23 (52,330.17, 54,472.29)
Firearm fatalities, rate per 100,000 population	13.12 (12.43, 13.82)	14.96 (14.27, 15.64)	15.24 (14.57, 15.92)	14.61 (13.75, 15.48)	16.37 (14.83, 17.92)	17.75 (17.11, 18.39)	19.91 (19.00, 20.82)	21.46 (20.02, 22.91)	25.57 (23.34, 27.81)
Motor vehicle crash deaths, rate per 100,000 population	13.15 (12.44, 13.87)	15.33 (14.66, 16.01)	15.96 (15.21, 16.71)	16.35 (15.50, 17.21)	16.30 (15.07, 17.53)	22.16 (21.44, 22.88)	21.81 (20.97, 22.65)	28.49 (26.81, 30.16)	29.54 (27.81, 31.27)
<b>Health Behaviors</b>									
Adult smoking, %	16.96 (16.58, 17.34)	18.77 (18.40, 19.13)	19.39 (19.04, 19.75)	20.34 (19.90, 20.78)	19.39 (18.73, 20.04)	21.81 (21.53, 22.09)	20.85 (20.47, 21.23)	21.58 (21.08, 22.09)	20.77 (20.34, 21.19)
Food insecurity, %	10.37 (10.09, 10.65)	12.10 (11.80, 12.40)	12.03 (11.70, 12.35)	13.06 (12.68, 13.44)	13.12 (12.36, 13.89)	13.41 (13.13, 13.69)	13.32 (12.95, 13.69)	13.13 (12.58, 13.68)	12.08 (11.64, 12.53)
Limited access to healthy foods, %	5.67 (5.30, 6.04)	7.91 (7.33, 8.49)	8.09 (7.53, 8.65)	8.11 (7.46, 8.76)	9.45 (8.22, 10.68)	8.30 (7.75, 8.85)	8.74 (8.15, 9.33)	8.81 (7.51, 10.11)	12.36 (11.20, 13.52)

Measure	Nonrural			Rural					
	RUCC 1	RUCC 2	RUCC 3	RUCC 4	RUCC 5	RUCC 6	RUCC 7	RUCC 8	RUCC 9
<b>Physical Environment</b>									
Drinking water violations (0/1 indicator)	0.39 (0.34, 0.43)	0.46 (0.41, 0.51)	0.37 (0.32, 0.42)	0.44 (0.37, 0.51)	0.43 (0.33, 0.54)	0.31 (0.27, 0.35)	0.30 (0.26, 0.35)	0.22 (0.16, 0.27)	0.22 (0.18, 0.26)
Households with broadband access, %	87.31 (86.78, 87.84)	83.77 (83.12, 84.42)	82.52 (81.85, 83.20)	81.95 (81.22, 82.68)	81.93 (80.39, 83.46)	77.74 (77.18, 78.29)	78.84 (78.16, 79.52)	74.78 (73.71, 75.85)	76.74 (75.93, 77.55)
Long commute—driving alone, %	45.77 (44.85, 46.70)	35.29 (34.12, 36.46)	30.02 (28.69, 31.35)	29.21 (28.12, 30.30)	18.80 (17.34, 20.25)	33.76 (33.00, 34.53)	23.79 (22.84, 24.73)	39.15 (37.60, 40.69)	28.53 (27.35, 29.72)
Households with severe housing cost burden, %	12.18 (11.80, 12.56)	11.53 (11.20, 11.87)	11.41 (11.05, 11.78)	11.78 (11.36, 12.20)	12.18 (11.50, 12.87)	10.27 (10.03, 10.50)	10.10 (9.81, 10.39)	9.44 (9.05, 9.83)	8.70 (8.36, 9.04)
<b>Clinical Care</b>									
Mammography screening, % female Medicare FFS	37.27 (36.71, 37.83)	38.29 (37.68, 38.90)	39.81 (39.04, 40.58)	38.29 (37.44, 39.15)	36.93 (35.12, 38.75)	36.05 (35.48, 36.66)	34.68 (33.81, 35.54)	35.96 (34.91, 37.01)	35.35 (34.34, 36.35)
Flu vaccinations, % Medicare FFS	51.67 (51.06, 52.28)	49.48 (48.64, 50.32)	49.42 (48.57, 50.27)	49.01 (48.03, 50.0)	46.95 (45.02, 48.87)	43.56 (42.88, 44.27)	39.93 (38.87, 40.99)	39.82 (38.51, 41.14)	35.09 (33.97, 36.21)
Preventable hospital stays, rate per 100,000 Medicare FFS enrollees	3,032.34 (2,950.06, 3,114.63)	2,823.23 (2,738.73, 2,907.72)	3,098.61 (2,993.79, 3,203.43)	2,969.60 (2,836.70, 3,102.51)	2,786.17 (2,557.05, 3,015.30)	3,184.22 (3,089.27, 3,279.17)	2,915.79 (2,781.52, 3,050.07)	2,990.50 (2,822.74, 3,158.26)	2,918.05 (2,771.61, 3,064.50)
<b>Health Outcomes</b>									
<b>Length of Life</b>									
Life expectancy, years	78.31 (78.03, 78.59)	77.30 (77.04, 77.55)	77.17 (76.88, 77.46)	76.51 (76.16, 76.85)	76.73 (75.95, 77.51)	75.83 (75.61, 76.06)	76.50 (76.16, 76.84)	76.67 (76.22, 77.12)	77.14 (76.68, 77.59)
Premature death, rate per 100,000 population	7,501.47 (7,269.92, 7,733.02)	8,416.70 (8,191.44, 8,641.97)	8,507.35 (8,250.26, 8,764.43)	8,982.02 (8,650.34, 9,313.69)	8,899.60 (8,294.49, 9,504.71)	9,593.32 (9,354.57, 9,812.07)	9,280.32 (8,986.93, 9,573.70)	9,674.43 (9,215.18, 10,133.69)	9,453.26 (9,062.07, 9,844.45)

Measure	Nonrural			Rural					
	RUCC 1	RUCC 2	RUCC 3	RUCC 4	RUCC 5	RUCC 6	RUCC 7	RUCC 8	RUCC 9
<b>Quality of Life</b>									
Adults who consider themselves to be in poor or fair health, %	13.77 (13.45, 14.08)	15.28 (14.89, 15.67)	15.49 (15.11, 15.87)	16.01 (15.52, 16.50)	16.01 (15.09, 16.93)	17.73 (17.37, 18.08)	16.89 (16.43, 17.36)	17.05 (16.42, 17.67)	15.7 (15.27, 16.22)
Poor mental health days, days	4.69 (4.64, 4.74)	4.87 (4.82, 4.93)	4.83 (4.77, 4.90)	4.91 (4.85, 4.98)	4.66 (4.52, 4.79)	4.96 (4.92, 5.01)	4.79 (4.73, 4.86)	4.81 (4.73, 4.90)	4.57 (4.49, 4.64)
Low birthweight, %	8.05 (7.91, 8.20)	8.39 (8.23, 8.56)	8.13 (7.95, 8.32)	8.19 (7.96, 8.42)	8.35 (7.94, 8.76)	8.48 (8.30, 8.66)	8.18 (7.97, 8.40)	8.52 (8.18, 8.87)	7.66 (7.41, 7.92)
Adult diabetes, %	9.72 (9.56, 9.89)	10.26 (10.06, 10.46)	10.28 (10.08, 10.48)	10.49 (10.22, 10.75)	10.52 (10.03, 11.01)	11.18 (10.99, 11.37)	10.71 (10.49, 10.94)	10.86 (10.54, 11.18)	10.19 (9.97, 10.40)

Abbreviation: FFS, fee-for-service

Note: Statistics presented are the mean and 95% confidence interval.

Sources: University of Wisconsin Population Health Institute. 2023 County Health Rankings National Data file. Accessed September 25, 2023. <https://www.countyhealthrankings.org/explore-health-rankings/rankings-data-documentation>; United States Department of Agriculture (USDA) Economic Research Service. 2013 Rural-Urban Continuum Codes data file. Accessed August 3, 2023. <https://www.ers.usda.gov/data-products/rural-urban-continuum-codes/>

## Exhibit A5. County Health Rankings (CHR) Health Statistics by Geographic Division

Measure	National	New England	Middle Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Pacific
<b>Demographics</b>										
Age 65 and older, % of population	20.04 (19.87, 20.21)	21.30 (20.37, 22.24)	20.07 (19.56, 20.57)	20.25 (19.87, 20.63)	20.90 (20.56, 21.25)	20.20 (19.77, 20.64)	18.85 (18.56, 19.15)	18.68 (18.26, 19.10)	20.99 (20.25, 21.72)	19.97 (18.92, 21.02)
<b>Health Factors</b>										
<b>Social and Economic Factors</b>										
Median household income, \$	58,931.62 (58,397.54, 59,465.71)	73,884.27 (69,950.04, 77,818.50)	68,376.23 (65,594.14, 71,158.32)	61,487.76 (60,419.26, 62,556.25)	60,272.15 (59,415.42, 61,128.88)	57,900.29 (56,445.35, 59,355.22)	49,217.91 (47,995.25, 50,440.57)	53,063.66 (51,903.47, 54,223.86)	61,460.01 (59,599.22, 63,320.81)	69,996.40 (67,370.78, 72,622.02)
Firearm fatalities, rate per 100,000 population	16.47 (16.16, 16.78)	9.90 (8.63, 11.17)	9.10 (8.34, 9.87)	12.02 (11.60, 12.44)	15.00 (14.15, 15.85)	17.43 (16.88, 17.99)	20.82 (20.03, 21.61)	18.69 (17.98, 19.41)	21.57 (20.30, 22.83)	15.39 (13.66, 17.12)
Motor vehicle crash deaths, rate per 100,000 population	19.15 (18.80, 19.51)	10.18 (9.10, 11.27)	10.20 (9.48, 10.92)	14.82 (14.28, 15.36)	19.20 (18.18, 20.22)	19.41 (18.74, 20.08)	25.19 (24.20, 26.18)	23.82 (22.99, 24.66)	19.67 (18.18, 21.15)	14.47 (13.26, 15.68)
<b>Health Behaviors</b>										
Adult smoking, %	20.04 (19.90, 20.19)	15.80 (15.10, 16.50)	17.89 (17.35, 18.44)	20.97 (20.66, 21.27)	19.53 (19.25, 19.81)	20.56 (20.24, 20.88)	23.62 (23.26, 23.99)	20.95 (20.66, 21.24)	16.93 (16.50, 17.36)	16.17 (15.49, 16.84)
Food insecurity, %	12.44 (12.31, 12.57)	10.20 (9.72, 10.68)	11.01 (10.64, 11.38)	11.86 (11.59, 12.13)	9.78 (9.51, 10.06)	12.53 (12.27, 12.78)	16.00 (15.66, 16.35)	15.16 (14.90, 15.42)	11.34 (10.98, 11.70)	12.01 (11.60, 12.42)
Limited access to healthy foods, %	8.54 (8.27, 8.80)	4.24 (3.61, 4.87)	4.52 (4.02, 5.02)	6.38 (5.97, 6.78)	9.20 (8.62, 9.78)	7.59 (7.06, 8.13)	7.74 (7.05, 8.43)	11.24 (10.52, 11.97)	12.01 (10.73, 13.30)	8.51 (7.22, 9.79)

Measure	National	New England	Middle Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Pacific
<b>Physical Environment</b>										
Drinking water violations (0/1 indicator)	0.34 (0.32, 0.35)	0.42 (0.30, 0.54)	0.66 (0.58, 0.74)	0.27 (0.23, 0.31)	0.23 (0.19, 0.26)	0.26 (0.22, 0.29)	0.14 (0.11, 0.18)	0.55 (0.51, 0.60)	0.45 (0.39, 0.51)	0.51 (0.43, 0.59)
Households with broadband access, %	80.54 (80.27, 80.82)	86.55 (85.49, 87.60)	84.56 (83.85, 85.28)	82.72 (82.23, 83.21)	81.10 (80.63, 81.58)	79.52 (78.81, 80.24)	76.24 (75.38, 77.09)	77.51 (76.74, 78.29)	82.38 (81.38, 83.38)	85.14 (84.05, 86.23)
Long commute—driving alone, %	32.72 (32.28, 33.17)	35.53 (33.34, 37.72)	36.16 (34.43, 37.90)	32.87 (31.92, 33.83)	26.09 (25.23, 26.94)	39.33 (38.36, 40.30)	38.84 (37.64, 40.04)	32.73 (31.63, 33.83)	26.25 (24.72, 27.78)	26.93 (24.73, 29.12)
Households with severe housing cost burden, %	10.68 (10.56, 10.80)	13.61 (12.95, 14.27)	12.70 (12.04, 13.37)	9.49 (9.26, 9.72)	8.80 (8.59, 9.01)	12.03 (11.74, 12.31)	10.67 (10.35, 10.99)	10.20 (9.89, 10.51)	10.99 (10.59, 11.38)	13.88 (13.24, 14.51)
<b>Clinical Care</b>										
Mammography screening, % female Medicare FFS	36.81 (36.53, 37.09)	39.46 (38.09, 40.84)	40.75 (39.86, 41.63)	39.65 (39.15, 40.14)	42.05 (41.37, 42.72)	38.35 (37.84, 38.87)	33.78 (33.13, 34.43)	30.90 (30.27, 31.52)	31.09 (30.25, 31.92)	32.28 (31.28, 33.29)
Flu vaccinations, % Medicare FFS	44.65 (44.28, 45.03)	51.76 (49.61, 53.91)	53.21 (52.30, 54.13)	48.54 (47.71, 49.36)	43.66 (42.61, 44.71)	47.09 (46.42, 47.75)	43.16 (42.26, 44.07)	41.15 (40.31, 42.00)	39.31 (37.98, 40.65)	40.75 (39.00, 42.51)
Preventable hospital stays, rate per 100,000 Medicare FFS enrollees	2,998.93 (2,958.22, 3,039.64)	2,466.55 (2,340.80, 2,592.31)	2,921.67 (2,831.98, 3,011.35)	2,910.80 (2,826.82, 2,994.77)	2,682.43 (2,595.47, 2,769.39)	3,366.94 (3,282.64, 3,451.24)	3,806.66 (3,687.48, 3,925.85)	3,453.05 (3,343.65, 3,562.44)	1,918.94 (1,823.57, 2,014.31)	1,956.65 (1,848.49, 2,064.80)

Measure	National	New England	Middle Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Pacific
<b>Health Outcomes</b>										
<b>Length of Life</b>										
Life expectancy, years	76.90 (76.78, 77.01)	79.36 (78.98, 79.73)	78.57 (78.28, 78.86)	77.26 (77.06, 77.45)	77.93 (77.69, 78.18)	76.20 (75.95, 76.44)	73.86 (73.63, 74.09)	75.62 (75.39, 75.84)	78.58 (78.12, 79.04)	79.76 (79.06, 80.46)
Premature death, rate per 100,000 population	8,912.66 (8,808.70, 9,016.62)	6,686.24 (6,384.23, 6,988.26)	7,145.75 (6,911.31, 7,380.20)	8,072.54 (7,889.16, 8,255.92)	7,878.97 (7,621.89, 8,136.04)	9,693.26 (9,473.70, 9,912.82)	11,427.21 (11,170.76, 11,683.67)	9,789.10 (9,580.57, 9,997.64)	8,265.46 (7,865.64, 8,665.28)	7,581.93 (7,074.76, 8,089.09)
<b>Quality of Life</b>										
Adults who consider themselves to be in poor or fair health, %	16.04 (15.88, 16.19)	11.13 (10.72, 11.54)	12.84 (12.50, 13.18)	14.39 (14.18, 14.61)	13.30 (13.04, 13.56)	17.17 (16.84, 17.49)	20.57 (20.17, 20.97)	19.83 (19.48, 20.17)	13.72 (13.35, 14.10)	14.68 (14.15, 15.21)
Poor mental health days, days	4.80 (4.78, 4.82)	4.70 (4.63, 4.76)	4.82 (4.76, 4.87)	4.77 (4.70, 4.83)	4.24 (4.20, 4.29)	4.94 (4.90, 4.98)	5.36 (5.30, 5.42)	5.16 (5.12, 5.20)	4.52 (4.46, 4.57)	4.72 (4.65, 4.80)
Low birthweight, %	8.21 (8.14, 8.29)	7.11 (6.90, 7.33)	7.51 (7.34, 7.68)	7.49 (7.38, 7.61)	6.81 (6.69, 6.92)	9.42 (9.27, 9.58)	9.96 (9.73, 10.19)	8.61 (8.44, 8.77)	8.32 (8.07, 8.58)	6.58 (6.40, 6.75)
Adult diabetes, %	10.48 (10.40, 10.56)	7.74 (7.52, 7.96)	8.99 (8.81, 9.16)	9.67 (9.56, 9.78)	9.26 (9.14, 9.38)	11.49 (11.32, 11.66)	12.22 (12.02, 12.42)	12.24 (12.05, 12.42)	9.22 (9.00, 9.44)	9.40 (9.14, 9.66)

Abbreviation: FFS, fee-for-service

Note: Statistics presented are the mean and 95% confidence interval.

Source: University of Wisconsin Population Health Institute. 2023 County Health Rankings National Data file. Accessed September 25, 2023. <https://www.countyhealthrankings.org/explore-health-rankings/rankings-data-documentation>

**Exhibit A6. County Health Rankings (CHR) Health Statistics by Geographic Division for Nonrural Counties Only Based on Rural-Urban Continuum Codes (RUCC)**

Measure	National Nonrural	New England Nonrural	Middle Atlantic Nonrural	East North Central Nonrural	West North Central Nonrural	South Atlantic Nonrural	East South Central Nonrural	West South Central Nonrural	Mountain Nonrural	Pacific Nonrural
<b>Demographics</b>										
Age 65 and older, % of population	18.03 (17.78, 18.28)	19.13 (17.93, 20.32)	18.99 (18.46, 19.52)	18.12 (17.74, 18.50)	17.35 (16.8, 17.91)	18.89 (18.26, 19.52)	17.67 (17.15, 18.20)	16.35 (15.79, 16.91)	18.07 (16.65, 19.50)	17.66 (16.39, 18.93)
<b>Health Factors</b>										
<b>Social and Economic Factors</b>										
Median household income, \$	67,758.34 (66,768.41, 68,748.27)	82,312.50 (77,388.23, 87,236.77)	75,012.38 (71,326.73, 78,698.02)	67,730.36 (65,711.10, 69,749.62)	70,166.04 (67,936.06, 72,396.02)	66,502.51 (64,359.32, 68,645.70)	58,157.63 (55,805.16, 60,510.11)	61,281.19 (59,006.18, 63,556.20)	71,486.40 (67,320.05, 75,652.75)	78,841.34 (74,591.85, 83,090.84)
Firearm fatalities, rate per 100,000 population	14.34 (13.94, 14.74)	6.38 (5.20, 7.56)	8.13 (7.23, 9.03)	11.76 (11.12, 12.40)	13.47 (12.10, 14.84)	15.70 (15.01, 16.39)	18.93 (17.69, 20.17)	17.52 (16.47, 18.57)	18.01 (16.32, 19.70)	10.91 (9.76, 12.06)
Motor vehicle crash deaths, rate per 100,000 population	14.71 (14.29, 15.13)	7.71 (6.75, 8.66)	8.82 (8.13, 9.51)	12.14 (11.38, 12.91)	13.95 (12.68, 15.22)	16.09 (15.30, 16.88)	19.68 (18.27, 21.09)	18.94 (17.78, 20.10)	13.41 (11.99, 14.83)	11.35 (10.32, 12.39)
<b>Health Behaviors</b>										
Adult smoking, %	18.29 (18.07, 18.51)	14.59 (13.79, 15.40)	16.38 (15.75, 17.00)	19.49 (19.00, 19.99)	18.14 (17.56, 18.73)	18.61 (18.21, 19.01)	21.54 (20.97, 22.11)	19.43 (18.94, 19.91)	14.94 (14.09, 15.80)	13.89 (13.29, 14.49)
Food insecurity, %	11.44 (11.26, 11.62)	9.59 (8.96, 10.22)	10.43 (9.92, 10.93)	11.00 (10.57, 11.43)	9.03 (8.54, 9.52)	11.23 (10.90, 11.56)	13.84 (13.32, 14.36)	14.09 (13.73, 14.46)	10.56 (9.92, 11.20)	10.93 (10.45, 11.42)
Limited access to healthy foods, %	7.15 (6.85, 7.44)	4.76 (3.82, 5.71)	4.40 (3.85, 4.95)	6.86 (6.22, 7.51)	6.16 (5.43, 6.89)	7.46 (6.88, 8.05)	7.71 (6.82, 8.59)	9.50 (8.46, 10.54)	9.05 (7.37, 10.73)	5.37 (4.66, 6.08)

Measure	National Nonrural	New England Nonrural	Middle Atlantic Nonrural	East North Central Nonrural	West North Central Nonrural	South Atlantic Nonrural	East South Central Nonrural	West South Central Nonrural	Mountain Nonrural	Pacific Nonrural
<b>Physical Environment</b>										
Drinking water violations (0/1 indicator)	0.41 (0.38, 0.44)	0.44 (0.27, 0.62)	0.73 (0.64, 0.82)	0.33 (0.26, 0.40)	0.28 (0.20, 0.36)	0.31 (0.25, 0.36)	0.11 (0.05, 0.16)	0.59 (0.51, 0.67)	0.69 (0.58, 0.81)	0.62 (0.51, 0.73)
Households with broadband access, %	84.70 (84.33, 85.08)	88.91 (88.05, 89.77)	86.70 (86.00, 87.40)	85.74 (85.07, 86.42)	84.93 (83.99, 85.87)	83.82 (82.99, 84.64)	81.33 (80.09, 82.56)	82.28 (81.10, 83.47)	87.52 (86.15, 88.90)	89.11 (88.26, 89.96)
Long commute—driving alone, %	37.57 (36.81, 38.32)	38.28 (35.35, 41.21)	37.93 (35.52, 40.35)	34.59 (32.91, 36.27)	32.21 (29.86, 34.56)	41.31 (39.85, 42.76)	41.21 (39.00, 43.43)	38.09 (35.93, 40.25)	33.76 (29.94, 37.59)	33.49 (30.80, 36.19)
Households with severe housing cost burden, %	11.73 (11.52, 11.94)	14.25 (13.44, 15.07)	14.08 (13.20, 14.97)	10.13 (9.72, 10.53)	9.52 (9.04, 10.00)	12.28 (11.90, 12.67)	10.85 (10.27, 11.42)	10.99 (10.45, 11.53)	11.81 (11.09, 12.53)	15.65 (14.94, 16.36)
<b>Clinical Care</b>										
Mammography screening, % female Medicare FFS	38.37 (38.00, 38.75)	40.59 (38.34, 42.83)	39.46 (38.37, 40.54)	39.78 (39.06, 40.49)	44.13 (42.95, 45.30)	39.13 (38.42, 39.85)	36.25 (35.30, 37.21)	35.04 (34.15, 35.93)	34.62 (33.26, 35.97)	33.46 (32.23, 34.69)
Flu vaccinations, % Medicare FFS	50.27 (49.83, 50.71)	55.32 (53.47, 57.18)	54.48 (53.43, 55.53)	53.56 (52.64, 54.47)	52.59 (50.83, 54.35)	50.02 (49.19, 50.84)	48.49 (47.41, 49.57)	46.17 (45.13, 47.22)	47.09 (45.22, 48.96)	46.32 (44.73, 47.90)
Preventable hospital stays, rate per 100,000 Medicare FFS enrollees	2,984.82 (2,932.56, 3,037.09)	2,701.53 (2,520.25, 2,882.81)	2,876.95 (2,762.14, 2,991.76)	3,095.45 (2,973.93, 3,216.98)	2,736.17 (2,583.44, 2,888.90)	3,211.63 (3,119.13, 3,304.13)	3,505.52 (3,348.97, 3,662.07)	3,250.84 (3,104.96, 3,396.73)	1,821.72 (1,669.20, 1,974.25)	2,098.21 (1,969.65, 2,226.77)



Measure	National Nonrural	New England Nonrural	Middle Atlantic Nonrural	East North Central Nonrural	West North Central Nonrural	South Atlantic Nonrural	East South Central Nonrural	West South Central Nonrural	Mountain Nonrural	Pacific Nonrural
<b>Health Outcomes</b>										
<b>Length of Life</b>										
Life expectancy, years	77.63 (77.47, 77.79)	79.74 (79.23, 80.24)	78.84 (78.45, 79.24)	77.66 (77.34, 77.99)	78.56 (78.07, 79.04)	77.25 (76.92, 77.58)	75.04 (74.68, 75.41)	76.53 (76.16, 76.90)	79.24 (78.65, 79.82)	80.21 (79.71, 80.70)
Premature death, rate per 100,000 population	8,104.59 (7,965.12, 8,244.07)	6,222.47 (5,825.51, 6,619.43)	6,983.65 (6,660.16, 7,307.14)	7,656.03 (7,361.03, 7,951.02)	7,142.04 (6,678.84, 7,605.24)	8,735.93 (8,460.54, 9,011.32)	10,239.51 (9,867.62, 10,611.40)	8,852.98 (8,524.04, 9,181.91)	7,167.11 (6,703.75, 7,630.48)	6,210.18 (5,872.94, 6,547.42)
<b>Quality of Life</b>										
Adults who consider themselves to be in poor or fair health, %	14.78 (14.57, 15.00)	10.69 (10.13, 11.25)	12.25 (11.81, 12.69)	13.63 (13.27, 13.99)	12.41 (11.88, 12.94)	15.33 (14.96, 15.69)	18.00 (17.45, 18.55)	18.06 (17.54, 18.59)	12.64 (11.95, 13.34)	14.16 (13.42, 14.90)
Poor mental health days, days	4.79 (4.76, 4.83)	4.62 (4.53, 4.71)	4.72 (4.65, 4.80)	4.68 (4.58, 4.78)	4.33 (4.24, 4.42)	4.80 (4.74, 4.85)	5.28 (5.19, 5.37)	5.12 (5.05, 5.19)	4.58 (4.48, 4.67)	4.70 (4.60, 4.80)
Low birthweight, %	8.19 (8.09, 8.28)	7.22 (6.97, 7.47)	7.69 (7.49, 7.90)	7.73 (7.55, 7.92)	6.86 (6.66, 7.06)	8.88 (8.70, 9.07)	9.31 (9.01, 9.62)	8.82 (8.56, 9.07)	8.19 (7.79, 8.59)	6.55 (6.38, 6.71)
Adult diabetes, %	10.07 (9.96, 10.18)	7.84 (7.50, 8.17)	8.85 (8.60, 9.10)	9.49 (9.31, 9.68)	8.88 (8.63, 9.13)	10.71 (10.51, 10.90)	11.28 (11.00, 11.56)	11.64 (11.36, 11.93)	8.75 (8.35, 9.15)	9.24 (8.89, 9.59)

Abbreviation: FFS, fee-for-service

Note: Statistics presented are the mean and 95% confidence interval.

Sources: University of Wisconsin Population Health Institute. 2023 County Health Rankings National Data file. Accessed September 25, 2023. <https://www.countyhealthrankings.org/explore-health-rankings/rankings-data-documentation>; United States Department of Agriculture (USDA) Economic Research Service. 2013 Rural-Urban Continuum Codes data file. Accessed August 3, 2023. <https://www.ers.usda.gov/data-products/rural-urban-continuum-codes/>

**Exhibit A7. County Health Rankings (CHR) Health Statistics by Geographic Division for Rural Counties Only Based on Rural-Urban Continuum Codes (RUCC)**

Measure	National Rural	New England Rural	Middle Atlantic Rural	East North Central Rural	West North Central Rural	South Atlantic Rural	East South Central Rural	West South Central Rural	Mountain Rural	Pacific Rural
<b>Demographics</b>										
Age 65 and older, % of population	21.22 (21.02, 21.43)	23.55 (22.55, 24.55)	21.98 (21.15, 22.80)	21.66 (21.15, 22.17)	21.83 (21.46, 22.20)	21.71 (21.17, 22.25)	19.46 (19.13, 19.79)	19.82 (19.30, 20.35)	21.87 (21.04, 22.69)	21.95 (20.42, 23.47)
<b>Health Factors</b>										
<b>Social and Economic Factors</b>										
Median household income, \$	53,724.98 (53,236.56, 54,213.39)	65,200.64 (60,470.88, 69,930.39)	56,578.63 (55,320.11, 57,837.15)	57,357.67 (56,484.83, 58,230.51)	57,687.62 (56,924.73, 58,450.51)	48,042.26 (46,951.98, 49,132.55)	44,655.31 (43,650.86, 45,659.76)	49,020.12 (47,944.38, 50,095.85)	58,442.81 (56,530.49, 60,355.14)	62,443.42 (60,100.32, 64,786.51)
Firearm fatalities, rate per 100,000 population	18.36 (17.92, 18.80)	13.65 (12.30, 15.00)	10.98 (9.69, 12.27)	12.24 (11.68, 12.80)	16.07 (15.02, 17.12)	19.84 (19.00, 20.67)	21.91 (20.91, 22.90)	19.54 (18.58, 20.50)	23.35 (21.73, 24.97)	21.13 (18.02, 24.25)
Motor vehicle crash deaths, rate per 100,000 population	22.34 (21.87, 22.82)	12.82 (11.26, 14.37)	12.80 (11.43, 14.18)	16.68 (16.03, 17.34)	21.36 (20.09, 22.62)	23.44 (22.53, 24.34)	28.05 (26.89, 29.21)	26.63 (25.65, 27.62)	22.19 (20.33, 24.06)	18.30 (16.28, 20.32)
<b>Health Behaviors</b>										
Adult smoking, %	21.08 (20.91, 21.25)	17.04 (16.01, 18.07)	20.59 (20.10, 21.08)	21.94 (21.60, 22.29)	19.89 (19.59, 20.20)	22.81 (22.45, 23.16)	24.69 (24.28, 25.10)	21.71 (21.37, 22.04)	17.53 (17.06, 18.00)	18.13 (17.15, 19.11)
Food insecurity, %	13.02 (12.85, 13.20)	10.83 (10.12, 11.54)	12.04 (11.65, 12.43)	12.43 (12.10, 12.76)	9.98 (9.66, 10.30)	14.02 (13.70, 14.34)	17.10 (16.73, 17.48)	15.69 (15.36, 16.02)	11.57 (11.15, 12.00)	12.93 (12.34, 13.52)
Limited access to healthy foods, %	9.36 (8.98, 9.73)	3.70 (2.87, 4.54)	4.73 (3.70, 5.75)	6.05 (5.53, 6.58)	9.99 (9.30, 10.68)	7.75 (6.81, 8.68)	7.76 (6.81, 8.70)	12.10 (11.16, 13.04)	12.89 (11.31, 14.47)	11.22 (9.04, 13.40)

Measure	National Rural	New England Rural	Middle Atlantic Rural	East North Central Rural	West North Central Rural	South Atlantic Rural	East South Central Rural	West South Central Rural	Mountain Rural	Pacific Rural
<b>Physical Environment</b>										
Drinking water violations (0/1 indicator)	0.30 (0.28, 0.32)	0.39 (0.22, 0.57)	0.54 (0.40, 0.67)	0.23 (0.18, 0.28)	0.21 (0.18, 0.25)	0.20 (0.15, 0.25)	0.16 (0.11, 0.21)	0.54 (0.48, 0.59)	0.38 (0.31, 0.44)	0.42 (0.32, 0.53)
Households with broadband access, %	78.09 (77.75, 78.42)	84.11 (82.51, 85.72)	80.77 (79.89, 81.66)	80.72 (80.15, 81.28)	80.10 (79.59, 80.61)	74.60 (73.68, 75.53)	73.64 (72.66, 74.62)	75.17 (74.28, 76.06)	80.83 (79.67, 81.99)	81.74 (80.15, 83.34)
Long commute—driving alone, %	29.86 (29.35, 30.38)	32.70 (29.58, 35.82)	33.01 (31.01, 35.02)	31.74 (30.62, 32.86)	24.49 (23.65, 25.32)	37.07 (35.87, 38.28)	37.63 (36.23, 39.04)	30.09 (28.93, 31.24)	23.99 (22.48, 25.51)	21.30 (18.38, 24.23)
Households with severe housing cost burden, %	10.06 (9.91, 10.20)	12.95 (11.91, 13.98)	10.25 (9.72, 10.78)	9.06 (8.80, 9.32)	8.61 (8.38, 8.84)	11.73 (11.32, 12.15)	10.58 (10.18, 10.97)	9.81 (9.43, 10.19)	10.74 (10.28, 11.21)	12.38 (11.47, 13.29)
<b>Clinical Care</b>										
Mammography screening, % female Medicare FFS	35.88 (35.49, 36.26)	38.30 (36.72, 39.89)	43.04 (41.68, 44.39)	39.56 (38.89, 40.23)	41.50 (40.72, 42.29)	37.47 (36.74, 38.20)	32.52 (31.72, 33.32)	28.83 (28.11, 29.55)	30.02 (29.06, 30.99)	31.11 (29.53, 32.68)
Flu vaccinations, % Medicare FFS	41.32 (40.84, 41.80)	48.09 (44.47, 51.71)	50.96 (49.36, 52.57)	45.22 (44.16, 46.28)	41.33 (40.17, 42.49)	43.75 (42.82, 44.69)	40.45 (39.35, 41.55)	38.67 (37.61, 39.72)	36.97 (35.45, 38.49)	35.26 (32.65, 37.87)
Preventable hospital stays, rate per 100,000 Medicare FFS enrollees	3,007.51 (2,950.24, 3,064.77)	2,224.45 (2,086.78, 2,362.12)	3,001.17 (2,855.92, 3,146.42)	2,788.63 (2,676.39, 2,900.86)	2,667.73 (2,564.95, 2,770.51)	3,543.86 (3,399.70, 3,688.01)	3,960.36 (3,801.81, 4,118.90)	3,555.48 (3,408.97, 3,701.99)	1,950.70 (1,834.07, 2,067.33)	1,813.20 (1,641.82, 1,984.58)

Measure	National Rural	New England Rural	Middle Atlantic Rural	East North Central Rural	West North Central Rural	South Atlantic Rural	East South Central Rural	West South Central Rural	Mountain Rural	Pacific Rural
<b>Health Outcomes</b>										
<b>Length of Life</b>										
Life expectancy, years	76.45 (76.29, 76.60)	78.96 (78.42, 79.51)	78.09 (77.74, 78.43)	76.99 (76.75, 77.23)	77.76 (77.48, 78.05)	74.99 (74.68, 75.30)	73.26 (73.00, 73.51)	75.15 (74.88, 75.41)	78.37 (77.79, 78.95)	79.35 (78.09, 80.61)
Premature death, rate per 100,000 population	9,403.06 (9,263.45, 9,542.68)	7,164.08 (6,750.06, 7,578.09)	7,433.94 (7,130.62, 7,737.25)	8,348.10 (8,118.59, 8,577.61)	8,081.82 (7,781.62, 8,382.02)	10,790.34 (10,487.46, 11,093.22)	12,033.38 (11,720.89, 12,345.87)	10,264.84 (10,013.64, 10,516.04)	8,618.70 (8,119.77, 9,117.63)	8,823.03 (7,983.61, 9,662.45)
<b>Quality of Life</b>										
Adults who consider themselves to be in poor or fair health, %	16.78 (16.57, 16.98)	11.58 (11.00, 12.16)	13.88 (13.49, 14.28)	14.90 (14.65, 15.15)	13.54 (13.24, 13.83)	19.27 (18.83, 19.71)	21.88 (21.43, 22.34)	20.70 (20.29, 21.11)	14.05 (13.61, 14.48)	15.13 (14.39, 15.88)
Poor mental health days, days	4.80 (4.77, 4.83)	4.78 (4.69, 4.87)	4.99 (4.93, 5.05)	4.82 (4.75, 4.90)	4.22 (4.17, 4.27)	5.10 (5.04, 5.16)	5.40 (5.32, 5.48)	5.18 (5.14, 5.22)	4.50 (4.44, 4.56)	4.74 (4.63, 4.86)
Low birthweight, %	8.23 (8.13, 8.33)	7.01 (6.65, 7.36)	7.18 (6.90, 7.45)	7.33 (7.19, 7.48)	6.79 (6.66, 6.93)	10.04 (9.80, 10.29)	10.29 (9.99, 10.60)	8.50 (8.28, 8.71)	8.37 (8.06, 8.68)	6.60 (6.30, 6.91)
Adult diabetes, %	10.72 (10.62, 10.83)	7.64 (7.33, 7.95)	9.22 (9.04, 9.41)	9.79 (9.66, 9.91)	9.36 (9.22, 9.50)	12.39 (12.15, 12.62)	12.70 (12.46, 12.95)	12.53 (12.30, 12.76)	9.36 (9.10, 9.62)	9.53 (9.15, 9.92)

Abbreviation: FFS, fee-for-service

Note: Statistics presented are the mean and 95% confidence interval.

Sources: University of Wisconsin Population Health Institute. 2023 County Health Rankings National Data file. Accessed September 25, 2023. <https://www.countyhealthrankings.org/explore-health-rankings/rankings-data-documentation>; United States Department of Agriculture (USDA) Economic Research Service. 2013 Rural-Urban Continuum Codes data file. Accessed August 3, 2023. <https://www.ers.usda.gov/data-products/rural-urban-continuum-codes/>

## Community Health Care Characteristics – Area Health Resources Files (AHRF) Data

**Exhibit A8. Area Health Resources Files (AHRF) Health Care Characteristics by County-Level Rural-Urban Continuum Codes (RUCC)**

Measure	Nonrural			Rural					
	RUCC 1	RUCC 2	RUCC 3	RUCC 4	RUCC 5	RUCC 6	RUCC 7	RUCC 8	RUCC 9
<b>Population</b>									
Proportion under age 65 without health insurance	9.91 (9.49, 10.33)	11.04 (10.56, 11.53)	11.02 (10.57, 11.48)	11.32 (10.65, 11.99)	12.09 (11.10, 13.09)	12.80 (12.36, 13.23)	12.59 (12.06, 13.12)	12.87 (12.27, 13.48)	13.54 (13.05, 14.03)
<b>Health Professions</b>									
PCPs per 100,000 population	55.24 (51.86, 58.63)	52.06 (48.84, 55.29)	53.13 (48.60, 57.66)	43.95 (41.22, 46.68)	59.91 (54.58, 65.24)	36.33 (34.49, 38.17)	45.81 (43.09, 48.53)	23.16 (19.64, 26.67)	32.33 (28.06, 36.61)
Specialists per 100,000 population	162.06 (146.28, 177.84)	138.64 (122.87, 154.40)	144.99 (117.20, 172.79)	88.49 (79.57, 97.40)	145.01 (117.62, 172.39)	39.73 (36.56, 42.90)	55.68 (49.58, 61.78)	18.96 (15.77, 22.15)	19.03 (15.48, 22.57)
CVD specialists per 100,000 population	4.46 (3.95, 4.97)	4.00 (3.48, 4.52)	4.60 (3.74, 5.46)	2.78 (2.38, 3.18)	5.05 (3.86, 6.24)	0.84 (0.66, 1.03)	1.15 (0.79, 1.52)	0.18 (0.03, 0.33)	0.29 (-0.01, 0.60)
Gastroenterology specialists per 100,000 population	3.18 (2.80, 3.55)	2.72 (2.35, 3.10)	3.11 (2.44, 3.78)	1.45 (1.19, 1.70)	2.50 (1.75, 3.24)	0.27 (0.18, 0.36)	0.46 (0.29, 0.63)	0.05 (-0.02, 0.12)	0.05 (-0.00, 0.10)
Neurological surgery specialists per 100,000 population	1.22 (1.04, 1.40)	1.36 (1.12, 1.60)	1.74 (1.16, 2.33)	0.38 (0.22, 0.53)	1.24 (0.71, 1.78)	0.10 (0.04, 0.17)	0.13 (0.05, 0.20)	0.01 (-0.01, 0.04)	0.06 (-0.01, 0.13)
Advanced practice registered nurses per 100,000 population	97.26 (90.36, 104.16)	105.33 (97.33, 113.33)	120.05 (107.02, 133.07)	100.01 (93.71, 106.31)	149.50 (131.55, 167.46)	79.91 (76.50, 83.32)	102.79 (96.70, 108.88)	67.68 (61.00, 74.36)	75.29 (69.14, 81.44)
Nurse practitioners per 100,000 population	82.26 (76.99, 87.53)	86.82 (80.73, 92.90)	96.17 (87.44, 104.90)	83.20 (77.90, 88.49)	119.89 (105.74, 134.04)	69.03 (66.10, 71.97)	85.33 (80.19, 90.48)	63.86 (57.42, 70.29)	70.92 (65.02, 76.82)

Measure	Nonrural			Rural					
	RUCC 1	RUCC 2	RUCC 3	RUCC 4	RUCC 5	RUCC 6	RUCC 7	RUCC 8	RUCC 9
<b>Health Facilities</b>									
FQHCs and RHCs per 100,000 population	4.27 (3.67, 4.87)	7.33 (6.32, 8.34)	9.08 (7.85, 10.30)	7.84 (6.88, 8.81)	10.31 (8.53, 12.08)	16.80 (15.75, 17.85)	22.18 (20.55, 23.82)	29.05 (26.04, 32.06)	41.48 (38.21, 44.75)
Short-term hospital beds per 100,000 population	158.45 (143.29, 173.62)	184.43 (165.38, 203.47)	244.21 (214.15, 274.27)	202.65 (183.59, 221.71)	318.35 (277.00, 359.71)	211.14 (189.70, 232.59)	319.00 (287.17, 350.84)	283.16 (154.61, 411.72)	396.76 (334.04, 459.49)

Abbreviations: CVD, cardiovascular disease; FQHC, Federally Qualified Health Center; PCP, primary care physician; RHC, Rural Health Clinic

Note: Statistics presented are the mean and 95% confidence interval.

Sources: Health Resources and Services Administration (HRSA). 2021–2022 Area Health Resources Files (AHRF) County Level Data file. Accessed November 16, 2023.

<https://data.hrsa.gov/data/download>; United States Department of Agriculture (USDA) Economic Research Service. 2013 Rural-Urban Continuum Codes data file. Accessed August 3, 2023.

<https://www.ers.usda.gov/data-products/rural-urban-continuum-codes/>

## Exhibit A9. Area Health Resources Files (AHRF) Health Care Characteristics by Geographic Division

Measure	National	New England	Middle Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Pacific
<b>Population</b>										
Proportion under age 65 without health insurance	11.94 (11.77, 12.12)	7.03 (6.27, 7.79)	6.63 (6.30, 6.95)	8.26 (8.05, 8.48)	10.63 (10.29, 10.96)	13.33 (13.00, 13.67)	11.91 (11.56, 12.26)	17.91 (17.37, 18.45)	12.82 (12.42, 13.21)	10.11 (9.57, 10.64)
<b>Health Professions</b>										
PCPs per 100,000 population	43.78 (42.57, 44.99)	79.88 (71.77, 87.98)	53.27 (46.49, 60.05)	42.94 (40.19, 45.69)	41.62 (38.55, 44.69)	45.25 (42.45, 48.06)	36.60 (34.02, 39.18)	34.29 (31.87, 36.65)	46.55 (42.67, 50.43)	63.57 (57.04, 70.09)
Specialists per 100,000 population	84.73 (79.81, 89.64)	230.28 (179.08, 281.48)	173.21 (125.62, 220.80)	85.84 (75.39, 96.28)	51.06 (41.71, 60.41)	109.41 (95.61, 123.22)	70.44 (60.41, 80.47)	53.62 (46.13, 61.11)	77.94 (67.57, 88.31)	111.74 (95.33, 128.16)
CVD specialists per 100,000 population	2.32 (2.15, 2.49)	6.86 (4.84, 8.89)	6.03 (4.69, 7.37)	2.43 (2.06, 2.79)	1.13 (0.76, 1.50)	3.22 (2.77, 3.68)	2.14 (1.70, 2.58)	1.39 (1.14, 1.65)	1.66 (1.16, 2.15)	2.30 (1.88, 2.72)
Gastroenterology specialists per 100,000 population	1.41 (1.29, 1.53)	4.07 (2.95, 5.20)	3.94 (2.74, 5.14)	1.33 (1.09, 1.57)	0.62 (0.40, 0.84)	2.10 (1.77, 2.44)	1.24 (0.97, 1.51)	0.89 (0.70, 1.08)	0.81 (0.59, 1.04)	1.67 (1.33, 2.01)
Neurological surgery specialists per 100,000 population	0.64 (0.55, 0.72)	1.34 (0.70, 1.99)	1.58 (0.75, 2.42)	0.60 (0.46, 0.74)	0.41 (0.23, 0.59)	0.86 (0.58, 1.13)	0.52 (0.36, 0.68)	0.43 (0.31, 0.54)	0.54 (0.35, 0.72)	0.67 (0.49, 0.85)
Advanced practice registered nurses per 100,000 population	94.98 (92.37, 97.60)	135.60 (116.54, 154.67)	105.06 (85.42, 124.69)	91.47 (86.16, 96.78)	91.89 (86.12, 97.67)	101.93 (94.52, 109.34)	123.86 (115.68, 132.05)	78.96 (74.11, 83.80)	78.53 (72.93, 84.13)	75.59 (68.68, 82.51)



Measure	National	New England	Middle Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Pacific
Nurse practitioners per 100,000 population	80.66 (78.63, 82.69)	111.35 (96.57, 126.14)	83.10 (72.63, 93.56)	76.98 (72.88, 81.07)	76.30 (71.70, 80.90)	86.25 (80.42, 92.08)	109.73 (103.28, 116.17)	69.56 (65.48, 73.65)	65.60 (60.59, 70.61)	65.44 (58.90, 71.98)
<b>Health Facilities</b>										
FQHCs and RHCs per 100,000 population	17.19 (16.45, 17.93)	9.64 (6.94, 12.35)	5.73 (4.15, 7.30)	11.31 (10.17, 12.44)	25.40 (23.30, 27.49)	11.87 (10.59, 13.15)	21.21 (19.00, 23.42)	18.09 (16.27, 19.91)	21.56 (18.56, 24.55)	15.70 (12.10, 19.30)
Short-term hospital beds per 100,000 population	251.95 (237.19, 266.70)	184.90 (154.72, 215.09)	252.32 (206.18, 298.55)	181.19 (163.61, 198.76)	377.67 (335.05, 420.29)	209.21 (181.04, 237.39)	275.84 (203.19, 348.48)	196.48 (176.24, 216.72)	294.52 (244.11, 344.93)	181.29 (147.41, 215.18)

Abbreviations: CVD, cardiovascular disease; FQHC, Federally Qualified Health Center; PCP, primary care physician; RHC, Rural Health Clinic

Note: Statistics presented are the mean and 95% confidence interval.

Source: Health Resources and Services Administration (HRSA). 2021–2022 Area Health Resources Files (AHRF) County Level Data file. Accessed November 16, 2023. <https://data.hrsa.gov/data/download>

**Exhibit A10. Area Health Resources Files (AHRF) Health Care Characteristics by Geographic Division for Nonrural Counties Only Based on Rural-Urban Continuum Codes (RUCC)**

Variable	National Nonrural	New England Nonrural	Middle Atlantic Nonrural	East North Central Nonrural	West North Central Nonrural	South Atlantic Nonrural	East South Central Nonrural	West South Central Nonrural	Mountain Nonrural	Pacific Nonrural
<b>Population</b>										
Proportion under age 65 without health insurance	10.62 (10.35, 10.88)	5.55 (4.75, 6.35)	6.64 (6.19, 7.09)	7.61 (7.34, 7.88)	8.84 (8.19, 9.49)	12.39 (11.95, 12.82)	11.14 (10.60, 11.68)	15.81 (14.96, 16.67)	11.23 (10.45, 12.02)	8.51 (8.02, 9.00)
<b>Health Professions</b>										
PCPs per 100,000 population	53.57 (51.43, 55.70)	84.82 (72.26, 97.39)	63.31 (53.65, 72.97)	53.66 (48.64, 58.67)	49.41 (42.87, 55.95)	54.83 (50.43, 59.23)	45.28 (39.56, 50.99)	41.05 (36.37, 45.74)	52.13 (44.56, 59.70)	68.84 (61.98, 75.69)
Specialists per 100,000 population	149.25 (137.77, 160.74)	284.26 (210.96, 357.57)	226.47 (154.97, 297.97)	139.15 (117.24, 161.07)	128.75 (88.58, 168.93)	156.91 (132.90, 180.92)	116.71 (91.65, 141.78)	103.41 (84.27, 122.54)	135.93 (110.48, 161.38)	174.57 (147.78, 201.35)
CVD specialists per 100,000 population	4.35 (3.99, 4.72)	9.14 (6.19, 12.10)	7.90 (5.98, 9.82)	4.18 (3.50, 4.86)	3.82 (2.21, 5.43)	4.47 (3.79, 5.15)	3.60 (2.65, 4.55)	2.75 (2.17, 3.34)	3.22 (2.53, 3.92)	4.00 (3.37, 4.63)
Gastroenterology specialists per 100,000 population	3.01 (2.73, 3.28)	5.35 (3.97, 6.73)	5.19 (3.40, 6.98)	2.51 (2.02, 3.01)	2.57 (1.57, 3.57)	3.24 (2.68, 3.81)	2.44 (1.82, 3.05)	2.20 (1.74, 2.66)	2.37 (1.80, 2.93)	3.20 (2.68, 3.73)
Neurological surgery specialists per 100,000 population	1.43 (1.22, 1.63)	1.95 (1.16, 2.74)	2.18 (0.90, 3.46)	1.19 (0.90, 1.49)	1.50 (0.72, 2.28)	1.50 (1.00, 1.99)	1.15 (0.76, 1.53)	1.10 (0.81, 1.38)	1.50 (1.09, 1.91)	1.40 (1.09, 1.72)
Advanced practice registered nurses per 100,000 population	106.83 (101.43, 112.23)	142.52 (115.01, 170.03)	118.43 (88.77, 148.09)	105.55 (96.05, 115.05)	104.37 (85.19, 123.56)	112.56 (100.68, 124.44)	128.37 (111.32, 145.42)	90.46 (80.35, 100.58)	89.74 (77.84, 101.65)	73.23 (65.42, 81.03)

Variable	National Nonrural	New England Nonrural	Middle Atlantic Nonrural	East North Central Nonrural	West North Central Nonrural	South Atlantic Nonrural	East South Central Nonrural	West South Central Nonrural	Mountain Nonrural	Pacific Nonrural
Nurse practitioners per 100,000 population	87.99 (84.13, 91.84)	118.08 (95.72, 140.44)	92.40 (77.18, 107.63)	86.93 (79.92, 93.95)	81.44 (68.14, 94.73)	92.93 (83.80, 102.06)	108.61 (96.10, 121.12)	76.47 (68.62, 84.31)	76.40 (66.11, 86.68)	62.30 (55.56, 69.03)
<b>Health Facilities</b>										
FQHCs and RHCs per 100,000 population	6.73 (6.18, 7.29)	5.33 (3.15, 7.51)	3.20 (2.49, 3.91)	5.51 (4.26, 6.75)	9.12 (7.18, 11.07)	6.09 (4.97, 7.21)	9.00 (6.99, 11.00)	8.47 (6.65, 10.28)	6.23 (4.15, 8.31)	6.46 (4.99, 7.93)
Short-term hospital beds per 100,000 population	193.06 (180.52, 205.59)	181.94 (139.84, 224.03)	249.54 (184.51, 314.57)	185.31 (164.26, 206.37)	218.28 (176.39, 260.16)	193.59 (165.58, 221.61)	199.50 (161.68, 237.32)	161.93 (134.71, 189.15)	180.74 (125.68, 235.80)	163.69 (140.90, 186.49)

Abbreviations: CVD, cardiovascular disease; FQHC, Federally Qualified Health Center; PCP, primary care physician; RHC, Rural Health Clinic

Note: Statistics presented are the mean and 95% confidence interval.

Sources: Health Resources and Services Administration (HRSA). 2021–2022 Area Health Resources Files (AHRF) County Level Data file. Accessed November 16, 2023.

<https://data.hrsa.gov/data/download/>; United States Department of Agriculture (USDA) Economic Research Service. 2013 Rural-Urban Continuum Codes data file. Accessed August 3, 2023.

<https://www.ers.usda.gov/data-products/rural-urban-continuum-codes/>

**Exhibit A11. Area Health Resources Files (AHRF) Health Care Characteristics by Geographic Division for Rural Counties Only Based on Rural-Urban Continuum Codes (RUCC)**

Variable	National Rural	New England Rural	Middle Atlantic Rural	East North Central Rural	West North Central Rural	South Atlantic Rural	East South Central Rural	West South Central Rural	Mountain Rural	Pacific Rural
<b>Population</b>										
Proportion under age 65 without health insurance	12.73 (12.49, 12.96)	8.55 (7.43, 9.67)	6.60 (6.19, 7.02)	8.70 (8.40, 8.99)	11.09 (10.72, 11.47)	14.42 (13.92, 14.92)	12.31 (11.86, 12.75)	18.94 (18.28, 19.61)	13.29 (12.85, 13.74)	11.45 (10.64, 12.26)
<b>Health Professions</b>										
PCPs per 100,000 population	38.01 (36.62, 39.40)	74.78 (64.23, 85.34)	35.43 (30.04, 40.81)	35.85 (32.99, 38.71)	39.59 (36.12, 43.05)	34.28 (31.49, 37.08)	32.17 (29.74, 34.61)	30.92 (28.25, 33.59)	44.87 (40.36, 49.38)	59.05 (48.41, 69.70)
Specialists per 100,000 population	46.65 (43.89, 49.42)	174.67 (104.57, 244.76)	78.52 (55.47, 101.58)	50.56 (43.64, 57.48)	30.76 (26.82, 34.70)	54.98 (48.19, 61.78)	46.82 (40.31, 53.34)	29.12 (25.23, 33.01)	60.49 (50.37, 70.61)	57.99 (45.95, 70.03)
CVD specialists per 100,000 population	1.13 (0.98, 1.27)	4.51 (1.83, 7.20)	2.71 (1.61, 3.81)	1.27 (0.92, 1.62)	0.42 (0.26, 0.58)	1.80 (1.25, 2.34)	1.39 (0.97, 1.81)	0.72 (0.51, 0.94)	1.18 (0.59, 1.78)	0.85 (0.50, 1.21)
Gastroenterology specialists per 100,000 population	0.47 (0.40, 0.54)	2.76 (1.01, 4.51)	1.70 (0.96, 2.44)	0.54 (0.36, 0.73)	0.11 (0.05, 0.17)	0.80 (0.58, 1.01)	0.63 (0.40, 0.86)	0.24 (0.12, 0.37)	0.35 (0.15, 0.54)	0.36 (0.14, 0.57)
Neurological surgery specialists per 100,000 population	0.17 (0.13, 0.22)	0.72 (-0.31, 1.74)	0.52 (0.14, 0.89)	0.21 (0.10, 0.32)	0.13 (0.05, 0.20)	0.12 (0.03, 0.22)	0.21 (0.08, 0.33)	0.09 (0.02, 0.17)	0.25 (0.06, 0.43)	0.04 (-0.02, 0.10)
Advanced practice registered nurses per 100,000 population	87.99 (85.36, 90.61)	128.48 (100.81, 156.15)	81.28 (68.11, 94.45)	82.15 (76.17, 88.13)	88.63 (83.33, 93.94)	89.75 (81.70, 97.80)	121.57 (112.70, 130.43)	73.30 (68.13, 78.46)	75.16 (68.83, 81.49)	77.62 (66.53, 88.71)
Nurse practitioners per 100,000 population	76.34 (74.06, 78.61)	104.43 (84.23, 124.62)	66.56 (56.85, 76.26)	70.39 (65.55, 75.23)	74.96 (70.28, 79.63)	78.59 (71.80, 85.39)	110.29 (102.88, 117.71)	66.17 (61.47, 70.87)	62.35 (56.64, 68.06)	68.13 (57.35, 78.90)

Variable	National Rural	New England Rural	Middle Atlantic Rural	East North Central Rural	West North Central Rural	South Atlantic Rural	East South Central Rural	West South Central Rural	Mountain Rural	Pacific Rural
<b>Health Facilities</b>										
FQHCs and RHCs per 100,000 population	23.37 (22.33, 24.41)	14.09 (9.42, 18.76)	10.22 (6.22, 14.21)	15.14 (13.60, 16.68)	29.65 (27.18, 32.11)	18.49 (16.31, 20.68)	27.44 (24.56, 30.33)	22.83 (20.42, 25.24)	26.17 (22.54, 29.80)	23.60 (17.45, 29.76)
Short-term hospital beds per 100,000 population	286.70 (264.57, 308.83)	187.96 (142.33, 233.60)	257.25 (198.59, 315.91)	178.46 (152.68, 204.24)	419.31 (367.24, 471.37)	227.11 (175.73, 278.49)	314.80 (206.83, 422.76)	213.49 (186.52, 240.45)	328.76 (265.83, 391.69)	196.35 (136.14, 256.56)

Abbreviations: CVD, cardiovascular disease; FQHC, Federally Qualified Health Center; PCP, primary care physician; RHC, Rural Health Clinic

Note: Statistics presented are the mean and 95% confidence interval.

Sources: Health Resources and Services Administration (HRSA). 2021–2022 Area Health Resources Files (AHRF) County Level Data file. Accessed November 16, 2023.

<https://data.hrsa.gov/data/download/>; United States Department of Agriculture (USDA) Economic Research Service. 2013 Rural-Urban Continuum Codes data file. Accessed August 3, 2023.

<https://www.ers.usda.gov/data-products/rural-urban-continuum-codes/>

**Exhibit A12. Area Health Resources Files (AHRF) Health Care Characteristics by Geographic Division and County-Level Rural-Urban Continuum Codes (RUCC)**

U.S. Census Division & Rural Designation	Proportion Under Age 65 Without Health Insurance	PCPs per 100,000 Population	Specialists per 100,000 Population	CVD Specialists per 100,000 Population	Gastroenterology Specialists per 100,000 Population	Neurological Surgery Specialists per 100,000 Population	Advanced Practice Registered Nurses per 100,000 Population	Nurse Practitioners per 100,000 Population	FQHCs and RHCs per 100,000 Population	Short-term Hospital Beds per 100,000 Population
National	11.94 (11.77, 12.12)	43.78 (42.57, 44.99)	84.73 (79.81, 89.64)	2.32 (2.15, 2.49)	1.41 (1.29, 1.53)	0.64 (0.55, 0.72)	88.64 (86.21, 91.07)	74.59 (72.71, 76.47)	17.19 (16.45, 17.93)	251.95 (237.19, 266.70)
New England	7.03 (6.27, 7.79)	79.88 (71.77, 87.98)	230.28 (179.08, 281.48)	6.86 (4.84, 8.89)	4.07 (2.95, 5.20)	1.34 (0.70, 1.99)	128.66 (111.01, 146.30)	105.22 (91.71, 118.72)	9.64 (6.94, 12.35)	184.90 (154.72, 215.09)
Nonrural	5.55 (4.75, 6.35)	84.82 (72.26, 97.39)	284.26 (210.96, 357.57)	9.14 (6.19, 12.10)	5.35 (3.97, 6.73)	1.95 (1.16, 2.74)	135.50 (110.17, 160.84)	111.46 (91.10, 131.81)	5.33 (3.15, 7.51)	181.94 (139.84, 224.03)
RUCC 1	4.42 (3.66, 5.19)	86.35 (66.11, 106.60)	316.68 (177.89, 455.47)	10.90 (5.14, 16.66)	6.13 (3.72, 8.53)	2.16 (0.82, 3.50)	134.81 (91.85, 177.77)	114.12 (77.01, 151.23)	2.80 (1.97, 3.62)	163.15 (102.98, 223.31)
RUCC 2	6.65 (5.19, 8.11)	77.26 (57.02, 97.50)	246.90 (152.80, 341.00)	7.69 (4.05, 11.33)	4.91 (2.66, 7.17)	1.41 (0.30, 2.51)	131.17 (95.94, 166.39)	105.74 (80.10, 131.38)	3.36 (2.52, 4.20)	173.48 (109.42, 237.54)
RUCC 3	6.39 (3.55, 9.23)	93.22 (53.78, 132.65)	268.89 (96.32, 441.45)	7.41 (1.71, 13.11)	4.26 (0.98, 7.53)	2.32 (-0.09, 4.72)	143.90 (60.92, 226.89)	114.36 (55.28, 173.43)	14.22 (5.45, 22.98)	238.17 (82.67, 393.67)
Rural	8.55 (7.43, 9.67)	74.78 (64.23, 85.34)	174.67 (104.57, 244.76)	4.51 (1.83, 7.20)	2.76 (1.01, 4.51)	0.72 (-0.31, 1.74)	121.60 (95.90, 147.31)	98.79 (80.27, 117.31)	14.09 (9.42, 18.76)	187.96 (142.33, 233.60)
RUCC 4	6.74 (4.92, 8.56)	70.02 (55.05, 85.00)	165.60 (134.18, 197.02)	5.13 (2.47, 7.78)	3.11 (1.86, 4.36)	0.55 (-0.04, 1.13)	126.90 (94.58, 159.21)	107.43 (82.11, 132.75)	4.14 (1.68, 6.61)	190.43 (100.19, 280.67)
RUCC 5	9.35 (.,.)*	178.89 (.,.)*	1,230.27 (.,.)*	42.80 (.,.)*	26.34 (.,.)*	16.46 (.,.)*	475.21 (.,.)*	343.51 (.,.)*	14.10 (.,.)*	577.27 (.,.)*
RUCC 6	10.23 (8.11, 12.34)	73.14 (52.86, 93.42)	126.32 (81.02, 171.62)	2.03 (-0.18, 4.24)	0.92 (-0.16, 1.99)	0.00 (.,.)	95.88 (72.53, 119.23)	80.05 (64.01, 96.09)	10.31 (5.17, 15.46)	132.03 (85.77, 178.30)

U.S. Census Division & Rural Designation	Proportion Under Age 65 Without Health Insurance	PCPs per 100,000 Population	Specialists per 100,000 Population	CVD Specialists per 100,000 Population	Gastroenterology Specialists per 100,000 Population	Neurological Surgery Specialists per 100,000 Population	Advanced Practice Registered Nurses per 100,000 Population	Nurse Practitioners per 100,000 Population	FQHCs and RHCs per 100,000 Population	Short-term Hospital Beds per 100,000 Population
RUCC 7	8.29 (5.81, 10.77)	74.11 (56.71, 91.52)	149.85 (101.15, 198.54)	3.88 (1.54, 6.22)	2.61 (0.15, 5.06)	0.00 (...)	114.13 (87.92, 140.35)	94.01 (71.49, 116.53)	18.35 (7.99, 28.71)	201.45 (109.45, 293.45)
RUCC 8	11.07 (2.04, 20.09)*	79.93 (30.44, 129.42)*	130.01 (65.85, 194.18)*	0.95 (-3.12, 5.02)*	1.28 (-4.24, 6.81)*	0.95 (-3.12, 5.02)*	113.36 (74.42, 152.30)*	82.17 (59.92, 104.42)*	18.53 (-4.83, 41.90)*	217.41 (-47.56, 482.38)*
RUCC 9	6.35 (5.09, 7.61)*	44.31 (-304.07, 392.69)*	79.99 (-292.46, 452.44)*	1.71 (-19.99, 23.41)*	0.00 (...)*	0.00 (...)*	79.99 (-292.46, 452.44)*	68.03 (-152.52, 288.59)*	38.86 (-110.77, 188.48)*	88.81 (-1,039.59, 1,217.21)*
Middle Atlantic	6.63 (6.30, 6.95)	53.27 (46.49, 60.05)	173.21 (125.62, 220.80)	6.03 (4.69, 7.37)	3.94 (2.74, 5.14)	1.58 (0.75, 2.42)	97.75 (79.62, 115.89)	76.42 (66.82, 86.02)	5.73 (4.15, 7.30)	252.32 (206.08, 298.55)
Nonrural	6.64 (6.19, 7.09)	63.31 (53.65, 72.97)	226.47 (154.97, 297.97)	7.90 (5.98, 9.82)	5.19 (3.40, 6.98)	2.18 (0.90, 3.46)	109.43 (81.99, 136.86)	84.46 (70.47, 98.44)	3.20 (2.49, 3.91)	249.54 (184.51, 314.57)
RUCC 1	6.67 (5.97, 7.37)	64.62 (55.93, 73.31)	236.14 (185.78, 286.50)	8.43 (6.67, 10.19)	5.31 (4.07, 6.55)	1.64 (1.12, 2.16)	93.38 (78.73, 108.03)	78.92 (66.73, 91.11)	2.72 (1.83, 3.62)	213.55 (179.18, 247.92)
RUCC 2	6.46 (5.71, 7.22)	54.55 (45.92, 63.18)	163.04 (116.46, 209.61)	6.26 (4.27, 8.26)	3.67 (2.61, 4.73)	1.83 (0.89, 2.78)	103.58 (83.66, 123.51)	82.29 (65.82, 98.76)	3.34 (2.17, 4.51)	221.98 (171.17, 272.79)
RUCC 3	6.83 (5.82, 7.85)	73.84 (26.63, 121.06)	302.32 (-73.50, 678.15)	9.09 (-0.12, 18.31)	7.34 (-2.12, 16.79)	4.21 (-2.80, 11.23)	162.52 (16.04, 309.01)	103.00 (36.32, 169.68)	4.28 (1.85, 6.70)	391.93 (47.64, 736.21)
Rural	6.60 (6.19, 7.02)	35.43 (30.04, 40.81)	78.52 (55.47, 101.58)	2.71 (1.61, 3.81)	1.70 (0.96, 2.44)	0.52 (0.14, 0.89)	77.00 (64.84, 89.17)	62.13 (53.12, 71.14)	10.22 (6.22, 14.21)	257.25 (198.59, 315.91)
RUCC 4	6.46 (5.79, 7.14)	37.70 (32.42, 42.97)	89.63 (65.83, 113.42)	3.56 (2.39, 4.73)	2.19 (1.21, 3.17)	0.48 (-0.03, 0.99)	81.85 (68.54, 95.15)	64.02 (52.99, 75.05)	4.61 (3.01, 6.20)	274.44 (215.99, 332.89)
RUCC 5	5.01 (...)*	68.89 (...)*	181.61 (...)*	7.51 (...)*	5.01 (...)*	1.25 (...)*	96.44 (...)*	95.19 (...)*	1.26 (...)*	318.12 (...)*



U.S. Census Division & Rural Designation	Proportion Under Age 65 Without Health Insurance	PCPs per 100,000 Population	Specialists per 100,000 Population	CVD Specialists per 100,000 Population	Gastroenterology Specialists per 100,000 Population	Neurological Surgery Specialists per 100,000 Population	Advanced Practice Registered Nurses per 100,000 Population	Nurse Practitioners per 100,000 Population	FQHCs and RHCs per 100,000 Population	Short-term Hospital Beds per 100,000 Population
RUCC 6	6.63 (5.75, 7.52)	31.91 (23.52, 40.31)	61.19 (30.03, 92.36)	1.89 (-0.17, 3.95)	0.94 (-0.03, 1.91)	0.61 (-0.19, 1.41)	69.82 (46.28, 93.35)	57.82 (41.11, 74.53)	10.42 (4.81, 16.04)	234.53 (109.65, 359.41)
RUCC 7	6.55 (5.55, 7.56)	45.41 (18.67, 72.15)	111.43 (-29.91, 252.77)	2.66 (-2.84, 8.16)	2.11 (-1.90, 6.13)	0.64 (-0.87, 2.16)	94.77 (34.71, 154.83)	75.23 (32.70, 117.77)	20.48 (-3.71, 44.67)	291.09 (59.96, 522.23)
RUCC 8	7.63 (5.06, 10.20)*	13.40 (-15.45, 42.25)*	10.29 (-12.24, 32.82)*	2.29 (-7.56, 12.14)*	0.00 (...)*	0.00 (...)*	56.19 (4.57, 107.81)*	53.90 (9.85, 97.94)*	8.81 (-15.81, 33.42)*	201.52 (-665.55, 1,068.59)*
RUCC 9	7.27 (6.75, 7.79)*	21.35 (-249.89, 292.58)*	45.74 (-535.48, 626.96)*	0.00 (...)*	3.05 (-35.70, 41.80)*	0.00 (...)*	44.84 (-160.42, 250.10)*	26.54 (-0.69, 53.77)*	32.67 (-21.08, 86.43)*	210.42 (-2,463.19, 2,884.02)*
East North Central	8.26 (8.05, 8.48)	42.94 (40.19, 45.69)	85.84 (75.39, 96.28)	2.43 (2.06, 2.79)	1.33 (1.09, 1.57)	0.60 (0.46, 0.74)	84.88 (79.92, 89.85)	70.98 (67.20, 74.77)	11.31 (10.17, 12.44)	181.19 (163.61, 198.76)
Nonrural	7.61 (7.34, 7.88)	53.66 (48.64, 58.67)	139.15 (117.24, 161.07)	4.18 (3.50, 4.86)	2.51 (2.02, 3.01)	1.19 (0.90, 1.49)	97.39 (88.58, 106.20)	79.36 (72.96, 85.77)	5.51 (4.26, 6.75)	185.31 (164.26, 206.37)
RUCC 1	7.62 (7.17, 8.08)	52.22 (43.96, 60.49)	138.77 (103.93, 173.62)	3.74 (2.74, 4.75)	2.31 (1.64, 2.98)	0.93 (0.58, 1.27)	84.84 (74.43, 95.24)	72.25 (63.83, 80.66)	4.57 (3.18, 5.97)	145.97 (120.32, 171.62)
RUCC 2	7.39 (7.03, 7.76)	54.07 (44.38, 63.77)	151.96 (101.25, 202.67)	4.30 (2.79, 5.82)	2.92 (1.66, 4.17)	1.54 (0.75, 2.32)	97.34 (76.85, 117.83)	77.58 (62.83, 92.33)	6.10 (2.87, 9.32)	186.65 (141.51, 231.80)
RUCC 3	7.81 (7.23, 8.38)	55.30 (46.71, 63.88)	127.15 (98.18, 156.11)	4.69 (3.54, 5.84)	2.41 (1.69, 3.13)	1.24 (0.79, 1.69)	115.40 (98.81, 131.99)	91.30 (80.02, 102.57)	6.27 (4.11, 8.42)	240.32 (199.55, 281.08)
Rural	8.70 (8.40, 8.99)	35.85 (32.99, 38.71)	50.56 (43.64, 57.48)	1.27 (0.92, 1.62)	0.54 (0.36, 0.73)	0.21 (0.10, 0.32)	76.61 (70.95, 82.27)	65.44 (60.88, 69.99)	15.14 (13.60, 16.68)	178.46 (152.68, 204.24)

U.S. Census Division & Rural Designation	Proportion Under Age 65 Without Health Insurance	PCPs per 100,000 Population	Specialists per 100,000 Population	CVD Specialists per 100,000 Population	Gastroenterology Specialists per 100,000 Population	Neurological Surgery Specialists per 100,000 Population	Advanced Practice Registered Nurses per 100,000 Population	Nurse Practitioners per 100,000 Population	FQHCs and RHCs per 100,000 Population	Short-term Hospital Beds per 100,000 Population
RUCC 4	8.04 (7.52, 8.55)	38.01 (32.53, 43.49)	74.22 (54.77, 93.66)	1.99 (1.18, 2.79)	0.92 (0.52, 1.33)	0.42 (0.15, 0.70)	91.13 (78.15, 104.11)	76.29 (66.17, 86.42)	6.72 (4.63, 8.80)	181.88 (150.10, 213.65)
RUCC 5	7.99 (6.88, 9.10)	65.86 (51.95, 79.76)	158.12 (101.94, 214.30)	4.03 (0.84, 7.21)	3.92 (2.10, 5.75)	1.86 (-0.10, 3.81)	150.67 (115.19, 186.14)	122.04 (89.71, 154.38)	9.90 (5.37, 14.43)	334.10 (236.70, 431.51)
RUCC 6	9.09 (8.57, 9.61)	35.20 (31.44, 38.97)	35.40 (28.85, 41.94)	0.85 (0.50, 1.20)	0.19 (0.02, 0.37)	0.07 (-0.03, 0.17)	67.29 (60.14, 74.45)	58.35 (52.55, 64.14)	12.63 (10.56, 14.70)	162.40 (115.69, 209.11)
RUCC 7	8.62 (7.84, 9.39)	41.34 (33.68, 49.00)	59.92 (42.95, 76.89)	1.42 (0.48, 2.35)	0.48 (-0.02, 0.98)	0.15 (-0.08, 0.38)	91.24 (78.04, 104.44)	75.63 (65.08, 86.18)	22.93 (19.28, 26.58)	233.59 (172.03, 295.16)
RUCC 8	9.13 (8.37, 9.89)	17.36 (9.00, 25.72)	16.34 (9.82, 22.85)	0.00 (...)	0.32 (-0.34, 0.98)	0.00 (...)	41.43 (27.13, 55.73)	38.98 (25.09, 52.86)	17.75 (13.10, 22.39)	74.67 (13.03, 136.32)
RUCC 9	8.49 (7.87, 9.10)	24.54 (13.98, 35.09)	28.75 (16.25, 41.25)	1.16 (-0.84, 3.17)	0.19 (-0.20, 0.58)	0.00 (...)	51.06 (35.66, 66.45)	48.32 (34.09, 62.56)	25.64 (19.10, 32.18)	135.78 (33.79, 237.77)
West North Central	10.63 (10.29, 10.96)	41.62 (38.55, 44.69)	51.06 (41.71, 60.41)	1.13 (0.76, 1.50)	0.62 (0.40, 0.84)	0.41 (0.23, 0.59)	86.36 (80.92, 91.79)	70.95 (66.65, 75.24)	25.40 (23.30, 27.49)	377.67 (335.05, 420.29)
Nonrural	8.84 (8.19, 9.49)	49.41 (42.87, 55.95)	128.75 (88.58, 168.93)	3.82 (2.21, 5.43)	2.57 (1.57, 3.57)	1.50 (0.72, 2.28)	97.41 (79.36, 115.45)	75.11 (62.86, 87.36)	9.12 (7.18, 11.07)	218.28 (176.39, 260.16)
RUCC 1	8.76 (7.53, 10.00)	47.37 (35.62, 59.11)	129.37 (64.66, 194.08)	3.17 (1.49, 4.84)	2.22 (0.98, 3.46)	1.36 (0.32, 2.39)	91.97 (61.93, 122.00)	72.70 (49.28, 96.12)	8.18 (3.95, 12.42)	169.75 (110.29, 229.21)
RUCC 2	8.47 (6.87, 10.08)	44.44 (33.79, 55.09)	83.38 (48.91, 117.85)	2.22 (0.98, 3.45)	1.36 (0.46, 2.26)	0.67 (0.19, 1.16)	80.55 (58.30, 102.80)	66.66 (50.42, 82.90)	11.27 (7.42, 15.11)	170.28 (116.78, 223.78)

U.S. Census Division & Rural Designation	Proportion Under Age 65 Without Health Insurance	PCPs per 100,000 Population	Specialists per 100,000 Population	CVD Specialists per 100,000 Population	Gastroenterology Specialists per 100,000 Population	Neurological Surgery Specialists per 100,000 Population	Advanced Practice Registered Nurses per 100,000 Population	Nurse Practitioners per 100,000 Population	FQHCs and RHCs per 100,000 Population	Short-term Hospital Beds per 100,000 Population
RUCC 3	9.07 (8.20, 9.94)	53.20 (42.28, 64.11)	152.20 (77.45, 226.95)	5.04 (1.83, 8.24)	3.41 (1.48, 5.34)	2.01 (0.49, 3.54)	109.37 (77.05, 141.68)	80.93 (60.09, 101.78)	8.54 (5.82, 11.26)	271.30 (195.51, 347.09)
Rural	11.09 (10.72, 11.47)	39.59 (36.12, 43.05)	30.76 (26.82, 34.70)	0.42 (0.26, 0.58)	0.11 (0.05, 0.17)	0.13 (0.05, 0.20)	83.47 (78.48, 88.46)	69.86 (65.46, 74.26)	29.65 (27.18, 32.11)	419.31 (367.24, 471.37)
RUCC 4	9.89 (8.35, 11.44)	50.82 (42.05, 59.59)	86.62 (64.94, 108.31)	2.37 (0.87, 3.88)	0.95 (0.15, 1.76)	0.42 (-0.21, 1.05)	114.43 (95.68, 133.18)	88.70 (71.28, 106.12)	7.86 (4.32, 11.41)	236.24 (164.10, 308.38)
RUCC 5	10.80 (9.04, 12.57)	58.14 (49.17, 67.11)	122.49 (95.82, 149.16)	4.22 (2.27, 6.18)	0.77 (0.15, 1.39)	1.12 (0.15, 2.08)	143.18 (121.62, 164.73)	110.41 (92.71, 128.10)	10.97 (6.46, 15.48)	367.86 (266.31, 469.40)
RUCC 6	9.60 (8.80, 10.40)	42.36 (37.14, 47.58)	29.22 (24.02, 34.43)	0.28 (0.00, 0.56)	0.10 (-0.04, 0.23)	0.13 (-0.03, 0.29)	77.21 (69.59, 84.84)	61.31 (54.96, 67.66)	16.96 (14.11, 19.81)	249.78 (196.28, 303.28)
RUCC 7	9.99 (9.26, 10.72)	45.60 (40.57, 50.63)	39.22 (30.83, 47.61)	0.25 (-0.00, 0.50)	0.04 (-0.04, 0.13)	0.02 (-0.02, 0.07)	94.68 (85.05, 104.32)	72.75 (64.90, 80.59)	20.60 (17.14, 24.07)	396.79 (324.83, 468.74)
RUCC 8	11.35 (10.06, 12.65)	25.34 (17.08, 33.60)	10.44 (6.63, 14.24)	0.00 (...)	0.00 (...)	0.00 (...)	61.58 (48.86, 74.31)	56.61 (44.27, 68.95)	37.52 (30.90, 44.15)	337.14 (181.64, 492.63)
RUCC 9	12.60 (12.03, 13.18)	35.22 (27.65, 42.79)	14.50 (9.68, 19.33)	0.00 (...)	0.00 (...)	0.05 (-0.05, 0.16)	75.75 (66.39, 85.11)	69.31 (60.53, 78.09)	44.12 (39.35, 48.89)	575.03 (459.34, 690.71)
South Atlantic	13.33 (13.00, 13.67)	45.25 (42.45, 48.06)	109.41 (95.61, 123.22)	3.22 (2.77, 3.68)	2.10 (1.77, 2.44)	0.86 (0.58, 1.13)	95.02 (88.19, 101.84)	79.60 (74.28, 84.91)	11.87 (10.59, 13.15)	209.21 (181.04, 237.39)
Nonrural	12.39 (11.95, 12.82)	54.83 (50.43, 59.23)	156.91 (132.90, 180.92)	4.47 (3.79, 5.15)	3.24 (2.68, 3.81)	1.50 (1.00, 1.99)	105.19 (94.24, 116.15)	86.09 (77.72, 94.45)	6.09 (4.97, 7.21)	193.59 (165.58, 221.61)

U.S. Census Division & Rural Designation	Proportion Under Age 65 Without Health Insurance	PCPs per 100,000 Population	Specialists per 100,000 Population	CVD Specialists per 100,000 Population	Gastroenterology Specialists per 100,000 Population	Neurological Surgery Specialists per 100,000 Population	Advanced Practice Registered Nurses per 100,000 Population	Nurse Practitioners per 100,000 Population	FQHCs and RHCs per 100,000 Population	Short-term Hospital Beds per 100,000 Population
RUCC 1	11.33 (10.63, 12.03)	56.73 (49.91, 63.54)	154.61 (127.10, 182.12)	4.18 (3.31, 5.06)	3.34 (2.47, 4.20)	1.07 (0.75, 1.38)	96.04 (81.24, 110.85)	78.95 (68.57, 89.33)	2.71 (1.98, 3.45)	166.08 (126.71, 205.46)
RUCC 2	12.99 (12.38, 13.61)	56.56 (49.76, 63.36)	162.53 (123.49, 201.58)	4.57 (3.42, 5.73)	3.37 (2.46, 4.28)	1.66 (1.07, 2.24)	107.22 (90.53, 123.91)	86.44 (73.97, 98.90)	6.79 (5.30, 8.28)	201.86 (154.44, 249.28)
RUCC 3	13.18 (12.26, 14.10)	50.22 (40.45, 59.99)	153.73 (91.11, 216.36)	4.75 (3.11, 6.40)	2.97 (1.71, 4.23)	1.91 (0.33, 3.49)	115.64 (88.53, 142.75)	95.63 (73.81, 117.45)	10.00 (6.72, 13.28)	222.54 (159.26, 285.82)
Rural	14.42 (13.92, 14.92)	34.28 (31.49, 37.08)	54.98 (48.19, 61.78)	1.80 (1.25, 2.34)	0.80 (0.58, 1.01)	0.12 (0.03, 0.22)	83.36 (75.97, 90.75)	72.17 (66.05, 78.28)	18.49 (16.31, 20.68)	227.11 (175.73, 278.49)
RUCC 4	14.94 (13.73, 16.14)	45.33 (38.46, 52.21)	102.16 (80.76, 123.56)	3.74 (2.62, 4.86)	2.41 (1.73, 3.10)	0.61 (0.02, 1.20)	100.17 (84.69, 115.66)	82.71 (69.86, 95.57)	6.69 (4.53, 8.85)	218.72 (167.32, 270.11)
RUCC 5	13.88 (10.30, 17.47)	65.93 (44.30, 87.56)	160.65 (107.24, 214.07)	8.39 (3.95, 12.82)	4.43 (2.51, 6.36)	0.22 (-0.31, 0.75)	175.56 (99.25, 251.88)	138.99 (71.32, 206.65)	12.17 (-0.88, 25.22)	285.88 (131.02, 440.75)
RUCC 6	14.37 (13.53, 15.20)	32.81 (29.13, 36.48)	48.64 (40.62, 56.67)	1.38 (0.82, 1.94)	0.53 (0.24, 0.82)	0.07 (-0.03, 0.18)	73.20 (65.34, 81.06)	63.25 (56.67, 69.84)	17.24 (14.66, 19.82)	230.31 (163.91, 296.70)
RUCC 7	14.49 (13.04, 15.94)	37.86 (30.20, 45.51)	58.01 (33.64, 82.39)	2.12 (-0.95, 5.20)	0.51 (0.04, 0.98)	0.00 (...)	117.79 (83.60, 151.98)	100.64 (73.75, 127.54)	21.92 (16.97, 26.86)	393.77 (178.94, 608.59)
RUCC 8	14.00 (12.88, 15.12)	26.69 (19.15, 34.23)	26.72 (18.62, 34.83)	0.48 (-0.08, 1.03)	0.00 (...)	0.00 (...)	66.65 (49.88, 83.42)	61.41 (46.01, 76.81)	25.23 (18.14, 32.32)	145.94 (-33.12, 325.01)
RUCC 9	14.68 (12.93, 16.42)	24.79 (14.47, 35.11)	31.52 (16.18, 46.86)	0.93 (-0.64, 2.51)	0.43 (-0.23, 1.08)	0.00 (...)	62.48 (44.50, 80.46)	59.23 (42.03, 76.44)	26.68 (15.11, 38.25)	125.99 (17.30, 234.69)

U.S. Census Division & Rural Designation	Proportion Under Age 65 Without Health Insurance	PCPs per 100,000 Population	Specialists per 100,000 Population	CVD Specialists per 100,000 Population	Gastroenterology Specialists per 100,000 Population	Neurological Surgery Specialists per 100,000 Population	Advanced Practice Registered Nurses per 100,000 Population	Nurse Practitioners per 100,000 Population	FQHCs and RHCs per 100,000 Population	Short-term Hospital Beds per 100,000 Population
East South Central	11.91 (11.56, 12.26)	36.60 (34.02, 39.18)	70.44 (60.41, 80.47)	2.14 (1.70, 2.58)	1.24 (0.97, 1.51)	0.52 (0.36, 0.68)	115.51 (107.90, 123.13)	101.67 (95.70, 107.63)	21.21 (19.00, 23.42)	275.84 (203.19, 348.48)
Nonrural	11.14 (10.60, 11.68)	45.28 (39.56, 50.99)	116.71 (91.65, 141.78)	3.60 (2.65, 4.55)	2.44 (1.82, 3.05)	1.15 (0.76, 1.53)	119.79 (103.98, 135.60)	100.27 (88.74, 111.80)	9.00 (6.99, 11.00)	199.50 (161.68, 237.32)
RUCC 1	10.49 (9.52, 11.46)	42.04 (33.51, 50.57)	103.93 (60.18, 147.68)	2.57 (1.29, 3.85)	2.03 (1.16, 2.90)	0.83 (0.22, 1.45)	102.89 (78.28, 127.49)	90.05 (71.83, 108.26)	7.73 (4.86, 10.60)	153.47 (101.06, 205.87)
RUCC 2	11.33 (10.44, 12.23)	50.21 (40.52, 59.90)	140.62 (93.73, 187.51)	4.86 (2.86, 6.85)	2.82 (1.67, 3.98)	1.52 (0.74, 2.29)	133.87 (103.57, 164.17)	110.17 (87.87, 132.46)	7.78 (4.78, 10.78)	215.71 (144.01, 287.40)
RUCC 3	11.67 (10.71, 12.63)	43.31 (30.95, 55.68)	103.79 (62.80, 144.78)	3.34 (1.73, 4.95)	2.47 (1.23, 3.71)	1.08 (0.45, 1.71)	123.07 (94.72, 151.42)	100.65 (80.42, 120.88)	11.88 (7.14, 16.62)	234.15 (158.92, 309.39)
Rural	12.31 (11.86, 12.75)	32.17 (29.74, 34.61)	46.82 (40.31, 53.34)	1.39 (0.97, 1.81)	0.63 (0.40, 0.86)	0.21 (0.08, 0.33)	113.33 (105.06, 121.60)	102.38 (95.49, 109.27)	27.44 (24.56, 30.33)	314.80 (206.83, 422.76)
RUCC 4	13.07 (11.77, 14.37)	43.30 (36.78, 49.81)	85.33 (63.69, 106.97)	3.01 (1.87, 4.15)	1.38 (0.49, 2.27)	0.51 (-0.04, 1.07)	119.83 (94.01, 145.65)	101.12 (78.33, 123.92)	9.15 (6.61, 11.69)	234.15 (139.08, 329.22)
RUCC 5	12.31 (10.02, 14.59)	61.81 (46.95, 76.67)	162.84 (111.71, 213.98)	8.22 (5.53, 10.91)	4.78 (2.39, 7.16)	1.82 (0.50, 3.13)	224.92 (157.45, 292.39)	180.13 (130.64, 229.63)	14.66 (8.86, 20.47)	441.27 (271.48, 611.06)
RUCC 6	12.49 (11.67, 13.31)	31.78 (28.15, 35.41)	39.36 (32.33, 46.40)	0.69 (0.11, 1.27)	0.31 (0.04, 0.58)	0.00 (...)	102.76 (93.49, 112.03)	93.50 (85.50, 101.50)	19.85 (16.77, 22.94)	205.33 (160.35, 250.30)
RUCC 7	12.06 (10.98, 13.13)	39.40 (34.48, 44.32)	61.75 (46.68, 76.82)	2.05 (0.86, 3.25)	0.84 (0.28, 1.39)	0.15 (-0.06, 0.36)	138.10 (118.25, 157.95)	121.75 (105.14, 138.36)	31.59 (24.67, 38.51)	428.41 (348.76, 508.05)

U.S. Census Division & Rural Designation	Proportion Under Age 65 Without Health Insurance	PCPs per 100,000 Population	Specialists per 100,000 Population	CVD Specialists per 100,000 Population	Gastroenterology Specialists per 100,000 Population	Neurological Surgery Specialists per 100,000 Population	Advanced Practice Registered Nurses per 100,000 Population	Nurse Practitioners per 100,000 Population	FQHCs and RHCs per 100,000 Population	Short-term Hospital Beds per 100,000 Population
RUCC 8	13.28 (12.33, 14.24)	19.72 (14.98, 24.46)	17.89 (12.47, 23.31)	0.19 (-0.20, 0.58)	0.00 (...)	0.00 (...)	81.42 (66.48, 96.36)	80.26 (65.42, 95.10)	31.64 (25.12, 38.17)	504.86 (-137.15, 1,146.86)
RUCC 9	11.09 (10.00, 12.18)	22.38 (17.73, 27.04)	18.74 (12.98, 24.51)	0.27 (-0.12, 0.65)	0.00 (...)	0.23 (-0.23, 0.69)	95.99 (79.73, 112.25)	92.57 (76.83, 108.31)	42.33 (33.50, 51.17)	182.05 (90.52, 273.57)
West South Central	17.91 (17.37, 18.45)	34.26 (31.87, 36.65)	53.62 (46.13, 61.11)	1.39 (1.14, 1.65)	0.89 (0.70, 1.08)	0.43 (0.31, 0.54)	72.73 (68.19, 77.28)	63.35 (59.53, 67.17)	18.09 (16.27, 19.91)	196.48 (176.24, 216.72)
Nonrural	15.81 (14.96, 16.67)	41.05 (36.37, 45.74)	103.41 (84.27, 122.54)	2.75 (2.17, 3.34)	2.20 (1.74, 2.66)	1.10 (0.81, 1.38)	83.99 (74.63, 93.36)	70.17 (63.01, 77.33)	8.47 (6.65, 10.28)	161.93 (134.71, 189.15)
RUCC 1	16.40 (15.12, 17.68)	43.00 (35.87, 50.13)	124.89 (86.50, 163.28)	2.93 (1.86, 3.99)	2.26 (1.50, 3.02)	1.14 (0.69, 1.59)	73.96 (62.84, 85.09)	62.06 (54.29, 69.84)	4.48 (3.07, 5.90)	112.91 (84.80, 141.01)
RUCC 2	15.61 (14.00, 17.23)	39.21 (31.34, 47.09)	92.44 (60.84, 124.05)	2.29 (1.36, 3.22)	1.77 (1.05, 2.49)	1.06 (0.51, 1.60)	83.09 (67.59, 98.59)	70.19 (58.02, 82.37)	10.17 (6.52, 13.83)	158.63 (112.40, 204.86)
RUCC 3	15.39 (13.91, 16.86)	41.46 (31.36, 51.56)	93.54 (66.38, 120.70)	3.25 (2.12, 4.39)	2.79 (1.78, 3.80)	1.11 (0.65, 1.57)	97.86 (74.97, 120.75)	80.23 (62.71, 97.74)	10.79 (7.43, 14.16)	227.96 (164.02, 291.90)
Rural	18.94 (18.28, 19.61)	30.92 (28.25, 33.59)	29.12 (25.23, 33.01)	0.72 (0.51, 0.94)	0.24 (0.12, 0.37)	0.09 (0.02, 0.17)	67.19 (62.29, 72.10)	59.99 (55.53, 64.45)	22.83 (20.42, 25.24)	213.49 (186.52, 240.45)
RUCC 4	18.56 (16.08, 21.04)	38.47 (32.42, 44.51)	64.41 (48.45, 80.36)	2.58 (1.46, 3.69)	1.17 (0.42, 1.92)	0.12 (-0.05, 0.28)	79.37 (66.08, 92.67)	67.93 (57.13, 78.73)	10.33 (6.70, 13.97)	224.08 (163.43, 284.73)
RUCC 5	19.18 (15.92, 22.43)	40.17 (30.75, 49.60)	94.59 (67.18, 122.01)	4.56 (2.98, 6.14)	1.06 (0.23, 1.88)	0.89 (-0.57, 2.34)	88.67 (67.62, 109.72)	70.25 (53.19, 87.31)	7.45 (5.28, 9.61)	334.98 (230.21, 439.74)

U.S. Census Division & Rural Designation	Proportion Under Age 65 Without Health Insurance	PCPs per 100,000 Population	Specialists per 100,000 Population	CVD Specialists per 100,000 Population	Gastroenterology Specialists per 100,000 Population	Neurological Surgery Specialists per 100,000 Population	Advanced Practice Registered Nurses per 100,000 Population	Nurse Practitioners per 100,000 Population	FQHCs and RHCs per 100,000 Population	Short-term Hospital Beds per 100,000 Population
RUCC 6	18.42 (17.40, 19.44)	31.02 (27.79, 34.25)	26.27 (22.28, 30.25)	0.62 (0.30, 0.94)	0.10 (-0.02, 0.22)	0.03 (-0.03, 0.08)	63.31 (57.64, 68.98)	55.84 (50.64, 61.04)	18.29 (16.01, 20.57)	194.55 (166.98, 222.13)
RUCC 7	19.14 (17.59, 20.69)	39.01 (32.33, 45.70)	31.94 (22.10, 41.78)	0.49 (0.06, 0.91)	0.32 (-0.05, 0.69)	0.09 (-0.04, 0.23)	75.75 (64.92, 86.57)	66.32 (56.97, 75.67)	21.67 (18.33, 25.02)	212.97 (157.77, 268.17)
RUCC 8	18.60 (16.76, 20.44)	17.60 (6.14, 29.06)	10.81 (4.88, 16.74)	0.00 (...)	0.00 (...)	0.00 (...)	54.79 (40.84, 68.74)	53.49 (39.24, 67.74)	26.66 (18.63, 34.69)	239.15 (71.58, 406.71)
RUCC 9	20.08 (18.39, 21.77)	20.93 (14.36, 27.51)	11.08 (5.82, 16.34)	0.00 (...)	0.00 (...)	0.11 (-0.11, 0.32)	60.06 (42.42, 77.70)	57.80 (40.92, 74.67)	40.92 (31.19, 50.66)	211.81 (125.16, 298.45)
Mountain	12.82 (12.42, 13.21)	46.55 (42.67, 50.43)	77.94 (67.57, 88.31)	1.66 (1.16, 2.15)	0.81 (0.59, 1.04)	0.54 (0.35, 0.72)	73.66 (68.40, 78.92)	60.99 (56.26, 65.72)	21.56 (18.56, 24.55)	294.52 (244.11, 344.93)
Nonrural	11.23 (10.45, 12.02)	52.13 (44.56, 59.70)	135.93 (110.48, 161.38)	3.22 (2.53, 3.92)	2.37 (1.80, 2.93)	1.50 (1.09, 1.91)	84.14 (72.95, 95.33)	71.18 (61.54, 80.83)	6.23 (4.15, 8.31)	180.74 (125.68, 235.80)
RUCC 1	9.21 (7.45, 10.97)	46.30 (25.53, 67.06)	156.07 (77.56, 234.58)	2.87 (1.22, 4.51)	2.61 (1.14, 4.09)	1.49 (0.59, 2.39)	71.35 (42.56, 100.14)	61.31 (37.59, 85.03)	3.94 (1.16, 6.72)	117.83 (66.90, 168.76)
RUCC 2	11.04 (9.55, 12.52)	47.71 (35.20, 60.22)	117.15 (71.23, 163.07)	2.48 (1.27, 3.69)	1.81 (0.81, 2.81)	0.90 (0.41, 1.38)	69.05 (52.07, 86.02)	56.44 (42.49, 70.38)	6.31 (1.66, 10.97)	117.56 (75.83, 159.30)
RUCC 3	12.53 (11.63, 13.43)	59.14 (48.36, 69.93)	140.74 (112.68, 168.80)	4.05 (3.02, 5.08)	2.71 (1.92, 3.49)	2.02 (1.25, 2.79)	104.10 (88.51, 119.68)	89.23 (75.11, 103.34)	7.44 (4.45, 10.43)	269.50 (147.51, 391.50)
Rural	13.29 (12.85, 13.74)	44.87 (40.36, 49.38)	60.49 (50.37, 70.61)	1.18 (0.59, 1.78)	0.35 (0.15, 0.54)	0.25 (0.06, 0.43)	70.51 (64.57, 76.45)	57.92 (52.52, 63.32)	26.17 (22.54, 29.80)	328.76 (265.83, 391.69)



U.S. Census Division & Rural Designation	Proportion Under Age 65 Without Health Insurance	PCPs per 100,000 Population	Specialists per 100,000 Population	CVD Specialists per 100,000 Population	Gastroenterology Specialists per 100,000 Population	Neurological Surgery Specialists per 100,000 Population	Advanced Practice Registered Nurses per 100,000 Population	Nurse Practitioners per 100,000 Population	FQHCs and RHCs per 100,000 Population	Short-term Hospital Beds per 100,000 Population
RUCC 4	12.58 (11.38, 13.79)	50.70 (33.70, 67.69)	105.41 (41.34, 169.47)	2.05 (0.71, 3.40)	0.59 (-0.27, 1.46)	0.00 (...)	74.60 (58.17, 91.03)	59.55 (44.40, 74.69)	9.70 (5.57, 13.82)	104.92 (82.49, 127.35)
RUCC 5	12.40 (10.78, 14.01)	54.01 (43.18, 64.84)	135.42 (95.68, 175.16)	3.04 (2.04, 4.04)	1.90 (0.84, 2.97)	0.84 (-0.14, 1.81)	90.15 (74.83, 105.47)	70.71 (57.41, 84.02)	5.92 (4.36, 7.49)	209.60 (155.10, 264.09)
RUCC 6	13.71 (12.52, 14.90)	46.42 (36.72, 56.12)	52.32 (37.35, 67.30)	0.90 (-0.07, 1.86)	0.16 (-0.16, 0.48)	0.49 (-0.38, 1.36)	75.49 (64.59, 86.38)	59.47 (49.02, 69.91)	17.87 (14.02, 21.72)	267.82 (142.46, 393.17)
RUCC 7	13.49 (12.71, 14.27)	54.71 (47.85, 61.56)	70.40 (52.93, 87.88)	1.19 (0.53, 1.85)	0.41 (-0.06, 0.88)	0.32 (-0.03, 0.68)	82.11 (72.03, 92.20)	62.32 (53.36, 71.28)	19.88 (16.62, 23.14)	310.74 (244.71, 376.77)
RUCC 8	12.48 (11.48, 13.49)	22.19 (5.58, 38.79)	21.72 (10.65, 32.79)	0.00 (...)	0.00 (...)	0.00 (...)	54.69 (29.19, 80.19)	53.32 (27.36, 79.28)	31.03 (16.88, 45.18)	270.52 (111.95, 429.09)
RUCC 9	13.51 (12.51, 14.50)	35.06 (24.85, 45.27)	32.32 (16.09, 48.55)	0.95 (-0.95, 2.86)	0.00 (...)	0.00 (...)	52.31 (39.39, 65.23)	49.34 (36.73, 61.94)	46.93 (37.24, 56.62)	497.29 (304.91, 689.66)
Pacific	10.11 (9.57, 10.64)	63.57 (57.04, 70.09)	111.74 (95.33, 128.16)	2.30 (1.88, 2.72)	1.67 (1.33, 2.01)	0.67 (0.49, 0.85)	71.61 (65.01, 78.20)	61.52 (55.35, 67.69)	15.70 (12.10, 19.30)	181.29 (147.41, 215.18)
Nonrural	8.51 (8.02, 9.00)	68.84 (61.98, 75.69)	174.57 (147.78, 201.35)	4.00 (3.37, 4.63)	3.20 (2.68, 3.73)	1.40 (1.09, 1.72)	67.85 (60.82, 74.87)	57.19 (51.30, 63.09)	6.46 (4.99, 7.93)	163.69 (140.90, 186.49)
RUCC 1	7.32 (6.65, 7.99)	81.46 (66.68, 96.23)	244.66 (184.25, 305.06)	5.14 (3.70, 6.58)	4.32 (3.24, 5.41)	1.88 (1.20, 2.56)	65.08 (52.51, 77.65)	54.89 (44.23, 65.55)	3.49 (2.59, 4.40)	156.21 (125.58, 186.84)
RUCC 2	9.08 (8.19, 9.97)	64.75 (56.82, 72.69)	142.82 (113.62, 172.03)	3.37 (2.62, 4.13)	2.49 (1.87, 3.12)	1.04 (0.63, 1.44)	66.10 (52.91, 79.28)	54.87 (44.54, 65.19)	6.37 (4.77, 7.96)	162.51 (122.97, 202.05)

U.S. Census Division & Rural Designation	Proportion Under Age 65 Without Health Insurance	PCPs per 100,000 Population	Specialists per 100,000 Population	CVD Specialists per 100,000 Population	Gastroenterology Specialists per 100,000 Population	Neurological Surgery Specialists per 100,000 Population	Advanced Practice Registered Nurses per 100,000 Population	Nurse Practitioners per 100,000 Population	FQHCs and RHCs per 100,000 Population	Short-term Hospital Beds per 100,000 Population
RUCC 3	9.19 (8.33, 10.04)	59.96 (48.14, 71.79)	134.68 (99.47, 169.89)	3.45 (2.49, 4.42)	2.78 (1.87, 3.68)	1.29 (0.74, 1.84)	72.54 (60.32, 84.77)	62.01 (51.12, 72.90)	9.66 (5.72, 13.60)	172.71 (120.80, 224.61)
Rural	11.45 (10.64, 12.26)	59.05 (48.41, 69.70)	57.99 (45.95, 70.03)	0.85 (0.50, 1.21)	0.36 (0.14, 0.57)	0.04 (-0.02, 0.10)	74.83 (64.07, 85.58)	65.22 (54.89, 75.55)	23.60 (17.45, 29.76)	196.35 (136.14, 256.56)
RUCC 4	8.79 (7.87, 9.70)	47.08 (38.43, 55.72)	83.54 (60.81, 106.26)	2.02 (0.82, 3.22)	0.98 (0.06, 1.90)	0.00 (..)	67.87 (54.01, 81.73)	56.32 (44.77, 67.88)	13.73 (10.08, 17.37)	117.78 (77.39, 158.16)
RUCC 5	9.51 (7.46, 11.56)	73.42 (51.17, 95.68)	114.13 (86.99, 141.27)	1.34 (0.21, 2.48)	1.02 (0.16, 1.88)	0.40 (-0.23, 1.04)	86.25 (65.49, 107.01)	74.36 (57.46, 91.27)	13.90 (7.96, 19.85)	172.65 (133.34, 211.96)
RUCC 6	11.12 (10.11, 12.13)	56.27 (33.81, 78.72)	72.70 (35.54, 109.86)	0.84 (0.01, 1.67)	0.24 (-0.27, 0.75)	0.00 (..)	58.43 (38.83, 78.03)	48.21 (33.66, 62.76)	22.73 (16.78, 28.68)	182.25 (30.79, 333.72)
RUCC 7	11.64 (9.80, 13.48)	71.12 (48.74, 93.51)	71.83 (43.62, 100.04)	1.17 (0.08, 2.26)	0.27 (-0.29, 0.82)	0.00 (..)	88.52 (63.78, 113.26)	71.74 (49.77, 93.71)	15.86 (10.35, 21.37)	235.40 (161.44, 309.37)
RUCC 8	8.58 (7.03, 10.14)	23.80 (-0.65, 48.26)	26.92 (4.99, 48.84)	0.00 (..)	0.00 (..)	0.00 (..)	58.19 (16.66, 99.72)	56.26 (14.54, 97.99)	25.72 (8.41, 43.02)	379.01 (-184.79, 942.81)
RUCC 9	14.93 (13.03, 16.82)	65.08 (32.19, 97.97)	8.98 (1.66, 16.30)	0.00 (..)	0.00 (..)	0.00 (..)	81.18 (49.20, 113.16)	77.36 (44.36, 110.35)	39.71 (17.32, 62.10)	168.06 (42.13, 293.99)

Abbreviations: CVD, cardiovascular disease; FQHC, Federally Qualified Health Center; PCP, primary care physician; RHC, Rural Health Clinic; RUCC, Rural-Urban Continuum Codes

Note: Statistics presented are the mean and 95% confidence interval.

\* Denotes statistic that is based on data from fewer than five counties.

Sources: Health Resources and Services Administration (HRSA). 2021–2022 Area Health Resources Files (AHRF) County Level Data file. Accessed November 16, 2023.

<https://data.hrsa.gov/data/download>; United States Department of Agriculture (USDA) Economic Research Service. 2013 Rural-Urban Continuum Codes data file. Accessed August 3, 2023.  
<https://www.ers.usda.gov/data-products/rural-urban-continuum-codes/>

**Exhibit A13. Area Health Resources Files (AHRF) Health Care Characteristics by Geographic Division and Rural/Nonrural Designation Based on County-Level Rural-Urban Continuum Codes (RUCC)**

U.S. Census Division & Rural Designation	Proportion Under Age 65 Without Health Insurance	PCPs per 100,000 Population	Specialists per 100,000 Population	CVD Specialists per 100,000 Population	Gastroenterology Specialists per 100,000 Population	Neurological Surgery Specialists per 100,000 Population	Advanced Practice Registered Nurses per 100,000 Population	Nurse Practitioners per 100,000 Population	FQHCs and RHCs per 100,000 Population	Short-term Hospital Beds per 100,000 Population
National Total	11.94 (11.77, 12.12)	43.78 (42.57, 44.99)	84.73 (79.81, 89.64)	2.32 (2.15, 2.49)	1.41 (1.29, 1.53)	0.64 (0.55, 0.72)	88.64 (86.21, 91.07)	74.59 (72.71, 76.47)	17.19 (16.45, 17.93)	251.95 (237.19, 266.70)
New England	7.03 (6.27, 7.79)	79.88 (71.77, 87.98)	230.28 (179.08, 281.48)	6.86 (4.84, 8.89)	4.07 (2.95, 5.20)	1.34 (0.70, 1.99)	128.66 (111.01, 146.30)	105.22 (91.71, 118.72)	9.64 (6.94, 12.35)	184.90 (154.72, 215.09)
Nonrural	5.55 (4.75, 6.35)	84.82 (72.26, 97.39)	284.26 (210.96, 357.57)	9.14 (6.19, 12.10)	5.35 (3.97, 6.73)	1.95 (1.16, 2.74)	135.50 (110.17, 160.84)	111.46 (91.10, 131.81)	5.33 (3.15, 7.51)	181.94 (139.84, 224.03)
Rural	8.55 (7.43, 9.67)	74.78 (62.23, 85.34)	174.67 (104.57, 244.76)	4.51 (1.83, 7.20)	2.76 (1.01, 4.51)	0.72 (-0.31, 1.74)	121.60 (95.90, 147.31)	98.79 (80.27, 117.31)	14.09 (9.42, 18.76)	187.96 (142.33, 233.60)
Middle Atlantic	6.63 (6.30, 6.95)	53.27 (46.49, 60.05)	173.21 (125.62, 220.80)	6.03 (4.69, 7.37)	3.94 (2.74, 5.14)	1.58 (0.75, 2.42)	97.75 (79.62, 115.89)	76.42 (66.82, 86.02)	5.73 (4.15, 7.30)	252.32 (206.08, 298.55)
Nonrural	6.64 (6.19, 7.09)	63.31 (53.65, 72.97)	226.47 (154.97, 297.97)	7.90 (5.98, 9.82)	5.19 (3.40, 6.98)	2.18 (0.90, 3.46)	109.43 (81.99, 136.86)	84.46 (70.47, 98.44)	3.20 (2.49, 3.91)	249.54 (184.51, 314.57)
Rural	6.60 (6.19, 7.02)	35.43 (30.04, 40.81)	78.52 (55.47, 101.58)	2.71 (1.61, 3.81)	1.70 (0.96, 2.44)	0.52 (0.14, 0.89)	77.00 (64.84, 89.17)	62.13 (53.12, 71.14)	10.22 (6.22, 14.21)	257.25 (198.59, 315.91)
East North Central	8.26 (8.05, 8.48)	42.94 (40.19, 45.69)	85.84 (75.39, 96.28)	2.43 (2.06, 2.79)	1.33 (1.09, 1.57)	0.60 (0.46, 0.74)	84.88 (79.92, 89.85)	70.98 (67.20, 74.77)	11.31 (10.17, 12.44)	181.19 (163.61, 198.76)
Nonrural	7.61 (7.34, 7.88)	53.66 (48.64, 58.67)	139.15 (117.24, 161.07)	4.18 (3.50, 4.86)	2.51 (2.02, 3.01)	1.19 (0.90, 1.49)	97.39 (88.58, 106.20)	79.36 (72.96, 85.77)	5.51 (4.26, 6.75)	185.31 (164.26, 206.37)
Rural	8.70 (8.40, 8.99)	35.85 (32.99, 38.71)	50.56 (43.64, 57.48)	1.27 (0.92, 1.62)	0.54 (0.36, 0.73)	0.21 (0.10, 0.32)	76.61 (70.95, 82.27)	65.44 (60.88, 69.99)	15.14 (13.60, 16.68)	178.46 (152.68, 204.24)

U.S. Census Division & Rural Designation	Proportion Under Age 65 Without Health Insurance	PCPs per 100,000 Population	Specialists per 100,000 Population	CVD Specialists per 100,000 Population	Gastroenterology Specialists per 100,000 Population	Neurological Surgery Specialists per 100,000 Population	Advanced Practice Registered Nurses per 100,000 Population	Nurse Practitioners per 100,000 Population	FQHCs and RHCs per 100,000 Population	Short-term Hospital Beds per 100,000 Population
West North Central	10.63 (10.29, 10.96)	41.62 (38.55, 44.69)	51.06 (41.71, 60.41)	1.13 (0.76, 1.50)	0.62 (0.40, 0.84)	0.41 (0.23, 0.59)	86.36 (80.92, 91.79)	70.95 (66.65, 75.24)	25.40 (23.30, 27.49)	377.67 (335.05, 420.29)
Nonrural	8.84 (8.19, 9.49)	49.41 (42.87, 55.95)	128.75 (88.58, 168.93)	3.82 (2.21, 5.43)	2.57 (1.57, 3.57)	1.50 (0.72, 2.28)	97.41 (79.36, 115.45)	75.11 (62.86, 87.36)	9.12 (7.18, 11.07)	218.28 (176.39, 260.16)
Rural	11.09 (10.72, 11.47)	39.59 (36.12, 43.05)	30.76 (26.82, 34.70)	0.42 (0.26, 0.58)	0.11 (0.05, 0.17)	0.13 (0.05, 0.20)	83.47 (78.48, 88.46)	69.86 (65.46, 74.26)	29.65 (27.18, 32.11)	419.31 (367.24, 471.37)
South Atlantic	13.33 (13.00, 13.67)	45.25 (42.45, 48.06)	109.41 (95.61, 123.22)	3.22 (2.77, 3.68)	2.10 (1.77, 2.44)	0.86 (0.58, 1.13)	95.02 (88.19, 101.84)	79.60 (74.28, 84.91)	11.87 (10.59, 13.15)	209.21 (181.04, 237.39)
Nonrural	12.39 (11.95, 12.82)	54.83 (50.43, 59.23)	156.91 (132.90, 180.92)	4.47 (3.79, 5.15)	3.24 (2.68, 3.81)	1.50 (1.00, 1.99)	105.19 (94.24, 116.15)	86.09 (77.72, 94.45)	6.09 (4.97, 7.21)	193.59 (165.58, 221.61)
Rural	14.42 (13.92, 14.92)	34.28 (31.49, 37.08)	54.98 (48.19, 61.78)	1.80 (1.25, 2.34)	0.80 (0.58, 1.01)	0.12 (0.03, 0.22)	83.36 (75.97, 90.75)	72.17 (66.05, 78.28)	18.49 (16.31, 20.68)	227.11 (175.73, 278.49)
East South Central	11.91 (11.56, 12.26)	36.60 (34.02, 39.18)	70.44 (60.41, 80.47)	2.14 (1.70, 2.58)	1.24 (0.97, 1.51)	0.52 (0.36, 0.68)	115.51 (107.90, 123.13)	101.67 (95.70, 107.63)	21.21 (19.00, 23.42)	275.84 (203.19, 348.48)
Nonrural	11.14 (10.60, 11.68)	45.28 (39.56, 50.99)	116.71 (91.65, 141.78)	3.60 (2.65, 4.55)	2.44 (1.82, 3.05)	1.15 (0.76, 1.53)	119.79 (103.98, 135.60)	100.27 (88.74, 111.80)	9.00 (6.99, 11.00)	199.50 (161.68, 237.32)
Rural	12.31 (11.86, 12.75)	32.17 (29.74, 34.61)	46.82 (40.31, 53.34)	1.39 (0.97, 1.81)	0.63 (0.40, 0.86)	0.21 (0.08, 0.33)	113.33 (105.06, 121.60)	102.38 (95.49, 109.27)	27.44 (24.56, 30.33)	314.80 (206.83, 422.76)
West South Central	17.91 (17.37, 18.45)	34.26 (31.87, 36.65)	53.62 (46.13, 61.11)	1.39 (1.14, 1.65)	0.89 (0.70, 1.08)	0.43 (0.31, 0.54)	72.73 (68.19, 77.28)	63.35 (59.53, 67.17)	18.09 (16.27, 19.91)	196.48 (176.24, 216.72)
Nonrural	15.81 (14.96, 16.67)	41.05 (36.37, 45.74)	103.41 (84.27, 122.54)	2.75 (2.17, 3.34)	2.20 (1.74, 2.66)	1.10 (0.81, 1.38)	83.99 (74.63, 93.36)	70.17 (63.01, 77.33)	8.47 (6.65, 10.28)	161.93 (134.71, 189.15)

U.S. Census Division & Rural Designation	Proportion Under Age 65 Without Health Insurance	PCPs per 100,000 Population	Specialists per 100,000 Population	CVD Specialists per 100,000 Population	Gastroenterology Specialists per 100,000 Population	Neurological Surgery Specialists per 100,000 Population	Advanced Practice Registered Nurses per 100,000 Population	Nurse Practitioners per 100,000 Population	FQHCs and RHCs per 100,000 Population	Short-term Hospital Beds per 100,000 Population
Rural	18.94 (18.28, 19.61)	30.92 (28.25, 33.59)	29.12 (25.23, 33.01)	0.72 (0.51, 0.94)	0.24 (0.12, 0.37)	0.09 (0.02, 0.17)	67.19 (62.29, 72.10)	59.99 (55.53, 64.45)	22.83 (20.42, 25.24)	213.49 (186.52, 240.45)
Mountain	12.82 (12.42, 13.21)	46.55 (42.67, 50.43)	77.94 (67.57, 88.31)	1.66 (1.16, 2.15)	0.81 (0.59, 1.04)	0.54 (0.35, 0.72)	73.66 (68.40, 78.92)	60.99 (56.26, 65.72)	21.56 (18.56, 24.55)	294.52 (244.11, 344.93)
Nonrural	11.23 (10.45, 12.02)	52.13 (44.56, 59.70)	135.93 (110.48, 161.38)	3.22 (2.53, 3.92)	2.37 (1.80, 2.93)	1.50 (1.09, 1.91)	84.14 (72.95, 95.33)	71.18 (61.54, 80.83)	6.23 (4.15, 8.31)	180.74 (125.68, 235.80)
Rural	13.29 (12.85, 13.74)	44.87 (40.36, 49.38)	60.49 (50.37, 70.61)	1.18 (0.59, 1.78)	0.35 (0.15, 0.54)	0.25 (0.06, 0.43)	70.51 (64.57, 76.45)	57.92 (52.52, 63.32)	26.17 (22.54, 29.8)	328.76 (265.83, 391.69)
Pacific	10.11 (9.57, 10.64)	63.57 (57.04, 70.09)	111.74 (95.33, 128.16)	2.30 (1.88, 2.72)	1.67 (1.33, 2.01)	0.67 (0.49, 0.85)	71.61 (65.01, 78.20)	61.52 (55.35, 67.69)	15.70 (12.10, 19.30)	181.29 (147.41, 215.18)
Nonrural	8.51 (8.02, 9.00)	68.84 (61.98, 75.69)	174.57 (147.78, 201.35)	4.00 (3.37, 4.63)	3.20 (2.68, 3.73)	1.40 (1.09, 1.72)	67.85 (60.82, 74.87)	57.19 (51.30, 63.09)	6.46 (4.99, 7.93)	163.69 (140.90, 186.49)
Rural	11.45 (10.64, 12.26)	59.05 (48.41, 69.70)	57.99 (45.95, 70.03)	0.85 (0.50, 1.21)	0.36 (0.14, 0.57)	0.04 (-0.02, 0.10)	74.83 (64.07, 85.58)	65.22 (54.89, 75.55)	23.60 (17.45, 29.76)	196.35 (136.14, 256.56)

Abbreviations: CVD, cardiovascular disease; FQHC, Federally Qualified Health Center; PCP, primary care physician; RHC, Rural Health Clinic

Note: Statistics presented are the mean and 95% confidence interval.

Source: Health Resources and Services Administration (HRSA). 2021–2022 Area Health Resources Files (AHRF) County Level Data file. Accessed November 16, 2023.

<https://data.hrsa.gov/data/download/>; United States Department of Agriculture (USDA) Economic Research Service. 2013 Rural-Urban Continuum Codes data file. Accessed August 3, 2023.

<https://www.ers.usda.gov/data-products/rural-urban-continuum-codes/>

## Appendix B: Secondary Analyses of ZIP Code-Level Rural Concordance

This appendix provides the results of a secondary analysis to explore agreement in definitions of rurality—specifically rural isolation or remoteness—between two datasets that use ZIP Code as the geographic unit: Rural-Urban Commuting Area (RUCA) Codes and Frontier and Remote (FAR) Area Codes.

### Data and Methods

#### Data

Two ZIP Code-level urban/rural classification systems were used for this analysis: RUCA and FAR. The RUCA codes classify ZIP Codes based on varying degrees of urbanicity/rurality, and the FAR classify ZIP Codes based on degree of rural remoteness. Both systems use their own independent methodology and assumptions. These systems and specific code values are described below.

In addition, the County-ZIP version of the Housing and Urban Development (HUD) United States Postal Service (USPS) ZIP Code Crosswalk Files was used, along with the county-level 2020 U.S. census population from the Area Health Resources Files (AHRF)<sup>xxx</sup> to determine the proportion of the population residing in each ZIP Code. The ZIP-County HUD USPS ZIP Code Crosswalk File is described below.

#### *Rural-Urban Commuting Area (RUCA) Codes, 2010*

The RUCA codes, from the USDA ERS, were first created in 1990 and are updated every 10 years.<sup>xxxi</sup> Originally developed for U.S. census tracts, the most recent release of RUCA codes are based on the 2010 census data. The 2010 RUCA codes also include a set of RUCA codes for ZIP Codes that are created using the RUCA values for the ZIP Code area's constituent census tracts. Census tracts and ZIP Codes are assigned to one of 10 categories based on the area's level of urbanization, population density, and daily commuting patterns. The RUCA codes and descriptions are provided in Exhibit B1, along with whether each code was designated as rural and/or as remote (rurally isolated) for this analysis.<sup>xxxii</sup> Only primary ZIP Code RUCA codes were used for this analysis; secondary ZIP Code RUCA codes were not considered.

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<sup>xxx</sup> The AHRF data are described in the main Data section of this report.

<sup>xxxi</sup> United States Department of Agriculture (USDA) Economic Research Service (ERS). Rural-Urban Commuting Area Codes. Updated September 25, 2023. Accessed August 14, 2024. <https://www.ers.usda.gov/data-products/rural-urban-commuting-area-codes/>

<sup>xxxii</sup> United States Department of Agriculture (USDA) Economic Research Service (ERS). Documentation. Updated September 25, 2023. Accessed August 14, 2024. <https://www.ers.usda.gov/data-products/rural-urban-commuting-area-codes/documentation/>

### Exhibit B1. Rural-Urban Commuting Area (RUCA) Codes

RUCA	Description	Rural?	Remote?
1	Metropolitan area core: primary flow within an urbanized area (UA)	No	No
2	Metropolitan area high commuting: primary flow 30% or more to a UA	No	No
3	Metropolitan area low commuting: primary flow 10% - 30% to a UA	No	No
4	Micropolitan area core: primary flow within an urban cluster of 10,000 to 49,999 (large UC)	Yes	No
5	Micropolitan high commuting: primary flow 30% or more to a large UC	Yes	No
6	Micropolitan low commuting: primary flow 10% to 30% to a large UC	Yes	No
7	Small town core: primary flow within an urban cluster of 2,500 to 9,999 (small UC)	Yes	No
8	Small town high commuting: primary flow 30% or more to a small UC	Yes	No
9	Small town low commuting: primary flow 10% to 30% to a small UC	Yes	No
10	Rural area: primary flow to a tract outside a UA or UC	Yes	Yes
99	Not coded: Census tract has zero population and no rural-urban identifier information	N/A	N/A

### Frontier and Remote (FAR) Area Codes, 2010

The FAR area codes, from the USDA ERS, were developed in 2000 and are updated every 10 years.<sup>xxxiii</sup> ZIP Codes are classified as either not meeting or meeting (coded as 0/1) the criteria for each of four levels of remoteness, progressing from least remote (FAR Level 1) to most remote (FAR Level 4), based on area population size and vehicular travel time to the nearest urban areas of varying size.<sup>xxxiv</sup> A ZIP Code that meets a higher level of remoteness will, by definition, also meet all lower levels of remoteness. ZIP Codes that are not considered remote (i.e., do not meet the criteria for FAR Level 1) are coded as “0” for all four FAR levels. The FAR area codes and descriptions are provided in Exhibit B2, along with whether each code was designated as remote (rurally isolated) for the purpose of this analysis. By the nature of this classification system as focused on remote areas, any ZIP Code that met the criteria for at least FAR Level 1 was considered remote for this analysis. ZIP Codes that did not meet the criteria for FAR Level 1 were considered not remote for this analysis. Because the FAR area codes classify ZIP Codes based only on degree of remoteness, this system cannot be used to determine an area’s urbanicity/rurality generally.

<sup>xxxiii</sup> United States Department of Agriculture (USDA) Economic Research Service (ERS). Frontier and Remote Area Codes. Updated March 7, 2024. Accessed August 14, 2024. <https://www.ers.usda.gov/data-products/frontier-and-remote-area-codes/>

<sup>xxxiv</sup> United States Department of Agriculture (USDA) Economic Research Service (ERS). Documentation. Updated March 7, 2024. Accessed August 14, 2024. <https://www.ers.usda.gov/data-products/frontier-and-remote-area-codes/documentation/>



Exhibit B2. Frontier and Remote (FAR) Area Codes

FAR Area Code	Description	Remote?
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.	Yes
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.	Yes
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.	Yes
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.	Yes

County-ZIP Housing and Urban Development (HUD) United States Postal Service (USPS) ZIP Code Crosswalk File, 2023 Quarter 2

The ZIP-County HUD USPS ZIP Code Crosswalk File, from the HUD Office of Policy Development and Research (PD&R), is updated for each quarter based on the most currently available decennial census geographies.<sup>xxxv,xxxvi</sup> The ZIP-County HUD Crosswalk File provides for each county the ZIP Codes that are part of that county and the proportion of residential, business, other, and total addresses within the county that are from each constituent ZIP Code. Post Office (PO) boxes are not included.

Methods

This analysis included ZIP Codes that were in common across all three data source files: RUCA, FAR, and County-ZIP HUD Crosswalk. A total of 41,013 ZIP Codes were identified across the three data sources with 29,623 ZIP Codes shared among all three sources. Based on examination of a sample of the 11,390 ZIP Codes that were not shared across the three sources, the most common reasons were that the ZIP Codes were for PO Boxes, for unique entities (such as a government building or business), outdated (currently inactive), or new (recently created). Both the RUCA and FAR files are based on 2010 data, whereas a more current version of the County-ZIP HUD Crosswalk File was used to reflect more current County-ZIP configurations.

The population in each rural ZIP Code was calculated using the county-level 2020 U.S. census population from the 2021–2022 AHRF data and the proportion of each county’s residential addresses (residential ratio) that fell within the specific ZIP Code based on the County-ZIP HUD Crosswalk File. For example, ZIP Code X falls within County A and County B. ZIP Code X constitutes 30 percent of County A’s residential addresses and 10 percent of County B’s residential addresses. Assuming

<sup>xxxv</sup> U.S. Department of Housing and Urban Development (HUD) Office of Policy Development and Research (PD&R). HUD USPS ZIP Code Crosswalk Files. Accessed September 5, 2024. [https://www.huduser.gov/portal/datasets/usps\\_crosswalk.html](https://www.huduser.gov/portal/datasets/usps_crosswalk.html)

<sup>xxxvi</sup> U.S. Department of Housing and Urban Development (HUD) Office of Policy Development and Research (PD&R). USPS Dataset API Documentation. Accessed September 5, 2024. <https://www.huduser.gov/portal/dataset/uspszip-api.html>



100,000 population in County A and 200,000 population in County B, ZIP Code X’s population would be estimated at 50,000  $([0.30 \times 100,000] + [0.10 \times 200,000])$ .

Results

Exhibit B3 summarizes the number of ZIP Codes designated as rural and the total U.S. population in rural ZIP Codes based on the RUCA codes. Rural designation is not available for the FAR because the FAR identifies only ZIP Codes that are remote or rurally isolated and not rural in general.

Exhibit B3. Rural ZIP Codes and Population Based on Rural Designation Using Rural-Urban Commuting Area (RUCA) Codes

Urban/Rural Classification System	Zip Codes		Population	
	Number of ZIP Codes Designated as Rural	Percent of U.S. ZIP Codes (29,623*)	Total U.S. Population Residing in Rural ZIP Codes	Percent of Total U.S. Population (331,449,281)
RUCA	13,189	44.52	50,973,334	15.38

Note: Population values are based on the 2020 U.S. census population.  
\* The analytic sample of 29,623 ZIP codes encompass 97% of the total U.S. population of 331,449,281.

Sources: United States Department of Agriculture (USDA) Economic Research Service (ERS). Rural-Urban Commuting Area Codes. Accessed August 14, 2024. <https://www.ers.usda.gov/data-products/rural-urban-commuting-area-codes/>; Health Resources and Services Administration (HRSA). 2021–2022 Area Health Resources Files (AHRF) County Level Data file. Accessed November 16, 2023. <https://data.hrsa.gov/data/download>

Exhibit B4 summarizes the number of ZIP Codes designated as remote (rurally isolated) and the total U.S. population in remote ZIP Codes based on two urban/rural classification systems.

Exhibit B4. Remote ZIP Codes and Population Based on Remote (Rurally Isolated) Designation Using Two ZIP Code-Level Urban/Rural Classification Systems

Urban/Rural Classification System	ZIP Codes		Population	
	Number of ZIP Codes Designated as Remote	Percent of U.S. ZIP Codes (29,623*)	Total U.S. Population Residing in Remote ZIP Codes	Percent of Total U.S. Population (331,449,281)
RUCA	5,761	19.45	8,897,815	2.68
FAR – Level 1	5,048	17.04	11,745,629	3.54
FAR – Level 2	3,908	13.19	7,133,509	2.15
FAR – Level 3	2,963	10.00	4,073,830	1.23
FAR – Level 4	2,391	8.07	2,087,873	0.63

Note: Population values are based on the 2020 U.S. census population.  
\* The analytic sample of 29,623 ZIP Codes encompasses 97% of the total U.S. population of 331,449,281.  
Sources: United States Department of Agriculture (USDA) Economic Research Service (ERS). Rural-Urban Commuting Area Codes. Accessed August 14, 2024. <https://www.ers.usda.gov/data-products/rural-urban-commuting-area-codes/>; United States Department of Agriculture (USDA) Economic Research Service (ERS). Frontier and Remote Area Codes. Accessed August 14, 2024. <https://www.ers.usda.gov/data-products/frontier-and-remote-area-codes/>; Health Resources and Services Administration (HRSA). 2021–2022 Area Health Resources Files (AHRF) County Level Data file. Accessed November 16, 2023. <https://data.hrsa.gov/data/download>

Exhibit B5 summarizes the level of agreement in designating ZIP Codes as remote (rurally isolated) versus nonremote between the two urban/rural classification systems.

Exhibit B5. Remote (Rurally Isolated) Agreement Between Two ZIP Code-Level Data Sources

Number of Sources	Number of ZIP Codes	Percent of U.S. ZIP Codes (29,623)
Both classification systems agree on nonremote designation for the ZIP Code.	21,665	73.14
One classification system designates the ZIP Code as remote, and the other system designates the ZIP Code as nonremote.	5,107	17.24
Both classification systems agree on remote designation for the ZIP Code.	2,851	9.62
Total	29,623	100.00

Source: United States Department of Agriculture (USDA) Economic Research Service (ERS). Rural-Urban Commuting Area Codes. Accessed August 14, 2024. <https://www.ers.usda.gov/data-products/rural-urban-commuting-area-codes/>; United States Department of Agriculture (USDA) Economic Research Service (ERS). Frontier and Remote Area Codes. Accessed August 14, 2024. <https://www.ers.usda.gov/data-products/frontier-and-remote-area-codes/>

# Appendix C: File Layouts for Analytic Files

This appendix provides file layouts for the Excel analytic file that provides the rural and remote designation flags for each county or ZIP Code and urban/rural classification system used for this analysis. The Excel file is available as a separate supplemental material to this report.

## **Exhibit C1. County-Level Excel File Columns**

- Combined state and county FIPS code
- County name
- State name
- RUCC code - Rural-Urban Continuum Codes (RUCC), 2013
- RUCC rural flag
- RUCC large rural flag
- RUCC small rural flag
- CBSA code - Core Based Statistical Areas (CBSAs), July 2023
- CBSA rural flag
- NCHS code - National Center for Health Statistics (NCHS) Urban-Rural Classification Scheme for Counties, 2013
- NCHS rural flag
- UIC code - Urban Influence Codes (UIC), 2013
- UIC rural flag
- Population (2020)

## **Exhibit C2. ZIP Code-Level Excel File Columns**

- ZIP Code
- State name
- RUCA code - Rural-Urban Commuting Area (RUCA) Codes, 2010
- RUCA rural flag
- RUCA rural isolation flag
- FAR1 flag - Frontier and Remote (FAR) Area Codes, 2010
- FAR2 flag
- FAR3 flag
- FAR4 flag
- Any FAR flag
- Population (2020)