

Defining 'Rural' and Utilizing VA Data Sources to Improve Rural Veterans Access to Care



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VA Office of Rural Health (ORH)



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March 12, 2024

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U.S. Department of Veterans Affairs
Veterans Health Administration
Office of Rural Health

Peter J. Kaboli, MD, MS

▶ Executive Director

VA Office of Rural Health

Iowa City VA Medical Center

▶ RESEARCH/PROJECT FOCI

- ▶ Rural Health
- ▶ Health Care Access and Quality
- ▶ Vulnerable Veteran populations



Dr. Peter Kaboli
ORH Executive Director



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Zachary Burningham, PhD, MPH

▶ Investigator

*Informatics, Decision-Enhancement
and Analytic Sciences (IDEAS) Center*
Veterans Rural Health Resource Center-SLC
Salt Lake City VA Medical Center



Dr. Zach Burningham
Investigator

▶ RESEARCH/PROJECT FOCI

- ▶ User Interface Design
- ▶ Usability Testing
- ▶ Optimization of backend data architecture



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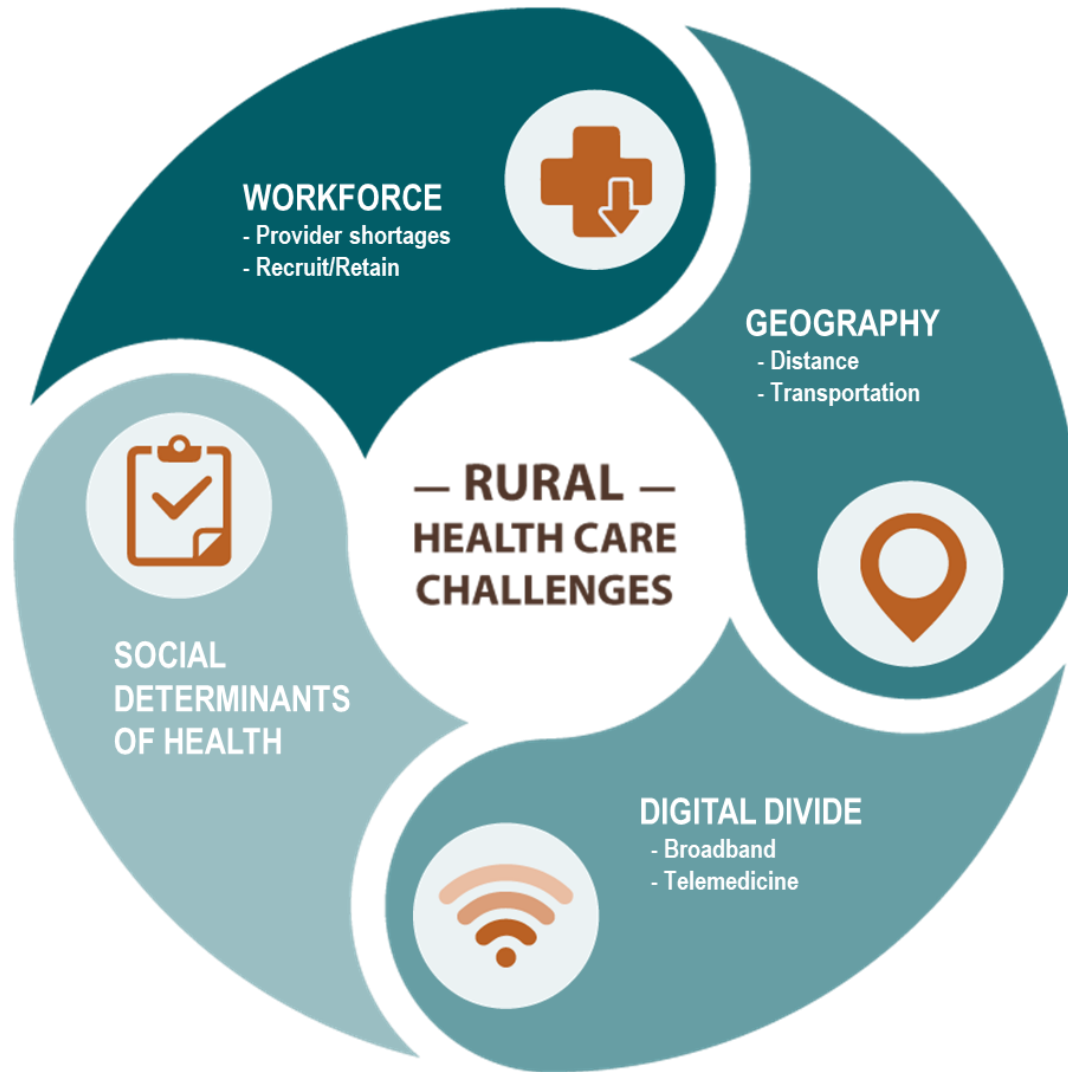
VA

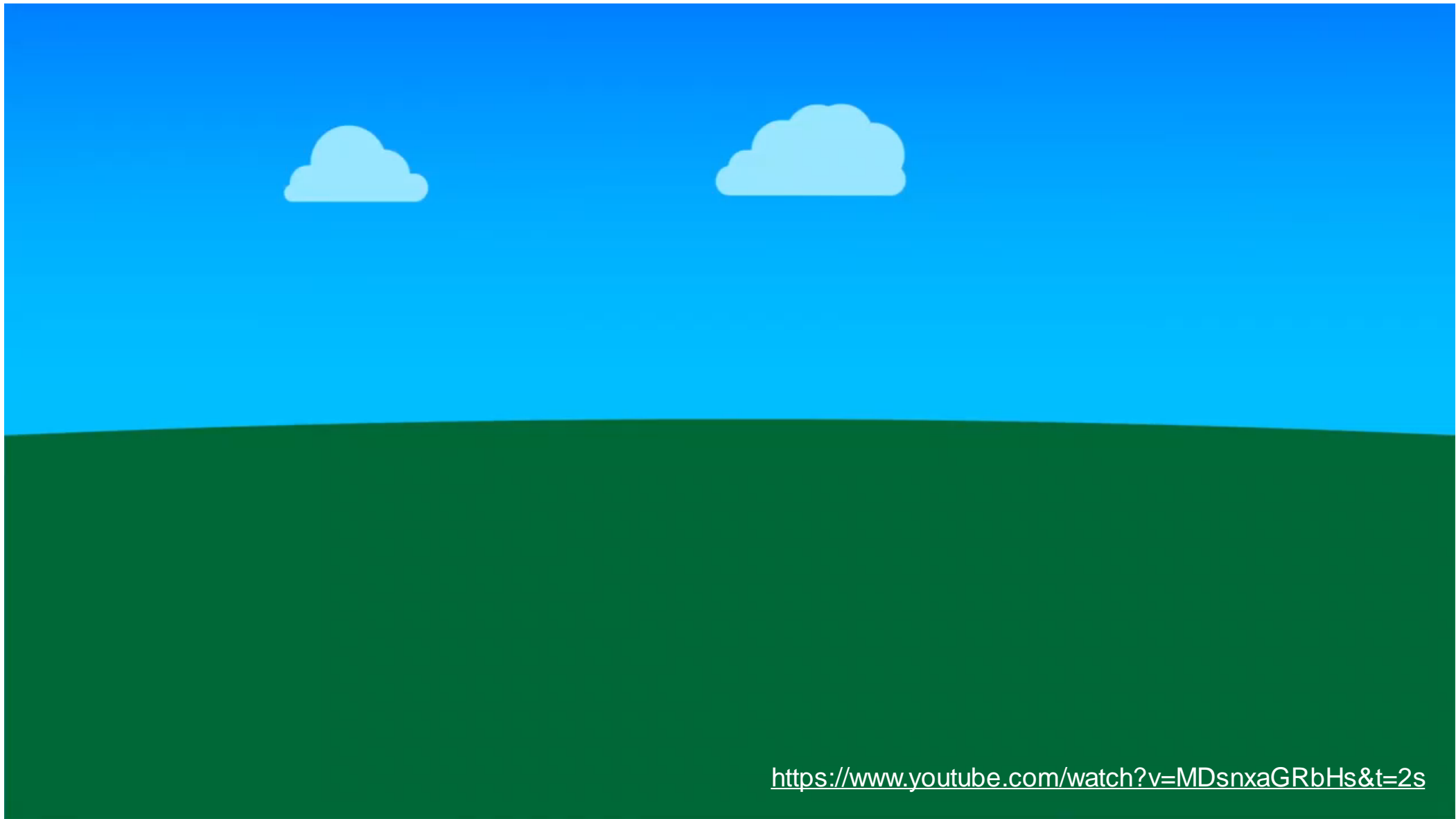


Outline

- ▶ What is Rural?
 - ▶ Describe the history of rural designations and variability
 - ▶ How VA Office of Rural Health selected our definition
 - ▶ Why it matters
- ▶ How to use VA data sources to identify rural?
 - ▶ RUCA (Rural Urban Commuting Area) Datasets
 - ▶ VA Rurality Data Sources
 - ▶ VA Rurality Measurement Tools
- ▶ Discussion







<https://www.youtube.com/watch?v=MDsnxaGRbHs&t=2s>



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U.S. Department of Veterans Affairs
Veterans Health Administration
Office of Rural Health

Defining “Rural” for Veterans’ Health Care Planning

2010

Alan N. West, PhD;¹ Richard E. Lee, MPH;¹ Michael D. Shambaugh-Miller, PhD;² Byron D. Bair, MD;³
Keith J. Mueller, PhD;² Ryan S. Lilly, MPA;¹ Peter J. Kaboli, MD;⁴ & Kara Hawthorne, MSW⁵

- ▶ Original ORH definition established ~2008 after creation of office
 - ▶ 62.1% Urban: census tracks in Urbanized Areas
 - ▶ 1.5% Highly Rural: <7 residents per square mile
 - ▶ 36.4% Rural: everything else
- ▶ Definition “over-estimates” rural Veterans (37.9%)
- ▶ Historically “rural” categorizations were used for directing funds





How to Define Rurality

Veterans who live in a census tract with a RUCA code of:



1.0, 1.1

are considered urban.

~70%



2 - 9, 10.1 - 10.3

are considered rural.

27%



10.0

are considered highly rural.

~3%

▶ 2014 Definition change to use Rural-Urban Commuting Area (RUCA)

- ▶ 10 primary/21 secondary codes at Census Tract Level
- ▶ Allows for separation of Insular Islands
- ▶ Reduced the proportion Rural from ~38% to ~30%

Source: [ORH Fact Sheet: How to Define Rurality \(Jan 2024\)](#)

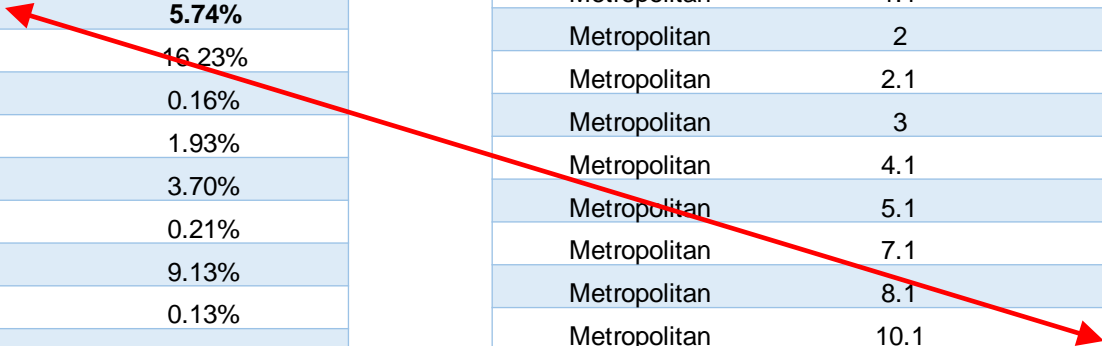


VHA RUCA Utilization

Definition	RUCA Code, 2010	Tract % Population	Tract % Land Area
Urban	1	71.80%	5.59%
Urban	1.1	1.44%	0.15%
Urban Total		73.24%	5.74%
Rural	2	9.39%	16.23%
Rural	2.1	0.16%	0.16%
Rural	3	0.85%	1.93%
Rural	4	5.46%	3.70%
Rural	4.1	0.48%	0.21%
Rural	5	2.40%	9.13%
Rural	5.1	0.07%	0.13%
Rural	6	0.51%	1.51%
Rural	7	2.67%	5.07%
Rural	7.1	0.22%	0.36%
Rural	7.2	0.07%	0.23%
Rural	8	0.86%	6.50%
Rural	8.1	0.02%	0.14%
Rural	8.2	0.01%	0.05%
Rural	9	0.39%	1.47%
Rural	10.1	0.11%	1.25%
Rural	10.2	0.11%	2.32%
Rural	10.3	0.08%	1.34%
Rural Total		23.90%	51.71%
Highly Rural	10	2.86%	42.55%
Highly Rural Total		2.86%	42.55%

UW Cat B RUCA Utilization

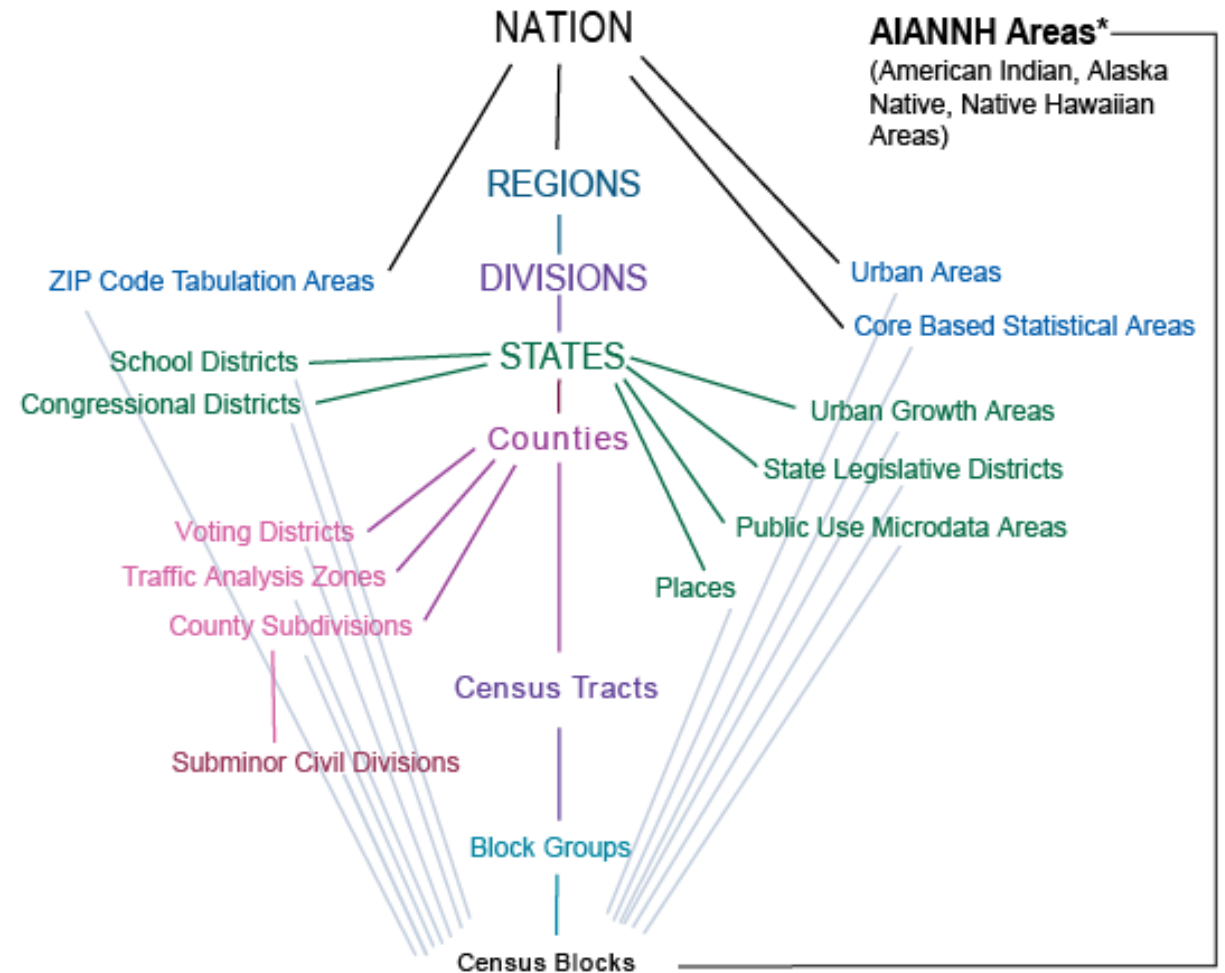
Definition	RUCA Code, 2010	Tract % Population	Tract % Land Area
Metropolitan	1	71.80%	5.59%
Metropolitan	1.1	1.44%	0.15%
Metropolitan	2	9.39%	16.23%
Metropolitan	2.1	0.16%	0.16%
Metropolitan	3	0.85%	1.93%
Metropolitan	4.1	0.48%	0.21%
Metropolitan	5.1	0.07%	0.13%
Metropolitan	7.1	0.22%	0.36%
Metropolitan	8.1	0.02%	0.14%
Metropolitan	10.1	0.11%	1.25%
Metropolitan Total		84.56%	26.14%
Micropolitan	4	5.46%	3.70%
Micropolitan	5	2.40%	9.13%
Micropolitan	6	0.51%	1.51%
Micropolitan Total		8.37%	14.33%
Rural	7	2.67%	5.07%
Rural	7.2	0.07%	0.23%
Rural	8	0.86%	6.50%
Rural	8.2	0.01%	0.05%
Rural	9	0.39%	1.47%
Rural	10	2.86%	42.55%
Rural	10.2	0.11%	2.32%
Rural	10.3	0.08%	1.34%
Rural Total		7.07%	59.53%



Geographic Complexity

- ▶ 11,078,297 Census Blocks
- ▶ 73,057 Census Tracts
- ▶ 3,143 Counties
- ▶ 333,287,557 population
 - ▶ 46M Rural (14%) USDA
 - ▶ 64M Rural (19%) Census

Standard Hierarchy of Census Geographic Entities



How do we determine if a facility is rural?

- ▶ Facility location vs. population it serves?
 - ▶ IF a rural census tract, then few VAMCs/CBOCs are rural.
 - ▶ IF by population it serves, it is on a continuum (0-99% rural).
 - ▶ ORH definition >50% rural

FACILITY	% Rural
(V12) Iron Mountain, MI HCS	99%
(V01) White River Junction, VT HCS	99%
(V19) Sheridan, WY HCS	84%
(V09) Lexington, KY HCS	81%
(V01) Togus, ME HCS	76%
(V19) Montana HCS	72%
(V23) Black Hills, SD HCS	68%
(V23) Iowa City, IA HCS	65%
(V16) Little Rock, AR HCS	56%
(V20) Anchorage, AK HCS	53%
(V16) Fayetteville, AR HCS	52%
(V02) Albany, NY HCS	51%
(V05) Huntington, WV HCS	51%

Full discussion on this in a future ORH Cyberseminar.



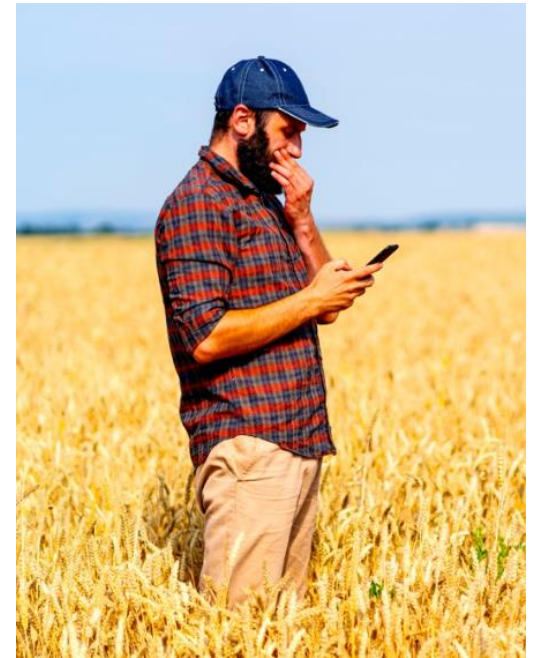
Which Definition of Rurality Should I Use?

The Relative Performance of 8 Federal Rural Definitions in Identifying Rural-Urban Disparities

Medical Care • Volume 59, Number 10 Suppl 5, October 2021

Julianna C. Long, BSPH,† Paul L. Delamater, PhD,†‡ and George M. Holmes, PhD*†*

- ▶ *“A fundamental challenge to policy makers and interventions designed to mitigate rural-urban disparities lies in the ambiguity of which areas and populations should be considered rural.”*
- ▶ What does it mean to be “rural”?
 - ▶ Proximity to an urbanized core?
 - ▶ “Connectedness” to a core (via commuting)?
 - ▶ Population density?
 - ▶ Population size?
 - ▶ Sharing a political (county) border?
- ▶ Key result: 8 different federal designations 6.9M (2.2%) to 75M (24%)



What do Veterans think? Do I feel rural?

▶ Do I feel lucky?



▶ Do I feel tardy?



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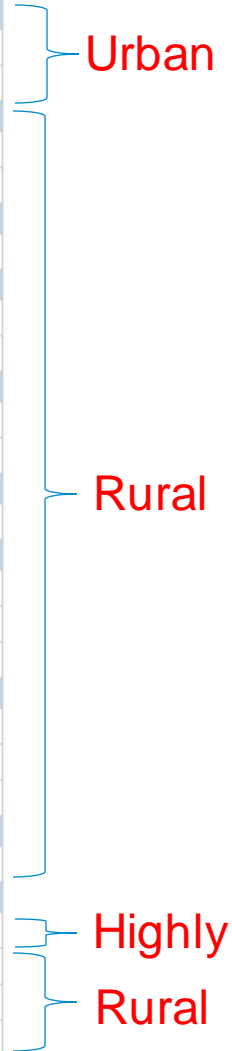
➤ How to use VA data sources to identify rural?



RUCA Codes

Secondary RUCA codes, 2010

Code	Classification description
1	Metropolitan area core: primary flow within an urbanized area (UA)
1.0	No additional code
1.1	Secondary flow 30% to 50% to a larger UA
2	Metropolitan area high commuting: primary flow 30% or more to a UA
2.0	No additional code
2.1	Secondary flow 30% to 50% to a larger UA
3	Metropolitan area low commuting: primary flow 10% to 30% to a UA
3.0	No additional code
4	Micropolitan area core: primary flow within an urban cluster of 10,000 to 49,999 (large UC)
4.0	No additional code
4.1	Secondary flow 30% to 50% to a UA
5	Micropolitan high commuting: primary flow 30% or more to a large UC
5.0	No additional code
5.1	Secondary flow 30% to 50% to a UA
6	Micropolitan low commuting: primary flow 10% to 30% to a large UC
6.0	No additional code
7	Small town core: primary flow within an urban cluster of 2,500 to 9,999 (small UC)
7.0	No additional code
7.1	Secondary flow 30% to 50% to a UA
7.2	Secondary flow 30% to 50% to a large UC
8	Small town high commuting: primary flow 30% or more to a small UC
8.0	No additional code
8.1	Secondary flow 30% to 50% to a UA
8.2	Secondary flow 30% to 50% to a large UC
9	Small town low commuting: primary flow 10% to 30% to a small UC
9.0	No additional code
10	Rural areas: primary flow to a tract outside a UA or UC
10.0	No additional code
10.1	Secondary flow 30% to 50% to a UA
10.2	Secondary flow 30% to 50% to a large UC
10.3	Secondary flow 30% to 50% to a small UC
99	Not coded: Census tract has zero population and no rural-urban identifier information

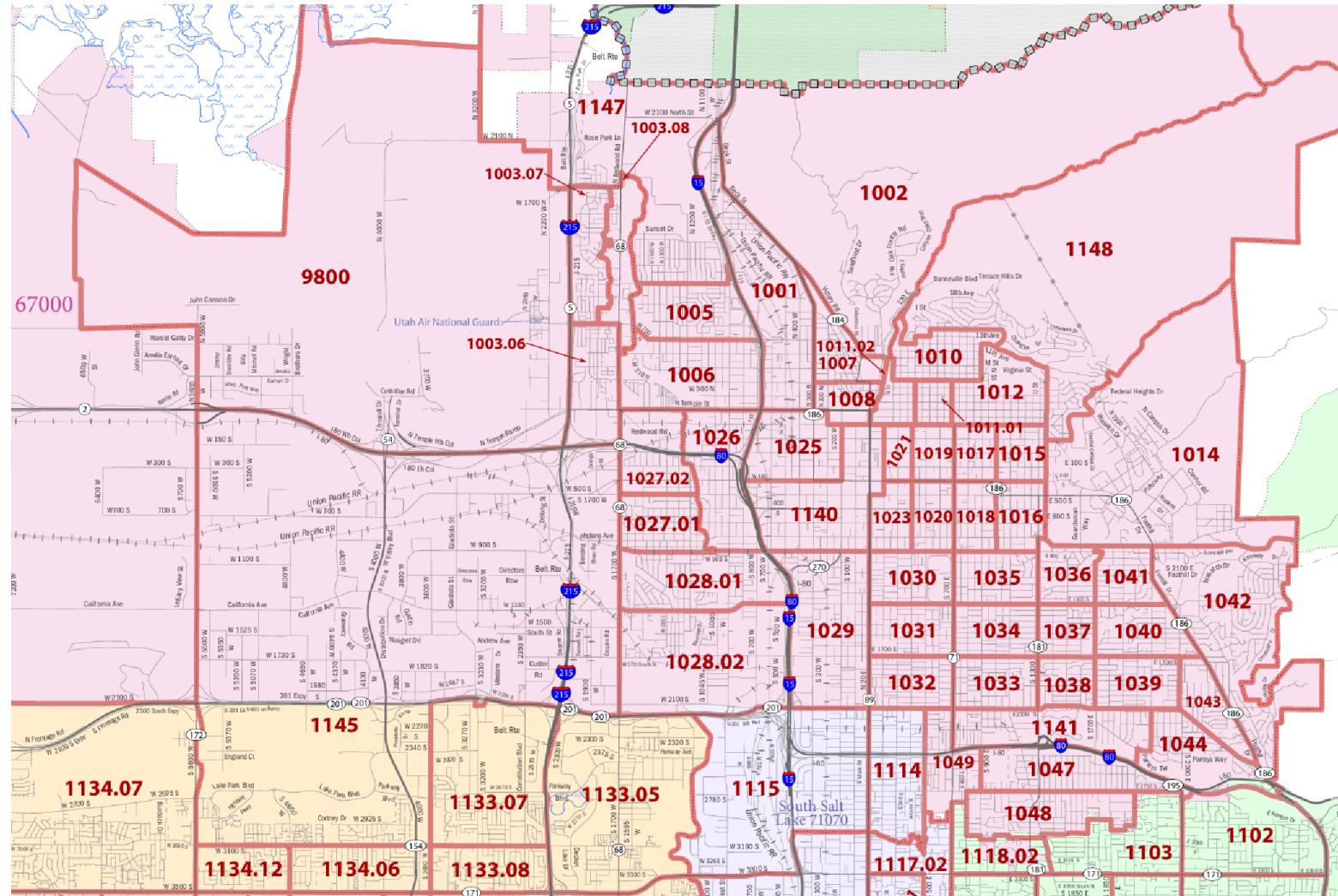


What is a census tract?

- ▶ Smallest geographic boundary for which population data exist
- ▶ Subdivisions of a county
- ▶ Designed to be relatively homogenous units with respect to population characteristics
- ▶ Avg Size = 4,000
 - ▶ Max = 8,000
 - ▶ Min = 1,200



Example



2010 Census/URL: <https://www.medallionbank.com/wp-content/uploads/2021/02/Map-of-Assessment-Area.pdf>



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RUCA Datasets

► URL: <https://www.ers.usda.gov/data-products/rural-urban-commuting-area-codes/>

2	State-County FIPS Code	Select State	Select County	State-County-Tract FIPS Code (lookup by address at http://www.ffiec.gov/Geocode/)	Primary RUCA Code 2010	Secondary RUCA Code, 2010 (see errata)	Tract Population, 2010	Land Area (square miles), 2010	Population Density (per square mile), 2010
3	01001	AL	Autauga County	01001020100	1	1	1,912	3.8	504.8
4	01001	AL	Autauga County	01001020200	1	1	2,170	1.3	1,682.5
5	01001	AL	Autauga County	01001020300	1	1	3,373	2.1	1,633.1
6	01001	AL	Autauga County	01001020400	1	1	4,386	2.5	1,779.8

► Zip-Code Approximation File

1	ZIP_CODE	STATE	ZIP_TYPE	RUCA1	RUCA2
2	00001	AK	Zip Code Area	10	10
3	00002	AK	Zip Code Area	10	10
4	00003	AK	Zip Code Area	10	10
5	00004	AK	Zip Code Area	10	10



VA Rurality Data Sources

- ▶ Planning Systems Support Group (PSSG) Enrollee File
 - ▶ Chief Strategy Office and Geospatial Service Support Center (GSSC)
- ▶ Corporate Data Warehouse (CDW)
 - ▶ Patient Domain
 - ▶ Outpatient Domain
- ▶ VA Site Tracking Database (VAST)



Data Access

▶ Research

- ▶ URL: <http://vaww.vhadataportal.med.va.gov/DataAccess/DARTRequestProcess.aspx>

▶ Operations

- ▶ URL: https://epas.r02.med.va.gov/submit.cfm?action=select&doc_type=690



PSSG

▶ Pros:

- ▶ Historical Rurality Available
- ▶ Cohort Prep Done For You
 - ▶ Enrolled Veterans
- ▶ Census Tract Data Available
- ▶ Drive Time/Distance Data

▶ Cons:












- ▶ Lag in Release























Data Availability

- ▶ SQL Server/SAS Grid
 - ▶ Research & Operations
- ▶ Naming Conventions:
- ▶ Guide

- ▶ <https://vaww.virec.research.va.gov/RUGs/PSSG-Geocoded-Enrollee-Files/RUG-PSSG-Geocoded-Enrollee-Files-CY15.pdf>

- ▶  FY2016_Q4_PH2
- ▶  FY2017_Q1
- ▶  FY2017_Q2
- ▶  FY2017_Q3
- ▶  FY2017_Q4
- ▶  FY2017_Q4_PH2
- ▶  FY2018_Q1
- ▶  FY2018_Q2
- ▶  FY2018_Q3
- ▶  FY2018_Q4
- ▶  FY2018_Q4_PH2

- ▶   OutBox.FY2016_Q1
- ▶   OutBox.FY2016_Q2
- ▶   OutBox.FY2016_Q3
- ▶   OutBox.FY2016_Q4
- ▶   OutBox.FY2016_Q4_ph2
- ▶   OutBox.FY2017_Q1
- ▶   OutBox.FY2017_Q2
- ▶   OutBox.FY2017_Q3
- ▶   OutBox.FY2017_Q4
- ▶   OutBox.FY2017_Q4_ph2



Key Data Elements

- ▶ Urban, Rural, Highly Rural
 - ▶ Based on RUCA
- ▶ Residential Address
- ▶ Census Tract
- ▶ Longitude/Latitude
- ▶ Patient Integrated Control Number (ICN)
- ▶ Scrambled SSN



CDW: Basic Definitions

▶ CDW Domain

- ▶ Refers to a grouping of objects that all contain information on the same topical area
- ▶ Ex. Appointment, Immunization, Outpatient, Patient, Inpatient

▶ CDW View (i.e. object/table)

- ▶ A view is comprised of a set of data elements (and their values) on a single topic, organized into rows and columns



CDW: Patient Domain

▶ Pros:

- ▶ Fully integrated w/ rest of CDW
- ▶ May be more current than PSSG, pending release timing and when Veteran address was last updated

▶ Cons:

- ▶ Difficult to measure historical rurality
- ▶ Requires more effort/thought to build cohort
- ▶ No census tract data



Data Availability

- ▶ SQL Server/SAS Grid
 - ▶ Research & Operations
- ▶ Target View/Object: **SpatientGISAddress**
 - ▶ SpatientAddress (Next of Kin, Emergency Contact, Employer, etc.)
- ▶ Guide
 - ▶ <https://vaww.virec.research.va.gov/CDW/Factbook/FB-CDW-Patient-Domain.pdf>



Key Data Elements

- ▶ Urban, Rural, Highly Rural
 - ▶ Based on RUCA (>75%)
- ▶ Residential Address
- ▶ Longitude/Latitude
- ▶ AddressChangeDateTime
- ▶ Patient Integrated Control Number (ICN)



CDW: Outpatient Domain

▶ Pros:

- ▶ Rurality measurement at a specific point in time
- ▶ Historical

▶ Cons:

- ▶ Zip code level only
- ▶ Must use RUCA Zip Code Approximation File
- ▶ More effort



Data Availability

- ▶ SQL Server/SAS Grid
 - ▶ Research & Operations
- ▶ Target View/Object(s): **Visit & Workload**
- ▶ Guide
 - ▶ <https://vaww.virec.research.va.gov/CDW/Factbook/FB-CDW-Outpatient-Domain.pdf>



Key Data Elements

- ▶ Visitdatetime
- ▶ PatientZip
- ▶ PatientFips
- ▶ County



VAST

- ▶ VA Site Tracking Database
 - ▶ Facility Rurality (Urban, Rural, Highly Rural)
 - ▶ Based on RUCA
 - ▶ Physical Location
 - ▶ Updated Monthly



Data Availability

- ▶ SQL Server/SAS Grid

 - ▶ Research & Operations

 - ▶ *Note: Operations in Raw

- ▶ Target View/Object: **Dim.VAST**

- ▶ Guide

 - ▶ <http://vaww.vssc.med.va.gov/VSSCEnhancedProductManagement/DisplayDocument.aspx?DocumentID=6541>



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VA Rurality Measurement Tools

▶ VSSC VAST Snapshot

- ▶ https://reports.vssc.med.va.gov/ReportServer/Pages/ReportViewer.aspx?%2fApps%2fVAST%2fProduction%2fVAST_Snapshot_2&rs:Command=Render



VHA Station Listing

These data are from the current working copy of the VA Site Tracking Database and can only be used for operational internal use.

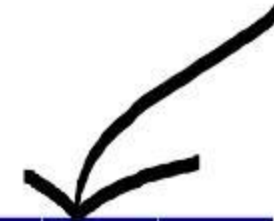
Notes:

- Note: Downloading to Excel will remove logo, report header and Notes, but will keep all column headers intact and will only include selected Groups.
- In VAST, Official Station Numbers are no more than 5 digits (the 7 digit numbers are for access calculations only, no workload).
- The Geocoded attributes in VAST are provided by the PSSG on a monthly basis - thus any analyses run against disparate data pulls may cause inconsistent results. To view, select 'Geocoded Attributes' in the 'Select Group(s) to Display' option above.

VSSC Help Desk

Data Definitions

VISM	STASIN (For Sorting)	Station Number	Official Station Name	Classification	Classification Status (Firm / Conditional / Save Rating / Dy Appeal)	Mobile	Operational Status: Active (A) or Planned (P) or Temporarily Deactivated (T) Permanently Deactivated (D)	Station Number Suffix Reservation Effective Date	Points of Service	Latitude	Longitude	Congressional District	MARKET	SUBMARKET	SECTOR	FIPS Code	Rurality: U=Urban; R=Rural; H=Highly rural I=Insular	VA Hospital
19	436	436	Fort Harrison VA Medical Center	VA Medical Center (VAMC)	Firm	No	A		1	46.61764177	-112.10185031	CD117_MT_3000	19-n	19-n-9	19-n-9-E	30049	R	1
19	436	43644	Miles City VA Community Living Center	VA Medical Center (VAMC)	Firm	No	A	10/01/2014	1	46.40603425	-105.83049169	CD117_MT_3000	19-n	19-n-9	19-n-9-G	30017	R	0
19	436	436GA	Anaconda VA Clinic	Other Outpatient Services (OOS)	Firm	No	D		0	46.12420635	-112.95361598							0
10	436	436GB	Great Falls VA Clinic	Primary Care CBOC	Firm	No	A		1	47.49046196	-111.25737168	CD117_MT_3000	19-n	19-n-9	19-n-9-F	30013	U	0
19	436	436OC	David J. Thatcher VA Clinic	Multi-Specialty CBOC	Firm	No	A		1	46.9087426	-114.05260708	CD117_MT_3000	19-n	19-n-9	19-n-9-D	30063	U	0
10	436	436GD	Travis W. Atkins Department of Veterans Affairs Clinic	Primary Care CBOC	Firm	No	A		1	45.67000751	-111.02038338	CD117_MT_3000	19-n	19-n-9	19-n-9-E	30031	R	0
19	436	436GF	Kalispell VA Clinic	Multi-Specialty CBOC	Firm	No	A		1	46.21143953	-114.33079859	CD117_MT_3000	19-n	19-n-9	19-n-9-D	30029	R	0
19	436	436GH	Benjamin Charles Steele VA Clinic	Health Care Center (HCC)	Firm	No	A		1	45.73090147	-100.60257892	CD117_MT_3000	19-n	19-n-9	19-n-9-G	30111	U	0
10		436GH01	Spring Creek Lane VA Clinic	Unclassified		No	D		0	45.7377	-108.606							0



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VA Rurality Measurement Tools (2)

▶ VSSC Current Enrollment Cube (i.e., preprocessed data)

▶ <https://pyramid.cdw.va.gov/direct/?id=b000a523-862c-4009-a736-0f68310b7564>

The screenshot shows a data visualization tool interface. The main content is a table titled "Enrollees Priority 1 to 8D by Rurality and Current County State (FY22-AUG, All, All Gender)". The table has columns for "Current County State", "Highly Rural", "Insular Islands", "Rural", "Urban", and "Unknown". The rows list various counties in Kansas, such as Whitley, IN, Allen, KS, Anderson, KS, Atchison, KS, Barber, KS, Barton, KS, Bourbon, KS, Brown, KS, Butler, KS, Chase, KS, Chautauqua, KS, Cherokee, KS, Cheyenne, KS, Clark, KS, and Clay, KS. The "Highly Rural" column shows the highest values for each county, ranging from 2 to 145. The "Rural" column shows values ranging from 6 to 1,432. The "Urban" column shows values ranging from 1 to 16. The "Unknown" column shows values ranging from 0 to 2.

Current County State	Highly Rural	Insular Islands	Rural	Urban	Unknown
(18183) Whitley, IN	142		904	27	
(20001) Allen, KS	8		353	6	
(20003) Anderson, KS	66		168	2	
(20005) Atchison, KS	9		454	9	0
(20007) Barber, KS	114		7	1	
(20009) Barton, KS	6		622	5	1
(20011) Bourbon, KS	2		418	10	0
(20013) Brown, KS	173		147	7	
(20015) Butler, KS	145		1,432	531	2
(20017) Chase, KS	2		65	1	
(20019) Chautauqua, KS	110		1	1	
(20021) Cherokee, KS	44		505	16	1
(20023) Cheyenne, KS	73		6	3	
(20025) Clark, KS	2		63	1	
(20027) Clay, KS	216		252	11	



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VA Rurality Measurement Tools (3)

▶ Office of Rural Health Rurality Calculator:

▶ <https://dvagov.sharepoint.com/sites/VHARuralHealth/SitePages/Rurality.aspx>

DATA FILTERS									
GENDER		AGE			RANGE			PRIORITY	
ALL GENDER	Y	ALL AGE	Y	55 TO 64	N	ALL PRIORIT	Y		
FEMALE	N	UNDER 35	N	65 AND OLDER	N	PRIORITY 1-7	N		
MALE	N	35 TO 44	N	65 TO 74	N				
		45 TO 54	N	75 & OLDER	N				

Office of Rural Health (ORH) FY 2024 Rurality Calculator		
Total Rural	Total Veterans	Total Rurality
34,664	133,801	25.9%

Last update: [Data from VSSC Curent Enrollment Cube EOY FY23](#)

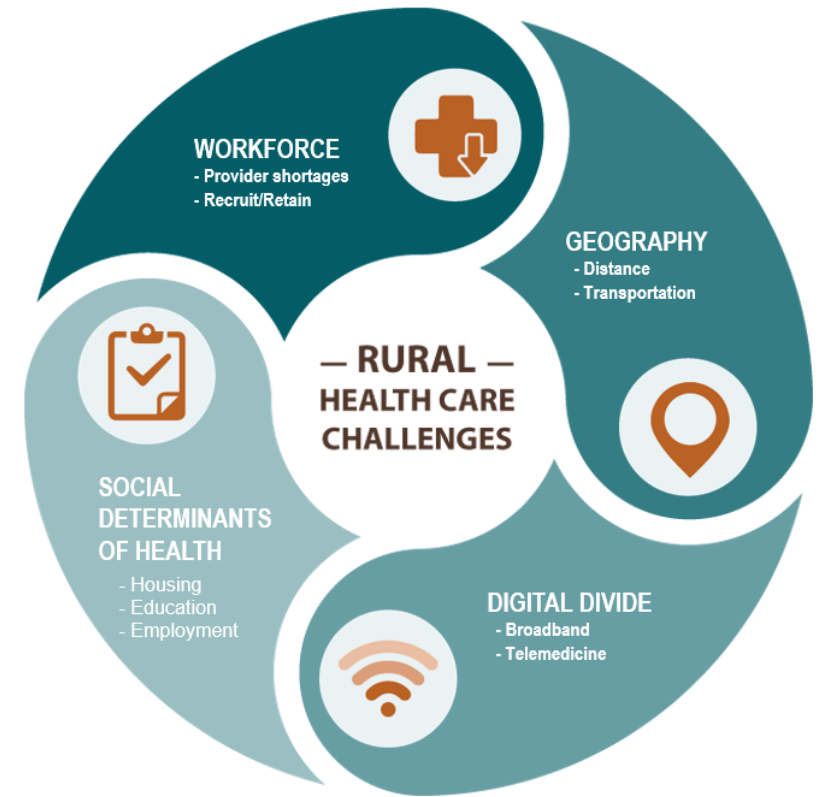
User Entry (400 rows)			
Facility Location		County	Zip
HCS VISN	CBOC	FIPS, State, Sector Code	Zip Code
660			
	660GG		
		UT	
			84713

Rurality Data			
Veteran Counts		Station Information	
Rural	Total	Station or Area Name	Rurality
18,263	68,591	(V19) (660) Salt Lake City, UT HCS	27%
4,302	8,284	(V19) (660GG) St. George, UT	52%
12,010	56,831	UTAH	21%
89	95	(84713) Beaver	94%



Summary

- ▶ No one single definition of Rural.
- ▶ Look at rural as a continuum and consider drive time.
- ▶ More research into the implications of the definition.
- ▶ Continue to identify ways to improve care for rural Veterans.





QUESTIONS?



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U.S. Department of Veterans Affairs
Veterans Health Administration
Office of Rural Health

ORH RURAL COMMUNITY CALL

Third Wednesday of the Month at 2:00 p.m. (EDT)



Tele Critical Care

National TelenNeurology Program (NTNP)

March 20, 2024 • 2:00 p.m. EDT

- [ORH Monthly Rural Community Call](#)
- [ORH SharePoint \(Internal VA ONLY\)](#)
<https://dvagov.sharepoint.com/sites/VHARuralHealth/>
- Email: rural.health.inquiry@va.gov
- Visit: www.ruralhealth.va.gov



Add to your Outlook Calendar.ics

ORH Rural Health Community Call



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