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Obesity

A Rural Veterans Health Care Atlas Series
1st edition FY-2014



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OVERVIEW

The staff at the GeoSpatial Outcomes Division accessed data repositories available through the VHA Support Service Center (VSSC) <http://vssc.med.va.gov/> to query and extract the data used to generate this chapter's tables, charts, and maps. The Diagnosis Cube, in particular, is a single repository cube with tools for diagnosis monitoring of the Veteran patient population.¹

According to a canned report available in the Diagnosis Cube, Obesity - specifically ICD-9-CM code 278.00 (representing only one of five Obesity ICD-9-CM codes) - is listed as #11 of the Top 20 Diagnoses by Uniques (with 749,522 unique patients diagnosed with that particular ICD-9-CM code) among all VHA facilities during FY-2014. When rural areas are queried from this selection, Obesity diagnostic code 278.00 is still ranked high at #11 (with 271,724 unique patients) and when highly rural areas were queried, diagnostic code 278.00 is positioned at #15 (with 8,556 unique patients). This represents a need for analysis of health care access and delivery for the Obesity cohort living in rural and highly rural areas. The GSOD team utilized scholarly and reliable web resources to confirm the five Diagnosis ICD-9-CM codes used to identify patients with Obesity (see *Diagnostic Codes Used to Define Cohort* section below). However, it can be noted that identifying VHA patients with a diagnosis of Obesity based solely on those five diagnostic codes may underestimate the rates of Obesity in the VHA patient population. For example, some studies have used other identifiers obtained from medical chart records such as BMI derived from heights and weights to identify this cohort.^{***} The team then extracted the appropriate data.

Process of Data Compilation

Using the VSSC and Proclarity Desktop Professional Version 6.3.129.200, data were extracted from the Diagnosis Cube. **Prevalence and demographic data** were queried on a broad level and then drilled down to specific ruralities. The following parameters were entered in different combinations to present various scenarios:

- **Measures:** Unique Patients
- **DXDate Date:** FY-2014
- **Diagnosis ICD9 Desc:** All, 278.0, 278.00, 278.01, 278.02, 278.03

- **Home County VISN:** V01, V02, V03, V04, V05, V06, V07, V08, V09, V10, V11, V12, V15, V16, V17, V18, V19, V20, V21, V22, V23
- **DiagnosisPosition:** Primary Diagnosis, Secondary Diagnosis
- **Priority:** 1 Svc Con 50% +, 2 Svc Con 30%-40%, 3 Svc Con 20%/POW/Special, 5 Non Service Con Below Income
- **Rurality:** Highly Rural, Rural, Urban, Unknown
- **Gender:** Female, Male, Unknown
- **Age:** <25, 25-34, 35-44, 45-54, 55-64, 65-74, 75-84, 85+, Unknown

Then the following parameters were entered to extract **outpatient encounters** and were used in different combinations to present various scenarios:

- **Measures:** Frequency
- **DXDate Date:** FY 14
- **Diagnosis ICD9 Desc:** All, 278.0, 278.00, 278.01, 278.02, 278.03
- **Home County VISN:** V01, V02, V03, V04, V05, V06, V07, V08, V09, V10, V11, V12, V15, V16, V17, V18, V19, V20, V21, V22, V23
- **DiagnosisPosition:** Primary Diagnosis, Secondary Diagnosis
- **Rurality:** Highly Rural, Rural, Urban, Unknown
- **Source:** Outpatient Encounters

ESRI ArcGIS Desktop was used to import the tabular data and create custom maps at National and VISN scales. The tabular data is broken down by rows of FIPS codes (county level geographic units), State, VISN, and then by columns of the following:

- Count of total number of patients with Obesity in the VHA.
- Counts and percentages of patients with Obesity versus all patients (uniques) broken down by rurality (HR/R/U/total), with HR/R combined into RHR for the purposes of patient confidentiality
- Counts and percentages of patients with Obesity versus all patients (uniques) *by gender* broken down by rurality (HR/R/U/total), with HR/R combined into RHR for the purposes of patient confidentiality
- Counts and percentages of patients with Obesity versus all patients (uniques) *by age group* (<65, 65+) broken down by rurality (HR/R/U/total), with HR/R combined into RHR for the purposes of patient confidentiality

- Counts and percentages of patients with Obesity versus all patients (uniques) *by enrollment priority (groups 1, 2 and 3)* broken down by rurality (HR/R/U/total), with HR/R combined into RHR for the purposes of patient confidentiality
- Counts and percentages of patients with Obesity versus all patients (uniques) *by enrollment priority (group 5)* broken down by rurality (HR/R/U/total), with HR/R combined into RHR for the purposes of patient confidentiality
- Counts and percentages of outpatient encounters of patients with Obesity in rural and highly rural areas versus outpatient encounters of patients with Obesity in all rural categories, with HR/R combined into RHR for the purposes of patient confidentiality.

***GSOD would like to acknowledge and thank the following individuals for their assistance finalizing the ICD-9-CM codes used to identify VHA patients with Obesity:

- Dr. Susan Raffa and Dr. Linda Kinsinger from the VHA National Center for Health Promotion and Disease Prevention (10P4N) in Durham, North Carolina
- Dr. Polly H. Noel from the South Texas Veterans Health Care System in San Antonio, Texas.

Diagnostic Codes Used to Define Cohort (Obesity)

ICD-9 CM code	Description
278.0	OBESITY
278.00	OBESITY UNSPECIFIED
278.01	MORBID OBESITY
278.02	OVERWEIGHT
278.03	OBESITY HYPOVENTILATION SYNDROME

Organization of Data Tables and Maps

The data tables and maps for Veterans with Obesity are organized into four sections. The first section (Section I) focuses on the total numbers of VHA patients with Obesity. We first present an overview of the data at the National, Veterans Integrated Service Network (VISN), State, and levels. In addition to the overall number of patients with Obesity, data are presented by gender, age group, and enrollment status. Table 1 contains the data used in the narrative summary. Following the table, there are a series of maps that visually illustrate the data.

- Map 1: Number of Patients with Obesity by VISN, FY-2014
- Map 2: Number of Patients with Obesity by State, FY-2014
- Map 3: Number of Patients with Obesity by County, FY-2014
- Map 4 - 7: Number of Patients with Obesity by County, FY-2014 – Zoomed VISN views

Section II of the chapter focuses on the overall prevalence of Obesity by the following rurality categories: *highly rural, rural, urban, and unknown*. Since the *rural and highly rural* categories are of particular interest in this volume, numbers and percentages are distinctively highlighted in shades of blue in Table 2. National, VISN, State, and county overview are presented focusing on the rural and highly rural Veterans with Obesity. Because the number of highly rural Veterans is so small, we combined the data for mapping purposes. For the maps, urban areas are shaded and urban patients are removed from the numerator and denominator. The following maps illustrate graphically the data on rural and highly rural VHA patients with Obesity:

- Map 8: Number of Rural and Highly Rural Patients with Obesity by VISN, FY-2014
- Map 9: Percent of Rural and Highly Rural Patients with Obesity of Total Rural and Highly Rural Patients by VISN, FY-2014
- Map 10: Number of Rural and Highly Rural Patients with Obesity by State, FY-2014
- Map 11: Percent of Rural and Highly Rural Patients with Obesity of Total Rural and Highly Rural Patients by State, FY-2014
- Map 12: Number of Rural and Highly Rural Patients with Obesity by County, FY-2014
- Map 13: Percent of Rural and Highly Rural Patients with Obesity of Total Rural and Highly Rural Patients by County, FY-2014
- Maps 14, 16, 18, 20: Number of Rural and Highly Rural Patients with Obesity by County, FY-2014 – Zoomed VISN

views

- Map 15, 17, 19, 21: Percent of Rural and Highly Rural Patients with Obesity by County, FY-2014 – Zoomed VISN views

Section III provides more detail on subgroups of rural and highly rural patients. Table 3 contains data broken down by gender and rurality, with accompanying maps of rural and highly rural VHA female patients:

- Map 22: Number of Rural and Highly Rural Female Patients with Obesity by VISN, FY-2014
- Map 23: Percent of Rural and Highly Rural Female Patients with Obesity of Total Rural and Highly Rural Female Patients by VISN, FY-2014
- Map 24: Number of Rural and Highly Rural Female Patients with Obesity by State, FY-2014
- Map 25: Percent of Rural and Highly Rural Female Patients with Obesity of Total Rural and Highly Rural Female Patients by State, FY-2014 *** **Note:** County level maps are not presented for this disease condition, as the number of VHA female patients with Obesity is very small.

Table 4 contains data broken down by age group and rurality, with accompanying maps of rural and highly rural VHA patients by 65 years of age and older:

- Map 26: Number of Rural and Highly Rural Patients Aged 65+ with Obesity by VISN, FY-2014
- Map 27: Percent of Rural and Highly Rural Patients Aged 65+ with Obesity of Total Rural and Highly Rural Patients Aged 65+ by VISN, FY-2014
- Map 28: Number of Rural and Highly Rural Patients Aged 65+ with Obesity by State, FY-2014
- Map 29: Percent of Rural and Highly Rural Patients Aged 65+ with Obesity of Total Rural and Highly Rural Patients Aged 65+ by State, FY-2014
- Map 30: Number of Rural and Highly Rural Patients Aged 65+ with Obesity by County, FY-2014
- Map 31: Percent of Rural and Highly Rural Patients Aged 65+ with Obesity of Total Rural and Highly Rural Patients Aged 65+ by County, FY-2014

Table 5 contains data broken down by enrollment priority and rurality, with accompanying maps of rural and highly rural

VHA patients by Service Connection (Enrollment Priority Groups 1-3) and Low Income (Enrollment Priority Group 5):

- Map 32: Number of Rural and Highly Rural Patients in Priority Group 1-3 with Obesity by VISN, FY-2014
- Map 33: Percent of Rural and Highly Rural Patients in Priority Group 1-3 with Obesity of Total Rural and Highly Rural Patients in Priority Group 1-3 by VISN, FY-2014
- Map 34: Number of Rural and Highly Rural Patients in Priority Group 1-3 with Obesity by State, FY-2014
- Map 35: Percent of Rural and Highly Rural Patients in Priority Group 1-3 with Obesity of Total Rural and Highly Rural Patients in Priority Group 1-3 by State, FY-2014
- Map 36: Number of Rural and Highly Rural Patients in Priority Group 1-3 with Obesity by County, FY-2014
- Map 37: Percent of Rural and Highly Rural Patients in Priority Group 1-3 with Obesity of Total Rural and Highly Rural Patients in Priority Group 1-3 by County, FY-2014
- Map 38: Number of Rural and Highly Rural Patients in Priority Group 5 with Obesity by VISN, FY-2014
- Map 39: Percent of Rural and Highly Rural Patients in Priority Group 5 with Obesity of Total Rural and Highly Rural Patients in Priority Group 5 by VISN, FY-2014
- Map 40: Number of Rural and Highly Rural Patients in Priority Group 5 with Obesity by State, FY-2014
- Map 41: Percent of Rural and Highly Rural Patients in Priority Group 5 with Obesity of Total Rural and Highly Rural Patients in Priority Group 5 by State, FY-2014
- Map 42: Number of Rural and Highly Rural Patients in Priority Group 5 with Obesity by County, FY-2014
- Map 43: Percent of Rural and Highly Rural Patients in Priority Group 5 with Obesity of Total Rural and Highly Rural Patients in Priority Group 5 by County, FY-2014

The final section of the chapter (Section IV) provides information on the outpatient encounters of VHA patients with Obesity. Table 6 examines the outpatient encounters of patients with a **primary** diagnosis of Obesity and breaks the encounter information by rurality and Table 8 provides information on the number of outpatient encounters of patients with a **secondary** diagnosis of Obesity, also categorized by rurality. Table 7 and Table 9 provide information on the numbers and percentage of rural and highly rural Obesity encounters of total Obesity encounters for patients with a primary diagnosis of Obesity (Table 7) and secondary diagnosis of Obesity (Table 9). The accompanying maps display the total numbers and percentages of rural and highly rural patients with **either** a primary or secondary diagnosis of Obesity to capture the total workload (outpatient encounters) of this disease in rural and highly rural areas:

- Map 44: Number of Rural and Highly Rural Obesity Patient Encounters by VISN, FY-2014
- Map 45: Percent of Rural and Highly Rural Obesity Patient Encounters of VHA Obesity Patient Encounters by VISN, FY-2014
- Map 46: Number of Rural and Highly Rural Obesity Patient Encounters by State, FY-2014
- Map 47: Percent of Rural and Highly Rural Obesity Patient Encounters of VHA Obesity Patient Encounters by State, FY-2014
- Map 48: Number of Rural and Highly Rural Obesity Patient Encounters by County, FY-2014
- Map 49: Percent of Rural and Highly Rural Veterans Obesity Patient Encounters of VHA Obesity Patient Encounters by County, FY-2014

Note: An asterisk (*) that appears in the tables signifies a low number or proportion of unique patients.

Section I Highlights: VHA Patients with Obesity

National Overview

In Fiscal Year 2014, the Veterans Health Administration had 914,251 patients with the diagnosis code indicating a primary or secondary diagnosis of Obesity (Table 1). This number represented approximately 15 percent (14.72%) of the total patient population during the fiscal year. As with most patients seen in the VHA, the majority of patients with Obesity were male (90.48%); however, females represented a proportion of nearly one-tenth (9.52%). The age distribution of patients with Obesity shows that 14.51% were under the age of 45, 15.51% were ages 45-54, 26.03% were ages 55-64, 33.37% were ages 65-74, and 10.57% were ages 75 or older.

We examined two groups of Veterans by their Enrollment Priority. Enrollment Priority Groups 1-3 were combined into one group, which includes Service-Connected Veterans rated by the VA from 10-100%. A second group, Enrollment Priority Group 5, was selected to represent non Service-Connected and noncompensable Service-Connected Veterans rated 0% disabled by VA with annual income and/or net worth below the VA National income threshold and geographically-adjusted income threshold for their resident location.² The table shows that more than half of patients with Obesity (53.6%) were Service-Connected injured Veterans enrolled in Priority Groups 1 – 3 and about one-fifth (21.83%) were Priority 5 (low income).

VISN Overview

At the time of this edition, the Veterans Health Administration consisted of 21 networks. Examining data at the network level, the volume of patients with Obesity ranged from a high of 101,050 individuals in the Sunshine Network (VISN 8, which serves Veterans in most of Florida, Puerto Rico, U.S. Virgin Islands, and a portion of Georgia) to a low of 19,006 individuals in the Capitol Network (VISN 5, which includes all of Washington D.C. and portions of Pennsylvania, Maryland, Virginia, and West Virginia). When examining the number of patients with Obesity proportionally to all patients, the Stars and Stripes Network (VISN 4) had the highest proportion at 17.67% and the Rocky Mountain Network (VISN 19) had the lowest proportion at 11.21%. The VISN with the highest ratio of females to males was in the Southeast Network (VISN 7), where 14.93% of the patients with Obesity were female. Nationally, the 65-74 age group had the highest prevalence of patients with Obesity to all VHA patients (33.37%); at the network level, the majority of VISNs had more than one-third of

the VHA patient population in this age group diagnosed with Obesity, with the Midwest Network (VISN 23) leading with 38.26%, followed by the New England Network (VISN 1) with 37.86%. The vast majority of VISNs had one-half or more of patients with Obesity in the VHA enrolled as Service-Connected (Priority Groups 1-3), the Heart of Texas Network (VISN 17) leading with almost two-thirds at 64.95%. Map 1 shows the number of Veterans with Obesity by quartile across the 21 VISNs.

State Overview

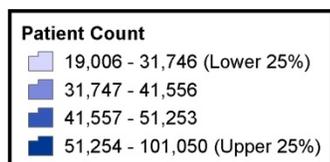
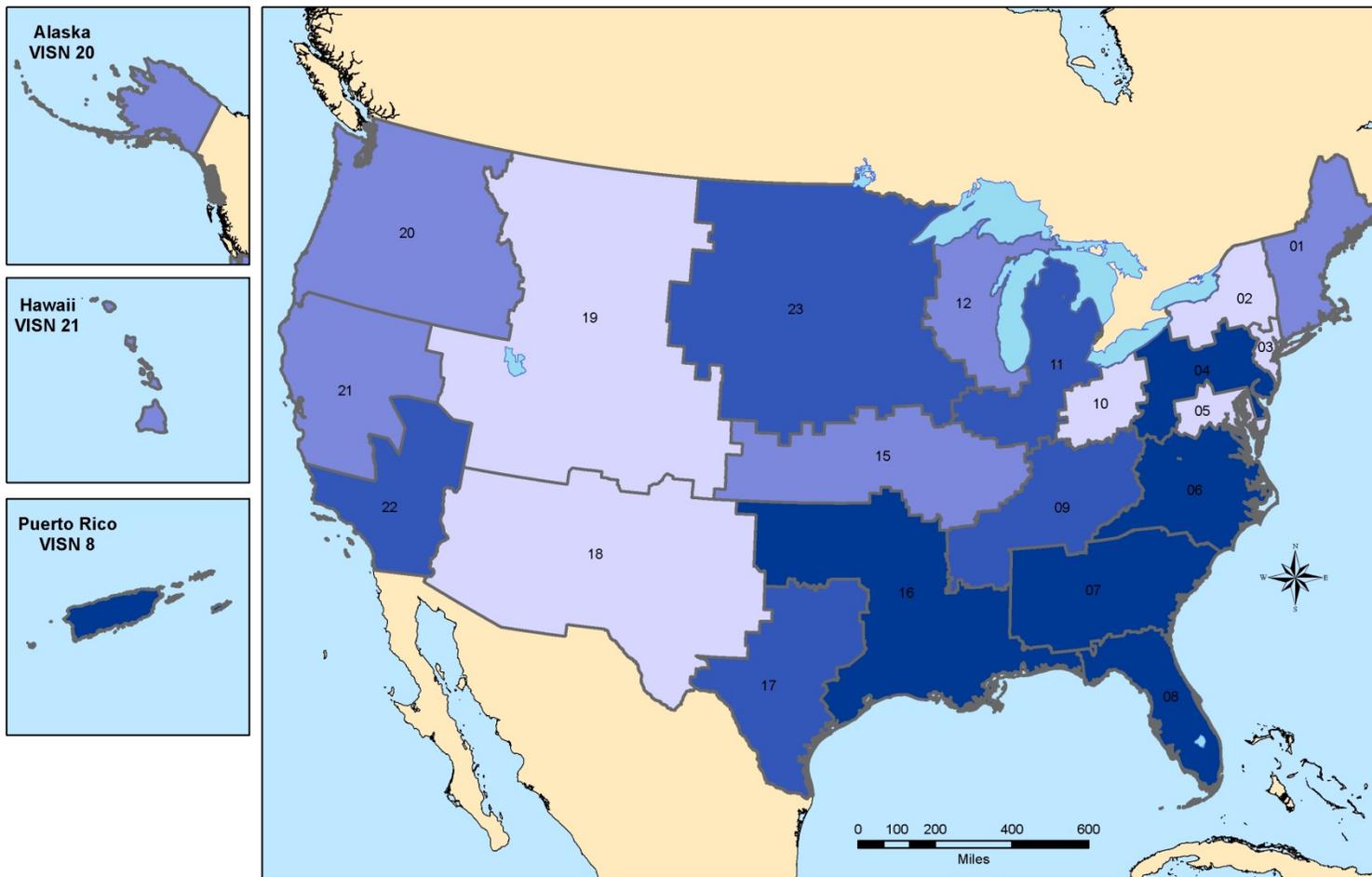
Map 2 shows the number of VHA patients with Obesity by State (by quartile). The top 10 States with the highest number of patients with Obesity by rank order were Florida (N=81,571), Texas (N=73,733), California (N=71,278), Pennsylvania (N=42,414), New York (N=38,817), North Carolina (N=34,048), Ohio (N=31,606), Georgia (N=30,990), Illinois (N=28,985), and Missouri (N=24,282). The U.S. territory with the highest percentage of patients with Obesity was Puerto Rico (34.05%), followed by these U.S. States and territories (in rank order): U.S. Virgin Islands (29.54%), Wisconsin (19.89%), New Jersey (19.8%), Mississippi (19.7%), Oklahoma (19.01%), Vermont (18.95%), Pennsylvania (18.54%), West Virginia (17.9%) and Delaware (17.59%). Thus, the State of Pennsylvania showed both a high number and a high proportion of patients with Obesity.

County Overview

The number of patients with Obesity by county is displayed by quartiles in Map 3. The highest 25% in terms of volume is designated by the darkest color. In addition to the National map, four additional maps are provided that zoom to the VISN level (Maps 4-7) to give a clearer picture of the number of patients with Obesity and the geographic patterns within each VISN. The top 10 counties with the largest number of VHA patients with Obesity across the U.S. were in the States of California (3 counties), Texas (2 counties), Illinois (1 county), Nevada (1 county), Arizona (1 county), and Florida (2 counties). Los Angeles County, California had the largest number of patients with Obesity (N=14,655), followed by, in rank order: Bexar County, Texas (N=9,719), San Diego County, California (N=9,313), Cook County, Illinois (N=8,803), Harris County, Texas (N=7,470), Clark County, Nevada (N=7,099), Maricopa County, Arizona (N=6,881), Pinellas County, Florida (N=5,667), Hillsborough County, Florida (N=5,501), and Riverside County, California (N=5,253).

Table 1: National and VISN Numbers and Percentages of VHA Patients with Obesity, FY-2014

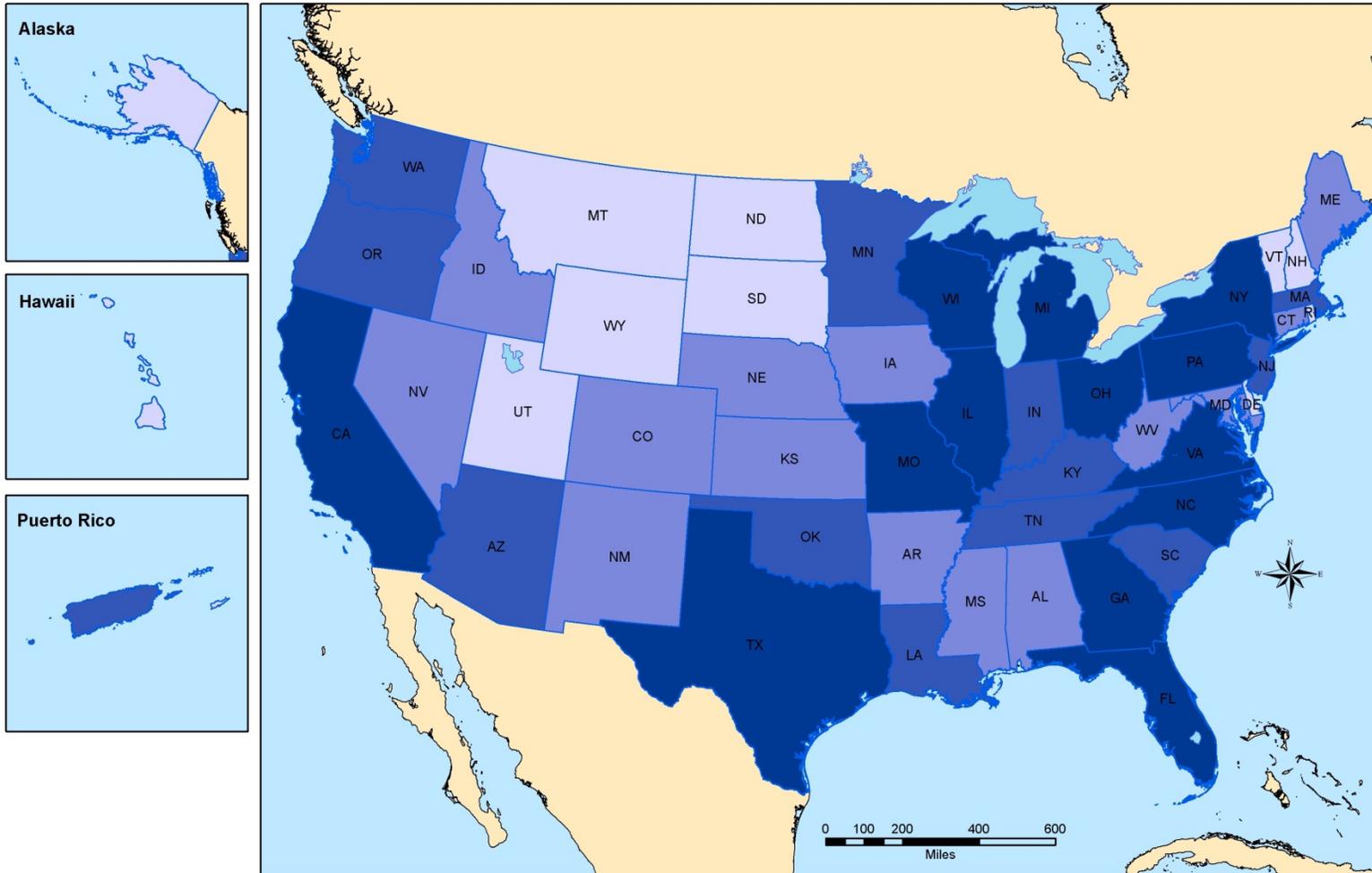
Overall Prevalence Statistics- Obesity, FY-2014												
Veterans Integrated Service Network	Total Number of Patients	Patients with Obesity		Gender (%)		Age Group (%)					Enrollment Priority Groups (%)	
		N	(%)	F	M	<45	45-54	55-64	65-74	75+	Service Connected (Priority 1-3)	Low Income (Priority 5)
New England (01)	253,326	38,144	15.06	6.85	93.15	11.22	12.06	22.84	37.86	16.01	50.82	18.96
Upstate NY (02)	136,497	23,403	17.15	8.26	91.74	13.62	14.61	25.06	34.52	12.20	47.22	23.42
NY/NJ (03)	174,457	26,514	15.20	8.36	91.64	13.08	12.93	22.40	34.50	17.10	46.24	23.00
Stars and Stripes (04)	310,940	54,957	17.67	7.58	92.42	12.06	13.05	24.30	36.98	13.62	45.45	22.08
Capitol (05)	150,012	19,006	12.67	13.80	86.20	15.70	20.54	27.07	27.75	8.94	53.05	22.39
Mid-Atlantic (06)	359,692	53,994	15.01	12.45	87.55	16.02	18.54	27.00	30.87	7.56	58.29	19.89
Southeast (07)	408,164	54,283	13.30	14.93	85.07	17.65	21.27	27.30	27.37	6.42	60.58	20.23
Sunshine (08)	576,411	101,050	17.53	9.60	90.40	13.66	15.93	25.98	31.80	12.64	51.01	24.38
Mid South (09)	298,396	43,610	14.61	8.84	91.16	13.83	16.66	27.03	34.06	8.42	56.64	22.17
Ohio (10)	231,319	30,915	13.36	8.38	91.62	11.17	15.45	28.07	35.84	9.47	45.87	27.39
Vets in Partnership (11)	282,135	42,663	15.12	7.45	92.55	11.43	14.65	26.25	37.18	10.50	51.54	24.33
Great Lakes (12)	266,879	41,556	15.57	7.97	92.03	11.67	13.73	24.84	36.64	13.12	44.29	22.50
Heartland (15)	245,357	37,828	15.42	8.48	91.52	11.59	13.46	26.91	36.31	11.72	51.27	23.13
South Central (16)	502,681	81,576	16.23	9.59	90.41	15.79	15.57	26.51	32.23	9.91	56.09	21.07
Heart of Texas (17)	306,581	46,676	15.22	12.63	87.37	22.11	18.43	25.85	27.04	6.58	64.95	17.33
Southwest (18)	271,557	31,746	11.69	9.71	90.29	16.08	15.28	26.61	32.71	9.32	55.27	21.87
Rocky Mtn. (19)	202,350	22,677	11.21	9.84	90.16	15.85	14.69	26.79	33.76	8.91	56.43	19.13
Northwest (20)	288,322	36,152	12.54	9.14	90.86	14.57	14.64	26.78	34.58	9.43	57.59	21.34
Sierra Pacific (21)	293,645	33,660	11.46	8.92	91.08	13.83	13.45	27.47	35.35	9.89	52.15	24.12
Desert Pacific (22)	328,951	51,253	15.58	8.74	91.26	19.27	15.47	26.41	30.82	8.03	53.77	24.84
Midwest (23)	324,728	42,588	13.11	7.05	92.95	11.28	12.50	24.61	38.26	13.35	59.54	14.75
Grand Total	6,212,400	914,251	14.72	9.52	90.48	14.51	15.51	26.03	33.37	10.57	53.60	21.83



Map 1:
Number of VHA Patients with Obesity
By VISN FY - 2014

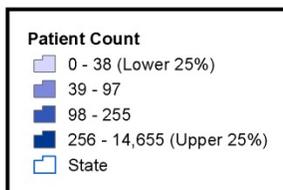
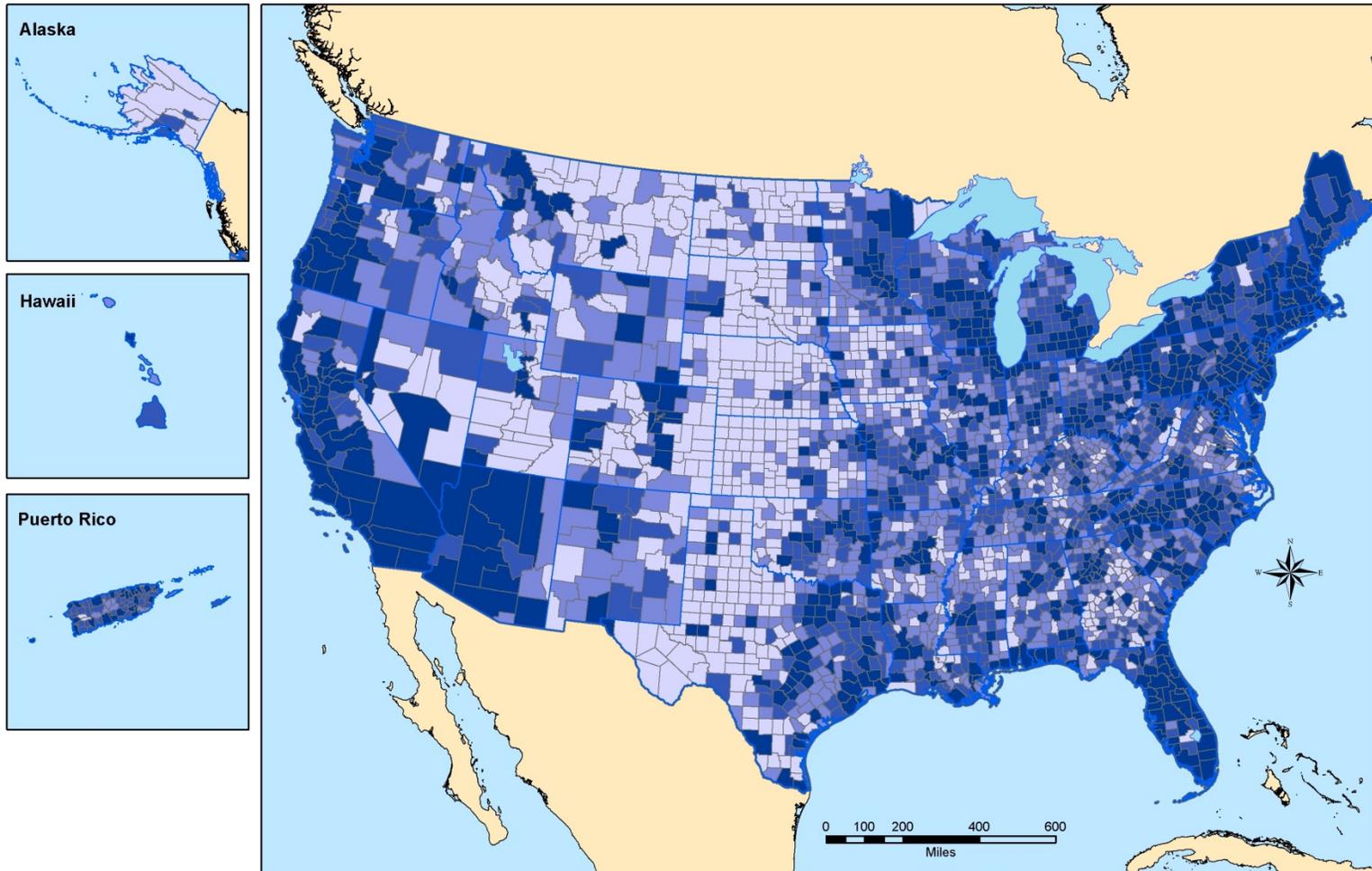

 GeoSpatial Outcomes Division
 VHA Office of Rural Health
 Map Created By: ORH RHRC-ER (DCR, LKW, JKA, ERL)
 GeoSpatial Outcomes Division
 (Map Creation Date: 9/8/2015)
 Map Information by: PSSG, VSSC, ESRI
 ArcGIS 10.2x

Obesity



Patient Count	
	356 - 4,802 (Lower 25%)
	4,803 - 13,494
	13,495 - 21,568
	21,569 - 81,571 (Upper 25%)

Map 2:
Number of VHA Patients with Obesity
By State FY - 2014

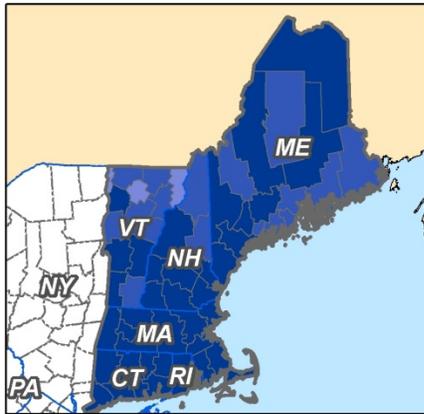


Number of VHA Patients with Obesity
By County FY - 2014

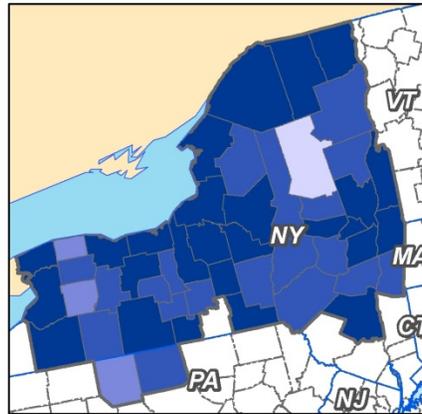


Map Created By: ORH RHRC-ER (DCR, LKW, JKA, ERL)
GeoSpatial Outcomes Division
(Map Creation Date: 9/9/2015)
Map Information by: PSSG, VSSC, ESRI
ArcGIS 10.2x

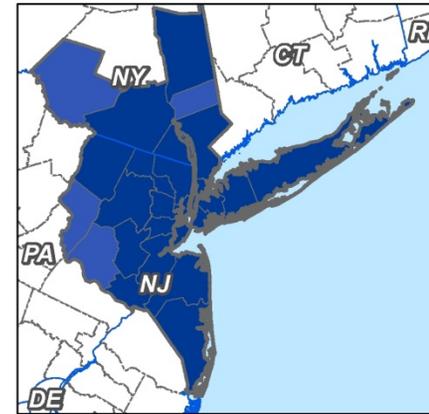
Obesity



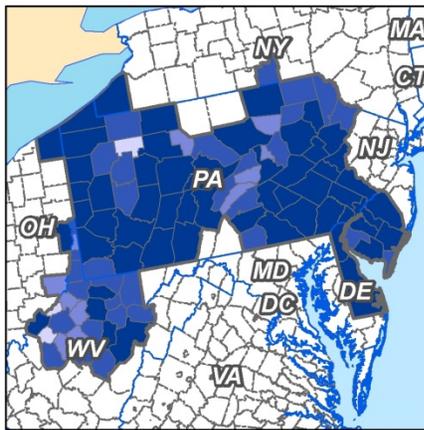
VISN 1



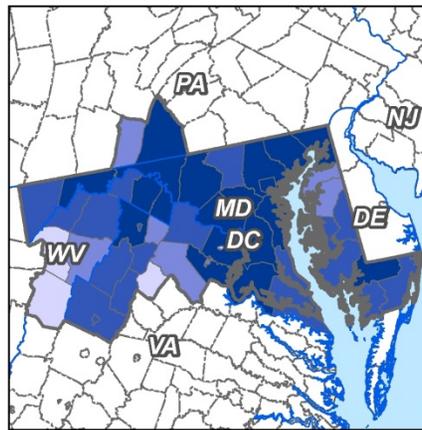
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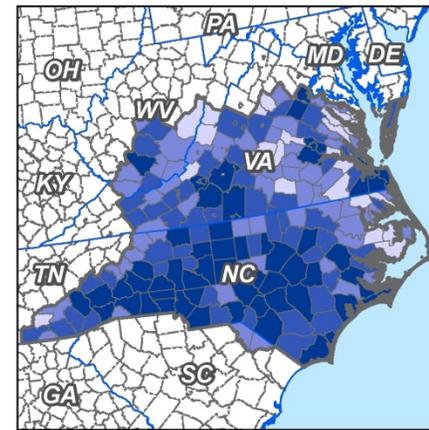
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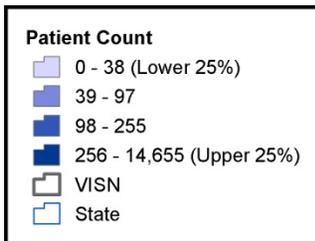
VISN 4



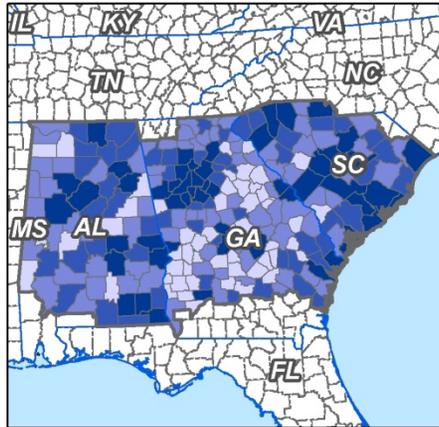
VISN 5



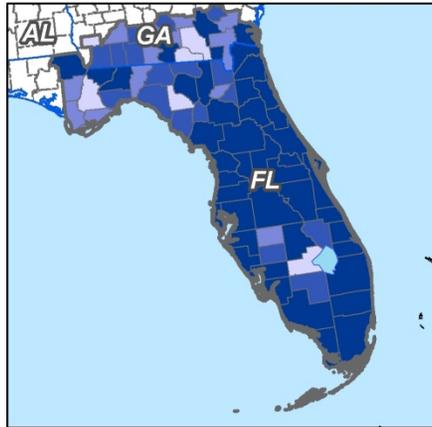
VISN 6



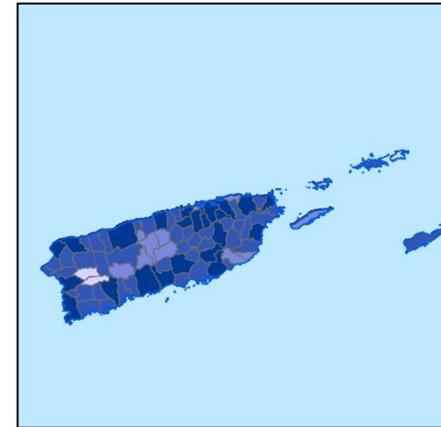
Map 4:
Number of VHA Patients
with Obesity
by County, FY - 2014



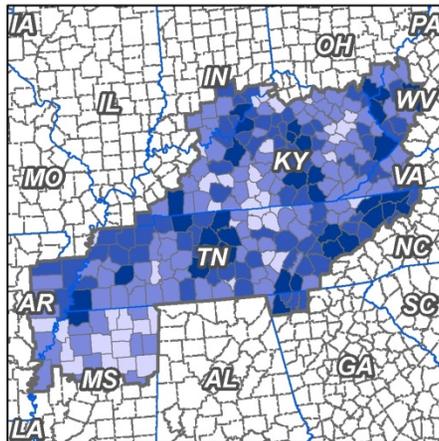
VISN 7



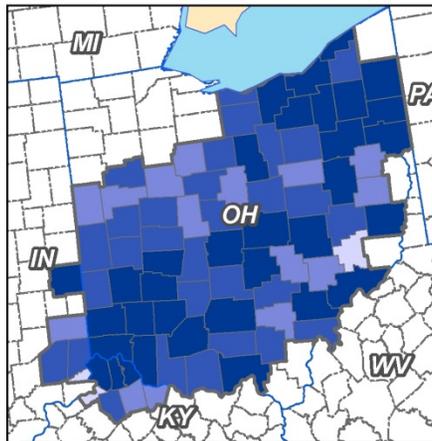
VISN 8



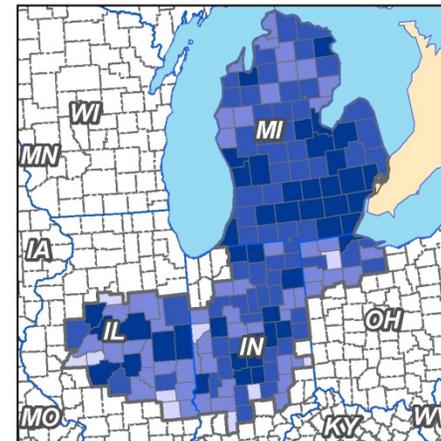
VISN 8 Puerto Rico & Virgin Islands



VISN 9



VISN 10



VISN 11

Patient Count

- 0 - 38 (Lower 25%)
- 39 - 97
- 98 - 255
- 256 - 14,655 (Upper 25%)
- VISN
- State

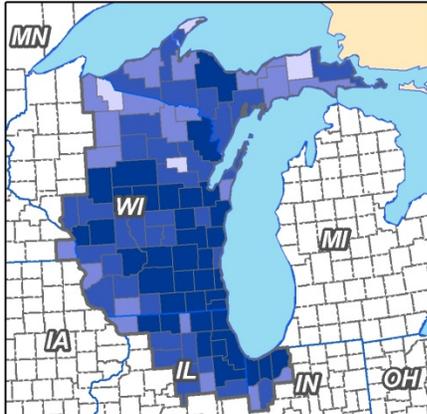
Map 5:

Number of VHA Patients
with Obesity
By County FY - 2014

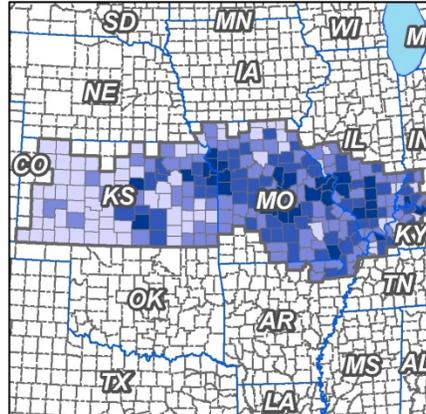


Map Created By: ORH RHRC-ER (DCR, LKW, JKA, ERL)
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Map Information by: PSSG, VSSC, ESRI
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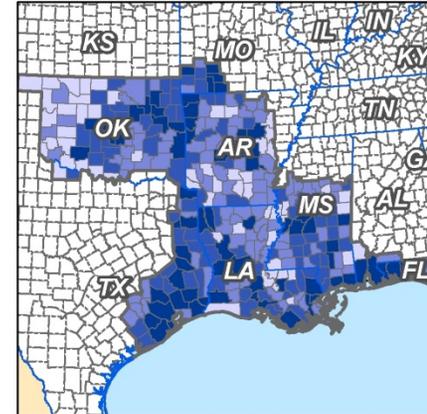
Obesity



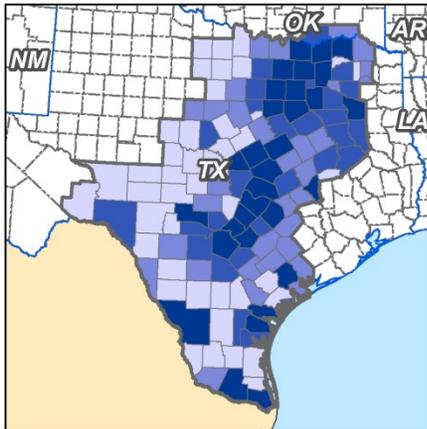
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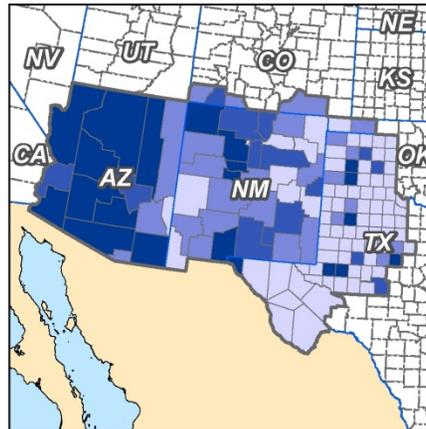
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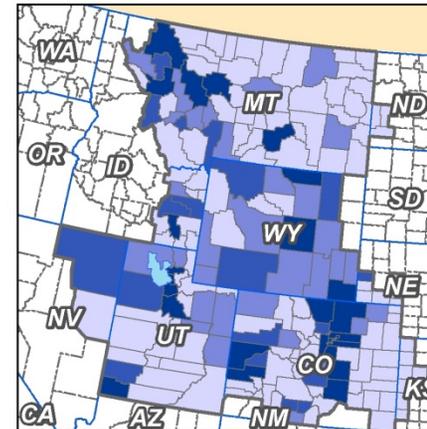
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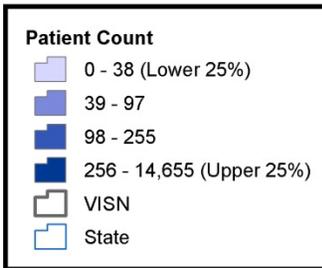
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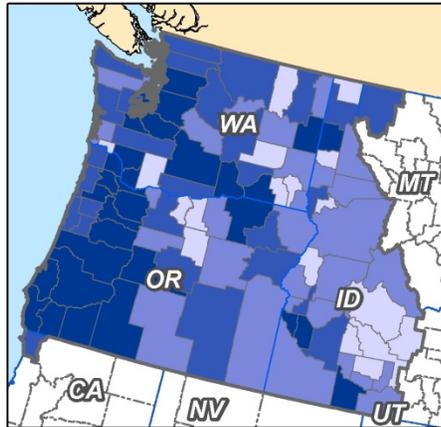
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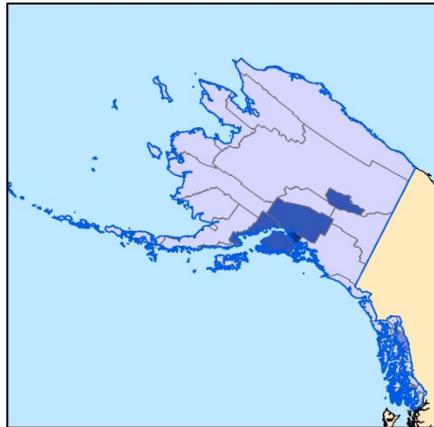
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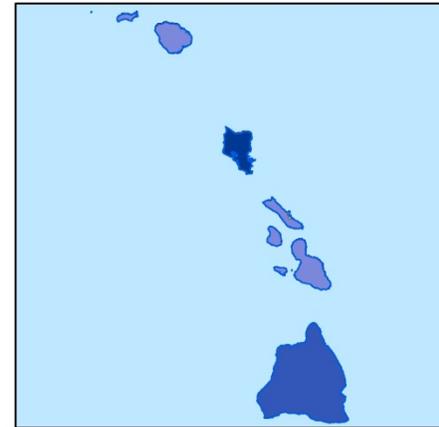
Map 6:
Number of VHA Patients
with Obesity
By County, FY - 2014



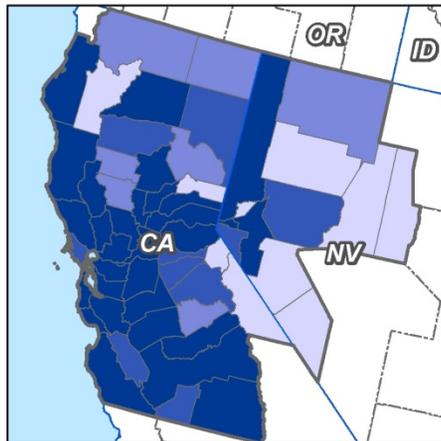
VISN 20



VISN 20- Alaska



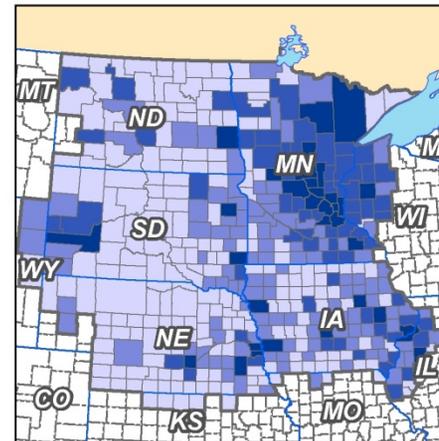
VISN 21- Hawaii



VISN 21



VISN 22



VISN 23

Patient Count

- 0 - 38 (Lower 25%)
- 39 - 97
- 98 - 255
- 256 - 14,655 (Upper 25%)
- VISN
- State

Map 7:

Number of VHA Patients
with Obesity
By County, FY - 2014



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GeoSpatial Outcomes Division
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Map Information by: PSSG, VSSC, ESRI
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Section II Highlights: Rural and Highly Rural VHA Patients with Obesity

This section focuses on the overall prevalence of Obesity in each Veterans Integrated Service Network, broken down by the following rurality categories: *highly rural*, *rural*, *urban*, and *unknown*. Beginning with Fiscal Year 2011, the repository from where these data were extracted obtained the rural designation data from the most recent geocoded rurality table provided by VHA's Planning System Support Group (PSSG). If not available from this source, the repository's algorithm then looks to the Office of Rural Health's (ORH) ZIP-based file located on the ORH website.¹ In FY-2014*, the VHA's definition of rurality was based on the U.S. Census definition for rural and urban, with an added category of Highly Rural. The definition of these categories is as follows:

- ❖ *urban* - areas defined by U.S. Census as an urbanized area.
- ❖ *rural* - all other areas excluded in U.S. Census defined urbanized areas
- ❖ *highly rural* - any rural area within a county with less than 7.0 civilians per square mile

Since the *rural and highly rural* categories are of particular interest in this volume, numbers and percentages are distinctively highlighted in shades of blue in Table 2. For the maps, urban areas are shaded and urban patients are removed from the numerator and denominator. The maps in this section illustrate graphically the data on rural and highly rural patients with Obesity. For this section, both the number and the percentages of rural and highly rural patients with Obesity at the VISN, State, and county levels are mapped.

*Note: Starting at the beginning of FY-2015, the VA changed its definitions based on Rural-Urban Commuting Area (RUCA) Codes. Future editions of the Rural Veterans Health Care Atlas will use the new definition of rurality: Urban Area: Census tracts with at least 30 percent of the population residing in an urbanized area as defined by the Census Bureau; Rural Area: Land areas not designed as urban or highly rural. Highly Rural Area: Sparsely populated areas — less than 10 percent of the working population commutes to any community larger than an urbanized cluster, which is typically a town of no more than 2,500 people.

National Overview

In FY-2014, 914,251 VHA patients had a primary or secondary diagnosis of Obesity. The majority of patients with Obesity lived in urban areas (62.54%). However, nearly half resided in either rural (N=332,674) or highly rural (N=9,291) areas (37.4% combined).

VISN Overview

The Rocky Mountain Network (VISN 19) had the highest number of patients with Obesity residing in a defined *highly rural* area at 2,597, which represented 11.45% of the total number of patients with Obesity in that network (Table 2). The South Central Network (VISN 16) had the highest number of patients with Obesity residing in a defined *rural* area at 39,899 which represented 48.91% of the total number of patients with Obesity in that network. Four of the 21 VISNs had a higher proportion of *rural* patients compared to *urban* patients with Obesity: Upstate New York Network (VISN 2), Mid South Network (VISN 9), Heartland Network (VISN 15), and Midwest Network (VISN 23).

Map 8 and Map 9 show the number and percentages of rural and highly rural patient with Obesity by VISN. VISN 4 showed both a high volume of rural and highly rural patients with Obesity and a large proportion of their rural and highly rural patient population who had this disorder. VISNs 6, 9, 20, and 23 had a relatively large number of patients with Obesity, but the proportion of rural and highly rural patients with Obesity represented a low to moderate percentage of the total rural and highly rural patient population. Conversely, VISNs 5 and 22 had a low to moderate number of combined rural and highly rural patients with Obesity, but this disorder was quite prevalent in the rural and highly rural patient population.

State Overview

Map 10 shows the number of VHA rural and highly rural patients with Obesity by State (by quartile). The top 10 States with the highest number of rural and highly rural patients with Obesity by rank order were: Texas (N=23,330), Pennsylvania (N=17,075), North Carolina (N=16,479), Florida (N=14,933), New York (N=13,534), Missouri (N=13,278), Ohio (N=12,512), Wisconsin (N=12,077), Michigan (N=11,651), and Georgia (N=11,605). The proportion of rural and highly rural patients with Obesity to the total rural and highly rural patient population is displayed in Map 11. The U.S. States and territories with the highest percentage of their rural and highly rural patients (and more than 10 patients classified as rural or highly rural) that have Obesity were: Puerto Rico (36.49%), U.S Virgin Islands (29.53%),

Pennsylvania (20.23%), New Jersey (19.74%), West Virginia (19.57%), Wisconsin (19.26%), Mississippi (19.04%), Vermont (19.01%), Kentucky (18.98%), and Delaware (18.79%). Thus, the States of Pennsylvania and Wisconsin showed both a high number and a high proportion of rural and highly rural patients with Obesity.

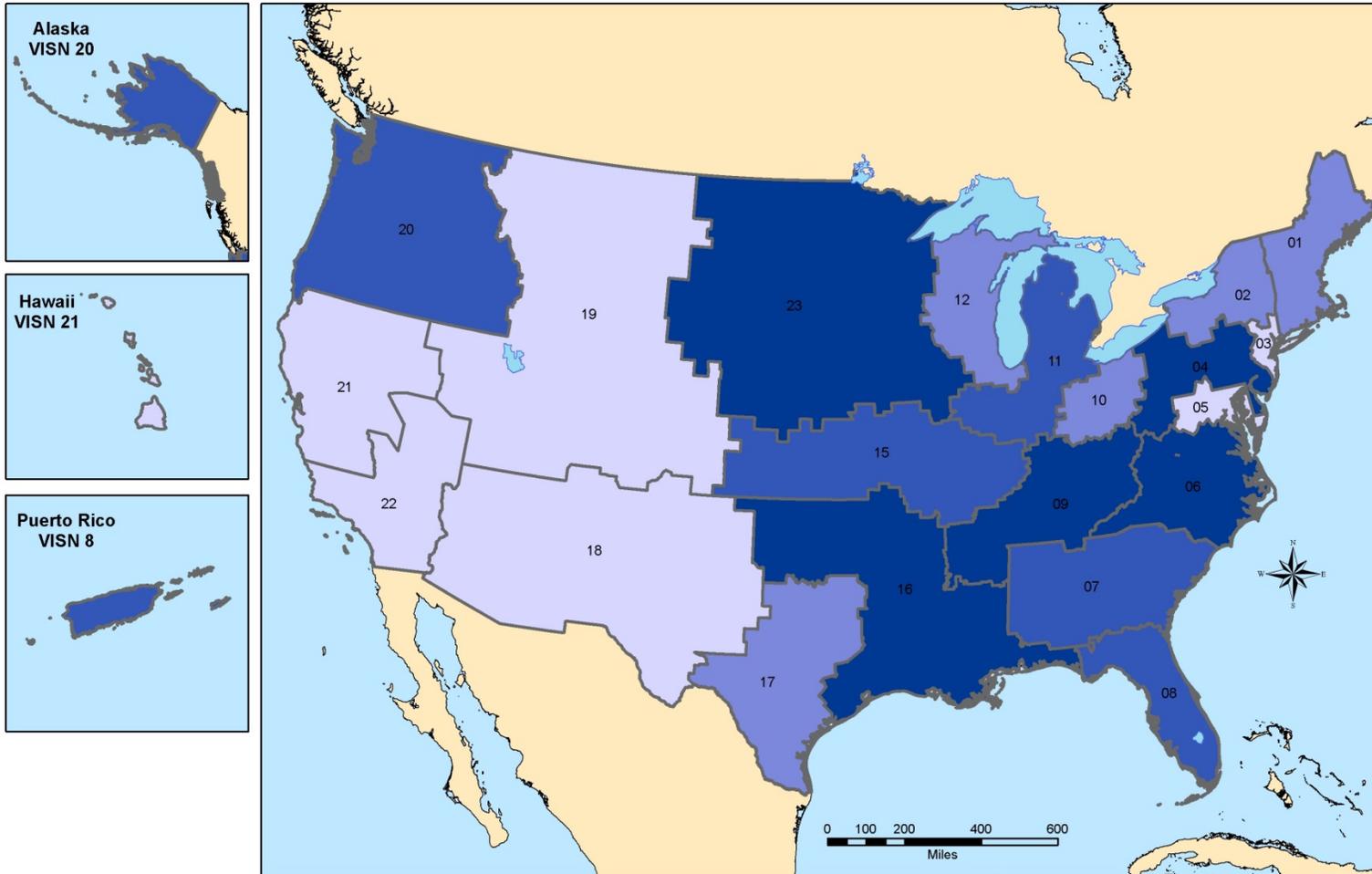
County Overview

The number of rural and highly rural patients with Obesity by county is displayed by quartiles in Map 12, with the highest 25% in terms of volume designated by the darkest shade. The proportion of rural and highly rural patients with Obesity of the total rural and highly rural patient population is portrayed in Map 13, with the highest 25% in terms of proportion designated in the darkest shade. In addition to the National map, eight additional maps are provided that zoom to the VISN level (Maps 14-21) to give a clearer picture of the number and percentages of rural and highly rural patients with Obesity and the geographic patterns by county within each VISN. The top 10 counties with the largest number of VHA rural and highly rural patients with Obesity across the U.S. were in the States of Florida (2 counties), Oregon (1 county), New York (1 county), California (2 counties), West Virginia (1 county), Arizona (1 county), Pennsylvania (1 county), and Maine (1 county). Marion County, Florida had the largest number of rural and highly rural patients with Obesity (N=1,197) followed by, in rank order: Douglas County, Oregon (N=1,099), Oswego County, New York (N=1,019), San Bernardino County, California (N=935), Harrison County, West Virginia (N=925), Yavapai County, Arizona (N=861), Butler County, Pennsylvania (N=854), Columbia County, Florida (N=841), Kern County, California (N=818), and Kennebec County, Maine (N=802). The top 10 counties with the largest proportion of their rural and highly rural patients (and there were at least 10 rural and highly rural patients) with a Obesity diagnostic code were Braxton County, West Virginia (41.75%), Vieques Municipio, Puerto Rico (41.38%), Tucker County, West Virginia (41.35%), Santa Isabel Municipio, Puerto Rico (41.18%), Throckmorton County, Texas (41.18%), Randolph County, West Virginia (40.75%), Maricao Municipio, Puerto Rico (40.0%), Cabo Rojo Municipio, Puerto Rico (40.0%), Utuado Municipio, Puerto Rico (40.0%), and Alpena County, Michigan (39.67%).

Table 2: National and VISN Numbers and Percentages of VHA Patients with Obesity by Rurality, FY-2014

Prevalence Statistics by Rurality- Obesity, FY-2014									
Veterans Integrated Service Network	Total Number of Patients with Obesity	Highly Rural		Rural		Urban		Unknown	
		N	(%)	N	(%)	N	(%)	N	(%)
New England (01)	38,144	133	0.35	13,512	35.42	24,500	64.23	*	*
Upstate NY (02)	23,403	16	0.07	12,317	52.63	11,070	47.30	*	*
NY/NJ (03)	26,514	*	*	1,632	6.16	24,877	93.83	4	0.02
Stars and Stripes (04)	54,957	4	0.01	24,057	43.77	30,892	56.21	4	0.01
Capitol (05)	19,006	*	*	4,956	26.08	14,050	73.92	*	*
Mid-Atlantic (06)	53,994	17	0.03	25,084	46.46	28,890	53.51	5	0.01
Southeast (07)	54,283	4	0.01	21,629	39.84	32,647	60.14	4	0.01
Sunshine (08)	101,050	8	0.01	17,959	17.77	83,068	82.20	17	0.02
Mid South (09)	43,610	9	0.02	24,773	56.81	18,824	43.16	4	0.01
Ohio (10)	30,915	4	0.01	11,678	37.77	19,229	62.20	4	0.01
Vets in Partnership (11)	42,663	9	0.02	19,410	45.50	23,242	54.48	4	0.01
Great Lakes (12)	41,556	96	0.23	14,050	33.81	27,405	65.95	5	0.01
Heartland (15)	37,828	281	0.74	22,314	58.99	15,228	40.26	6	0.02
South Central (16)	81,576	113	0.14	39,899	48.91	41,558	50.94	7	0.01
Heart of Texas (17)	46,676	187	0.40	14,029	30.06	32,449	69.52	11	0.02
Southwest (18)	31,746	1,406	4.43	8,920	28.10	21,368	67.31	52	0.16
Rocky Mtn. (19)	22,677	2,597	11.45	6,629	29.23	13,446	59.29	7	0.03
Northwest (20)	36,152	1,736	4.80	13,102	36.24	21,311	58.95	4	0.01
Sierra Pacific (21)	33,660	353	1.05	8,135	24.17	24,817	73.73	355	1.05
Desert Pacific (22)	51,253	564	1.10	4,104	8.01	46,581	90.88	4	0.01
Midwest (23)	42,588	1,753	4.12	24,485	57.49	16,350	38.39	*	*
Grand Total	914,251	9,291	1.02	332,674	36.39	571,802	62.54	500	0.05

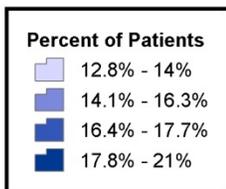
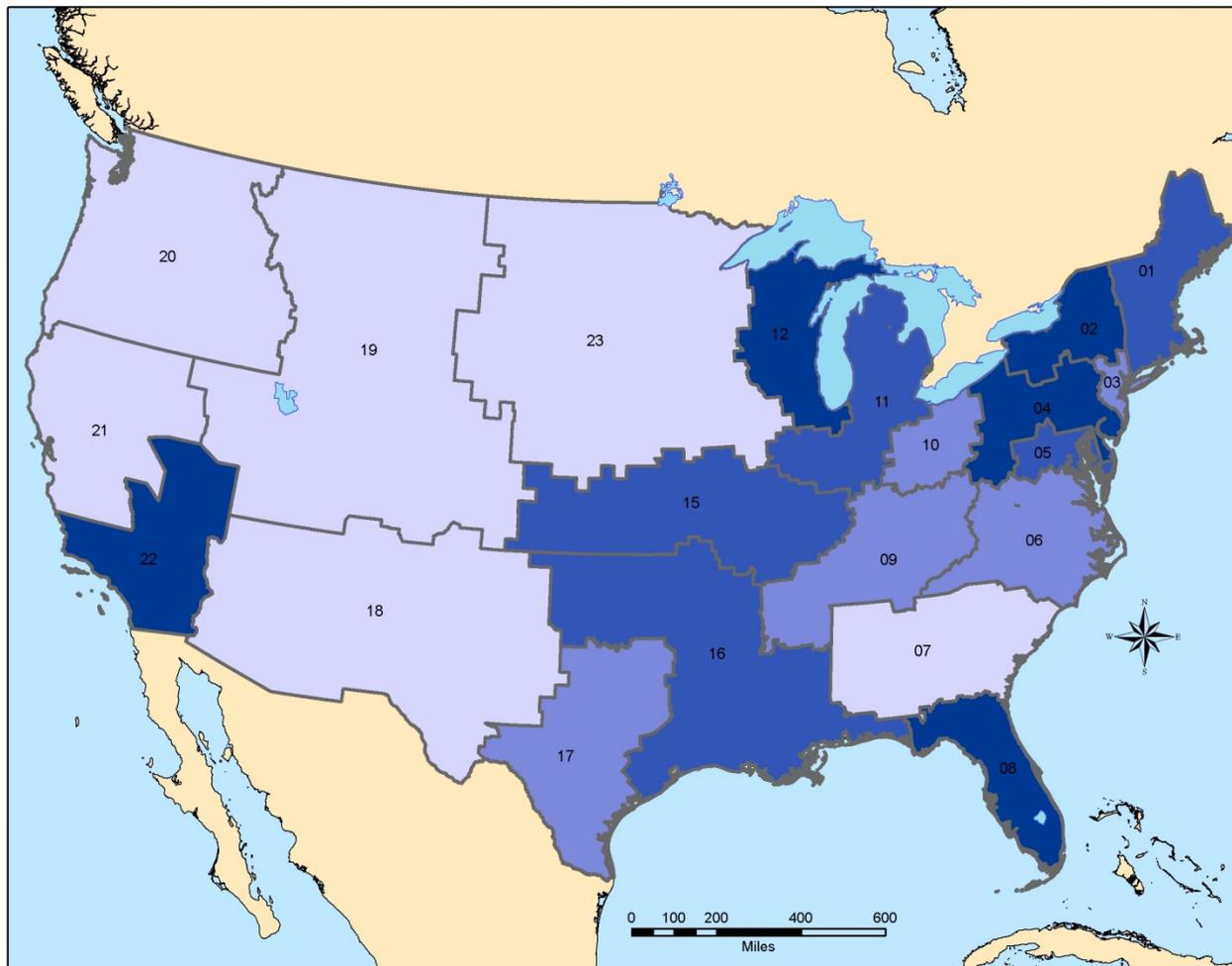
Obesity



Patient Count

- 1,633 - 10,326 (Lower 25%)
- 10,327 - 14,216
- 14,217 - 22,595
- 22,596 - 40,012 (Upper 25%)

Map 8:
Number of Rural and Highly Rural VHA Patients
with Obesity
By VISN FY - 2014

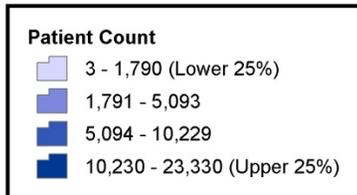
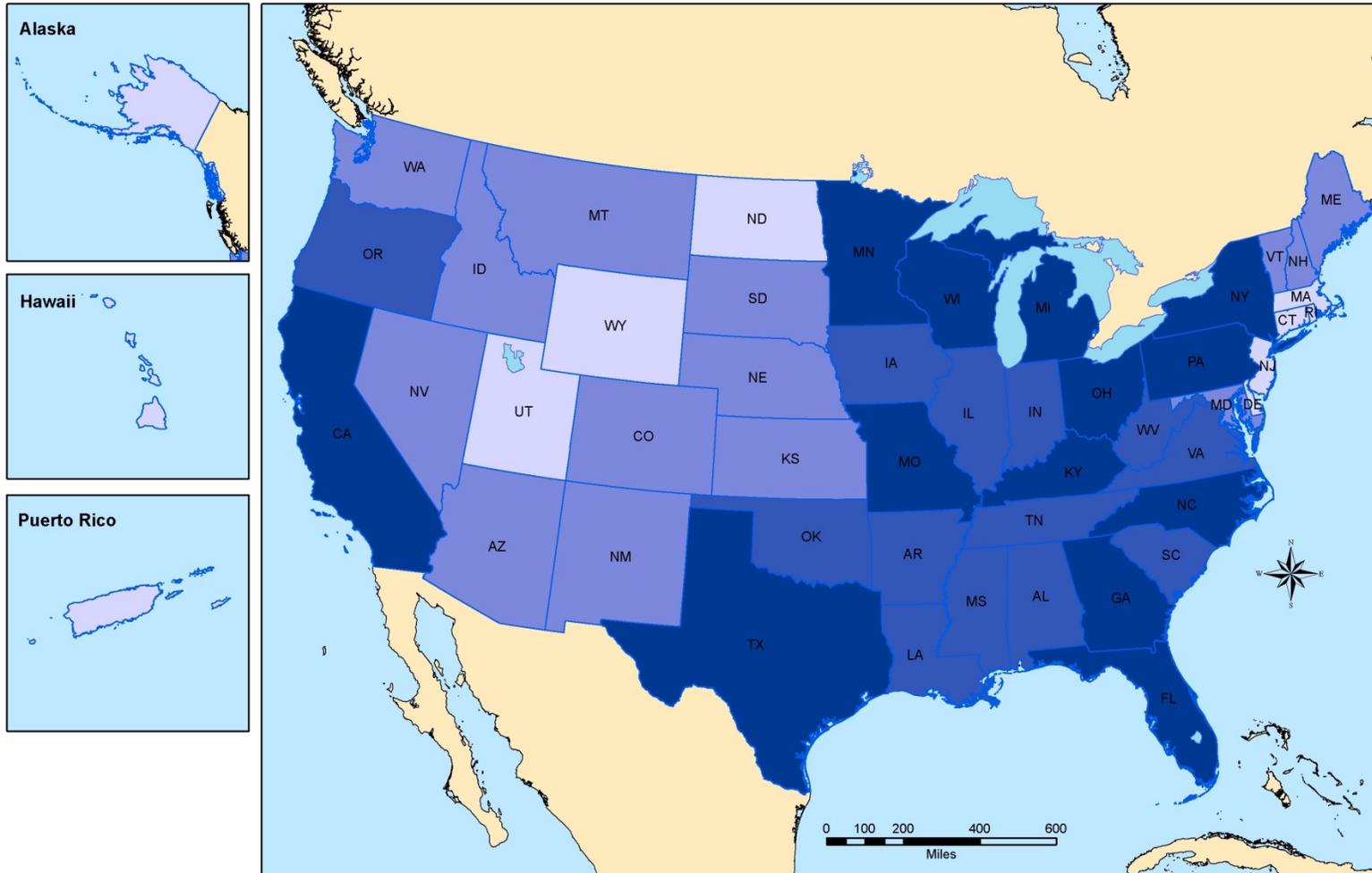


Map 9:
Percent of Rural and Highly Rural VHA Patients
with Obesity
Of All Rural and Highly Rural VHA Patients
By VISN FY - 2014

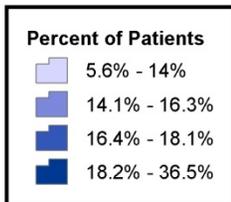
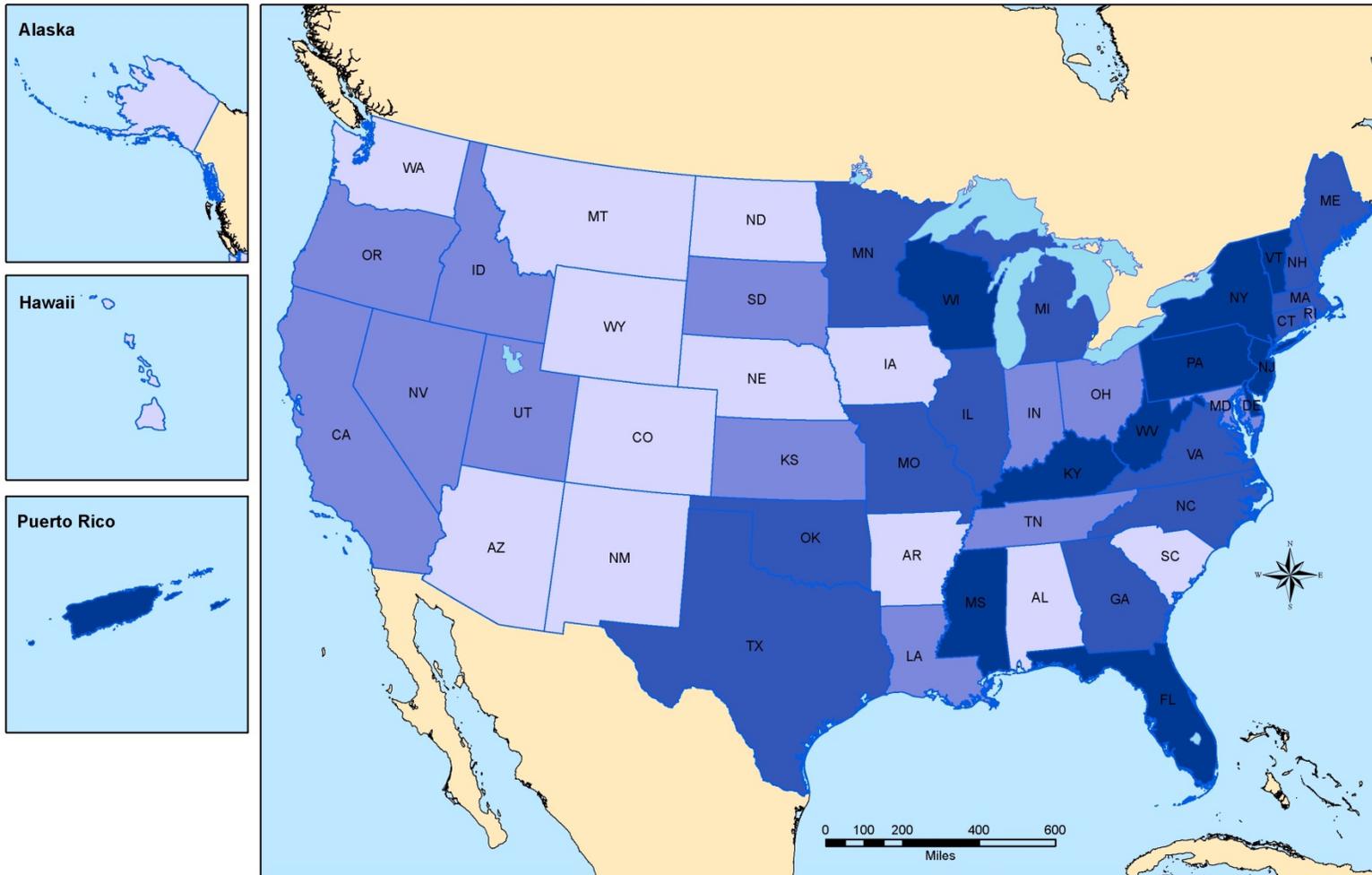


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GeoSpatial Outcomes Division
(Map Creation Date: 9/9/2015)
Map Information by: PSSG, VSSC, ESRI
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Obesity



Map 10:
Number of Rural and Highly Rural VHA Patients
with Obesity
By State FY - 2014

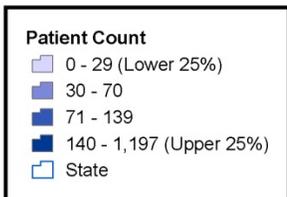
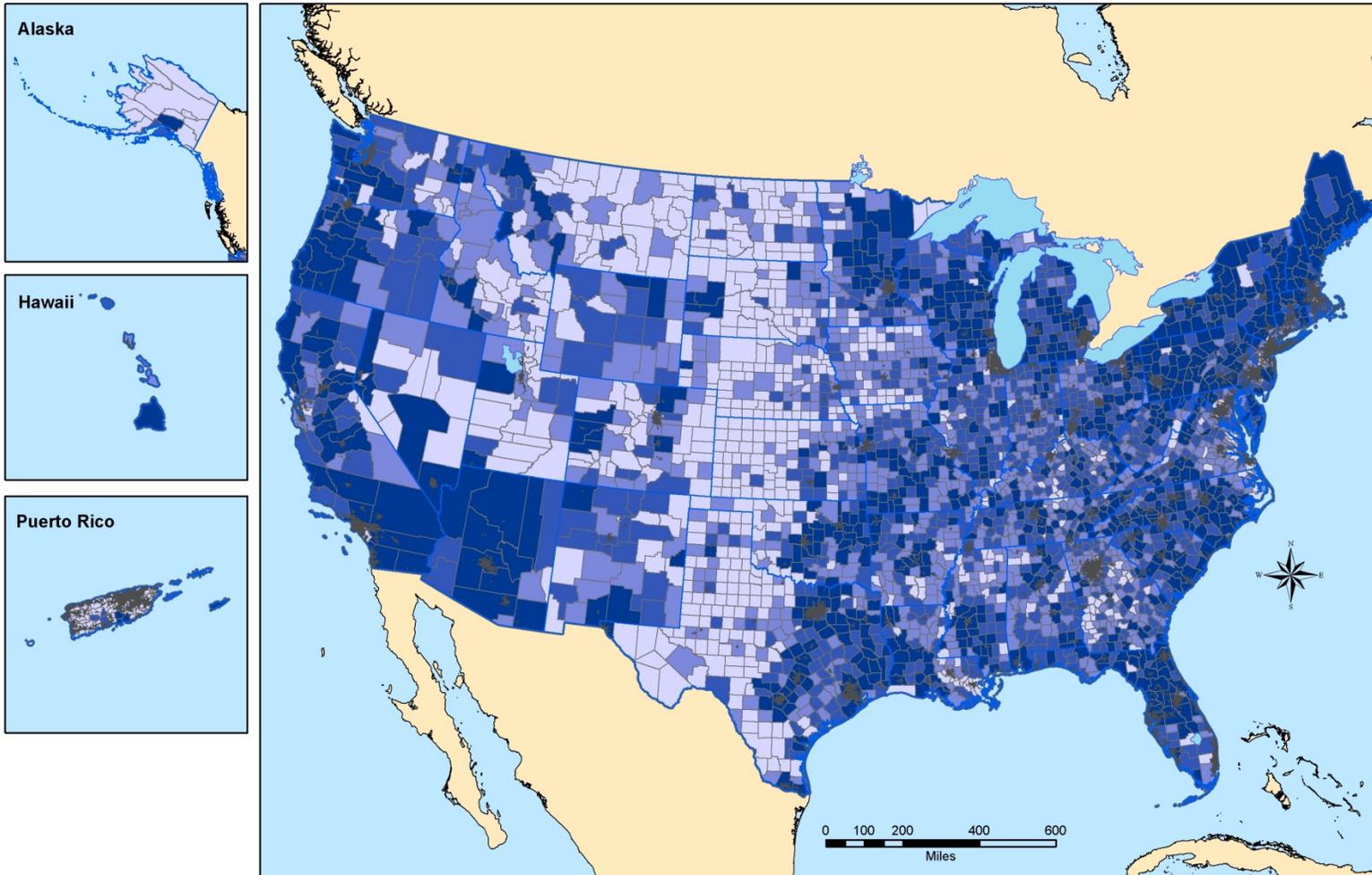


Map 11:
Percent of Rural and Highly Rural VHA Patients
with Obesity
Of All Rural and Highly Rural Patients
By State FY - 2014

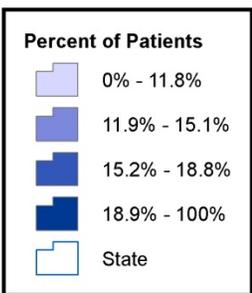
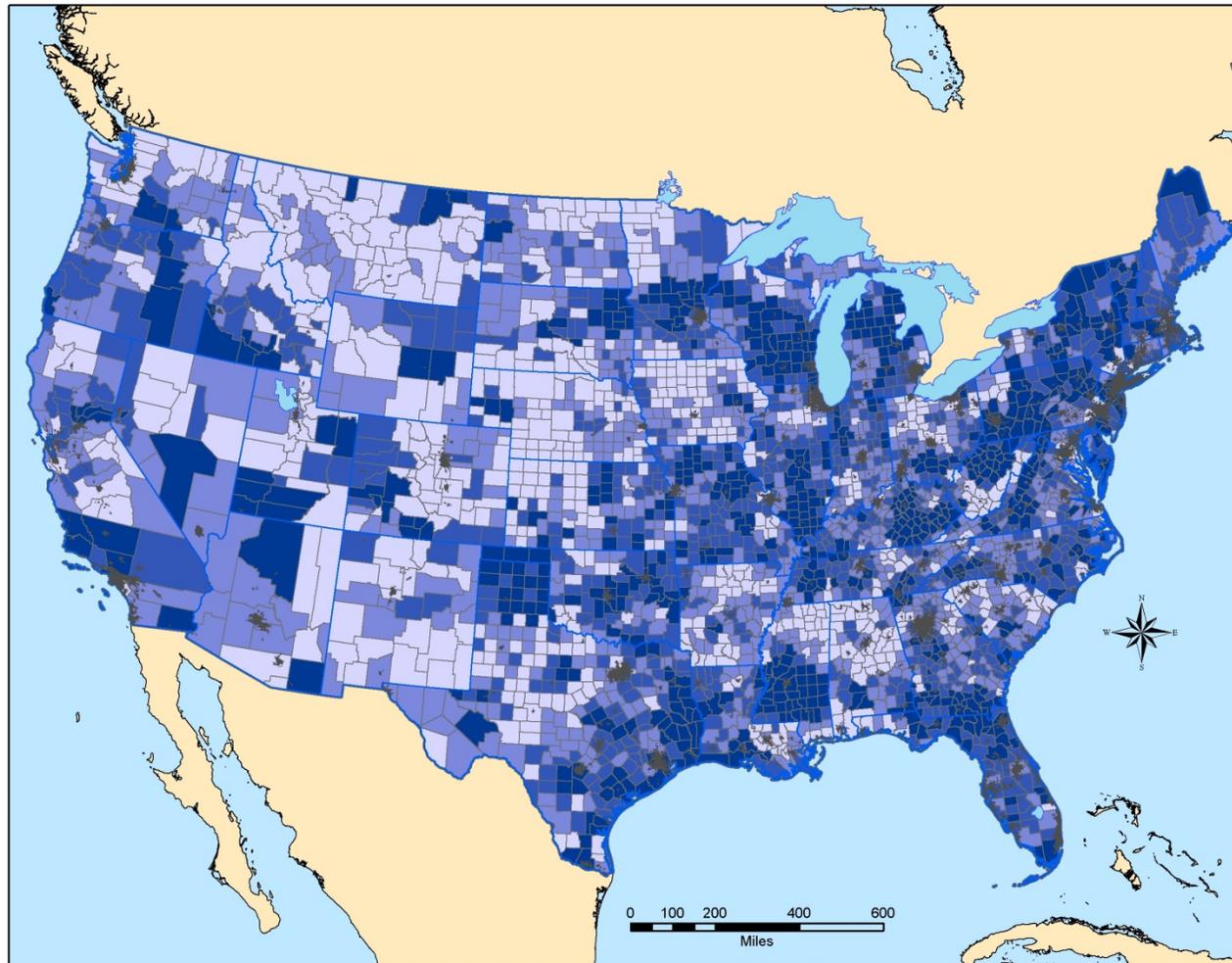
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VHA Office of Rural Health

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GeoSpatial Outcomes Division
(Map Creation Date: 9/10/2015)
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Obesity



Map 12:
Number of Rural and Highly Rural VHA Patients
with Obesity
By County, FY - 2014
Urban Areas "Shaded"

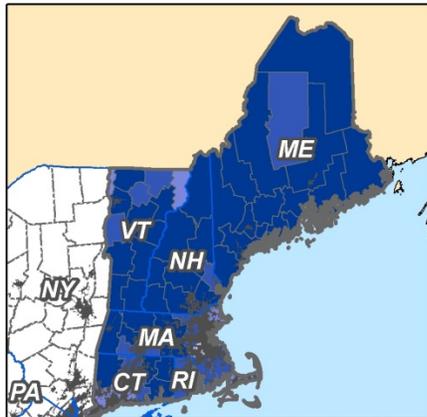


Map 13:
Percent of Rural and Highly Rural VHA Patients
with Obesity
Of All Rural and Highly Rural Patients
By County FY - 2014
Urban Areas "Shaded"

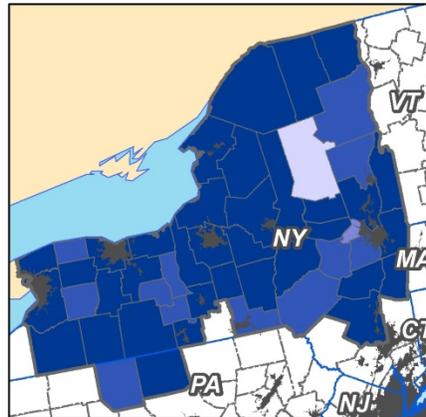


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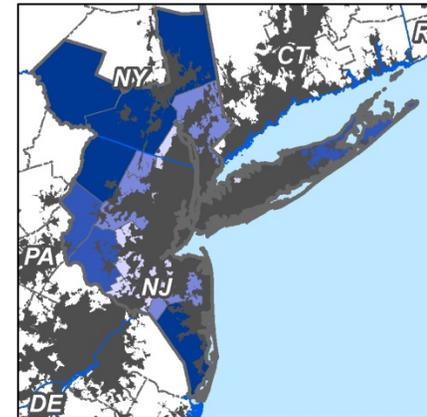
Obesity



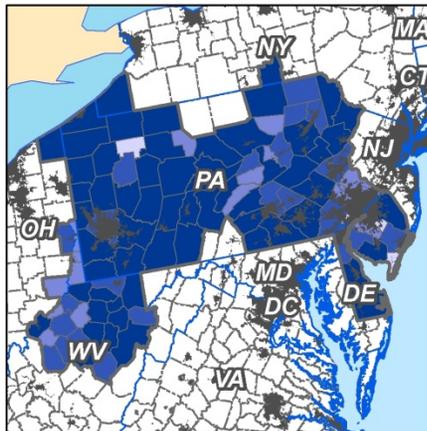
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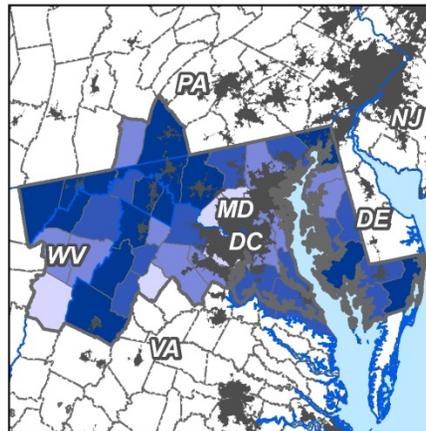
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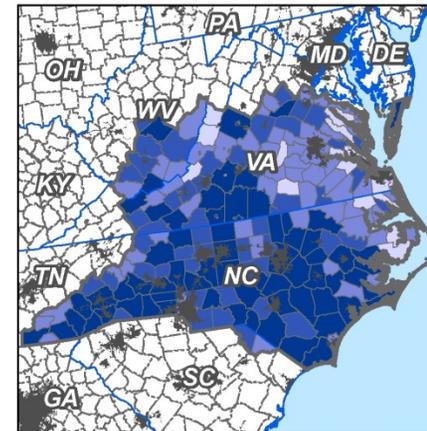
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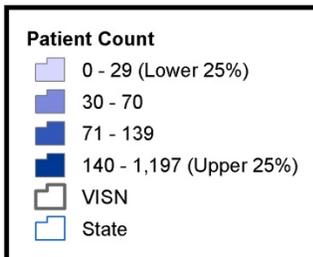
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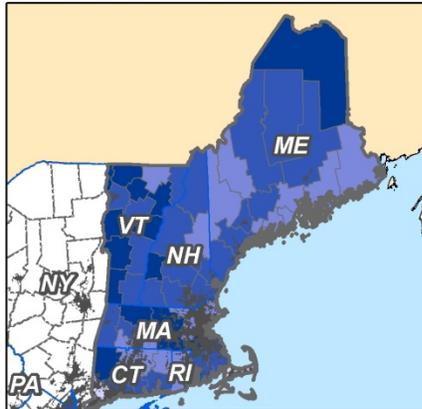
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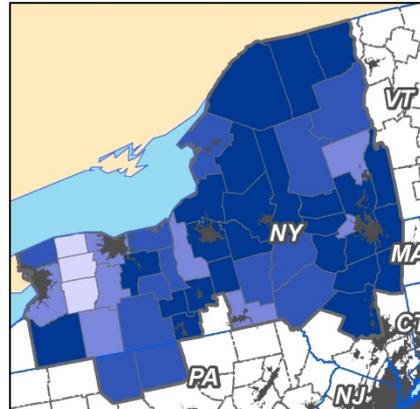
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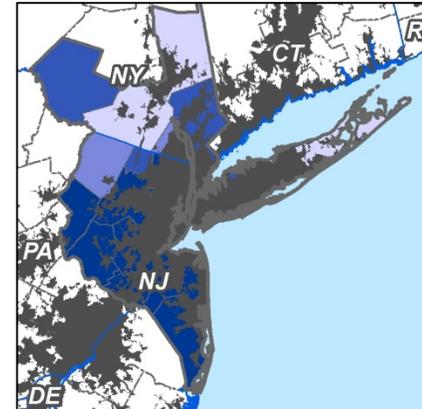
Map 14:
Number of Rural and Highly Rural VHA Patients
with Obesity
By County FY - 2014
Urban Areas "Shaded"



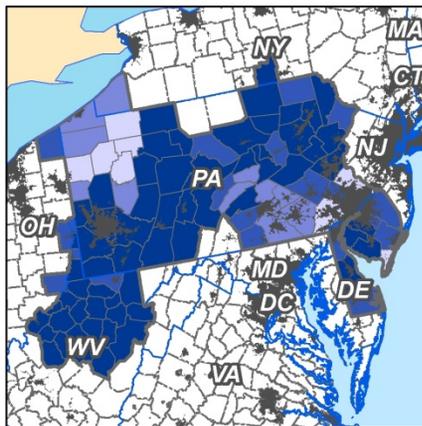
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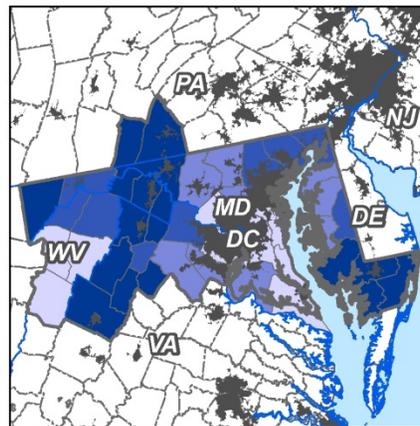
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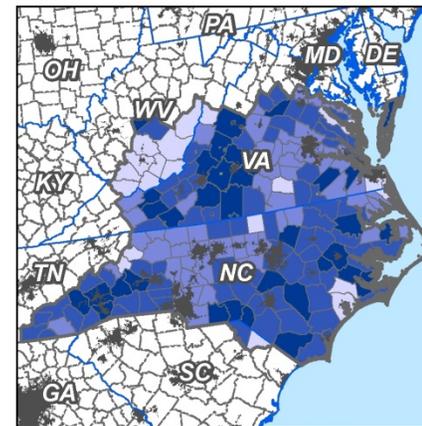
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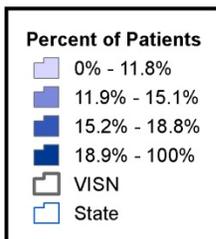
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VISN 5



VISN 6

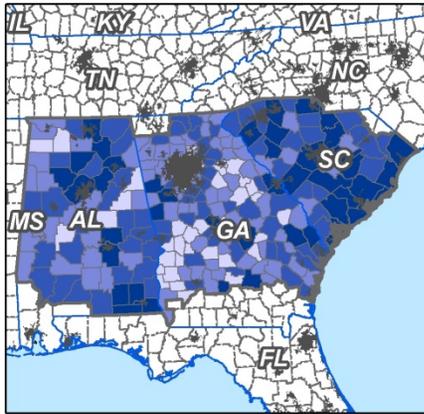


Map 15:
Percent of Rural and Highly Rural VHA Patients
with Obesity
Of All Rural and Highly Rural Patients
By County FY - 2014
Urban Areas "Shaded"

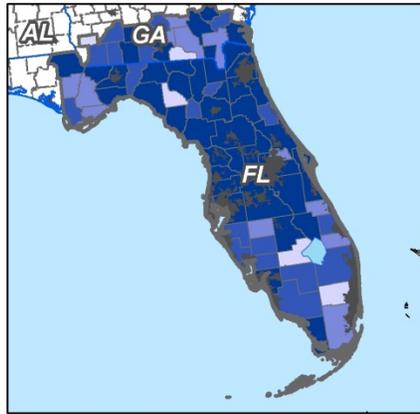


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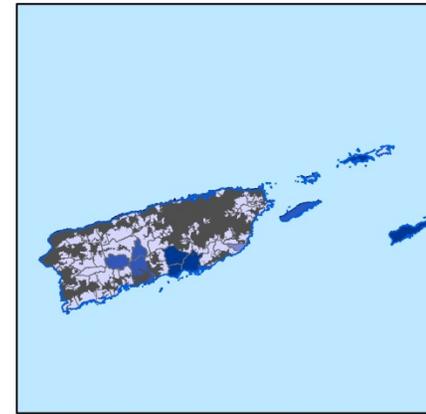
Obesity



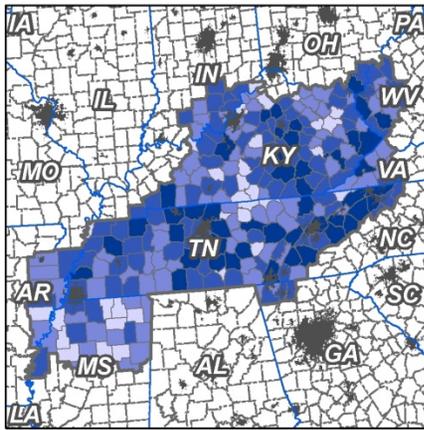
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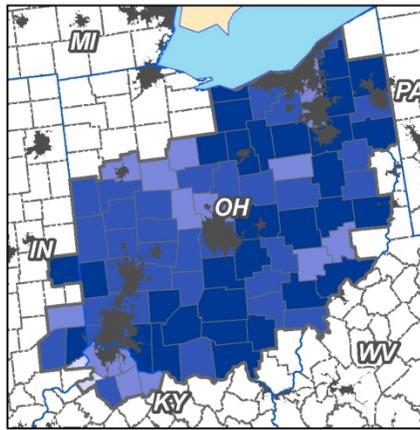
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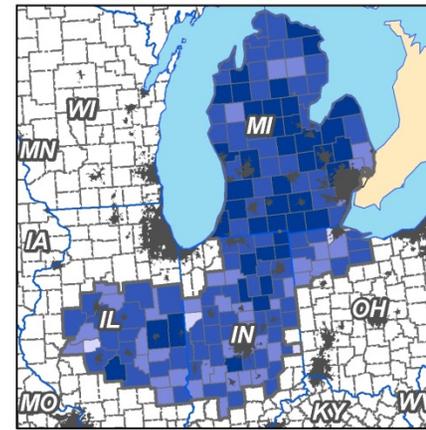
VISN 8 Puerto Rico & Virgin Islands



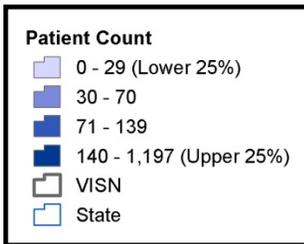
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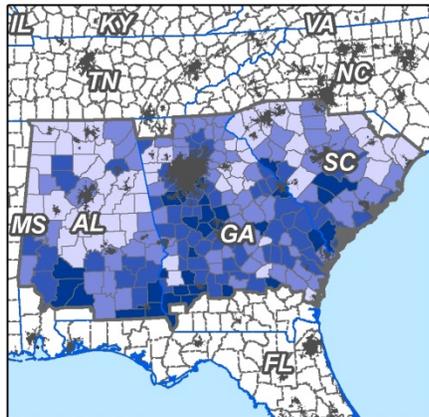
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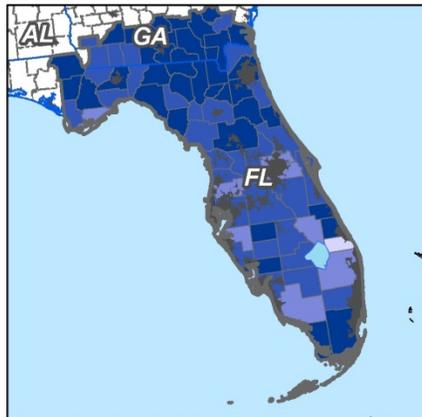
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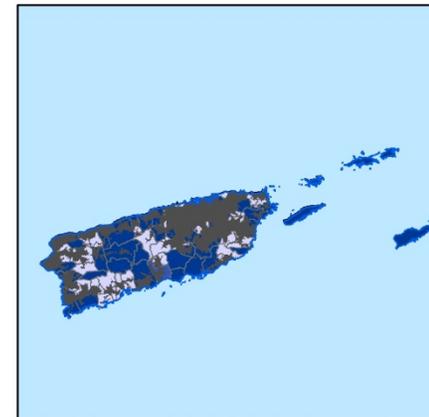
Map 16:
Number of Rural and Highly Rural VHA Patients
with Obesity
By County FY - 2014
Urban Areas "Shaded"



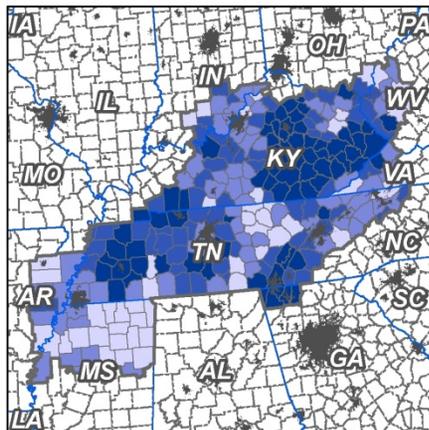
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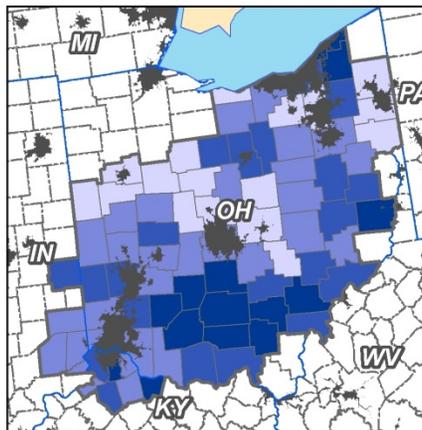
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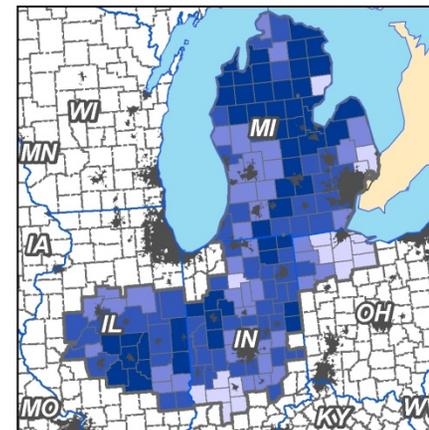
VISN 8 Puerto Rico & Virgin Islands



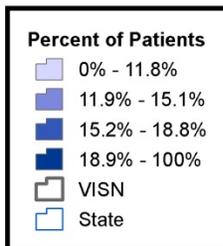
VISN 9



VISN 10



VISN 11



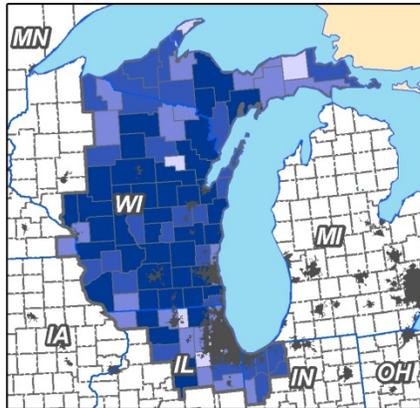
Map 17:

Percent of Rural and Highly Rural VHA Patients
with Obesity
Of All Rural and Highly Rural Patients
By County FY - 2014
Urban Areas "Shaded"

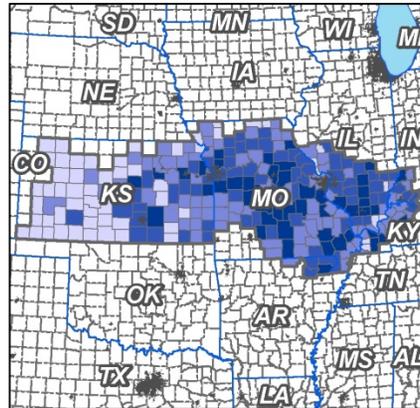


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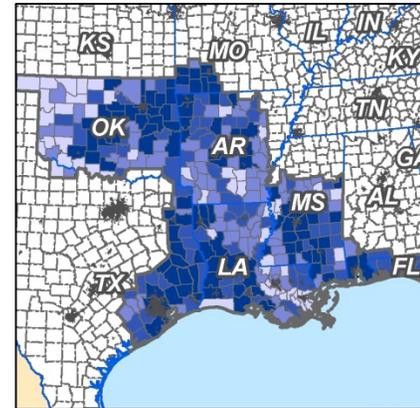
Obesity



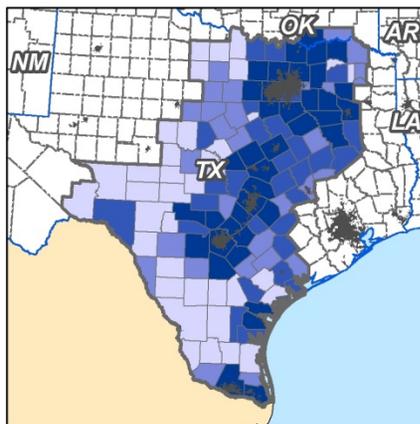
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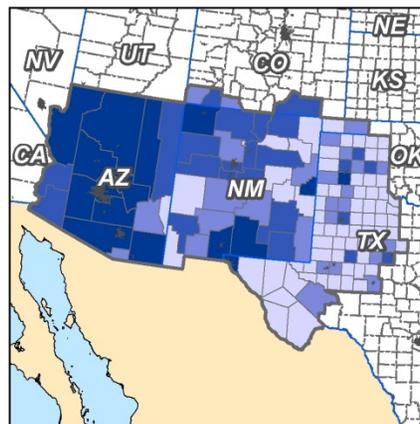
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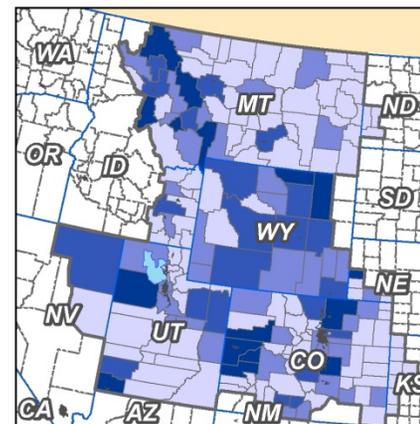
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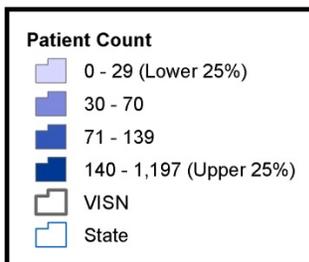
VISN 17



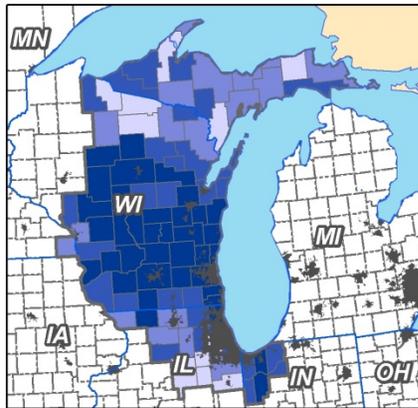
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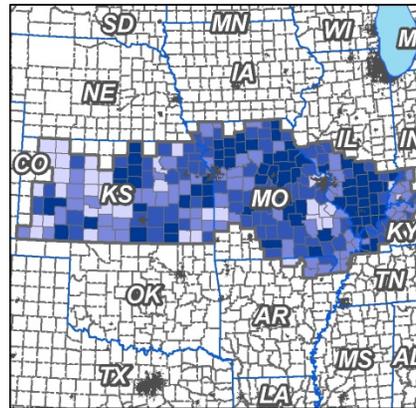
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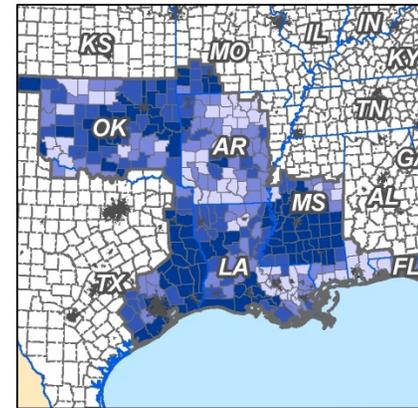
Map 18:
Number of Rural and Highly Rural VHA Patients
with Obesity
By County FY - 2014
Urban Areas "Shaded"



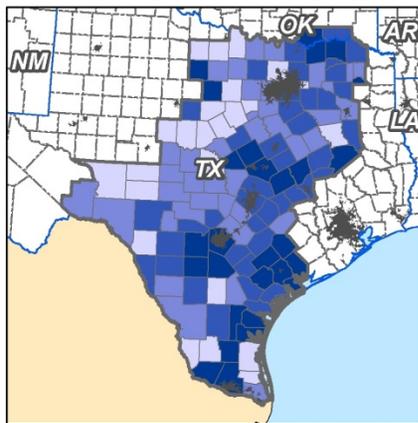
VISN 12



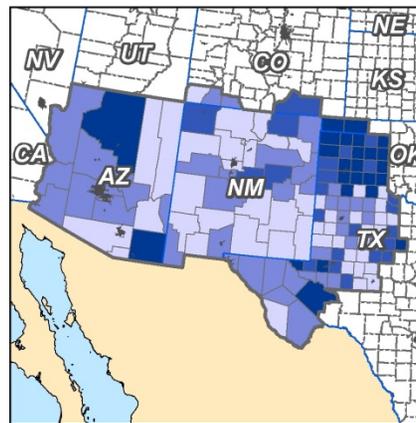
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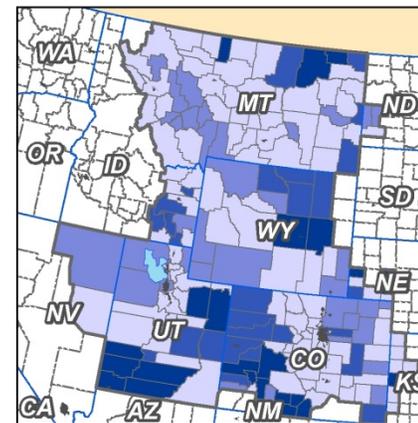
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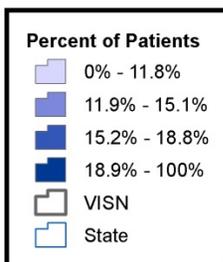
VISN 17



VISN 18



VISN 19



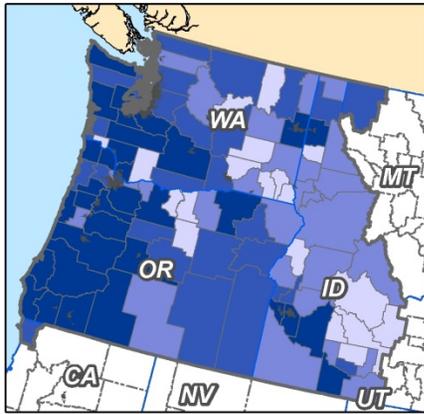
Map 19:

Percent of Rural and Highly Rural VHA Patients
with Obesity
Of All Rural and Highly Rural Patients
By County FY - 2014
Urban Areas "Shaded"

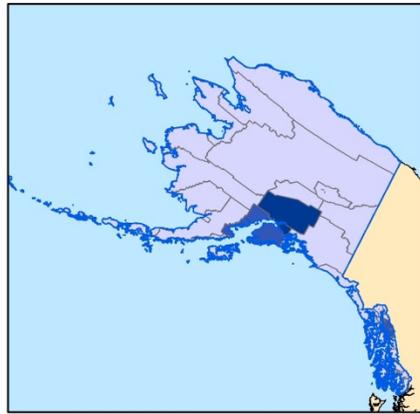


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Obesity



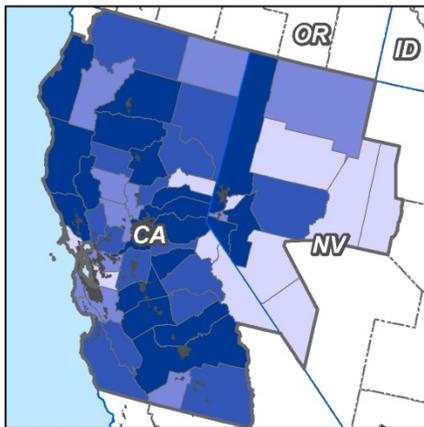
VISN 20



VISN 20- Alaska



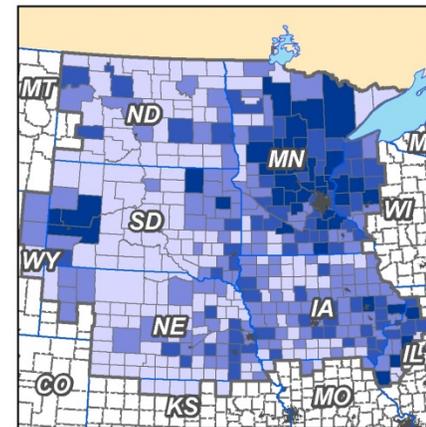
VISN 21- Hawaii



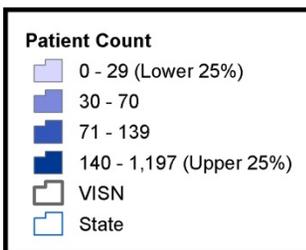
VISN 21



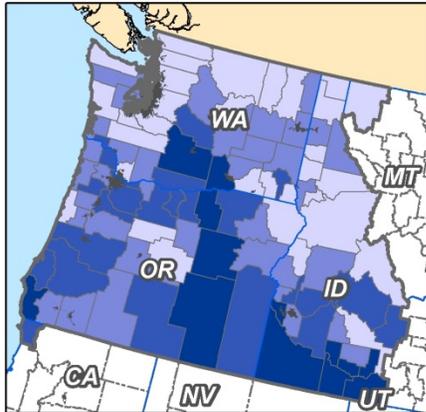
VISN 22



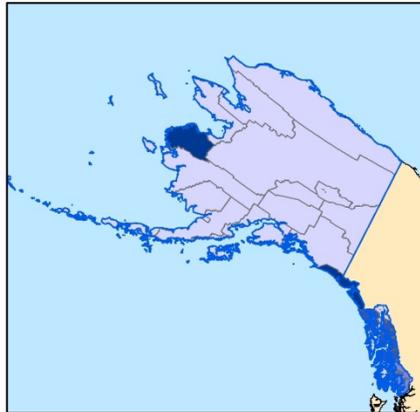
VISN 23



Map 20:
Number of Rural and Highly Rural VHA Patients
with Obesity
By County FY - 2014
Urban Areas "Shaded"



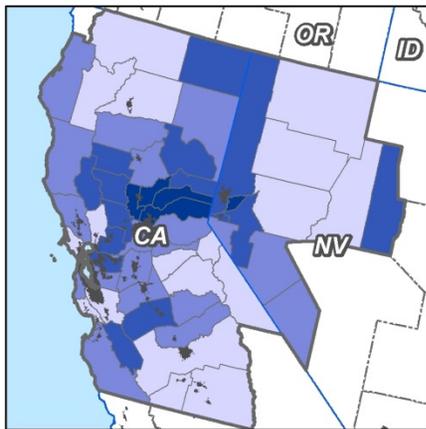
VISN 20



VISN 20- Alaska



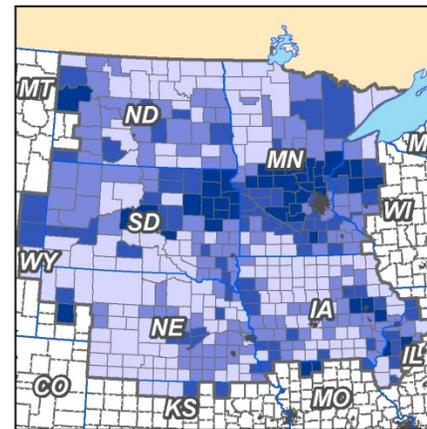
VISN 21- Hawaii



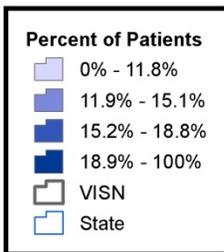
VISN 21



VISN 22



VISN 23



Map 21:

Percent of Rural and Highly Rural VHA Patients
with Obesity
Of All Rural and Highly Rural Patients
By County FY - 2014
Urban Areas "Shaded"



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Section III Highlights: Rural and Highly Rural VHA Subgroups of Patients with Obesity

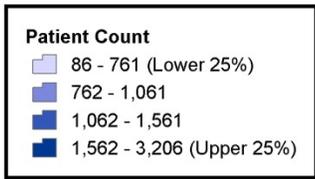
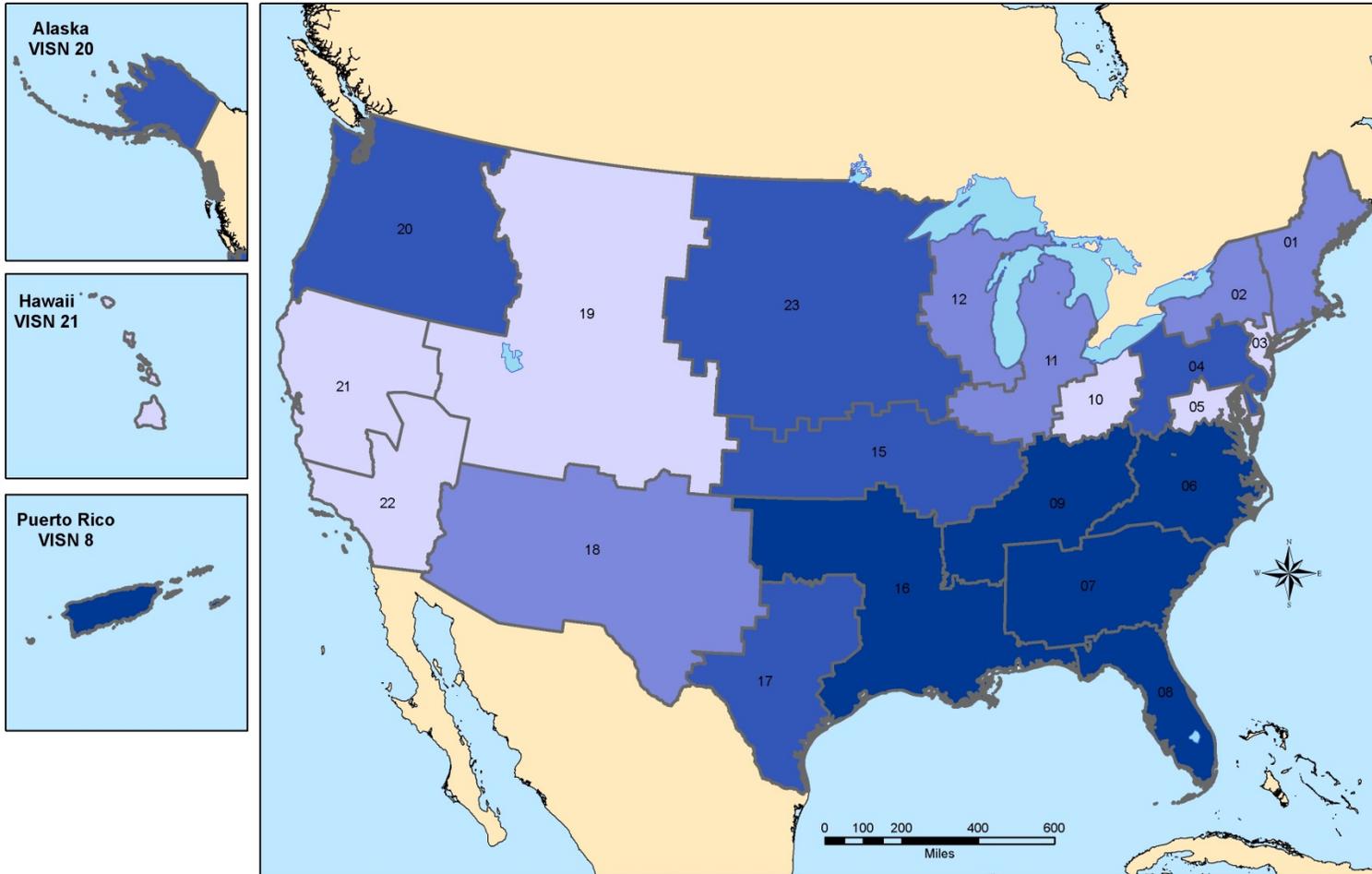
GENDER

Table 3 further illustrates overall prevalence of Obesity in each network, broken down by gender of patient and the same rurality categories as in Table 2. For the purposes of simplicity, the percent-column adjacent to the rurality columns are a combined percentage of rural and highly rural patients, indicated in red text. Female patients in rural and highly rural areas comprised 2.77% of total number of patients with Obesity at the National level. At the network level, nine VISNs had three to four percent of their Obesity patients as rural and highly rural females, with the Southeast Network (VISN 7) leading at 4.19%. Male patients, as expected, represented a much higher percentage of total patients with Obesity in each network. In three networks, more than half of male patients with Obesity lived in rural and highly rural areas, and in eleven networks, there were more than one-third. Male patients with Obesity in the Midwest Network (VISN 23) comprised the highest prevalence of 57.94% of total patients with Obesity in that network. The New York/New Jersey Network (VISN 3) had the lowest prevalence of rural and highly rural patients with Obesity - both for males (5.83%) and females (0.32%). Maps 22-25 display the number and percentage of rural and highly rural female patients with Obesity by VISN and State, with the darkest shade designating the highest quartile (upper 25%) in terms of volume and proportion. VISNs 6, 8, and 16 showed both a high volume and large proportion of rural and highly rural female patients with Obesity of the total rural and highly rural female patient population, as portrayed in Maps 22 and 23. VISN 20 had a high volume but relatively low to moderate proportion of rural and highly rural female patients with Obesity of the total rural and highly rural female patient population. Six of the 50 U.S. States, as shown on Maps 24 and 25, had both a high volume and high proportion (in upper 25% quartile) of rural and highly rural female patients with Obesity of the total rural and highly rural female patient population. Those U.S. States were Florida, Georgia, Kentucky, Mississippi, North Carolina, and Pennsylvania.

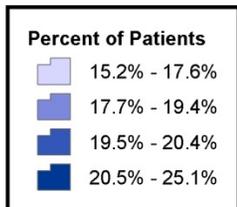
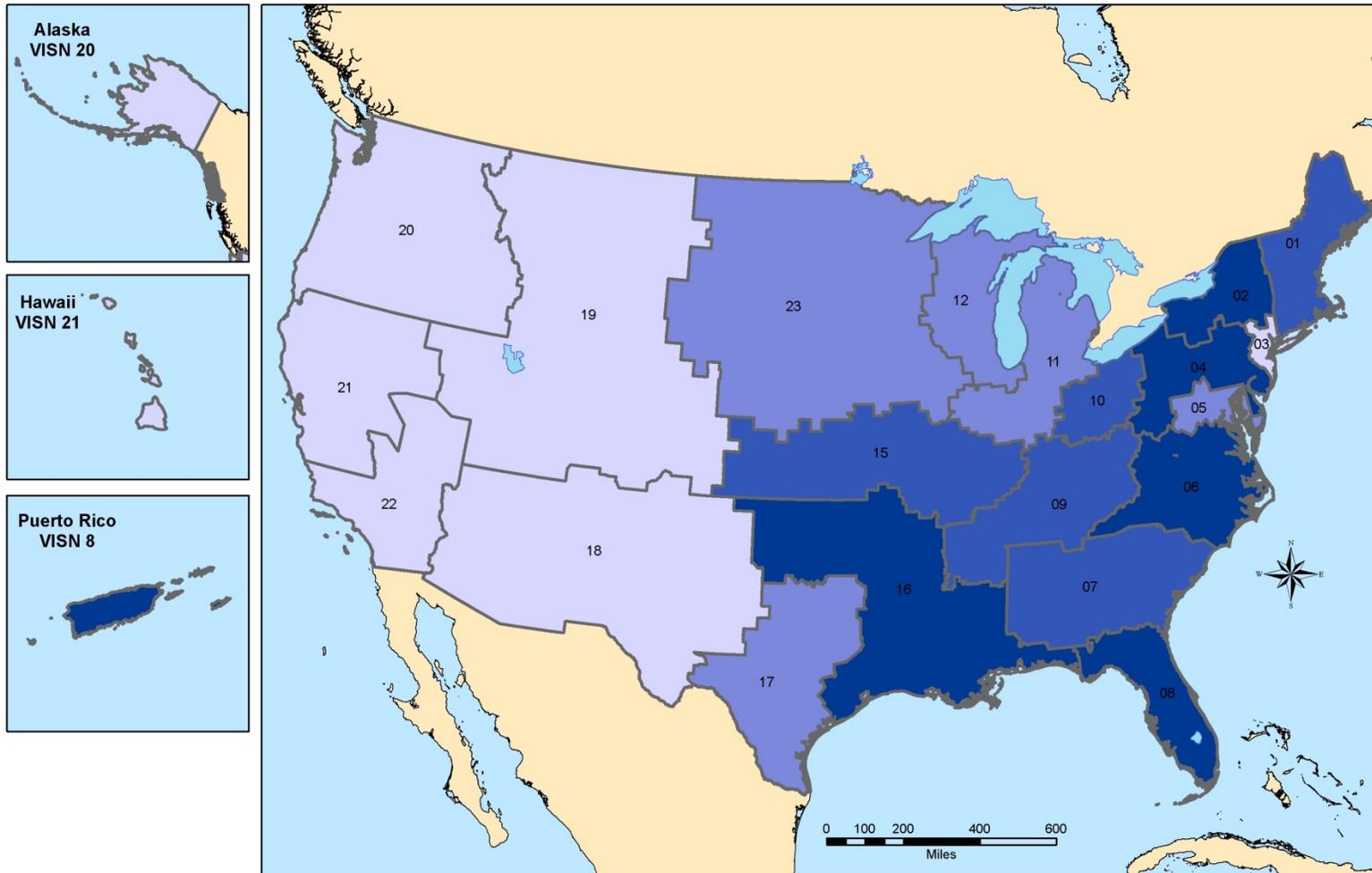
Table 3: National and VISN Numbers and Percentages of VHA Patients with Obesity, by Rurality and Gender, FY-2014

Prevalence Statistics by Gender and Rurality- Obesity, FY-2014											
Veterans Integrated Service Network	Total Number of Patients with Obesity	Female					Male				
		HR	R	%	U	Unk	HR	R	%	U	Unk
New England (01)	38,144	9	964	2.55	1,639	*	124	12,548	33.22	22,861	*
Upstate NY (02)	23,403	*	878	3.76	1,052	*	14	11,439	48.94	10,018	*
NY/NJ (03)	26,514	*	86	0.32	2,129	*	*	1,546	5.83	22,748	3
VISN 04 (04)	54,957	*	1,546	2.82	2,617	*	*	22,511	40.96	28,275	4
Capitol (05)	19,006	*	375	1.97	2,248	*	*	4,581	24.10	11,802	*
Mid-Atlantic (06)	53,994	*	2,078	3.85	4,641	*	15	23,006	42.64	24,249	3
Southeast (07)	54,283	*	2,272	4.19	5,832	*	3	19,357	35.66	26,815	3
Sunshine (08)	101,050	*	1,649	1.63	8,051	3	8	16,310	16.15	75,017	14
Mid South (09)	43,610	*	1,628	3.73	2,225	*	9	23,145	53.09	16,599	3
Ohio (10)	30,915	*	736	2.38	1,855	*	3	10,942	35.40	17,374	4
Vets in Partnership (11)	42,663	*	1,059	2.49	2,118	*	7	18,351	43.03	21,124	3
Great Lakes (12)	41,556	7	783	1.90	2,521	*	89	13,267	32.14	24,884	4
Heartland (15)	37,828	19	1,476	3.95	1,710	*	262	20,838	55.78	13,518	5
South Central (16)	81,576	7	3,199	3.93	4,618	*	106	36,700	45.12	36,940	6
Heart of Texas (17)	46,676	10	1,231	2.66	4,653	*	177	12,798	27.80	27,796	9
Southwest (18)	31,746	124	762	2.79	2,176	19	1,282	8,158	29.74	19,192	33
Rocky Mtn. (19)	22,677	183	578	3.36	1,470	*	2,414	6,051	37.33	11,976	7
Northwest (20)	36,152	103	1,018	3.10	2,183	*	1,633	12,084	37.94	19,128	*
Sierra Pacific (21)	33,660	31	561	1.76	2,371	38	322	7,574	23.46	22,446	317
Desert Pacific (22)	51,253	47	299	0.68	4,135	*	517	3,805	8.43	42,446	3
Midwest (23)	42,588	100	1,461	3.67	1,443	*	1,653	23,024	57.94	14,907	*
Grand Total	914,251	650	24,639	2.77	61,687	72	8,641	308,035	34.64	510,115	426

Obesity



Map 22:
Number of Rural and Highly Rural VHA Patients
with Obesity
Female
By VISN FY - 2014

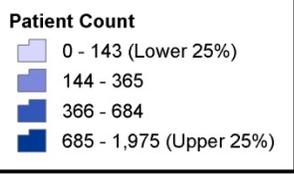
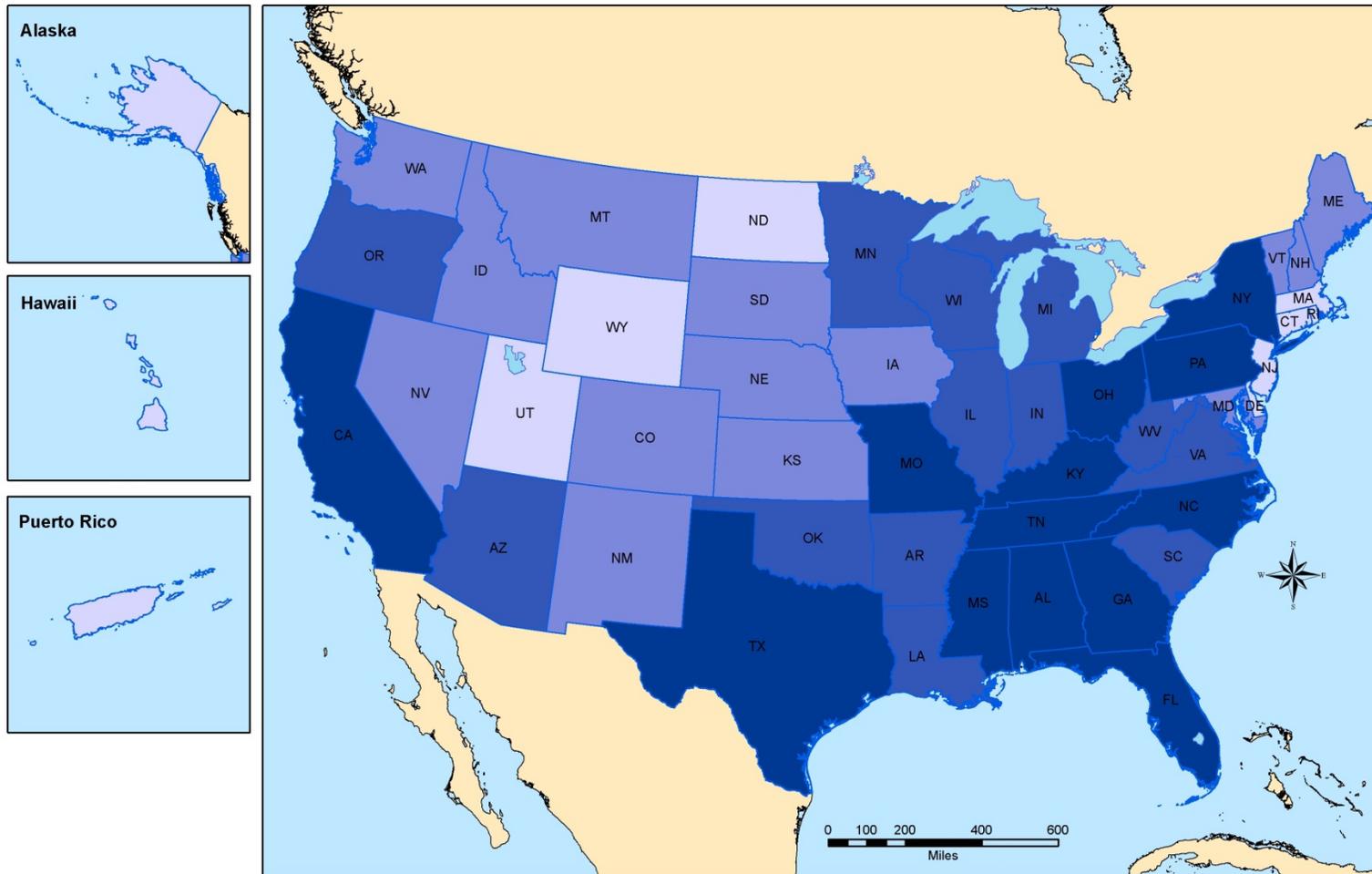


Map 23:
Percent of Rural and Highly Rural VHA Patients
with Obesity, Female
Of All Rural and Highly Rural VHA Patients
Female
By VISN FY - 2014

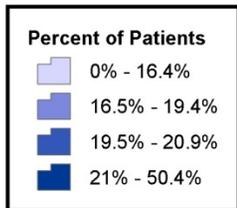
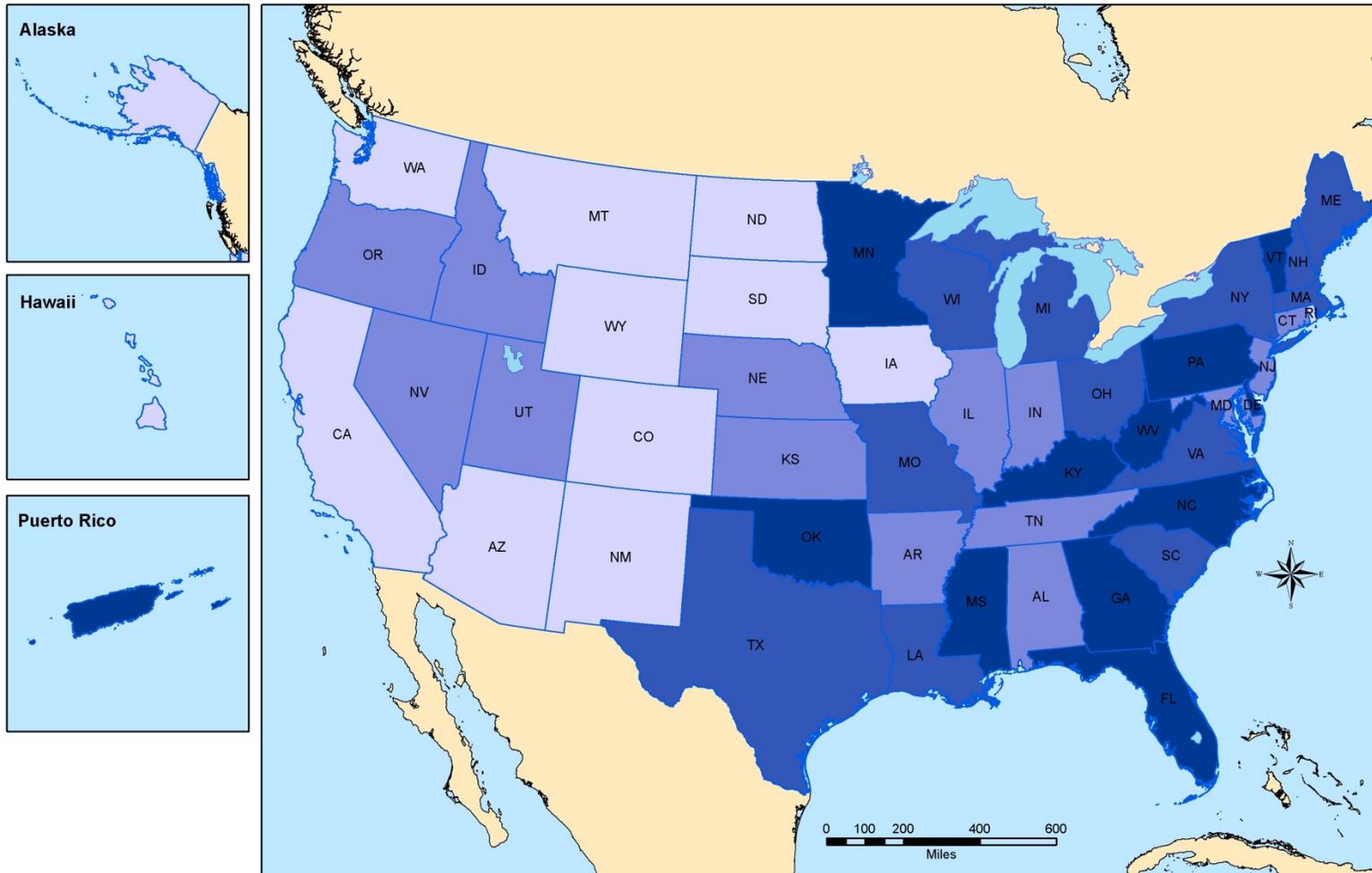


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Obesity



Map 24:
Number of Rural and Highly Rural VHA Patients
with Obesity
Female
By State FY - 2014



Map 25:
Percent of Rural and Highly Rural VHA Patients
with Obesity, Female
Of All Rural and Highly Rural Patients Female
By State FY - 2014

GeoSpatial
Outcomes Division
VHA Office of Rural Health

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GeoSpatial Outcomes Division
(Map Creation Date: 9/10/2015)
Map Information by: PSSG, VSSC, ESRI
ArcGIS 10.2x

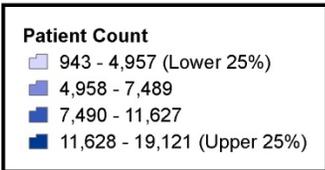
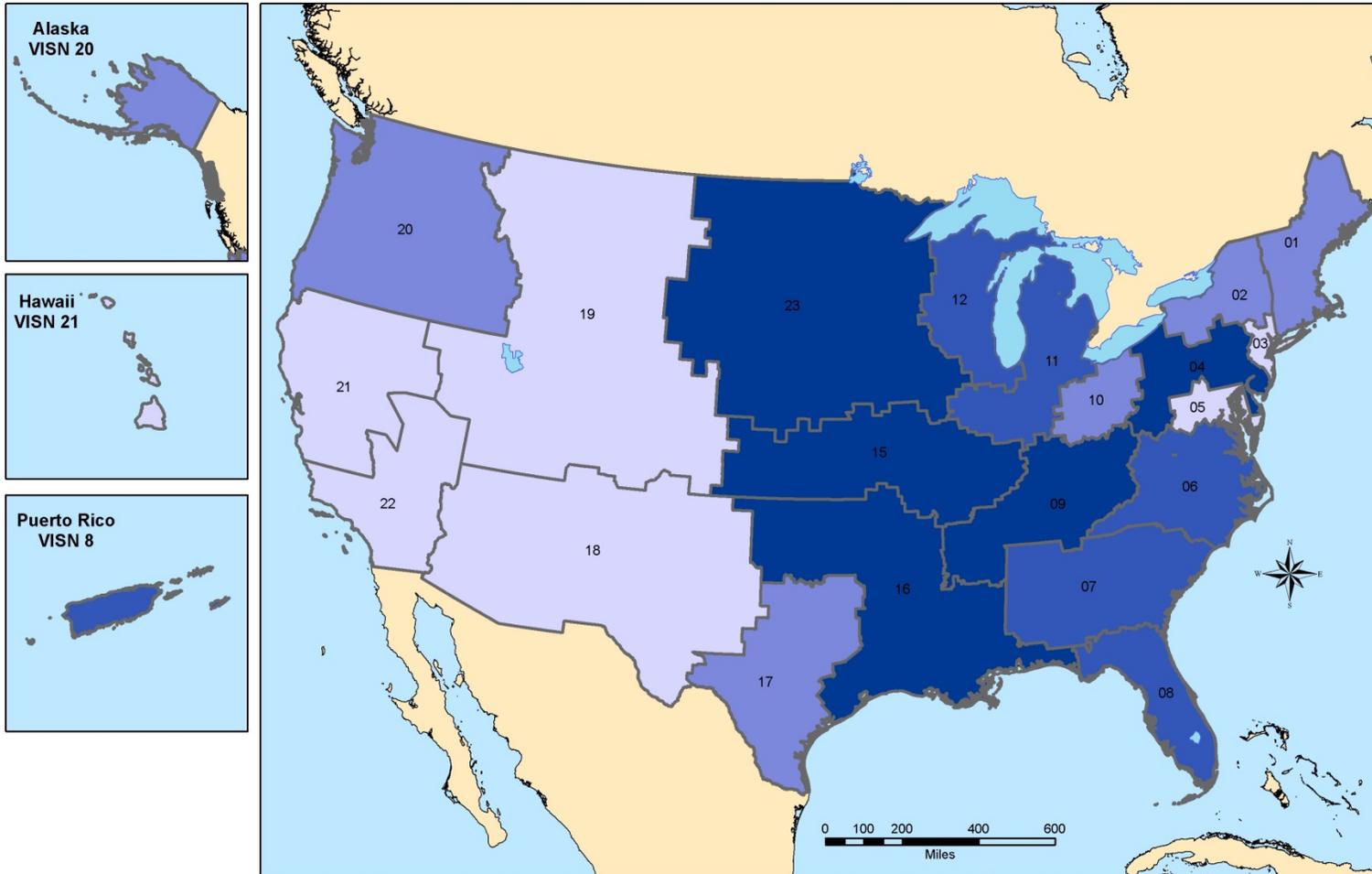
AGE GROUP

Examining the age groups of rural and highly rural patients is also of particular interest to the policy and planning community within the VHA. In Table 4, only rural and highly rural categories were included, since that is the focus, and urban and unknown categories were omitted. For simplicity's sake, the percent-column adjacent to the rurality columns are a combined percentage of rural and highly rural patients, indicated in red text. The 65-74 age group, at the National level, had the highest prevalence of patients with Obesity in rural and highly rural areas at 14.3%. At the network level, three VISNs had almost one-quarter of Obesity patients aged 65-74, with Midwest Network (VISN 23) ranking highest at 24.92%, followed by VISNs 15 and 9. Across all age groups except for 75+, the New York/New Jersey Network (VISN 3) had the fewest number of patients and lowest percentage of patients of rural and highly rural patients with Obesity of the total rural and highly rural patient population. Maps 26-31 display the number and percentage of rural and highly rural patients age 65 and over with Obesity by VISN, State, and county, with the highest 25% in terms of volume and proportion designated by the darkest shade. VISN 4 showed both a high volume and high proportion (in upper 25% quartile) of rural and highly rural patients age 65 and over with Obesity of the total rural and highly rural patient population age 65 and over, as portrayed in Maps 26 and 27. Six of the 50 U.S. States, as shown on Maps 28 and 29, had both a high volume and high proportion (in upper 25% quartile) of rural and highly rural patients age 65 and over with Obesity of the total rural and highly rural patient population age 65 and over. Those U.S. States were Illinois, Kentucky, Michigan, New York, Pennsylvania, and Wisconsin.

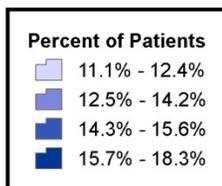
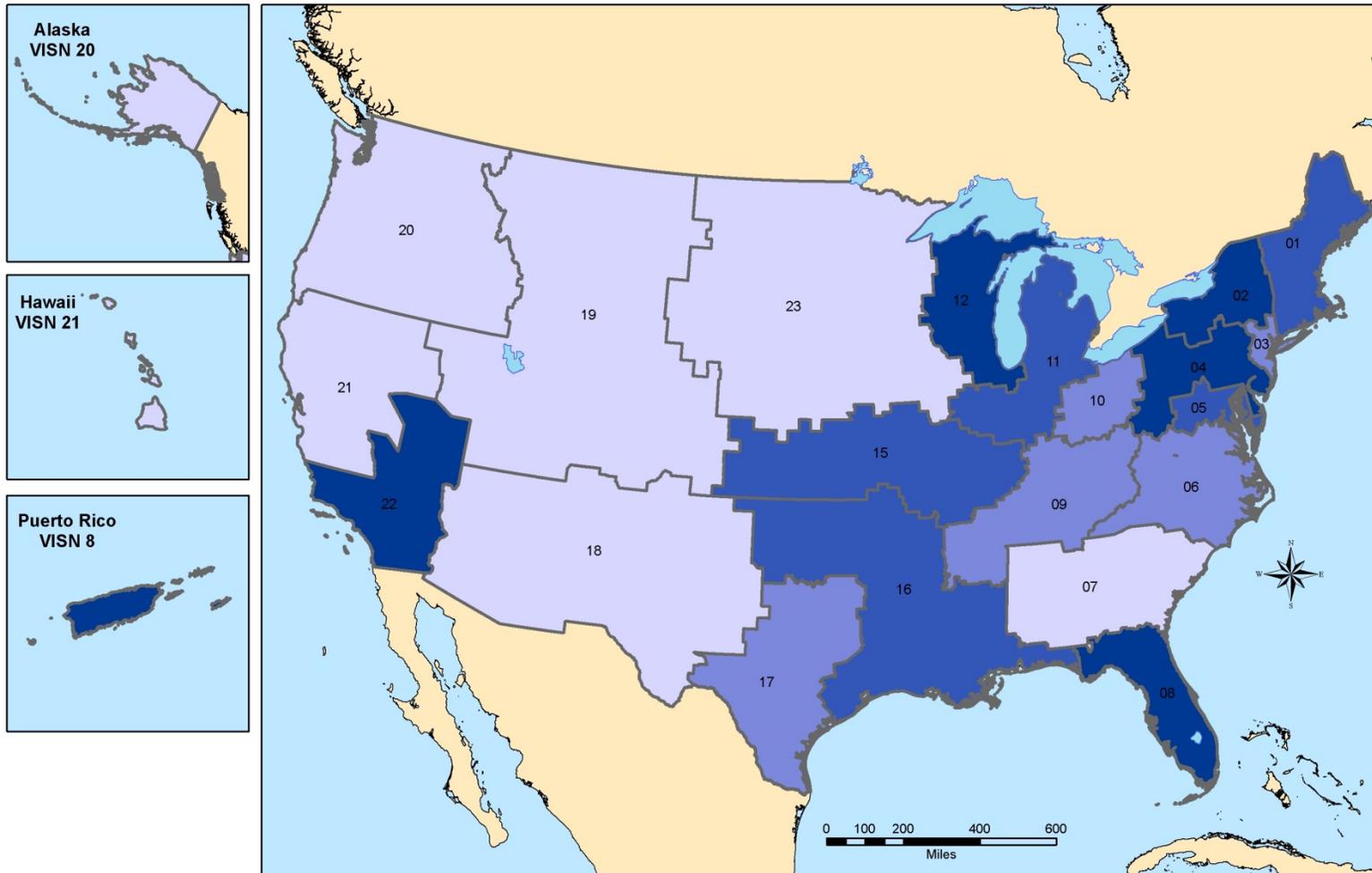
Table 4: National and VISN Numbers and Percentages of VHA Patients with Obesity, by Rurality and Age Group, FY-2014

Prevalence Statistics by Age Group and Rurality- Obesity, FY-2014																
Veterans Integrated Service Network	Total Number of Patients with Obesity	<45			45-54			55-64			65-74			75+		
		HR	R	%	HR	R	%	HR	R	%	HR	R	%	HR	R	%
New England (01)	38,144	10	1,343	3.55	14	1,675	4.43	30	3,231	8.55	65	5,458	14.48	14	1,805	4.77
Upstate NY (02)	23,403	*	1,558	6.67	*	1,614	6.90	3	3,087	13.20	7	4,531	19.39	3	1,528	6.54
NY/NJ (03)	26,514	*	157	0.59	*	188	0.71	*	345	1.30	*	692	2.61	*	250	0.94
Stars and Stripes (04)	54,957	*	2,627	4.78	*	2,681	4.88	*	5,642	10.27	*	9,722	17.69	*	3,385	6.16
Capitol (05)	19,006	*	512	2.69	*	741	3.90	*	1,227	6.46	*	1,843	9.70	*	633	3.33
Mid-Atlantic (06)	53,994	3	2,937	5.45	*	3,802	7.04	*	6,729	12.47	10	9,345	17.33	*	2,271	4.21
Southeast (07)	54,283	*	3,067	5.65	*	3,793	6.99	*	5,923	10.91	*	7,163	13.20	*	1,683	3.10
Sunshine (08)	101,050	*	2,102	2.08	*	2,642	2.62	5	4,858	4.81	*	6,282	6.22	*	2,076	2.05
Mid South (09)	43,610	5	2,788	6.40	*	3,606	8.27	*	6,668	15.29	*	9,438	21.64	*	2,274	5.21
Ohio (10)	30,915	*	1,166	3.78	*	1,496	4.84	*	3,112	10.07	*	4,666	15.09	*	1,238	4.00
Vets in Partnership (11)	42,663	3	1,826	4.29	*	2,286	5.36	*	4,748	11.13	3	8,126	19.05	*	2,424	5.68
Great Lakes (12)	41,556	*	1,208	2.91	10	1,516	3.67	19	3,264	7.90	47	5,869	14.24	19	2,193	5.32
Heartland (15)	37,828	22	2,284	6.10	24	2,708	7.22	80	5,736	15.37	105	8,660	23.17	50	2,926	7.87
South Central (16)	81,576	12	5,142	6.32	10	5,487	6.74	21	10,220	12.55	46	14,361	17.66	24	4,690	5.78
Heart of Texas (17)	46,676	13	2,050	4.42	18	2,036	4.40	48	3,658	7.94	84	4,956	10.80	24	1,329	2.90
Southwest (18)	31,746	150	1,148	4.09	182	1,177	4.28	396	2,316	8.54	535	3,375	12.32	143	904	3.30
Rocky Mtn. (19)	22,677	277	853	4.98	294	881	5.18	675	1,754	10.71	1,070	2,480	15.65	281	661	4.15
Northwest (20)	36,152	122	1,501	4.49	221	1,607	5.06	456	3,442	10.78	747	5,104	16.18	190	1,448	4.53
Sierra Pacific (21)	33,660	32	797	2.46	46	830	2.60	102	2,096	6.53	146	3,455	10.70	27	957	2.92
Desert Pacific (22)	51,253	44	630	1.32	64	541	1.18	172	1,050	2.38	229	1,515	3.40	55	368	0.83
Midwest (23)	42,588	157	2,329	5.84	174	2,758	6.88	421	5,957	14.98	724	9,888	24.92	277	3,553	8.99
Grand Total	914,251	858	38,025	4.25	1,066	44,065	4.94	2,437	85,063	9.57	3,821	126,929	14.30	1,109	38,596	4.34

Obesity



Map 26:
Number of Rural and Highly Rural VHA Patients
with Obesity
Age 65 and Over
By VISN FY - 2014

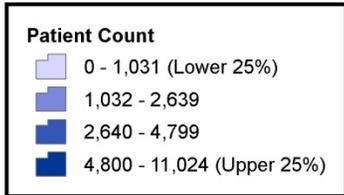
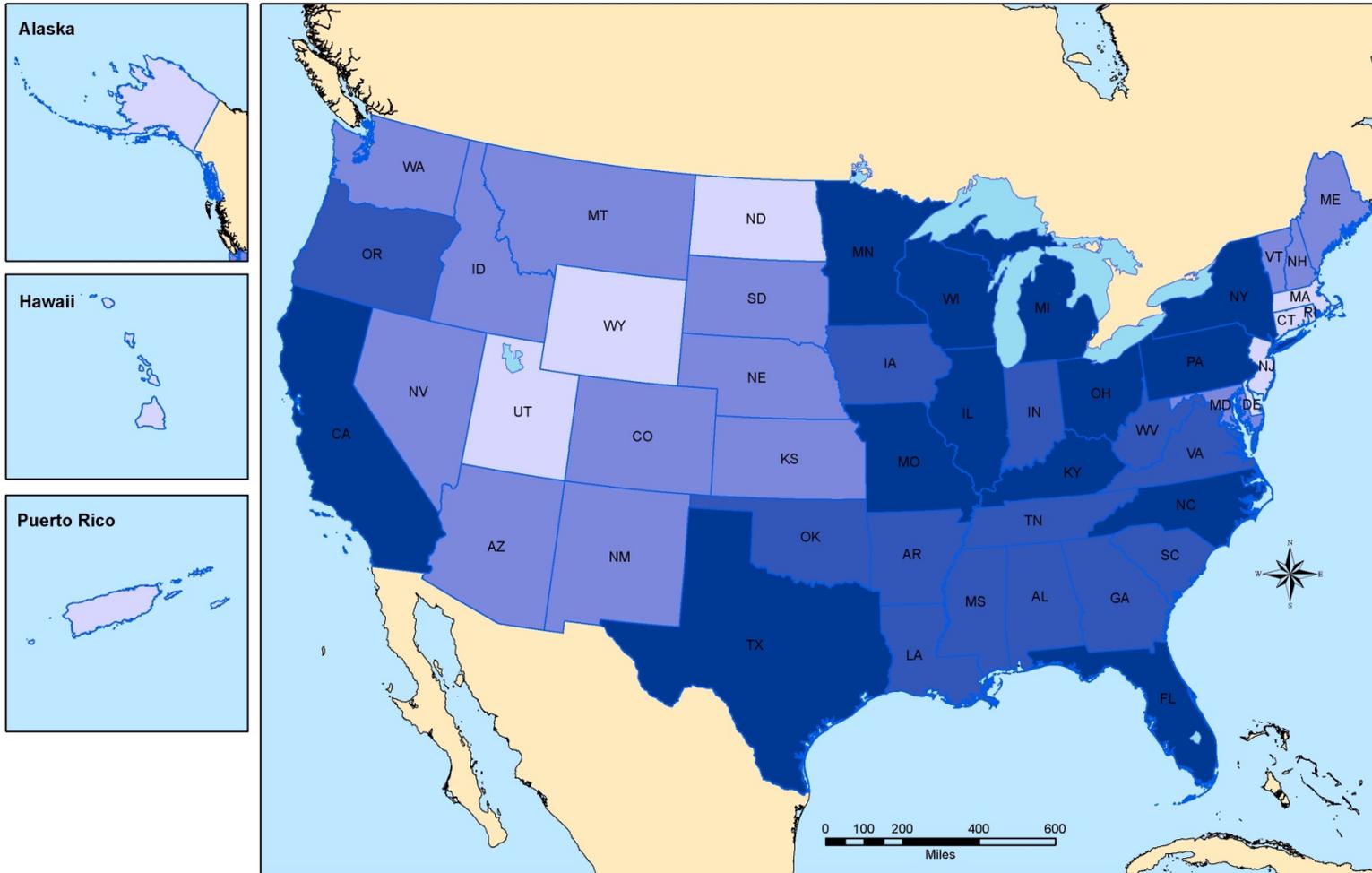


Map 27:
Percent of Rural and Highly Rural VHA Patients
with Obesity, Age 65 and Over
Of All Rural and Highly Rural VHA Patients Age 65 and Over
By VISN FY - 2014

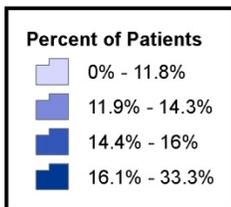
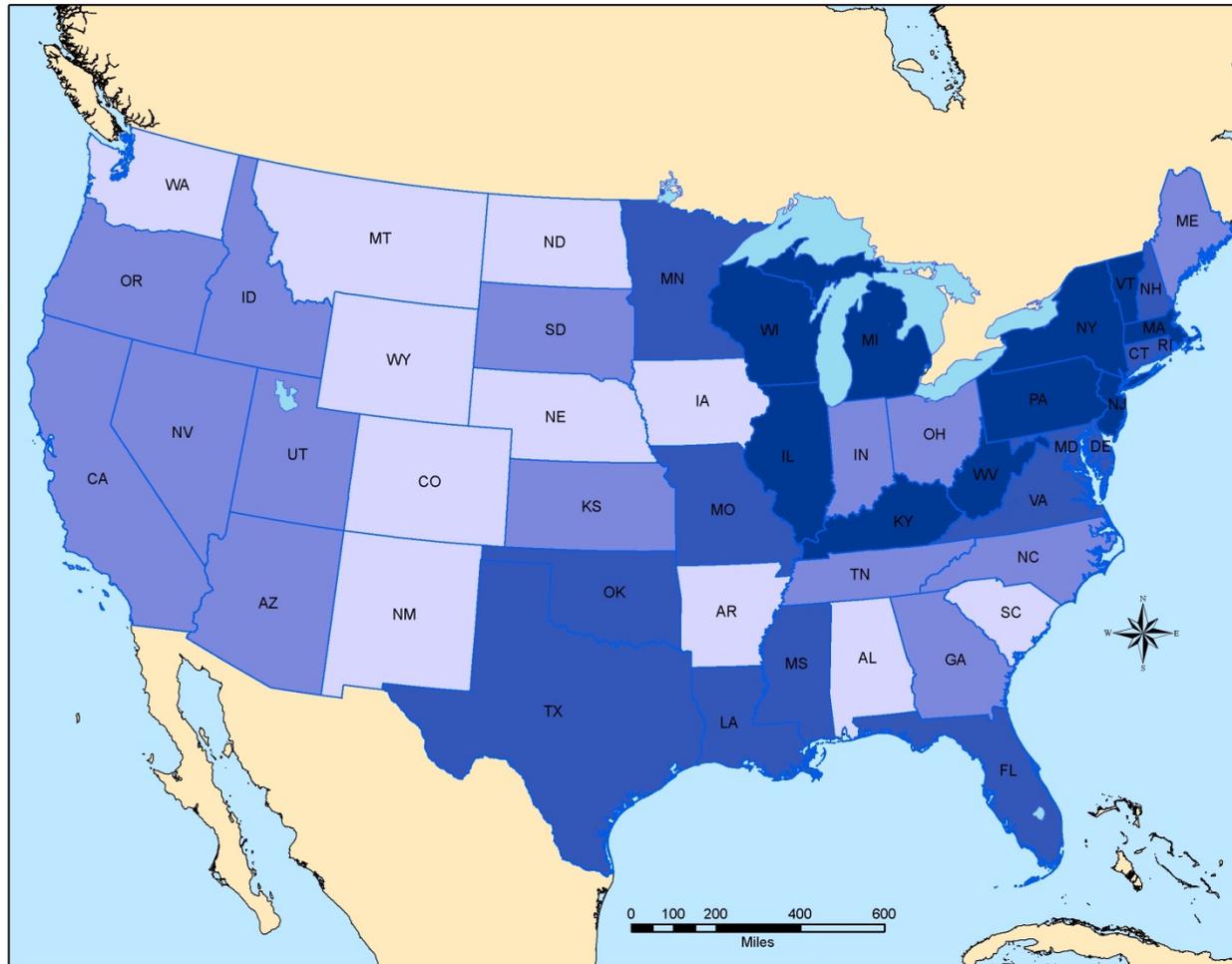
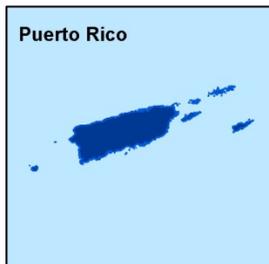


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Obesity



Map 28:
Number of Rural and Highly Rural VHA Patients
with Obesity
Age 65 and Over
By State FY - 2014

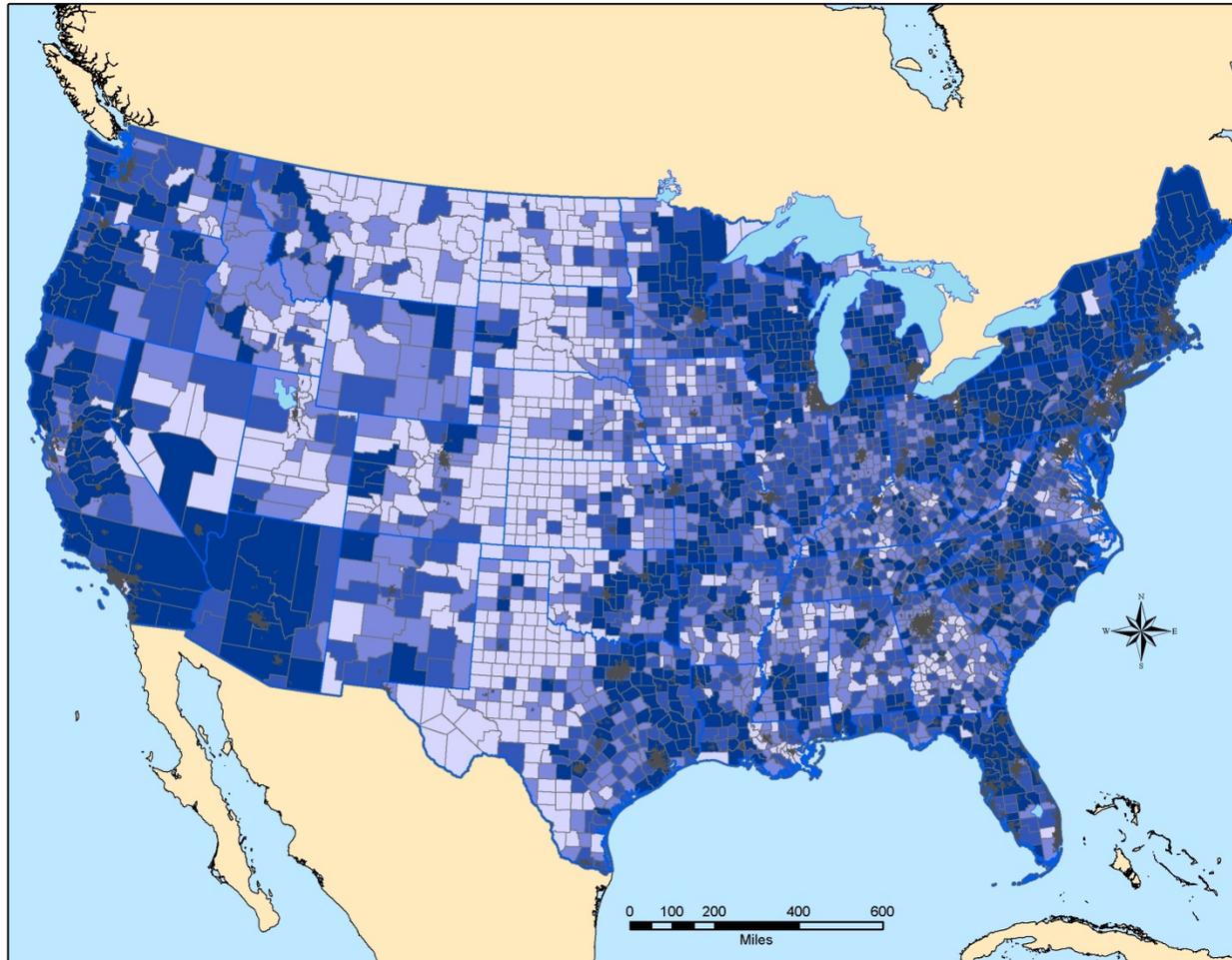


Map 29:
Percent of Rural and Highly Rural VHA Patients
with Obesity, Age 65 and Over
Of All Rural and Highly Rural Patients Age 65 and Over
By State FY - 2014



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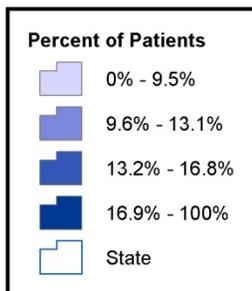
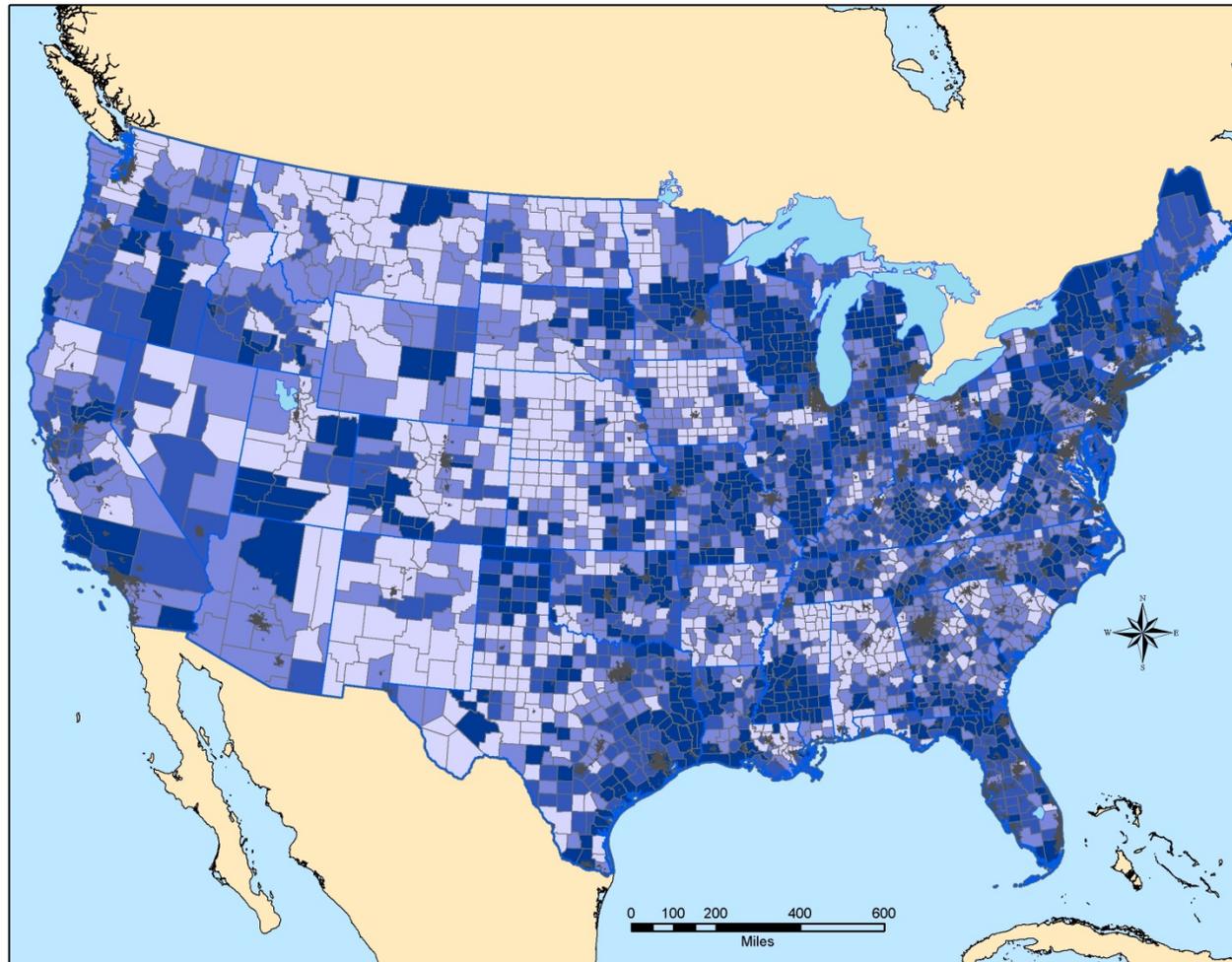
Obesity



Patient Count

- 0 - 14 (Lower 25%)
- 15 - 35
- 36 - 69
- 70 - 629 (Upper 25%)
- State

Map 30:
Number of Rural and Highly Rural VHA Patients
with Obesity
Age 65 and Over
By County FY - 2014
Urban Areas "Shaded"



Map 31:

Percent of Rural and Highly Rural VHA Patients
with Obesity, Age 65 and Over
Of All Rural and Highly Rural Patients Age 65 and Over
By County FY - 2014
Urban Areas "Shaded"



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SERVICE CONNECTION AND LOW INCOME ENROLLMENT PRIORITY GROUPS

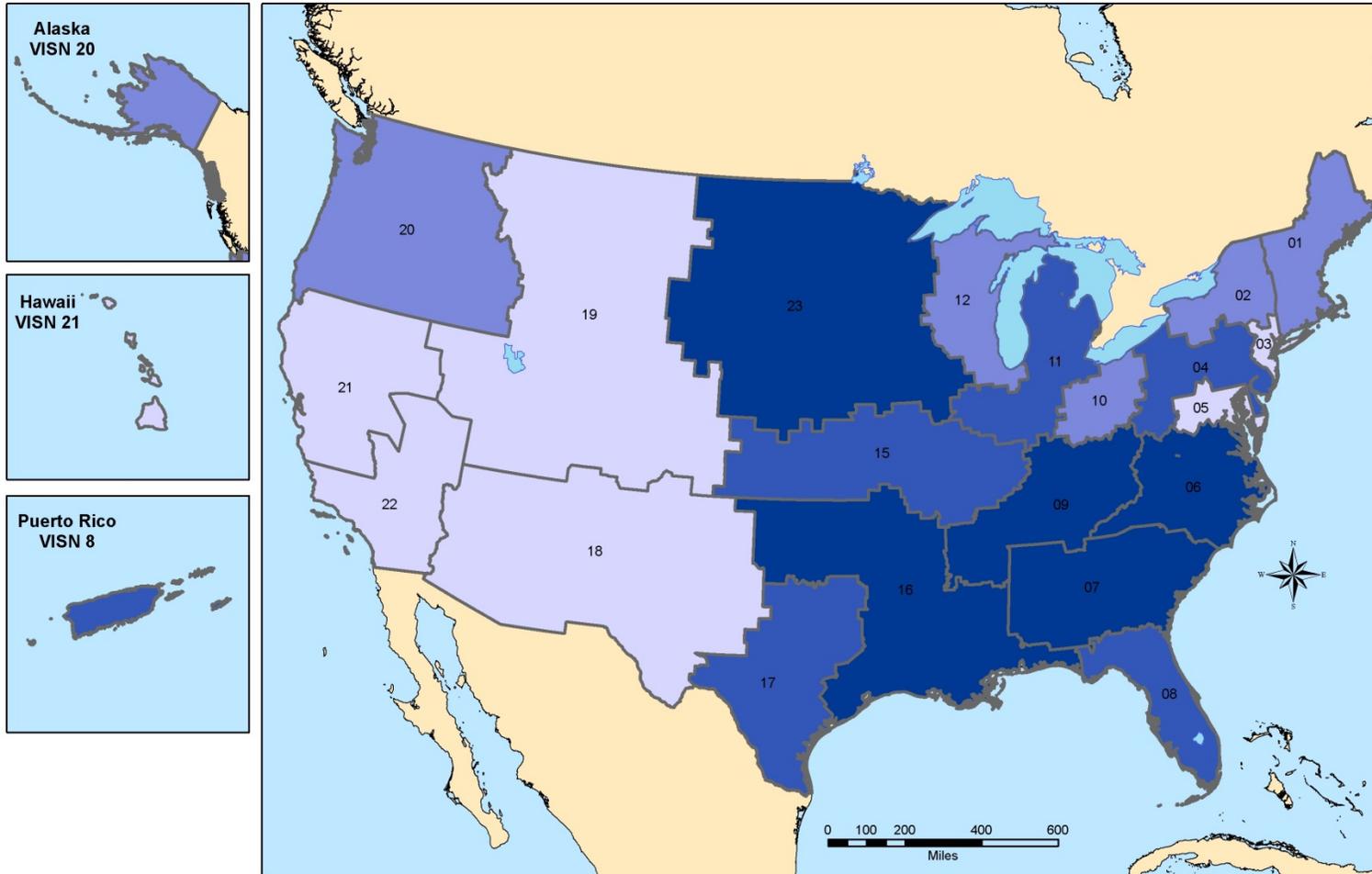
Table 5 examines selected enrollment priority groups and what percentage of those patients resided in rural and highly rural areas. At the National level, rural and highly rural patients with Obesity with a service-connected disability represented 19.9% of the total number of patients with Obesity in the VHA. At the network level, the South Central Network (VISN 16) ranked the highest with 22,080 rural and highly rural service-connected patients with Obesity. Proportionally speaking, Midwest Network (VISN 23) ranked highest with 35.7% in terms of percentage of rural and highly rural service-connected patients with Obesity to all patients with Obesity. Maps 32-37 display the number and percentage of rural and highly rural patients with a service-connected disability with Obesity by VISN, State, and county, with the highest 25% in terms of volume and proportion designated by the darkest shade.

Patients with Obesity residing in rural and highly rural areas who were Priority Group 5 represented 7.85% of the total patient population with Obesity across the United States. South Central Network (VISN 16) again ranked the highest with 8,565 rural and highly rural low-income/non Service-Connected/non-compensable Service-Connected patients with Obesity. The Heartland Network (VISN 15) had the highest proportion at 13.33%. Maps 38-41 display the number and percentage of rural and highly rural patients in Priority Group 5 with Obesity by VISN and State, with the highest 25% in terms of volume and proportion designated by the darkest shade. Maps 42-43 display the same information by county, with the highest 50% in volume and highest 25% in percentage designated by the darkest shade.

Table 5: National and VISN Numbers and Percentages of VHA Patients with Obesity, by Rurality and Enrollment Priority Group, FY-2014

Prevalence Statistics by Service Connection Type and Low Income by Rurality- Obesity, FY-2014											
Veterans Integrated Service Network	Total Number of Patients with Obesity	Service Connected Priority 1-3					Low Income				
		HR	R	%	U	Unk	HR	R	%	U	Unk
New England (01)	38,144	81	7,034	18.65	12,271	*	24	2,392	6.33	4,819	*
Upstate NY (02)	23,403	6	5,884	25.17	5,161	*	5	2,783	11.91	2,692	*
NY/NJ (03)	26,514	*	797	3.01	11,461	*	*	352	1.33	5,747	*
Stars and Stripes (04)	54,957	*	10,706	19.48	14,272	*	*	5,060	9.21	7,077	*
Capitol (05)	19,006	*	2,388	12.56	7,695	*	*	1,138	5.99	3,117	*
Mid-Atlantic (06)	53,994	11	13,874	25.72	17,587	*	*	5,249	9.73	5,489	*
Southeast (07)	54,283	*	12,639	23.29	20,245	*	*	4,621	8.51	6,360	*
Sunshine (08)	101,050	6	8,746	8.66	42,789	3	*	4,452	4.41	20,171	7
Mid South (09)	43,610	6	13,907	31.90	10,788	*	*	5,530	12.69	4,136	*
Ohio (10)	30,915	3	5,478	17.73	8,700	*	*	2,993	9.68	5,475	*
Vets in Partnership (11)	42,663	5	10,345	24.26	11,639	*	3	4,216	9.89	6,160	*
Great Lakes (12)	41,556	31	6,672	16.13	11,703	*	27	2,548	6.20	6,776	*
Heartland (15)	37,828	114	11,609	30.99	7,672	*	60	4,983	13.33	3,705	*
South Central (16)	81,576	60	22,020	27.07	23,675	*	22	8,543	10.50	8,620	*
Heart of Texas (17)	46,676	111	8,535	18.52	21,667	*	43	2,677	5.83	5,366	4
Southwest (18)	31,746	701	4,745	17.15	12,095	6	354	1,947	7.25	4,622	20
Rocky Mtn. (19)	22,677	1,253	3,566	21.25	7,978	*	522	1,252	7.82	2,563	*
Northwest (20)	36,152	933	7,629	23.68	12,257	*	424	2,596	8.35	4,695	*
Sierra Pacific (21)	33,660	212	4,054	12.67	13,059	228	67	2,010	6.17	5,982	59
Desert Pacific (22)	51,253	288	2,245	4.94	25,024	*	159	968	2.20	11,603	*
Midwest (23)	42,588	876	14,328	35.70	10,154	*	309	3,448	8.82	2,525	*
Grand Total	914,251	4,701	177,201	19.90	307,892	245	2,025	69,758	7.85	127,700	95

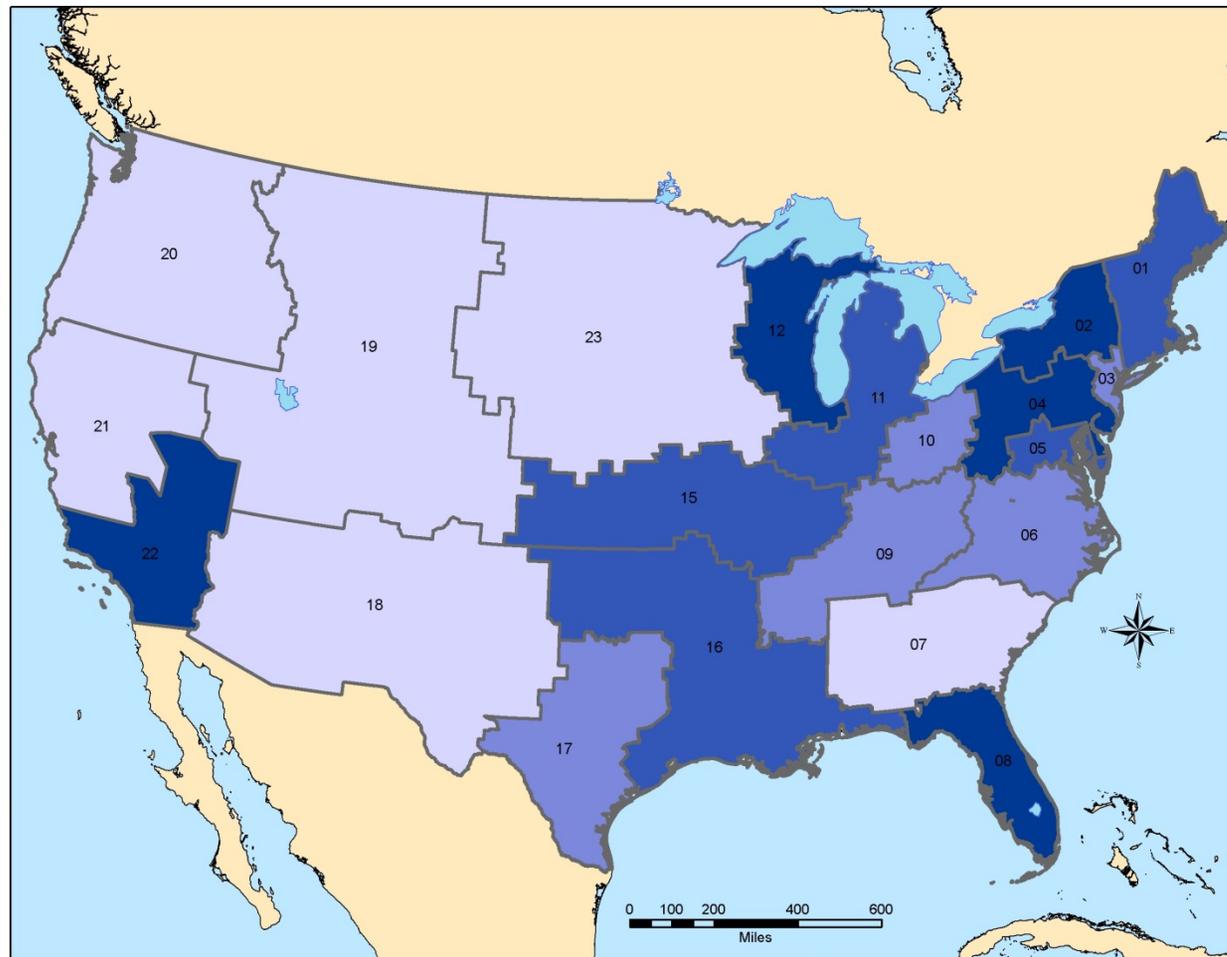
Obesity



Patient Count

- 798 - 5,446 (Lower 25%)
- 5,447 - 8,562
- 8,563 - 11,723
- 11,724 - 22,080 (Upper 25%)

Map 32:
Number of Rural and Highly Rural VHA Patients
with Obesity
Priority 1-3
By VISN FY - 2014



Percent of Patients

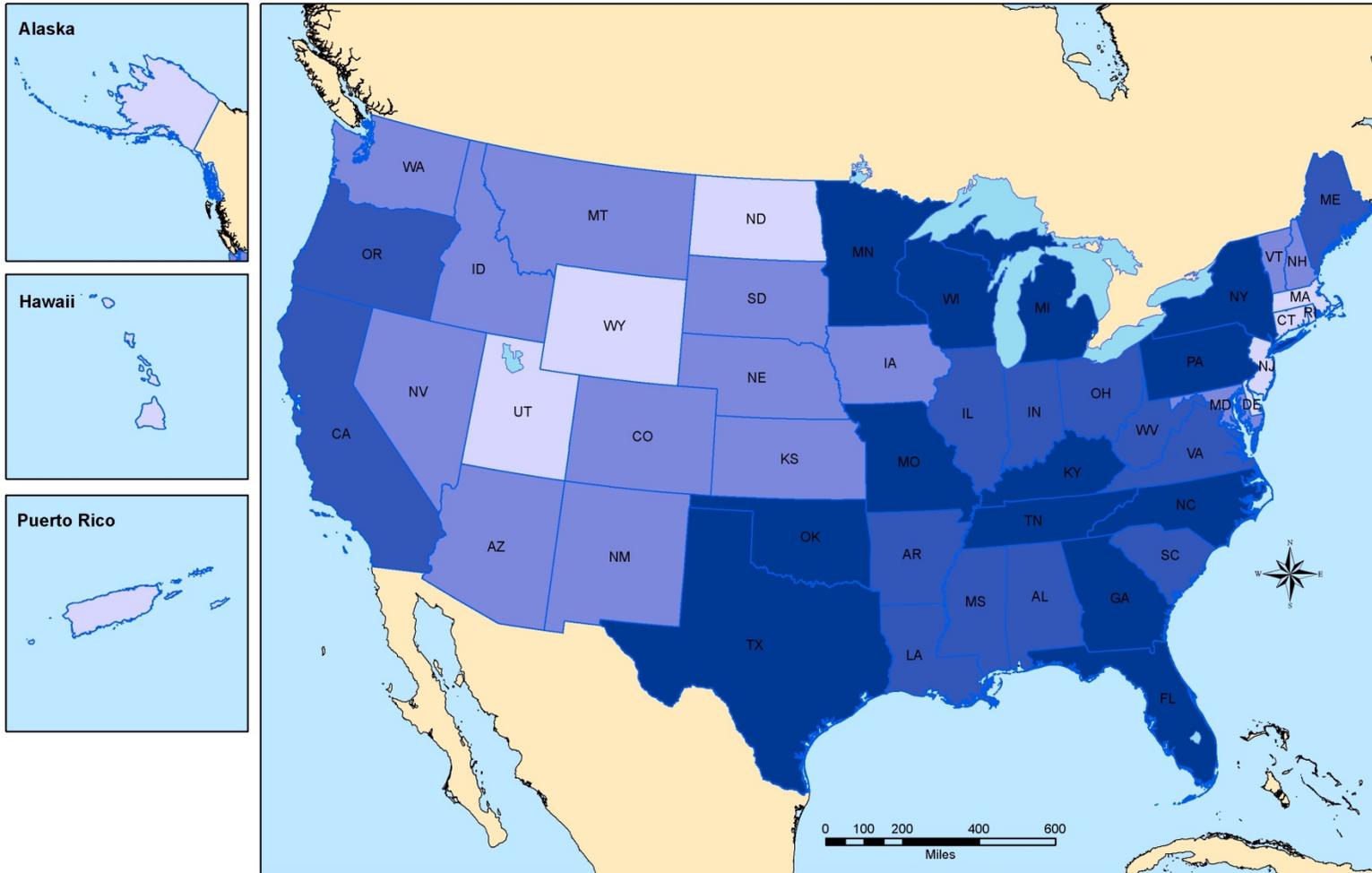
- 14% - 16%
- 16.1% - 18.6%
- 18.7% - 19.9%
- 20% - 24.8%

Map 33:
Percent of Rural and Highly Rural VHA Patients
with Obesity, Priority 1-3
Of All Rural and Highly Rural VHA Patients Priority 1-3
By VISN FY - 2014



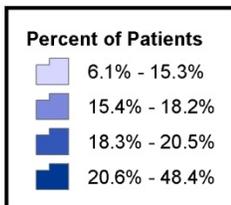
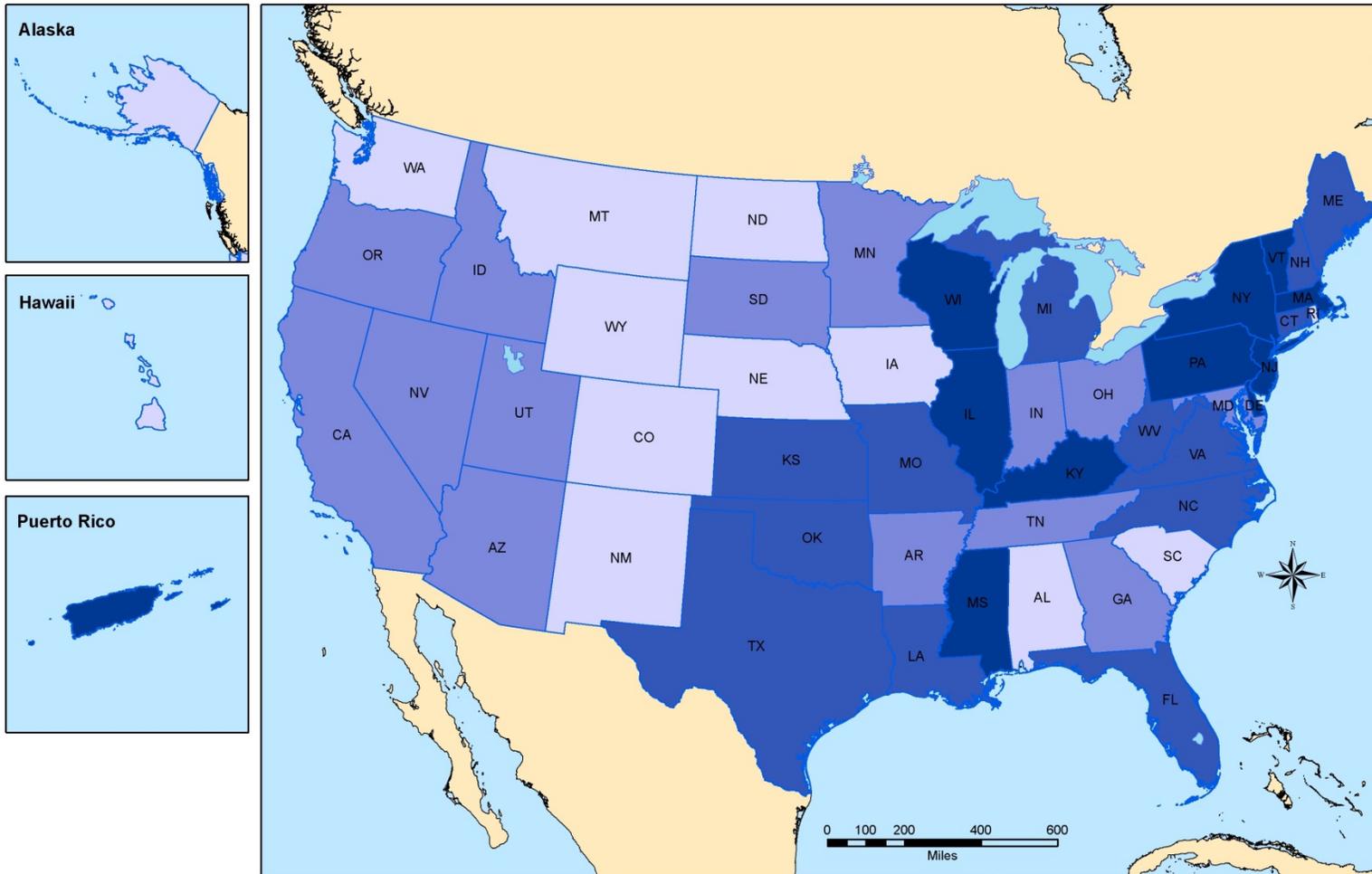
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GeoSpatial Outcomes Division
(Map Creation Date: 9/9/2015)
Map Information by: PSSG, VSSC, ESRI
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Obesity



Patient Count	
	2 - 982 (Lower 25%)
	983 - 2,602
	2,603 - 5,907
	5,908 - 13,455 (Upper 25%)

Map 34:
Number of Rural and Highly Rural VHA Patients
with Obesity
Priority 1-3
By State FY - 2014

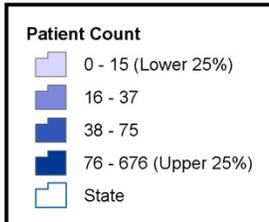
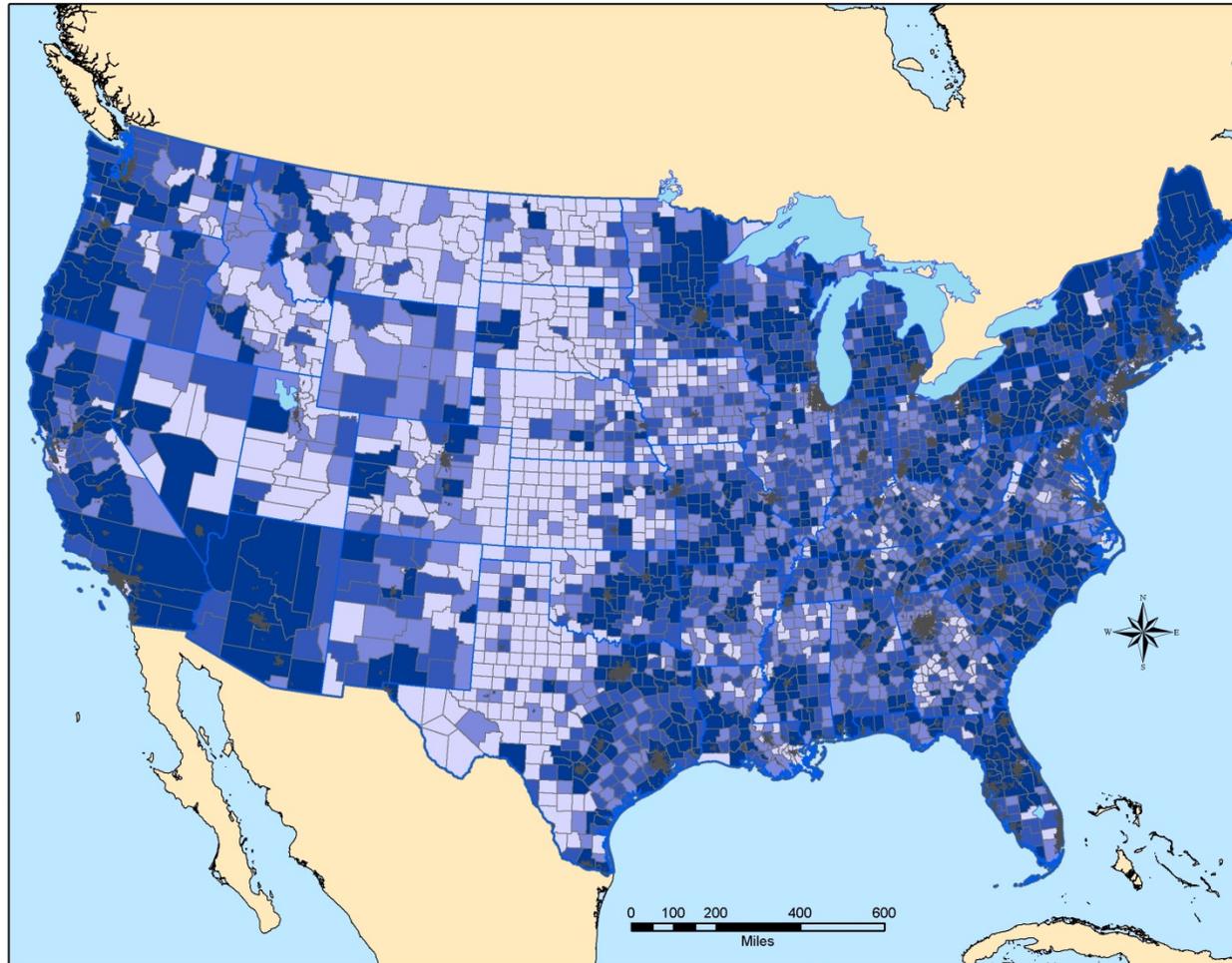


Map 35:
Percent of Rural and Highly Rural VHA Patients
with Obesity, Priority 1-3
Of All Rural and Highly Rural Patients Priority 1-3
By State FY - 2014

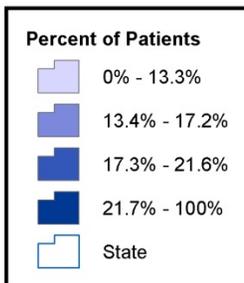
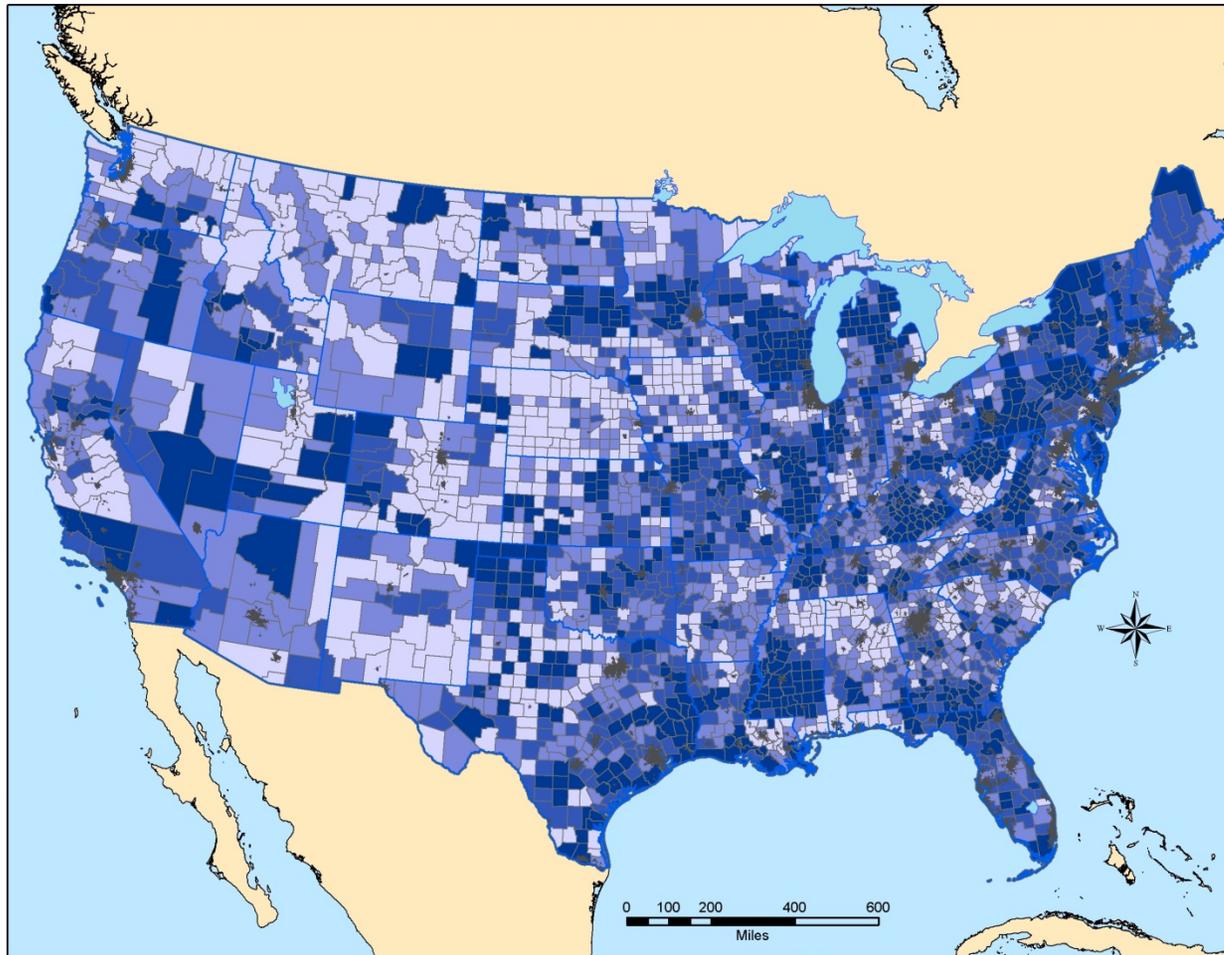


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(Map Creation Date: 9/10/2015)
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Obesity



Map 36:
Number of Rural and Highly Rural VHA Patients
with Obesity
Priority 1-3
By County FY - 2014
Urban Areas "Shaded"

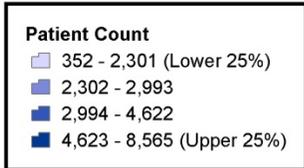
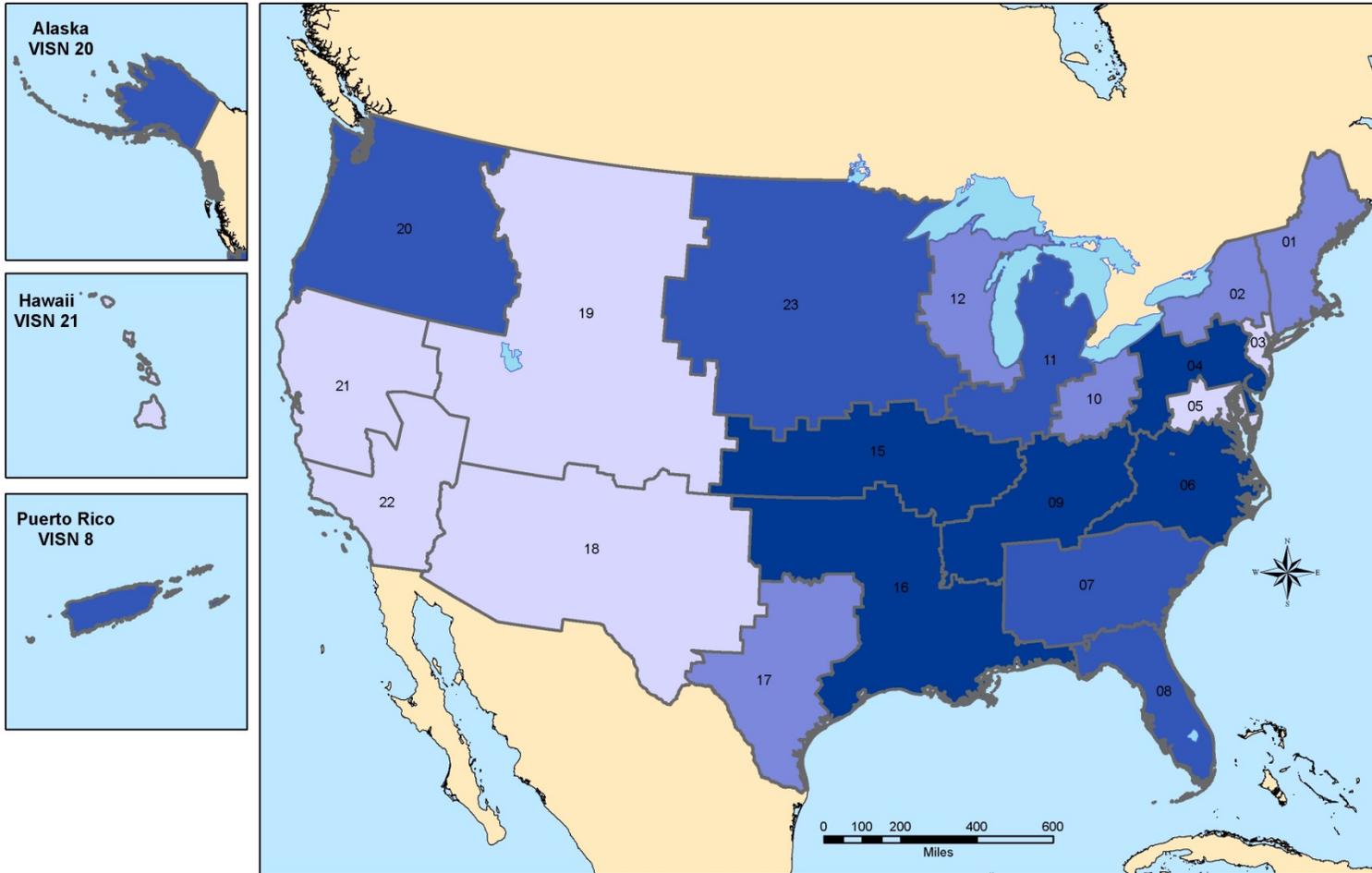


Map 37:
Percent of Rural and Highly Rural VHA Patients
with Obesity, Priority 1-3
Of All Rural and Highly Rural Patients Priority 1-3
By County FY - 2014
Urban Areas "Shaded"

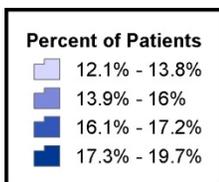
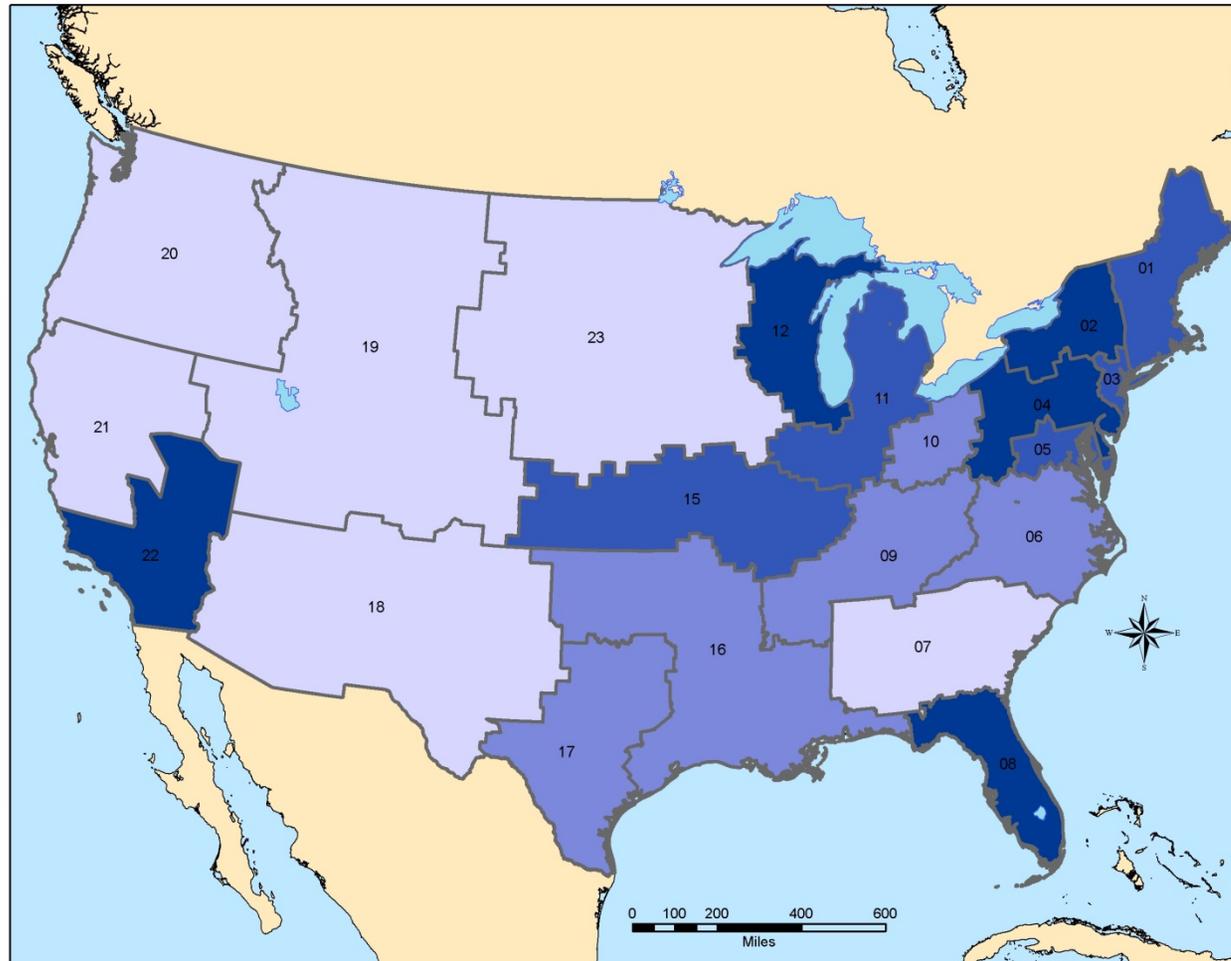


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Obesity



Map 38:
Number of Rural and Highly Rural VHA Patients
with Obesity, Priority 5
By VISN FY - 2014

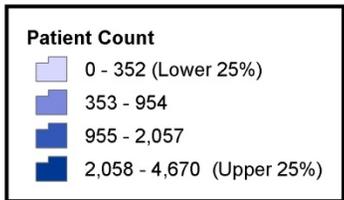
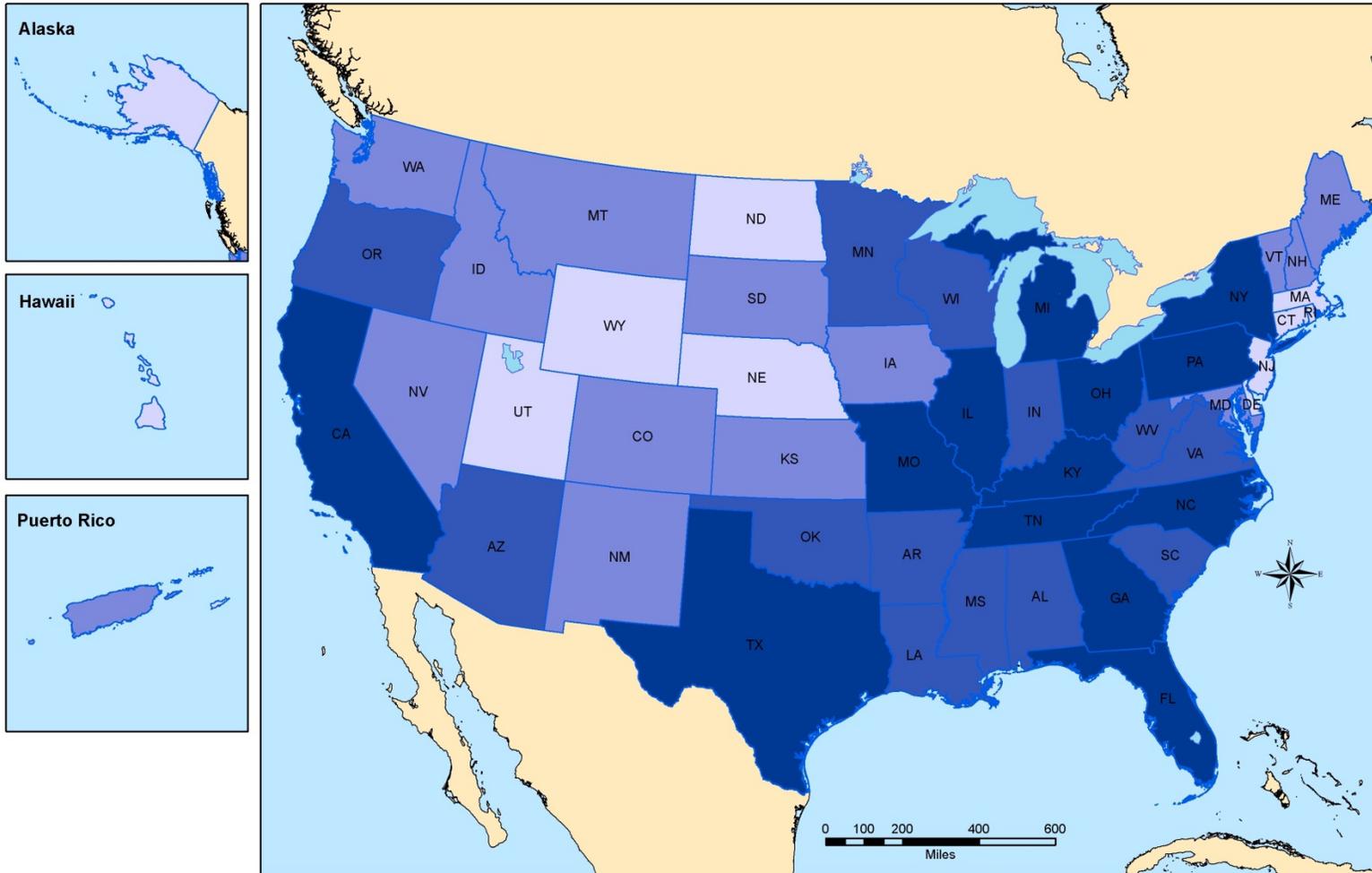


Map 39:
Percent of Rural and Highly Rural VHA Patients
with Obesity, Priority 5
Of All Rural and Highly Rural VHA Patients Priority 5
By VISN FY - 2014

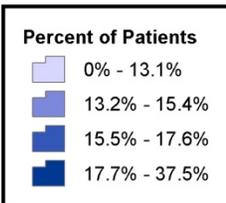
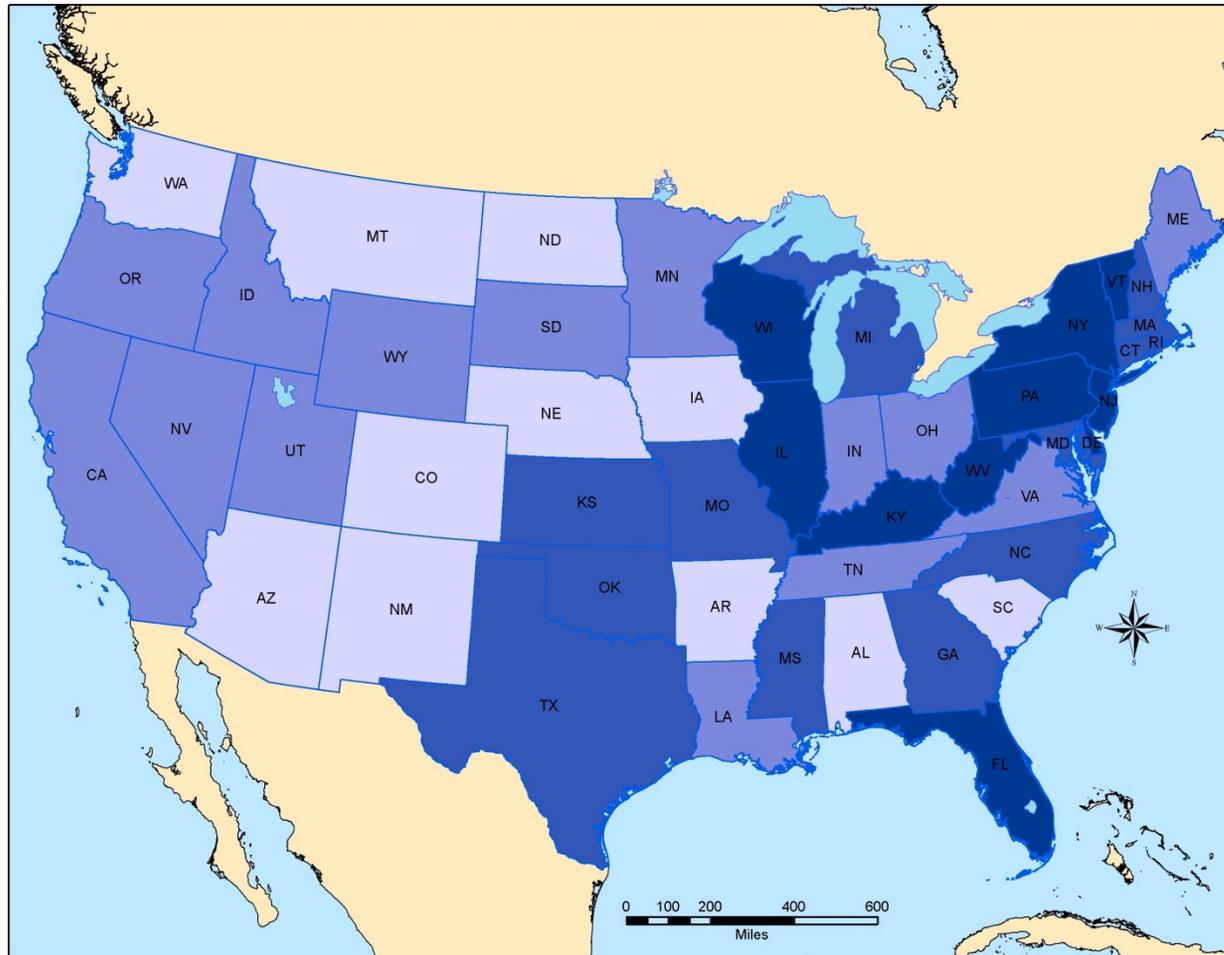
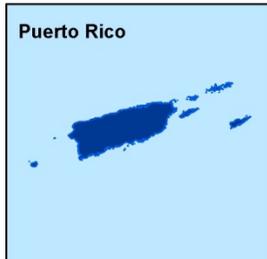


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Obesity



Map 40:
Number of Rural and Highly Rural VHA Patients
with Obesity
Priority 5
By State FY - 2014

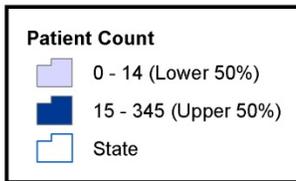
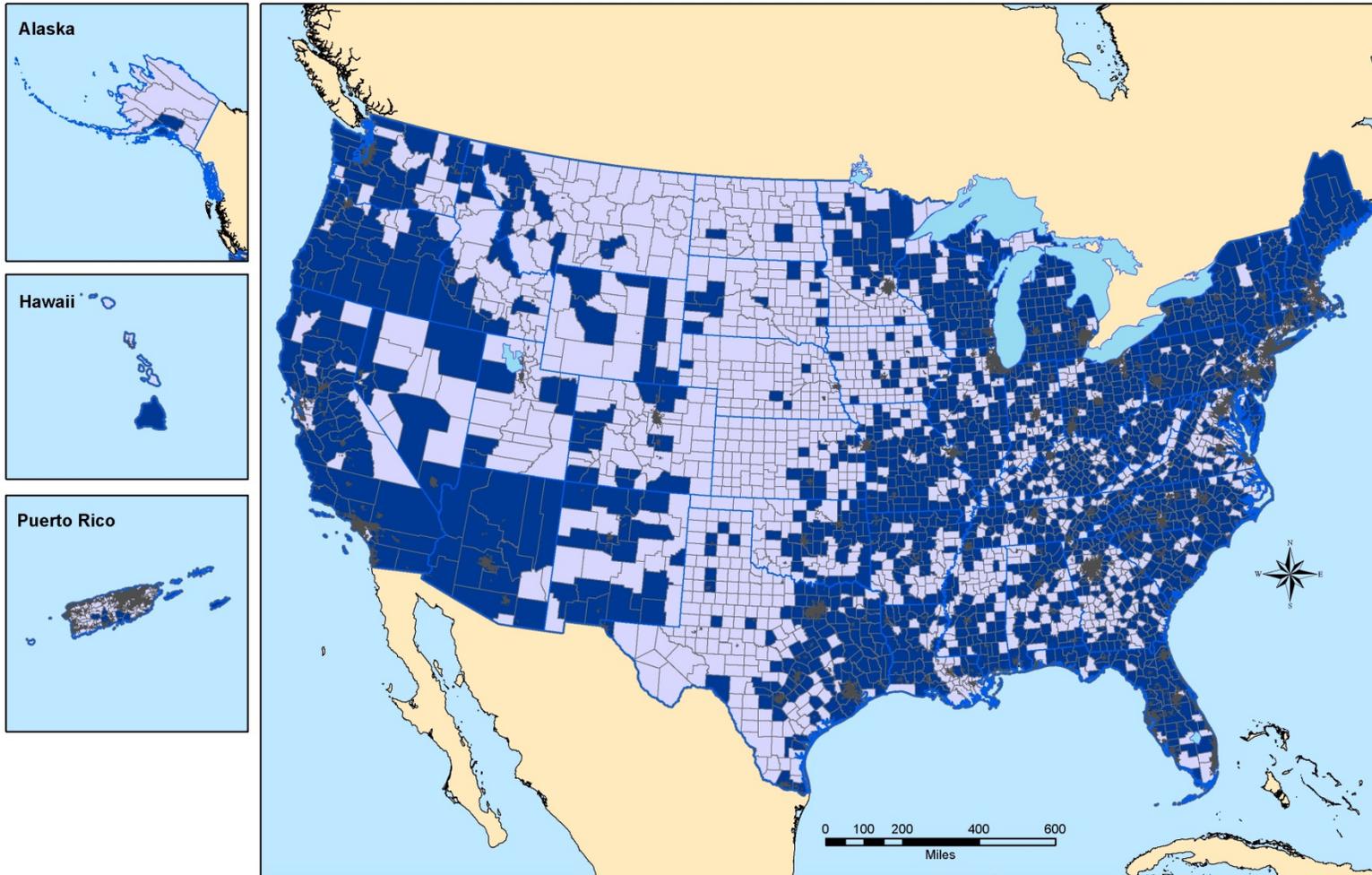


Map 41:
Percent of Rural and Highly Rural VHA Patients
with Obesity, Priority 5
Of All Rural and Highly Rural Patients Priority 5
By State FY - 2014

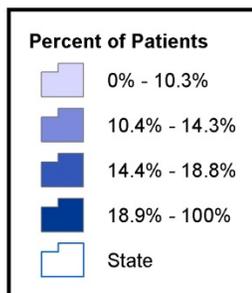
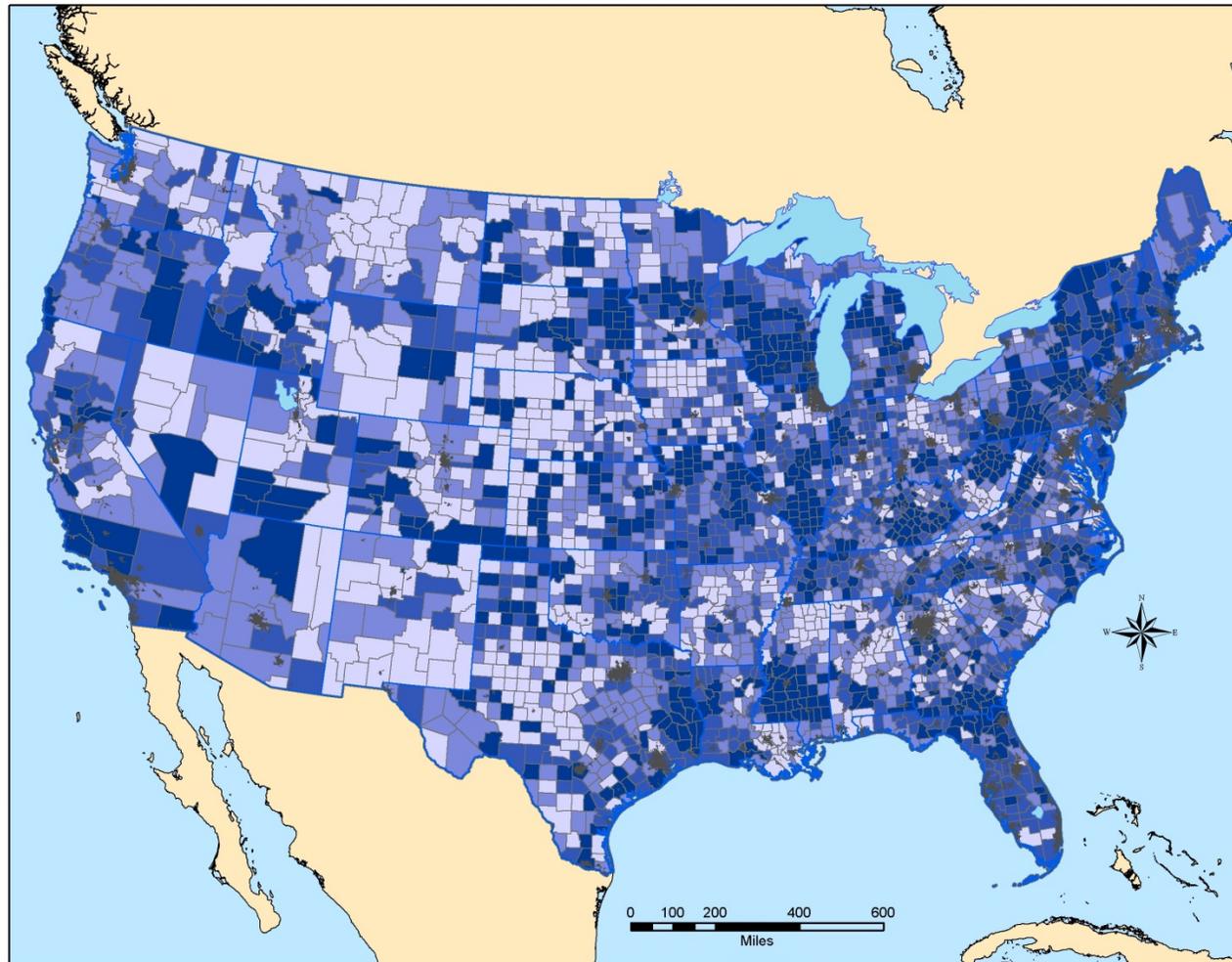


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Obesity



Map 42:
Number of Rural and Highly Rural VHA Patients
with Obesity
Priority 5
By County FY - 2014
Urban Areas "Shaded"



Map 43:
Percent of Rural and Highly Rural VHA Patients
with Obesity, Priority 5
Of All Rural and Highly Rural Patients Priority 5
By County FY - 2014
Urban Areas "Shaded"



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Section IV Highlights: VHA Patients with Obesity (Outpatient Utilization)

Table 6 examines overall utilization of VHA health care facilities by those VHA patients with a primary diagnosis of Obesity. That is, patients who may have had an encounter with the diagnosis set as the primary diagnosis. At the National level, 2.92% (N=181,434) of all VHA patients had a primary diagnosis of Obesity. At the network level, the range ran from a low of 5,268 individuals in the Upstate New York Network (VISN 2), representing 3.86%, to a high of 17,331 individuals in the Sunshine Network (VISN 8), representing 3.01%.

Using the example of the Sunshine Network (VISN 8), a small percent (0.41%) of all 17,255,468 outpatient encounters were by those VHA patients with a primary diagnosis of Obesity. A closer examination can be conducted for counts and percentages of outpatient encounters by those residing in rural and highly rural areas. For the purposes of simplicity, a combined percentage – indicated in red text – was calculated for both rural and highly rural numbers, both at the network and National level. Again, looking at the Sunshine Network (VISN 8), combined rural patients with a primary diagnosis of Obesity represented only 0.06% of all outpatient encounters in that network, compared to 0.41% when compared to overall rurality categories combined (highly rural, rural, urban, unknown).

Table 7 provides information on outpatient encounters for all patients with a primary diagnosis of Obesity by rurality. In this table, some very interesting urban-rural comparisons across VISNs emerge. For example, the Mid South Network (VISN 9) had a total of 19,773 outpatient encounters for patients who had a primary diagnosis of Obesity. More than half (56.33%) of the encounters were from patients living in rural or highly rural areas of the VISN. Following VISN 9, two other networks (in rank order, VISNs 23 and 15) also had more than half of encounters from patients living in rural and highly rural areas of the VISN.

Table 6: Outpatient Encounters of Patients with a Primary Diagnosis of Obesity

Overall Resource Utilization- Obesity (Primary Diagnosis Group) Compared to All Users, FY-2014										
Veterans Integrated Service Network	Total Number of Patients	Patients with Obesity		Outpatient Encounters						
		N	%	Total	Obesity					
					N	HR	R	%	U	Unk
New England (01)	253,326	8,543	3.37	7,306,431	89	13,151	0.18	28,509	0	0.57
Upstate NY (02)	136,497	5,268	3.86	4,189,442	16	8,974	0.21	9,638	0	0.44
NY/NJ (03)	174,457	6,447	3.70	5,308,815	0	1,248	0.02	26,894	4	0.53
Stars and Stripes (04)	310,940	9,699	3.12	8,188,223	0	14,506	0.18	19,878	1	0.42
Capitol (05)	150,012	6,394	4.26	3,919,003	0	6,585	0.17	33,107	0	1.01
Mid-Atlantic (06)	359,692	8,680	2.41	9,682,967	4	11,566	0.12	13,438	0	0.26
Southeast (07)	408,164	9,171	2.25	10,588,864	0	12,010	0.11	15,953	1	0.26
Sunshine (08)	576,411	17,331	3.01	17,255,468	10	10,335	0.06	60,162	0	0.41
Mid South (09)	298,396	7,727	2.59	8,424,188	0	11,139	0.13	8,633	1	0.23
Ohio (10)	231,319	8,247	3.57	7,511,566	2	12,879	0.17	20,039	2	0.44
Vets in Partnership (11)	282,135	7,566	2.68	7,691,758	0	19,418	0.25	23,004	0	0.55
Great Lakes (12)	266,879	8,579	3.21	7,705,668	9	4,071	0.05	28,751	6	0.43
Heartland (15)	245,357	6,312	2.57	7,009,124	56	9,982	0.14	9,590	1	0.28
South Central (16)	502,681	10,987	2.19	13,310,260	45	14,479	0.11	16,160	1	0.23
Heart of Texas (17)	306,581	11,799	3.85	7,950,682	64	9,562	0.12	32,630	0	0.53
Southwest (18)	271,557	6,555	2.41	6,738,226	1,007	4,871	0.09	14,924	12	0.31
Rocky Mtn. (19)	202,350	6,111	3.02	4,987,574	3,289	9,153	0.25	13,138	3	0.51
Northwest (20)	288,322	7,778	2.70	6,791,502	1,622	7,606	0.14	13,667	0	0.34
Sierra Pacific (21)	293,645	6,649	2.26	6,828,680	149	3,161	0.05	19,269	44	0.33
Desert Pacific (22)	328,951	13,090	3.98	8,520,022	630	3,175	0.04	46,898	1	0.60
Midwest (23)	324,728	8,501	2.62	8,146,785	647	25,734	0.32	21,004	2	0.58
Grand Total	6,212,400	181,434	2.92	168,055,248	7,639	213,605	0.13	475,286	79	0.41

Table 7: Outpatient Encounters of Patients with a Primary Diagnosis of Obesity by Rurality

Veterans Integrated Service Network	Outpatient Encounters by Patients with Primary Obesity DX					
	Total	Rurality				
	N	HR	R	%	U	Unk
New England (01)	41,749	89	13,151	31.71	28,509	0
Upstate NY (02)	18,628	16	8,974	48.26	9,638	0
NY/NJ (03)	28,146	0	1,248	4.43	26,894	4
VISN 04 (04)	34,385	0	14,506	42.19	19,878	1
Capitol (05)	39,692	0	6,585	16.59	33,107	0
Mid-Atlantic (06)	25,008	4	11,566	46.27	13,438	0
Southeast (07)	27,964	0	12,010	42.95	15,953	1
Sunshine (08)	70,507	10	10,335	14.67	60,162	0
Mid South (09)	19,773	0	11,139	56.33	8,633	1
Ohio (10)	32,922	2	12,879	39.13	20,039	2
Vets in Partnership (11)	42,422	0	19,418	45.77	23,004	0
Great Lakes (12)	32,837	9	4,071	12.43	28,751	6
Heartland (15)	19,629	56	9,982	51.14	9,590	1
South Central (16)	30,685	45	14,479	47.33	16,160	1
Heart of Texas (17)	42,256	64	9,562	22.78	32,630	0
Southwest (18)	20,814	1,007	4,871	28.24	14,924	12
Rocky Mtn. (19)	25,583	3,289	9,153	48.63	13,138	3
Northwest (20)	22,895	1,622	7,606	40.31	13,667	0
Sierra Pacific (21)	22,623	149	3,161	14.63	19,269	44
Desert Pacific (22)	50,704	630	3,175	7.50	46,898	1
Midwest (23)	47,387	647	25,734	55.67	21,004	2
TOTAL	696,609	7,639	213,605	31.76	475,286	79

Table 8 examines the overall outpatient encounters at VHA health care facilities by those VHA patients with a secondary diagnosis of Obesity. That is, patients who had an encounter with Obesity as the secondary diagnosis. At the National level, 13.63% (N=846,943) of all VHA patients had secondary diagnosis of Obesity. At the network level, the range ran from a low of 16,280 individuals in the Capitol Network (VISN 5), representing 10.85%, to a high of 94,978 individuals in the Sunshine Network (VISN 8), representing 16.48%.

In Table 9 (similar to Table 7 for patients with a primary diagnosis of Obesity) information on outpatient encounters for all patients with a secondary diagnosis of Obesity by rurality is reported. The percentage of encounters by rural and highly rural patients constituted nearly two-thirds of the total Obesity encounters in VISN 23 (60.41%). Following VISN 23, three other networks (in rank order, VISNs 15, 9, and 2) had more than half of the encounters from patients with a secondary diagnosis of Obesity living in rural and highly rural areas of the VISN.

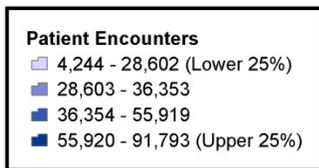
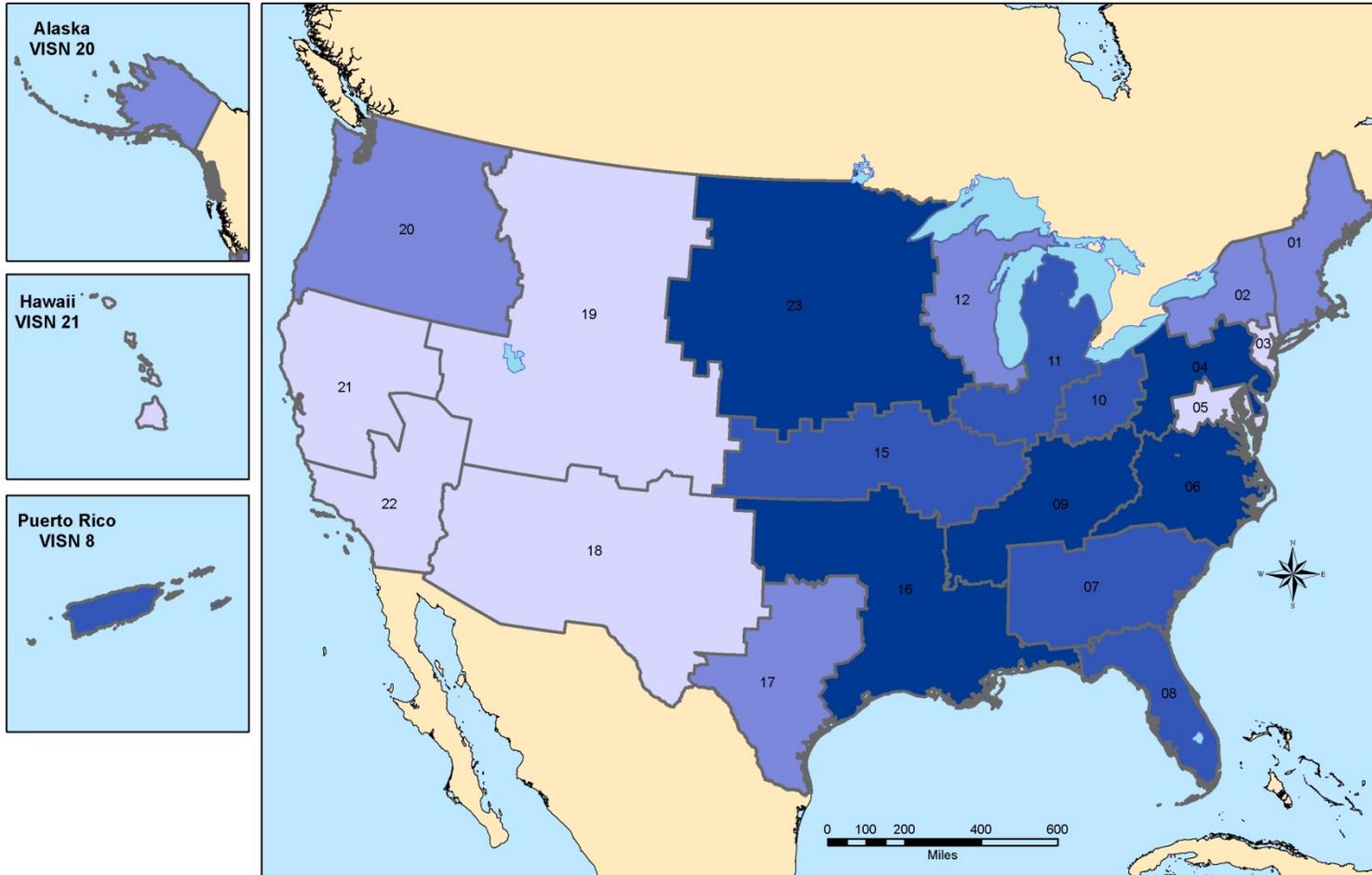
Table 8: Outpatient Encounters of Patients with a Secondary Diagnosis of Obesity

Overall Resource Utilization- Obesity (Secondary Diagnosis Group) Compared to All Users, FY-2014										
Veterans Integrated Service Network	Total Number of Patients	Patients with Obesity		Outpatient Encounters						
		N	%	Total	Obesity					
	N			HR	R	%	U	Unk	%	
New England (01)	253,326	34,964	13.80	7,306,431	215	22,898	0.32	46,512	0	0.95
Upstate NY (02)	136,497	21,411	15.69	4,189,442	26	20,538	0.49	18,892	1	0.94
NY/NJ (03)	174,457	24,367	13.97	5,308,815	1	2,995	0.06	45,922	5	0.92
Stars and Stripes (04)	310,940	51,325	16.51	8,188,223	6	42,056	0.51	53,715	4	1.17
Capitol (05)	150,012	16,280	10.85	3,919,003	0	8,013	0.20	22,213	0	0.77
Mid-Atlantic (06)	359,692	50,909	14.15	9,682,967	22	44,433	0.46	50,243	6	0.98
Southeast (07)	408,164	50,746	12.43	10,588,864	5	36,989	0.35	55,343	3	0.87
Sunshine (08)	576,411	94,978	16.48	17,255,468	41	29,449	0.17	136,572	18	0.96
Mid South (09)	298,396	41,150	13.79	8,424,188	11	45,958	0.55	39,041	3	1.01
Ohio (10)	231,319	28,068	12.13	7,511,566	8	25,266	0.34	37,630	2	0.84
Vets in Partnership (11)	282,135	40,295	14.28	7,691,758	15	36,486	0.47	48,140	3	1.10
Great Lakes (12)	266,879	38,417	14.39	7,705,668	126	28,106	0.37	51,584	6	1.04
Heartland (15)	245,357	35,721	14.56	7,009,124	499	41,628	0.60	30,266	6	1.03
South Central (16)	502,681	77,642	15.45	13,310,260	196	77,073	0.58	79,503	9	1.18
Heart of Texas (17)	306,581	41,887	13.66	7,950,682	307	21,650	0.28	47,757	12	0.88
Southwest (18)	271,557	29,321	10.80	6,738,226	2,482	14,121	0.25	34,086	73	0.75
Rocky Mtn. (19)	202,350	20,396	10.08	4,987,574	3,927	12,233	0.32	23,520	8	0.80
Northwest (20)	288,322	32,426	11.25	6,791,502	2,588	18,323	0.31	30,598	4	0.76
Sierra Pacific (21)	293,645	30,813	10.49	6,828,680	592	14,515	0.22	45,819	456	0.90
Desert Pacific (22)	328,951	46,236	14.06	8,520,022	1,089	6,094	0.08	73,950	3	0.95
Midwest (23)	324,728	39,591	12.19	8,146,785	3,459	44,147	0.58	31,193	1	0.97
Grand Total	6,212,400	846,943	13.63	168,055,248	15,615	592,971	0.36	1,002,499	623	0.96

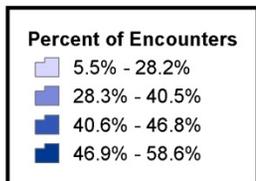
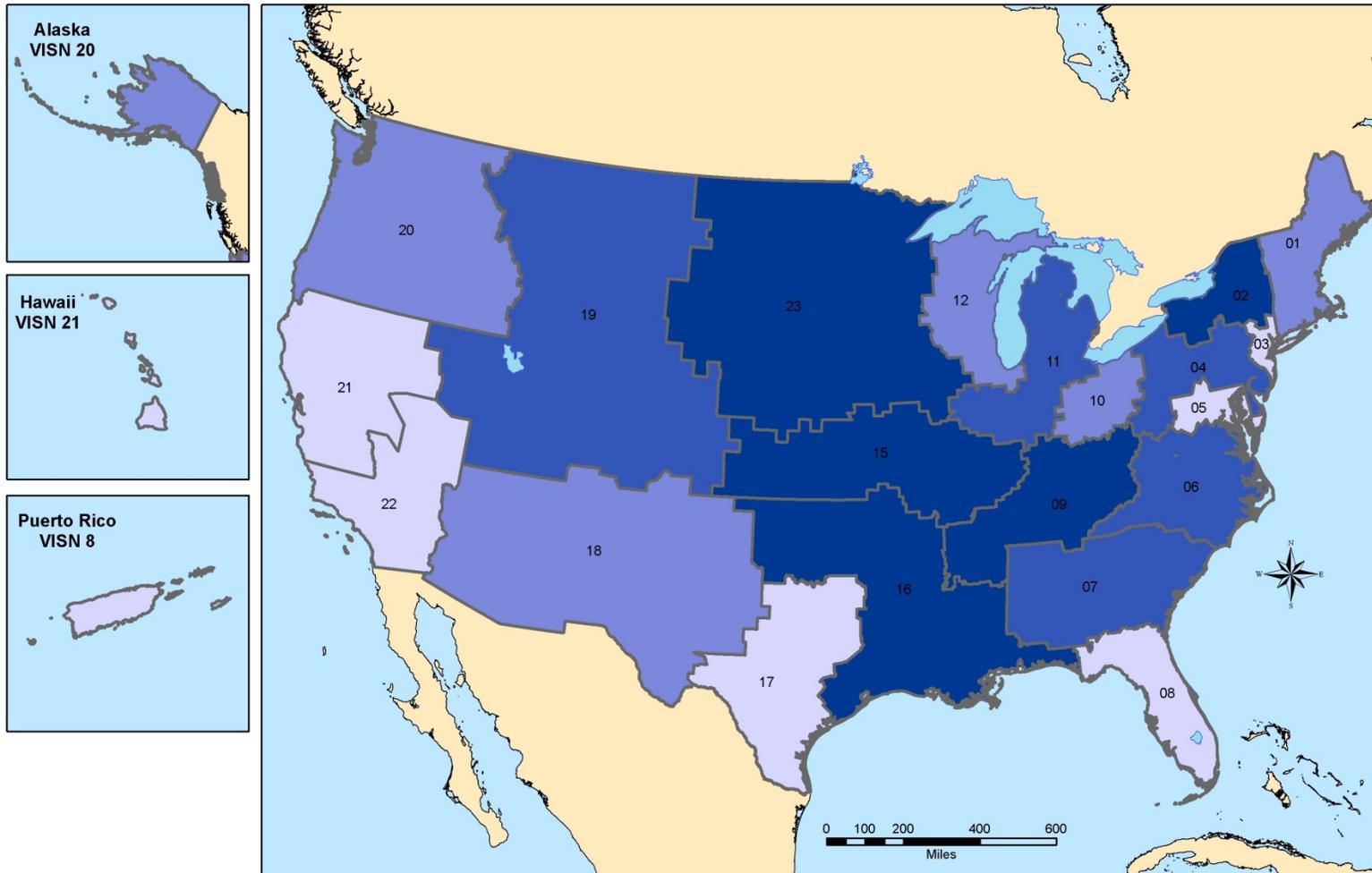
Table 9: Outpatient Encounters of Patients with a Secondary Diagnosis of Obesity by Rurality

Veterans Integrated Service Network	Outpatient Encounters by Patients with Secondary Obesity DX					
	Total	Rurality				
	N	HR	R	%	U	Unk
New England (01)	69,625	215	22,898	33.20	46,512	0
Upstate NY (02)	39,457	26	20,538	52.12	18,892	1
NY/NJ (03)	48,923	1	2,995	6.12	45,922	5
VISN 04 (04)	95,781	6	42,056	43.91	53,715	4
Capitol (05)	30,226	0	8,013	26.51	22,213	0
Mid-Atlantic (06)	94,704	22	44,433	46.94	50,243	6
Southeast (07)	92,340	5	36,989	40.06	55,343	3
Sunshine (08)	166,080	41	29,449	17.76	136,572	18
Mid South (09)	85,013	11	45,958	54.07	39,041	3
Ohio (10)	62,906	8	25,266	40.18	37,630	2
Vets in Partnership (11)	84,644	15	36,486	43.12	48,140	3
Great Lakes (12)	79,822	126	28,106	35.37	51,584	6
Heartland (15)	72,399	499	41,628	58.19	30,266	6
South Central (16)	156,781	196	77,073	49.28	79,503	9
Heart of Texas (17)	69,726	307	21,650	31.49	47,757	12
Southwest (18)	50,762	2,482	14,121	32.71	34,086	73
Rocky Mtn. (19)	39,688	3,927	12,233	40.72	23,520	8
Northwest (20)	51,513	2,588	18,323	40.59	30,598	4
Sierra Pacific (21)	61,382	592	14,515	24.61	45,819	456
Desert Pacific (22)	81,136	1,089	6,094	8.85	73,950	3
Midwest (23)	78,800	3,459	44,147	60.41	31,193	1
TOTAL	1,611,708	15,615	592,971	37.76	1,002,499	623

Obesity



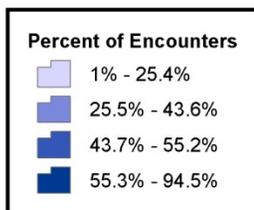
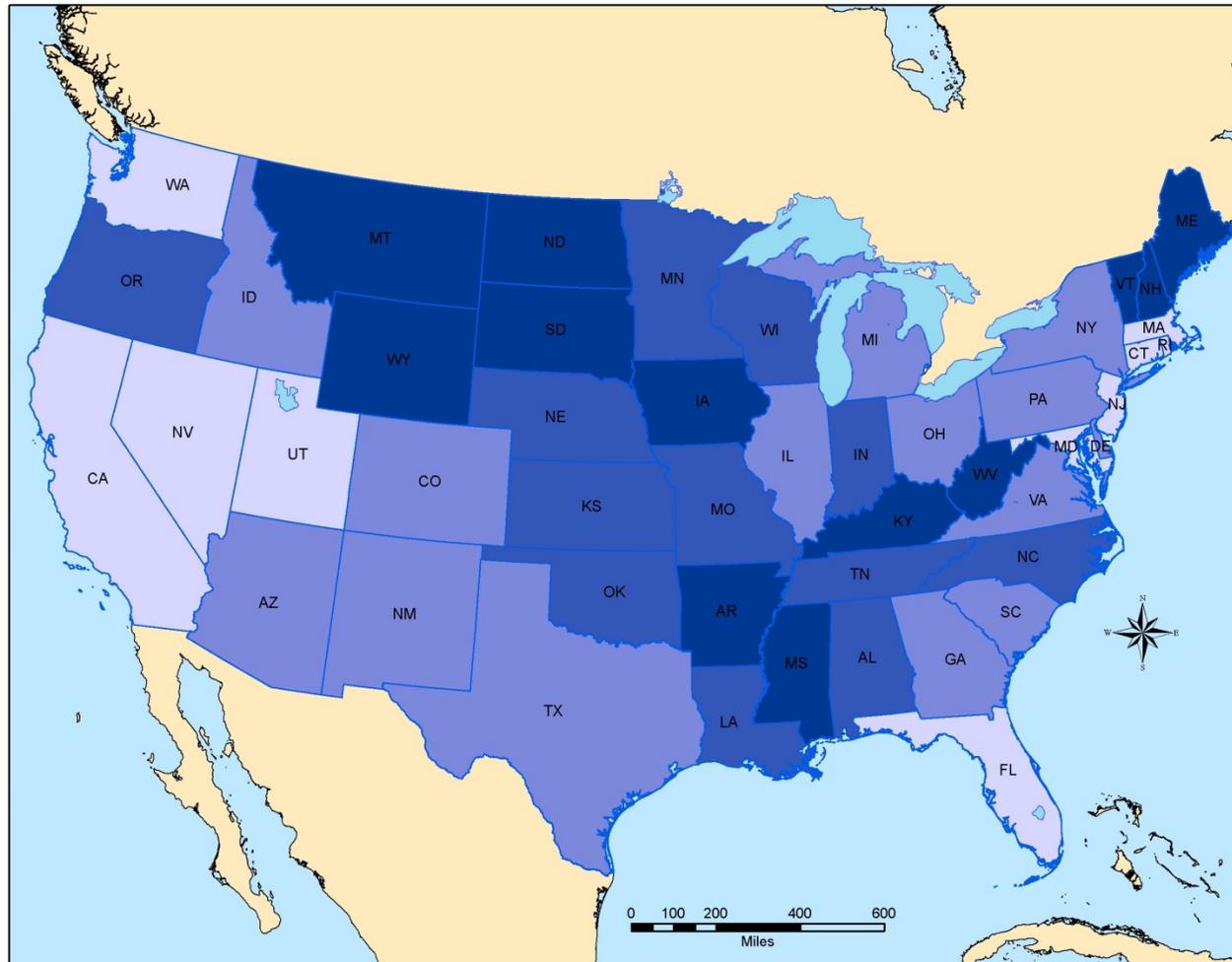
Map 44:
Number of Rural and Highly Rural VHA Patients
with Obesity
Encounters
By VISN FY - 2014



Map 45:
Percent of Rural and Highly Rural VHA Patients
with Obesity, Encounters
Of All VHA Patient Obesity Encounters
By VISN FY - 2014



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GeoSpatial Outcomes Division
(Map Creation Date: 9/9/2015)
Map Information by: PSSG, VSSC, ESRI
ArcGIS 10.2x

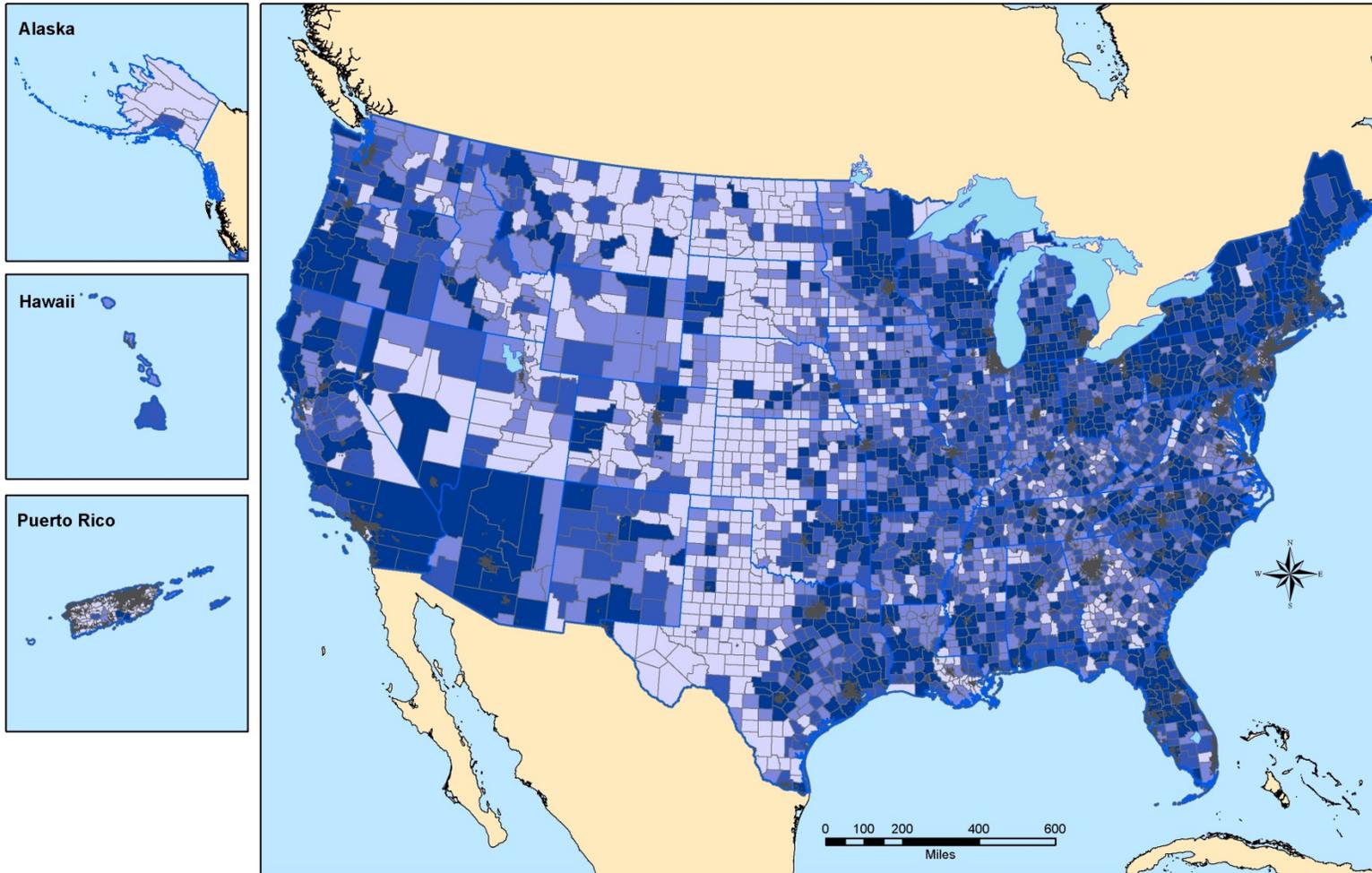


Map 47:
Percent of Rural and Highly Rural VHA Patients
with Obesity, Encounters
Of All VHA Patient Obesity Encounters
By State FY - 2014

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VHA Office of Rural Health

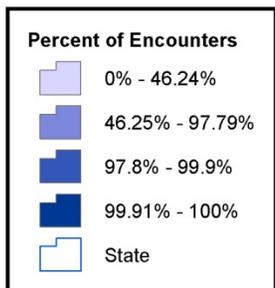
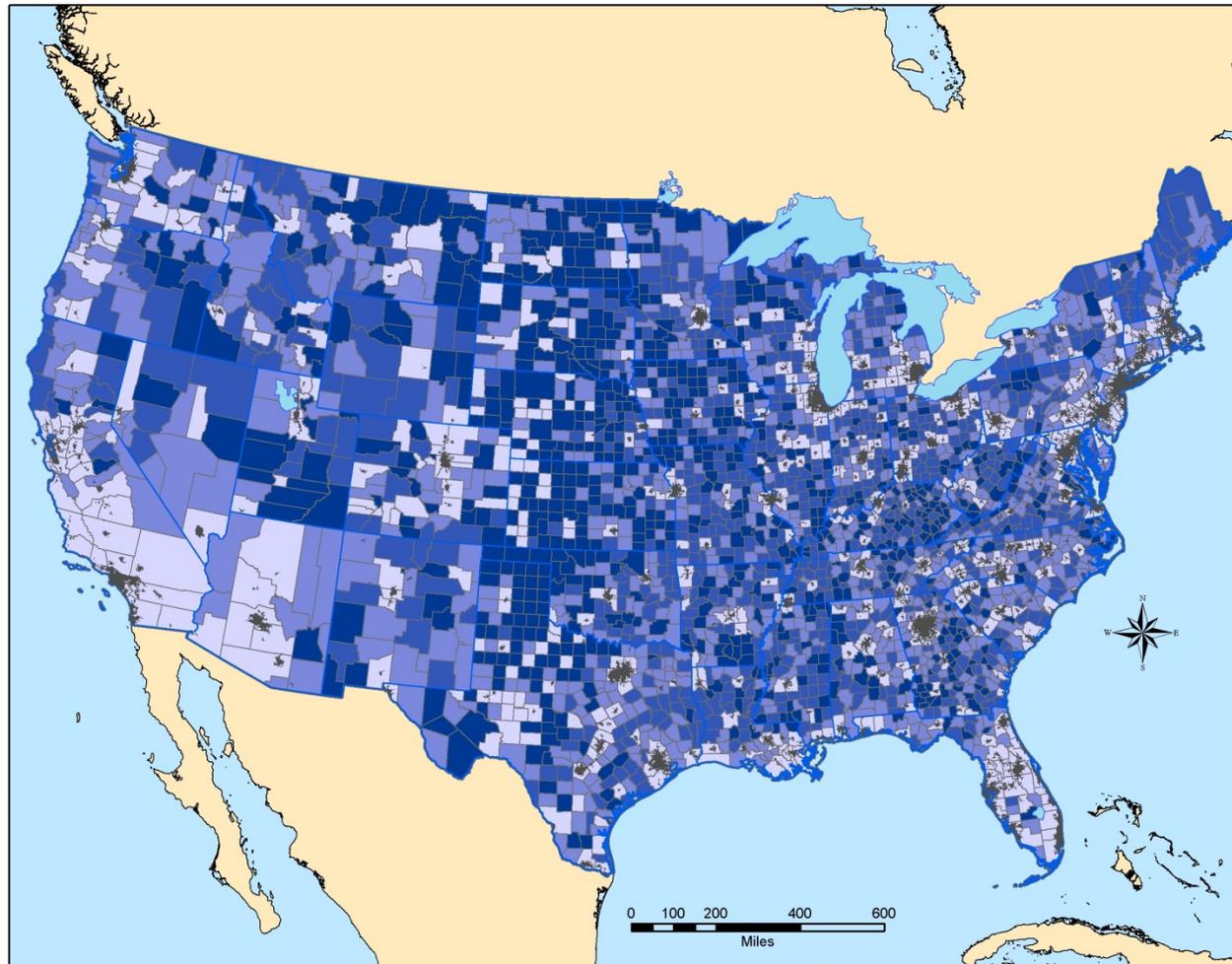
Map Created By: ORH RHRC-ER (DCR, LKW, JKA, ERL)
GeoSpatial Outcomes Division
(Map Creation Date: 9/10/2015)
Map Information by: PSSG, VSSC, ESRI
ArcGIS 10.2x

Obesity



Patient Encounters	
	0 - 65 (Lower 25%)
	66 - 163
	164 - 339
	340 - 4,314 (Upper 25%)
	State

Map 48:
Number of Rural and Highly Rural VHA Patients
with Obesity, Encounters
By County FY - 2014
Urban Areas "Shaded"



Map 49:
Percent of Rural and Highly Rural VHA Patients
with Obesity, Encounters
Of All VHA Patient Obesity Encounters
By County FY - 2014
Urban Areas "Shaded"



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GeoSpatial Outcomes Division
(Map Creation Date: 9/10/2015)
Map Information by: PSSG, VSSC, ESRI
ArcGIS 10.2x

References

1) Diagnosis Cube Documentation, available at:

<http://vaww.vssc.med.va.gov/VSSCEnhancedProductManagement/DisplayDocument.aspx?DocumentID=16>

NOTE: This is an internal VA website and is not accessible to the public.

2) Enrollment Priority Groups, available at:

http://www.va.gov/healthbenefits/resources/publications/IB10-441_enrollment_priority_groups.pdf.

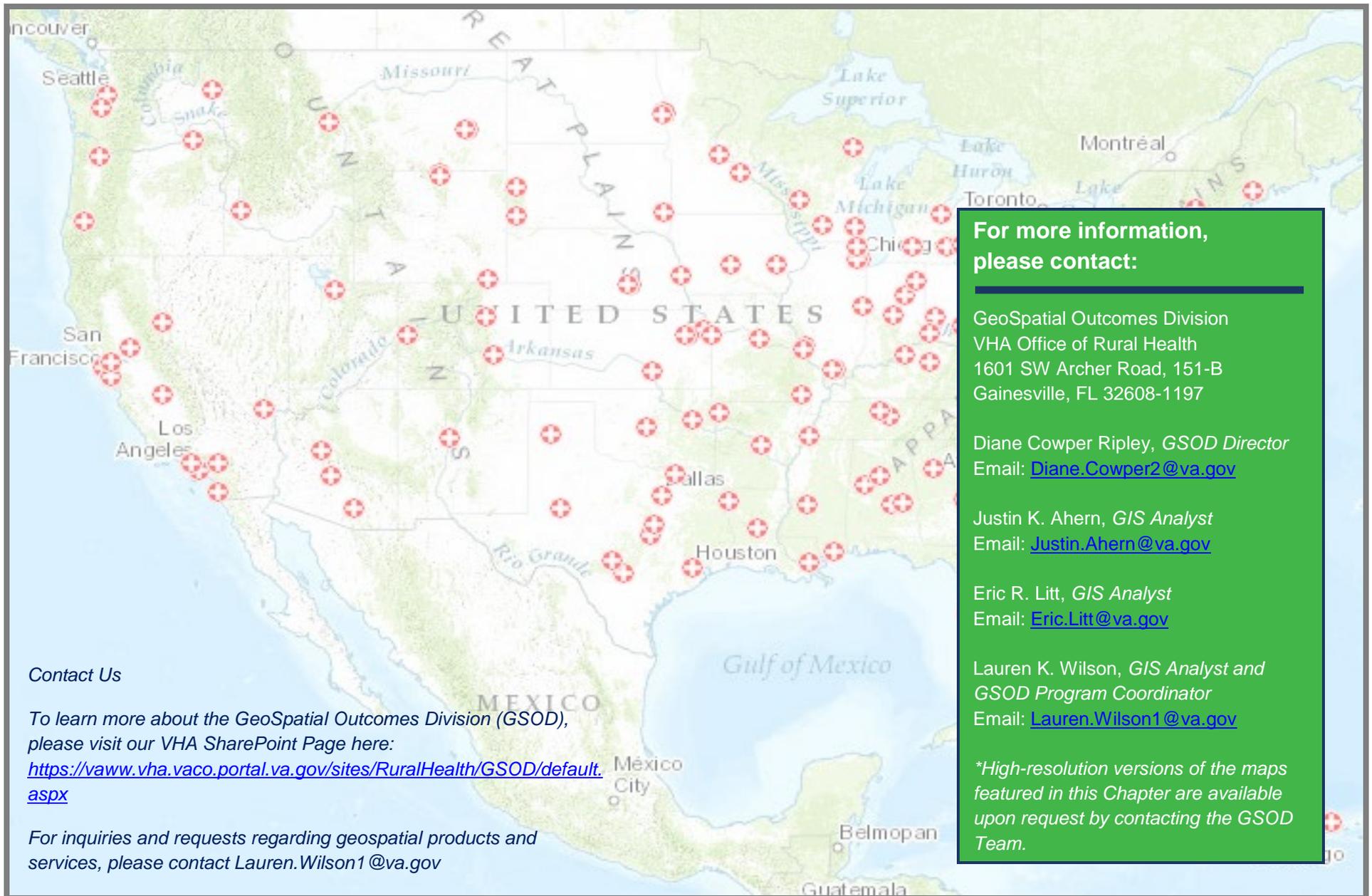
Project Team

Diane C. Cowper Ripley, Ph.D. is presently Site Co- Director of the HSR&D-funded Center of Innovation on Disability and Rehabilitation Research (CINDRR) and the Director of the Veterans Rural Health Resource Center-Eastern Region's GeoSpatial Outcomes Division (GSOD). Her research has focused on Veterans' access and utilization issues for over 31 years.

Justin K. Ahern, B.A. is a geographer and the newest staff member of the GeoSpatial Outcomes Division. He hopes to bring his diversity of skills and experiences to satisfy the GSOD's mission of supporting both Research and Operations related to improving access to health care for rural Veterans.

Eric R. Litt, B.A. is a geographer and has been with the VA since 2006. He also serves as Deputy Director of the GeoSpatial Outcomes Division. Mr. Litt has a strong interest in and deep commitment to assisting our Veterans by providing geospatial analyses that ultimately may improve access to health care services.

Lauren K. Wilson, B.S. serves as the program coordinator and GIS Analyst with the GeoSpatial Outcomes Division. She has been employed with the VA since 2009 and has been using GIS tools since 2005. Her main focus is geospatial analyses and geostatistics and their myriad uses for evidence-based research and policy influence for meaningful change in access to health care for rural Veterans.



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**High-resolution versions of the maps featured in this Chapter are available upon request by contacting the GSOD Team.*

Contact Us

To learn more about the GeoSpatial Outcomes Division (GSOD), please visit our VHA SharePoint Page here: <https://vaww.vha.vaco.portal.va.gov/sites/RuralHealth/GSOD/default.aspx>

For inquiries and requests regarding geospatial products and services, please contact Lauren.Wilson1@va.gov