

10

Posttraumatic Stress Disorder

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



TABLE OF CONTENTS

OVERVIEW	1
Process of Data Compilation	1
Diagnostic Codes Used to Define Cohort (PTSD)	3
Organization of Data Tables and Maps	3
Section I Highlights: VHA Patients with PTSD	
National Overview	7
VISN Overview	8
State Overview	9
County Overview	9
Table 1	10
Maps 1 - 7	11
Section II Highlights: Rural and Highly Rural VHA Patients with PTSD	18
National Overview	19
VISN Overview	19
State Overview	20
County Overview	20
Table 2	22
Maps 8 - 21	23

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

Gender	37
Table 3	38
Maps 22 - 25	39
Age Group	45
Table 4	46
Maps 26 - 31	47
Service Connection and Low Income Enrollment Priority Groups	53
Table 5	54
Maps 32 - 43	55

Section IV Highlights: VHA Patients with PTSD (Outpatient Utilization) 67

Tables 6 - 7	68
Tables 8 - 9	71
Maps 44 - 49	73

References 79

Project Team 79

OVERVIEW

The staff at the GeoSpatial Outcomes Division accessed data repositories available through the Veterans Health Administration (VHA) Support Service Center (VSSC) <http://vssc.med.va.gov/> to query and extract the data used to generate this chapter's tables and maps. The Diagnosis Cube, in particular, is a single repository cube with tools for diagnosis monitoring of the Veteran patient population. It was developed to provide a cube where diagnoses from all diagnosis positions from Outpatient, Inpatient, and Fee Sources are included¹.

According to a canned report available in the Diagnosis Cube, Posttraumatic Stress Disorder (PTSD) - specifically ICD-9-CM code 309.81 - is listed as #12 of the Top 20 Diagnoses by Uniques (with 735,730 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, PTSD diagnostic code 309.81 is still ranked high at #13 (with 265,200 unique patients), and when highly rural areas are queried from the selection, code 309.81 is ranked higher at #12 (with 8,556 unique patients). In addition, the Diagnosis Cube also reported a high frequency of occurrences of ICD-9-CM code 309.81 (positioned at #2, with 6,922,594 occurrences), and positioned even higher in rural areas (at #3, with 2,286,354 occurrences) and in highly rural areas (at #3 with 75,959 occurrences). This represents a need for analysis of health care access and delivery for the PTSD cohort living in rural and highly rural areas. The GSOD team utilized scholarly and reliable web resources to confirm the one diagnosis ICD-9-CM code used to identify patients with PTSD (see *Diagnostic Codes Used to Define Cohort* section below). 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 14

Posttraumatic Stress Disorder



- **Diagnosis ICD9 Desc:** 309.81. This code applies to Chronic Posttraumatic Stress Disorder, Concentration camp syndrome, Posttraumatic Stress Disorder (Not Otherwise Specified), and Post-Traumatic Stress Disorder (PTSD)
- **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-2014
- **Diagnosis ICD9 Desc:** 309.81. This code applies to Chronic Posttraumatic Stress Disorder, Concentration camp syndrome, Posttraumatic Stress Disorder (Not Otherwise Specified), and Post-Traumatic Stress Disorder (PTSD)
- **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 10.1/10.2 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 PTSD in the VHA.
- Counts and percentages of total patients with PTSD 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 PTSD 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 PTSD versus all patients (uniques) *by age group (<=45)* 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 PTSD 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 PTSD 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 PTSD in rural and highly rural areas versus outpatient encounters of patients with PTSD in all rural categories, with HR/R combined into RHR for the purposes of patient confidentiality.

Diagnostic Codes Used to Define Cohort (PTSD)

There is a single ICD-9-CM code that applies to PTSD: **309.81**.

Organization of Data Tables and Maps

The organization of the data tables and maps for Veterans with PTSD is organized into four sections. The first section (Section I) focuses on the total numbers of VHA patients with PTSD. We first present an overview of the data at the National, Veterans Integrated Service Network (VISN), State, and county levels. In addition to the overall number of patients with PTSD, 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 PTSD by VISN, FY-2014
- Map 2: Number of Patients with PTSD by State, FY-2014
- Map 3: Number of Patients with PTSD by County, FY-2014
- Map 4 - 7: Number of Patients with PTSD by County, FY-2014 – Zoomed VISN views

Section II of the chapter focuses on the overall prevalence of PTSD 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 PTSD. Because the numbers 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 PTSD:

- Map 8: Number of Rural and Highly Rural Patients with PTSD by VISN, FY-2014
- Map 9: Percent of Rural and Highly Rural Patients with PTSD of Total Rural and Highly Rural Patients by VISN, FY-2014
- Map 10: Number of Rural and Highly Rural Patients with PTSD by State, FY-2014
- Map 11: Percent of Rural and Highly Rural Patients with PTSD of Total Rural and Highly Rural Patients by State, FY-2014
- Map 12: Number of Rural and Highly Rural Patients with PTSD by County, FY-2014
- Map 13: Percent of Rural and Highly Rural Patients with PTSD of Total Rural and Highly Rural Patients by County, FY-2014
- Maps 14, 16, 18, 20: Number of Rural and Highly Rural Patients with PTSD by County, FY-2014 – Zoomed VISN views
- Map 15, 17, 19, 21: Percent of Rural and Highly Rural Patients with PTSD 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 female VHA patients:

- Map 22: Number of Rural and Highly Rural Female Patients with PTSD by VISN, FY-2014
- Map 23: Percent of Rural and Highly Rural Female Patients with PTSD of Total Rural and Highly Rural Female Patients by VISN, FY-2014
- Map 24: Number of Rural and Highly Rural Female Patients with PTSD by State, FY-2014
- Map 25: Percent of Rural and Highly Rural Female Patients with PTSD of Total Rural and Highly Rural Female Patients by State, FY-2014

- Map 26: Number of Rural and Highly Rural Females Patients with PTSD by County, FY-2014
- Map 27: Percent of Rural and Highly Rural Female Patients with PTSD of Total Rural and Highly Rural Female Patients by County, FY-2014

Table 4 contains data broken down by age group and rurality, with accompanying maps of rural and highly rural VHA patients by 45 years of age and younger:

- Map 28: Number of Rural and Highly Rural Patients Aged 45 and Younger with PTSD by VISN, FY-2014
- Map 29: Percent of Rural and Highly Rural Patients with PTSD Aged 45 and Younger of Total Rural and Highly Rural Patients Aged 45 and Younger by VISN, FY-2014
- Map 30: Number of Rural and Highly Rural Patients Aged 45 and Younger with PTSD by State, FY-2014
- Map 31: Percent of Rural and Highly Rural Patients Aged 45 and Younger with PTSD of Total Rural and Highly Rural Patients Aged 45 and Younger by State, FY-2014
- Map 32: Number of Rural and Highly Rural Patients Aged 45 and Younger with PTSD by County, FY-2014
- Map 33: Percent of Rural and Highly Rural Patients Aged 45 and Younger with PTSD of Total Rural and Highly Rural Patients Aged 45 and Younger 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 34: Number of Rural and Highly Rural Patients in Priority Group 1-3 with PTSD by VISN, FY-2014
- Map 35: Percent of Rural and Highly Rural Patients with PTSD in Priority Group 1-3 of Total Rural and Highly Rural Patients in Priority Group 1-3 by VISN, FY-2014
- Map 36: Number of Rural and Highly Rural Patients in Priority Group 1-3 with PTSD by State, FY-2014
- Map 37: Percent of Rural and Highly Rural Patients in Priority Group 1-3 with PTSD of Total Rural and Highly Rural Patients in Priority Group 1-3 by State, FY-2014
- Map 38: Number of Rural and Highly Rural Patients in Priority Group 1-3 with PTSD by County, FY-2014
- Map 39: Percent of Rural and Highly Rural Patients in Priority Group 1-3 with PTSD of Total Rural and Highly Rural Patients in Priority Group 1-3 by County, FY-2014
- Map 40: Number of Rural and Highly Rural Patients in Priority Group 5 with PTSD by VISN, FY-2014

- Map 41: Percent of Rural and Highly Rural Patients with PTSD in Priority Group 5 of Total Rural and Highly Rural Patients in Priority Group 5 by VISN, FY-2014
- Map 42: Number of Rural and Highly Rural Patients in Priority Group 5 with PTSD by State, FY-2014
- Map 43: Percent of Rural and Highly Rural Patients in Priority Group 5 with PTSD of Total Rural and Highly Rural Patients in Priority Group 5 by State, FY-2014
- Map 44: Number of Rural and Highly Rural Patients in Priority Group 5 with PTSD by County, FY-2014
- Map 45: Percent of Rural and Highly Rural Patients in Priority Group 5 with PTSD 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 PTSD. Table 6 examines the outpatient encounters of patients with a **primary** diagnosis of PTSD 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 PTSD, also categorized by rurality. Table 7 and Table 9 provide information on the numbers and percentage of rural and highly rural PTSD encounters of total PTSD encounters for patients with a primary diagnosis of PTSD (Table 7) and secondary diagnosis of PTSD (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 PTSD to capture the total workload (outpatient encounters) of this disease in rural and highly rural areas:

- Map 46: Number of Rural and Highly Rural PTSD Patient Encounters by VISN, FY-2014
- Map 47: Percent of Rural and Highly Rural PTSD Patient Encounters of Total VHA Patient PTSD Encounters by VISN, FY-2014
- Map 48: Number of Rural and Highly Rural PTSD Patient Encounters by State, FY-2014
- Map 49: Percent of Rural and Highly Rural PTSD Patient Encounters of Total VHA Patient PTSD Encounters by State, FY-2014
- Map 50: Number of Rural and Highly Rural PTSD Patient Encounters by County, FY-2014
- Map 51: Percent of Rural and Highly Rural PTSD Patient Encounters of Total VHA Patient PTSD 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 PTSD

National Overview

Posttraumatic Stress Disorder (PTSD) can result from exposure to a terrifying event that “involved physical harm or the threat of physical harm. The person who develops PTSD may have been the one who was harmed, the harm may have happened to a loved one, or the person may have witnessed a harmful event that happened to loved ones or strangers.” (<http://www.nimh.nih.gov/health/topics/post-traumatic-stress-disorder-ptsd/index.shtml>). Events that occurred during combat-related missions may trigger PTSD in Armed Forces personnel and continue as service members transition from the military to civilian life. This condition has received considerable attention in the past decade from the medical community, as well as the media, for troops returning from combat in Iraq and Afghanistan.

In a recent journal article in the Journal of Anxiety Disorders, the prevalence of PTSD among Patients serving in OEF/OIF is estimated at 23%.² In a review of the literature published between 2009 and 2014, there is emerging evidence that links PTSD with a myriad of outcomes including “physical health, suicide, housing and homelessness, employment and economic well-being, social well-being, and aggression, violence, and criminality.”³

In Fiscal Year 2014, the Patients Health Administration had 735,730 patients with the diagnosis code indicating a primary or secondary diagnosis of PTSD (Table 1). This number represents approximately 12 percent (11.84%) of the total patient population during the fiscal year. As with most patients seen in the VHA, the majority of PTSD patients were male (90.26%); however, females represented almost 10 percent (9.74%).

The age distribution of PTSD patients shows that 30.1% were under the age of 45, 13.67% were ages 45-54, 18.75% were ages 55-64, 33.48% were ages 65-74, and 4.10% were ages 75 or older. The high percentages in the under 45 and in the 65-74 reflect the age groups that have served in the Gulf and OEF/OIF/OND eras (under age 45), as well as those Patients of the Vietnam Conflict (aged 65-74).

We examined two groups of Patients by their Enrollment Priority. Enrollment Priority Groups 1-3 were combined into one group, which includes Service-Connected Patients rated by the VA from 10-100%. A second group, Enrollment Priority

Posttraumatic Stress Disorder



Group 5, was selected to represent non Service-Connected and noncompensable Service-Connected Patients 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.⁴ The table shows that about 85 percent (84.26%) were Service-Connected injured Patients enrolled in Priority Groups 1 – 3 and 8.30% were Priority 5 (low income).

VISN Overview

At the time of this edition, the Patients Health Administration consisted of 21 networks. Examining data at the network level, the volume of patients with PTSD ranged from a high of 63,804 individuals in the South Central Network (VISN 16, which serves Patients in Oklahoma, Arkansas, Louisiana, Mississippi, and parts of Texas, Missouri, Alabama and Florida) to a low of 14,393 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 PTSD patients proportionally to all patients, the Mid-Atlantic Network (VISN 6) had the highest proportion at 14.39% and the Midwest Network (VISN 23) had the lowest proportion at 7.64%. The VISN with the highest ratio of females to males was in the Capital Network (VISN 5), where 12.47% of the PTSD patients were female. At the National level, the 65-74 age group had the highest prevalence of PTSD patients to all VHA patients (33.48%); however, at the network level, five networks had PTSD patients in the under 45 age group with the highest percentage (VISNs 11, 17, 19, 22 and 23). The vast majority of PTSD patients in the VHA were Service-Connected (Priority Groups 1-3), with all VISNs having over 80% in this priority group. Map 1 shows the number of Patients with PTSD by quartile across the 21 VISNs.

State Overview

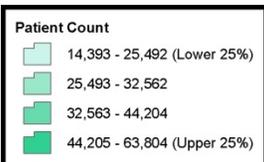
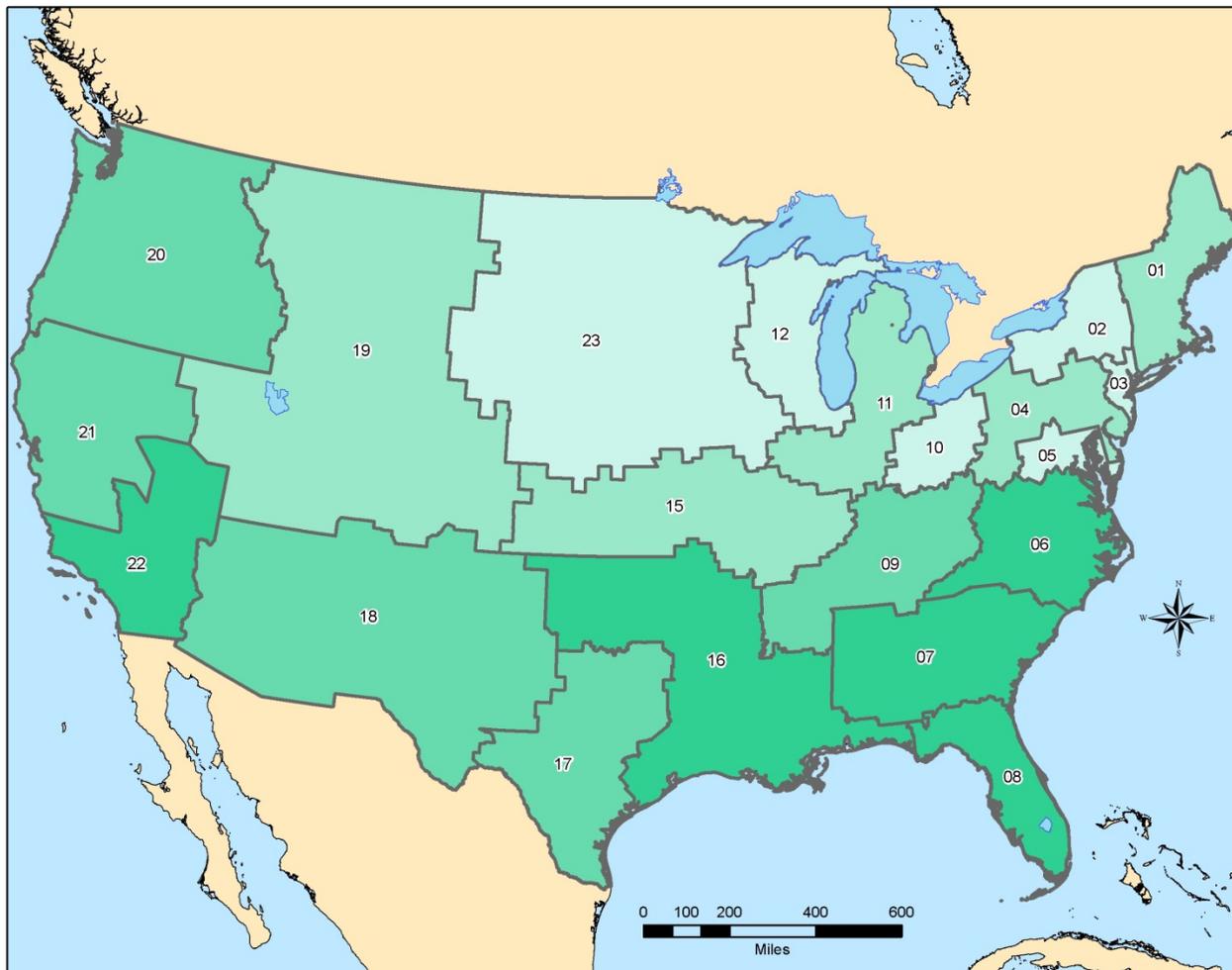
Map 2 shows the number of VHA patients with PTSD by State (by quartile). The top 10 States with the highest number of patients with PTSD by rank order were California (N=65,906) and Texas (N=65,906), Florida (N=51,949), North Carolina (N=32,994), New York (N=28,707), Georgia (N=28,106), Ohio (N=22,370), Pennsylvania (N=21,655), South Carolina (N=20,634), and Alabama (N=19,519). The State/territory with the highest percentages of patients with PTSD was Northern Mariana Islands (22.37%), followed by (in rank order): New Mexico (19.21%), Alabama (18.01%), Guam (17.92%), Massachusetts (17.00%), Colorado (16.96%), South Carolina (16.68%), Washington (16.15%), Oregon (15.86%) and North Carolina (15.83).

County Overview

The number of patients with PTSD 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 PTSD and the geographic patterns within each VISN. The top 10 counties with the largest number of VHA patients with PTSD across the US were in the States of Arizona (1 county), California (4 counties), Illinois (1 county), Nevada (1 county), and Texas (3 counties). Los Angeles County, California had the largest number of patients with PTSD (N=11,763), followed by, in rank order: Maricopa County, Arizona (N=8,945), San Diego County, California (N=8,583), Bexar County, Texas (N=7,842), Cook County, Illinois (N=6,104), Harris County, Texas (N=6,013), Clark County, Nevada (N=5,629), Riverside County, California (N=5,576), San Bernardino County (N=4,571) and Bell County, Texas (N=4,461).

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

Overall Prevalence Statistics- PTSD, FY-2014												
Veterans Integrated Service Network	Total Number of Patients	Patients with PTSD		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	32,562	12.85	8.33	91.67	28.55	12.31	18.96	34.26	5.94	83.65	7.44
Upstate NY (02)	136,497	15,120	11.08	9.44	90.56	30.93	12.90	17.97	33.92	4.33	83.02	8.70
NY/NJ (03)	174,457	20,612	11.81	7.28	92.72	25.50	10.78	17.03	39.86	6.83	81.53	10.18
Stars and Stripes (04)	310,940	30,877	9.93	7.83	92.17	26.90	12.22	18.50	38.00	4.39	83.60	8.06
Capitol (05)	150,012	14,393	9.59	12.47	87.53	28.74	16.02	20.07	31.63	3.56	81.78	9.33
Mid-Atlantic (06)	359,692	51,745	14.39	11.08	88.92	27.76	16.21	19.20	33.23	3.61	86.38	7.02
Southeast (07)	408,164	63,638	15.59	11.51	88.49	27.15	17.95	19.70	31.69	3.51	85.63	7.84
Sunshine (08)	576,411	53,717	9.32	9.99	90.01	26.83	14.05	19.17	34.91	5.06	83.93	8.78
Mid South (09)	298,396	35,653	11.95	7.68	92.32	28.05	14.19	18.18	36.02	3.56	87.67	6.52
Ohio (10)	231,319	21,829	9.44	9.09	90.91	30.40	12.65	19.00	34.39	3.58	81.10	10.37
Vets in Partnership (11)	282,135	27,538	9.76	7.89	92.11	32.39	12.44	18.61	34.04	2.52	82.43	9.69
Great Lakes (12)	266,879	25,492	9.55	9.58	90.42	30.53	12.69	19.16	34.33	3.29	80.01	9.61
Heartland (15)	245,357	27,858	11.35	8.72	91.28	30.07	13.54	19.27	33.38	3.75	83.30	9.08
South Central (16)	502,681	63,804	12.69	9.11	90.89	29.76	13.40	18.35	34.63	3.88	85.99	7.31
Heart of Texas (17)	306,581	44,204	14.42	11.50	88.50	37.30	14.78	16.36	28.35	3.21	87.59	6.42
Southwest (18)	271,557	36,980	13.62	10.03	89.97	30.62	12.88	18.66	33.23	4.61	82.52	9.38
Rocky Mtn. (19)	202,350	27,325	13.50	10.72	89.28	36.24	12.98	18.57	28.95	3.27	84.25	8.12
Northwest (20)	288,322	39,962	13.86	11.58	88.42	31.86	13.58	20.39	30.68	3.49	83.44	9.32
Sierra Pacific (21)	293,645	32,716	11.14	8.48	91.52	26.19	10.33	19.66	38.16	5.65	83.43	9.06
Desert Pacific (22)	328,951	44,906	13.65	9.78	90.22	33.98	11.95	17.74	31.59	4.74	81.83	10.05
Midwest (23)	324,728	24,799	7.64	9.22	90.79	32.65	12.59	18.92	31.90	3.95	87.64	5.82
Grand Total	6,212,400	735,730	11.84	9.74	90.26	30.01	13.67	18.75	33.48	4.10	84.26	8.30

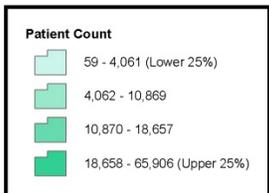
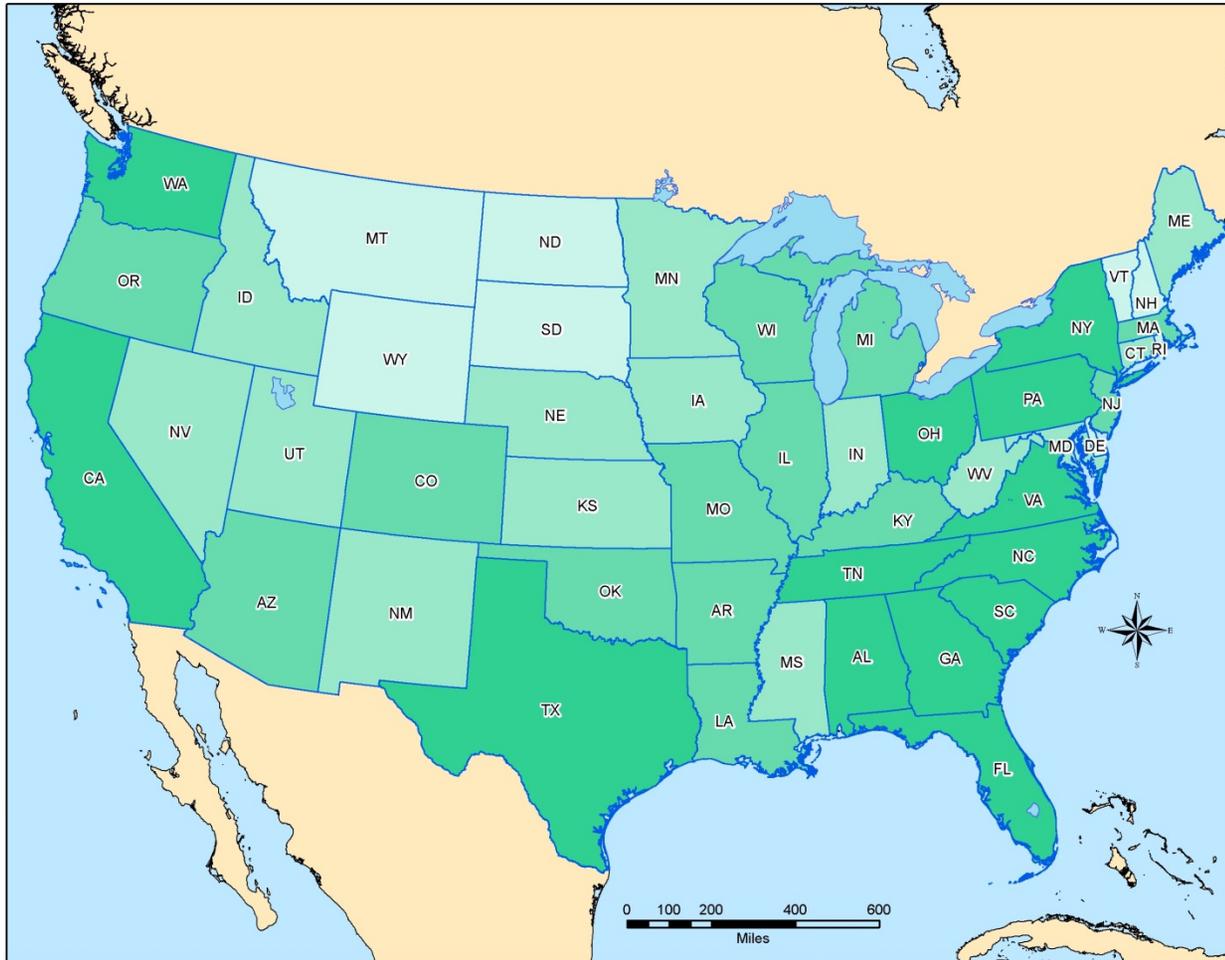


Map 1:
Number of VHA Patients with PTSD
By VISN FY - 2014

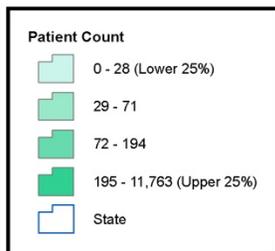
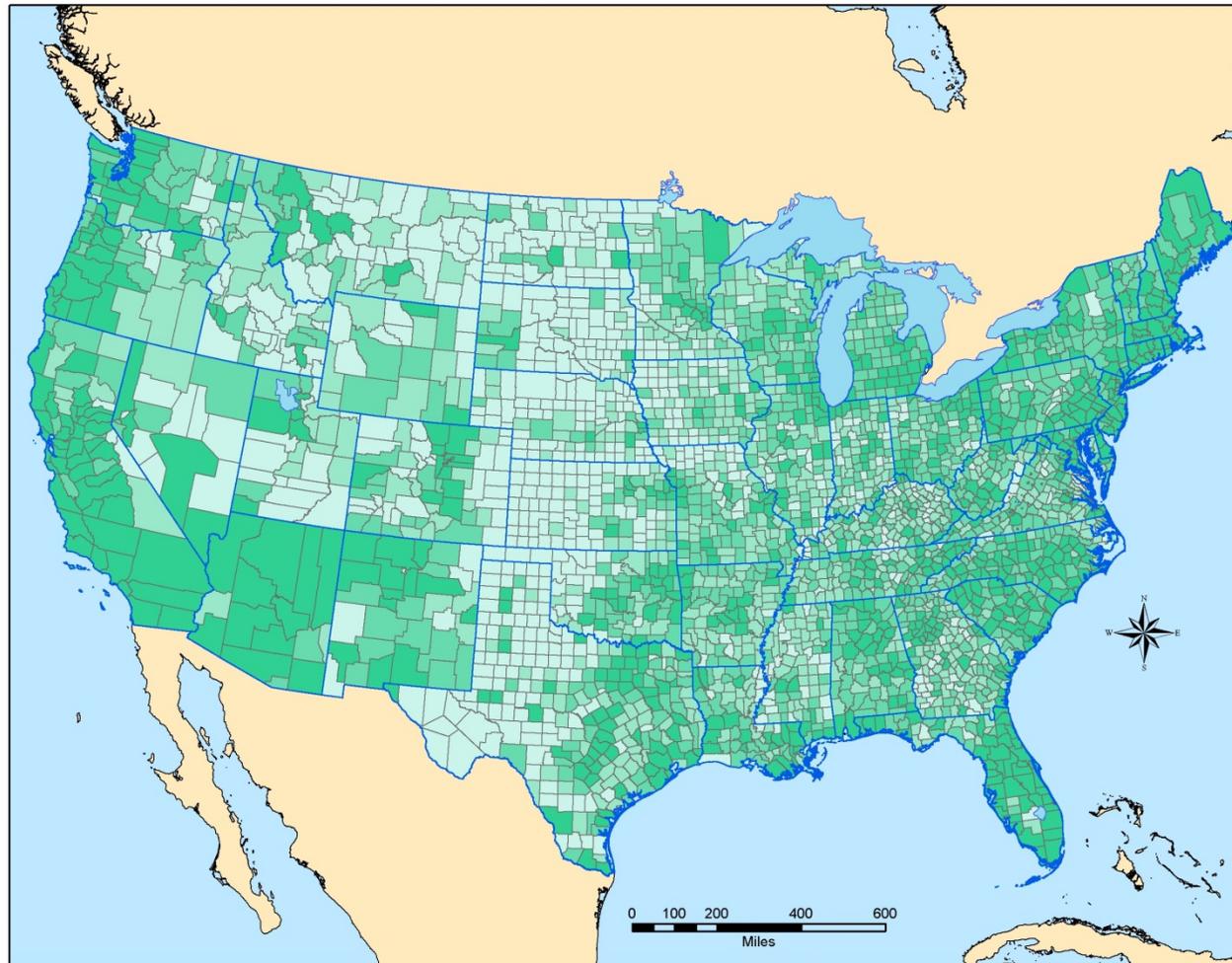


Map Created By: ORH RHRC-ER (DCR, LKW, JKA, ERL)
GeoSpatial Outcomes Division
(Map Creation Date: 7/9/2015)
Map Information by: PSSG, VSSC, ESRI
ArcGIS 10.2x

Posttraumatic Stress Disorder



Map2:
Number of VHA Patients with PTSD
By State FY - 2014

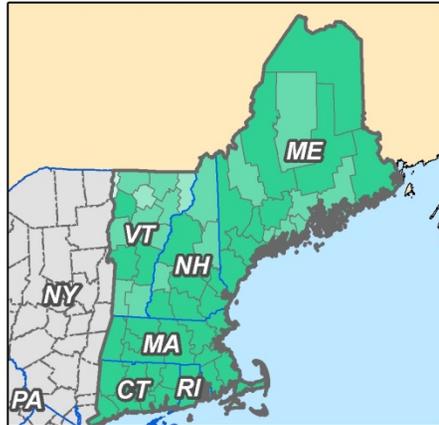


Map 3:
Number of VHA Patients with PTSD
By County FY - 2014

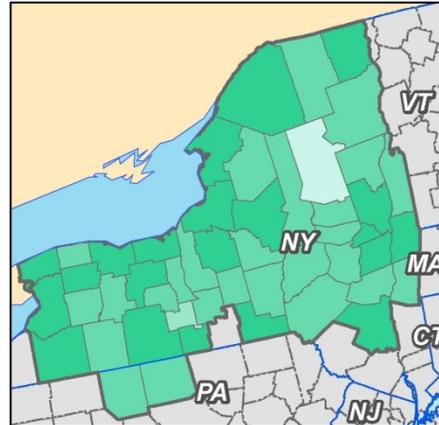


Map Created By: ORH RHRC-ER (DCR, LKW, JKA, ERL)
GeoSpatial Outcomes Division
(Map Creation Date: 7/8/2015)
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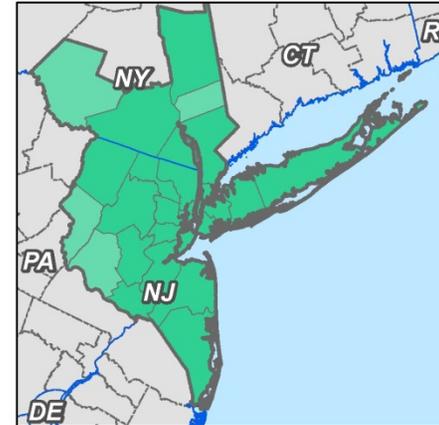
Posttraumatic Stress Disorder



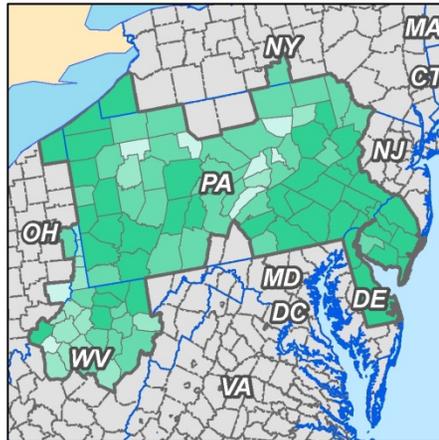
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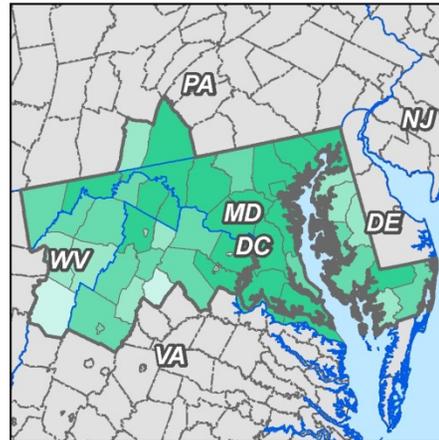
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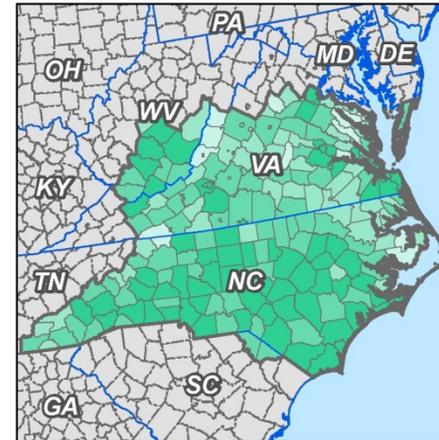
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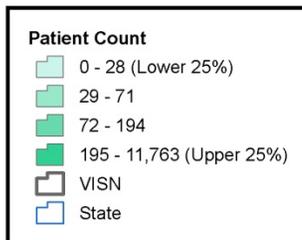
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VISN 5

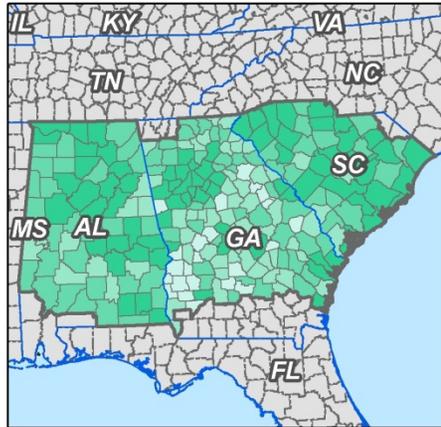


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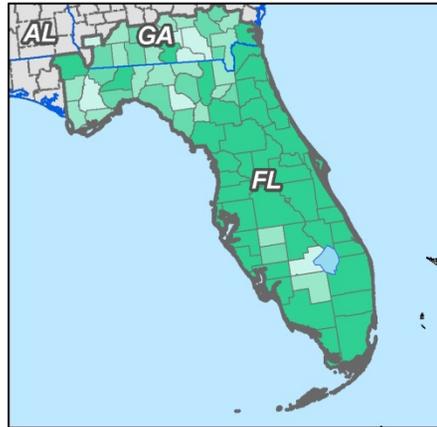


Map 4:

Number of VHA Patients with PTSD by County, FY - 2014



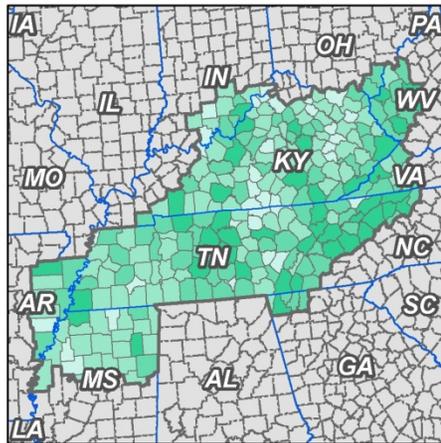
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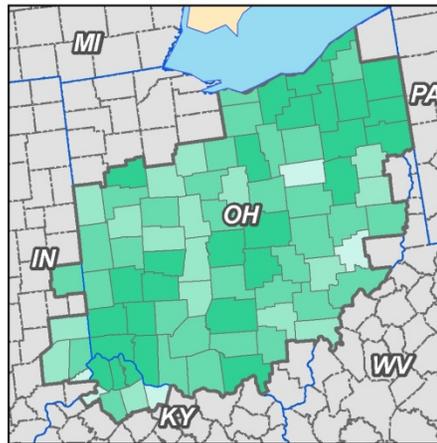
VISN 8



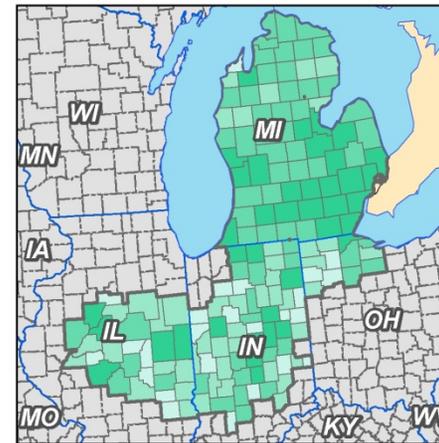
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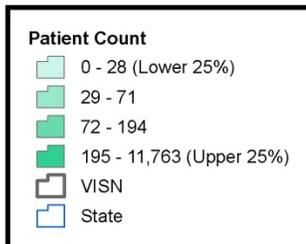
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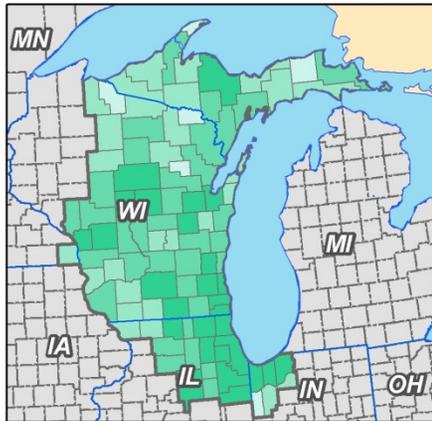


Map 5:
Number of VHA Patients with PTSD
By County FY - 2014

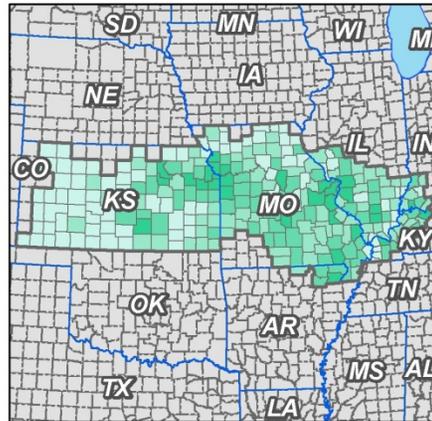


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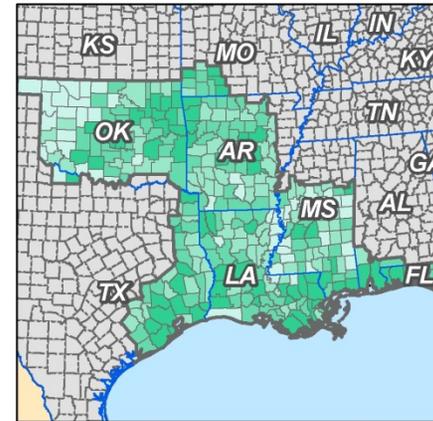
Posttraumatic Stress Disorder



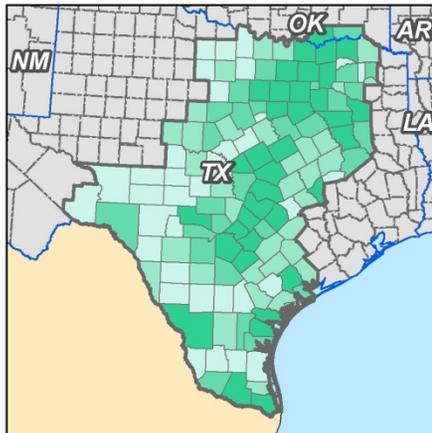
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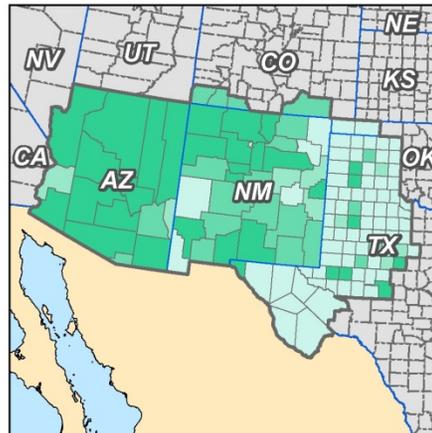
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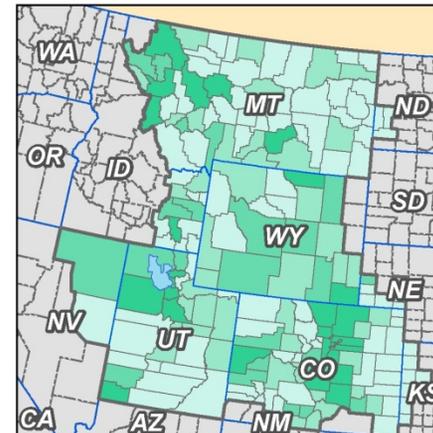
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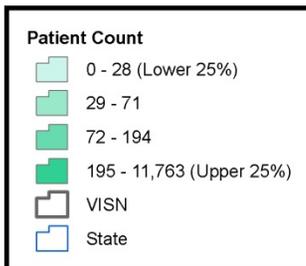
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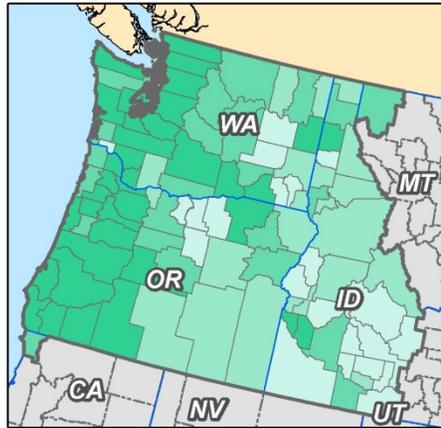
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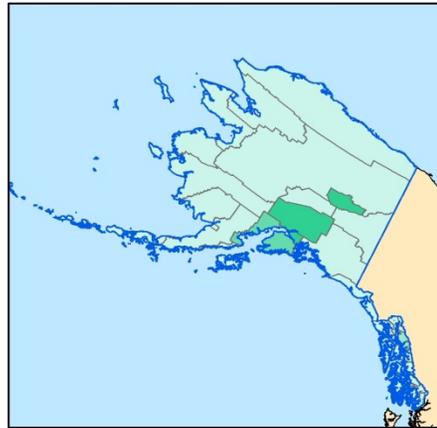
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Map 6:
Number of VHA Patients with PTSD
By County, FY - 2014



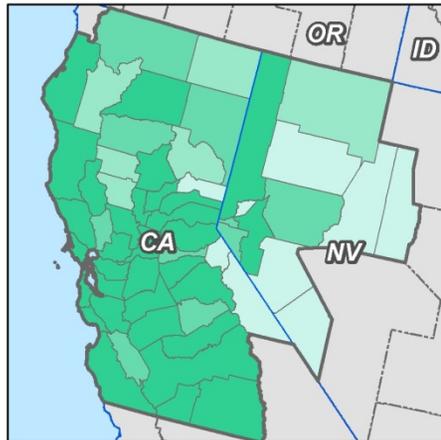
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VISN 20- Alaska



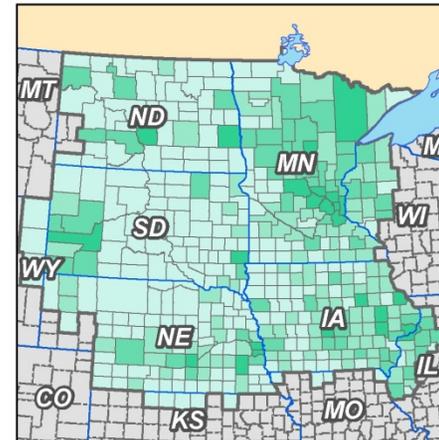
VISN 21- Hawaii



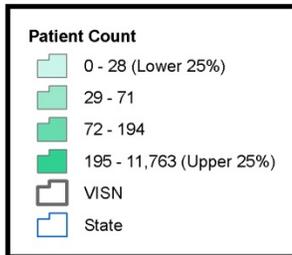
VISN 21



VISN 22



VISN 23



Map 7:
Number of VHA Patients with PTSD
By County, FY - 2014



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GeoSpatial Outcomes Division
(Map Creation Date: 7/8/2015)
Map Information by: PSSG, VSSC, ESRI
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Section II Highlights: Rural and Highly Rural VHA Patients with PTSD

This section focuses on the overall prevalence of PTSD in each Patients 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 PTSD. For this section, both the number and the percentages of rural and highly rural patients with PTSD 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 Patients 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, 735,730 VHA patients had a primary or secondary diagnosis of PTSD. The majority of patients with PTSD lived in urban areas (63.10%). However, over a third resided in either rural (N=262,426) or highly rural (N=8,451) areas (36.90% combined).

VISN Overview

The Rocky Mountain Network (VISN 19) had the highest number of patients with PTSD residing in a defined *highly rural* area at 2,380, which represented 8.71% of the total number of patients with PTSD in that network (Table 2). The South Central Network (VISN 16) had the highest number of patients with PTSD residing in a defined *rural* area at 30,213, which represented 47.35% of the total number of patients with PTSD in that network. Of note is that four of the 21 VISNs had a higher proportion of *rural* patients with PTSD compared to *urban* patients with PTSD: VISN 2 (Upstate New York), VISN 9 (Mid-South), VISN 15 (Heartland), and VISN 23 (Midwest).

Map 8 and Map 9 show the number and percentages of rural and highly rural patient with PTSD by VISN. VISNs 6 and 7 showed both a high volume of rural and highly rural patients with PTSD and a large proportion of their rural and highly rural patient population who had this disorder. VISNs 9, 15 and 16 had a relatively large number of patients with PTSD, but the proportion of rural and highly rural patients with PTSD represented a low to moderate percentages of the total rural and highly rural patient population. Conversely, VISNs 22 and 18 had low to moderate numbers of combined rural and highly rural patients with PTSD, but PTSD was quite prevalent in the rural and highly rural patient population (upper 25% quartile).

State Overview

Map 10 shows the number of VHA rural and highly rural patients with PTSD by State (by quartile). The top 10 States with the highest number of rural and highly rural patients with PTSD by rank order were: Texas (N=19,436), North Carolina (N=15,701), California (N=10,608), Georgia (N=10,405), Alabama (N=10,325), Tennessee (N=9,665), South Carolina (N=9,474), Florida (N=9,415), New York (9,044) and Michigan (N=8,780). The proportion of rural and highly rural patients with PTSD to the total rural and highly rural patient population is displayed in Map 11. Three of the States (Alabama,

Posttraumatic Stress Disorder



South Carolina and North Carolina) with the highest volume of rural and highly rural patients with PTSD also had the highest proportions of PTSD in their rural and highly rural patient population. The States with the highest percentage of their rural and highly rural patients (and more than 10 patients classified as rural or highly rural) having PTSD were: Hawaii (21.30%), New Mexico (20.10%), New Jersey (18.92), Alabama (18.62%), Massachusetts (17.83%), South Carolina (17.73%), Washington (16.68%), Colorado (15.99%), Louisiana (15.88%), and North Carolina (15.83%).

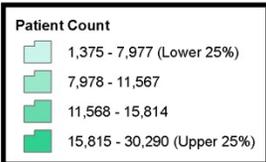
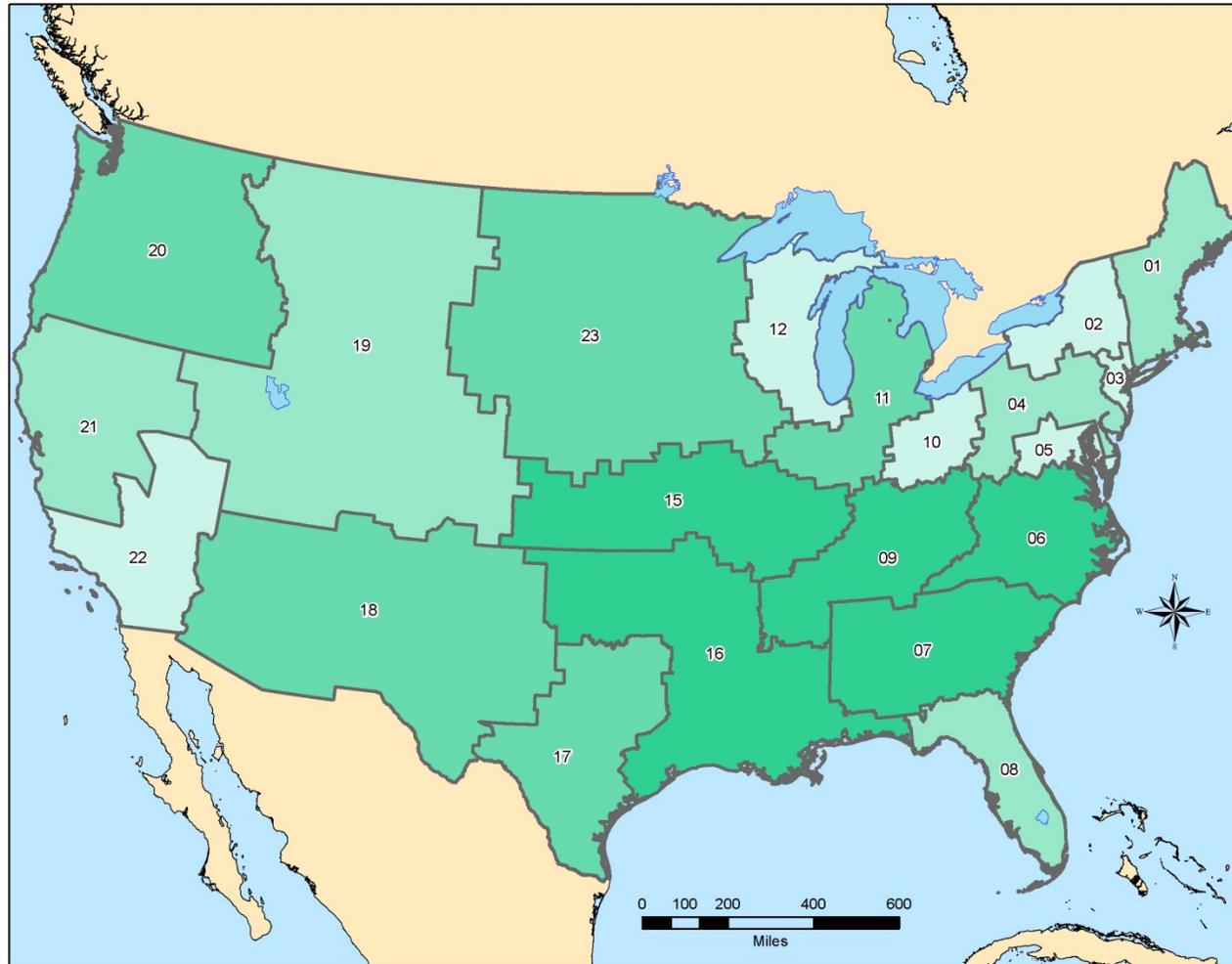
County Overview

The number of rural and highly rural patients with PTSD by county is displayed by quartiles in Map 12. The highest 25% in terms of volume is designated by the darkest shade. The proportion of rural and highly rural patients with PTSD of the total rural and highly rural patient population is portrayed in Map 13. 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 PTSD 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 PTSD across the US were in the States of Arizona (3 counties), California (1 county), Hawaii (1 county), Kansas (1 county), Maine (1 county), North Carolina (2 counties), and Oregon (1 county). Douglas County, Oregon had the largest number of rural and highly rural patients with PTSD (N=1,261) followed by, in rank order: San Bernardino County, California (N=972), Hawaii County, Hawaii (N=838), Yavapai County, Arizona (N=765), Kennebec County, Maine (N=722), Robeson County, North Carolina (N=665), Leavenworth County, Kansas (N=642), Onslow County, North Carolina (N=630), Mohave County, Arizona (N=628), and Pima County, Arizona (N=628). 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 PTSD diagnostic code were Bergen County, New Jersey (37.04%), Mora County, New Mexico (37.02%), San Miguel County, New Mexico (36.22%), Newport News City County, Virginia (35.29%), Taos County, New Mexico (31.09%), Wilcox County, Alabama (31.09%), Costilla County, Colorado (30.46%), Long County, Georgia (29.97%), Harlan County, Kentucky (29.67%), and Rio Arriba County, New Mexico (29.26%).

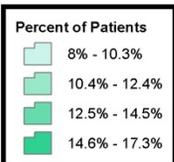
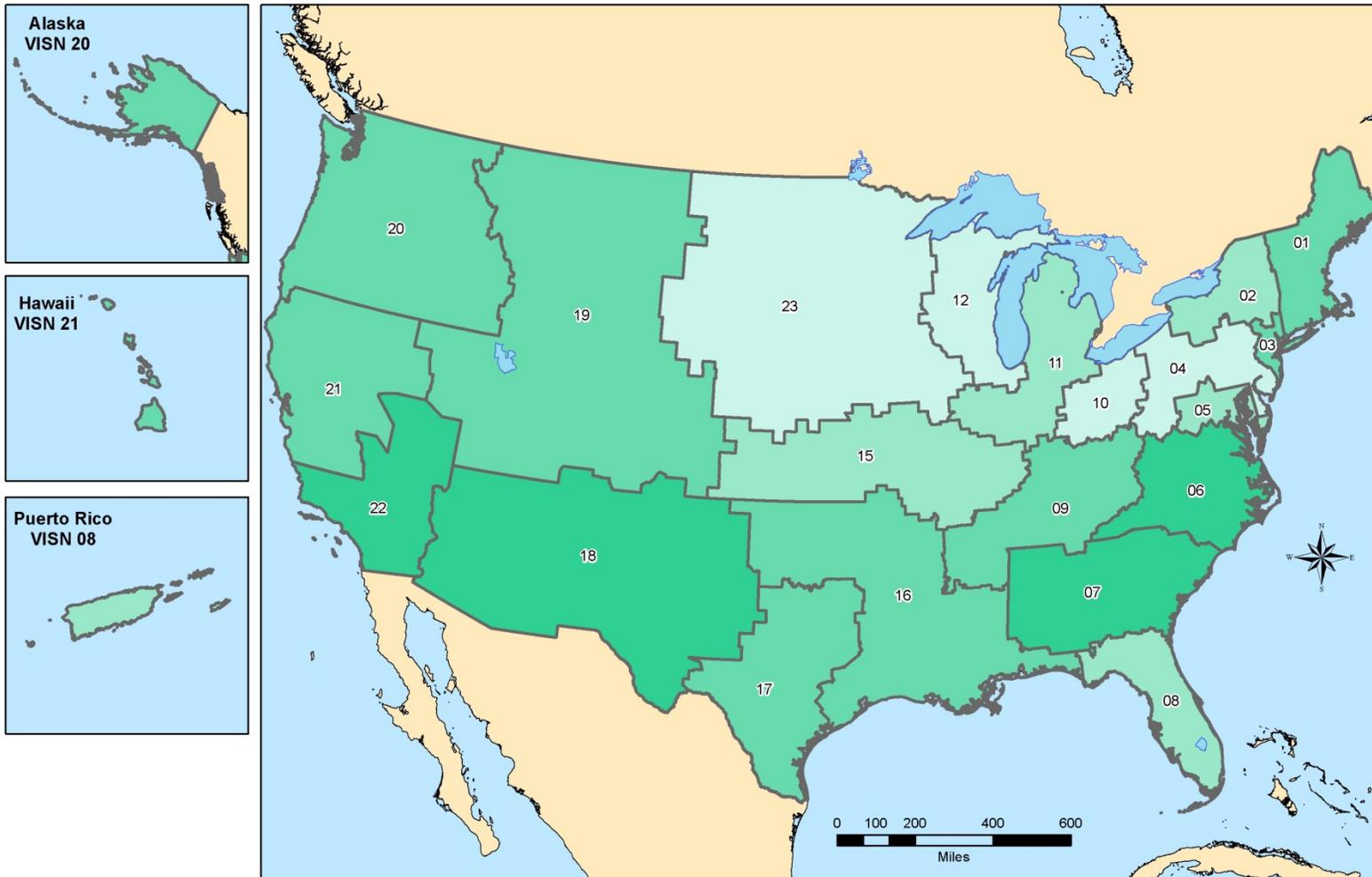
Table 2: National and VISN Numbers and Percentages of VHA Patients with PTSD by Rurality, FY-2014

Prevalence Statistics by Rurality- PTSD, FY-2014									
Veterans Integrated Service Network	Total Number of PTSD Patients	Highly Rural		Rural		Urban		Unknown	
		N	(%)	N	(%)	N	(%)	N	(%)
New England (01)	32,562	136	0.42	10,873	33.39	21,552	66.19	6	0.02
Upstate NY (02)	15,120	10	0.07	7,832	51.80	7,280	48.15	*	*
NY/NJ (03)	20,612	5	0.02	1,370	6.65	19,235	93.32	*	*
Stars and Stripes (04)	30,877	*	*	11,565	37.46	19,306	62.53	7	0.02
Capitol (05)	14,393	*	*	3,333	23.16	11,057	76.82	3	0.02
Mid-Atlantic (06)	51,745	18	0.03	23,723	45.85	27,997	54.11	10	0.02
Southeast (07)	63,638	6	0.01	27,498	43.21	36,127	56.77	8	0.01
Sunshine (08)	53,717	13	0.02	9,899	18.43	43,799	81.54	6	0.01
Mid South (09)	35,653	13	0.04	21,057	59.06	14,585	40.91	5	0.01
Ohio (10)	21,829	3	0.01	7,974	36.53	13,853	63.46	*	*
Vets in Partnership (11)	27,538	6	0.02	12,779	46.40	14,755	53.58	4	0.01
Great Lakes (12)	25,492	60	0.24	7,588	29.77	17,839	69.98	5	0.02
Heartland (15)	27,858	165	0.59	15,814	56.77	11,876	42.63	5	0.02
South Central (16)	63,804	77	0.12	30,213	47.35	33,495	52.50	22	0.03
Heart of Texas (17)	44,204	181	0.41	12,873	29.12	31,137	70.44	16	0.04
Southwest (18)	36,980	1,800	4.87	10,386	28.09	24,740	66.90	55	0.15
Rocky Mtn. (19)	27,325	2,380	8.71	6,922	25.33	18,016	65.93	10	0.04
Northwest (20)	39,962	1,563	3.91	14,251	35.66	24,135	60.39	13	0.03
Sierra Pacific (21)	32,716	329	1.01	9,113	27.85	22,778	69.62	497	1.52
Desert Pacific (22)	44,906	481	1.07	3,516	7.83	40,899	91.08	10	0.02
Midwest (23)	24,799	1,201	4.84	13,847	55.84	9,750	39.32	3	0.01
Grand Total	735,730	8,451	1.15	262,426	35.67	464,211	63.10	690	0.09

Posttraumatic Stress Disorder



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

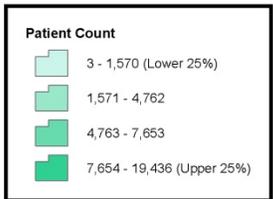
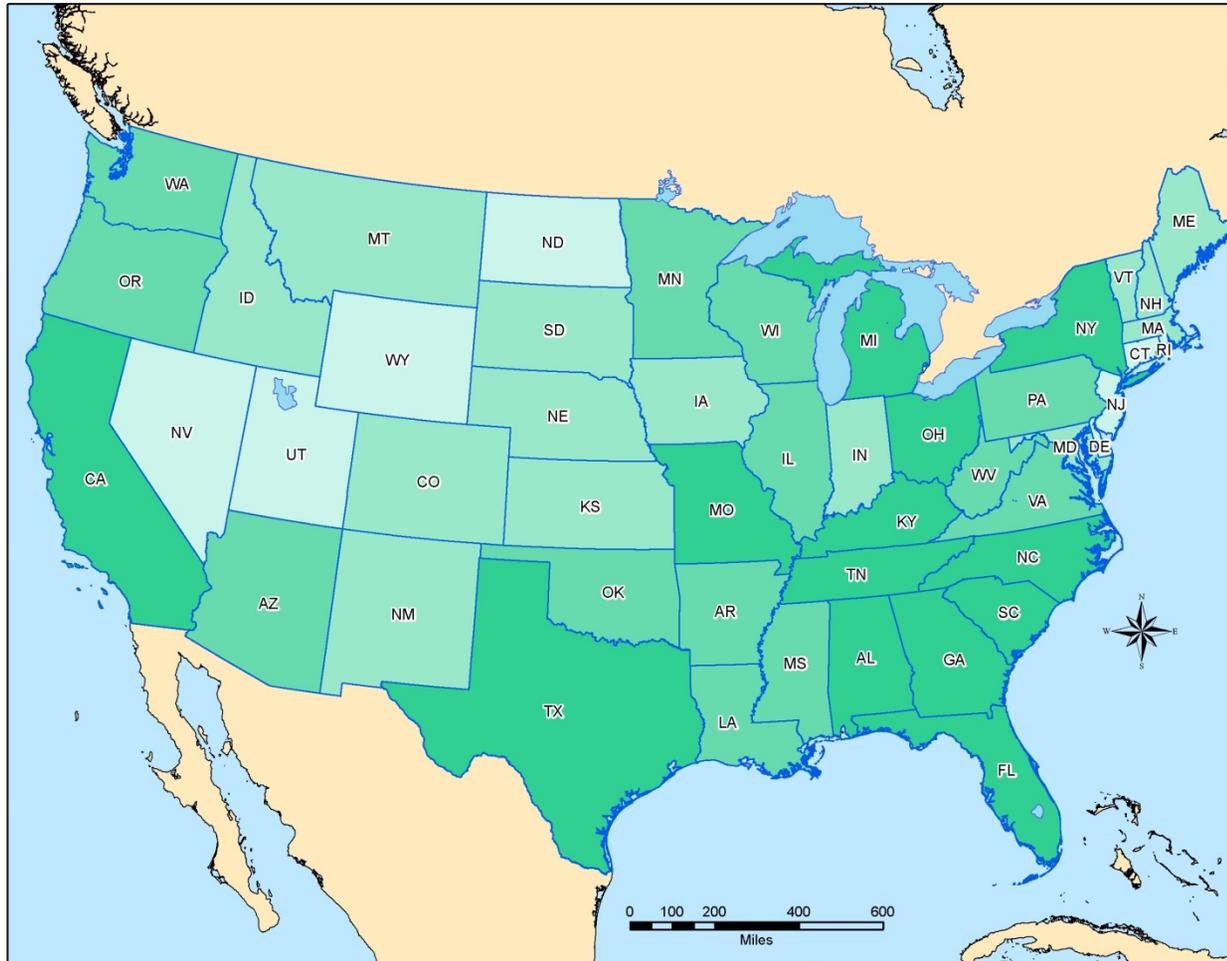


Map 9:
Percent of Rural and Highly Rural VHA Patients
with PTSD
Of All Rural and Highly Rural Patients
By VISN FY - 2014

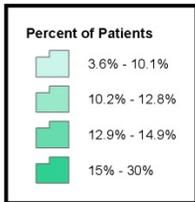
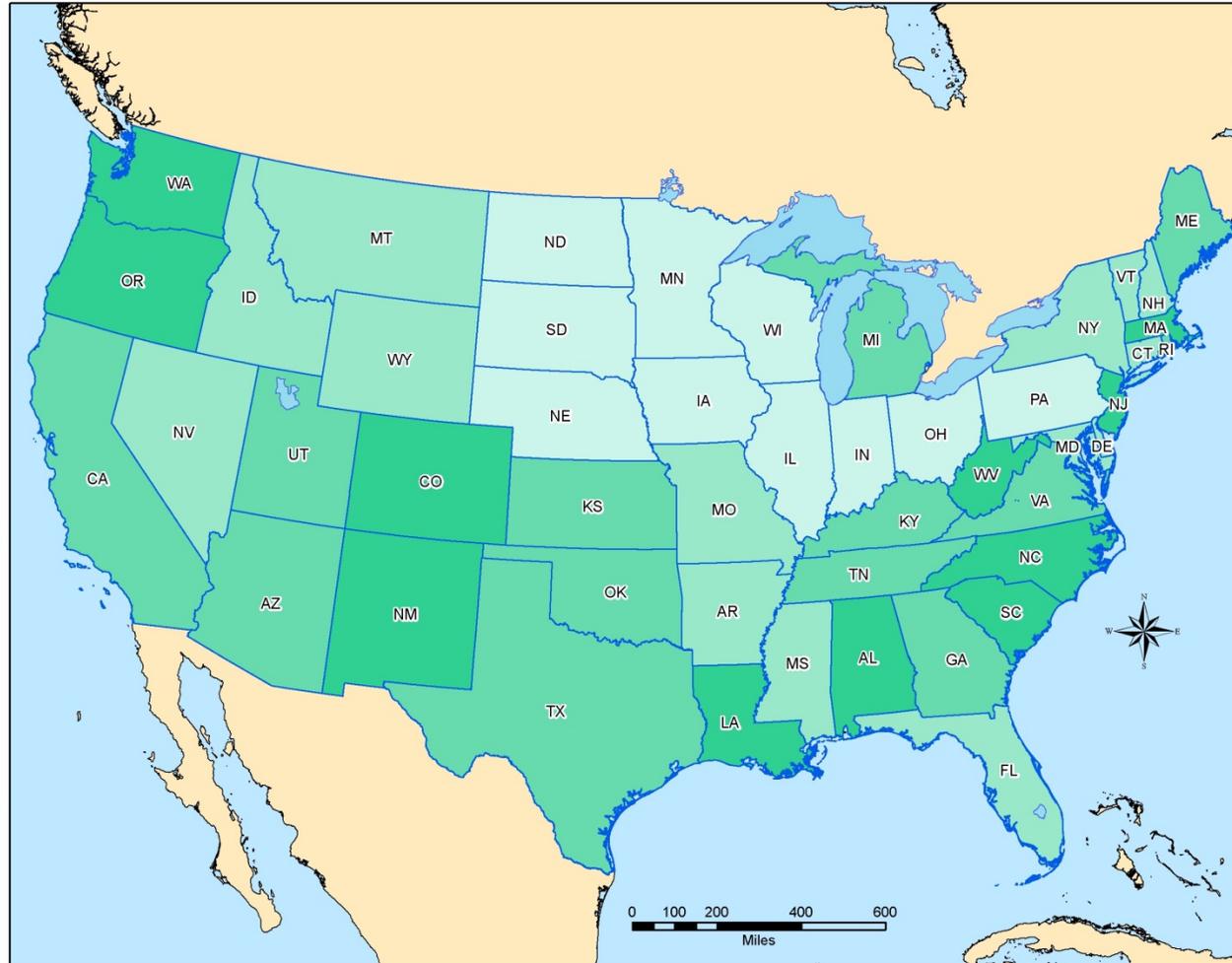


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GeoSpatial Outcomes Division
(Map Creation Date: 7/9/2015)
Map Information by: PSSG, VSSC, ESRI
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Posttraumatic Stress Disorder



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

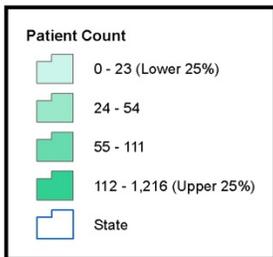
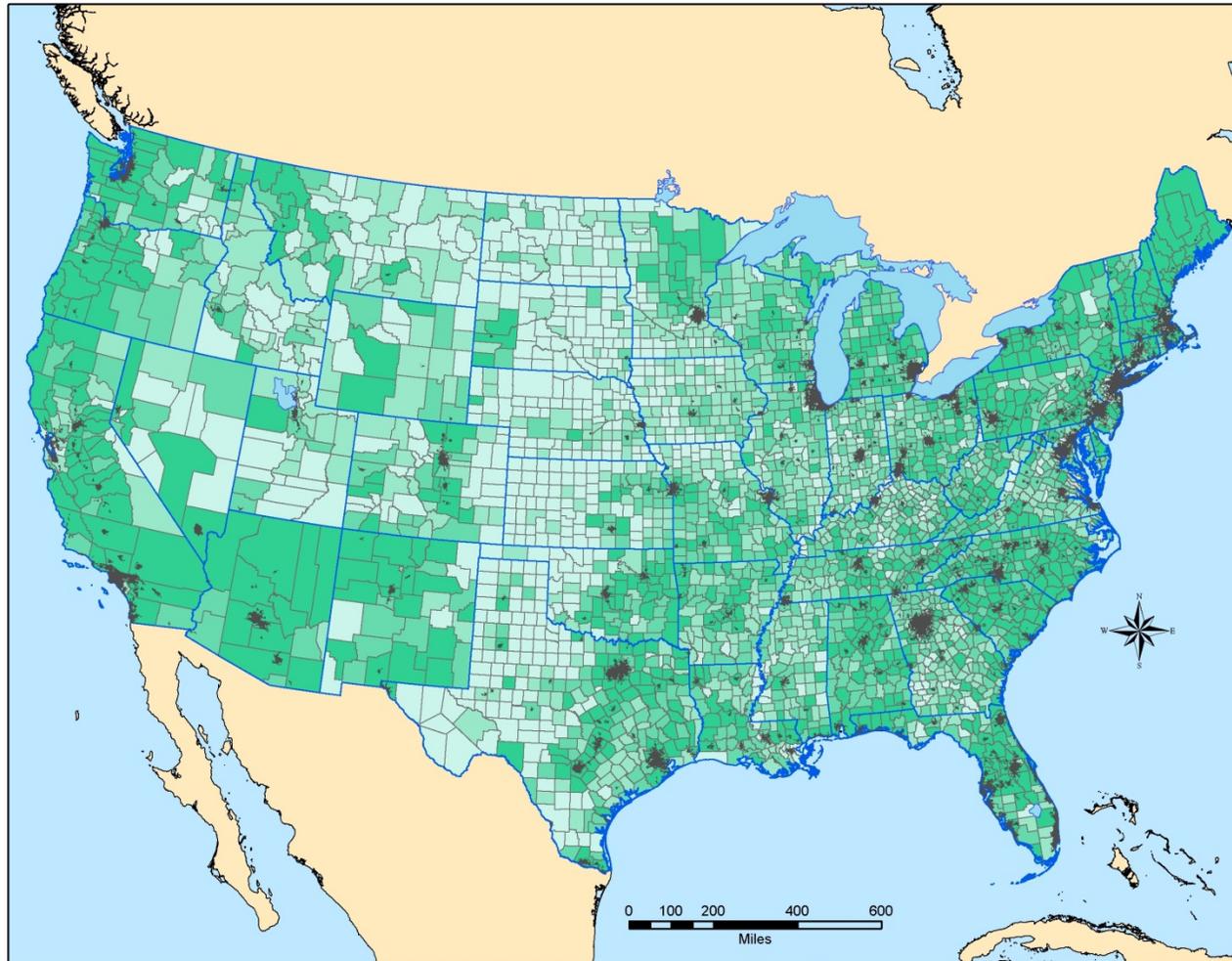


Map 11:
Percent of Rural and Highly Rural VHA Patients
with PTSD
Of All Rural and Highly Rural Patients
By State FY - 2014

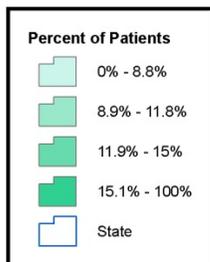
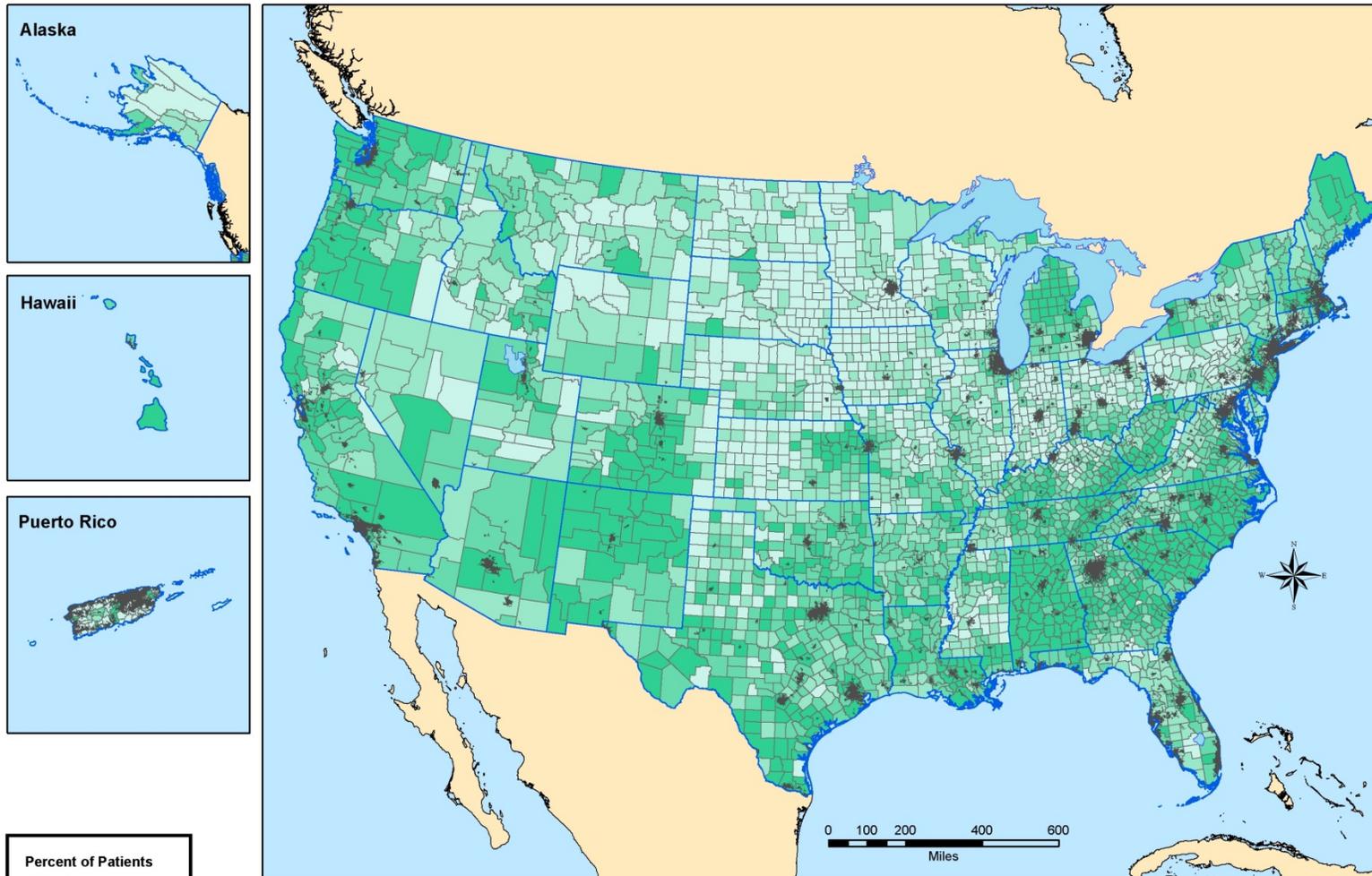


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Map 12:
Number of Rural and Highly Rural VHA Patients with PTSD
By County FY - 2014
Urban Areas "Shaded"

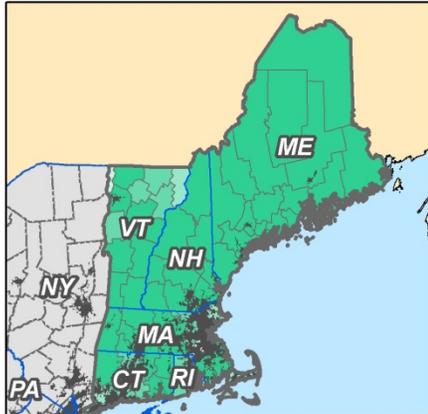


Map 13:
Percent of Rural and Highly Rural VHA Patients with PTSD
Of All Rural and Highly Rural VHA Patients
By County FY - 2014
Urban Areas "Shaded"

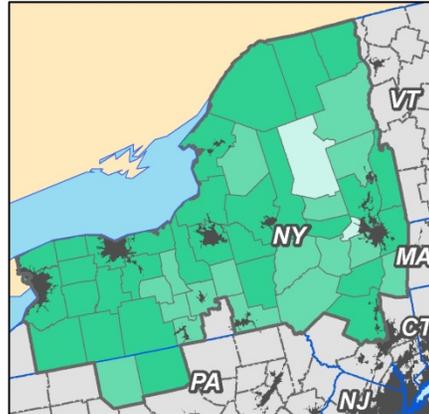


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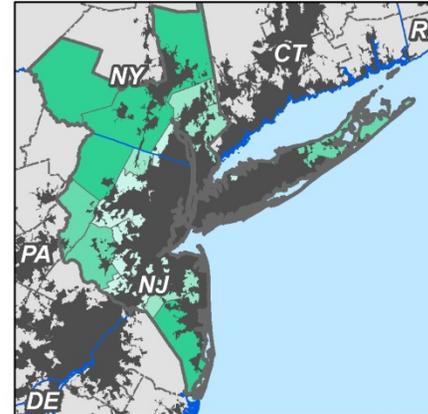
Posttraumatic Stress Disorder



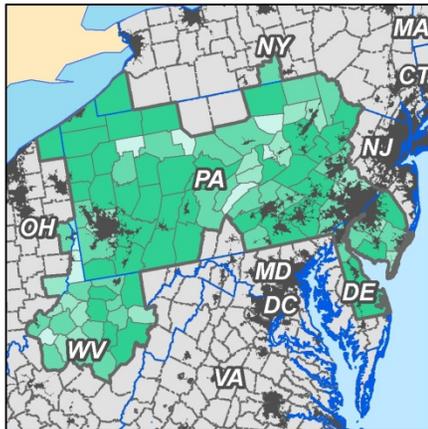
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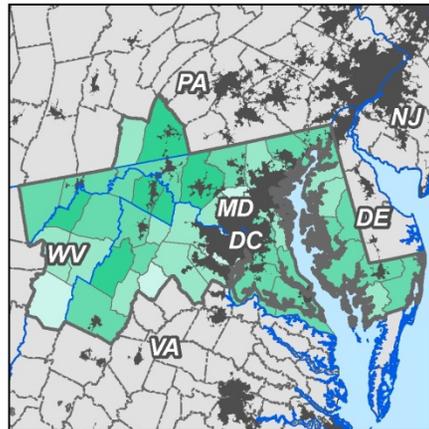
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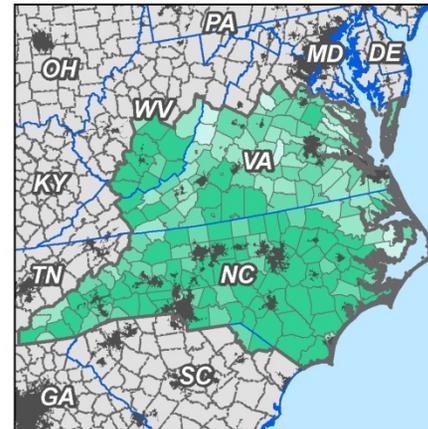
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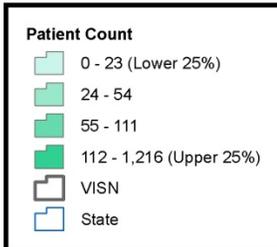
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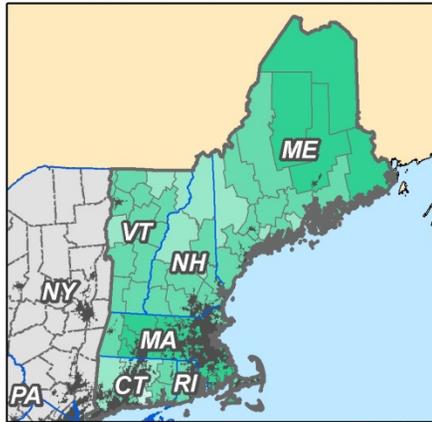


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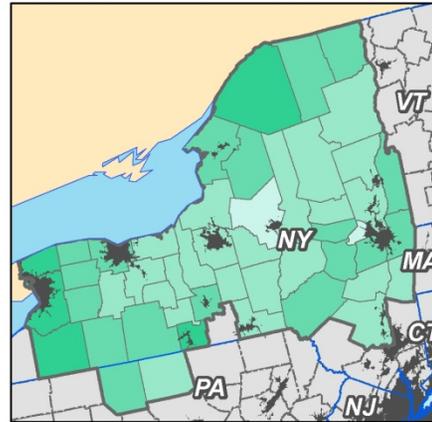


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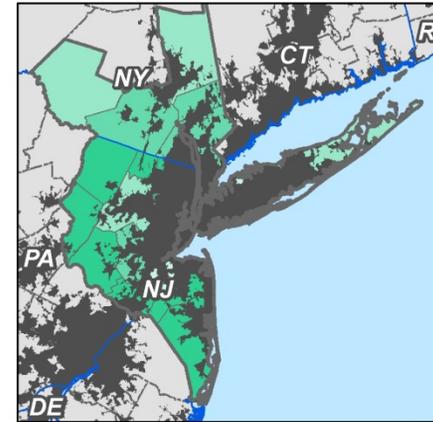
Number of Rural and Highly Rural VHA Patients with PTSD
By County FY - 2014
Urban Areas "Shaded"



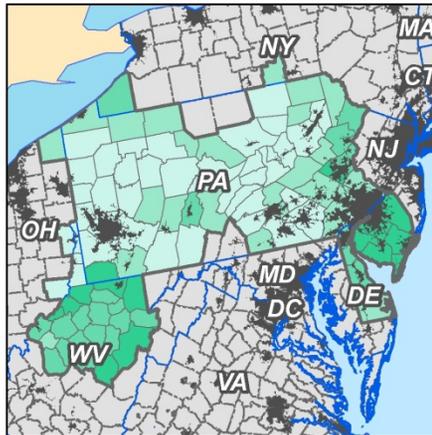
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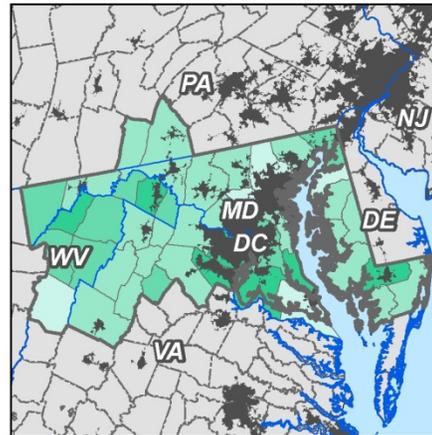
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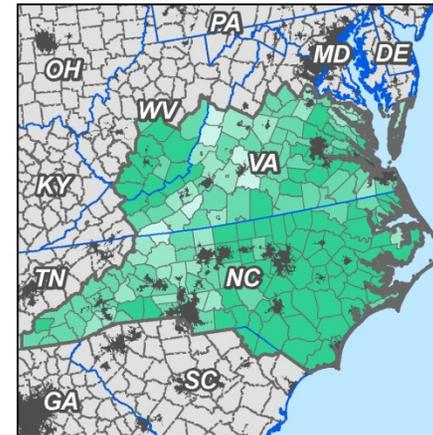
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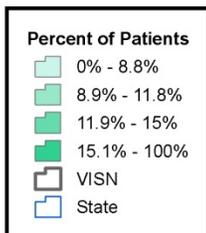
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VISN 5



VISN 6

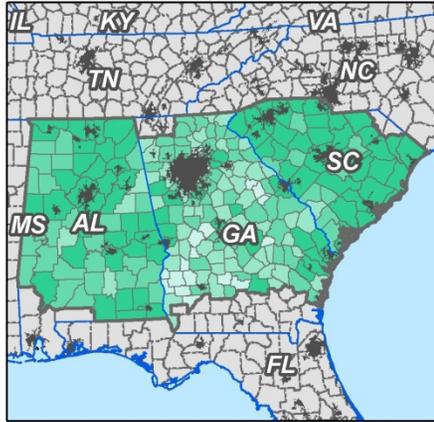


Map 15:
Percent of Rural and Highly Rural VHA Patients
with PTSD
Of All Rural and Highly Rural Patients
By County FY - 2014
Urban Areas "Shaded"

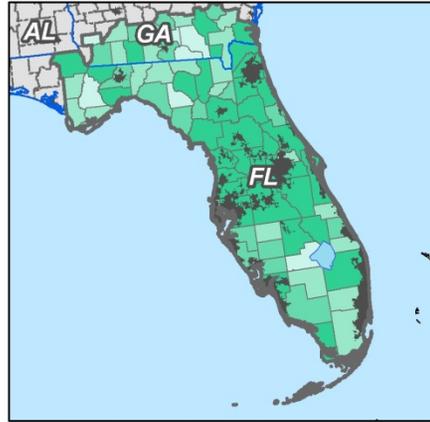


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GeoSpatial Outcomes Division
(Map Creation Date: 7/8/2015)
Map Information by: PSSG, VSSC, ESRI
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Posttraumatic Stress Disorder



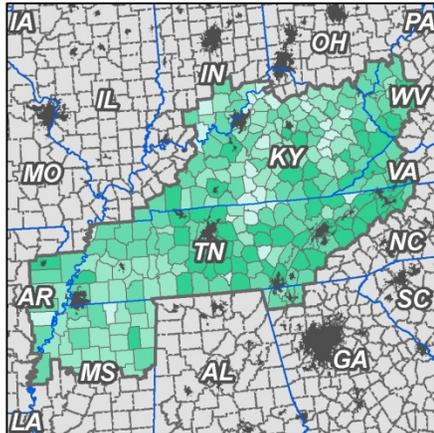
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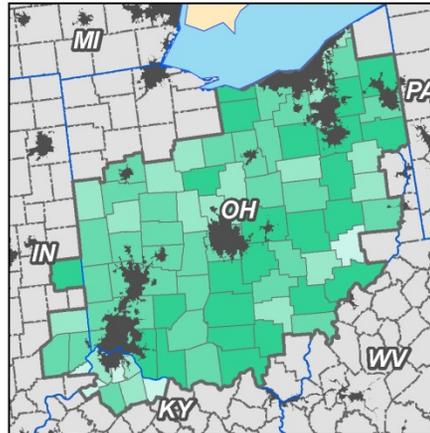
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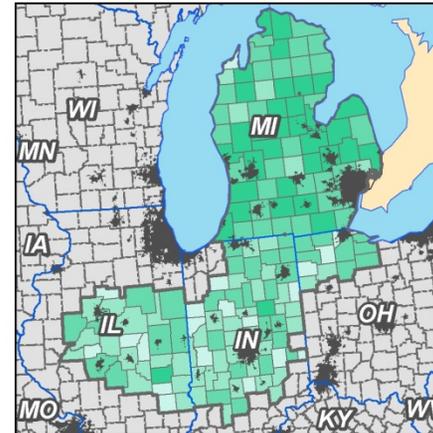
VISN 8 Puerto Rico & Virgin Islands



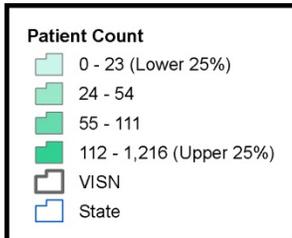
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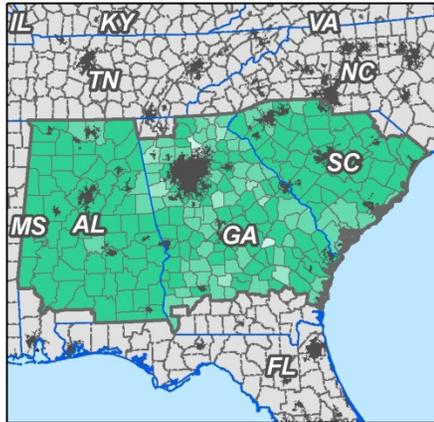
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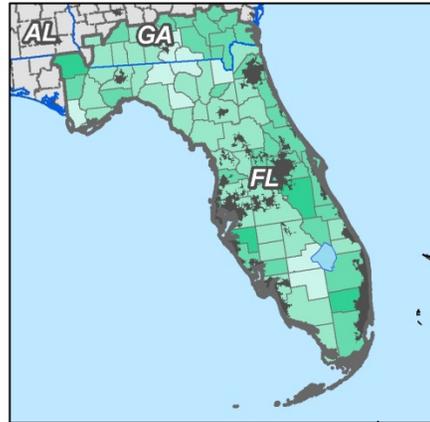
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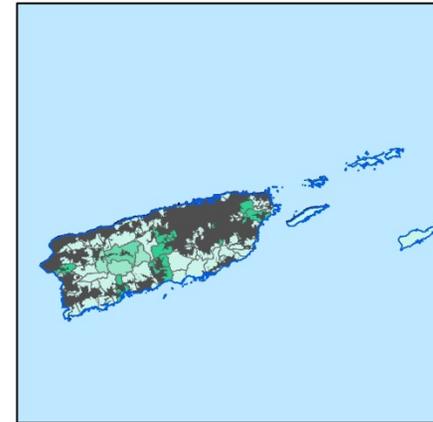
Map 16:
Number of Rural and Highly Rural VHA Patients with PTSD By County FY - 2014
Urban Areas "Shaded"



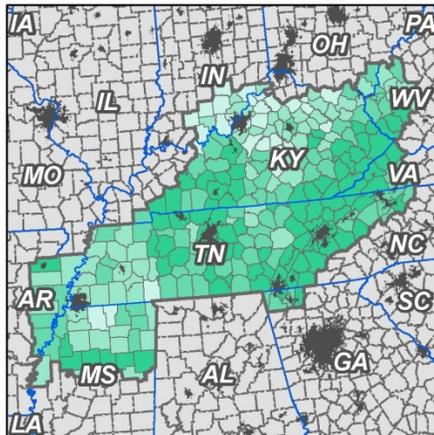
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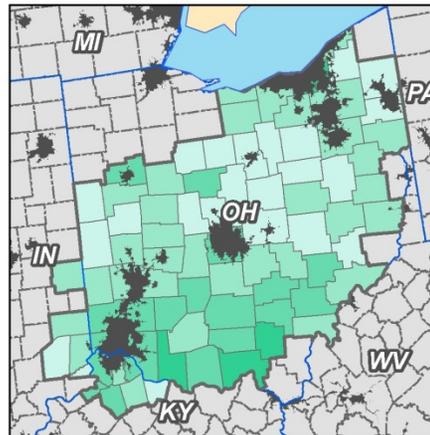
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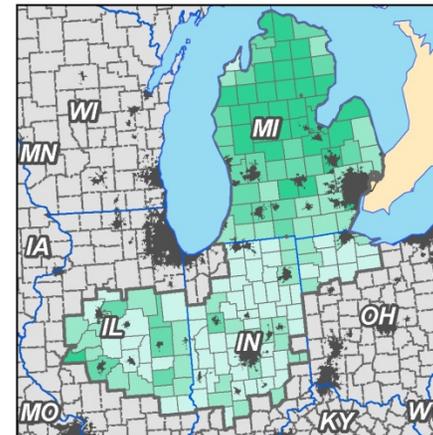
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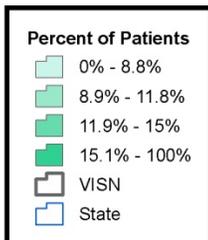
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VISN 10



VISN 11



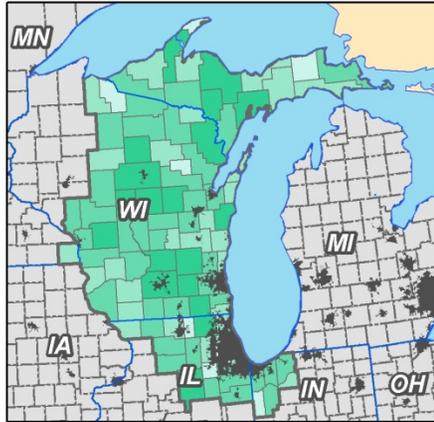
Map 17:

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

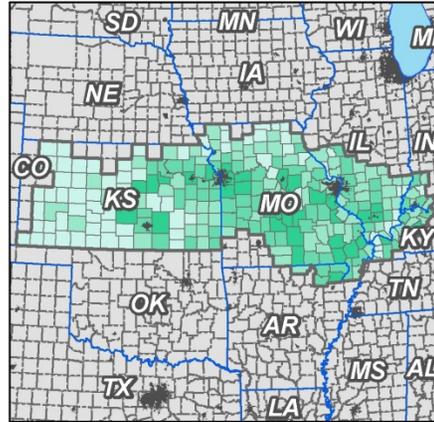


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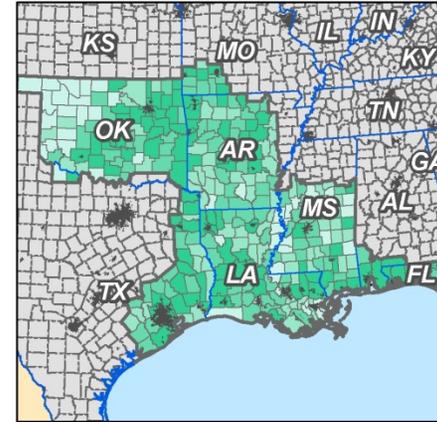
Posttraumatic Stress Disorder



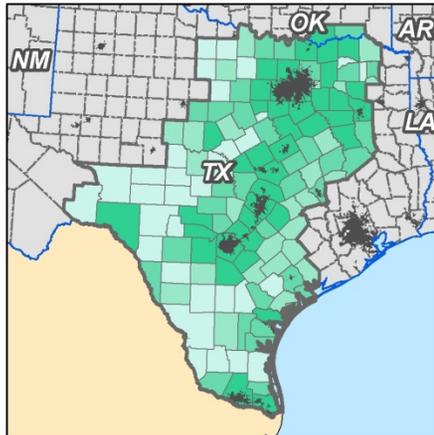
VISN 12



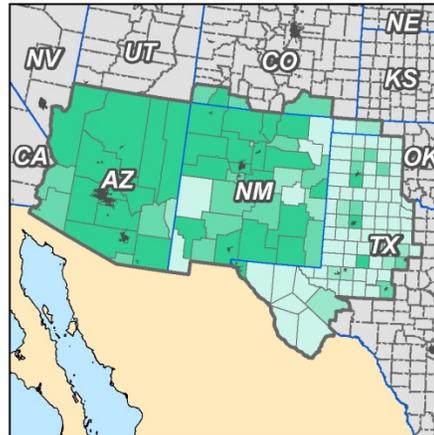
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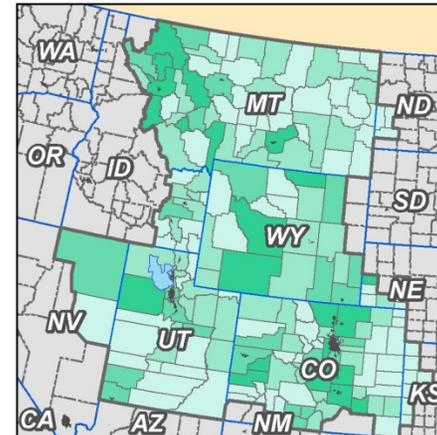
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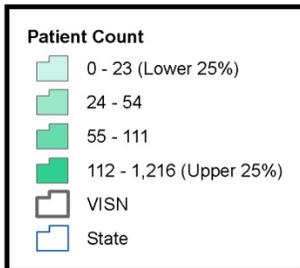
VISN 17



VISN 18

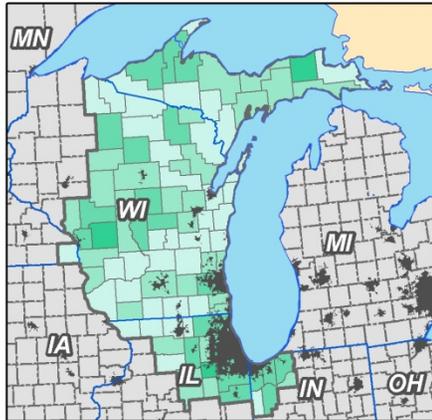


VISN 19

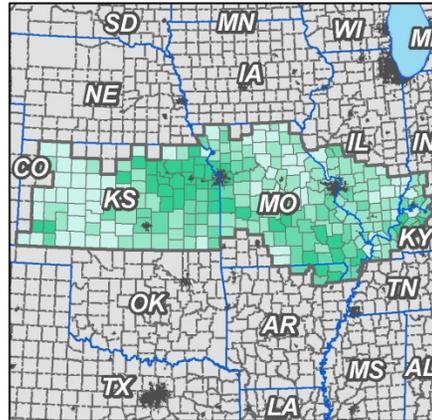


Map 18:

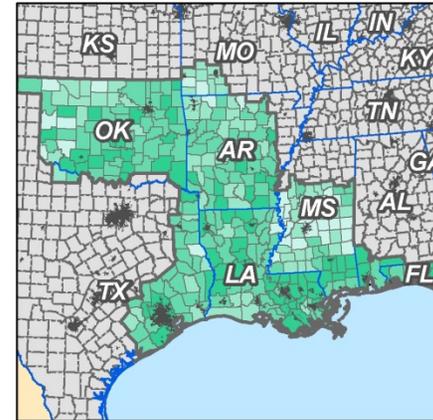
Number of Rural and Highly Rural VHA Patients with PTSD
By County FY - 2014
Urban Areas "Shaded"



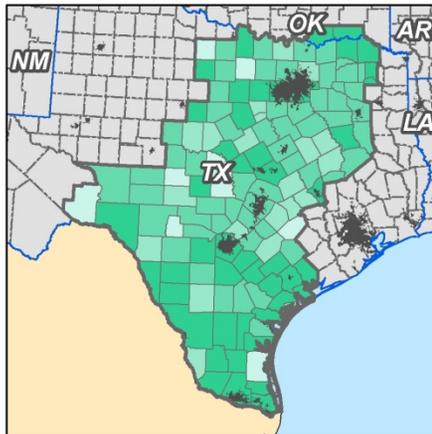
VISN 12



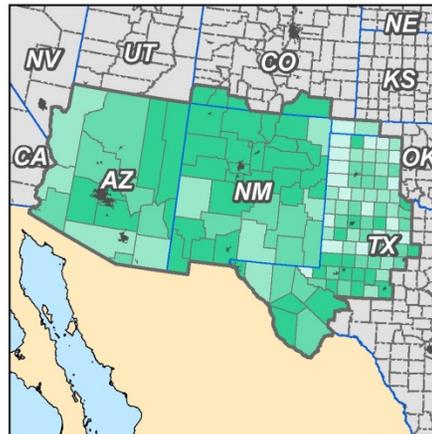
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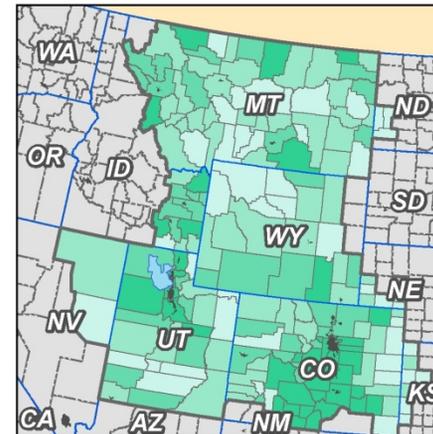
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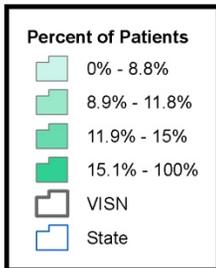
VISN 17



VISN 18



VISN 19



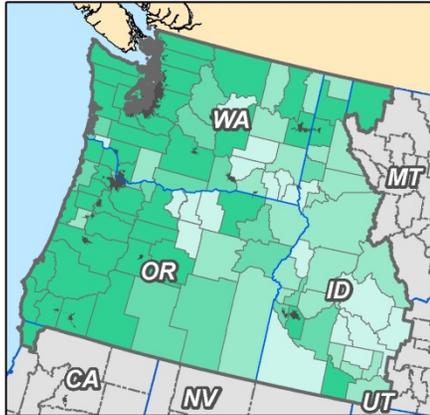
Map 19:

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

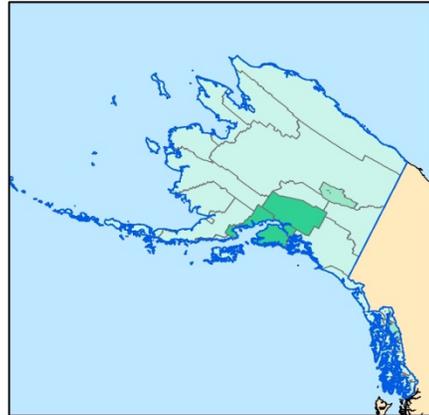


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Posttraumatic Stress Disorder



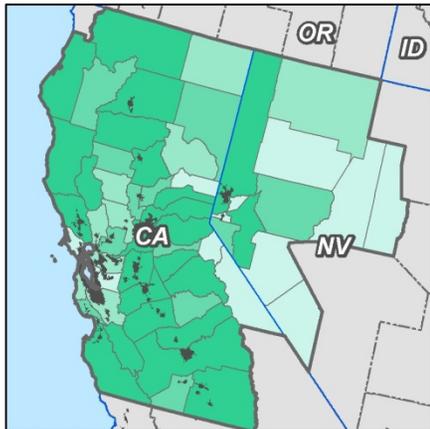
VISN 20



VISN 20- Alaska



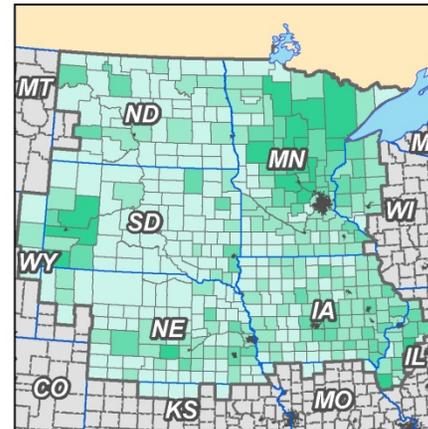
VISN 21- Hawaii



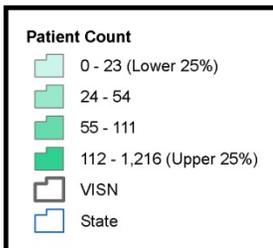
VISN 21



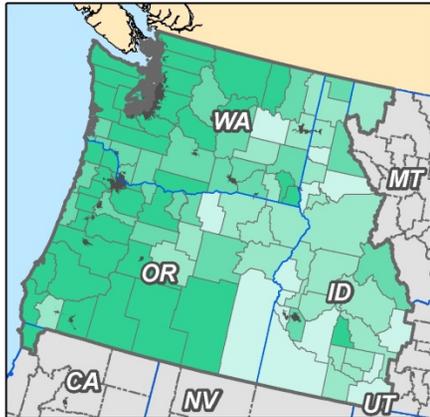
VISN 22



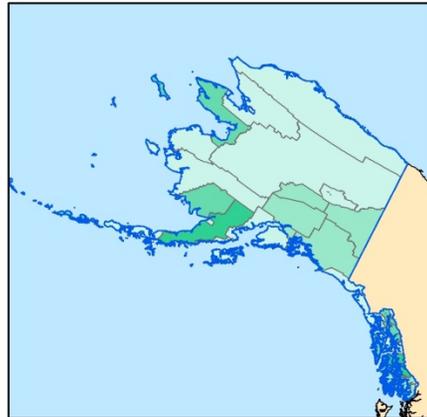
VISN 23



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



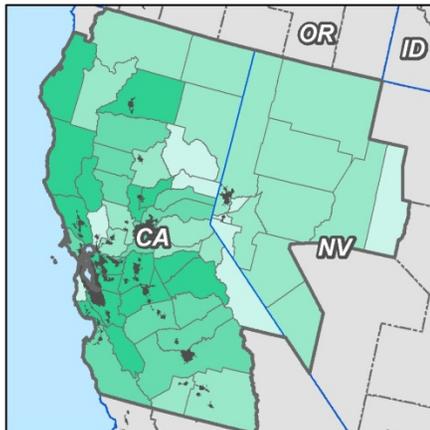
VISN 20



VISN 20- Alaska



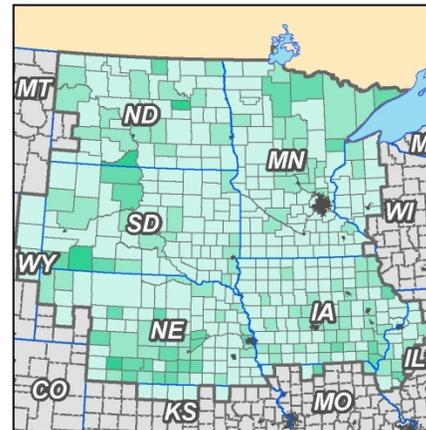
VISN 21- Hawaii



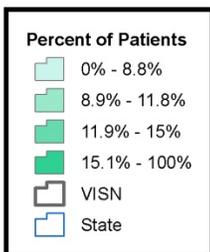
VISN 21



VISN 22



VISN 23



Map 21:
Percent of Rural and Highly Rural VHA Patients
with PTSD
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 PTSD

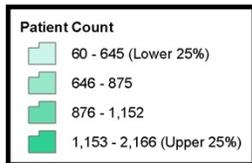
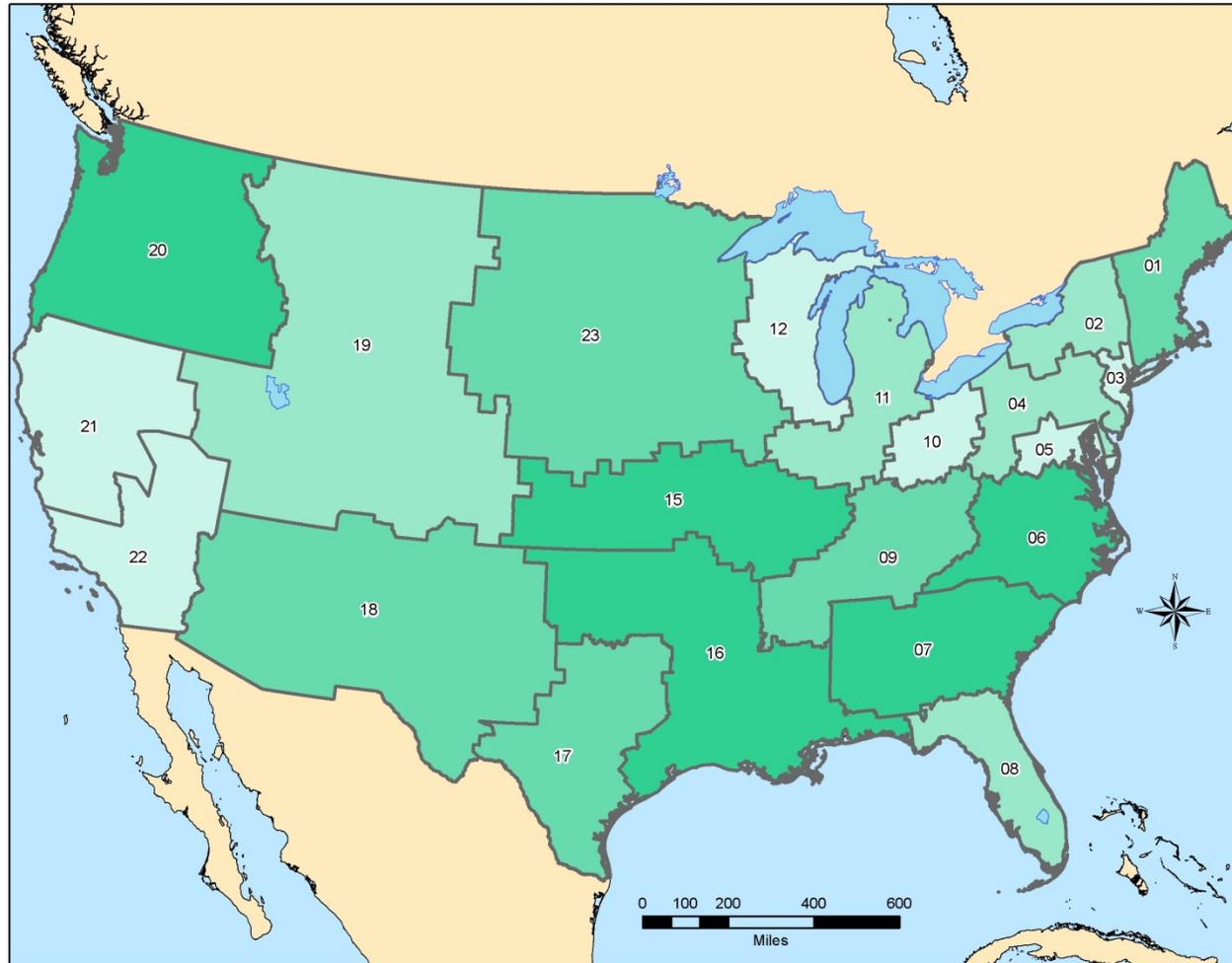
GENDER

Table 3 further illustrates overall prevalence of PTSD 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 less than five percent of total number of PTSD patients in each network. VISN 23 (Midwest) represented the highest prevalence of female rural and highly rural PTSD patients at 4.63%. Male patients, as expected, represented a much higher percentage of total PTSD patients in each network. In three networks, more than 50% of male PTSD patients lived in rural and highly rural areas. Male PTSD patients in Midwest Network (VISN 23) made up the highest prevalence of 56.05% of total PTSD patients in that network. New York/New Jersey Network (VISN 3) had the lowest prevalence of rural and highly rural PTSD patients - both for males (6.38%) and females (0.29%).

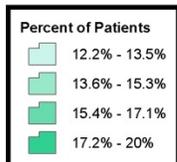
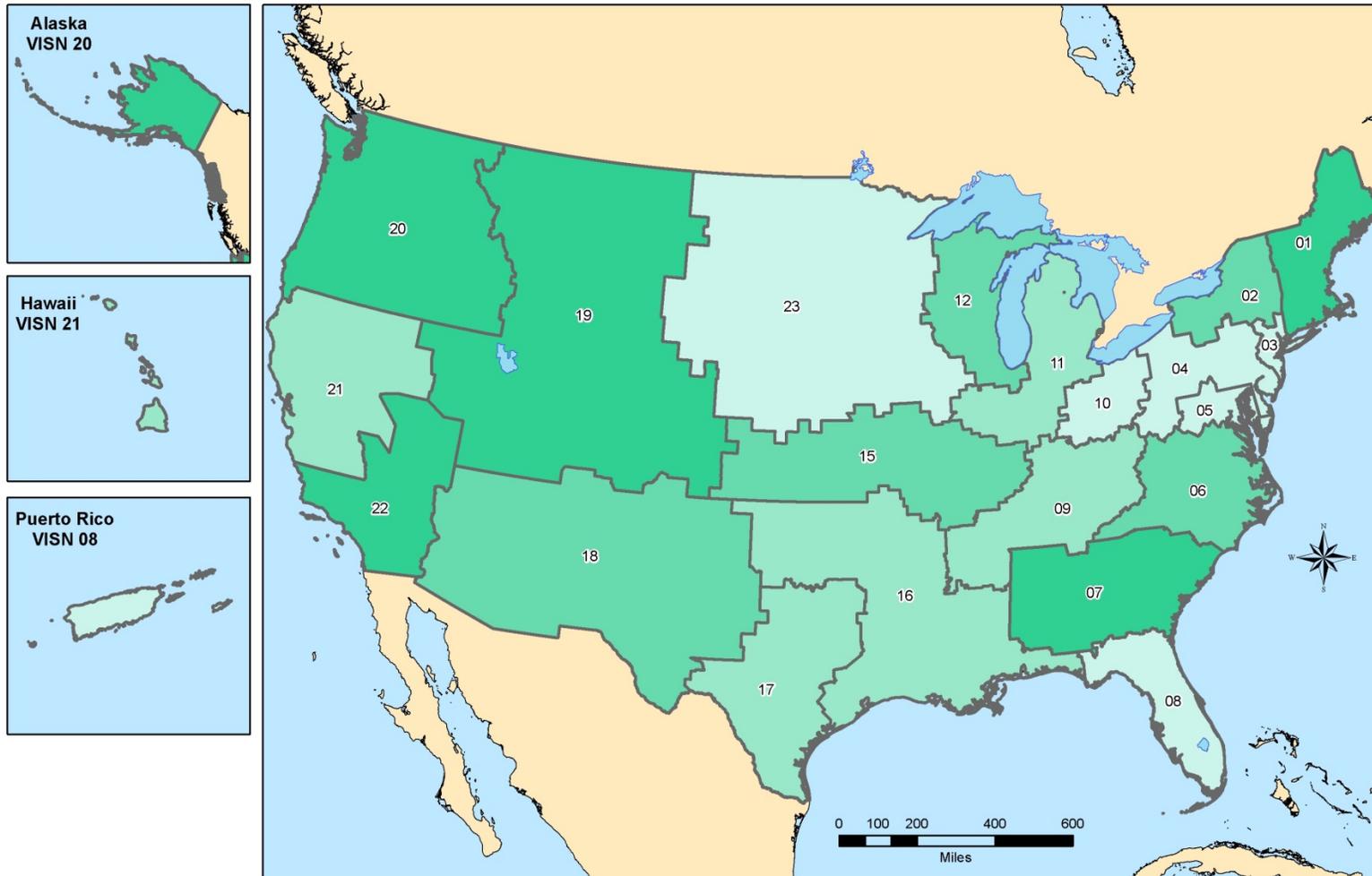
Table 3: National and VISN Numbers and Percentages of VHA Patients with PTSD, by Rurality and Gender, FY-2014

Prevalence Statistics by Gender and Rurality- PTSD, FY-2014											
Veterans Integrated Service Network	Total Number of PTSD Patients	Female					Male				
		HR	R	%	U	Unk	HR	R	%	U	Unk
New England (01)	32,562	8	888	2.75	1,817	*	128	9,985	31.06	19,735	5
Upstate NY (02)	15,120	*	655	4.33	772	*	10	7,177	47.53	6,508	*
NY/NJ (03)	20,612	*	60	0.29	1,441	*	5	1,310	6.38	17,794	*
VISN 04 (04)	30,877	*	764	2.47	1,655	*	*	10,801	34.98	17,651	7
Capitol (05)	14,393	*	239	1.66	1,554	*	*	3,094	21.50	9,503	*
Mid-Atlantic (06)	51,745	3	1,706	3.30	4,024	*	15	22,017	42.58	23,973	8
Southeast (07)	63,638	*	2,094	3.29	5,226	*	5	25,404	39.93	30,901	6
Sunshine (08)	53,717	*	873	1.63	4,489	*	11	9,026	16.82	39,310	5
Mid South (09)	35,653	3	1,149	3.23	1,587	*	10	19,908	55.87	12,998	4
Ohio (10)	21,829	*	492	2.25	1,493	*	3	7,482	34.29	12,360	*
Vets in Partnership (11)	27,538	*	785	2.85	1,386	*	5	11,994	43.57	13,369	*
Great Lakes (12)	25,492	*	643	2.52	1,795	*	58	6,945	27.47	16,044	4
Heartland (15)	27,858	12	1,196	4.34	1,221	*	153	14,618	53.02	10,655	5
South Central (16)	63,804	6	2,160	3.39	3,644	6	71	28,053	44.08	29,851	16
Heart of Texas (17)	44,204	5	1,007	2.29	4,073	*	176	11,866	27.24	27,064	16
Southwest (18)	36,980	148	851	2.70	2,701	8	1,652	9,535	30.25	22,039	47
Rocky Mtn. (19)	27,325	178	647	3.02	2,103	*	2,202	6,275	31.02	15,913	8
Northwest (20)	39,962	122	1,327	3.63	3,176	3	1,441	12,924	35.95	20,959	10
Sierra Pacific (21)	32,716	17	547	1.72	2,182	29	312	8,566	27.14	20,596	468
Desert Pacific (22)	44,906	40	300	0.76	4,052	*	441	3,216	8.14	36,847	8
Midwest (23)	24,799	108	1,040	4.63	1,138	*	1,093	12,808	56.05	8,612	3
Grand Total	735,730	658	19,423	2.73	51,529	60	7,793	243,004	34.09	412,682	629

Posttraumatic Stress Disorder



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

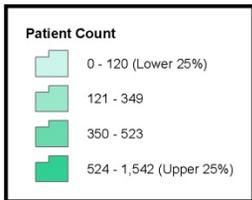
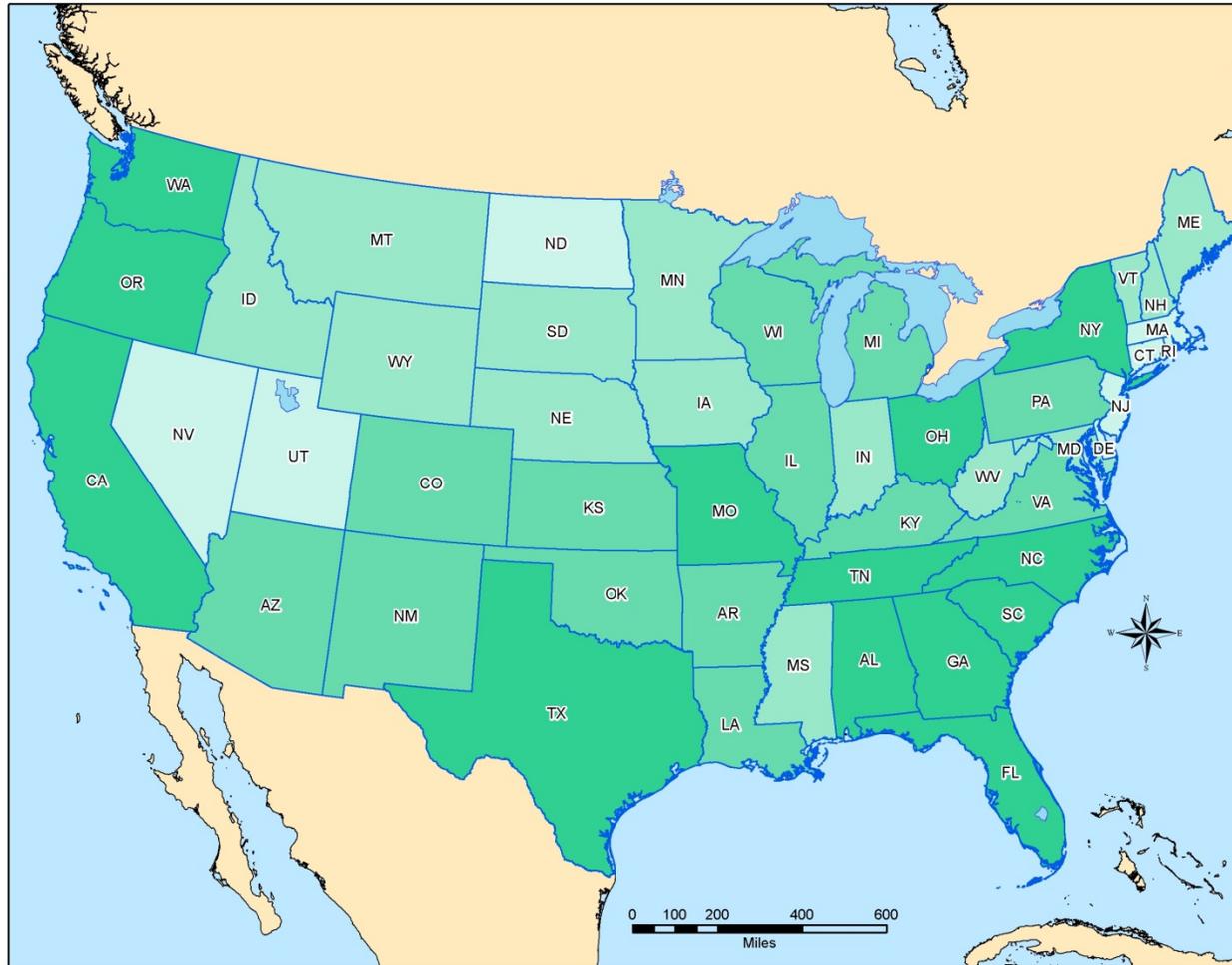


Map 23:
Percent of Rural and Highly Rural VHA Patients with PTSD
Female
Of All Rural and Highly Rural Patients Female
By VISN FY - 2014

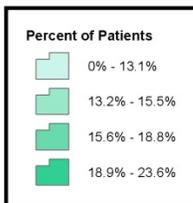
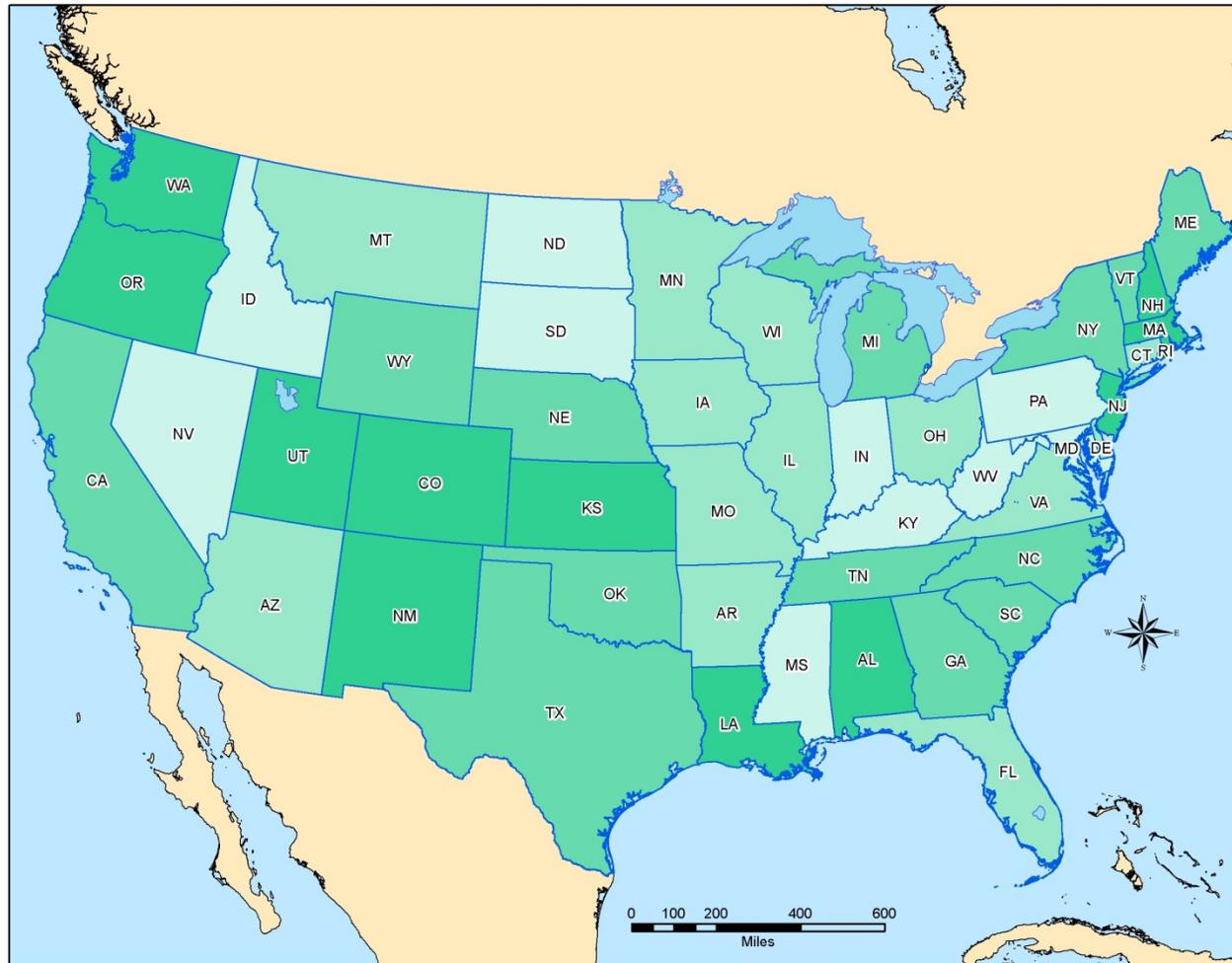


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Posttraumatic Stress Disorder



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

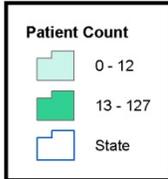
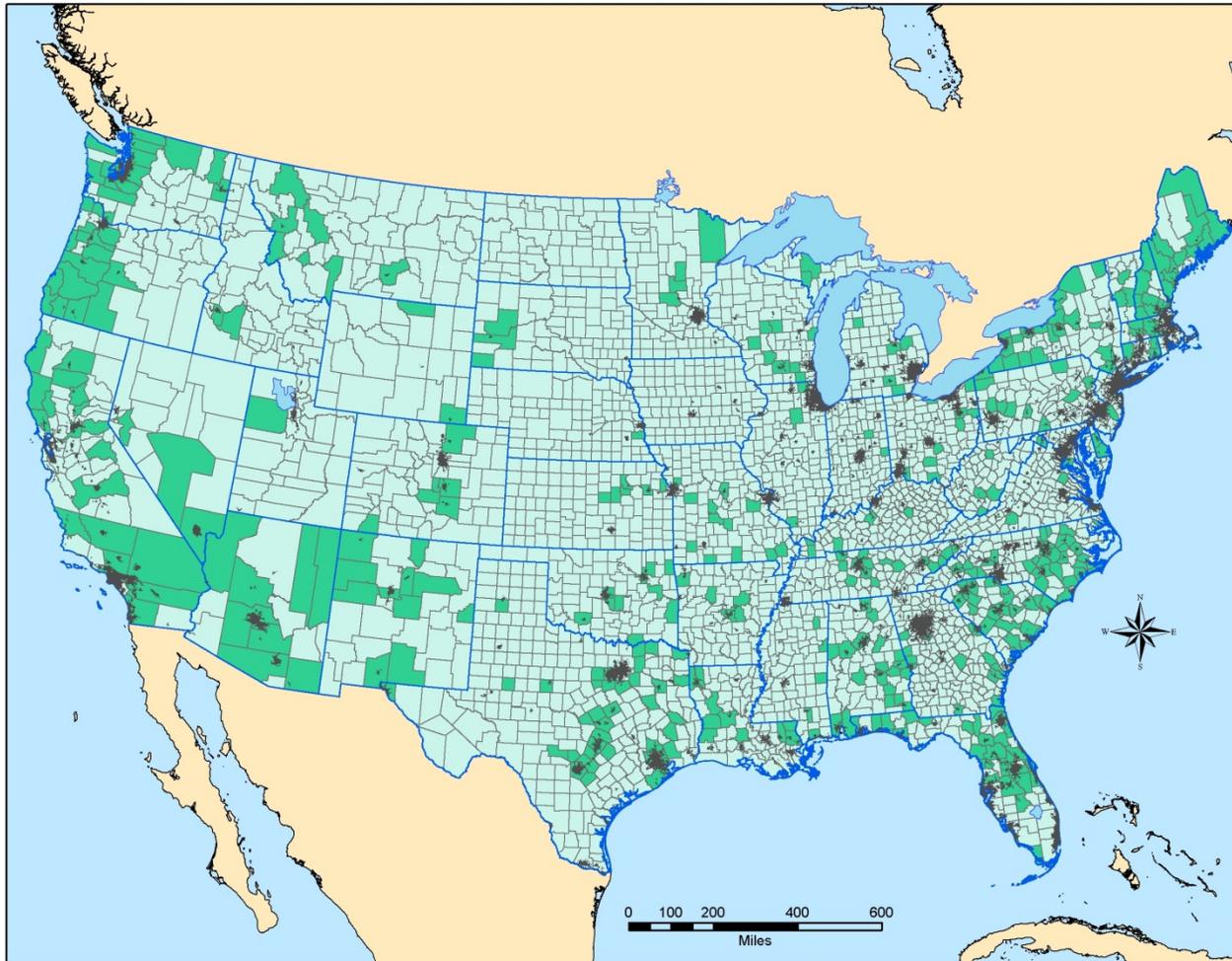


Map 25:
Percent of Rural and Highly Rural VHA Patients with PTSD
Female
Of All Rural and Highly Rural Patients Female
By State FY - 2014

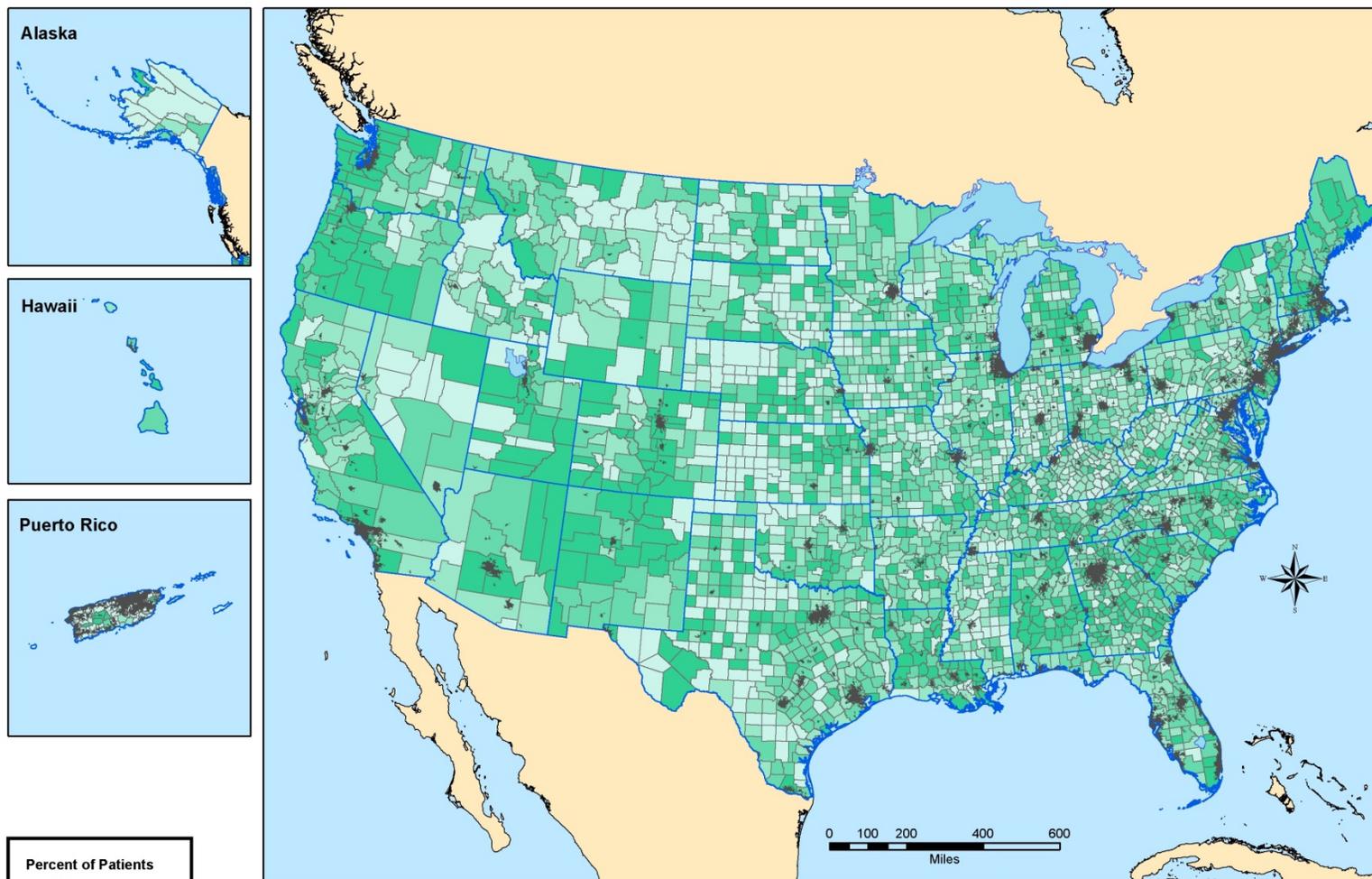
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(Map Creation Date: 7/8/2015)
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Posttraumatic Stress Disorder



Map 26:
Number of Rural and Highly Rural VHA Patients with PTSD
Female
By County FY - 2014
Urban Areas "Shaded"



Map 27:
Percent of Rural and Highly Rural VHA Patients with PTSD
Female
Of All Rural and Highly Rural VHA Patients Female
By County FY - 2014
Urban Areas "Shaded"



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(Map Creation Date: 7/8/2015)
Map Information by: PSSG, VSSC, ESRI
ArcGIS 10.2x

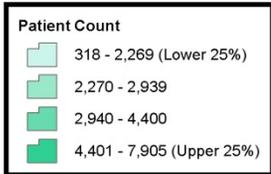
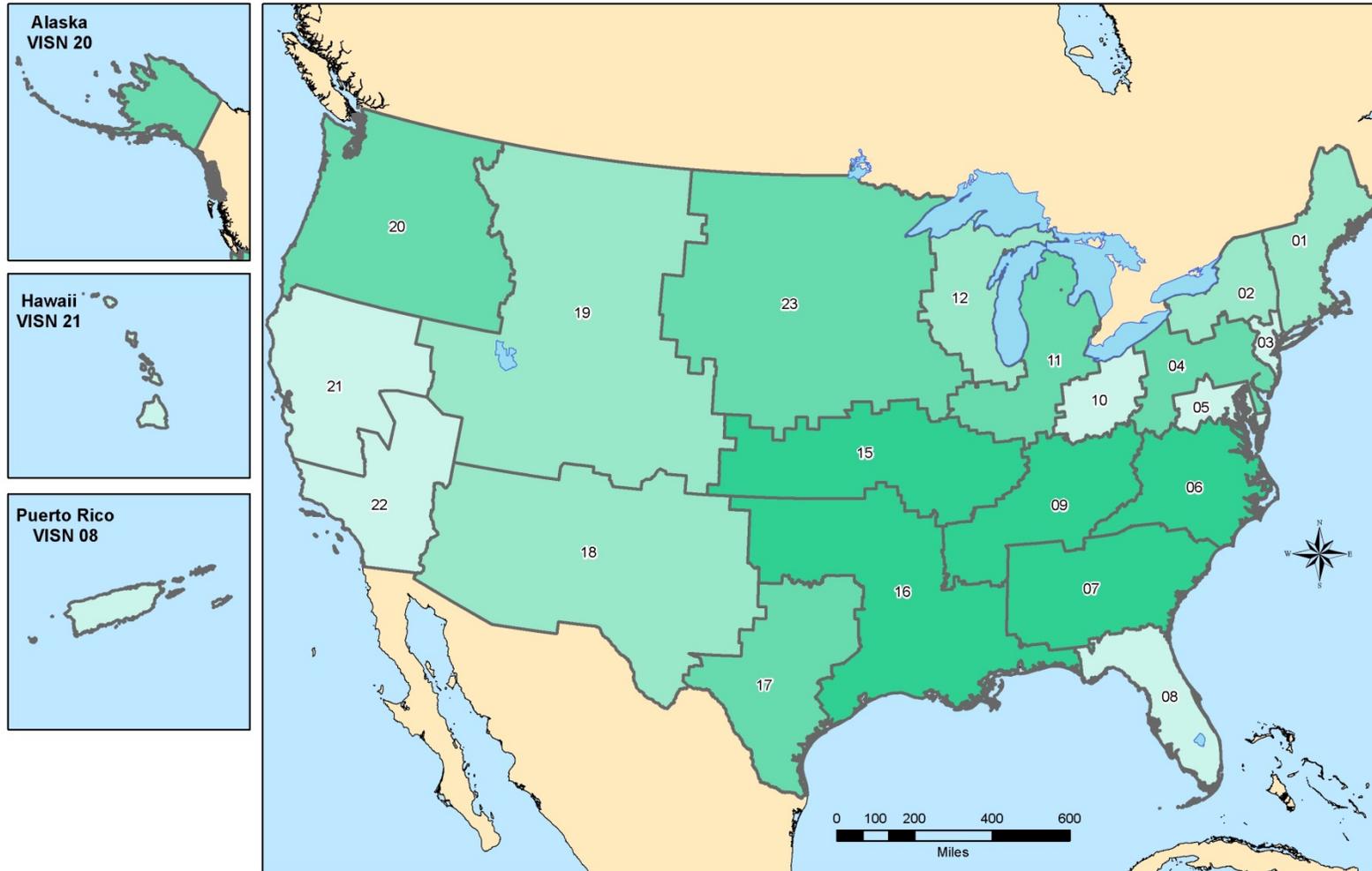
AGE GROUP

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 PTSD patient representation in rural and highly rural areas at 14.19%. The same age group showed significant prevalence in rural and highly rural areas at the network level. For example, the Mid-South Network (VISN 9) had 8,587 rural and highly rural PTSD patients aged 65-74, representing 24.08% of the total number of PTSD patients in that network. Other networks with rural and highly rural patients in the 65-74 age bracket that represented more than 20% of their total PTSD patients were VISNs 15 and 23. Patients under the age of 45 in rural and highly rural areas had the second highest prevalence of PTSD both at the National (9.53%) and at the VISN level. For this condition, the maps that follow focus on the under 45 age group.

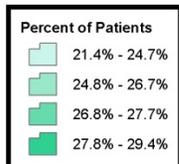
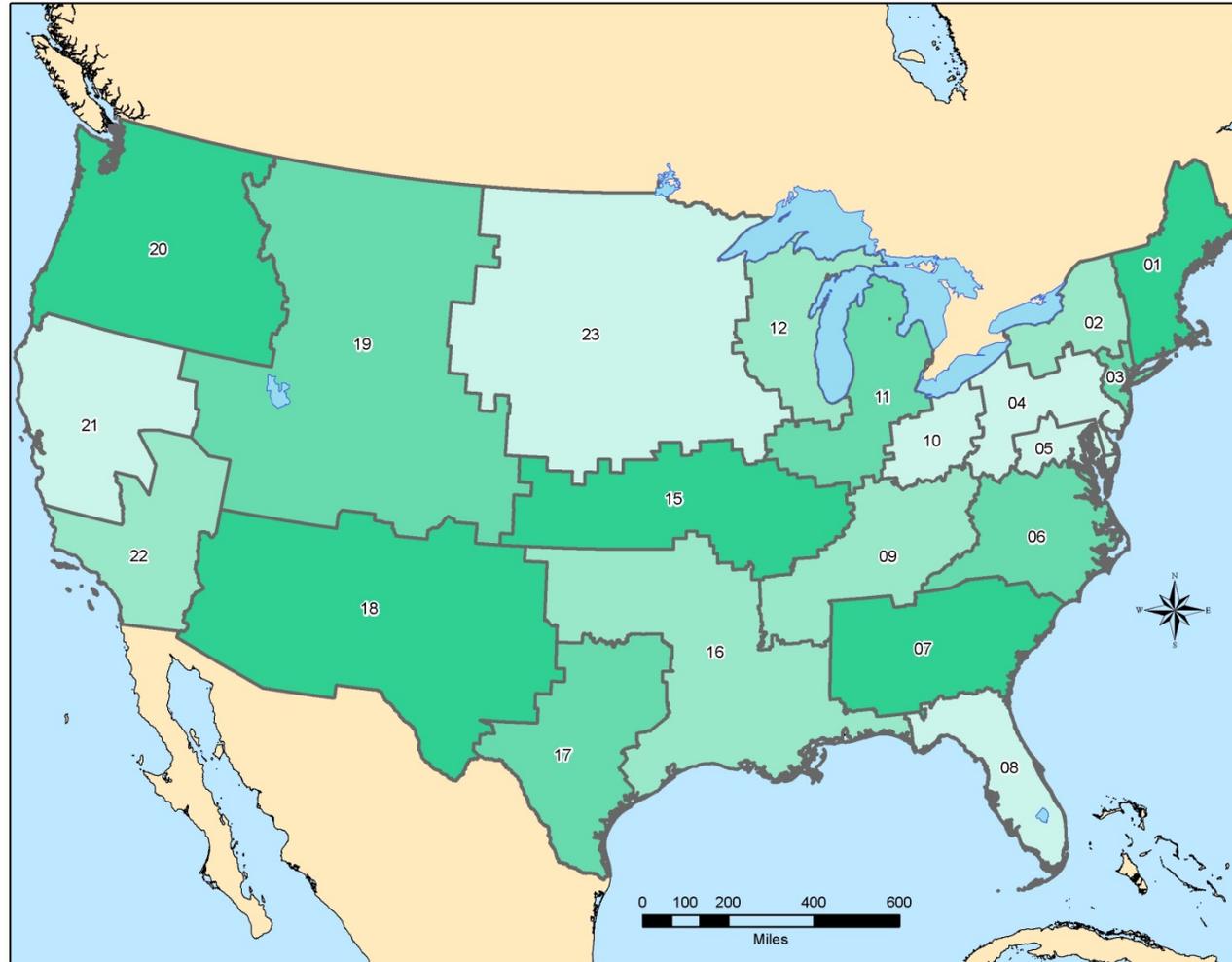
Table 4: National and VISN Numbers and Percentages of VHA Patients with PTSD, by Rurality and Age Group, FY-2014

Prevalence Statistics by Age Group and Rurality- PTSD, FY-2014																
Veterans Integrated Service Network	Total Number of PTSD Patients	<45			45-54			55-64			65-74			75+		
		HR	R	%	HR	R	%	HR	R	%	HR	R	%	HR	R	%
New England (01)	32,562	22	2,823	8.74	15	1,355	4.21	35	2,152	6.72	59	4,037	12.58	5	506	1.57
Upstate NY (02)	15,120	*	2,334	15.44	*	961	6.36	*	1,418	9.38	7	2,811	18.64	*	311	2.06
NY/NJ (03)	20,612	3	315	1.54	*	131	0.64	*	215	1.04	*	647	3.14	*	62	0.30
Stars and Stripes (04)	30,877	*	3,083	9.99	*	1,259	4.08	*	2,040	6.61	*	4,708	15.25	*	476	1.54
Capitol (05)	14,393	*	823	5.72	*	397	2.76	*	651	4.53	*	1,315	9.14	*	147	1.02
Mid-Atlantic (06)	51,745	6	5,499	10.64	*	3,105	6.00	*	4,563	8.82	8	9,647	18.66	*	910	1.76
Southeast (07)	63,638	*	6,346	9.97	3	4,214	6.63	*	5,546	8.72	*	10,382	16.32	*	1,010	1.59
Sunshine (08)	53,717	3	2,235	4.17	*	1,290	2.41	*	2,076	3.87	6	3,899	7.27	*	400	0.75
Mid South (09)	35,653	4	5,122	14.38	4	2,664	7.48	3	3,893	10.93	*	8,585	24.08	*	794	2.23
Ohio (10)	21,829	*	2,269	10.39	*	896	4.10	3	1,455	6.68	*	3,052	13.98	*	304	1.39
Vets in Partnership (11)	27,538	4	3,865	14.05	*	1,405	5.10	*	2,367	8.60	*	4,794	17.42	*	348	1.26
Great Lakes (12)	25,492	11	2,300	9.07	5	907	3.58	21	1,438	5.72	22	2,692	10.65	*	252	0.99
Heartland (15)	27,858	38	4,557	16.49	17	2,124	7.69	30	3,024	10.96	74	5,515	20.06	6	594	2.15
South Central (16)	63,804	25	7,880	12.39	5	3,713	5.83	12	5,685	8.93	35	11,675	18.35	*	1,261	1.98
Heart of Texas (17)	44,204	37	3,553	8.12	12	1,605	3.66	38	2,303	5.30	89	4,918	11.33	5	496	1.13
Southwest (18)	36,980	314	2,625	7.95	242	1,145	3.75	420	2,052	6.68	724	4,080	12.99	100	484	1.58
Rocky Mtn. (19)	27,325	618	2,160	10.17	249	841	3.99	502	1,364	6.83	912	2,338	11.89	99	219	1.16
Northwest (20)	39,962	377	3,623	10.01	190	1,649	4.60	334	3,022	8.40	621	5,395	15.05	41	562	1.51
Sierra Pacific (21)	32,716	77	1,763	5.62	20	749	2.35	73	1,858	5.90	146	4,257	13.46	13	486	1.53
Desert Pacific (22)	44,906	64	966	2.29	36	386	0.94	105	668	1.72	240	1,353	3.55	36	144	0.40
Midwest (23)	24,799	285	4,115	17.74	138	1,612	7.06	254	2,676	11.81	474	4,853	21.48	50	593	2.59
Grand Total	735,730	1,890	68,256	9.53	941	32,408	4.53	1,837	50,466	7.11	3,425	100,953	14.19	358	10,359	1.46

Posttraumatic Stress Disorder



Map 28:
Number of Rural and Highly Rural VHA Patients with PTSD
Aged 45 and Younger
By VISN FY - 2014

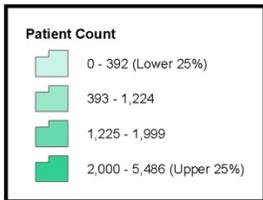
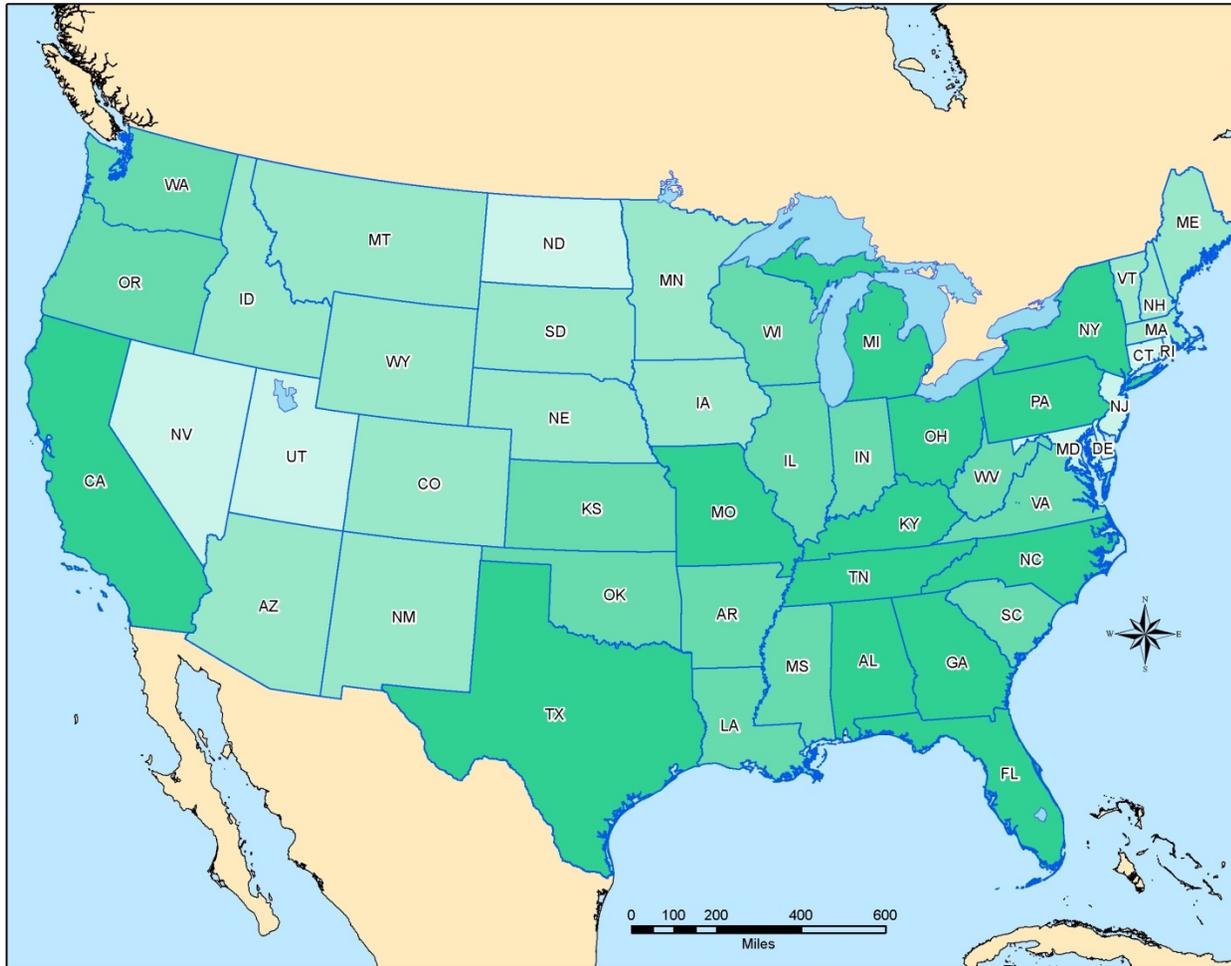


Map 29:
Percent of Rural and Highly Rural VHA Patients with PTSD
Aged 45 and Younger
Of All Rural and Highly Rural Patients Aged 45 and Younger
By VISN FY - 2014

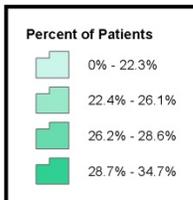
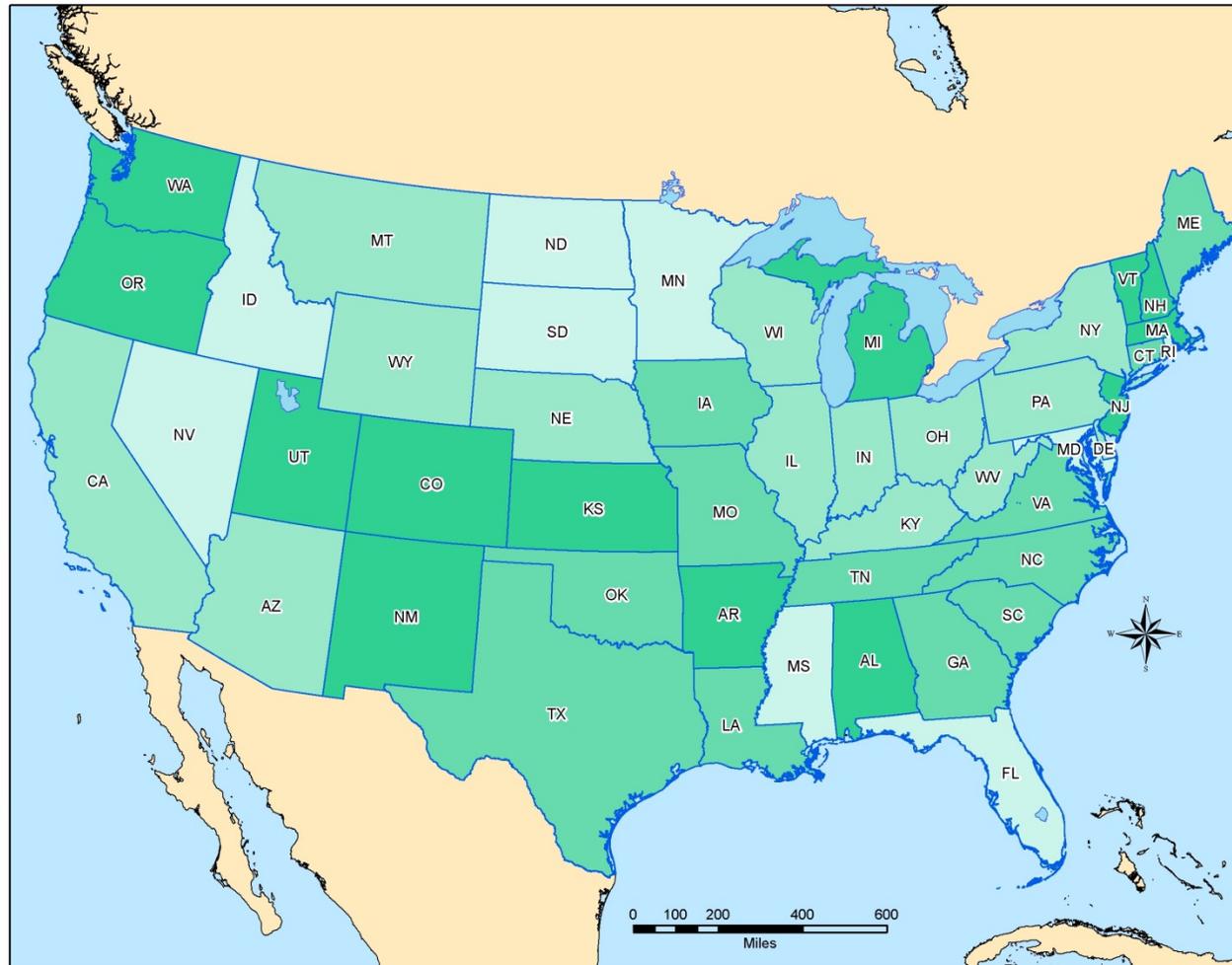


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Map Information by: PSSG, VSSC, ESRI
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Posttraumatic Stress Disorder



Map 30:
Number of Rural and Highly Rural VHA Patients with PTSD
Aged 45 and Younger
By State FY - 2014

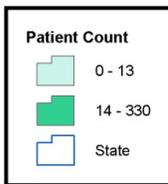
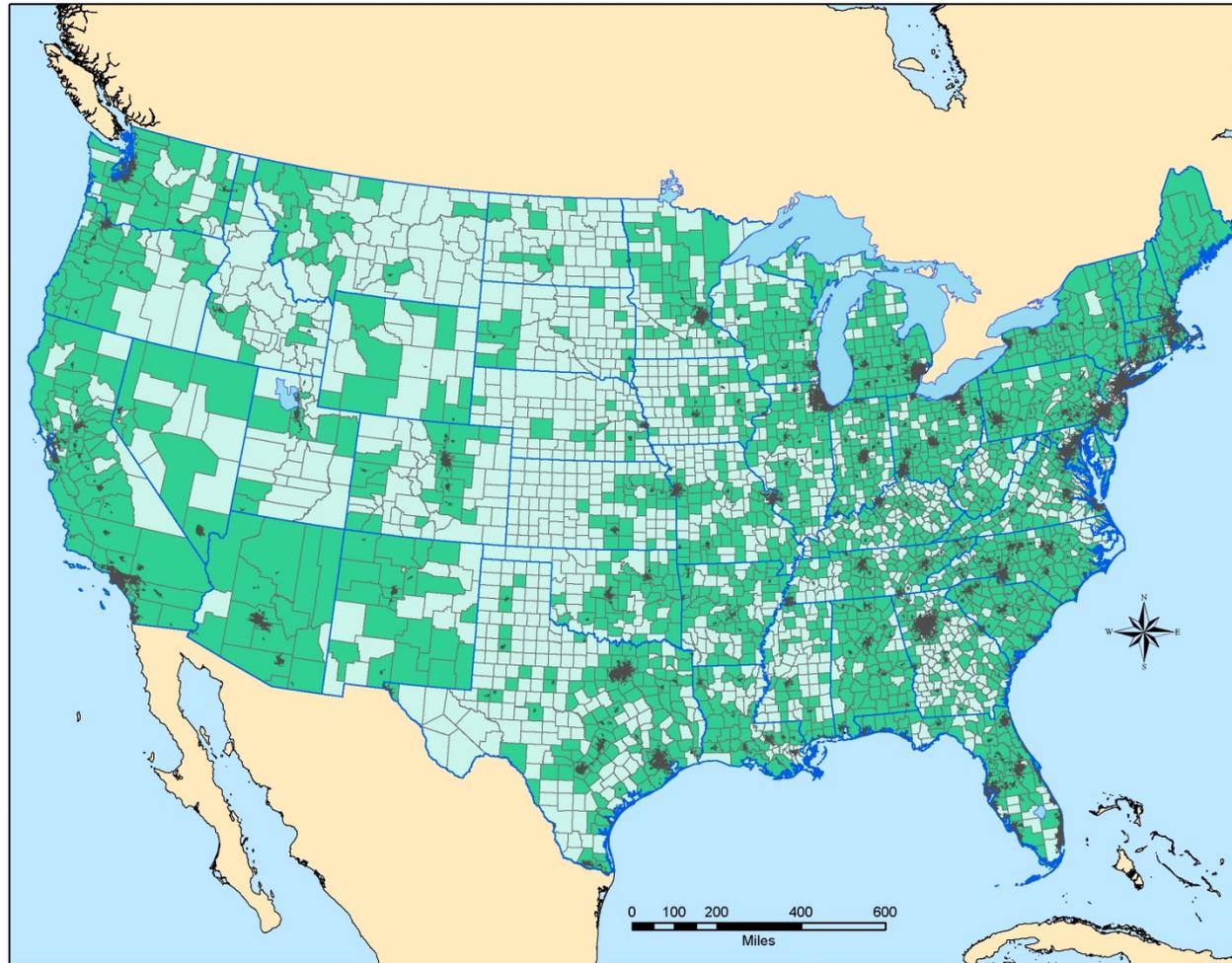


Map 31:
Percent of Rural and Highly Rural VHA Patients with PTSD
Aged 45 and Younger
Of All Rural and Highly Rural Patients Aged 45 and Younger
By State FY - 2014

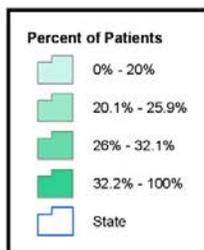
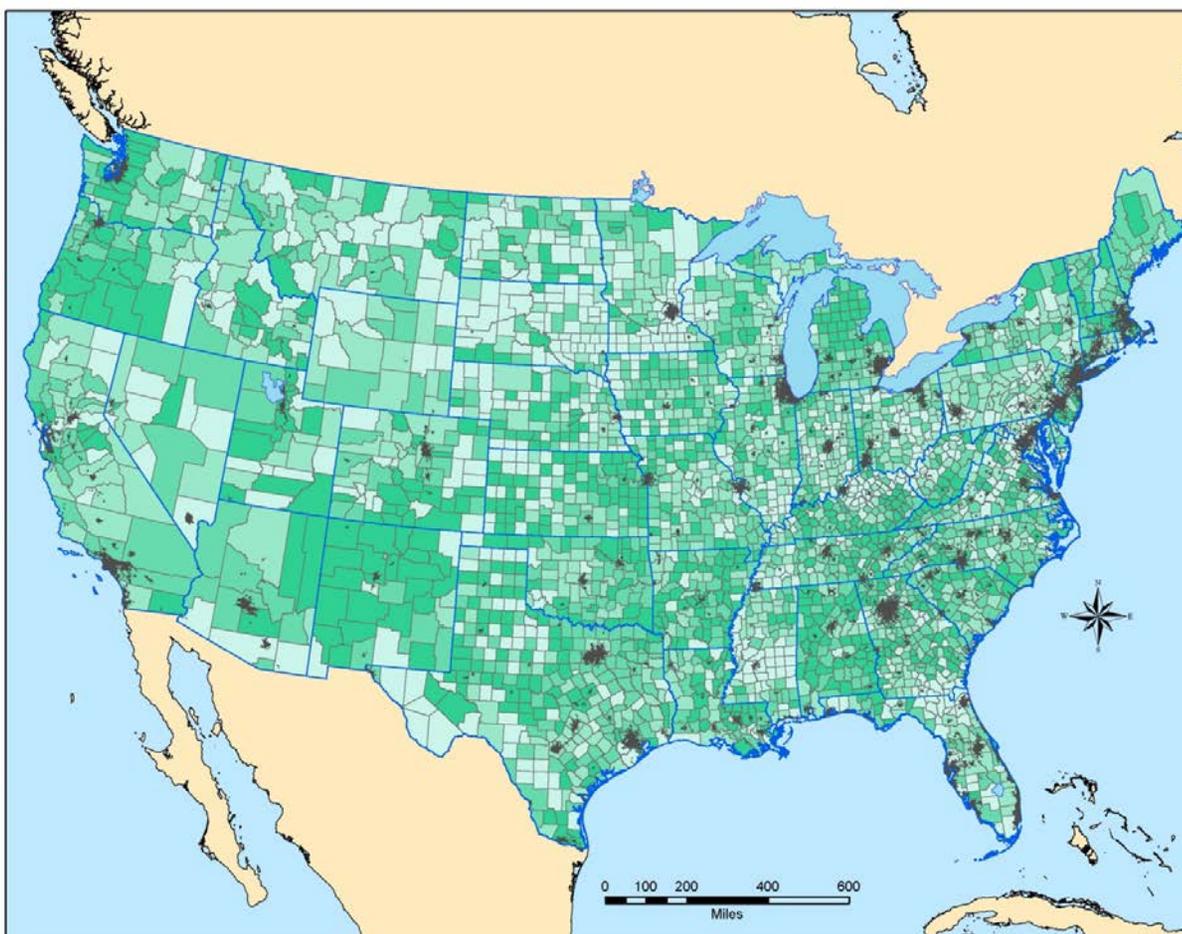
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Posttraumatic Stress Disorder



Map 32:
Number of Rural and Highly Rural VHA Patients with PTSD
Aged 45 and Younger
By County FY - 2014
Urban Areas "Shaded"



Map 33:
Percent of Rural and Highly Rural VHA Patients with PTSD
Aged 45 and Younger
Of All Rural and Highly Rural VHA Patients Aged 45 and Younger
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 PTSD Patients with a service-connected disability represented 31.77% of the total number of PTSD patients in the VHA. At the network level, the top two VISNs with the highest proportion of rural and highly rural service-connected PTSD Patients were located in Midwest Network (VISN 23) at 53.78% and Mid South Network (VISN 9) at 52.48%. Both networks were located in the central regions of the contiguous United States.

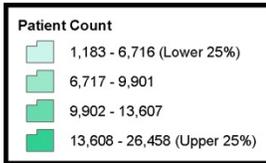
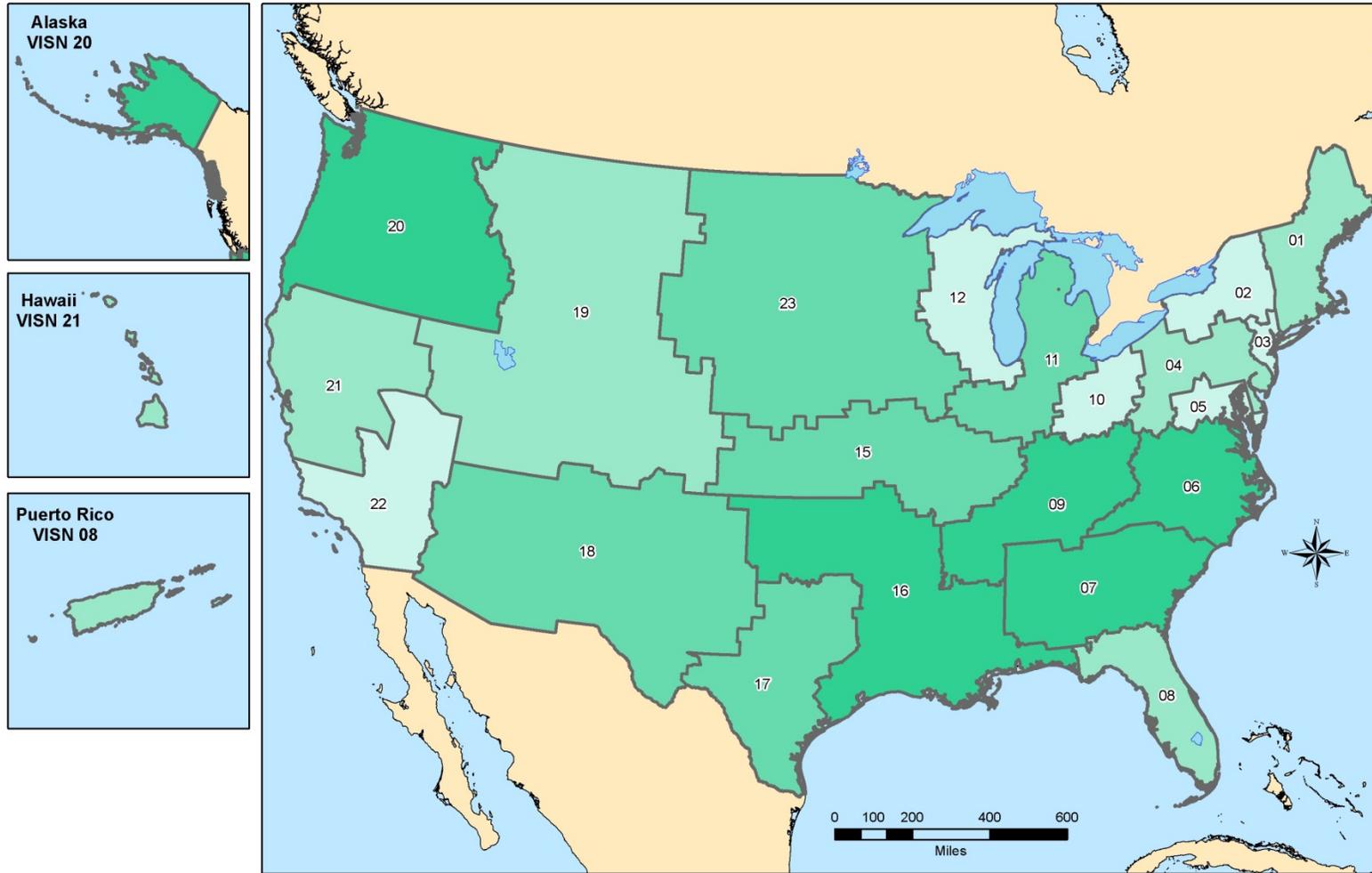
Patients with PTSD residing in rural and highly rural areas who were enrolled in Priority Group 5 represented only 2.67% of the total PTSD patient population across the United States. The Heartland Network (VISN 15) had the highest proportion at 4.61%.

The map series following Table 5 examines the numbers and percentages of rural and highly rural Service-Connected patients (numerator) with PTSD of the total rural and highly rural Service-Connected patient population (denominator) in Map 34 – Map 39. Similar information is presented for the Low Income (Priority 5) patients with PTSD in Map 40 – Map 45.

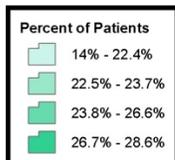
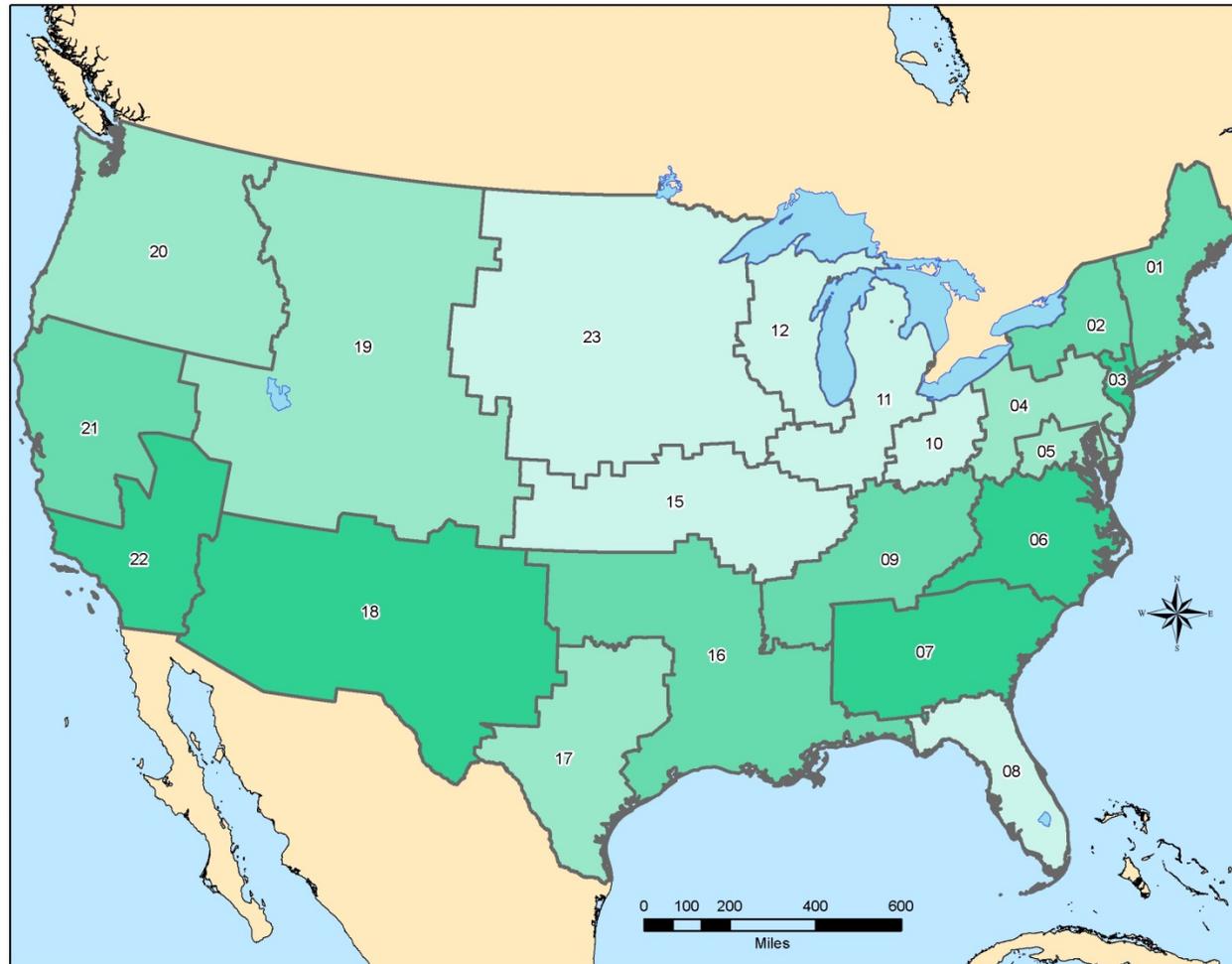
Table 5: National and VISN Numbers and Percentages of VHA Patients with PTSD, by Rurality and Enrollment Priority Group, FY-2014

Prevalence Statistics by Service Connection Type and Low Income by Rurality- PTSD, FY-2014											
Veterans Integrated Service Network	Total Number of PTSD Patients	Service Connected Priority 1-3					Low Income				
		HR	R	%	U	Unk	HR	R	%	U	Unk
New England (01)	32,562	119	9,324	29.00	17,797	*	8	674	2.09	1,742	*
Upstate NY (02)	15,120	7	6,613	43.78	5,935	*	*	635	4.20	680	*
NY/NJ (03)	20,612	4	1,179	5.74	15,621	*	*	92	0.45	2,006	*
Stars and Stripes (04)	30,877	*	9,901	32.07	15,913	*	*	808	2.62	1,681	*
Capitol (05)	14,393	*	2,866	19.91	8,907	*	*	244	1.70	1,098	*
Mid-Atlantic (06)	51,745	14	20,863	40.35	23,822	*	3	1,519	2.94	2,114	*
Southeast (07)	63,638	3	23,888	37.54	30,603	*	*	1,973	3.10	3,013	*
Sunshine (08)	53,717	13	8,174	15.24	36,896	*	*	980	1.82	3,737	*
Mid South (09)	35,653	7	18,705	52.48	12,551	*	3	1,268	3.56	1,055	*
Ohio (10)	21,829	3	6,713	30.77	10,990	*	*	696	3.19	1,567	*
Vets in Partnership (11)	27,538	6	10,810	39.28	11,885	*	*	1,070	3.89	1,598	*
Great Lakes (12)	25,492	54	6,430	25.44	13,913	*	4	538	2.13	1,909	*
Heartland (15)	27,858	133	13,474	48.84	9,599	*	14	1,270	4.61	1,245	*
South Central (16)	63,804	65	26,393	41.47	28,408	5	6	2,038	3.20	2,620	3
Heart of Texas (17)	44,204	169	11,308	25.96	27,239	4	7	867	1.98	1,959	3
Southwest (18)	36,980	1,545	8,592	27.41	20,369	12	162	978	3.08	2,312	15
Rocky Mtn. (19)	27,325	2,011	5,920	29.02	15,088	3	185	507	2.53	1,528	*
Northwest (20)	39,962	1,341	12,307	34.15	19,690	5	137	1,092	3.08	2,494	3
Sierra Pacific (21)	32,716	295	7,819	24.80	18,744	438	21	720	2.26	2,207	17
Desert Pacific (22)	44,906	419	2,932	7.46	33,395	*	35	326	0.80	4,153	*
Midwest (23)	24,799	1,031	12,307	53.78	8,397	*	99	692	3.19	654	*
Grand Total	735,730	7,239	226,518	31.77	385,762	467	689	18,987	2.67	41,372	41

Posttraumatic Stress Disorder



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

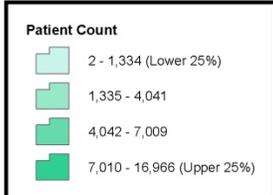
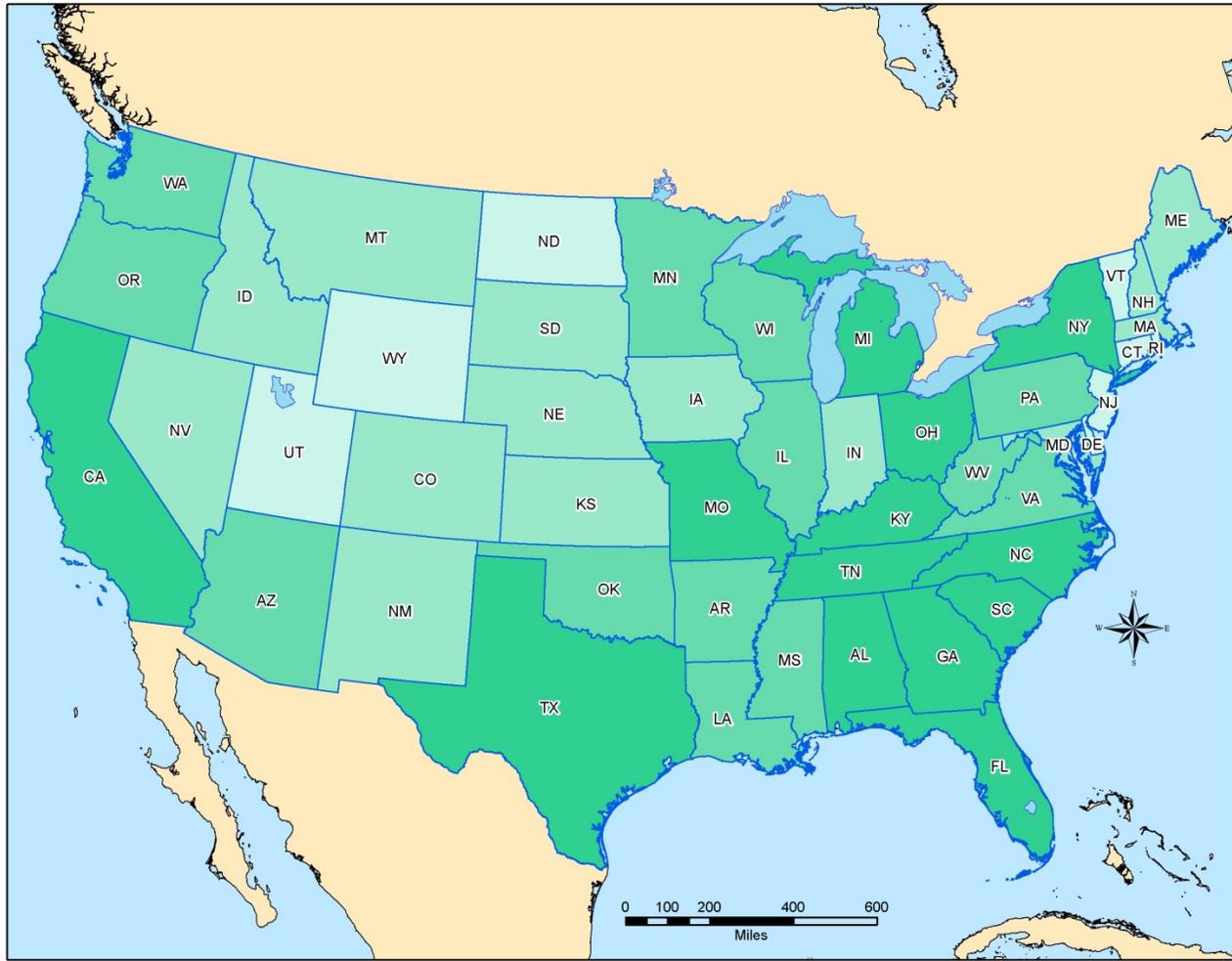


Map 35:
Percent of Rural and Highly Rural VHA Patients with PTSD
Priority 1-3
Of All Rural and Highly Rural Patients Priority 1-3
By VISN FY - 2014

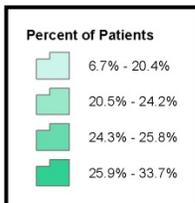
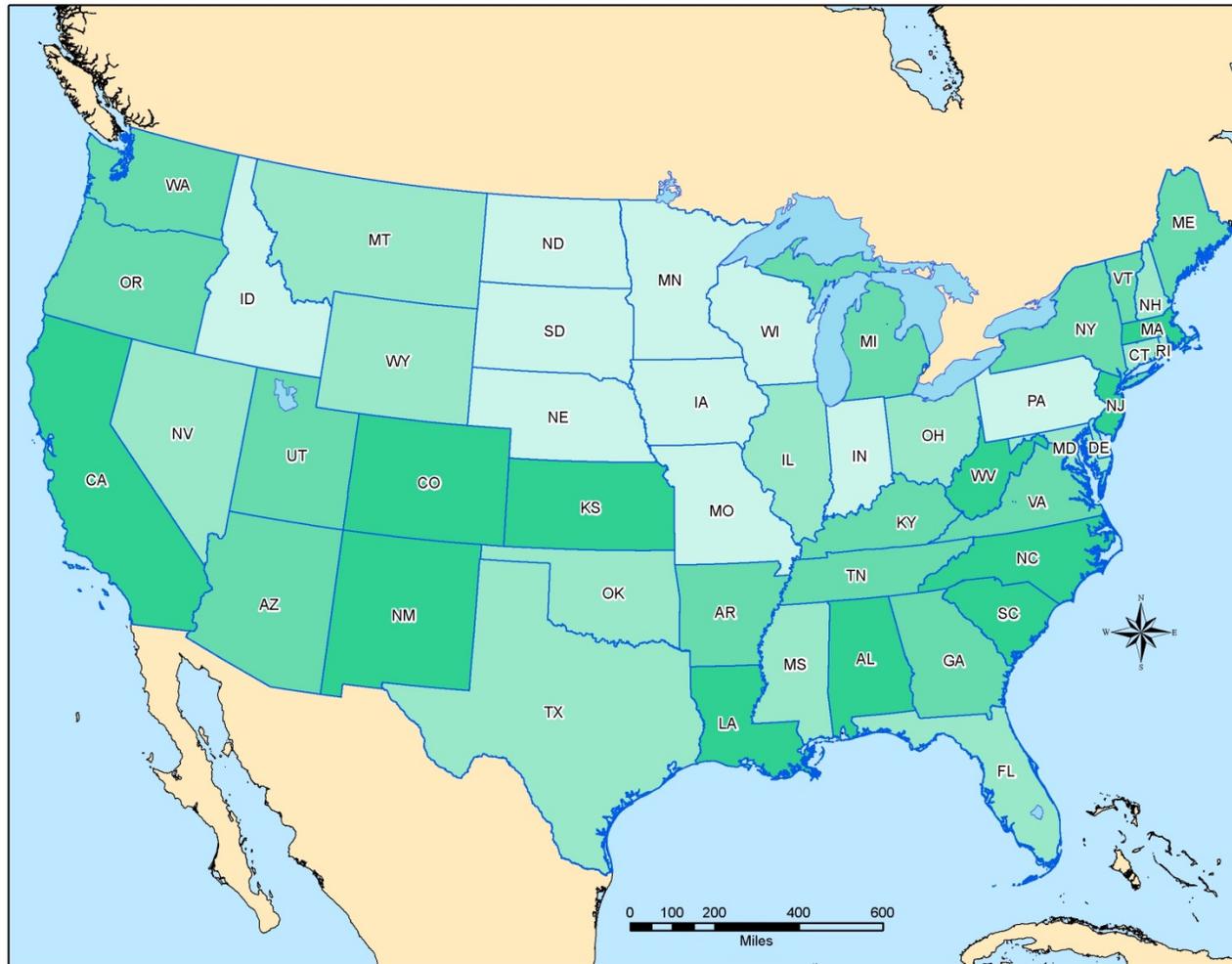


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Posttraumatic Stress Disorder



Map 36:
Number of Rural and Highly Rural VHA Patients with PTSD
Priority 1-3
By State FY - 2014

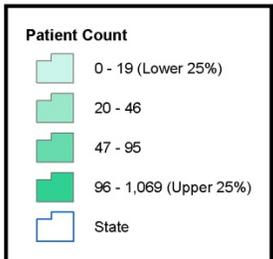
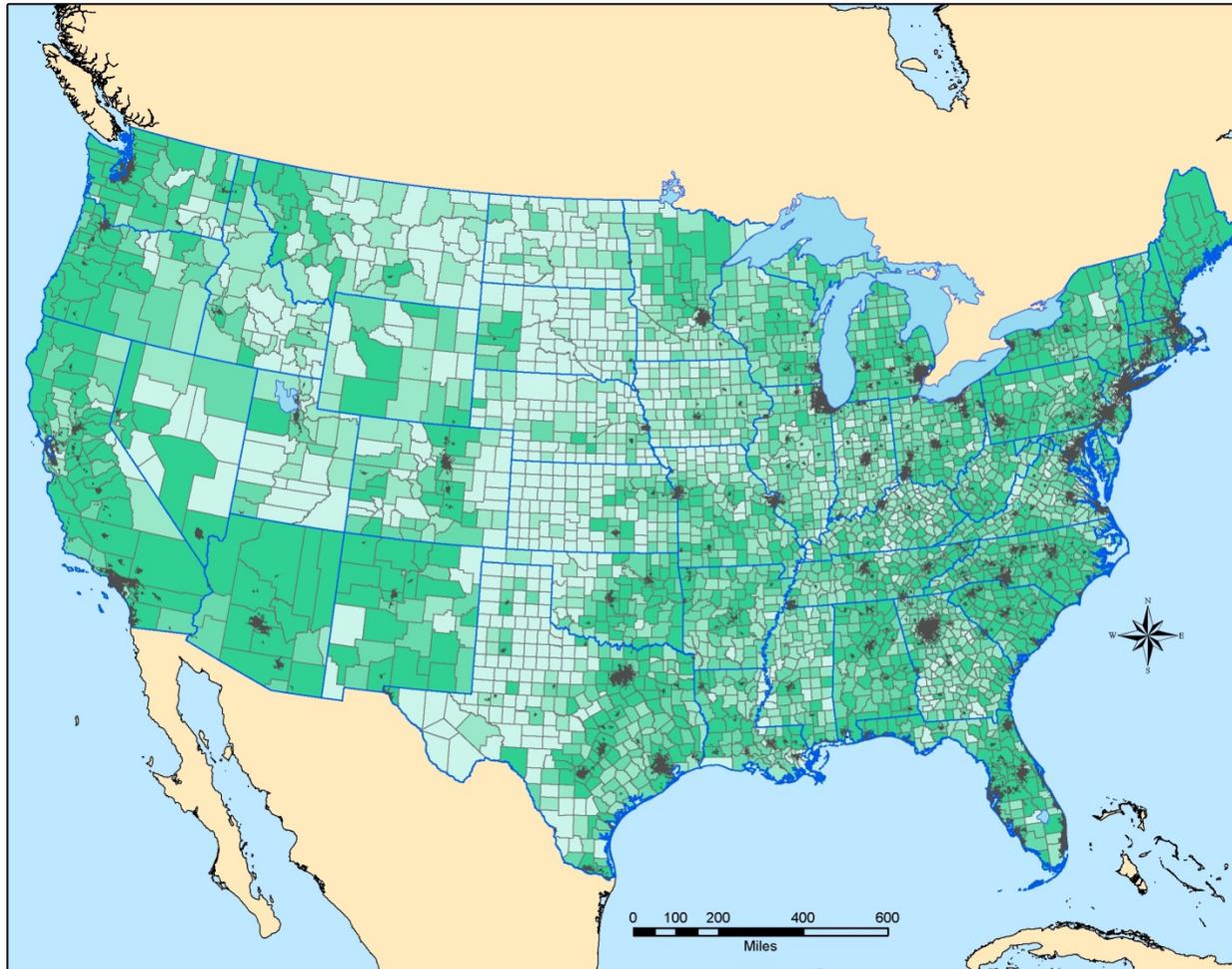


Map 37:
Percent of Rural and Highly Rural VHA Patients with PTSD
Priority 1-3
Of All Rural and Highly Rural Patients Priority 1-3
By State FY - 2014

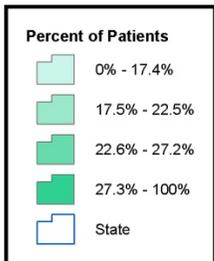
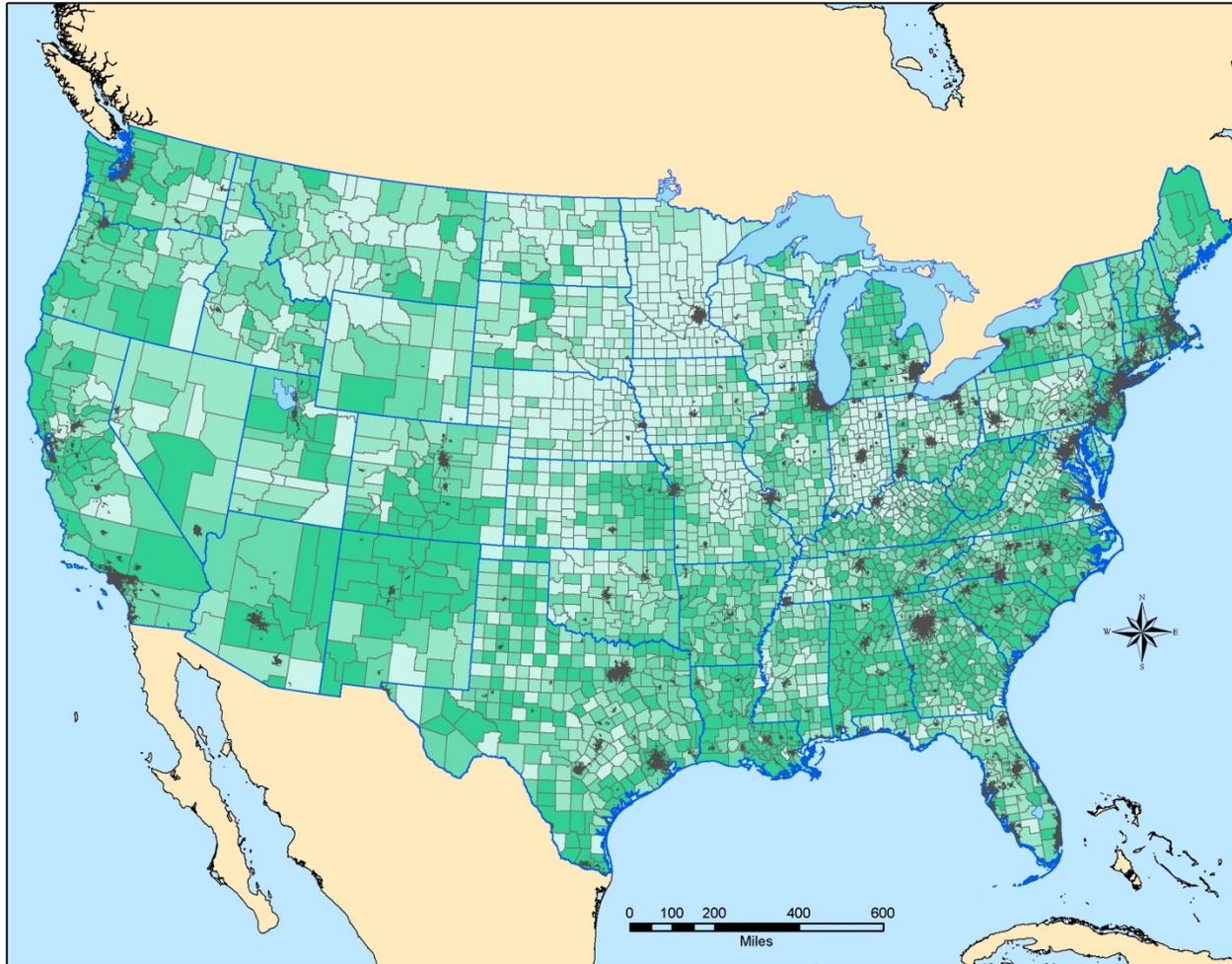


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Posttraumatic Stress Disorder



Map 38:
Number of Rural and Highly Rural VHA Patients with PTSD
Priority 1-3
By County FY - 2014
Urban Areas "Shaded"

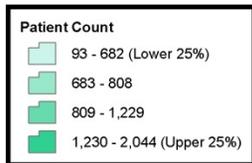
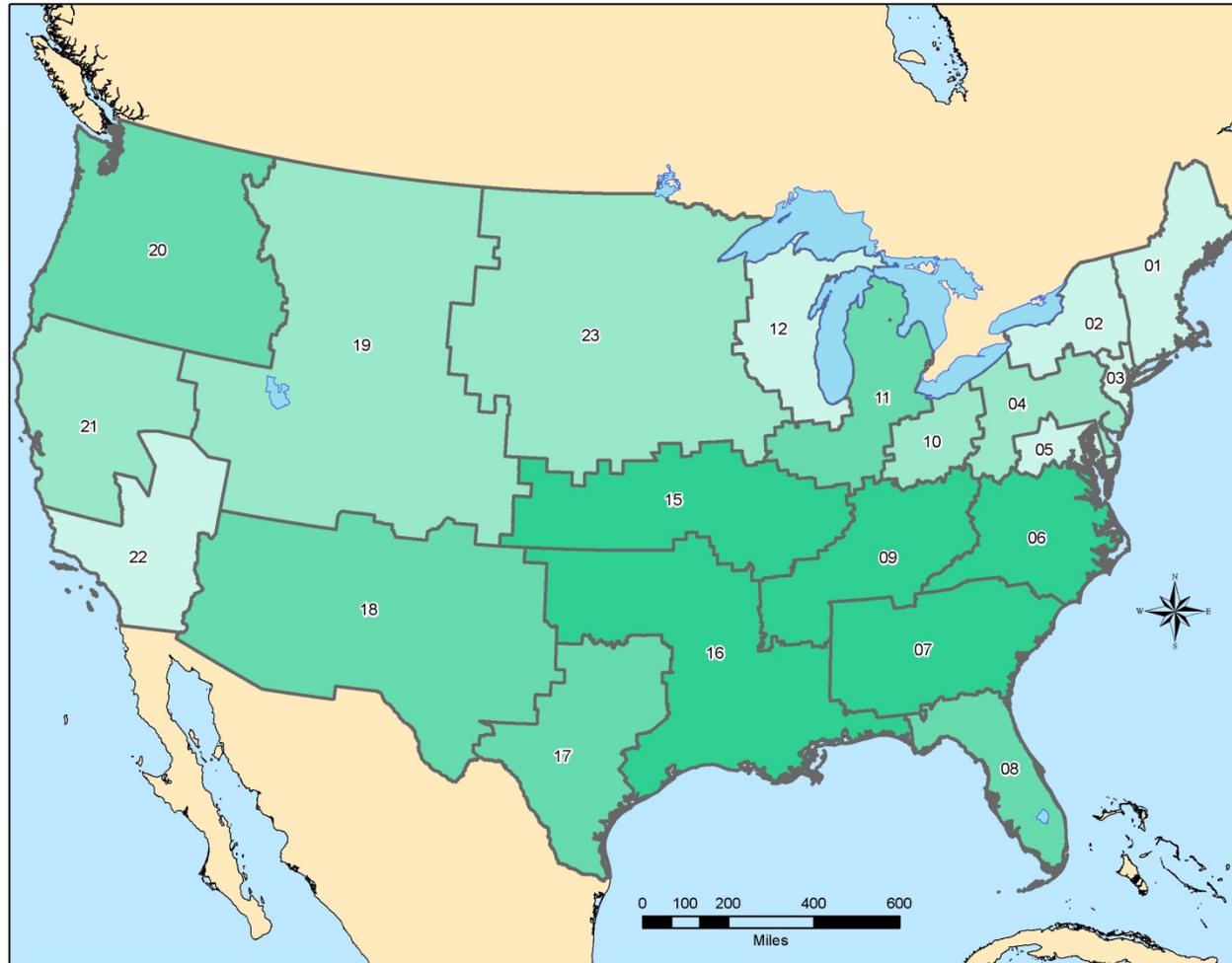


Map 39:
Percent of Rural and Highly Rural VHA Patients with PTSD
Priority 1-3
Of All Rural and Highly Rural VHA Patients Priority 1-3
By County FY - 2014
Urban Areas "Shaded"

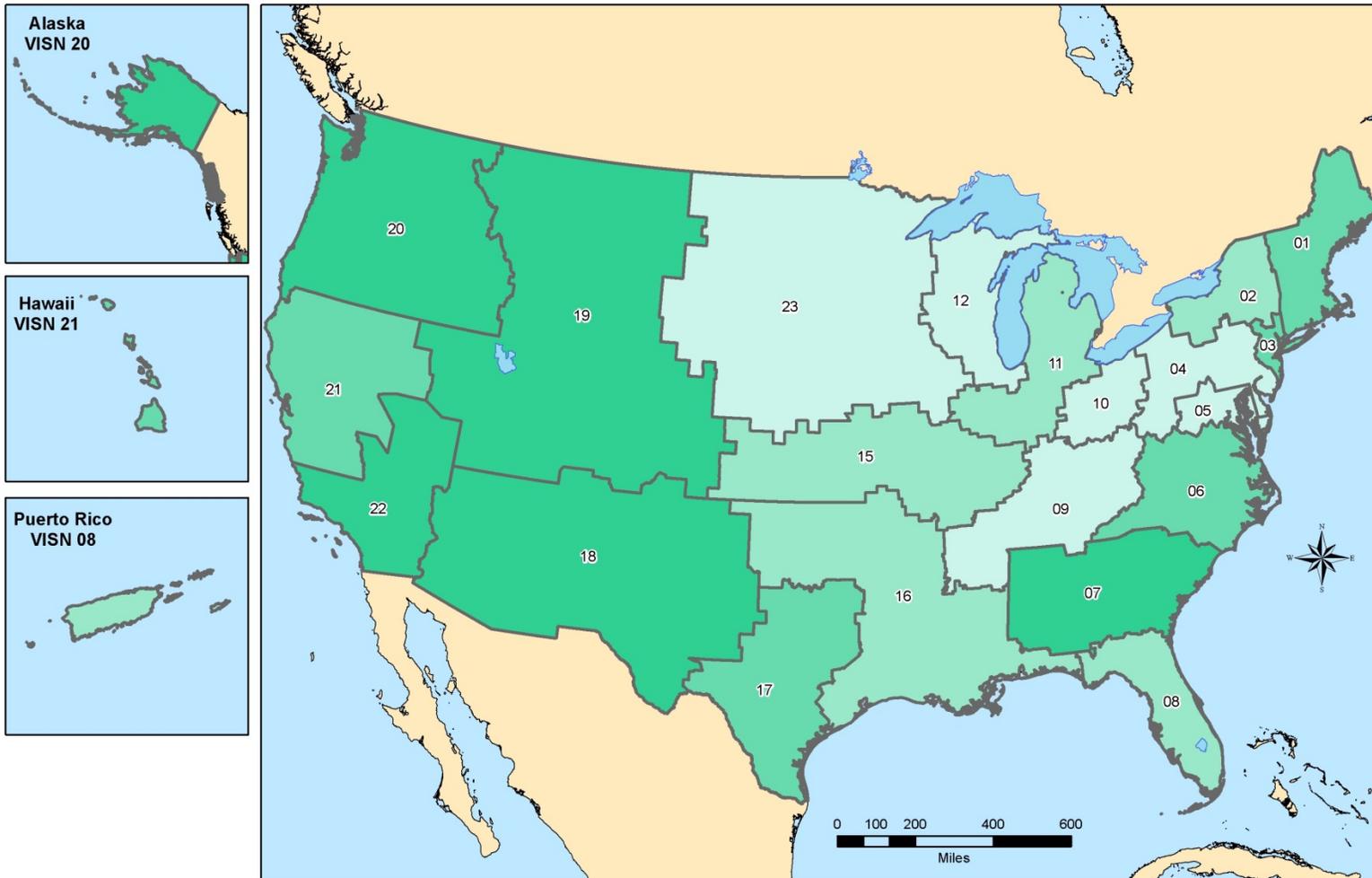


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Posttraumatic Stress Disorder



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

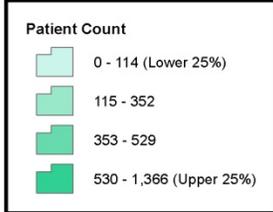
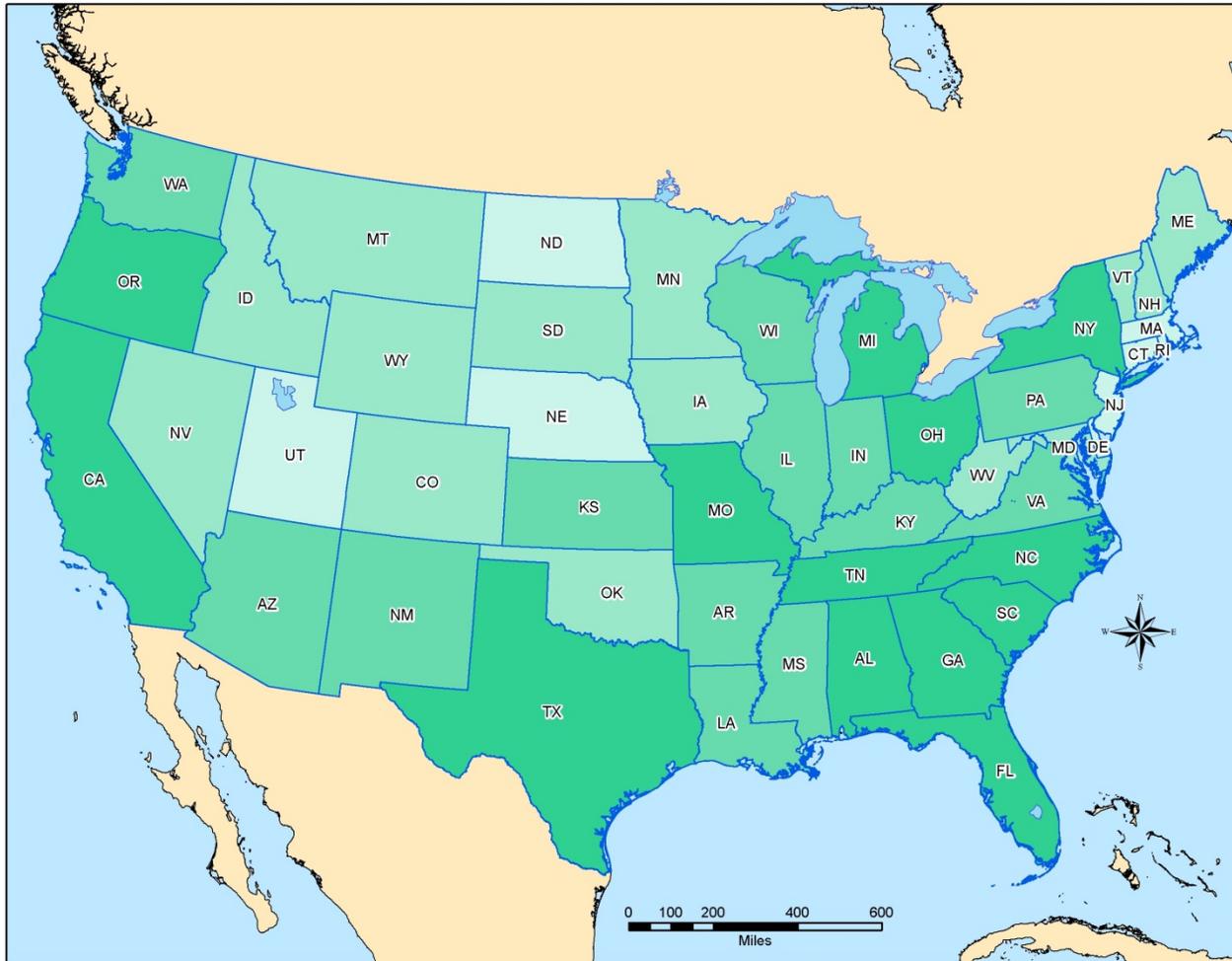


Map 41:
Percent of Rural and Highly Rural VHA Patients with PTSD
Priority 5
Of All Rural and Highly Rural Patients Priority 5
By VISN FY - 2014

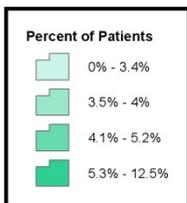
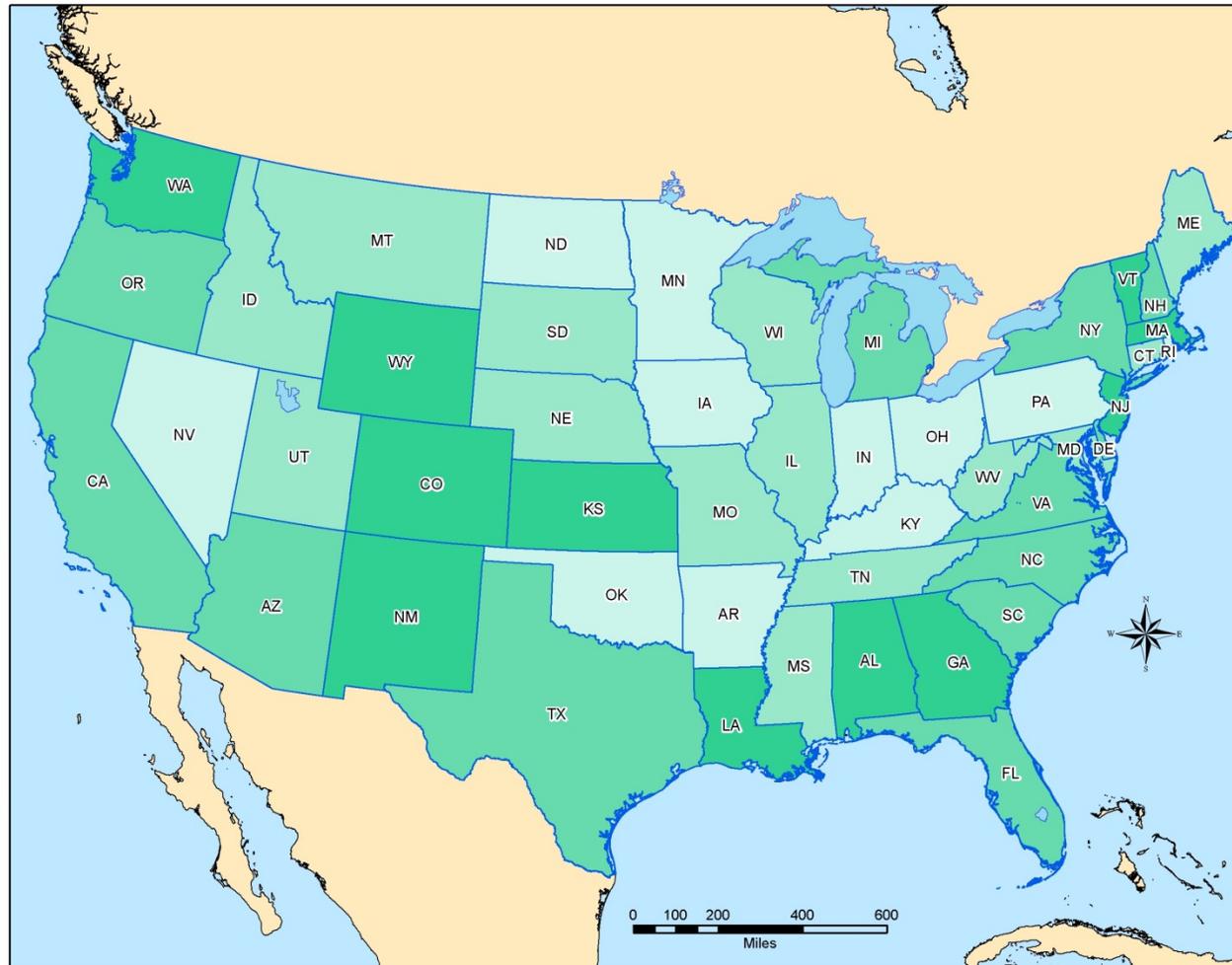


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Posttraumatic Stress Disorder



Map 42:
Number of Rural and Highly Rural VHA Patients with PTSD
Priority 5
By State FY - 2014

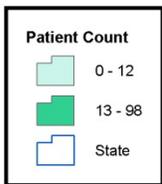
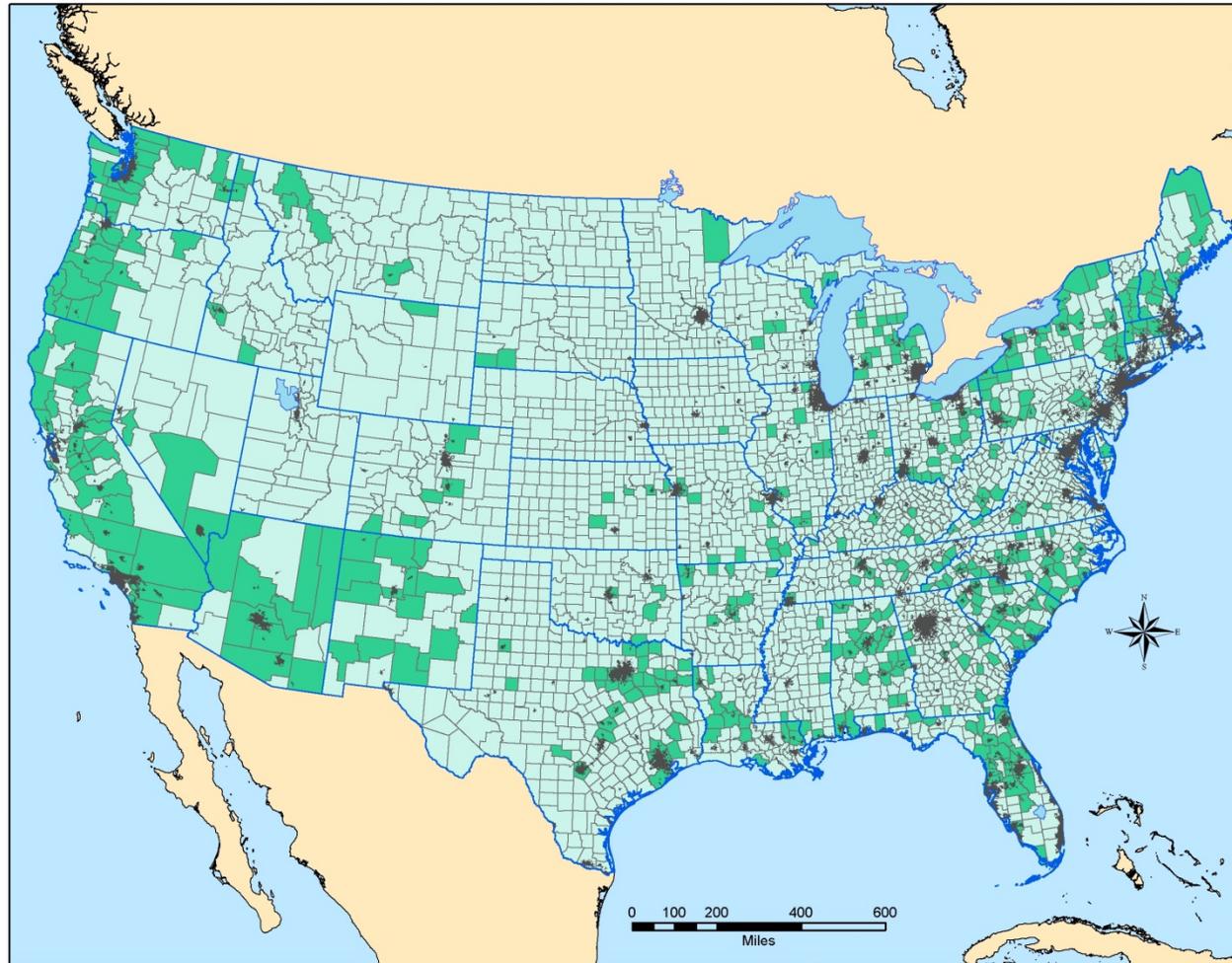


Map 43:
Percent of Rural and Highly Rural VHA Patients with PTSD
Priority 5
Of All Rural and Highly Rural Patients Priority 5
By State FY - 2014

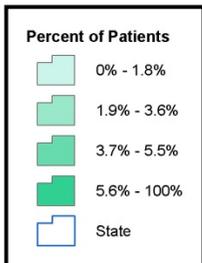
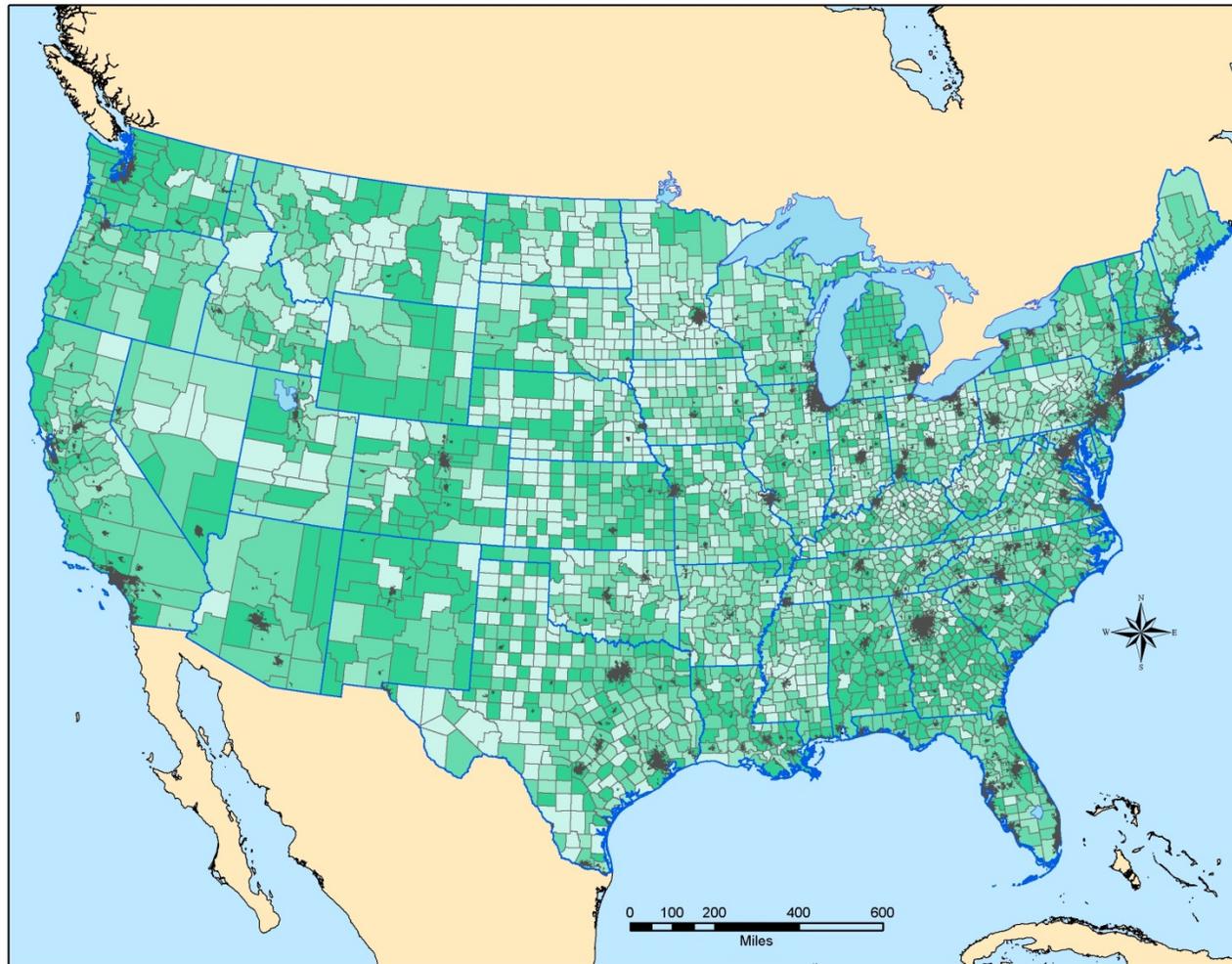
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Posttraumatic Stress Disorder



Map 44:
Number of Rural and Highly Rural VHA Patients with PTSD
Priority 5
By County FY - 2014
Urban Areas "Shaded"



Map 45:
Percent of Rural and Highly Rural VHA Patients with PTSD
Priority 5
Of All Rural and Highly Rural VHA Patients Priority 5
By County FY - 2014
Urban Areas "Shaded"



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

Table 6 examines overall utilization of VHA health care facilities by those VHA patients with a primary diagnosis of PTSD. That is, patients who may have had an encounter with the diagnosis set as the primary diagnosis. At the National level, 9.24% (N=574,175) of all VHA patients had a primary diagnosis of PTSD. At the network level, the range ran from a low of 5.83% (N=18,927) in the Midwest Network (VISN 23) to a high of 12.64% (N=51,596) in the Southeast Network (VISN 7).

Using the example of the Southeast Network (VISN 7), a small percent (3.72%) of all 10,588,864 outpatient encounters were by those VHA patients with a primary diagnosis of PTSD. 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 Southeast Network (VISN 7), combined rural patients with a primary diagnosis of PTSD represented only 1.57% of all outpatient encounters in that network, compared to 3.72% 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 PTSD by rurality. In this table, some very interesting urban-rural comparisons across VISNs emerge. For example, VISN 9 (Mid-South) had a total of 191,665 outpatient encounters for patients who had a primary diagnosis of PTSD. Over half (57.00%) of the encounters were from patients living in rural or highly rural areas of the VISN. Two other VISNs (15 and 23) had more than half of their PTSD outpatient encounters coming from rural and highly rural areas.

Table 6: Outpatient Encounters of Primary Diagnosis PTSD Patients

Overall Resource Utilization- PTSD (Primary Diagnosis Group) Compared to All Users, FY-2014										
Veterans Integrated Service Network	Total Number of Patients	Patients with PTSD		Outpatient Encounters						
	N	N	%	Total	PTSD					
				N	HR	R	%	U	Unk	%
New England (01)	253,326	25,536	10.08	7,306,431	521	57,829	0.80	159,449	6	2.98
Upstate NY (02)	136,497	11,533	8.45	4,189,442	67	51,298	1.23	52,838	2	2.49
NY/NJ (03)	174,457	17,588	10.08	5,308,815	31	13,480	0.25	202,493	1	4.07
Stars and Stripes (04)	310,940	24,214	7.79	8,188,223	1	77,664	0.95	123,262	8	2.45
Capitol (05)	150,012	11,222	7.48	3,919,003	15	27,239	0.70	87,778	5	2.94
Mid-Atlantic (06)	359,692	40,213	11.18	9,682,967	152	112,533	1.16	145,446	5	2.67
Southeast (07)	408,164	51,596	12.64	10,588,864	23	166,366	1.57	227,175	9	3.72
Sunshine (08)	576,411	41,577	7.21	17,255,468	49	56,324	0.33	294,009	4	2.03
Mid South (09)	298,396	27,433	9.19	8,424,188	17	109,228	1.30	82,415	5	2.28
Ohio (10)	231,319	17,159	7.42	7,511,566	7	53,141	0.71	107,659	2	2.14
Vets in Partnership (11)	282,135	20,485	7.26	7,691,758	63	79,403	1.03	85,684	1	2.15
Great Lakes (12)	266,879	20,019	7.50	7,705,668	484	53,265	0.70	140,666	5	2.52
Heartland (15)	245,357	22,023	8.98	7,009,124	1,098	112,456	1.62	87,920	2	2.87
South Central (16)	502,681	50,840	10.11	13,310,260	462	184,992	1.39	204,636	48	2.93
Heart of Texas (17)	306,581	34,885	11.38	7,950,682	964	73,833	0.94	167,070	23	3.04
Southwest (18)	271,557	28,686	10.56	6,738,226	10,467	57,722	1.01	133,477	80	2.99
Rocky Mtn. (19)	202,350	21,100	10.43	4,987,574	14,672	45,331	1.20	126,313	12	3.74
Northwest (20)	288,322	29,225	10.14	6,791,502	7,923	64,934	1.07	133,891	25	3.04
Sierra Pacific (21)	293,645	24,247	8.26	6,828,680	1,881	42,180	0.65	121,209	2,728	2.46
Desert Pacific (22)	328,951	35,667	10.84	8,520,022	4,028	17,636	0.25	253,632	8	3.23
Midwest (23)	324,728	18,927	5.83	8,146,785	8,813	95,886	1.29	72,983	2	2.18
Grand Total	6,212,400	574,175	9.24	168,055,248	51,738	1,552,740	0.95	3,010,005	2,981	2.75

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

Veterans Integrated Service Network	Outpatient Encounters by Patients with Primary PTSD DX					
	Total	Rurality				
	N	HR	R	%	U	Unk
New England (01)	217,805	521	57,829	26.79	159,449	6
Upstate NY (02)	104,205	67	51,298	49.29	52,838	2
NY/NJ (03)	216,005	31	13,480	6.25	202,493	1
VISN 04 (04)	200,935	1	77,664	38.65	123,262	8
Capitol (05)	115,037	15	27,239	23.69	87,778	5
Mid-Atlantic (06)	258,136	152	112,533	43.65	145,446	5
Southeast (07)	393,573	23	166,366	42.28	227,175	9
Sunshine (08)	350,386	49	56,324	16.09	294,009	4
Mid South (09)	191,665	17	109,228	57.00	82,415	5
Ohio (10)	160,809	7	53,141	33.05	107,659	2
Vets in Partnership (11)	165,151	63	79,403	48.12	85,684	1
Great Lakes (12)	194,420	484	53,265	27.65	140,666	5
Heartland (15)	201,476	1,098	112,456	56.36	87,920	2
South Central (16)	390,138	462	184,992	47.54	204,636	48
Heart of Texas (17)	241,890	964	73,833	30.92	167,070	23
Southwest (18)	201,746	10,467	57,722	33.80	133,477	80
Rocky Mtn. (19)	186,328	14,672	45,331	32.20	126,313	12
Northwest (20)	206,773	7,923	64,934	35.24	133,891	25
Sierra Pacific (21)	167,998	1,881	42,180	26.23	121,209	2,728
Desert Pacific (22)	275,304	4,028	17,636	7.87	253,632	8
Midwest (23)	177,684	8,813	95,886	58.92	72,983	2
TOTAL	4,617,464	51,738	1,552,740	34.75	3,010,005	2,981

Table 8 examines the overall outpatient encounters at VHA health care facilities by those VHA patients with a secondary diagnosis of PTSD. That is, patients who had an encounter with the PTSD as the secondary diagnosis. At the National level, 8.21% of all VHA patients had a secondary diagnosis of PTSD. At the network level, the range ran from a low of 5.37% in the Midwest Network (VISN 23) to a high of 10.17% in the Southeast Network (VISN 7).

In Table 9 (similar to Table 7 for patients with a primary diagnosis of PTSD) information on outpatient encounters for all patients with a secondary diagnosis of PTSD by rurality is reported. The percentage of encounters by rural and highly rural patients constituted a large share of the total PTSD encounters in VISN 9 (54.68%). The other VISNs with more than half of the PTSD encounters from rural and highly rural areas were VISN 15 (53.02%) and VISN 23 (54.18%)

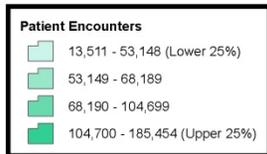
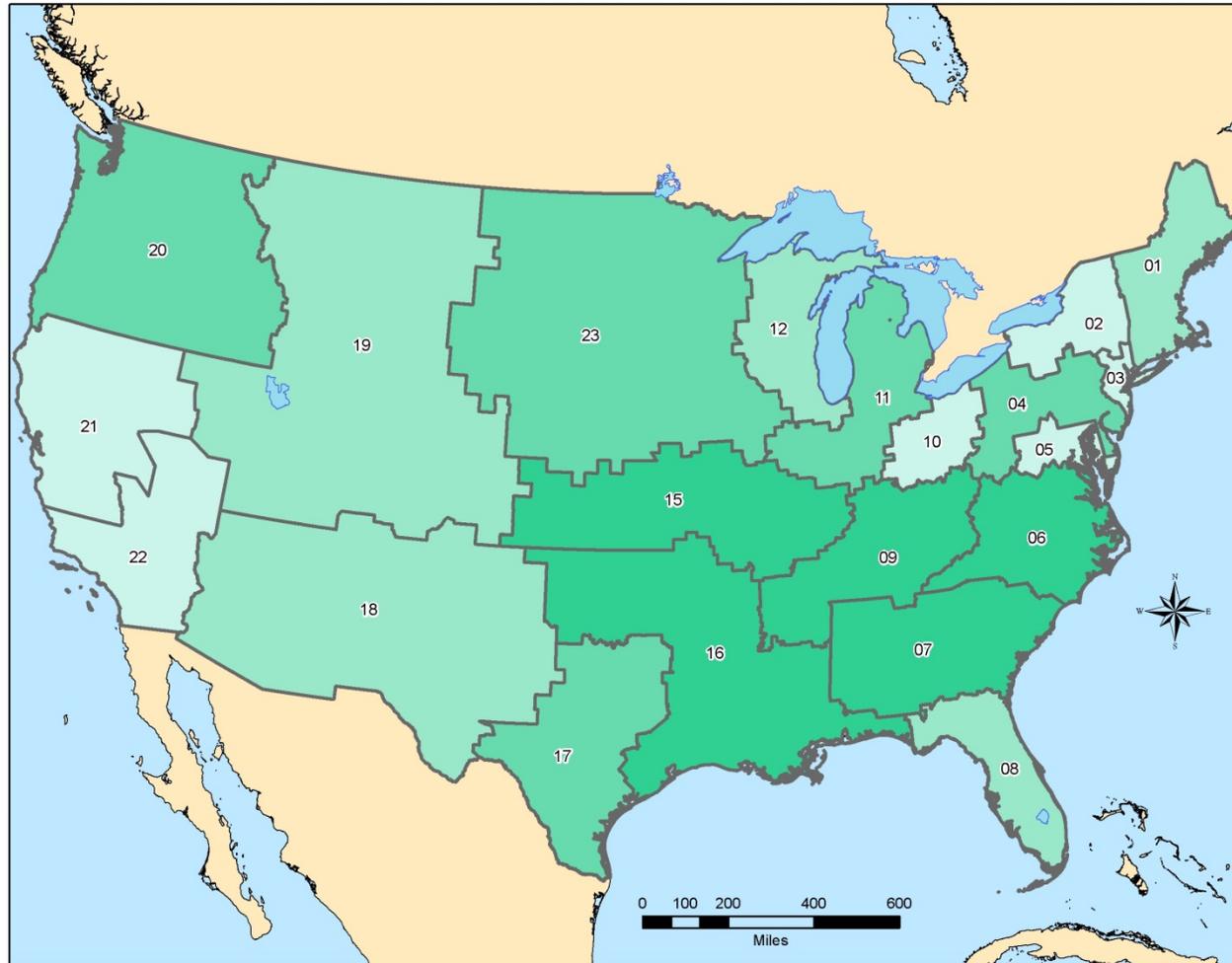
Table 8: Outpatient Encounters of Patients with a Secondary Diagnosis of PTSD

Overall Resource Utilization- PTSD (Secondary Diagnosis Group) Compared to All Users, FY-2014										
Veterans Integrated Service Network	Total Number of Patients	Patients with PTSD		Outpatient Encounters						
		N	%	Total	PTSD					
					N	HR	R	%	U	Unk
New England (01)	253,326	22,822	9.01	7,306,431	219	25,237	0.35	61,761	1	1.19
Upstate NY (02)	136,497	11,315	8.29	4,189,442	8	18,260	0.44	19,734	0	0.91
NY/NJ (03)	174,457	11,985	6.87	5,308,815	27	2,362	0.05	40,228	2	0.80
Stars and Stripes (04)	310,940	22,074	7.10	8,188,223	4	21,406	0.26	44,512	2	0.81
Capitol (05)	150,012	10,151	6.77	3,919,003	4	5,615	0.14	26,334	3	0.82
Mid-Atlantic (06)	359,692	36,026	10.02	9,682,967	47	40,739	0.42	55,257	6	0.99
Southeast (07)	408,164	41,522	10.17	10,588,864	7	40,651	0.38	64,605	4	0.99
Sunshine (08)	576,411	40,043	6.95	17,255,468	12	20,688	0.12	109,238	2	0.75
Mid South (09)	298,396	25,631	8.59	8,424,188	27	37,112	0.44	30,782	2	0.81
Ohio (10)	231,319	15,308	6.62	7,511,566	9	15,893	0.21	38,716	0	0.73
Vets in Partnership (11)	282,135	19,345	6.86	7,691,758	22	24,297	0.32	28,787	1	0.69
Great Lakes (12)	266,879	18,676	7.00	7,705,668	123	20,002	0.26	49,050	1	0.90
Heartland (15)	245,357	19,604	7.99	7,009,124	412	32,622	0.47	29,264	4	0.89
South Central (16)	502,681	42,693	8.49	13,310,260	99	53,530	0.40	67,293	20	0.91
Heart of Texas (17)	306,581	29,777	9.71	7,950,682	348	21,816	0.28	63,602	6	1.08
Southwest (18)	271,557	25,339	9.33	6,738,226	3,734	19,522	0.35	49,679	43	1.08
Rocky Mtn. (19)	202,350	19,049	9.41	4,987,574	4,242	13,964	0.37	39,785	7	1.16
Northwest (20)	288,322	28,002	9.71	6,791,502	2,380	23,052	0.37	56,197	8	1.20
Sierra Pacific (21)	293,645	23,210	7.90	6,828,680	562	14,715	0.22	53,894	680	1.02
Desert Pacific (22)	328,951	29,864	9.08	8,520,022	604	6,138	0.08	73,971	5	0.95
Midwest (23)	324,728	17,424	5.37	8,146,785	2,739	32,499	0.43	29,796	1	0.80
Grand Total	6,212,400	509,860	8.21	168,055,248	15,629	490,120	0.30	1,032,485	798	0.92

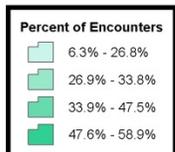
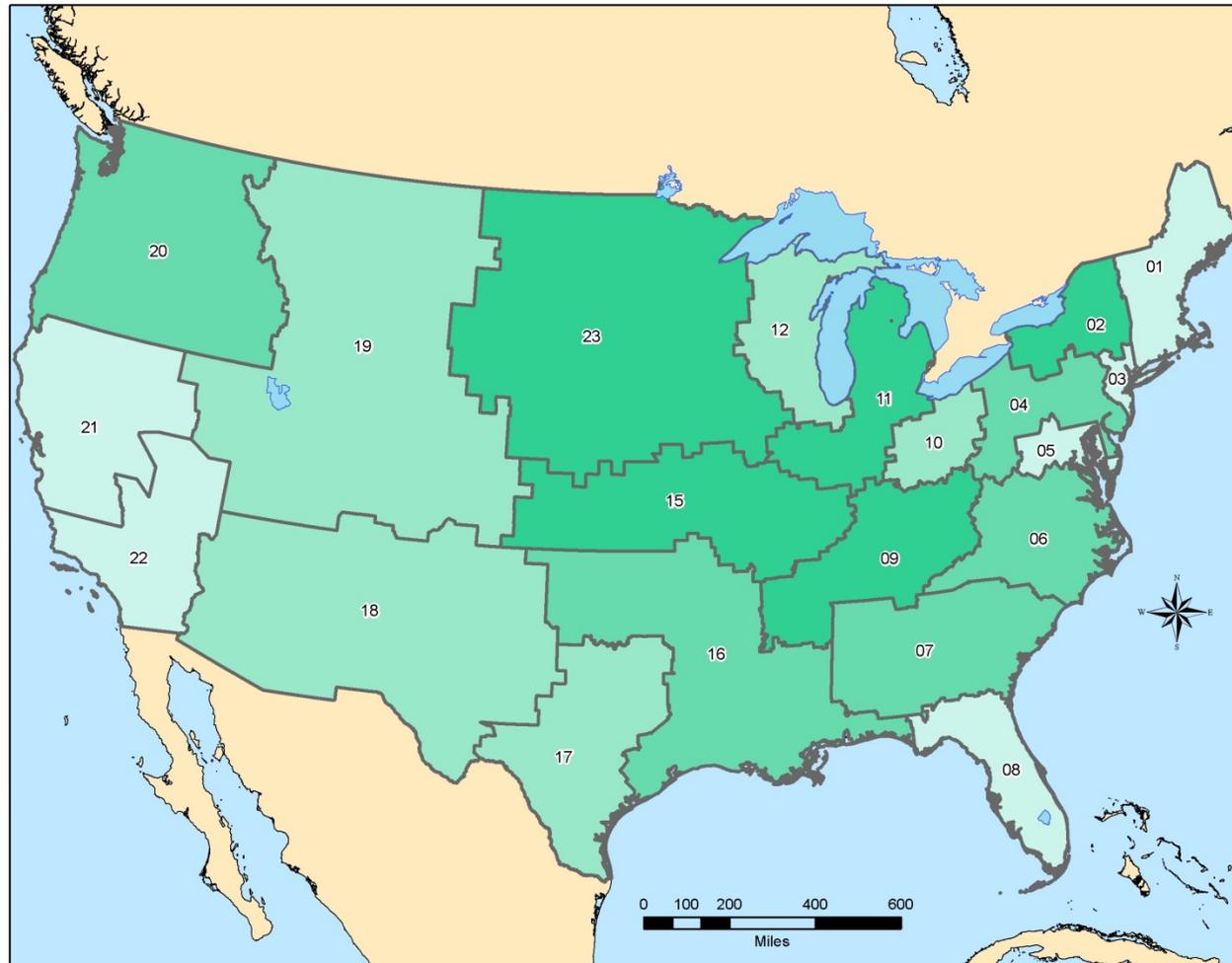
Table 9: Outpatient Encounters by Patients with a Secondary Diagnosis of PTSD by Rurality

Veterans Integrated Service Network	Outpatient Encounters by Patients with Secondary PTSD DX					
	Total	Rurality				
	N	HR	R	%	U	Unk
New England (01)	87,218	219	25,237	29.19	61,761	1
Upstate NY (02)	38,002	8	18,260	48.07	19,734	0
NY/NJ (03)	42,619	27	2,362	5.61	40,228	2
VISN 04 (04)	65,924	4	21,406	32.48	44,512	2
Capitol (05)	31,956	4	5,615	17.58	26,334	3
Mid-Atlantic (06)	96,049	47	40,739	42.46	55,257	6
Southeast (07)	105,267	7	40,651	38.62	64,605	4
Sunshine (08)	129,940	12	20,688	15.93	109,238	2
Mid South (09)	67,923	27	37,112	54.68	30,782	2
Ohio (10)	54,618	9	15,893	29.11	38,716	0
Vets in Partnership (11)	53,107	22	24,297	45.79	28,787	1
Great Lakes (12)	69,176	123	20,002	29.09	49,050	1
Heartland (15)	62,302	412	32,622	53.02	29,264	4
South Central (16)	120,942	99	53,530	44.34	67,293	20
Heart of Texas (17)	85,772	348	21,816	25.84	63,602	6
Southwest (18)	72,978	3,734	19,522	31.87	49,679	43
Rocky Mtn. (19)	57,998	4,242	13,964	31.39	39,785	7
Northwest (20)	81,637	2,380	23,052	31.15	56,197	8
Sierra Pacific (21)	69,851	562	14,715	21.87	53,894	680
Desert Pacific (22)	80,718	604	6,138	8.35	73,971	5
Midwest (23)	65,035	2,739	32,499	54.18	29,796	1
TOTAL	1,539,032	15,629	490,120	32.86	1,032,485	798

Posttraumatic Stress Disorder



Map 46:
Number of Rural and Highly Rural VHA Patients with PTSD Encounters
By VISN FY - 2014

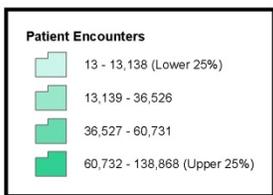
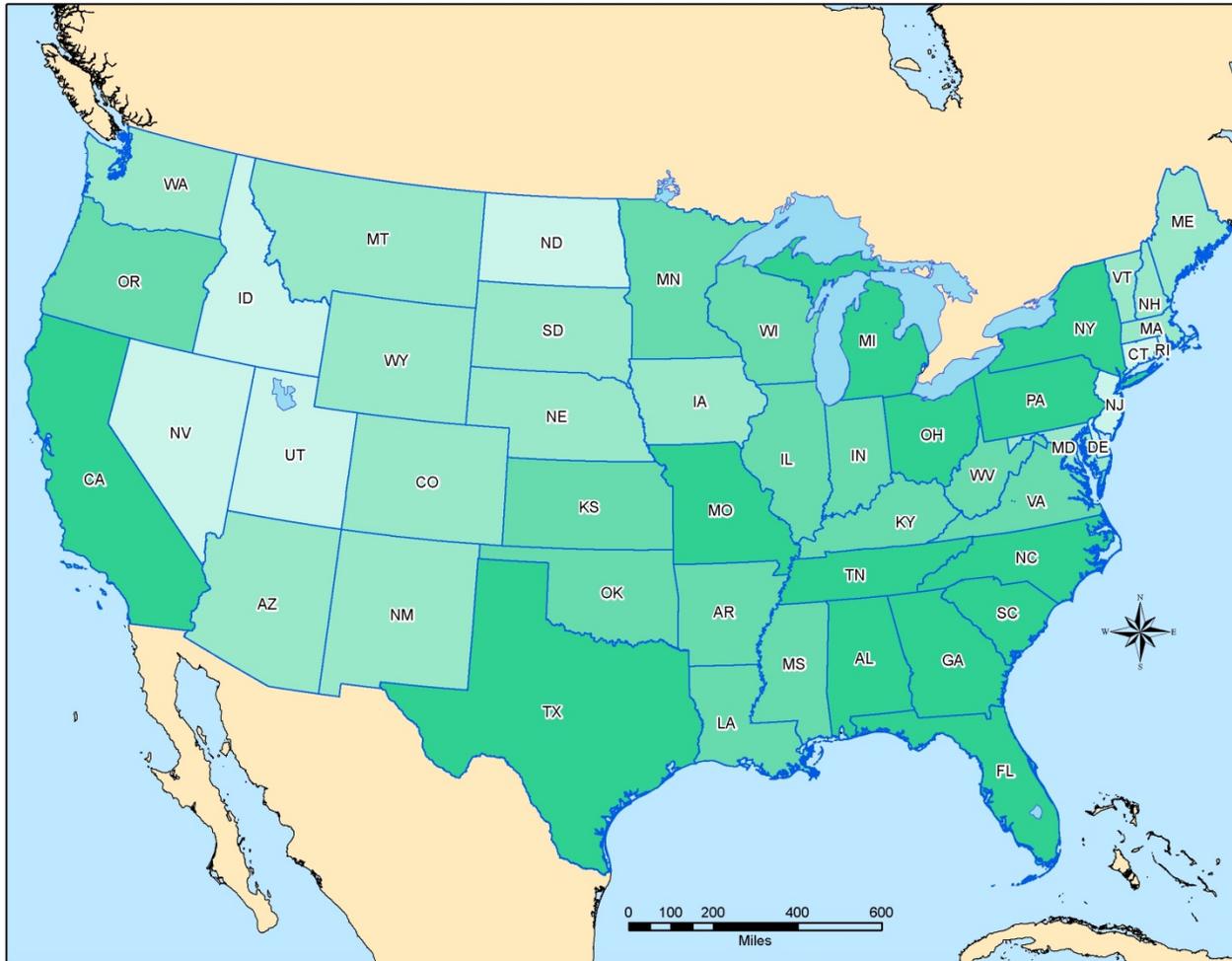


Map 47:
Percent of Rural and Highly Rural VHA Patients with PTSD Encounters
Of All VHA Patient PTSD Encounters
By VISN FY - 2014



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Map Information by: PSSG, VSSC, ESRI
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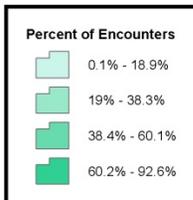
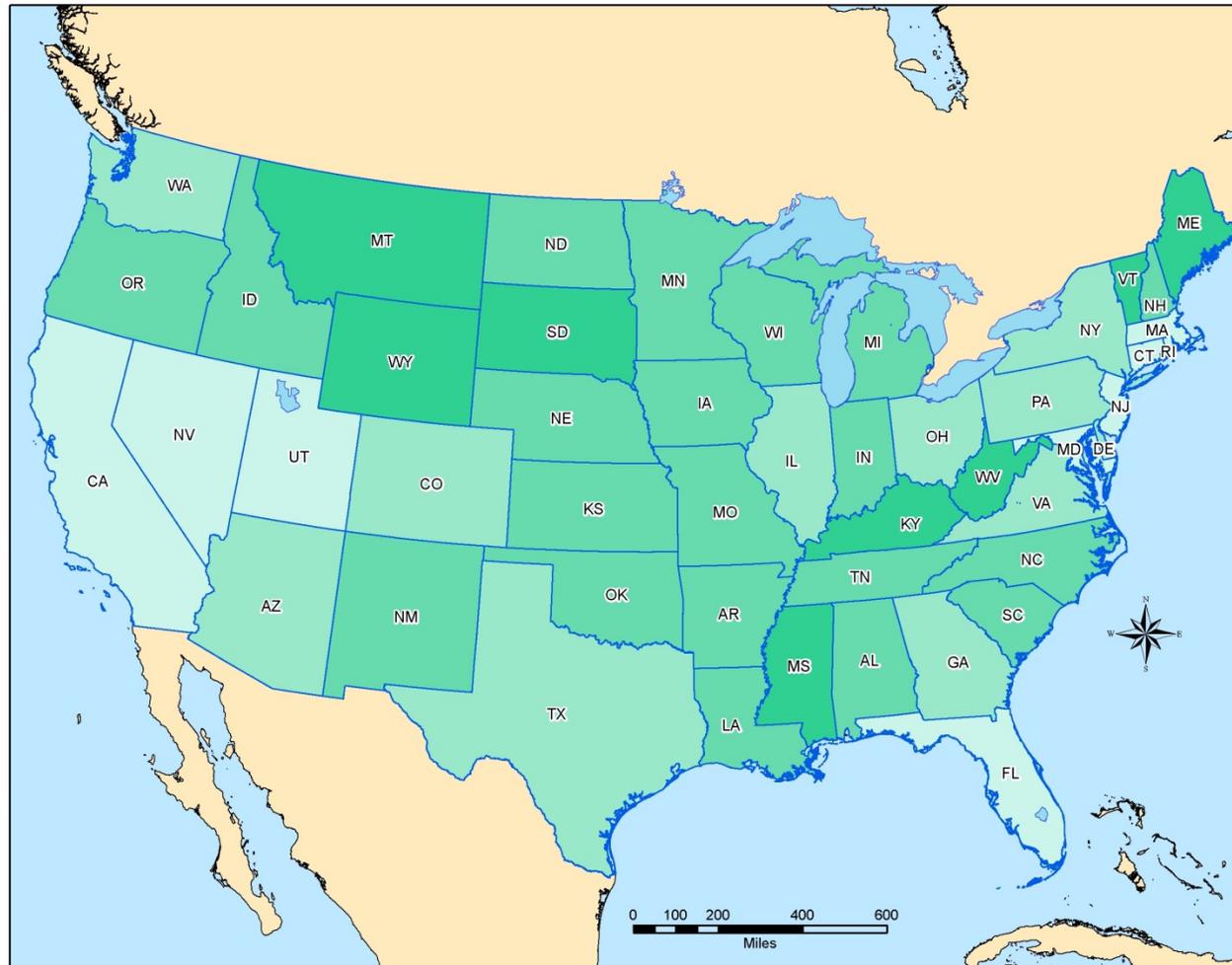
Posttraumatic Stress Disorder



Map 48:
Number of Rural and Highly Rural VHA Patients with PTSD Encounters
By State FY - 2014

GeoSpatial Outcomes Division
VHA Office of Rural Health

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(Map Creation Date: 7/8/2015)
Map Information by: PSSG, VSSC, ESRI
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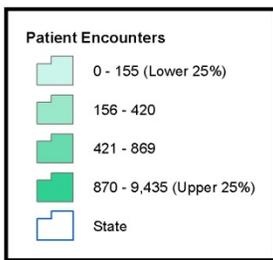
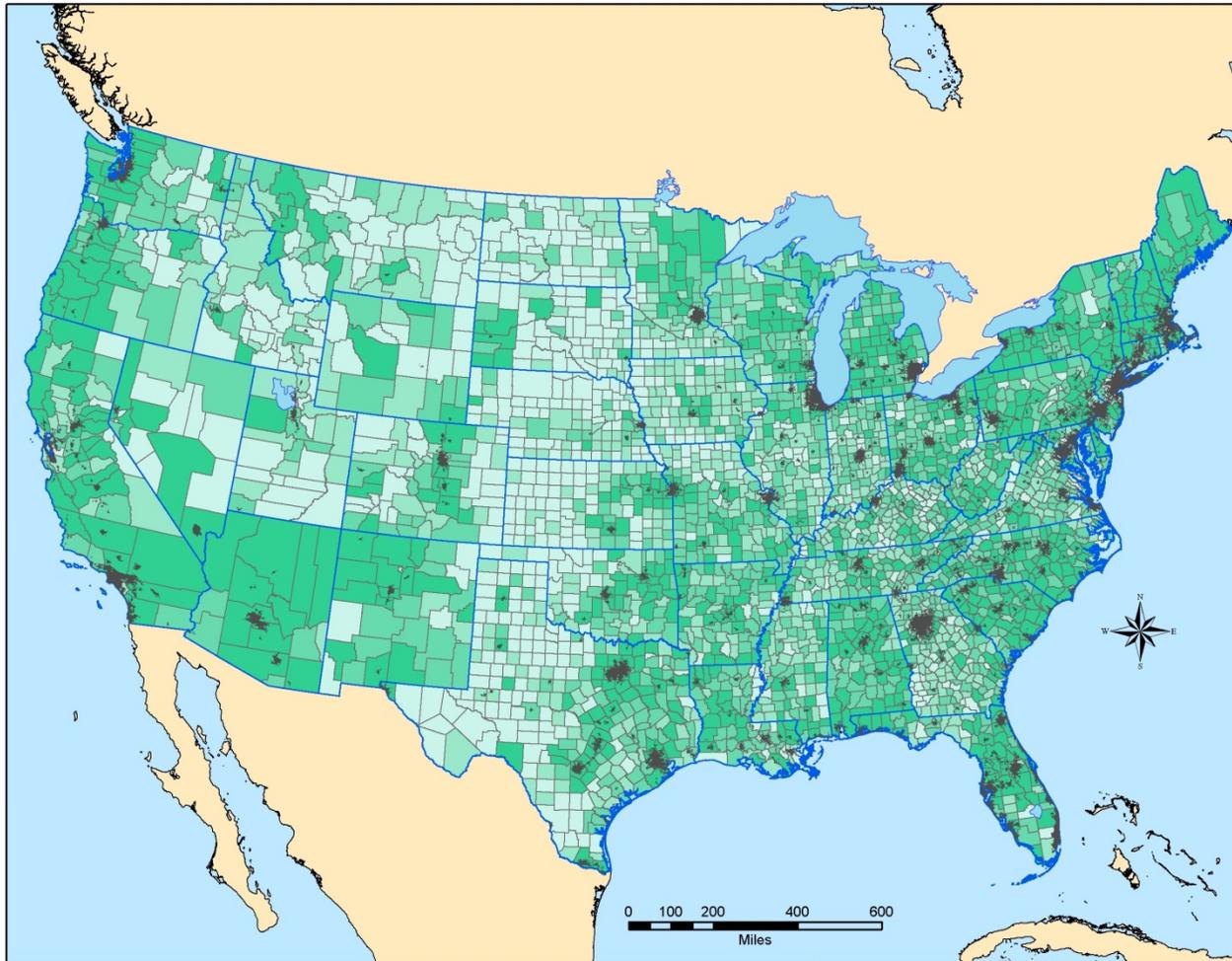
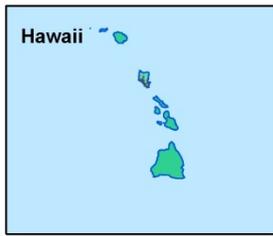


Map 49:
Percent of Rural and Highly Rural VHA Patients with PTSD Encounters
Of All VHA Patient PTSD Encounters
By State FY - 2014

GeoSpatial
Outcomes Division
VHA Office of Rural Health

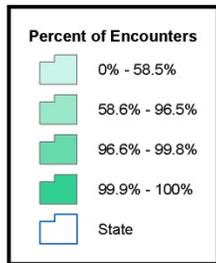
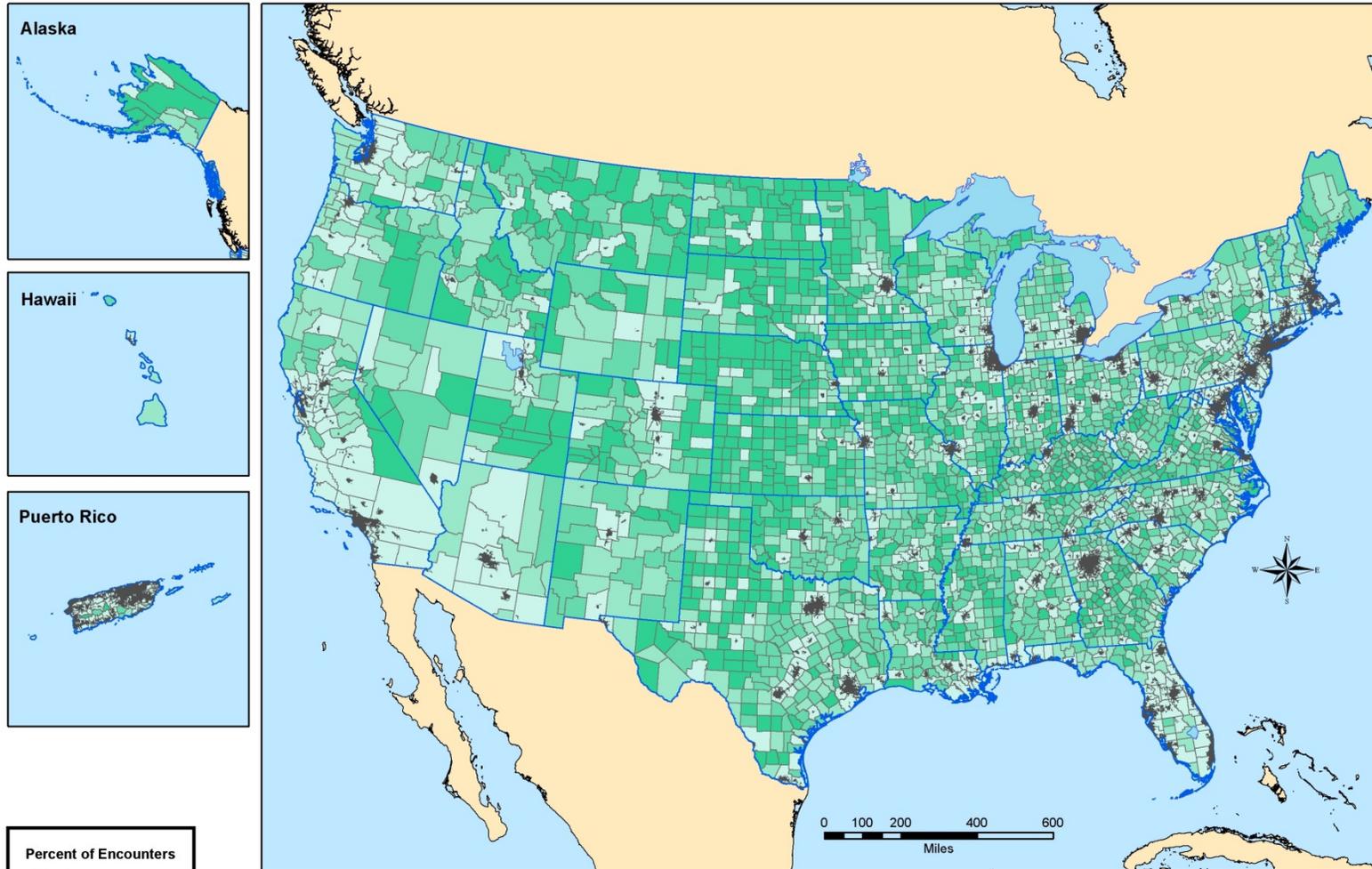
Map Created By: ORH RHRC-ER (DCR, LKW, JKA, ERL)
GeoSpatial Outcomes Division
(Map Creation Date: 7/8/2015)
Map Information by: PSSG, VSSC, ESRI
ArcGIS 10.2x

Posttraumatic Stress Disorder



Map 50:
Number of Rural and Highly Rural VHA Patients with PTSD Encounters
By County FY - 2014
Urban Areas "Shaded"

Posttraumatic Stress Disorder



Map 51:
Percent of Rural and Highly Rural VHA Patients with PTSD Encounters
Of All VHA Patient PTSD Encounters
By County FY - 2014
Urban Areas "Shaded"

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) Fulton JJ, Calhoun PS, Wagner HR, Schry AR, Hair LP, Feeling N, Elbogen E, Beckham JC. The prevalence of posttraumatic stress disorder in Operation Enduring Freedom/Operation Iraqi Freedom (OEF/OIF) Patients: A meta-analysis. *Journal of Anxiety Disorders*, Volume 31, April 2015, Pages 98–107.
- 3) Ramchand R, Rudavsky R, Grant S, Tanielian T, Jaycox L. Prevalence of, Risk Factors for, and Consequences of Posttraumatic Stress Disorder and Other Mental Health Problems in Military Populations Deployed to Iraq and Afghanistan. *Current Psychiatry Reports* April 2015, 17:37. <http://link.springer.com/article/10.1007/s11920-015-0575-z>
- 4) Enrollment Priority Groups, available at:
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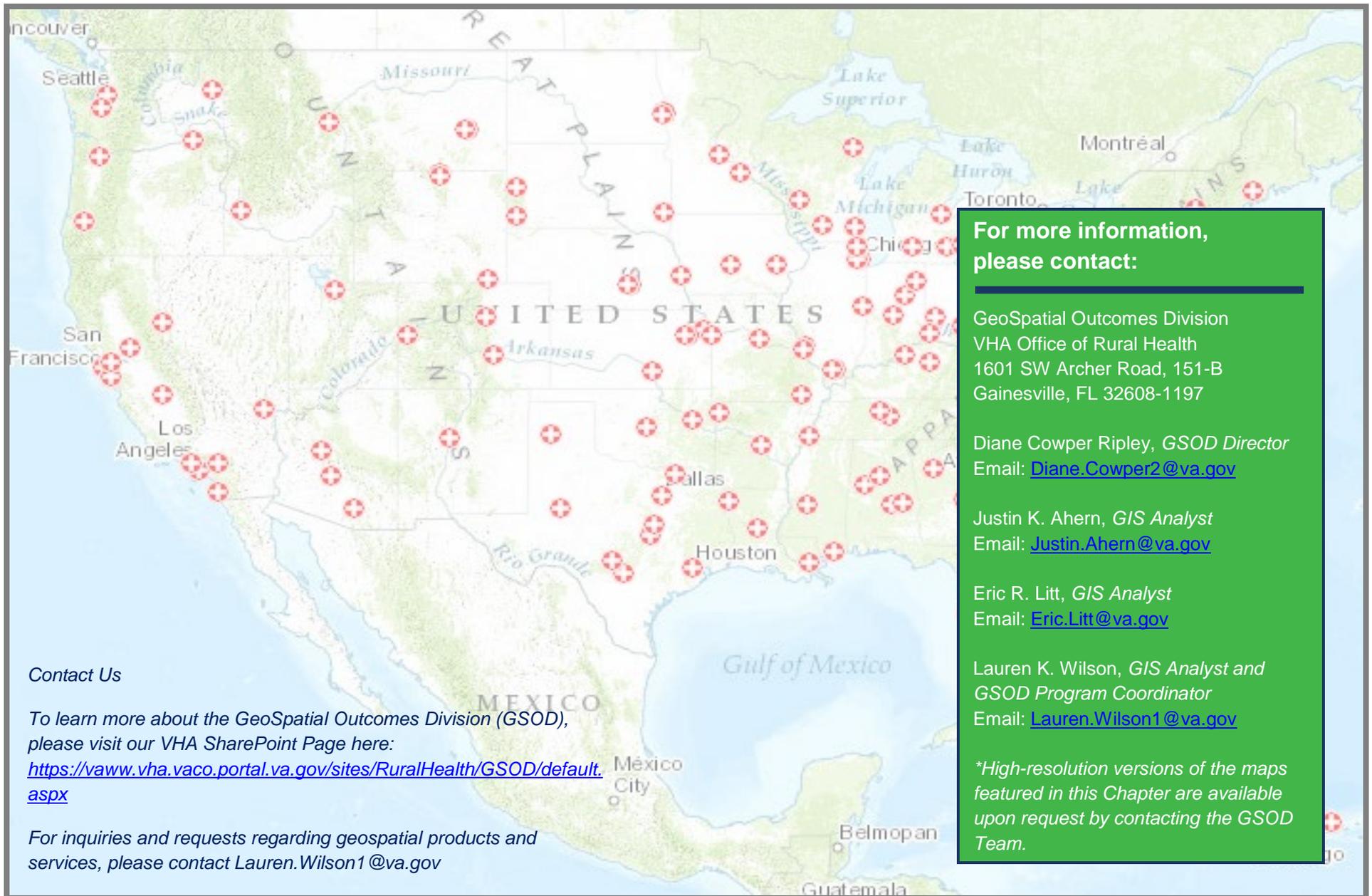
Project Team

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 Patients Rural Health Resource Center-Eastern Region's GeoSpatial Outcomes Division (GSOD). Her research has focused on Patients' 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 Patients.

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 Patients 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 Patients.



For more information, please contact:

GeoSpatial Outcomes Division
VHA Office of Rural Health
1601 SW Archer Road, 151-B
Gainesville, FL 32608-1197

Diane Cowper Ripley, *GSOD Director*
Email: Diane.Cowper2@va.gov

Justin K. Ahern, *GIS Analyst*
Email: Justin.Ahern@va.gov

Eric R. Litt, *GIS Analyst*
Email: Eric.Litt@va.gov

Lauren K. Wilson, *GIS Analyst and GSOD Program Coordinator*
Email: Lauren.Wilson1@va.gov

**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