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# Chronic Obstructive Pulmonary Disease

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



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## OVERVIEW

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

According to a canned report available in the Diagnosis Cube, Chronic Obstructive Pulmonary Disease (COPD) - specifically ICD-9-CM code 496. (representing only one of 38 COPD ICD-9-CM codes) - is listed as #16 of the Top 20 Diagnoses by Uniques (with 538,612 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, COPD diagnostic code 496. is still ranked high at #14 (with 234,382 unique patients), and when highly rural areas are queried from the selection, code 496. is ranked higher at #10 (with 8,784 unique patients). In addition, the Diagnosis Cube also reported a high frequency of occurrences of ICD-9-CM code 496. (positioned at #13, with 2,338,708 occurrences), and positioned even higher in rural areas (at #10, with 982,116 occurrences) and in highly rural areas (at #9 with 37,923 occurrences). This represents a need for analysis of health care access and delivery for the COPD cohort living in rural and highly rural areas. The GSOD team utilized scholarly and reliable web resources to confirm the 38 Diagnosis ICD-9-CM codes used to identify patients with COPD (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-2014
- **Diagnosis ICD9 Desc:** All, 490., 491.0, 491.1, 491.2, 491.20, 491.21, 491.22, 491.8, 491.9, 492.0, 492.8, 493.00, 493.01, 493.02, 493.10, 493.11, 493.12, 493.20, 493.21, 493.22, 493.81, 493.82, 493.90, 493.91, 493.92, 494.0, 494.1, 495.0, 495.1, 495.2, 495.3, 495.4, 495.5, 495.6, 495.7, 495.8, 495.9, 496.

## Chronic Obstructive Pulmonary Disease



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

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

- **Measures:** Frequency
- **DXDate Date:** FY 14
- **Diagnosis ICD9 Desc:** All, 490., 491.0, 491.1, 491.2, 491.20, 491.21, 491.22, 491.8, 491.9, 492.0, 492.8, 493.00, 493.01, 493.02, 493.10, 493.11, 493.12, 493.20, 493.21, 493.22, 493.81, 493.82, 493.90, 493.91, 493.92, 494.0, 494.1, 495.0, 495.1, 495.2, 495.3, 495.4, 495.5, 495.6, 495.7, 495.8, 495.9, 496.
- **Home County VISN:** V01, V02, V03, V04, V05, V06, V07, V08, V09, V10, V11, V12, V15, V16, V17, V18, V19, V20, V21, V22, V23
- **DiagnosisPosition:** Primary Diagnosis, Secondary Diagnosis
- **Rurality:** Highly Rural, Rural, Urban, Unknown
- **Source:** Outpatient Encounters

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

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

\*\*\*GSOD would like to acknowledge The Dartmouth Institute for Health Policy and Clinical Practice for producing the The Dartmouth Atlas of Health Care which collected the ICD-9 codes used for COPD. The qualifying diagnosis codes are available here: [http://www.dartmouthatlas.org/downloads/methods/Chronic\\_Disease\\_Codes.pdf](http://www.dartmouthatlas.org/downloads/methods/Chronic_Disease_Codes.pdf) and the research methods used in production of that atlas are available here: [http://www.dartmouthatlas.org/downloads/methods/research\\_methods.pdf](http://www.dartmouthatlas.org/downloads/methods/research_methods.pdf) GSOD would also like to acknowledge the The National Institute for Occupational Safety and Health (NIOSH), an established U.S. federal agency as part of the U.S. Centers of Disease Control and Prevention (CDC), for providing qualifying diagnosis codes, which are available here: <http://www.cdc.gov/niosh/pdfs/98-157-d.pdf>.

## Diagnostic Codes Used to Define Cohort (Chronic Obstructive Pulmonary Disease)

ICD-9 CM code	Description
490.	BRONCHITIS NOT OTHERWISE SPECIFIED
491.0	SIMPLE CHRONIC BRONCHITIS
491.1	MUCOPURULENT CHRONIC BRONCHITIS
491.2	OBSTRUCTIVE CHRONIC BRONCHITIS
491.20	OBSTRUCTIVE CHRONIC BRONCHITIS WITHOUT EXACERBATION
491.21	OBSTRUCTIVE CHRONIC BRONCHITIS WITH (ACUTE) EXACERBATION
491.22	OBSTRUCTIVE CHRONIC BRONCHITIS WITH ACUTE BRONCHITIS
491.8	OTHER CHRONIC BRONCHITIS
491.9	UNSPECIFIED CHRONIC BRONCHITIS
492.0	EMPHYSEMATOUS BLEB
492.8	OTHER EMPHYSEMA
493.00	EXTRINSIC ASTHMA, UNSPECIFIED
493.01	EXTRINSIC ASTHMA WITH STATUS ASTHMATICUS
493.02	EXTRINSIC ASTHMA WITH (ACUTE) EXACERBATION
493.10	INTRINSIC ASTHMA, UNSPECIFIED
493.11	INTRINSIC ASTHMA WITH STATUS ASTHMATICUS
493.12	INTRINSIC ASTHMA WITH (ACUTE) EXACERBATION
493.20	CHRONIC OBSTRUCTIVE ASTHMA, UNSPECIFIED CONVERT
493.21	CHRONIC OBSTRUCTIVE ASTHMA WITH STATUS ASTHMATICUS
493.22	CHRONIC OBSTRUCTIVE ASTHMA WITH (ACUTE) EXACERBATION
493.81	EXERCISE INDUCED BRONCHOSPASM
493.82	COUGH VARIANT ASTHMA

ICD-9 CM code	Description
493.90	ASTHMA, UNSPECIFIED TYPE, UNSPECIFIED
493.91	ASTHMA, UNSPECIFIED TYPE, WITH STATUS ASTHMATICUS
493.92	ASTHMA, UNSPECIFIED TYPE, WITH (ACUTE) EXACERBATION
494.0	BRONCHIECTASIS WITHOUT ACUTE EXACERBATION
494.1	BRONCHIECTASIS WITH ACUTE EXACERBATION
495.0	FARMERS' LUNG
495.1	BAGASSOSIS
495.2	BIRD-FANCIERS' LUNG
495.3	SUBEROSIS
495.4	MALT WORKERS' LUNG
495.5	MUSHROOM WORKERS' LUNG
495.6	MAPLE BARK-STRIPPERS' LUNG
495.7	"VENTILATION" PNEUMONITIS
495.8	OTHER SPECIFIED ALLERGIC ALVEOLITIS AND PNEUMONITIS
495.9	UNSPECIFIED ALLERGIC ALVEOLITIS AND PNEUMONITIS
496.	CHRONIC AIRWAY OBSTRUCTION, NOT ELSEWHERE CLASSIFIED

## Organization of Data Tables and Maps

The data tables and maps for Veterans with COPD are organized into four sections. The first section (Section I) focuses on the total numbers of VHA patients with COPD. 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 COPD, 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 COPD by VISN, FY-2014
- Map 2: Number of Patients with COPD by State, FY-2014
- Map 3: Number of Patients with COPD by County, FY-2014
- Map 4 - 7: Number of Patients with COPD by County, FY-2014 – Zoomed VISN views

Section II of the chapter focuses on the overall prevalence of COPD 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 COPD. Because the number of highly rural Veterans is so small, we combined the data for mapping purposes. For the maps, urban areas are shaded and urban patients are removed from the numerator and denominator. The following maps illustrate graphically the data on rural and highly rural VHA patients with COPD:

- Map 8: Number of Rural and Highly Rural Patients with COPD by VISN, FY-2014
- Map 9: Percent of Rural and Highly Rural Patients with COPD of Total Rural and Highly Rural Patients by VISN, FY-2014
- Map 10: Number of Rural and Highly Rural Patients with COPD by State, FY-2014
- Map 11: Percent of Rural and Highly Rural Patients with COPD of Total Rural and Highly Rural Patients by State, FY-2014
- Map 12: Number of Rural and Highly Rural Patients with COPD by County, FY-2014
- Map 13: Percent of Rural and Highly Rural Patients with COPD of Total Rural and Highly Rural Patients by County, FY-2014

- Maps 14, 16, 18, 20: Number of Rural and Highly Rural Patients with COPD by County, FY-2014 – Zoomed VISN views
- Map 15, 17, 19, 21: Percent of Rural and Highly Rural Patients with COPD 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 COPD by VISN, FY-2014
- Map 23: Percent of Rural and Highly Rural Female Patients with COPD of Total Rural and Highly Rural Female Patients by VISN, FY-2014
- Map 24: Number of Rural and Highly Rural Female Patients with COPD by State, FY-2014
- Map 25: Percent of Rural and Highly Rural Female Patients with COPD of Total Rural and Highly Rural Female Patients by State, FY-2014 \*\*\* **Note:** County level maps are not presented for this disease condition, as the number of VHA female patients with COPD is very small.

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

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

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

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

- Map 32: Number of Rural and Highly Rural Patients in Priority Group 1-3 with COPD by VISN, FY-2014
- Map 33: Percent of Rural and Highly Rural Patients with COPD in Priority Group 1-3 of Total Rural and Highly Rural Patients in Priority Group 1-3 by VISN, FY-2014
- Map 34: Number of Rural and Highly Rural Patients in Priority Group 1-3 with COPD by State, FY-2014
- Map 35: Percent of Rural and Highly Rural Patients in Priority Group 1-3 with COPD of Total Rural and Highly Rural Patients in Priority Group 1-3 by State, FY-2014
- Map 36: Number of Rural and Highly Rural Patients in Priority Group 1-3 with COPD by County, FY-2014
- Map 37: Percent of Rural and Highly Rural Patients in Priority Group 1-3 with COPD of Total Rural and Highly Rural Patients in Priority Group 1-3 by County, FY-2014
- Map 38: Number of Rural and Highly Rural Patients in Priority Group 5 with COPD by VISN, FY-2014
- Map 39: Percent of Rural and Highly Rural Patients with COPD in Priority Group 5 of Total Rural and Highly Rural Patients in Priority Group 5 by VISN, FY-2014
- Map 40: Number of Rural and Highly Rural Patients in Priority Group 5 with COPD by State, FY-2014
- Map 41: Percent of Rural and Highly Rural Patients in Priority Group 5 with COPD of Total Rural and Highly Rural Patients in Priority Group 5 by State, FY-2014
- Map 42: Number of Rural and Highly Rural Patients in Priority Group 5 with COPD by County, FY-2014
- Map 43: Percent of Rural and Highly Rural Patients in Priority Group 5 with COPD 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 COPD. Table 6 examines the outpatient encounters of patients with a **primary** diagnosis of COPD 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 COPD, also categorized by rurality. Table 7 and Table 9 provide information on the numbers and percentage of rural and highly rural COPD encounters of total COPD encounters for patients with a primary diagnosis of COPD (Table 7) and secondary diagnosis of COPD (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 COPD to capture the total workload (outpatient encounters) of this disease in rural and highly rural areas:

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

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

## Section I Highlights: VHA Patients with COPD

### National Overview

In Fiscal Year 2014, the Veterans Health Administration had 774,735 patients with the diagnosis code indicating a primary or secondary diagnosis of COPD (Table 1). This number represented approximately 12 percent (12.47%) of the total patient population during the fiscal year. As with most patients seen in the VHA, the majority of patients with COPD were male (92.91%); however, females represented about seven percent (7.09%). The age distribution of patients with COPD shows that 6.64% were under the age of 45, 8.24% were ages 45-54, 23.94% were ages 55-64, 34.82% were ages 65-74, and 26.36% were ages 75 or older.

We examined two groups of Veterans by their Enrollment Priority. Enrollment Priority Groups 1-3 were combined into one group, which includes Service-Connected Veterans rated by the VA from 10-100%. A second group, Enrollment Priority Group 5, was selected to represent non Service-Connected and noncompensable Service-Connected Veterans rated 0% disabled by VA with annual income and/or net worth below the VA National income threshold and geographically-adjusted income threshold for their resident location.<sup>2</sup> The table shows that about half of patients with COPD (47.26%) were Service-Connected injured Veterans enrolled in Priority Groups 1 – 3 and more than one-quarter (27.38%) were Priority 5 (low income).

### VISN Overview

At the time of this edition, the Veterans Health Administration consisted of 21 Veterans Integrated Service Networks. Examining data at the network level, the volume of patients with COPD ranged from a high of 72,603 individuals in the Sunshine Network (VISN 8, which serves Veterans in most of Florida, Puerto Rico, U.S. Virgin Islands, and a portion of Georgia) to a low of 14,748 individuals in the Capitol Network (VISN 5, which includes all of Washington D.C. and portions of Pennsylvania, Maryland, Virginia, and West Virginia). When examining the number of patients with COPD proportionally to all patients, the Heartland Network (VISN 15) had the highest proportion at 15.29% and the Desert Pacific Network (VISN 22) had the lowest proportion at 9.56%. The two VISNs with the highest ratio of females to males were in the Heart of Texas Network (VISN 17), where 10.49% of the patients with COPD were female, followed closely by

the Capitol Network (VISN 5) with 10.13%. Nationally, the 65-74 age group had the highest prevalence of patients with COPD to all VHA patients (34.82%); on the network level, the majority of VISNs had more than one-third of the VHA patient population in this age group diagnosed with COPD. All VISNs had nearly half of patients with COPD in the VHA enrolled as Service-Connected (Priority Groups 1-3), the Heart of Texas Network (VISN 17) leading at 56.95%. Map 1 shows the number of Veterans with COPD by quartile across the 21 VISNs.

### **State Overview**

Map 2 shows the number of VHA patients with COPD by State (by quartile). The top 10 States with the highest number of patients with COPD by rank order were Florida (N=66,937), Texas (N=54,322), California (N=48,986), Ohio (N=36,277), Pennsylvania (N=33,129), New York (N=32,806), North Carolina (N=26,274), Illinois (N=25,114), Michigan (N=22,642), and Missouri (N=22,632). The State with the highest percentage of patients with COPD was West Virginia (19.25%), followed by (in rank order): South Dakota (17.29%), Kentucky (16.72%), Missouri (16.48%), Wyoming (16.20%), Nevada (16.15%), Nebraska (16.14%), Ohio (16.04%), Oklahoma (15.94%) and Arkansas (15.69%). Thus, the States of Missouri and Ohio both showed a high number and a high proportion of patients with COPD.

### **County Overview**

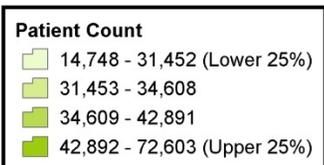
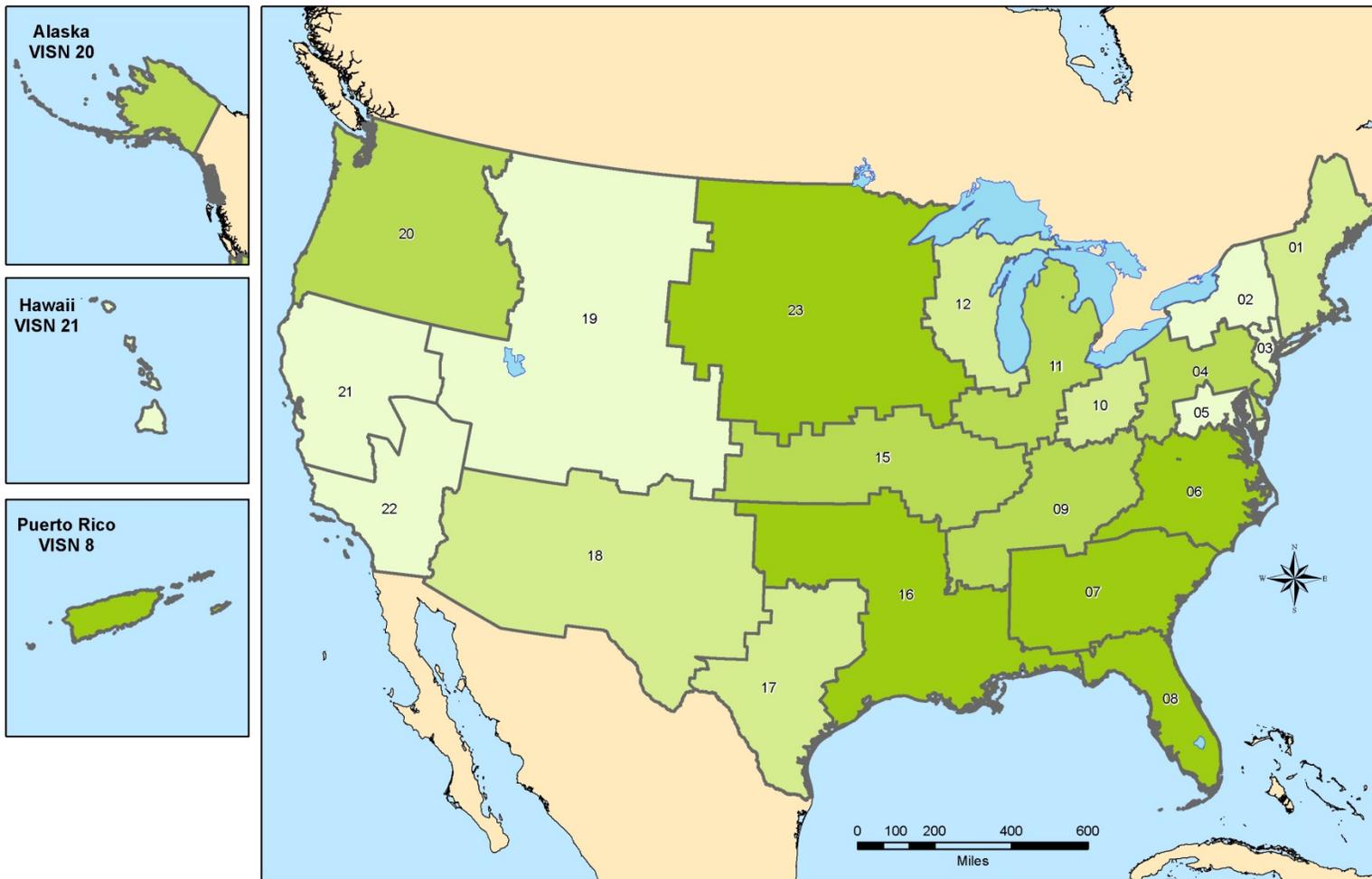
The number of patients with COPD by county is displayed by quartiles in Map 3. The highest 25% in terms of volume is designated by the darkest color. In addition to the National map, four additional maps are provided that zoom to the VISN level (Maps 4-7) to give a clearer picture of the number of patients with COPD and the geographic patterns within each VISN. The top 10 counties with the largest number of VHA patients with COPD across the U.S. were in the States of California (2 counties), Illinois (1 county), Arizona (1 county), Nevada (1 county), Texas (2 counties), and Florida (3 counties). Los Angeles County, California had the largest number of patients with COPD (N=7,798), followed by, in rank order: Cook County, Illinois (N=6,829), Maricopa County, Arizona (N=6,539), Clark County, Nevada (N=5,835), Harris County, Texas (N= 5,337), Pinellas County, Florida (N=5,169), San Diego County, California (N=4,828), Bexar County, Texas (N=4,662), Palm Beach County, Florida (N=4,617), and Hillsborough County, Florida (N=4,290).

# Chronic Obstructive Pulmonary Disease



**Table 1: National and VISN Numbers and Percentages of VHA Patients with Chronic Obstructive Pulmonary Disease (COPD), FY-2014**

Overall Prevalence Statistics- Chronic Obstructive Pulmonary Disease (COPD), FY-2014												
Veterans Integrated Service Network	Total Number of Patients	Patients with COPD		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	31,658	12.50	5.80	94.20	5.71	6.78	19.79	33.91	33.82	47.05	22.88
Upstate NY (02)	136,497	18,648	13.66	6.92	93.08	5.58	7.61	22.61	34.07	30.15	40.71	29.75
NY/NJ (03)	174,457	20,291	11.63	6.55	93.45	7.79	7.88	19.47	31.66	33.21	43.22	26.46
Stars and Stripes (04)	310,940	42,891	13.79	5.73	94.27	5.04	7.02	21.27	35.62	31.06	39.23	28.02
Capitol (05)	150,012	14,748	9.83	10.13	89.87	8.66	10.65	24.06	30.81	25.83	45.28	30.29
Mid-Atlantic (06)	359,692	43,737	12.16	8.88	91.12	7.84	9.52	24.80	34.95	22.90	52.17	26.12
Southeast (07)	408,164	46,710	11.44	9.30	90.70	7.97	10.21	26.57	34.04	21.22	53.49	26.06
Sunshine (08)	576,411	72,603	12.60	7.54	92.46	5.82	8.27	23.50	33.44	28.97	45.71	27.96
Mid South (09)	298,396	42,084	14.10	5.91	94.09	5.28	8.45	25.71	37.86	22.70	48.57	28.91
Ohio (10)	231,319	34,608	14.96	5.72	94.28	4.92	8.63	27.11	35.73	23.62	38.94	33.72
Vets in Partnership (11)	282,135	40,041	14.19	5.78	94.22	5.34	8.61	25.95	36.37	23.74	44.95	30.31
Great Lakes (12)	266,879	32,409	12.14	6.72	93.28	6.84	7.50	21.58	33.83	30.26	37.69	26.73
Heartland (15)	245,357	37,505	15.29	5.62	94.38	4.94	8.01	24.75	35.86	26.44	44.35	29.26
South Central (16)	502,681	66,205	13.17	6.88	93.12	6.57	7.76	25.98	36.05	23.65	49.59	28.36
Heart of Texas (17)	306,581	33,352	10.88	10.49	89.51	11.18	9.68	25.04	32.74	21.36	56.95	23.69
Southwest (18)	271,557	32,406	11.93	7.84	92.16	7.52	8.08	22.76	34.97	26.68	49.52	26.87
Rocky Mtn. (19)	202,350	24,300	12.01	7.42	92.58	7.97	7.89	23.65	34.19	26.29	49.13	25.32
Northwest (20)	288,322	34,638	12.01	7.69	92.31	7.45	8.33	25.22	36.31	22.69	51.30	27.00
Sierra Pacific (21)	293,645	30,380	10.35	6.80	93.20	6.85	7.29	23.40	35.95	26.52	48.15	28.31
Desert Pacific (22)	328,951	31,452	9.56	8.02	91.98	9.49	9.01	24.52	33.94	23.05	47.84	29.11
Midwest (23)	324,728	44,069	13.57	4.82	95.18	4.45	6.51	20.38	34.26	34.41	50.77	21.11
<b>Grand Total</b>	<b>6,212,400</b>	<b>774,735</b>	<b>12.47</b>	<b>7.09</b>	<b>92.91</b>	<b>6.64</b>	<b>8.24</b>	<b>23.94</b>	<b>34.82</b>	<b>26.36</b>	<b>47.26</b>	<b>27.38</b>

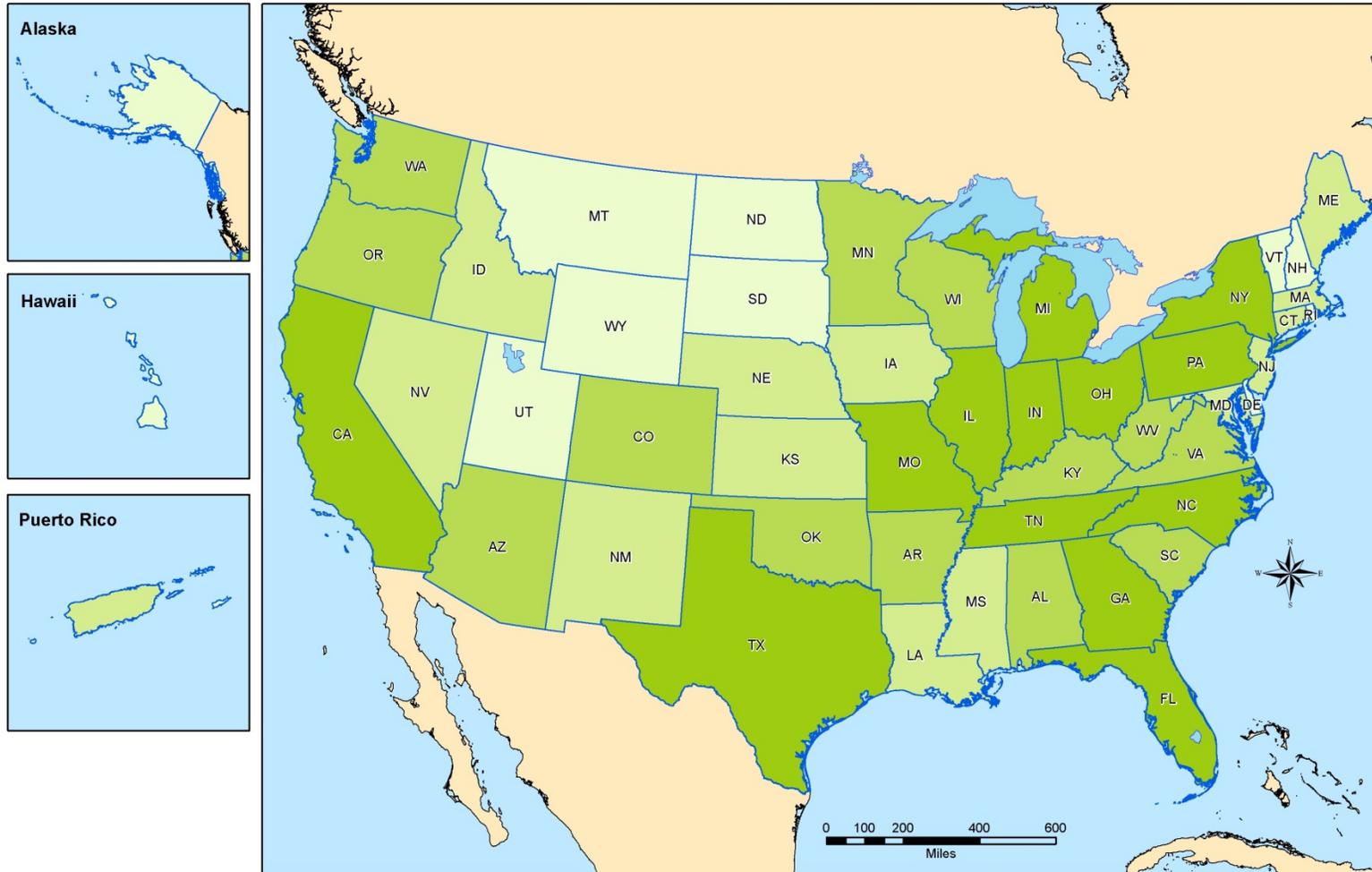


Map 1:  
Number of VHA Patients with COPD  
By VISN FY - 2014



Map Created By: ORH RHRC-ER (DCR, LKW, JKA, ERL)  
GeoSpatial Outcomes Division  
(Map Creation Date: 8/18/2015)  
Map Information by: PSSG, VSSC, ESRI  
ArcGIS 10.2x

# Chronic Obstructive Pulmonary Disease

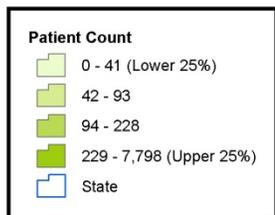
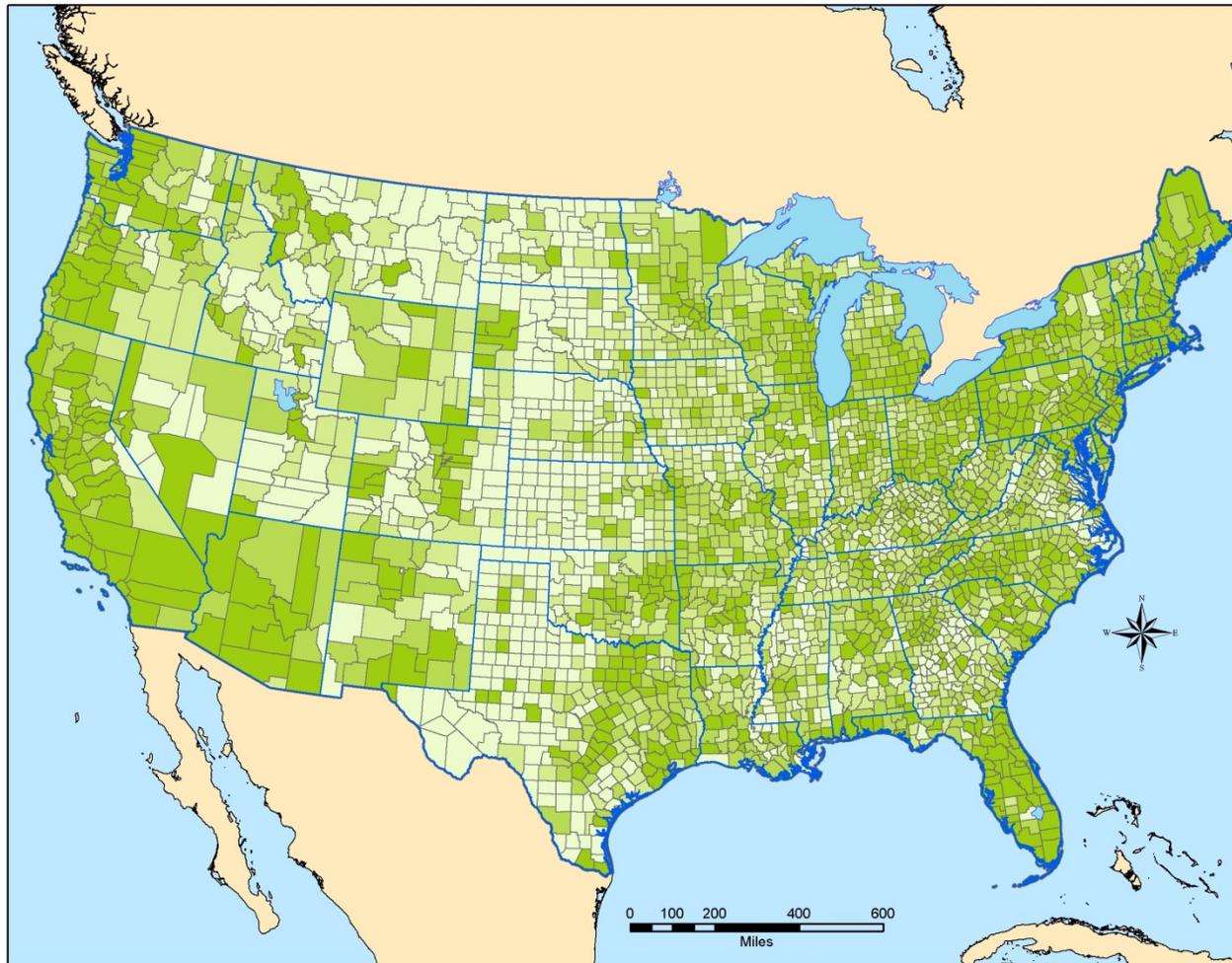


Patient Count	
<span style="display:inline-block; width:15px; height:10px; background-color:#fff9c4; border:1px solid black;"></span>	129 - 5,102 (Lower 25%)
<span style="display:inline-block; width:15px; height:10px; background-color:#e6f5d0; border:1px solid black;"></span>	5,103 - 11,123
<span style="display:inline-block; width:15px; height:10px; background-color:#c7e9c0; border:1px solid black;"></span>	11,124 - 17,992
<span style="display:inline-block; width:15px; height:10px; background-color:#a1d99b; border:1px solid black;"></span>	17,993 - 66,937 (Upper 25%)

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

GeoSpatial Outcomes Division  
VHA Office of Rural Health

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GeoSpatial Outcomes Division  
(Map Creation Date: 8/18/2015)  
Map Information by: PSSG, VSSC, ESRI  
ArcGIS 10.2x

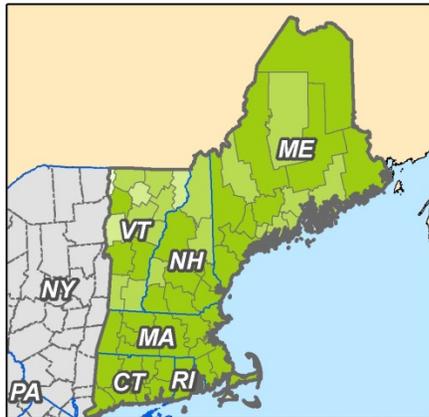


Map 3:  
Number of VHA Patients with COPD  
By County FY - 2014

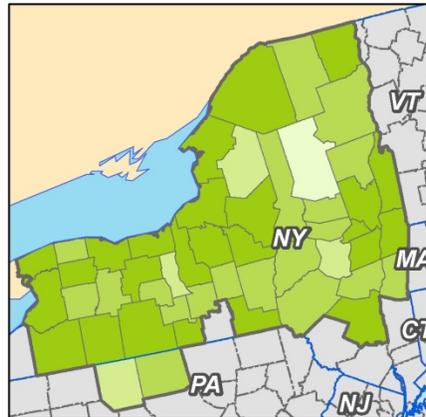


Map Created By: ORH RHRC-ER (DCR, LKW, JKA, ERL)  
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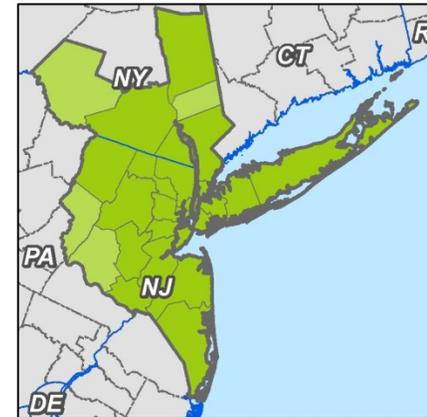
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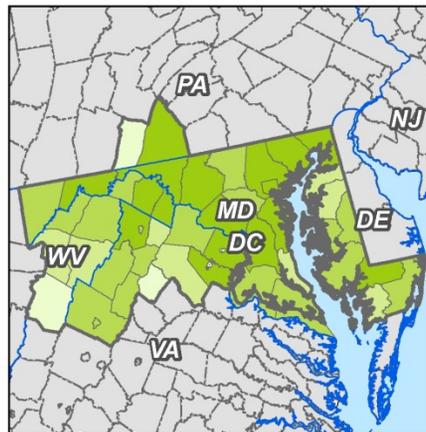
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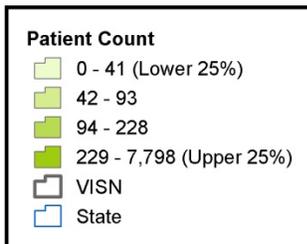
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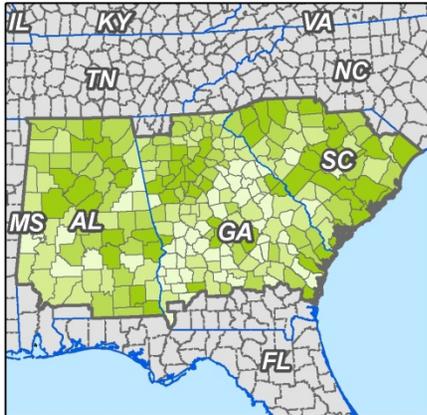
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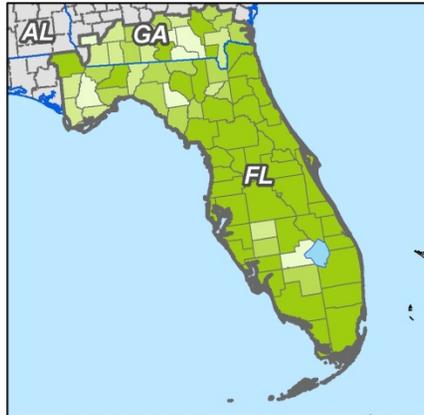
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Map 4:  
Number of VHA Patients with COPD by County, FY - 2014



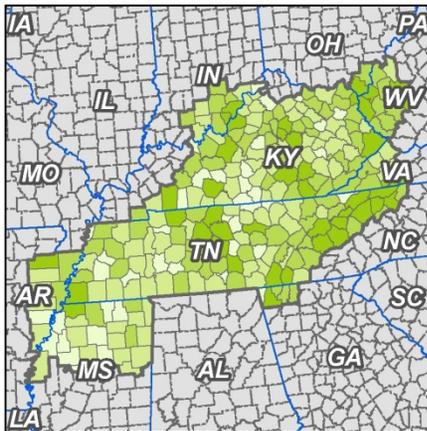
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VISN 8



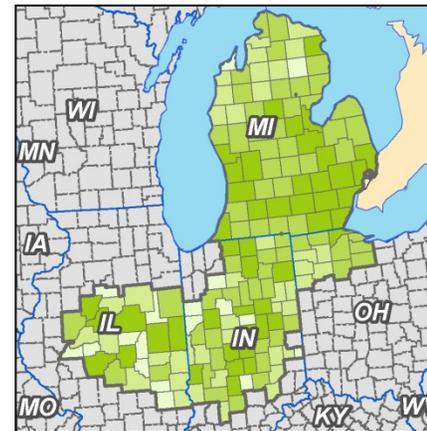
VISN 8 Puerto Rico & Virgin Islands



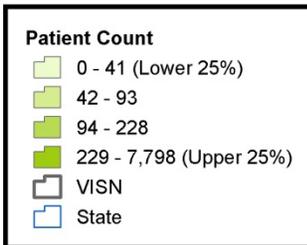
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VISN 10



VISN 11

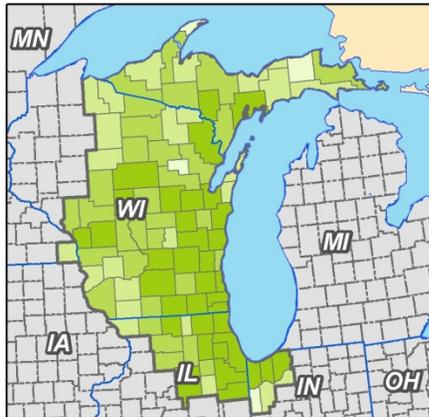


Map 5:  
Number of VHA Patients  
with COPD  
By County FY - 2014

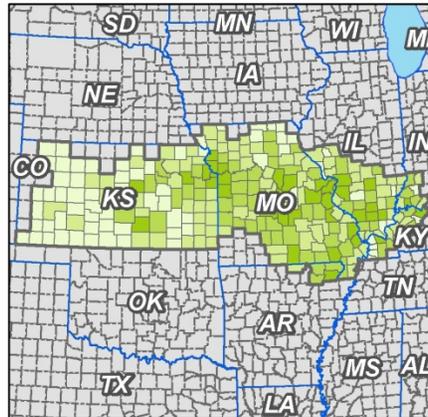


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# Chronic Obstructive Pulmonary Disease



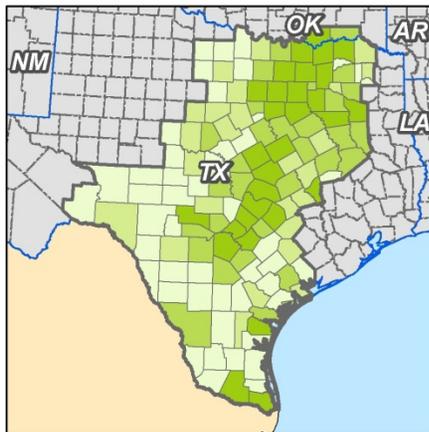
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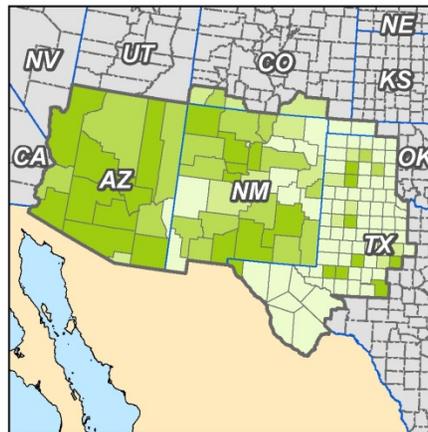
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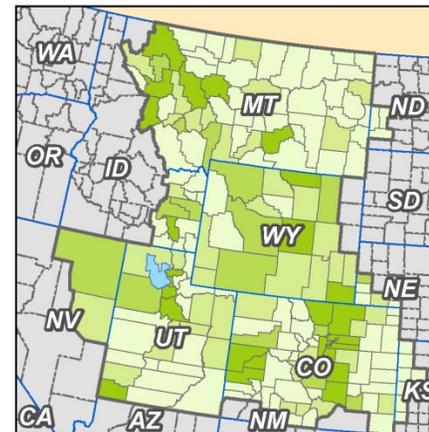
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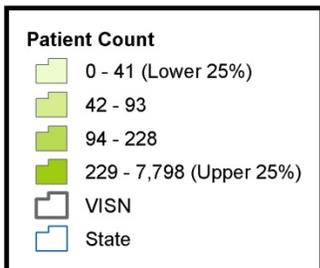
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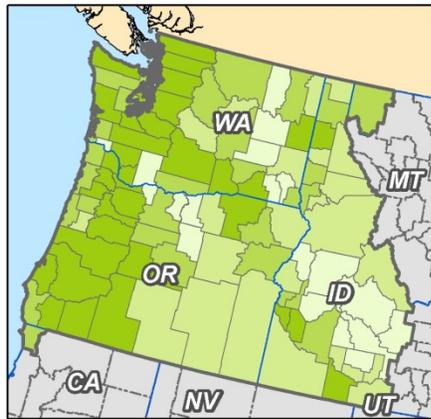
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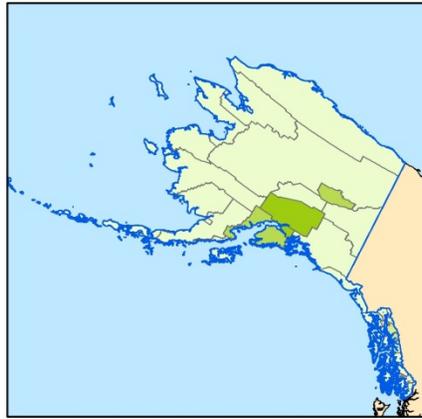
VISN 19



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



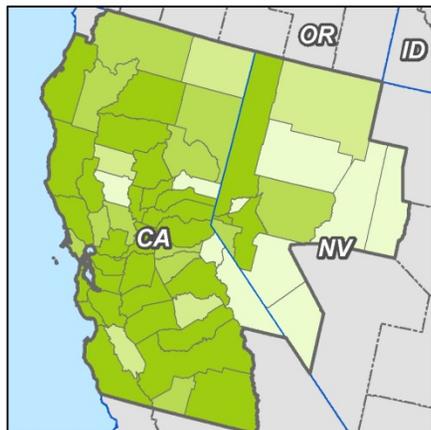
VISN 20



VISN 20- Alaska



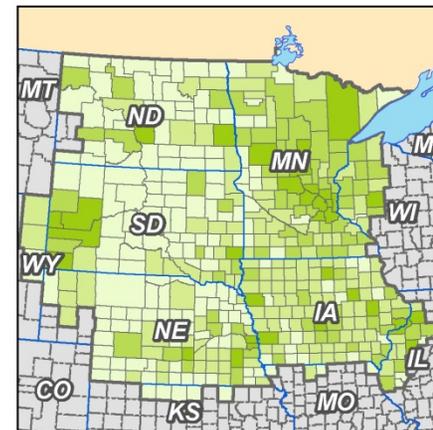
VISN 21- Hawaii



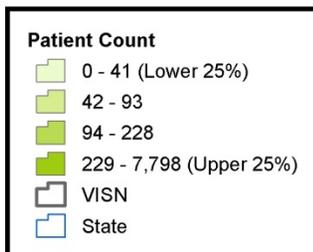
VISN 21



VISN 22



VISN 23



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



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Map Information by: PSSG, VSSC, ESRI  
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## Section II Highlights: Rural and Highly Rural VHA Patients with COPD

This section focuses on the overall prevalence of COPD in each Veterans Integrated Service Network, broken down by the following rurality categories: *highly rural*, *rural*, *urban*, and *unknown*. Beginning with Fiscal Year 2011, the repository from where these data were extracted obtained the rural designation data from the most recent geocoded rurality table provided by VHA's Planning System Support Group (PSSG). If not available from this source, the repository's algorithm then looks to the Office of Rural Health's (ORH) ZIP-based file located on the ORH website.<sup>1</sup> 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 COPD. For this section, both the number and the percentages of rural and highly rural patients with COPD at the VISN, State, and county levels are mapped.

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

## National Overview

In FY-2014, 774,735 VHA patients had a primary or secondary diagnosis of COPD. The majority of patients with COPD lived in urban areas (58.02%). However, nearly half resided in either rural (N=313,139) or highly rural (N=11,784) areas (41.9% combined).

## VISN Overview

The Rocky Mountain Network (VISN 19) had the highest number of patients with COPD residing in a defined *highly rural* area at 3,424, which represented 14.09% of the total number of patients with COPD in that network (Table 2). The South Central Network (VISN 16) had the highest number of patients with COPD residing in a defined *rural* area at 35,492 which represented 53.61% of the total number of patients with COPD in that network. Six of the 21 VISNs had a higher proportion of *rural* patients than *urban* patients with COPD: Upstate New York Network (VISN 2), Mid-Atlantic Network (VISN 6), Mid South Network (VISN 9), Heartland Network (VISN 15), South Central Network (VISN 16), and Midwest Network (VISN 23).

Map 8 and Map 9 show the number and percentages of rural and highly rural patient with COPD by VISN. VISNs 9 and 15 showed both a high volume of rural and highly rural patients with COPD and a large proportion of their rural and highly rural patient population who had this disorder. VISNs 7 and 20 had a relatively large number of patients with COPD, but the proportion of rural and highly rural patients with COPD represented a low to moderate percentage of the total rural and highly rural patient population. Conversely, VISNs 2 and 5 had a low to moderate number of combined rural and highly rural patients with COPD, but this disorder was quite prevalent in the rural and highly rural patient population.

## State Overview

Map 10 shows the number of VHA rural and highly rural patients with COPD by State (by quartile). The top 10 States with the highest number of rural and highly rural patients with COPD by rank order were: Texas (N=20,852), Ohio (N=15,017), North Carolina (N=13,632), Florida (N=13,492), Missouri (N=13,324), Pennsylvania (N=12,830), New York (N=11,484), Kentucky (N=11,254), Michigan (N=11,006), and Georgia (N=10,190). The proportion of rural and highly rural patients with COPD to the total rural and highly rural patient population is displayed in Map 11. The States with the highest percentage of their rural and highly rural patients (and more than 10 patients classified as rural or highly rural) that had COPD are: West Virginia (20.22%), Kentucky (18.54%), Nevada (18.47%), Oklahoma (17.77%), Missouri (17.64%), South Dakota (17.55%), Ohio (17.5%), Arkansas (16.83%), Michigan (16.82%), and Nebraska (16.78%).

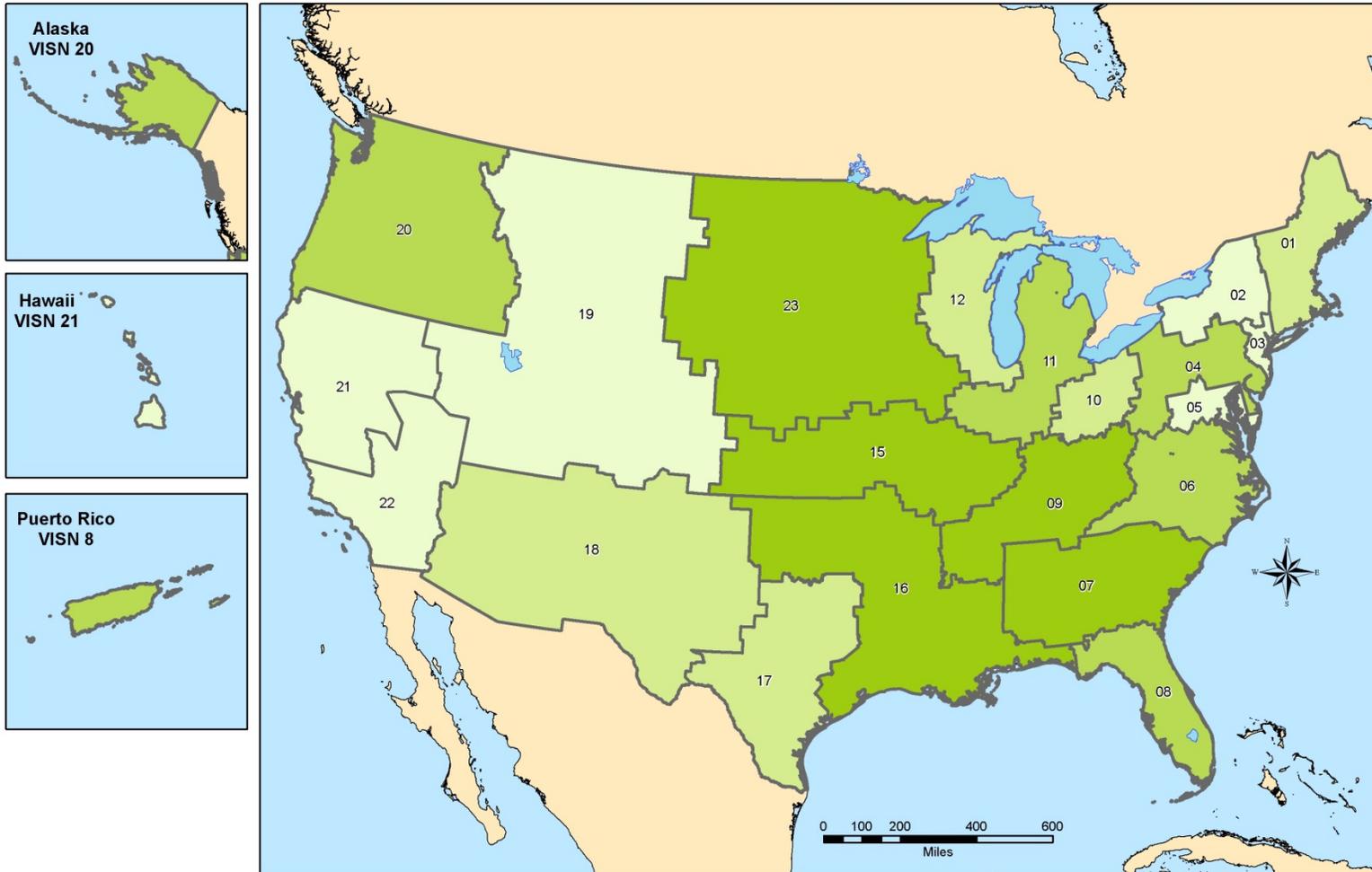
## County Overview

The number of rural and highly rural patients with COPD by county is displayed by quartiles in Map 12, with the highest 25% in terms of volume designated by the darkest shade. The proportion of rural and highly rural patients with COPD of the total rural and highly rural patient population is portrayed in Map 13, with the highest 25% in terms of proportion designated in the darkest shade. In addition to the National map, eight additional maps are provided that zoom to the VISN level (Maps 14-21) to give a clearer picture of the number and percentages of rural and highly rural patients with COPD 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 COPD across the U.S. were in the States of Oregon (1 county), Arizona (3 counties), Florida (2 counties), Maine (1 county), California (1 county), New York (1 county), and Ohio (1 county). Douglas County, Oregon had the largest number of rural and highly rural patients with COPD (N=1,296) followed by, in rank order: Yavapai County, Arizona (N=1,104), Marion County, Florida (N=1,095), Mohave County, Arizona (N=999), Columbia County, Florida (N=937), Pima County, Arizona (N=890), Kennebec County, Maine (N=814), San Bernardino County, California (N=790), Chautauqua County, New York (N=747), and Ross County, Ohio (N=731). 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 COPD diagnostic code were Blaine County, Nebraska (43.75%), Union County, New Jersey (40.0%), Kiowa County, Colorado (38.1%), Briscoe County, Texas (34.04%), Poquoson city, Virginia (33.33%), Shannon County, Missouri (32.9%), Logan County, North Dakota (32.26%), Webster County, West Virginia (30.59%), Oldham County, Texas (30.56%), and Greeley County, Kansas (30.0%).

Table 2: National and VISN Numbers and Percentages of VHA Patients with Chronic Obstructive Pulmonary Disease (COPD) by Rurality, FY-2014

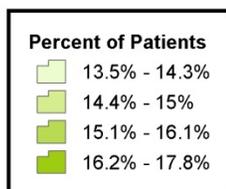
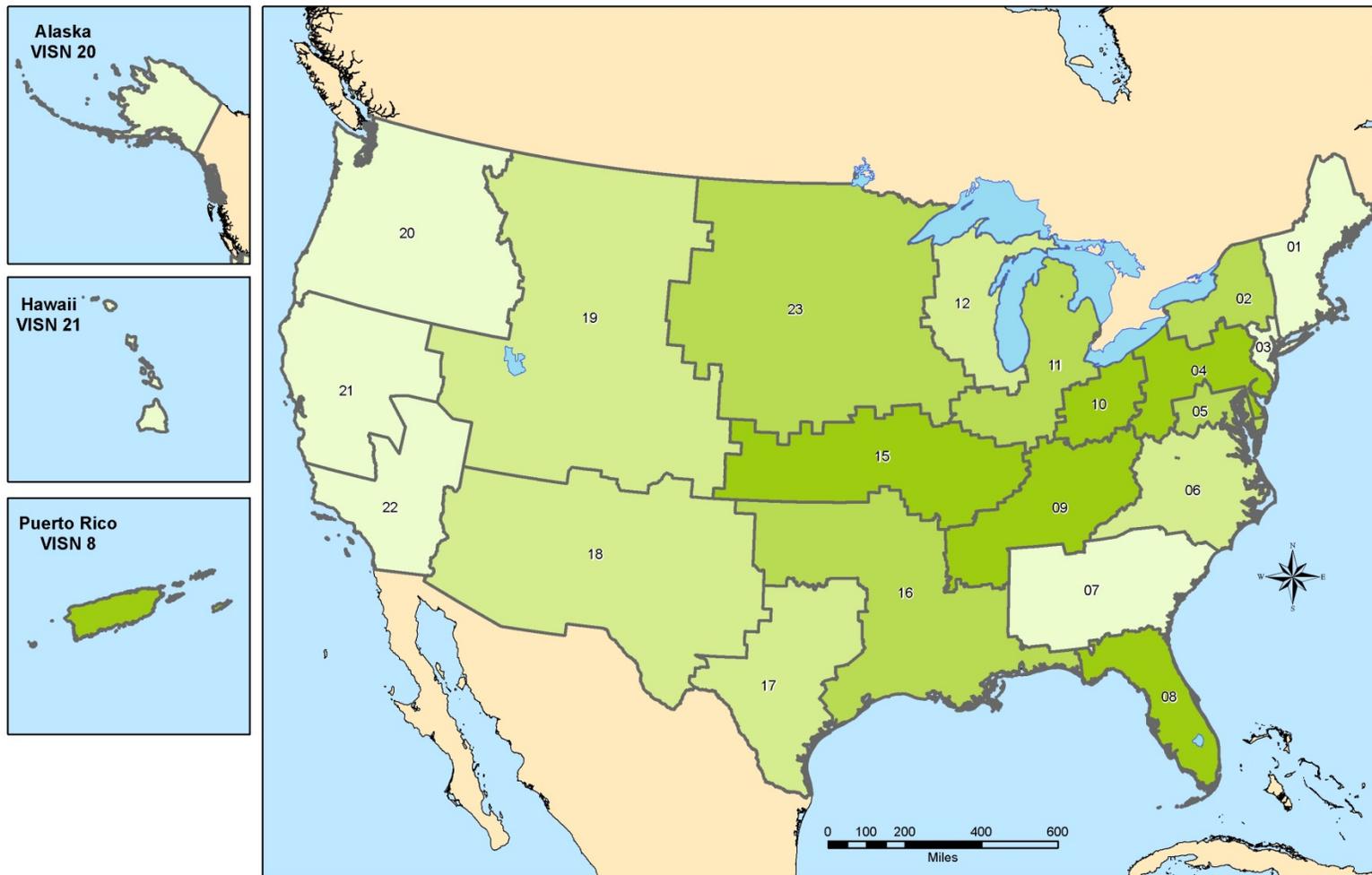
Prevalence Statistics by Rurality- Chronic Obstructive Pulmonary Disease (COPD) , FY-2014									
Veterans Integrated Service Network	Total Number of Patients with COPD	Highly Rural		Rural		Urban		Unknown	
		N	(%)	N	(%)	N	(%)	N	(%)
New England (01)	31,658	143	0.45	11,278	35.62	20,234	63.91	3	0.01
Upstate NY (02)	18,648	10	0.05	9,944	53.32	8,696	46.63	*	*
NY/NJ (03)	20,291	*	*	1,466	7.22	18,825	92.78	*	*
Stars and Stripes (04)	42,891	4	0.01	18,511	43.16	24,377	56.83	5	0.01
Capitol (05)	14,748	*	*	4,411	29.91	10,332	70.06	6	0.04
Mid-Atlantic (06)	43,737	9	0.02	22,142	50.63	21,587	49.36	3	0.01
Southeast (07)	46,710	*	*	22,176	47.48	24,534	52.52	*	*
Sunshine (08)	72,603	12	0.02	14,765	20.34	57,821	79.64	9	0.01
Mid South (09)	42,084	6	0.01	25,656	60.96	16,425	39.03	4	0.01
Ohio (10)	34,608	7	0.02	13,739	39.70	20,861	60.28	3	0.01
Vets in Partnership (11)	40,041	7	0.02	18,524	46.26	21,505	53.71	7	0.02
Great Lakes (12)	32,409	92	0.28	11,470	35.39	20,836	64.29	14	0.04
Heartland (15)	37,505	342	0.91	22,578	60.20	14,580	38.87	6	0.02
South Central (16)	66,205	109	0.16	35,492	53.61	30,592	46.21	14	0.02
Heart of Texas (17)	33,352	194	0.58	13,122	39.34	20,027	60.05	11	0.03
Southwest (18)	32,406	1,573	4.85	10,238	31.59	20,551	63.42	45	0.14
Rocky Mtn. (19)	24,300	3,424	14.09	7,114	29.28	13,754	56.60	10	0.04
Northwest (20)	34,638	1,891	5.46	13,180	38.05	19,564	56.48	6	0.02
Sierra Pacific (21)	30,380	633	2.08	8,823	29.04	20,732	68.24	192	0.63
Desert Pacific (22)	31,452	621	1.97	2,861	9.10	27,963	88.91	8	0.03
Midwest (23)	44,069	2,703	6.13	25,649	58.20	15,716	35.66	5	0.01
<b>Grand Total</b>	<b>774,735</b>	<b>11,784</b>	<b>1.52</b>	<b>313,139</b>	<b>40.42</b>	<b>449,512</b>	<b>58.02</b>	<b>352</b>	<b>0.05</b>

# Chronic Obstructive Pulmonary Disease



Patient Count	
Lightest Green	1,467 - 10,538 (Lower 25%)
Light Green	10,539 - 13,746
Medium Green	13,747 - 22,151
Dark Green	22,152 - 35,601 (Upper 25%)

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

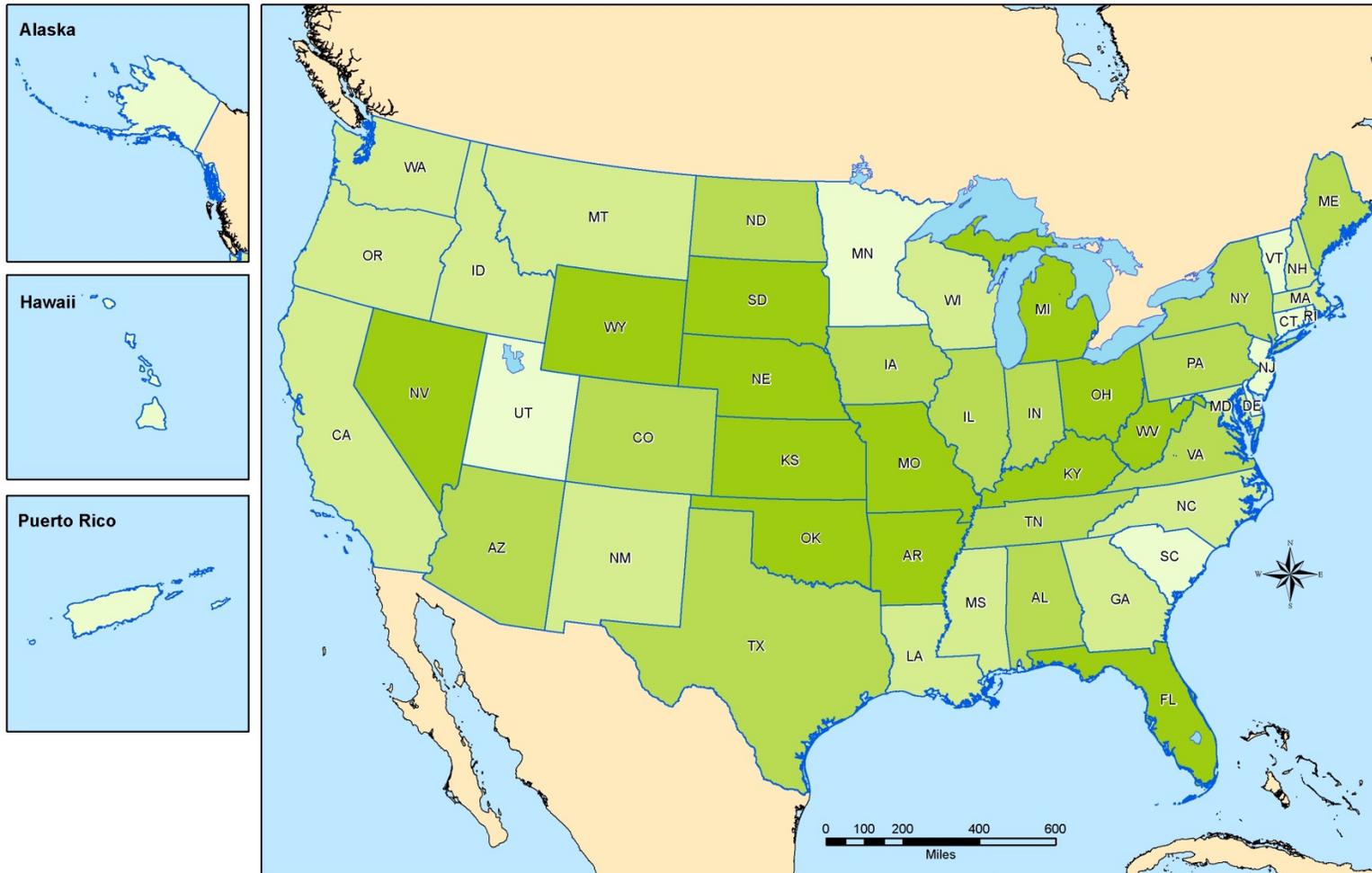


Map 9:  
Percent of Rural and Highly Rural VHA Patients  
with COPD  
Of All Rural and Highly Rural VHA Patients  
By VISN FY - 2014



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GeoSpatial Outcomes Division  
(Map Creation Date: 8/18/2015)  
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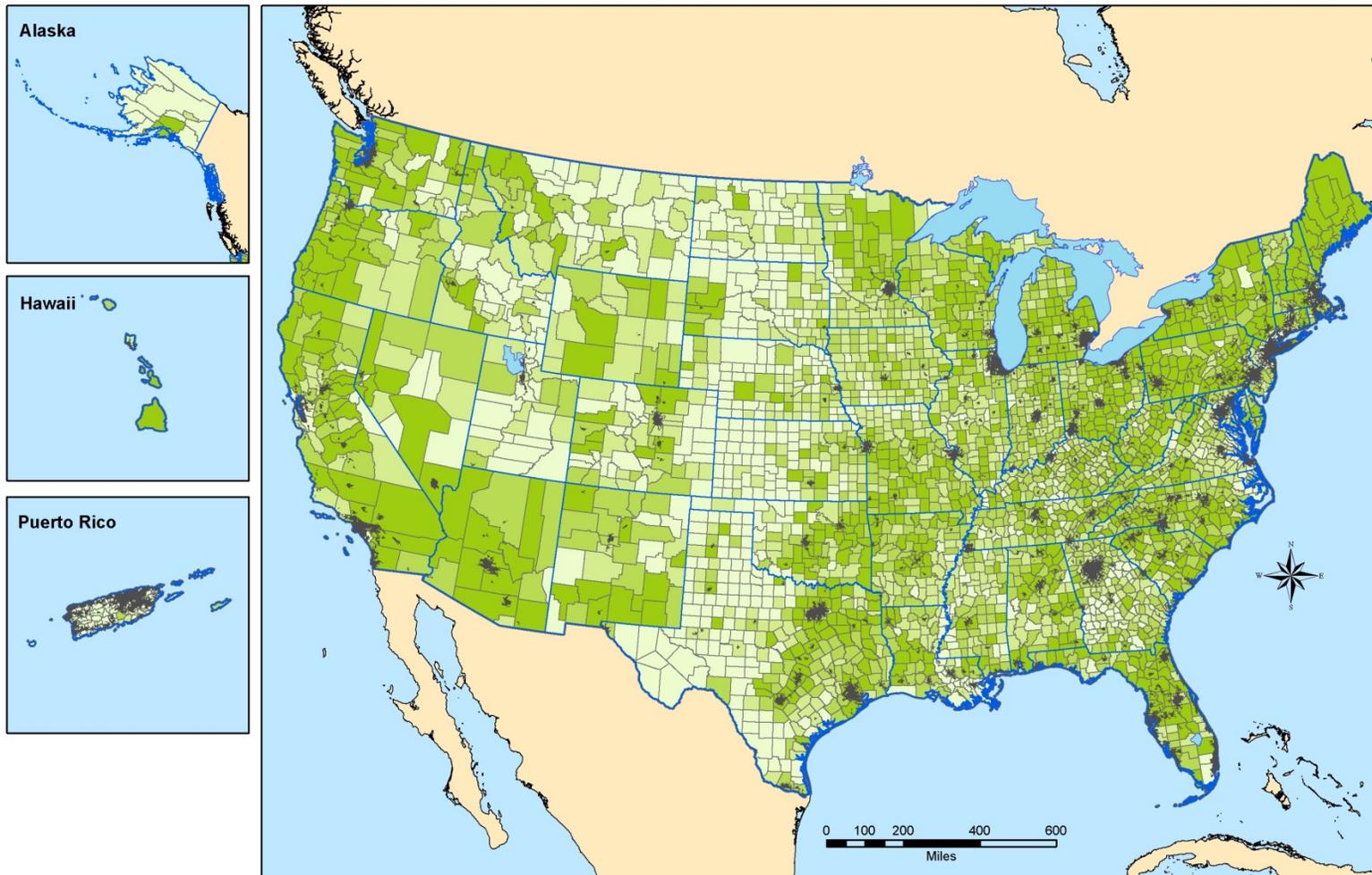




Map 11:  
Percent of Rural and Highly Rural VHA Patients  
with COPD  
Of All Rural and Highly Rural Patients  
By State FY - 2014

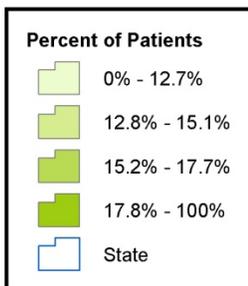
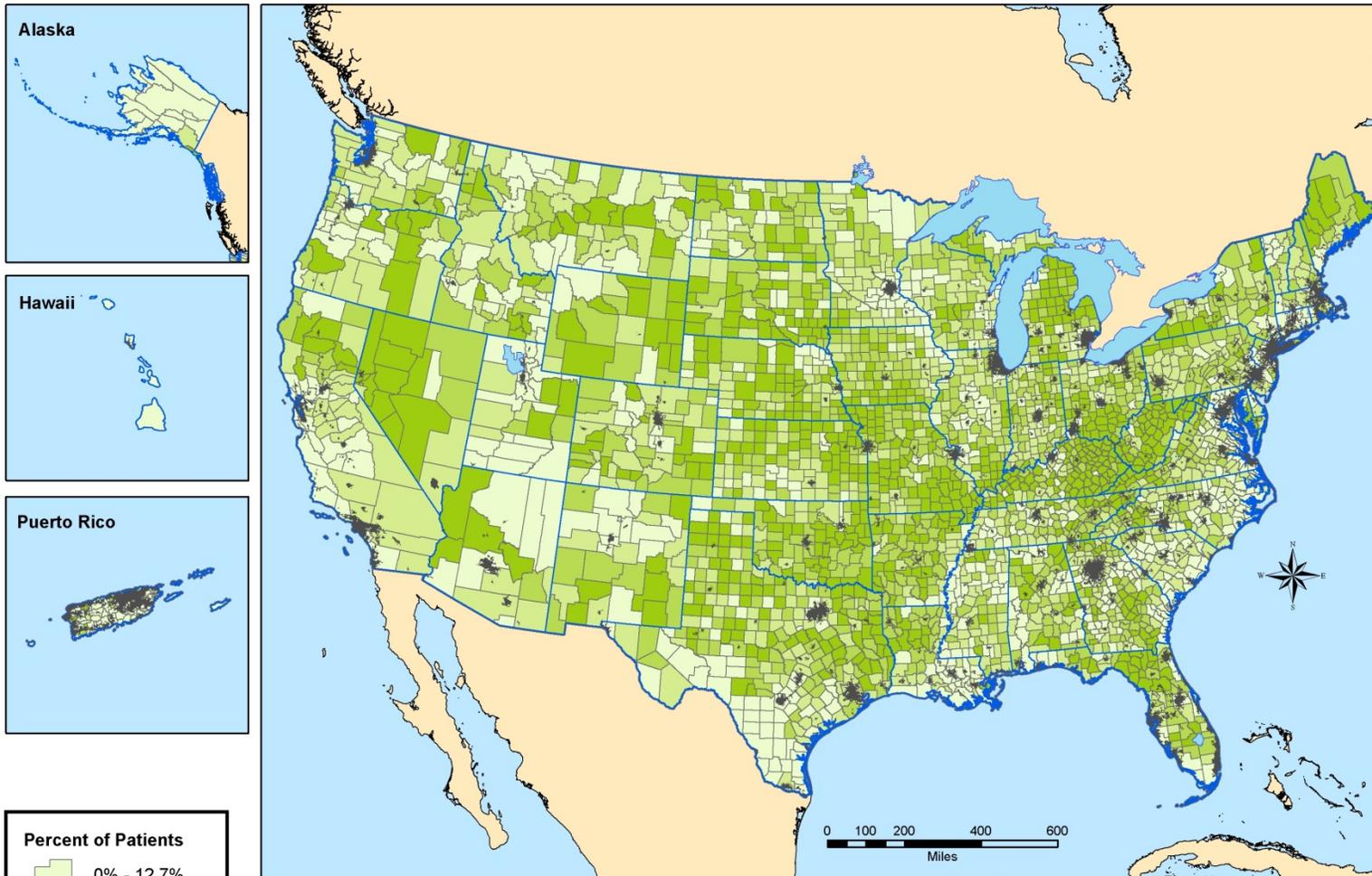
  
GeoSpatial  
Outcomes Division  
VHA Office of Rural Health  
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GeoSpatial Outcomes Division  
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ArcGIS 10.2x

# Chronic Obstructive Pulmonary Disease



Patient Count	
	0 - 32 (Lower 25%)
	33 - 71
	72 - 137
	138 - 1,296 (Upper 25%)
	State

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

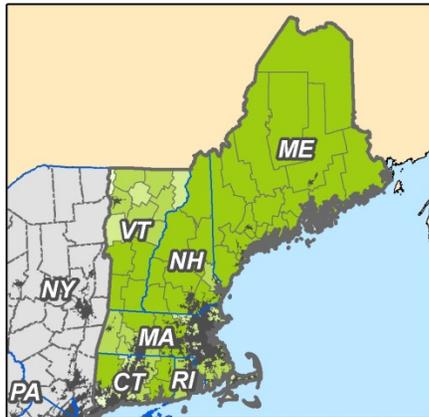


Map 13:  
Percent of Rural and Highly Rural VHA Patients  
with COPD  
Of All Rural and Highly Rural Patients  
By County FY - 2014  
Urban Areas "Shaded"

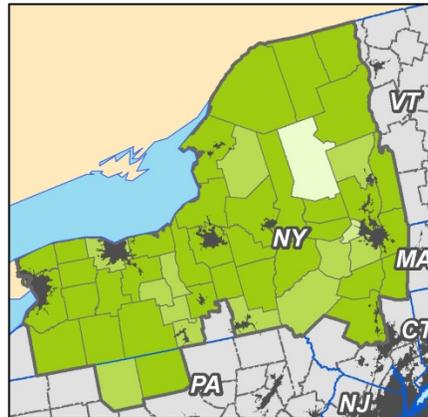


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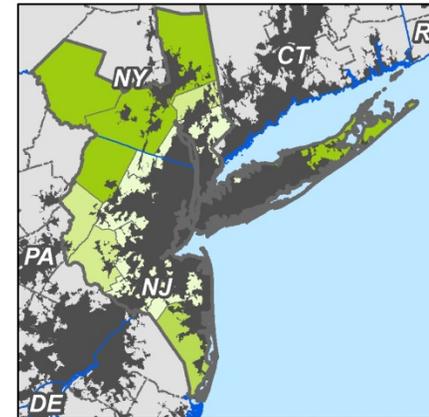
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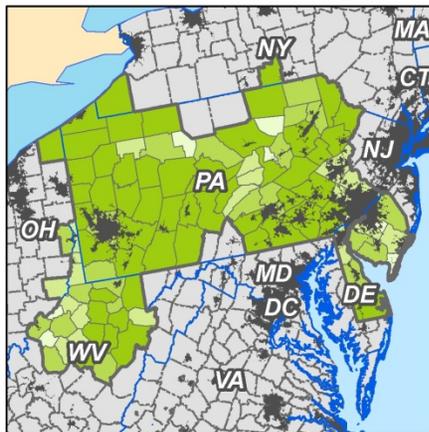
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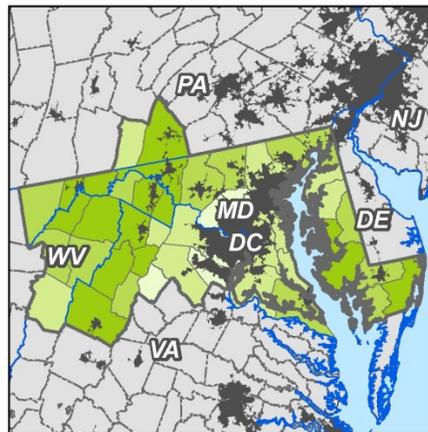
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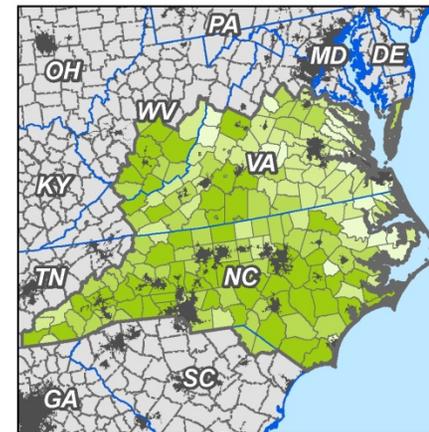
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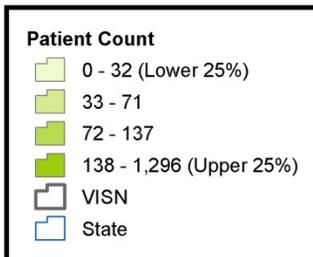
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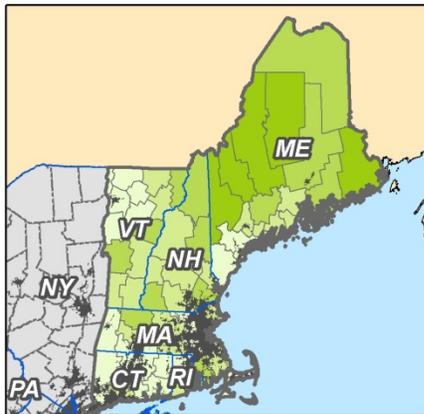
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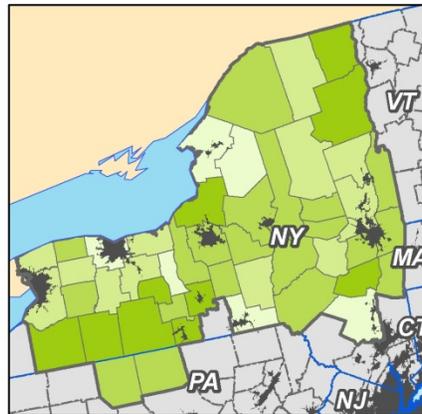
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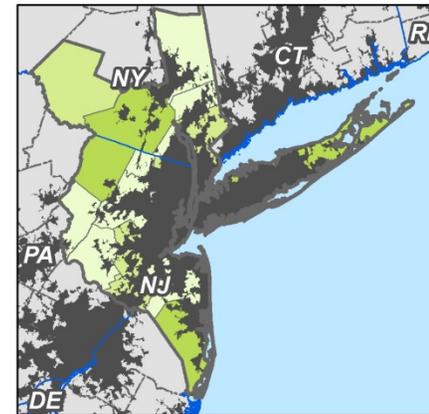
Map 14:  
Number of Rural and Highly Rural VHA Patients with COPD By County FY - 2014  
Urban Areas "Shaded"



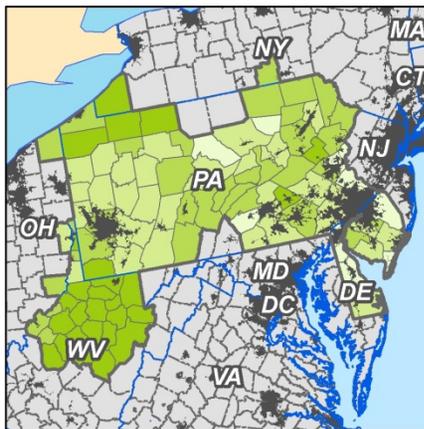
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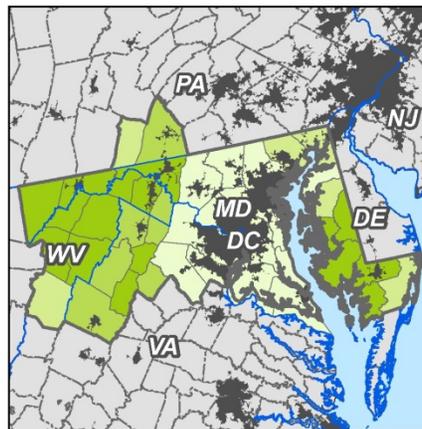
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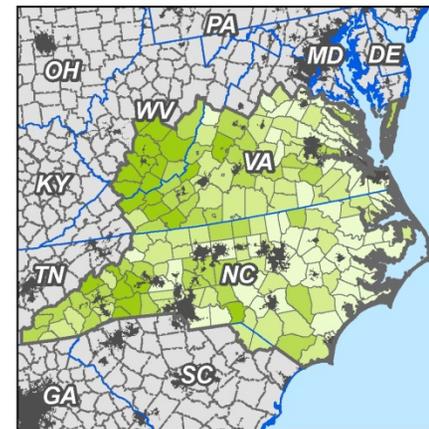
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VISN 4



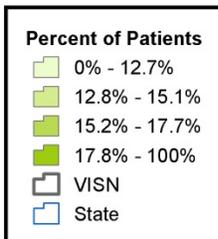
VISN 5



VISN 6

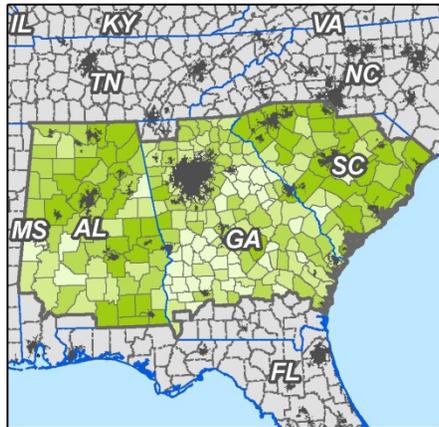
Map 15:

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

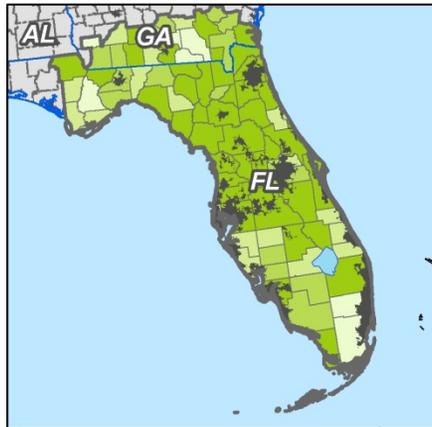


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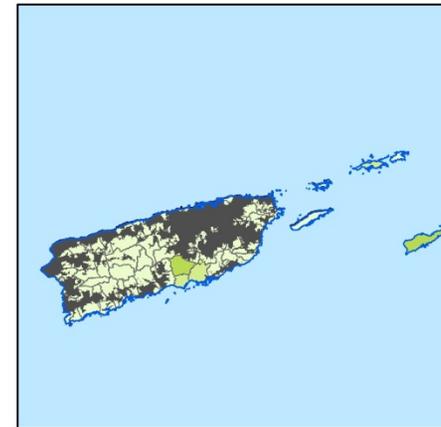
# Chronic Obstructive Pulmonary Disease



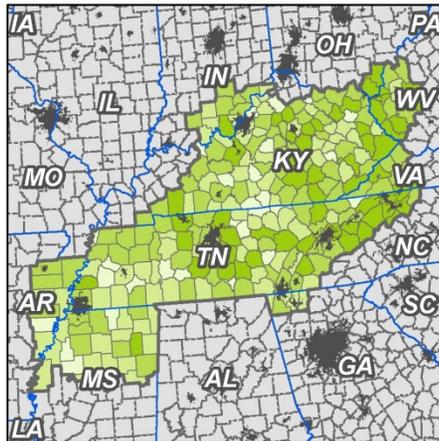
VISN 7



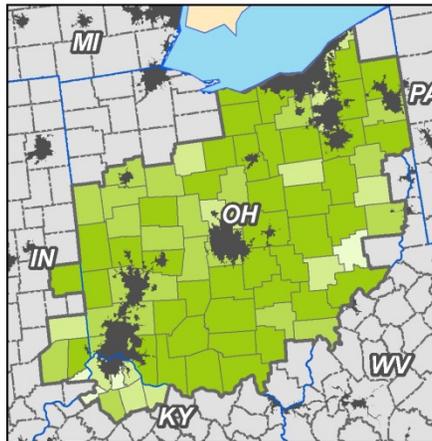
VISN 8



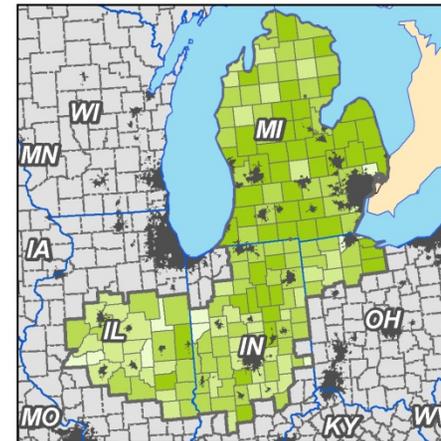
VISN 8 Puerto Rico & Virgin Islands



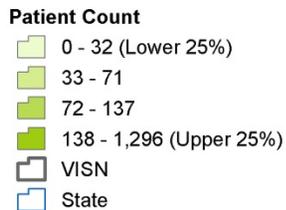
VISN 9



VISN 10

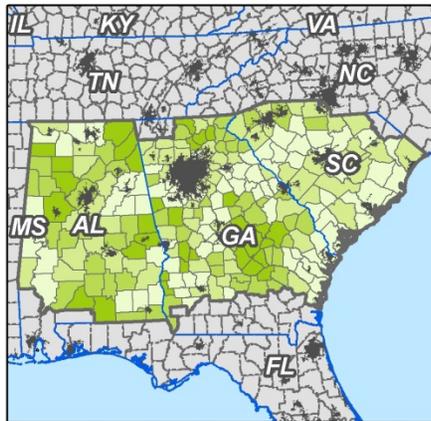


VISN 11



Map 16:

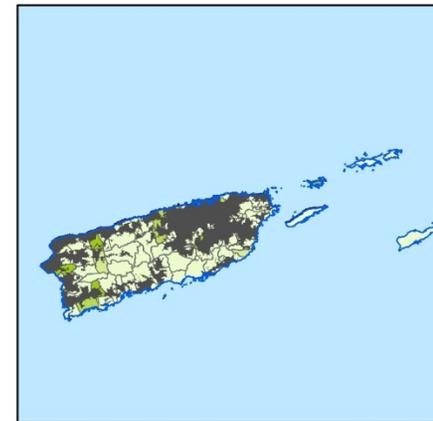
Number of Rural and Highly Rural VHA Patients with COPD  
By County FY - 2014  
Urban Areas "Shaded"



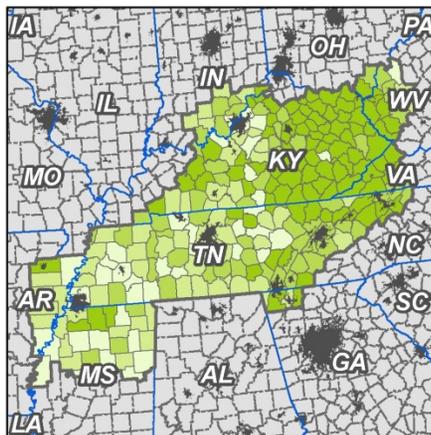
VISN 7



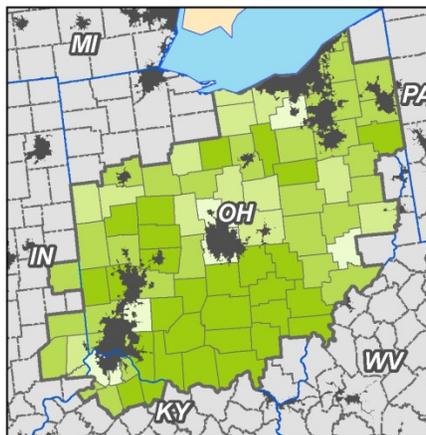
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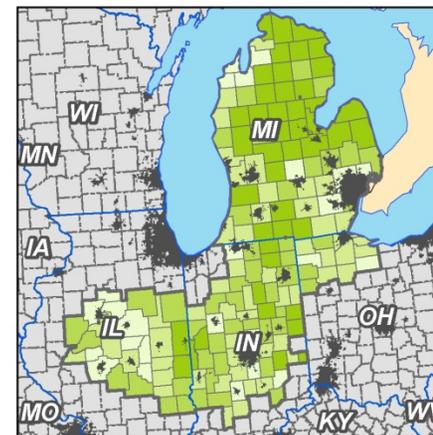
VISN 8 Puerto Rico & Virgin Islands



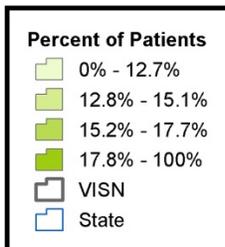
VISN 9



VISN 10



VISN 11



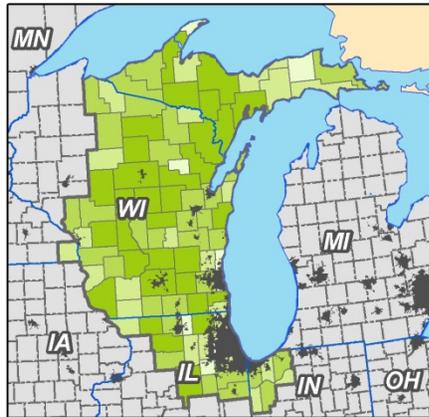
Map 17:

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

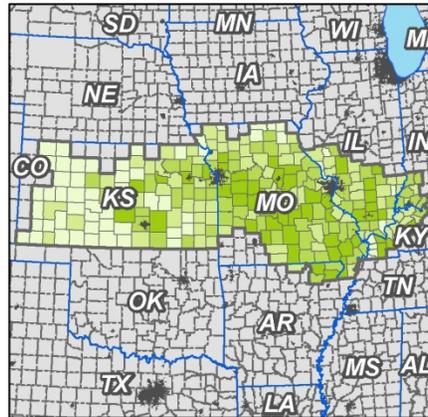


Map Created By: ORH RHRC-ER (DCR, LKW, JKA, ERL)  
GeoSpatial Outcomes Division  
(Map Creation Date: 8/18/2015)  
Map Information by: PSSG, VSSC, ESRI  
ArcGIS 10.2x

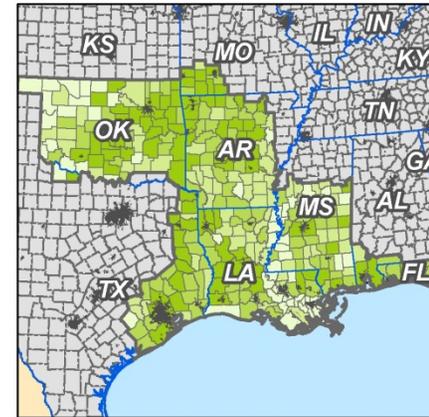
# Chronic Obstructive Pulmonary Disease



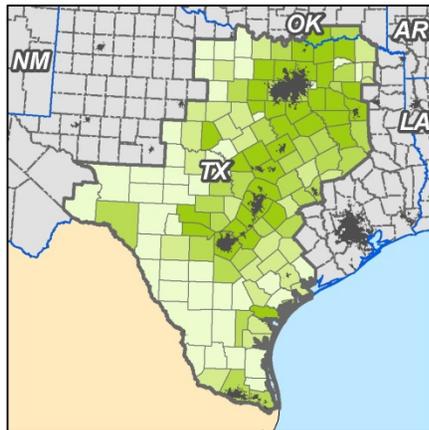
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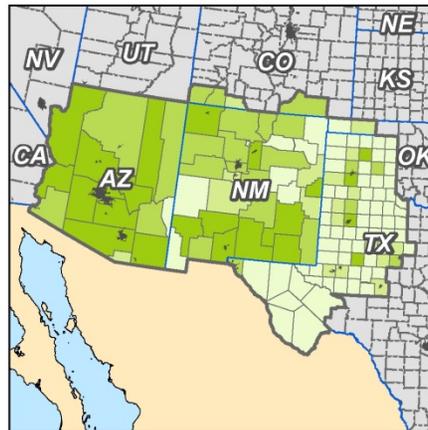
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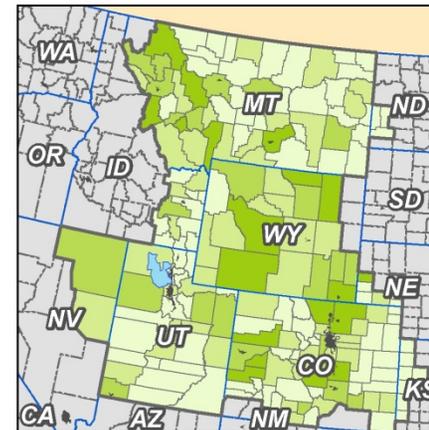
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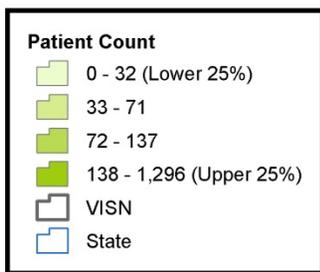
VISN 17



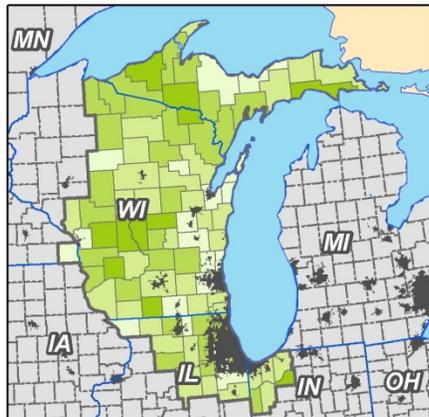
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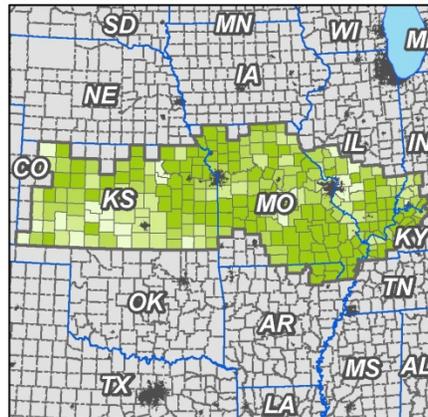
VISN 19



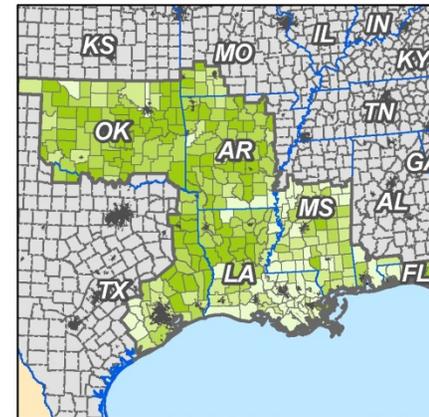
Map 18:  
Number of Rural and Highly Rural VHA Patients with COPD  
By County FY - 2014  
Urban Areas "Shaded"



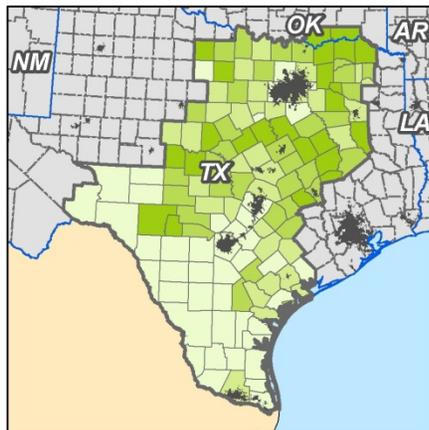
VISN 12



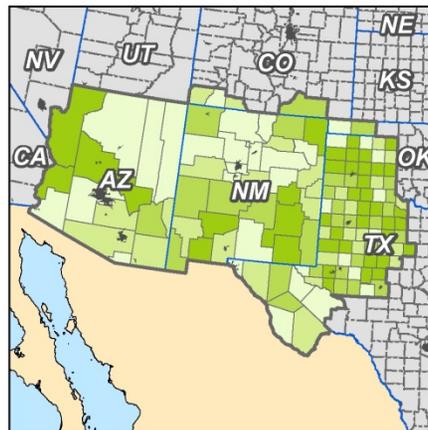
VISN 15



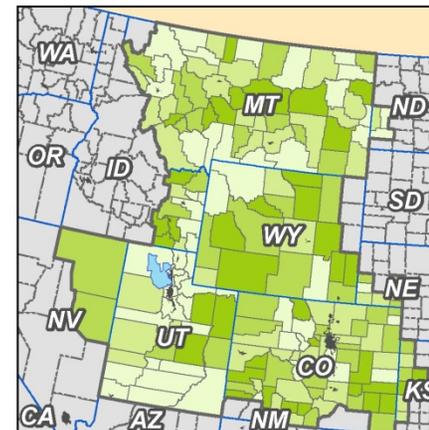
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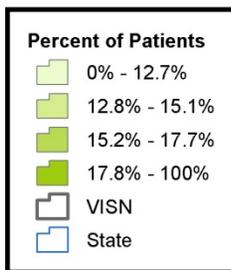
VISN 17



VISN 18



VISN 19



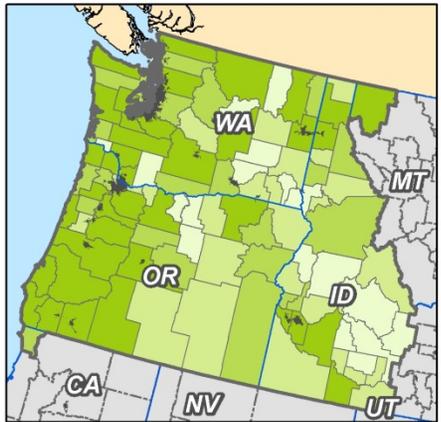
Map 19:

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

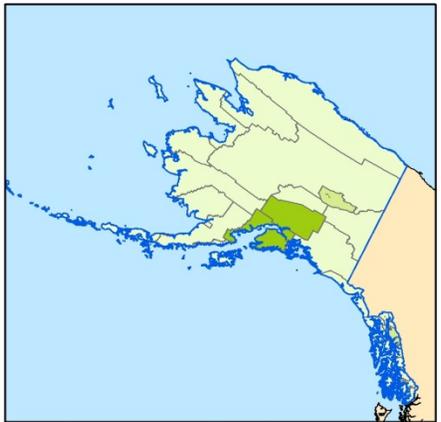


Map Created By: ORH RHRC-ER (DCR, LKW, JKA, ERL)  
GeoSpatial Outcomes Division  
(Map Creation Date: 8/18/2015)  
Map Information by: PSSG, VSSC, ESRI  
ArcGIS 10.2x

# Chronic Obstructive Pulmonary Disease



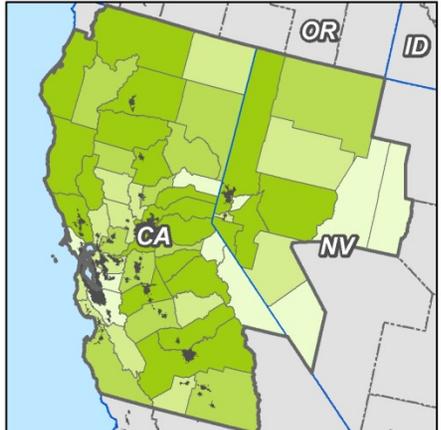
VISN 20



VISN 20- Alaska



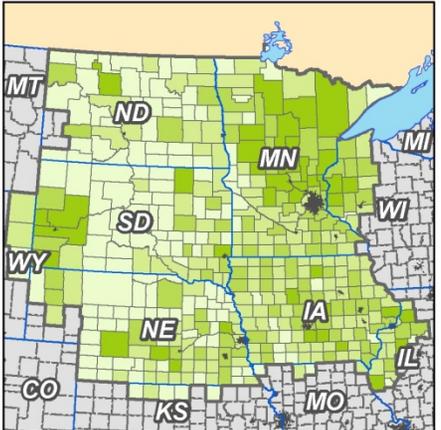
VISN 21- Hawaii



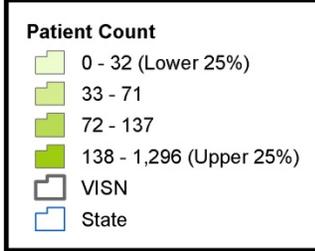
VISN 21



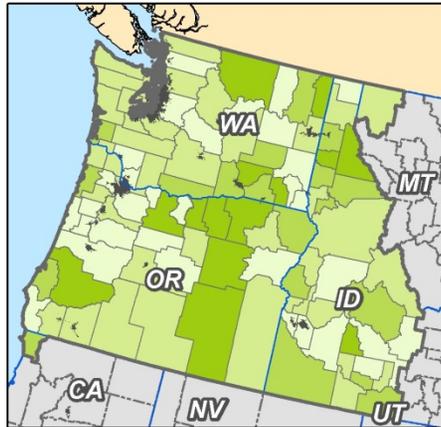
VISN 22



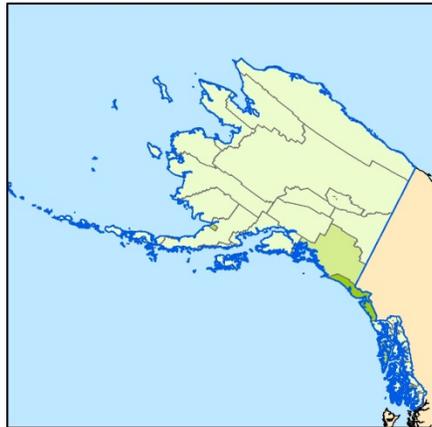
VISN 23



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



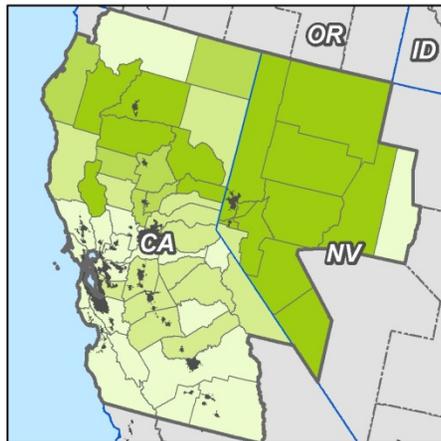
VISN 20



VISN 20- Alaska



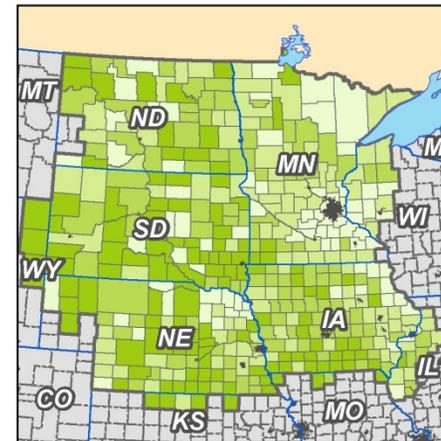
VISN 21- Hawaii



VISN 21

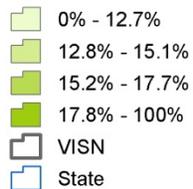


VISN 22



VISN 23

Percent of Patients



Map 21:

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



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

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

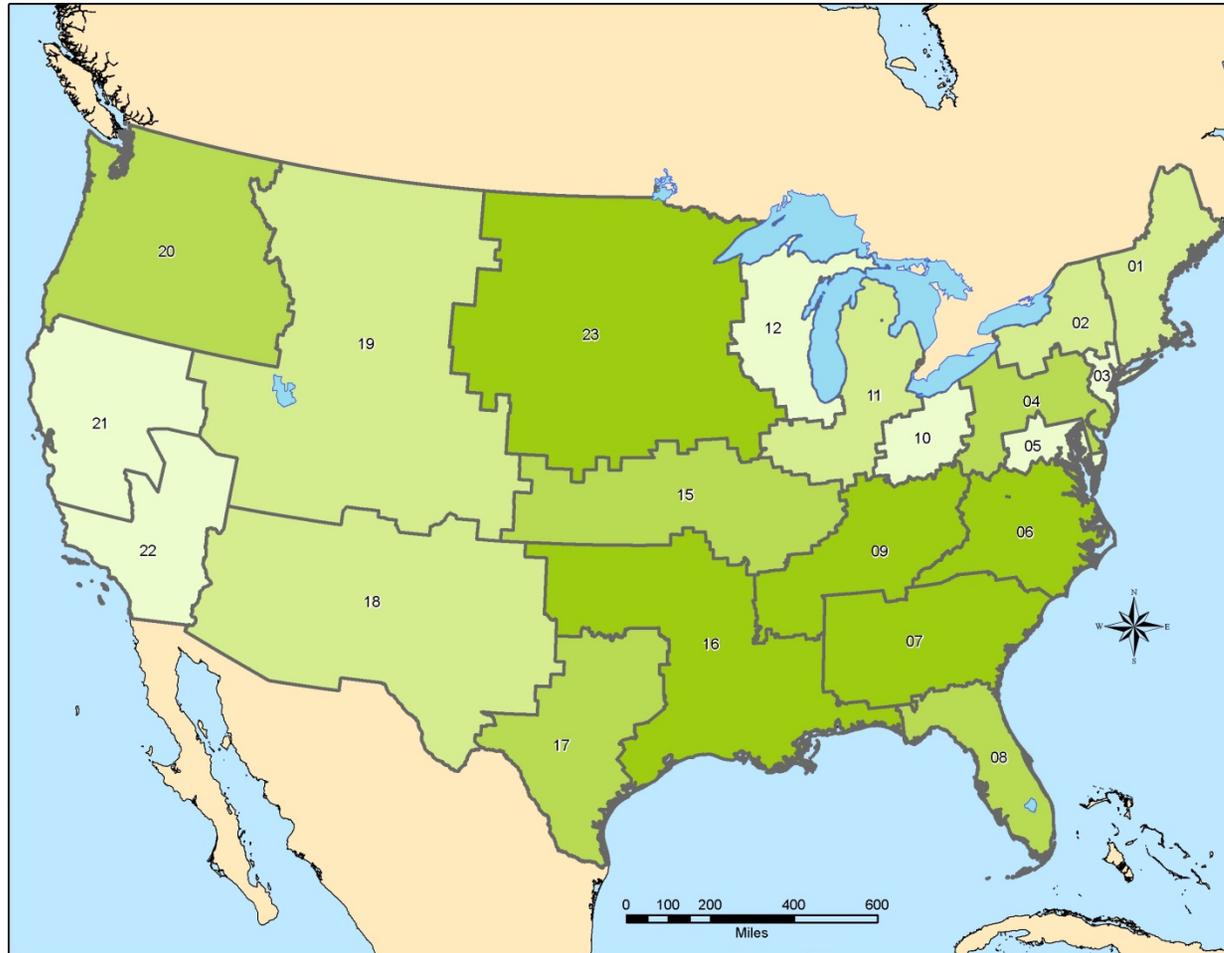
### GENDER

Table 3 further illustrates overall prevalence of COPD in each network, broken down by gender of patient and the same rurality categories as in Table 2. For the purposes of simplicity, the percent-column adjacent to the rurality columns are a combined percentage of rural and highly rural patients, indicated in red text. Female patients in rural and highly rural areas comprised 2.21% of total number of patients with COPD on the National level. On the network level, the Upstate New York Network (VISN 2) led with 3.40%, with three networks ranking closely behind (VISN 6 at 2.9%, VISN 16 at 2.89%, and VISN 15 at 2.81%). Male patients, as expected, represented a much higher percentage of total patients with COPD in each network. In four networks, more than half of male patients with COPD lived in rural and highly rural areas. Male patients with COPD in the Midwest Network (VISN 23) comprised the highest prevalence of 61.7% of total patients with COPD in that network. The New York/New Jersey Network (VISN 3) had the lowest prevalence of rural and highly rural patients with COPD - both for males (6.87%) and females (0.35%). Maps 22-25 display the number and percentage of rural and highly rural female patients with COPD by VISN and State, with the darkest shade designating the highest quartile (upper 25%) in terms of volume and proportion. VISNs 6, 7, 16, and 23 had a high volume but relatively low to moderate proportion of rural and highly rural female patients with COPD of the total rural and highly rural female patient population, as portrayed in Maps 22 and 23. Conversely, those maps also show that VISNs 3 and 10 had a low volume but high proportion (in upper 25% quartile) of rural and highly rural female patients with COPD of the total rural and highly rural female patient population. Five of the 50 U.S. States, as shown on Maps 24 and 25, had both a high volume and high proportion (in upper 25% quartile) of rural and highly rural female patients with COPD of the total rural and highly rural female patient population. Those U.S. States were Florida, Missouri, New York, Ohio, and Oklahoma.

Table 3: National and VISN Numbers and Percentages of VHA Patients with Chronic Obstructive Pulmonary Disease (COPD), by Rurality and Gender, FY-2014

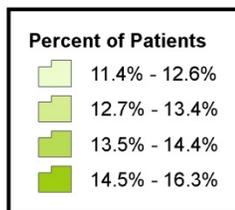
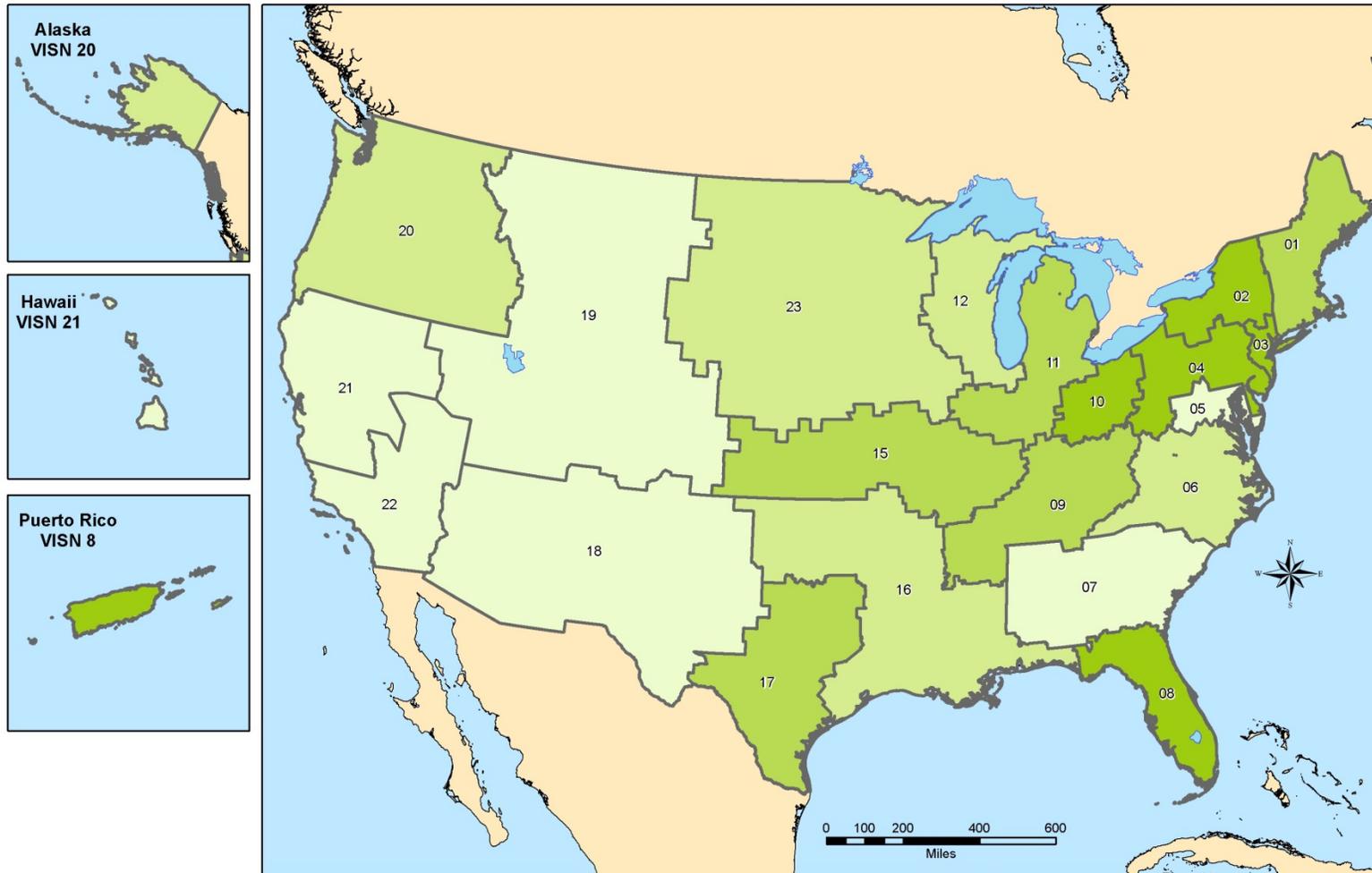
Prevalence Statistics by Gender and Rurality- Chronic Obstructive Pulmonary Disease (COPD), FY-2014											
Veterans Integrated Service Network	Total Number of Patients with COPD	Female					Male				
		HR	R	%	U	Unk	HR	R	%	U	Unk
New England (01)	31,658	9	659	2.11	1,168	*	134	10,619	33.97	19,066	3
Upstate NY (02)	18,648	*	634	3.40	657	*	10	9,310	49.98	8,039	*
NY/NJ (03)	20,291	*	72	0.35	1,258	*	*	1,394	6.87	17,567	*
VISN 04 (04)	42,891	*	901	2.10	1,555	*	3	17,610	41.06	22,822	5
Capitol (05)	14,748	*	239	1.63	1,254	*	*	4,172	28.29	9,078	6
Mid-Atlantic (06)	43,737	*	1,267	2.90	2,617	*	9	20,875	47.75	18,970	*
Southeast (07)	46,710	*	1,273	2.73	3,070	*	*	20,903	44.75	21,464	*
Sunshine (08)	72,603	*	1,066	1.47	4,409	*	10	13,699	18.88	53,412	9
Mid South (09)	42,084	*	1,123	2.67	1,365	*	5	24,533	58.31	15,060	3
Ohio (10)	34,608	*	559	1.62	1,418	*	5	13,180	38.10	19,443	3
Vets in Partnership (11)	40,041	*	789	1.97	1,524	*	7	17,735	44.31	19,981	4
Great Lakes (12)	32,409	5	534	1.66	1,636	3	87	10,936	34.01	19,200	11
Heartland (15)	37,505	10	1,045	2.81	1,053	*	332	21,533	58.30	13,527	5
South Central (16)	66,205	3	1,908	2.89	2,641	4	106	33,584	50.89	27,951	10
Heart of Texas (17)	33,352	6	909	2.74	2,580	3	188	12,213	37.18	17,447	8
Southwest (18)	32,406	92	645	2.27	1,789	14	1,481	9,593	34.17	18,762	31
Rocky Mtn. (19)	24,300	153	433	2.41	1,216	*	3,271	6,681	40.95	12,538	9
Northwest (20)	34,638	120	814	2.70	1,728	*	1,771	12,366	40.81	17,836	6
Sierra Pacific (21)	30,380	33	450	1.59	1,565	18	600	8,373	29.54	19,167	174
Desert Pacific (22)	31,452	29	212	0.77	2,280	3	592	2,649	10.30	25,683	5
Midwest (23)	44,069	105	1,055	2.63	962	*	2,598	24,594	61.70	14,754	3
<b>Grand Total</b>	<b>774,735</b>	<b>572</b>	<b>16,587</b>	<b>2.21</b>	<b>37,745</b>	<b>53</b>	<b>11,212</b>	<b>296,552</b>	<b>39.73</b>	<b>411,767</b>	<b>297</b>

# Chronic Obstructive Pulmonary Disease



Patient Count	
<span style="display:inline-block; width:15px; height:15px; background-color:#e6f2e6; border:1px solid black;"></span>	72 - 561 (Lower 25%)
<span style="display:inline-block; width:15px; height:15px; background-color:#c7e9c0; border:1px solid black;"></span>	562 - 789
<span style="display:inline-block; width:15px; height:15px; background-color:#a1d99b; border:1px solid black;"></span>	790 - 1,068
<span style="display:inline-block; width:15px; height:15px; background-color:#74c476; border:1px solid black;"></span>	1,069 - 1,911 (Upper 25%)

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

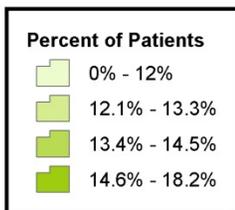
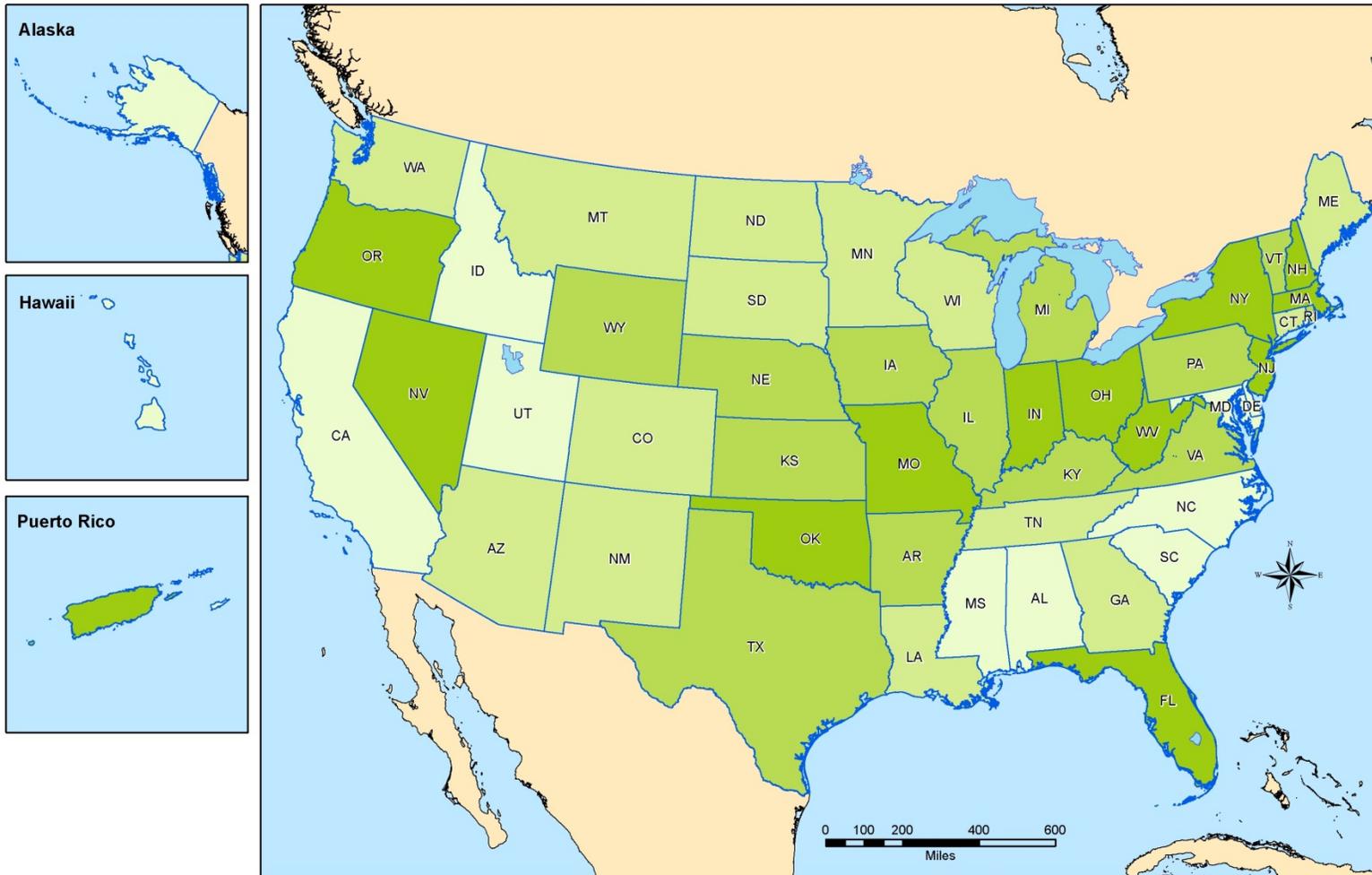


Map 23:  
Percent of Rural and Highly Rural VHA Patients  
with COPD, Female  
Of All Rural and Highly Rural VHA Patients  
Female  
By VISN FY - 2014



Map Created By: ORH RHRC-ER (DCR, LKW, JKA, ERL)  
GeoSpatial Outcomes Division  
(Map Creation Date: 8/18/2015)  
Map Information by: PSSG, VSSC, ESRI  
ArcGIS 10.2x





Map 25:  
Percent of Rural and Highly Rural VHA Patients  
with COPD, Female  
Of All Rural and Highly Rural Patients Female  
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: 8/18/2015)  
Map Information by: PSSG, VSSC, ESRI  
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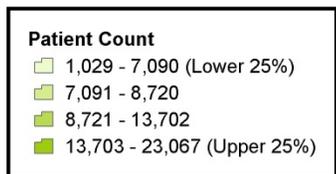
## AGE GROUP

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, on the National level, had the highest prevalence of patients with COPD in rural and highly rural areas at 16.22%. On the network level, three VISNs had almost one-quarter of COPD patients aged 65-74, with the Mid South Network (VISN 9) ranking highest at 25.12%, followed by the Heartland Network (VISN 15) at 23.35% and the Midwest Network (VISN 23) at 22.92%. Across all age groups, the New York/New Jersey Network (VISN 3) had the fewest number of patients and lowest percentage of patients of rural and highly rural patients with COPD of the total rural and highly rural patient population. Maps 26-31 display the number and percentage of rural and highly rural patients age 65 and over with COPD by VISN, State, and county, with the highest 25% in terms of volume and proportion designated by the darkest shade. VISNs 9, 15, and 16 showed both a high volume and high proportion (in upper 25% quartile) of rural and highly rural patients age 65 and over with COPD of the total rural and highly rural patient population age 65 and over, as portrayed in Maps 26 and 27. Five of the 50 U.S. States, as shown on Maps 28 and 29, had both a high volume and high proportion (in upper 25% quartile) of rural and highly rural patients age 65 and over with COPD of the total rural and highly rural patient population age 65 and over. Those U.S. States were Florida, Kentucky, Michigan, Missouri, and Ohio.

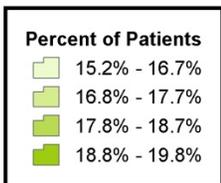
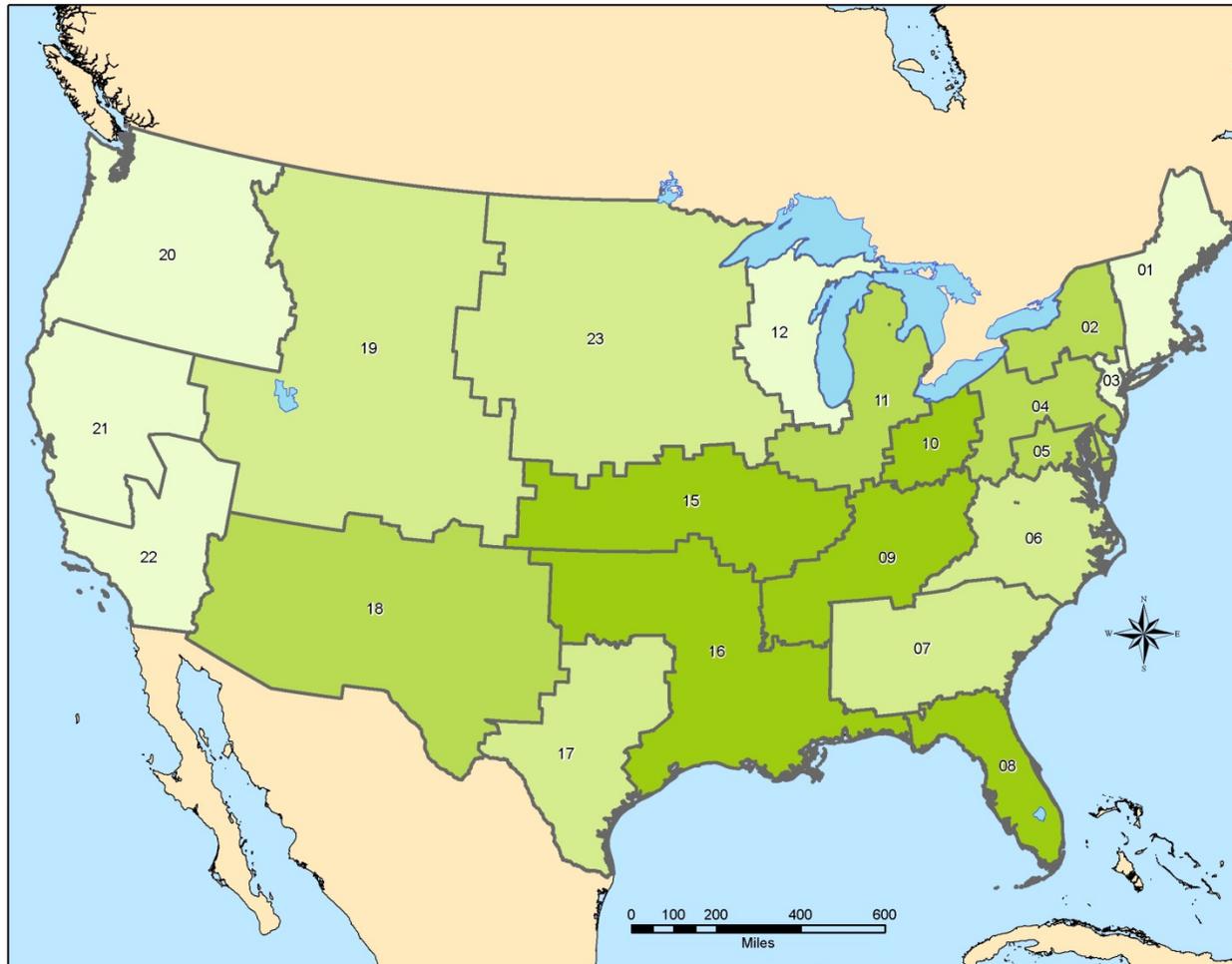
Table 4: National and VISN Numbers and Percentages of VHA Patients with Chronic Obstructive Pulmonary Disease (COPD), by Rurality and Age Group, FY-2014

Prevalence Statistics by Age Group and Rurality- Chronic Obstructive Pulmonary Disease (COPD), FY-2014																
Veterans Integrated Service Network	Total Number of Patients with COPD	<45			45-54			55-64			65-74			75+		
		HR	R	%	HR	R	%	HR	R	%	HR	R	%	HR	R	%
New England (01)	31,658	4	538	1.71	7	756	2.41	34	2,293	7.35	58	4,145	13.28	40	3,546	11.33
Upstate NY (02)	18,648	*	485	2.61	*	695	3.73	*	2,254	12.09	3	3,639	19.53	5	2,874	15.44
NY/NJ (03)	20,291	*	71	0.35	*	97	0.48	*	270	1.33	*	558	2.75	*	470	2.32
Stars and Stripes (04)	42,891	*	821	1.91	*	1,121	2.62	*	3,656	8.53	*	7,213	16.82	*	5,701	13.29
Capitol (05)	14,748	*	193	1.31	*	301	2.04	*	931	6.32	*	1,634	11.08	*	1,352	9.17
Mid-Atlantic (06)	43,737	*	1,067	2.44	*	1,544	3.53	*	5,297	12.12	5	8,778	20.08	*	5,456	12.48
Southeast (07)	46,710	*	1,097	2.35	*	1,725	3.69	*	5,653	12.10	*	8,633	18.48	*	5,068	10.85
Sunshine (08)	72,603	*	664	0.92	4	1,087	1.50	*	3,639	5.01	4	5,559	7.66	*	3,818	5.26
Mid South (09)	42,084	*	994	2.37	*	1,802	4.29	*	6,297	14.96	*	10,570	25.12	*	5,994	14.25
Ohio (10)	34,608	*	481	1.40	*	1,004	2.90	5	3,535	10.23	*	5,436	15.71	*	3,284	9.49
Vets in Partnership (11)	40,041	*	760	1.90	*	1,315	3.29	*	4,418	11.04	*	7,289	18.21	*	4,743	11.85
Great Lakes (12)	32,409	*	536	1.65	4	720	2.23	26	2,309	7.20	31	4,261	13.24	31	3,647	11.35
Heartland (15)	37,505	12	891	2.41	14	1,573	4.23	59	5,253	14.16	121	8,638	23.35	136	6,226	16.96
South Central (16)	66,205	*	1,691	2.56	4	2,197	3.32	32	8,610	13.05	38	13,869	21.01	33	9,127	13.84
Heart of Texas (17)	33,352	5	699	2.11	10	869	2.64	35	3,199	9.70	85	5,100	15.55	59	3,255	9.94
Southwest (18)	32,406	58	496	1.71	81	670	2.32	334	2,212	7.86	614	3,950	14.08	486	2,910	10.48
Rocky Mtn. (19)	24,300	114	447	2.31	170	481	2.68	697	1,539	9.20	1,339	2,710	16.66	1,104	1,937	12.51
Northwest (20)	34,638	71	697	2.22	142	867	2.91	469	3,114	10.34	732	5,335	17.52	477	3,167	10.52
Sierra Pacific (21)	30,380	28	410	1.44	30	443	1.56	147	1,971	6.97	278	3,594	12.75	150	2,405	8.41
Desert Pacific (22)	31,452	16	175	0.61	40	212	0.80	145	712	2.72	262	1,113	4.37	158	650	2.57
Midwest (23)	44,069	72	853	2.10	128	1,379	3.42	505	4,901	12.27	964	9,135	22.92	1,034	9,381	23.63
<b>Grand Total</b>	<b>774,735</b>	<b>389</b>	<b>14,066</b>	<b>1.87</b>	<b>638</b>	<b>20,858</b>	<b>2.77</b>	<b>2,498</b>	<b>72,063</b>	<b>9.62</b>	<b>4,539</b>	<b>121,159</b>	<b>16.22</b>	<b>3,720</b>	<b>85,011</b>	<b>11.45</b>

# Chronic Obstructive Pulmonary Disease



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

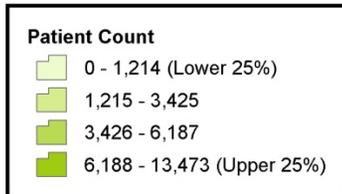
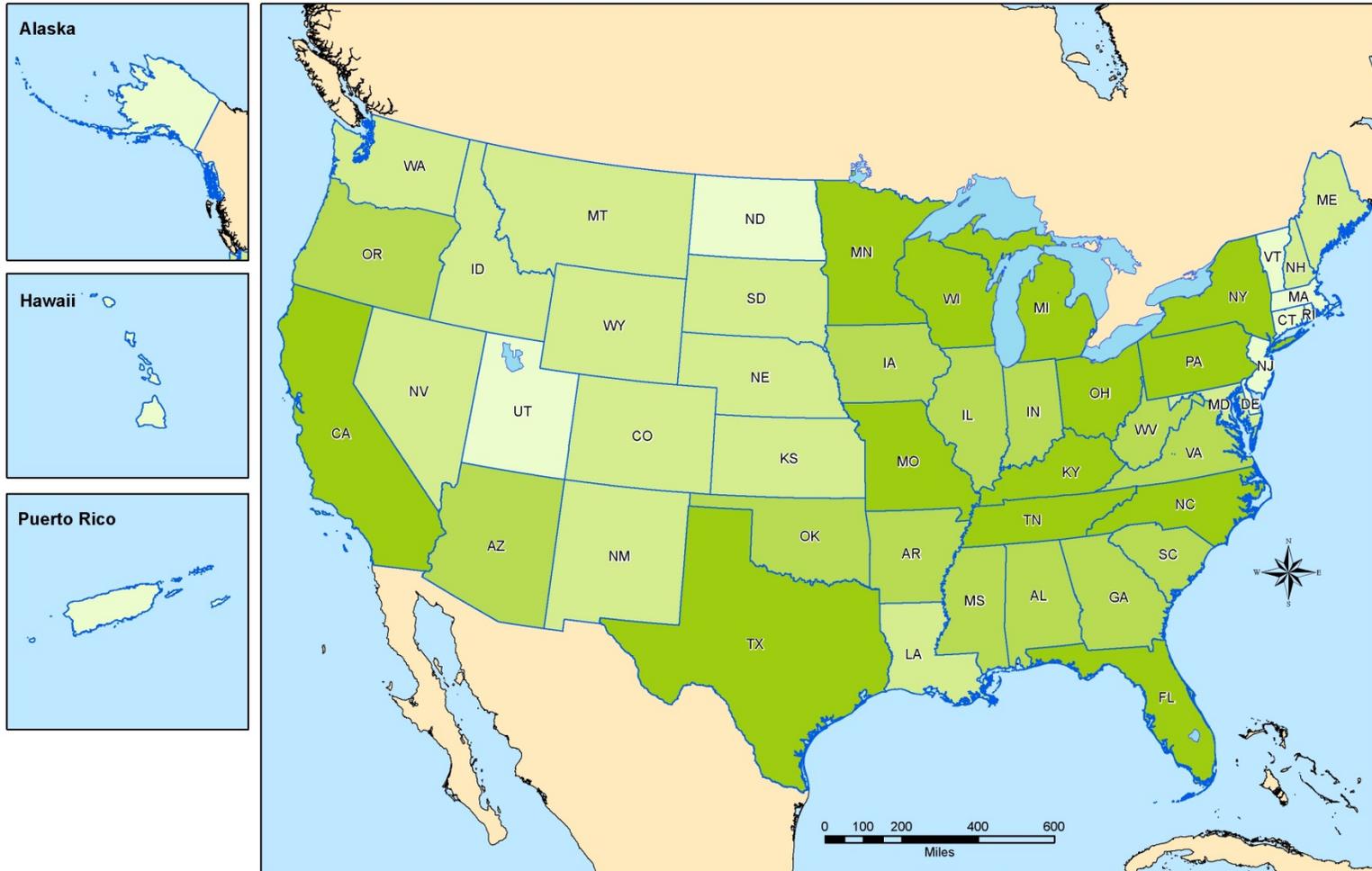


Map 27:  
Percent of Rural and Highly Rural VHA Patients  
with COPD, Age 65 and Over  
Of All Rural and Highly Rural VHA Patients Age 65 and Over  
By VISN FY - 2014

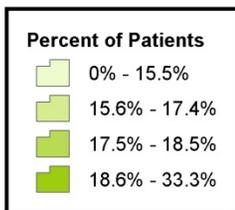
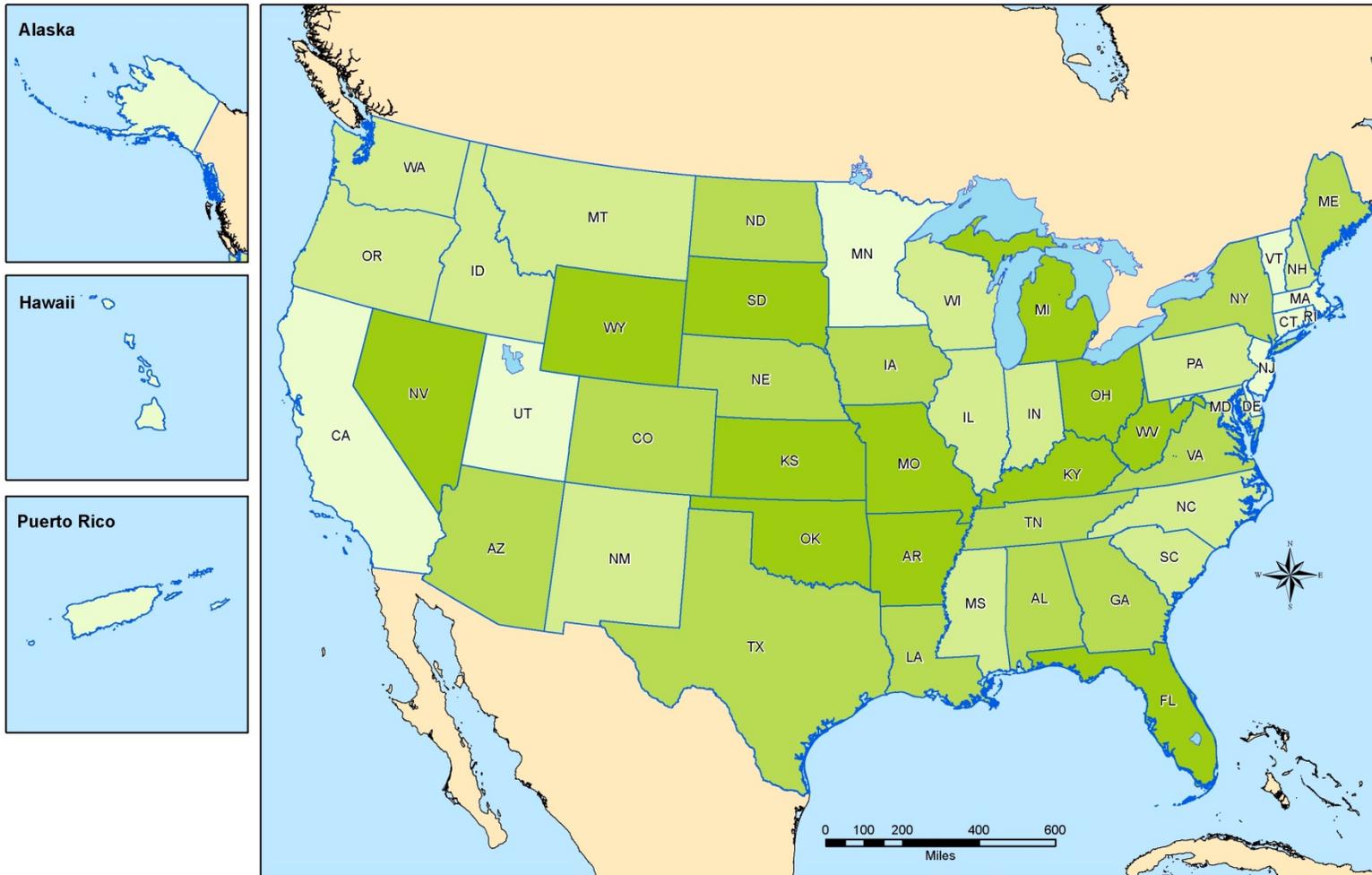


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ArcGIS 10.2x

# Chronic Obstructive Pulmonary Disease



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

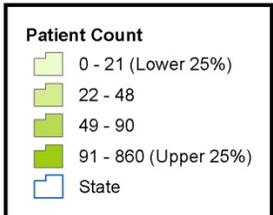
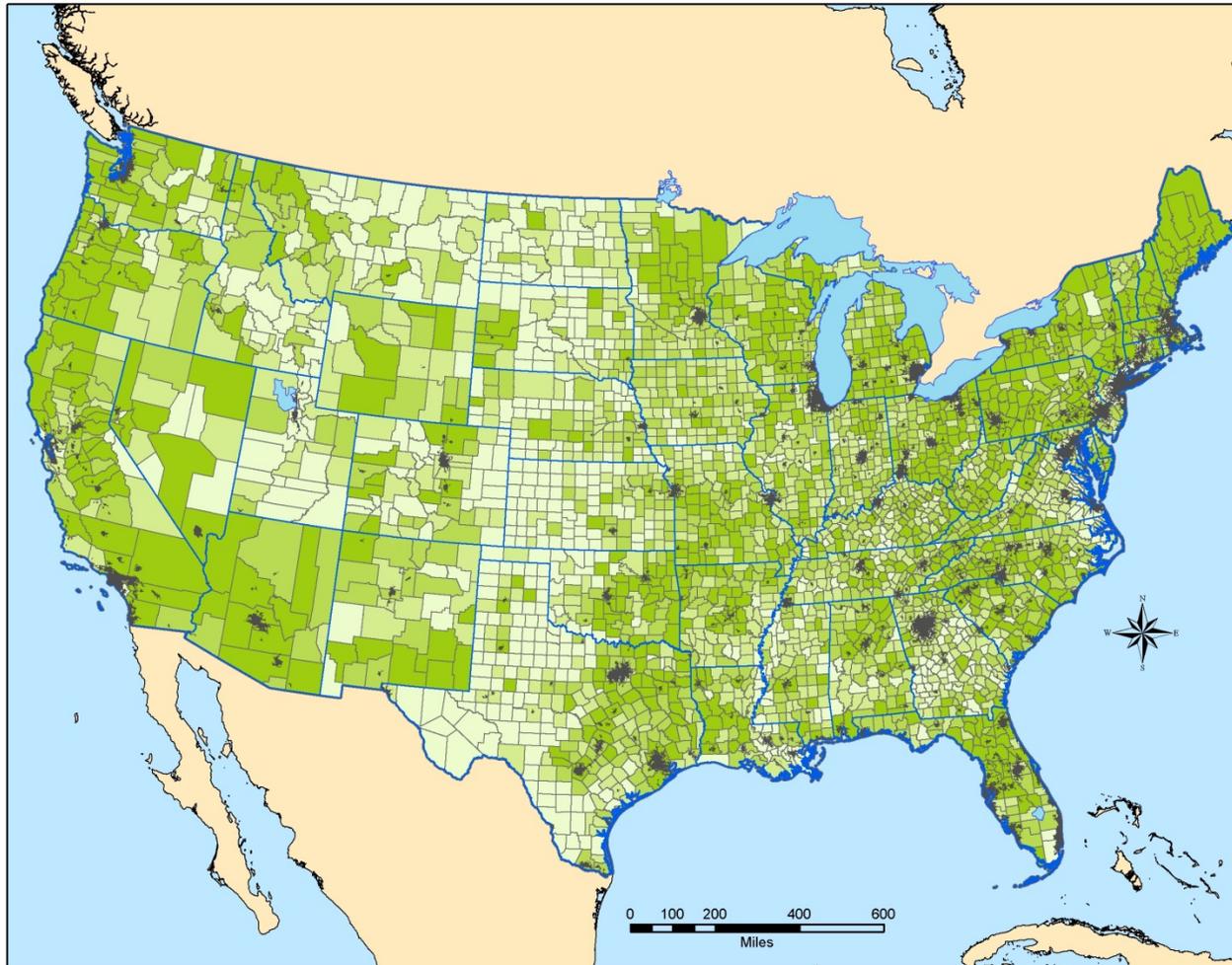


Map 29:  
Percent of Rural and Highly Rural VHA Patients  
with COPD, Age 65 and Over  
Of All Rural and Highly Rural Patients Age 65 and Over  
By State FY - 2014

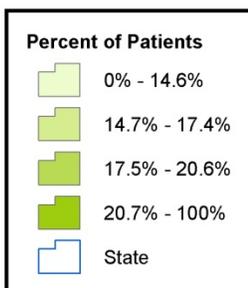
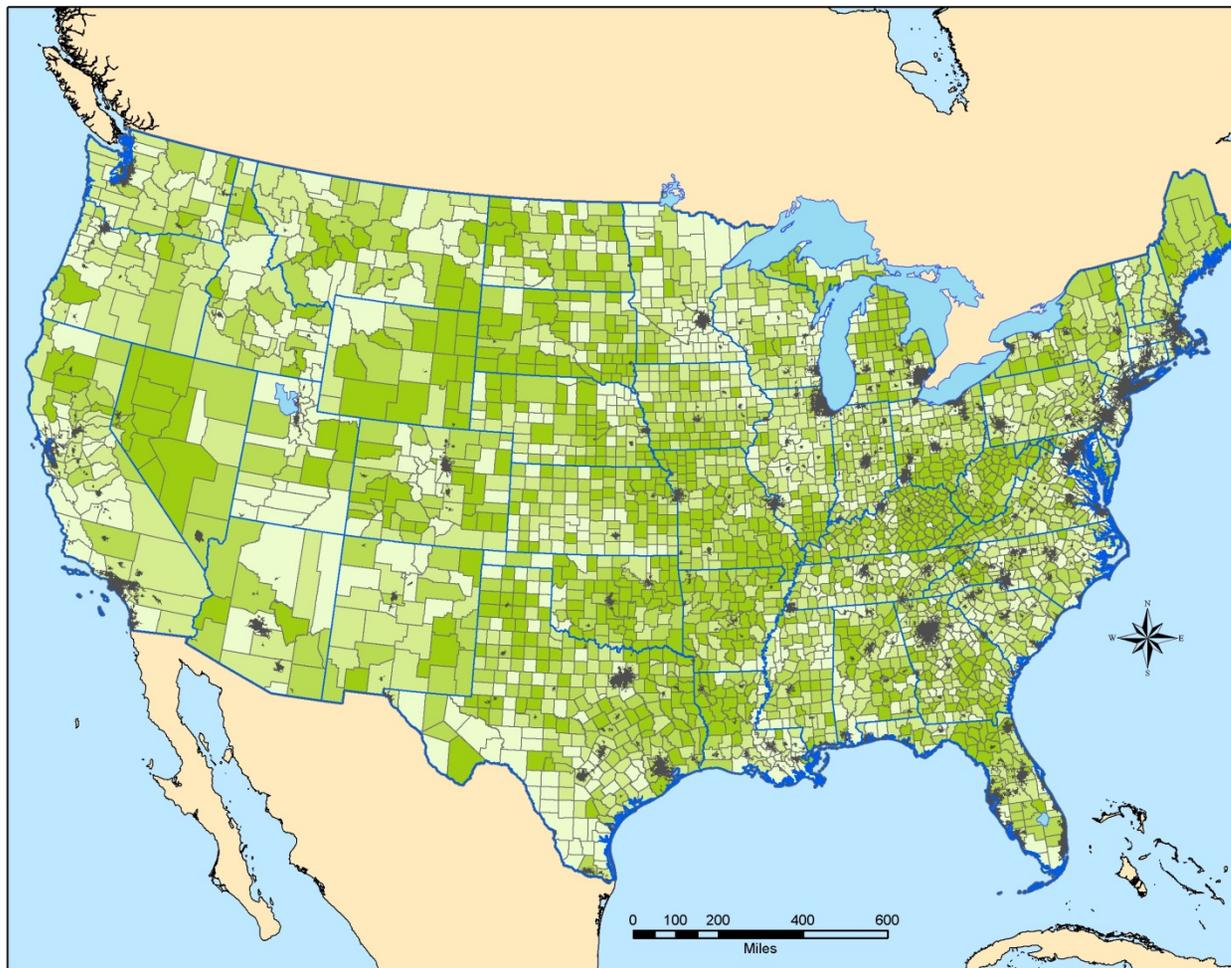
GeoSpatial  
Outcomes Division  
VHA Office of Rural Health

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ArcGIS 10.2x

# Chronic Obstructive Pulmonary Disease



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



Map 31:  
Percent of Rural and Highly Rural VHA Patients  
with COPD, Age 65 and Over  
Of All Rural and Highly Rural Patients Age 65 and Over  
By County FY - 2014  
Urban Areas "Shaded"



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## SERVICE CONNECTION AND LOW INCOME ENROLLMENT PRIORITY GROUPS

Table 5 examines selected enrollment priority groups and what percentage of those patients resided in rural and highly rural areas. On the National level, rural and highly rural patients with COPD with a service-connected disability represented 19.66% of the total number of patients with COPD in the VHA. At the network level, the South Central Network (VISN 16) ranked the highest with 17,449 rural and highly rural service-connected patients with COPD. However, the Midwest Network (VISN 23) ranked the highest at 31.51%, in terms of proportion of rural and highly rural patients with COPD to all patients with COPD. Maps 32-37 display the number and percentage of rural and highly rural patients with a service-connected disability with COPD by VISN, State, and county, with the highest 25% in terms of volume and proportion designated by the darkest shade.

Patients with COPD residing in rural and highly rural areas who were Priority Group 5 represented 11.59% of the total patient population with COPD across the United States. The South Central Network (VISN 16) again ranked the highest with 10,369 rural and highly rural low-income/non Service-Connected/non-compensable Service-Connected patients with COPD. The Mid South Network (VISN 9) had the highest proportion at 17.93%. Maps 38-41 display the number and percentage of rural and highly rural patients enrolled in Priority Group 5 with COPD by VISN and State, with the highest 25% in terms of volume and proportion designated by the darkest shade. Maps 42-43 display the same information by county, with the highest 50% in volume and highest 25% in percentage designated by the darkest shade.

Table 5: National and VISN Numbers and Percentages of VHA Patients with Chronic Obstructive Pulmonary Disease (COPD), by Rurality and Enrollment Priority Group, FY-2014

Prevalence Statistics by Service Connection Type and Low Income by Rurality- Chronic Obstructive Pulmonary Disease (COPD), FY-2014											
Veterans Integrated Service Network	Total Number of Patients with COPD	Service Connected Priority 1-3					Low Income				
		HR	R	%	U	Unk	HR	R	%	U	Unk
New England (01)	31,658	65	5,351	17.11	9,478	*	44	2,584	8.30	4,616	*
Upstate NY (02)	18,648	*	4,109	22.04	3,482	*	6	2,909	15.63	2,633	*
NY/NJ (03)	20,291	*	639	3.15	8,130	*	*	375	1.85	4,994	*
Stars and Stripes (04)	42,891	*	7,239	16.88	9,591	*	*	5,215	12.16	6,804	*
Capitol (05)	14,748	*	1,846	12.52	4,833	*	*	1,346	9.13	3,121	*
Mid-Atlantic (06)	43,737	7	11,129	25.46	11,682	*	*	6,160	14.09	5,266	*
Southeast (07)	46,710	*	11,290	24.17	13,694	*	*	6,196	13.26	5,976	*
Sunshine (08)	72,603	9	6,381	8.80	26,796	*	*	4,573	6.30	15,724	*
Mid South (09)	42,084	*	12,487	29.68	7,953	*	4	7,541	17.93	4,622	*
Ohio (10)	34,608	4	5,485	15.86	7,987	*	*	4,518	13.06	7,152	*
Vets in Partnership (11)	40,041	5	8,663	21.65	9,331	*	*	5,217	13.03	6,917	*
Great Lakes (12)	32,409	32	4,784	14.86	7,401	*	31	2,822	8.80	5,809	*
Heartland (15)	37,505	122	10,269	27.71	6,244	*	78	6,519	17.59	4,378	*
South Central (16)	66,205	46	17,403	26.36	15,386	*	31	10,338	15.66	8,410	*
Heart of Texas (17)	33,352	86	6,820	20.71	12,086	*	64	3,542	10.81	4,296	*
Southwest (18)	32,406	713	4,882	17.27	10,450	5	508	2,781	10.15	5,405	14
Rocky Mtn. (19)	24,300	1,390	3,461	19.96	7,086	*	882	1,703	10.64	3,568	*
Northwest (20)	34,638	925	6,850	22.45	9,993	3	561	3,500	11.72	5,292	*
Sierra Pacific (21)	30,380	283	4,074	14.34	10,137	133	176	2,525	8.89	5,860	40
Desert Pacific (22)	31,452	260	1,334	5.07	13,453	*	213	871	3.45	8,073	*
Midwest (23)	44,069	1,172	12,716	31.51	8,489	*	609	5,327	13.47	3,370	*
<b>Grand Total</b>	<b>774,735</b>	<b>5,125</b>	<b>147,212</b>	<b>19.66</b>	<b>213,682</b>	<b>145</b>	<b>3,217</b>	<b>86,562</b>	<b>11.59</b>	<b>122,286</b>	<b>59</b>

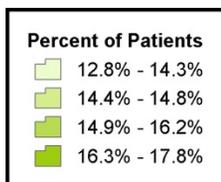
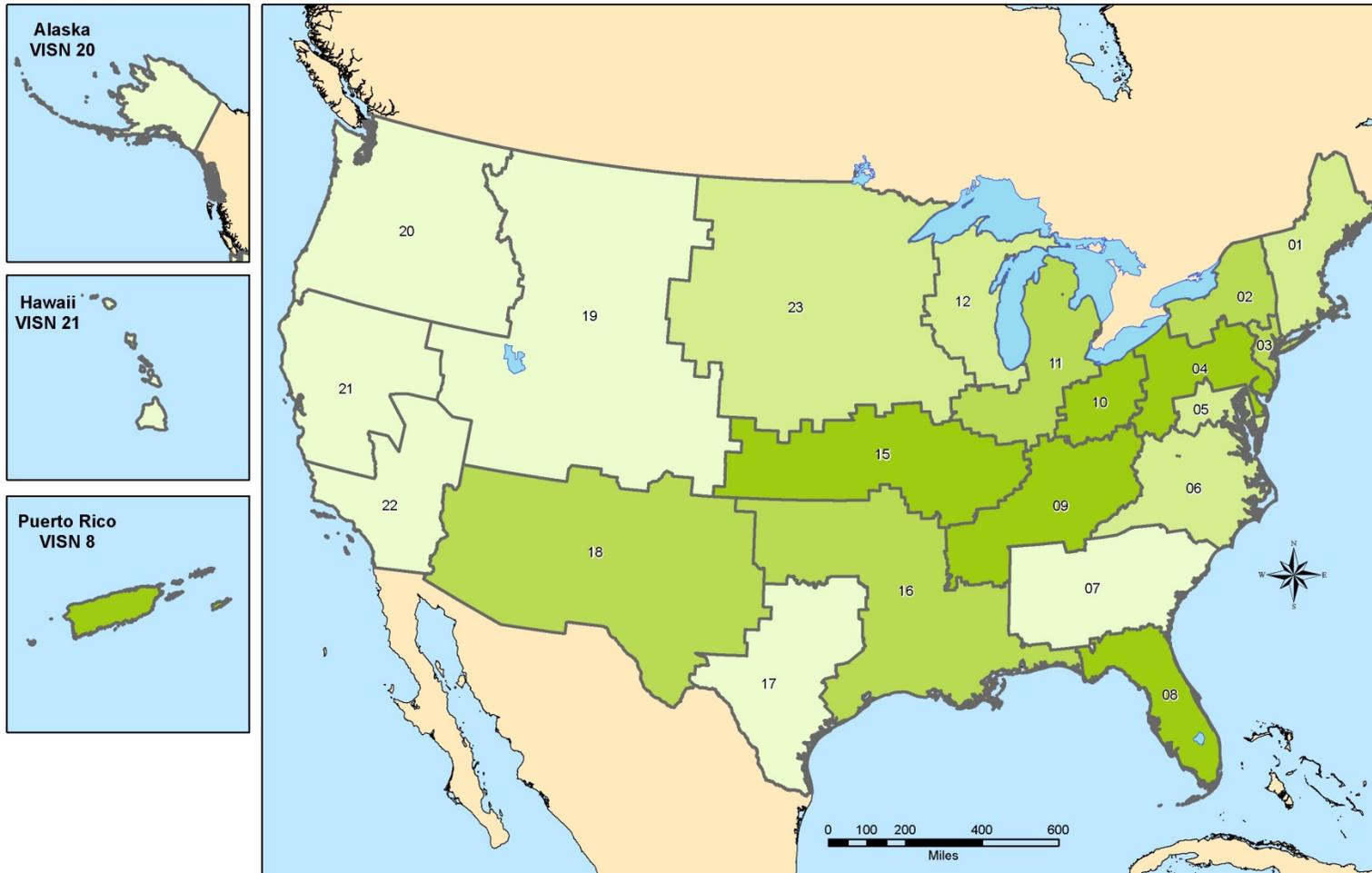
# Chronic Obstructive Pulmonary Disease



**Patient Count**

- 639 - 4,816 (Lower 25%)
- 4,817 - 6,390
- 6,391 - 10,391
- 10,392 - 17,449 (Upper 25%)

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

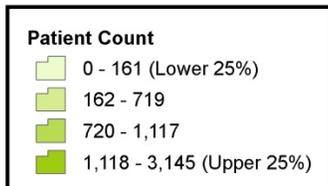
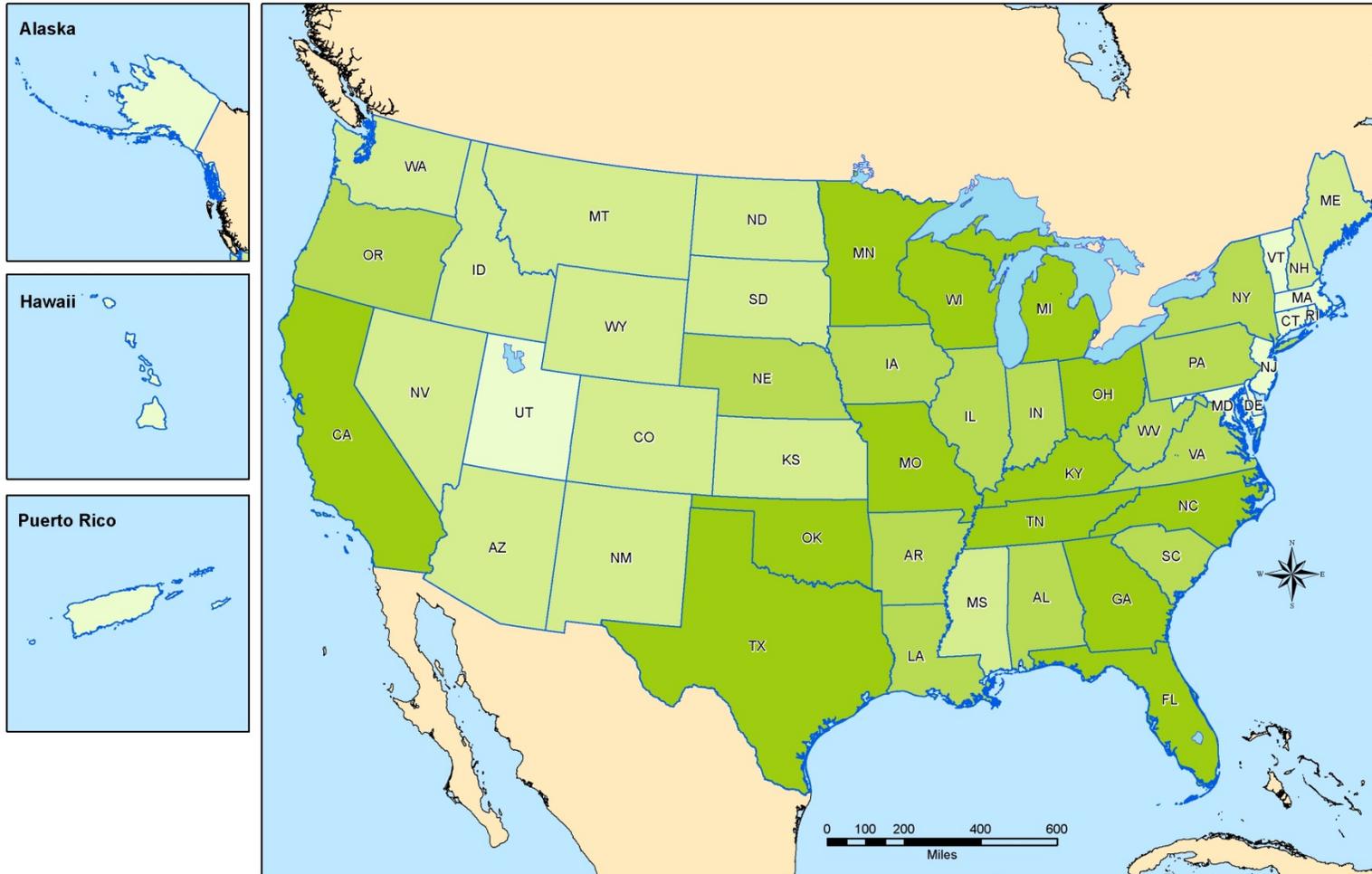


Map 33:  
Percent of Rural and Highly Rural VHA Patients  
with COPD, Priority 1-3  
Of All Rural and Highly Rural VHA Patients Priority 1-3  
By VISN FY - 2014

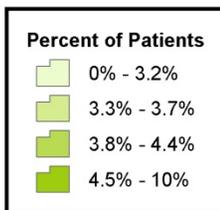
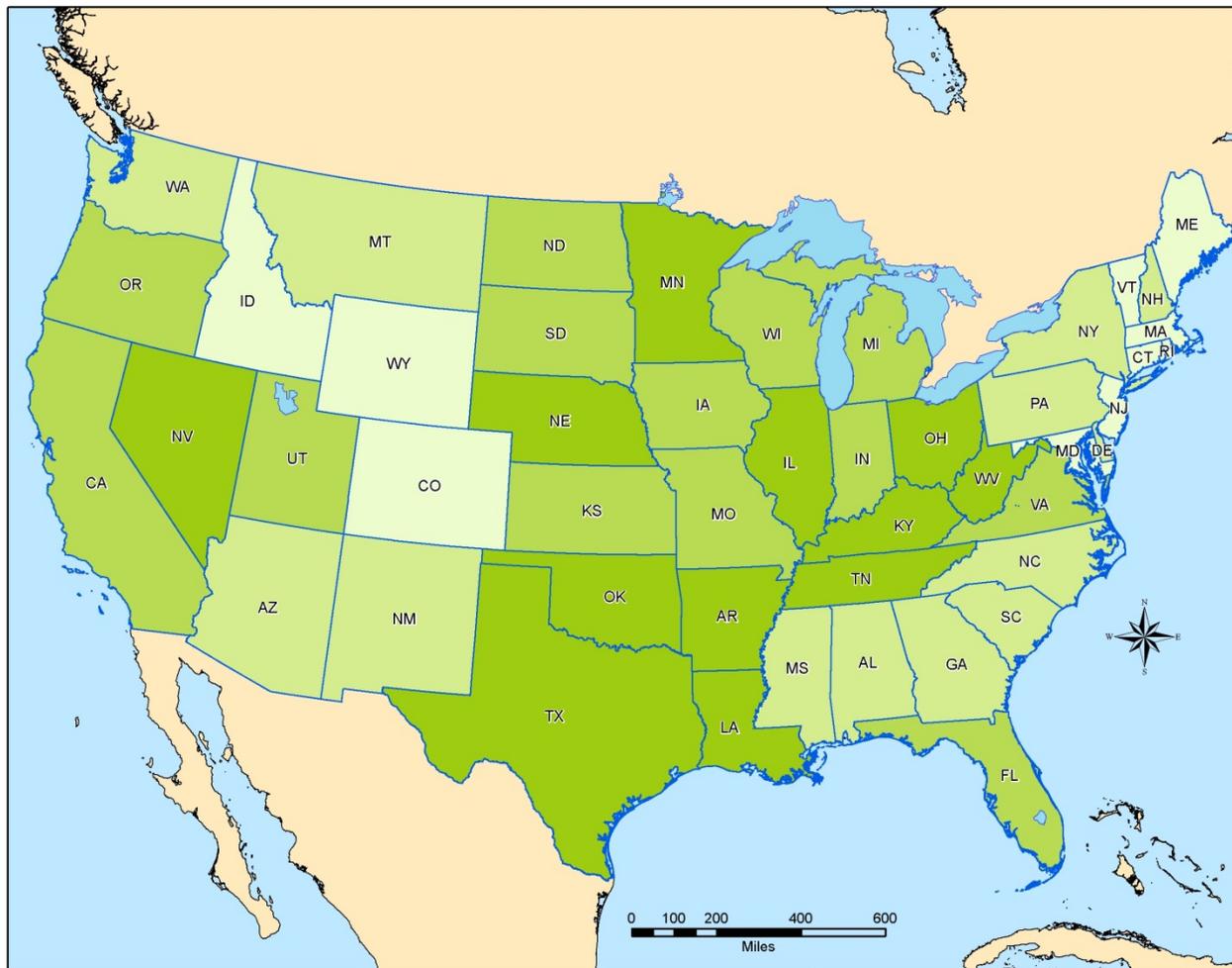


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Map Information by: PSSG, VSSC, ESRI  
ArcGIS 10.2x

# Chronic Obstructive Pulmonary Disease



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

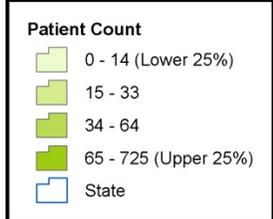
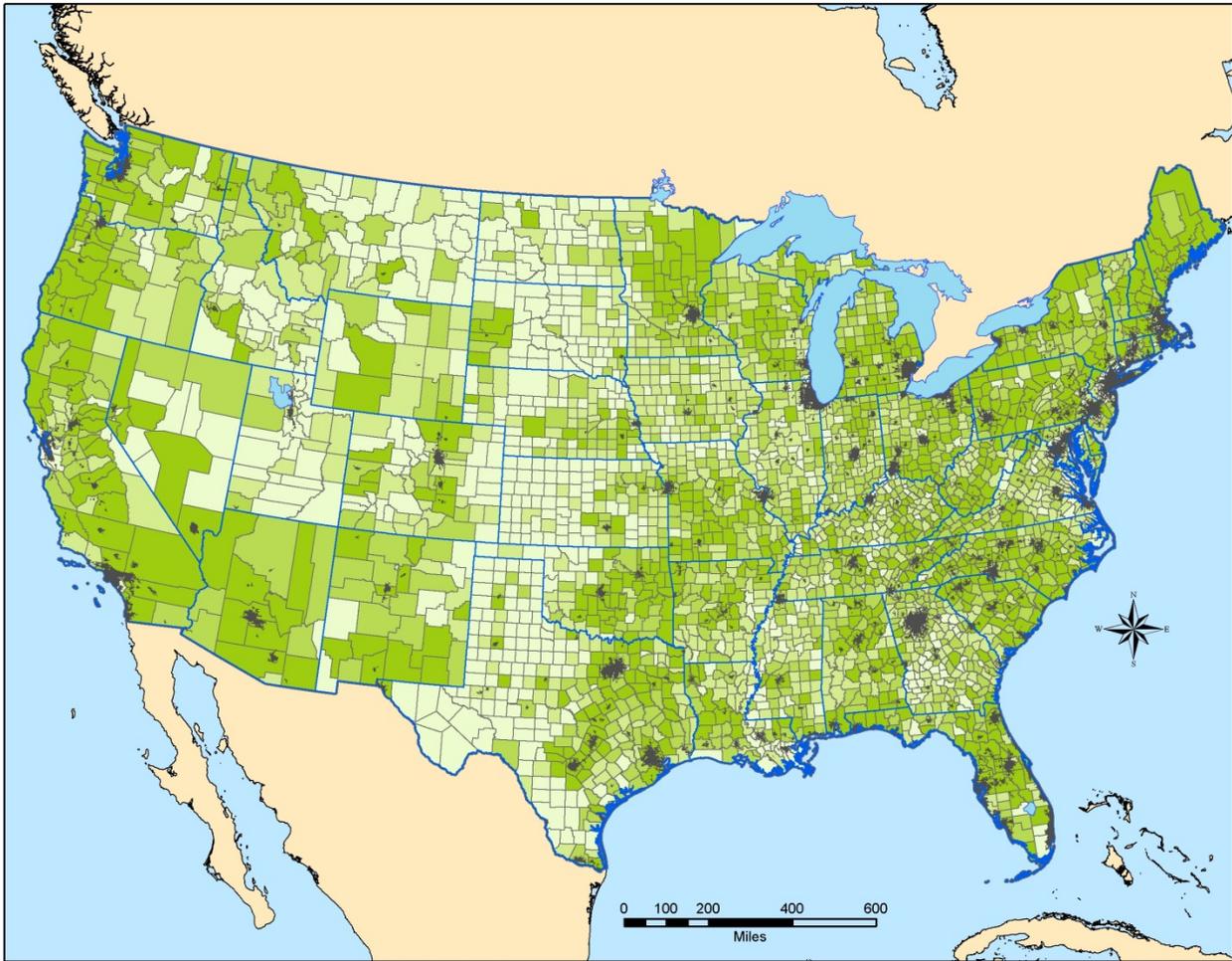


Map 35:  
Percent of Rural and Highly Rural VHA Patients  
with COPD, Priority 1-3  
Of All Rural and Highly Rural Patients Priority 1-3  
By State FY - 2014

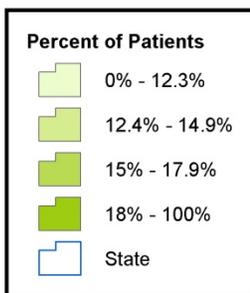
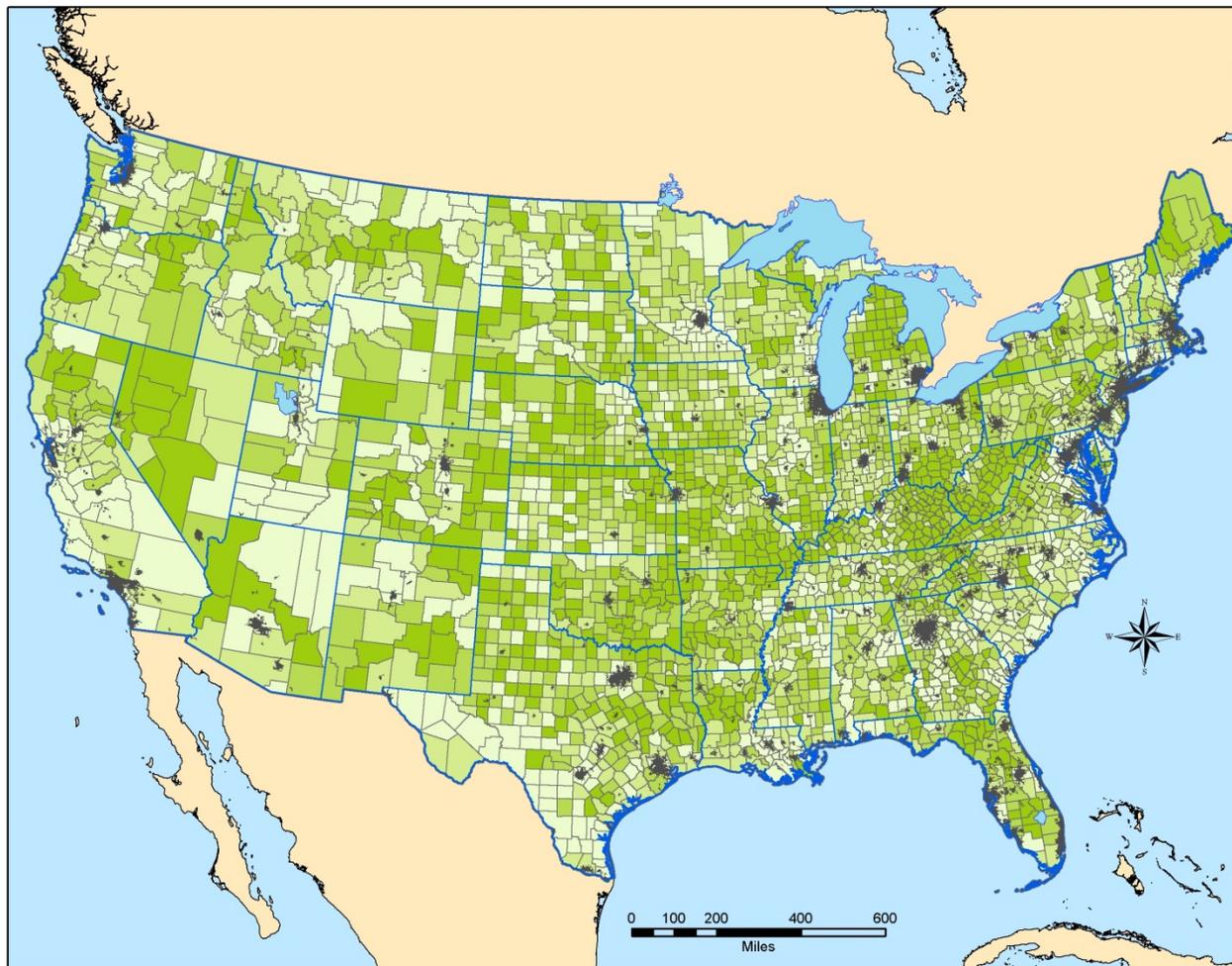
GeoSpatial  
Outcomes Division  
VHA Office of Rural Health

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# Chronic Obstructive Pulmonary Disease



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



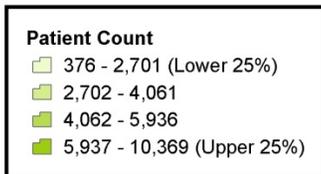
Map 37:

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

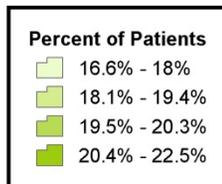
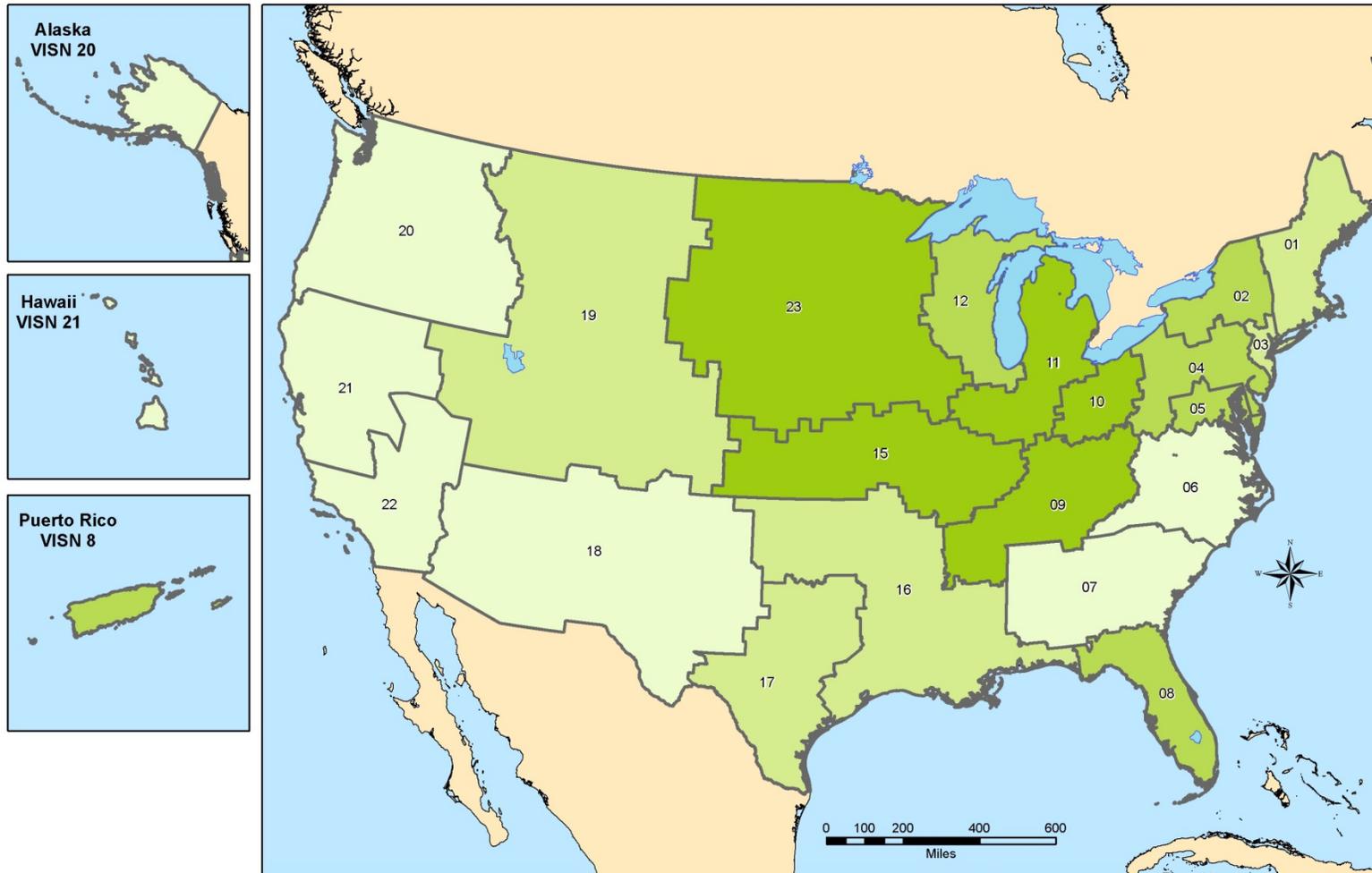


Map Created By: ORH RHRC-ER (DCR, LKW, JKA, ERL)  
GeoSpatial Outcomes Division  
(Map Creation Date: 8/18/2015)  
Map Information by: PSSG, VSSC, ESRI  
ArcGIS 10.2x

# Chronic Obstructive Pulmonary Disease



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

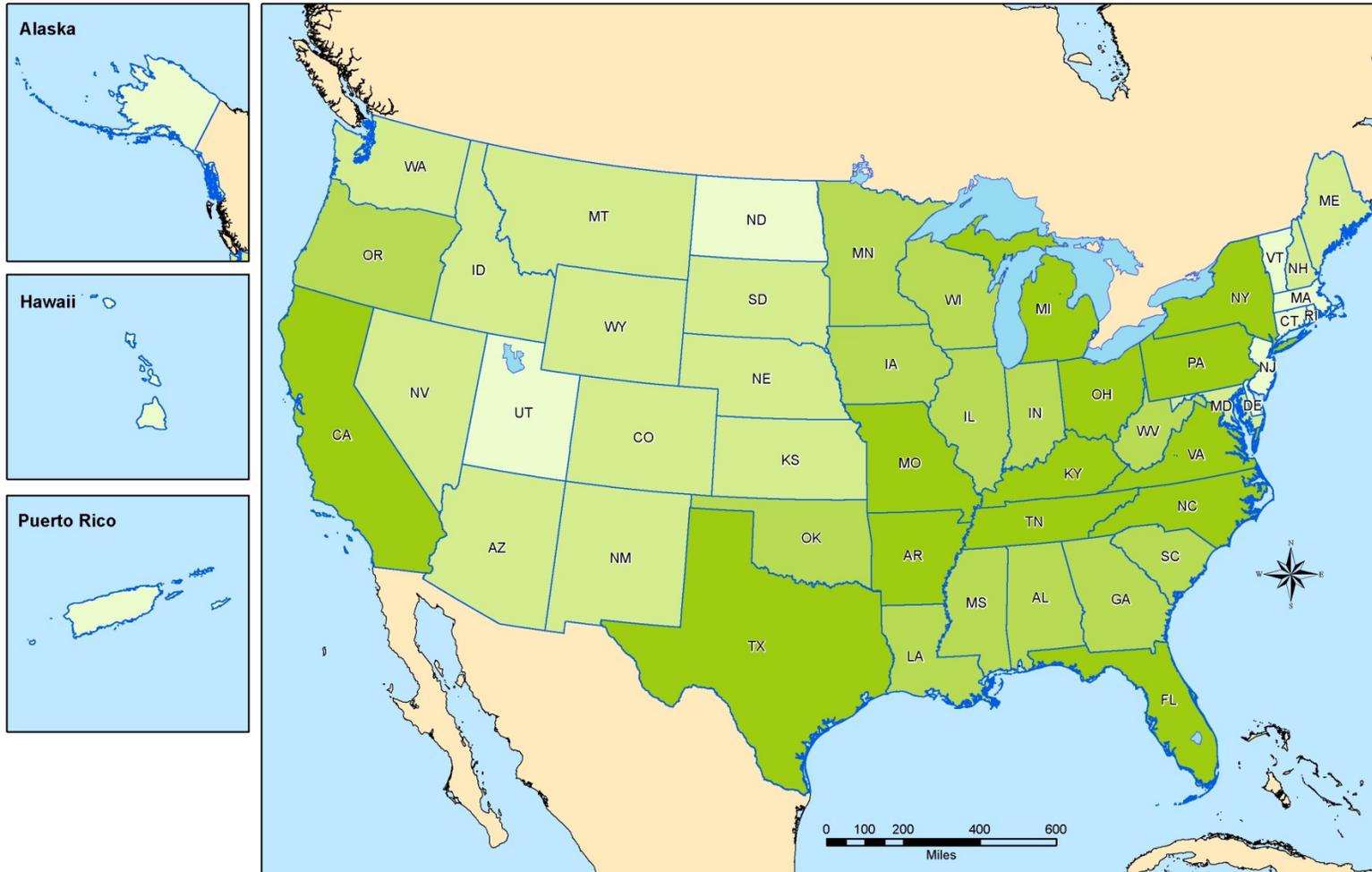


Map 39:  
Percent of Rural and Highly Rural VHA Patients  
with COPD, Priority 5  
Of All Rural and Highly Rural VHA Patients Priority 5  
By VISN FY - 2014



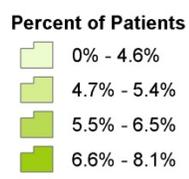
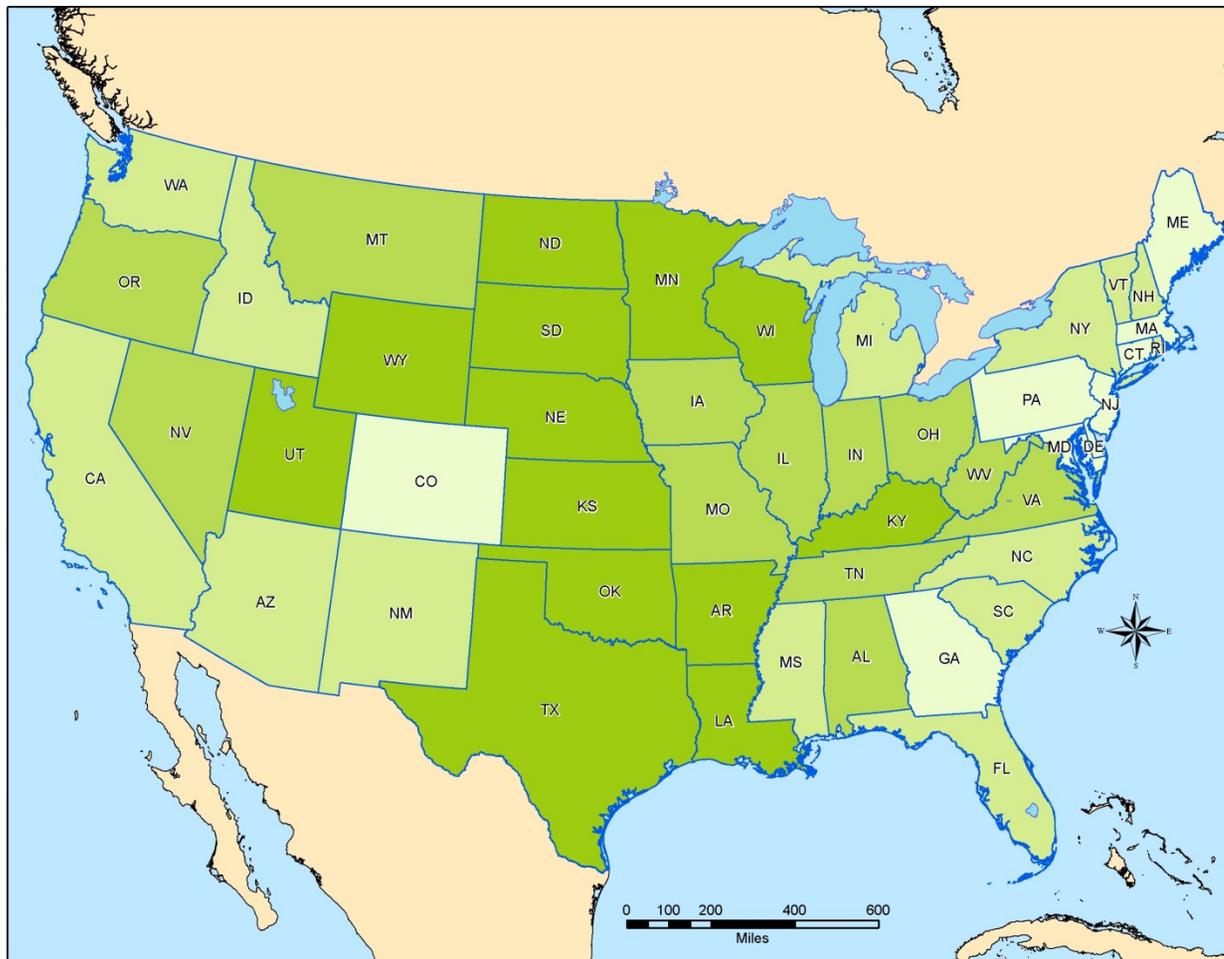
Map Created By: ORH RHRC-ER (DCR, LKW, JKA, ERL)  
GeoSpatial Outcomes Division  
(Map Creation Date: 8/18/2015)  
Map Information by: PSSG, VSSC, ESRI  
ArcGIS 10.2x

# Chronic Obstructive Pulmonary Disease



Patient Count	
<span style="display:inline-block; width:15px; height:15px; background-color:#d9ead3;"></span>	0 - 121 (Lower 25%)
<span style="display:inline-block; width:15px; height:15px; background-color:#c4e6c4;"></span>	122 - 476
<span style="display:inline-block; width:15px; height:15px; background-color:#a1d99b;"></span>	477 - 804
<span style="display:inline-block; width:15px; height:15px; background-color:#74c476;"></span>	805 - 2,061 (Upper 25%)

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

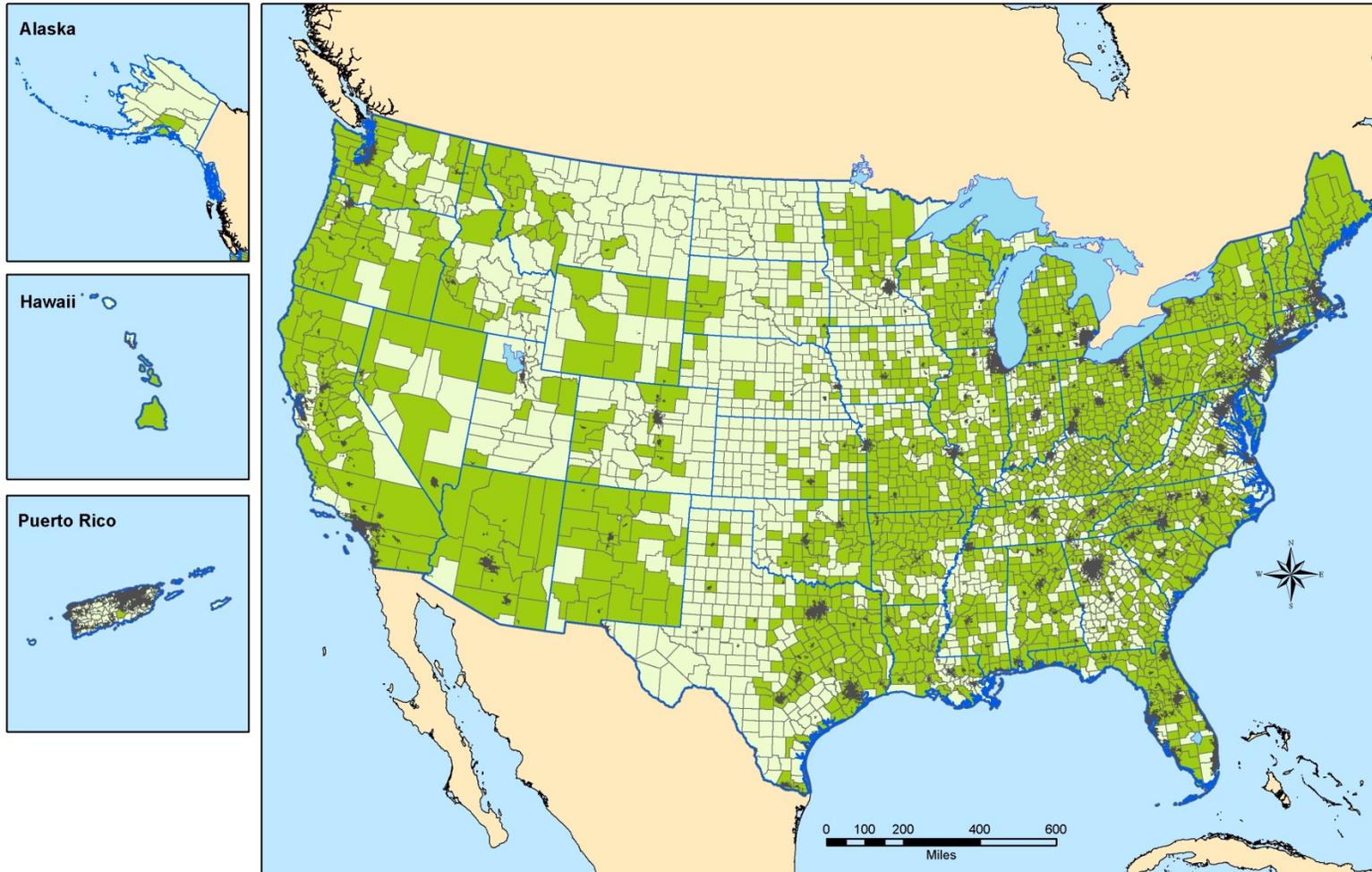


Map 41:  
Percent of Rural and Highly Rural VHA Patients  
with COPD, Priority 5  
Of All Rural and Highly Rural Patients Priority 5  
By State FY - 2014



Map Created By: ORH RHRC-ER (DCR, LKW, JKA, ERL)  
GeoSpatial Outcomes Division  
(Map Creation Date: 8/18/2015)  
Map Information by: PSSG, VSSC, ESRI  
ArcGIS 10.2x

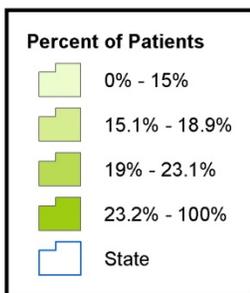
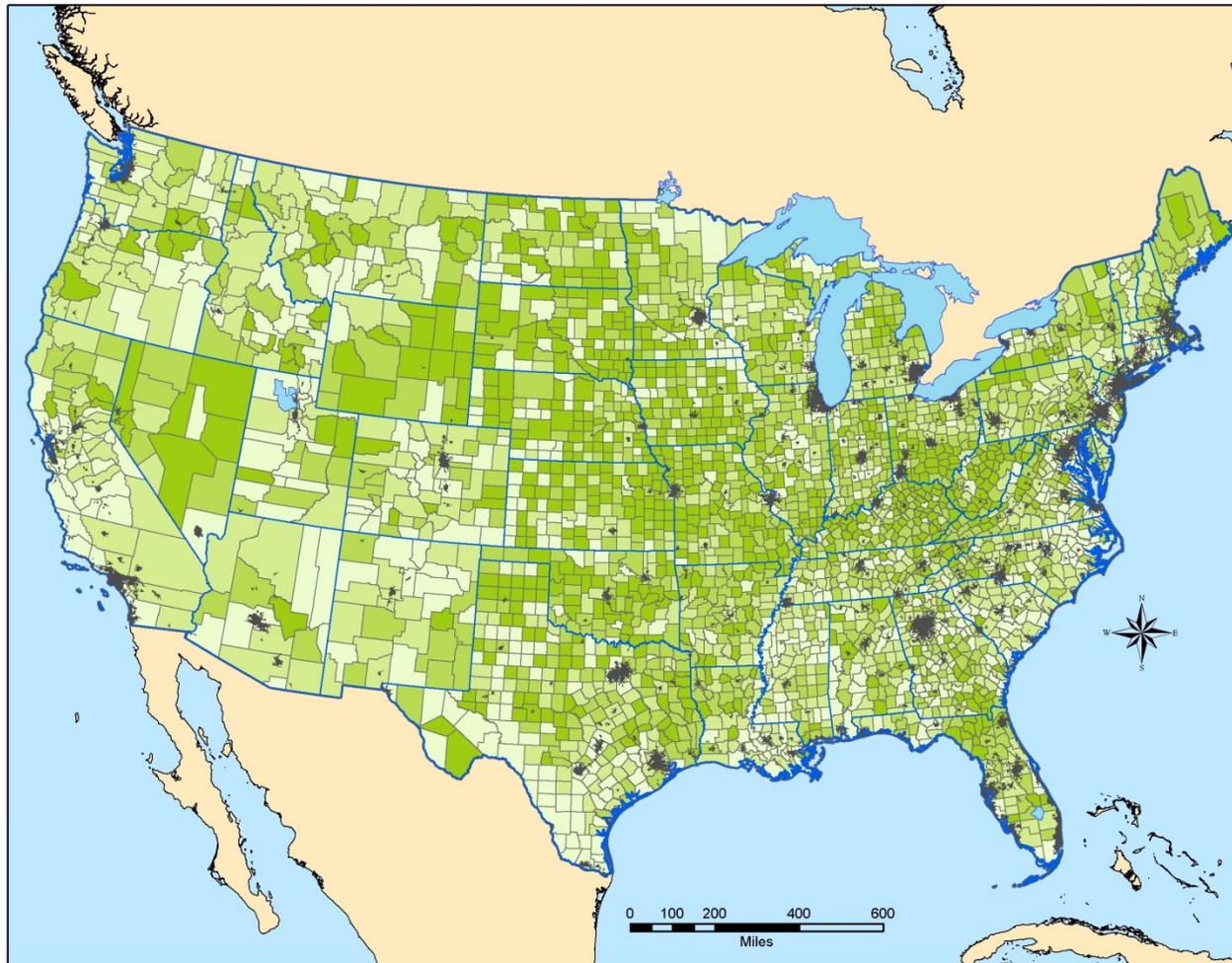
# Chronic Obstructive Pulmonary Disease



**Patient Count**

- 0 - 19 (Lower 50%)
- 20 - 362 (Upper 50%)
- State

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



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



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(Map Creation Date: 8/18/2015)  
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ArcGIS 10.2x

## Section IV Highlights: VHA Patients with COPD (Outpatient Utilization)

Table 6 examines overall utilization of VHA health care facilities by those VHA patients with a primary diagnosis of COPD. That is, patients who may have had an encounter with the diagnosis set as the primary diagnosis. On the National level, 6.5% (N=403,629) of all VHA patients had a primary diagnosis of COPD. On the network level, the range ran from a low of 8,102 individuals in the Capitol Network (VISN 5), representing 5.4%, to a high of 36,254 individuals in the South Central Network (VISN 16), representing 7.21%.

Using the example of the South Central Network (VISN 16), a small percent (0.6%) of all 13,310,260 outpatient encounters were by those VHA patients with a primary diagnosis of COPD. 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 on the network and National level. Again, looking at the South Central Network (VISN 16), combined rural patients with a primary diagnosis of COPD represented only 0.31% of all outpatient encounters in that network, compared to 0.6% 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 COPD by rurality. In this table, some very interesting urban-rural comparisons across VISNs emerge. For example, the Midwest Network (VISN 23) had a total of 57,227 outpatient encounters for patients who had a primary diagnosis of COPD. More than half (62.30%) of the encounters were from patients living in rural or highly rural areas of the VISN. Following VISN 23, four other networks (in rank order, VISNs 9, 15, 2, and 16) also had more than half of encounters from patients living in rural and highly rural areas of the VISN.

Table 6: Outpatient Encounters of Patients with a Primary Diagnosis of Chronic Obstructive Pulmonary Disease (COPD)

Overall Resource Utilization- Chronic Obstructive Pulmonary Disease (COPD) (Primary Diagnosis Group) Compared to All Users, FY-2014										
Veterans Integrated Service Network	Total Number of Patients	Patients with COPD		Outpatient Encounters						
		N	%	Total	COPD					
	N	%	N	HR	R	%	U	Unk	%	
New England (01)	253,326	16,882	6.66	7,306,431	162	13,747	0.19	7	3	0.19
Upstate NY (02)	136,497	9,003	6.60	4,189,442	10	12,628	0.30	11,135	0	0.57
NY/NJ (03)	174,457	11,804	6.77	5,308,815	0	1,920	0.04	25,446	0	0.52
Stars and Stripes (04)	310,940	21,232	6.83	8,188,223	5	24,068	0.29	30,582	4	0.67
Capitol (05)	150,012	8,102	5.40	3,919,003	0	5,285	0.13	14,695	5	0.51
Mid-Atlantic (06)	359,692	21,738	6.04	9,682,967	8	22,869	0.24	23,861	1	0.48
Southeast (07)	408,164	23,307	5.71	10,588,864	0	24,586	0.23	25,778	1	0.48
Sunshine (08)	576,411	35,763	6.20	17,255,468	9	14,357	0.08	64,147	10	0.46
Mid South (09)	298,396	21,052	7.06	8,424,188	8	25,794	0.31	16,648	1	0.50
Ohio (10)	231,319	19,814	8.57	7,511,566	4	19,454	0.26	32,630	2	0.69
Vets in Partnership (11)	282,135	20,270	7.18	7,691,758	15	20,370	0.27	26,199	3	0.61
Great Lakes (12)	266,879	16,385	6.14	7,705,668	100	12,192	0.16	24,368	10	0.48
Heartland (15)	245,357	20,562	8.38	7,009,124	483	29,239	0.42	20,699	2	0.72
South Central (16)	502,681	36,254	7.21	13,310,260	105	41,173	0.31	38,965	11	0.60
Heart of Texas (17)	306,581	17,582	5.73	7,950,682	226	14,271	0.18	21,868	4	0.46
Southwest (18)	271,557	17,675	6.51	6,738,226	2,367	15,964	0.27	31,467	33	0.74
Rocky Mtn. (19)	202,350	13,331	6.59	4,987,574	3,456	7,948	0.23	16,012	5	0.55
Northwest (20)	288,322	18,143	6.29	6,791,502	1,932	14,725	0.25	23,623	4	0.59
Sierra Pacific (21)	293,645	15,856	5.40	6,828,680	919	9,048	0.15	23,850	112	0.50
Desert Pacific (22)	328,951	16,275	4.95	8,520,022	639	2,415	0.04	31,563	4	0.41
Midwest (23)	324,728	22,599	6.96	8,146,785	3,869	31,783	0.44	21,571	4	0.70
<b>Grand Total</b>	<b>6,212,400</b>	<b>403,629</b>	<b>6.50</b>	<b>168,055,248</b>	<b>14,317</b>	<b>363,836</b>	<b>0.23</b>	<b>553,842</b>	<b>219</b>	<b>0.55</b>

# Chronic Obstructive Pulmonary Disease



**Table 7: Outpatient Encounters of Patients with a Primary Diagnosis of Chronic Obstructive Pulmonary Disease (COPD) by Rurality**

Veterans Integrated Service Network	Outpatient Encounters by Patients with Primary COPD DX					
	Total	Rurality				
	N	HR	R	%	U	Unk
New England (01)	42,647	162	13,747	32.61	28,735	3
Upstate NY (02)	23,773	10	12,628	53.16	11,135	0
NY/NJ (03)	27,366	0	1,920	7.02	25,446	0
VISN 04 (04)	54,659	5	24,068	44.04	30,582	4
Capitol (05)	19,985	0	5,285	26.44	14,695	5
Mid-Atlantic (06)	46,739	8	22,869	48.95	23,861	1
Southeast (07)	50,365	0	24,586	48.82	25,778	1
Sunshine (08)	78,523	9	14,357	18.30	64,147	10
Mid South (09)	42,451	8	25,794	60.78	16,648	1
Ohio (10)	52,090	4	19,454	37.35	32,630	2
Vets in Partnership (11)	46,587	15	20,370	43.76	26,199	3
Great Lakes (12)	36,670	100	12,192	33.52	24,368	10
Heartland (15)	50,423	483	29,239	58.95	20,699	2
South Central (16)	80,254	105	41,173	51.43	38,965	11
Heart of Texas (17)	36,369	226	14,271	39.86	21,868	4
Southwest (18)	49,831	2,367	15,964	36.79	31,467	33
Rocky Mtn. (19)	27,421	3,456	7,948	41.59	16,012	5
Northwest (20)	40,284	1,932	14,725	41.35	23,623	4
Sierra Pacific (21)	33,929	919	9,048	29.38	23,850	112
Desert Pacific (22)	34,621	639	2,415	8.82	31,563	4
Midwest (23)	57,227	3,869	31,783	62.30	21,571	4
<b>TOTAL</b>	<b>932,214</b>	<b>14,317</b>	<b>363,836</b>	<b>40.57</b>	<b>553,842</b>	<b>219</b>

Table 8 examines the overall outpatient encounters at VHA health care facilities by those VHA patients with a secondary diagnosis of COPD. That is, patients who had an encounter with COPD as the secondary diagnosis. On the National level, 9.68% (N=601,339) of all VHA patients had secondary diagnosis of COPD. On the network level, the range ran from a low of 11,412 individuals in the Capitol Network (VISN 5), representing 7.61%, to a high of 58,046 individuals in the Sunshine Network (VISN 8), representing 10.07%.

In Table 9 (similar to Table 7 for patients with a primary diagnosis of COPD) information on outpatient encounters for all patients with a secondary diagnosis of COPD by rurality is reported. The percentage of encounters by rural and highly rural patients constituted nearly two-thirds of the total COPD encounters in VISN 23 (64.86%). Following VISN 23, five other networks (in rank order, VISNs 9, 15, 16, 2, and 6) had more than half of the encounters from patients with a secondary diagnosis of COPD living in rural and highly rural areas of the VISN.

# Chronic Obstructive Pulmonary Disease



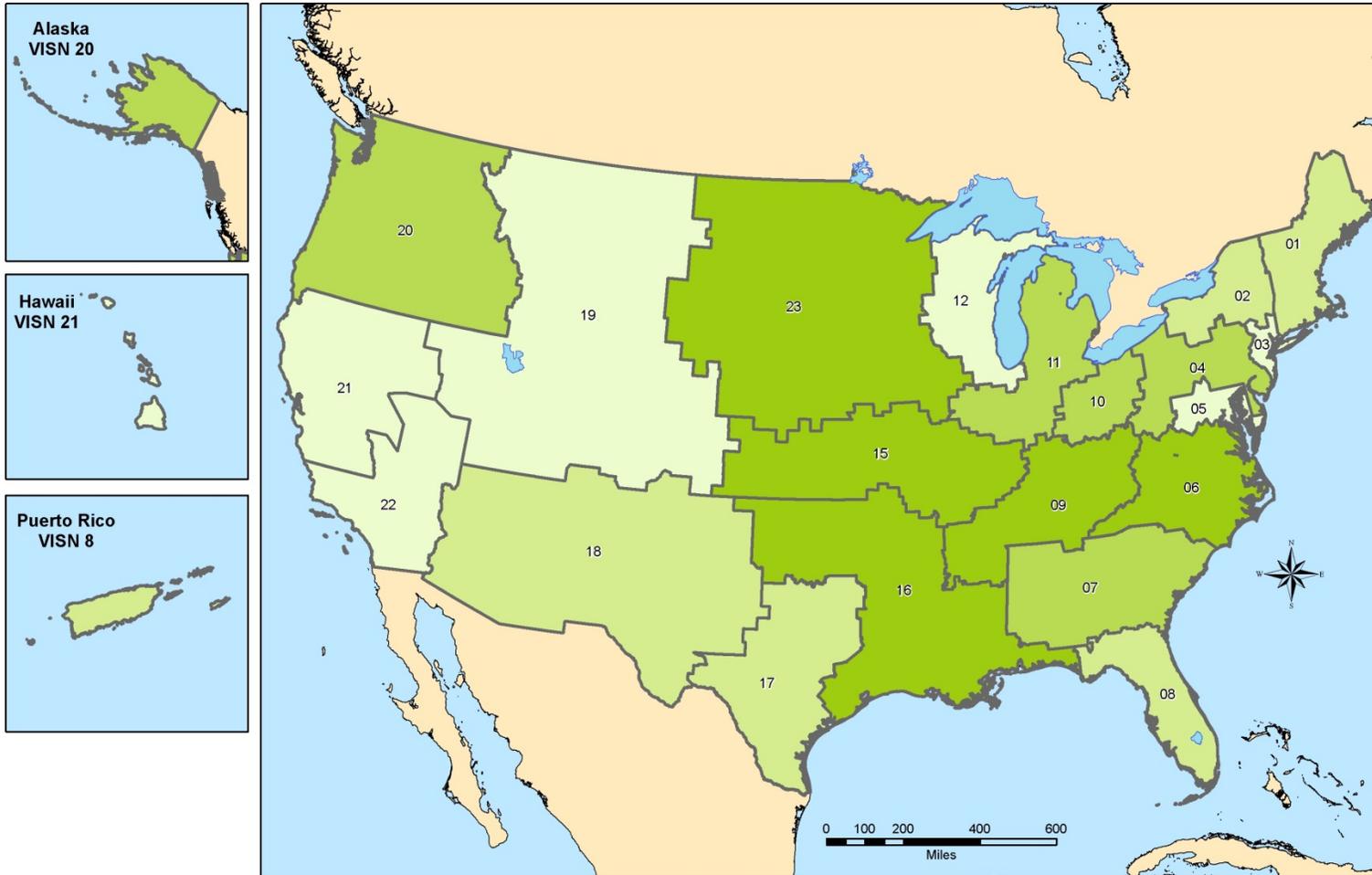
**Table 8: Outpatient Encounters of Patients with a Secondary Diagnosis of Chronic Obstructive Pulmonary Disease (COPD)**

Overall Resource Utilization- Chronic Obstructive Pulmonary Disease (COPD) (Secondary Diagnosis Group) Compared to All Users, FY-2014										
Veterans Integrated Service Network	Total Number of Patients	Patients with COPD		Outpatient Encounters						
		N	%	Total	COPD					
	N			HR	R	%	U	Unk	%	
New England (01)	253,326	24,453	9.65	7,306,431	258	17,788	0.25	33,020	0	0.70
Upstate NY (02)	136,497	15,440	11.31	4,189,442	29	17,971	0.43	15,110	0	0.79
NY/NJ (03)	174,457	15,420	8.84	5,308,815	1	2,121	0.04	26,955	0	0.55
Stars and Stripes (04)	310,940	33,960	10.92	8,188,223	5	28,708	0.35	36,713	1	0.80
Capitol (05)	150,012	11,412	7.61	3,919,003	4	6,843	0.17	15,399	1	0.57
Mid-Atlantic (06)	359,692	34,767	9.67	9,682,967	16	37,766	0.39	33,137	2	0.73
Southeast (07)	408,164	35,770	8.76	10,588,864	3	29,560	0.28	29,891	0	0.56
Sunshine (08)	576,411	58,046	10.07	17,255,468	12	21,807	0.13	85,450	1	0.62
Mid South (09)	298,396	33,503	11.23	8,424,188	4	36,977	0.44	23,485	3	0.72
Ohio (10)	231,319	26,733	11.56	7,511,566	6	21,973	0.29	32,261	1	0.72
Vets in Partnership (11)	282,135	31,326	11.10	7,691,758	6	27,315	0.36	30,348	2	0.75
Great Lakes (12)	266,879	25,329	9.49	7,705,668	157	16,103	0.21	31,471	4	0.62
Heartland (15)	245,357	28,885	11.77	7,009,124	461	34,670	0.50	23,447	4	0.84
South Central (16)	502,681	49,462	9.84	13,310,260	122	48,829	0.37	38,230	4	0.66
Heart of Texas (17)	306,581	26,056	8.50	7,950,682	282	20,033	0.26	27,672	7	0.60
Southwest (18)	271,557	24,442	9.00	6,738,226	2,312	14,108	0.24	27,817	47	0.66
Rocky Mtn. (19)	202,350	18,618	9.20	4,987,574	4,201	9,397	0.27	20,047	6	0.67
Northwest (20)	288,322	26,410	9.16	6,791,502	2,727	19,633	0.33	26,989	8	0.73
Sierra Pacific (21)	293,645	23,075	7.86	6,828,680	901	12,106	0.19	27,859	212	0.60
Desert Pacific (22)	328,951	24,147	7.34	8,520,022	937	3,757	0.06	38,942	6	0.51
Midwest (23)	324,728	34,085	10.50	8,146,785	3,883	33,133	0.45	20,057	2	0.70
<b>Grand Total</b>	<b>6,212,400</b>	<b>601,339</b>	<b>9.68</b>	<b>168,055,248</b>	<b>16,327</b>	<b>460,598</b>	<b>0.28</b>	<b>644,300</b>	<b>311</b>	<b>0.67</b>

Table 9: Outpatient Encounters of Patients with a Secondary Diagnosis of Chronic Obstructive Pulmonary Disease (COPD) by Rurality

Veterans Integrated Service Network	Outpatient Encounters by Patients with Secondary COPD DX					
	Total	Rurality				
	N	HR	R	%	U	Unk
New England (01)	51,066	258	17,788	35.34	33,020	0
Upstate NY (02)	33,110	29	17,971	54.36	15,110	0
NY/NJ (03)	29,077	1	2,121	7.30	26,955	0
VISN 04 (04)	65,427	5	28,708	43.89	36,713	1
Capitol (05)	22,247	4	6,843	30.78	15,399	1
Mid-Atlantic (06)	70,921	16	37,766	53.27	33,137	2
Southeast (07)	59,454	3	29,560	49.72	29,891	0
Sunshine (08)	107,270	12	21,807	20.34	85,450	1
Mid South (09)	60,469	4	36,977	61.16	23,485	3
Ohio (10)	54,241	6	21,973	40.52	32,261	1
Vets in Partnership (11)	57,671	6	27,315	47.37	30,348	2
Great Lakes (12)	47,735	157	16,103	34.06	31,471	4
Heartland (15)	58,582	461	34,670	59.97	23,447	4
South Central (16)	87,185	122	48,829	56.15	38,230	4
Heart of Texas (17)	47,994	282	20,033	42.33	27,672	7
Southwest (18)	44,284	2,312	14,108	37.08	27,817	47
Rocky Mtn. (19)	33,651	4,201	9,397	40.41	20,047	6
Northwest (20)	49,357	2,727	19,633	45.30	26,989	8
Sierra Pacific (21)	41,078	901	12,106	31.66	27,859	212
Desert Pacific (22)	43,642	937	3,757	10.76	38,942	6
Midwest (23)	57,075	3,883	33,133	64.86	20,057	2
<b>TOTAL</b>	<b>1,121,536</b>	<b>16,327</b>	<b>460,598</b>	<b>42.52</b>	<b>644,300</b>	<b>311</b>

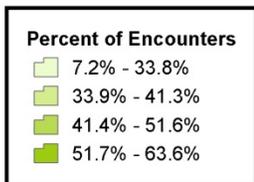
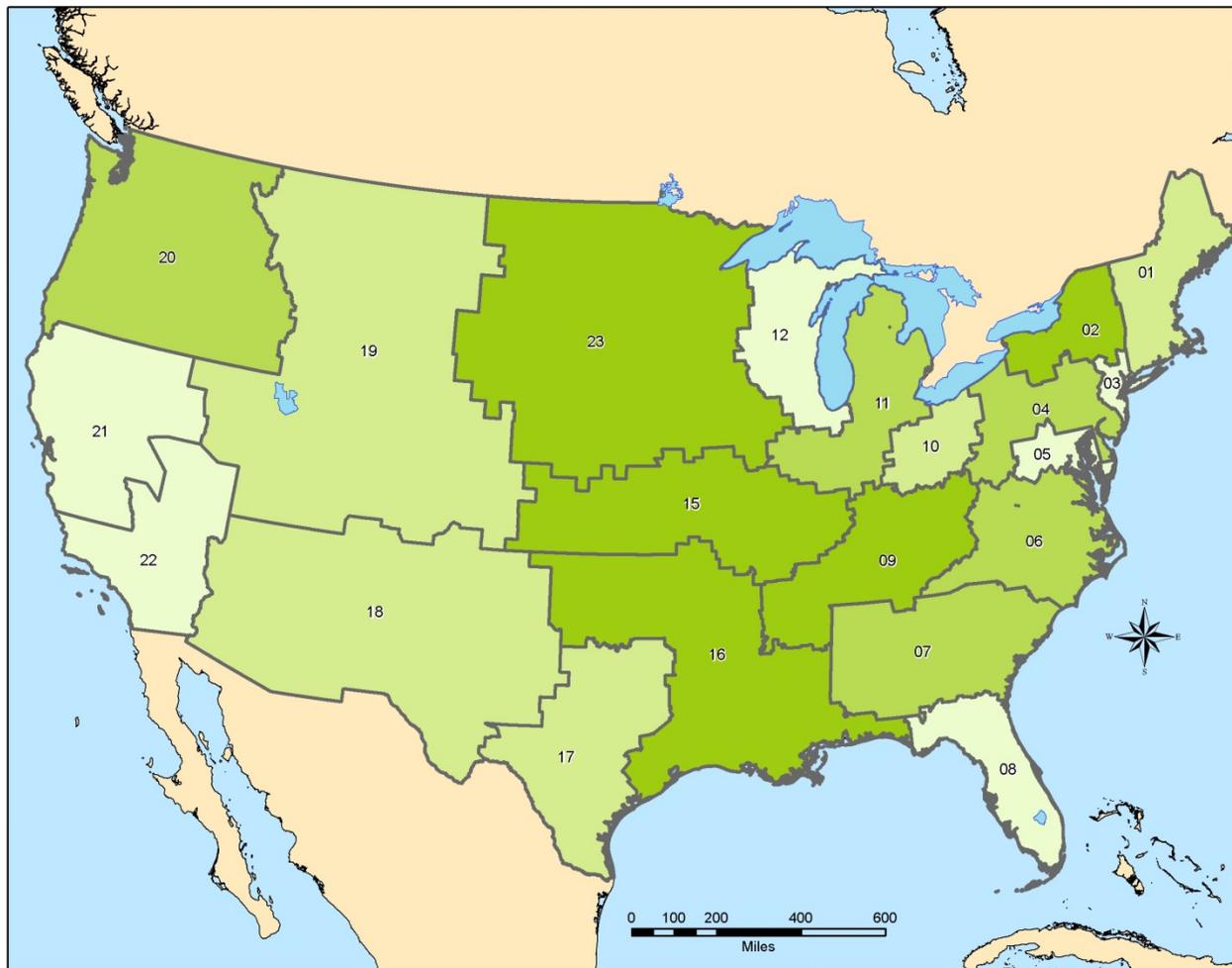
# Chronic Obstructive Pulmonary Disease



**Patient Encounters**

- 4,042 - 28,552 (Lower 25%)
- 28,553 - 36,185
- 36,186 - 54,149
- 54,150 - 90,229 (Upper 25%)

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

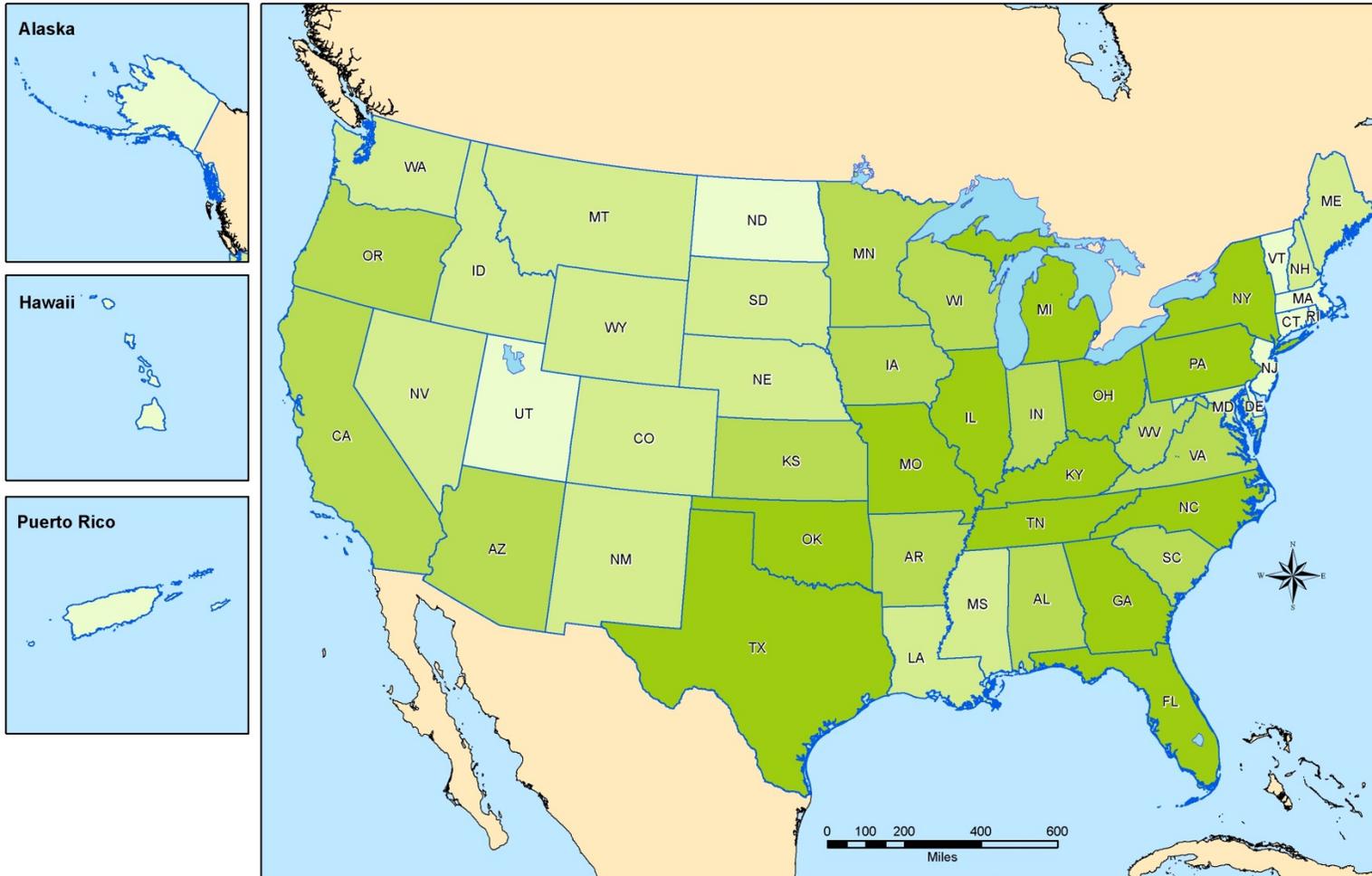


Map 45:  
Percent of Rural and Highly Rural VHA Patients  
with COPD Encounters  
Of All VHA Patient COPD Encounters  
By VISN FY - 2014



Map Created By: ORH RHRC-ER (DCR, LKW, JKA, ERL)  
GeoSpatial Outcomes Division  
(Map Creation Date: 8/18/2015)  
Map Information by: PSSG, VSSC, ESRI  
ArcGIS 10.2x

# Chronic Obstructive Pulmonary Disease

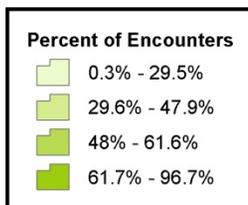
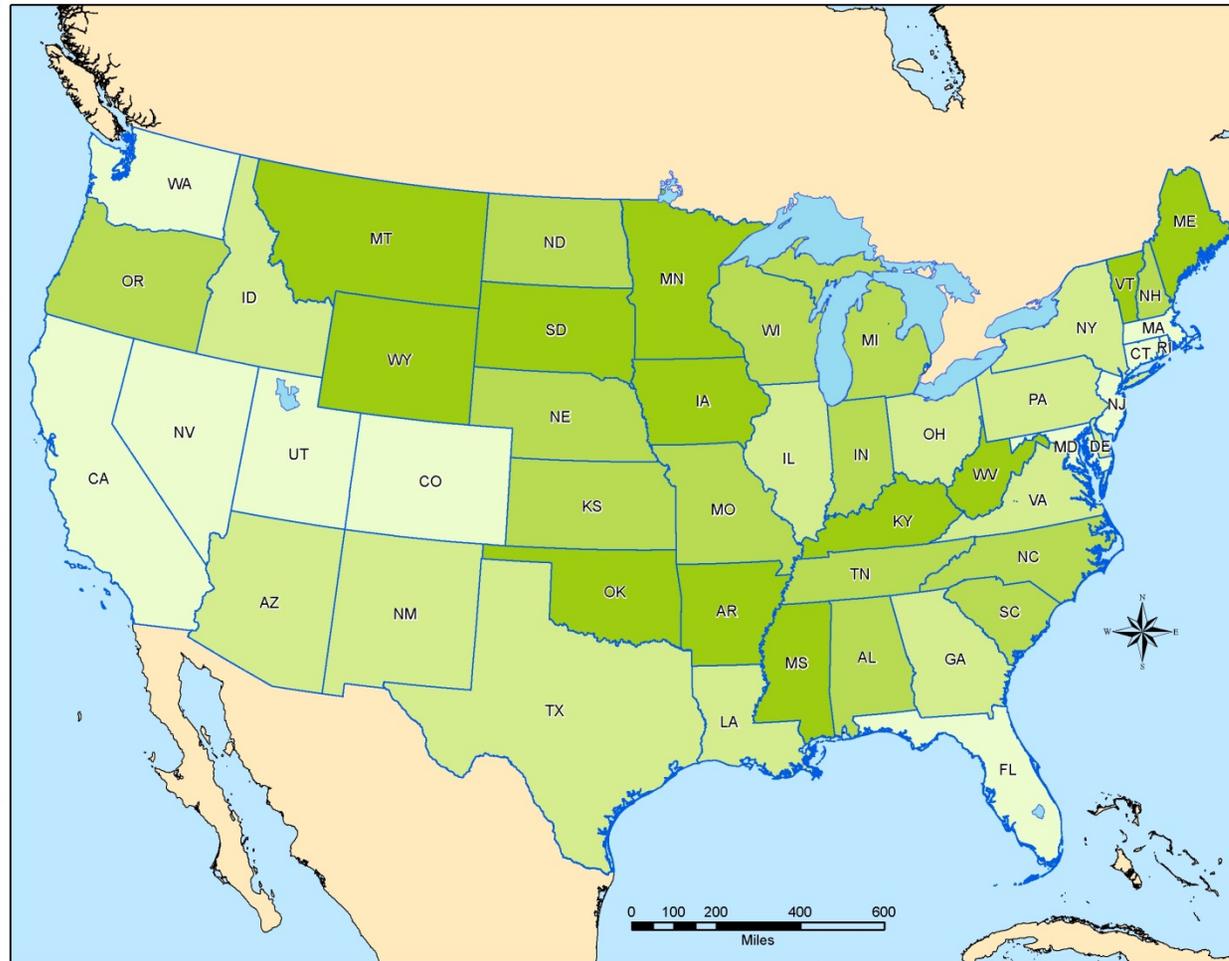


Patient Encounters	
<span style="display:inline-block; width:15px; height:15px; background-color:#ffffcc; border:1px solid black;"></span>	1 - 4,965 (Lower 25%)
<span style="display:inline-block; width:15px; height:15px; background-color:#d9ead3; border:1px solid black;"></span>	4,966 - 16,176
<span style="display:inline-block; width:15px; height:15px; background-color:#c4e1a1; border:1px solid black;"></span>	16,177 - 22,970
<span style="display:inline-block; width:15px; height:15px; background-color:#94b88d; border:1px solid black;"></span>	22,971 - 56,067 (Upper 25%)

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

GeoSpatial Outcomes Division  
VHA Office of Rural Health

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GeoSpatial Outcomes Division  
(Map Creation Date: 8/18/2015)  
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ArcGIS 10.2x

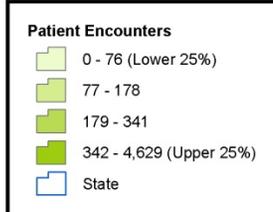
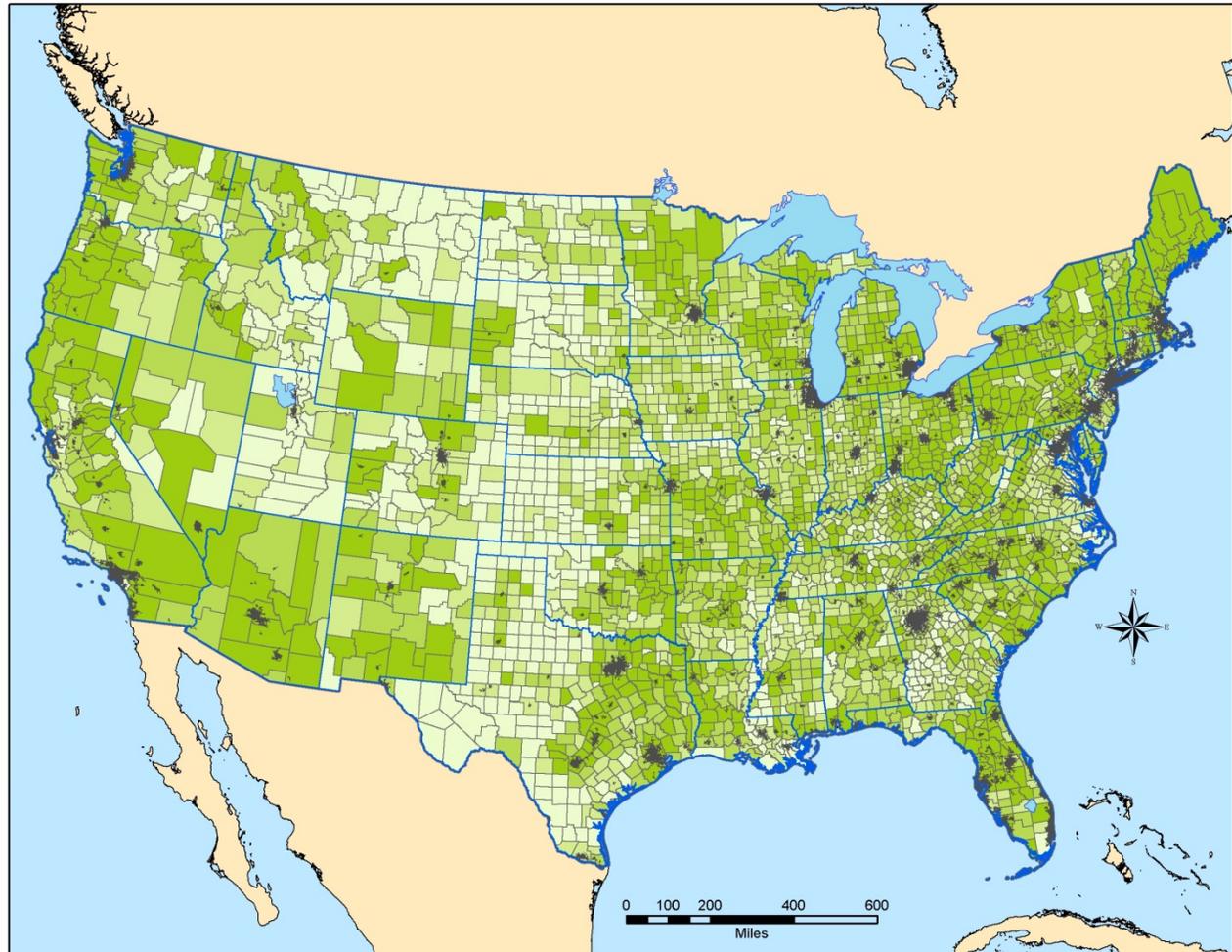


Map 47:  
Percent of Rural and Highly Rural VHA Patients  
with COPD, Encounters  
Of All VHA Patient COPD Encounters  
By State FY - 2014

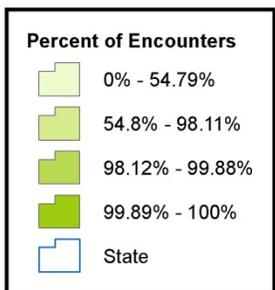
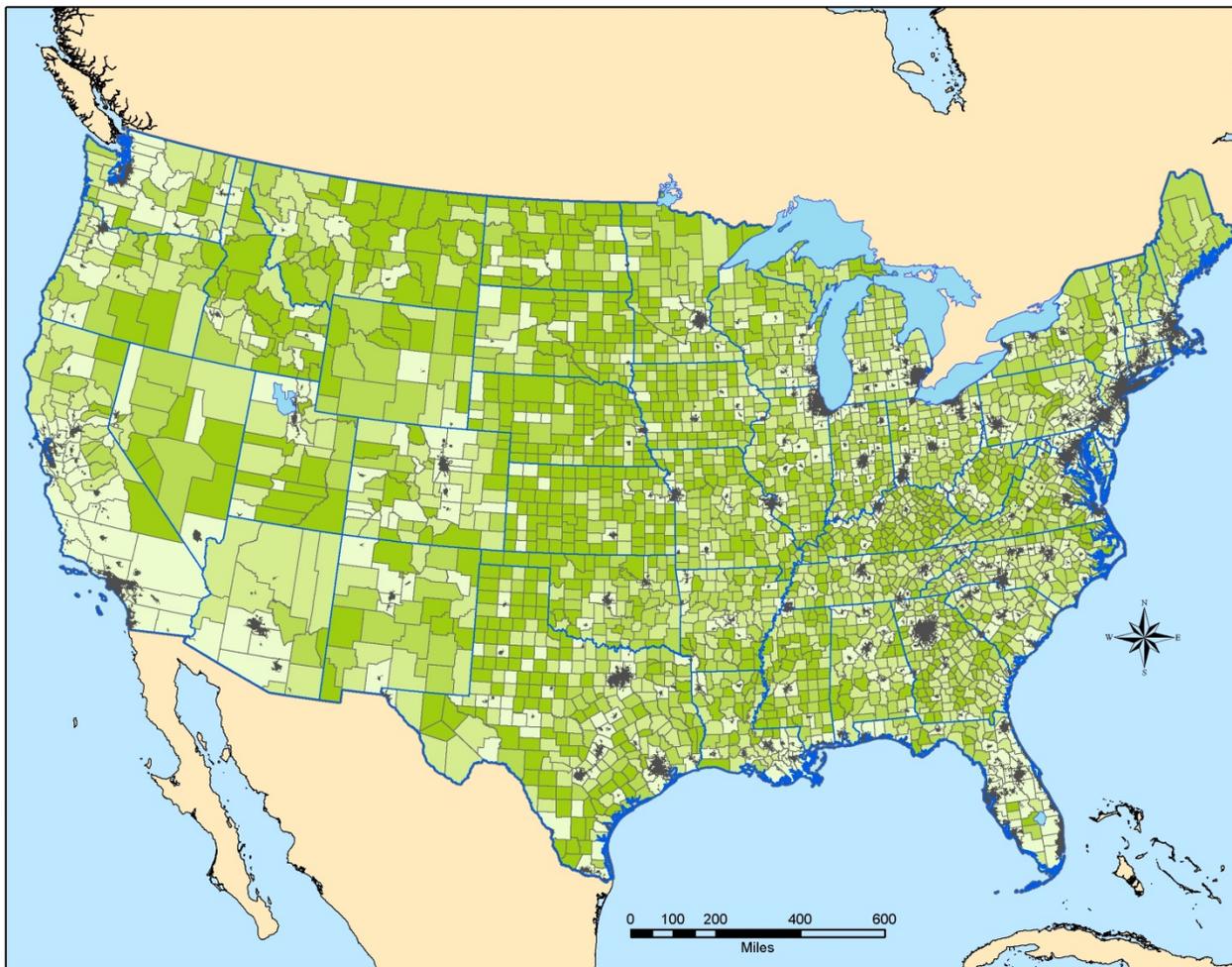


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(Map Creation Date: 8/18/2015)  
Map Information by: PSSG, VSSC, ESRI  
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# Chronic Obstructive Pulmonary Disease



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



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



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GeoSpatial Outcomes Division  
(Map Creation Date: 8/18/2015)  
Map Information by: PSSG, VSSC, ESRI  
ArcGIS 10.2x

## References

1) Diagnosis Cube Documentation, available at:

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

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

2) Enrollment Priority Groups, available at:

[http://www.va.gov/healthbenefits/resources/publications/IB10-441\\_enrollment\\_priority\\_groups.pdf](http://www.va.gov/healthbenefits/resources/publications/IB10-441_enrollment_priority_groups.pdf).

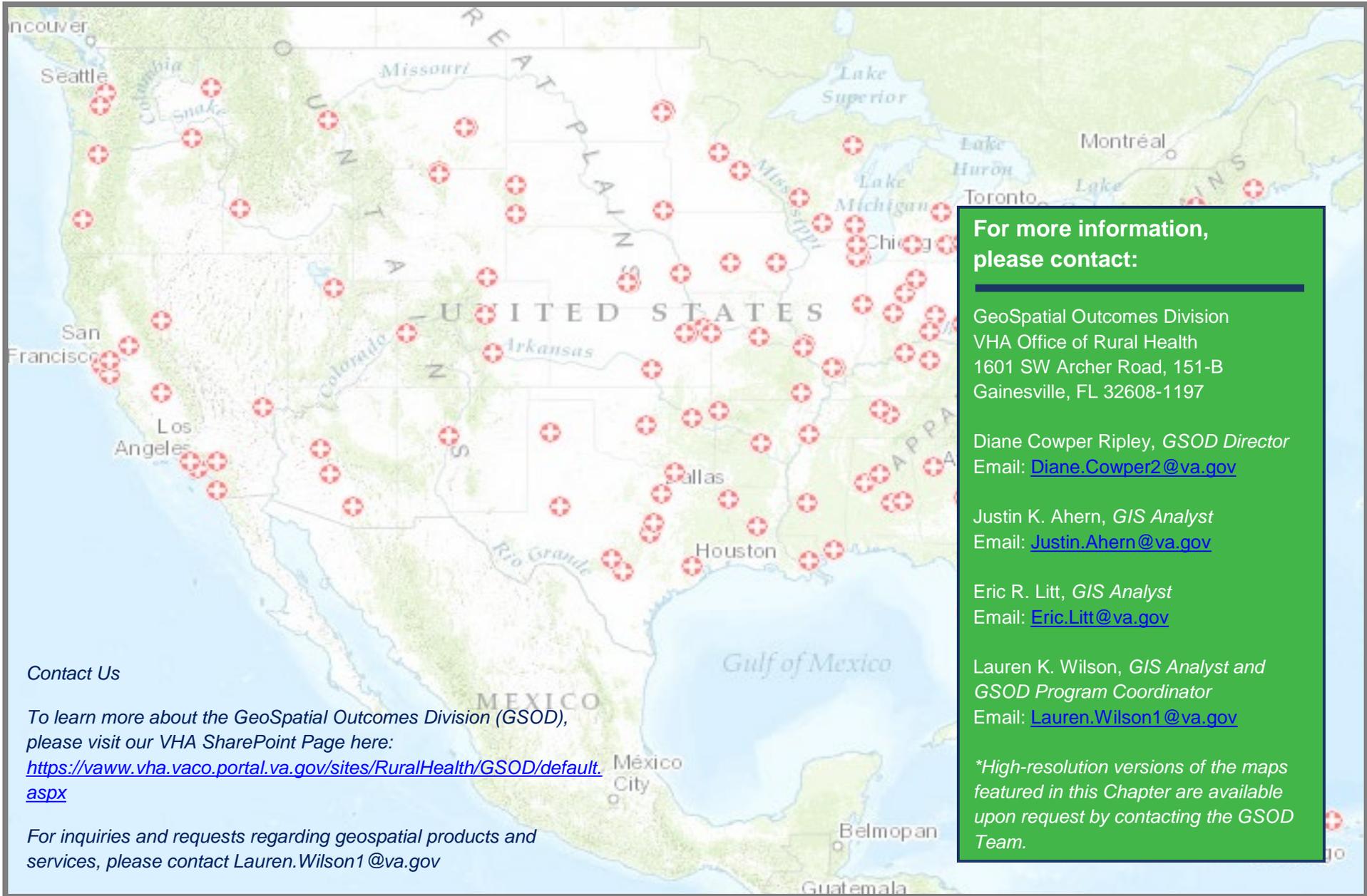
## Project Team

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

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

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

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



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

**Contact Us**

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

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