

Final Deliverable

TIME AND DISTANCE STUDY



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I. Introduction

The purpose of this study is to measure the distance and travel time PSAS patients endure to access primary healthcare services at VHA facilities

The Department of Veterans Affairs (VA) contracted Booz Allen Hamilton (Booz Allen) to conduct a program evaluation of services provided to veterans that utilize Prosthetics and Sensory Aids Services (PSAS). PSAS patients were chosen to represent special disability populations that utilize VHA health care services. The program evaluation study presented in this report focuses on determining PSAS patients' access to primary care services.

The main study question in the overall program evaluation of PSAS evaluates “to what extent is VA achieving its program outcomes for patients requiring prosthetics based on a continuum of care?” This portion of the program evaluation concentrates on three specific study questions.

- ✓ Are VA prosthetic patients provided convenient, accessible care?
- ✓ What is the travel distance from residence to point of care?
- ✓ What is the travel time from residence to point of care?

This report describes Veterans Health Administration (VHA) system for providing primary care services, the methodology used to calculate travel time and distance, and results of the analysis. These results include distance and travel time PSAS patients endure to access primary healthcare services and percentages of patients meeting specific travel standards. Other measures utilized to calculate convenience and accessibility, such as waiting times, will be evaluated in the Patients Discharged to Home Study under this Program Evaluation.

VHA provides primary healthcare services to veterans at various types of facilities across the country

VHA is dedicated to providing a comprehensive integrated healthcare system. Over the last ten years, VHA has transitioned from a hospital-based health care system to a system of care that includes Community Based Outpatient Clinics (CBOCs), mobile clinics, and ambulatory care centers, as well as acute and tertiary care hospitals, nursing homes, and domiciliaries. There are approximately 744 CBOCs, 163 hospitals, four ambulatory care centers, and seven mobile clinics offering primary care services to veterans. Primary care services are defined as providing initial assessment, health promotion and education, disease prevention, management of acute minor illnesses and chronic bio-psychosocial conditions, drug management, physical examinations, immunizations, and referrals to specialty care.¹ CBOCs have been developed and utilized by VHA as a method to provide health care services, mainly primary care, to veterans in underserved areas. CBOCs may be VA-operated or run by contractor organizations.

Patient access to primary care services is an important aspect of care to measure because it represents the initial contact and entry point to a system of care. It also represents comprehensive, longitudinal care from multidisciplinary practitioners that may include general medicine physicians, nurse practitioners, dietitians, pharmacists, and health educators who serve as gatekeepers to specialty care.

II. Methodology

VA databases were used to identify facilities providing primary care services and to determine a representative PSAS patient set

The Booz Allen team utilized several VA databases to determine primary care facilities, identify patients that utilize PSAS services, and determine the locations of both facilities and patient residence. The zip codes for patients' residences were matched to the closest VA facility providing primary care services to determine average distance and time traveled by patients. VA databases used in this effort include the VA Zip Code File, VA Station Tracking (VAST) database, Outpatient Clinic/Patient Treatment File (OPC/PTF), and the National Prosthetic Patient Database (NPPD).

FACILITY IDENTIFICATION AND ADDRESS MATCHING

The VA Planning Systems Support Group (PSSG) developed the Zip Code File data set that provides zip code centroids — coordinates (latitude and longitude) representing the center of a region — and the corresponding VHA service sites. The zip code centroids were derived from Geographic Data Technology (GDT), which provides up-to-date, highly accurate spatial information on geographic locations such as county boundaries, zip codes, etc.

A current list of VHA facilities providing primary care services was obtained from the VA Station Tracking (VAST) database. VHA sites that provide primary care services are characterized as Hospital-Based Clinics, Independent Clinics, Mobile Clinics, and Community-Based Outpatient Clinics. These facilities are defined below according to VHA Directive 2001-060.

Hospital-Based Clinic — A hospital-based clinic consists of the outpatient clinic functions located at a hospital.

Independent Clinic — An independent clinic is a full-time, self-contained, freestanding, ambulatory care clinic that has no management, program, or fiscal relationship to a VA hospital. Primary and specialty health care services are provided in an outpatient setting.

Mobile Clinic — A mobile clinic is a specially equipped van with multiple scheduled stops providing outpatient care. A mobile clinic is under the jurisdiction of a parent medical facility.

Community-Based Outpatient Clinic (CBOC) — A CBOC is a VA-operated or a VA-funded health care facility geographically distinct from a parent medical facility. This term encompasses all types of VA outpatient clinics, except hospital-based, independent, and mobile clinics.

As of July 1, 2002, the VAST database included 918 sites coded in one of these clinic types. The VAST database identified 744 CBOCs, 163 Hospital Based Clinics, four Independent Clinics and seven Mobile Clinics. The Booz Allen team determined 860 unique zip codes of the 918 facilities, as there may be several facilities in one zip code. Of the 860 sites, 46 sites did not have a specified address or match to a zip code. To determine the reason for the missing zip codes and addresses, Booz Allen team members called the Clinical Manager's office at several Veteran Integrated Service Networks (VISNs). VISN staff reported that the clinics listed in the VAST database without addresses or zip codes were not open for service at that time (as of July 18, 2002) and were therefore omitted from the study set. Five sites located

in Puerto Rico, Guam, and the Virgin Islands were also omitted because these sites fall beyond the study area.

A total of 809 primary care facilities remained in our study data set after removing the above-mentioned sites, i.e., those with missing zip codes and addresses, as well as those in Puerto Rico, Guam and the Virgin Islands. The percentage of urban and non-urban sites used for this study is identified below.

Primary Care Facilities: Urban – $475/809 = 59\%$ Non-Urban – $334/809 = 41\%$

The 809 unique zip code locations also include 18 sites that contain more than one service provider/facility. For instance, the Madelia, Minnesota, provider (Mayo Health Clinic System) contains 14 providers/facilities but is only counted once (under one zip code). VA Central Office staff in the Primary and Ambulatory Care Service stated that sites with more than one provider/facility are most often contractors. It is possible that the contracted facilities operate in locations with different zip codes from those represented in the VAST database. If this is true, the VA site locations for primary care services in this study could be underrepresented.

PATIENT POPULATION SET

Booz Allen team members determined the population set of PSAS patients for this study by extracting patient identifiers from the OPC/PTF and NPPD. The patient population included veterans: with a motorized wheelchair, receiving home oxygen services, who were legally blind, and who had above knee amputations in 1998, 1999 and 2000. These populations were chosen because they depict a large portion of the entire PSAS population. The population for this study was limited to patients located in the continental United States.

The population set consists of the patients' scrambled social security numbers and zip codes of residence. Each patient population set year was merged as one to create a single file representing that segment of the study population. The Booz Allen team eliminated duplicate social security numbers for patients that appeared in more than one year, as it was only necessary to measure time and distance once for an individual patient.

Each patient population set, distinguished by diagnosis or item received, was geocoded to the zip code level. Geocoding is the process of determining the coordinates of a specific location based on its street address or its existence within a known region. Coordinates can be assigned as a pair of X, Y coordinates or a latitude and longitude. Unmatched zip codes were deleted from the patient set. These unmatched zip codes occurred because the zip code variable was left blank, not identified, or fell outside of the numerical range available for zip codes.

To account for outliers that may skew the data, the Booz Allen team eliminated those data points that fell 3 standard deviations out. This resulted in an analysis of 99.7% of the patient population. This report includes results for the patient population after removing the outliers. The geocoded matched results and the total number of patients in each data set are presented on the following page.

PATIENT SET FOR 98, 99, 00	DATA SET INFORMATION	PATIENT TOTAL
Motorized Wheelchair	5,822 records 1,605 duplicate scrambled SSNs deleted Geocoded 4,217 = 4,214 matched, 3 unmatched (deleted) 39 located in Puerto Rico were deleted 58 outliers were eliminated	Patient Total excluding outliers = 4,117
Home Oxygen	9,958 records 2241 duplicate scrambled SSNs deleted Geocoded 7717 = 7713 matched, 4 unmatched (deleted) 92 outliers were eliminated	Patient Total excluding outliers = 7,621
Legally Blind	8,964 records 1,380 duplicate scrambled SSNs deleted Geocoded 7,584 = 7,576 matched, 8 unmatched (deleted) 117 located in Puerto Rico were deleted 72 outliers were eliminated	Patient Total excluding outliers = 7,387
Patients with A/K Amputations	8,431 records 2,405 duplicate scrambled SSNs deleted Geocoded 6,026 = 6,020 matched, 6 unmatched (deleted) 94 located in Puerto Rico were deleted 69 outliers were eliminated	Patient Total excluding outliers = 5,857
Total Patient Set excluding outliers = 24,982		

VHA Directive 2001-060 defines urban, suburban, and rural areas using the definitions listed below.

- **Urban** — general population of 50,000+ in densely settled territory
- **Suburban** — general population of 2,500–49,999, in a city, village, or township
- **Rural** — all other locations not defined as an urban or suburban area

Each population set was coded as urban or non-urban against VHA Zip Code File. Since VHA Zip Code File codes facilities as either urban or non-urban, the Booz Allen team could not identify those patients that reside in a suburban area. The population sets are described below.

**National Total Patient Population Excluding Outliers
(Urban and Non-urban)**

Urban Area	15,098 Patients
Non-urban	9,884 Patients

The national total patient population in urban and non-urban areas includes all patients from the four patient data sets (motorized wheelchair, above knee amputations, home oxygen, legally blind). Patients may appear more than once in this national total because they may be in more than one patient data set. For example, a patient with an above knee amputation may also have received a motorized wheelchair.

Booz Allen reviewed extensive research done by the CARES team and standards set by TRICARE for time and distance to primary care services

The Booz Allen team reviewed extensive research conducted by the Booz Allen Capital Asset Realignment Enhanced Services (CARES) teamⁱⁱ to utilize standards for time and distance to VHA health care. The CARES research included extensive literature review as well as conversations with approximately 30 healthcare agencies, organizations, departments of health, and academic medical centers.

The Booz Allen CARES team utilized multiple data resources including:

- State of Illinois (e.g., radiation therapy, dialysis: 90% within 45 min.)
- National Rural Health Association (e.g., primary care: 30 min travel time from patient's residence)
- Center for Health Services Research & Policy (e.g., primary care: Wisconsin 20 miles)
- TRICARE (e.g., Community Hospital: 40 mile radius)
- Department of Veterans Affairs
 - National Healthcare Plan 1992
 - Patient Care Services Feedback to CARES Criteria 2000
 - VISN 12 Defining Programs Draft 12/99 (e.g., Regional/specialty: 90% within 2 hours)
- Bureau of Primary Care-time/distance conversion
- Chicago Area Transportation Department
- Patient Survey Data
- VISN 12 Site Visits

These resources did not produce definitive standards for access times; however, the CARES team did produce a clustering of reference points that were used to define standards for accessing primary care services. These standards include 30 minutes and six miles for urban areas, 30 minutes and 20 miles for both suburban and rural areas. The formula used for calculating time in this study was developed from the CARES standards. The time required to travel was calculated by multiplying 1.5 times the travel distance for patients located in non-urban areas and five times the travel distance for urban patients.

The Booz Allen team also reviewed access standardsⁱⁱⁱ for TRICARE contractors to gain additional understanding of standards established outside of VA. TRICARE — the Department of Defense's (DoD) regional managed health care program for members of the Armed Services, military families and retirees — established access standards for both primary and specialty care. These standards were set for TRICARE contractors to ensure that enrollees have access to appropriate health care services. The TRICARE access standard for primary care regarding travel time is defined, as “under normal circumstances, enrollee travel time may not exceed 30 minutes from home to primary care delivery site.”^{iv} The *Evaluation of the TRICARE Program—FY 2000 Report to Congress* describes enrollee perceived access to and quality of health care provided by the TRICARE Program. The report states that 87% of enrollees experienced a travel time to provider less than 30 minutes in FY 94 and 83% in FY 98. The data used for this evaluation were obtained from the Health Care Survey of DoD Beneficiaries, which

sampled representative cross sections of all beneficiaries, i.e., non-active and active duty military personnel.

The analysis presented later in this report applies the CARES and TRICARE standards (which are the same) to VA results to calculate time traveled by VA patients. The percentage of TRICARE enrollees meeting the 30 minute travel time standard is also compared to the percent of VA patients meeting this standard.

The Booz Allen team utilized Geographic Information Systems (GIS) to determine time and travel distance

A Geographic Information System (GIS) is a computer system capable of integrating, manipulating, analyzing, and displaying geographically referenced information. GIS has the ability to integrate data that may be different, such as geographic, demographic, and man-made features. GIS can be used on a large or small scale, tracking information at the national, state, or site level. GIS helps identify and graphically depict information about land, transportation, environmental, economic and other factors that will aid in spatial analysis. By combining multiple layers of information into a single system, a more complete understanding of relationships at both the micro and macro level can be obtained.

In this study, GIS provides spatial analysis to determine how far a patient travels to access primary care services from their residence. Spatially referenced information such as zip code point locations of patient residences and primary care service sites were layered together to analyze time and distance traveled. By applying distance buffers around each of VHA sites: six-mile radius for urban patients and 20-mile radius for non-urban patients, we were better able to see which patients are within the CARES distance standards. In determining the distance of the closest VHA site to a patient's home, a spatial join is applied. A spatial join is a type of analysis in which the attributes of features in two different layers are joined together based on relative location of the features. The nearest feature is defined as the feature that is geographically closest to one another. In this study, the spatial join locates the nearest VHA primary care site to each patient and records the distance between the two points.

Several issues were raised in performing the analysis that may limit study findings

Booz Allen team members identified special considerations, possible limitations and issues regarding the data available for analysis. These data descriptions are outlined below.

- Lack of complete information regarding primary care facility locations and addresses:
 - Information in the study database did not include complete addresses for patients, therefore the zip code for patients and facilities were used to determine travel distance. The results underrepresented the travel distance since patients that live in the same zip code area as the facility are recorded as traveling zero miles. Also, more than one primary care facility may be located in a zip code, which is also not accounted for using this methodology.
 - Mobile Clinics were coded as one zip code; however, the clinic probably provides services to multiple zip code locations.
 - Several contractor sites are coded as multiple providers (facilities) under one zip code. These provider sites may be located in zip code areas not captured in the database.

- 46 clinics were identified in the VAST database that did not specify an address or zip code. These clinics were assumed to be planned facilities not currently providing services and were removed from the study.
- Characteristics of the patient population:
 - The majority of patients under review for this study are considered special disability populations. These patients may live closer to large medical facilities for the purpose of obtaining regular medical treatment.
 - The analysis will determine the closest VA facility to each veteran, which may or may not be the facility the veteran chooses to utilize.
 - VHA utilizes private-sector providers to care for patients on a fee basis. Typically, fee basis is used for specialized care, when the patient cannot travel long distances or in extremely underutilized service areas. These private-sector physician locations could not be identified for this study.
 - The patient populations used for this study may not be accurately reflected due to coding or data entry errors. Examples include: 1) there were no patients in Washington D.C. coded in the database as home oxygen users, and 2) a motorized wheelchair patient living in Massachusetts was coded as living in VISN 8, incorrectly.
 - Cities in the Zip Code File may not be coded according to the VHA Directive 2001-060 guidelines for rural, urban, and suburban size. For example, Auburn, Maine (population 24,000), and Lewiston, Maine (population 40,000), were both coded as urban locations. Patients that live in these cities and travel to Portland, Maine, for primary care treatment had a travel time calculated using the urban ratio (1.5 per 1 mile).

III. Findings from Data Analysis

Booz Allen conducted a data analysis to determine the national average distance for the total patient population excluding data outliers

Booz Allen team members removed the data outliers (3 standard deviations out), which were 291 patients of the total patient population (both urban/non-urban, all four groups). These patients were identified as having travel distances greater than 62.38 miles. Of this outlier group, the range of travel distances is between 62.430 and 667.771 miles. Average distance traveled for this group (N=291) is 80.916 miles (from 33 states). The top four states with the highest average distance traveled from the outlier group are: Alaska, Nevada, North Dakota, Utah, and Washington.

After removing these outliers, the patient population (all groups) travel on average 12.855 miles to the nearest VHA primary care site. The majority of patients resides 0 to 15 miles from the nearest VHA primary care site and travels an average of 5.477 miles. The majority of the patient population is comprised of home oxygen patients. Legally blind patients travel the shortest distance and live closest to VHA sites. Motorized wheelchair patients live the furthest away from a VHA site. Below are the mile ranges for patients, excluding the outlier group.

National Average Distance Traveled for the Patient Population Minus Data Outliers (N=24,982)

MILE RANGES	Average Distance	Median Distance	Number (Percent) of Population
0-15	5.477	4.698	17,418 (70%)
15-30	21.949	21.746	4,417 (18%)
30-60	40.554	39.048	3,090 (12%)
60+	61.169	61.383	57 (0%)
National Average	12.855	7.552	24,982 (100%)

National Average Distance Traveled by Patient Population (N=24,982)

Patient Population	Average Distance	Median Distance	Number (Percent) of Population
Motorized Wheelchair	13.975	8.840	4,117 (16%)
Home Oxygen	12.933	7.769	7,621 (31%)
Legally Blind	11.690	6.780	7,387 (30%)
Patients with A/K Amputations	13.435	7.535	5,857 (23%)

Below are the national averages for distance and time traveled for each group of the patient population. As an entire population, average for time is above the standard, possibly because in certain states there are fewer VHA sites available, therefore travel time and distance are longer.

Average/Median Distance/Time Patients Travel (N=24,982)

PATIENT POPULATION	URBAN (N = 15,098)				NON-URBAN (N = 9,884)			
	N	Average Distance	Average Time	Median Distance	N	Average Distance	Average Time	Median Distance
Motorized Wheelchair	2,374	6.982	34.912	5.067	1,743	23.498	35.247	21.765
Home Oxygen	4,354	6.240	31.200	4.661	3,267	21.853	32.780	20.701
Legally Blind	4,902	6.277	31.387	4.798	2,485	22.367	33.551	20.555
Patients with A/K Amputations	3,468	6.246	31.231	4.434	2,389	23.870	35.806	22.500

There are a total of 1,213 urban area patients who have a travel distance and time of zero because there is a VHA site located in their home zip code area. Of that group, 33 percent are coded as legally blind and live in the same zip code area as the nearest VHA site. For the 744 non-urban patients living in the same zip code area as the closest VHA site, home oxygen patients have the highest percentage, 33 percent, of zero travel time and distance. Below are the percentages for each group where travel time and distance are equal to zero.

Percent of Patients Traveling Zero Miles and Minutes to Access Care

PATIENT POPULATION	Number (Percent) Patients Traveling 0 Miles and 0 Minutes	
	URBAN (N=1,213)	NON-URBAN (N=744)
Motorized Wheelchair	205 (17%)	118 (16%)
Home Oxygen	308 (25%)	248 (33%)
Legally Blind	396 (33%)	187 (25%)
Patients with A/K Amputations	304 (25%)	191 (26%)

MOTORIZED WHEELCHAIR

The national average distance/time and median distance/time traveled for urban area motorized wheelchair patients is 6.982 miles or 34.912 minutes and 5.067 miles or 25.337 minutes, respectively. The average distance/time and median distance/time for non-urban area motorized wheelchair patients is 23.498 miles or 35.247 minutes and 21.765 miles or 32.647 minutes, respectively.

Patients Receiving Motorized Wheelchairs Average/Median Distance/Time

Urban	N	Average Distance	Average Time	Median Distance	Median Time
0-2	420	0.676	3.379	0.328	1.640
2-4	513	3.052	15.260	3.069	15.345
4-6	434	4.931	24.655	4.878	24.388
6-10	503	7.684	38.422	7.519	37.596
10-20	380	13.125	65.626	12.508	62.539
20+	124	30.110	150.552	27.966	139.831
Total Mile Range Average/Median	2,374	6.982	34.912	5.067	25.337
Non-urban	N	Average Distance	Average Time	Median Distance	Median Time
0-10	337	3.998	5.997	3.479	5.218
10-20	467	15.129	22.693	15.048	22.571
20-30	383	24.830	37.245	24.515	36.773
30-60	542	40.920	61.380	39.540	59.310
60+	14	61.138	91.707	61.137	91.706
Total Mile Range Average/Median	1,743	23.498	35.247	21.765	32.647

PATIENTS RECEIVING HOME OXYGEN

The national average distance/time and median distance/time traveled for urban area home oxygen patients receiving home oxygen is 6.240 miles or 31.200 minutes and 4.661 miles or 23.306 minutes, respectively. The national average distance/time and median for non-urban home oxygen patients is 21.853 miles or 32.780 minutes and 20.701 miles or 31.051 minutes, respectively.

Patients Receiving Home Oxygen –Average/Median Distance/Time

Urban	N	Average Distance	Average Time	Median Distance	Median Time
0-2	788	0.874	4.369	1.007	5.034
2-4	1066	3.039	15.196	3.030	15.152
4-6	921	4.953	24.766	4.987	24.934
6-10	898	7.635	38.175	7.581	37.904
10-20	521	13.057	65.284	12.492	62.462
20+	160	31.379	156.894	28.030	140.151
Total Mile Range Average/Median	4,354	6.240	31.200	4.661	23.306
Non-urban	N	Average Distance	Average Time	Median Distance	Median Time
0-10	683	3.829	5.743	3.802	5.703
10-20	898	15.123	22.684	15.055	22.582
20-30	832	24.778	37.166	24.891	37.337
30-60	832	39.947	59.921	37.451	56.177
60+	22	61.290	91.934	61.550	92.325
Total Mile Range Average/Median	3,267	21.853	32.780	20.701	31.051

LEGALLY BLIND

The national average and median distance/time traveled for urban area legally blind patients is 6.277 miles or 31.387 minutes and 4.798 miles or 23.991 minutes, respectively. The national average/median distance/time for non-urban legally blind patients is 22.367 miles or 33.551 minutes and 20.555 miles or 30.833 minutes, respectively.

Legally Blind Patients Average/Median Distance/Time

Urban	N	Average Distance	Average Time	Median Distance	Median Time
0-2	909	0.788	3.941	0.866	4.332
2-4	1,186	3.024	15.122	3.046	15.231
4-6	927	4.984	24.920	5.025	25.127
6-10	1,037	7.714	38.568	7.640	38.199
10-20	679	13.237	66.187	12.777	63.885
20+	164	29.642	148.211	27.467	137.334
Total Mile Range Average/Median	4,902	6.277	31.387	4.798	23.991
Non-urban	N	Average Distance	Average Time	Median Distance	Median Time
0-10	539	4.157	6.236	4.425	6.638
10-20	671	15.048	22.572	14.881	22.321
20-30	549	24.771	37.157	24.732	37.098
30-60	720	40.663	60.995	39.303	58.954
60+	6	61.308	91.962	61.366	92.049
Total Mile Range Average/Median	2,485	22.367	33.551	20.555	30.833

PATIENTS WITH ABOVE KNEE AMPUTATIONS

The national average and median distance/time traveled for urban area patients with above knee amputations is 6.246 miles or 31.231 minutes and 4.434 miles or 22.168 minutes, respectively. The national average/median time/distance for non-urban patients with amputations is 23.870 miles and 35.805 minutes and 22.500 miles or 33.750 minutes, respectively.

Patients with Above Knee Amputations Average/Median Distance/Time

Urban	N	Average Distance	Average Time	Median Distance	Median Time
0-2	673	0.749	3.745	0.719	3.594
2-4	882	2.996	14.979	2.958	14.790
4-6	651	4.914	24.568	4.907	24.534
6-10	686	7.684	38.420	7.531	37.655
10-20	426	13.212	66.059	12.568	62.842
20+	150	29.450	147.252	27.001	135.004
Total Mile Range Average/Median	3,468	6.246	31.231	4.434	22.168
Non-urban	N	Average Distance	Average Time	Median Distance	Median Time
0-10	683	3.995	5.992	3.994	5.991
10-20	898	15.306	22.959	15.394	23.091
20-30	832	24.854	37.282	24.695	37.042
30-60	832	41.175	61.763	39.765	59.648
60+	22	60.907	91.360	60.703	91.055
Total Mile Range Average/Median	2,389	23.870	35.805	22.500	33.750

NATIONAL AVERAGE DISTANCE BY STATE

The state of North Dakota has the farthest driving distance where patients must travel on average 27.475 miles to the nearest VHA site. There are only four primary care VHA sites located in North Dakota. Although, this study only reports primary care facilities, it does not account for patient access to sites outside the facility listing, e.g., patients that utilize private sector physicians through fee basis. Patients living in the District of Columbia travel the shortest distance, 1.938 miles, to access primary care services. There are three facilities located in the District of Columbia. See detail in Appendix A, Average & Median Distance Traveled of Patient Population per State.

URBAN AND NON-URBAN PATIENT POPULATION BY STATE

Motorized Wheelchair

The farthest distance traveled for motorized wheelchair patients in urban areas is in Indiana. There are no urban area patients located in Vermont. The state of Iowa has the farthest distance traveled for patients in non-urban areas. There are no non-urban motorized wheelchair patients located in Rhode Island, and North Dakota.

Home Oxygen

Urban area home oxygen patients in Missouri travel the farthest distance to access care. There are no home oxygen patients residing in Hawaii, North Dakota, and Wyoming in the non-urban setting.

Legally Blind

In the urban and the non-urban settings, there are no legally blind patients in Delaware and Hawaii according to the ICD-9 codes for legally blind in the VA databases. Patients in the state of Maine travel the farthest distance to access care. North Dakota has the highest travel time for non-urban legally blind patients, as well as the second highest travel time for urban area patients.

Patients with Above Knee Amputations

Urban area patients in North Dakota travel the farthest distance to access care. There are no urban area patients in Vermont. There are no non-urban patients with above knee amputations located in District of Columbia, Alaska, Rhode Island, and Hawaii.

Of the 809 VHA primary care sites, the majority of these facilities are located in New York (75), California (59), Texas (54), and Florida (45). The states with the least number of facilities are Rhode Island (2), Delaware (3), District of Columbia (3), and Alaska (3).

Appendix B describes the average and median distance/time traveled for access for each patient population by state. Averages and medians with the value of zero either indicate that there are no patients located in that state or patients in that state are considered to travel zero miles to the closest facility because they live within the same zip code.

NATIONAL AVERAGE AND MEDIAN DISTANCE BY VISN

Patients travel the furthest distance to access primary care services in VISN 23, an average 20.217 miles. In VISN 3, patients travel the shortest distance, 3.687 miles to the nearest VHA site. See Appendix C, Average and Median Distance Traveled Within Each VISN, for information on each VISN.

URBAN AND NON-URBAN PATIENT POPULATION BY VISN

As shown in the table on the next page, VISN 22 has the highest number of patients located in urban areas, while VISN 23 has the least number of patients. Patients travel the furthest distance to access primary care services in the urban setting in VISN 6, an average of 9.740 miles. For patients located in non-urban areas, VISN 16 has the highest number of patients and VISN 3 has the least number of patients. In VISN 23, patients travel the furthest distance in the non-urban setting, 29.809 miles to the nearest VHA site. In VISN 3, patients travel 3.080 miles or 15.400 minutes in the urban setting to access primary care services. The table on the following page describes average distance and times for patients in each VISN in the urban and non-urban settings. Appendix D describes the average distance and time for urban and non-urban per VISN for each patient population. In addition, Appendix E displays maps that were generated utilizing GIS to visually display the location of VA primary care facilities and patients in each population group.

**Overall Patient Population Average/Median Distance/Time for Urban & Non-urban Per
VISN**

VISN	URBAN					NON-URBAN				
	N	Average Distance	Average Time	Median Distance	Median Time	N	Average Distance	Average Time	Median Distance	Median Time
1	950	5.244	26.222	4.119	20.595	443	15.752	23.628	14.374	21.561
2	239	3.781	18.905	2.820	14.100	180	11.973	17.959	11.098	16.647
3	970	3.080	15.400	2.251	11.255	63	13.042	19.563	11.400	17.100
4	550	5.842	29.211	4.510	22.550	314	13.070	19.605	13.156	19.734
5	532	4.397	21.985	3.511	17.555	261	13.104	19.656	12.616	18.924
6	680	9.740	48.701	6.877	34.385	945	25.351	38.026	25.687	38.531
7	702	7.737	38.685	5.786	28.930	846	26.889	40.333	27.093	40.640
8	1,366	6.834	34.168	5.431	27.155	912	17.831	26.746	16.382	24.573
9	673	6.557	32.786	3.803	19.015	838	24.517	36.775	23.605	35.408
10	628	4.908	24.538	4.141	20.705	309	18.470	27.705	18.353	27.530
11	639	9.597	47.985	6.380	31.900	405	24.576	36.864	24.453	36.680
12	910	5.240	26.199	4.614	23.070	206	20.289	30.433	19.727	29.591
15	440	7.722	38.611	5.016	25.080	589	27.190	40.786	26.153	39.230
16	1,290	7.576	37.882	5.376	26.880	1,163	28.293	42.439	27.113	40.670
17	641	7.760	38.799	6.294	31.470	434	27.137	40.705	28.671	43.007
18	629	5.706	28.531	5.702	28.510	368	18.542	27.813	14.307	21.461
19	380	6.032	30.158	5.307	26.535	176	19.033	28.550	15.643	23.465
20	675	8.439	42.196	5.440	27.200	642	23.079	34.619	21.540	32.310
21	594	5.550	27.752	4.271	21.355	279	18.943	28.414	18.342	27.513
22	1,385	5.526	27.628	4.477	22.385	172	17.756	26.634	15.493	23.240
23	225	5.764	28.820	4.030	20.150	339	29.809	44.714	31.159	46.739

IV. Comparison to CARES/TRICARE Standards

Booz Allen analyzed each group of the patient population to determine the percent of patients who are within the CARES standards for access to care. CARES standards assume distance and travel times for access to care in urban, suburban, and rural areas. CARES standards assume equal distance and time standards for both suburban and rural areas, therefore in this study, only urban and rural standards are analyzed. Moreover, this analysis compares urban and rural standards against the urban and non-urban zip code areas of the patient population and VHA sites.

The table below presents the average distance and average time for each patient population in urban and non-urban settings. In order to establish a time calculation, the CARES ratio of time to distance was applied, for example 6 miles to 30 minutes was interpreted as 5 minutes per mile. Both the CARES and the TRICARE standards for time are 30 minutes from residence to point of care. Since the formula was derived from the CARES standard, the percent of patients meeting the time standard will be the same as the percentage of patients meeting the mileage standard.

Average and Median Distance/Time Patients Travel (N=24,982)

PATIENT POPULATION	URBAN				NON-URBAN			
	Average Distance	Average Time	Median Distance	Median Time	Average Distance	Average Time	Median Distance	Median Time
Motorized Wheelchair	6.982	34.912	5.067	25.337	23.498	35.247	21.765	32.647
Home Oxygen	6.240	31.200	4.661	23.306	21.853	32.780	20.701	31.051
Legally Blind	6.277	31.387	4.798	23.991	22.367	33.551	20.555	30.833
Patient with A/K amputations	6.246	31.231	4.434	22.168	23.870	35.806	22.500	33.750

Time traveled from residence to the nearest VA primary care delivery site was calculated and compared to TRICARE program results regarding access to care. Sixty-three percent (63%) of all VA patients in this study (15,801 out of 24,982) traveled to the nearest primary care delivery site in 30 minutes or less. The *Evaluation of the TRICARE Program—FY 2000 Report to Congress* states that 87% of TRICARE enrollees experienced a travel time to provider less than 30 minutes in FY 94 and 83% in FY 98. Caution should be used, however, when interpreting the differences in these statistics because the data for these two studies were collected differently. The VA percentage came from calculations using distances from patient and facility zip codes while the TRICARE data was obtained through self reported survey results. Another consideration that should be taken into account is that many TRICARE enrollees may live on or near military bases where primary care delivery sites are concentrated and the VA population may be more dispersed throughout the country. For a direct comparison between VA and DoD TRICARE patients the same or similar survey tool would need to be utilized for both populations and a clear distinction made between the differences in geographic dispersal of patients and health services.

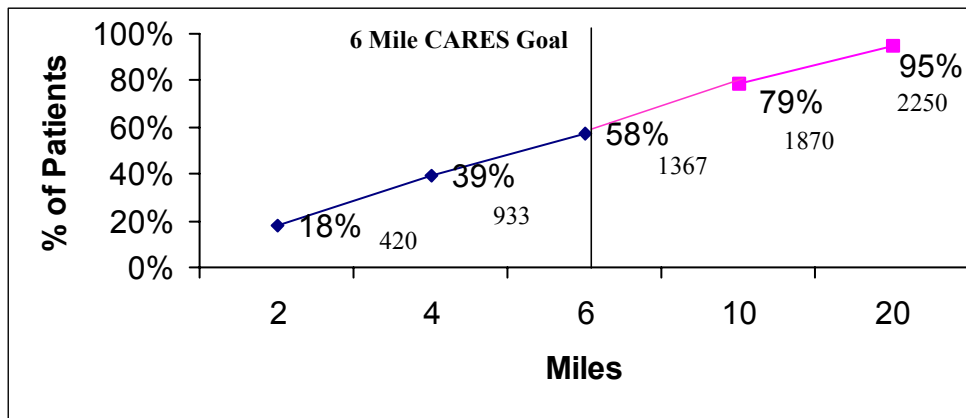
Percent of Patients Relative to CARES Mileage Standards

PATIENT POPULATION	URBAN				NON-URBAN			
	Meet Goal		> 6 mile Goal		Meet Goal		> 20 mile Goal	
Motorized Wheelchair	1,367	58%	1,007	42%	804	46%	939	54%
Home Oxygen	2,775	64%	1,579	36%	1,581	48%	1,686	52%
Legally Blind	3,022	62%	1,880	38%	1,210	49%	1,275	51%
Patients with A/K Amputations	2,206	64%	1,262	36%	1,038	43%	1,351	57%

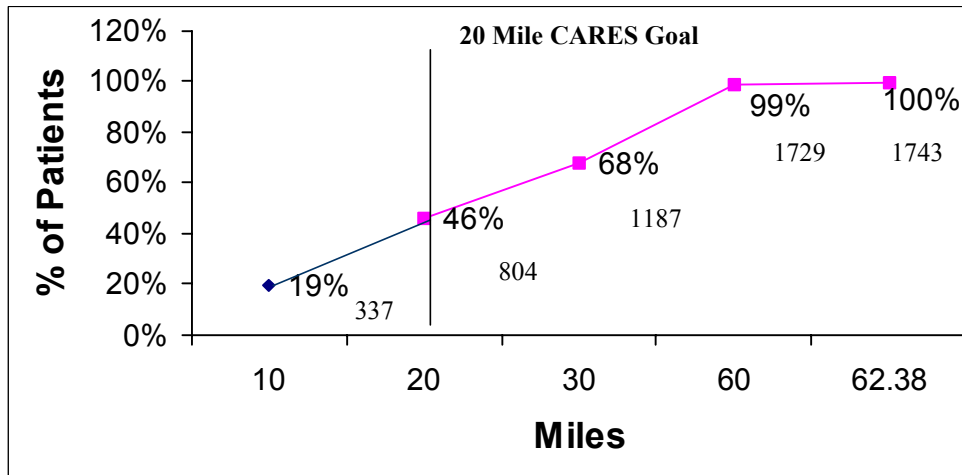
MOTORIZED WHEELCHAIR

For motorized wheelchair patients living in urban areas, 58 percent of patients meet the standard, with the majority residing two to four miles from a primary care facility. Of the 42 percent who are located beyond six miles of a primary care site, the majority of patients live within six to ten miles from the nearest VHA site. In non-urban areas, 46 percent of patients are within the 20-mile standard.

Cumulative Percent (Number) of Motorized Wheelchair Patients Compared to Distance Traveled in Urban Environment



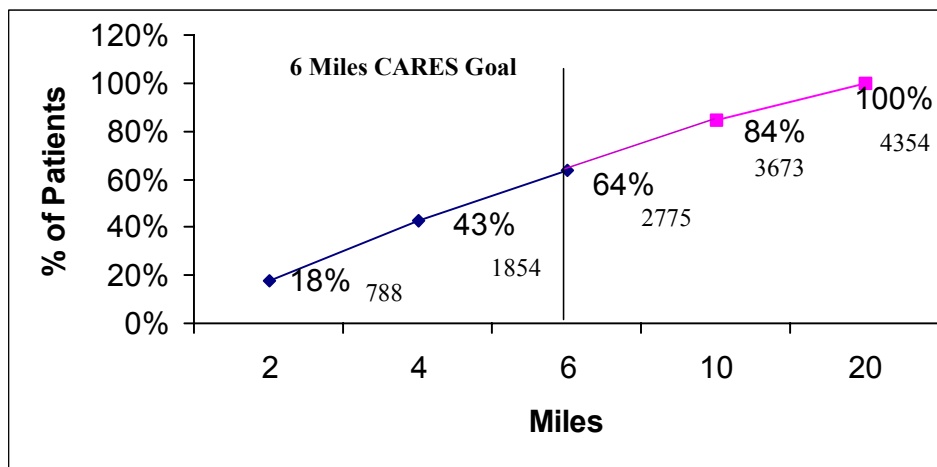
Cumulative Percent (Number) of Motorized Wheelchair Patients Compared to Distance Traveled in Non-urban Environment



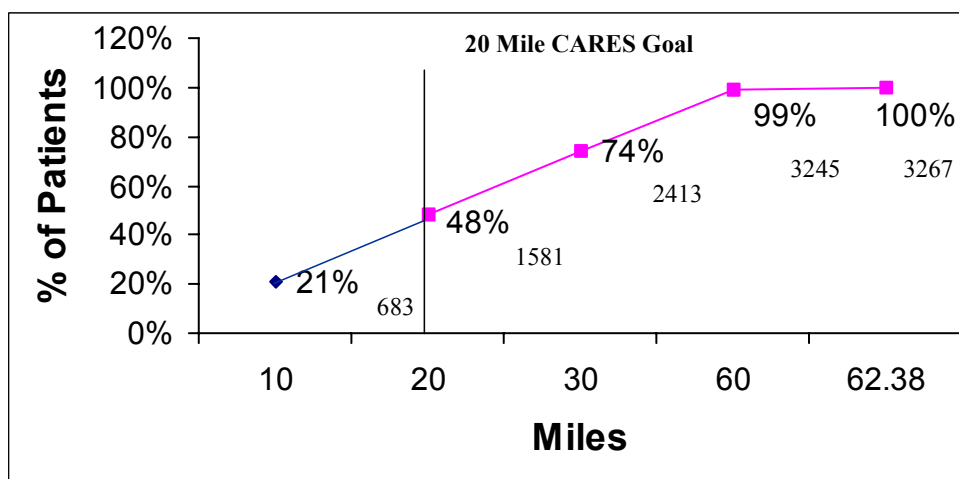
PATIENTS RECEIVING HOME OXYGEN

For home oxygen patients living in urban areas, 64 percent of patients meet the standard, with the majority living two to four miles from a primary care facility. Of the 36 percent who are located beyond six miles of a primary care site, the majority of patients live within six to ten miles. In non-urban areas, 48 percent of patients are within the 20-mile standard. Those patients living in urban areas and are within six miles of the nearest VHA site travel on average 2.960 miles or 14.780 minutes.

Cumulative Percent (Number) of Home Oxygen Patients Compared to Distance Traveled in Urban Environment



Cumulative Percent (Number) of Home Oxygen Patients Compared to Distance Traveled in Non-urban Environment

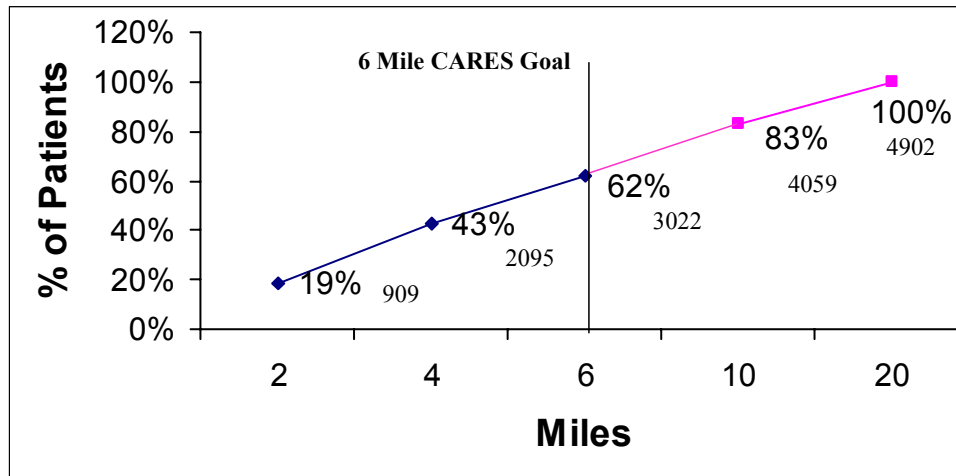


LEGALLY BLIND

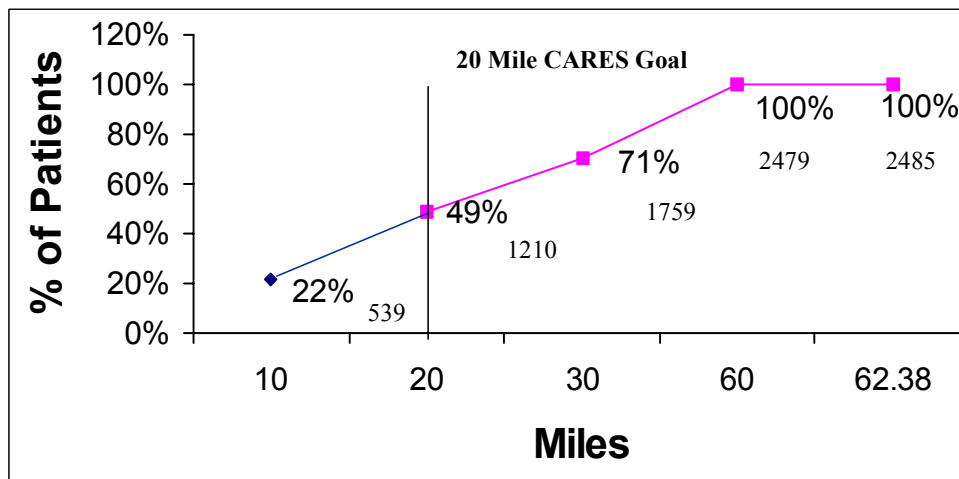
For legally blind patients living in urban areas, 62 percent of patients meet the standard, with the majority living two to four miles from a primary care facility. Of the 38 percent who are located beyond six miles of a primary care site, the majority of patients live within six to ten miles. In non-urban areas, 49 percent of patients are within the 20-mile standard, with 22 percent living 10 to 20 miles from the nearest VHA primary care facility. Of the 51 percent who are located beyond 20 miles of a primary care site, the

majority of patients live within 30 to 60 miles. Those patients living in urban areas and are within six miles of the nearest VHA site travel on average 2.932 miles or 14.660 minutes.

Cumulative Percent (Number) of Legally Blind Patients Compared to Distance Traveled in Urban Environment



Cumulative Percent (Number) of Legally Blind Patients Compared to Distance Traveled in Non-urban Environment

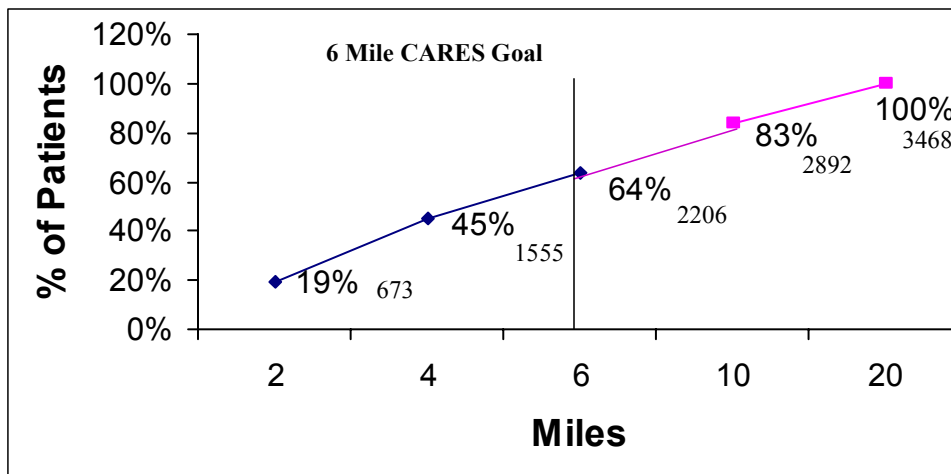


PATIENTS WITH ABOVE KNEE AMPUTATIONS

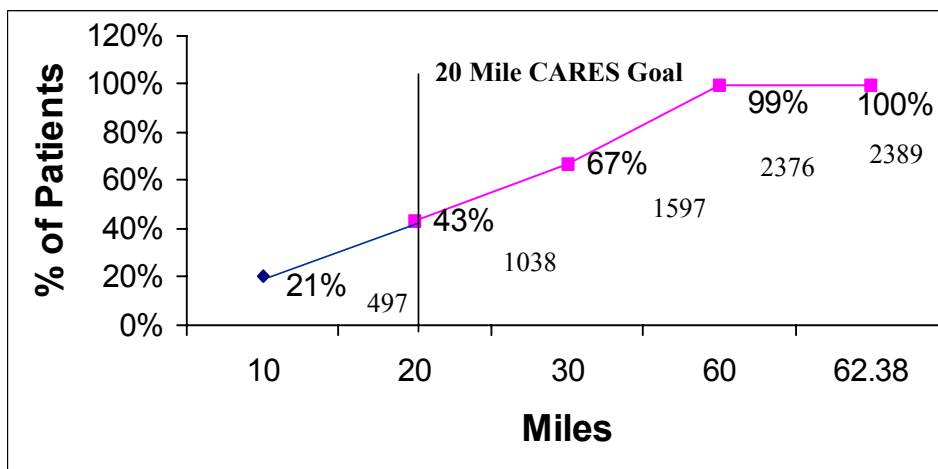
For patients with amputations living in urban areas, 64 percent of patients meet the standard, with the majority living two to four miles from a primary care facility. Of the 36 percent who are located beyond six miles of a primary care site, the majority of patients live within six to ten miles. In non-urban areas, 43 percent of patients are within the 20-mile standard, with 21 percent living 10 to 20 miles from the nearest VHA primary care facility. Of the 57 percent who are located beyond 30 miles of a primary care site, the majority of patients live within 30 to 60 miles.

Those patients living in urban areas and are within six miles of the nearest VHA site travel on average 2.876 miles or 14.38 minutes. Within this population, the national average distance traveled for all patients with amputations is 6.246 miles or 31.231 minutes. Patients living in non-urban areas and are within 20 miles of the nearest VHA site travel on average 9.890 miles or 14.835 minutes to access the nearest primary care facility. The national average for non-urban patients with above knee amputations is 23.870 miles or 35.806 minutes.

Cumulative Percent (Number) of Patients with A/K Amputations Compared to Distance Traveled in Urban Environment



Cumulative Percent (Number) of Patients with A/K Amputations Compared to Distance Traveled in Non-urban Environment



APPENDICES

**Appendix A —
Average & Median Distance Traveled of Patient Population per State**

STATE	NUMBER OF PATIENTS	AVERAGE DISTANCE	MEDIAN DISTANCE
AK	15	6.913	4.536
AL	403	14.583	10.412
AR	299	23.941	22.955
AZ	689	8.751	6.045
CA	2,209	7.997	5.269
CO	334	8.799	5.626
CT	157	7.689	7.886
DC	69	1.938	1.551
DE	44	6.831	4.594
FL	2,248	10.382	7.281
GA	585	21.336	18.330
HI	9	9.864	11.369
IA	158	23.987	23.564
ID	169	21.014	19.304
IL	1,017	9.114	5.336
IN	651	18.288	14.563
KS	355	14.656	8.758
KY	660	15.093	8.859
LA	594	14.255	6.370
MA	729	5.572	4.445
MD	601	6.861	4.481
ME	182	19.423	19.740
MI	478	13.217	9.298
MN	174	21.049	16.023
MO	525	20.712	17.728
MS	349	20.448	18.311
MT	66	18.988	5.721
NC	558	20.935	18.411
ND	20	27.475	33.943
NE	118	13.822	5.862
NH	134	12.511	10.860
NJ	263	6.248	5.302
NM	192	12.568	5.763
NV	190	5.751	3.969
NY	1,250	4.421	2.767
OH	921	9.275	6.101
OK	726	18.795	14.254
OR	606	13.446	10.346
PA	719	8.177	6.055
RI	131	6.291	5.149
SC	650	19.722	17.657
SD	71	15.224	4.212
TN	555	14.784	9.788
TX	1,759	16.096	10.945
UT	129	9.057	7.494
VA	901	17.458	13.085
VT	34	13.210	11.777
WA	526	16.261	10.445
WI	297	13.987	10.239
WV	431	15.015	14.012
WY	32	15.998	4.143

Appendix B — Average & Median Distance/Time for Urban & Non-urban Per State

Motorized Wheelchair Patients

STATE	URBAN					NON-URBAN				
	N	Average Distance	Average Time	Median Distance	Median Time	N	Average Distance	Average Time	Median Distance	Median Time
AK	3	3.473	17.364	2.823	14.114	2	24.304	36.456	24.304	36.456
AL	49	5.750	28.748	5.081	25.404	49	23.565	35.347	22.885	34.328
AR	31	7.810	39.051	4.878	24.388	87	25.409	38.113	24.515	36.773
AZ	70	6.169	30.847	6.216	31.081	30	10.689	16.033	6.373	9.560
CA	239	6.180	30.900	5.109	25.544	63	17.454	26.181	16.963	25.444
CO	38	7.160	35.800	5.860	29.300	9	23.499	35.249	21.994	32.991
CT	17	6.370	31.850	5.934	29.670	3	14.293	21.440	14.112	21.168
DC	11	1.747	8.737	1.527	7.634	0	0.000	0.000	0.000	0.000
DE	25	3.704	18.520	4.504	22.520	5	16.498	24.747	19.460	29.190
FL	283	7.321	36.607	6.181	30.904	167	15.197	22.796	12.508	18.762
GA	59	6.037	30.185	4.948	24.740	93	30.112	45.168	31.239	46.859
HI	3	7.338	36.692	7.070	35.350	4	12.830	19.246	12.962	19.443
IA	11	8.441	42.206	4.379	21.893	25	38.209	57.314	43.821	65.731
ID	10	8.261	41.305	4.344	21.719	12	29.798	44.697	28.014	42.021
IL	47	5.858	29.290	4.746	23.732	40	23.797	35.696	21.900	32.850
IN	15	19.865	99.323	12.025	60.126	14	30.248	45.372	27.399	41.098
KS	18	9.370	46.850	8.758	43.788	11	22.829	34.244	17.015	25.522
KY	31	4.965	24.827	3.486	17.430	52	22.372	33.559	22.011	33.016
LA	43	5.677	28.385	3.710	18.551	28	25.561	38.342	22.649	33.973
MA	39	4.943	24.717	4.445	22.223	10	11.312	16.967	9.889	14.834
MD	41	5.422	27.111	5.331	26.657	14	13.058	19.587	13.499	20.248
ME	1	0.000	0.000	0.000	0.000	29	18.939	28.408	18.258	27.387
MI	43	9.297	46.486	6.661	33.305	23	28.215	42.323	19.723	29.584
MN	14	7.131	35.653	6.161	30.806	14	37.281	55.922	36.759	55.138
MO	51	8.986	44.932	6.645	33.223	60	32.135	48.202	31.496	47.244
MS	52	6.853	34.266	4.082	20.408	72	28.418	42.627	26.980	40.470
MT	1	5.721	28.604	5.721	28.604	16	13.628	20.442	7.920	11.879
NC	66	13.323	66.615	7.915	39.573	129	28.812	43.219	29.168	43.752
ND	2	0.893	4.463	0.893	4.463	0	0.000	0.000	0.000	0.000
NE	10	3.881	19.404	4.207	21.033	11	28.221	42.332	29.090	43.636
NH	5	4.892	24.462	2.431	12.157	10	16.003	24.004	15.849	23.774
NJ	44	7.534	37.669	7.133	35.663	4	17.634	26.451	17.389	26.084
NM	5	3.274	16.370	3.813	19.063	12	10.404	15.606	4.769	7.153
NV	36	3.580	17.900	3.835	19.177	14	13.987	20.980	9.606	14.409
NY	192	2.797	13.984	2.128	10.640	33	12.889	19.333	9.486	14.230
OH	73	4.520	22.602	4.077	20.387	46	17.817	26.725	17.322	25.983
OK	49	7.601	38.006	6.071	30.353	71	27.243	40.864	27.067	40.601
OR	27	6.424	32.121	6.324	31.621	42	15.515	23.272	15.813	23.719
PA	69	4.626	23.128	4.134	20.672	29	13.537	20.305	15.222	22.834
RI	6	5.183	25.913	3.760	18.800	0	0.000	0.000	0.000	0.000
SC	45	8.528	42.641	6.125	30.624	63	31.134	46.702	32.689	49.034
SD	4	2.442	12.208	2.120	10.598	13	18.510	27.765	1.477	2.215
TN	66	9.682	48.410	6.296	31.479	36	25.284	37.926	20.969	31.454
TX	190	8.103	40.517	6.628	33.138	133	26.630	39.945	26.560	39.840
UT	24	6.741	33.706	7.430	37.152	6	19.447	29.170	21.571	32.356
VA	70	8.791	43.957	6.683	33.413	35	26.486	39.729	24.784	37.176
VT	0	0.000	0.000	0.000	0.000	1	21.450	32.175	21.450	32.175
WA	98	13.190	65.950	8.965	44.825	41	32.227	48.341	31.561	47.341
WI	33	7.772	38.861	5.370	26.851	29	22.092	33.137	19.521	29.282
WV	14	4.100	20.499	3.898	19.490	42	16.646	24.969	17.249	25.873
WY	1	0.000	0.000	0.000	0.000	11	17.059	25.589	3.817	5.726

Patients Receiving Home Oxygen

STATE	URBAN					NON-URBAN				
	N	Average Distance	Average Time	Median Distance	Median Time	N	Average Distance	Average Time	Median Distance	Median Time
AK	4	3.650	18.251	2.602	13.010	1	7.059	10.588	7.059	10.588
AL	2	8.395	41.976	8.395	41.976	1	13.259	19.888	13.259	19.888
AR	13	8.704	43.520	7.732	38.660	71	27.547	41.321	26.153	39.230
AZ	125	5.589	27.944	5.702	28.510	98	14.400	21.600	11.213	16.819
CA	717	5.328	26.639	4.245	21.223	165	19.936	29.904	20.033	30.049
CO	27	2.057	10.283	1.376	6.881	29	11.064	16.596	3.894	5.841
CT	2	5.401	27.006	5.401	27.006	2	7.844	11.766	7.844	11.766
DC	0	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000
DE	0	0.000	0.000	0.000	0.000	5	14.882	22.324	16.053	24.080
FL	262	6.572	32.858	5.602	28.009	240	17.448	26.172	17.741	26.611
GA	17	15.995	79.975	11.030	55.150	51	35.126	52.689	35.565	53.348
HI	0	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000
IA	0	0.000	0.000	0.000	0.000	5	31.804	47.707	30.552	45.828
ID	18	3.604	18.020	3.432	17.162	68	30.187	45.281	27.043	40.564
IL	284	4.460	22.301	4.402	22.011	35	19.294	28.941	17.007	25.510
IN	73	9.955	49.773	7.996	39.979	135	23.049	34.574	22.339	33.508
KS	87	4.680	23.402	3.715	18.573	109	21.242	31.863	19.152	28.728
KY	126	4.181	20.903	3.554	17.769	102	26.990	40.484	27.458	41.187
LA	136	5.799	28.995	4.154	20.769	103	29.862	44.793	30.199	45.299
MA	337	4.349	21.747	3.772	18.858	80	11.791	17.687	11.522	17.283
MD	215	4.748	23.738	3.633	18.163	101	12.047	18.071	12.405	18.608
ME	14	19.171	95.853	26.879	134.396	56	19.755	29.632	17.748	26.622
MI	154	7.849	39.246	7.296	36.482	25	32.682	49.022	30.989	46.483
MN	0	0.000	0.000	0.000	0.000	2	49.326	73.989	49.326	73.989
MO	28	24.193	120.965	30.808	154.041	131	24.564	36.845	25.258	37.887
MS	2	13.592	67.959	13.592	67.958	4	19.845	29.767	19.750	29.624
MT	0	0.000	0.000	0.000	0.000	8	41.634	62.450	56.101	84.152
NC	5	17.036	85.181	13.596	67.979	8	34.470	51.704	46.709	70.064
ND	0	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000
NE	3	4.352	21.759	3.437	17.184	1	12.366	18.548	12.366	18.548
NH	5	7.185	35.923	7.260	36.300	8	8.455	12.682	8.234	12.351
NJ	72	4.774	23.872	3.578	17.888	3	15.798	23.697	17.846	26.769
NM	1	3.921	19.605	3.921	19.605	6	23.723	35.584	29.032	43.548
NV	10	4.039	20.194	3.916	19.582	2	28.070	42.105	28.070	42.105
NY	248	2.964	14.818	2.588	12.942	23	11.543	17.314	12.344	18.516
OH	174	5.090	25.449	4.172	20.862	98	18.635	27.952	18.296	27.444
OK	170	7.182	35.910	5.999	29.995	190	25.961	38.941	26.732	40.098
OR	170	6.907	34.534	6.119	30.596	237	18.005	27.007	17.044	25.566
PA	49	7.821	39.106	4.623	23.113	68	12.170	18.254	12.960	19.440
RI	59	5.989	29.944	5.149	25.747	5	13.466	20.199	13.161	19.741
SC	91	11.156	55.779	8.447	42.234	176	23.484	35.227	22.844	34.267
SD	2	4.171	20.856	4.171	20.855	0	0.000	0.000	0.000	0.000
TN	47	10.310	51.551	6.450	32.251	72	21.430	32.146	20.428	30.641
TX	248	9.014	45.069	7.581	37.904	164	30.865	46.297	32.167	48.250
UT	2	6.500	32.499	6.500	32.498	1	55.492	83.238	55.492	83.238
VA	194	10.725	53.625	7.228	36.140	249	26.439	39.658	25.687	38.530
VT	0	0.000	0.000	0.000	0.000	2	14.510	21.765	14.510	21.765
WA	99	5.189	25.943	3.163	15.814	67	26.043	39.064	19.579	29.368
WI	58	6.052	30.260	4.655	23.277	33	21.971	32.956	20.339	30.509
WV	4	5.234	26.172	5.147	25.735	227	16.340	24.510	14.409	21.613
WY	0	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000

Legally Blind Patients

STATE	URBAN					NON-URBAN				
	N	Average Distance	Average Time	Median Distance	Median Time	N	Average Distance	Average Time	Median Distance	Median Time
AK	1	4.536	22.681	4.536	22.680	0	0.000	0.000	0.000	0.000
AL	88	5.454	27.269	4.339	21.697	87	22.811	34.217	21.568	32.352
AR	5	5.031	25.156	4.176	20.878	11	18.554	27.832	19.571	29.357
AZ	176	5.727	28.635	5.702	28.510	67	17.958	26.936	13.708	20.562
CA	553	5.987	29.937	4.748	23.741	112	18.182	27.274	17.581	26.372
CO	147	5.832	29.159	5.459	27.297	39	22.003	33.004	17.246	25.869
CT	74	6.717	33.584	7.135	35.673	19	12.186	18.279	11.991	17.987
DC	27	1.906	9.532	2.044	10.221	0	0.000	0.000	0.000	0.000
DE	0	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000
FL	615	6.742	33.710	5.295	26.475	285	16.301	24.452	14.872	22.307
GA	95	7.115	35.577	5.279	26.395	111	29.387	44.081	28.225	42.338
HI	0	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000
IA	24	4.987	24.935	4.379	21.893	37	29.258	43.887	29.558	44.338
ID	22	4.790	23.951	3.300	16.502	17	31.625	47.438	24.128	36.192
IL	241	6.009	30.044	5.061	25.307	78	22.765	34.147	23.564	35.345
IN	116	10.316	51.580	5.826	29.132	111	27.912	41.867	28.174	42.261
KS	32	7.747	38.733	7.257	36.283	33	23.016	34.525	25.096	37.644
KY	84	4.753	23.766	3.526	17.629	98	23.413	35.119	23.570	35.355
LA	88	4.634	23.168	3.617	18.085	39	29.982	44.972	31.988	47.982
MA	140	4.334	21.672	3.712	18.562	23	13.279	19.918	13.094	19.641
MD	110	4.360	21.802	3.739	18.697	24	16.533	24.800	17.798	26.698
ME	5	22.270	111.348	26.879	134.396	52	20.721	31.082	21.204	31.806
MI	82	8.540	42.700	7.599	37.993	24	29.160	43.740	28.214	42.321
MN	33	6.183	30.915	4.030	20.150	30	32.542	48.813	33.270	49.905
MO	92	6.301	31.504	3.927	19.637	37	31.586	47.378	29.213	43.819
MS	26	7.158	35.790	4.748	23.741	59	28.750	43.125	29.297	43.945
MT	4	3.762	18.808	4.663	23.313	14	25.207	37.810	27.388	41.082
NC	79	9.245	46.224	7.061	35.305	72	27.844	41.766	27.878	41.817
ND	3	16.286	81.432	6.015	30.074	3	55.719	83.578	55.368	83.051
NE	16	4.029	20.146	3.385	16.925	21	21.652	32.477	16.648	24.973
NH	24	5.353	26.767	2.431	12.157	36	15.009	22.513	14.231	21.347
NJ	49	5.156	25.778	3.758	18.789	8	8.972	13.458	9.681	14.522
NM	73	5.706	28.529	3.921	19.605	55	22.580	33.869	19.915	29.872
NV	59	3.162	15.812	3.426	17.131	15	12.383	18.575	9.606	14.409
NY	409	2.976	14.878	2.385	11.925	117	10.530	15.795	9.810	14.716
OH	173	4.927	24.633	4.705	23.527	82	16.357	24.535	15.517	23.275
OK	48	6.945	34.724	5.594	27.969	67	29.064	43.596	27.067	40.601
OR	37	5.271	26.353	4.229	21.144	32	23.206	34.808	20.294	30.440
PA	193	5.674	28.371	4.316	21.578	77	12.984	19.476	12.712	19.068
RI	35	5.120	25.599	4.007	20.037	6	11.850	17.775	12.076	18.114
SC	65	7.758	38.791	5.767	28.834	67	29.380	44.070	31.204	46.805
SD	3	1.441	7.205	1.314	6.571	13	21.456	32.184	22.886	34.329
TN	82	7.163	35.815	4.651	23.255	51	21.471	32.207	20.850	31.276
TX	353	8.577	42.887	6.974	34.869	155	29.163	43.744	29.772	44.658
UT	69	7.244	36.222	7.367	36.834	4	20.326	30.489	15.242	22.862
VA	126	8.692	43.460	5.997	29.983	72	28.703	43.054	28.972	43.458
VT	4	1.592	7.962	0.000	0.000	14	13.304	19.956	11.190	16.785
WA	87	13.703	68.513	9.575	47.877	42	24.340	36.510	21.374	32.061
WI	15	6.179	30.895	4.605	23.027	22	33.070	49.605	25.749	38.623
WV	18	10.877	54.384	10.980	54.902	42	16.375	24.562	17.863	26.794
WY	2	1.227	6.137	1.227	6.137	5	26.245	39.368	22.179	33.268

Patients with Above Knee Amputations

STATE	URBAN					NON-URBAN				
	N	Average Distance	Average Time	Median Distance	Median Time	N	Average Distance	Average Time	Median Distance	Median Time
AK	4	4.620	23.099	4.318	21.592	0	0.000	0.000	0.000	0.000
AL	65	5.491	27.456	4.141	20.706	62	25.629	38.444	24.728	37.091
AR	9	4.901	24.504	4.646	23.230	72	32.824	49.236	33.859	50.789
AZ	87	5.313	26.564	5.823	29.117	36	13.717	20.575	10.232	15.348
CA	306	5.267	26.335	4.445	22.227	54	18.887	28.331	18.966	28.448
CO	35	5.510	27.551	3.846	19.232	10	17.064	25.596	14.591	21.886
CT	36	7.078	35.389	7.444	37.219	4	11.536	17.304	12.052	18.078
DC	31	2.033	10.166	2.044	10.221	0	0.000	0.000	0.000	0.000
DE	7	4.161	20.804	2.870	14.352	2	10.967	16.450	10.967	16.450
FL	248	6.285	31.427	5.021	25.106	148	16.671	25.007	17.423	26.134
GA	77	9.443	47.217	5.941	29.704	82	31.664	47.495	31.676	47.513
HI	2	7.718	38.592	7.718	38.592	0	0.000	0.000	0.000	0.000
IA	21	8.214	41.072	5.030	25.150	35	34.517	51.775	39.024	58.536
ID	9	3.874	19.371	4.344	21.719	13	24.279	36.419	24.128	36.192
IL	214	5.234	26.170	4.288	21.439	78	22.511	33.766	21.522	32.283
IN	111	9.207	46.035	5.431	27.154	76	26.699	40.049	25.291	37.937
KS	36	5.927	29.634	5.101	25.506	29	28.960	43.440	27.988	41.982
KY	73	4.044	20.219	3.524	17.621	94	25.268	37.902	25.926	38.889
LA	92	5.065	25.324	3.137	15.683	65	24.615	36.923	21.200	31.801
MA	90	3.618	18.092	2.756	13.781	10	10.937	16.405	11.108	16.662
MD	77	4.251	21.254	3.511	17.557	19	14.590	21.885	17.629	26.444
ME	2	1.340	6.701	1.340	6.701	23	18.243	27.365	18.362	27.543
MI	79	9.144	45.721	5.941	29.704	48	23.347	35.021	23.036	34.554
MN	35	6.265	31.323	5.333	26.663	46	33.534	50.300	33.819	50.729
MO	50	7.101	35.504	4.243	21.213	76	32.749	49.123	29.804	44.706
MS	53	6.990	34.949	4.315	21.573	81	29.315	43.973	30.113	45.169
MT	5	2.398	11.989	3.093	15.463	18	17.581	26.371	3.925	5.888
NC	74	9.530	47.651	6.877	34.384	125	26.274	39.411	28.154	42.231
ND	7	12.096	60.481	0.000	0.000	5	49.404	74.106	52.898	79.347
NE	22	3.376	16.881	3.330	4.995	34	19.496	29.244	12.916	19.374
NH	10	6.760	33.802	4.931	24.656	36	18.113	27.169	17.540	26.310
NJ	71	5.222	26.109	3.855	19.274	12	12.917	19.375	11.426	17.140
NM	15	4.891	24.456	3.921	19.605	25	15.755	23.632	15.806	23.709
NV	41	3.141	15.704	3.426	17.131	13	13.107	19.660	7.194	10.792
NY	180	2.815	14.075	1.764	8.822	48	12.649	18.974	11.494	17.240
OH	189	5.208	26.042	4.227	21.135	86	17.480	26.219	16.313	24.469
OK	46	6.280	31.401	5.473	27.367	85	30.769	46.154	30.304	45.456
OR	24	6.235	31.176	5.440	27.202	37	21.486	32.229	20.405	30.607
PA	161	4.831	24.155	3.857	19.286	73	14.847	22.270	14.473	21.709
RI	20	6.101	30.506	4.566	22.830	0	0.000	0.000	0.000	0.000
SC	54	9.810	49.052	7.932	39.662	89	26.101	39.151	25.458	38.187
SD	10	2.349	11.744	2.457	12.283	26	19.824	29.736	14.986	22.479
TN	108	8.666	43.328	6.259	31.297	93	21.615	32.422	18.944	28.416
TX	318	8.222	41.109	6.525	32.625	198	29.145	43.717	28.839	43.258
UT	18	6.721	33.605	7.901	39.507	5	23.845	35.767	19.028	28.543
VA	97	8.535	42.677	5.674	28.368	58	26.447	39.670	26.731	40.096
VT	0	0.000	0.000	0.000	0.000	13	15.849	23.774	18.401	27.601
WA	71	11.548	57.738	5.809	29.047	21	30.783	46.175	22.902	34.353
WI	64	5.634	28.169	4.372	21.859	43	23.259	34.889	22.843	34.264
WV	12	8.477	42.387	4.185	20.925	72	13.881	20.821	14.338	21.508
WY	2	0.000	0.000	0.000	0.000	11	17.328	25.992	4.468	6.702

**Appendix C —
Average & Median Distance Traveled Within Each VISN**

VISN	NUMBER OF PATIENTS	AVERAGE DISTANCE	MEDIAN DISTANCE
1	1,393	8.586	5.934
2	419	7.300	4.224
3	1,033	3.687	2.342
4	864	8.469	6.547
5	793	7.263	4.780
6	1,625	18.818	15.521
7	1,548	18.204	15.013
8	2,278	11.236	7.712
9	1,511	16.517	11.561
10	937	9.380	6.045
11	1,044	15.408	10.946
12	1,116	8.018	5.336
15	1,029	18.866	13.528
16	2,453	17.398	12.325
17	1,075	15.582	10.212
18	997	10.444	6.216
19	556	10.147	6.097
20	1,317	15.576	10.416
21	873	9.830	6.725
22	1,557	6.877	4.693
23	564	20.217	14.328

Appendix D — Average & Median Distance/Time for Urban & Non-urban Per VISN

Patients with Motorized Wheelchairs

VISN	URBAN					NON-URBAN				
	N	Average Distance	Average Time	Median Distance	Median Time	N	Average Distance	Average Time	Median Distance	Median Time
1	67	5.059	25.295	4.331	21.657	48	16.705	25.058	15.849	23.774
2	24	4.821	24.107	4.571	22.854	20	14.577	21.865	13.808	20.712
3	204	3.390	16.948	2.211	11.055	19	13.391	20.087	13.080	19.620
4	100	5.085	25.425	4.295	21.475	52	13.641	20.461	14.389	21.584
5	51	4.552	22.759	2.872	14.362	13	14.244	21.366	14.515	21.772
6	136	10.241	51.207	6.971	34.857	184	27.249	40.873	27.153	40.729
7	137	7.382	36.911	5.868	29.341	191	29.507	44.261	30.043	45.065
8	274	7.217	36.084	6.177	30.883	173	14.755	22.132	12.314	18.471
9	110	7.898	39.491	4.245	21.223	148	25.700	38.550	23.018	34.526
10	84	4.538	22.689	4.077	20.387	47	19.293	28.939	19.173	28.759
11	52	12.368	61.838	7.059	35.296	42	24.975	37.462	19.038	28.558
12	77	6.485	32.426	4.621	23.107	44	21.862	32.793	20.315	30.472
15	74	9.068	45.342	7.394	36.972	78	30.716	46.075	28.925	43.387
16	236	7.510	37.552	5.037	25.184	264	26.409	39.614	25.073	37.610
17	139	7.730	38.649	6.535	32.675	97	25.621	38.432	24.966	37.449
18	80	6.017	30.085	5.704	28.519	42	12.398	18.597	7.176	10.764
19	66	7.490	37.448	6.359	31.797	41	18.069	27.103	14.075	21.113
20	135	10.936	54.678	6.571	32.854	100	24.044	36.066	22.757	34.136
21	89	5.543	27.715	3.720	18.602	51	17.722	26.583	18.342	27.513
22	200	6.149	30.747	5.084	25.421	31	14.143	21.214	13.027	19.540
23	39	5.692	28.460	4.212	21.062	58	33.291	49.937	36.759	55.138

Home Oxygen Patients

VISN	URBAN					NON-URBAN				
	N	Average Distance	Average Time	Median Distance	Median Time	N	Average Distance	Average Time	Median Distance	Median Time
1	420	5.129	25.645	4.100	20.500	154	14.733	22.099	13.653	20.480
2	15	4.652	23.261	3.707	18.533	5	13.287	19.931	14.654	21.982
3	304	3.398	16.989	2.646	13.228	21	13.465	20.197	12.344	18.516
4	50	7.264	36.322	4.566	22.832	70	11.460	17.190	12.335	18.502
5	219	4.835	24.176	3.633	18.163	175	12.308	18.462	12.444	18.666
6	201	10.669	53.344	7.228	36.140	419	23.471	35.206	23.311	34.967
7	113	10.717	53.585	8.306	41.528	186	23.919	35.878	23.489	35.233
8	256	6.797	33.986	5.590	27.951	284	20.224	30.336	19.556	29.334
9	180	5.988	29.941	3.679	18.394	214	25.924	38.885	25.440	38.161
10	187	4.888	24.441	4.011	20.057	113	18.820	28.229	18.895	28.342
11	196	8.804	44.018	7.230	36.151	103	21.935	32.903	21.067	31.600
12	360	5.033	25.167	4.618	23.088	65	20.957	31.436	19.050	28.575
15	113	8.985	44.923	4.205	21.024	269	23.723	35.585	23.805	35.708
16	369	7.073	35.366	5.188	25.942	357	27.803	41.704	27.067	40.601
17	200	9.096	45.481	7.183	35.917	147	29.941	44.911	31.907	47.860
18	122	5.631	28.154	5.702	28.510	100	15.770	23.654	12.128	18.192
19	27	2.057	10.283	1.376	6.881	29	11.064	16.596	3.894	5.841
20	293	6.003	30.017	4.808	24.040	379	21.832	32.748	20.405	30.607
21	214	4.662	23.308	3.776	18.878	111	20.011	30.016	20.836	31.255
22	512	5.679	28.394	4.560	22.798	60	19.969	29.954	16.724	25.086
23	3	2.394	11.968	4.743	23.717	6	37.095	55.642	32.427	48.640

Legally Blind Patients

VISN	URBAN					NON-URBAN				
	N	Average Distance	Average Time	Median Distance	Median Time	N	Average Distance	Average Time	Median Distance	Median Time
1	303	5.599	27.996	4.472	22.362	154	15.935	23.903	13.600	20.400
2	137	3.745	18.726	2.820	14.102	115	10.884	16.326	10.266	15.399
3	293	2.665	13.324	2.074	10.370	9	14.069	21.103	9.681	14.522
4	207	6.170	30.851	4.897	24.485	84	13.227	19.840	13.284	19.926
5	153	4.182	20.908	3.142	15.711	32	17.446	26.168	16.703	25.055
6	182	8.939	44.693	6.806	34.032	144	27.999	41.999	28.364	42.546
7	263	6.813	34.066	5.279	26.395	264	26.638	39.956	27.213	40.819
8	602	6.643	33.215	5.252	26.258	298	17.085	25.627	15.377	23.066
9	185	5.757	28.786	3.639	18.194	209	22.272	33.408	21.411	32.117
10	167	4.858	24.289	4.705	23.527	74	17.263	25.894	16.447	24.671
11	207	10.002	50.009	6.380	31.901	136	25.421	38.131	26.166	39.249
12	214	5.286	26.430	4.821	24.107	28	22.117	33.176	20.602	30.903
15	153	6.967	34.837	4.995	24.974	107	28.115	42.172	29.199	43.798
16	338	8.566	42.831	6.220	31.102	224	29.899	44.848	30.481	45.721
17	131	5.991	29.955	4.895	24.476	63	22.875	34.313	23.967	35.950
18	300	5.764	28.819	5.376	26.882	146	22.285	33.428	18.672	28.009
19	224	6.327	31.634	5.721	28.604	65	24.483	36.725	20.106	30.159
20	145	10.115	50.573	4.760	23.799	92	25.313	37.970	22.352	33.528
21	194	6.334	31.668	5.274	26.370	75	17.721	26.581	17.616	26.424
22	422	5.502	27.509	4.477	22.385	54	17.915	26.872	16.596	24.893
23	82	5.582	27.909	3.931	19.657	112	29.060	43.590	29.384	44.077

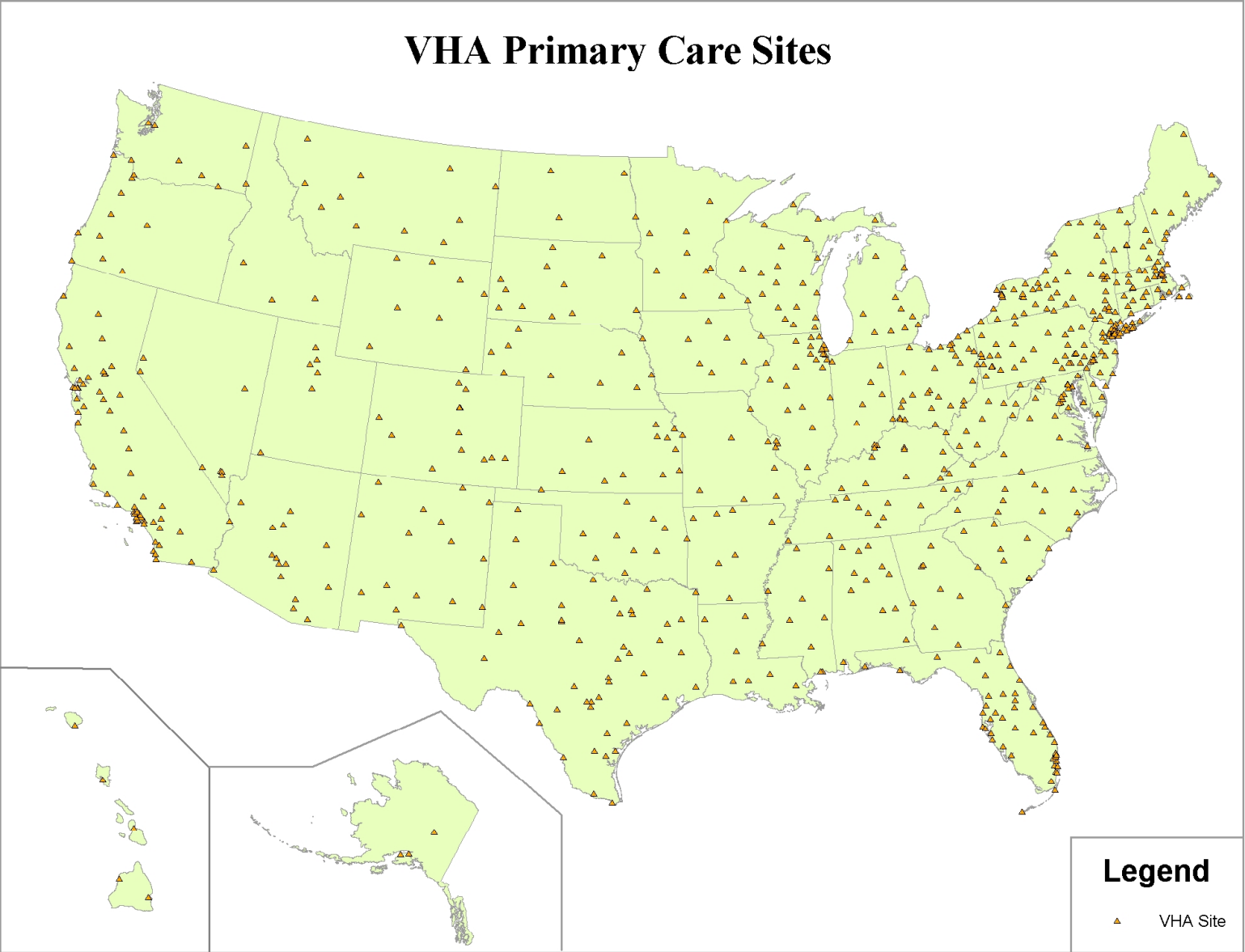
Patients with Above Knee Amputations

VISN	URBAN					NON-URBAN				
	N	Average Distance	Average Time	Median Distance	Median Time	N	Average Distance	Average Time	Median Distance	Median Time
1	160	4.952	24.762	3.456	17.278	87	16.704	25.056	16.240	24.360
2	63	3.255	16.275	2.585	12.924	40	13.635	20.453	13.352	20.028
3	169	2.854	14.270	1.755	8.775	14	11.275	16.912	11.073	16.610
4	193	5.515	27.573	4.300	21.499	108	13.716	20.575	13.733	20.599
5	109	3.746	18.732	2.597	12.984	41	12.751	19.127	10.291	15.437
6	161	9.064	45.319	6.877	34.384	198	25.639	38.459	27.259	40.889
7	189	7.498	37.491	5.291	26.453	205	27.467	41.201	27.486	41.228
8	234	6.915	34.576	5.304	26.518	157	18.307	27.461	18.072	27.108
9	198	7.077	35.384	3.803	19.015	267	24.490	36.735	24.828	37.241
10	190	5.134	25.670	4.141	20.704	75	18.619	27.929	18.895	28.342
11	184	9.204	46.020	5.431	27.154	124	25.709	38.563	25.809	38.713
12	259	5.118	25.591	4.372	21.859	69	17.913	26.870	19.468	29.202
15	100	6.454	32.271	4.794	23.971	135	31.329	46.994	30.187	45.280
16	347	7.192	35.961	5.126	25.628	318	29.275	43.913	28.354	42.531
17	171	7.576	37.880	5.689	28.447	127	27.162	40.743	28.313	42.469
18	127	5.447	27.234	5.740	28.698	80	18.401	27.601	12.549	18.823
19	63	5.158	25.791	4.290	21.449	41	16.994	25.491	9.857	14.786
20	102	9.750	48.752	5.523	27.617	71	25.480	38.220	23.238	34.857
21	97	5.951	29.757	4.912	24.562	42	19.785	29.677	20.033	30.049
22	251	4.755	23.777	3.987	19.937	27	16.670	25.004	14.592	21.889
23	101	5.941	29.704	3.887	19.434	163	28.664	42.996	30.675	46.012

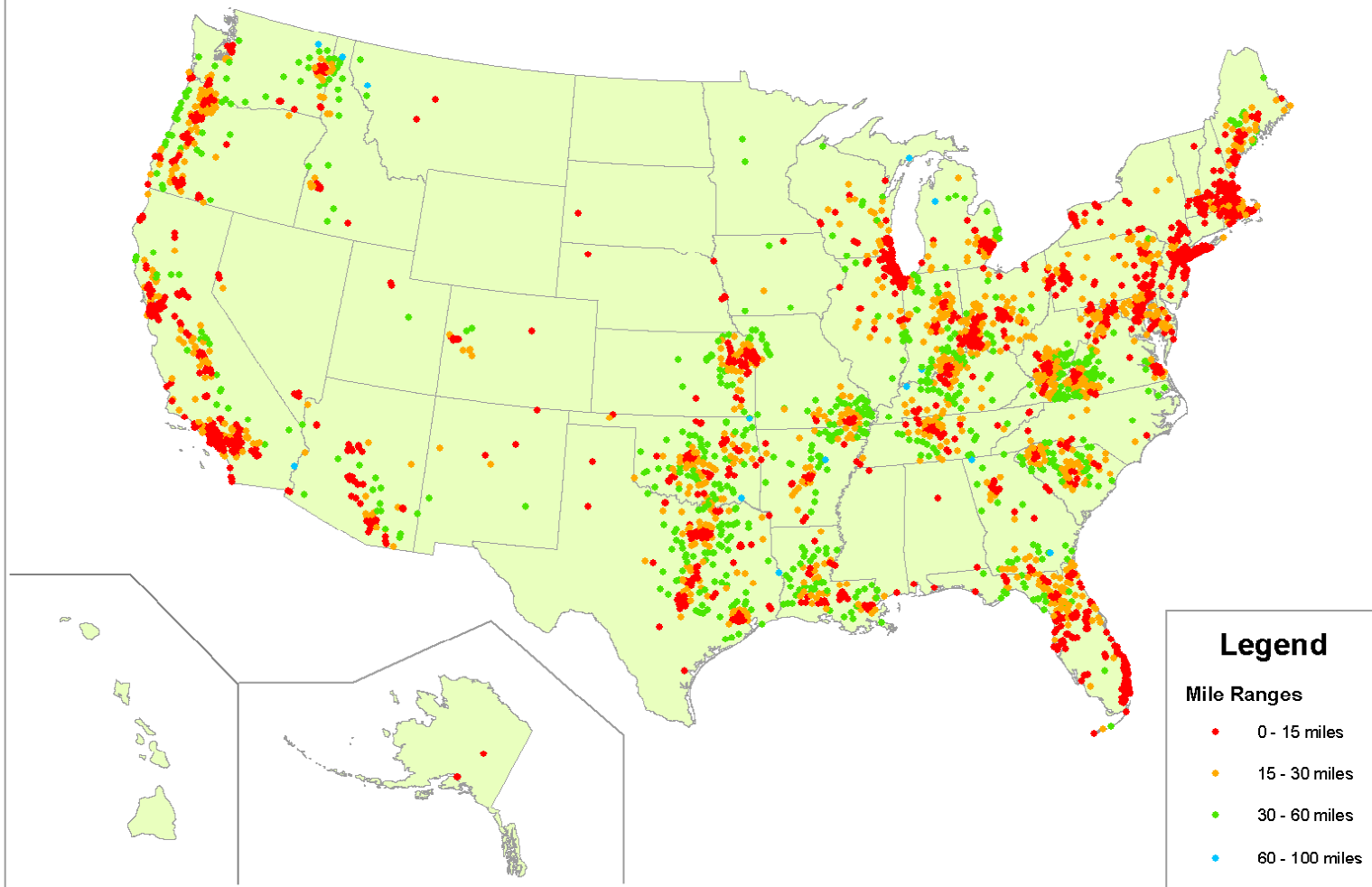
Appendix E — Maps of VHA Primary Care Sites and Patient Populations within the Continental United States



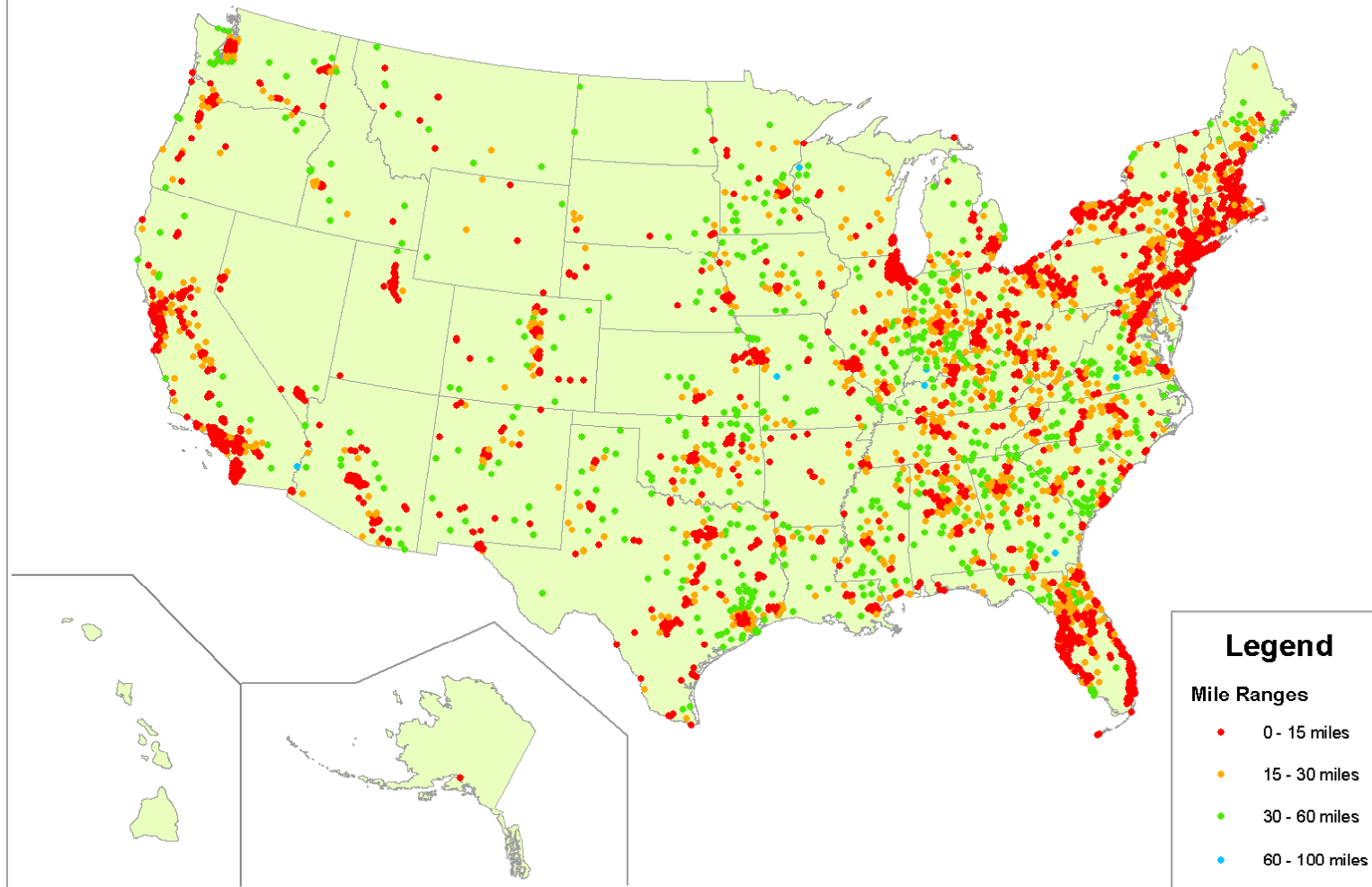
VHA Primary Care Sites



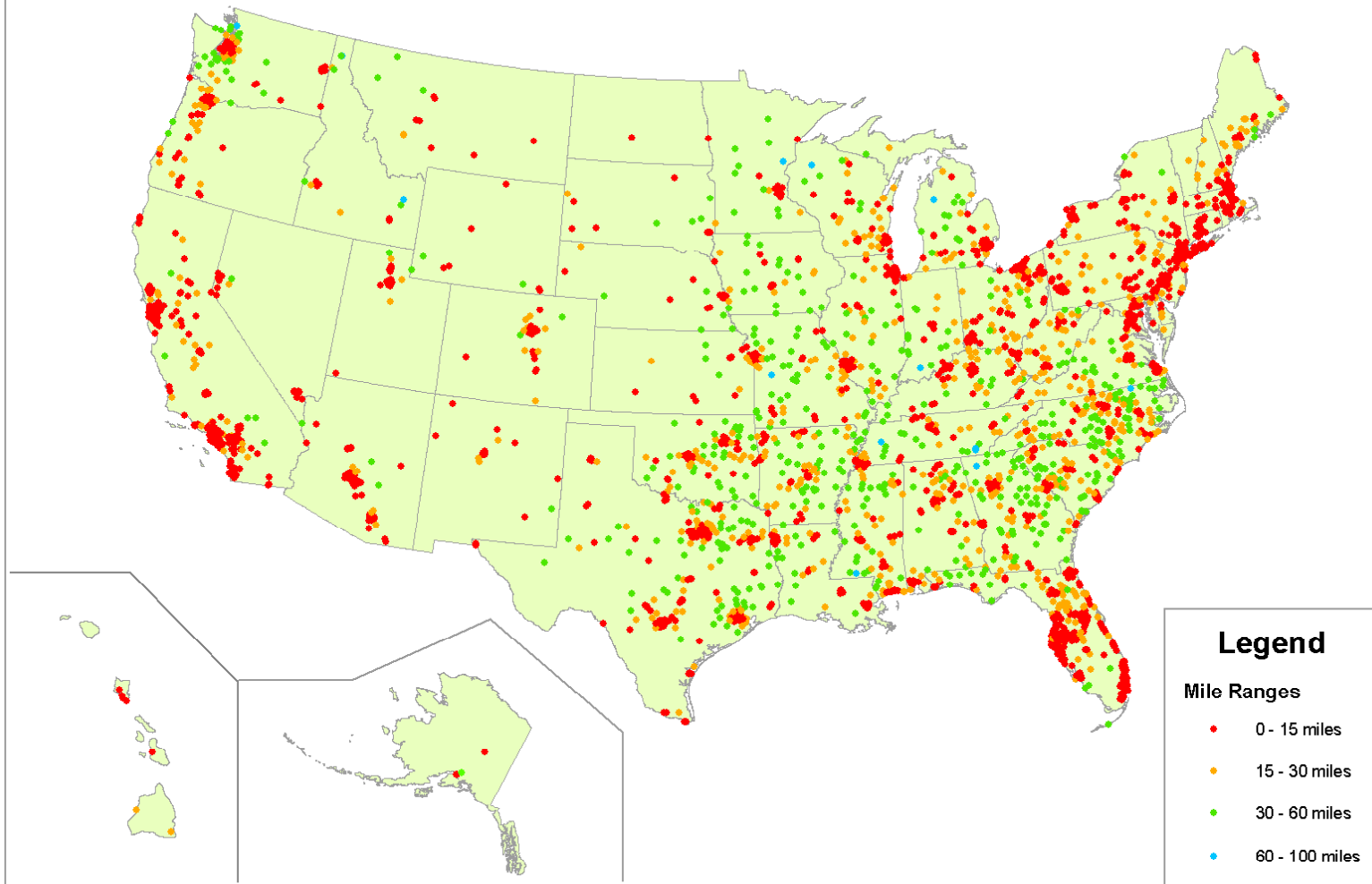
Home Oxygen Patients (PSAS 1998, 1999, 2000)



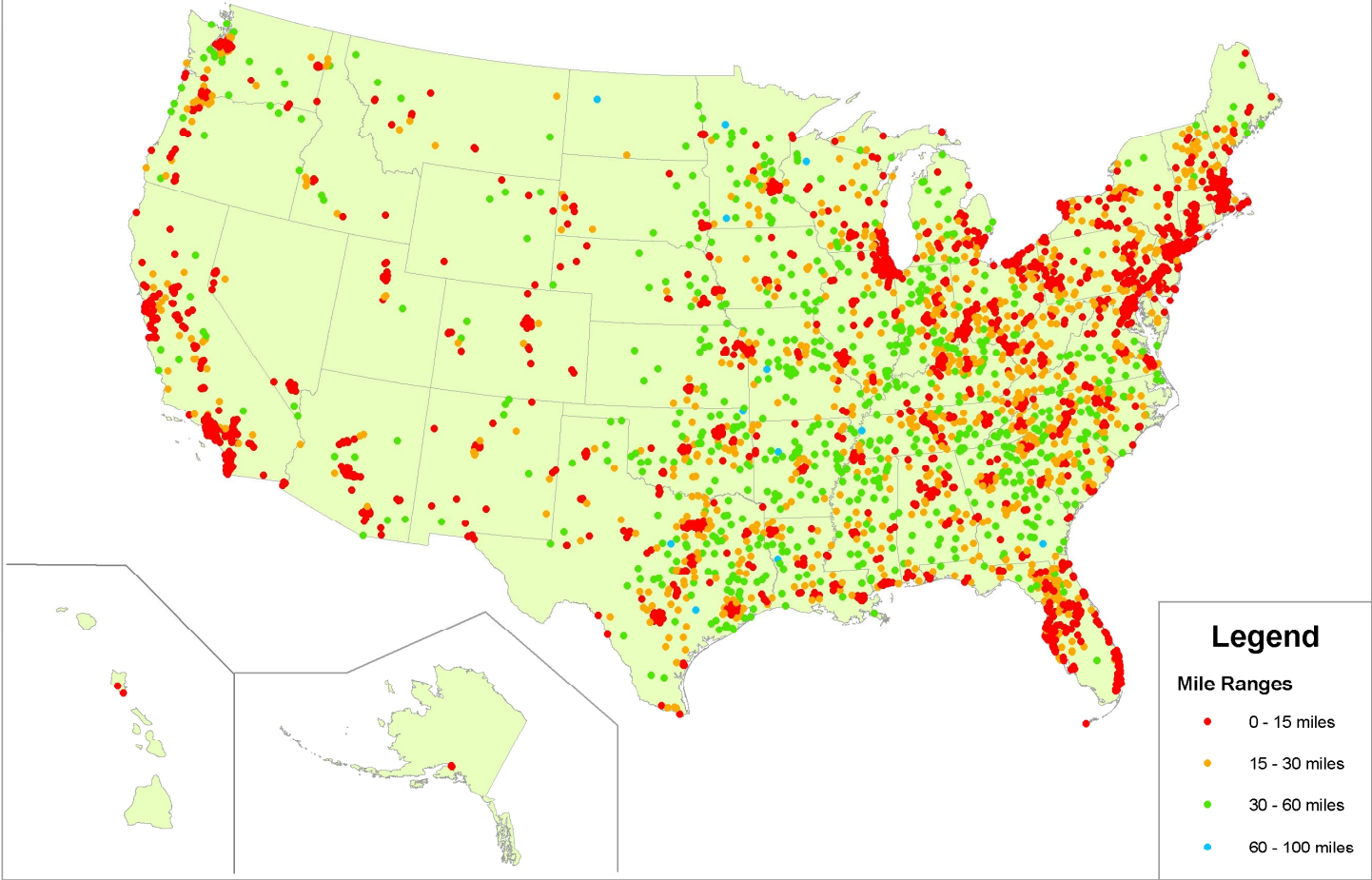
Legally Blind Patients (PSAS 1998, 1999, 2000)



Motorized Wheelchair Patients (PSAS 1998, 1999, 2000)



Patients with Above the Knee Amputations (PSAS 1998, 1999, 2000)



Appendix F — Bibliography

ⁱ *VHA Directive 2001-060, Veterans Health Administration Policy for Planning and Activating Community Based Outpatient Clinics, Department of Veterans Affairs, October 2, 2001. Attachment A.*

ⁱⁱ *CARES Process — Final Report, Chapter 4. Planning Principles, Department of Veterans Affairs, May 31, 2001.*

ⁱⁱⁱ Understanding TRICARE's Access Standards. News Release, No. 00-16. September 12, 2000.

^{iv} 32 CFR 199.17(P)(5)