# An Examination of Transportation Services **Available to Rural Military Veterans** for Medical Services



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#### **Executive Summary**

Currently, more than 1 million veterans are living in Pennsylvania. In federal fiscal year 2008, this population experienced more than 21,000 hospitalizations and made more than 2.4 million visits for outpatient medical services.

Moreover, more than 10 percent of Pennsylvania veterans are over age 65 and the veteran population in this age group is rapidly increasing. As these veterans age, their use of healthcare services also increases.

To quantify the need for medically-related transportation services among rural Pennsylvania veterans and identify the transportation services currently available to them, this research linked county-level locations of Pennsylvania's rural veterans with locations of healthcare services available to them in proximity to their home county location.

The research found that rural veterans have significant and ongoing needs for quality healthcare, and often for specialized care, and face sometimes significant challenges in accessing that care. While state, county, and local agencies and organizations make valiant efforts to provide some level of transportation services, there is a long way to go to meet current local needs and overcome barriers, such as financial challenges, the limited availability of trained volunteer drivers and transportation itself, and a lack of necessary services in local healthcare facilities, which often necessitates long-distance travel to access those services.

Results from this research suggest that local and state level measures would be beneficial. For example, community leaders could increase public awareness about the need for medical transportation among veterans in their communities, and of the vital transportation services that local organizations, such as the Disabled American Veterans, currently provide.

Counties could emphasize transportation system planning that takes into account locations of medical facilities used by veterans and develops efficient routes and reciprocal agreements that allow for cross-county transportation routes and services.

The state could increase support for county-based veteran services through the county Veteran Services/Veterans Affairs Offices. It could also further support accessible transportation systems, as well as local organizations, such as the Disabled American Veterans, in purchasing handicapped-accessible vans.

#### Introduction

Media headlines provide a good snapshot of the health-care issues and concerns facing many of today's military veterans who fought in the Afghanistan and Iraq wars: "Veterans with PTSD Suffer More Medical Illnesses," "Traumatized Vets Face Higher Dementia Risk," "Veterans Nervous about TriCare Changes," "Female War Veterans at Greater Risk of Mental Health Problems during Pregnancy," and "New Effort Launched to Help Veterans with Disabilities Live Independently at Home."

Issues like these are not specific to those returning from the most recent conflicts. Veterans of World War II and the Korean and Vietnam wars also face healthcare access challenges for a host of reasons.

While health and healthcare are topics of continuing interest, issues and challenges about accessing facilities and services needed to treat ongoing health conditions for veterans and military personnel, and especially for those living in rural areas, has received less attention.

To learn more about the transportation services available to rural Pennsylvania veterans for medical services, this research examined the location of medical services in proximity to the home locations of rural veterans and the transportation services available to them.

#### Veterans' Reliance on Medical Transportation Services

The need for and importance of transportation services to access healthcare by Pennsylvania military veterans have increased in recent years as the number of veterans has grown and as rising costs have decreased the availability of affordable private medical care. This is especially true for young veterans who are far less likely to have access to private insurance than their more elderly counterparts.

Currently, more than 1 million veterans are living in Pennsylvania. In federal fiscal year 2008, this population experienced 21,241 hospitalizations and made 2,441,000 visits for outpatient medical services (U.S. Department of Veterans Affairs, 2008).

Moreover, more than 10 percent of veterans in Pennsylvania are over age 65 and the veteran population in this age group is increasing rapidly. As these veterans age, their use of healthcare services increases (Weeks et al., 2005).

## Transportation and Healthcare Access Issues for Rural Veterans

Transportation issues are particularly important among rural<sup>1</sup> veterans. Research has shown that rural veterans travel much farther for Veterans Administration (VA) care than veterans in urban areas (Behrman, 2007; Lilly, 2010; Mooney et al., 2000; West, 2010). Moreover, needs for healthcare and social services among relatively young rural veterans must be accommodated while continuing

to address the needs of aging veterans from past conflicts (Jonk et al., 2005; Wilson and Kizer, 1997). While efforts are underway to improve the healthcare experiences of wounded soldiers and veterans upon their return to the U.S. and during initial treatment and early stage recovery, little is known about their experiences upon discharge from the military and their return to their Home-of-Record (HOR), which are disproportionately rural areas or small towns (Levin, 2009).

In addition to veterans from pre-2000 conflicts, geocoded data for returning service personnel wounded in the Afghanistan and Iraq conflicts suggest that more than 25 percent list their HOR in counties designated as rural—substantially above the share of the nation's population living in rural areas. The numbers of National Guard and Reserve personnel—who are playing unique roles in these conflicts—further contribute to the proportion of rural service members.

While medical care is critical, wounded service personnel and other returning veterans have many social service needs as well. Research has shown that families and communities are key companions in meeting the health and community service needs and enhancing the recovery prospects of veterans (Reeves, 2007; Reeves et al., 2005). Rehabilitation leading to employment and participation in other elements of daily life requires a range of accessible public- and nonprofit-provided services, including education, transportation, and social welfare (Adams, 2007; Camp, 2009; Finley et al., 2010; Jackonis et al., 2008; Khaylis et al., 2011; Wright et al., 2006).

TriCare, the national Military Health Services Health-care Plan, noted in its 2007 Annual Report to Stakeholders that early and continued intervention on an array of fronts improves returning soldiers' likelihood of recovery (TriCare, 2008). Thus, an examination of transportation services available to rural military veterans to facilitate access to healthcare services is an important first step in examining healthcare availability and quality and other social services to advance the outcome prospects for veterans (Haskell et al., 2010; Hoff and Rosenheck, 1998; Kressin et al., 1999).

1. For this research on rural veterans, the prevailing definition of rural comes from the Office of Management and Budget (OMB), which designates areas as metro on the basis of standards released in January 1980: each metropolitan statistical area (MSA) must include at least one city with 50,000 or more inhabitants or an urbanized area (defined by the U.S. Bureau of the Census) with at least 50,000 inhabitants and a total MSA population of at least 100,000 (75,000 in New England). These standards provide that each MSA must include the county in which the central city is located (the central county) and additional contiguous counties (fringe counties), if they are economically and socially integrated with the central county. Any county not included in an MSA is considered non-metro. OMB periodically reclassifies counties on the basis of census data and population estimates. See http://www.census.gov/population/www/estimates/metrodef.html.

#### Goals and Methodology

The research goal was to identify the scope of unmet needs for transportation services among rural Pennsylvania veterans and to develop policy considerations.

Using information gained through data analyses, key informant interviews, and selected county case studies, this research linked county-level locations of Pennsylvania's rural veterans with: (1) locations of healthcare services available to these veterans in proximity to their home county location; (2) the need for medically-related transportation services among rural veterans; and (3) transportation services currently available to rural veterans.

In addition, the researchers assembled a data file that identified the HOR of soldiers wounded in Afghanistan and Iraq, or OEF/OIF (Operation Enduring Freedom /Operation Iraqi Freedom). The data file allowed the researchers to construct estimates of travel time required of HOR soldiers to access military, veteran and civilian healthcare services. This simulation provided far greater precision in estimating travel time than is presently available by using techniques that make rough determinations of the origin and destination of travel.

Data sources included county-level U.S. Census data, including the American Community Survey (ACS) and VA data on veterans from previous military conflicts (World War II–First Iraq Conflict), a place- and county-level-based geocoded data set of returning service personnel wounded in the Afghanistan and Iraq conflicts, and a place-based health services data set compiled from publicly available military databases.

The researchers used these sources of data, together with information gathered through online research and interviews with service providers and related stakeholders, to create a picture of veterans and military personnel in rural Pennsylvania eligible for VA health benefits and services at the county and place levels to: determine their proximity to needed health and social services; learn about transportation services available to access these services; and evaluate service use.

Information from key informant interviews augmented the data analysis. The researchers conducted a total of 14 interviews with county-, intra-state/regional, and state-level organizations and offices actively engaged in offering healthcare, and social and other support services to rural Pennsylvania veterans and military personnel. The interviewees were from Allegheny, Bedford, Blair, Bradford, Cameron, Clearfield, Franklin, Schuylkill and Warren counties.

At the county level, the directors of departments and/or offices of veterans affairs were interviewed; at the intra-state/regional levels,

transportation officers and Disabled American Veterans (DAV) coordinators in medical centers/systems and county service agencies offered information; and at the state level, interviews involved officials in veterans associations and related organizations and state veterans offices, as well as state government. A list of key informants is shown in Table 1.

#### **Definitions of Veteran and Soldier**

This study used the U.S. Census Bureau's definition of "veteran" for data identification and collection and for literature searches. A "civilian veteran" is a person 18 years old or older who has served (even for a short time), but is not now serving, on active duty in the U.S. Army, Navy, Air Force, Marine Corps, or Coast Guard, or who has served in the U.S. Merchant Marines during World War II. Those who served in the National Guard or military Reserves are classified as veterans only if they were called or ordered to active duty, not counting the 4–6 months for initial training or yearly summer camps. All other civilians 18 years old and over are classified as non-veterans.

In addition, the Reserve components of the Armed Forces consist of the Army National Guard of the United States, Army Reserve, Naval Reserve, Marine Corps Reserve, Air National Guard, Air Force Reserve, and Coast Guard Reserve.

Table 1. Key Informant Interviews at County, Intra-State/Regional, and State Levels

	County-level Interviews							
County	A	gency Type		Titl		Agency Name		
Bradford		nty Government		Director		Department of Veterans Affairs		
Clearfield		v Governmen		Direc		Veterans Affairs Office		
Franklin	Count	v Governmen	t	Direc	tor	Office of Veterans Affairs		
Schuylkill	Count	y Governmen	t	Direc	tor	Department of Veteran's Services		
Warren	Count	y Governmen	t	Direc	tor	Department of Veterans Affairs		
		Intra or	Inter	-State Regi	onal-leve	el Interviews		
County	Age	ency Type		Title		Agency Name		
			Tra	nsportation	Officer	VA Pittsburgh Healthcare System		
Allegheny	Federa	nment		insportation		VA Pittsburgh Healthcare System,		
	Gover	nment		•		Motor Vehicles Operations		
Bedford	Trong	t Commons		Representat	ive	Huntingdon/Bedford/Fulton Area		
Bedioid		nsit Company		1		Agency on Aging		
Blair	Servic	e/Fraternal	DAV Coordinator		nator	James E. Van Zandt VA Medical		
	Organization					Center		
West	Service	e/Fraternal	I	OAV Coordi	nator	Martinsburg VA Medical Center		
Virginia	Organ	ization						
				tate-level In	terviews			
Agency T	`ype		Γitle			Agency Name		
		Pre	eside	nt	Per	nnsylvania Association of County		
County					Veterans Service Officers			
Government	t	Longest serving member		Pennsylvania Association of County				
				Veterans Service Officers				
Service/Frat		Departm	ent A	djutant	Pennsylvania American Legion			
Organization Fellisylvalia Alik								
		Deputy Adjutant General		Pennsylvania Department of Military and				
		(Ret.)			Veterans Affairs			
State Govern	nment	Chief			Pennsylvania Division of Veterans Services			
State Govern					and Programs			
		Director		Pennsylvania Veterans Affairs and				
					Em	ergency Preparedness Committee		

Between May 25 and December 31, 2010, 27 possible participants were contacted in county and state government, service and fraternal organizations, and federal government healthcare facilities. Fourteen interviews were completed. Of the remaining possible interviewees, eight were unresponsive, three were inappropriate for study, and two declined.

While active duty is a primary criterion distinguishing a member of the military from a veteran, within the category of persons who are designated as a veteran, the following conditions apply: first, there are many groups whose active service makes them veterans, including those who incurred a service-connected disability during active duty for training in the Reserves or National Guard, even though that service would not otherwise have counted for veteran status; and members of a National Guard or Reserve component who have been ordered to active duty by order of the President or who have a full-time military job. The latter are called AGRs² (Active Guard and Reserve). No one who has received a dishonorable discharge is a veteran.

The term soldier refers to individuals who are active duty in the U.S. Armed Forces and to members of the National Guard and National Guard Reserve who have been deployed and are currently serving in a military engagement.

#### **Literature Review**

The researchers reviewed federal reports and presentations, testimony to state and federal legislative committees, and research literature to gain information on military personnel's access to healthcare. The review focused on three populations: members of the active military, including the Guard and Army Reserve, veterans of pre-Gulf War I, and soldiers serving in Afghanistan and Iraq.

Publications offered basic insights into the challenges of access to care associated with the military managed care program (TriCare). A veteran who served his/her entire career in the military has access to the TriCare system upon retirement. In contrast, other veterans will have different government-related healthcare depending on whether they were conscripted or enlisted, or if they were a member of the National Guard or Army Reserve. In the current conflicts, the issue of access to care is also arising for individuals who were civilian contractors wounded in an overseas conflict. Each of these categories reflects a different level of long-term health service access<sup>3</sup>.

The spatial analysis for this project focused on two levels of assessment. Using county data, the researchers determined generalized patterns of physical access to care by comparing the veteran's county location versus the VA medical facility's county location. The second, more precise level of analysis, relied on the HOR location for soldiers identified by the Department of Defense (DoD) as having been wounded in the OEF/OIF conflicts. Prior

research has indicated that these individuals have a recognized potential to return to their communities and to seek healthcare due to their service in the military.

The scope of this inquiry was intentionally broadened to include all veterans regardless of their location because the majority of research available to consider healthcare access treats veterans as a group regardless of location. Nearly 450 citations associated with these topics were collected, with the focus on the specific healthcare needs of veterans and wounded soldiers from the OEF/OIF conflicts.

Because of the growing healthcare problems linked to illnesses associated with conflicts in Afghanistan and Iraq, the research was expanded to include the implied healthcare demands of such signature problems as Post Traumatic Stress Disorder (PTSD) and Traumatic Brain Injury (TBI)<sup>4</sup>. These two illnesses confront as many as 25 percent of soldiers returning from these conflicts (Perlin, 2006). While there is debate about the numbers afflicted by PTSD, the VA's medical record system indicated approximately 15 percent, or 143,530, OEF/OIF veterans have sought care for PTSD (U.S. Department of Veterans Affairs, 2009). These data were drawn from VA medical system region records and thus reflect only those individuals who sought care for PTSD.

The researchers assumed that selecting the wider focus would provide a background perspective on the challenges faced by former military personnel who, due to the peculiar aspects of VA care, such as free prescription drugs, have increasingly come to rely upon the VA for healthcare services<sup>5</sup>.

#### Veterans' Access to Healthcare

Since the late 1980s, differential access to healthcare experienced by rural versus urban veterans has been a topic of significant concern, with the majority of the nation's veterans' healthcare services based geographically in urban areas. With the suburbanization of the nation and the shift in population from the north and midwest to the south and west, the spatial mismatch between location of services and demand has only grown over time, leading legislators to call for an overhaul of the VA healthcare system (U.S. General Accounting Office, 1995, 1996a,b, 1998a,b).

Census 2000 estimates indicated that there are more than 22 million veterans (Lilly, 2010)<sup>6</sup>. Of those veterans, about 7.8 million or almost one-third are enrolled in the

 $<sup>2.\</sup> A\ full\ list\ of\ acronyms\ used\ in\ this\ report\ is\ available\ in\ the\ Appendix\ on\ Page\ 27.$ 

<sup>3.</sup> A member of the military who retires after a career in the Armed Services will have access to TriCare; he/she also has access to VA care if he/she signs up for it. Thus, differential levels of available care present a complex picture of healthcare access associated with being a member of the military.

<sup>4.</sup> For a system-wide numerical assessment of the frequency of TBI and other mental health-related illnesses, see "Analysis of VA Health Care Utilization Among US Global War on Terrorism (GWOT) Veterans Operation Enduring Freedom Operation Iraqi Freedom," VHA Office of Public Health and Environmental Hazards, January 2009.

<sup>5.</sup> Since 2003 the number of veterans seeking healthcare services from the VA has increased from 4 to 8 million patients. Speculation is that veteran pharmacology benefits and the reduction in workforce retirement benefits have placed added strain on the VA healthcare system.

<sup>6.</sup> In this study, decennial census data were used rather than American Community Survey (ACS) data because at the time of the data analysis, five-year estimates were not available from the ACS. At the time of the study, 2010 Census results were not available.

VA healthcare system. More than half (4.9 million) are active patients.

In urban areas, more veterans are enrolled in the VA program but are not patients, compared with rural veterans. This may reflect the higher rate of private insurance held by urban compared with rural residents and the range of available healthcare providers in urban versus rural areas (Lenardson et al., 2009; Watson, 2010). In addition, veteran pharmacy benefits may also increase the rate of program use. Thirty-eight percent of enrolled veterans live in rural areas, and rural veterans are more likely to be patients (40 percent) compared with urban veterans. One-third of enrolled veterans who served in Afghanistan and Iraq live in rural areas (Mitrone, 2010).

The demographic and health characteristics of rural veterans differ from those living in urban areas. On average, rural veterans are older than urban veterans, as nearly three out of four are 55 years old or older; rural veterans are also more likely to be male than female. Compared with urban veterans, self-reported income levels are lower for rural veterans (Lilly, 2010). Rural veterans are also less healthy than urban veterans and suffer from distinct mental healthcare challenges compared with urban veterans and are less likely to receive timely and continuing therapy for PTSD than urban veterans (Cully et al., 2010; Levin, 2009; Wallace et al., 2006).

Rural and urban veterans use in- and out-patient health-care services differently and also exhibit distinct health conditions for which care is sought (Wallace et al., 2006; Weeks et al., 2002; Weeks et al., 2004; Weeks et al., 2005)<sup>7</sup>. Rural veterans are more likely to seek in-patient healthcare compared with urban veterans, and their disease profiles differ. This may reflect the lack of close-by outpatient care. Rural veterans are more likely to seek in-patient care for circulatory, respiratory, and musculature illnesses, whereas urban veterans seek in-patient care for mental health and drug and alcohol rehabilitation and treatment (LaVela et al., 2004). In contrast, rural veterans using out-patient services exhibit a higher frequency of care for mental health, substance abuse, hypertension diabetes, and chronic disease (Lilly, 2010)<sup>8</sup>.

## Creation of the Rural Health Office of the Veterans Administration

In the wake of legislation creating the Rural Health Office of the Veterans Administration in 2007, researchers found that from 1950 to 2007, little had actually been researched or written about the health conditions of rural veterans (Weeks et al., 2008), despite knowledge of the long-standing overrepresentation of veterans in rural areas. Of the modest number (50) of articles identified, key themes emerged, including: access to care (Smith, 1996), the use of telehealth services, the benefits of faceto-face healthcare delivery, patient characteristics (Harada, 2002; Levin, 2009; Weeks et al., 2008; Westermeyer et al., 2009), programs implemented in rural settings (Chalifoux

et al., 1996), and rural health service delivery and veteran healthcare use patterns (Weeks et al., 2008). The summarized results indicate that: rural veterans have poorer quality access to healthcare services compared with their urban counterparts (Wallace et al., 2010); telehealth has been shown to work for some level of psychiatric care but is expensive (Morland et al., 2010); rural hospitals have more professional staff supporting patient care (Zigmond, 2007); and, compared to urban veterans, rural veterans have poorer health conditions and more co-morbidities (Forman-Hoffman et al., 2005).

In general, rural veterans' health conditions are worse, they are more comfortable using VA health services compared with their urban counterparts (Long et al., 2005), and, consistently, their access to healthcare is limited by the lack of transportation services (Community Transportation Association, n.d.).

With regard to healthcare services, rural hospitals had fewer specialties but services were deemed to be as good as or better than those in urban areas (Reschovsky, 2005). The literature review further found that the studies on rural access to care were generally older in age and used less high-quality data (Weeks et al., 2008). And importantly, no systematic definition of rural was used to study differences across location. This led one new entrant to the study of rural health issues at Stanford University to conclude, using the census definition of metro/non-metro (and unaware that the two are not synonymous with urban and rural), that one in three veterans are within 30 minutes' access of a VA major medical facility (Bair, 2010)9.

In summary, until recently, there was little accumulated research on the healthcare needs and experiences of rural

<sup>7.</sup> Veterans healthcare, at the time of its original establishment, was created as an inpatient system. It has since evolved into an outpatient model of care provision. At the same time, rural veterans use inpatient care in the absence of available care services nearby and due to the distance attending access to higher-skilled care at VA medical centers. Also, compared with urban veterans, rural veterans have less private insurance coverage and lower incomes, as noted elsewhere in this report. See also, from the Health Services Research and Development Service (HSR&D), Veterans Administration, http://www.hrsd.research.va.gov/publications/forum/oct10/oct10-3.cfm.

<sup>8.</sup> About two in five VA healthcare enrollees are rural residents (including the 1.5% defined by the VA as "highly rural." Rural enrollees are slightly more likely than urban ones to use VA care (68% vs. 65%); from 2006–2009, the number of rural enrollees grew faster (by 11%) than the number of urban enrollees (2%). Overrepresentation of rural residents among OEF/OIF troops, and casualties, will likely increase rural veterans' healthcare needs further (HSR&D, 2010).

<sup>9.</sup> Public Law 110-387 sought the creation of pilot programs to allow veterans to access healthcare from non-VA providers in instances of long distance and serious hardship. The law established a definition of access and hardship as part of the pilot program. This definition included the following criteria: More than 60 miles driving distance from the nearest VA healthcare facility providing primary care services, if the veteran is seeking such services; or more than 120 miles driving distance from the nearest VA healthcare facility providing acute hospital care, if the veteran is seeking such care; or more than 240 miles driving distance from the nearest VA healthcare facility providing tertiary care, if the veteran is seeking such care. Less clear-cut was the definition of hardship. The program is ongoing. To date, there is little documentation of program efficacy.

veterans. The majority of literature that does exist is being greatly augmented with new research in the wake of the creation of the VA Office of Rural Health and the growing healthcare challenges of a nation at war where signature health problems are related to mental health (PTSD), latent long-term debilitation (TBI), and the severity of wounds that in previous wars would have resulted in the death of the soldier.

The current conflicts in which the United States is engaged are calling attention to the specific needs of and geographic impediments to accessing healthcare services by rural veterans (American Legion, 2010). The challenge for rural veterans extends beyond geographic access, however. Demographic, life course<sup>10</sup>, family, and socioeconomic factors contribute to rural veteran healthcare status, which is below that of urban veterans. Some evidence has shown that, compared with urban locations, veterans in rural areas are less likely to seek mental health services and have less familiarity with mental health services in general (Wallace et al., 2010). Low relative use rates of VA healthcare services is attributed by some, including the American Legion, to the sparse availability of services due to distances and service consolidation.

#### Military and Veteran Healthcare Service Systems

Two primary systems support military-related personnel and their need for healthcare. Healthcare access for active duty personnel, including the Guard and Reserves, is provided through TriCare, a healthcare service program that relies on military healthcare facilities and facilities managed by regionalized healthcare maintenance organizations.

In contrast, the VA operates the largest integrated healthcare system in the country with 1,400 facilities, including hospitals, community clinics, residential facilities, counseling centers, and other facilities (Bascetta, 2007). The system is organized into regions with a major healthcare facility at the center and decentralized feeder facilities that offer varying levels of primary care.

Both service systems maintain unique eligibility criteria for access to healthcare services. Each is logically aimed at providing healthcare to its members and their dependents.

This study initially focused on active duty personnel and veterans. The spatial distribution of major military

healthcare facilities and VA operations was examined. The project team discovered that there was almost no overlap despite years of discussion about the cooperation between the two systems.

At the time of the study, the VA and DoD were in a pilot phase regarding record-sharing, a serious challenge for soldiers returning from active duty and having military-related injuries<sup>11</sup>. An analysis of DoD healthcare data, while related to the topic of this study, refers only to former retired active duty military personnel who retired from the military with a pension. These individuals have access to at least two healthcare insurance systems. This access makes it impossible to disentangle these individuals' specific role as potential participants in VA healthcare. For this reason, attention was focused in this study on individuals identified by the census as veterans.

Two major points are relevant to this discussion of the VA system. First, changes in the mid-1990s transformed the organization of the veterans healthcare system, altering the spatial distribution and format of service provision from in- to out-patient care (U.S. General Accounting Office, 1995, 1996a,b); the second refers to current service enhancements in response to the healthcare needs of soldiers serving OEF/OIF efforts (U.S. General Accounting Office, 2005, 2006, 2007).

In the mid-1990s, the VA decentralized the management structure of its Veterans Health Administration (VHA) and established 22 Veterans Integrated Service Networks (VISNs) (Congressional Budget Office, 2008; Ilem, 2009; U.S. General Accounting Office, 1997; Viranga et al., 2010). The 22 VISNs were to be stand-alone operations that controlled resource allocation among physical facilities and served specific territories of veterans. This new regionalization fostered coordination among hospitals, outpatient clinics, and other facilities to increase efficiency. To ensure that services were being offered efficiently, effectively, and without redundancy, the structure of care shifted from costly inpatient care at medical centers (parent facilities) to less costly outpatient care at community-based outpatient clinics (CBOCs). The goal for the CBOCs was to locate them within approximately 30 minutes' travel time from a veteran's home but this approximation was not applied to specialized care and unique services (U.S. General Accounting Office, 1998a, b). The overarching emphasis on primary care was designed to improve veterans access to care by redirecting existing resources to serve more patients.

A brief examination of the geography of military and veterans healthcare facility locations revealed a system built up in times of war and recovery. The overarching architecture of the system is indicative of the spatial distribution of population centers dating to the beginning of the 20th century when the nation's residents were concentrated in the Northeast and Midwest. World War II reshaped the military geography to include more bases located in the South and West. The geography of military care is aligned

<sup>10. &</sup>quot;Life course" is the term used to describe people's lives within structural, social, and cultural contexts. It frequently refers to how past actions influence future outcomes.

<sup>11.</sup> The Veterans Administration (VA) and U.S. Department of Defense (DoD) have been discussing record-sharing for more than a decade. The U.S. General Accounting Office reported in 2011 that the DoD and VA are expected to implement a system that links records in operation by 2012. The first year in which attempts were made to connect records was 2004. In 2010, the DoD and VA demonstrated the ability to share information with a private healthcare provider. The overarching system design was still under review at the completion of this study . See U.S. General Accounting Office (2011), Electronic Health Records, http://www.gao.gov/new.items/d11265.pdf.

first and foremost with base locations and secondarily with population concentrations circa the 1950s.

In a 1995 study, the General Accounting Office (GAO) used census data to model the location of veterans and their likely use of services<sup>12</sup>. The results were as follows:

- Living within 5 miles of a VA hospital or outpatient clinic significantly increased the likelihood that a veteran would use VA healthcare services.
- Although most veterans live within 25 miles of a VA hospital and outpatient clinic, use of VA facilities, in terms of both likelihood of VA use and the frequency of use, declines significantly among veterans living more than 5 miles from a VA facility.
- Only about 11 percent of veterans live within 5 miles of a VA hospital providing acute medical and surgical care and 17 percent within 5 miles of a VA outpatient clinic
- Use of VA healthcare services does not decline with distance as rapidly among veterans receiving VA compensation or pension payments. These payments are closely associated with a disabling injury in service of the country.
- Even those veterans with service-connected disabilities
  who live more than 100 miles from a VA outpatient
  clinic are more likely to use VA outpatient services
  than are higher-income veterans with non-serviceconnected disabilities who live within 5 miles of a VA
  outpatient clinic.
- A number of factors, including broader eligibility and entitlement to outpatient care for service-connected and low-income veterans, veterans' ages, and differences in available resources, also could contribute to the differences in use of VA services.

Further, in the 1990s, about 89 percent of veterans lived more than 5 miles from a VA hospital providing acute medical and surgical care, but about 50 percent lived within 25 miles. Similarly, approximately 83 percent of veterans lived more than 5 miles from a VA outpatient clinic, but about 66 percent lived within 25 miles.

At the time, VA facilities and services planning focused on the needs of 2.2 million veterans who were actively receiving healthcare under the control of the VA. Longerterm care would be extended to 6 million additional veterans, primarily served by out-patient clinics. By the late 20<sup>th</sup> century, of more than 23 million veterans, 33 percent used the VA for some facet of their healthcare (U.S. General Accounting Office, 1998a, b).

Travel time for veterans presents a more complex pattern as major facilities have historically been located in urban areas and locations with existing concentrations of veterans. Even with the expansion of CBOCs, the focus was on the concentrations of veterans, and not on the level of care required or the existence of injuries associated with military action. Thus, given the emphasis on numbers served, significant differences in travel time to care occur for urban and rural soldiers, as rural soldiers experience longer travel times to care compared with urban soldiers. However, rural veterans have shorter travel times to CBOCs compared with other types of healthcare facilities and services<sup>13</sup>.

In improving accessibility, the VA faced two basic decisions: where to locate new facilities and how to deliver care. It chose to target existing users and focus on veterans with high priority based on service-connected disabilities. There were two reasons for this decision. First, VA parent facilities finance CBOCs through their existing budgets and require the reallocation of resources to set up satellite facilities. In focusing on serving current users more efficiently, the VA could generate savings. However, the savings incurred would not offset the increased costs associated with caring for increased numbers of veterans attracted to the new clinics who would otherwise have sought alternative care elsewhere than at the VA's facilities.

Second, as indicated in VA regulations, veterans are accorded different priorities for enrollment and care based on several factors. Generally, veterans with service-connected disabilities have the highest priority, followed by lower-income veterans, and then higher-income veterans (U.S. General Accounting Office, 1998b). This order of priority is also reflected in the allocation of resources to individual Veteran Integrated Service Networks (VISN) by the Veterans Equitable Resources Allocation (VERA) system.

The gains from a focus on CBOCs and the distributed system of healthcare services were conceived based on a model of services supply. New research has revealed that not only does the disparity between urban and rural veterans stem from facility location decisions, but equally important, the population of veterans served differs significantly by age and era of military engagement. While there are many relevant examples, two are noted here:

- Younger veterans use VA health services at a high rate for their primary care and lack other forms of health-care coverage compared with older veterans (Johnson, 2008; Weeks et al., 2006); and
- the closure and consolidation of certain types of services, including substance abuse facilities, leaves veterans in non-urban settings without needed services (Wallace et al., 2007).

<sup>12.</sup> This GAO report forms the initial basis of this analysis because its publication initiated a decade-long discussion about the travel distance disparities facing rural veterans seeking healthcare. The results of this GAO study have been echoed over the last decade or so, despite significant investments in the establishments of new Community-Based Outpatient Clinics (CBOCs).

<sup>13.</sup> For more information on rural veterans' need for shorter travel times to CBOCs, see U.S. General Accounting Office (2001), Community-Based Clinics Improve Primary Care (http://www.gao.gov/new.items/d01678t.pdf).

### OEF/OIF Healthcare Needs: The Special Case of Rural Soldiers

The current military conflicts present extraordinary challenges to rural communities for three reasons: medical personnel in rural areas are often also members of the Guard or Reserve and have been drawn into the conflict as part of their service to country (Candi, 2007; Mitrone, 2010; Scott, 2010); the high proportion of Guard and Reserve forces serving in the wars are predominantly employed members of rural communities and members of family units so their absence and the prospect of a long convalescence in cases of severe injury place undue burdens on family members to provide transportation to healthcare services—anecdotal evidence indicates the burden may threaten the standard of living of family units (American Legion, 2010); and life-long complications from serious injury have been known to preclude the return of rural veterans to their communities—patterns of migration toward veteran medical facilities where possible is documented.

The literature on challenges facing members of the active military serving in Afghanistan and Iraq is growing rapidly. The concerns expressed in the literature revolve around the type of illnesses and severity of wounds experienced in the conflicts (Clark et al., 2007; Gronroos et al., 2009; Owens et al., 2007); burden placed on families and relationships (Chartrand et al., 2008; Fang et al., 2005; Johnson et al., 2007; Tyso, 2005; U.S. General Accounting Office, 2006a,b; U.S. Secretary of Defense, 2005); access to care (Community Transportation Association, n.d.; Peake, 2007; Philpott, 2008; Warrior Care, personal communications, n.d.; U.S. General Accounting Office, 2007); and metrics designed or needed to better diagnose mental health illnesses attributable to the war experience (Jackonis, 2008; Philpott, 2008; Wieland et al., 2010). This small sampling of the literature adds up to one overarching fact: the care needed by former soldiers extends significantly beyond physical wounds, which when encountered have a high probability of being significant, to the less apparent yet no less traumatic, psychological wounds of war. Access questions are magnified in the type of wounds requiring care of unusual and ongoing proportions. The same is true for mental healthcare. And it is all contingent on the veteran receiving timely and supportive care, which is itself contingent on access.

For rural veterans, the challenges of healthcare access are significant. High-level healthcare services are concentrated in metropolitan areas. This means that rural veterans—enlisted or reserve—needing sustained care must travel to centralized facilities, which can place an undue burden on individuals and families. Simultaneously, while active-duty personnel often have access to healthcare services at their base of deployment, the situation is less clear for reserve unit personnel and veterans. Identifying the geographic availability of services and service shortage

areas can help states and communities provide adequate healthcare assistance for rural veterans.

#### Post-Injury Care of Veterans

The path of care for a member of the military wounded in Afghanistan or Iraq depends on the seriousness of the injury. Injuries that require being processed out of the war zone follow a path from Landstuhl Germany Army Hospital to medical facilities in the U.S. Once the patient is ready to leave the military care facility and is being discharged from the military, he/she is transferred from military treatment facilities (MTF) to veteran health facilities.

An individual is assigned to a VA Social Welfare Worker Liaison, who assists with transfers and provides information for active duty and reserves. The Office of Seamless Transition coordinates among military treatment facilities, the VA healthcare facilities, and the nurses and social workers at regional medical centers.

An OEF/OIF member is screened for case management service needs. A wounded soldier transferred to a veterans healthcare facility is assigned to a care management team. Each VA facility has a caseworker and a social worker to provide case services. A caseworker is responsible for between 25–30 patients. Transition Patient Advocates (TPA) are located at regional healthcare facilities; the advocate is responsible for setting up the services needed by the soldier. The TPA is the point of contact between care, the member, and the member's family.

Despite best intentions, there are still serious challenges in the receipt of care by soldiers wounded in Afghanistan and Iraq. According to a RAND Corporation report, *Invisible Wounds of War: Psychological and Cognitive Injuries, Their Consequences, and Services to Assist Recovery*, a continuing weak link in accessing services relates to the lack of available transportation services (Tarnielian and Jaycox, 2008). Transportation services are still heavily reliant on services provided by DAV.

Another important issue in access to healthcare services is eligibility for healthcare benefits. Several factors enter into the determination of a veteran's eligibility for health benefits:

- Eligibility for most veterans' healthcare benefits is based solely on active military service in the U.S. Army, Navy, Air Force, Marines, or Coast Guard (or Merchant Marines during WW II), and discharge under other than dishonorable conditions.
- Reservists and National Guard members who were called to active duty by a Federal Executive Order may qualify for VA healthcare benefits. Returning service members, including Reservists and National Guard members who served on active duty in a theater of combat operations, have special eligibility for hospital care, medical services, and nursing home care for 5 years following discharge from active duty.
- Healthcare eligibility is not just for those who served

in combat—other groups may be eligible for some health benefits.

- Veteran's healthcare is not just for service-connected injuries or medical conditions.
- Veteran's healthcare facilities are not for men only. The VA offers full-service health care to women veterans.
   Information on eligibility for benefits is provided by VA officials involved in veterans' healthcare, and is also

VA officials involved in veterans' healthcare, and is also available from VA medical centers and clinics and county veterans affairs offices.

Another way in which the social worker, county veterans affairs office, and/or veterans health clinic/medical center assists a returning, wounded soldier or veteran is in locating local transportation services to access medical treatment and care when such services are needed.

## Medical Transportation System for Veterans in Pennsylvania

A description of the current state of the transportation system is warranted before general background on the issue of medical transportation for the commonwealth's rural veterans is provided.

Veterans' medical transportation services are coordinated in three ways, depending on the medical needs of the veteran. These services are available to veterans who have no other source of transportation and are only for transportation to VA-provided services. The point of coordination can vary. The veteran, a family member or friend can contact the transportation service and make arrangements.

If a social worker is part of the team providing care for the veteran, that person can make the transportation arrangements as can the county VA director. For those veterans making their own transportation arrangements, county VA directors, social workers, service organizations, such as the VFW, and word-of-mouth are the most typical sources of information on whom to contact for these services.

The first type of transportation is provided through DAV and is designed only to transport veterans who are not bedridden and can walk on their own. The DAV provides donated vans and volunteer drivers as well as funds for a hospital services coordinator, who works at the Veterans Administration Medical Center (VAMC) and arranges transportation for the veteran in the service delivery area covered by the medical center. For those transportation services that are outside of the medical center's service delivery area, the veteran (or family member), social worker, or hospital services coordinator will contact the county VA office to have transportation arranged locally. These local services can be provided through the county Area Agencies on Aging, the local public transportation system, or local medical transport agency.

The second type of transportation is a "med" van, which is for those veterans who are not able to walk and use a wheelchair. These vans typically are coordinated through a county- or community-based transportation service or ambulance service and are staffed by a medically trained person.

Finally, the VAMCs provide "motor coach" (bus) services for veterans needing VAMC services not available at the facility to which the veteran is assigned. The VAMC provides paid drivers to operate these 47-passenger buses that can accommodate wheelchairs. The buses make two trips per day on weekdays. The DAV transports the veteran from his/her home to a predetermined point for pick-up for the bus.

#### **Data Sources Used in Study**

The researchers used the most reliable and encompassing information available from a variety of data sources (See Table 2).

#### World War II through First Irag War Veterans

Data on veterans from World War II through the First Iraq War are less accurate than data on recent conflicts. In this study, VA and U.S. Census data were used to examine the county-level density of veterans from prior military eras. The VA database provides information on age, race, gender, county of residence, and period of service catego-

Table 2. Veteran Population, Data/Data Sets, and Information Available in Data Sources

Veteran Population	Data Sources	Information
World War II through the	U.S. Census-Veterans Administration	Demographic information
First Iraq Conflict	detailed data on veterans (more	including age,
	complete than standard census data)	race/ethnicity, gender,
	(December 2010*)	occupation, income,
		disability for veterans by
		specific conflict (Korean
		War, WWII, Vietnam)
Iraq and Afghanistan	Home-of-Record Data (Freedom of	Place-level location of
	Information Act)	wounded veterans
	U.S. Department of Defense	
	(February 2009)	
All Veterans	U.S. Census and American	County-level counts of all
	Community Survey Data,	veterans, no differentiation
	2000–2006, estimates 2007–2030	by age, gender, service, or
		year of conflict
All Veterans	U.S. Department of Health and	County-specific counts of
	Human Services, Centers for	healthcare providers by
	Medicare and Medicaid Services	type, healthcare facilities
	(2009)	by type, social workers,
		mental health
		professionals
All Veterans	Veterans Administration (2009) and	Information about all DoD
	Department of Defense (2010)	and VA healthcare
		facilities
All Veterans	Disabled American Veterans Hospital	Veteran-related
	Service Coordinator Directory for	transportation services
	Pennsylvania and other directories	
	(see text) (February 2010)	
All Veterans	Stakeholder Interviews (2010–2011)	Transportation currently
		used by veterans and
(1) (): a		perceived unmet needs

<sup>\*</sup> Month/year(s) in parentheses after data source name(s) are the years of data used in this study.

rized according to 13 time periods specified by the VA. These data are available for 2000 and were collected as part of the decennial census. While not as geographically detailed as the OEF/OIF data described below, these data allowed the researchers to examine the relationship between the location of soldiers who served in different service eras and distance to specialized healthcare services.

#### Returning Wounded Iraq and Afghanistan Veterans

The researchers assembled a data set of the place-level counts and locations of soldiers wounded in the Afghanistan and Iraq conflicts. These data provided information on each wounded veteran's service component, HOR, state, and country. These data were current as of the first quarter of 2009. According to the DoD, the HOR location is the place the service members were living when they entered (or re-enlisted in) the military. In this study, it was assumed that a person wounded in Afghanistan or Iraq was likely to return to this location. Given the "all volunteer" army and significant role played by members of the National Guard and Reserve, the HOR designation represents a reasonable approximation of where a soldier could/would return if he or she was wounded in the wars and required medical care<sup>14</sup>.

For each wounded soldier, the researchers matched his/ her unique city-state combination to data contained in the U.S. Geological Survey's (USGS) Geographic Names Information System. Through this process, the researchers linked wounded soldiers locations to existing latitude, longitude, and census data. An outcome of this process

14. In this study, the following assumptions were made regarding the relationship between HOR and location of residence, that is, the location where the soldier resided prior to deployment to an international conflict zone. Members of the Guard and Reserve are not full-time members of the Armed Services, but instead are men and women who sign up for duty to serve in the Reserve and are expected to serve their country in periods of conflict and national emergencies. These individuals do not live full-time on a base, nor do they surrender their civilian status. As these individuals are in effect part-time, there is a presumption that the HOR listed reflects their permanent residence. In the case of active duty personnel, the HOR of an active duty solider may not represent a one-to-one correspondence with the current residence of the soldier and could instead reflect (a) the location of their enlistment or (b) a family residence.

15. The analysis of healthcare access did not include an investigation of time of travel to healthcare facilities outside of Pennsylvania's borders. For soldiers living in southcentral and southeastern Pennsylvania, travel to out-of-state healthcare facilities, especially those located in the Washington, DC/Bethesda, MD area is possible given proximity to those facilities, and especially if veterans require access to critical care facilities located at one of these military healthcare centers.

16. The DAV Hospital Service Coordinator Directory is a national directory published by Disabled American Veterans, a nonprofit organization. The directory provides names and contact information for volunteers and paid staff who perform duties as hospital service coordinators. Among other activities, they coordinate transportation services for veterans who need to travel to VA healthcare facilities. Often, these volunteer coordinators maintain offices in VA medical centers. The most recent directory may be found online at: http://www.dav.org/volunteers/documents/HSCDirectory.pdf.

positioned these soldiers in geographic space, affording some basic characteristics of the locales in which these veterans resided and allowing connection of a wounded soldier's HOR with his/her corresponding county, state, and country of residence.

These data allowed a much improved analysis regarding the location of the soldier compared with census data on veterans of prior conflicts. Knowing where the soldier is located in space enabled a series of analyses. These analyses linked the wounded soldier data to existing VA military and non-military healthcare facilities. For each wounded soldier, place was the unit of analysis. A soldier's travel on a road network to his/her most geographically proximate healthcare facility of a particular type was presumed. With this information, the researchers were able to determine average one-way travel times between uniquely identified wounded soldiers and civilian, VA, and military healthcare facilities. These data were used to conduct additional quantitative and spatial analyses. Access to facilities identified by the VA and DoD in response to key healthcare challenges, such as mental health, speech pathology, physical therapy, and trauma centers, facing veteran service personnel were examined<sup>15</sup>.

#### Transportation Services for Veterans

Next, the researchers examined the potential supply of transportation services available to veterans in rural Pennsylvania. They gained a complete picture of these services by examining the DAV Hospital Service Coordinator Directory<sup>16</sup> for Pennsylvania and commensurate information available from state Red Cross, VA, and related community service providers. A search of county/regional web sites also provided information on veterans/VA-related transportation services, from which a list of services was assembled.

The snowball approach was used to identify non-traditional service providers such as churches, community service organizations, retired persons associations, municipal and local public transit, and other potential providers. The researchers also contacted DAV coordinators, county veteran service officers, and VISN transportation officers to determine the extent to which transportation services were being provided predominantly by family members and friends.

#### **Quantitative Data Analyses**

This project used a method that simulated the travel options for veterans, available as a result of unique data sets developed as part of a larger project supported by a U.S. Department of Agriculture (USDA) Cooperative Research grant, Penn State funds, and the personal resources of team member/investigator Dr. Amy Glasmeier. Working with DoD, VA, and healthcare facilities data, Glasmeier developed a database that allowed simulation of travel options facing veterans seeking healthcare from a range

of healthcare facilities, and military, veteran, and civilian medical facilities.

The researchers also used DoD and VA service personnel and healthcare facilities data with the data described above to identify patterns of healthcare access. They used Geographic Information Systems (GIS) technology, in particular a nested mapping profile, which enabled estimates of average distances between HOR and VA facilities based on real-time travel options, to calculate average distances by type of county and location.

For veterans of pre-OEF/OIF conflicts, patterns of veteran population concentration and proximity to healthcare facilities were studied based on the population of veterans included in the study (pre-versus post-Afghanistan and Iraq-era veterans and military personnel). Originally, the plan in this project was to use a centroid analysis<sup>17</sup> strategy that fixed the place of veteran location to the centroid of the population center of the county of residence. After consulting with highly-trained spatial analysts, it was clear that this would be insufficient for making even the most guarded generalizations about travel times to healthcare services. Therefore, the researchers decided to use pre-OEF/OIF veterans' access to healthcare based on their residence in a county with a major VA medical facility (core counties) or their location in a county proximate to a core county. While this is not an optimal solution, the OEF/OIF results were richer and more precise than any conclusions that could have been drawn on the time-travel estimates using county centroids. As a simulation of travel time, in this report the analysis of place-based data for the OEF/OIF soldier location stands as this project's contribution to understanding access challenges facing veterans.

For OEF/OIF soldiers, by linking VA service system capability by type of healthcare facility with HOR data, it was possible to illuminate specific challenges that could potentially be overcome by mobile and remote care options, where such options do not currently exist.

This analysis identified potential limitations of access and should be viewed as a simulation of potential problems military personnel and their families might face in seeking care. In addition, military service healthcare facilities and all qualifying diversified specialty healthcare facilities that are part of the Health Resources and Services Administration (HRSA) data collection program were incorporated. The healthcare facility data included major medical, clinics, outpatient services; rehabilitation services; speech pathology and therapy services; and many others. Attention in this project was focused on

healthcare services identified in the literature as being key to the recovery plans of OEF/OIF members.

#### Importance of the Concept of "Place"

The term "place" is important here. The HOR typically refers to the name of a town or city. This more specific designation allowed analysis of wounded soldier location below the county level. This, in turn, facilitated the use of GIS to determine the approximate number of minutes it would take a solider to travel to different types of healthcare facilities. In the case of Pennsylvania, "place" may refer to a township, borough, or city. The designation depends on the name of the location specified in the data set used in the analysis. The files were cleansed of incomplete, duplicate, and obscure records to produce approximately 35,000 unique records. The finished data file included all cases inclusive of the two time periods studied—pre-2007, and 2007–2009. According to anecdotal DoD estimates, as of 2009, this figure constituted about 30 percent of the reported 70,000 wounded soldiers referred to in various VA publications.

Differences in travel times for wounded soldiers who might be in need of healthcare were examined. In this analysis, three types of healthcare facilities were studied: military, veterans, and civilian. As each type of healthcare facility was addressed in turn, type of facility was described, followed by a review of the travel times of active duty wounded soldiers, inclusive of the Guard and the Reserve. Given the importance of these two sub-populations of active duty personnel, each was explored separately and reported in preliminary work for the USDA.

Given the disproportionate number of military personnel from rural areas<sup>18</sup>, the relatively high number of reserve units currently deployed, and the concentration of VA health services in metro areas, a GIS analysis seemed the best option in that it measures average distance in travel time to health service centers by region, state, and county type.

#### **Qualitative Data Gathering and Analyses**

The goal of the qualitative component of the research project was to understand and describe the transportation services available to rural military veterans to facilitate access to healthcare services and to identity the structural and community factors that facilitated, or impeded, a rural veteran's ability to access healthcare services in a timely and efficient manner. Prior to conducting the key informant interviews, the researchers understood that rural veterans in Pennsylvania rely primarily on two formal, non-familial and social network sources of transportation assistance: Disabled American Veterans (DAV), and County Veterans Service Offices.

The qualitative component of the project focused on conducting key informant interviews in selected rural counties in the state to provide insight into the particular

<sup>17.</sup> In centroid analysis, data points are mapped and reviewed for clustering: the greatest density of data points may be found at the centroid, or center. 18. Disproportionate is indicated in the following statistics: of 23.4 million veterans, 8 million sign up for healthcare and 5 million use these services. One in three veterans enrolled in VA healthcare reside in rural areas, two-thirds of those enrolled in VA healthcare and residing in rural areas use VA healthcare services. That is, rural veterans account for 41% of the total number of enrolled veterans who receive VA medical services (VA Office of Rural Health Strategic Plan 2010–2014).

transportation resources available to rural veterans to access healthcare services, identify factors that contribute to access to services, and highlight barriers that impede access to needed services.

#### Selection of Key Informant Counties

Using the Center for Rural Pennsylvania's definition of rural, the researchers determined the county-level supply of transportation service and their links to VA-related healthcare services in the state's 48 rural counties. Next, they analyzed counties based on seven criteria: concentration of the veteran population, in general; concentration of military personnel (VA, National Guard, and Reserve); concentration of wounded OEF/OIF veterans; concentration of the county population that was male<sup>19</sup>; the number of VA healthcare facilities in the county; rurality; and the concentration of civilian healthcare facilities located in the county. They then analyzed soldiers' commutes based on location of medical facilities, including military, veterans, and civilian healthcare services. Finally, they considered geographic dispersion across the state.

The researchers then selected case study counties that offered a range of service need profiles. Seven counties were included in the qualitative component of the project: Blair, Bradford, Cameron, Clearfield, Franklin, Schuylkill, and Warren.

#### Selection of Key Informant Interview Contacts

The researchers held key informant interviews with staff in the county-based VA offices, staff from multiple county or federal intra- or inter-state agencies, such as Area Agencies on Aging, regional VA Medical Centers, and state-level representatives from state associations or agencies serving the veteran population.

The researchers contacted the 27 potential key informants between May 25 and December 31, 2010.

The researchers completed a total of 14 interviews. Of

the remaining possibilities, eight were unresponsive; three were determined to be inappropriate for the study; and two declined interviews, citing their agency's unwillingness to participate/inappropriateness for this study.

The key informant interviews complemented the data analysis and provided insight into how the local, state, and federal sectors serve the healthcare and social services

19. Data analyses indicated that the majority of veterans in Pennsylvania are male, hence the reason for including this criterion.

needs of rural veterans, and identified barriers to service access.

#### Results

According to the 2000 U.S. Census, 14 percent, or approximately 1.3 million individuals aged 18 and older, are veterans of one or more military conflict and reside in Pennsylvania. Population distribution maps created for this project for 2006, 2007, and 2009 showed a dense clustering of veterans in urban counties of the state and a more diffuse spread of veterans throughout the state's rural counties.

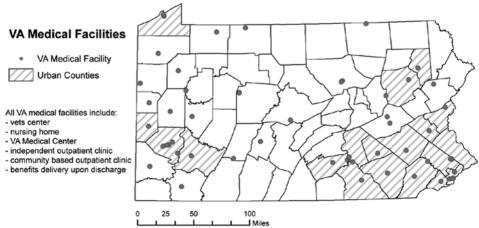
As shown on Map 1, VA all-inclusive medical facilities are roughly equally distributed between urban and rural areas, but are located more densely in urban counties in the upper northeast, lower southwest, and lower southeast areas of the state, fitting with the population density of veterans and active-duty military. Twenty-one rural counties have a VA medical facility, but approximately 13 of these are located proximate to an urban county. A total of 27 counties—nearly one-third the total number of counties in Pennsylvania—lack a VA medical facility and the majority of these counties are hundreds of miles from the closest proximate facility.

#### Breakdown of Healthcare Services in Pennsylvania

In Pennsylvania, there are eight major veterans medical care facilities. These facilities have multiple functions on site, and in most instances offer a full range of care with specializations. In key urban areas, such as Philadelphia and Pittsburgh, there are high order specializations. With one exception, the facilities are located and clustered in urban counties of the state. Map 2, on Page 16, identifies these key facility locations.

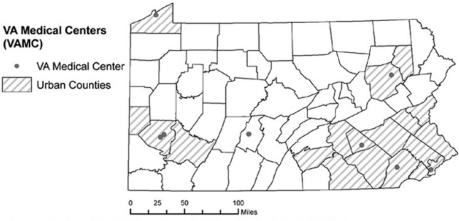
Outpatient clinics are examined in Map 3, on Page 16. As expected, CBOCs are more spatially dispersed

Map 1. Location of All VA Medical Facilities in Pennsylvania



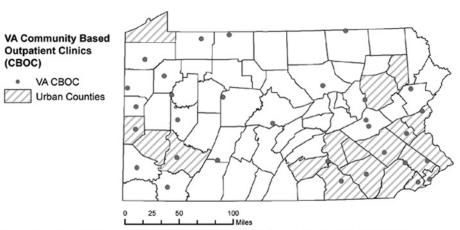
Geographic locations of all VA medical facility types in counties designated rural and urban by CRP, 2009 Data Represented are 2009 VA Facilities data

Map 2. Location of Pennsylvania's Key VA Medical Facilities, 2009



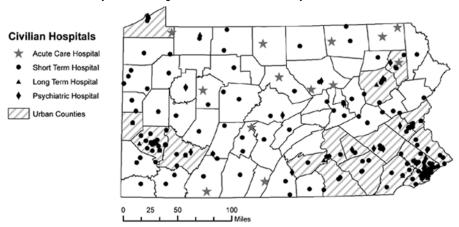
Geographic locations of VA Medical Centers in counties designated rural and urban by CRP, 2009 Data Represented are 2009 VA Facilities data

Map 3. Pennsylvania's VA Community-based Outpatient Clinics, 2009



Geographic locations of VA Community Based Outpatient Clinics in counties designated rural and urban by CRP, 2009 Data Represented are 2009 VA Facilities data

Map 4. Pennsylvania's Civilian Hospitals, 2009



Geographic locations of PA civilian medical facilities in counties designated rural and urban by CRP, 2009 Data Represented are 2009 Centers of Medicare and Medicaid Services data compared with primary medical facilities. These facilities were intended to be the more localized components of the VA healthcare system. After the reorganization of the VA health care system in the mid-1990s, and with the shift to a system of out- versus in-patient care, CBOCs were established to enable greater healthcare access to rural veterans.

Map 4 illustrates the location of civilian medical hospitals. This characterization demonstrates the spatial dispersion of healthcare service around the state. These facilities include community hospitals, critical care facilities, and larger sites of service provision. For rural areas, critical care hospitals are just that—hospitals designed to provide emergency care. Seven counties are without some type of hospital facility.

## Location of Veterans/Residences to Core Counties

The next section considers the location of Pennsylvania's veterans and their residence in or in proximity to core counties.

Pennsylvania's rural veterans are found throughout the state, with concentrations in core counties with veteran healthcare facilities and in adjacent counties (See Map 5). For example, significant counts of veterans are located in proximity to the medical complexes in Pittsburgh and Wilkes-Barre, and in Butler and Blair counties. Such a depiction tends to underplay concern over access. As a first cut, most rural veterans would appear to have access to healthcare at all three services—VAMCs, CBOCs, and civilian hospitals.

Although Pennsylvania has a large veteran population, the VA is projecting a decline in the veteran population (See Map 6). This projected reduction is not expected to substantially alter the spatial location of veterans. It may be posited, however, that the availabil-

ity of veteran education benefits could marginally alter the location of future veteran populations toward counties with institutions of higher education.

Of more critical importance is the difference in the spatial distribution of veterans by age group. In general, the concentration of younger veterans exhibits a slightly higher concentration in the more rural and smaller counties of the state (See Map 7).

Middle-aged veterans appear to be slightly more dispersed, with concentrations in the western and eastern portions of the state (See Map 8 on Page 18). This may reflect the impact of the Vietnam War, which was a war based on a draft, an artifact that would have fostered a spatial pattern mirroring the location of the state's population. This in turn would likely reflect the 20th-century location of industrial activities.

Veterans of retirement age and beyond exhibit a locational pattern reminiscent of that seen for the 45–64 age group (See Map 9 on Page 18). Again, the Vietnam War may have influenced the nature of this pattern.

The relationship between veterans' locations and veteran healthcare facilities

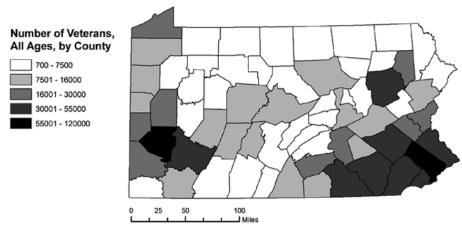
For this analysis, the researchers identified county locations as "core," meaning a county had a VA medical facility of any type, and as "adjacent to core counties."

Based strictly on the sum of all veterans regardless of urban or rural location, the researchers found that the majority of veterans are located in counties proximate to healthcare facilities (See Table 3 on Page 18).

The researchers found that more than 90 percent of urban veterans are in counties with healthcare facilities (See Table 4 on Page 18).

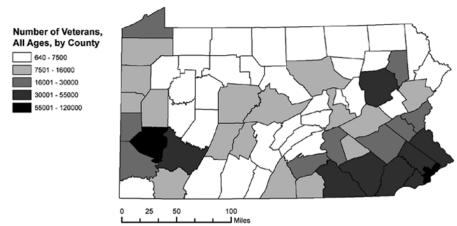
However, the researchers found that about one-third of rural vet-

Map 5. Rural Pennsylvania County Veteran Population as of September 2006



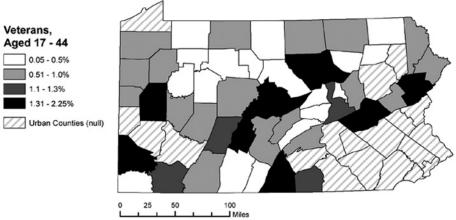
Absolute population of veterans living in counties designated rural and urban by CRP, 2009 Data Represented are VetPop 2007 County, Living Veterans data

Map 6. Projected Rural Pennsylvania County Veteran Population, 2009



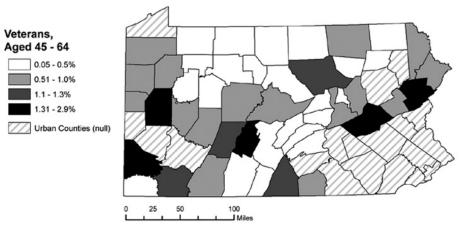
Projected absolute population of veterans living in counties designated rural and urban by CRP, 2009 Data Represented are VetPop 2007 County, Living Veterans data

Map 7. Share of Pennsylvania Veterans Aged 17–44 Living in Rural Counties, 2009



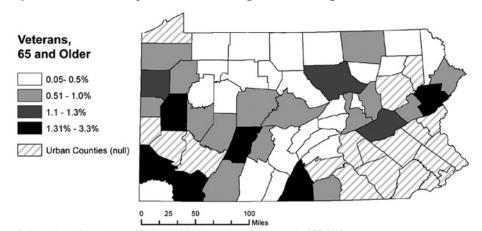
Projected share of veterans aged 17 - 44 living in counties designated rural by CRP, 2009 Data Represented are VetPop 2007 County, Living Veterans data

Map 8. Share of Pennsylvania Veterans Aged 45-64 Living in Rural Counties, 2009



Projected share of veterans aged 45 - 64 living in counties designated rural by CRP, 2009 Data Represented are VetPop 2007 County, Living Veterans data

Map 9. Share of Pennsylvania Veterans Aged 65+ Living in Rural Counties, 2009



Projected share of veterans aged 65 and older living in counties designated rural by CRP, 2009 Data Represented are VetPop 2007 County, Living Veterans data

erans are in adjacent counties. Therefore, the researchers hypothesized that rural veterans would face longer travel times than urban veterans (See Table 5).

When examining the location of veterans in counties that have major medical centers, <sup>20</sup> the research found that

Table 3. Geographic Distribution

County of Residence	Number	Percent
Contains 1+ VA Facility	825,707	82.98%
Adjacent Counties	165,214	16.60%
Non-Adjacent Counties	4,218	0.42%
Total	995,136	100.00%

of Pennsylvania Veterans, 2009

Sources: VetPop 2007 County, Living Veterans; 2009 VA Medical Facilities Data

about one-third of all veterans are located in counties that are non-core and non-adjacent counties proximate to health-care facilities (See Table 6).

When breaking the groups into urban and rural, and examining the impact of facility location in core, adjacent and non-adjacent counties, a different picture emerges. Few rural veterans live in core counties with key medical facilities. About 40 percent live in counties adjacent to core counties. The majority of rural veterans live in non-core, non-adjacent counties (See Table 7).

This pattern of rural proximity to major facilities differs significantly when compared with urban veterans: 85 percent of urban veterans are located in either a county with a major medical facility or are proximate to a core county (See Table 8).

# One-Way Time Analysis of Travel to Healthcare Facilities

For this analysis, the researchers used the Center for Rural Pennsylvania definition of rural. Table 9 reflects time travel in minutes to military-related medical facilities for

veterans located in urban and rural counties. With few exceptions, travel time for rural veterans is longer than for urban veterans. Even considering CBOCs, rural travel times are longer than urban travel times.

In the second and third rows of Table 9, travel times to

Table 4. Geographic Distribution of Pennsylvania's Urban Veterans, 2009

County of Residence	Number	Percent
Contains 1+ VA Facility	630,291	92.81%
Adjacent Counties	48,799	7.19%
Non-Adjacent Counties	0	0.00%
Total	679,090	100.00%

Sources: VetPop 2007 County, Living Veterans; 2009 VA Medical Facilities Data

<sup>20.</sup> In this study, a major medical center is a Veterans Administration Medical Center (VAMC).

Table 5. Geographic Distribution of Pennsylvania's Rural Veterans, 2009

County of Residence	Number	Percent
Contains 1+ VA Facility	195,417	61.83%
Adjacent Counties	116,414	36.84%
Non-Adjacent Counties	4,218	1.33%
Total	316,049	100.00%

Sources: VetPop 2007 County, Living Veterans; 2009 VA Medical Facilities Data

Table 7. Geographic Distribution of Pennsylvania's Rural Veterans Living in Counties with Major Medical Centers, 2009

County of Residence	Number	Percent
Contains 1+ VA Facility	288,531	28.99%
Adjacent Counties	435,051	43.72%
Non-Adjacent Counties	271,554	27.29%
Total	995,136	100.00%

Sources: VetPop 2007 County, Living Veterans; 2009 VA Medical Facilities Data

Table 6. Geographic Distribution of Pennsylvania Veterans Living in Counties with Major Medical Centers, 2009

County of Residence	Number	Percent
Contains 1+ VA Facility	11,579	3.66%
Adjacent Counties	122,293	38.69%
Non-Adjacent Counties	182,177	57.65%
Total	316,049	100.00%

Sources: VetPop 2007 County, Living Veterans; 2009 VA Medical

Facilities Data

Table 8. Geographic Distribution of Pennsylvania's Urban Veterans, 2009

County of Residence	Number	Percent
Contains 1+ VA Facility	276,952	40.78%
Adjacent Counties	297,035	43.74%
Non-Adjacent Counties	105,103	15.48%
Total	679,090	100.00%

Sources: VetPop 2007 County, Living Veterans; 2009 VA Medical Facilities Data

Table 9. One-Way Travel Time (in Minutes), Urban and Rural Counties, Based on HOR of OEF/OIF Soldiers

	Average One-Way Travel Time, Urban and Rural Counties, Based on OEF/OIF Soldiers*								
	Veterans Administration and Department of Defense Facilities								
		VAMC	СВОС	RRTP	BDD	юс	VANH	VCTR	Military Facilities
Urba	n	31.70	25.05	1056.88	155.82	242.64	125.78	42.14	100.46
Rura	ı	70.57	31.18	1121.77	161.85	183.95	146.63	44.75	172.16

Civilian Hospital Facilities									
Critical Access Long Term Care Short Term Care Psychiatric Unspecified Type**									
Urban	105.62	21.30	8.98	37.48	45.45				
Rural	53.32	57.86	15.93	50.62	48.70				

Other Civilian Healthcare Facilities								
	Community Mental Health Center	Federally Qualified Health Center	Rural Health Clinic	End Stage Renal Disease Facility	ICF-MR Title 19	Skilled Nursing Facility	SNF & NF Title 18 & 19 Only	Ambulatory Surgical Center
Urban	28.18	16.36	66.87	7.07	21.71	16.43	5.74	8.20
Rural	73.88	32.86	33.10	16.40	21.08	44.74	10.03	24.86

Civilian Rehabilitation Facilities							
	Comprehensive Outpatient Rehab Facility	Rehab Hospital	Outpatient Physical Therapy/Speech Pathology Facility				
Urban	37.29	21.48	12.15				
Rural	76.68	58.19	42.37				

<sup>\*</sup>Excludes Juniata and Forest Counties

VAMC: VA Medical Center, CBOC: Community Based Outpatient Clinic; RRTP: Residential Rehabilitation Treatment Program; BDD: Benefits Delivery Upon Discharge; IOC: Independent Outpatient Clinic; VANH: VA Nursing Home; VCTR: VA Veterans Center, Military Facilities: DoD Hospitals and other facilities in the TriCare System; ICF-MR Title 19: Intermediate Care Facilities-Mentally Retarded, Title 19 Only; SNF & NF Title 18 & 19 Only: Nursing Facilities, Title 19 Only; Skilled Nursing/Nursing Facilities (Distinct Part) Title 18/19; Skilled Nursing/Nursing Facilities (Distinct Part)

<sup>\*\*</sup> Includes civilian hospitals of types that were not indicated in original facilities dataset

Table 10. Travel Time in Minutes, OEF/OIF Soldiers, Based on HOR Location, By Facility

			V	A and DOD I	acilities				
									Military
County	Locale	VAMC	CBOC	RRTP	BDD	IOC	VANH	VCTR	Facilities
Blair	Rural	35.47	59.33	1102.86	215.16	198.44	168.72	51.68	192.1
Bradford	Rural	89.96	31.59	1233.74	147.27	367.58	204.98	59.97	223.5
Cameron	Rural	154.49	77.22	1270.49	199.94	185.43	227.85	34.82	265.3
Franklin	Rural	59.23	30.68	962.85	205.58	231.65	201.27	62.52	43.
Schuylkill	Rural	57.39	17.49	1072.31	198.24	314.21	189.22	29.03	87.:
Warren	Rural	82.52	15.06	1236.92	157.81	160.16	161.62	39.27	130.
				ivilian Healtl	ncare Facilities	s			
			Federally		End Stage				
		Community	Qualified	Rural	Renal			SNF & NF	
		Mental Health	Health	Health	Disease	ICF-MR	Skilled Nursing	Title 18 &	Ambulator
County	Locale	Center	Center	Clinic	Facility	Title 19	Facility	19 Only	Surgical Cent
Blair	Rural	12.29	10.52	31.51	11.02	15.69	57.41	5.81	11
Bradford	Rural	101.59	53.42	79.90	23.04	20.74	77.16	14.89	33
Cameron	Rural	188.08	0.56	9.90	31.69	40.44	103.02	0.00	22
Franklin	Rural	48.47	7.86	16.39	4.97	13.85	51.35	3.42	8.
Schuylkill	Rural	57.07	37.90	34.01	28.91	13.28	45.34	7.74	19
Warren	Rural	181.47	61.28	40.13	13.71	17.85	14.06	11.07	17
									Outpatient
				Short					Physical
			Long Term	Term		Hospital of	Comprehensive		Therapy/Spee
		Critical Access	Care	Care	Psychiatric	Unspecified	Outpatient	Rehab	Pathology
County	Locale	Hospital	Hospital	Hospital	Hospital	Type*	Rehab Facility	Hospital	Facility
Blair	Rural	45.38	66.06	9.49	89.70	62.81	138.45	40.11	5
Bradford	Rural	36.41	107.42	20.25	45.48	48.68	114.61	95.13	101
Cameron	Rural	59.34	192.08	31.69	108.12	59.93	168.07	139.73	86
Franklin	Rural	36.26	27.18	3.45	20.23	58.53	29.15	64.72	11
Schuylkill	Rural	94.63	58.26	20.15	49.14	29.58	21.74	52.70	36
Warren	Rural	40.03	86.49	12.47	15.58	44.61	157.58	88.20	37

<sup>\*</sup> Includes civilian hospitals of types that were not indicated in original facilities dataset

VAMC: VA Medical Center; CBOC: Community Based Outpatient Clinic; RRTP: Residential Rehabilitation Treatment Program; BDD: Benefits Delivery Upon Discharge; IOC: Independent Outpatient Clinic; VANH: VA Nursing Home; VCTR: VA Veterans Center; Military Facilities: DoD Hospitals and other facilities in the TriCare System; ICF-MR Title 19: Intermediate Care Facilities-Mentally Retarded, Title 19 Only; SNF & NF Title 18 & 19 Only: Nursing Facilities, Title 19 Only, Skilled Nursing/Nursing Facilities (Distinct Part) Title 18/19, and Skilled Nursing/Nursing Facilities (Dully Certified) Title 18/19

rehabilitation, speech pathology, psychiatric facilities, community mental health facilities and skilled nursing facilities, rural travel times are longer, sometimes more than twice as long as those for urban veterans.

Finally, the researchers looked at travel time for veterans located in the case study counties. These results reiterate the difference in travel time for rural versus urban veterans. Comparisons between Tables 9 and 10 illustrate the significant difference in distance traveled to access health-care services thought to be critical to veteran populations.

In summary, medical services are urban-centered. Proximity to major medical facilities is highest in urban counties and rural veterans are more likely to live in non-adjacent counties compared to their urban counterparts. Travel time to most types of medical facilities are longer for rural soldiers, especially those seeking healthcare services identified as important to their treatment following their return from current military conflicts.

#### Themes from Key Informant Interviews

Several themes emerged from interviews with key informants. After offering central findings, a brief summary is provided for each theme: desire to help veterans; legal mandates and duty to provide assistance; ability to assist enabled/constrained by resources; and factors that enable/constrain veterans' access to transportation and related services, such as funding, human resources, time, travel

distance to care, transportation-related needs, service specialization at specific facilities, technology, and system complexity and coordination.

#### Central Findings

County VA directors indicated they typically have a sufficient budget for one staff person to coordinate transportation scheduling, manage drivers and fleet, and coordinate with provider scheduling. All of the other functions, such as placing flags on soldiers' graves and helping veterans apply for benefits, are accomplished often beyond the typical workday because of these directors' deep commitment to the veterans they serve.

At the VAMC, the structure helps to improve and coordinate care, but there is a feeling that processes and following the rules are more important than the individual needs of veterans.

Most DAV transportation services exist due to the goodwill of volunteers. This situation acts to limit convenience and efficiency for veterans needing transportation.

Vans and other vehicles frequently cannot be modified for wheelchairs, beds, or other supports for those who are not fully or moderately able to walk on their own. The result is limited access to transportation services for those who cannot walk on their own or with the assistance of a walker, cane, crutches, or other support.

One of the first challenges is identifying rural veterans

who need support. One key informant noted the general concern regarding communication and outreach as it was difficult to identify vets in rural areas unless they try to find services.

#### Desire to help veterans

One of the key themes that emerged from the key informant interviews is the deep commitment of county VA directors, DAV coordinators, and transportation staff at the VAMCs to serve the veterans in any way they can.

#### Legal mandates and duty to provide assistance

Many key informants spoke of the legal requirements in the county code to provide transportation and other services to veterans and their families. Several noted that the scope of services is not mandated but that staff members feel a duty to help well beyond the services prescribed by law, including support to spouses, widows/widowers, and children.

#### Ability to assist enabled/constrained by resources

Many services are provided with a mix of county and state funding and donations of time by volunteers, and, on occasion, direct financial support from service organizations. As with many services that combine volunteer services and more formal organizations, communication is essential. Often organized systems for coordination and information dissemination are not in place and are driven by interpersonal relationships rather than formal structure.

## Factors that enable/constrain veterans' access to transportation and related services

Information from key informant interviews focused on factors that facilitate the provision of services or present resources, governance structures or other factors often beyond the control of the DAV, VAMC, and others that provide support to veterans. The factors are organized by type below.

Funding. Several key informants discussed the need to manage a complex funding stream that includes donations, grants, direct budgets, and fundraising efforts to provide transportation services to veterans. Some of the factors that limit the ability of county VA directors and others to provide transportation services are the structure of the budget model and the need to restructure existing budgets to fund new services as the transportation needs of veterans change due to age, the changing nature of combat-related injuries, and the mix of acute and chronic conditions over time.

Human resources. Beyond budget dollars the most significant asset that enables the provision of transportation services to veterans is the number and capacity of drivers. A significant portion of transportation services are provided by volunteer drivers, many of whom use their personal vehicles for part of or the entire trip. According

to the VA county directors, however, one key challenge is that many of the volunteers are older, retired veterans themselves. The directors specifically indicated these older volunteers' difficulty with driving or driving long distances; with passing their required annual physical; and with using their own vehicles to provide services due to the increasing cost of fuel and their own fixed incomes. Directors also cited the number of days missed by older volunteers due to illness.

*Time.* One of the additional challenges of the county structure is that transportation is often restricted within counties. In addition, some services are provided at regional hubs, such as Pittsburgh and Philadelphia, which require longer travel times. The existing vans are not suited to longer trips for those with certain types of injuries in which sitting in one position for an extended period of time is uncomfortable or painful.

Travel distance to care. Distance is a critical factor for many veterans seeking transportation to medical services. These issues can be exacerbated when there are no local public transportation systems and/or the cost of transportation (for example a 30-mile taxi ride) is beyond the reach of the veteran.

Transportation-related needs. Arranging for transportation services is especially difficult for veterans with physical limitations that require mobility devices, such as wheelchairs or scooters. Key informants also expressed concern about the capacity of the drivers to respond to healthcare needs en route, as most lack the first-aid or medical training to effectively respond. Many key informants also discussed the challenges that veterans face in coordinating multiple types of transportation to get to a DAV van pick-up location and/or navigate public transportation when those options are available to them.

Service specialization at specific facilities. Quality of care is often improved when specialty services are consolidated, concentrating volume and expertise in one location. For veterans requiring specialty services, transportation times and coordination can be difficult.

Technology. One option for responding to transportation challenges is to use technology solutions that facilitate scheduling, direct service provision, and/or effective response. In many rural counties, broadband access and cell phone coverage continue to be problems, limiting the utility of technology-enabled responses and telemedicine/ telehealth options.

System complexity and coordination. For many veterans, transportation services are available but the need to coordinate across multiple providers and systems makes accessing transportation services difficult. Several key informants mentioned the misperception/expectation that these different systems coordinate seamlessly with each other on behalf of veterans.

#### **Key Informant Interview Case Studies**

(Please note: The names and other potentially identifying information have been changed to ensure confidentiality.)

Case Study 1: Stephanie (27-years old; HOR—Somerset County; single amputee, IED; services received in Altoona, PA).

Stephanie, an OEF/OIF veteran, is a single amputee whose injury stemmed from an Improvised Explosive Device (IED) explosion that hit the Humvee she was driving as part of a support unit. She travels from her home in Somerset County to Altoona (Blair County) to receive physical therapy related to her prosthetic.

Stephanie relies on her parents for the first part of her weekly journey. Her father drives her to Johnstown on his way to work, where she meets the van at the Community Based Outpatient Clinic (CBOC). The van leaves the Johnstown CBOC at 7:30 a.m. and travels to Altoona, with stops in Ebensburg to pick up other vets requiring services in Altoona. The drive to Johnstown takes 45 minutes to 1 hour depending on school bus and other commuter traffic, and can take longer in inclement weather. The drive from Johnstown to Ebensburg takes 30 to 45 minutes, also depending on traffic and weather. The drive from Ebensburg to Altoona takes 45 minutes to 1 hour depending on the same factors.

Stephanie typically arrives in Altoona between 9:15 and 9:30 a.m. after traveling for 2 hours or more. Her physical therapy appointments typically last 90 minutes, but can take longer if she is having trouble with her prosthetic. Stephanie eats lunch at the Altoona VA because the van starts afternoon runs at 1 p.m.

Upon returning to Johnstown, Stephanie waits at the CBOC until her father finishes his work day and picks her up on the way home. Each leg of the journey is about 80 miles and takes 2 to 2 ½ hours to complete.

Every time Stephanie makes this trip, she travels more than 160 miles round-trip for a 90-minute visit. Due to her prosthetic, her physical therapy is scheduled to continue for 32 weeks, or 8 months. Stephanie sometimes must reschedule appointments if the weather is bad, making travel difficult or impossible; the van driver is ill; or the Physical Therapy and Prostheses Unit in Altoona is unable to fit her into the schedule if she misses her appointment time due to these circumstances.

Case Study 2: Joe (57-years old; HOR—Fulton County; Post Traumatic Stress Disorder (PTSD) and pancreatic cancer; services received at the VA Medical Center in Martinsburg, WV).

Joe served in the Vietnam War and has suffered for years with Post Traumatic Stress Disorder (PTSD). In the last year, he has been diagnosed with pancreatic cancer, potentially as a result of exposure to Agent Orange during the war. He lives in a small town in Fulton County and receives his VA medical care from the VA Medical Center (VAMC) in Martinsburg, WV. Periodically, he needs to travel to the VAMC in Baltimore, MD for specialized services.

Joe and his wife do not own reliable transportation, so he relies on the volunteer veterans transport system provided by DAV. However, that transportation can be inconvenient and time-consuming at best. For example, when Joe needs to travel to Baltimore for treatment (a distance of approximately 110 miles), he must call the Martinsburg VAMC Transportation Office three days in advance to reserve a seat on the van to travel to Martinsburg (a distance of approximately 50 miles). Once at the Martinsburg VAMC, he may be required to stay overnight if transportation is not available to Baltimore. If necessary, he can stay in the medical center's "hop-tel," which has a bed and a microwave. Joe's stay there is supported by the medical center but he must call the medical center's Travel Services Office at least two days before to reserve it. Sometimes Joe and his wife misplace the pieces of paper that list the phone number for the VAMC Travel and Transportation Offices, which is frustrating since Joe, as the patient, must schedule the van and hop-tel rather than having someone at the VAMC take care of that for him.

On the second day of travel, Joe is transported by van from Martinsburg to Baltimore (a distance of 100 miles). When he arrives in Baltimore, he cannot be registered until 30 minutes before his appointment so he often needs to wait in the waiting room to be seen. Once services are received, he makes the return in reverse in order, having spent a minimum of two days in travel time.

Joe also worries about his friend and neighbor, Steve, who is confined to a wheelchair and often cannot leave his bed for several days. Steve also served in Vietnam and has suffered from Chronic Obstructive Pulmonary Disease for the last 10 years. Steve also receives some of his medical care from the Martinsburg VAMC but cannot travel there on the DAV van since it cannot accommodate wheelchairs or gurneys. Steve has to wait for his son or daughter to take time off from work to take him to Martinsburg.

Case Study 3: John (47-years old; HOR—Montour County; Chronic Obstructive Pulmonary Disease, possibly related to Gulf War Syndrome; services received in Lebanon, PA and the Bethesda Naval Hospital, MD).

John, a veteran of the Persian Gulf War (Gulf War – Operation Desert Storm), suffers from Chronic Obstructive Pulmonary Disease (COPD), which was officially associated with Gulf War Syndrome (GWS) in 2009. John's illness has been linked to two primary causes: the inhalation of high-temperature fumes from burning oil fields in Kuwait and the use of pyridostigmine bromide (PB) pills as a preventative against the potential use of nerve agents. While the respiratory symptoms are the dominant illness for which John seeks treatment, other symptoms include

chronic pain and severe headaches with no definitive diagnosis, which often require diagnostic work-ups.

John travels from his home in Montour County to the VA Medical Center in Lebanon County where there is a special respiratory care program. When the weather is good, the route is more than 60 miles and takes about 11/2 hours; when the weather is not good, the trip is longer. Due to his COPD and related need for oxygen, John relies on a DAV van for transportation to and from the VA Medical Center in Lebanon. John's driver travels from his home in Bloomsburg, PA to Montour County, a 20 to 30 minute trip, to pick John up to drive him to Lebanon. John's treatments and respiratory therapy often take 2 to 3 hours and leave him exhausted. John receives his treatment once a month, requiring 3+ hours of transportation for John and 4 hours for his driver. Every six months John travels to the Naval Medical Center in Bethesda, MD, for treatments and diagnostic follow-up. This trip typically takes 3½ to 4 hours, (183 miles) one way. John's treatment and diagnostic work-up at Bethesda typically lasts 4 to 6 hours. When he is feeling up to it, John returns home on the same day to avoid the cost of an overnight stay. On these days, John and his volunteer driver travel 7 to 8 hours. Because John's condition is chronic, this travel schedule is expected to continue indefinitely.

#### **CONCLUSIONS and CONSIDERATIONS**

Rural Pennsylvania veterans have significant and ongoing needs for quality healthcare, and often for specialized care, and face sometimes significant challenges in accessing care. While state, county, and local agencies and organizations make valiant efforts to provide some level of transportation services, there is still a long way to go to meet current local needs and overcome barriers, including financial challenges, limited availability of trained volunteer drivers and transportation itself, and a lack of necessary services in local healthcare facilities, which often necessitate long-distance travel to access those services.

Taken together, results from the quantitative data analyses and key informant interviews document a pervasive gap between rural military veterans' needs in Pennsylvania for medically-related transportation and the availability of accessible and affordable transportation services. Rural veterans face and often endure comparatively longer travel times to reach healthcare facilities; for some types of specialty care, they must travel very long distances. The situation is compounded by formidable barriers to the provision of transportation services in rural areas, including limited availability of public transportation systems and handicapped-accessible vehicles, funding for vans, as well as lack of sufficient numbers of trained drivers.

To increase access to much-needed transportation for rural veterans, the following measures are recommended for local communities, county agencies, statewide organizations and state government.

#### **Community Level**

Engage community leaders in campaigns to increase community awareness about the need for medical transportation among veterans in the community, and of the vital transportation services currently provided by local organizations.

A number of the key informants interviewed for this research discussed a lack of awareness in rural communities about the difficulties veterans experience in identifying transportation options to access healthcare services. Increasing community recognition of the importance of transportation will facilitate recruitment of volunteers and generate support for needed improvements. Informational campaigns also may directly benefit veterans themselves, who are sometimes unaware of services available in their communities, or who may erroneously believe they are not eligible for services. Efforts at raising awareness could initially be spearheaded by the county-based VA directors, in collaboration with volunteers currently involved with providing DAV services. Working together, they could reach out to opinion leaders, such as local elected officials, school administrators and educators, and members of the clergy. Once those groups become educated about unmet transportation needs among veterans and services, dissemination of this information to the wider community would be greatly facilitated.

Encourage service organizations in rural communities to adopt transportation for veterans as a cause they support financially and with volunteer time.

Many communities have civic organizations, service groups, and churches that view community improvement as part of their missions. These organizations should be key targets for outreach by the county-based VA directors and DAV volunteers as described above. Educating members of these groups and encouraging them to become involved in fund-raising and volunteering can increase resources available to devote to transportation improvements.

#### **County Level**

Encourage transportation system planning that takes into account locations of medical facilities used by veterans and develops efficient routes, including reciprocal agreements that allow transportation routes that can cross county boundaries.

The county-based VA directors are very knowledgeable about the transportation needs of the veterans in their counties. Those interviewed for this project would welcome the opportunity to work with county transportation authorities and planners to maximize the extent to which public transportation allowed access to medical facilities used by veterans. The directors interviewed, however, felt that current planning processes did not allow for a consistent and effective way to voice their concerns and suggestions. Another opportunity may reside in potential coordination with Local Development Districts (LDDs), whose transportation-related activities are mandated by the U.S. Department of Transportation. While there is currently little to no overlap between the agendas of the LDDs and those providing veterans services, officials may be encouraged to identify and discuss ways to seek opportunities to collaborate on issues relating to transportation of veterans to healthcare services as this overlaps with LDD and related transportation planning efforts.

Establish registries for rural veterans needing transportation services.

Several informants mentioned that a lack of information about the magnitude of the need for transportation among rural veterans was a barrier to planning for services. The establishment of voluntary registries, perhaps at the time of discharge from the service or during contacts with county VA directors, would be a valuable step toward better transportation services planning. County directors should be encouraged to take the lead in instituting these registries and providing funding to support the development of these registries.

#### State Level

Increase support for county-based veteran services through the County Veteran Services/Veterans Affairs Offices.

Most county offices support one full-time staff person who is responsible for assisting all veterans in the county and their families with accessing all services available through the state and federal governments. State legislators could increase support for staffing in these offices to provide additional resources for veterans as they apply for VA and county-based services.

Increase financial support for transportation systems in counties and to local organizations, such as DAV, to aid in purchasing handicapped-accessible vans.

Although the Pennsylvania Department of Military and Veterans Affairs does not operate transportation for veterans at this time, it has provided funds to DAV to assist with the purchase of vans that transport veterans to VA medical facilities. The key informants observed that many of the DAV vans are in poor condition (despite the availability of federal funding for maintenance), more are needed and few are wheelchair-accessible. State legislators should be made aware that increased transportation-related funding is greatly needed in counties and local communities.

Identify ways to incentivize healthcare providers to use telemedicine and in-home monitoring.

Because rural veterans live farther from healthcare facilities, particularly for tertiary care, reducing the frequency of visits needed through telemedicine technology could contribute to a reduction in the unmet demand for transportation services. State legislators should seek ways to encourage healthcare payors (both governmental/public and private insurance companies) to encourage the use of telemedicine and in-home monitoring through favorable reimbursement policies.

Encourage communication and cooperation among agencies that serve populations that include veterans but may not currently be focused on veterans' needs.

Facilitation of communication and strong working relationships among agencies that serve populations that include veterans but are not specifically targeting this population could lead to more optimal services. For example, the county Area Agencies on Aging currently provide some transportation services, but could perhaps better meet the medical transportation needs of older veterans if there were more awareness of the healthcare facilities often used by this group. Another example might be the Pennsylvania Department of Public Welfare, whose clients include veterans who may be unaware of resources available to veterans. The Department of Public Welfare provides transportation subsidy programs for people who have received a Medical Assistance Access Card. More effort could be made to inform veterans of these and other available resources and assistance.

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Appendix: List of Acronyms						
ACS	American Community Survey	MTF	Military Treatment Facilities			
AGR	Active Guard and Reserve	NRC	National Resource Center for Human Service			
ARF	Area Resource File		Transportation Coordination			
CARES	Center for Applied Research and Environmental	OEF	Operation Enduring Freedom			
	Systems, University of Missouri	OIF	Operation Iraqi Freedom			
CBOC	Community-Based Outpatient Clinic	PB	Pyridostigmine Bromide			
CHCBP	Continued Healthcare Benefit Program	PTSD	Post Traumatic Stress Disorder			
COPD	Chronic Obstructive Pulmonary Disease	Ret	Retired			
CRP	Center for Rural Pennsylvania	TBI	Traumatic Brain Injury			
CTAP	Community Transportation Assistance Program	TPA	Transition Patient Advocate			
DAV	Disabled American Veterans (organization)	USDA	U.S. Department of Agriculture			
DMDC	Defense Manpower Data Center	USGS	U.S. Geological Survey			
DoD	U.S. Department of Defense	VA	Veterans Administration; Veterans Affairs			
ESRI	Environmental Systems Research Institute	VAMC	Veterans Administration Medical Center			
GIS	Geographic Information Science/Systems	VERA	Veterans Equitable Resources Allocation			
Gulf War	Persian Gulf War; Operation Desert Storm	VFW	Veterans of Foreign Wars			
GWS	Gulf War Syndrome	VHA	Veterans Health Administration			
HOR	Home-of-Record	VISN	Veterans Integrated Service Network			
HRSA	Health Resources and Services Administration	VISN 4	Veterans Integrated Services Network's			
IED	Improvised Explosive Device		Regional Office, Pittsburgh			
IRB	Institutional Review Board	WWII	World War II			

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