Using geographic information system tools to improve access to MS specialty care in Veterans Health Administration

William J. Culpepper, II, PhD, MA;[1–2]* Diane Cowper-Ripley, PhD;[3–4] Eric R. Litt, BA;[3] Tzu-Yun McDowell, MA;[1–2] Paul M. Hoffman, MD[3–4]

[1]*Multiple Sclerosis Center of Excellence-East, Department of Veterans Affairs Maryland Healthcare System, Baltimore, MD;* [2]*University of Maryland School of Medicine, Baltimore, MD;* [3]*Rehabilitation Outcomes Research Center Research Enhancement Award Program, North Florida/South Georgia Veterans Health System, Gainesville, FL;* [4]*University of Florida College of Medicine, Gainesville, FL*

Abstract—Access to appropriate and timely healthcare is critical to the overall health and well-being of patients with chronic diseases. In this study, we used geographic information system (GIS) tools to map Veterans Health Administration (VHA) patients with multiple sclerosis (MS) and their access to MS specialty care. We created six travel-time bands around VHA facilities with MS specialty care and calculated the number of VHA patients with MS who resided in each time band and the number of patients who lived more than 2 hours from the nearest specialty clinic in fiscal year 2007. We demonstrate the utility of using GIS tools in decision-making by providing three examples of how patients' access to care is affected when additional specialty clinics are added. The mapping technique used in this study provides a powerful and valuable tool for policy and planning personnel who are evaluating how to address underserved populations and areas within the VHA healthcare system.

Key words: access to care, geographic information system (GIS), healthcare, mapping techniques, multiple sclerosis, policy planning, travel time, veterans, Veterans Health Administration, VISN.

BACKGROUND

Access to appropriate and timely healthcare is critical to the overall health and well-being of patients with chronic diseases. Patients with chronic and disabling diseases and conditions use a disproportionately large amount of the total healthcare dollars and are more likely to experience problems with access to needed services [1–3]. More specifically, access barriers in these patient groups have been shown to have a wide range of negative effects on service utilization and health. Not only is there an increased risk of secondary conditions and deterioration in their overall health, but these barriers negatively influence overall quality of life [4].

Multiple sclerosis (MS) is a chronic, degenerative disorder of the central nervous system that results in a wide range of neurological symptoms and can lead to significant disability. It is the most common neurological disorder among young adults, with a worldwide prevalence of about 100 per 100,000. An estimated 400,000 cases exist in the United States at any time point, with 10,000 new

cases diagnosed annually. MS occurs more frequently in Caucasians than other racial groups and is nearly three times more common in women than men [5–13]. The hallmark symptom of MS is irreversible disability (e.g., impaired ambulation), which occurs in 50 percent of patients with MS after about 28 years [14–15]. Because MS is a complex, chronic, and degenerative disease, MS specialty care is critical to ensuring quality healthcare.

Specification of MS specialty care in the Veterans Health Administration (VHA) can be found in the Multiple Sclerosis System of Care Procedures [16]. In general, MS specialty care is defined as MS-specific healthcare provided by an individual or team of clinicians with subspecialty training/certification in MS. Most often, a neurologist is the lead clinician who works closely with and supervises other clinicians (e.g., nurse practitioner, physician assistant) in management of the unique healthcare needs of veterans with MS.

Due to the chronic nature of MS and the unpredictable and variable nature of the disease course, patients with MS are heavy consumers of healthcare services. Miltenburger and Kobelt found that (1) healthcare costs increase dramatically as disability increases, (2) indirect costs are the predominant driver of total costs as patients lose their ability to maintain employment as the disease progresses, and (3) inpatient costs are the primary driver of direct costs [17]. Within the VHA, patients with MS had annualized total healthcare costs (2003 valuation) that were second only to spinal cord injury ($25,500 vs $29,500, respectively) [18].

In response to concerns about access to quality MS care in the VHA, two MS Centers of Excellence (MSCoEs) were established in 2003 that were tasked to "provide the best possible care for veterans with MS" through research and the development of standards of care for MS throughout the VHA system (www.va.gov/ms). The Baltimore Department of Veterans Affairs (VA) Medical Center (VAMC) (the MSCoE-East) and the Seattle-Portland VAMCs (the MSCoE-West) were selected as the coordinating sites for this program. A major goal of the MSCoEs is to improve the quality of and access to MS specialty care for veterans diagnosed with MS throughout the VHA system. Currently, about 39,000 veterans (VHA MS User Cohort) are seen in the VHA for MS-related issues (e.g., rule-out, diagnostic evaluation, treatment) and about 19,000 have a "confirmed" diagnosis (VHA MS Patient Cohort) [19].

Recently, The National MS Society endorsed 17 MS-specific quality indicators [20], 1 of which is that patients receive an annual MS specialty visit. Probably the most basic of benchmarks for assessing access to quality MS specialty care is the proportion of MS patients seen by an MS specialist at least once a year. Preliminary analysis in the VHA revealed that only 51.5 percent of the VHA MS Patient Cohort (nationwide) received an annual MS specialty visit during fiscal years (FYs) 1998 through 2006 [21].

The present study was designed to establish travel bands to the nearest VHA facility with MS specialty care clinics for each veteran with MS and to provide an empirical method for testing placement of new MS specialty care clinics in potentially underserved areas. Our objectives were to (1) use geographic information system (GIS) tools to ascertain veterans' access to MS specialty care and services within the VHA and (2) demonstrate the utility of using GIS tools in decision-making by providing three examples of how patients' access to care is affected when additional MS specialty care clinics are added.

METHODS

Study Design
This retrospective, observational study of all MS patients seeking treatment in VHA facilities during FY2007 lays a foundation for future research.

Study Cohort
From 19,311 veterans whose MS diagnosis was confirmed through application of a statistical algorithm [19], 92 cases (0.48%) were excluded because of invalid/missing zip codes, army post office or overseas zip codes, and residence outside the United States, Puerto Rico, and the Virgin Islands. The total number of VHA patients with MS used for GIS analysis in this study was 19,219.

Data Sources
The VHA MS Patient Cohort was derived from VHA extant databases and contains patient characteristics that include home zip code, healthcare utilization by type of care (inpatient, outpatient), location of care (hospital unit, clinic stop codes), diagnosis and procedure codes, and healthcare costs, as well as home/treating facility and its zip code.

Analysis Plan
In this study, we defined veterans' access as travel time (in minutes) to VA healthcare facilities. With the use

585

CULPEPPER et al. GIS tools to improve access to VHA MS care

of GIS mapping tools (ArcGIS, ESRI; Redlands, California), the location of patients in relation to MS specialty care clinics are displayed across Veterans Integrated Service Network (VISN) based on zip code data. From the administrative data, patients' state, county, and zip code of residence were obtained. The Assistant Deputy Undersecretary for Policy and Planning maintains the VA Site Tracking System, a database on all VA facilities. This database includes the street address of the facility, along with the site latitude and longitude [22].

Procedures

The VHA Planning System Support Group [22] has created 30-, 60-, 90-, and 120-minute travel-time bands around each VA facility. Using travel time as an indicator of geographic access is important, because straight-line distance depends on population density and ease of traveling. For example, a 15-mile distance to a VA facility in rural Nebraska may take a commuting time of 15 min-

utes, while the same 15-mile distance may take an hour or more in heavily urbanized areas such as Chicago, Los Angeles, or New York. The methodology used for creating the travel-time bands accounts for population density and type of roadways.

These data were then used to generate maps displaying current patient-to-facility patterns and maps of three "What if?" scenarios to demonstrate the utility of GIS tools for decision-making. Specifically, the change in MS patients' access to specialty care was calculated when MS specialty clinics in VISN 9 (Nashville), VISN 15 (Kansas City), and VISN 16 (Houston) were added.

RESULTS

The availability of and accessibility to MS specialty care varies widely within and between VISNs and the East-West catchment areas. **Figure 1** provides a national
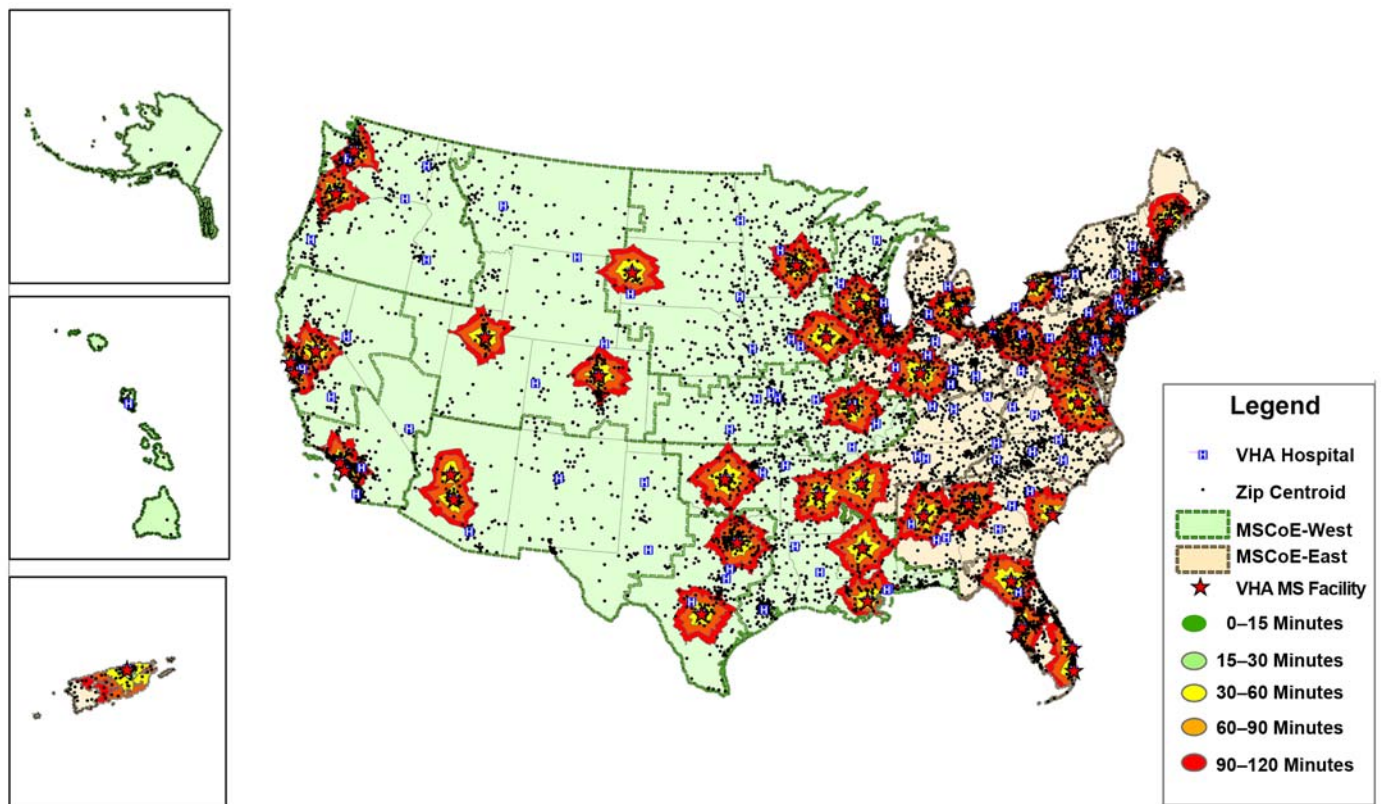

Figure 1.
National map of Veterans Health Administration (VHA) facilities offering multiple sclerosis (MS) specialty care overlaid with Planning System Support Group travel bands. MSCoE = MS Center of Excellence.

map of VHA facilities with MS specialty care overlaid with the Planning System Support Group travel bands for veterans with MS. For confidentiality purposes, the specific number of patients contained within each zip code is not provided.

East

Table 1 summarizes geographic access (travel time) for the MSCoE-East network. More than one-third (34.8%) of MS patients in the total catchment area (VISNs 1–11) traveled more than 2 hours to MS specialty care. Access to MS specialty care was poorest in VISN 9, where only 7.1 percent of MS patients were within

30 minutes and 85.7 percent resided more than a 2-hour travel time to the nearest MS specialty site. Other VISNs where more than half of patients traveled more than 2 hours to MS specialty care include VISN 2 (57.8%) and VISN 6 (63.3%). Only a small percentage of MS patients in VISN 3 (1.0%) and VISN 5 (3.8%), the smallest VISNs, were more than 2 hours from specialty care. More than 40 percent of patients in both VISNs resided within 30 minutes of facilities offering MS specialty care.

West

Travel times for the MSCoE-West catchment area are summarized in Table 2. Almost half (45.9%) of MS

Table 1.
Distribution of travel times by Veterans Integrated Service Network (VISN) within Multiple Sclerosis Center of Excellence (MSCoE)-East catchment area. Data presented as frequency (%).

VISN	0–15 min	15–30 min	30–60 min	60–90 min	90–120 min	120+ min
1. New England Healthcare System	67 (8.7)	123 (16.0)	268 (34.8)	148 (19.2)	52 (6.7)	111 (14.4)
2. Healthcare Network Upstate New York	29 (7.7)	28 (7.4)	17 (4.5)	48 (12.7)	33 (8.8)	218 (57.8)
3. New York/New Jersey Veterans Healthcare Network	59 (14.8)	107 (26.8)	127 (31.8)	83 (20.8)	20 (5.0)	4 (1.0)
4. Stars and Stripes Healthcare Network	55 (7.0)	98 (12.5)	232 (29.6)	164 (20.9)	157 (20.1)	100 (12.8)
5. Capitol Health Care Network	54 (14.8)	127 (34.8)	128 (35.1)	29 (7.9)	13 (3.6)	14 (3.8)
6. Mid-Atlantic Network	57 (7.7)	94 (12.7)	60 (8.1)	32 (4.3)	34 (4.6)	467 (63.3)
7. The Atlantic Network	27 (3.9)	66 (9.5)	119 (17.2)	66 (9.5)	100 (14.4)	315 (45.5)
8. Sunshine Healthcare Network	61 (6.5)	141 (15.0)	254 (27.1)	119 (12.7)	165 (17.6)	197 (21.0)
9. Mid South Veterans Healthcare Network	5 (1.0)	30 (6.1)	19 (3.8)	6 (1.2)	11 (2.2)	424 (85.7)
10. Healthcare System of Ohio	18 (7.1)	33 (5.7)	76 (13.1)	96 (16.6)	103 (17.8)	253 (43.7)
11. Veterans In Partnership	40 (6.3)	90 (14.2)	94 (14.9)	84 (13.3)	76 (12.0)	249 (39.3)
MSCoE-East Total	472 (7.0)	937 (13.8)	1,394 (20.6)	874 (12.9)	742 (10.9)	2,359 (34.8)

Table 2.
Distribution of travel times by Veterans Integrated Service Network (VISN) within Multiple Sclerosis Center of Excellence (MSCoE)-West catchment area. Data presented as frequency (%).

VISN	0–15 min	15–30 min	30–60 min	60–90 min	90–120 min	120+ min
12. The Great Lakes Health Care System	99 (12.2)	141 (14.5)	202 (20.8)	186 (19.2)	156 (16.1)	187 (19.3)
23. Midwest Health Care Network*	70 (6.0)	123 (10.6)	115 (9.9)	70 (6.0)	131 (11.3)	653 (56.2)
15. Heartland Network	20 (2.6)	54 (7.0)	97 (12.5)	24 (3.1)	34 (4.4)	545 (70.4)
16. South Central VA Healthcare Network	79 (6.7)	93 (8.0)	70 (6.0)	109 (9.1)	156 (13.4)	656 (56.6)
17. Heart of Texas Health Care Network	38 (5.5)	123 (17.8)	174 (25.2)	74 (10.7)	97 (14.1)	184 (26.7)
18. Southwest Healthcare Network	47 (6.8)	102 (12.7)	99 (12.3)	15 (1.9)	14 (1.7)	527 (65.5)
19. Rocky Mountain Network	82 (8.5)	139 (14.3)	137 (14.1)	133 (13.7)	59 (6.1)	420 (43.3)
20. Northwest Network	58 (5.2)	156 (13.9)	202 (18.0)	135 (12.0)	60 (5.3)	512 (45.6)
21. Sierra Pacific Network	49 (6.7)	98 (13.4)	153 (20.9)	99 (13.5)	55 (7.5)	278 (38.0)
22. Desert Pacific Healthcare Network	83 (8.1)	199 (19.3)	136 (13.2)	138 (13.4)	115 (11.2)	358 (34.8)
MSCoE-West Total	625 (6.6)	1,228 (13.0)	1,385 (14.7)	980 (10.4)	877 (9.3)	4,320 (45.9)

*VISNs 13 and 14 were combined into VISN 23 in January 2002.
VA = Department of Veterans Affairs.

587

CULPEPPER et al. GIS tools to improve access to VHA MS care

patients in the total catchment area (VISNs 12–23) traveled more than 2 hours to MS specialty care. Access to MS specialty care was poorest in VISN 15, where only 9.6 percent of MS patients lived within 30 minutes or less and 70.4 percent resided more than a 2-hour travel time to a MS specialty site. Other VISNs where more than half of patients traveled more than 2 hours to MS specialty care include VISN 18 (65.5%), VISN 16 (56.6%), and VISN 23 (56.2%). VISN 12 and VISN 17 showed greater relative accessibility to specialty care for MS patients than other VISNs in the MSCoE-West catchment area (**Table 2**).

Hypothetical Scenarios

To demonstrate how this GIS mapping technique could be used for policy and planning purposes, we selected VISNs 9 (Eastern network), 15, and 16 (Western network) as test cases, because they had the largest percentage of patients traveling more than 2 hours to the nearest facility with MS specialty care in their respective catchment areas. On the basis of visual inspection of the VISN-specific maps, we asked, What would happen to the travel bands if an MS specialty clinic were located at an additional facility within those VISNs?

If an MS specialty clinic were placed at the Nashville VAMC (**Figure 2**), the proportion of VHA patients with MS traveling more than 2 hours in VISN 9 would be decreased from 85.7 percent to 65.3 percent (**Table 3**). In VISN 15 (**Figure 3**), if an MS specialty clinic were placed at the Kansas City VAMC, the proportion of patients traveling more than 2 hours would be decreased from 70.4 percent to 40.8 percent (**Table 3**). Similarly, if an MS specialty clinic were placed at the Houston VAMC (**Figure 4**), the proportion traveling more than 2 hours in VISN 16 would be decreased from 56.6 percent to 39.8 percent
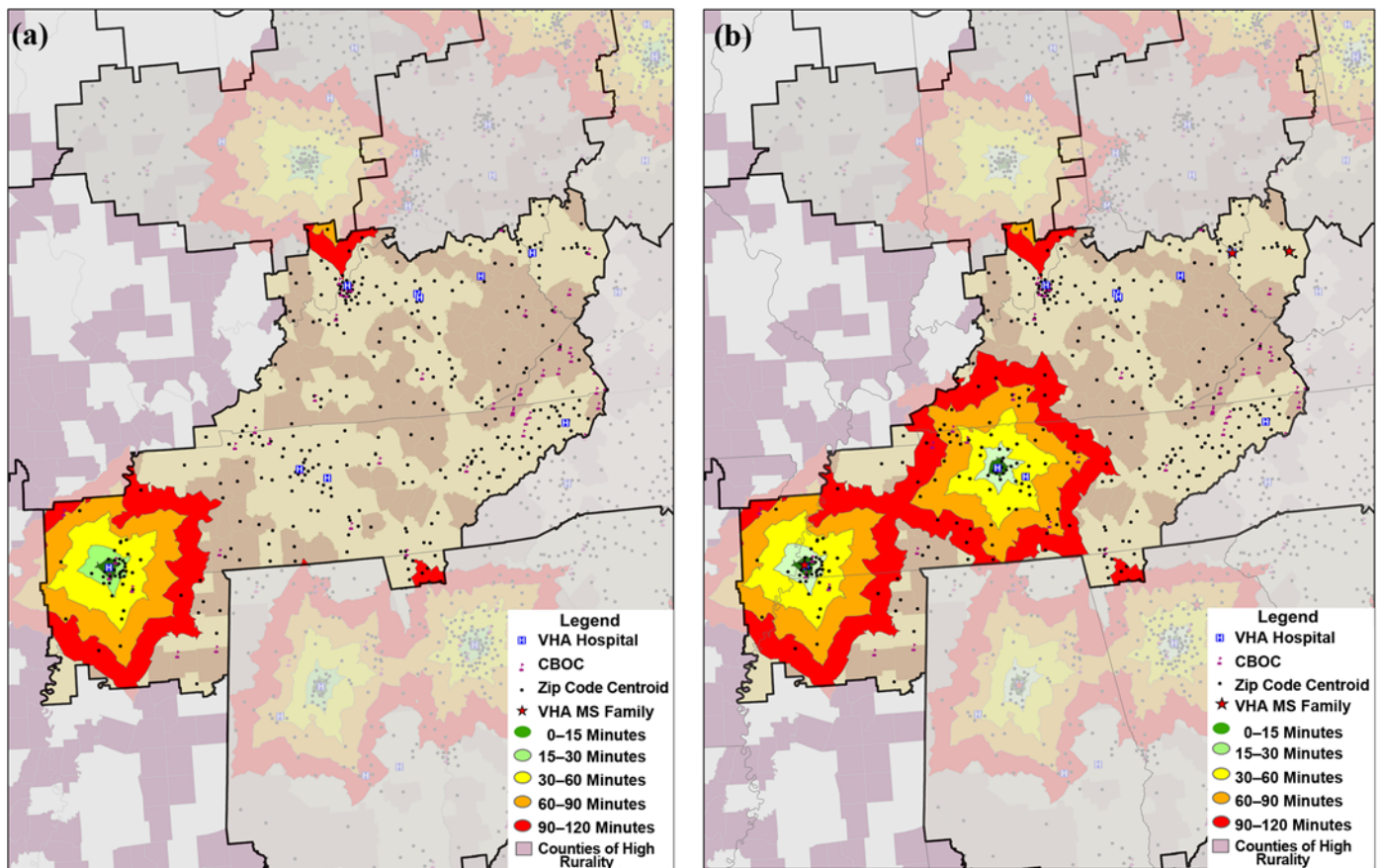

Figure 2.
Map of **(a)** observed travel times for Veterans Integrated Service Network 9 versus **(b)** travel times if multiple sclerosis (MS) specialty care were added in Nashville, Tennessee. CBOC = community-based outpatient clinic, VHA = Veterans Health Administration.

Table 3.
Comparisons of distribution in travel times if multiple sclerosis specialty care were added to one additional Veterans Integrated Service Network (VISN) facility. Data presented as frequency (%).

VISN	0–15 min	15–30 min	30–60 min	60–90 min	90–120 min	120+ min
9	5 (1.0)	30 (6.1)	19 (3.8)	6 (1.2)	11 (2.2)	424 (85.7)
9—If Nashville added	10 (2.0)	48 (9.7)	40 (8.1)	48 (9.7)	28 (5.7)	323 (65.3)
15	20 (2.6)	54 (7.0)	97 (12.5)	24 (3.1)	34 (4.4)	545 (70.4)
15—If Kansas City added	50 (6.5)	113 (14.6)	148 (19.1)	77 (9.9)	70 (9.0)	316 (40.8)
16	79 (6.7)	93 (8.0)	70 (6.0)	109 (9.1)	156 (13.4)	656 (56.6)
16—If Houston added	97 (8.4)	153 (13.2)	140 (21.1)	127 (10.9)	181 (15.6)	462 (39.8)

(**Table 3**). Other facility locations within a given VISN can be similarly evaluated to determine which facility results in the largest reduction in the proportion of veterans traveling more than 2 hours for MS specialty care.

DISCUSSION

GIS mapping techniques provide a powerful and valuable tool for policy and planning personnel who are evaluating how best to address underserved populations and areas within the VHA healthcare system, particularly when access barriers are created by distance and/or travel times. However, travel time is but one source of the data needed in the decision process regarding where to locate new specialty-care services. For example, knowledge of the capabilities of potential facilities (e.g., personnel, physical facilities) and the costs that would be required to implement new specialty-care services at these target facilities are also needed for informed decision-making.

Often, insufficient data exist to empirically assess the "real-world" impact of policy decisions. In many instances, a rather lengthy period of time is needed following implementation of a new policy to allow for the necessary data collection before that policy can be empirically evaluated. The GIS mapping technique applied to the VHA's extant data provides a means to empirically assess and compare the potential impact of locating new specialty-care services between multiple locations. Using the GIS techniques described here in conjunction with other data (e.g., facility capabilities, implementation costs) affords decision makers
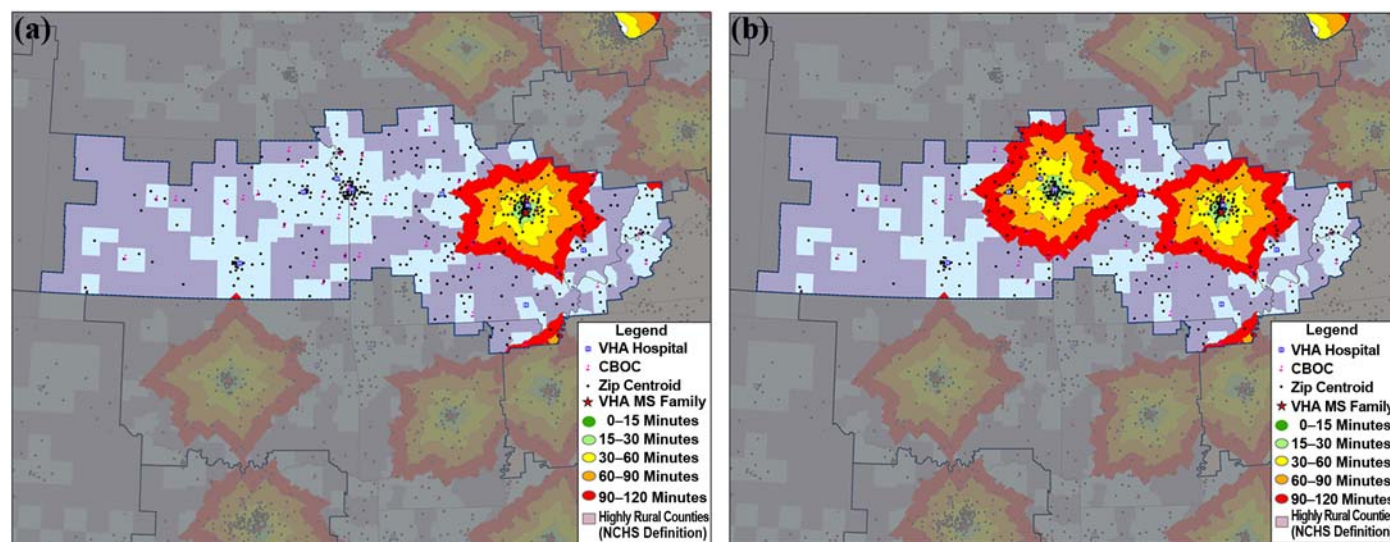
Figure 3.
Map of **(a)** observed travel times for Veterans Integrated Service Network 15 versus **(b)** travel times if multiple sclerosis (MS) specialty care were added in Kansas City, Missouri. CBOC = community-based outpatient clinic, NCHS = National Center for Health Statistics, VHA = Veterans Health Administration.

589

CULPEPPER et al. GIS tools to improve access to VHA MS care
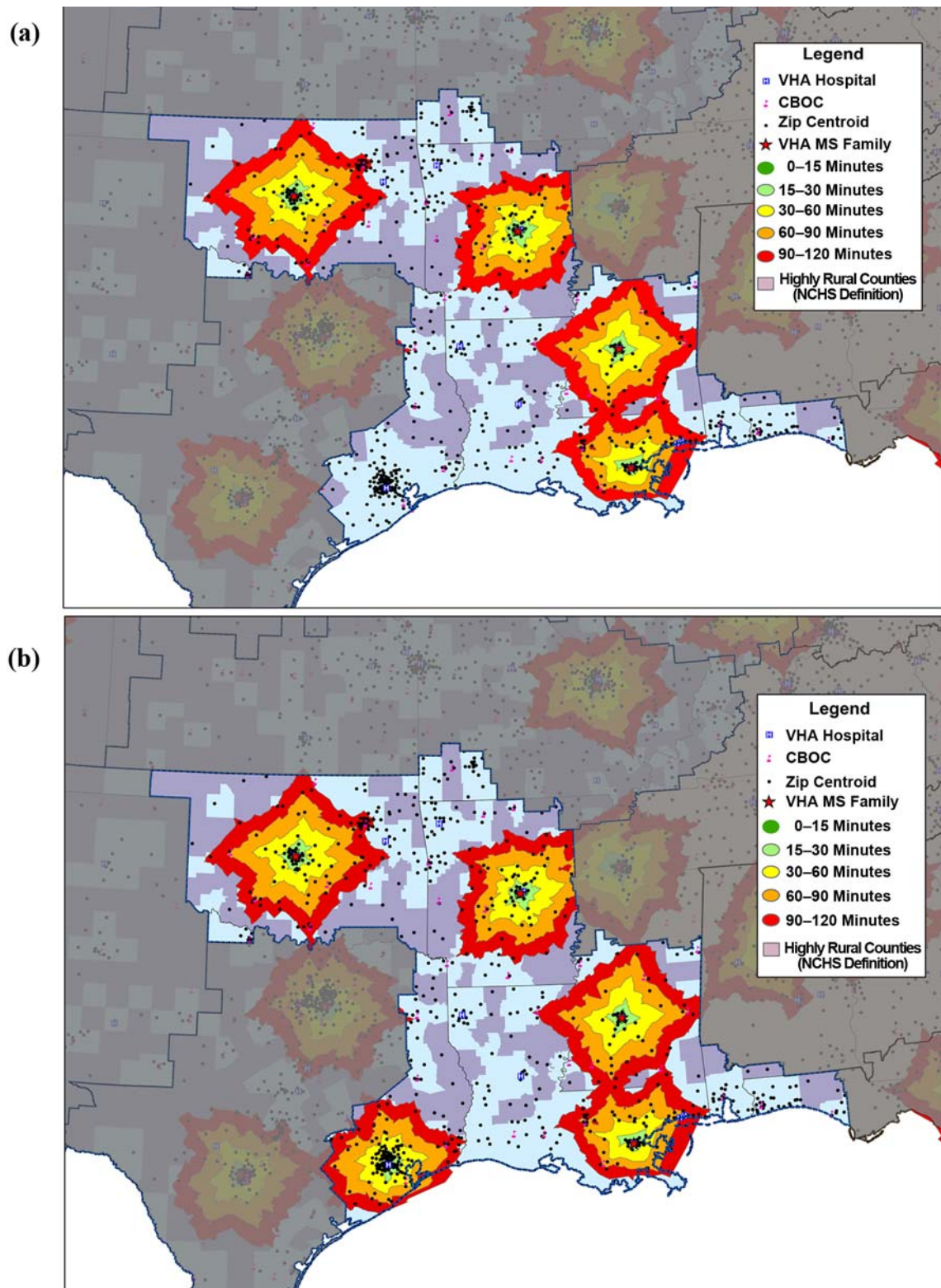
Figure 4.
Map of **(a)** observed travel times for Veterans Integrated Service Network 15 versus **(b)** travel times if multiple sclerosis (MS) specialty care were added in Houston, Texas. CBOC = community-based outpatient clinic, NCHS = National Center for Health Statistics, VHA = Veterans Health Administration.

the ability to test a number of "What if" scenarios and base decisions on empirical evidence.

For example, each of the three hypothetical scenarios summarized in **Table 3** results in a reduction in the proportion of patients traveling more than 2 hours to the nearest MS clinic. However on closer inspection (**Table 3**), one can see that adding an MS clinic in Houston in VISN 16 would result in 22 percent of the patients who traveled more than 2 hours now having to travel 1 hour or less compared with 18 percent in VISN 15 and only 9 percent in VISN 9. Thus, if only one new center could be added, the greatest savings in travel costs and travel burden on the patients would be achieved by the addition of a new clinic in VISN 16 (Houston VAMC).

This study contributes to the health services research evidence base by using an existing database together with sophisticated GIS mapping techniques to develop a method to assess geographic variability in access to specialty care for veterans with MS. Findings from this study provide baseline data for the establishment of initial benchmark criteria for the quality indicator of an annual MS specialty visit.

Results from this project can affect recommendations for healthcare management and delivery of care to MS patients by identifying geographically underserved areas and testing a variety of "what if" scenarios. The number of patients affected by locating specialty services, whether in a VAMC or in a community-based outpatient clinic via telerehabilitation, in one geographic area versus another can be used as a first step in the planning process.

CONCLUSIONS

The GIS mapping technique used in this study provides a powerful and valuable tool for policy and planning personnel who are evaluating how to address underserved areas within the VHA healthcare system, not only for MS but also for all conditions and diseases affecting the veteran patient population. Additionally, travel times generated from the GIS mapping technique can be used as a covariate in models evaluating various quality indicators (e.g., annual evaluation by a MS specialist).

REFERENCES

1. Beatty PW, Hagglund KJ, Neri MT, Dhont KR, Clark MJ, Hilton SA. Access to health care services among people with chronic and disabling conditions: Patterns and predictors. Arch Phys Med Rehabil. 2003;84(10):1417–25. [PMID: 14586907] DOI:10.1016/S0003-9993(03)00268-5

2. DeJong G, Basnett I. Disability and health policy: The role of markets in the delivery of health services. In: Albrecht GL, Seelman KD, Bury M, editors. Handbook of disability studies. Thousand Oaks (CA): Sage; 2001. p. 610–32.

3. Gold M, Nelson L, Brown R, Ciemnecki A, Aizer A, Docteur E. Disabled Medicare beneficiaries in HMOs. Health Aff (Millwood). 1997;16(5):149–62. [PMID: 9314686] DOI:10.1377/hlthaff.16.5.149

4. Neri MT, Kroll T. Understanding the consequences of access barriers to health care: Experiences of adults with disabilities. Disabil Rehabil. 2003;25(2):85–96. [PMID: 12554383]

5. Multiple Sclerosis Association of America. Multiple sclerosis: The process and medical treatments. 4th ed. Cherry Hill (NJ): Multiple Sclerosis Association of America; 2002.

591

CULPEPPER et al. GIS tools to improve access to VHA MS care

6. Courtney SW. All about multiple sclerosis [Internet]. 3rd ed. Cherry Hill (NJ): Multiple Sclerosis Association of America; 2003 [cited 2006 Sep]. Available from: http://www.msassociation.org/publications/allaboutms/MSAA.MSbook3E.pdf/.

7. Ebers GC, Koopman WJ, Hader W, Sadovnick AD, Kremenchutzky M, Mandalfino P, Wingerchuk DM, Baskerville J, Rice GP. The natural history of multiple sclerosis: A geographically based study: 8: Familial multiple sclerosis. Brain. 2000;123(Pt 3):641–49. [PMID: 10686184] DOI:10.1093/brain/123.3.641

8. Whitaker JN, Mitchell GW. Clinical features of multiple sclerosis. In: Raine CS, McFarland HF, Tourtellotte WW, editors. Multiple sclerosis: Clinical features and pathogenetic basis. London (UK): Chapman and Hall; 1997. p. 3–19.

9. Wallin MT, Kurtzke J. Neuroepidemiology. In: Bradley WG, Fenichel GM, Jankovic J, editors. Neurology in clinical practice. 4th ed. Philadelphia (PA): Butterworth-Heinemann; 2004. p. 763–79.

10. Lublin FD. Clinical features and diagnosis of multiple sclerosis. Neurol Clin. 2005;23(1):1–15,v. [PMID: 15661085] DOI:10.1016/j.ncl.2004.09.003

11. Weinshenker BG, Bass B, Rice GP, Noseworthy J, Carriere W, Baskerville J, Ebers GC. The natural history of multiple sclerosis: A geographically based study. I. Clinical course and disability. Brain. 1989;112(Pt 1):133–46. [PMID: 2917275] DOI:10.1093/brain/112.1.133

12. Weinshenker BG. Natural history of multiple sclerosis. Ann Neurol. 1994;36 Suppl:S6–S11. [PMID: 8017890] DOI:10.1002/ana.410360704

13. Alonso A, Hernán MA. Temporal trends in the incidence of multiple sclerosis: A systematic review. Neurology. 2008; 71(2):129–35. [PMID: 18606967] DOI:10.1212/01.wnl.0000316802.35974.34

14. Tremlett H, Paty D, Devonshire V. Disability progression in multiple sclerosis is slower than previously reported. Neurology. 2006;66(2):172–77. [PMID: 16434648] DOI:10.1212/01.wnl.0000194259.90286.fe

15. Ebers GC, Heigenhauser L, Daumer M, Lederer C, Noseworthy JH. Disability as an outcome in MS clinical trials. Neurology. 2008;71:624–31. [PMID: 18480462] DOI:10.1212/01.wnl.0000313034.46883.16

16. Multiple sclerosis system of care procedures [Internet]. Washington (DC): Department of Veterans Affairs; 2009 [cited 2009 Dec]. VHA Handbook 1001.06. Available from: http://vaww1.va.gov/vhapublications/ViewPublication.asp?pub_ID=2129/.

17. Miltenburger C, Kobelt G. Quality of life and cost of multiple sclerosis. Clin Neurol Neurosurg. 2002;104(3):272–75. [PMID: 12127667] DOI:10.1016/S0303-8467(02)00051-3

18. Culpepper WJ, Bradham DD. Multiple Sclerosis Center of Excellence: Second report on the VHA MS Cohort. Washington (DC): Department of Veterans Affairs; 2006.

19. Culpepper WJ 2nd, Ehrmantraut M, Wallin MT, Flannery K, Bradham DD. Veterans Health Administration multiple sclerosis surveillance registry: The problem of case-finding from administrative databases. J Rehabil Res Dev. 2006; 43(1):17–24. [PMID: 16847768] DOI:10.1682/JRRD.2004.09.0122

20. RTI International. Multiple sclerosis quality indicators project. New York (NY): National Multiple Sclerosis Society; 2004. RTI project No. 08536.002.

21. Culpepper WJ. MS quality indicators: MS-specialty visit (MSSV) preliminary findings. Presented at: Annual MSCoE-East Directors & Coordinators Meeting; 2007 Sep 9; Baltimore, MD.

22. Planning Systems Support Group (PSSG) [Internet]. Washington (DC): Department of Veterans Affairs; 2009 [updated 2010 Apr 14; cited 2009 May]. Available from: http://vaww.pssg.med.va.gov/PSSG/pssg_vast_data.htm/.