



Geographic Access to Treatment for VHA Patients with Multiple Sclerosis

MSCoE-East

MANAGEMENT REPORT

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Geographic Access to Treatment for VHA Patients with Multiple Sclerosis:

MSCoE-East

Research Support

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I. OVERVIEW

Background/Rationale

The Multiple Sclerosis Centers of Excellence (MSCoE) was established in 2003. The Baltimore VAMC (MSCoE-East) and Seattle-Portland VAMCs (MSCoE-West) were selected as the coordinating sites for this program. A major goal of the MSCoE is to improve the quality of and access to MS specialty care for veterans diagnosed with MS. Currently there are about 35,000 veterans that are seen in the VHA for MS-related issues (e.g., rule-out, diagnostic evaluation, treatment, etc.) and about 17,000 with a confirmed diagnosis.

Probably the most basic benchmark for assessing access to MS specialty care is the proportion of veterans with MS that are seen by an MS specialist at least once a year. Because MS is a complex, chronic, degenerative disease, MS-specialty care is critical for assessment of quality of care in MS. The National MS Society (NMSS) recently has endorsed 17 MS-specific quality indicators¹, one of which is an annual MS-specialty visit.

Preliminary analysis revealed that only 51.5% of the VHA Patient cohort (nationwide) received an annual MS-specialty visit during the period of FY1998 through FY2006.² An MS-specialty visit was defined as an outpatient encounter where MS was listed as the primary diagnosis that occurred in a neurology clinic, SCI clinic, or physical medicine. This method provided a crude estimate of annual MS-specialty visits as a complete list of VHA facilities nationwide with MS specialty care is now being compiled. Thus, the preliminary estimates are an overestimate of the real rate.

The present study was designed to establish travel bands to the nearest VHA facility with MS-specialty care in veterans with MS and to provide an empirical method for testing placement of MS-specialty care in currently underserved areas. Additionally, these data will be used in future projects to assess the impact of travel times on receiving annual MS-specialty visits.

Objectives

Objective 1: To identify veterans from the VA Multiple Sclerosis User Cohort who accessed Veterans Health Administration (VHA) facilities for treatment of MS.

Objective 2: To use Geographic Information System (GIS) tools to ascertain veterans' access to treatment and medical services offered to veterans with MS within the MSCoE-East catchment area.

Objective 3: To demonstrate the utility of using GIS tools in decision-making by providing three VISN-level examples of how patients' access to care is affected when adding additional MS specialty clinics.

¹ RTI International. Multiple Sclerosis quality indicators project. RTI project No. 08536.002. National Multiple Sclerosis Society, 2004.

² Culpepper WJ. MS quality indicators: MS-specialty visit (MSSV) preliminary findings. Presented at the annual MSCoE-East Directors & Coordinators meeting. September, 2007.

Methods

Data sources: The VHA MS Patient Cohort is derived from VHA extant databases and contains nearly 17,000 veterans whose MS diagnosis has been confirmed through application of a statistical algorithm.³ These data contain patient characteristics that include home ZIP code, utilization by type of care (inpatient, outpatient), location of care (hospital unit, clinic stop codes), diagnosis and procedure codes, healthcare costs as well as home facility and its ZIP code. We concentrate on the 6,778 patients within the MSCoE-East catchment area.

Study design: The design is a retrospective, observational study of all MS patients currently seeking treatment in VHA facilities within the MSCoE-East network during FY2007. This is a descriptive study that lays the foundation for additional research.

Analysis Plan: In this study, we define veterans' access as travel time (in minutes) to VA health care facilities. Using GIS mapping tools (ArcGIS), the location of patients in relation to MS specialty care are displayed across Veterans Integrated Service Network (VISN). From the administrative data, patients' state, county, and ZIP code of residence were obtained. The Assistant Deputy Under Secretary for Policy and Planning maintains a database on all VA facilities called the VA Site Tracking System (VAST). This database includes the street address of the facility, along with the site latitude and longitude.

Procedures: The VHA Planning System Support Group has created 30, 60, 90, and 120 minute travel time bands around each VA facility. It is important use travel time as an indicator of geographic access, as straight-line distance is dependent 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 minutes, while the same 15 mile distance may take an hour or more in a heavily urbanized area such as Chicago or New York. The methodology used for creating the travel time bands takes into account population density and type of roadways. In addition to displaying current patient-to-facility patterns, three "what if?" scenarios are included to demonstrate the utility of GIS tools for decision-making. Specifically, the change in MS patients' access to specialty care is calculated when adding MS specialty clinics to White River Junction, VT (VISN 1), Durham, NC (VISN 6), and Nashville, TN (VISN 9) VA Medical Centers.

Results

The availability of and accessibility to MS specialty care varies widely across VISNs within the MSCoE-East catchment area. Over one-third of MS patients in the total catchment area (VISN 1 – VISN 11) travel more than two hours to specialty MS care (34.8%). Access to MS specialty care appears poorest in VISN 9 where only 7% of MS patients are within 30 minutes and 85.7% of MS patients in this VISN reside more than a two hour travel time to a MS specialty site. Other VISNs where more than half of patients travel more than two hours to MS specialty care include: VISN 2 (57.8%) and VISN 6 (63.3%). VISN 3 and VISN 5 show greater accessibility to specialty care for MS patients than other VISNs in the MSCoE-East catchment area. Only a small percentage of MS patients in VISN 3 (1.0%) and VISN 5 (3.8%) are more than two hours from specialty care. Over forty percent in both VISNs resided within thirty minutes of MS specialty treatment.

To show how this GIS mapping technique could be used for policy and planning purposes, we selected VISNs 6 & 9 as test cases because they had 63% and 86% of patients traveling more

³ Culpepper WJ, Ehrmantraut M, Wallin MT, Flannery K, Bradham DD. Identification of the VHA MS Surveillance Registry: the problem of case-finding from administrative databases. *Journal of Rehabilitation Research & Development*. 2006; 43(1): 17-24.

than 2-hours to the nearest facility with MS-specialty care. Based on visual inspection of the VISN-specific maps we asked: what would happen to the travel bands if there was an MS-specialty clinic located at an additional facility within those VISNs? In VISN 6, if a MS-specialty clinic was placed at the Durham VAMC (compare Figures 8 and 14) the proportion of patients traveling more than 2-hours would be decreased from 63% to 38%. Similarly, if an MS-specialty clinic was placed at the Nashville VAMC (compare Figures 11 and 15), the proportion traveling more than 2-hours in VISN 9 would be decreased from 86% to 65%. Other facility locations within a given VISN can be similarly evaluated to determine which additional facility results in the largest reduction in the proportion of veterans traveling more than 2-hours for MS-specialty care.

This technique works well even for VISNs that do not have an excess number of patients traveling more than 2-hours. For example, VISN 1 had only 14% of veterans traveling more than 2-hours (see Figure 3). However, if MS-specialty care was implemented at White River Junction (see Figure 16) the proportion traveling more than 2-hours would be decreased to only 5%.

Thus, GIS mapping techniques provide a powerful and valuable tool for policy and planning personnel when evaluating how to address underserved populations and areas within the VHA healthcare system.

Impact

This pilot study contributes to 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 MS patients. Findings from this study provide baseline data for establishing initial benchmark criteria for the Quality Indicator of an annual MS specialty visit.

Ultimately, future research will use this method to assess geographic variability and potential access gaps for the national MS System of Care. Specifically, the data from this study will be used to re-evaluate the annual MS-specialty visit quality indicator to establish a baseline benchmark value that will be used to assess quality improvement activities in the future.

Results from this project can impact recommendations for health care management and delivery of care to MS patients by identifying geographically underserved areas and by testing a variety of “what-if” scenarios. The GIS mapping technique used in this study provides a powerful and valuable tool for policy and planning personnel when evaluating how to address underserved populations and areas within the VHA healthcare system not only for MS but for ALL conditions and diseases affecting the veteran population.

II. MS CoE-East Catchment Area

Figure 1

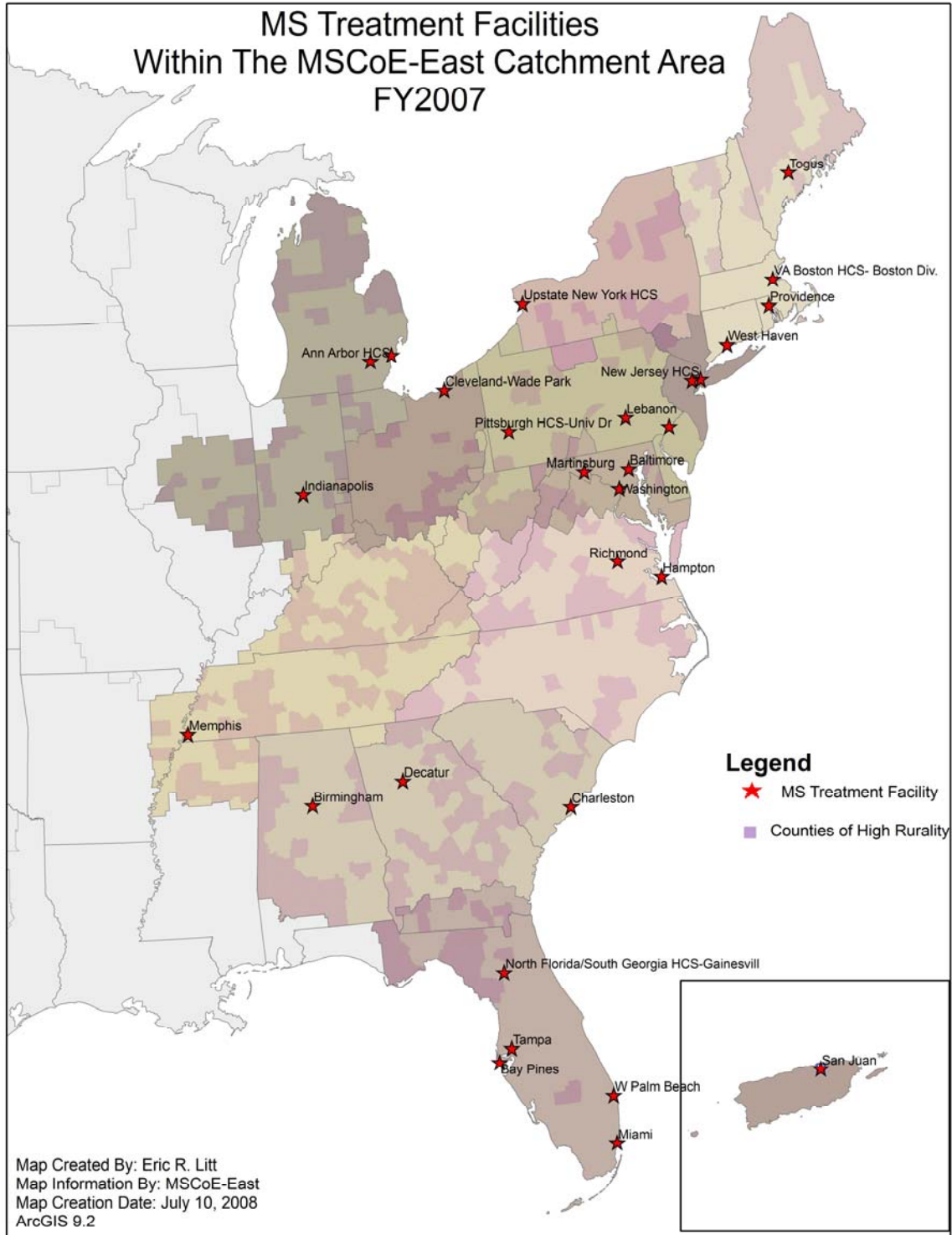
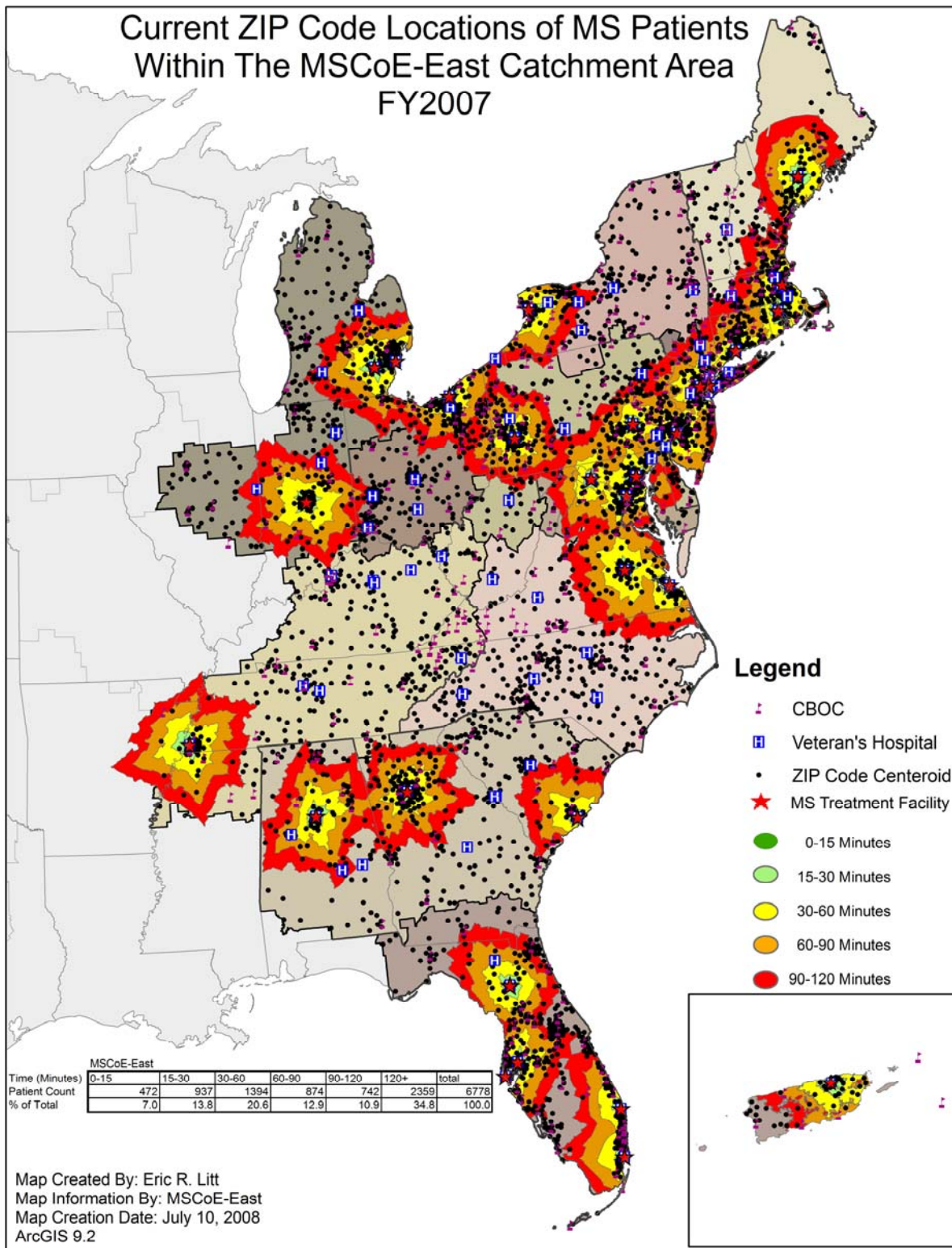


Figure 2



III. VISN Data & Maps

Figure 3

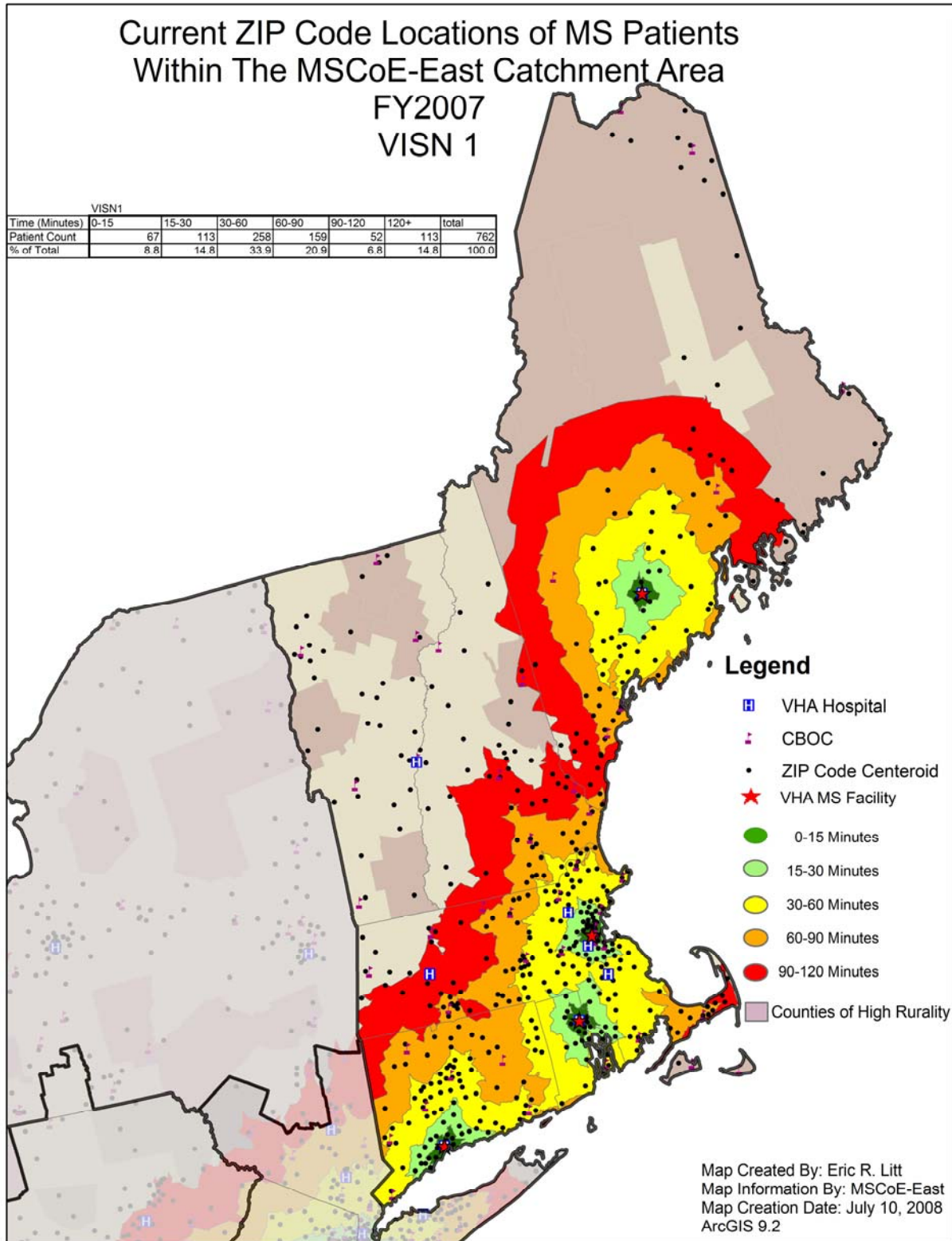


Figure 4

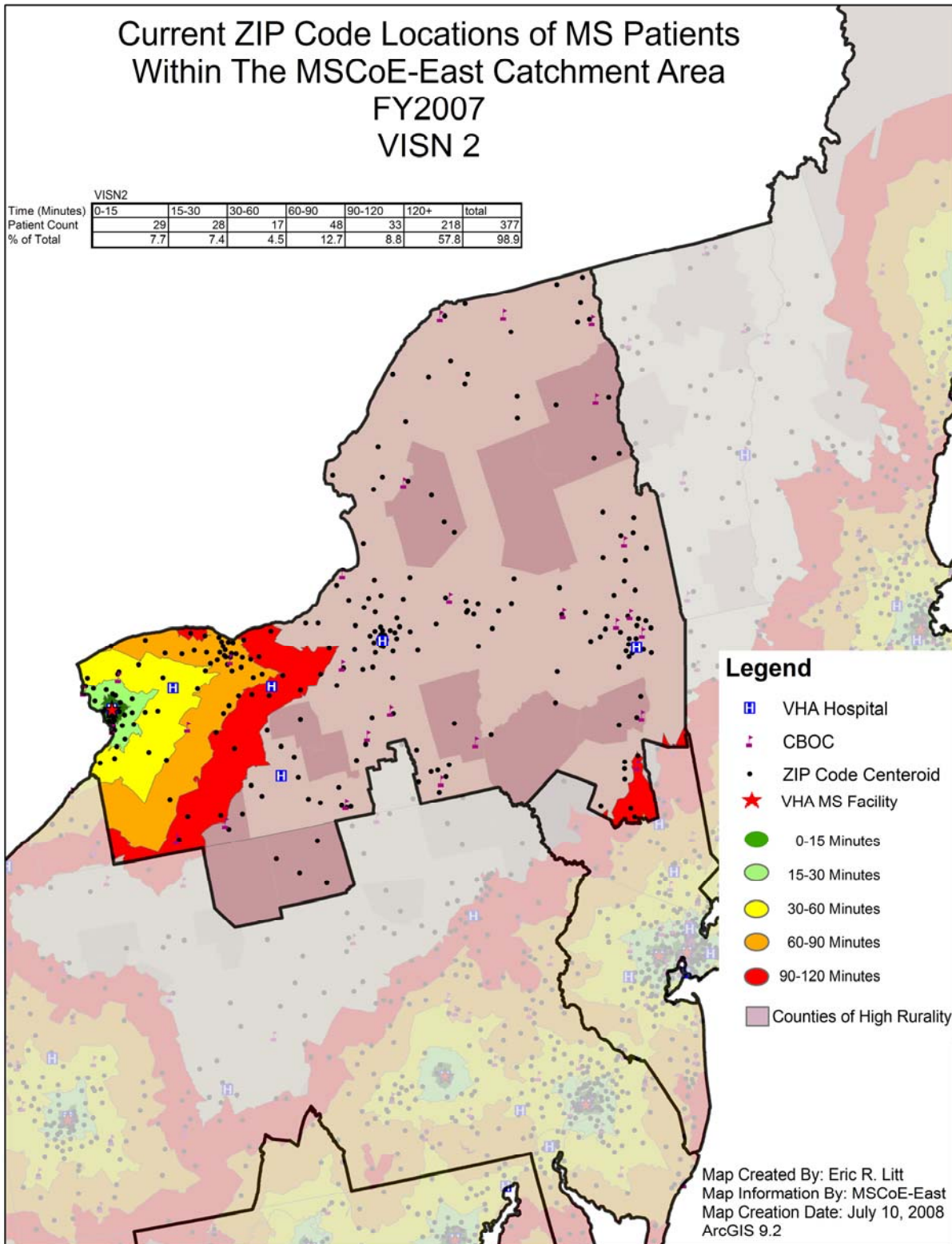


Figure 5

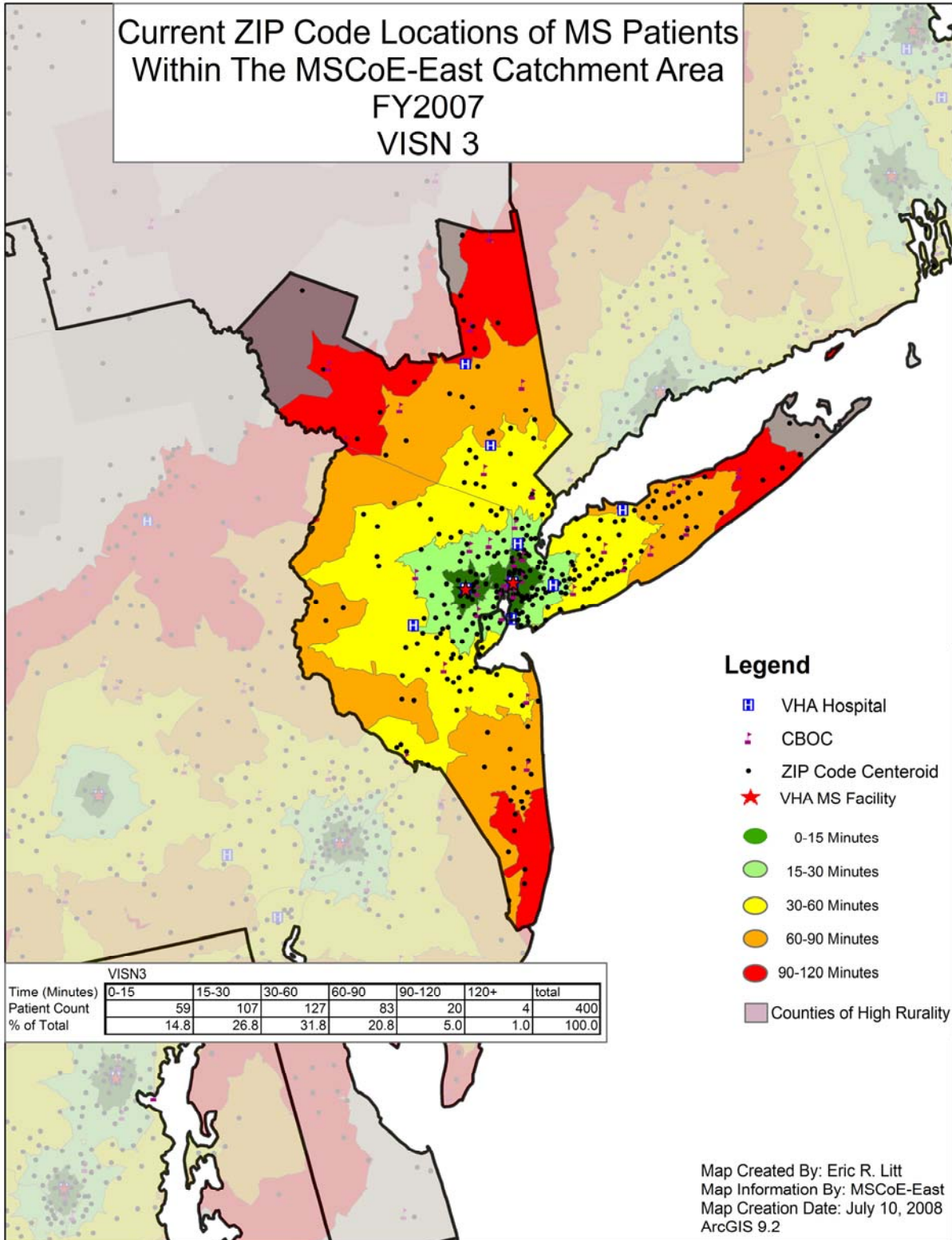


Figure 6

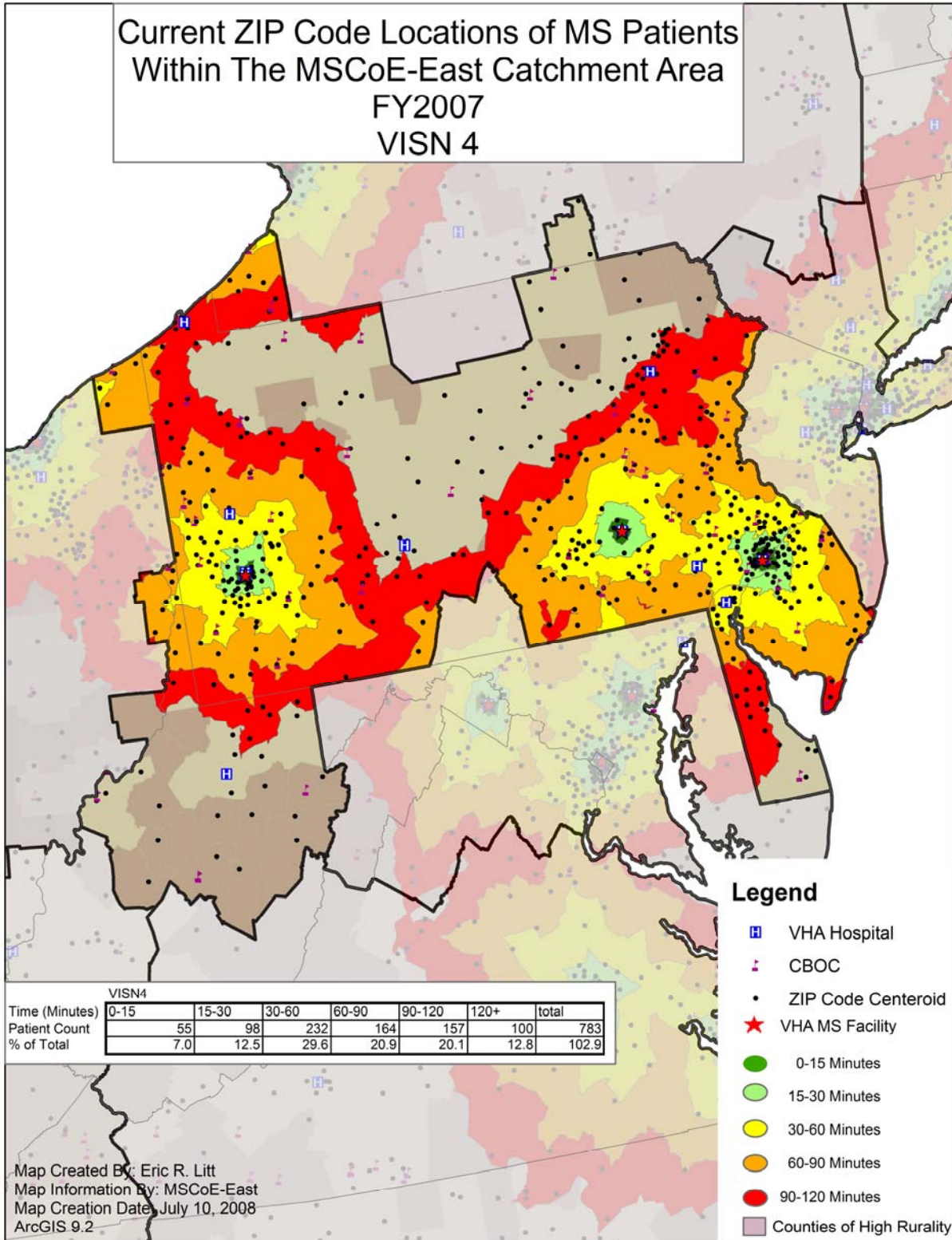


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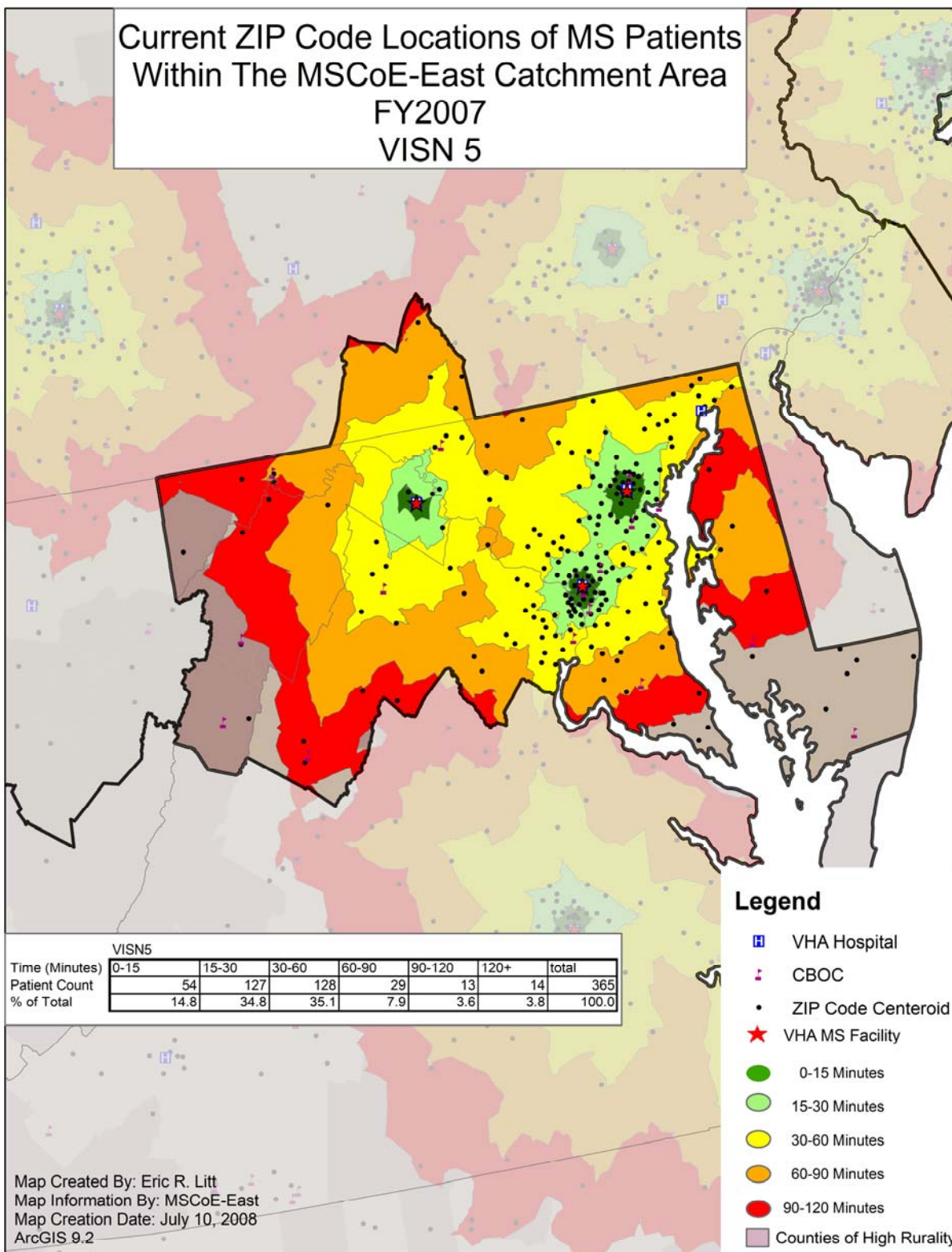


Figure 8

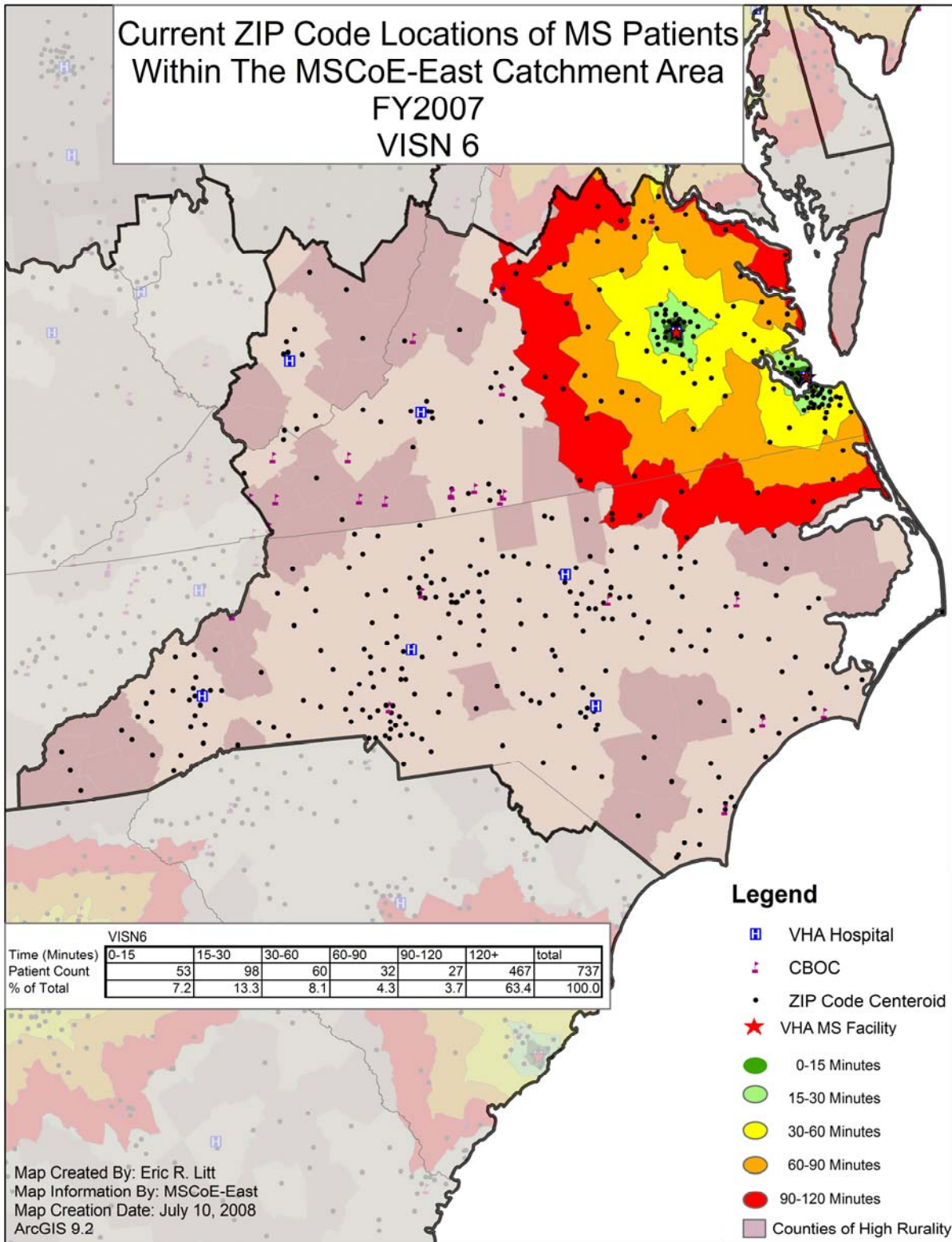


Figure 9

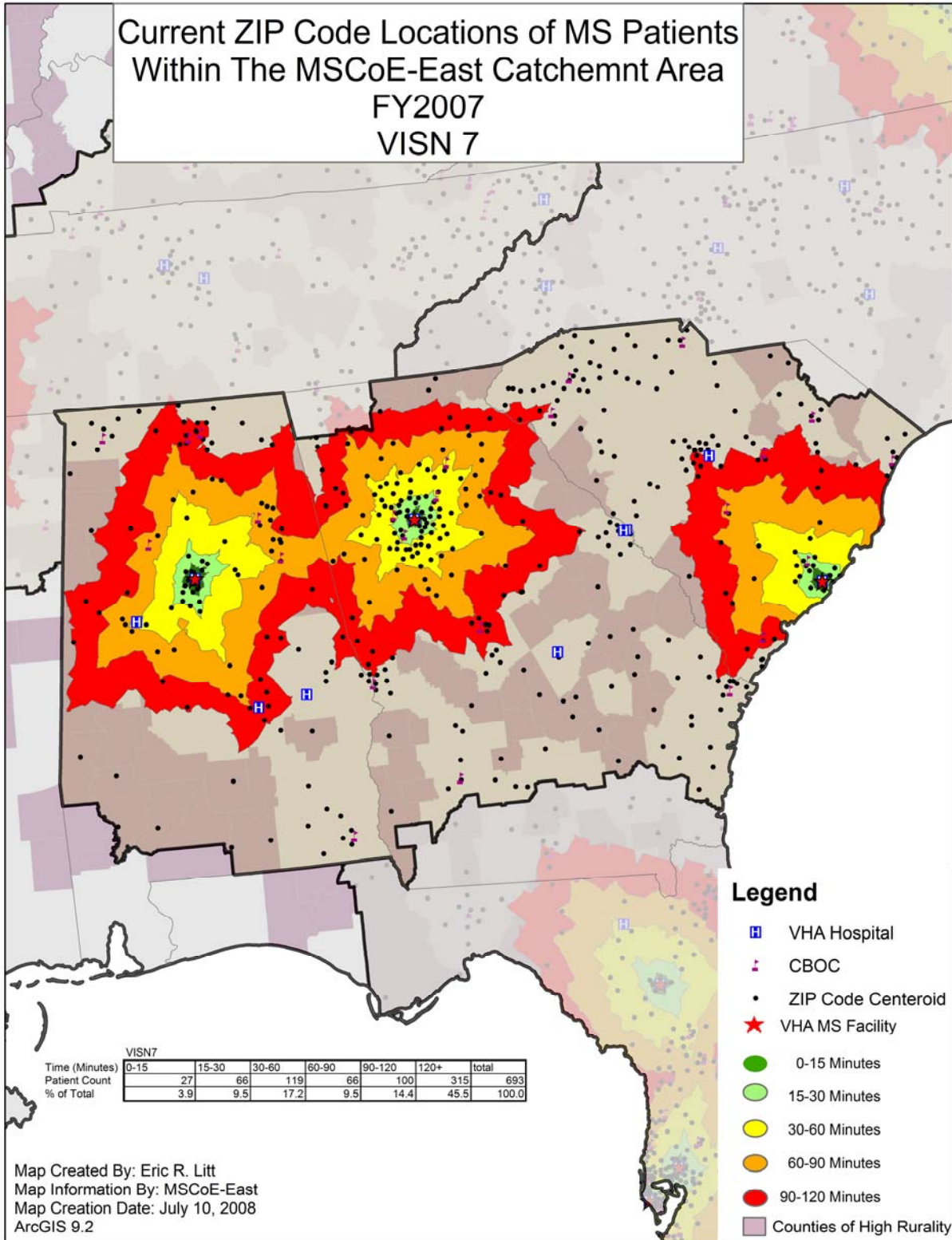


Figure 10

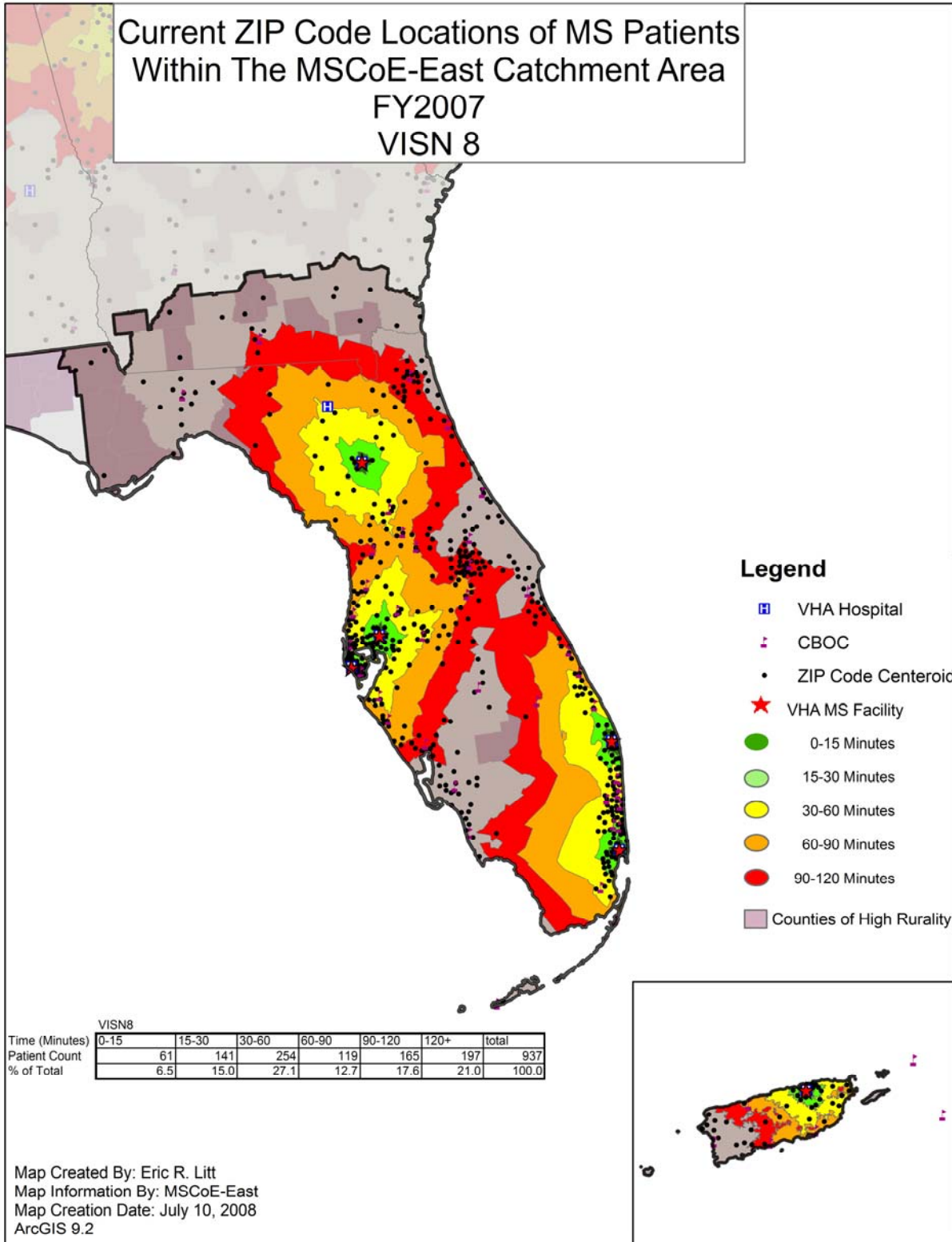


Figure 11

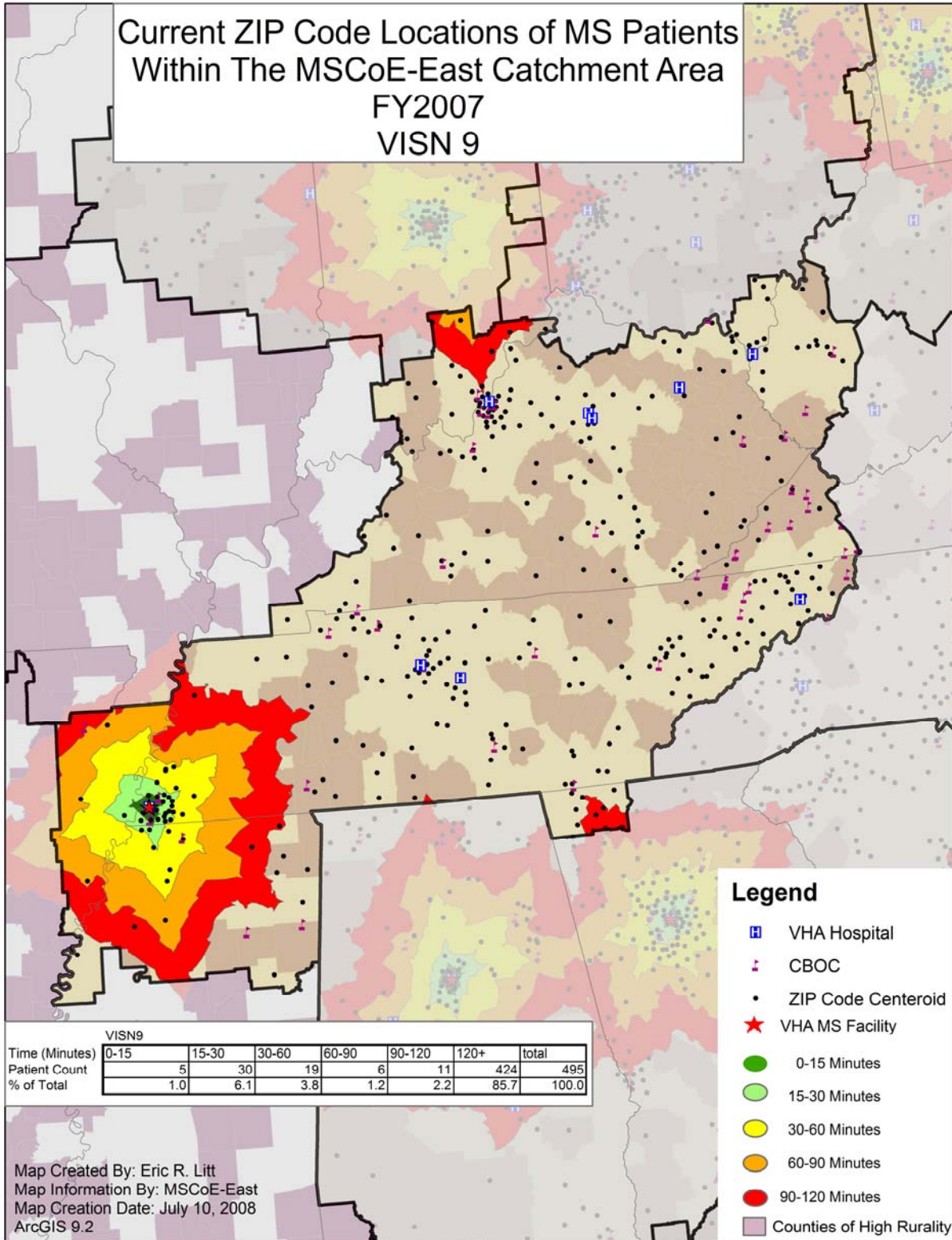


Figure 12

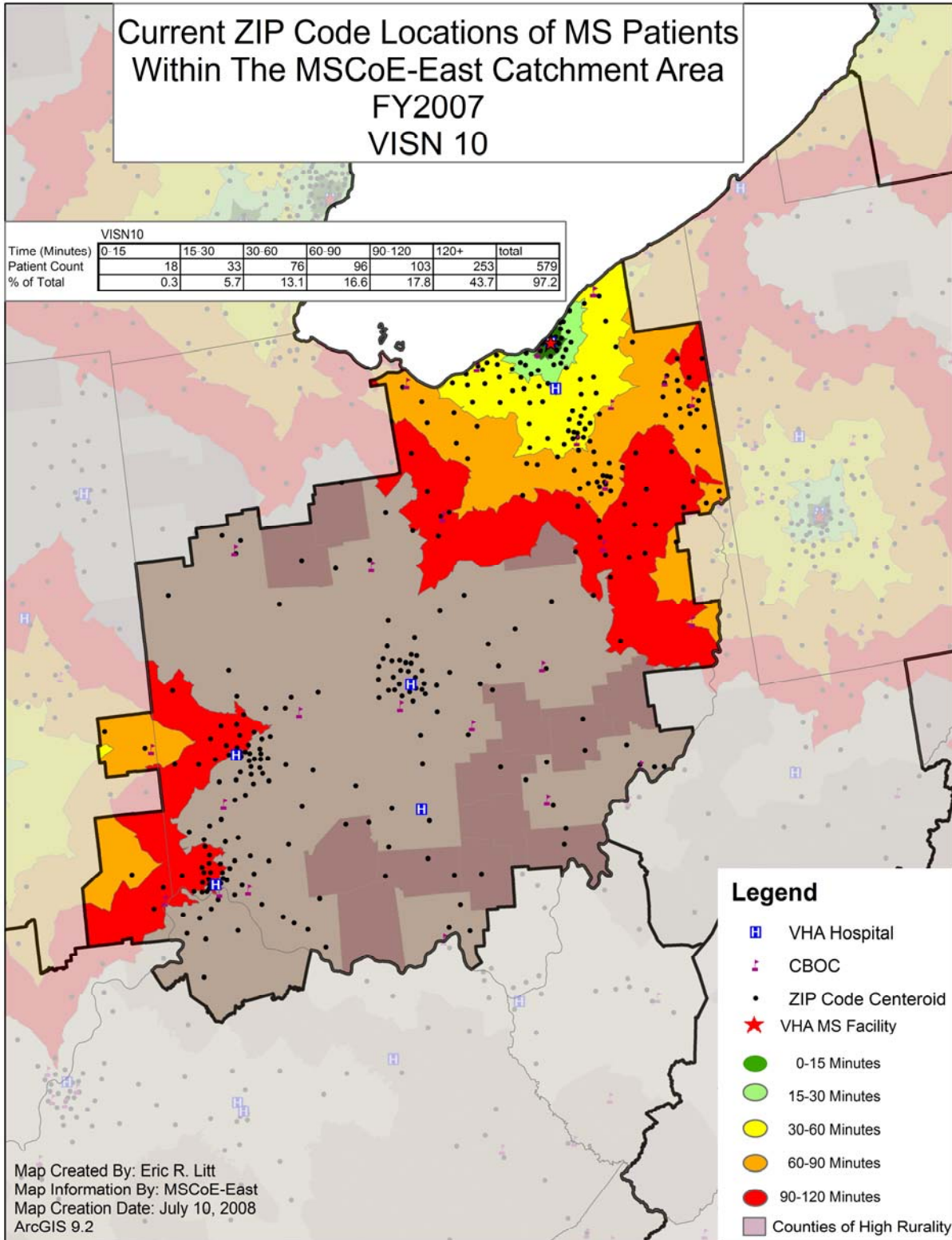
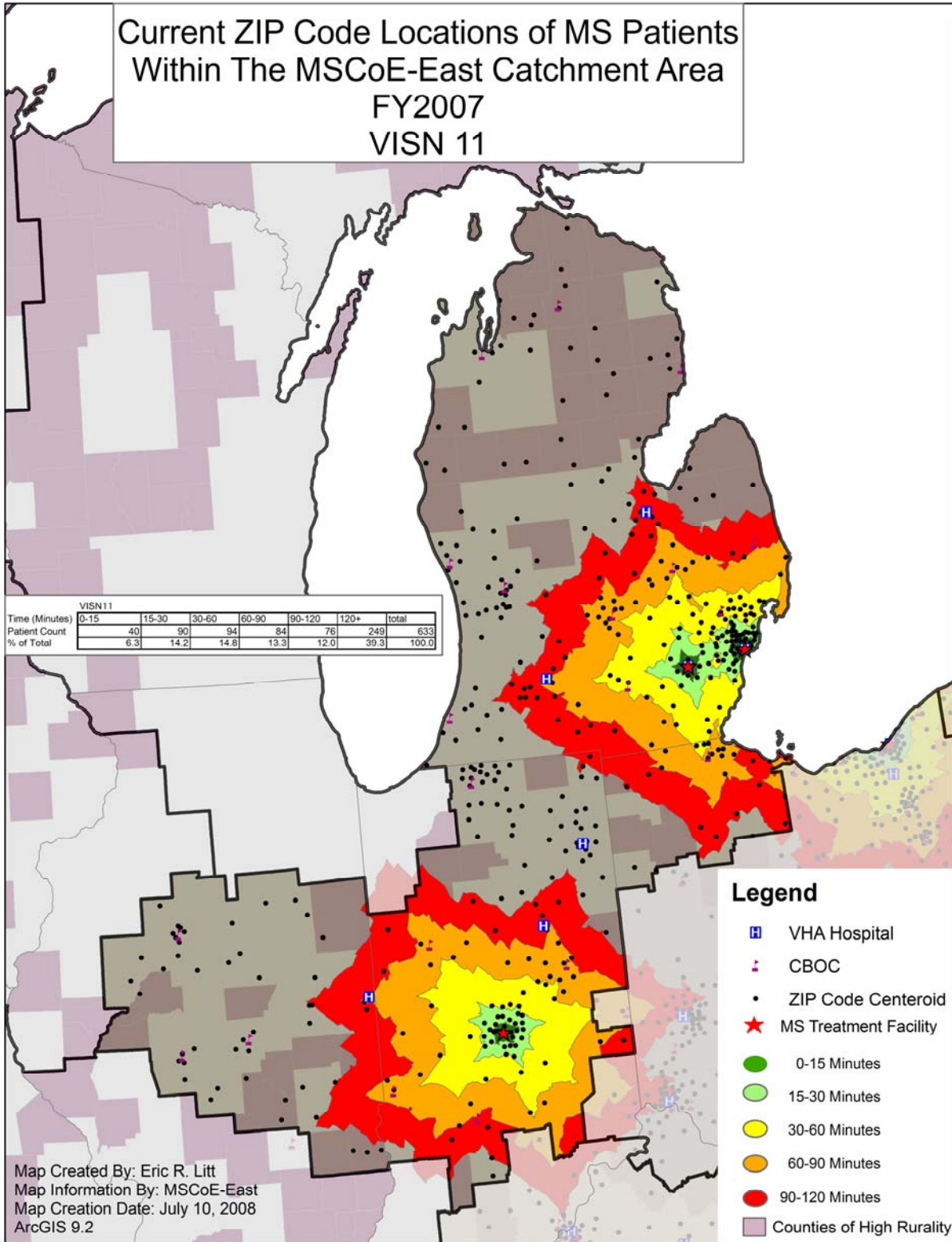


Figure 13



IV. Travel Time Summary Table

Table 1 below presents the number and percentages of MS patients broken down by the travel categories: 0-15 minutes, 15-30 minutes, 30-60 minutes, 60-90 minutes, 90-120 minutes, and more than 120 minutes for each VISN and for the total MS CoE-East Catchment Area.

Table 1: Number and Percentage of MS Patients by Travel Time Breakdown, MSCoE-East Total and by Veterans Integrated Service Network (VISN), FY2008						
VISN	0-15 Min. N (%)	15-30 Min. N (%)	30-60 Min. N (%)	60-90 Min. N (%)	90-120 Min. N (%)	120+ Min. N (%)
1	67 (8.7)	123 (16.0)	268 (34.8)	148 (19.2)	52 (6.7)	111 (14.4)
2	29 (7.7)	28 (7.4)	17 (4.5)	48 (12.7)	33 (8.8)	218 (57.8)
3	59 (14.8)	107 (26.8)	127 (31.8)	83 (20.8)	20 (5.0)	4 (1.0)
4	55 (7.0)	98 (12.5)	232 (29.6)	164 (20.9)	157 (20.1)	100 (12.8)
5	54 (14.8)	127 (34.8)	128 (35.1)	29 (7.9)	13 (3.6)	14 (3.8)
6	57 (7.7)	94 (12.7)	60 (8.1)	32 (4.3)	34 (4.6)	467 (63.3)
7	27 (3.9)	66 (9.5)	119 (17.2)	66 (9.5)	100 (14.4)	315 (45.5)
8	61 (6.5)	141 (15.0)	254 (27.1)	119 (12.7)	165 (17.6)	197 (21.0)
9	5 (1.0)	30 (6.1)	19 (3.8)	6 (1.2)	11 (2.2)	424 (85.7)
10	18 (.311)	33 (5.7)	76 (13.1)	96 (16.6)	103 (17.8)	253 (43.7)
11	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)	1394 (20.6)	874 (12.9)	742 (10.9)	2359 (34.8)

V. “What if?” Scenarios: The Utility of GIS in Decision-Making

Many variables need to be considered before establishing new specialty clinics. Factors such as staffing, expertise, and a host of other facility characteristics come into play before these decisions can be made, underscoring the need for a comprehensive inventory of available resources by facility within each VISN. Once candidates for site location are chosen, GIS tools can provide National, VISN and facility management with the impact each candidate site would have on the current patient population being treated in the catchment area.

In this section, three “what if” scenarios are presented to show how access to specialty care for MS patients might change if an additional MS specialty care clinic is added in a Network. As shown in Table 1 above, the travel time breakdowns for these three VISN are:

	0-15 Min. N (%)	15-30 Min. N (%)	30-60 Min. N (%)	60-90 Min. N (%)	90-120 Min. N (%)	120+ Min. N (%)
VISN 1	67 (8.7)	123 (16.0)	268 (34.8)	148 (19.2)	52 (6.7)	111 (14.4)
VISN 6	57 (7.7)	94 (12.7)	60 (8.1)	32 (4.3)	34 (4.6)	467 (63.3)
VISN 9	5 (1.0)	30 (6.1)	19 (3.8)	6 (1.2)	11 (2.2)	424 (85.7)

For illustrative purposes, we chose VISN 1 (White River Junction), VISN 6 (Durham), and VISN 9 (Nashville) and recalculated the travel time. The results are presented below:

	0-15 Min. N (%)	15-30 Min. N (%)	30-60 Min. N (%)	60-90 Min. N (%)	90-120 Min. N (%)	120+ Min. N (%)
VISN 1	74 (9.7)	115 (15.1)	283 (37.1)	188 (24.7)	63 (8.3)	39 (5.1)
VISN 6	57 (7.7)	106 (14.4)	105 (14.2)	87 (11.8)	102 (13.8)	280 (38.0)
VISN 9	10 (2.0)	48 (9.7)	40 (8.1)	48 (9.7)	28 (5.7)	323 (65.3)

In VISN 6, if a MS-specialty clinic was placed at the Durham VAMC (compare Figures 8 and 14) the proportion of patients traveling more than 2-hours would be decreased from 63% to 38%. Similarly, if an MS-specialty clinic was placed at the Nashville VAMC (compare Figures 11 and 15), the proportion traveling more than 2-hours in VISN 9 would be decreased from 86% to 65%. Other facility locations within a given VISN can be similarly evaluated to determine which additional facility results in the largest reduction in the proportion of veterans traveling more than 2-hours for MS-specialty care. This technique works well even for VISNs that do not have an excess number of patients traveling more than 2-hours. For example, VISN 1 had only 14% of veterans traveling more than 2-hours (see Figure 3). However, if MS-specialty care was implemented at White River Junction (see Figure 16) the proportion traveling more than 2-hours would be decreased to only 5%.

Figure 14

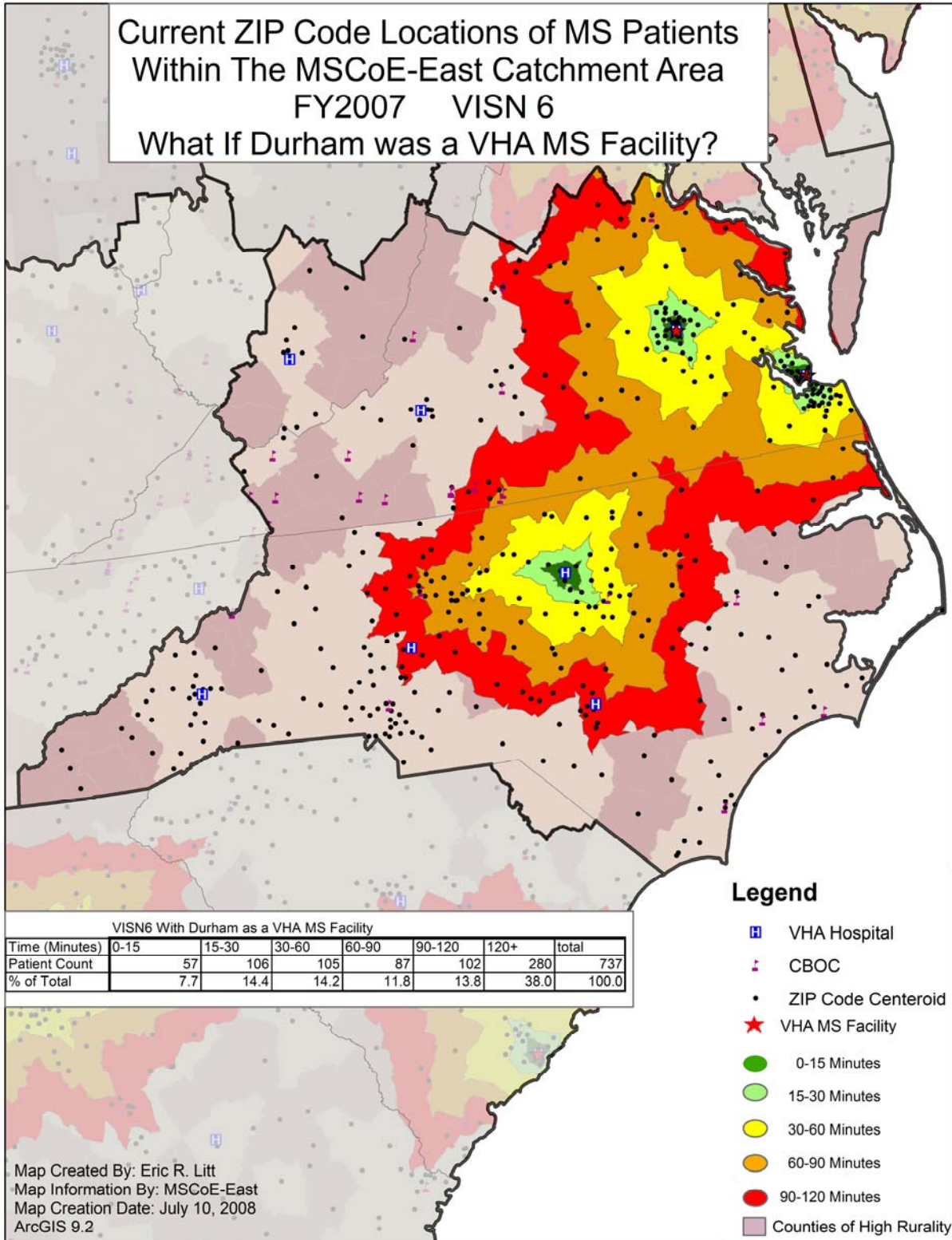


Figure 15

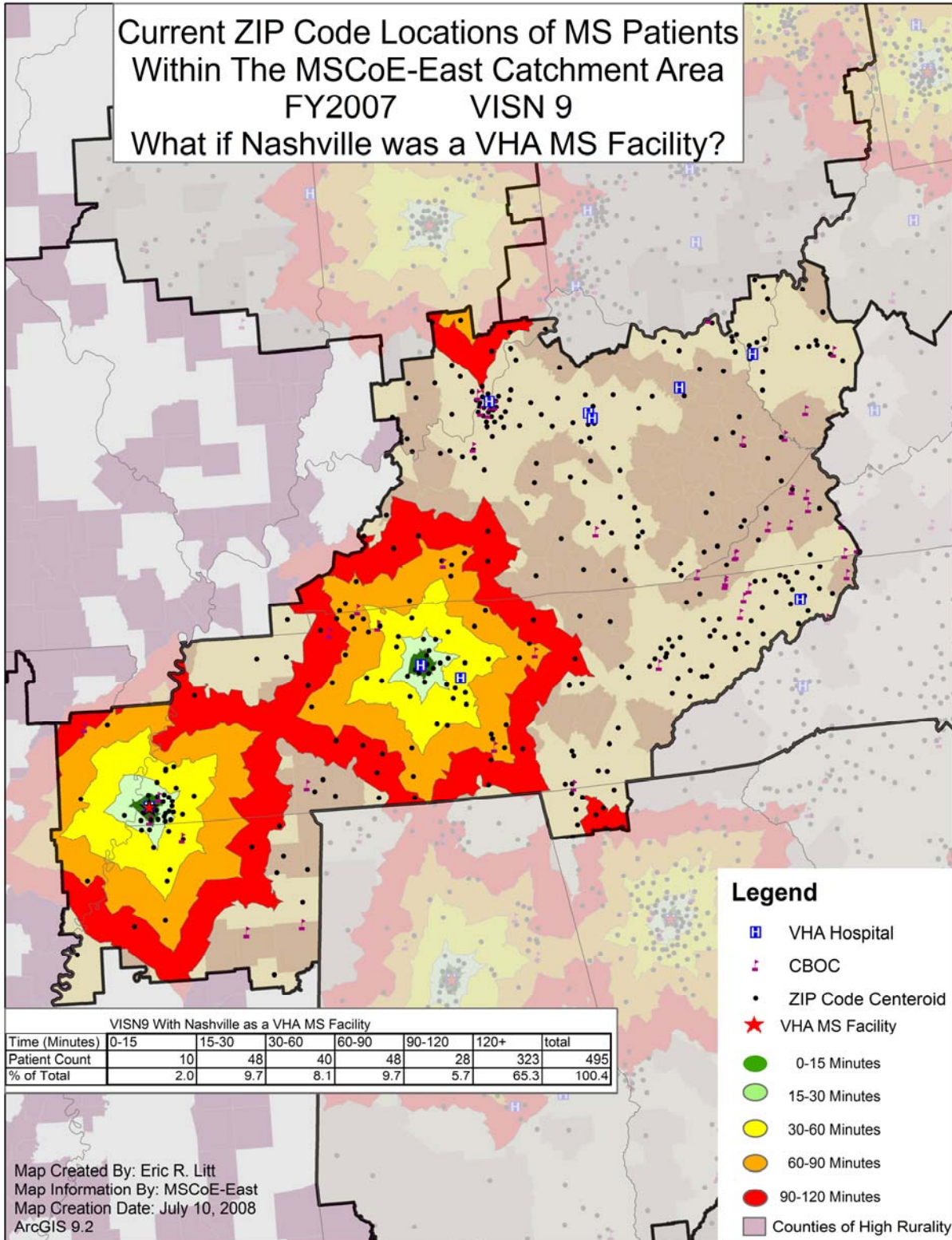
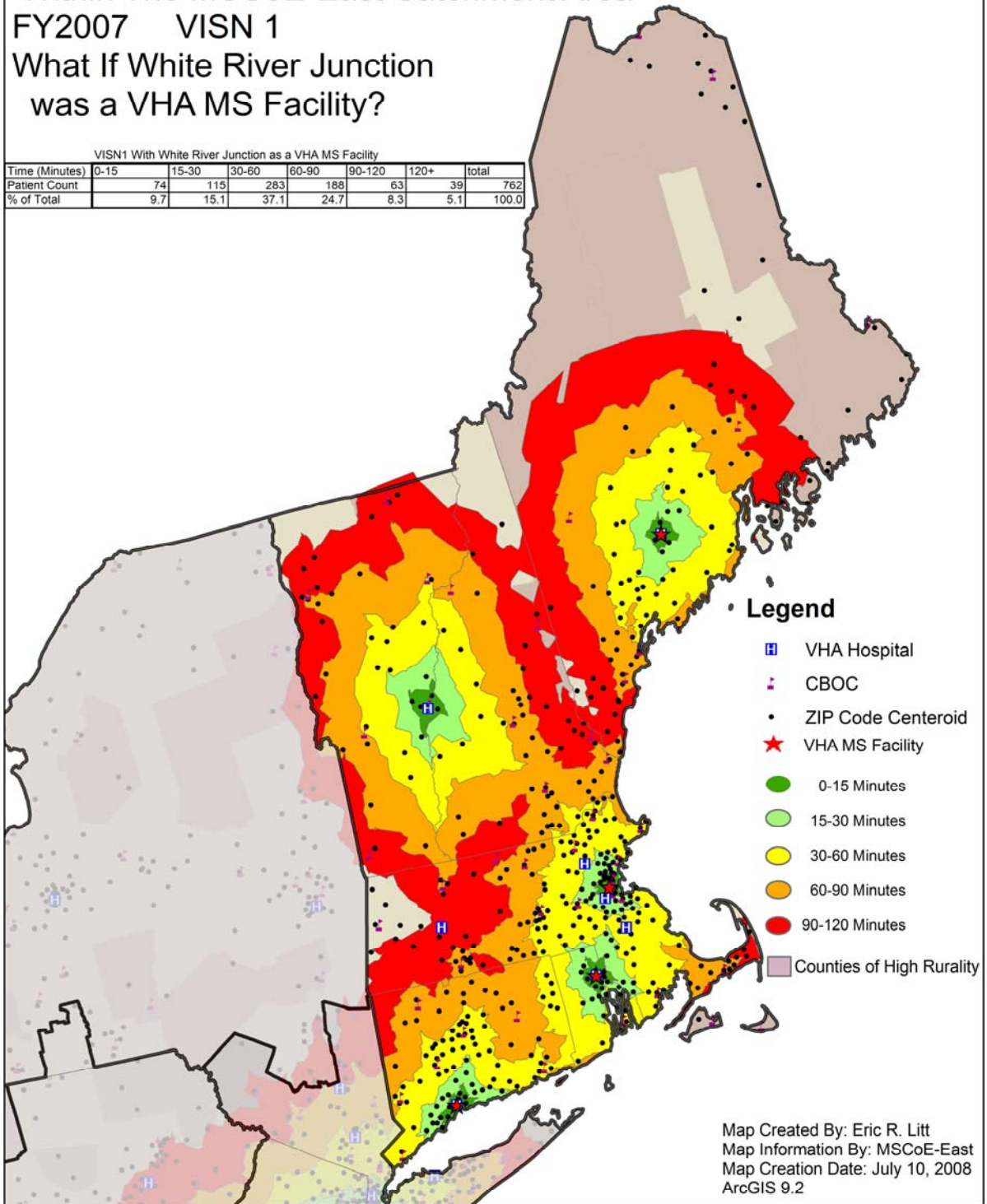


Figure 16

Current ZIP Code Locations of MS Patients
 Within The MScOE-East Catchment Area
 FY2007 VISA 1
 What If White River Junction
 was a VHA MS Facility?

VISA1 With White River Junction as a VHA MS Facility

Time (Minutes)	0-15	15-30	30-60	60-90	90-120	120+	total
Patient Count	74	115	283	188	63	39	762
% of Total	9.7	15.1	37.1	24.7	8.3	5.1	100.0



VI. Highlights

- The availability and accessibility of specialty MS care varies widely across VISNs in the MSCoE-East catchment area.
 - Over one-third of MS patients in the total catchment area (VISN 1 – VISN 11) travel more than two hours to specialty MS care (34.8%).
 - Access to MS specialty care appears poorest in VISN 9. Only 7% of MS patients are within 30 minutes and 85.7% of MS patients in this VISN reside more than a two hour travel time to a MS specialty site.
 - Other VISNs where more than half of patients travel more than two hours to MS specialty care include: VISN 2 (57.8%) and VISN 6 (63.3%).
 - VISN 3 and VISN 5 show greater accessibility to specialty care for MS patients than other VISNs in the MSCoE-East catchment area.
 - Only a small percentage of MS patients in VISN 3 (1.0%) and VISN 5 (3.8%) are more than two hours from specialty care.
 - Over forty percent of MS patients in both VISNs resided within thirty minutes of specialty treatment.
- GIS can be used at both the national and VISN level to select the best candidates for placement of new specialty clinics and/or tele-health programs, once facility characteristics are taken into account.
- The GIS mapping technique utilized in this study provides the ability to test “what-if” scenarios. Specifically, we can test how much of a reduction in the proportion of patients having to travel more than 2-hours for MS-specialty care is achieved if MS-specialty care was implemented at an additional facility(s).
- The GIS mapping technique used in this study provides a powerful and valuable tool for policy and planning personnel when evaluating how to address underserved populations and areas within the VHA healthcare system not only for MS but for ALL conditions and diseases affecting the veteran population.