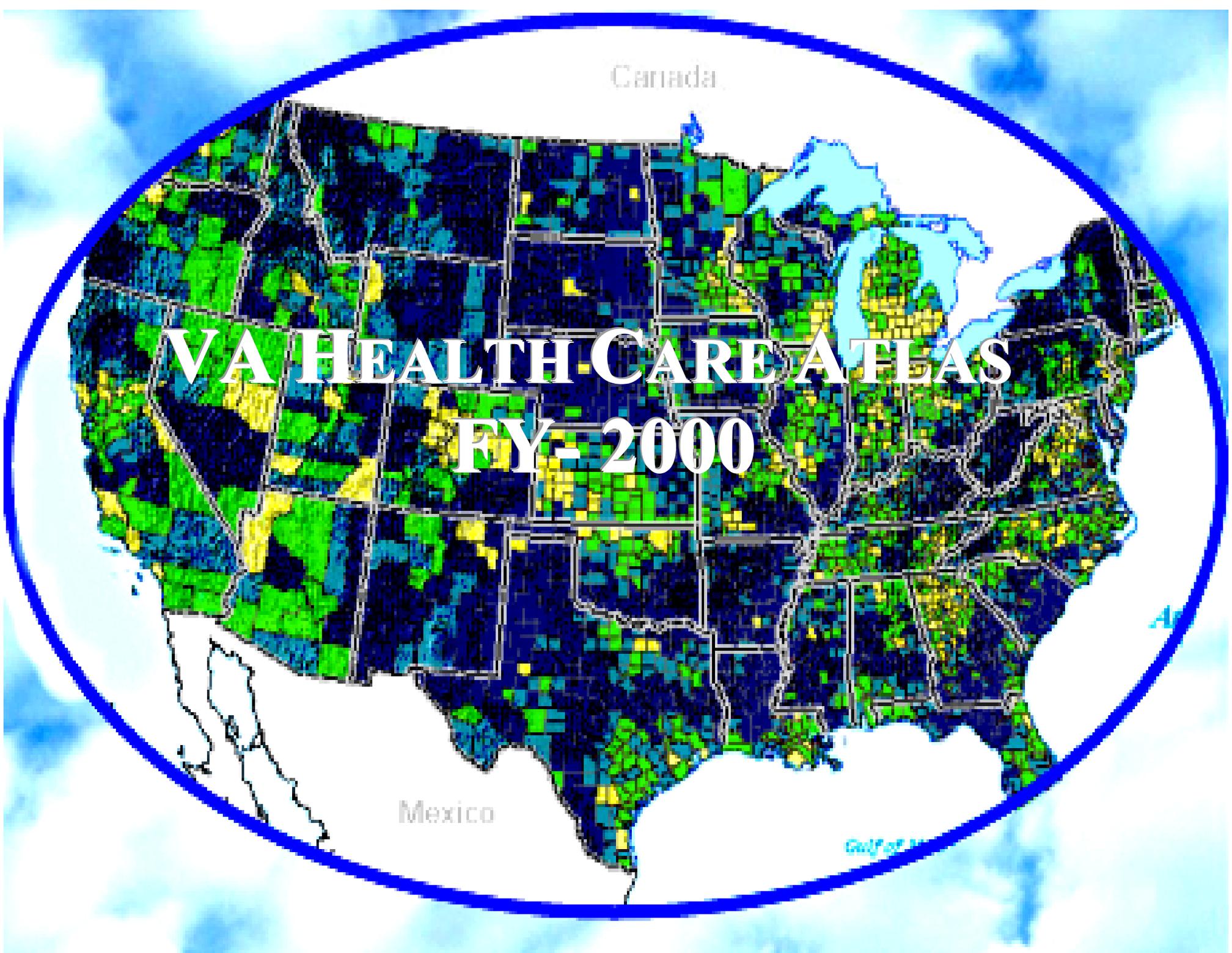


Canada

VA HEALTH CARE ATLAS FY-2000

Mexico

Gulf of Mexico



Research Team

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Stroke – Pamela Duncan, Dean Reker

Dedication

The VA Health Care Atlas, FY-2000 is dedicated to:

John G. Demakis, MD

Director, VA HSR&D Service

without whose support the project would not have been possible. We thank Dr. Demakis for supporting the depth and breadth of tools that convey his message of making a difference to our veterans.



October 2003

Overview

The Department of Veterans Affairs (VA) maintains the largest health care system in the United States. In FY-2000, the VA oversaw the operation of 163 hospitals, over 500 Community Based Outpatient clinics (CBOCs), 163 hospital-based outpatient clinics and 4 independent outpatient clinics, 134 nursing homes, 40 domiciliaries, and 4 mobile clinics. VA has electronically captured data on the VA patient population for decades and its patient data systems are second to none. The massive amount of data available for analysis, however, can be overwhelming to the researcher, planner or decision maker who needs to translate these data into usable information. The VA Health Care Atlas team created the *VA Health Care Atlas, FY-2000* to synthesize information frequently requested by field researchers, managers, and planners and to highlight the Quality Enhancement Research Initiative (QUERI) program.

Objectives

The goal of this Service Directed Research project was to create a product that would enhance knowledge of VA's enrolled patient population and their health care utilization and, ultimately, to provide background information that will improve the formulation of specific research questions to address those needs. The *VA Health Care Atlas, FY-2000* includes:

- A profile of the veteran population from the Census 2000 decennial survey
- An overview and the location of medical facilities in the VA health care system in FY-2000;
- A summary VA's enrollee population in FY-2000;
- An examination of overall VA utilization in FY-2000; and

- Patterns of health care use and costs by specific patient disease categories (HIV/AIDS, Chronic Heart Failure, Diabetes, Colorectal Cancer, Ischemic Heart Disease, Psychiatric Disorders, Spinal Cord Injury, Substance Abuse and Stroke) in FY-2000.

Previous Research and Applications

The use of medical atlases to display visually the relationship between disease and location has been used by other organizations, including several government agencies. The Centers for Disease Control (CDC), National Institutes of Health (NIH), and National Cancer Institute (NCI), for example, all publish medical atlases. Perhaps the most well-known atlas to researchers is *The Dartmouth Atlas of Health Care*, funded by the Robert Wood Johnson Foundation, and *The Dartmouth Atlas of Cardiovascular Health Care* -- projects led by John Wennberg, M.D. (<http://www.dartmouth.edu/~atlas>).

An *Annals of Internal Medicine* article overviewed the functionality of using maps to detect patterns in health care, disease and mortality.¹ The article describes the advantages, as well as disadvantages, of using Geographic Information Systems (GIS) to display data. One important advantage to mapping is that it enables researchers to see visually patterns of, for example, mortality rates or health care utilization, and generate hypotheses surrounding these particular patterns.

GIS is a computer-based tool for organizing and displaying data. GIS can create, access, integrate, and display geographically relevant information. Moreover, GIS can be used to examine population-level effects of services as reflected in geographic and spatial

distribution of populations and allows predictive modeling. It can also associate, for example, patients with the nearest medical facility or provider, locate under-served areas, measure access (distance) to medical facilities in a VISN, and many other analyses relevant to VA. GIS has been used in the health care industry for epidemiological studies, disease tracking, program evaluation, epidemic outbreak investigations, site location and patient distribution analysis, and community needs assessment.²

Variations in surgery rates, as shown in the Dartmouth Atlas of Health Care 1999 made national news on the cover of USA TODAY September 19, 2000. The lead article, “The operation you get often depends on where you live,” provided information on geographic variation across the 306 hospital referral regions (HRR) in the United States.²

In the Department of Veterans Affairs, the Planning System Support Group (PSSG), VHA Office of Policy and Planning, has taken the lead in introducing GIS to VA. Preliminary “snapshots” of geographic variation provide the foundation for asking very specific research and organizational questions.

A report released in October 2000, *Diabetes in VHA – Patient Demographics/Comorbid Conditions/Outcomes, FY99* by the Healthcare Analysis and Information Group in collaboration with VHA’s Office of Patient Care Services, Centers for Disease Control, American Diabetes Association and HSR&D’s Diabetes Quality Enhancement Research Initiative summarized information pertaining to the burden of illness associated with diabetes mellitus patients in the VA Health Care system. To see the report, go to the Web site: <http://vaww.va.gov/haig/diabetes/fy99/Diab99PD.pdf>.³

The report made use of GIS techniques to summarize data by Veterans Integrated Service Networks (VISNs). For each Network,

information was provided on overall prevalence statistics and mean HBA1c outcomes by gender, race, age and marital status. In addition, mean visits were reported by outpatient provider type (primary care, endocrine, ophthalmology, podiatry, mental health, cardiology, vascular, orthopedic, neurology, hypertension). Diabetes related information, ophthalmic complications, prevalence of numerous co-morbid conditions, procedures, and resource utilization were also compiled and presented in tabular form. GIS techniques were used to portray data in topographical mapping format. Maps generated for this report included: Distance of Diabetic Patients to Closest VA Service Site by County and Prevalence of Patients with Diabetes During FY99 by County.

Methods

The data that the research team used to compile the *VA Health Care Atlas, FY-2000* reside in VA’s 97 corporate data systems and/or at numerous field units throughout the VA. While no primary data collection was needed, identifying where the data reside and creating SAS programs or SQL queries to extract information from the databases entailed considerable time and effort. The investigators performed secondary data extractions, then displayed existing data in a new, more comprehensive and accessible format. The research team relied heavily on Geographic Information System (GIS) tools to create the *VA Health Care Atlas, FY-2000*. In many health and human service agencies, GIS has been used as a tool to improve access and use of data and information by developing “profiles” of emerging organizational issues and challenges.

The Atlas is broken into 14 sections as follows:

- The Veteran Population
- Profile of VA’s Enrolled Population

- Location of VA Medical Centers
- Overall Utilization
- QUERI Overview
 - HIV/AIDS
 - Chronic Heart Failure
 - Colorectal Cancer
 - Diabetes
 - Ischemic Heart Disease
 - Psychiatric Disorders
 - Substance Abuse
 - Spinal Cord Injury
 - Stroke

and compiles information for the base year of FY-2000. A reference section is provided following these sections for individuals interested in other GIS applications in health care.

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Subject	Page
1. Veteran Population	1
a. National and Regional Trends	2
b. State Veteran Population.....	3
c. County Veteran Population	4
2. Enrollee Population	27
a. National and VISN Totals	28
b. State Trends	32
c. Country Trends	37
3. VA Facilities	37
a. Facility Definitions	45
b. VA Hospitals by State	47
4. Health Care Utilization	53
a. National Totals	53
b. VISN Trends	53
c. County Overview	58
5. QUERI	73
a. QUERI Process	73
b. Disease Classification Methods	74
c. ICD-9 Codes for QUERI Cohorts	75
d. Patient Cohort Disease Prevalence	76
e. Obtaining Utilization by Patient Cohort	76
f. Cost Determination	77
g. Geographic Mapping	78
6. HIV/AIDS	81
a. Highlights	81
b. For More Information	98
7. Chronic Heart Failure	99
a. Highlights	100
b. For More Information	115
8. Colorectal Cancer	117
a. Highlights	118
b. For More Information	133

Subject	Page
9. Diabetes	135
a. Highlights	137
b. For More Information	152
10. Ischemic Heart Disease.....	155
a. Highlights	157
b. For More Information	173
11. Psychiatric Disorders	81
a. Highlights	81
b. For More Information	98
12. Substance Abuse	175
a. Highlights	189
b. For More Information	205
13. Spinal Cord Injury.....	235
a. Highlights	238
b. For More Information	253
14. Stroke	255
a. Highlights	256
b. For More Information	271
15. GIS References	273

Table of Contents

List of Tables

Veteran Population

- 1.1 Veteran Population by Age and Gender by VISN
- 1.2 Veteran Population as a Percentage of the Civilian Population by VISN
- 1.3 Veteran Population by Age and Gender by State
- 1.4 Veteran Population as a Percentage of the Civilian Population by State

Enrollee Population

- 2.1 Enrollees as a Percentage of the Veteran Population by VISN
- 2.2 Percent Veterans enrolled in VHA by State

VA Facilities

- 3.1 VA Hospitals by State, FY-2000

Utilization

- 4.1 Number of Patients, Outpatient Visits, and Discharges by VISN

HIV/AIDS

- 6.1 Overall Prevalence Statistics
- 6.2 Overall Resource Utilization, Primary Diagnosis Group Compared to All Users
- 6.3 Overall Resource Utilization, Secondary Diagnosis Group Compared to All Users
- 6.4 Resource Utilization for Treatment of Primary Diagnosis Compared to Overall Resource Utilization by All Users
- 6.5 Resource Utilization for Treatment of Diagnosis Compared to Overall Utilization by Diagnosis Cohort
- 6.6 FY-2000 Cost of Primary Diagnosis

- 6.7 FY-2000 Cost of Secondary Diagnosis

Chronic Heart Failure

- 7.1 Overall Prevalence Statistics
- 7.2 Overall Resource Utilization, Primary Diagnosis Group Compared to All Users
- 7.3 Overall Resource Utilization, Secondary Diagnosis Group Compared to All Users
- 7.4 Resource Utilization for Treatment of Primary Diagnosis Compared to Overall Resource Utilization by All Users
- 7.5 Resource Utilization for Treatment of Diagnosis Compared to Overall Utilization by Diagnosis Cohort
- 7.6 FY-2000 Cost of Primary Diagnosis
- 7.7 FY-2000 Cost of Secondary Diagnosis

Colorectal Cancer

- 8.1 Overall Prevalence Statistics
- 8.2 Overall Resource Utilization, Primary Diagnosis Group Compared to All Users
- 8.3 Overall Resource Utilization, Secondary Diagnosis Group Compared to All Users
- 8.4 Resource Utilization for Treatment of Primary Diagnosis Compared to Overall Resource Utilization by All Users
- 8.5 Resource Utilization for Treatment of Diagnosis Compared to Overall Utilization by Diagnosis Cohort
- 8.6 FY-2000 Cost of Primary Diagnosis
- 8.7 FY-2000 Cost of Secondary Diagnosis

Diabetes

- 9.1 Overall Prevalence Statistics

- 9.2 Overall Resource Utilization, Primary Diagnosis Group Compared to All Users
- 9.3 Overall Resource Utilization, Secondary Diagnosis Group Compared to All Users
- 9.4 Resource Utilization for Treatment of Primary Diagnosis Compared to Overall Resource Utilization by All Users
- 9.5 Resource Utilization for Treatment of Diagnosis Compared to Overall Utilization by Diagnosis Cohort
- 9.6 FY-2000 Cost of Primary Diagnosis
- 9.7 FY-2000 Cost of Secondary Diagnosis

Ischemic Heart Disease

- 10.1 Overall Prevalence Statistics
- 10.2 Overall Resource Utilization, Primary Diagnosis Group Compared to All Users
- 10.3 Overall Resource Utilization, Secondary Diagnosis Group Compared to All Users
- 10.4 Resource Utilization for Treatment of Primary Diagnosis Compared to Overall Resource Utilization by All Users
- 10.5 Resource Utilization for Treatment of Diagnosis Compared to Overall Utilization by Diagnosis Cohort
- 10.6 FY-2000 Cost of Primary Diagnosis
- 10.7 FY-2000 Cost of Secondary Diagnosis

Psychiatric Disorders

- 11.1 Overall Prevalence Statistics
- 11.2 Overall Resource Utilization, Primary Diagnosis Group Compared to All Users
- 11.3 Overall Resource Utilization, Secondary Diagnosis Group Compared to All Users
- 11.4 Resource Utilization for Treatment of Primary Diagnosis Compared to Overall Resource Utilization by All Users

- 11.5 Resource Utilization for Treatment of Diagnosis Compared to Overall Utilization by Diagnosis Cohort
- 11.6 FY-2000 Cost of Primary Diagnosis
- 11.7 FY-2000 Cost of Secondary Diagnosis

Substance Abuse

- 12.1 Overall Prevalence Statistics
- 12.2 Overall Resource Utilization, Primary Diagnosis Group Compared to All Users
- 12.3 Overall Resource Utilization, Secondary Diagnosis Group Compared to All Users
- 12.4 Resource Utilization for Treatment of Primary Diagnosis Compared to Overall Resource Utilization by All Users
- 12.5 Resource Utilization for Treatment of Diagnosis Compared to Overall Utilization by Diagnosis Cohort
- 12.6 FY-2000 Cost of Primary Diagnosis
- 12.7 FY-2000 Cost of Secondary Diagnosis

Spinal Cord Injury

- 13.1 Overall Prevalence Statistics
- 13.2 Overall Resource Utilization, Primary Diagnosis Group Compared to All Users
- 13.3 Overall Resource Utilization, Secondary Diagnosis Group Compared to All Users
- 13.4 Resource Utilization for Treatment of Primary Diagnosis Compared to Overall Resource Utilization by All Users
- 13.5 Resource Utilization for Treatment of Diagnosis Compared to Overall Utilization by Diagnosis Cohort
- 13.6 FY-2000 Cost of Primary Diagnosis
- 13.7 FY-2000 Cost of Secondary Diagnosis

Stroke

- 14.1 Overall Prevalence Statistics

Table of Contents

- 14.2 Overall Resource Utilization, Primary Diagnosis Group Compared to All Users
- 14.3 Overall Resource Utilization, Secondary Diagnosis Group Compared to All Users
- 14.4 Resource Utilization for Treatment of Primary Diagnosis Compared to Overall Resource Utilization by All Users
- 14.5 Resource Utilization for Treatment of Diagnosis Compared to Overall Utilization by Diagnosis Cohort
- 14.6 FY-2000 Cost of Primary Diagnosis
- 14.7 FY-2000 Cost of Secondary Diagnosis

List of Maps

Veteran Population

- 1.1 Total Veteran Population by VISN
- 1.2 Veteran Population 65+ by VISN
- 1.3 Female Veteran Population by VISN
- 1.4: Total Veteran Population by State
- 1.5 Veteran Population 65+ by State
- 1.6 Female Veteran Population by State
- 1.7 Total Veteran Population by County
- 1.8 Veteran Population 65+ by County
- 1.9 Female Veteran Population by County
- 1.10 Veterans as a Percentage of Civilian Population by County
- 1.11 – 1.14 Veterans as a Percentage of Civilian Population by County within VISN

Enrollee Population

- 2.1 Number of Veterans Enrolled by VISN
- 2.2 Percent of Veterans Enrolled by VISN
- 2.3 Enrollee Population by State
- 2.4 Percent of Veterans Enrolled by State

- 2.5 Enrollee Population by County
- 2.6 Percent Enrolled in VA by County
- 2.7 – 2.10 Percent Enrolled in VA by County Within VISN

VA Facilities

- 3.1 Location of VA Hospitals, FY-2000

Utilization

- 4.1 Number of Patients by VISN
- 4.2 Number of Outpatient Visits by VISN
- 4.3 Number of Discharges by VISN
- 4.4 Number of Patients by County
- 4.5 Number of Visits by County
- 4.6 Number of Discharges by County
- 4.7 Number of Visits per 1,000 Enrollees by County
- 4.8 – 4.11 Number of Visits per 1,000 Enrollees by County Within VISN
- 4.12 Number of Discharges per 1,000 Enrollees by County
- 4.13 – 4.16 Number of Discharges per 1,000 Enrollees by County Within VISN

HIV/AIDS

- 6.1 Number of VA Patients with Diagnosis by County
- 6.2 Percent of VA Patients with Diagnosis by County
- 6.3 Percent Disease Specific Visits of Total Visits by County
- 6.4 Percent Disease Specific Visits of Total Discharges by County
- 6.5 Average Number of Visits by County
- 6.6 Disease Specific Discharges per 1,000 Patients by County

Chronic Heart Failure

- 7.1 Number of VA Patients with Diagnosis by County
- 7.2 Percent of VA Patients with Diagnosis by County
- 7.3 Percent Disease Specific Visits of Total Visits by County

- 7.4 Percent Disease Specific Visits of Total Discharges by County
- 7.5 Average Number of Visits by County
- 7.6 Disease Specific Discharges per 1,000 Patients by County

Colorectal Cancer

- 8.1 Number of VA Patients with Diagnosis by County
- 8.2 Percent of VA Patients with Diagnosis by County
- 8.3 Percent Disease Specific Visits of Total Visits by County
- 8.4 Percent Disease Specific Visits of Total Discharges by County
- 8.5 Average Number of Visits by County
- 8.6 Disease Specific Discharges per 1,000 Patients by County

Diabetes

- 9.1 Number of VA Patients with Diagnosis by County
- 9.2 Percent of VA Patients with Diagnosis by County
- 9.3 Percent Disease Specific Visits of Total Visits by County
- 9.4 Percent Disease Specific Visits of Total Discharges by County
- 9.5 Average Number of Visits by County
- 9.6 Disease Specific Discharges per 1,000 Patients by County

Ischemic Heart Disease

- 10.1 Number of VA Patients with Diagnosis by County
- 10.2 Percent of VA Patients with Diagnosis by County
- 10.3 Percent Disease Specific Visits of Total Visits by County
- 10.4 Percent Disease Specific Visits of Total Discharges by County
- 10.5 Average Number of Visits by County
- 10.6 Disease Specific Discharges per 1,000 Patients by County

Psychiatric Disorders

- 11.1 Number of VA Patients with Diagnosis by County
- 11.2 Percent of VA Patients with Diagnosis by County
- 11.3 Percent Disease Specific Visits of Total Visits by County

- 11.4 Percent Disease Specific Visits of Total Discharges by County
- 11.5 Average Number of Visits by County
- 11.6 Disease Specific Discharges per 1,000 Patients by County

Substance Abuse

- 12.1 Number of VA Patients with Diagnosis by County
- 12.2 Percent of VA Patients with Diagnosis by County
- 12.3 Percent Disease Specific Visits of Total Visits by County
- 12.4 Percent Disease Specific Visits of Total Discharges by County
- 12.5 Average Number of Visits by County
- 12.6 Disease Specific Discharges per 1,000 Patients by County

Spinal Cord Injury

- 13.1 Number of VA Patients with Diagnosis by County
- 13.2 Percent of VA Patients with Diagnosis by County
- 13.3 Percent Disease Specific Visits of Total Visits by County
- 13.4 Percent Disease Specific Visits of Total Discharges by County
- 13.5 Average Number of Visits by County
- 13.6 Disease Specific Discharges per 1,000 Patients by County

Stroke

- 14.1 Number of VA Patients with Diagnosis by County
- 14.2 Percent of VA Patients with Diagnosis by County
- 14.3 Percent Disease Specific Visits of Total Visits by County
- 14.4 Percent Disease Specific Visits of Total Discharges by County
- 14.5 Average Number of Visits by County
- 14.6 Disease Specific Discharges per 1,000 Patients by County

