3. DEMAND FOR HEALTHCARE SERVICES

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An understanding of historic and current demand for VA healthcare services within Veterans Integrated Service Network (VISN) 12 is a baseline for future planning initiatives. The Capitol Asset Realignment for Enhanced Services (CARES) process has relied on this foundation, focusing on both

the most recent five-year trends and the FY 2000 actual utilization experience within the VISN. Information regarding veteran population, enrollment, and service utilization has been provided by the VA and verified by representatives from the VISN and the individual facilities within the VISN. Much of this information comes from the VISN Support Services (KLF menu) as well as the national database of utilization provided by the VA.

The purpose of this chapter is to address both current and projected demand for healthcare services within VISN 12. Sections 3.1 – 3.6 highlight current trends in service utilization and describe the various components of care delivered within VA. The integration of different services and the overlap of patients who require multiple levels of care at several VA facilities complicates service utilization counting; however, understanding how care is being delivered is important. As a foundation for future forecasts, this information is essential for the CARES process. These sections address veteran population and enrollment plus inpatient acute care, long-term care, and ambulatory care demand for services within VISN 12. Summary information is displayed; detailed information can be found in Appendix G.

Sections 3.7 – 3.10 focus on the projection of future demand for healthcare services for 12. These projections have been developed with the actuarial firm of Milliman & Robertson, Inc., (M&R) and the VA. A detailed discussion of the methodology can be found in Appendix G.

The final section in this chapter, Section 3.11, contains summary projections for future demand by markets within VISN 12. Based on the distribution of the population within each of the markets identified in the next chapter, the future demand for inpatient and ambulatory services is summarized by market.

3.1 THE TOTAL NUMBER OF VETERANS ELIGIBLE TO RECEIVE CARE IN VISN 12 IS PROJECTED TO CONTINUE TO DECLINE; HOWEVER, RECENT ENROLLMENT EFFORTS HAVE, DUE TO CHANGES IN ENROLLMENT ELIGIBILITY RULES, MAINTAINED A LEVEL BASE OF PATIENTS.

The total number of patients served by VISN 12 facilities has remained relatively constant over the past several years. This is due to efforts aimed at enrolling veterans who are eligible to receive care within the VA. Currently, VISN 12 reports more than 219,000 enrollees and projects a continued increase over the next several years. In FY 2000, VISN 12 cared for 157,304 unique patients, a number similar to the total unique patients reported in FY 1998.

Exhibit 3-1. Eligible Veterans, Enrollees, and Unique Patients in VISN 12

POPULATION	FY 1998	FY 2000	%CHANGE
Veteran Population	1,234,518	1,190,494	-3.6%
VISN 12 Enrollees	N/A	219,960	N/A
VISN 12 Unique Patients Served	157,722	157,304	-0.3%

Source(s): FY 1998 Veteran Population and FY 1998 Unique Patient data from VISN 12 Delivery Options Study, 7/27/99, p43; FY 2000 data from VA National and VISN Support Services; KLF Menu

Not all of the patients served within the VISN are enrolled. During FY 2000, more than 22,000 patients cared for within VISN 12 were either enrolled elsewhere or were not enrolled at all. This figure also includes non-veteran patients who received care during the year. The following table displays the actual patient counts for VISN 12 during the most recently completed fiscal year:

Exhibit 3-2. Unique Patients Served in VISN 12 (FY 2000)

PATIENT/USER CATEGORY [a]	NUMBER OF UNIQUE PATIENTS
Enrolled in VISN 12	134,402
Enrolled Elsewhere	6,212
Non-Enrolled Veterans [b]	3,006
Non-Veteran Users [c]	13,684
TOTAL Unique Patients	**157,304**

Source: FY 2000 Utilization, and Enrollment Data, VA Office of Policy and Planning
(a) Patient/User defined by unique SSN of patients seen within any of the VISN 12 facilities during FY 2000
(b) Veterans who were not enrolled at the time of service
(c) Mostly ambulatory patients, including VA employees

3.2 THE PERCENTAGE OF ELIGIBLE VETERANS ENROLLED IN THE VA VARIES SIGNIFICANTLY BY COUNTY.

Significant differences exist in the make up and demographics of the veteran population within the counties served by VISN 12 facilities. The entire 96 county geography consists of a combination of urban, suburban, and rural areas. The density of veterans by county varies considerably. The following table highlights those counties constituting the bulk of the eligible and enrolled population within the VISN. (Appendix G contains a complete listing of VISN 12 county-level eligible and enrolled population figures.)

Exhibit 3-3. Eligible and Enrolled Veterans by County (FY 2000)

COUNTY	FY 2000 VETERAN POPULATION	VISN 12 ENROLLED VETERANS	% ENROLLED (FY 2000)
IL COOK	376,408	77,855	20.7%
WI MILWAUKEE	82,964	14,345	17.3%
IL DU PAGE	66,367	6,089	9.2%
IL LAKE	49,092	10,664	21.7%
IN LAKE	43,864	6,830	15.6%
WI DANE	35,079	3,433	9.8%
IL WILL	35,008	4,545	13.0%
WI WAUKESHA	29,943	2,642	8.8%
IL KANE	26,327	2,903	11.0%
IL WINNEBAGO	23,666	3,163	13.4%
WI BROWN	19,576	2,462	12.6%
IL MC HENRY	18,406	2,915	15.8%
WI OUTAGAMIE	13,249	2,541	19.2%

COUNTY	FY 2000 VETERAN POPULATION	VISN 12 ENROLLED VETERANS	% ENROLLED (FY 2000)
IL LA SALLE	11,033	2,703	24.5%
WI LA CROSSE	9,432	2,436	25.8%
SUB-TOTAL	840,414	145,526	17.3%
Percent of Total	*71%*	*74%*	
OTHER VISN 12 COUNTIES	350,080	52,341	15.0%
SUB-TOTAL*	**1,190,494**	**197,867**	**16.6%**
ALL OTHER **	-	22,093	-
TOTAL	**1,190,494**	**219,960**	**18.5%**

Source: VA Office of Policy and Planning

* *Enrollees identified within the 96 counties in VISN 12; (Excludes enrollees with missing zip codes or zip codes that fall outside the VISN 12 boundaries)*

** *Veterans from outside the VISN 12 boundaries who chose to enroll at a VISN 12 facility*

Of the total 96 counties within the VISN 12 boundaries, 15 counties (representing more than 66 percent of the enrollees) range from 9 percent to 26 percent enrollment penetration.

3.3 VISN 12 FACILITIES PROVIDE CARE FOR PATIENTS WHO TRAVEL FROM BEYOND THE VISN GEOGRAPHIC BOUNDARIES, PARTICULARLY FOR SPECIAL DISABILITY PROGRAMS.

The "in-migration" of patients who seek care within VISN 12 is modest (3.6 percent) except for specialized services. These patients may travel significant distances to receive treatment at facilities offering these services. The FY 2000 utilization data for VISN 12 shows the following in-migration patterns:

Exhibit 3-4. In-Migration of Patients Seeking Care in VISN 12 (FY 2000)

INPATIENT PROGRAM OR SERVICE	TOTAL PATIENTS (FY 2000)	PATIENTS FROM OUTSIDE VISN 12	% IN-MIGRATION
Blind Rehabilitation	252	191	75.0%
SCI	566	145	25.6%
PTSD Residential Rehab	392	197	50.3%
Cardiothoracic	498	50	10.2%

As shown in Exhibit 3-4, the impact of patients who travel from beyond the VISN boundaries is significant for these highly specialized programs. These programs, however, represent a relatively small portion of the total workload of the VISN. The total in-migration for inpatient services in VISN 12 was 3.6 percent in FY 2000 (1,389 admissions out of a total of 38,240).

Measuring the "out-migration" of patients enrolled in VISN 12 who receive care at facilities in other VISNs will require a comprehensive analysis of the entire VA, nationwide. This was not within

the scope of the pilot CARES process. Discussions with VA staff, however, suggest that the "in-" and "out-migration" patterns for enrollees likely balance each other out, except for special disability programs (which have relatively low patient volumes).

3.4 HISTORIC UTILIZATION TRENDS SUGGEST SIGNIFICANT CHANGES HAVE OCCURRED IN HOW CARE IS DELIVERED—SHIFTS HAVE OCCURRED IN CARE SETTINGS AND THERE HAVE BEEN REDUCTIONS IN THE LENGTH OF STAY FOR INPATIENTS.

Consistent with trends in the overall healthcare industry, VA has emphasized shifting care from inpatient to ambulatory settings. Those patients who are hospitalized tend to stay fewer days and are often moved to less costly settings when medically appropriate. These factors, combined with the decline in population of veterans who have historically been the heaviest users of the VA system, have resulted in decreases in the average daily census of patients within VA facilities.

As shown in the following table, the average daily census for acute inpatients within VISN 12 has dropped nearly 50 percent within the last 5 years. Ambulatory workload, however, has increased during this same period. Exhibit 3-5 summarizes these utilization patterns. (Also see Appendix G for detailed 5-year VISN 12 service utilization information.)

Exhibit 3-5. VISN 12 Summary Utilization (FY 1996-FY 2000)

	1996	1997	1998	1999	2000
Acute Inpatient[1]					
• Admissions	47,057	40,320	35,921	35,302	33,232
• Bed Days of Care	672,874	487,963	406,156	411,973	386,719
• Average Daily Census	1,838	1,337	1,113	1,129	1,057
Long-term/Extended Care[2]					
• Admissions	6,346	6,662	6,768	6,868	6,810
• Average Daily Census	2,922	2,822	2,723	2,650	2,346
Ambulatory Care Visits[3]	1,579,293	1,657,328	1,774,856	1,806,264	1,824,019

Source: VA (VISN 12 via KLF Web) 5_ year_ history_ of_ VISN_ 12.xls

(1) Includes Medicine, Surgery, Intermediate, Rehab Medicine, Psychiatry, SCI, Neurology, and Blind Rehabilitation. Does not include outsourced acute care. This data source includes residential rehabilitation with psychiatry.

(2) Includes VA Nursing Home, VA Domiciliary, Community Nursing Home, State Domiciliary, and State Nursing Home care.

(3) Includes Fee Visits and Outpatient Visits.

Exhibit 3-6. Acute Inpatient and Long-Term Care—Average Daily Census (FY

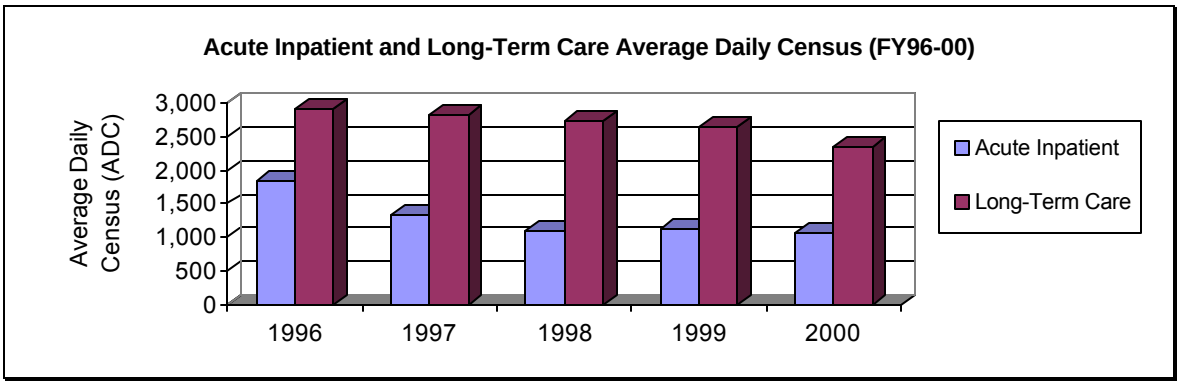
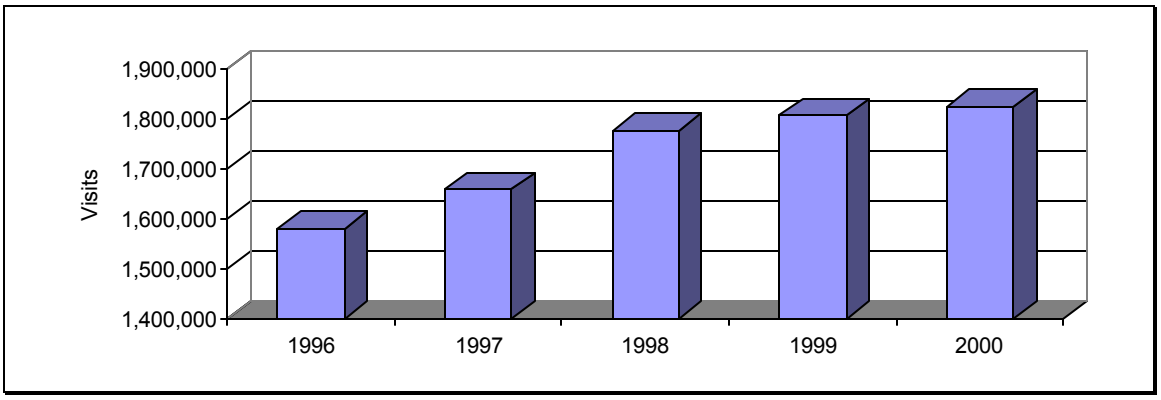


Exhibit 3-7. Ambulatory Care Visits (FY 1996–2000)



Among the findings from the VISN 12 database are breakdowns in the trends and utilization of inpatient, long-term care, and ambulatory services.

Acute Inpatient Services

- Acute inpatient data are broken down into eight categories of service where applicable. These are medicine, surgery, neurology, blind rehabilitation, rehabilitation medicine, intermediate, psychiatry, and SCI. During the 5-year period FY 1996 through FY 2000, total VISN 12 discharges decreased from 47,057 to 33,232; a 29 percent reduction.
- Total Bed Days of Care (BDOC) have been reduced by 43 percent, from 672,874 to 386,719, during the time frame FY 1996 through FY 2000.
- Similarly, reported inpatient average daily census within VISN 12 for the 7 VA Medical Centers(VAMC) has been reduced by 43 percent, from 1,838 in FY 1996 to 1,057 in FY 2000.

These changes are due to factors including declines in veteran population, changes in care management practices, reduction in length of stay, and the continuing emphasis on caring for patients on an ambulatory basis wherever possible.

Long-Term Care

- Long-term care patients within VISN 12 have increased during the 5-year period, FY 1996 through FY 2000. These patients are treated in settings such as community nursing homes, state domiciliary facilities, state nursing homes, VA domiciliary facilities, and VA nursing homes. In total, patients seen have increased by 8 percent, from 6,346 to 6,810.
- Cumulative long-term average daily census within VISN 12 has declined from 2,922 in FY 1996 to 2,346 in FY 2000; a 20 percent decrease.

These utilization trends reflect the aging of the veteran population. However, efforts to reduce lengths of stay, particularly in residential rehabilitation and domiciliary care, have been successful in reducing the overall average daily census.

Ambulatory Care

- Ambulatory trends demonstrate the shift from inpatient to outpatient services throughout the region during the past 5 years. In total, ambulatory visits have grown from 1,579,293 to 1,824,019 visits; an 11 percent increase.
- Supporting data show that in FY 2000 ambulatory care was predominately provided within the VAMC facilities as opposed to providing care within a Community-Based Outpatient Clinic (CBOC) facility. That is, the ambulatory care distribution ratio between patients treated at a VAMC vs. a CBOC was approximately 92 percent to 8 percent.

3.5 THE BOOZ·ALLEN CARES TEAM USED CURRENT DEMAND AND SERVICE UTILIZATION AS THE FOUNDATION FOR THE CARES PROCESS.

An understanding of the current utilization of services is an essential ingredient in the CARES process. One of the challenges of the CARES process has been to find a consistent way to describe and measure the various medical services offered to veterans within the VISN. It has been important to reconcile data as reported in these various databases with descriptions and measures that are familiar to VA professionals as well as to assemble data relevant to decision making processes involving possible future service delivery changes. Finally, this task has been influenced by the need to inform efforts to streamline data collection and validation activities that will be necessary in subsequent VISN CARES processes.

During the course of the CARES process, service utilization information has been collected and analyzed in a number of ways. The most helpful exercise has been to "line up" service utilization into the five categories or groupings of medical services prescribed in the CARES process. These five categories are—

- Inpatient acute care
- Residential rehabilitation
- Extended/long-term care
- Special disability programs
- Ambulatory services.

Exhibit 3-8 displays the FY 2000 inpatient utilization within VISN 12. This summary information is aggregated using the five categories of care cited above in a manner consistent with the methodology used by the actuary in forecasting future demand for these services. Detailed information is contained in the Appendix section (Appendix G—VISN 12 FY 2000 Utilization), along with a listing of the bed-sections and other defining characteristics used to categorize the workload for summary reporting.

Exhibit 3-8. VISN 12 Summary Inpatient Utilization (FY 2000)

SERVICE CATEGORY	ADMISSIONS	BDOC	ALOS	ADC
Inpatient Acute Care				
• Medical & Surgical	**25,903**	**227,805**	**8.8**	**624.1**
• Psychiatric & Substance Abuse(1)	**5,587**	**61,503**	**11.0**	**168.5**
SUB-TOTAL	**31,490**	**289,308**	**9.2**	**792.6**
Residential Rehabilitation				
• Psychiatric & Substance Abuse(1)	**1,606**	**52,197**	**32.5**	**143.0**
• Other (CWT)	**92**	**8,570**	**93.2**	**23.5**
SUB-TOTAL	**1,698**	**60,767**	**35.8**	**166.5**
Long-Term Care				
• Nursing Home Care(2)	**1,876**	**217,200**	**115.8**	**595.1**
• Domiciliary Care(1)	**2,033**	**169,093**	**83.2**	**463.3**
• Long-Term Psychiatry(3)	**366**	**48,745**	**133.2**	**133.5**
SUB-TOTAL	**4,275**	**435,038**	**101.8**	**1,191.9**
TOTAL VISN 12	**37,464**	**785,113**	**21.0**	**2,151.0**

** The number of days stayed from point of admissions divided by the number of admissions.*

Source: VA FY 2000 Utilization Files (PM/CENPM and XM/CENXM)

Notes: (1) Mental health patients are cared for in a variety of settings; see Appendix G for a listing of bed sections used in this summary.

(2) Nursing Home includes VA only; State and Community Nursing Home utilization excluded.

(3) Includes N. Chicago and Tomah long-term patients with missing bed section information.

The following table displays FY 2000 ambulatory utilization within VISN 12. This summary information is aggregated in a manner consistent with VA categories. Ambulatory clinic stops provides a higher degree of granularity in the analysis than visits described in Exhibit 3-7, previously. A single visit often has multiple clinic stops.

Exhibit 3-9. VISN 12 Summary Ambulatory Clinic Stops (FY 2000)

DESCRIPTION	VISN 12 TOTAL–FY 2000
Primary Care	560,944
Home-Based Primary Care	23,688
Medicine	257,863
Surgery	285,932
Mental Health	676,853
Ancillary/Diagnostic	1,212,160
Other	17,358
TOTAL	**3,034,798**

Source: VA FY 2000 Ambulatory Utilization Files (Excluding Dental)

Dental Utilization

FY 2000 dental workload for VISN 12 was extracted from the VA's Dental Activity System. While the Dental Activity System does report dental workload in visits and sittings, the preferred unit of measure for dental workload is a composite time value (CTV), which represents 10 minutes of a dental provider's time based on a national average of VA dental providers. The VA prefers CTVs because they have a stronger correlation with actual dental resources consumed than do visits. In FY 2000, VISN 12 reported that 13,732 patients generated 396,062 CTVs.

Special Disability Programs

The special disability programs are separately accounted for in some of the databases but in other instances they are commingled with data (e.g., acute, long-term care, mental health) describing location of care. These special disability programs are divided into several categories including spinal cord injury (SCI), amputation, blind rehabilitation, homeless, traumatic brain injury (TBI), post traumatic stress disorder (PTSD), seriously mentally ill (SMI), and substance abuse.

A summary of FY 2000 inpatient and ambulatory workload generated from patients who are registered in one or more of these special disability programs is presented in the following table.

Exhibit 3-10. Special Disability Program Utilization (FY 2000)

SPECIAL DISABILITY PROGRAM	FY 2000 INPATIENT BDOCS	FY 2000 AMBULATORY ENCOUNTERS (1)
SCI/SCD (1999 data)	32,250	5,469
Blind Rehabilitation	8,907	1,695
Amputation (PACT)	6,035	2,160
TBI	775	(See footnote)
Homeless Chronically Mentally Ill	15,480	(See footnote)
SMI/PTSD and Substance Abuse	113,700	(See footnote)

Source: Special Disability Registry patients matched to inpatient and ambulatory utilization files using defined bed sections and/or ambulatory clinic stops.

(1) Included in general ambulatory workload.

3.6 THE ACTUARY ESTIMATED FUTURE DEMAND FOR ACUTE INPATIENT AND AMBULATORY SERVICES BASED ON A PRIVATE SECTOR MODEL THAT INCLUDES ASSUMPTIONS INFLUENCING BOTH PATIENT ADMISSIONS AND LENGTH OF STAY.

An understanding of the transition from current patterns of service utilization to projected future demand is an essential ingredient in this planning effort. The foundation for the projection of veteran healthcare needs in 2010 is actuarial projections developed for the CARES process. VA and its actuary use the Enrollment Level Decision Analysis (ELDA)—for strategic planning purposes. The CARES projections include enhancements to the ELDA. These include projections of the future enrolled

population and the resulting demand for acute inpatient and ambulatory services. Inherent in these projections are assumptions of a continued shift toward tighter management of inpatient episodes of care. That is, the actuary has built into the demand model the notion that with increased management of patient conditions (adjusted for morbidity), fewer patients will need to be hospitalized, and those that are hospitalized will spend less time in the acute care setting.

The increased management of patient conditions built into the VA actuary model compounds existing trends in increased utilization of ambulatory care services. These projections include an increase in the utilization rate per 1000 enrollees and a shift within the patient mix. For example, veterans who fall within Priority Level 7 are expected to increase their use of ambulatory and ancillary services in conjunction with higher use of pharmacy services.

The estimates for future demand are based on the enrolled population. Rather than using an actual count of unique patients currently using facilities within the VISN, the actuarial model uses the projected future enrollment as the basis for predicting service utilization and demand. This allows the actuary to better equate the demand model to the private sector (i.e., benchmarks of service utilization for patients enrolled in managed care plans) and provides a broader base from which to plan future service needs.

VA provides a continuum of services to its enrollees, from primary care through long-term care. While many of these services have been modeled by the actuarial firm, some have not. For example, VA provides extensive domiciliary care for many veterans who are in transition or require some type of residential rehabilitation program. These services are somewhat unique to the VA and do not necessarily correlate well to services in the private sector. The Booz·Allen CARES Team has expanded the demand model to include existing programs and services not modeled by the actuarial firm.

3.7 THE ACTUARY MODELED VETERAN POPULATION DEMOGRAPHICS AND ENROLLMENT PATTERNS USING ENROLLMENT PRIORITY LEVELS TO PREDICT SERVICE UTILIZATION AND DEMAND FOR 2010.

The historic utilization of VA healthcare services varies by enrollee categories. This is important for future planning because of shifts in the population within each enrollee category and in total. Currently, veterans who are in Priority Levels 1–6 have had the highest average utilization of healthcare services within the VA. Veterans in Priority Level 7, the fastest growing portion of the enrollment within the VA, typically use fewer services on average. This difference in utilization of services is a critical component in predicting future demand.

The overall change in total enrollment within VISN 12 between FY 2001 and FY 2010 is not as dramatic as the change in total veteran population. This is due to the prediction of increased enrollment, particularly for Priority Level 7 enrollees over the next 2 to 3 years. The actuary estimates total enrollment in VISN 12 to climb from 217,611 in FY 2001 to 233,828 in FY 2004, and then decline to 202,909 in FY 2010. This represents a 7 percent decline over the 10-year period.

The decline of enrollees in Priority Levels 1–6 is more dramatic than the overall change in population. The actuary has projected nearly 25,000 fewer enrollees in these priority levels (an 18 percent decrease from current levels). Projected enrollments by each priority level are reflected in Exhibits 3-11 and 3-12.

Exhibit 3-11. Projected Enrolled Population by Priority Level 2001–2010

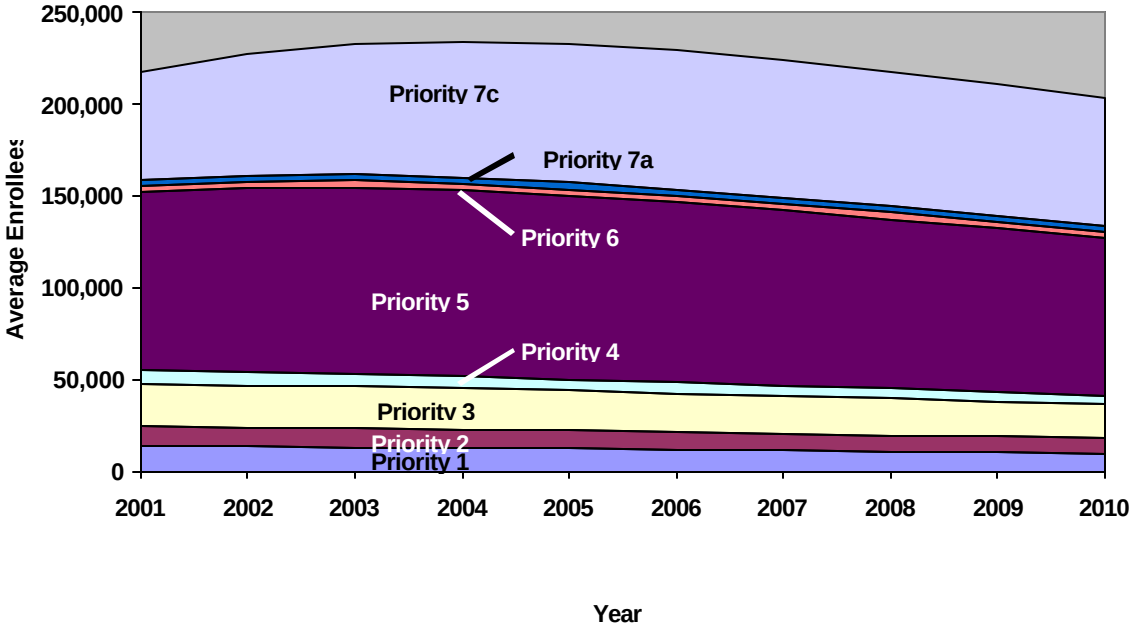
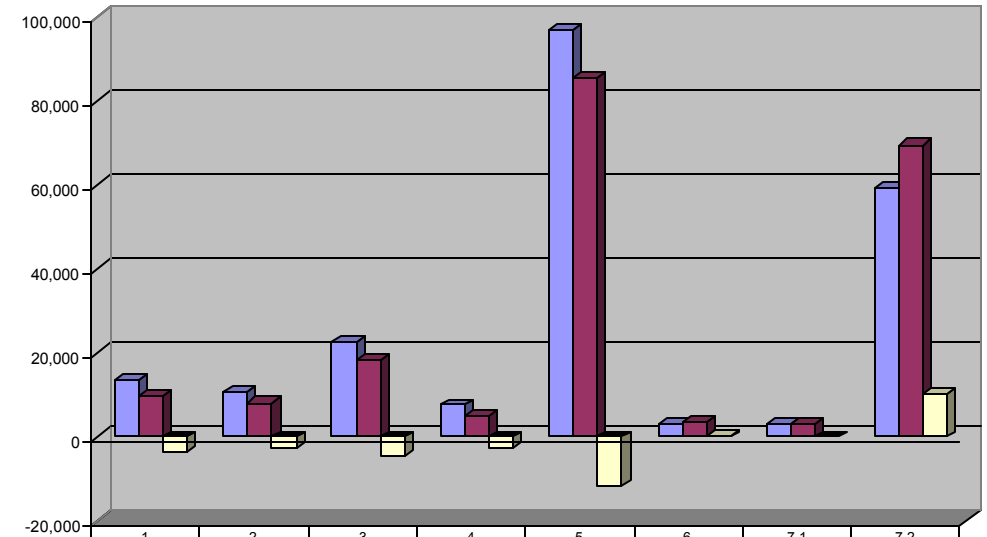


Exhibit 3-12. Projected Changes in Enrolled Population by Priority Level



	1	2	3	4	5	6	7-1	7-2
2001	13,500	10,792	22,719	7,610	97,119	3,309	3,063	59,499
2010	9,873	8,156	18,240	4,990	85,523	3,532	3,051	69,544
Difference	-3,627	-2,636	-4,479	-2,620	-11,596	223	-12	10,045

3.8 TO INCORPORATE THE DEMAND PROJECTIONS FROM THE ACTUARY, THE BOOZ·ALLEN CARES TEAM ADOPTED A CONSISTENT AND UNIFORM APPROACH TO THE MEASUREMENT OF SERVICE UTILIZATION.

The actuarial model reports demand in use rates (units of service per 1,000 enrollees) for inpatient acute care and ambulatory services. The Booz·Allen CARES Team has adopted this approach for the CARES process and has expanded the model to include VA services not modeled by the actuary. Additionally, VA has provided Booz·Allen with demand projections for nursing home and domiciliary services from their long-term care model.

There are five major categories of care used by the Booz·Allen CARES Team in reporting future demand for services. The units of measure used in forecasting future demand for these services and the source of demand projections are summarized in Exhibit 3-13. There is a significant overlap in the patients served in the Special Disability Programs, the acute and residential programs, and the ambulatory care services.

Exhibit 3-13. Service Categories and Sources of Demand Projections

SERVICE CATEGORY	UNIT(S) OF MEASURE	SOURCE OF DEMAND PROJECTIONS
Inpatient Acute Care: • Medicine • Surgery • Psychiatry • Substance Abuse	Admissions/1,000 Enrollees Patient Days (BDOC)/1,000 Enrollees	Actuarial projections based on private sector model, adapted for VA, with Booz·Allen adjustments for residential mental health services (RRPT).
RRPT: • Psychiatric RRTP • Substance Abuse RRTP	Total BDOCs	Modeled by Booz·Allen separately from acute psychiatry and substance abuse.
Long-Term/Extended Care: • Nursing Home • Domiciliary • Long-term Psychiatry	Total BDOCs	VA Long-Term Care Model for NH and Domiciliary; Long-term psychiatry modeled by Booz·Allen.
Ambulatory Care Services: • Ambulatory and Ancillary Services	CPT-level services/1,000 Enrollees	Actuarial projections translated by Booz·Allen to clinic stop volumes.
Special Disability Programs: • SCI • Blind Rehabilitation • TBI • Amputation • SMI • Substance Abuse • Homeless • PTSD/PTSD-SMI	Unique Patients (Demand projections for these programs are embedded in the inpatient, long-term/extended, and ambulatory care projections)	Projections by Booz·Allen based on Special Disability Program Registry and Special Disability Capacity Report and capacity levels required by federal legislation.

3.9 THE PILOT APPLICATION OF DEMAND FORECASTING METHODOLOGIES WITHIN VISN 12 HAS REVEALED THE NEED TO VARY THE DEMAND FORECASTING METHOD DEPENDING UPON THE CLINICAL SERVICE BEING MODELED.

The actuarial methodology for projecting future enrollment involved the modeling of actual enrollment, enrollment trends, marketing and outreach assumptions, and total veteran population data. The actuary projected new enrollees using trend data and applied mortality rates to these enrollment projections. Nevertheless, accurately predicting future enrollment will always present a challenge because of the number of variables (e.g., changes in the economy, employment levels) that might cause an eligible veteran to participate and thereby seek services in the VA healthcare system.

Furthermore, the methodology used in this pilot CARES process for projecting inpatient related demand has focused on acute care services that compare to private sector experience, adjusted for the VA patient demographics and case mix. This provides a solid foundation for equating the acute inpatient requirements to the enrolled population. However, there is no good comparison now available for the extended and other non-acute services. Many of the long-term care, residential rehabilitation, and special disability programs do not correlate well with private sector experience. For nursing home and domiciliary care demand, the VA has developed a long-term care model.

The Booz·Allen CARES Team has developed aggregate demand projections for long-term and residential programs not modeled by the actuary. The method employed for these projections uses the enrollment projections and an understanding of current use rates as a foundation for future demand estimates. Again, this method incorporates predicted changes in the population and, to the extent possible, mirrors the potential changes in utilization patterns projected by the actuary for overall inpatient demand. Appendix G contains a complete description of the methods used to project future inpatient demand for VA services.

The ambulatory care projections developed by the actuary are based on private sector experience stated in encounters per enrollee. The unit of measure is the Current Procedural Terminology (CPT) code for each encounter. The VA system of care uses clinic stops as a measure of encounter (and further refines the clinic stop encounters to represent actual patient visits). The major difference between the actuarial process and the actual counting of VA workload is in how encounters are categorized. For example, the actuary uses a broad category of home/office visits, which represent visits in most medical and surgical subspecialties. This category of care also includes the demand for primary care and other services. For the CARES process, a more refined understanding is necessary to equate patient visits with capital and facility requirements. To this end, the Booz·Allen CARES Team developed a methodology to translate the projected CPT-level demand into forecasted demand at the clinic stop level. Appendix G contains the description of the ambulatory translation methodology.

3.10 THE PROJECTIONS OF FUTURE DEMAND IN VISN 12 SUGGEST A DECLINE IN INPATIENT ACUTE CARE DEMAND AND INCREASES IN EXTENDED AND LONG-TERM CARE AND IN AMBULATORY CARE DEMAND.

The results of the demand modeling show potential decreases in the demand for inpatient acute care services. These forecasts are consistent with the expected decline in enrolled population for veterans in Priority Levels 1–6 and the expected increase in the degree of healthcare management observed within the VA. Conversely, the projected increase in demand for extended care and ambulatory services is consistent with the shift in veteran population served (e.g., more Priority Level 7 veterans) and the general shift to outpatient services. It should be noted, however, that projections for FY 2001 are, in some cases such as ambulatory care services, significantly higher than the FY 2000 actual utilization experience in VISN 12. These differences are likely due to imbalances between the demand and current supply for certain specialists. Projections for each of the major care categories are summarized in Exhibit 3-14 and are described in more detail below.

Exhibit 3-14. Projected Demand for Healthcare Service in VISN 12—2001 to 2010

SERVICE CATEGORY	PROJECTED DEMAND	2010 PROJECTED DEMAND	% CHANGE
Inpatient Acute Care:	*(BDOCs)*	*(BDOCs)*	
• Medicine	143,009	107,430	-24.9%
• Surgery	68,159	52,952	-22.3%
• Psychiatry & SA(1)	57,802	46,241	-20.0%
TOTAL	**268,970**	**206,623**	**-23.2%**
Residential Rehabilitation:	*(BDOCs)*	*(BDOCs)*	
• Psychiatric & Substance Abuse Residential Rehabilitation (1)	54,951	48,567	-11.6%
Long-Term/Extended Care:	*(FY 2000 BDOCs)**	*(BDOCs)*	
• Nursing Home	217,200	252,288	+16.2%
• Domiciliary	169,093	201,115	+18.9%
• Long-Term Psychiatry(2)	48,745	37,826	-22.4%
TOTAL	**435,038**	**491,229**	**+12.9%**
Ambulatory Care Services:	*(Clinic Stops)*	*(Clinic Stops)*	
• Ambulatory & Ancillary Services (3)	**3.511 M**	**3.416 M**	**-2.7%**
(The following inpatient programs are included in the projections above)			

SERVICE CATEGORY	PROJECTED DEMAND	2010 PROJECTED DEMAND	% CHANGE
Special Disability Programs: (4)	*(FY99/00 Actual BDOCs)*	*(BDOCs)*	
• SCI/SCD	32,250	33,047	+2.5%
• Blind Rehabilitation	8,907	9,316	+4.6%
• TBI	775	722	-6.8%
• Amputation	6,035	7,586	+25.7%
• Homeless	15,480	18,287	+15.4%
• SMI/PTSD/Substance Abuse	**113,700**	**87,458**	**-23.1%**

** VA LTC projections are based on a baseline year of FY 2000. The VA actuary uses FY 2001 as a baseline year.*

(1) Actuarial projections for Psychiatry and Substance Abuse include a portion of Residential Rehabilitation; Booz·Allen modeled Residential Rehab demand separately using different assumptions of changes in use rates, resulting in a projection of 94,808 total psychiatry and substance abuse BDOCs *in FY 2000 (See Methodology Section).*

(2) Long-term psychiatry services have been adjusted to reconcile with VISN 12 bed section level detail (FY 2000 G&L sheets) and have been forecasted using the same assumptions used by the actuary for acute mental health services.

(3) Ambulatory and Ancillary services, excluding dental, pharmacy, durable medical equipment, and ambulance services. Also excludes Maternity—Non-Delivery (FY 2000 actual utilization was 3.034M, representing a 12.6 percent increase between FY 2001and FY 2010).

(4) 1999 VA SCI Data; all other programs—FY 2000.

3.10.1 Inpatient Acute Care Services

Decreases in BDOCs in both acute medicine and acute surgery are reflective of the projected decrease in enrollees as well as the expected decrease in utilization rates (admissions per 1,000 enrollees) and length of stay. The actuarial projections include the following assumptions about use rates:

Exhibit 3-15. Admissions, Length of Stay, and Patient Day Use Rates per 1,000 Enrollees—Medicine and Surgery

ACUTE SERVICE	2001 USE RATES	2010 USE RATES	% CHANGE
Admissions/1,000			
• Medicine	110.9	95.1	-14.3%
• Surgery	29.0	26.0	-10.4%
Average Length of Stay			
• Medicine	5.92	5.56	-6.1%
• Surgery	10.80	10.04	-7.0%
BDOCs			
• Medicine	657.2	529.5	-19.4%
• Surgery	313.2	261.0	-16.7%

The use rate changes shown in Exhibit 3-15 reflect changes in the degree of healthcare management for medical and surgical inpatients and demographic shifts in the enrolled population, specifically enrollees in Priority Levels 1–6. The actuary has estimated the degree of management observed within the VA healthcare system relative to the loosely managed level observed in the local

community, based on patient diagnosis and workload statistics. Age, gender, morbidity, and mortality factors have been applied to the enrolled population, along with consideration of veteran enrollee reliance on VA for their services.

Inpatient psychiatric and substance abuse services present a slightly different challenge when using the actuarial model. The private sector experience within the mental health services may not mirror the experience of VA, particularly with regard to the SMI patients cared for by the VA. Therefore the assumption of moving toward a higher degree of healthcare management (especially lower lengths of stay) may not be applicable. Additionally, the use rates for admissions per 1,000 enrollees may remain constant for the VA enrolled population. The Booz·Allen CARES Team requested a refinement to both the inpatient and ambulatory mental health service projections to remove the assumption of increased degree of healthcare management. Specifically, we requested the following adjustments to the actuarial model:

- Inpatient mental health—move halfway between current healthcare management and actuarially-defined "loosely managed care" (i.e., reduce the modeled degree of management by 50 percent)
- Outpatient—no adjustment to current healthcare management; increase reliance for Priority Level 1–6 to 85 percent (from 77 percent) and keep Priority Level 7 reliance the same as other inpatient services.

The results of these refinements to the actuarial model are reflected in Exhibit 3-13 and are detailed in Exhibit 3-16.

Exhibit 3-16. Admissions, Length of Stay, and Patient Day Use Rates per 1000 Enrollees—Psychiatry and Substance Abuse

ACUTE SERVICE	2001 USE RATES	2010 USE RATES	% CHANGE
Admissions/1,000			
• Psychiatry	24.3	21.7	-10.7%
• Substance Abuse	19.8	16.5	-16.7%
Average Length of Stay			
• Psychiatry	13.5	13.0	-3.7%
• Substance Abuse	9.6	9.1	-5.2%
BDOCs			
• Psychiatry	329.1	281.6	-14.4%
• Substance Abuse	189.0	149.3	-21.0%

It should be noted, however, that VA has established a variety of inpatient and residential rehabilitation settings to care for psychiatric and substance abuse patients. For the purpose of the CARES process, the Booz·Allen CARES Team has further refined the projections of demand for inpatient mental health services by forecasting long-term psychiatric services and by segregating a portion of both the psychiatric and substance abuse workload (BDOC) into acute and residential rehabilitation programs. This is consistent with the current use of VA's Residential Rehabilitation Treatment Programs (P/SARRTP). These refinements are reflected in Exhibit 3-17.

Exhibit 3-17. Breakout of FY2010 Acute versus Residential Rehabilitation Mental Health Demand

Actuarial Projections for FY 2010 Inpatient Psychiatric and Substance Abuse BDOCs	87,458
Adjustment/Redistribution of Acute Bed Days to P/SARRTP settings *(Represents a portion of residential rehabilitation*)*	-41,217
BDOCs remaining in acute mental health inpatient settings	46,241

* *the methodology used for RRTP for VISN 12 includes consideration of an additional 7,350 BDOCs in RRTP, bringing the projected total RRTP days to 48,567. Booz·Allen used the actuary's aging and mortality model results on this largely special disability patient population. See Methodology Statement for more detail.*

The total BDOC remains the same as the actuarial projection; however, it is divided between inpatient acute care and residential rehabilitation.

3.10.2 Long-Term/Extended Care Services

Long-term care services include nursing home care, domiciliary, and long-term psychiatry services. Projections for future demand for nursing home and domiciliary care have come from VA's Long-Term Care Model. The Booz·Allen CARES Team projected the long-term psychiatry demand using the actuarial model for psychiatry as the basis for future projections.

One of the challenges in identifying categories of extended care services stems from the current variations in classification of patient types. For example, some facilities may have a mixture of psychiatric or substance abuse RRTPs housed in domiciliary sections. For planning purposes, the Booz·Allen CARES Team has used the guidelines shown in Exhibit 3-18 for determining patient types in the extended care arena.

Exhibit 3-18. Long-Term/Extended Care Service Categories Based on Average Length of Stay

AVERAGE LENGTH OF STAY/DIAGNOSIS	PROGRAM OR SERVICE
Under 30 days/all diagnoses	Acute Inpatient Services
30 to 90 days, with RRTP designation	Residential Rehabilitation Programs
Over 90 days, with Sustain Treatment and Rehabilitation (STAR) designation	Long-Term Psychiatry
30 to 365 days, with Domiciliary designation	Domiciliary Care
Over 90 days	Nursing Home Care

3.10.3 Ambulatory Care Services

Projections of future demand for ambulatory care services are based primarily on private sector experience, adjusted for the VA. The actuarial model uses the occurrence of CPT codes from claims records to measure ambulatory services. This approach allows for a comprehensive measurement of

service utilization, regardless of the actual setting where care is provided. The benefit of this approach is that it does not limit the projections of ambulatory services to a single definition of a "patient visit," which might vary from one healthcare system to the next. On the other hand, this approach does not easily fit with the VA practice of counting clinic stops as a measurement of ambulatory activity.

The actuary uses 25 categories of ambulatory clinical services common in the private sector (see Appendix G). In some cases, the CPT codes that fall within these categories correlate well with the VA clinic stops. In other cases, they do not. The Booz·Allen CARES Team has developed (and reviewed with the actuary) an approach to translating the actuary's projected demand into clinic stop activity. This approach is detailed in Appendix G. The primary purpose of this "translation" has been to relate the clinic stop activity within the VA to space and functional requirements.

As shown in Exhibit 3-19, the actual (FY 2000) utilization of ambulatory care services within VISN 12 was significantly lower than the projected number of encounters for FY 2001 and FY 2010. These differences may be due to limitations in the supply of certain subspecialties (e.g., surgical subspecialties). Some of the difference may also be explained by variations in coding methodologies between the VA and the private sector model used by the actuary or by the translation of the actuary's model to clinic stops. The results of this translation to projected future ambulatory encounters are contained in Exhibit 3-19.

Exhibit 3-19. Ambulatory Care Projections: Aggregated Clinic Stops

	FY 2000 ACTUAL	FY 2001 PROJECTED	FY 2010 PROJECTED
Ambulatory Encounters[1]	1,805,280	2,119,376	1,939,084
Ancillary Encounters[2]	1,229,518	1,391,707	1,477,257
TOTAL	**3,034,798**	**3,511,083**	**3,416,341**

(1) Ambulatory encounters include all primary and specialty care clinics, except dental.

(2) Ancillary encounters include laboratory/pathology, radiology, etc., but exclude pharmacy, PDN/home care, prosthetics, durable medical equipment, and ambulance services.

3.10.4 Dental Services

As dental demand was not predicted by the actuarial model, the Booz·Allen CARES Team developed a demand projection methodology in collaboration with representatives from the VA. This projection assumed VA national norms for patients per enrollee and CTV per patient. With these assumptions and M&R FY 2010 projected VISN 12 enrollees, we projected demand for dental CTVs using the following equation:

National Average for Patients per Enrollee		M&R FY 2010 Enrollees		National Average for CTV Per Enrollee		FY 2010 Demand for Dental Services
7.8%	**X**	**202,909**	**X**	**36**	**=**	**569,768 CTVs**

The Booz·Allen CARES Team also projected FY 2010 demand for dental chairs for the VISN. This involved making a projection of expected providers and hygienists and multiplying the result by VA's dental-chairs-per-provider-and-hygienists full-time equivalent (FTE) benchmarks. This analysis predicted a need for 94 dental chairs in VISN 12 in FY 2010.

PROVIDERS	Projected CTVs in FY 2010		CTVS per Provider		Expected Providers		Chairs per Provider FTE		Chairs Required (Rounded)
	569,768	÷	**13,500**	=	**42.2**	X	**2**	=	**85**
HYGIENISTS	Clinics in the VISN		Hygienists per Clinic		Expected Hygienists		Chairs per Hygienist FTE		
	9	X	**1**	=	**9**	X	**1**	=	**9**
							TOTAL		**94**

These calculations assume that, by FY 2010, the VISN 12 dental service will increase its patients per enrollee from the current 6.24 percent to the national norm of 7.8 percent. They also assume that VISN 12 providers will deliver more care per patient a decade from now, raising the FY 2000 average CTV per patient from 28.8 to the national norm of 36. This model further assumes that provider productivity will increase from 10,851 CTVs per provider in FY 2000 to 13,500 CTVs per provider in FY 2010. The results of these factors suggest a need for an increase in dental provider FTEs from 36.5 in FY 2000 to 42.2 in FY 2010.

3.10.5 Special Disability Programs and Services

Special disability program projections contain both inpatient and ambulatory components of care. These programs generally have capacity levels that have been mandated by legislative action. In some cases, these legislated capacity levels are measured in bed capacity (e.g., SCI/SCD, blind rehabilitation), and in other cases, the capacity requirements are based on the number of unique users or the highest workload generated by these patients within the past 5 years. For planning purposes, the Booz·Allen CARES Team selected the highest capacity levels reached (measured by total number of patients treated in a given year) between FY 1996 and FY 2000. This allows ample room for maintaining the legislated capacity within the VISN.

Exhibit 3-20 highlights the legislated and planned capacity for each of the Special Disability Programs (SDP). The inpatient and ambulatory workload expected to be generated by patients in these SDPs is embedded in the total projections for BDOCs and ambulatory procedures summarized in Exhibit 3-14.

Exhibit 3-20. Special Disability Programs: Legislated Capacity Levels—Unique Patients

PROGRAM	BEDS	1996 BASELINE	PLANNED
Spinal Cord Injury	126	776	795
Blind Rehabilitation	30	392	661
TBI	-	8	21
Amputation	-	280	280
SMI	-	14,763	14,763
Substance Abuse	-	6,935	6,935
Homeless	-	1,216	1,776
PTSD	-	1,661	1,671
PTSD (SMI Only)	-	1,381	1,571

3.11 THE PROJECTIONS OF FUTURE DEMAND FOR EACH MARKET ARE BASED ON THE ESTIMATED SIZE AND DEMOGRAPHICS OF THE POPULATION IN EACH MARKET.

Through geographic modeling of the Demand Projections, we analyzed the impact on veterans of providing healthcare services at different locations. We characterized the density of veterans to define three distinct markets for healthcare services within VISN 12.

Using the same approach of modeling demand based on the size and characteristics of the projected enrolled population, the Booz·Allen CARES Team has assigned workload by the three markets and 13 submarkets described in Chapter 4. This market-based approach is consistent with the requirement that the CARES process be driven by demand rather than supply of services. This is also an essential step in crafting SDOs to meet local veteran requirements for healthcare services.

The results of the market demand analysis are shown by market and submarket in Exhibit 3-21. For display purposes, this information has been condensed to three categories of care (acute inpatient, long-term care, and ambulatory services). Detailed projections are contained in Appendix G. A map of the various markets in also included in Chapter 4.

Exhibit 3-21. Summary of Projected Demand by Market—FY 2010

MARKET/ SUBMARKET	ENROLLED POPULATION	ACUTE INPATIENT DEMAND (BDOCS) [1]	LONG-TERM CARE DEMAND (BDOCS) [2]	AMBULATORY CARE ENCOUNTERS (CLINIC STOPS)
Southern				
Chicago City	43,105	80,063	145,346	725,751
Chicago Suburban	59,925	82,601	155,552	1,008,946
Suburban Collar Zone	5,630	5,289	11,353	94,792
Central				
Milwaukee	33,544	37,161	82,889	564,774

MARKET/ SUBMARKET	ENROLLED POPULATION	ACUTE INPATIENT DEMAND (BDOCS) (1)	LONG-TERM CARE DEMAND (BDOCS) (2)	AMBULATORY CARE ENCOUNTERS (CLINIC STOPS)
Madison	17,914	16,414	41,523	301,615
Green Bay	11,370	7,414	20,038	191,435
La Crosse	7,938	5,867	15,006	133,651
Wisconsin Rapids	3,370	2,710	6,986	56,740
Madison West Zone	2,469	1,816	5,117	41,570
Northern				
Iron Mountain	5,984	5,255	12,843	100,751
Rhinelander	3,728	3,274	8,001	62,768
Marquette	1,405	1,234	2,982	23,656
Ironwood	1,303	1,144	2,796	21,938
Sault Ste. Marie	795	699	1,707	13,385
East Central Upper Penn.	370	324	795	6,230
Hancock	924	811	1,983	15,557
Northwestern Wisconsin Zone	1,424	1,251	3,056	23,976

Note(s): (1) Includes Medicine, Surgery, Psychiatry, Substance Abuse, and RRTP

(2) Includes Nursing Home, Domiciliary, and Long-Term Psychiatry

This chapter has focused on the projections of total healthcare demand for enrollees in VISN 12. This is a population-based demand model, based on the projections of enrollees by priority level for the FY 2010. The impact of these demand projections on facility capacity will be explored in more detail in the following chapters.