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PRIMUS/NAVCARE Utilization Analysis

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**Prepared by
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for
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ACRONYMS AND ABBREVIATIONS

| | |
|----------|---|
| AFB | Air Force Base |
| AH | Army Hospital |
| AHC | Army Health Clinic |
| AMC | Army Medical Center |
| BRMCL | Navy Branch Medical Clinic |
| CHAMPUS | Civilian Health and Medical Program of the Uniformed Services |
| CONUS | Continental United States |
| CRI | CHAMPUS Reform Initiative |
| CY | Calendar Year |
| DMIS | Defense Medical Information System |
| DoD | Department of Defense |
| ENT | Ears, Nose, and Throat |
| ER | Emergency Room |
| FI | CHAMPUS Fiscal Intermediary |
| FT. | Fort |
| FY | Fiscal Year |
| MEPRS | Medical Expense and Performance Reporting System |
| MHSS | Military Health Services System |
| MTF | Medical Treatment Facility |
| NAVCARE | Navy Cares |
| NH | Naval Hospital |
| OB/GYN | Obstetrics and Gynecology |
| OCHAMPUS | Office of the Civilian Health and Medical Program of the Uniformed Services |
| PRIMUS | Primary Care for the Uniformed Services |
| RAPS | Resource Analysis and Planning System |
| SH | Air Force Strategic Hospital |
| TMC | Troop Medical Clinic |
| UIC | Unit Identification Code |
| USA | US Army |
| USAF | US Air Force |
| USAHC | US Army Health Clinic |
| USN | US Navy |

FOREWORD

This document presents a detailed analysis of the impact of PRIMUS/NAVCARE clinics on military medical treatment facility (MTF) and CHAMPUS utilization. The analysis was conducted as part of an evaluation of PRIMUS/NAVCARE clinics that is summarized in the Final Report to Congress on the PRIMUS/NAVCARE Evaluation (Lewin/ICF, March 1991). The evaluation focused upon the impact of these clinics on access to care, MTF overcrowding, and the cost of providing care, along with an assessment of some aspects of quality.

This document was authored by Ron Mitchell, Jim Lee, and Charles Roehrig of Vector Research, Incorporated (VRI). Valuable contributions were also made by Kevin Dombkowski of VRI and David Kennell and Terry Savelle of Lewin/ICF.

1.0 EXECUTIVE SUMMARY

This analysis was conducted as part of a congressionally-mandated evaluation of the PRIMUS/NAVCARE program. Under this program, the Army, Navy, and Air Force Medical Departments have positioned contractor-owned-and-operated primary care clinics in the vicinity of heavily utilized military hospitals in order to augment the hospitals' capacity to provide basic health services to eligible beneficiaries and to reduce MTF overcrowding.

1.1 PURPOSE

The purpose of the utilization analysis was to examine the impact of PRIMUS/NAVCARE clinics upon other forms of military health services system (MHSS) utilization and, if possible, to quantify this impact. The two other forms of MHSS utilization considered in the analysis were: (1) direct care received at military medical treatment facilities (MTFs); and (2) care financed under the Civilian Health and Medical Program of the Uniformed Services (CHAMPUS).

1.2 METHODOLOGY

The analysis used a longitudinal approach, in which the three components of MHSS utilization - PRIMUS/NAVCARE, MTF care, and CHAMPUS care - were examined qualitatively and quantitatively before and after the opening of PRIMUS/NAVCARE clinics.

For the period FY86 through FY88, we assembled month-by-month utilization data for individual PRIMUS/NAVCARE clinics, local MTFs, and CHAMPUS users in the surrounding area. (CHAMPUS data were provided on a quarterly basis and converted to monthly data using average monthly utilization.) Utilization was expressed in terms of visit counts and

restricted to primary care services to the extent permitted by the data. Average monthly utilization rates were then compared during the pre- and post-opening periods.

Approach to Analyzing the Impact on MTF Utilization

To determine the impact of PRIMUS/NAVCARE clinics upon MTF utilization, plots of monthly visits were produced for each individual site over a period spanning the clinic opening. Plots were examined to determine the extent to which the clinic opening was accompanied by a reduction in the normal monthly pattern of MTF visits. Reductions in MTF visits were viewed as evidence of a shifting of patients to the newly opened PRIMUS/NAVCARE clinic. For example, suppose an MTF was consistently providing 20,000 monthly visits prior to the opening of a local PRIMUS/NAVCARE clinic. Suppose further that the newly opened clinic provided 5,000 visits per month and MTF visits fell to 18,000 per month in the period immediately following the clinic opening. Then we would assume the PRIMUS/NAVCARE clinic was responsible for a reduction in MTF visits of 2,000 per month and that of the 5,000 monthly PRIMUS/NAVCARE visits, 2,000 were shifted from the local MTF.

Approach to Analyzing the Impact on CHAMPUS Utilization

The approach to determining the impact on CHAMPUS utilization was complicated by the lack of monthly CHAMPUS data and by the rapid growth in CHAMPUS visits over the study period (the number of CHAMPUS medical visits in CONUS catchment areas more than doubled between FY86 and FY88). The lack of monthly data made it impossible to isolate the change in CHAMPUS visits that coincided precisely with the opening of the PRIMUS/NAVCARE clinic. The rapid nationwide growth in CHAMPUS visits meant that the PRIMUS/NAVCARE effect had to be analyzed in terms

of its effect on the growth rate rather than on the absolute number of CHAMPUS visits.

Quarterly CHAMPUS visit data were available for five sites and annual data had to be used for the remaining studied sites. We computed CHAMPUS growth rates for a period spanning the opening of the PRIMUS/NAVCARE clinics and compared these rates with the rates that would have been expected in the absence of the clinic opening (expected rates were based upon regional rates for catchment areas without PRIMUS/NAVCARE clinics). Deviations between the expected and observed growth rates were assumed to be the result of the PRIMUS/NAVCARE clinic opening.

Effects of Changing Populations and Other Factors

It is worth noting that we did not explicitly incorporate the effects of changing populations into the analysis of MTF or CHAMPUS utilization. For the MTF utilization analysis, there were no monthly population data available. Furthermore, because the analysis focused upon a short time period (the months immediately preceding and following the clinic opening), population changes should not be significant at most sites. For the CHAMPUS utilization analysis, population trends (and other trends such as the degree and quality of other health insurance and growth in the Partnership program) are implicitly incorporated in the regional CHAMPUS growth rates that are a key part of the methodology.

To account for seasonality, we sought to examine one full cycle of monthly data prior to the opening of a PRIMUS/NAVCARE clinic, and a full cycle after opening.

1.3 ESTIMATED IMPACT ON MTF UTILIZATION

Exhibit 1-1 presents clinic-by-clinic results of our analysis of the impact of PRIMUS/NAVCARE on MTF utilization. The first column shows average monthly PRIMUS/NAVCARE visits in the months immediately following the clinic opening. The second and third columns present MTF monthly visits before and after the clinic openings.¹ The fourth column is the change in MTF visits associated with PRIMUS/NAVCARE clinic openings (computed as column three minus column two). The last column (percentage "offset") can be viewed as the percentage of PRIMUS/NAVCARE visits that were previously provided by the MTF.

As can be seen, there is considerable variation across sites in the percentage offset. For discussion purposes, we characterized each clinic according to whether its visits appear to represent:

- an "expansion" of previously existing direct care visits (less than 25% offset);
- a "substitution" of PRIMUS/NAVCARE visits for previously existing direct care visits (more than 75% offset); or
- a "mixed" response (between 25% and 75% offset).

The bar chart at the base of the exhibit summarizes the results. It shows that most clinics result in a net increase in direct care visits (defined here as PRIMUS/NAVCARE plus MTF visits) with only three cases falling into the "substitution" category in which most PRIMUS/NAVCARE visits are offset by a corresponding reduction in MTF visits.

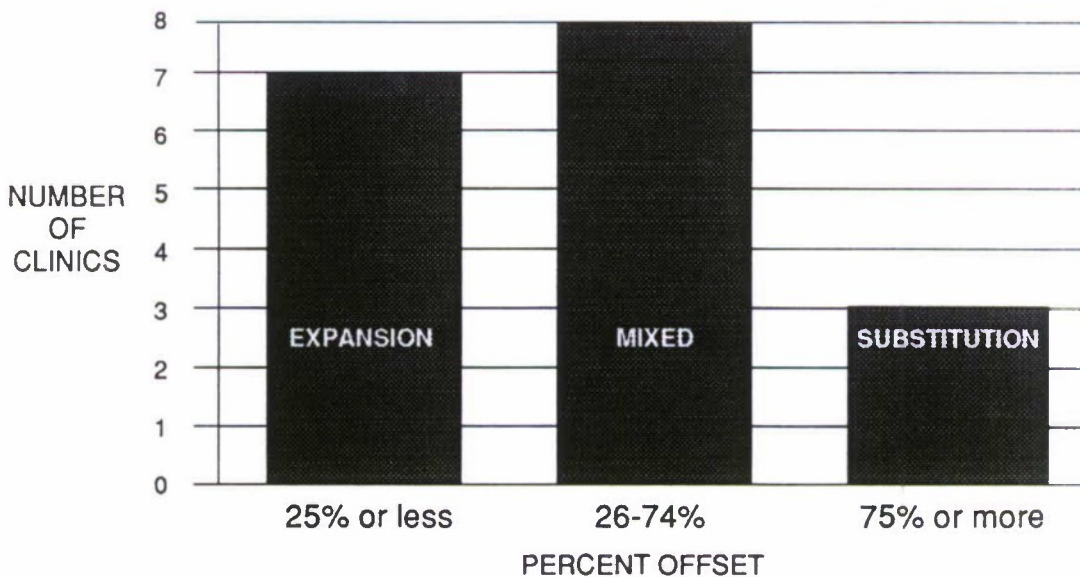
Note that these data do not reveal the motivating factors underlying the direct care utilization response. For example, in the case of substitution, the data do not permit a determination of whether PRIMUS/NAVCARE patients were drawn from the MTF or diverted from the MTF by a

¹See Appendix E for graphical data displays for each site. The data in Exhibit 1-1 are based upon analysis of these displays.

EXHIBIT 1-1: PRIMUS/NAVCARE VISITS ARE OFFSET TO SOME DEGREE BY DECLINE IN MTF VISITS

| CLINIC | PRIMUS/NAVCARE VISITS | MTF VISITS BEFORE | MTF VISITS AFTER | MTF VISITS DIFFERENCE | % OFFSET | |
|-----------------------------|-----------------------|-------------------|------------------|-----------------------|------------|--------------|
| Norfolk | 5,000 | 61,800 | 50,400 | (11,400) | 228% | |
| Columbus | 4,500 | 21,900 | 17,500 | (4,400) | 98% | Substitution |
| South Bay | 5,500 | 27,500 | 22,500 | (5,000) | 91% | |
| Jacksonville (Camp Lejeune) | 4,300 | 25,500 | 22,400 | (3,100) | 72% | |
| Charleston | 5,100 | 27,600 | 24,100 | (3,500) | 69% | |
| Monterey/Salinas * | 7,200 | 17,600 | 13,100 | (4,500) | 63% | |
| Omaha | 4,400 | 15,500 | 12,800 | (2,700) | 61% | Mixed |
| Fayetteville | 6,500 | 32,600 | 29,400 | (3,200) | 49% | |
| Mayport | 3,000 | 29,500 | 28,600 | (900) | 30% | |
| Riverside | 3,200 | 15,600 | 14,700 | (900) | 28% | |
| Killeen/Copperas Cove * | 11,100 | 20,800 | 17,800 | (3,000) | 27% | |
| Savannah | 4,200 | 12,300 | 11,700 | (600) | 14% | |
| Oakland | 2,400 | 38,500 | 38,300 | (200) | 8% | |
| Oceanside (Camp Pendleton) | 4,800 | 13,800 | 13,400 | (400) | 8% | |
| Virginia Beach | 8,700 | 48,500 | 48,000 | (500) | 6% | Expansion |
| Tucson | 2,800 | 11,100 | 11,000 | (100) | 4% | |
| San Diego | 9,000 | 22,100 | 24,200 | 2,100 | (23%) | |
| Long Beach | 3,400 | 6,800 | 7,700 | 900 | (26%) | |
| TOTAL | 95,100 | 449,000 | 407,600 | (41,400) | 44% | |

Source: Derived from charts in Appendix E.

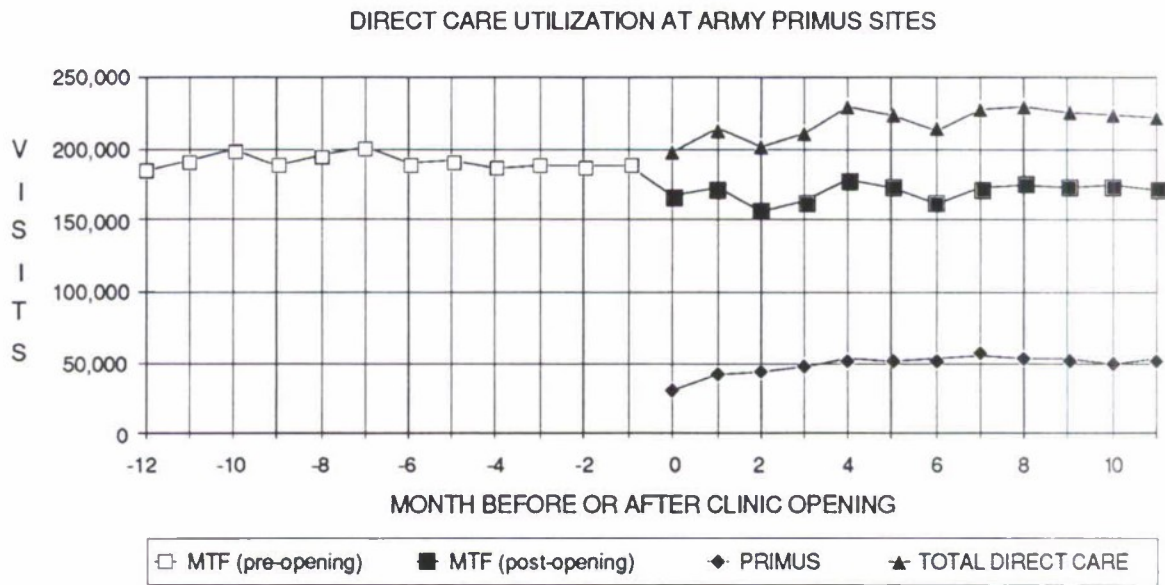


* Two pairs of clinics — Monterey/Salinas and Killeen/Copperas Cove — were treated as single sites due to the close proximity and simultaneous opening of the paired clinics.

constraint in MTF resources. As can be seen from the charts in Appendix E, Navy sites often demonstrated a pattern of declining MTF utilization just prior to the opening of a PRIMUS/NAVCARE clinic. This suggests that MTF resource restrictions – planned or unplanned – play an important role in the direct care utilization response.

Aggregating across all clinics, the exhibit shows an estimated 44% of all PRIMUS/NAVCARE visits are offset by reductions in MTF visits. Thus, overall, the introduction of PRIMUS/NAVCARE clinics results in some decline in MTF visits but an increase in total direct care visits.

This "mixed" response is illustrated below for the aggregation of Army PRIMUS sites. Similar charts for Navy and Air Force sites are provided in Exhibits 3-8 and 3-9 in Chapter 3.



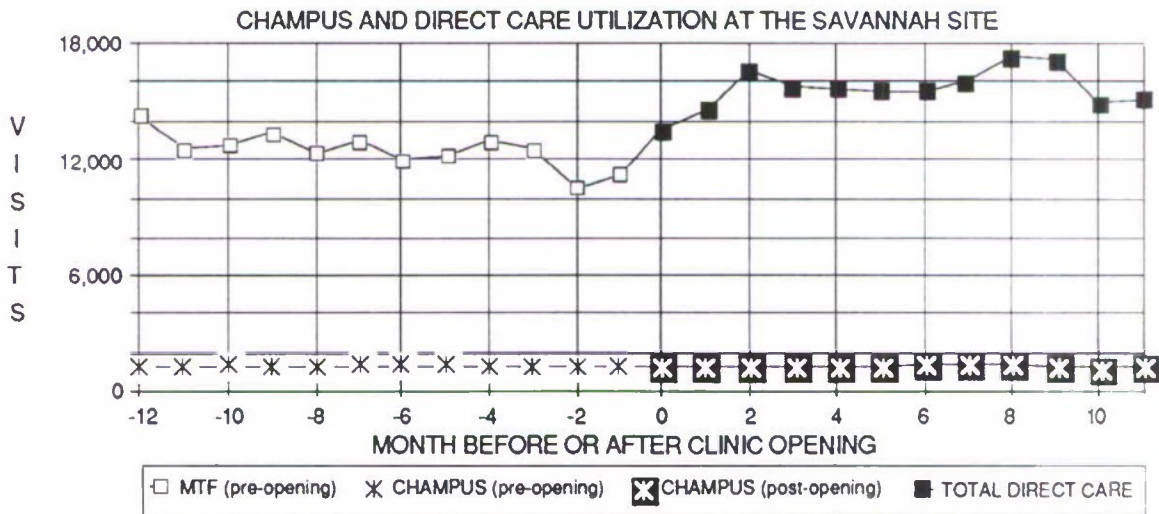
Taken together, all Army sites showed a 14% increase in total direct care visits after the opening of a PRIMUS clinic. However, this was accompanied by an 11% decline in MTF visits. Findings were similar for Navy and Air Force sites. Navy sites showed a 15% increase in total direct care visits and a 10% reduction in MTF visits. Air Force sites

showed a 16% increase in total direct care visits and an 8% reduction in MTF visits.

1.4 ESTIMATED IMPACT ON CHAMPUS UTILIZATION

The sites selected for the analysis of the impact of PRIMUS/NAVCARE on CHAMPUS utilization were limited by two factors: (1) the availability of CHAMPUS data before and after the clinic opening; and (2) the degree to which PRIMUS/NAVCARE clinics caused a net increase in direct care visits. This second factor is important because one would not expect much effect on CHAMPUS visits at sites where PRIMUS/NAVCARE visits were simply substituted for MTF visits. There were five "early-opening" sites for which quarterly "before and after" data were available, and eight "late-opening" sites where annual data were available. Analysis of the early-opening sites will be presented first.

Of the five sites for which quarterly CHAMPUS data were available, only one – the Army PRIMUS clinic at Savannah, Georgia – displayed significant expansion in total direct care visits. Data are displayed below for this site where monthly CHAMPUS visits were estimated using quarterly averages.



At this site, the opening of the PRIMUS clinic expanded direct care utilization by an average of 3,600 visits per month. Prior to the opening, CHAMPUS utilization in the Savannah catchment area stood at approximately 1,350 visits per month. In the period following the opening, average utilization rose to 1,575 visits. Correcting for the CHAMPUS growth trend brings this figure down to 1,300 CHAMPUS visits per month after opening the PRIMUS clinic. The addition of 3,600 direct care visits per month, then, netted an estimated decrease in CHAMPUS utilization of just 50 visits per month. At this single site, at least, the rate of exchange between increased direct care visits and CHAMPUS visits does not appear to be one-to-one or even close to one-to-one. In fact, if such were the case, the presence of the Savannah clinic would have absorbed all CHAMPUS demand in the area.

Our analysis of eight late-opening clinics used annual FY88 and FY89 CHAMPUS visit data (quarterly data were not available). When aggregated over the eight clinics, an increase in direct care utilization of approximately 286,000 visits between FY88 and FY89 was observed, while CHAMPUS utilization increased by roughly 95,000 visits over the same period. Initially, it appears an increase in direct care utilization did not cause a reduction in CHAMPUS utilization. As in the evaluation of early-opening clinics, an absolute decrease in CHAMPUS utilization was not observed. However, compared to regions without PRIMUS/NAVCARE clinics, areas around these late-opening clinics exhibited different growth patterns in CHAMPUS utilization. The eight clinics, referred to as the "study group", were compared to three control groups where PRIMUS/NAVCARE was not in operation.

Exhibit 1-2 compares CHAMPUS utilization levels observed within the study group to projected CHAMPUS utilization under control group growth rates. The control group growth rates considered were: growth within

EXHIBIT 1-2: COMPARISON OF PROJECTED AND ACTUAL CHAMPUS UTILIZATION GROWTH AT "LATE-OPENING" CLINICS

| CONTROL GROUP | CONTROL GROUP % CHAMPUS Growth | STUDY GROUP Actual Direct Care Growth | STUDY GROUP Actual CHAMPUS Growth | STUDY GROUP Projected CHAMPUS Growth | Estimated CHAMPUS Visits "Saved" | Ratio of Direct Care to CHAMPUS "Saved" Visits |
|--------------------|--------------------------------------|---|---|--|--|--|
| National FY88-FY89 | 23% | 286,000 | 95,000 | 152,000 | 57,000 | 5.0 |
| Regional FY88-FY89 | 22% | 286,000 | 95,000 | 145,000 | 50,000 | 5.7 |
| Local FY87-FY88 | 38% | 286,000 | 95,000 | 251,000 | 156,000 | 1.8 |

all areas in the entire nation without PRIMUS/NAVCARE (National FY88-FY89), growth within all areas in the DoD regions which include the study group (Regional FY88-FY89), and growth within the areas surrounding the eight clinics of interest during the previous fiscal year (Local FY87-FY88).

As shown in the exhibit, the regional and national control group CHAMPUS growth rates are similar (just over 20%) while the local previous year's growth rate is significantly larger (almost 40%). The actual increase in CHAMPUS visits at these eight sites was 95,000 or 14%. Thus, regardless of the control group rates used, one would conclude that PRIMUS/NAVCARE clinics did reduce the CHAMPUS visit growth rate.

The greatest reduction is observed with the comparison to the previous year's local growth rate of 38%. In this case, it would appear that PRIMUS/NAVCARE reduced CHAMPUS utilization by 156,000 visits which amounts to about one CHAMPUS visit saved for each two additional direct care visits. Note that this result appears to be inconsistent with the analysis of the Savannah PRIMUS clinic presented earlier. At that site, there was an increase of about 3,600 monthly direct care visits and there were only about 1,350 CHAMPUS visits prior to the clinic opening. If one CHAMPUS visit was saved for each two additional direct care visits, the PRIMUS clinic would have eliminated all CHAMPUS visits in the area. Instead, CHAMPUS visits grew to roughly 1,575 per month.

The smallest reduction comes when comparing to the regional growth rate of 22%. Here, the reduction in CHAMPUS visits computes to 50,000 or one CHAMPUS visit saved for every six additional direct care visits. This result is more consistent with the Savannah analysis.

1.5 CONCLUSIONS

Regarding two important PRIMUS/NAVCARE program objectives, the following conclusions can be drawn:

- there is direct evidence that PRIMUS/NAVCARE has increased access to primary care; and
- there is indirect evidence that PRIMUS/NAVCARE has reduced MTF overcrowding.

The former is indicated at those sites where utilization expanded following the opening of a clinic. The latter is suggested at those sites where direct care substitution occurred, i.e., utilization was drawn or diverted from the MTF to PRIMUS/NAVCARE.

The impact of PRIMUS/NAVCARE clinics on CHAMPUS visits is difficult to quantify. However, the effect does not appear to be great. At "substitution" sites where most PRIMUS/NAVCARE visits appear to be shifted from the MTF, one would not expect much effect on CHAMPUS visits. At the one expansionary site which could be analyzed using quarterly CHAMPUS data, the increase in direct care visits was nearly three times the initial number of CHAMPUS visits and yet CHAMPUS visits continued to increase in spite of the PRIMUS clinic opening. Finally, our analysis of eight late-opening sites using annual CHAMPUS data produced estimates of one CHAMPUS visit saved for every two to six additional direct care visits.

In terms of the effect that PRIMUS/NAVCARE clinics have had on overall MHSS utilization, our analysis supports the following conclusions:

- most PRIMUS/NAVCARE clinic openings have resulted in an increase in direct care (MTF plus PRIMUS/NAVCARE) primary care visits; and
- the proportion of these increased direct care visits that were offset by reductions in CHAMPUS visits was relatively small.

Therefore, PRIMUS/NAVCARE clinics have resulted in a significant net increase in the number of MHSS primary care visits.

2.0 INTRODUCTION

This document presents an analysis of the impact of PRIMUS/NAVCARE clinics on MTF and CHAMPUS utilization. Discussion is divided into six chapters and five appendices.

The first two chapters consist of the executive summary and this introductory chapter. Chapter 3 provides information on selected characteristics of PRIMUS/NAVCARE utilization including the breakout by type of beneficiary, branch of Service, and type of visit. Chapters 4 and 5 contain the analysis of the impact of PRIMUS/NAVCARE on MTF and CHAMPUS utilization respectively. Chapter 6 summarizes the conclusions of the study.

Appendix A presents detailed information regarding the MTFs that were included in the analysis of each PRIMUS/NAVCARE site. Appendices B, C, and D provide specifics regarding the PRIMUS/NAVCARE, MTF, and CHAMPUS data employed in the analysis. Appendix E contains charts that show MTF and PRIMUS/NAVCARE workloads in the months immediately preceding and following the clinic openings at each of the 17 sites.

The remainder of this introductory chapter describes how our study sites were defined.

Defining Study Sites

As defined in this study, a "site" consists of the following components:

- all PRIMUS/NAVCARE clinics under the sponsorship of the same parent MTF;
- significant MTFs within the 40-mile radius catchment area of the parent MTF; and
- CHAMPUS beneficiaries in the parent MTF's catchment area.

Exhibit 2-1 shows the 23 PRIMUS/NAVCARE clinics operating in FY89, their opening dates, and the 17 geographic sites into which they were mapped. A complete listing of the PRIMUS/NAVCARE clinics and MTFs included within each geographic site is provided in Appendix A. For the most part, the analysis was conducted using data aggregated at the site level, although capability was retained to isolate individual MTFs or PRIMUS/NAVCARE clinics.

Sites comprising multiple PRIMUS/NAVCARE clinics were dealt with in one of three ways. In cases where the clinics opened simultaneously — i.e., Killeen/Copperas Cove and Monterey/Salinas — they were treated as a single clinic. In cases where multiple clinic openings were separated by more than 18 months — i.e., Norfolk/Virginia Beach and South Bay/San Diego — the clinics were studied independently of one another. Northern Virginia was excluded from the analysis due to the unavailability of monthly MTF utilization data prior to the opening of the three PRIMUS clinics at this site.

EXHIBIT 2-1: PRIMUS/NAVCARE SITES AND OPENING DATES

| <u>SITE</u> | <u>PRIMUS/NAVCARE CLINIC</u> | <u>OPENED (YMMM)</u> | <u>PARENT MTF</u> |
|---------------------------|------------------------------|--------------------------|---|
| Charleston | NAVCARE Charleston | 8807 | Naval Hospital (NH) Charleston |
| Columbus | PRIMUS Columbus | 8805 | Martin Army Hospital (AH) |
| Fayetteville | PRIMUS Fayetteville | 8805 | Womack AH, Fort Bragg |
| Jacksonville/Camp Lejeune | NAVCARE Jacksonville | 8612 | NH Camp Lejeune |
| Killeen/Copperas Cove | PRIMUS Killeen | 8806 | Darnall AH, Fort Hood |
| | PRIMUS Copperas Cove | 8806 | Damall AH, Fort Hood |
| Long Beach | NAVCARE Long Beach | 8807 | NH Long Beach |
| Mayport | NAVCARE Mayport | 8612 | NH Jacksonville |
| Monterey/Salinas | PRIMUS Monterey | 8806 | Hays AH, Fort Ord |
| | PRIMUS Salinas | 8806 | Hays AH, Fort Ord |
| Norfolk/Virginia Beach | NAVCARE Norfolk | 8612 | NH Portsmouth |
| | NAVCARE Virginia Beach | 8807 | NH Portsmouth |
| Northern Virginia | PRIMUS Burke | 8611 | Dewitt AH, Fort Belvoir |
| | PRIMUS Fairfax | 8510 | Dewitt AH, Fort Belvoir |
| | PRIMUS Woodbridge | 8612 | Dewitt AH, Fort Belvoir |
| Oakland | NAVCARE Oakland | 8807 | NH Oakland |
| Oceanside/Camp Pendleton | NAVCARE Oceanside | 8807 | NH Camp Pendleton |
| Omaha | PRIMUS Omaha | 8808 | Ehrling Bergquist Strategic Hospital, Offutt AFB |
| Riverside | PRIMUS Riverside | 8809 | 22d Strategic Hospital, March AFB |
| South Bay/San Diego | NAVCARE San Diego | 8807 | NH San Diego |
| | NAVCARE South Bay | 8612 | NH San Diego |
| Savannah | PRIMUS Savannah | 8701 | Winn AH, Fort Stewart |
| Tucson | PRIMUS Tucson | 8809 | 836th Medical Group, Davis-Monthan AFB |

3.0 PRIMUS/NAVCARE UTILIZATION

This chapter provides an overall description of PRIMUS/NAVCARE utilization. Following a brief discussion of the PRIMUS/NAVCARE data evaluated, general characteristics of DoD-wide PRIMUS/NAVCARE utilization are described in Section 3.2.

3.1 PRIMUS/NAVCARE UTILIZATION DATA

The military medical departments provided monthly visit counts from the date of opening through September 1989 for each of 23 PRIMUS/NAVCARE clinics (except PRIMUS Tucson where data were only available through May 1989). As noted in the previous chapter, the 23 clinics were combined into 17 sites based on geographic location. Appendix B presents a detailed discussion of the PRIMUS/NAVCARE utilization data studied. A graphical presentation of PRIMUS/NAVCARE and MTF utilization for each of the 17 sites is contained in Appendix E.

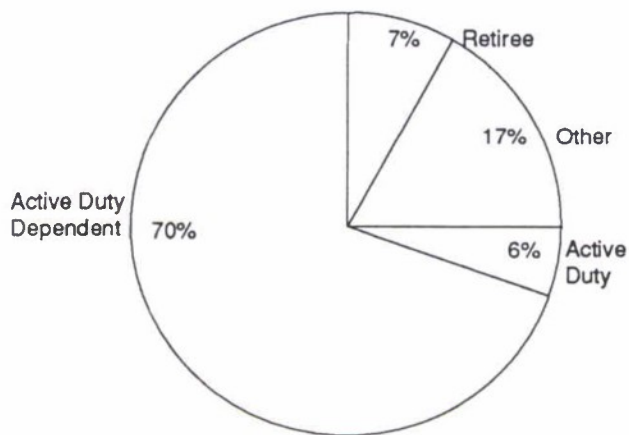
3.2 GENERAL CHARACTERISTICS OF PRIMUS/NAVCARE UTILIZATION

Exhibit 3-1 displays FY89 PRIMUS/NAVCARE services delivered by beneficiary category, sponsor service branch, parent MTF service branch, and type of service. Services include a range of contract-specified, billable health care services that is unique to each service branch or, in some cases, unique to individual sites. This range includes, in decreasing order of frequency:

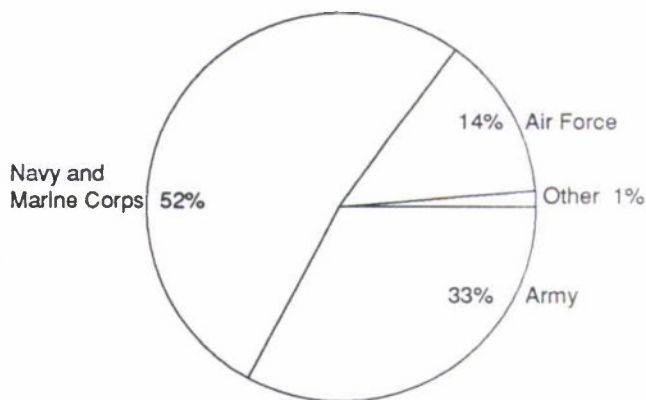
EXHIBIT 3-1: CHARACTERISTICS OF PRIMUS/NAVCARE UTILIZATION

FY89 TOTAL PRIMUS/NAVCARE SERVICES¹ = 1,644,378

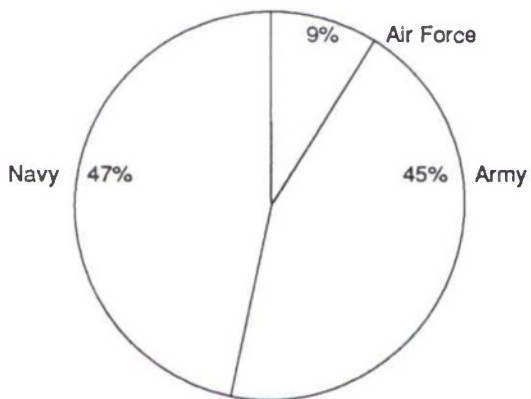
BENEFICIARY CATEGORY



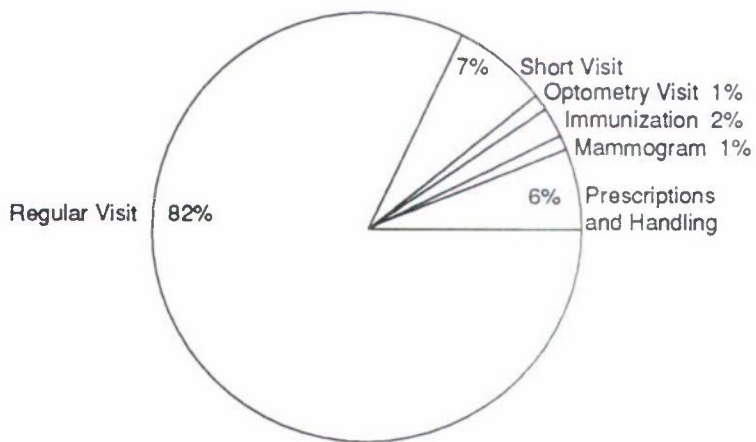
SPONSOR SERVICE BRANCH



PARENT MTF SERVICE BRANCH



TYPE OF SERVICE*



* Ambulance Transfer <0.5%

¹Services consist of visits and other contract-specified billable health care services as defined in Appendix B.

- standard office visits;¹
- abbreviated office visits;²
- prescription refills or other handling;
- immunizations;
- mammography;
- optometry visits (Army only); and
- emergency ambulance transfers.

Throughout this document, PRIMUS/NAVCARE "visits" will refer to the sum of regular and abbreviated (short) visits. (See Appendix B for further discussion.) Some points worth noting include:

- 6% of all PRIMUS/NAVCARE services are from active duty personnel – significantly smaller than the active duty share of MTF services;
- nearly 90% of all reported services are classified within regular and short visits; and
- Army and Navy sites continue to dominate PRIMUS/NAVCARE, both in terms of patients served and clinic sponsorship.

Exhibit 3-2 shows the growth in PRIMUS/NAVCARE utilization from the opening of the first clinic in October 1985 through September 1989. Since 15 of the 23 PRIMUS/NAVCARE clinics opened during the third and fourth quarters of FY88, utilization more than doubled between FY88 and FY89.

Exhibit 3-3 displays PRIMUS/NAVCARE utilization from a different perspective. Utilization data from each clinic are aligned by month relative to the date of clinic opening. The opening month of operation for a clinic is month 0, the first full month of operation is month 1,

¹In the parlance of the individual service branches, 'standard' visits are termed 'regular' by the Army; 'full' by the Navy; and 'long' by the Air Force.

²Abbreviated visits are termed 'short' or 'no charge' by the Army; 'limited' by the Navy; and 'short' by the Air Force.

EXHIBIT 3-2: PRIMUS/NAVCARE VISITS BY ACTUAL MONTH

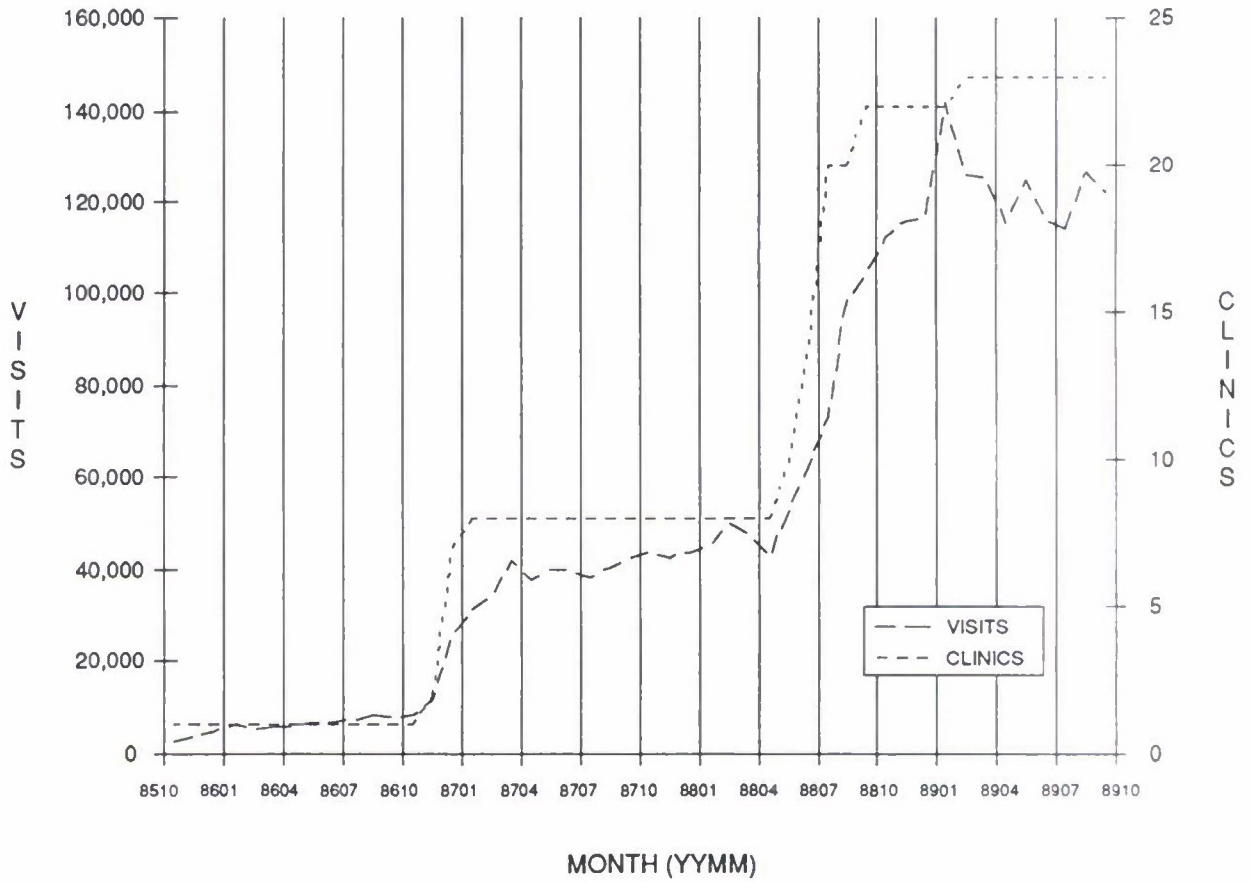
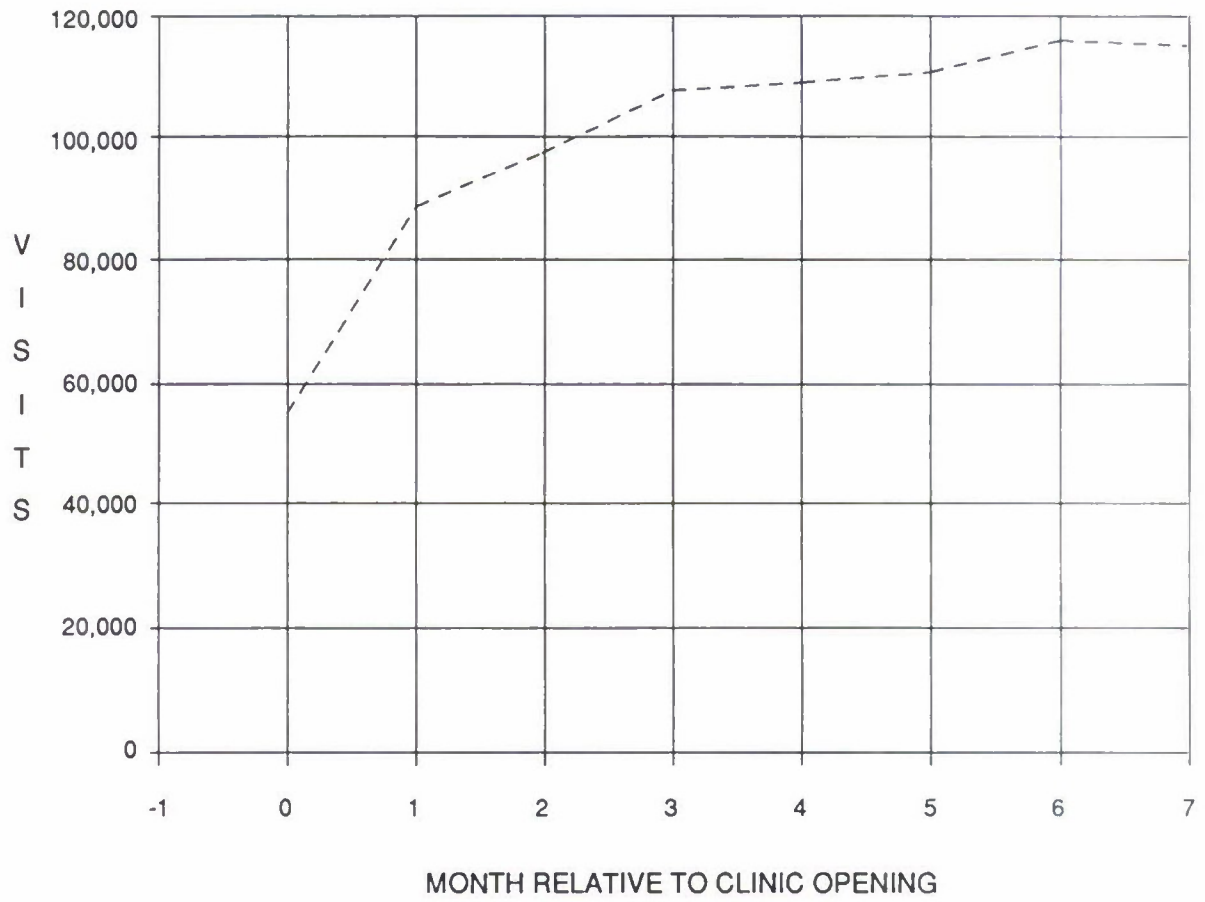


EXHIBIT 3-3: PRIMUS/NAVCARE VISITS BY MONTH RELATIVE TO CLINIC OPENING



the second full month of operation is month 2, and so on. The month immediately prior to clinic opening is month -1.

This exhibit displays the rapid growth in PRIMUS/NAVCARE utilization that occurs during the first few months of a clinic's operation before growth levels off. Note that all 23 PRIMUS/NAVCARE clinics are represented in the first 8 months of data (Months 0 through 7). This method of aligning opening dates provides a basis for measuring the overall effect of operating PRIMUS/NAVCARE clinics. It allows aggregation of MTF and CHAMPUS utilization data over a number of sites with distinct PRIMUS/NAVCARE clinic opening dates.

4.0 PRIMUS/NAVCARE IMPACT ON DIRECT CARE UTILIZATION

This chapter discusses the effect of PRIMUS/NAVCARE clinics on direct care utilization. Section 4.1 briefly describes the analysis methodology. Results of the analysis, including a discussion of the impact of PRIMUS/NAVCARE on direct care utilization at the Service level and at individual sites, is presented in Section 4.2. Results by clinical area and a discussion concerning emergency room utilization are also presented in Section 4.2. MTF and PRIMUS/NAVCARE utilization is displayed graphically in Appendix E for each of the 17 sites. There are numerous exhibits in this chapter. In order to preserve the flow of the text, exhibits 4-9 through 4-20 are located at the end of the chapter.

4.1 METHODOLOGY FOR DIRECT CARE UTILIZATION ANALYSIS

Visit counts for components of MTF care comparable to care provided at PRIMUS/NAVCARE clinics were used in this analysis. Specifically, counts from within the following clinics were included:

- Primary Care Clinic;
- Family Practice Clinic;
- Pediatrics Clinic;
- Gynecology Clinic;
- ENT Clinic; and
- Emergency Room.

These clinical areas were selected as most likely to be affected by PRIMUS/NAVCARE operation. Details concerning the MTF utilization data are discussed in Appendix C.

The MTF utilization data were evaluated at various levels of aggregation. In order to combine the data at the Service level, months relative to clinic opening were computed as discussed in Section 3.2.

Average monthly visits before and after clinic opening were computed for individual clinical areas within the MTF — e.g., pediatrics.

Three direct care utilization responses attributable to the opening of a PRIMUS/NAVCARE clinic were identified: expansion, substitution, and mixed. These responses are presented graphically in Exhibit 4-1. An expansion response is observed when utilization at local MTFs remains relatively constant after the opening of a PRIMUS/NAVCARE clinic — i.e., PRIMUS/NAVCARE utilization is not substantially offset by a decrease in MTF utilization.¹ A substitution response is observed when utilization at the MTF is reduced by an amount approximately equal to utilization at the PRIMUS/NAVCARE clinic, resulting in little or no increase in total direct care utilization.² Lastly, a mixed response is observed when MTF utilization decreases less than the added utilization at the PRIMUS/NAVCARE clinic, i.e., PRIMUS/NAVCARE utilization is only partially offset by a decrease in MTF utilization.³

The Norfolk/Virginia Beach site did exhibit a response outside these three general categories. A significant reduction in average direct care utilization was observed during the period after the opening of the Norfolk NAVCARE clinic. This decrease in MTF utilization was in excess of the visit volume attributable to the NAVCARE clinic.

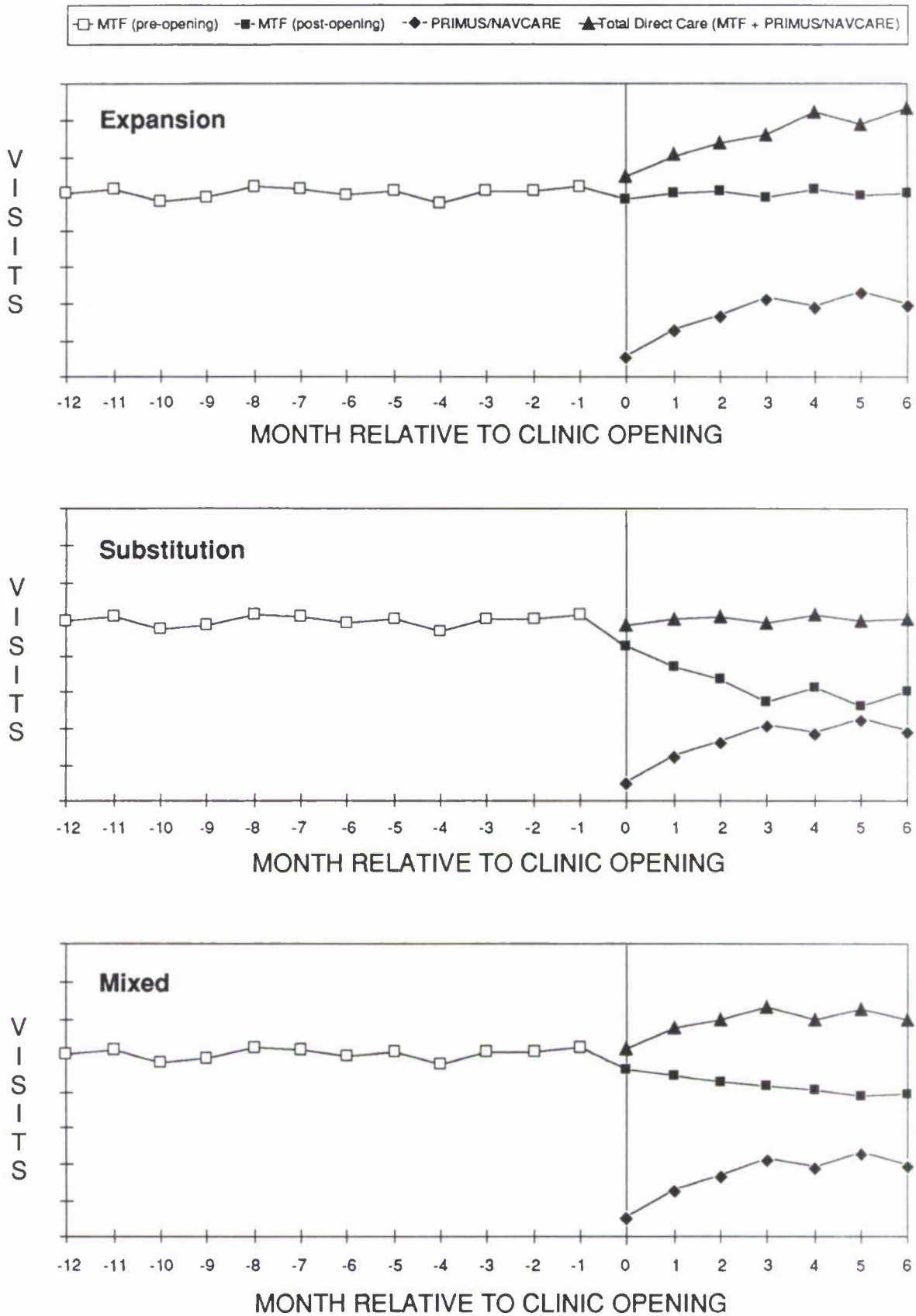
Of the 17 sites, 5 had multiple PRIMUS/NAVCARE clinic openings during the study period: Northern Virginia, South Bay/San Diego,

¹Operationally defined as when the decrease in MTF visits represents 25% or less of total PRIMUS/NAVCARE visits.

²Operationally defined as when the decrease in MTF visits represents 75% or more of total PRIMUS/NAVCARE visits.

³Operationally defined as when the decrease in MTF visits represents between 26% and 74% of total PRIMUS/NAVCARE visits.

EXHIBIT 4-1: OBSERVED DIRECT CARE RESPONSE CATEGORIES



Norfolk/Virginia Beach, Killeen/Copperas Cove, and Monterey/Salinas. Due to the lack of MTF utilization data prior to the opening of PRIMUS Fairfax in October 1985, the Northern Virginia site was excluded from subsequent direct care utilization analysis. The NAVCARE clinics at both South Bay/San Diego and Norfolk/Virginia Beach opened more than 18 months apart and were evaluated as two distinct openings within each site. The PRIMUS clinics at Killeen/Copperas Cove and Monterey/Salinas all began operation during the same month - June 1986. These two sites were evaluated as though a single PRIMUS clinic was opened at each site. The remainder of this chapter describes observed utilization responses at individual sites and at the aggregate Service level.

4.2 RESULTS OF DIRECT CARE UTILIZATION ANALYSIS

Exhibit 4-2 presents clinic-by-clinic results of our analysis of the impact of PRIMUS/NAVCARE on MTF utilization. The first column shows average monthly PRIMUS/NAVCARE visits in the months immediately following the clinic opening. The second and third columns present MTF monthly visits before and after the clinic openings.⁴ The fourth column is the change in MTF visits associated with PRIMUS/NAVCARE clinic openings (computed as column three minus column two). The last column is percentage "offset" and may be viewed as the percentage of PRIMUS/NAVCARE visits that were previously provided by the MTF.

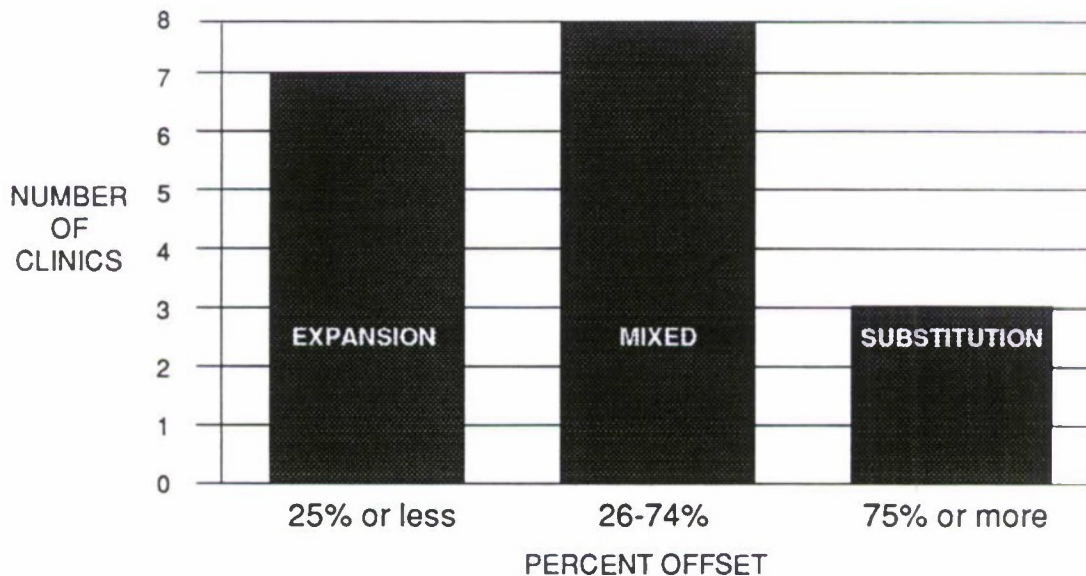
As can be seen, there is considerable variation across sites in the percentage offset. For discussion purposes, we characterized each clinic according to whether its visits appear to represent:

⁴See Appendix E for graphical data displays for each site. The data in Exhibit 4-2 are based upon analysis of these displays.

**EXHIBIT 4-2: PRIMUS/NAVCARE VISITS ARE OFFSET TO SOME DEGREE
BY DECLINE IN MTF VISITS**

| CLINIC | PRIMUS/NAVCARE VISITS | MTF VISITS BEFORE | MTF VISITS AFTER | MTF VISITS DIFFERENCE | % OFFSET | |
|-----------------------------|-----------------------|-------------------|------------------|-----------------------|------------|--------------|
| Norfolk | 5,000 | 61,800 | 50,400 | (11,400) | 228% | |
| Columbus | 4,500 | 21,900 | 17,500 | (4,400) | 98% | Substitution |
| South Bay | 5,500 | 27,500 | 22,500 | (5,000) | 91% | |
| Jacksonville (Camp Lejeune) | 4,300 | 25,500 | 22,400 | (3,100) | 72% | |
| Charleston | 5,100 | 27,600 | 24,100 | (3,500) | 69% | |
| Monterey/Salinas * | 7,200 | 17,600 | 13,100 | (4,500) | 63% | |
| Omaha | 4,400 | 15,500 | 12,800 | (2,700) | 61% | Mixed |
| Fayetteville | 6,500 | 32,600 | 29,400 | (3,200) | 49% | |
| Mayport | 3,000 | 29,500 | 28,600 | (900) | 30% | |
| Riverside | 3,200 | 15,600 | 14,700 | (900) | 28% | |
| Killeen/Copperas Cove * | 11,100 | 20,800 | 17,800 | (3,000) | 27% | |
| Savannah | 4,200 | 12,300 | 11,700 | (600) | 14% | |
| Oakland | 2,400 | 38,500 | 38,300 | (200) | 8% | |
| Oceanside (Camp Pendleton) | 4,800 | 13,800 | 13,400 | (400) | 8% | |
| Virginia Beach | 8,700 | 48,500 | 48,000 | (500) | 6% | Expansion |
| Tucson | 2,800 | 11,100 | 11,000 | (100) | 4% | |
| San Diego | 9,000 | 22,100 | 24,200 | 2,100 | (23%) | |
| Long Beach | 3,400 | 6,800 | 7,700 | 900 | (26%) | |
| TOTAL | 95,100 | 449,000 | 407,600 | (41,400) | 44% | |

Source: Derived from charts in Appendix E.



* Two pairs of clinics — Monterey/Salinas and Killeen/Copperas Cove — were treated as single sites due to the close proximity and simultaneous opening of the paired clinics.

- an "expansion" of previously existing direct care visits (less than 25% offset);
- a "substitution" of PRIMUS/NAVCARE visits for previously existing direct care visits (more than 75% offset); or
- a "mixed" response (between 25% and 75% offset).

The bar chart at the base of the exhibit summarizes the results. It shows that most clinics result in a net increase in direct care visits (defined here as PRIMUS/NAVCARE plus MTF visits) with only three cases falling into the "substitution" category in which most PRIMUS/NAVCARE visits are offset by a corresponding reduction in MTF visits.

Note that these data do not reveal the motivating factors underlying the direct care utilization response. For example, in the case of substitution, the data do not permit a determination of whether PRIMUS/NAVCARE patients were drawn from the MTF or diverted from the MTF by a constraint in MTF resources. As can be seen from the charts in Appendix E, Navy sites often demonstrated a pattern of declining MTF utilization just prior to the opening of a PRIMUS/NAVCARE clinic. This suggests that MTF resource restrictions — planned or unplanned — play an important role in the direct care utilization response.

Aggregating across all clinics, the exhibit shows an estimated 44% of all PRIMUS/NAVCARE visits are offset by reductions in MTF visits. Thus, overall, the introduction of PRIMUS/NAVCARE clinics results in some decline in MTF visits but an increase in total direct care visits.

EXAMPLES OF EXPANSION, SUBSTITUTION, AND MIXED RESPONSES

Exhibits 4-3 through 4-5 are examples of sites within each of the identified response patterns. Tucson, shown in Exhibit 4-3, demonstrates an expansion response. Essentially, none of the PRIMUS visits were offset by a decrease in MTF utilization, and therefore utilization of direct care primary care increased at this site.

EXHIBIT 4-3: EXAMPLE OF EXPANSION RESPONSE
TUCSON

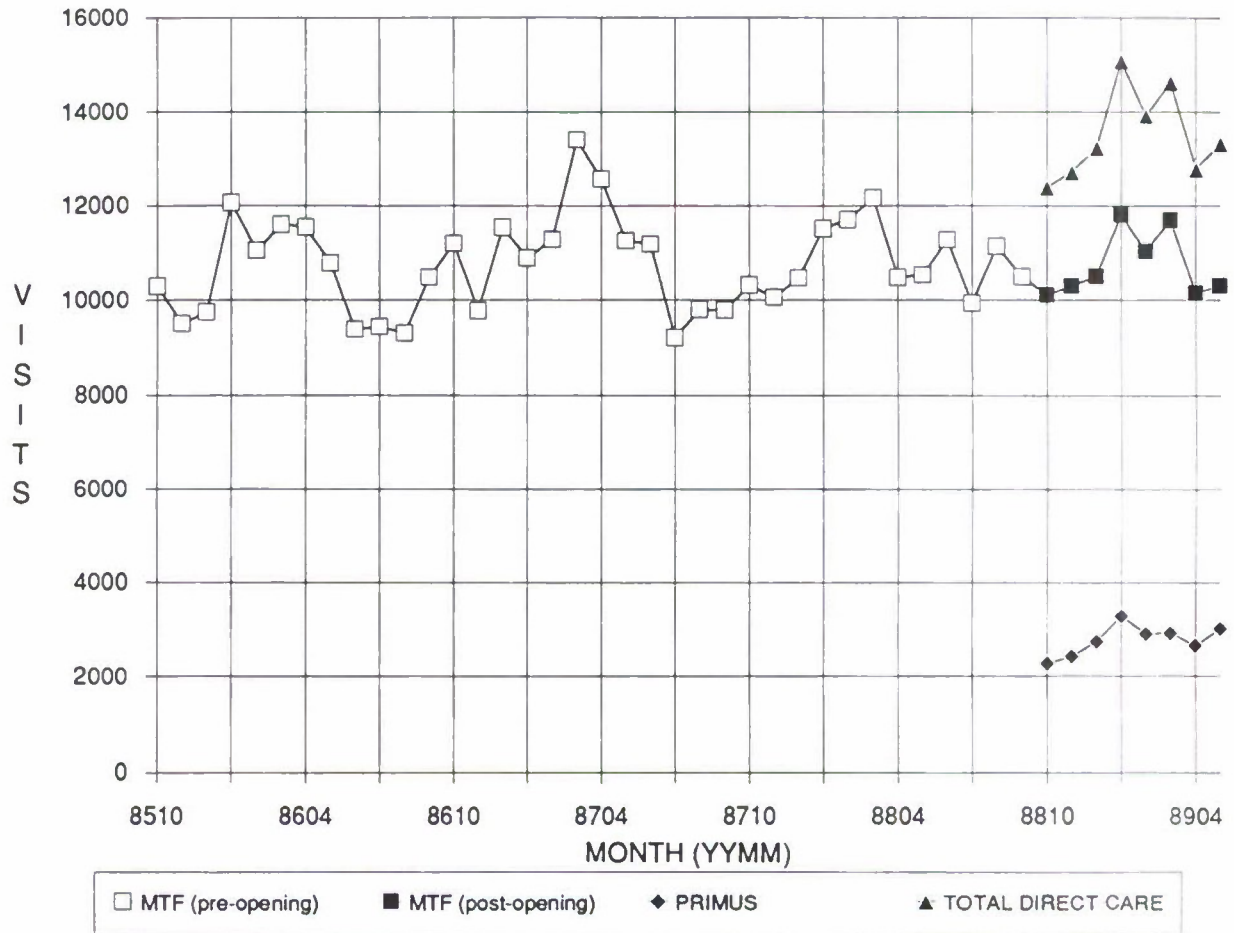
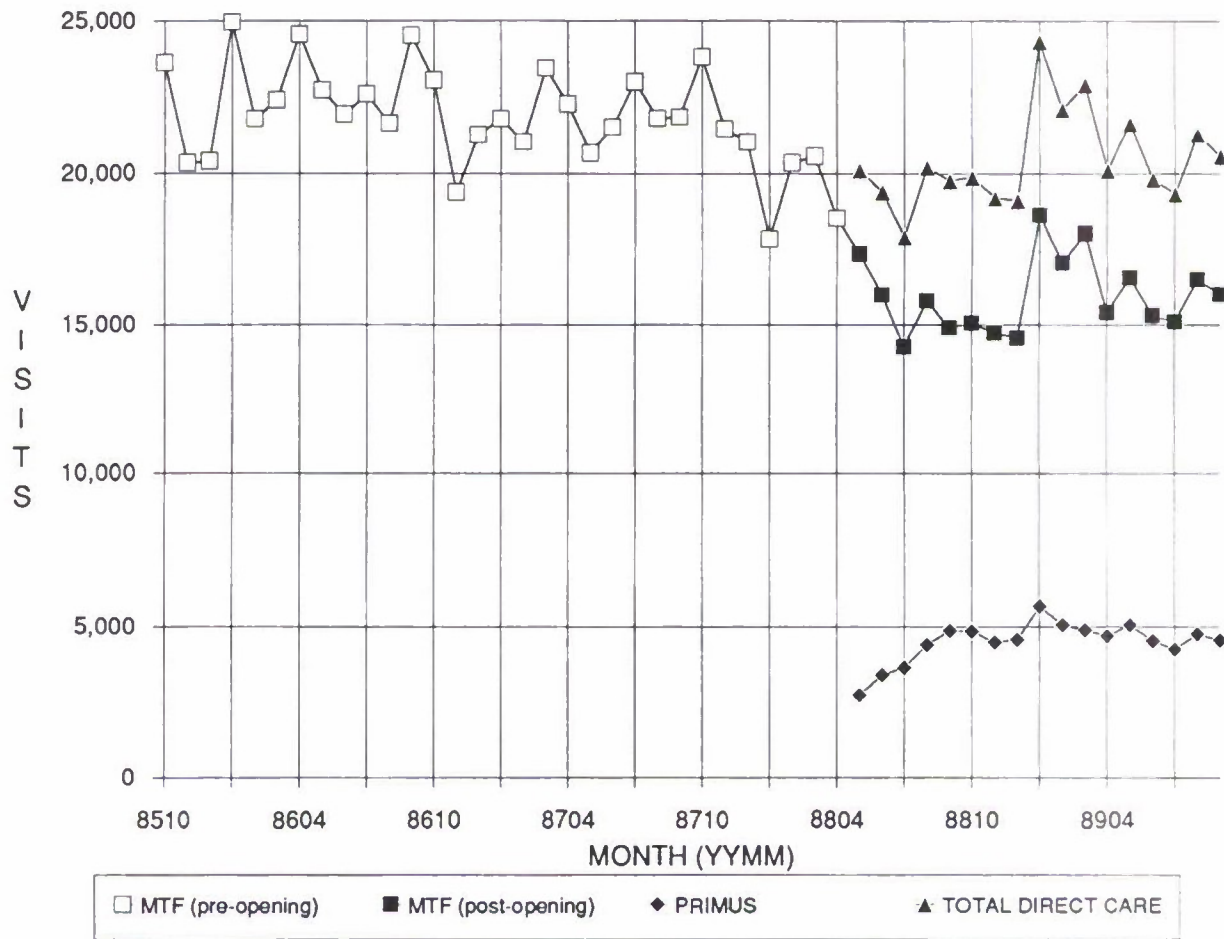


EXHIBIT 4-4: EXAMPLE OF SUBSTITUTION RESPONSE
COLUMBUS



Columbus, presented in Exhibit 4-4, is an example of a substitution response. PRIMUS utilization at this site was completely offset by a decrease in MTF utilization. It was unclear, however, whether the observed reduction in MTF utilization was due to resources being constrained at the MTF or patients being drawn from the MTF to the PRIMUS clinic.

Data for Killeen/Copperas Cove, shown in exhibit 4-5, provide an example of a mixed response. MTF utilization declined significantly but was accompanied by a noticeable increase in total direct care utilization.

PRIMUS/NAVCARE IMPACT AT THE SERVICE BRANCH LEVEL

Analysis of the effect of PRIMUS/NAVCARE clinic operation was also completed at an aggregate level for each of the service branches. Exhibit 4-6 shows PRIMUS and MTF utilization for all Army sites except Northern Virginia (PRIMUS Burke, Fairfax, and Woodbridge were excluded due to insufficient MTF data prior to clinic opening). MTF utilization was relatively stable prior to clinic opening and decreased immediately after clinic opening. However, total direct care visits clearly increased. Thus, the Army sites as a whole displayed a mixed response.

Exhibit 4-7 displays NAVCARE and MTF utilization data aggregated over all Navy sites for the months prior to and after opening of NAVCARE clinics. A steady decline in MTF utilization occurred during the year prior to the opening of the clinics, with a significant decline the month prior to opening. This phenomenon was observed at a number of NAVCARE sites including Jacksonville/Camp Lejeune, Long Beach, Norfolk/Virginia Beach, and South Bay/San Diego. Assuming that the decline in MTF visits just prior to NAVCARE clinic openings is related to these openings, the Navy, too, showed a mixed response.

EXHIBIT 4-5: EXAMPLE OF MIXED RESPONSE

KILLEEN/COPPERAS COVE

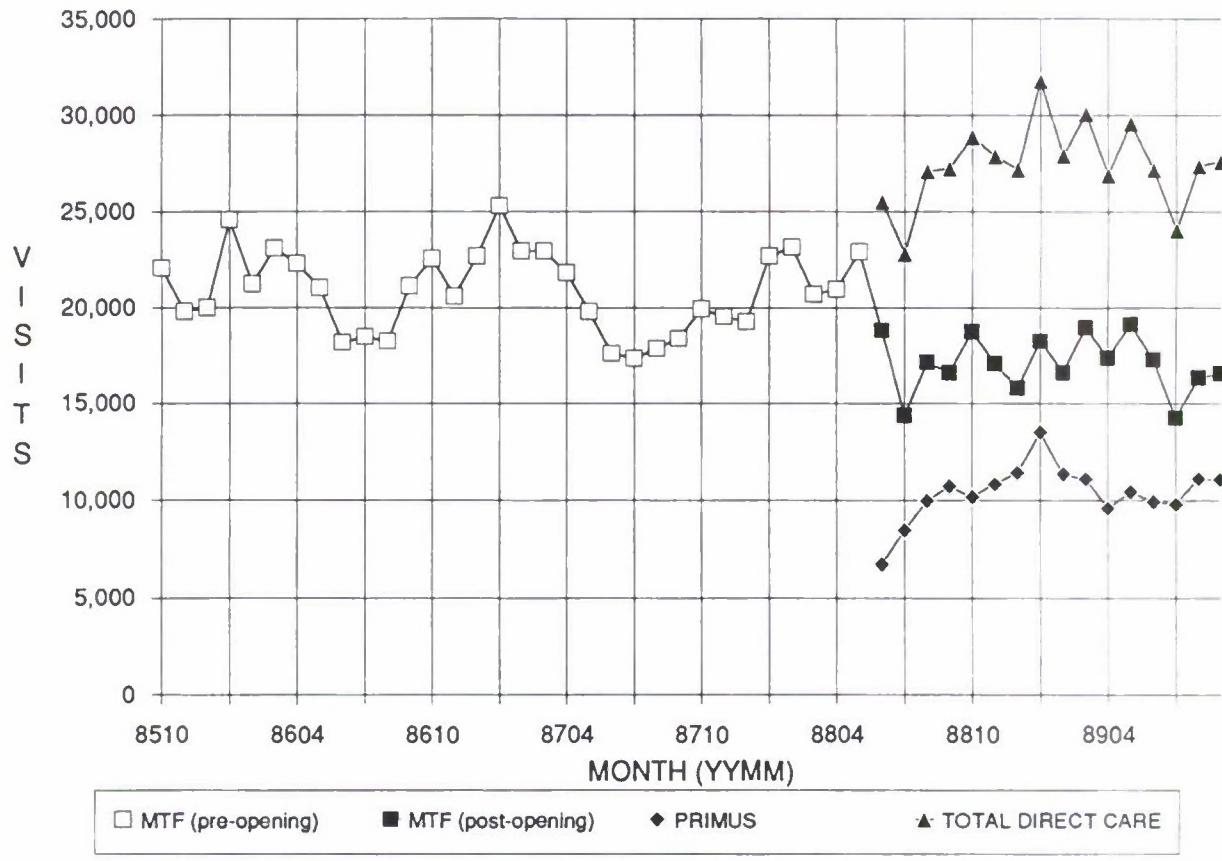


EXHIBIT 4-6: DIRECT CARE UTILIZATION AT ARMY PRIMUS SITES

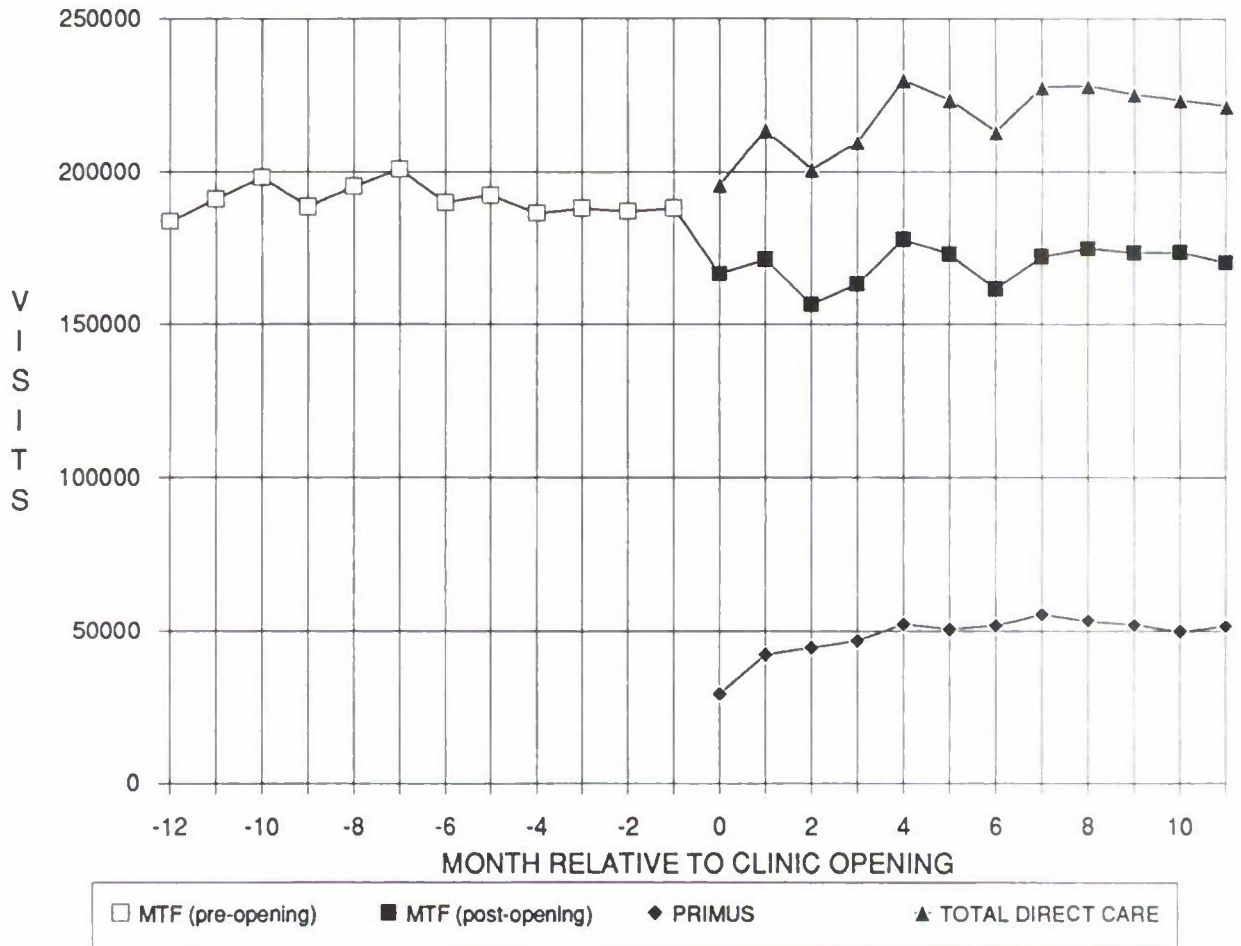
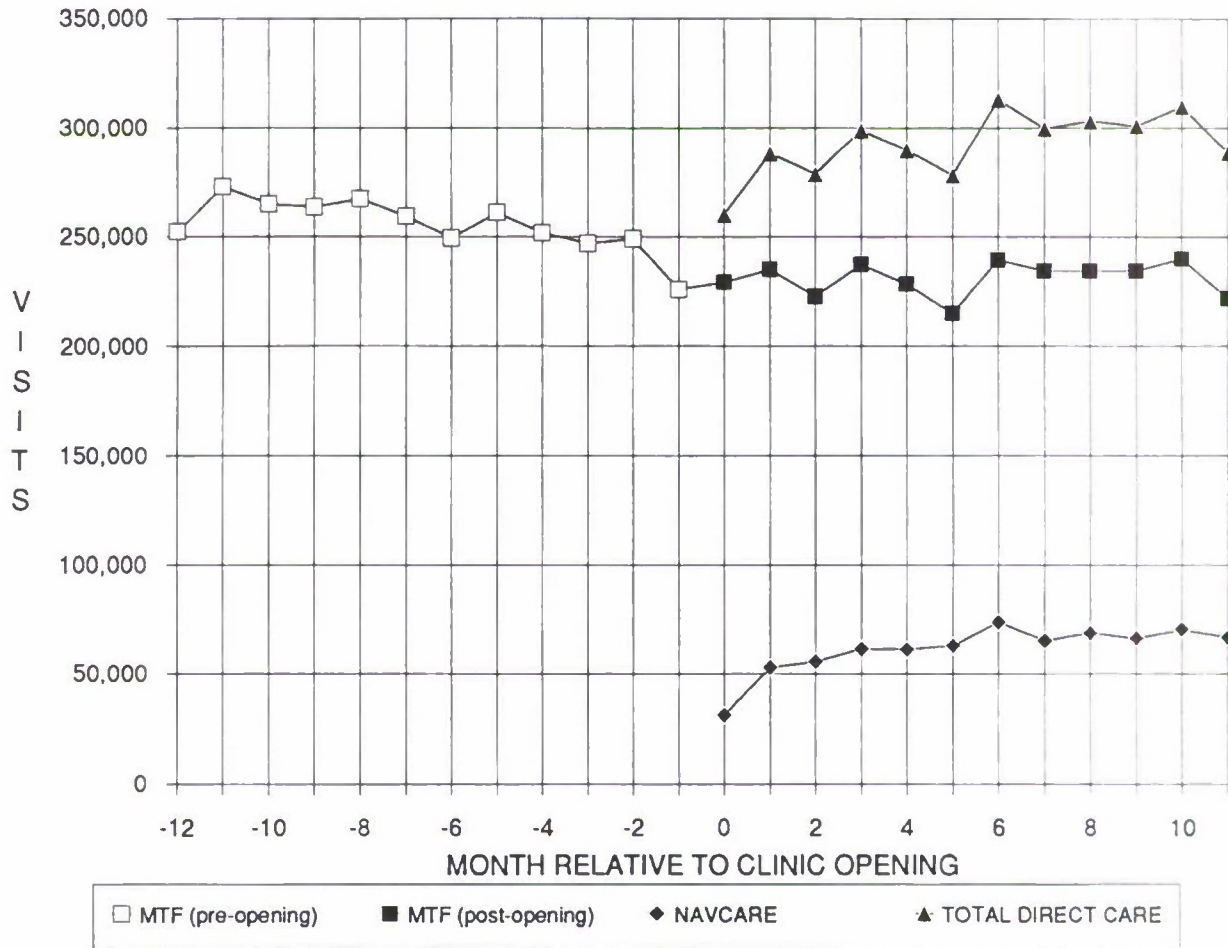


EXHIBIT 4-7: DIRECT CARE UTILIZATION AT NAVY NAVCARE SITES



Air Force direct care utilization data are presented in Exhibit 4-8. The Air Force also displayed a mixed response, as approximately one-third of the PRIMUS visits were offset by a decrease in MTF utilization. Thus, all three Services exhibited a mixed response.

Analysis of changes in direct care utilization by clinical area, however, revealed different responses from the three Services. The Army and Air Force sites displayed significant decreases within the family practice and gynecological clinics, while the largest decreases at Navy sites were within the pediatric and primary care clinics. Exhibits 4-9 through 4-16, located at the end of the chapter, are a graphical and tabular presentation of utilization data by clinical area for each of the Services and the three Services combined. Note that data from the Northern Virginia site were excluded from these exhibits.

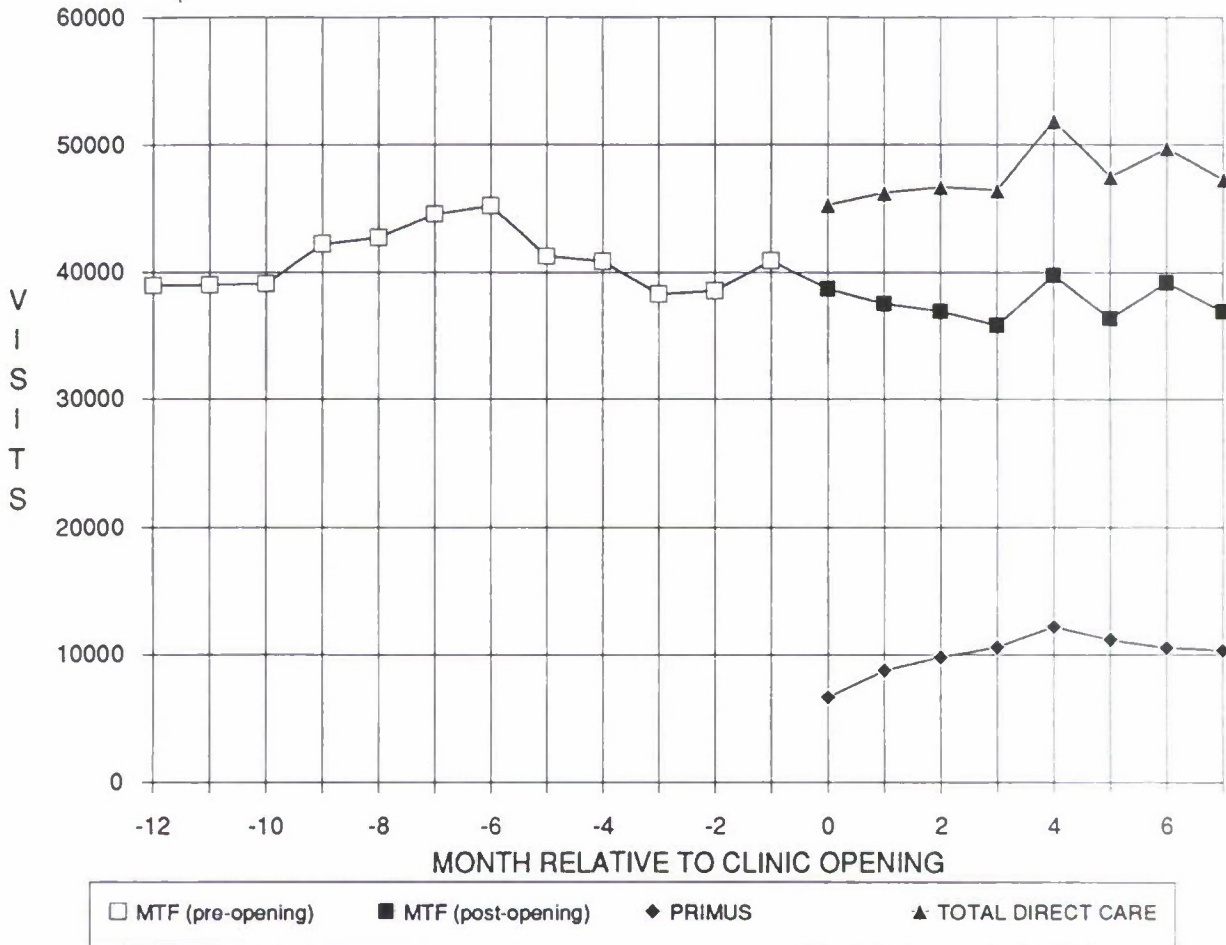
PRIMUS/NAVCARE IMPACT ON EMERGENCY ROOM UTILIZATION

A particular point of interest is emergency room utilization. It was anticipated that operating a PRIMUS/NAVCARE clinic might significantly reduce ER visits, since limited access to primary care may provoke inappropriate utilization of the ER (i.e., the ER is utilized as a walk-in clinic of sorts). The data show that ER utilization did decline for the Army and Air Force; however, the Navy demonstrated a slight increase in ER utilization. These results suggest that, within the Army, approximately one ER visit may be saved for every 15 PRIMUS visits, while one ER visit may be saved for every 5 PRIMUS visits within the Air Force.

PRIMUS/NAVCARE IMPACT ON MTF UTILIZATION AT INDIVIDUAL SITES

A few individual sites displayed noteworthy utilization patterns which are briefly described below.

EXHIBIT 4-8: DIRECT CARE UTILIZATION AT AIR FORCE PRIMUS SITES



Savannah, Georgia, is an interesting site because the PRIMUS clinic is located in the city, while the parent MTF - Winn Army Hospital - is located on Fort Stewart, approximately 30 miles away. The top half of Exhibit 4-17 gives the impression that MTF utilization was not affected to any great extent by the opening of PRIMUS Savannah. The bottom half of the exhibit, however, distinguishes between the two MTFs that make up the site - Winn Army Hospital and Tuttle Army Health Clinic - and shows two distinct response patterns. Utilization at Winn actually increased by 130 visits per month. Utilization at Tuttle - which also happens to be located in the city and in close proximity to the PRIMUS clinic - decreased by 900 visits per month.

Exhibit 4-18 shows a mixed response occurring at the Monterey/Salinas site. What is not apparent, however, is that the Army Medical Department actually intended PRIMUS Monterey to replace the Army Health Clinic formerly located at the Presidio of Monterey. This, then, is somewhat a case of substitution by design. The result, however, was a mixed response with a net increase in total direct care visits.

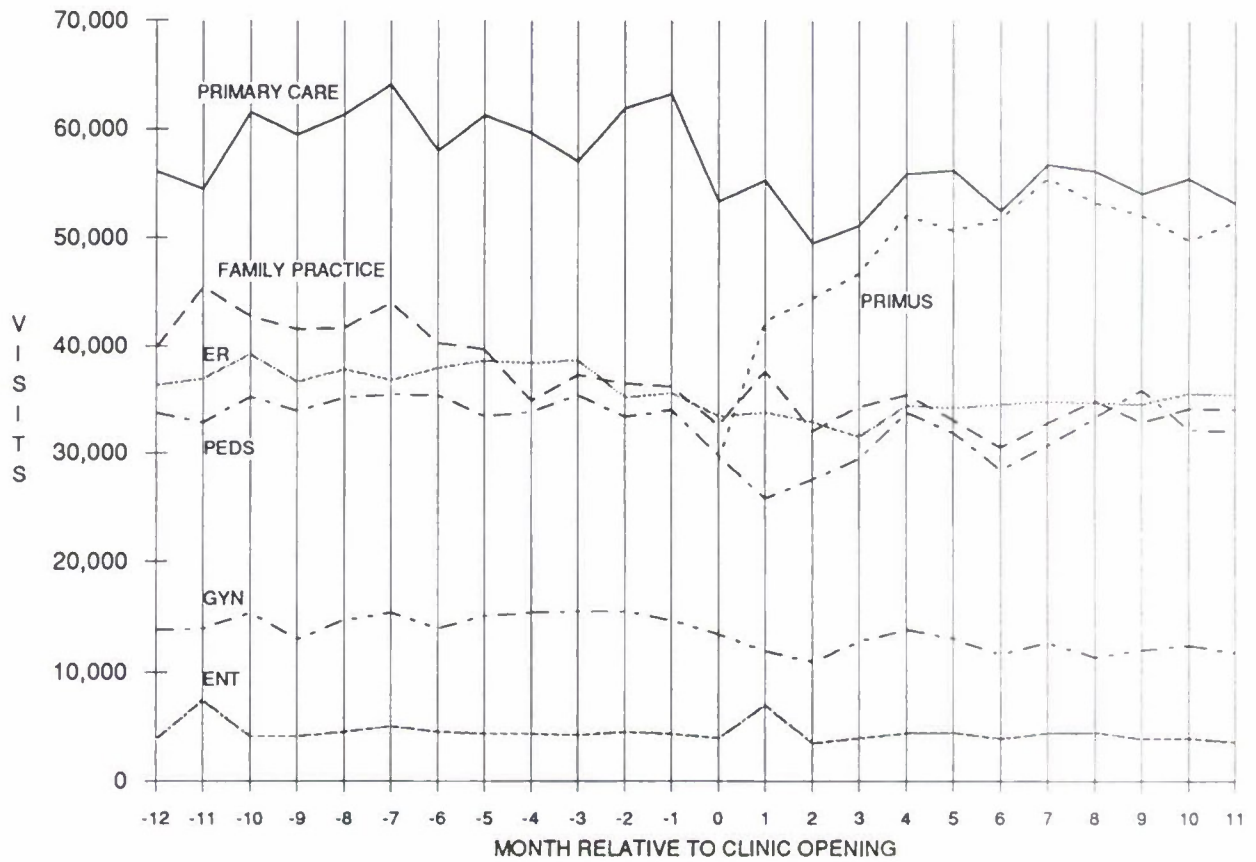
Fayetteville, North Carolina, shown in Exhibit 4-19, demonstrates a pattern of large MTF utilization spikes each summer, which is most likely attributable to an influx of trainees at Fort Bragg. A spike fails to appear in 1989, however. While speculative, it would appear that PRIMUS/NAVCARE may have a role in blunting the impact of sharp swings in the demand for MTF services. Killeen/Copperas Cove, shown earlier in Exhibit 4-5, provides another example of this pattern. In this case, the spike occurs in the winter, perhaps due to an annual flu epidemic or the increased incidence of adult respiratory distress syndrome among troops at Fort Hood during the winter. A noticeable spike appears at the MTF in January of 1986, 1987, and 1988. In 1989, however, the spike appears at the PRIMUS clinics.

Lastly, Exhibit 4-20, Norfolk/Virginia Beach, is an example of MTF utilization in decline prior to NAVCARE clinic opening, as observed at a number of Navy sites. In many cases, a particularly large and unexplained drop in MTF utilization occurred during the month immediately prior to a NAVCARE clinic opening.

INDICATORS OF UTILIZATION RESPONSE

We attempted to identify explanatory factors which would indicate the type of utilization response (expansion, substitution, mixed) that might be anticipated at a potential PRIMUS/NAVCARE site, given certain site and operating conditions. A number of indicators were examined, including distance from local MTFs, CHAMPUS per capita utilization, and beneficiary demographics. CHAMPUS visits per capita, perhaps the best response predictor examined, may be an indication of latent demand for free primary care. Those sites with higher CHAMPUS utilization rates tended toward an expansion response. No indicators, however, were found to be consistent predictors of utilization response.

EXHIBIT 4-9: MTF UTILIZATION AT ARMY SITES BY CLINICAL AREA
ALL ARMY PRIMUS SITES*



*Utilization data for the Northern Virginia site were excluded from this exhibit.

EXHIBIT 4-10: MTF UTILIZATION AT ARMY SITES BY CLINICAL AREA*

| MONTH RELATIVE TO OPENING | PRIMARY CARE | FAMILY PRACTICE | PEDIATRICS | GYNECOLOGY | EAR, NOSE & THROAT | EMERGENCY ROOM | TOTAL MTF VISITS | PRIMUS VISITS | TOTAL DIRECT CARE VISITS |
|---------------------------|--------------|-----------------|------------|------------|--------------------|----------------|------------------|---------------|--------------------------|
| -12 | 56,151 | 39,889 | 33,731 | 13,820 | 3,832 | 36,327 | 183,750 | | 183,750 |
| -11 | 54,518 | 45,398 | 32,812 | 13,967 | 7,420 | 36,888 | 191,003 | | 191,003 |
| -10 | 61,446 | 42,771 | 35,172 | 15,372 | 4,122 | 39,226 | 198,109 | | 198,109 |
| -9 | 59,475 | 41,499 | 33,876 | 13,020 | 4,155 | 36,613 | 188,638 | | 188,638 |
| -8 | 61,276 | 41,712 | 35,164 | 14,726 | 4,550 | 37,791 | 195,219 | | 195,219 |
| -7 | 64,076 | 43,979 | 35,485 | 15,418 | 5,079 | 36,799 | 200,836 | | 200,836 |
| -6 | 57,984 | 40,278 | 35,377 | 13,959 | 4,548 | 37,918 | 190,064 | | 190,064 |
| -5 | 61,237 | 39,664 | 33,400 | 15,144 | 4,357 | 38,605 | 192,407 | | 192,407 |
| -4 | 59,652 | 34,813 | 33,861 | 15,420 | 4,398 | 38,371 | 186,515 | | 186,515 |
| -3 | 57,033 | 37,247 | 35,364 | 15,522 | 4,236 | 38,648 | 188,050 | | 188,050 |
| -2 | 61,868 | 36,518 | 33,354 | 15,565 | 4,542 | 35,191 | 187,038 | | 187,038 |
| -1 | 63,242 | 36,196 | 34,017 | 14,699 | 4,361 | 35,634 | 188,149 | | 188,149 |
| 0 | 53,394 | 32,596 | 29,787 | 13,450 | 3,969 | 33,437 | 166,633 | 29,292 | 195,925 |
| 1 | 55,317 | 37,617 | 25,794 | 11,944 | 7,039 | 33,788 | 171,499 | 42,310 | 213,809 |
| 2 | 49,512 | 32,101 | 27,580 | 11,004 | 3,475 | 32,891 | 156,563 | 44,426 | 200,989 |
| 3 | 51,110 | 34,282 | 29,463 | 12,851 | 3,943 | 31,555 | 163,204 | 46,712 | 209,916 |
| 4 | 55,900 | 35,421 | 33,764 | 13,896 | 4,449 | 34,447 | 177,877 | 52,176 | 230,053 |
| 5 | 56,296 | 33,077 | 31,881 | 13,051 | 4,518 | 34,214 | 173,037 | 50,665 | 223,702 |
| 6 | 52,514 | 30,524 | 28,469 | 11,657 | 3,901 | 34,530 | 161,595 | 51,835 | 213,430 |
| 7 | 56,787 | 32,818 | 30,681 | 12,689 | 4,421 | 34,800 | 172,196 | 55,554 | 227,750 |
| 8 | 56,247 | 34,869 | 33,324 | 11,379 | 4,496 | 34,652 | 174,967 | 53,337 | 228,304 |
| 9 | 54,139 | 32,884 | 35,894 | 12,068 | 3,908 | 34,571 | 173,464 | 52,122 | 225,586 |
| 10 | 55,492 | 34,120 | 32,180 | 12,480 | 3,976 | 35,563 | 173,811 | 49,811 | 223,622 |
| 11 | 53,276 | 34,063 | 32,102 | 11,821 | 3,629 | 35,409 | 170,300 | 51,556 | 221,856 |
| AVG 12 MONTHS PRIOR | 59,830 | 39,997 | 34,301 | 14,719 | 4,633 | 37,334 | 190,815 | | 190,815 |
| AVG 12 MONTHS AFTER | 54,165 | 33,698 | 30,910 | 12,358 | 4,310 | 34,155 | 169,596 | 48,316 | 217,912 |
| DIFFERENCE | (5,665) | (6,299) | (3,391) | (2,362) | (323) | (3,180) | (21,219) | | 27,097 |
| PERCENT DIFFERENCE | (9.5%) | (15.7%) | (9.9%) | (16.0%) | (7.0%) | (8.5%) | (11.1%) | | 14.2% |

*Utilization data for the Northern Virginia site were excluded from this exhibit.

EXHIBIT 4-11: MTF UTILIZATION AT NAVY SITES BY CLINICAL AREA
ALL NAVCARE SITES

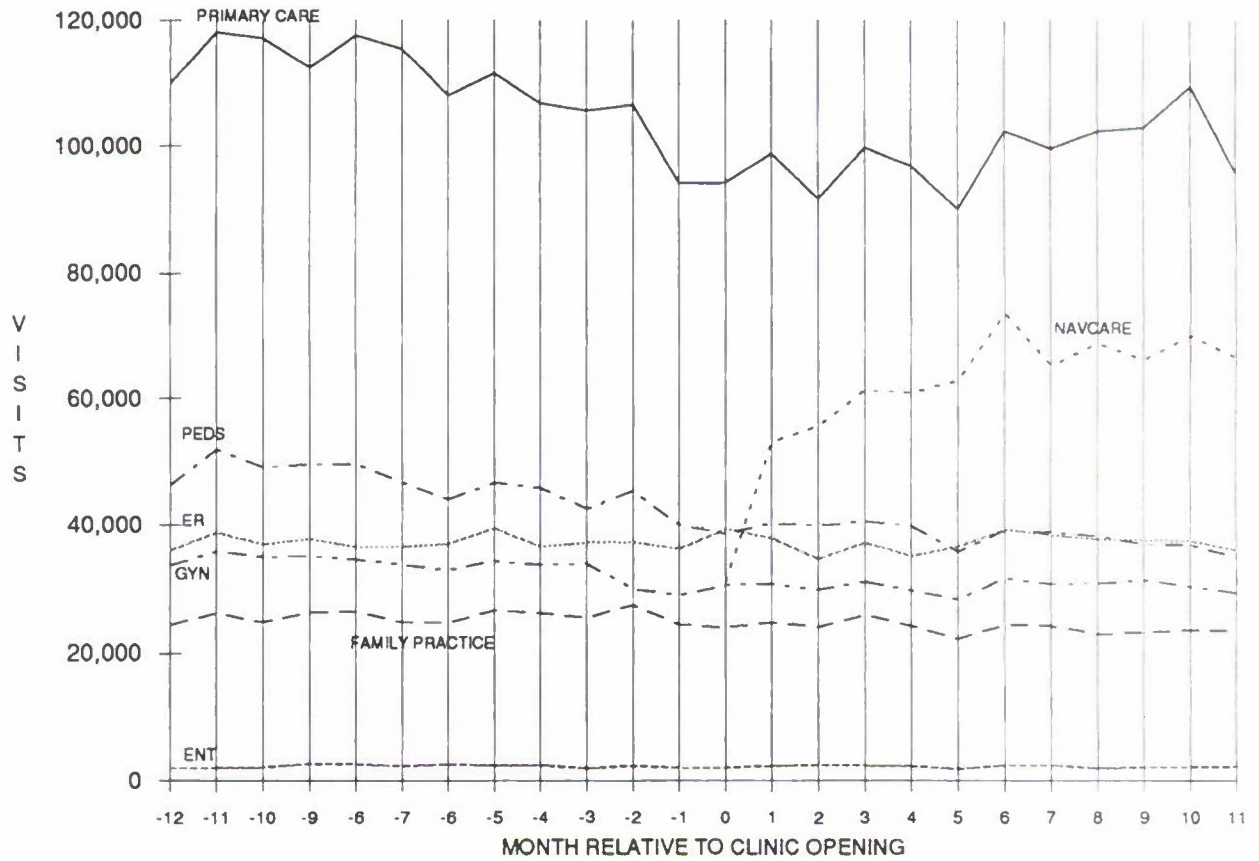


EXHIBIT 4-12: MTF UTILIZATION AT NAVY SITES BY CLINICAL AREA

| MONTH RELATIVE TO OPENING | PRIMARY CARE | FAMILY PRACTICE | PEDIATRICS | GYNECOLOGY | EAR, NOSE, & THROAT | EMERGENCY ROOM | TOTAL MTF VISITS | NAVCARE VISITS | TOTAL DIRECT CARE VISITS |
|---------------------------|--------------|-----------------|------------|------------|---------------------|----------------|------------------|----------------|--------------------------|
| -12 | 109,811 | 24,447 | 46,228 | 33,603 | 1,951 | 36,096 | 252,136 | | 252,136 |
| -11 | 118,100 | 26,110 | 51,890 | 35,862 | 1,972 | 38,748 | 272,682 | | 272,682 |
| -10 | 117,120 | 24,855 | 49,104 | 34,941 | 2,007 | 36,901 | 264,928 | | 264,928 |
| -9 | 112,341 | 26,200 | 49,508 | 35,075 | 2,611 | 37,760 | 263,495 | | 263,495 |
| -8 | 117,604 | 26,452 | 49,657 | 34,511 | 2,501 | 36,530 | 267,255 | | 267,255 |
| -7 | 115,394 | 24,825 | 46,641 | 33,700 | 2,245 | 36,512 | 259,317 | | 259,317 |
| -6 | 107,920 | 24,829 | 43,991 | 32,921 | 2,559 | 37,095 | 249,315 | | 249,315 |
| -5 | 111,439 | 26,656 | 46,692 | 34,295 | 2,349 | 39,487 | 260,918 | | 260,918 |
| -4 | 106,663 | 26,191 | 45,902 | 33,765 | 2,485 | 36,696 | 251,702 | | 251,702 |
| -3 | 105,608 | 25,482 | 42,665 | 33,911 | 1,947 | 37,254 | 246,867 | | 246,867 |
| -2 | 106,524 | 27,433 | 45,350 | 29,989 | 2,383 | 37,398 | 249,077 | | 249,077 |
| -1 | 94,269 | 24,531 | 40,049 | 28,909 | 1,984 | 36,300 | 226,042 | | 226,042 |
| 0 | 94,387 | 23,977 | 38,700 | 30,627 | 2,006 | 39,371 | 229,068 | 31,031 | 260,099 |
| 1 | 98,902 | 24,816 | 40,270 | 30,793 | 2,317 | 37,943 | 235,041 | 53,025 | 288,066 |
| 2 | 91,819 | 24,163 | 39,856 | 29,845 | 2,534 | 34,635 | 222,852 | 55,697 | 278,549 |
| 3 | 99,819 | 26,071 | 40,649 | 31,085 | 2,461 | 37,285 | 237,370 | 61,297 | 298,667 |
| 4 | 96,992 | 24,328 | 39,908 | 29,740 | 2,330 | 35,097 | 228,395 | 60,982 | 289,377 |
| 5 | 90,217 | 22,247 | 35,869 | 28,311 | 1,887 | 36,637 | 215,188 | 62,856 | 278,044 |
| 6 | 102,344 | 24,464 | 39,228 | 31,676 | 2,437 | 39,259 | 239,408 | 73,689 | 313,097 |
| 7 | 99,639 | 24,333 | 38,857 | 30,760 | 2,448 | 38,461 | 234,498 | 65,302 | 299,800 |
| 8 | 102,373 | 23,041 | 38,341 | 30,864 | 1,935 | 37,825 | 234,379 | 68,802 | 303,181 |
| 9 | 102,958 | 23,335 | 36,948 | 31,415 | 2,156 | 37,659 | 234,471 | 66,265 | 300,736 |
| 10 | 109,340 | 23,717 | 36,831 | 30,405 | 2,120 | 37,503 | 239,916 | 70,099 | 310,015 |
| 11 | 95,727 | 23,442 | 34,963 | 29,338 | 2,226 | 36,017 | 221,713 | 66,628 | 288,341 |
| AVG 12 MONTHS PRIOR | 110,233 | 25,668 | 46,473 | 33,457 | 2,250 | 37,231 | 255,311 | | 255,311 |
| AVG 12 MONTHS AFTER | 98,710 | 23,995 | 38,368 | 30,405 | 2,238 | 37,309 | 231,025 | 61,306 | 292,331 |
| DIFFERENCE | (11,523) | (1,673) | (8,105) | (3,052) | (11) | 78 | (24,286) | | 37,020 |
| PERCENT DIFFERENCE | (10.5%) | (6.5%) | (17.4%) | (9.1%) | (0.5%) | 0.2% | (9.5%) | | 14.5% |

EXHIBIT 4-13: MTF UTILIZATION AT AIR FORCE SITES BY CLINICAL AREA

ALL AIR FORCE PRIMUS SITES

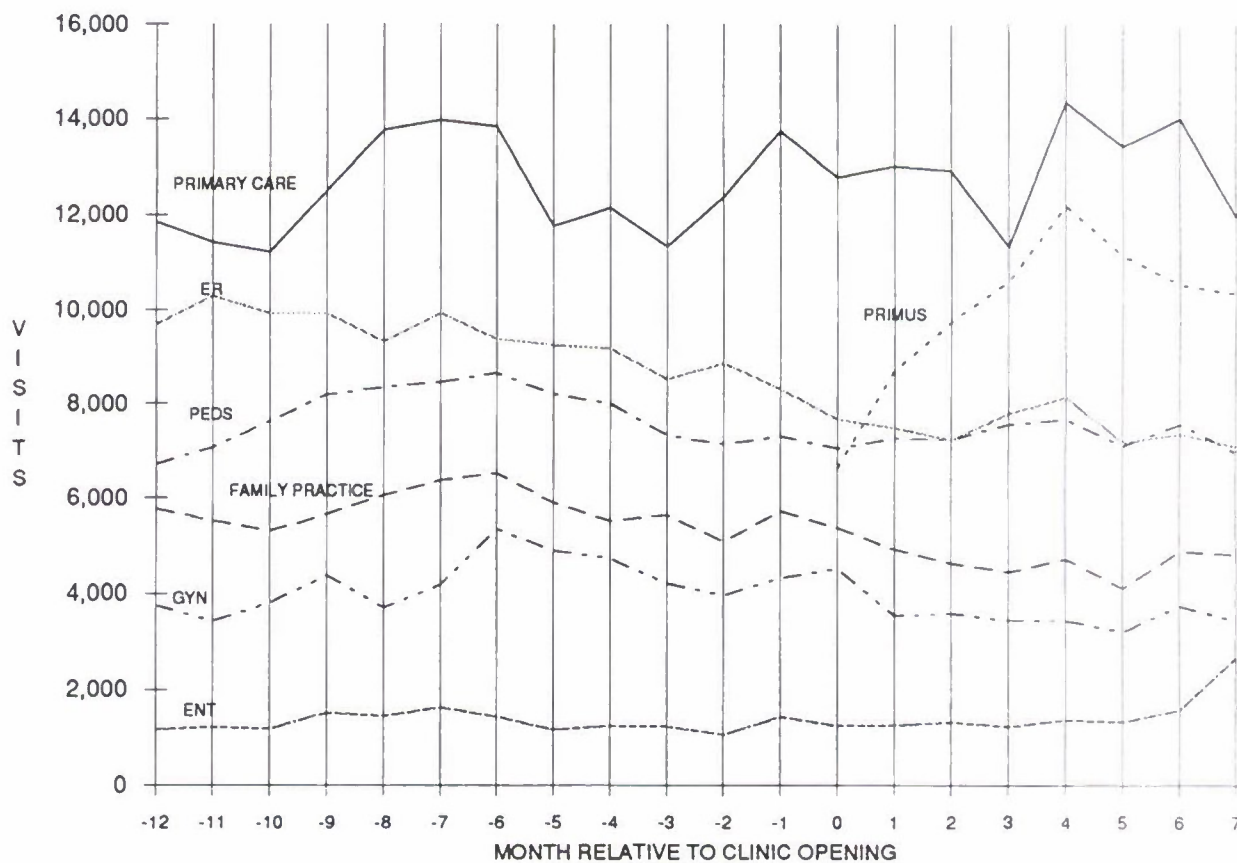
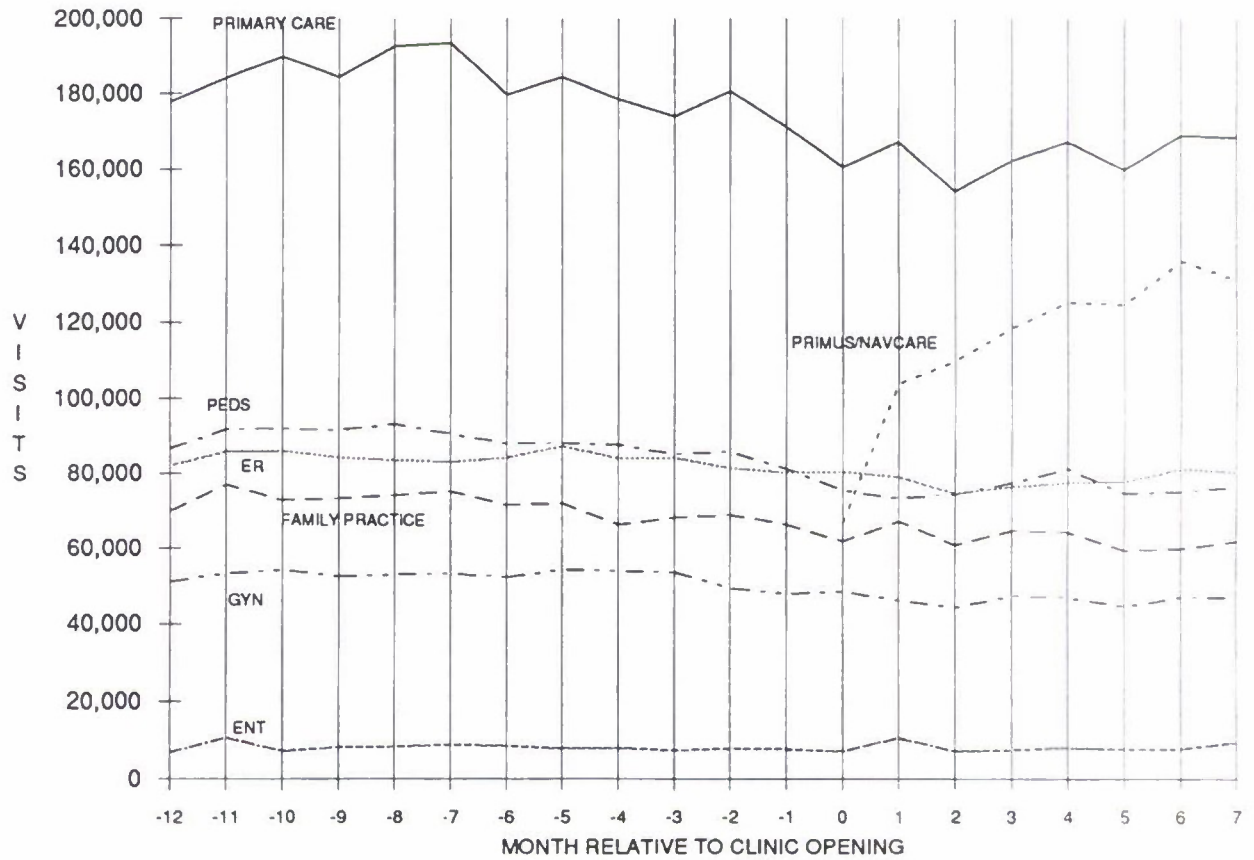


EXHIBIT 4-14: MTF UTILIZATION AT AIR FORCE SITES BY CLINICAL AREA

| MONTH RELATIVE TO OPENING | PRIMARY CARE | FAMILY PRACTICE | PEDIATRICS | GYNECOLOGY | EAR, NOSE & THROAT | EMERGENCY ROOM | TOTAL MTF VISITS | PRIMUS VISITS | TOTAL DIRECT CARE VISITS |
|---------------------------|--------------|-----------------|------------|------------|--------------------|----------------|------------------|---------------|--------------------------|
| -12 | 11,849 | 5,759 | 6,713 | 3,749 | 1,171 | 9,689 | 38,930 | | 38,930 |
| -11 | 11,423 | 5,527 | 7,064 | 3,430 | 1,225 | 10,306 | 38,975 | | 38,975 |
| -10 | 11,222 | 5,306 | 7,633 | 3,806 | 1,185 | 9,918 | 39,070 | | 39,070 |
| -9 | 12,501 | 5,658 | 8,196 | 4,377 | 1,526 | 9,920 | 42,178 | | 42,178 |
| -8 | 13,763 | 6,058 | 8,352 | 3,710 | 1,462 | 9,343 | 42,688 | | 42,688 |
| -7 | 13,971 | 6,374 | 8,467 | 4,183 | 1,638 | 9,931 | 44,564 | | 44,564 |
| -6 | 13,828 | 6,516 | 8,655 | 5,350 | 1,446 | 9,401 | 45,196 | | 45,196 |
| -5 | 11,764 | 5,899 | 8,215 | 4,907 | 1,178 | 9,256 | 41,219 | | 41,219 |
| -4 | 12,143 | 5,520 | 8,001 | 4,743 | 1,253 | 9,196 | 40,856 | | 40,856 |
| -3 | 11,338 | 5,650 | 7,318 | 4,215 | 1,238 | 8,517 | 38,276 | | 38,276 |
| -2 | 12,378 | 5,096 | 7,144 | 3,974 | 1,073 | 8,867 | 38,532 | | 38,532 |
| -1 | 13,755 | 5,723 | 7,303 | 4,319 | 1,451 | 8,321 | 40,872 | | 40,872 |
| 0 | 12,782 | 5,371 | 7,053 | 4,527 | 1,252 | 7,673 | 38,658 | 6,628 | 45,286 |
| 1 | 13,018 | 4,931 | 7,260 | 3,557 | 1,275 | 7,474 | 37,515 | 8,721 | 46,236 |
| 2 | 12,922 | 4,625 | 7,229 | 3,593 | 1,340 | 7,220 | 36,929 | 9,761 | 46,690 |
| 3 | 11,342 | 4,452 | 7,553 | 3,455 | 1,239 | 7,788 | 35,829 | 10,609 | 46,438 |
| 4 | 14,354 | 4,731 | 7,673 | 3,443 | 1,399 | 8,134 | 39,734 | 12,200 | 51,934 |
| 5 | 13,428 | 4,122 | 7,096 | 3,221 | 1,356 | 7,166 | 36,389 | 11,142 | 47,531 |
| 6 | 14,016 | 4,886 | 7,564 | 3,760 | 1,597 | 7,361 | 39,184 | 10,544 | 49,728 |
| 7 | 11,952 | 4,822 | 6,958 | 3,449 | 2,683 | 7,080 | 36,944 | 10,356 | 47,300 |
| 8 | | | | | | | | | |
| 9 | | | | | | | | | |
| 10 | | | | | | | | | |
| 11 | | | | | | | | | |
| AVG 12 MONTHS PRIOR | 12,495 | 5,757 | 7,755 | 4,230 | 1,321 | 9,389 | 40,946 | | 40,946 |
| AVG 12 MONTHS AFTER | 12,977 | 4,743 | 7,298 | 3,626 | 1,518 | 7,487 | 37,648 | 9,995 | 47,643 |
| DIFFERENCE | 482 | (1,015) | (457) | (605) | 197 | (1,902) | (3,299) | | 6,697 |
| PERCENT DIFFERENCE | 3.9% | (17.6%) | (5.9%) | (14.3%) | 14.9% | (20.3%) | (8.1%) | | 16.4% |

EXHIBIT 4-15: MTF UTILIZATION AT PRIMUS/NAV CARE SITES BY CLINICAL AREA

ALL PRIMUS/NAV CARE SITES*



*Utilization data for the Northern Virginia site were excluded from this exhibit.

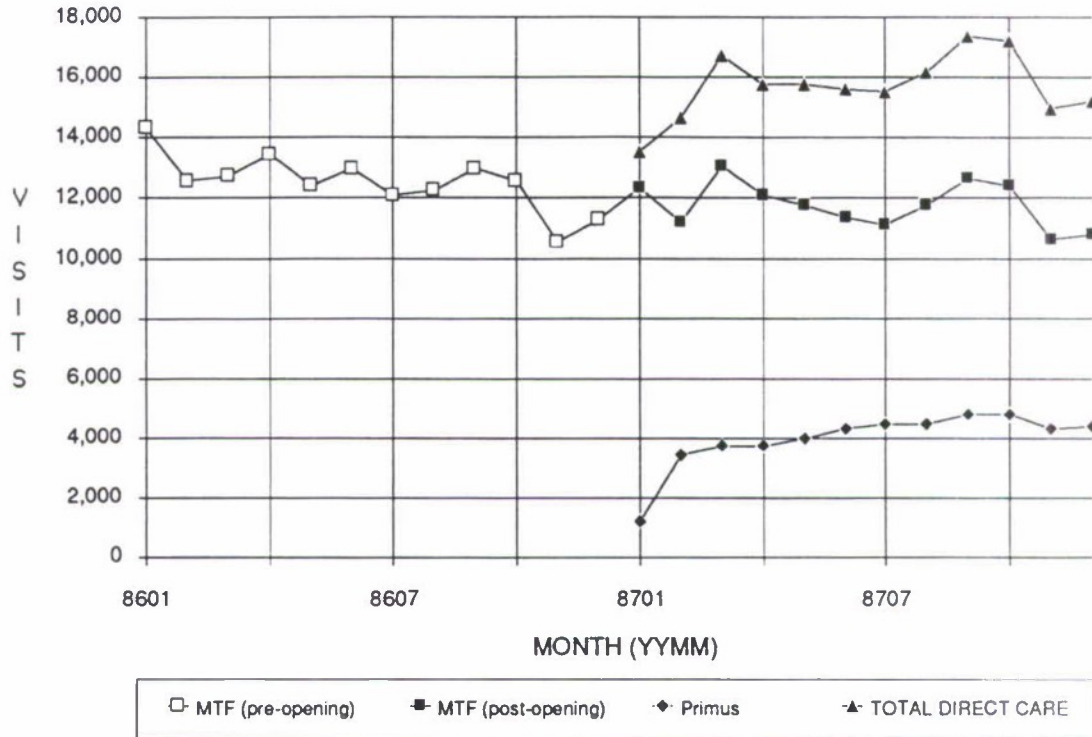
EXHIBIT 4-16: MTF UTILIZATION AT ALL PRIMUS/NAVACARE SITES BY CLINICAL AREA*

| MONTH RELEVANT TO OPENING | PRIMARY CARE | FAMILY PRACTICE | PEDIATRICS | GYNECOLOGY | EAR, NOSE & THROAT | EMERGENCY ROOM | TOTAL MTF VISITS | PRIMUS/ NAVACARE VISITS | TOTAL DIRECT CARE VISITS |
|---------------------------|--------------|-----------------|------------|------------|--------------------|----------------|------------------|-------------------------|--------------------------|
| -12 | 177,811 | 70,095 | 86,672 | 51,172 | 6,954 | 82,112 | 474,816 | | 474,816 |
| -11 | 184,041 | 77,035 | 91,766 | 53,259 | 10,617 | 85,942 | 502,660 | | 502,660 |
| -10 | 189,788 | 72,932 | 91,909 | 54,119 | 7,314 | 86,045 | 502,107 | | 502,107 |
| -9 | 184,317 | 73,357 | 91,580 | 52,472 | 8,292 | 84,293 | 494,311 | | 494,311 |
| -8 | 192,643 | 74,222 | 93,173 | 52,947 | 8,513 | 83,664 | 505,162 | | 505,162 |
| -7 | 193,441 | 75,178 | 90,593 | 53,301 | 8,962 | 83,242 | 504,717 | | 504,717 |
| -6 | 179,732 | 71,623 | 88,023 | 52,230 | 8,553 | 84,414 | 484,575 | | 484,575 |
| -5 | 184,440 | 72,219 | 88,307 | 54,346 | 7,884 | 87,348 | 494,544 | | 494,544 |
| -4 | 178,458 | 66,524 | 87,764 | 53,928 | 8,136 | 84,263 | 479,073 | | 479,073 |
| -3 | 173,979 | 68,379 | 85,347 | 53,648 | 7,421 | 84,419 | 473,193 | | 473,193 |
| -2 | 180,770 | 69,047 | 85,848 | 49,528 | 7,998 | 81,456 | 474,647 | | 474,647 |
| -1 | 171,266 | 66,450 | 81,369 | 47,927 | 7,796 | 80,255 | 455,063 | | 455,063 |
| 0 | 160,563 | 61,944 | 75,540 | 48,604 | 7,227 | 80,481 | 434,359 | 66,951 | 501,310 |
| 1 | 167,237 | 67,364 | 73,324 | 46,294 | 10,631 | 79,205 | 444,055 | 104,056 | 548,111 |
| 2 | 154,253 | 60,889 | 74,665 | 44,442 | 7,349 | 74,746 | 416,344 | 109,884 | 526,228 |
| 3 | 162,271 | 64,805 | 77,665 | 47,391 | 7,643 | 76,628 | 436,403 | 118,618 | 555,021 |
| 4 | 167,246 | 64,480 | 81,345 | 47,079 | 8,178 | 77,678 | 446,006 | 125,358 | 571,364 |
| 5 | 159,941 | 59,446 | 74,846 | 44,583 | 7,761 | 78,037 | 424,614 | 124,663 | 549,277 |
| 6 | 168,874 | 59,874 | 75,261 | 47,093 | 7,935 | 81,150 | 440,187 | 136,068 | 576,255 |
| 7 | 168,378 | 61,973 | 76,496 | 46,898 | 9,552 | 80,341 | 443,638 | 131,212 | 574,850 |
| 8 | | | | | | | | | |
| 9 | | | | | | | | | |
| 10 | | | | | | | | | |
| 11 | | | | | | | | | |
| AVG 12 MONTHS PRIOR | 182,557 | 71,422 | 88,529 | 52,406 | 8,203 | 83,954 | 487,072 | | 487,072 |
| AVG 8 MONTHS AFTER | 163,595 | 62,597 | 76,143 | 46,548 | 8,285 | 78,533 | 435,701 | 114,601 | 550,302 |
| DIFFERENCE | (18,962) | (8,825) | (12,387) | (5,858) | 81 | (5,421) | (51,372) | | 63,230 |
| PERCENT DIFFERENCE | (10.4%) | (12.4%) | (14.0%) | (11.2%) | 1.0% | (6.5%) | (10.5%) | | 13.0% |

* Utilization data for the Northern Virginia site were excluded from this exhibit.

EXHIBIT 4-17: EXAMPLE OF PROXIMITY EFFECT: SAVANNAH

WINN AH AND TUTTLE AHC COMBINED



WINN AH AND TUTTLE AHC SEPARATELY IDENTIFIED

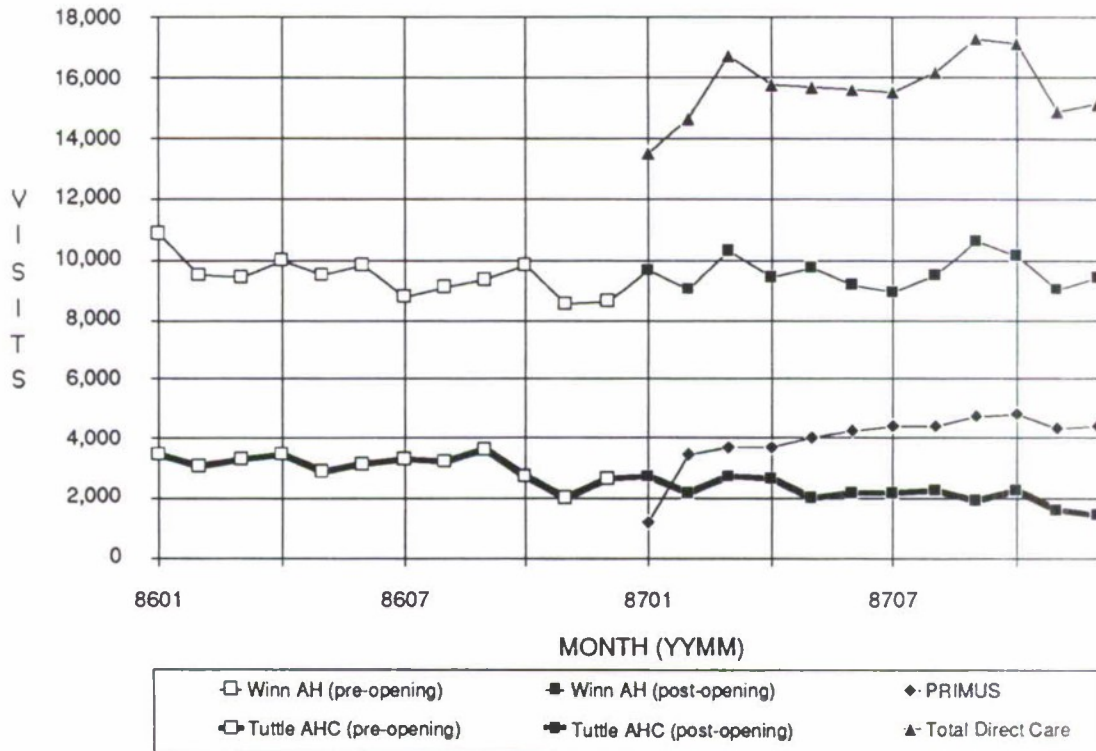


EXHIBIT 4-18: EXAMPLE OF PLANNED SUBSTITUTION MONTEREY/SALINAS

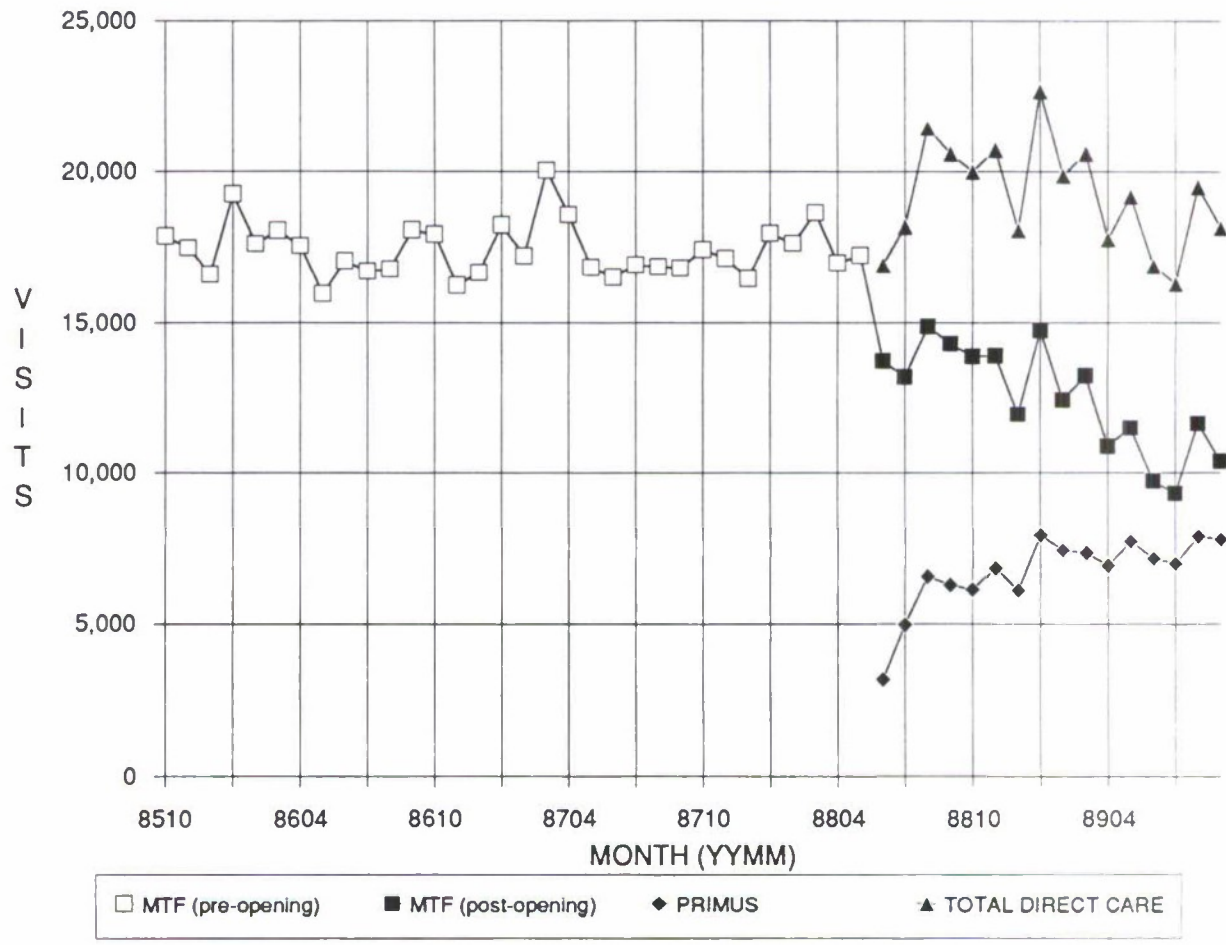


EXHIBIT 4-19: EXAMPLE OF SEASONALITY IN UTILIZATION

FAYETTEVILLE

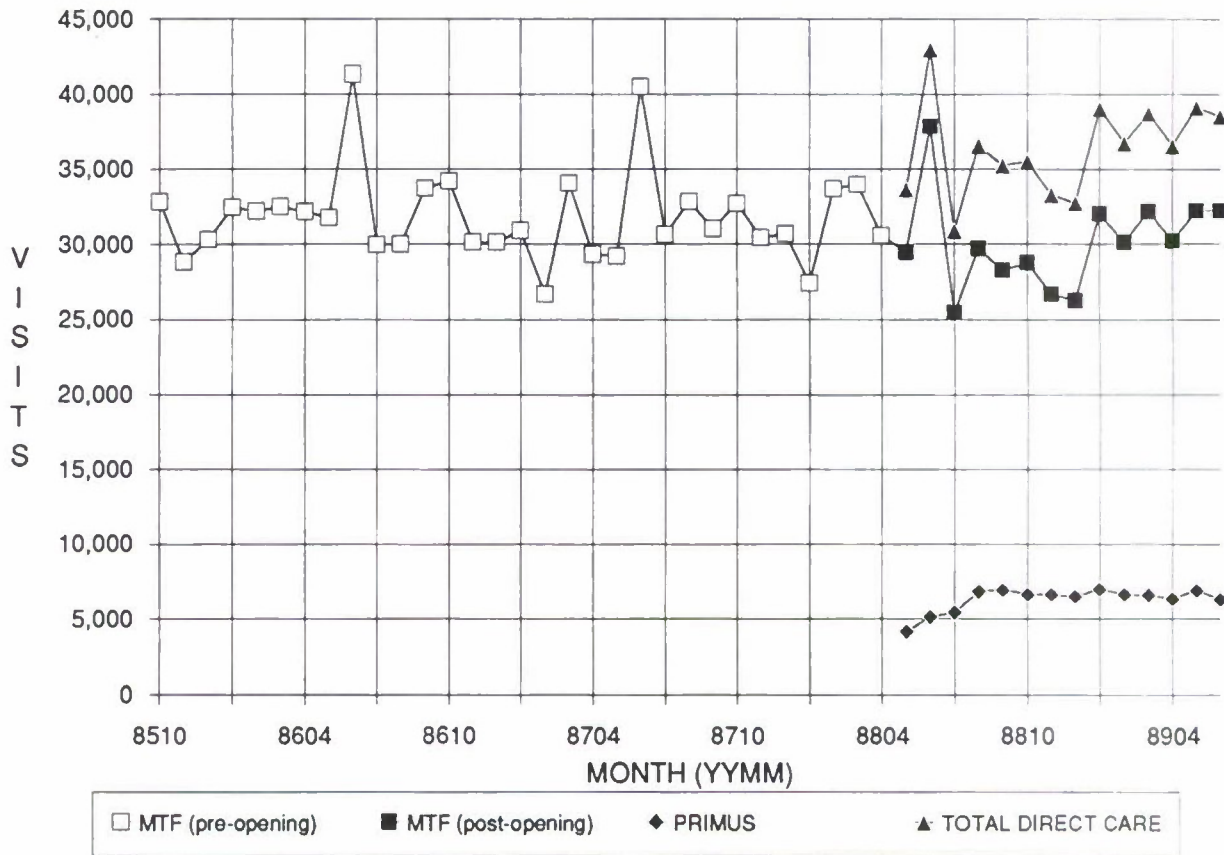
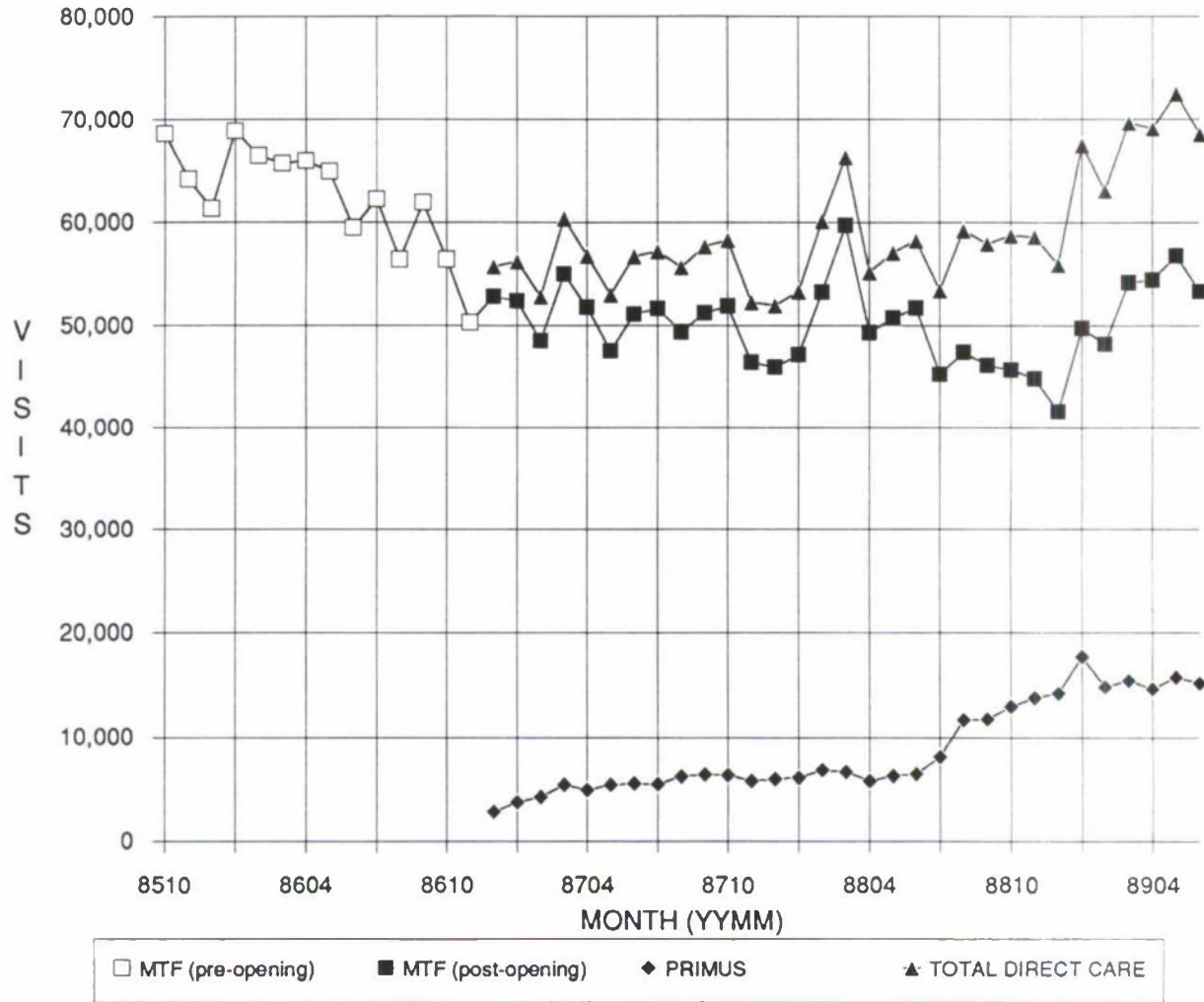


EXHIBIT 4-20: EXAMPLE OF MTF UTILIZATION DECREASE PRIOR TO NAVCARE
OPENING

NORFOLK/VIRGINIA BEACH



5.0 PRIMUS/NAVCARE IMPACT ON CHAMPUS UTILIZATION

This chapter discusses the effect of PRIMUS/NAVCARE on CHAMPUS utilization. The CHAMPUS utilization data used and the limitations of the analysis are discussed in Section 5.1. Results for five "early-opening" clinics are presented in Section 5.2 and results for eight "late-opening" clinics are presented in Section 5.3.

5.1 CHAMPUS UTILIZATION DATA AND ANALYSIS LIMITATIONS

CHAMPUS outpatient professional services data were provided on a quarterly basis for FY86 through FY88 by the OCHAMPUS Statistics Branch. FY89 CHAMPUS data, however, were not available on a quarterly basis at the time of the analysis. Therefore, the analysis of the effect of PRIMUS/NAVCARE on CHAMPUS utilization was divided into two components. Five early-opening clinics were evaluated using quarterly CHAMPUS data. These clinics included: Jacksonville, Norfolk, Mayport, Savannah, and South Bay. Additionally, eight late-opening clinics were evaluated using annual CHAMPUS utilization data. These clinics included: Charleston, Columbus, Copperas Cove, Fayetteville, Killeen, Omaha, Tucson, and Virginia Beach. Note that the three Northern Virginia PRIMUS clinics were excluded from the analysis due to the lack of available CHAMPUS data prior to the opening of the earliest of these clinics. Seven other clinics were excluded from the analysis because of changes in reporting methodology due to the CHAMPUS Reform Initiative (CRI).

Visits within the medical and OB/GYN categories of care were selected for analysis, as PRIMUS/NAVCARE was not expected to affect utilization within the psychiatric and surgical care categories. While the medical care category was known to include specialty

medicine in addition to primary care, it represented the best available proxy for primary care utilization. Compared to the medical care category, OB/GYN accounted for a substantially smaller number of visits.

To complete the analysis of the five early-opening clinics, the quarterly data were converted to monthly data. Each month within a given quarter was assigned utilization equivalent to the average monthly utilization for that quarter. The data were then merged with PRIMUS/NAVCARE and MTF monthly data. The utilization data studied and method used to merge the three data sets are discussed in greater detail in Appendix D.

5.2 CHAMPUS UTILIZATION ANALYSIS RESULTS AT EARLY-OPENING SITES

During the period of investigation, the CHAMPUS program experienced rapid growth in utilization. Exhibit 5-1 displays CHAMPUS utilization for all categories of care broken out by beneficiary category, category of care, and CHAMPUS Fiscal Intermediary (FI) Region. Data from the 4th quarter of FY88 were excluded because of changes in utilization patterns and data reporting due to the CRI. In addition to its rapid growth rate, CHAMPUS utilization exhibits a marked seasonal pattern.

Exhibit 5-2 compares absolute and relative growth in CHAMPUS utilization at the five early-opening sites selected for this analysis with the remainder of catchment areas in the Continental US (CONUS). Only medical and OB/GYN visits are included in this exhibit. Of the five sites, four began operation in December of 1986; PRIMUS Savannah opened in January of 1987.

The second graph in Exhibit 5-2 shows that, overall, CHAMPUS grew more at the selected sites than at other areas during the three-year

EXHIBIT 5-1: FY86-88 CHAMPUS UTILIZATION BY BENEFICIARY CATEGORY, TYPE OF CARE, AND FI REGION (INCLUDES ALL TYPES OF CARE)

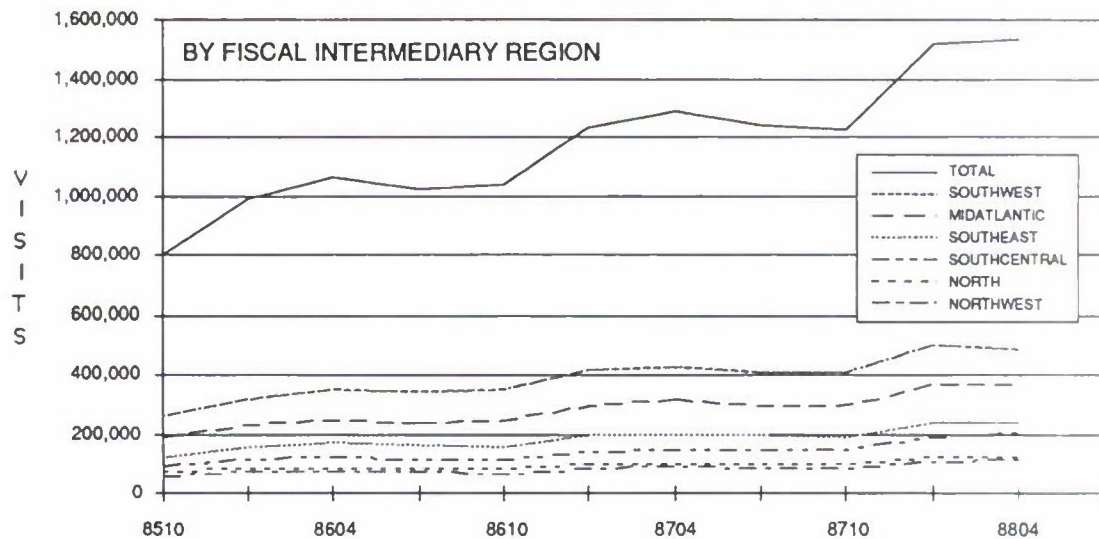
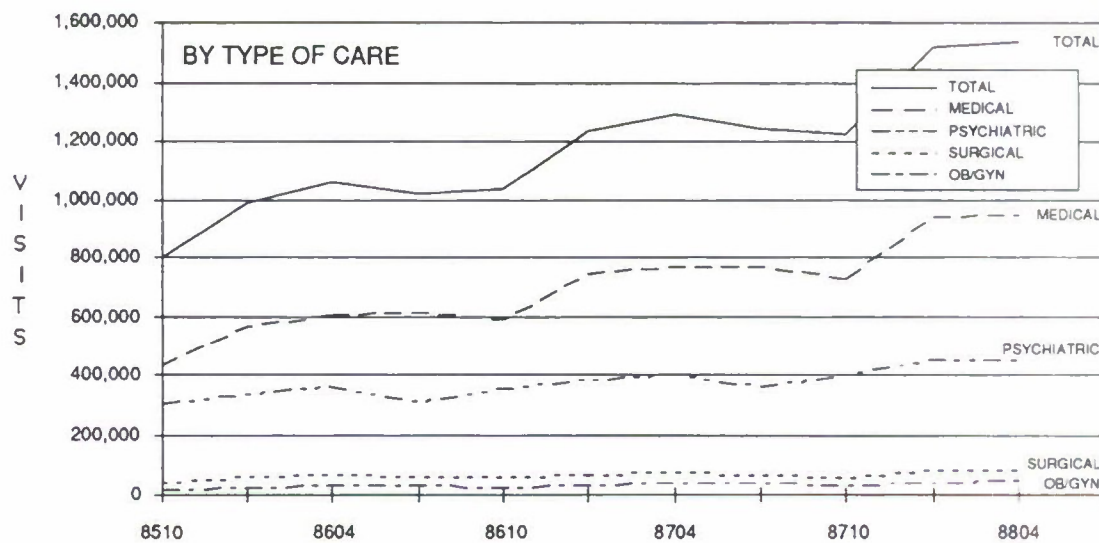
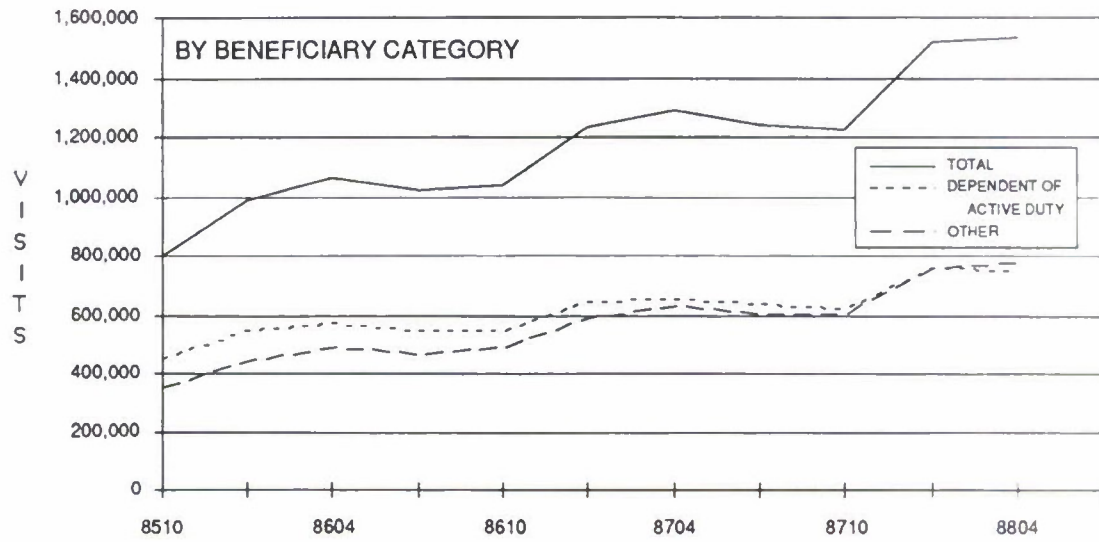
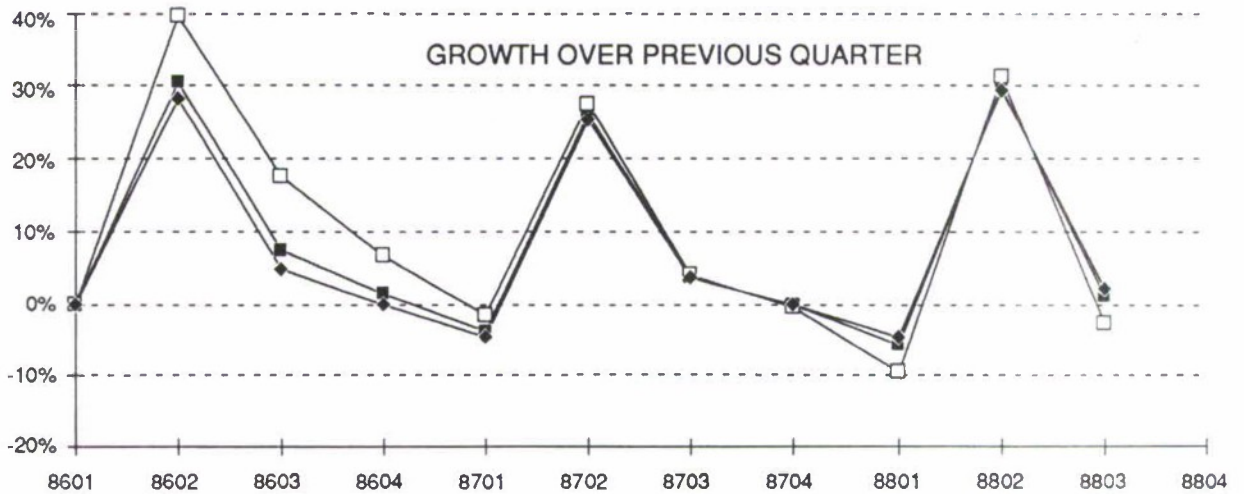
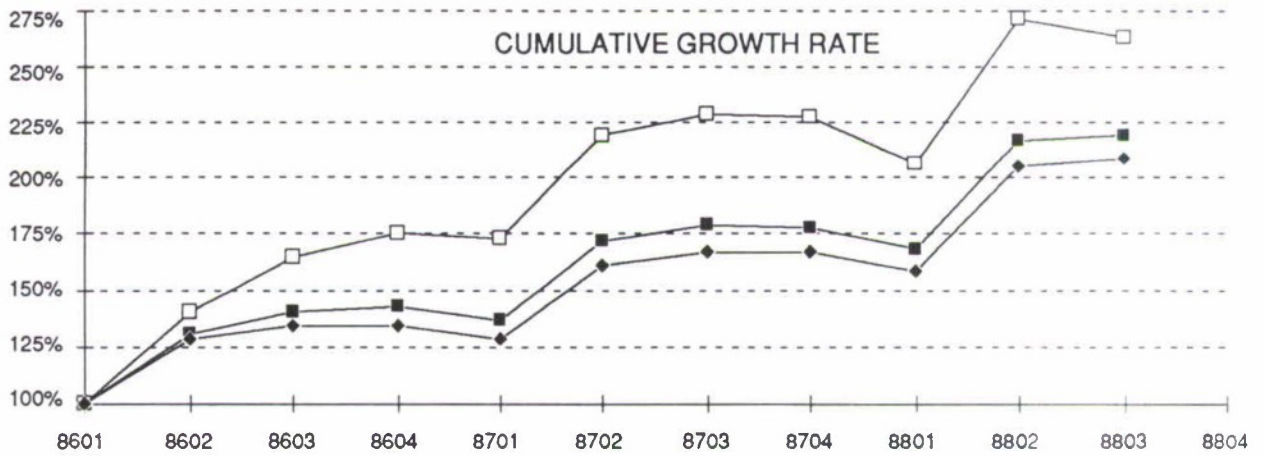
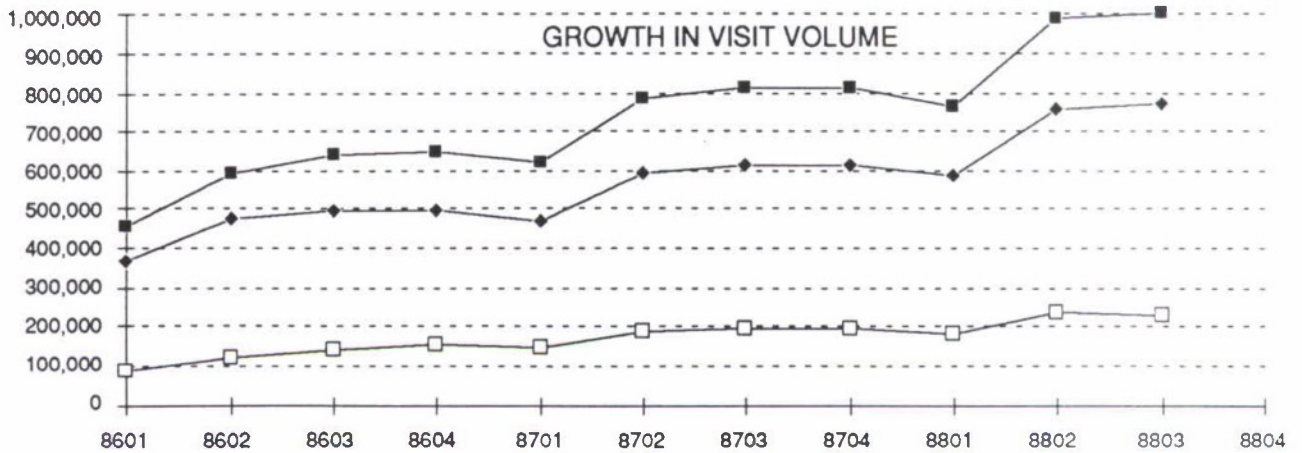


EXHIBIT 5-2: CHAMPUS UTILIZATION GROWTH AT "EARLY-OPENING" SITES VERSUS OTHER SITES (MEDICAL AND OB/GYN CARE ONLY)



□ Early-Opening PRIMUS/NAVCARE Sites
 Other CONUS Sites
 All CONUS Sites

period. The third graph displays growth relative to the previous quarter. The rate of growth at the selected sites outpaced that of other areas prior to the opening of their PRIMUS/NAVCARE clinics. After opening, this rate of growth falls into line with the other sites through the remaining quarters. In interpreting this graph, recall that PRIMUS/NAVCARE utilization plateaus quite quickly after opening - within three or four months. Thus, the opening of a PRIMUS/NAVCARE clinic should result in a one-time, transient reduction in the CHAMPUS growth rate, after which whatever forces driving CHAMPUS growth would resume their influence.

We also examined CHAMPUS utilization at the five early-opening clinics individually. Exhibit 5-3 compares monthly utilization before and after clinic opening for each clinic. Exhibits 5-4 through 5-8 show CHAMPUS and total direct care utilization (PRIMUS/ NAVCARE and MTF utilization combined) graphically for each clinic.

Since none of the five clinics displayed an absolute decrease in CHAMPUS utilization (i.e., CHAMPUS visits for the year after opening were greater than visits during the year prior to opening), we also analyzed CHAMPUS utilization relative to a control group. For a given clinic, this control group consisted of those catchment areas within its FI Region at which PRIMUS/NAVCARE had not been introduced. The regional growth was used to remove from the clinic-specific growth rate the growth that, presumably, is unrelated to PRIMUS/NAVCARE and would have occurred in the absence of PRIMUS/NAVCARE.

Exhibits 5-4 through 5-8 show both this adjusted utilization and the raw data. If CHAMPUS utilization grew less at one of the selected clinics than at its control group, its adjusted utilization line would be downward sloping. Alternatively, greater CHAMPUS growth would be

**EXHIBIT 5-3: IMPACT OF PRIMUS/NAVCARE ON CHAMPUS AND
MTF UTILIZATION AT "EARLY-OPENING" SITES****

| | MTF | PRIMUS/ NAVCARE | TOTAL DIRECT CARE | CHAMPUS* | TOTAL ALL CARE |
|------------------------------------|---------|--------------------|----------------------|----------|-------------------|
| NORFOLK | | | | | |
| Average Monthly Visits Before | 61,800 | | 61,800 | 14,300 | 76,100 |
| Average Monthly Visits After | 50,400 | 5,000 | 55,400 | 21,400 | 76,800 |
| Change | -11,400 | | -6,400 | +7,100 | +700 |
| % Change | -18.4% | | -10.4% | +49.7% | +0.9% |
| SOUTH BAY | | | | | |
| Average Monthly Visits Before | 27,500 | | 27,500 | 19,600 | 47,100 |
| Average Monthly Visits After | 22,500 | 5,500 | 28,000 | 26,300 | 54,300 |
| Change | -5,000 | | +500 | +6,700 | +7,200 |
| % Change | -18.2% | | +1.8% | +34.2% | +15.3% |
| SAVANNAH | | | | | |
| Average Monthly Visits Before | 12,300 | | 12,300 | 1,350 | 13,650 |
| Average Monthly Visits After | 11,700 | 4,200 | 15,900 | 1,575 | 17,475 |
| Change | -600 | | +3,600 | +225 | +3,825 |
| % Change | -4.9% | | +29.3% | +16.7% | +28.0% |
| JACKSONVILLE (CAMP LEJEUNE) | | | | | |
| Average Monthly Visits Before | 25,500 | | 25,500 | 3,850 | 29,350 |
| Average Monthly Visits After | 22,400 | 4,300 | 26,700 | 4,550 | 31,250 |
| Change | -3,100 | | +1,200 | +700 | +1,900 |
| % Change | -12.2% | | +4.7% | +18.2% | +6.5% |
| MAYPORT | | | | | |
| Average Monthly Visits Before | 29,500 | | 29,500 | 7,400 | 36,900 |
| Average Monthly Visits After | 28,600 | 3,000 | 31,600 | 9,600 | 41,200 |
| Change | -900 | | +2,100 | +2,200 | +4,300 |
| % Change | -3.1% | | +7.1% | +29.7% | +11.7% |
| EARLY-OPENING SITES | | | | | |
| Average Monthly Visits Before | 156,600 | | 156,600 | 46,500 | 203,100 |
| Average Monthly Visits After | 135,600 | 22,000 | 157,600 | 63,425 | 221,025 |
| Change | -21,000 | | +1,000 | +16,925 | +17,925 |
| % Change | -13.4% | | +0.6% | +36.4% | +8.8% |

* CHAMPUS utilization data are unadjusted for growth trend.

**Data for MTF and PRIMUS/NAVCARE visits were derived from the charts in Appendix E. Data for CHAMPUS

EXHIBIT 5-4: IMPACT ON CHAMPUS UTILIZATION AT NORFOLK

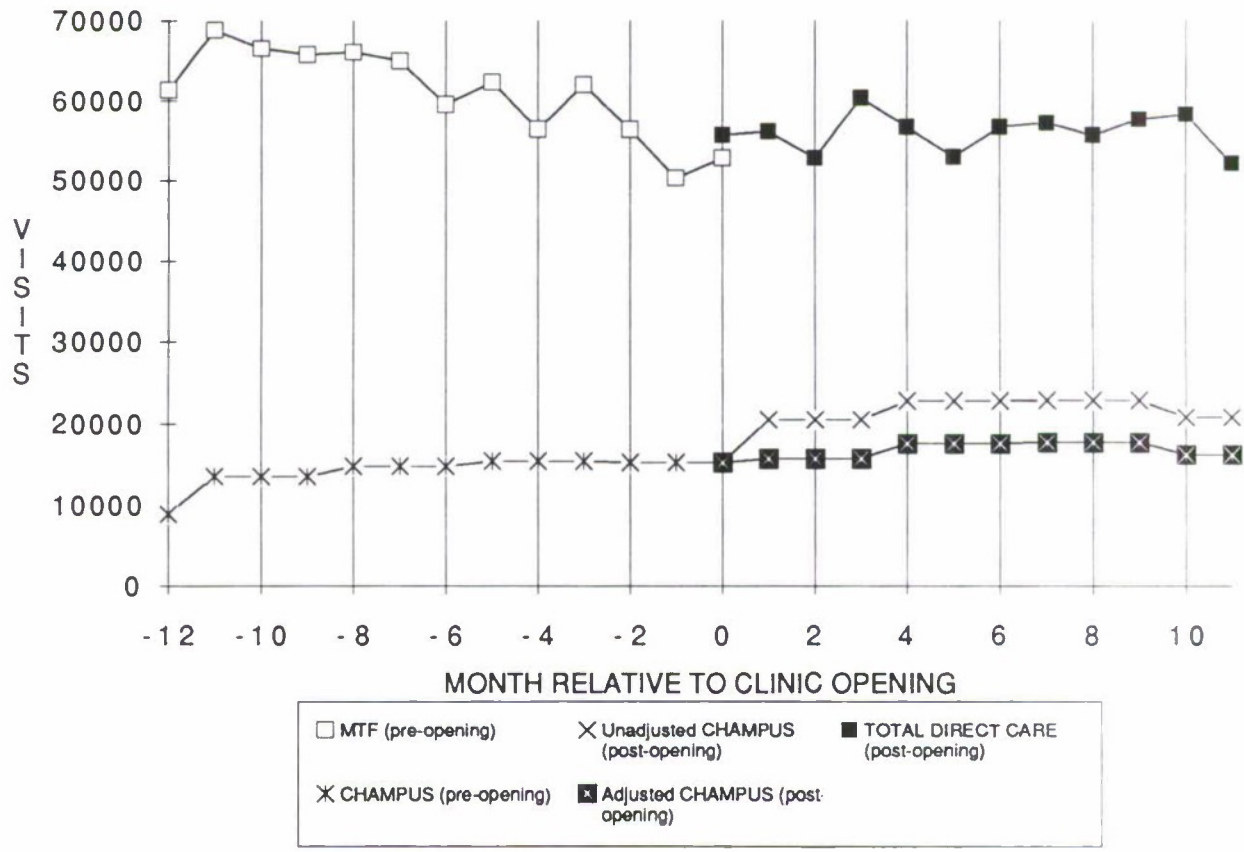


EXHIBIT 5-5: IMPACT ON CHAMPUS UTILIZATION AT SOUTH BAY

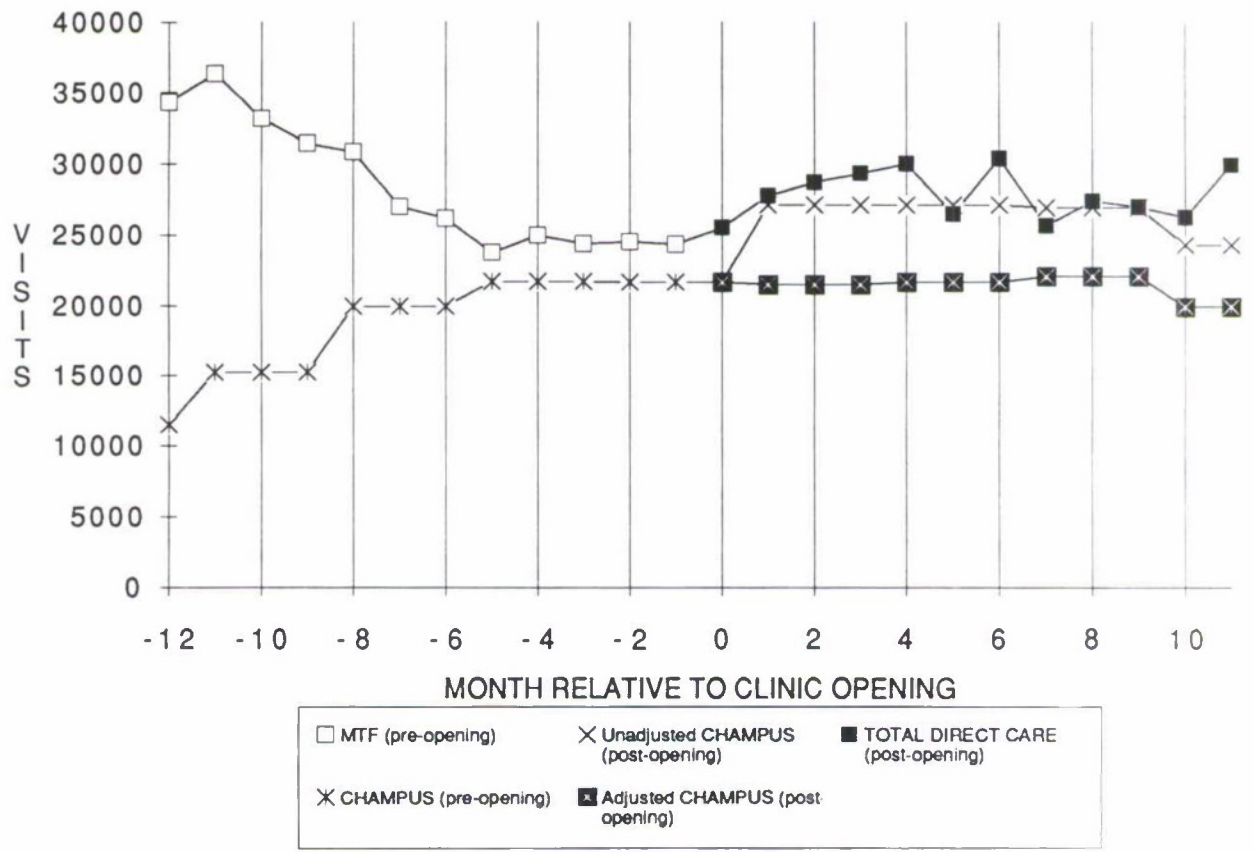


EXHIBIT 5-6: IMPACT ON CHAMPUS UTILIZATION AT SAVANNAH

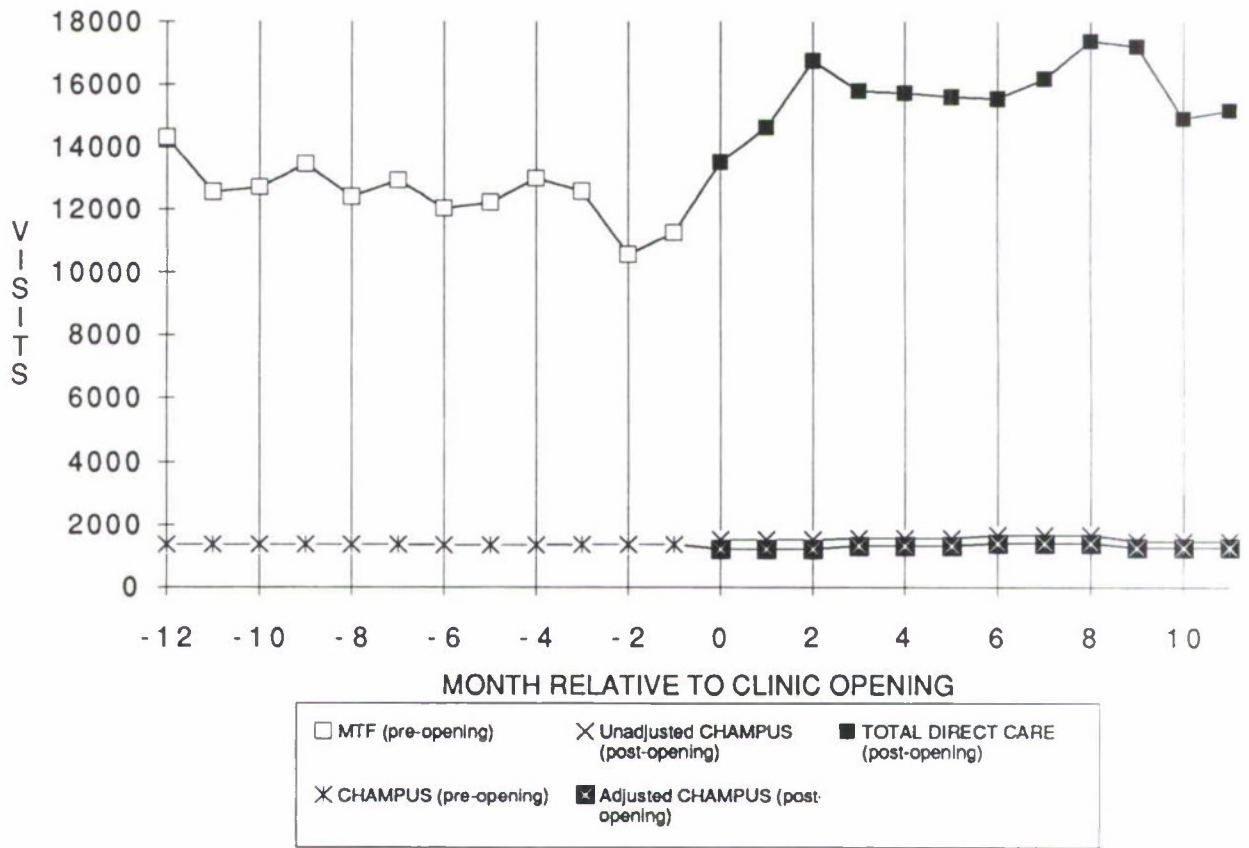


EXHIBIT 5-7: IMPACT ON CHAMPUS UTILIZATION AT JACKSONVILLE (CAMP LEJEUNE)

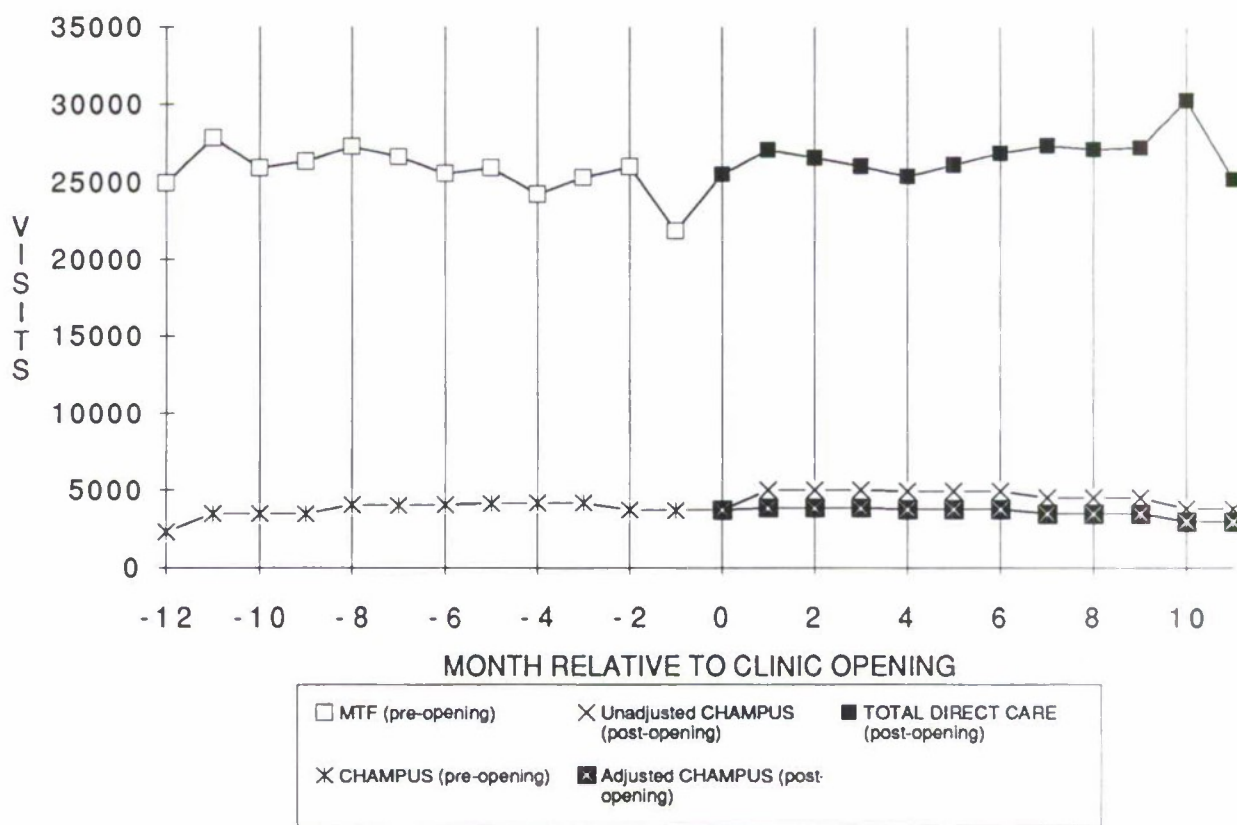
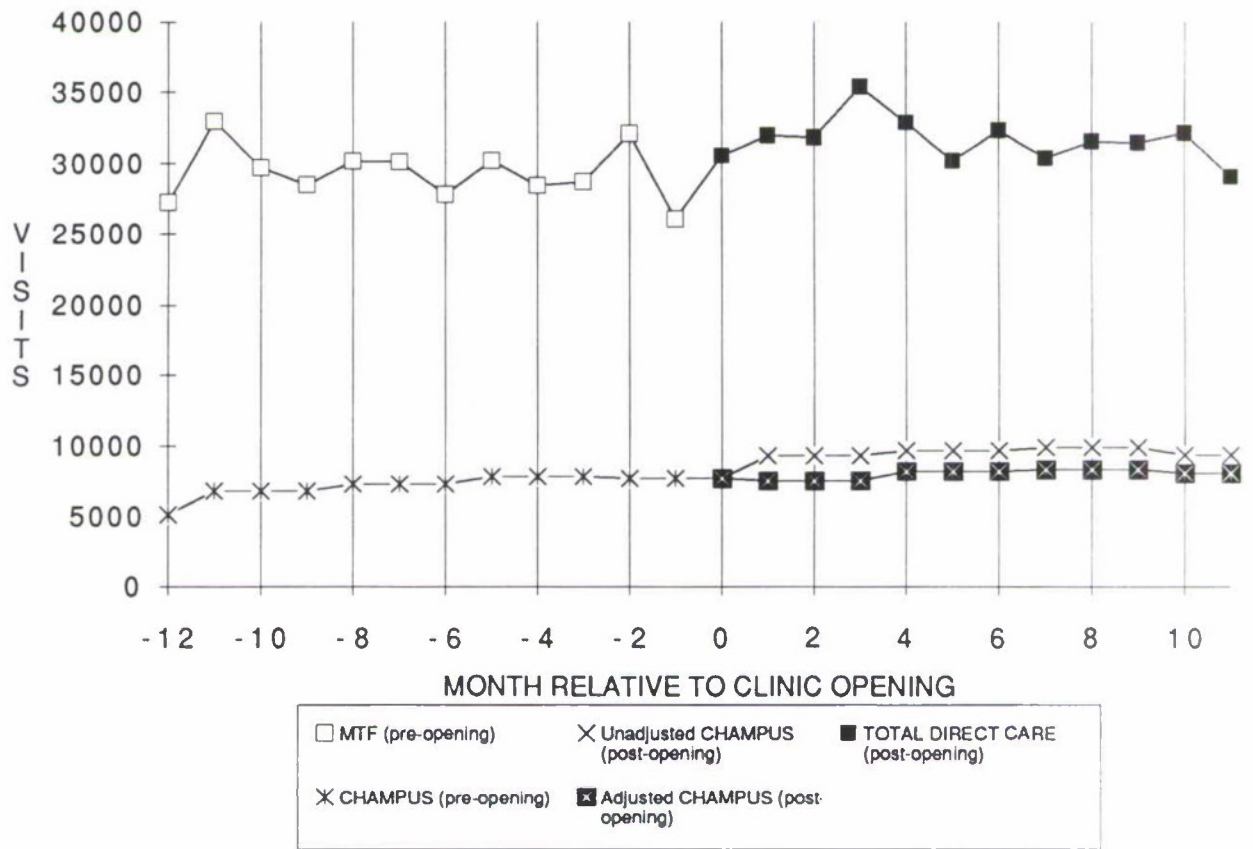


EXHIBIT 5-8: IMPACT ON CHAMPUS UTILIZATION AT MAYPORT



represented by an upward sloping line. Given the short span of investigation, population changes should not significantly affect the observed results.

Since both Norfolk (Exhibit 5-4) and South Bay (Exhibit 5-5) did not have a net increase in direct care utilization during the year after opening a NAVCARE clinic, one does not expect to observe a reduction in CHAMPUS utilization during this period. In fact, CHAMPUS utilization increased relative to their respective control groups at these clinics. Interestingly, at Savannah (Exhibit 5-6), where direct care utilization increased by about 3,600 visits per month, CHAMPUS utilization increased from roughly 1,350 to 1,575 visits per month. While this increase was less relative to its control group, one might expect to observe an absolute decrease in CHAMPUS utilization given an increase in direct care utilization more than double that of existing CHAMPUS utilization.

Like Savannah, Jacksonville/Camp Lejeune (Exhibit 5-7) also displayed an increase in direct care utilization but the increase was small. CHAMPUS utilization grew less relative to its control group. Mayport (Exhibit 5-8) had a small increase in direct care utilization in addition to an increase in CHAMPUS utilization relatively greater than its control group.

In summary, the only site displaying a significant increase in direct care utilization - Savannah - exhibited less CHAMPUS growth relative to its respective control group. However, this reduction in growth is very small relative to the increase in direct care visits. This suggests that an increase in direct care utilization may reduce the rate of CHAMPUS utilization growth but that it takes many additional direct care visits to save one CHAMPUS visit. Section 5.3 presents results for the eight late-opening clinics.

5.3 CHAMPUS UTILIZATION ANALYSIS RESULTS AT LATE-OPENING CLINICS

The effect of PRIMUS/NAVCARE on CHAMPUS utilization was evaluated at eight late-opening clinics: Tucson, Columbus, Omaha, Fayetteville, Killeen, Copperas Cove, Virginia Beach, and Charleston. Note that utilization data for PRIMUS Killeen and Copperas Cove were combined for this analysis due to their geographic proximity and the fact that both clinics began operation during the same month.

To evaluate the impact of PRIMUS/NAVCARE on CHAMPUS utilization at these clinics, utilization data from FY88 and FY89 were compared. For the most part, these eight clinics began full operation at the end of FY88. Therefore, FY88 direct care and CHAMPUS utilization are considered the "before" clinic opening data, and FY89 utilization data are considered the "after" clinic opening data. Exhibit 5-9 presents FY88 and FY89 MTF, PRIMUS/NAVCARE, and CHAMPUS utilization for each of the clinics. Note that the CHAMPUS data presented have been adjusted for known reporting incompleteness.¹

Exhibit 5-9 shows, when aggregated over the eight clinics, an increase in direct care utilization of approximately 286,000 visits from FY88 to FY89 was observed while CHAMPUS visits increased by about 95,000 visits. In order to assess the impact of the clinic openings on the CHAMPUS growth rate, the growth patterns at the late-opening sites, heretofore referred to as the "study group", were compared to growth patterns within three "control groups" where PRIMUS/NAVCARE was not in operation.

Exhibit 5-10 compares CHAMPUS utilization levels observed within the study group to projected CHAMPUS utilization given the study group

¹User's Guide for the CHAMPUS Workload Data, DoD OCHAMPUS, Aurora, Colorado, February, 1989.

EXHIBIT 5-9: IMPACT OF PRIMUS/NAVCARE ON CHAMPUS AND
MTF UTILIZATION AT "LATE-OPENING" CLINICS

| | <u>MTF</u> | <u>PRIMUS/ NAVCARE</u> | <u>TOTAL DIRECT CARE</u> | <u>CHAMPUS</u> | <u>TOTAL ALL CARE</u> |
|------------------------------|------------|----------------------------|------------------------------|----------------|---------------------------|
| <u>TUCSON</u> | | | | | |
| FY88 Visits | 118,958 | | 118,958 | 24,741 | 143,699 |
| FY89 Visits | 128,849 | 33,282 | 162,131 | 29,962 | 192,093 |
| Change | +9,891 | | +43,173 | +5,221 | +48,394 |
| % Change | +8.3% | | +36.3% | +21.1% | +33.7% |
| <u>COLUMBUS</u> | | | | | |
| FY88 Visits | 252,527 | | 252,527 | 22,864 | 275,391 |
| FY89 Visits | 191,800 | 53,325 | 245,125 | 31,026 | 276,151 |
| Change | -60,727 | | -7,402 | +8,162 | +760 |
| % Change | -24.0% | | -2.9% | +35.7% | +0.3% |
| <u>OMAHA</u> | | | | | |
| FY88 Visits | 175,696 | | 175,696 | 31,836 | 207,532 |
| FY89 Visits | 147,939 | 52,813 | 200,752 | 45,727 | 246,479 |
| Change | -27,757 | | +25,056 | +13,891 | +38,947 |
| % Change | -15.8% | | +14.3% | +43.6% | +18.8% |
| <u>FAYETTEVILLE</u> | | | | | |
| FY88 Visits | 383,605 | | 383,605 | 60,302 | 443,907 |
| FY89 Visits | 357,087 | 74,937 | 432,024 | 84,491 | 516,515 |
| Change | -26,518 | | +48,419 | +24,189 | +72,608 |
| % Change | -6.9% | | +12.6% | +40.1% | +16.4% |
| <u>CHARLESTON</u> | | | | | |
| FY88 Visits | 325,683 | | 325,683 | 88,257 | 413,940 |
| FY89 Visits | 283,771 | 70,085 | 353,856 | 84,401 | 438,257 |
| Change | -41,912 | | +28,173 | -3,856 | +24,317 |
| % Change | -12.9% | | +8.7% | -4.4% | +5.9% |
| <u>KILLEEN/COPPERAS COVE</u> | | | | | |
| FY88 Visits | 240,252 | | 240,252 | 87,795 | 328,047 |
| FY89 Visits | 208,694 | 124,187 | 332,881 | 121,435 | 454,316 |
| Change | -31,558 | | +92,629 | +33,640 | +126,269 |
| % Change | -13.1% | | +38.6% | +38.3% | +38.5% |
| <u>VIRGINIA BEACH</u> | | | | | |
| FY88 Visits | 608,692 | | 608,692 | 344,976 | 953,668 |
| FY89 Visits | 587,867 | 76,708 | 664,575 | 358,798 | 1,023,373 |
| Change | -20,825 | | +55,883 | +13,822 | +69,705 |
| % Change | -3.4% | | +9.2% | +4.0% | +7.3% |
| <u>LATE-OPENING CLINICS</u> | | | | | |
| FY88 Visits | 2,105,413 | | 2,105,413 | 660,771 | 2,766,184 |
| FY89 Visits | 1,906,007 | 485,337 | 2,391,344 | 755,840 | 3,147,184 |
| Change | -199,406 | | +285,931 | +95,069 | +381,000 |
| % Change | -9.5% | | +13.6% | +14.4% | +13.8% |

EXHIBIT 5-10: COMPARISON OF PROJECTED AND ACTUAL CHAMPUS UTILIZATION GROWTH AT "LATE-OPENING" CLINICS

| CONTROL GROUP | CONTROL GROUP % CHAMPUS Growth | STUDY GROUP Actual Direct Care Growth | STUDY GROUP Actual CHAMPUS Growth | STUDY GROUP Projected CHAMPUS Growth | Estimated CHAMPUS Visits "Saved" | Ratio of Direct Care to CHAMPUS "Saved" Visits |
|--------------------|--------------------------------------|---|---|--|--|--|
| National FY88-FY89 | 23% | 286,000 | 95,000 | 152,000 | 57,000 | 5.0 |
| Regional FY88-FY89 | 22% | 286,000 | 95,000 | 145,000 | 50,000 | 5.7 |
| Local FY87-FY88 | 38% | 286,000 | 95,000 | 251,000 | 156,000 | 1.8 |

maintained growth rates comparable to the control groups. Three control group growth rates were considered: growth within all areas in the entire nation without PRIMUS/NAVCARE (National FY88-FY89), growth within all areas in the DoD regions which include the eight clinics which makeup the study group (FI Regional FY88-FY89), and growth within the areas surrounding the eight clinics of interest during the previous fiscal year (Local FY87-FY88).

The observed CHAMPUS growth rate for each of the three control groups is provided in the second column of the exhibit. The third column is the total growth in direct care utilization for the study group and may be considered new direct care resulting from the introduction of PRIMUS/NAVCARE. The fourth column is the observed growth in CHAMPUS utilization within the study group from FY88 to FY89. The fifth column displays projected CHAMPUS growth using the control group growth rate as an expected growth rate. That is, if PRIMUS/NAVCARE was not introduced at these areas, one would expect CHAMPUS growth to be similar to that of areas without PRIMUS/NAVCARE. Column six is the difference between projected CHAMPUS utilization and observed CHAMPUS utilization and represents the estimated number of visits which did not occur within the CHAMPUS system due to expansion of the direct care system. This difference is termed CHAMPUS visits "saved". Lastly, the rightmost column displays the ratio of new direct care to CHAMPUS visits saved. This may be interpreted as the number of new direct care visits required in order to reduce CHAMPUS utilization by one visit.

The results presented in the exhibit show that for the national and FI regional control groups the ratio of new direct care to CHAMPUS visits saved is approximately 5 to 1. The local control group, however, provides a ratio of roughly 2 to 1. This latter result appears

unlikely given the circumstances observed at Savannah. Recall that about 3,600 new monthly direct care visits were observed after the introduction of a PRIMUS clinic. However, there were only about 1,350 monthly CHAMPUS medical visits in the area prior to the PRIMUS opening. Thus, if the ratio of new direct care to saved CHAMPUS visits is 2 to 1, one would have expected PRIMUS to eliminate all CHAMPUS medical visits in the Savannah area. Instead these visits increased by about 225 per month.

The results presented are approximate since these estimates are based on observations at a limited number of clinics. Furthermore, the effect of PRIMUS/NAVCARE on CHAMPUS utilization may vary depending on demographic differences in beneficiary populations, variations in medical practice patterns, location of the PRIMUS/NAVCARE relative to beneficiary residences, the level of unmet demand for primary care services prior to clinic opening, and other factors. Given these considerations, the National FY88-FY89 control group may best represent the entire beneficiary population and MHSS practice patterns. Therefore, the estimated ratio of 5 new direct care visits required to reduce CHAMPUS utilization by 1 visit was used for calculations in the cost-effectiveness report.²

²VRI-LI-1 WP90-2, PRIMUS/NAVCARE Cost-Effectiveness Analysis, Vector Research, Incorporated, April 1991.

6.0 SUMMARY AND CONCLUSIONS

Examination of the two components of direct care utilization - PRIMUS/NAVCARE and local MTFs - revealed three patterns of response to the opening of a PRIMUS/NAVCARE clinic:

- Expansion - PRIMUS/NAVCARE represents an added source of direct care with little or no reduction in MTF visits. This response was observed at seven sites.
- Substitution - PRIMUS/NAVCARE utilization is offset by a near equivalent reduction in MTF utilization. This response was observed at three sites.
- Mixed - PRIMUS/NAVCARE operation appears to reduce MTF utilization with an increase in total direct care utilization. This response was observed at eight sites.

Analysis of a number of site and operating conditions did not reveal explanatory factors which would elicit a particular utilization response. Also, the data did not provide a method for determining if reduced MTF utilization was due to patients being diverted from MTFs or electing to use PRIMUS/NAVCARE centers over local MTFs. (At a number of Navy sites, there was a substantial decline in MTF utilization just prior to clinic opening.) We estimate that somewhat less than half of PRIMUS/NAVCARE visits have been offset by reductions in MTF visits.

The impact of PRIMUS/NAVCARE clinics on CHAMPUS visits was difficult to quantify. However, the effect does not appear to be great. At "substitution" sites where most PRIMUS/NAVCARE visits appear to be shifted from the MTF, one would not expect much effect on CHAMPUS visits. At the one expansionary site which could be analyzed using quarterly data, the increase in direct care visits was nearly three times the initial number of CHAMPUS visits and yet CHAMPUS visits continued to increase in spite of the PRIMUS opening. Finally, our

analysis of eight late-opening sites using annual CHAMPUS data produced estimates of one saved CHAMPUS visit for every two to six additional direct care visits.

In terms of the effect that PRIMUS/NAVCARE clinics have had on overall MHSS utilization, our analysis supports the following conclusions:

- most PRIMUS/NAVCARE clinic openings have resulted in an increase in direct care (MTF plus PRIMUS/NAVCARE) primary care visits; and
- the proportion of these increased direct care visits that were offset by reductions in CHAMPUS visits was relatively small.

Therefore, PRIMUS/NAVCARE clinics have resulted in a significant net increase in the number of MHSS primary care visits.

APPENDIX A: FACILITY-TO-SITE MAP

The following table demonstrates the linkage between geographic sites and the individual PRIMUS/NAVCARE centers and MTFs considered in the utilization analysis. For each PRIMUS/NAVCARE center, the table also indicates its parent or sponsoring MTF. For each MTF in the "Facility Name" column, the table indicates the MTF through which its MEPRS data is normally reported.

| <u>Site</u> | <u>Branch</u> | <u>DMIS ID</u> | <u>UIC</u> | <u>Facility Name</u> | <u>Parent / Reporting MTF</u> |
|------------------------------------|---------------|----------------|------------|---------------------------|-------------------------------|
| <u>Charleston</u> | | | | | |
| USN | - - - | - - - | - - - | NAVCARE Charleston | NH CHARLESTON |
| USN | 0103 | 068084 | - - - | NH CHARLESTON | NH CHARLESTON |
| USN | 0104 | 061337 | - - - | NH BEAUFORT | NH BEAUFORT |
| USAF | 0356 | FFCOSO | - - - | USAF CLINIC CHARLESTON | CHARLESTON USAF/HDC |
| USN | 0359 | - - - | - - - | BRMCL NAVSTA CHARLESTON | NH CHARLESTON |
| USN | 0511 | - - - | - - - | BRMCL WPNSTA CHARLESTON | NH CHARLESTON |
| <u>Columbus</u> | | | | | |
| USA | - - - | - - - | - - - | PRIMUS Columbus | MARTIN AH FT BENNING |
| USA | 0048 | W2L3AA | - - - | MARTIN AH, FT BENNING | MARTIN AH FT BENNING |
| USA | 1316 | - - - | - - - | WINDER CLINIC, FT BENNING | MARTIN AH FT BENNING |
| <u>Fayetteville</u> | | | | | |
| USA | - - - | - - - | - - - | PRIMUS Fayetteville | WOMACK AH FT BRAGG |
| USA | 0089 | W2L6AA | - - - | WOMACK AH, FT BRAGG | WOMACK AH FT BRAGG |
| USAF | 0335 | FFH7TO | - - - | USAF CLINIC POPE | POPE USAF/HDC |
| USA | 0564 | - - - | - - - | TMC-9, FT BRAGG | WOMACK AH FT BRAGG |
| USA | 0567 | - - - | - - - | TMC-12 WOMACK, FT BRAGG | WOMACK AH FT BRAGG |
| USA | 0574 | - - - | - - - | TMC-21, FT BRAGG | WOMACK AH FT BRAGG |
| USA | 0576 | - - - | - - - | TMC-MOT WOMACK, FT BRAGG | WOMACK AH FT BRAGG |
| <u>Jacksonville (Camp Lejeune)</u> | | | | | |
| USN | - - - | - - - | - - - | NAVCARE Jacksonville | NH CAMP LEJEUNE |
| USN | 0091 | 068093 | - - - | NH CAMP LEJEUNE | NH CAMP LEJEUNE |
| USN | 0092 | 066094 | - - - | NH CHERRY POINT | NH CHERRY POINT |
| <u>Killeen / Copperas Cove</u> | | | | | |
| USA | - - - | - - - | - - - | PRIMUS Copperas Cove | DARNALL AH FT HOOD |
| USA | - - - | - - - | - - - | PRIMUS Killeen | DARNALL AH FT HOOD |
| USA | 0110 | W2M5AA | - - - | DARNALL AH, FT HOOD | DARNALL AH FT HOOD |
| USA | 1590 | - - - | - - - | TMC-3, FT HOOD | DARNALL AH FT HOOD |
| <u>Long Beach</u> | | | | | |
| USN | - - - | - - - | - - - | NAVCARE Long Beach | NH LONG BEACH |
| USN | 0025 | 068090 | - - - | NH LONG BEACH | NH LONG BEACH |
| USN | 0215 | - - - | - - - | BRMCL MCAS TUSTIN | NH LONG BEACH |
| USAF | 0248 | FFB580 | - - - | USAF CLINIC LOS ANGELES | USAF CLINIC LOS ANGELES |

| <u>Site</u> | <u>Branch</u> | <u>DMIS ID</u> | <u>UIC</u> | <u>Facility Name</u> | <u>Parent / Reporting MTF</u> |
|---------------------------------|---------------|----------------|------------|----------------------------|-------------------------------|
| <u>Mayport</u> | | | | | |
| USN | - | - | - | NAVCARE Mayport | NH JACKSONVILLE |
| USN | 0039 | 000232 | - | NH JACKSONVILLE | NH JACKSONVILLE |
| USN | 0266 | - | - | BRMCL NAS JACKSONVILLE | NH JACKSONVILLE |
| USN | 0267 | - | - | BRMCL NAS CECIL FIELD | NH JACKSONVILLE |
| USN | 0405 | - | - | BRMCL NAVSTA MAYPORT | NH JACKSONVILLE |
| <u>Monterey / Salinas</u> | | | | | |
| USA | - | - | - | PRIMUS Monterey | HAYS AH FT ORD |
| USA | - | - | - | PRIMUS Salinas | HAYS AH FT ORD |
| USA | 0023 | W204AA | - | HAYS AH, FT ORD | HAYS AH FT ORD |
| USA | 0247 | - | - | USAHC PRESIDIO, MONTEREY | HAYS AH FT ORD |
| <u>Norfolk / Virginia Beach</u> | | | | | |
| USN | - | - | - | NAVCARE Norfolk | NH PORTSMOUTH |
| USN | - | - | - | NAVCARE Virginia Beach | NH PORTSMOUTH |
| USAF | 0120 | FFD5Z0 | - | 1st MEDICAL GROUP | USAF HOSP LANGLEY AFB |
| USA | 0121 | W2K1AA | - | MCDONALD AH, FT EUSTIS | MCDONALD AH FT EUSTIS |
| USN | 0124 | 000183 | - | NRMC PORTSMOUTH | NH PORTSMOUTH |
| USA | 0372 | - | - | USAHC FT MONROE | MCDONALD AH FT EUSTIS |
| USN | 0378 | - | - | BRMCL NAVPHIB LITTLE CREEK | NMCL NORFOLK |
| USN | 0379 | - | - | BRMCL NSC NORFOLK | NMCL NORFOLK |
| USN | 0381 | - | - | BRMCL WPNSTA YORKTOWN | NMCL NORFOLK |
| USN | 0387 | - | - | BRMCL NAS OCEANA | NMCL NORFOLK |
| USA | 0464 | - | - | USAHC FT STORY | MCDONALD AH FT EUSTIS |
| USN | 0505 | - | - | BRMCL LAFAYETTE RIVER | NMCL NORFOLK |
| USN | 0508 | - | - | BRMCL NAVSTA NORFOLK | NMCL NORFOLK |
| USN | 0702 | 068722 | - | NMCL NORFOLK | NH PORTSMOUTH |
| USAF | 0848 | - | - | TAC MED AID STATION SUMM | USAF HOSP LANGLEY AFB |
| <u>Northern Virginia</u> | | | | | |
| USA | 6202 | - | - | PRIMUS Burke | DEWITT AH FT BELVOIR |
| USA | 6200 | - | - | PRIMUS Fairfax | DEWITT AH FT BELVOIR |
| USA | 6201 | - | - | PRIMUS Woodbridge | DEWITT AH FT BELVOIR |
| USA | 0037 | W2DHAA | - | WALTER REED AMC | WALTER REED AMC |
| USAF | 0066 | FFCMW0 | - | MALCOLM GROW USAF MED CEN | M. GROW MC ANDREWS AFB |
| USN | 0067 | 00498A | - | NH BETHESDA | NH BETHESDA |
| USA | 0123 | W2LFAA | - | DEWITT AH, FT BELVOIR | DEWITT AH FT BELVOIR |
| USA | 0255 | - | - | USAHC FT MCNAIR | WALTER REED AMC |
| USA | 0256 | - | - | USAHC PENTAGON | WALTER REED AMC |
| USN | 0301 | - | - | BRMCL NAVORDSTA INDIANHEAD | BRMCL NAVYARD WASHINGTON |
| USN | 0385 | 000231 | - | NMCL QUANTICO | NMCL QUANTICO |
| USN | 0386 | - | - | BRMCL NAVSWC DAHLGREN | NMCL QUANTICO |
| USA | 0389 | - | - | AVN CLINIC DAVISON AAF | DEWITT AH FT BELVOIR |
| USA | 0390 | - | - | USA RADER CLINIC, FT MYER | WALTER REED AMC |
| USA | 0391 | - | - | USAHC ARLINGTON HALL | WALTER REED AMC |
| USA | 0392 | - | - | USAHC CAMERON STATION | WALTER REED AMC |
| USA | 0393 | - | - | USAHC VINT HILL FARMS | DEWITT AH FT BELVOIR |
| USN | 0514 | - | - | BRCL NDIST WASHINGTON DC | BRMCL NAVYARD WASHINGTON |
| USA | 0551 | - | - | NORTH POST HC FT BELVOIR | DEWITT AH FT BELVOIR |
| USA | 0552 | - | - | TMC SOUTH POST, FT BELVOIR | DEWITT AH FT BELVOIR |
| USAF | 0846 | - | - | SYSCOMM MEDAIDSTATION SUMM | M. GROW MC ANDREWS AFB |

| <u>Site</u> | <u>Branch</u> | <u>DMIS ID</u> | <u>UIC</u> | <u>Facility Name</u> | <u>Parent / Reporting MTF</u> |
|-----------------------------------|---------------|----------------|------------|---------------------------|-------------------------------|
| <u>Oakland</u> | | | | | |
| USN | - - - | - - - | - - - | NAVCARE Oakland | NH OAKLAND |
| USAF | 0014 | FFCRHO | - - - | DAVID GRANT USAF MED CEN | GRANT MED CEN TRAVIS AFB |
| USA | 0022 | W004AA | - - - | LETTERMAN AMC, PRESIDIO | LETTERMAN AMC |
| USN | 0027 | 000619 | - - - | NH OAKLAND | NH OAKLAND |
| USN | 0219 | - - - | - - - | BRMCL NAS MOFFETT FIELD | NH OAKLAND |
| USN | 0220 | - - - | - - - | BRMCL NAS ALAMEDA | NH OAKLAND |
| USN | 0221 | - - - | - - - | NSC OAKLAND DIV MARE ISL | NH OAKLAND |
| USN | 0222 | - - - | - - - | BRMCL WPNSTA CONCORD | NH OAKLAND |
| USA | 0241 | - - - | - - - | USAHC OAKLAND | LETTERMAN AMC |
| USA | 0245 | - - - | - - - | USAHC TRACY DEPOT | LETTERMAN AMC |
| USN | 0516 | - - - | - - - | BRMCL NSY MARE ISLAND | NH OAKLAND |
| USN | 0526 | 062287 | - - - | NMCL SAN FRANCISCO | NH OAKLAND |
| <u>Oceanside (Camp Pendleton)</u> | | | | | |
| USN | - - - | - - - | - - - | NAVCARE Oceanside | NH CAMP PENDLETON |
| USN | 0024 | 068094 | - - - | NH CAMP PENDLETON | NH CAMP PENDLETON |
| USN | 1659 | - - - | - - - | BRMCL MCB SAN ONOFRE | NH CAMP PENDLETON |
| <u>Omaha</u> | | | | | |
| USAF | - - - | - - - | - - - | PRIMUS Omaha | BERGQUIST HOSP OFFUTT AFB |
| USAF | 0078 | FFDP10 | - - - | EHRLING BEROUIST REG HOSP | BERGQUIST HOSP OFFUTT AFB |
| USAF | 0845 | - - - | - - - | SAC MED AID STATION SUMM | BERGQUIST HOSP OFFUTT AFB |
| <u>Riverside</u> | | | | | |
| USAF | - - - | - - - | - - - | PRIMUS Riverside | MARCH REG HOSP MARCH AFB |
| USAF | 0021 | FFDNYO | - - - | 22nd STRATEGIC HOSPITAL | MARCH REG HOSP MARCH AFB |
| USAF | 0249 | FFGLWO | - - - | USAF CLINIC NORTON | NORTON USAF/HDC |
| <u>South Bay / San Diego</u> | | | | | |
| USN | - - - | - - - | - - - | NAVCARE San Diego | NH SAN DIEGO |
| USN | - - - | - - - | - - - | NAVCARE South Bay | NH SAN DIEGO |
| USN | 0029 | 000259 | - - - | NH SAN DIEGO | NH SAN DIEGO |
| USN | 0232 | - - - | - - - | BRMCL NAS MIRAMAR | NMCL SAN DIEGO |
| <u>Savannah</u> | | | | | |
| USA | 6203 | - - - | - - - | PRIMUS Savannah | WINN ACH FT STEWART |
| USA | 0049 | W2MSAA | - - - | WINN AH, FT STEWART | WINN ACH FT STEWART |
| USA | 0272 | - - - | - - - | TUTTLE AHC HUNTER FIELD | WINN ACH FT STEWART |
| <u>Tucson</u> | | | | | |
| USAF | - - - | - - - | - - - | PRIMUS Tucson | USAF HOSP DAVIS-MONTHAN |
| USAF | 0010 | FFDNT0 | - - - | 836th MEDICAL GROUP | USAF HOSP DAVIS-MONTHAN |

APPENDIX B: PRIMUS/NAVCARE DATA DESCRIPTION

Monthly counts of services provided at individual PRIMUS/NAVCARE clinics were furnished for the analysis by the US Army Health Services Command, the Naval Medical Materiel Support Command, and the Office of the Air Force Surgeon General. Prior to analysis, the data from the three sources were processed into a common file layout.

The counts were provided from the opening date of each clinic through FY89, with the exception of Air Force PRIMUS Tucson, where data were only available through May 1989. The first month for which counts were present was taken to be the clinic's opening month, even though the center may not have been in operation for the entire month. Monthly counts for FY89 were checked against previously furnished annual utilization data for consistency.

The counts were furnished in two formats:¹

- counts of services by beneficiary category; and
- counts of services by type of service.

The latter were used for most analyses due to a shortcoming of the MTF utilization data with regard to beneficiary category, as discussed in Appendix C.

"Type of service" refers to a range of contract-specified, billable health care services that is unique to each service branch or, in some cases, unique to individual sites. This range includes, in decreasing order of frequency:

¹The counts of NAVCARE services furnished by the Navy were simultaneously broken out by both beneficiary category and type of service.

- standard office visits;²
- abbreviated office visits;³
- prescription refills or other handling;
- immunizations;
- mammography;
- optometry visits (Army only); and
- emergency ambulance transfers.

For the purposes of comparison with MTF and CHAMPUS utilization, PRIMUS/NAVCARE visits were taken to be the total of standard and abbreviated office visits. Optometry services were not considered, because they are offered at only a very few Army sites and also due to differences between the direct care and CHAMPUS optometry benefit. While reasonable and consistent in its own right, there were also other considerations that pointed to the same approach. First, standard and abbreviated visits account for the vast preponderance of PRIMUS/NAVCARE services. Second, early PRIMUS/NAVCARE contracts did not distinguish between standard and abbreviated visits.

Third, the monthly PRIMUS data provided by the Army had been channeled through a standard MTF reporting mechanism (i.e., Army Medical Summary Report or MED-302), which also does not distinguish between standard and abbreviated visits. The Army PRIMUS data, instead, were reported in terms of 'primary care clinic visits'. However, when compared with annual PRIMUS data derived directly from contractor billing statements, it was apparent that primary care clinic visits

²In the parlance of the individual service branches, 'standard' visits are termed 'regular' by the Army; 'full' by the Navy; and 'long' by the Air Force.

³Abbreviated visits are termed 'short' or 'no charge' by the Army; 'limited' by the Navy; and 'short' by the Air Force.

equated with the sum of standard and abbreviated office visits. For unknown reasons, the number of immunizations reported through the two mechanisms did not correlate closely. Close correlation would not be expected for pharmacy services or mammography, which are reported through the MTF as resource-weighted procedures.

APPENDIX C: MTF DATA DESCRIPTION

The MTF utilization data used in the analysis were furnished by the biostatistics offices of the Services, specifically:

- US Army Health Services Command, Patient Administration Systems and Biostatistics Activity;
- Naval Medical Data Services Center; and
- Air Force Office of Medical Support.

These data – often referred to as Biometrics data – consisted of monthly counts of outpatient visits for FY86-FY89 for selected MTFs. Within MTFs, the counts were clinic-specific, and were limited to a subset of clinics believed most likely to provide services comparable to or competitive with PRIMUS/NAVCARE. These clinics were:

- Primary Care Clinic;
- Family Practice Clinic;
- Pediatrics Clinic;
- Gynecology Clinic;
- ENT Clinic; and
- Emergency Room.

The visit counts were not specific with regard to beneficiary category. In this respect, the data used in the analysis were similar to utilization data reported through the Medical Expense and Performance Reporting System (MEPRS), with individual clinics corresponding to MEPRS subaccounts.¹

¹MTF utilization data for the Navy were provided at the MEPRS summary account level, creating a data comparability issue. For example, Navy primary care visit counts include visits for the primary care clinic itself, as well as, those for the occupational health clinic, the medical examination clinic, etc., giving the appearance of higher MTF utilization at Navy sites.

The Biometrics data used in the analysis, however, did offer one important advantage over MEPRS data — greater MTF specificity. With few exceptions, MEPRS data are aggregated at the level of the military hospital for reporting purposes — i.e., visits at all the branch and satellite MTFs that are subordinate to the hospital are "rolled up" with those of the hospital itself. In some cases, the subordinate MTF may be quite distant from the hospital and its nearby PRIMUS/NAVCARE center. Alternatively, a subordinate MTF may be distant from its own superior hospital, but close to a hospital and PRIMUS/NAVCARE center under a different command. The PRIMUS/NAVCARE center may affect utilization at the subordinate MTF without affecting the subordinate MTF's superior hospital.

Using Biometrics data, it was possible to dispense with the command-oriented organization of MEPRS data, replacing it with one more geographically oriented. Under this approach, all MTFs situated within the 40-mile radius catchment area of a PRIMUS/NAVCARE center's parent MTF were initially selected for inclusion in the study; all others were excluded. MTFs were selected or excluded without regard to service branch affiliation or MEPRS reporting status. The decision to select or exclude a given MTF was based on a reference table of location relationships (RLOCAT) that is internal to the Resource Analysis and Planning System (RAPS) model.

In total, 213 MTFs and their subordinate clinics were selected through this process.² A considerable number of these MTFs that treated only active duty members (e.g., troop medical clinics) or that performed mainly occupational medicine were subsequently excluded, resulting in the set of facilities shown in Appendix A. This had the beneficial

²Although requested, utilization data were not received for Naval Medical Clinic San Diego, through which much of the direct care workload in the San Diego area is reported.

effect of reducing the amount of noise in the data and making any impact of PRIMUS/NAVCARE on MTF utilization more obvious. The end result is that the MTFs selected were those determined to be most likely to be affected by PRIMUS/ NAVCARE.

In general, for a given site, 12 or more months of MTF data were available before the opening of the PRIMUS/NAVCARE clinic, and at least 12 months of data were available after opening, including the month of opening. This tended to diminish the impact of systematic seasonal fluctuations in utilization, since a fluctuation in the 12 months prior to opening would be cancelled out by the same fluctuation in the following 12 months. Therefore, no adjustment was made to the MTF utilization data for seasonal variation.

It should be noted, however, that the Air Force data submission for FY89 contained only the first six months of data. This had the effect of shortening to eight months the comparison period after opening of some PRIMUS/NAVCARE clinics. Those sites with late opening dates (i.e., end of FY88) for which the service branch of the parent MTF or any other selected MTF was Air Force were affected by the incomplete FY89 data. This also affected the aggregation of MTF utilization data across sites, limiting to eight the number of months for which all sites had usable data.

In addition to the data described up to this point, each of the Services also furnished a second monthly data file covering the same time period and MTFs. This file featured visit counts specific for beneficiary category, but not broken down by clinic within a given MTF. The original intent had been to use this file to develop MTF-specific distributions of visits by beneficiary category, which could then be applied to the clinic-specific counts in the previously described dataset. However, prototype results did not appear sufficiently reliable to warrant incorporating the technique into the analysis.

APPENDIX D: CHAMPUS DATA DESCRIPTION

The analysis of the effect of PRIMUS/NAVCARE on CHAMPUS utilization was divided into two components. This was necessary as quarterly CHAMPUS data for FY89 were not available in a form comparable to FY86-FY88 data at the time of the analysis. Therefore, "early-opening" clinics (in operation prior to February 1987) were evaluated using quarterly data, while "late-opening" clinics were evaluated using annual data. The methodology applied to early-opening clinics is described first.

METHODOLOGY FOR EARLY-OPENING CLINICS

Eight PRIMUS/NAVCARE clinics were in operation prior to February 1987. The three Northern Virginia clinics were excluded from analysis due to inadequate CHAMPUS data prior to clinic operation. The remaining clinics shown below were analyzed using quarterly data.

| <u>PRIMUS/NAVCARE Clinic</u> | <u>Parent MTF</u> | <u>FI Region</u> |
|------------------------------|-----------------------|------------------|
| PRIMUS Savannah | Weed AH, Fort Stewart | Southeast |
| NAVCARE Jacksonville | NH Camp Lejeune | Middle Atlantic |
| NAVCARE Mayport | NH Jacksonville | Southeast |
| NAVCARE Norfolk | NH Portsmouth | Middle Atlantic |
| NAVCARE South Bay | NH San Diego | Southwest |

Aggregate outpatient claims data by fiscal quarter for FY86, FY87, and FY88 were furnished for the utilization analysis by OCHAMPUS Statistics Branch. Claims from beneficiaries residing outside of any CONUS catchment area were excluded from the data. Each record in this dataset was specific for the following attributes:

- Fiscal Quarter (in which care was received);
- Catchment Area;
- Fiscal Intermediary (FI) Region;
- Beneficiary Category;
- Age Group;
- Sex; and
- Clinical Category (medical, surgical, OB/GYN, or psychiatric).

Each record also contained the following values:

- Total Office Visits;
- Total Emergency Room Visits;
- Total Ancillary Services; and
- Total Government Costs.

These totals reflect claims accumulated by OCHAMPUS for up to 24 months after the date of care and, thus, represent virtually all care received in a given fiscal quarter or year that will ever be claimed. Therefore, no adjustment for completeness was necessary. The one exception was fourth quarter FY88, which is known to be incomplete due to claims processing problems encountered by the CHAMPUS Reform Initiative (CRI) contractor. This incompleteness, affecting catchment areas in California and Hawaii, could not be corrected.

Records for the catchment areas of these five parent MTFs were extracted from the CHAMPUS dataset. The remaining records were collapsed by FI Region and served as control groups. The catchment areas of four of the five test sites overlap to varying degrees with the catchment areas of neighboring MTFs. These neighboring catchment areas were not, however, included in the test group, because of the lower likelihood that their beneficiaries' utilization would be affected by the presence of a PRIMUS/NAVCARE clinic.

After creating the test and control groups, the next step was to select out records with clinical category of care of medical or OB/GYN. While the medical category was known to contain specialty medicine in addition to primary care, it represented the best available proxy for primary care utilization. Compared to the medical category, OB/GYN accounted for a vastly smaller number of visits. Also, despite the label, these OB/GYN visits were believed to be largely gynecological in nature, as opposed to maternity-related. Pre- and post-natal visits are typically claimed as part of a global delivery fee, and, as a result, are not reflected in outpatient CHAMPUS utilization data.

Within the medical and OB/GYN subset of records, the mapping shown below was used to obtain utilization categories that were as consistent as possible with those used for the direct care utilization analysis.

| <u>ORIGINAL CATEGORY</u> | <u>FINAL CATEGORY</u> |
|---------------------------------------|-----------------------|
| Adult (16+ yrs) Medical Office Visit | Primary Care Visit |
| Child (0-15 yrs) Medical Office Visit | Pediatric Visit |
| OB/GYN Office Visit | Gynecology Visit |
| Medical Emergency Room Visit | ER Visit |
| OB/GYN Emergency Room Visit | ER Visit |
| Medical Ancillary Service | not counted |
| OB/GYN Ancillary Service | not counted |

One last step was necessary in order to allow the quarterly CHAMPUS data to be easily merged with monthly PRIMUS/NAVCARE and MTF data. To accomplish this, average monthly utilization for each given quarter was computed. Each month within the quarter was then assumed to have utilization equivalent to the computed monthly average.

METHODOLOGY FOR LATE-OPENING CLINICS

Fifteen PRIMUS/NAVCARE clinics began operation after February, 1987. Of the 15 clinics, 7 were affected by data problems associated with the CRI. These clinics were subsequently excluded from the analysis. Remaining were the following eight clinics:

| <u>PRIMUS/NAVCARE Clinic</u> | <u>Parent MTF</u> | <u>DoD Region</u> |
|------------------------------|---|-------------------|
| PRIMUS Columbus | Martin AH, Fort Benning | 7 |
| PRIMUS Copperas Cove | Darnall AH, Fort Hood | 5 |
| PRIMUS Fayetteville | Womack AH, Fort Bragg | 8 |
| PRIMUS Killeen | Darnall AH, Fort Hood | 5 |
| NAVCARE Charleston | NH Charleston | 8 |
| NAVCARE Virginia Beach | NH Portsmouth | 8 |
| PRIMUS Omaha | Bergquist SH, Offutt AFB | 3 |
| PRIMUS Tucson | 836th Medical Group, Davis-Monthan AFB | 4 |

For these clinics, the effect of PRIMUS/NAVCARE on CHAMPUS utilization was evaluated using annual CHAMPUS visit data taken from the outpatient professional services component of the FY88 and FY89 CHAMPUS Cost and Workload Reports. Only medical visits were counted; surgical, psychiatric, and delivery-related visits were excluded. Data in these reports are "incomplete" in that they reflect only a 15-month claims collection period versus a full 24 months. Thus, it was necessary to

estimate the visit counts to completeness using standard OCHAMPUS adjustment factors.¹ Similar data and methods were used in the creation of control groups to study the growth in CHAMPUS utilization in the absence of PRIMUS/NAVCARE.

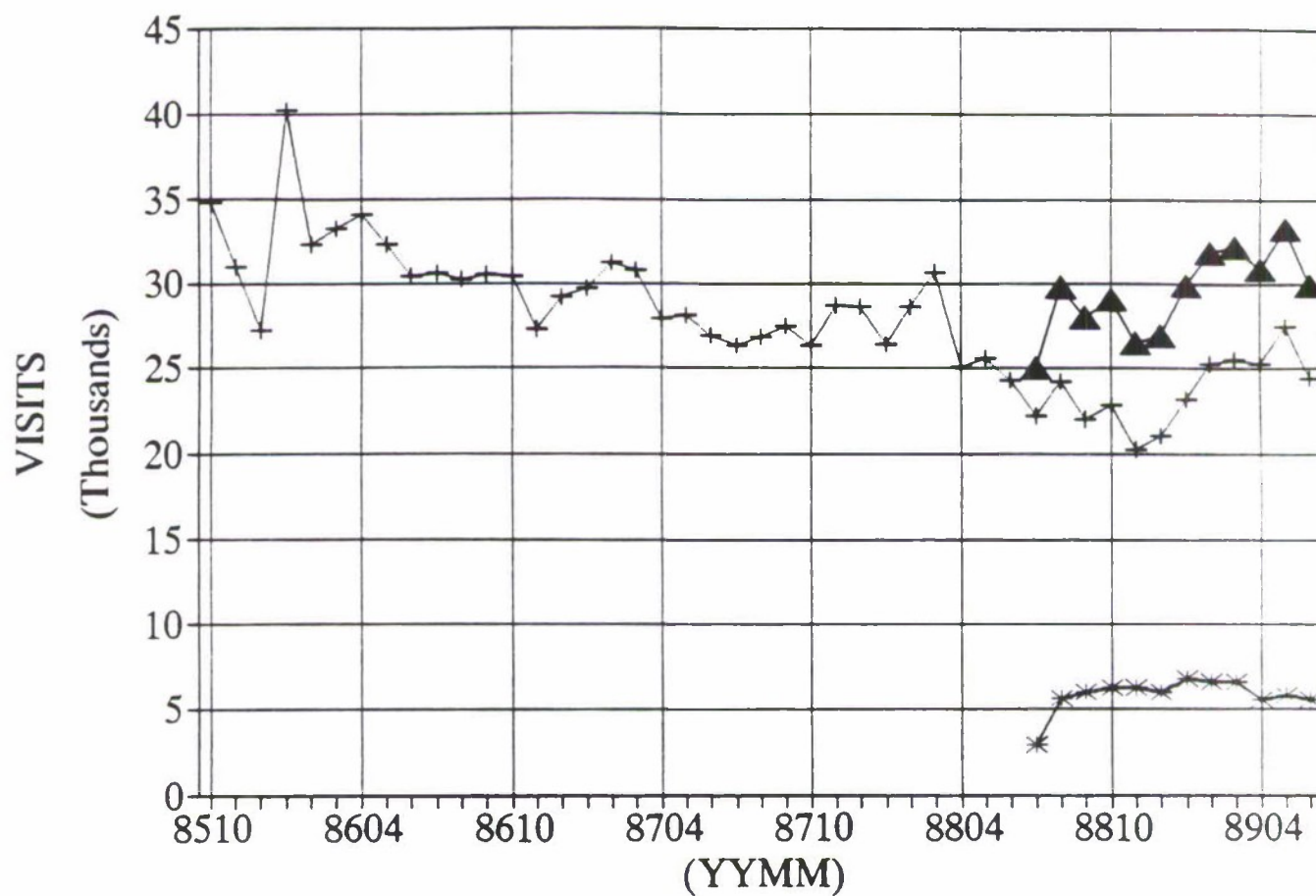
¹User's Guide for the CHAMPUS Workload Data, DoD OCHAMPUS, Aurora, Colorado, February, 1989. Beneficiaries are permitted to file claims until the close of the calendar year following the calendar year in which care was received. For fiscal year X, OCHAMPUS produces its standard reports at the end of calendar year X - i.e., 15 months after the beginning of the fiscal year. Such a 15-month report reflects approximately 90% of all care that was received in FY_X and that will ultimately be claimed against the government. The remaining claims continue to accumulate until the close of CY_{X+1}.

APPENDIX E: PRIMUS/NAVCARE AND MTF UTILIZATION AT INDIVIDUAL SITES

The series of exhibits in this appendix presents PRIMUS/NAVCARE and MTF utilization data for 17 sites in the following order:

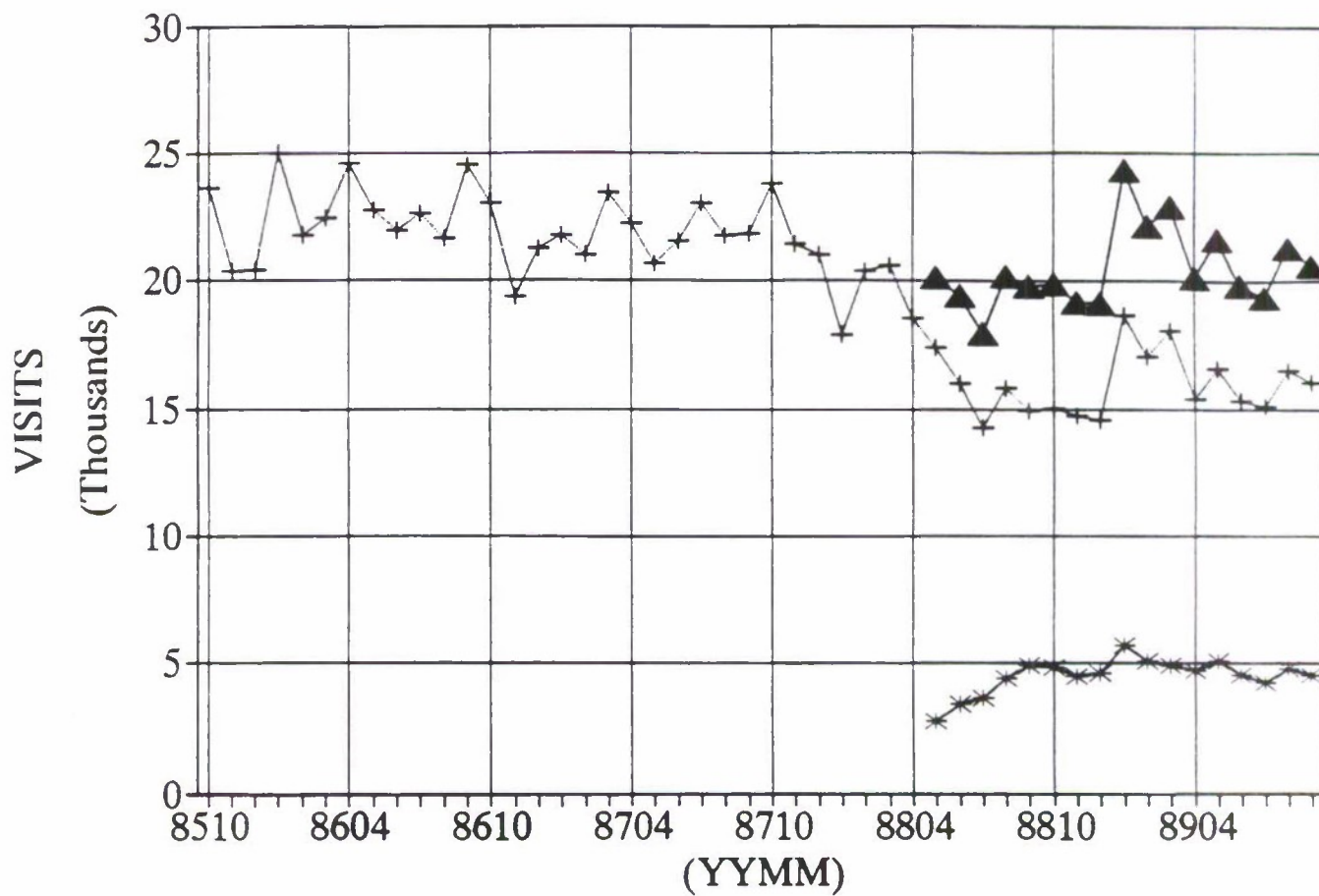
- Charleston
- Columbus
- Fayetteville
- Jacksonville (Camp Lejeune)
- Killeen/Copperas Cove
- Long Beach
- Mayport
- Monterey/Salinas
- Norfolk/Virginia Beach
- Northern Virginia
- Oakland
- Oceanside (Camp Pendleton)
- Omaha
- Riverside
- South Bay/San Diego
- Savannah
- Tucson

CHARLESTON

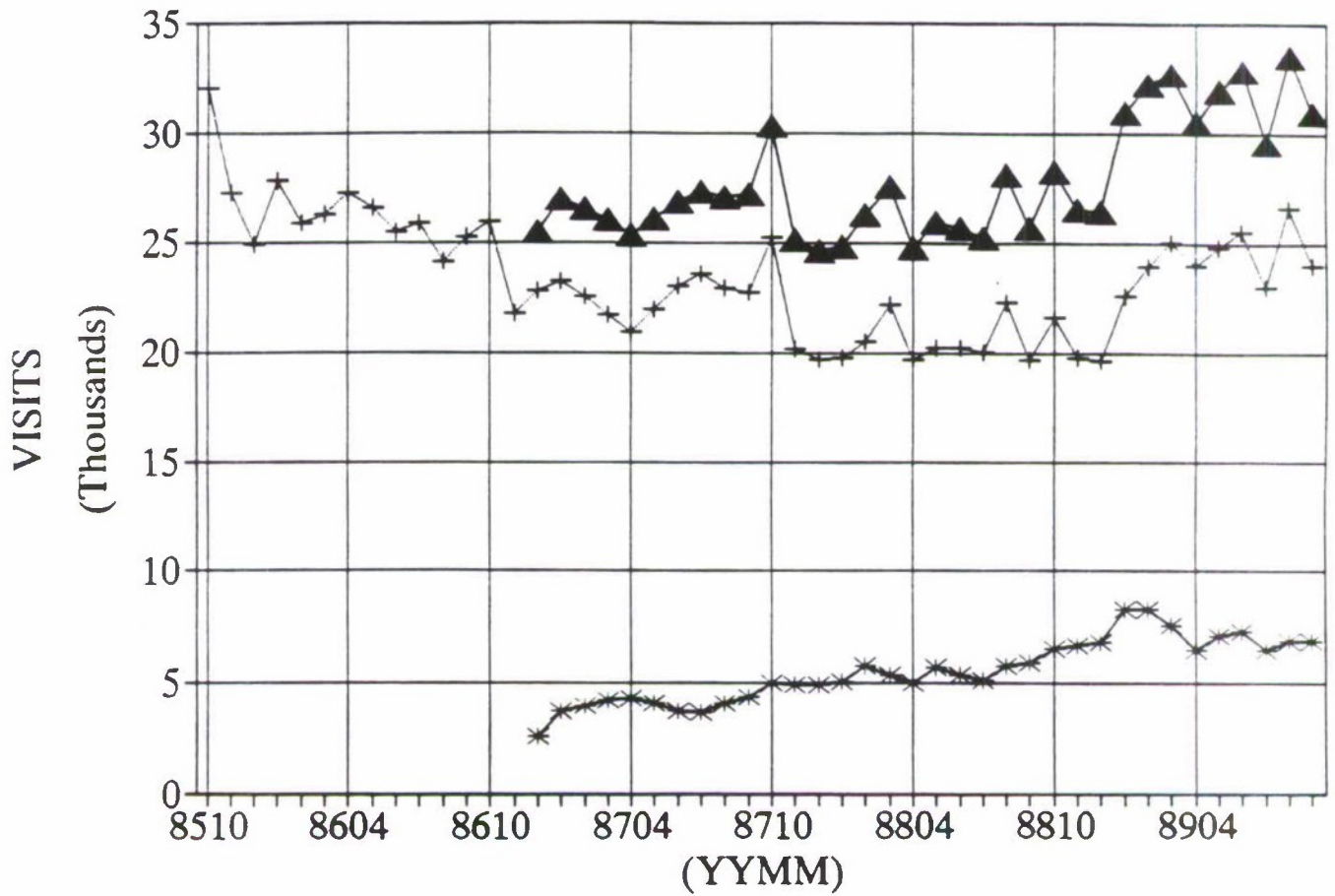


+ MTF * NAVCARE ▲ TOTAL DIRECT CARE

COLUMBUS

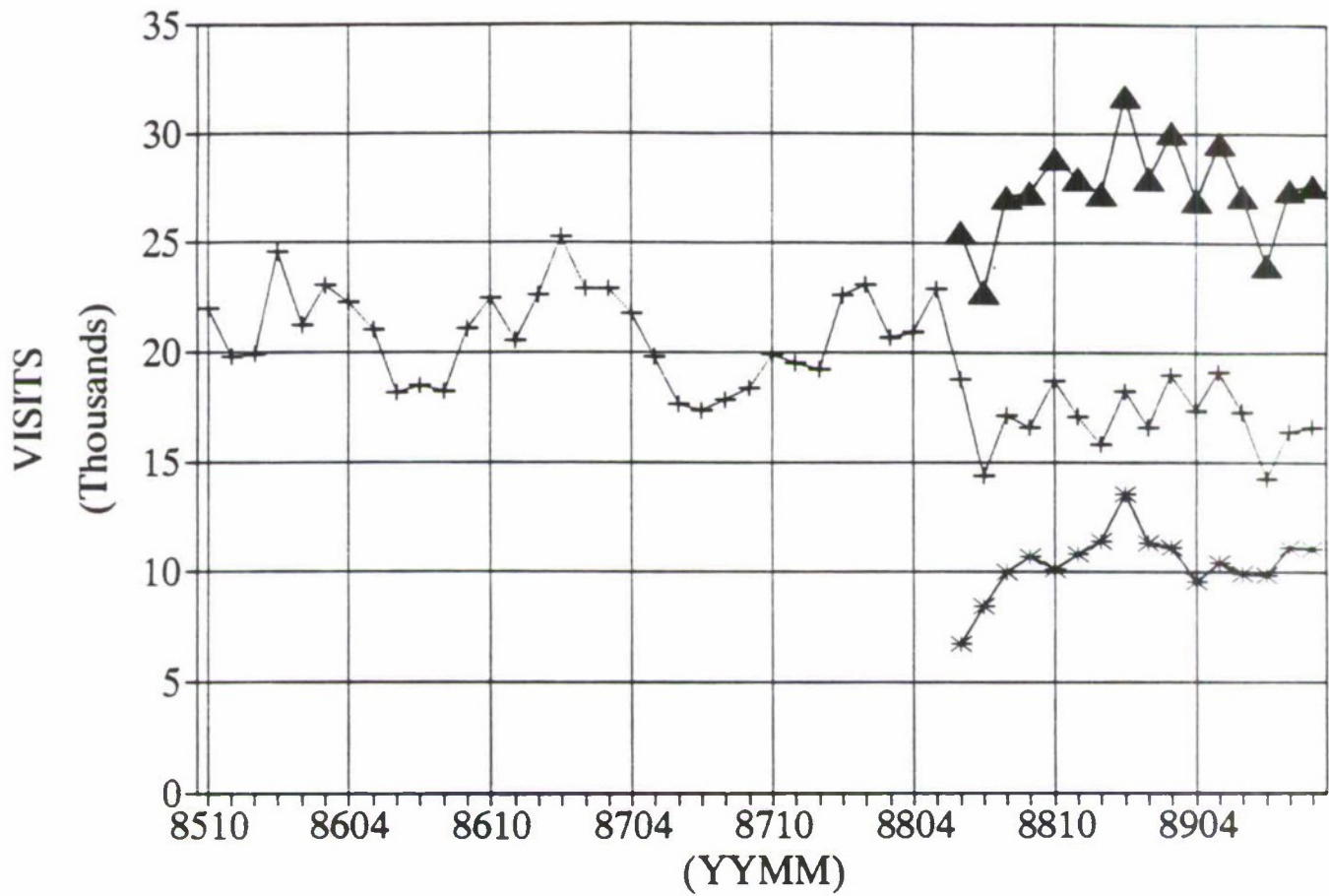


JACKSONVILLE/CAMP LEJEUNE



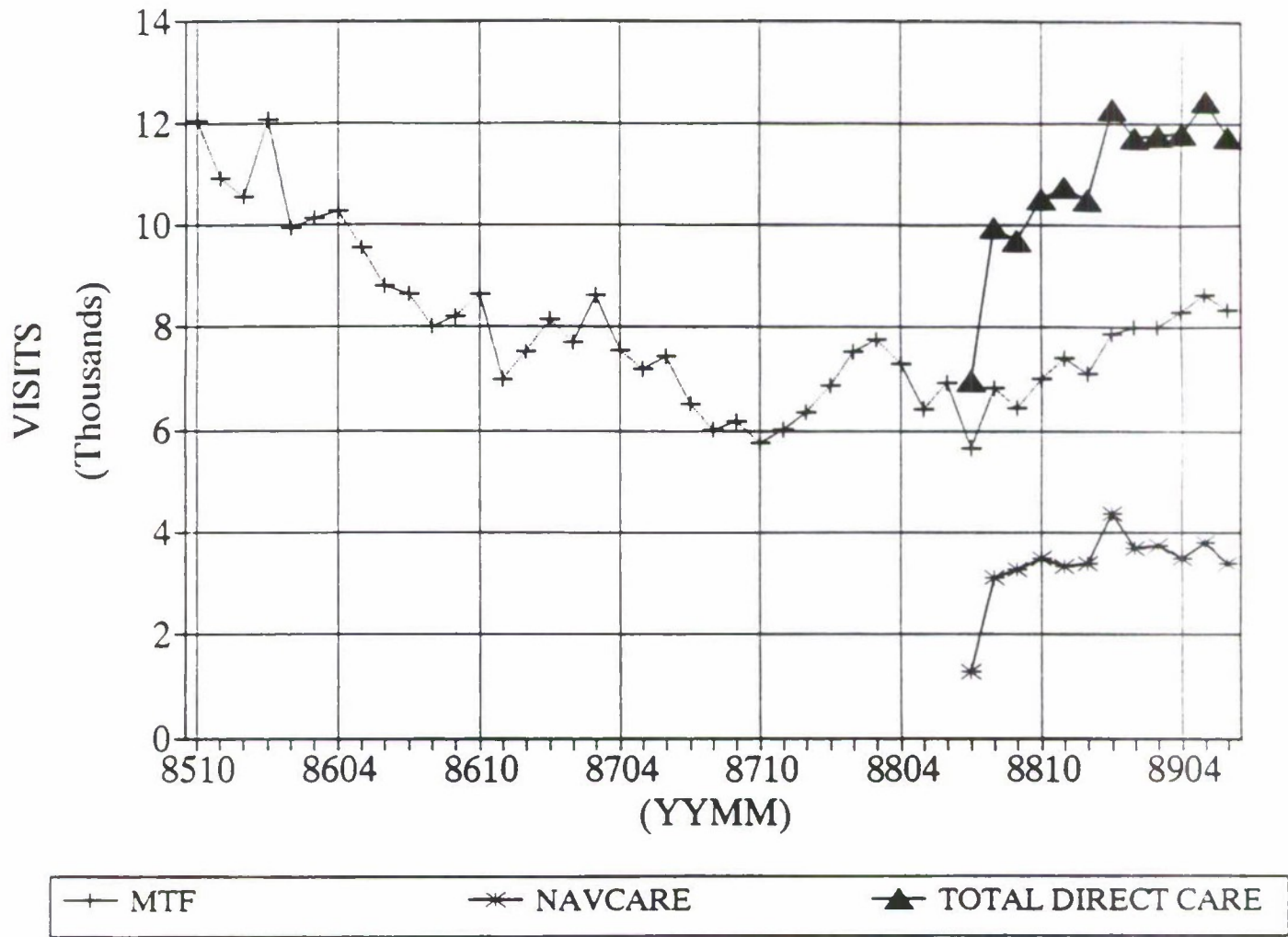
+ MTF * NAVCARE ▲ TOTAL DIRECT CARE

KILLEEN/COPPERAS COVE

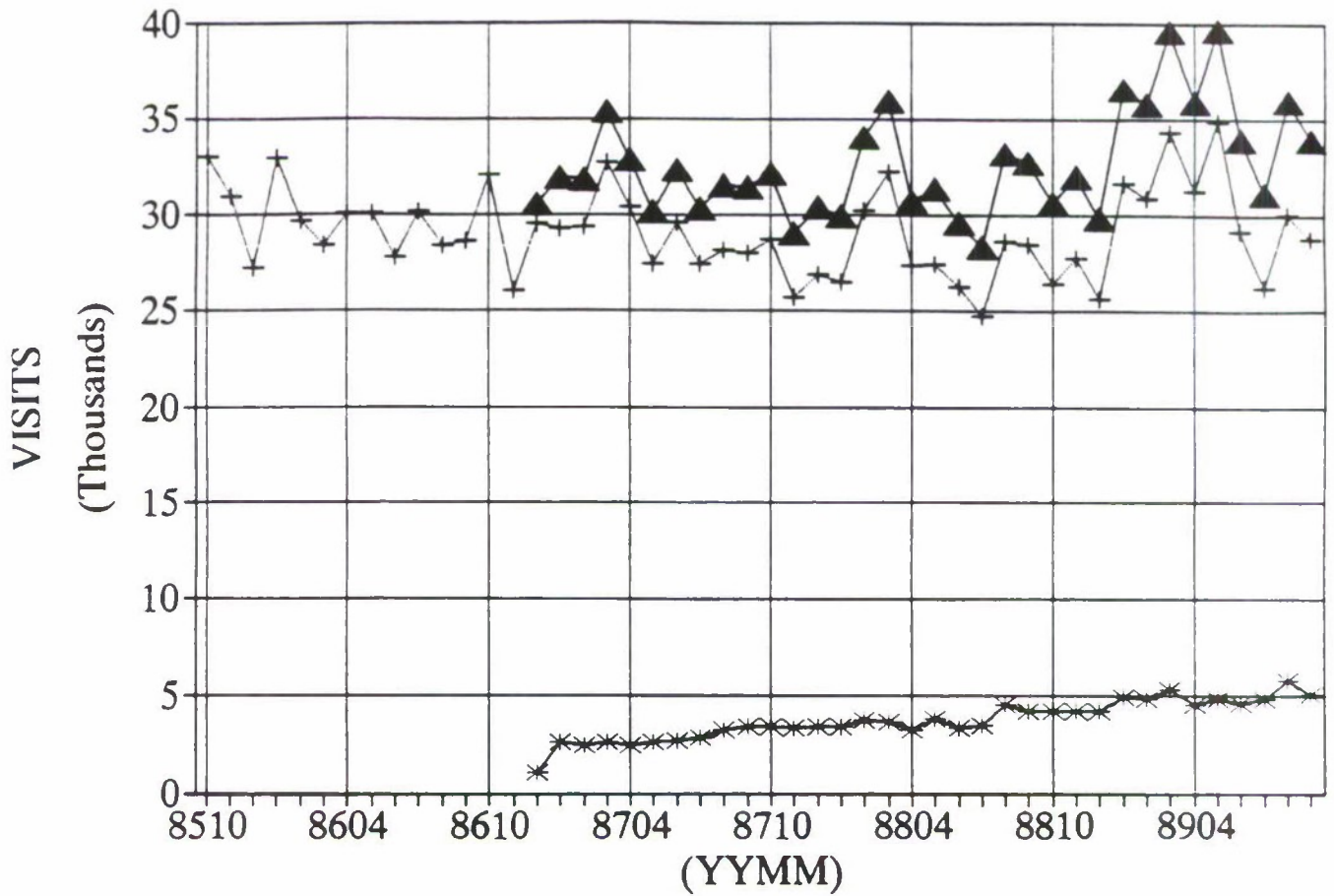


+ MTF * PRIMUS ▲ TOTAL DIRECT CARE

LONG BEACH

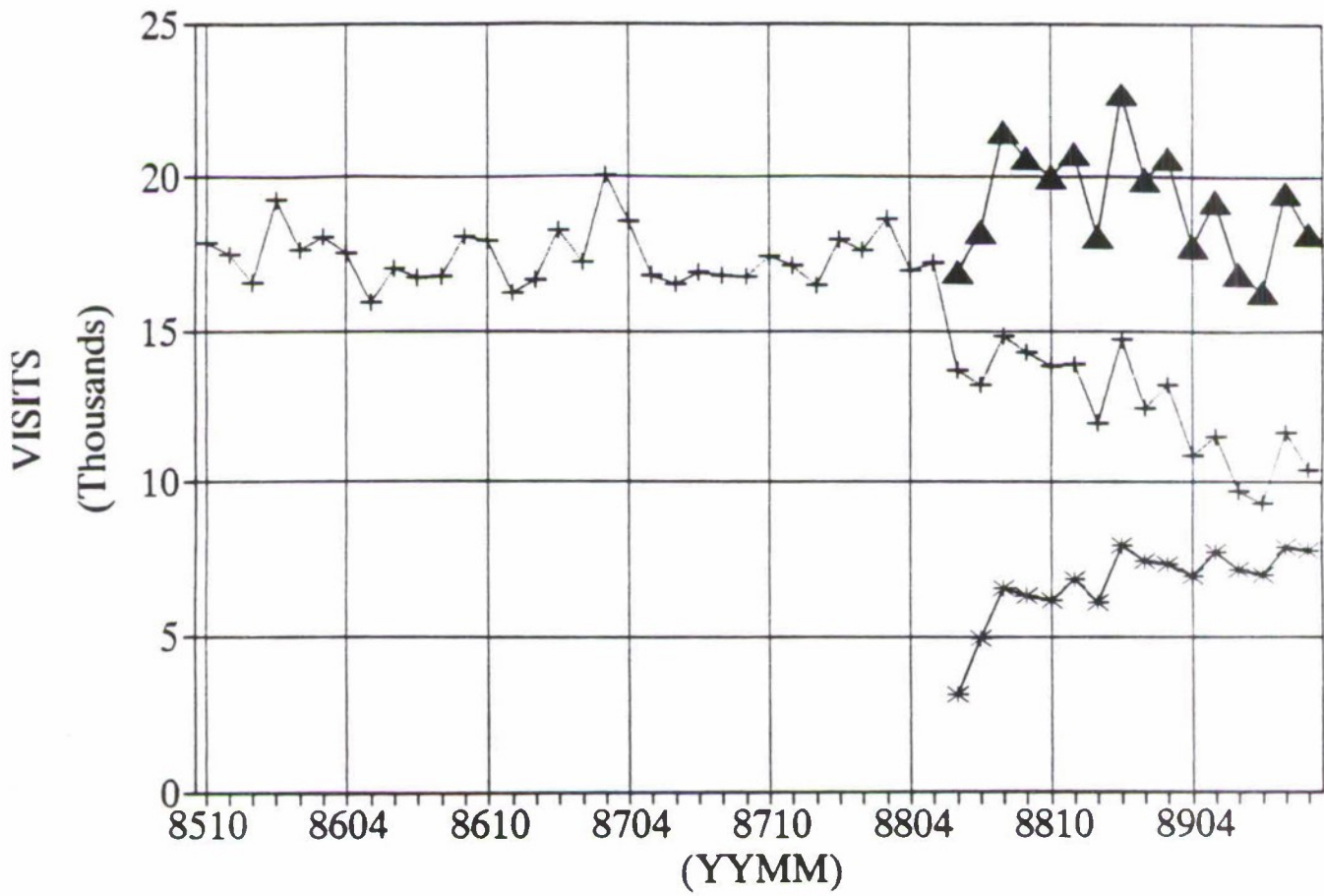


MAYPORT



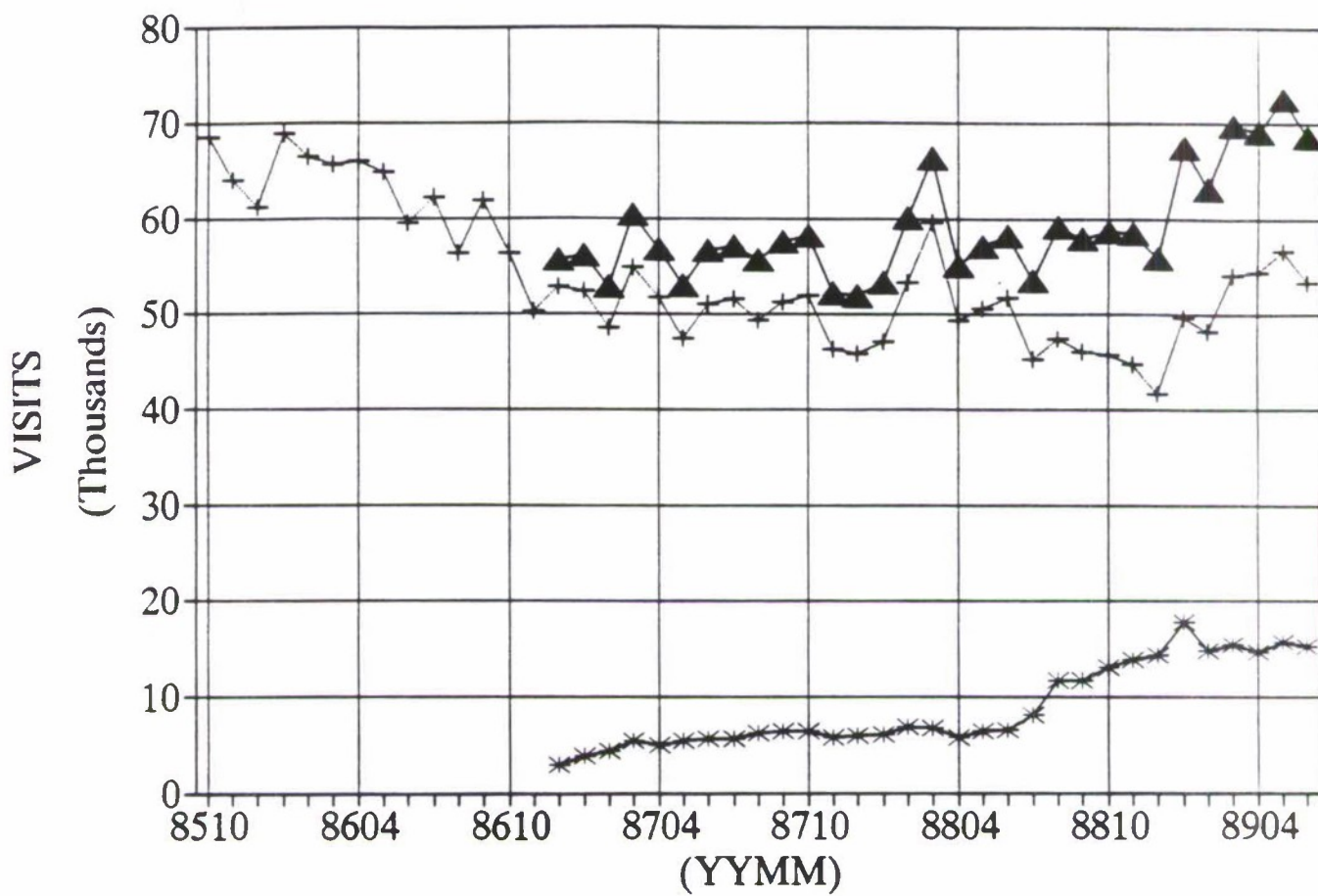
+ MTF * NAVCARE ▲ TOTAL DIRECT CARE

MONTEREY/SALINAS



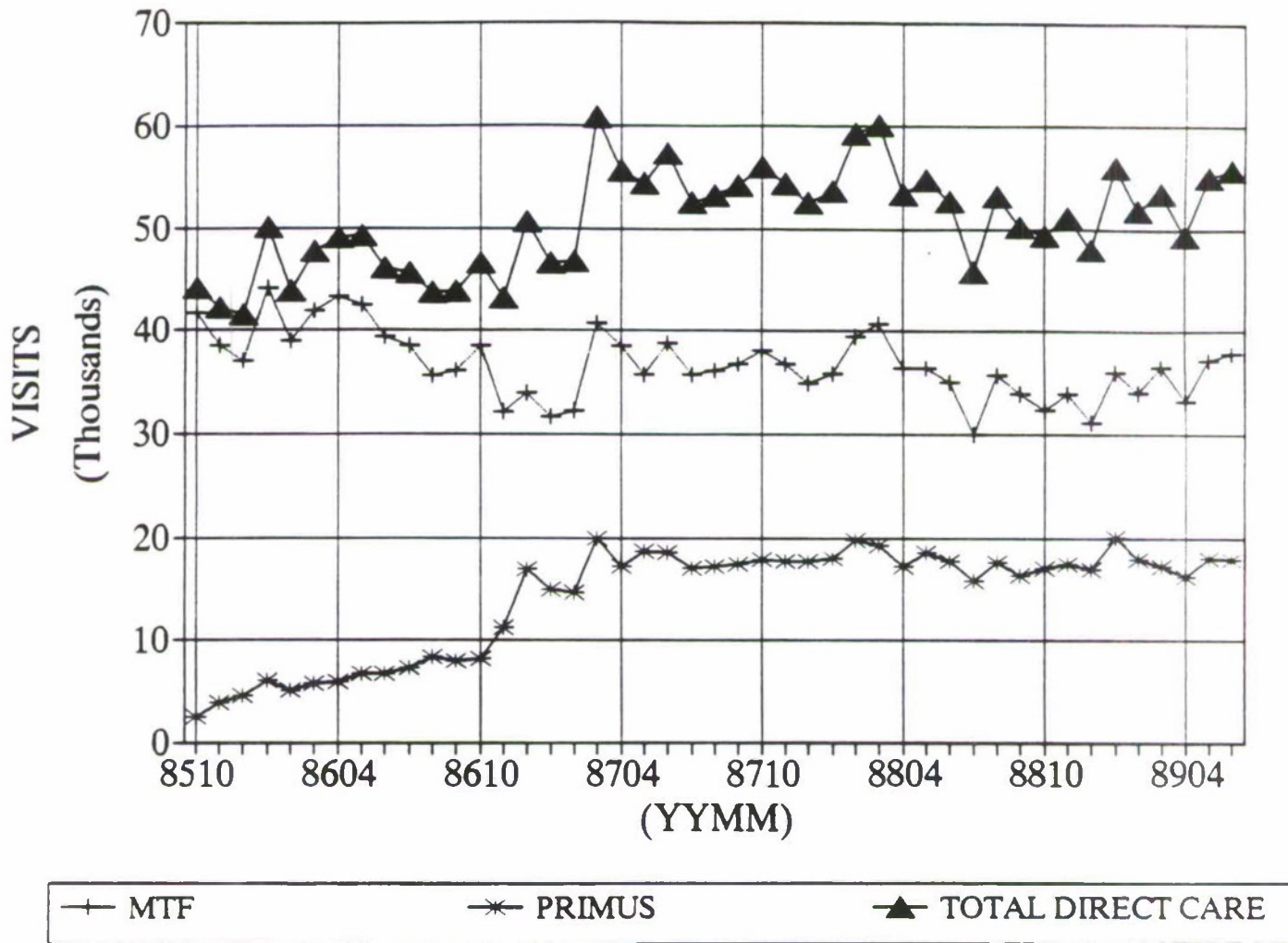
+ MTF * PRIMUS ▲ TOTAL DIRECT CARE

NORFOLK/VIRGINIA BEACH

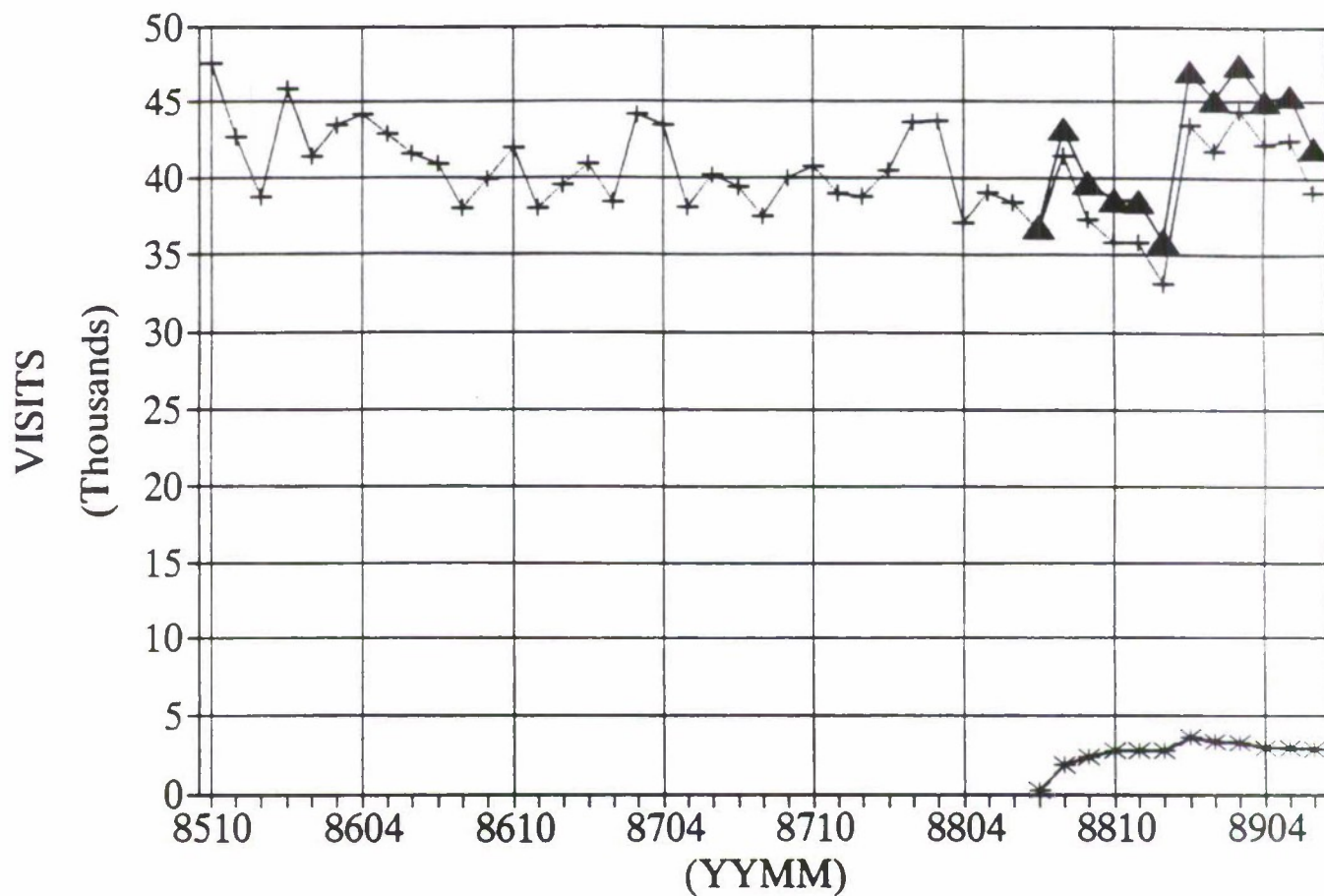


+ MTF * NAVCARE ▲ TOTAL DIRECT CARE

NORTHERN VIRGINIA

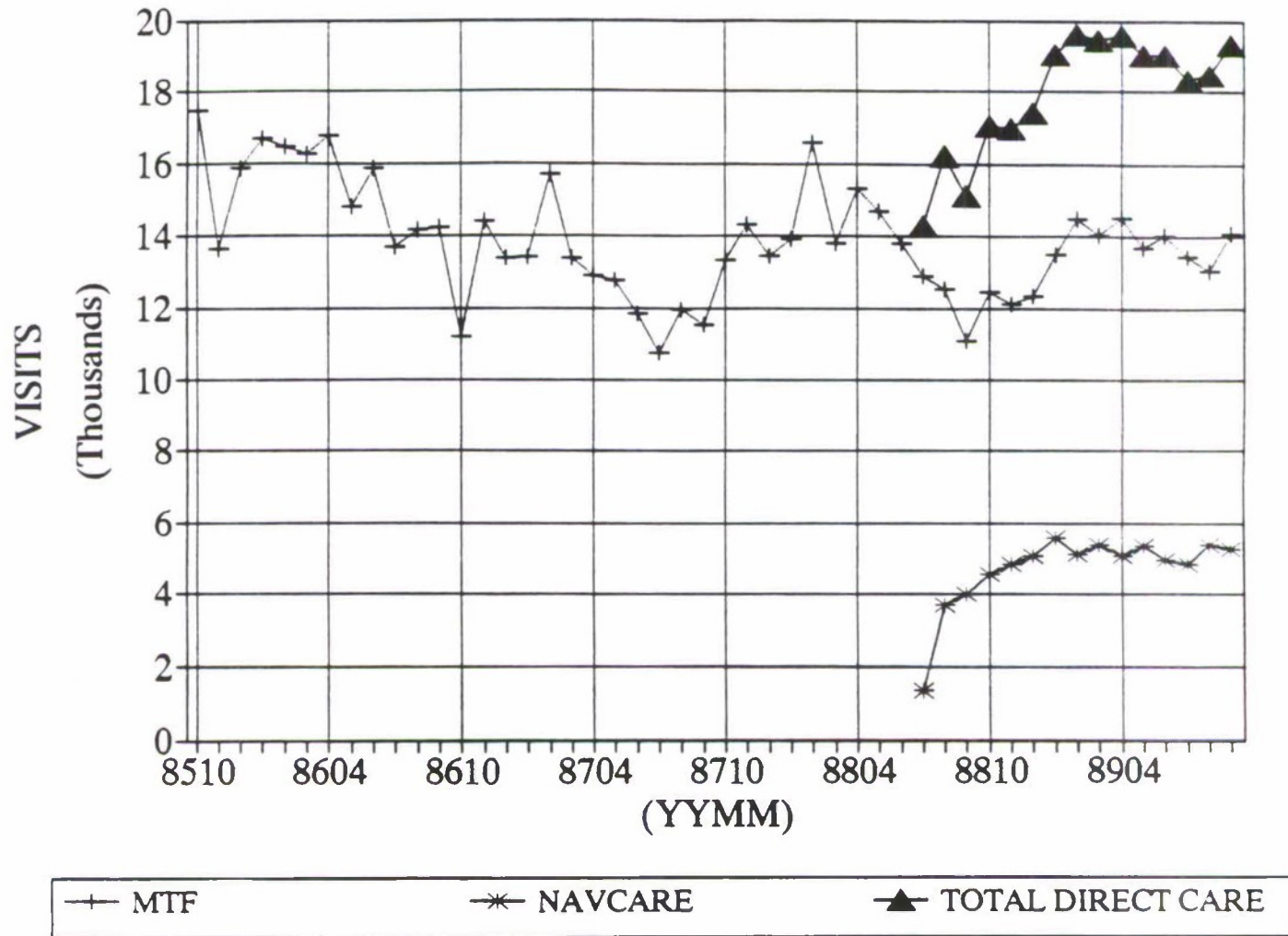


OAKLAND

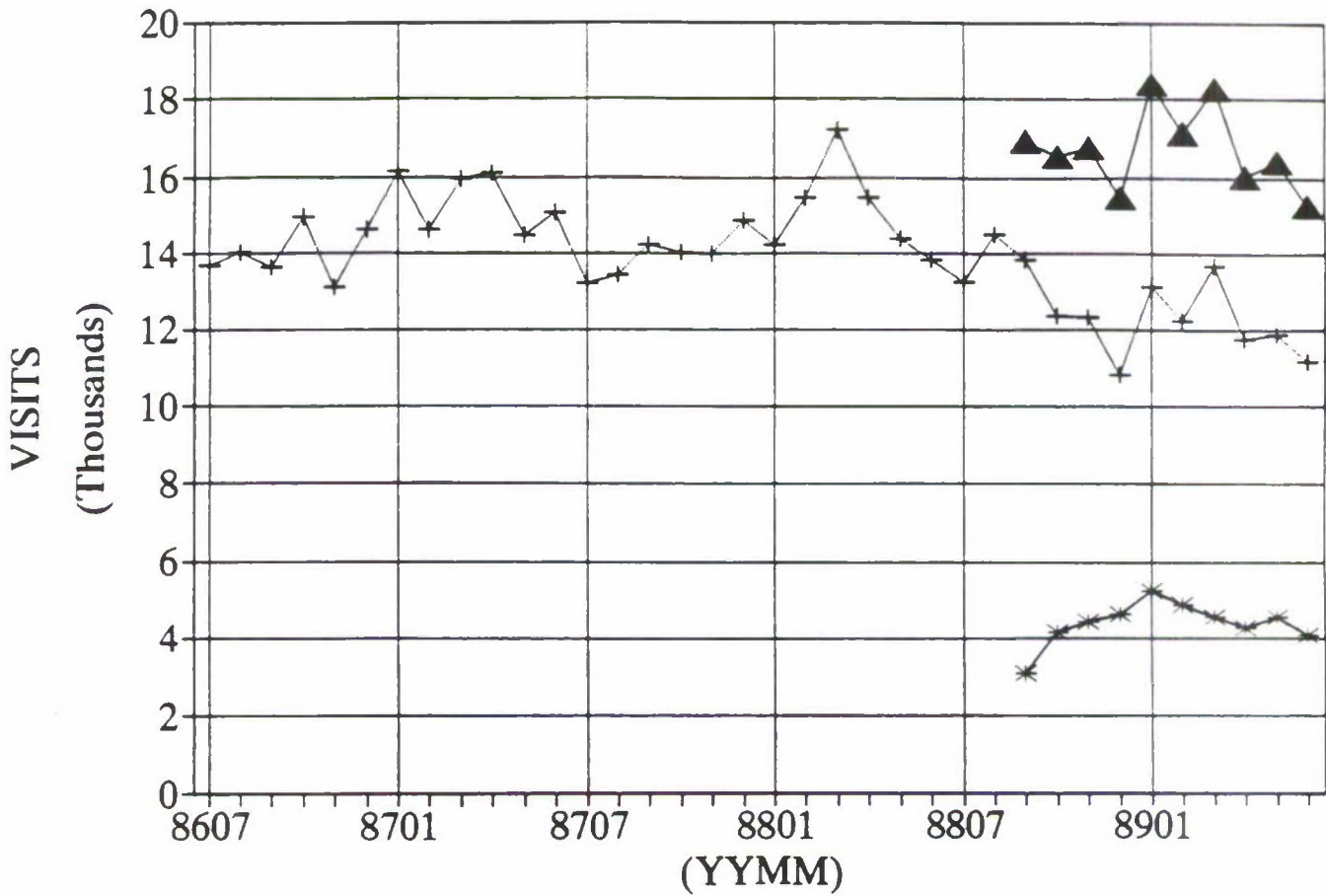


+ MTF * NAVCARE ▲ TOTAL DIRECT CARE

OCEANSIDE/CAMP PENDLETON

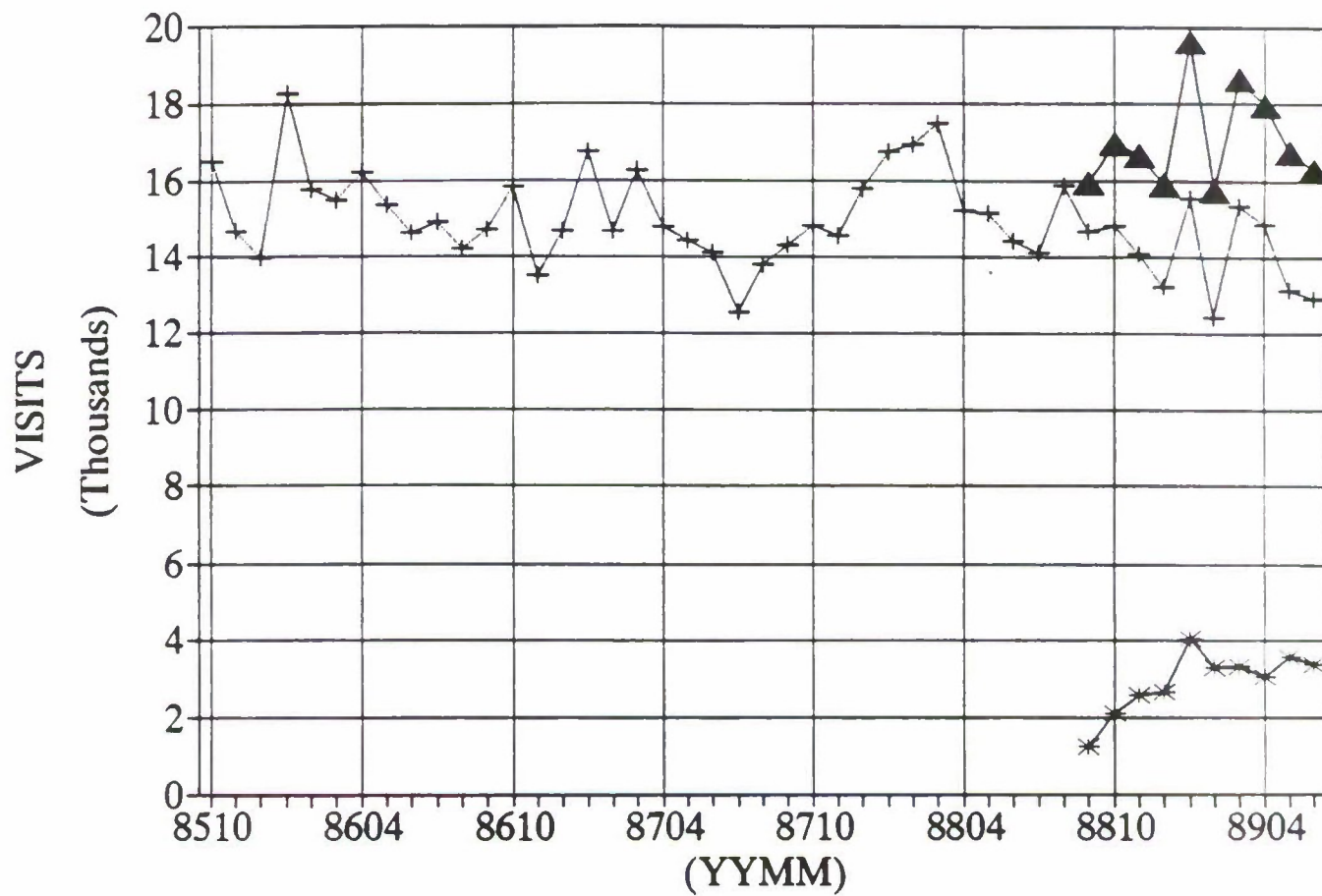


OMAHA



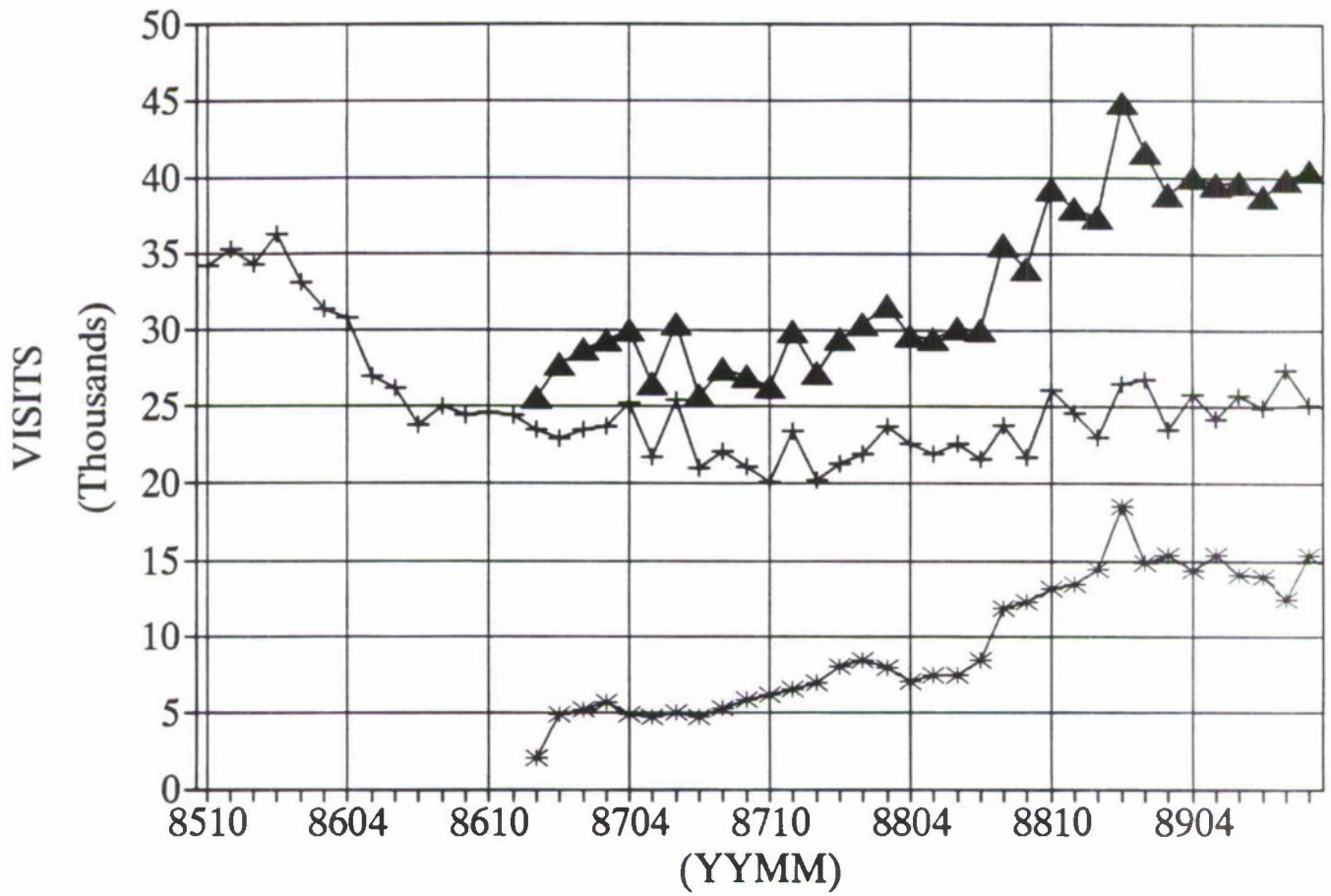
+ MTF * PRIMUS ▲ TOTAL DIRECT CARE

RIVERSIDE



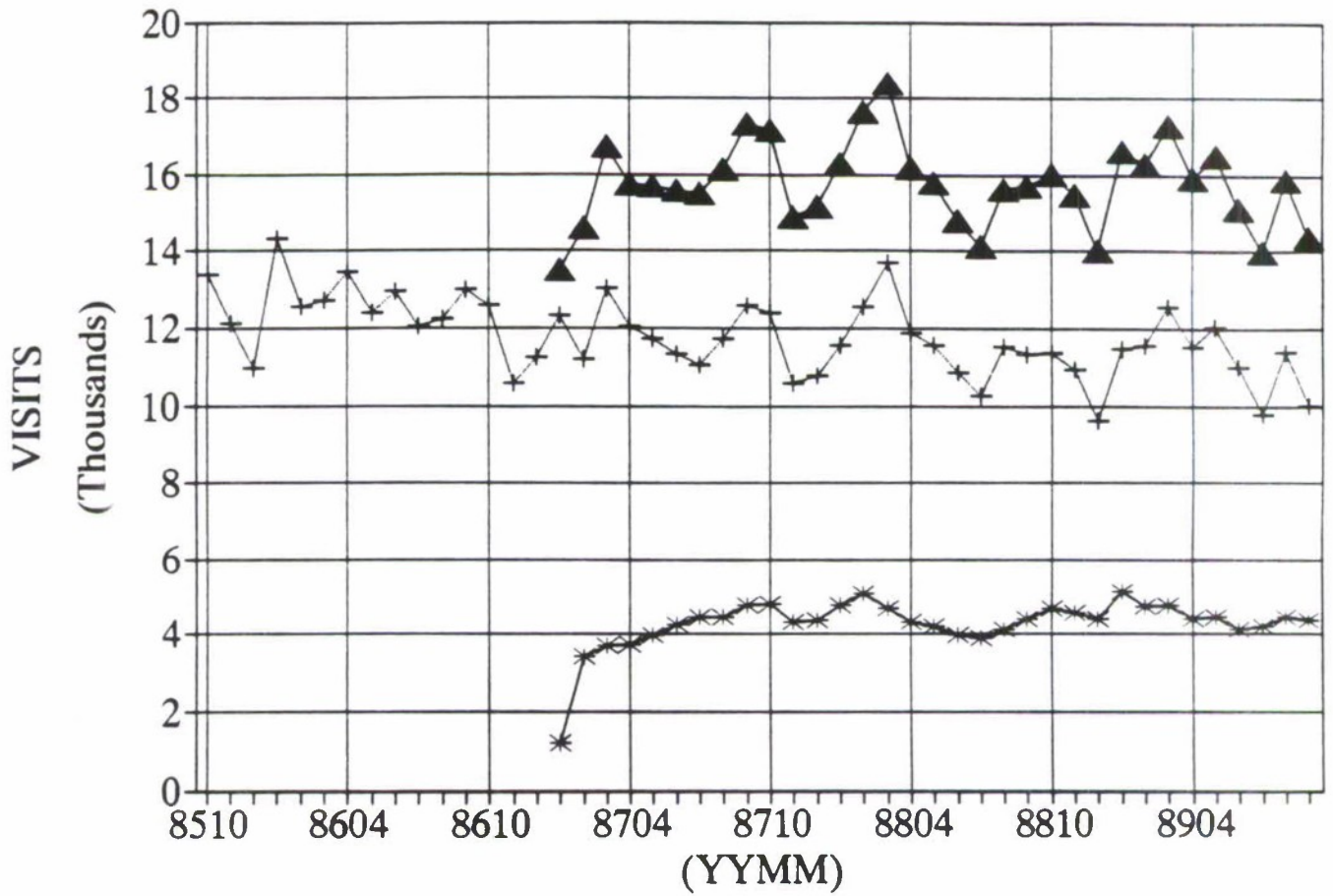
+ MTF * PRIMUS ▲ TOTAL DIRECT CARE

SOUTH BAY/SAN DIEGO



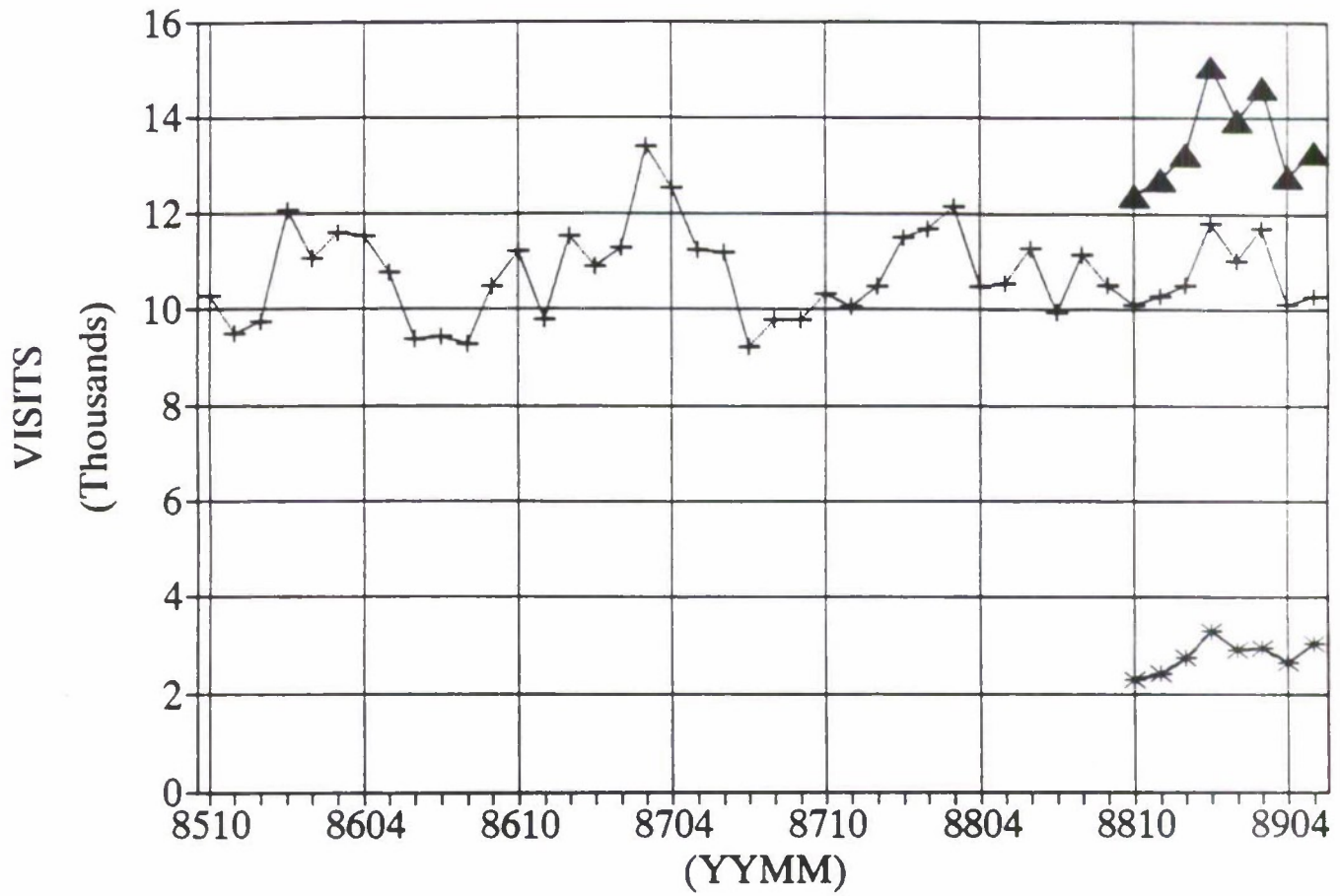
+ MTF * NAVCARE ▲ TOTAL DIRECT CARE

SAVANNAH



+ MTF * PRIMUS ▲ TOTAL DIRECT CARE

TUCSON



+ MTF * PRIMUS ▲ TOTAL DIRECT CARE