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Army Cross Case Quantitative Analysis, 2010-2013

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Post-Traumatic Stress Innovations: U.S. Military Enterprise Analysis

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Introduction

We used de-identified encounter data for behavioral health services provided[1] from 1 October 2010 to 30 September 2013 to develop a quantitative baseline of behavioral healthcare delivery at the Embedded Behavioral Health study sites. This baseline[2] serves to triangulate the qualitative findings from the in-depth fieldwork at those installations. We first developed an understanding of the Active Duty population in each installation, how much care was provided to Active Duty Soldiers in the direct care and purchased care settings, and who was providing care in the outpatient setting. We then focused on key areas that had surfaced in the field research: utilization of inpatient care, transitioning from inpatient care to outpatient care, identification and management of care for patients with PTSD, and the comorbidities associated with those patients.

Table 1: Active Duty Soldiers Population Using Behavioral Health Services 2010 - 2013

Active Duty Soldiers	Site Alpha	Site Bravo	Site Delta
Seen in Behavioral Health	39,088	15,955	27,103
In WTU[a]	4,721	1,868	1,772
PTSD[b] Patients	1,604	1,363	775
MDD[c] Patients	2,567	2570	1,816

a. A Soldier is considered to be part of the WTU if he or she has more than three documented case management encounters;
b. A Soldier is considered to have PTSD is s/he has 1 inpatient diagnosis of PTSD or two outpatient diagnoses of PTSD with a privileged behavioral health provider; c. A Soldier is considered to have MDD if s/he has an inpatient or outpatient diagnoses of Major Depressive Disorder by a privileged behavioral health provider.

Population overview

The population of active duty soldiers who accessed behavioral health services is summarized in Table 1. Both Site Alpha and Site Delta map to the 80/20 rule with 20% patients accounting for 80% of total costs[3]. Of the 39,088 Active component soldiers at Site Alpha, 7,383 (18.8%) Soldiers accounted for 84.7% of the direct outpatient costs, and in Site Delta, 5623 (20.7%) Soldiers accounted for 78.1% of the direct outpatient costs. In Site Bravo on the other hand, 1780 Soldiers (11.1%) accounted for 85.4% of total direct outpatient costs, potentially indicating higher acuity of these patients.

All three installations have Warrior Transition Units (WTU). Site Alpha has a larger population that has cycled through the WTU because it serves as a mobilization/demobilization station of National Guard and Army Reserve units. Over the three-year period studied, Site Alpha provided services to 4,721 WTU Soldiers, while Sites Bravo and Delta provided services to 1,868 and 1,772 Soldiers respectively. In terms of the number of Soldiers with Post Traumatic Stress Disorder (PTSD) and

[1] The encounter data includes any care provided in a BF** MEPRS code, FAZ* MEPRS code, AF** MEPRS code. Additionally, we used purchased care claims data to capture both inpatient and outpatient care provided for MDC 19 and MDC 20.
[2] We excluded data from Site Charlie for this report because of data fidelity issues arising from a multi-service population at the off-post hospital.
[3] We use the RVUs generated per patient encounter as a proxy for the cost of direct outpatient care.

Major Depressive Disorder (MDD), the incidence rates at Site Alpha and Site Delta are comparable (4.1% and 2.9% for PTSD, and 6.6% and 6.7% for MDD). Site Bravo has a higher incidence rate: 6.89% for PTSD and 16.1% for MDD.

Table 2: Care Provided 2010 - 2013

	Site Alpha	Site Bravo	Site Delta
Direct Outpatient Care Encounters	38,6170	154,123	298,855
Purchased Outpatient Care Encounters	74,253	38,903	32,644
Direct Inpatient Care Admissions	-	1,794	1,013
Purchased Inpatient Care Admissions	2,265	1259	539

We next extended the analysis of overall care provided to separate out purchased outpatient care and number of inpatient admissions (Table 2). Again, Site Bravo has a higher overall utilization of inpatient services than Alpha or Delta.

Direct and purchased care provider strength over time

When comparing the number of privileged providers at each installation over time (Figure 1), Site Alpha had an infusion of providers in October 2011 as they expanded EBH to all Brigade Combat Teams on the installation. Site Bravo and Delta have been gradually growing their provider base over the last three years. Part of the challenge for Site Bravo has been their expansion from being principally a TRADOC installation to a FORSCOM installation that is home to a Division while retaining their schoolhouse capabilities.

A similar challenge exists in terms of purchased care capacity for Active Duty Soldiers (Figure 2). All three installations have comparable networks of psychiatrists providing purchased care. However there is significant variation in terms of the number of psychotherapy providers, with Site Bravo having the least number of purchased care providers, and Site Alpha having the largest network of purchased care providers serving Active Duty Soldiers. The analysis did not take into consideration care for dependents, but can be replicated to address that key stakeholder group.

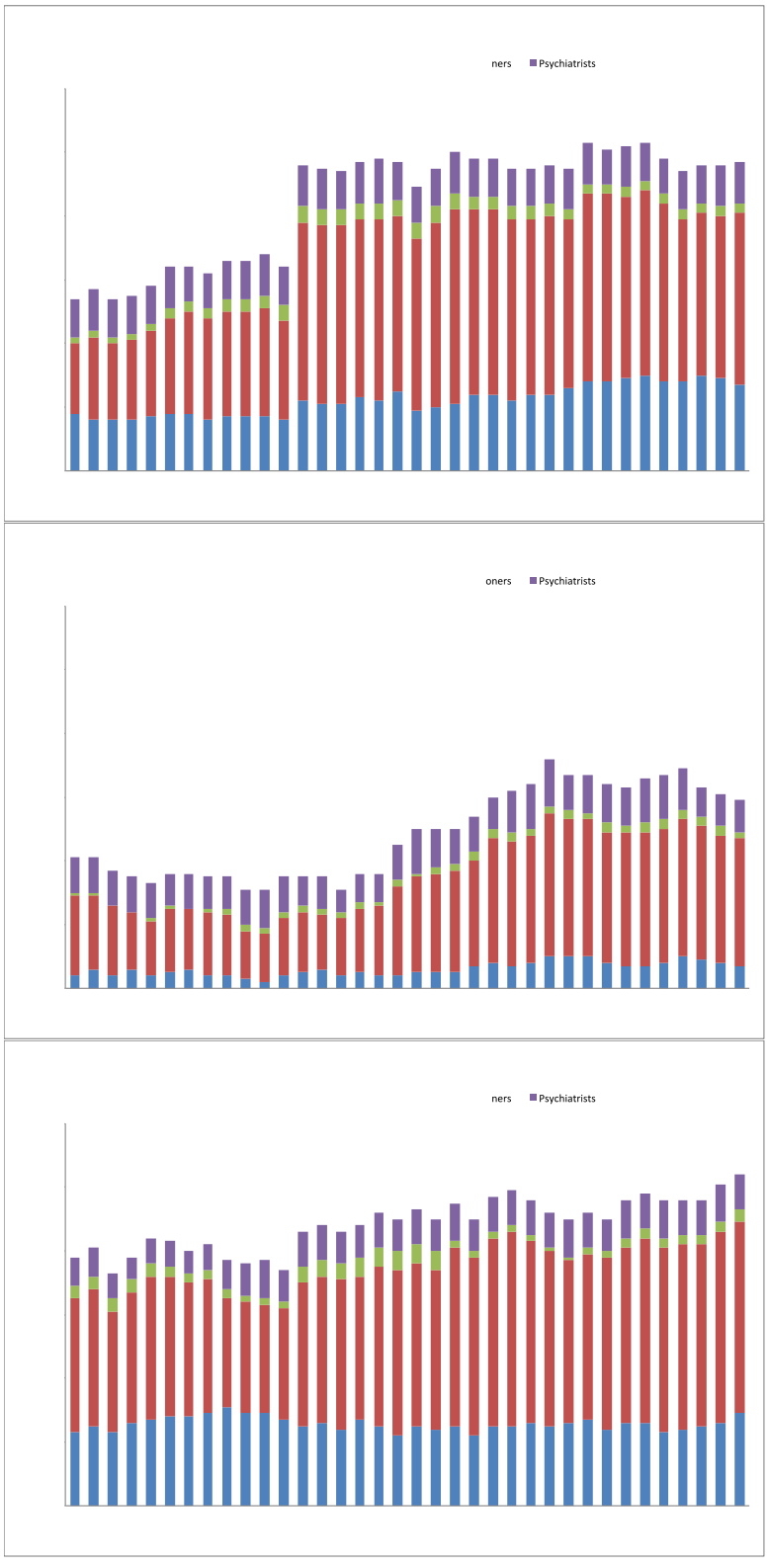

Figure 1: Direct Care Provider Strength 2010 – 2013

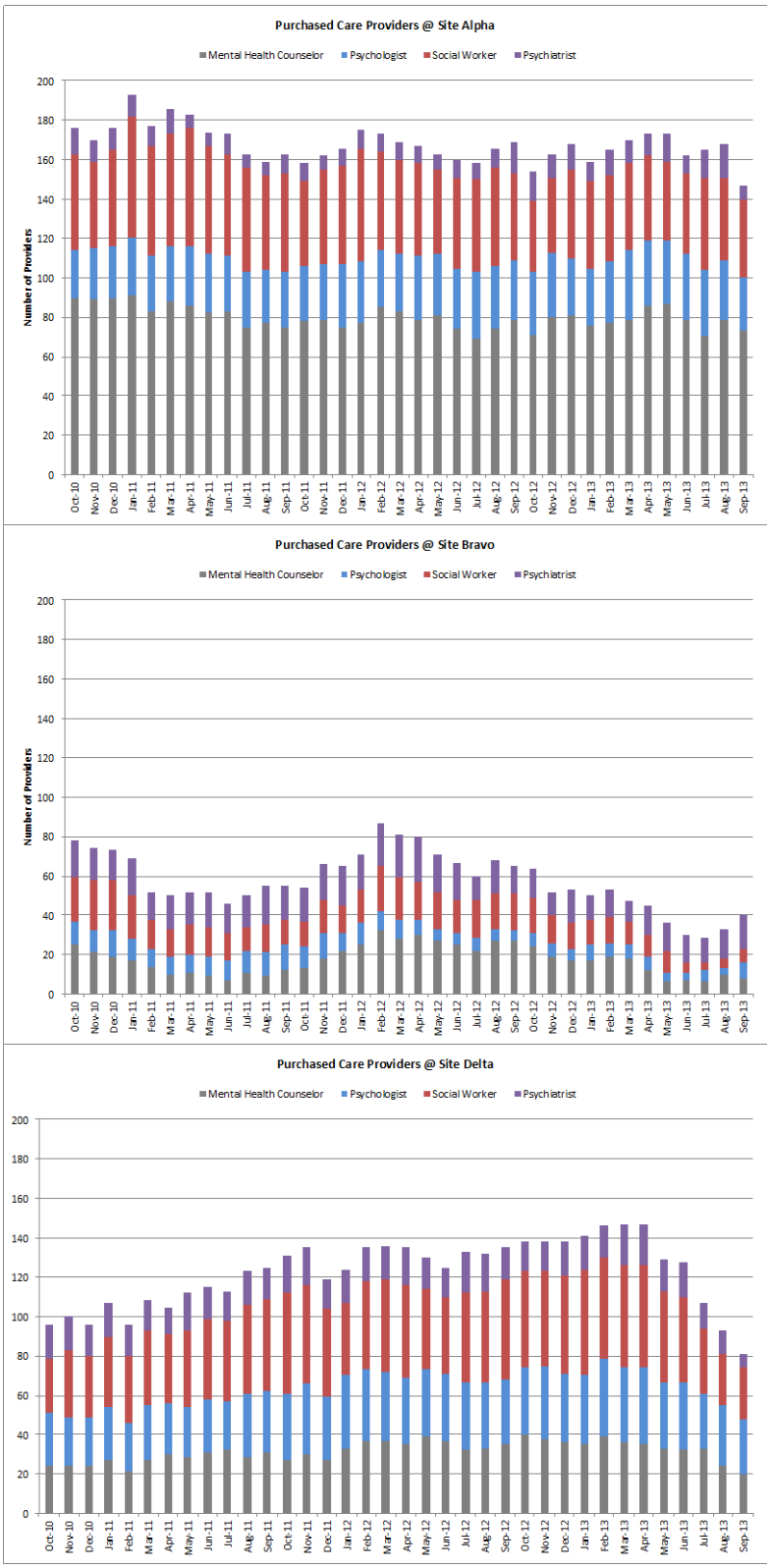

Figure 2: Purchased Care Provider Strength 2010 – 2013

Utilization of care

In order to compare care provision for active duty Soldiers over time, we computed the number of encounters per month with privileged providers at each of the installations, as shown Figure 3. The data highlights the gradual increase in monthly direct care volume at Site Bravo. The variation in Site Alpha can be explained through the additional deployment related screenings that are carried out at the Soldier Readiness Processing site. When the data are parsed into prescriber utilization and psychotherapist utilization, an interesting pattern appears with Site Delta making intensive use of their prescriber capabilities, while Site Alpha places a greater emphasis on exploiting their psychotherapy capabilities (Figure 4).

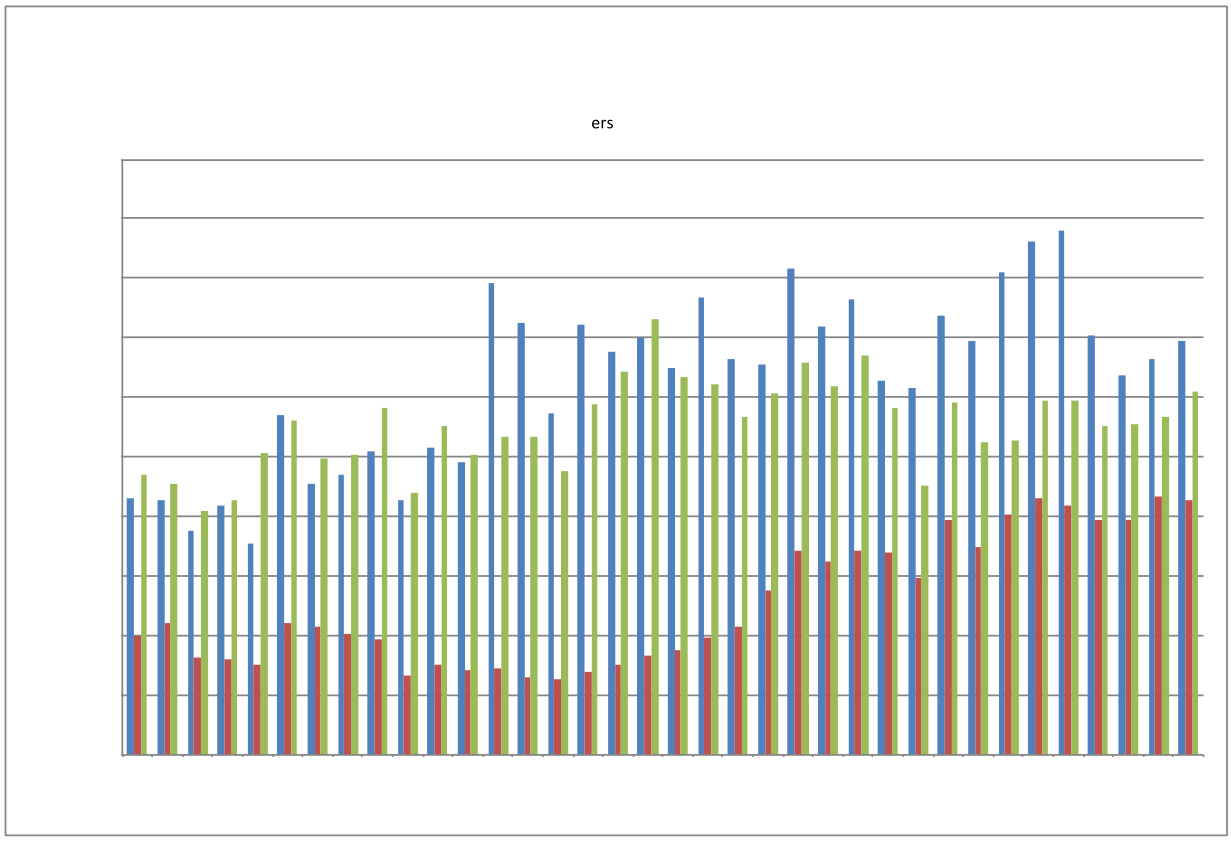

Figure 3: Direct Care Utilization per Month

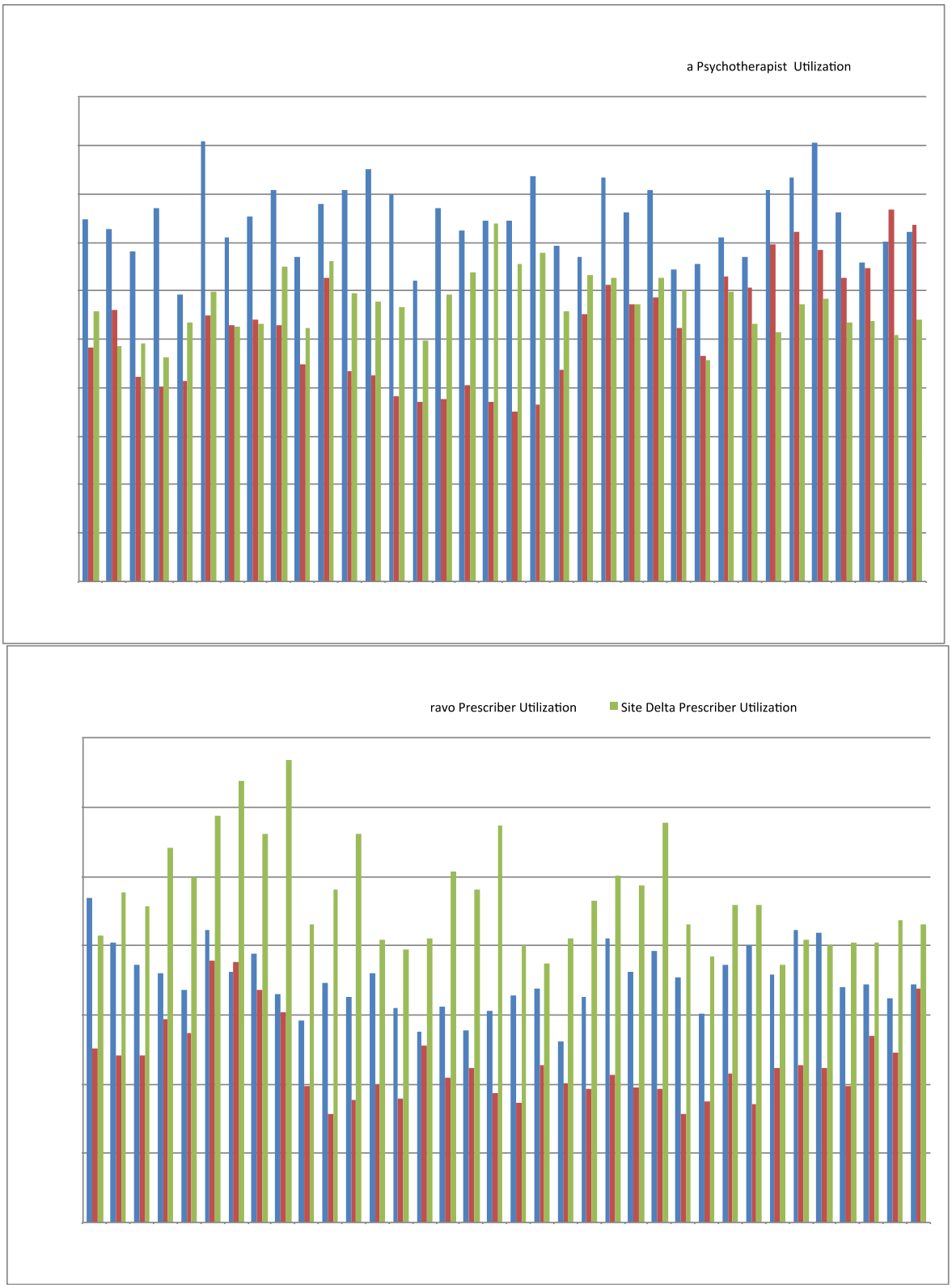

Figure 4: Comparing Prescriber and Psychotherapist Utilization

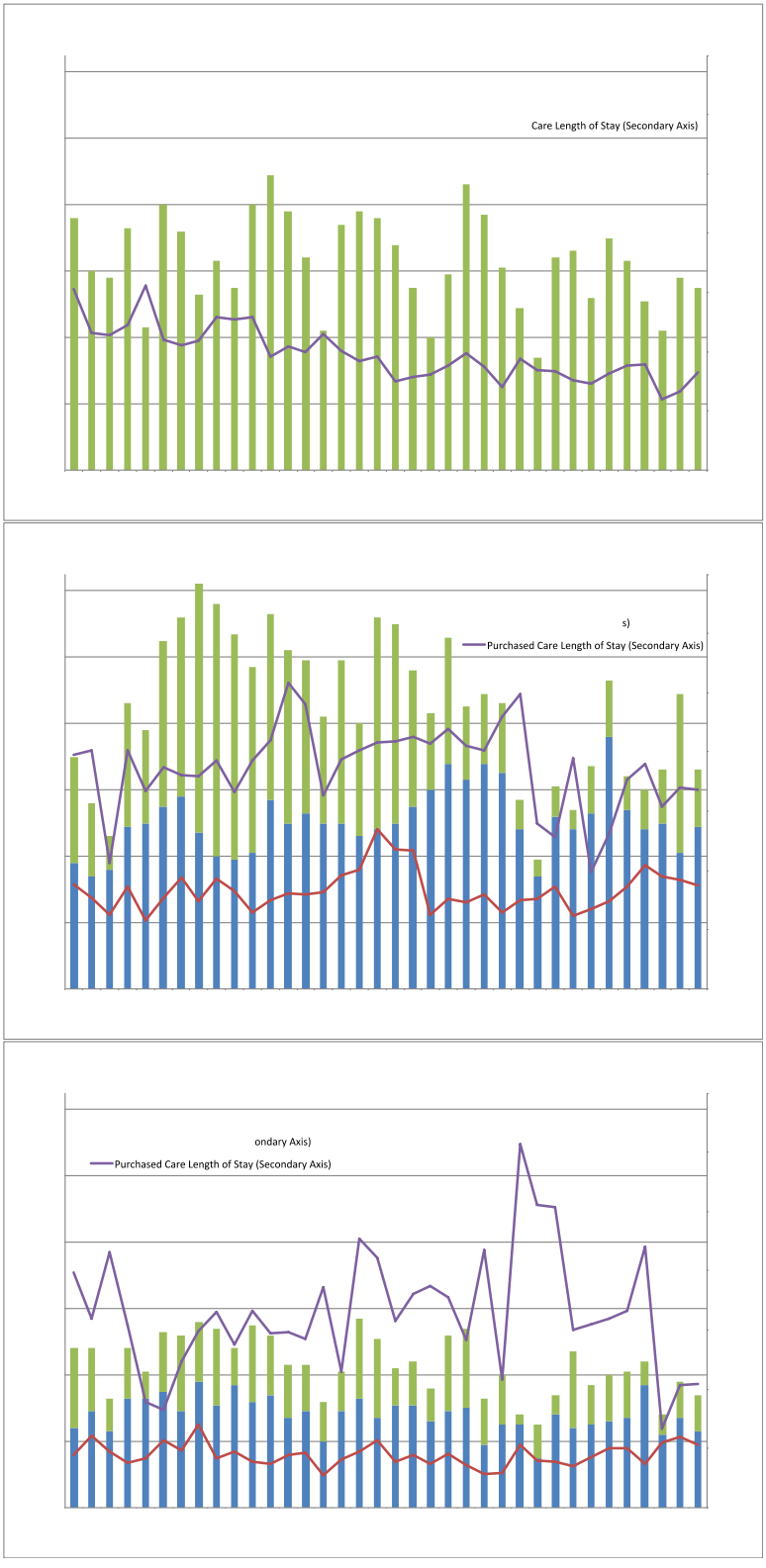

Figure 5: Inpatient Care Utilization

Inpatient utilization

We examined the number of inpatient admissions in both purchased and direct care at the installations (Figure 5). The inpatient ward at Site Alpha was under renovation during the analysis time period; hence they were utilizing the purchased care network to provide inpatient services. The behavioral health leadership at Site Alpha has made a conscious effort to manage utilization of the purchased care network without compromising the care provided to Soldiers. 1,456 Soldiers accounted for the 2,265 admissions, of which 263 admissions resulted in stays longer than 21 days. When these extended stays are excluded from the calculation, the average length of stay drops to 7 days.

When we first visited Site Bravo in 2011, they reported averaging between 50 and 70 admissions per month in the purchased care network. Their pressing challenge then was managing length of stay for those inpatient admissions as they varied between 17 and 25 days. Over the last two years, they have focused on managing inpatient admissions using better assessments in the Emergency Room, and have focused on reducing the length of stay. Overall, 2,151 Soldiers accounted for 3,053 inpatient admissions in Site Bravo; and 562 had more than one inpatient stay. When we exclude the 484 admissions that resulted in stays longer than 21 days, the average length of stay in purchased inpatient care drops from 17 days to 8.2 days.

Site Delta has the lowest overall utilization of inpatient services, with 1,171 Soldiers accounting for 1,552 admissions. (251 Soldiers had more than one inpatient stay). When we exclude the 218 admissions resulted in inpatient stays longer than 21 days, the average length of stay in purchased care dropped from 9 days to 4.8 days.

Table 3: Handoff between Inpatient and Outpatient Care

	Total Admissions *(# unique)*	No Follow Up Care *(# not registered)*	7 Day Outpatient Follow Up	30 Day Outpatient Follow Up	> 30 Day Outpatient Follow Up
Site Alpha	2,265 *(1,456)*	18 *(8)*	1,798	375	65
Site Bravo	3,053 *(2,151)*	759 *(352)*	691	548	703
Site Delta	1,552 *(1,171)*	86 *(70)*	1,006	184	206

In order to capture the effectiveness of the system of care in managing the transition from inpatient care to outpatient care, we computed standard HEDIS measures on 7 day outpatient follow up after an inpatient stay, and 30 day outpatient follow up after an inpatient stay (Table 3). Site Alpha has very few patients that receive no follow up care (18 admissions) as opposed to 86 admissions in Site Delta and 759 admissions in Site Bravo. The data are reflective of the maturity of the system of

care as whole, with the more mature system in Site Alpha ensuring that transitions are more effectively managed.

One of the data fidelity issues arises from patients who are admitted for inpatient care, but have no record of having received behavioral health services. Site Delta has 70 such admissions, Site Bravo has 352 such admissions and Site Alpha has 8 admissions with no record of having received outpatient care. The Behavioral Health Service Line leadership is leveraging our research as well as the work of their internal analytics cell to surface and fix these data fidelity challenges.

Care for PTSD patients

We adopted the Psychological Health Working Group's definition of PTSD as a Soldiers' having an inpatient diagnosis of PTSD in any diagnosis field or two outpatient diagnoses of PTSD in any diagnosis field by a privileged behavioral health provider. We identified 1,604 Soldiers (4.1%) in Site Alpha, 1,363 Soldiers (8.5%) in Site Bravo and 775 Soldiers in Site Delta (2.9%) that met the criterion for PTSD. These patients were found to be high utilizers of behavioral health services. For example, in Site Bravo, Soldiers with PTSD accounted for 17,222 bed days (43% of all behavioral health related inpatient stays). Similarly, Soldiers with PTSD in Site Delta accounted for 5,245 bed days (38% of all inpatient stays).

We mapped out behavioral health care trajectories for these Soldiers to determine how many of them were receiving care either in the purchased care or the direct care system. The data show (Figure 6) that the number of PTSD patients who receive behavioral health services (both direct and purchased care) has declined in Site Alpha and Site Delta, but has increased over the same timeframe in Site Bravo. Similarly, the number of new patients diagnosed with PTSD in Site Alpha and Site Delta has declined, while it is increasing in Site Bravo. This further highlights the increase in patients with mental health conditions at Site Bravo. The encounter data alone is insufficient to determine whether or not a Soldier received evidence based treatment for PTSD.

We also mapped out the care location where the second (confirming) outpatient diagnosis or the inpatient diagnosis of PTSD was made (Figure 7). In the 2010 – 2011 time period Site Alpha and Site Delta there was an increase in the PTSD diagnoses in purchased outpatient care. This increase is potentially explained by the increased reliance of both installations on the purchased care network to provide care for Soldiers. This same pattern is manifesting itself in the case of Site Bravo. This increase in purchased outpatient care diagnoses raises concerns regarding accuracy of diagnosis and the career implications for that Soldier. Site Alpha and Site Delta have made a concentrated effort over the last two years to enhance the accuracy of combat related PTSD diagnoses in the outpatient setting. All three installations continue to leverage the purchased care network to provide continuity of care for patients needing weekly therapy sessions.

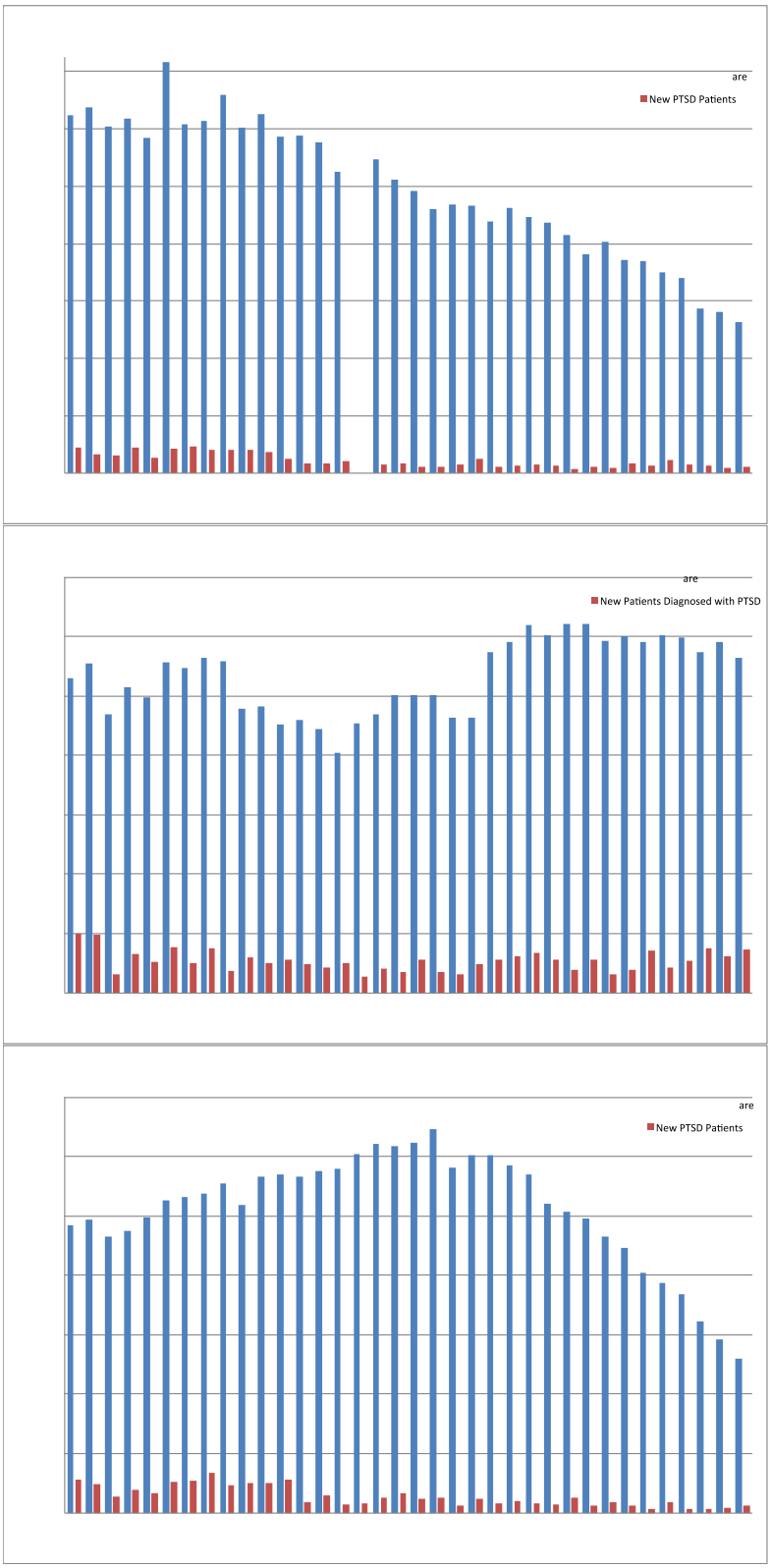

Figure 6: PTSD Patients over Time

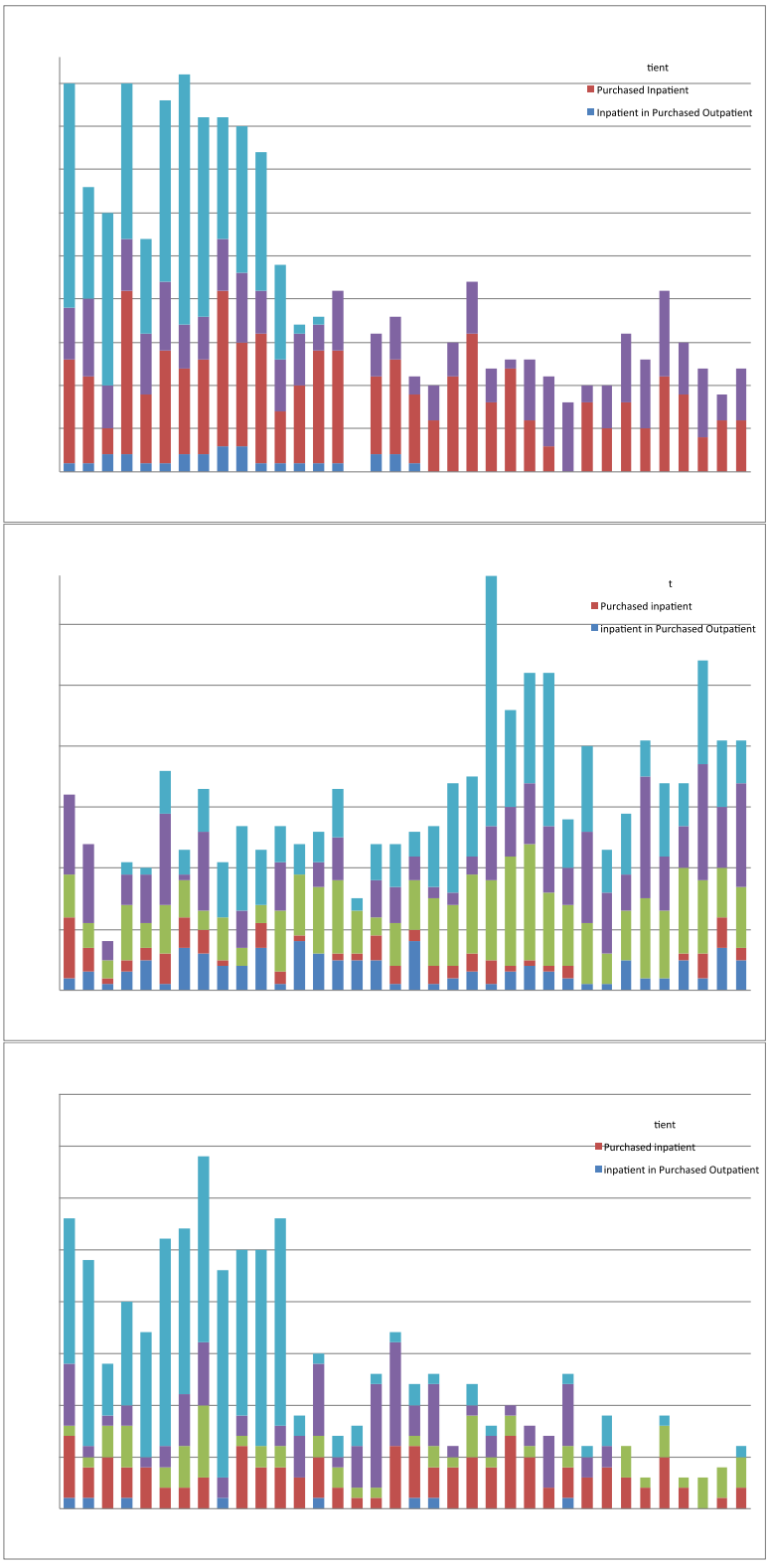

Figure 7: Location Confirming PTSD Diagnosis

Comorbidity with PTSD

To address the issue of comorbid conditions, we looked at patients with any substance use/dependence diagnoses. We also examined whether they were part of some other sub population such as being part of family advocacy program or the WTU. The data showed significant comorbidities, as summarized in Table 4.

Table 4: Co-Morbid Conditions for Soldiers with PTSD

	Only PTSD	PTSD and Substance Use	PTSD and Family Advocacy	PTSD in WTU	PTSD and> 2 Co-morbid Conditions	Total PTSD
Site Alpha	285	90	67	344	818	1,604
Site Bravo	579	275	109	233	167	1,363
Site Delta	356	54	120	125	120	775

Path forward

This initial baseline provides the foundation for more in-depth understanding of the disease burden at each installation. The care trajectories analyses developed for patients with PTSD and MDD will support the development of better system performance measures for cost, care processes, and care quality.

Glossary

FORSCOM	Forces Command
HEDIS	Healthcare Effectiveness Data and Information Set
MDC	Major Diagnostic Category
MDC 19	Mental Diseases and Disorders
MDC 20	Alcohol/Drug Use or Induced Mental Disorders
MEPRS	Medical Expense & Performance Reporting System
Privileged Provider	Psychiatrists, Psychiatric Nurse Practitioners, Licensed Clinical Social Workers, and Clinical psychologists
RVU	Relative Value Unit
TRADOC	Training and Doctrine Command