

Appendix C

FY04 VA ENROLLEE HEALTH CARE
PROJECTION MODEL

ENROLLMENT RATES
ANALYSIS REPORT

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ENROLLMENT RATE STUDY

OVERVIEW

CACI, INC.- FEDERAL (CACI) was contracted by the Department of Veterans Affairs (VA) to examine a number of components of the VA Enrollee Health Care Projection Model to possibly identify potential enhancements to the Model for the Final Model Run associated with the FY04 ELDA/CARES Programs. CACI subcontracted with Milliman USA, Inc. (Milliman) to perform and/or assist CACI with these analyses. One component of the VA Enrollee Health Care Projection Model that had been identified for further examination was the use of constant enrollment rates in the development of the enrollment projections.

Some members of the VHA enrollment rates workgroup have suggested that enrollment rates can be expected to decline over time. The suppositions underlying this suggestion included:

1. Once veterans have passed up the initial opportunity to enroll, they are not likely to enroll in the future.
2. There are some veterans who, for any number of reasons, will never enroll.
3. There may be a limiting market share for any particular geographic area.

Under the analysis performed to investigate these suppositions, historical enrollment data was studied. However, the resulting evidence indicated that there is no general decline in enrollment rates. Moreover, the analysis indicated that enrollment rates do not necessarily decline in areas with relatively high market shares. The specific results associated with these findings are detailed in the section titled, "Review of Study Findings" below.

Enrollment rates have certainly declined since the initial months (October 1998-March 1999) of open enrollment. However, those enrollments were primarily administrative enrollments of veterans who had already encountered VHA and appear to have been completed within that time period.

In order to study the change in enrollment rates for new encounters with VHA, it was necessary to study new enrollment during the 42-month period from April 1, 1999 through September 30, 2002. This is the complete period for which enrollment data was available for modeling future enrollment rates.

For those groups of veterans eligible to enroll, certain factors may make it difficult to detect a declining enrollment rate. For example, the enrollment rate for those groups with a high proportion of separations depends on the tendency of newly separated veterans to enroll.

It was necessary to search for explanatory variables other than time that could lead to a declining enrollment rate. The limitation was that the variable must be one for which data was available in the enrollment projection process. The only variable identified as a candidate was market share. There were two assumptions that could have been presumed:

1. As market share approaches some limiting upper bound, the number of new enrollees vanishes to zero.

2. Enrollment rates vary with market share according to any number of linear and/or nonlinear functions.

PARAMETERS

In order to test the hypothesis that enrollment rates decline as market share increases, a database for the 42-month period from April 1, 1999 to September 30, 2002 was created. This database contains the following variables:

- Region (Nation, VISN, Market, SubMarket, or Consolidated County)
- Age Band (Under 45, 45 to 64, 65 and Over)
- Healthcare Priority Level (1, 2, 3, 4, 5, 6, 7a, 7c)
- Month (April 1999 to September 2002)
- Veterans (Beginning of Month)
- Enrollees (Beginning of Month)
- New Enrollment during Month

From this database the following statistics were computed:

- Market Share = $\text{Enrollees} \div \text{Veterans}$
- Enrollment Rate = $\text{New Enrollment} \div (\text{Veterans} - \text{Enrollees})$

This database could then be mined for potential enrollment rate models, recognizing that there are statistical pitfalls to be cautious of when using the same data to formulate *and* fit a model.

LIMITATIONS

It was also necessary to recognize the severe limitations inherent in the construction of this database:

- Veteran counts by Priority Level were based on a proxy methodology that used enrollment data as an input. Thus, there was an unavoidable dependent relationship between enrollment and veterans that could interfere with accurate estimates of the market share and the enrollment rate. Estimation errors in the VetPop proxy could be leveraged into extremely high estimated enrollment rates in cells where estimated market share was close to 100%.
- There appeared to have been a delay of approximately one year in identifying many Priority Level 4 enrollees, as well as some veterans in Priority Levels 1, 2, 3, 5, 6 and 7a. These enrollees were typically classified as Priority Level 7c veterans until more complete information regarding them became available. This caused the estimated enrollment rates during Fiscal Year 2002 to be overstated for Priority Level 7c and understated for all other Priority Levels. Therefore, it was determined that FY2002 data could be analyzed to assess overall trends, but could not be used to calculate enrollment rates by priority.
- The VetPop proxy for months prior to September 2000 is very approximate, as VP2001_adj did not provide VetPop estimates prior to this date.
- There were a large number of new enrollees that entered the system during October 2000. This appears to be a result of administrative enrollment, but it is unclear whether the true enrollment date for these veterans is generally before or after October 2000.
- The VHA Office of the Assistant Deputy Under Secretary for Health reported that there appears to have been a large number of veterans who were administratively enrolled

during September 2001. It is not clear whether these veterans would or would not have subsequently enrolled. For this reason, September 2001 is excluded from calculations of enrollment rates.

- External events can have a strong effect on a veterans' tendency to enroll. It was difficult to discern how changes in local and national economies affected the tendency of veterans to enroll. Finally, marketing efforts by local VHA and/or VSO entities may have impacted historical enrollment rates at the regional level.

With all of these considerations in mind, the enrollment rate database was mined for information to help determine enrollment rates to be used in future modeling efforts.

The enrollment rate study had three components:

1. Numerous possible models were developed and tested to identify a negative correlation between enrollment rates and market share.
2. When no such correlation was found, exhibits were constructed to demonstrate this finding.
3. Enrollment rates were calculated using the constant enrollment rate model.

The details of the regression models which were tested are omitted from this report. The important aspect of these regressions is that every model tested showed results according to the following pattern:

- For most priorities, age groups and regions, enrollment rates showed no correlation or positive correlation with market share.
- For few priorities, age groups and regions, enrollment rates showed a negative correlation with market share.
- The negative correlations did not exhibit a consistent, identifiable pattern. That is, there was no priority or age group for which a large number of regions showed a negative correlation with market share.

Based on the findings, it was determined that the constant enrollment rate model was still the model best supported by the data. The 17 month period from April 2000 to August 2001 was selected, for the reasons listed above in the limitations section. Raw enrollment rates were computed as the sum over the period of new enrollment divided by the sum over the period of the difference between the veteran population and new enrollment. Raw enrollment rates were developed by Priority Level, 3 major age groups and Sector. Likewise, raw enrollment rates for each Priority Level and Age Group were developed at the Submarket, Market and VISN level. Where necessary, enrollment rates were credibility adjusted to the SubMarket, Market or VISN level.¹

¹ Full credibility was given to any cell with at least 50 new enrollees during the period. In order to avoid bias against cells with very low enrollment rates, a credit of 1 "new enrollee" was given for credibility for every 5,000 exposures. Partial credibility equal to the square root of new enrollment + exposure credit was given to all cells that were not fully credible.

PRESENTATION OF STUDY FINDINGS

The presentation of study findings moves from a review of national data to a review of local data, and from a review of aggregated Priority Levels to a review of specific Priority Levels. In this way, an understanding of the macro-level effects can be obtained before drilling into the details of the results. The first focus of these findings is to answer the question:

Is there any evidence to suggest that the rapid pace of enrollment observed during the first three years of open enrollment has diminished in the fourth year?

AGGREGATE FINDINGS

National enrollment rates for all Priority Levels and across all ages are presented as the starting point for these findings. Graph 1 of the enclosed exhibit shows national market share and enrollment rates by month from April 1999 to September 2002. There was a dip in new enrollment during the first few months of FY 2002, which was offset by the increase in enrollment in the closing months of FY 2001. By the end of FY 2002, enrollment rates had returned to levels at or above historical average levels.

It could be supposed that the sustained increase in new enrollment was attributable to areas with lower market share finally “catching up”. That is, prior enrollment rates were high in some markets, due to outreach activities at the time, and in those markets, market shares have now stagnated. Other markets that conducted their outreach at a later time are just now catching up. If this supposition is true, then once all markets have caught up, new enrollments can be expected to stagnate. To better understand this, trends in aggregate enrollment rates by market over the entire study period are presented. Twenty-one markets had decreasing enrollment rates, 15 markets had steady enrollment rates, and 42 markets had increasing enrollment rates. Five sample markets are shown in Graphs 2-a through 2-e of the enclosed. To summarize:

- Market 02-b has a high market share and decreasing enrollment rates.
- Markets 08-b and 19-e have high market shares and increasing enrollment rates.
- Market 05-c has a low market share and decreasing enrollment rates.
- Market 12-a has a low market share and increasing enrollment rates.

Given this, there is no apparent indication that increasing or decreasing enrollment rates are linked to current market share in the market.

It is important to understand that many effects observed at an aggregate level can lead to improper conclusions regarding the underlying causes. A fixed population consisting of several distinct groups, each with their own constant enrollment rate, will exhibit a decreasing enrollment rate over time— as those with the highest enrollment rate enroll out of the pool, and those with the lowest enrollment rate remain in the pool. It is not enough to draw conclusions about the enrollment process based simply on aggregated data. Therefore, it is necessary to study trends in enrollment rates as they vary by Priority Level. The focus of the Priority Level findings is to answer the question:

Is it possible that although overall enrollment rates are increasing, the enrollment rates for the largest groups of enrollees are decreasing?

PRIORITY LEVEL

Graphs 3a-3f show trends in enrollment rates for Priority Levels 1 through 5 and the combined Priority Level “67”, consisting of Priority Levels 6 through 8c. For all Priority Levels, except Priority Level 4, enrollment rates demonstrated a general increasing trend over time. This trend analysis was limited to the months April 1999 through August 2001. FY 2002 was not used as enrollment estimates for Priority Levels 1 through 5 were understated and the month of September 2001 contains unusually high enrollment due to unusual administrative circumstances.

Graphs 3a-3f, as well as Graphs 4a-1 through 4e-6 mentioned below, demonstrate the approximate level of the proposed constant enrollment rate. This rate is calculated as the average of the observed enrollment rates during the 17-month period from April 2000 to August 2001. Had FY 2002 enrollment data been used to calculate enrollment rates in this study, enrollment rates would have been higher overall, particularly in Priority Level 7.

The enrollment rate trends by Priority Level can also be presented by Market. For all Priority Levels, other than Priority Level 4, the majority of markets show increasing enrollment rates. The markets shown in Graphs 2a through 2e are shown again in Graphs 4a through 4e, by Priority Level, showing just the months from April 1999 through August 2001.

So far, the findings presented only represent selected markets. An alternate mode of presentation is needed to comprehensively cover all markets. To show how enrollment rates vary with market share, the findings are restricted to the month of August 2001 (the most current, credible month of enrollment data available). The question to be considered is:

Can we assert that areas with high market share experience lower enrollment rates than areas with low market share?

MARKET SHARE/ENROLLMENT RATE CORRELATIONS

For each “Consolidated County,”² market share and enrollment rate by Priority Level were calculated. A scatter plot of market share vs. enrollment rate (Graphs 5a-5f) illustrates that enrollment rates tend to be higher in areas with higher market shares. (The fitted regression line on these graphs is a cubic). By restricting the analysis to August 2001 it was expected that regions which had already achieved high market share were now experiencing a decline in enrollment. This was not evident. Instead, areas with high market share, in general, were continuing to enroll a relatively high percentage of non-enrolled veterans. Areas with low market share were, in general, continuing to enroll a relatively low percentage of non-enrolled veterans.

COMPREHENSIVE PRIORITY LEVEL REGRESSION ANALYSIS

One regression performed as a part of the study merits particular attention. This final regression was to be certain that there wasn’t any missing evidence to suggest that enrollment could be declining. In order to accomplish this, a comprehensive regression analysis was performed for

² Geographically clustered rural counties consisting of at least 5,000 veterans that do not cross CARES market, state or VISN boundaries.

each Priority Level. This regression attempted to explain enrollment rate as a function of market share, month, and area. Three separate regressions were attempted, using VISN, Market and Consolidated County respectively as categorical variables for area. All three regressions used month as a categorical variable and market share as a continuous variable.

In all regressions, for all Priority Levels, the correlation between enrollment rate and market share was positive, with one exception. In the model which used Consolidated Counties as the categorical variable, Priority Level 3 showed a negative correlation between enrollment rate and market share. Furthermore, the relationship between enrollment rate and month was reviewed to attempt to identify trend. This review showed that controlling for all other variables, enrollment rates were roughly the same for all months in the study, with the exception of the 2 anomalous months mentioned above (October 2000 and September 2001).

CONCLUSION

The conclusion of this analysis was that there is no evidence to support a change to the constant enrollment rate assumption. This does not mean that future enrollment rates will not be lower than current enrollment rates. Actual enrollment rates will likely vary from this analysis for a number of reasons including economic climate, Congressional funding and VA Management and Policy decisions. Therefore, emerging experience should continue to be monitored to detect whether the expectations based on this analysis are appropriate over time. To the extent that current enrollment rates reflect current enrollment policy, it can be expected that changes to enrollment policy will cause changes to actual enrollment rates. Enrollment rate assumptions should be modified to reflect anticipated future changes to enrollment policy.