ANALYSIS OF METHODOLOGICAL EXPERIMENTS AND NON-RESPONSE BIAS FOR THE 2012 VHA SURVEY OF VETERAN ENROLLEES' HEALTH AND RELIANCE UPON VA

FINAL REPORT

--- Not For Distribution ---

Submitted to:

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BACKGROUND

The Department of Veterans Affairs (VA) serves American Veterans by providing primary and specialized health care as well as related medical and social support services. VA also administers the country's largest, most comprehensive, integrated health care system. Veterans Health Administration (VHA) enrollment files show that the number of Veterans turning to Veterans Health Administration (VHA) for health care increases every year. Enrollment in VHA will likely continue to increase due to factors such as the nation's economy, shifts in Veteran population demographics, and rising health care costs.

VHA's ability to enroll Veterans is regulated by the Veteran's Health Care Eligibility Reform Act of 1996 (Public Law 104-262). This law instituted a priority-based enrollment system designed to balance service to those Veterans most in need with the need to control health care costs and system burden. Under this law, the number of priority levels to which VHA can deliver care is a function of annual funding levels and utilization patterns.

To meet enrollees' health care needs, VHA also must understand fully the reliance of enrolled Veterans on VHA health care services and programs compared to their use of non-VA services and programs (known as "VA reliance"). Data gathered by the VHA Survey of Veteran Enrollees' Health and Reliance Upon VA (Survey of Enrollees) is a major contributor to VA's understanding of enrollee reliance. The Survey of Enrollees was developed to gather a variety of information used to determine the relationship between utilization patterns and demographic and socioeconomic characteristics of VHA enrollees.

The Survey of Enrollees data inform health care budgets, assist VA with its annual enrollment decisions, and inform the VA Enrollee Health Care Projection Model (EHCPM). Forecasts developed from this model have a number of purposes, such as budgeting, and scenario-based policy and planning analyses.

VHA has conducted ten cycles of the Survey of Enrollees (1999, 2000, 2002, 2003, 2005, 2007, 2008, 2010, 2011, and 2012). Through 2011, the survey methodology could be summarized as an English-only, 15- to 20-minute survey available via Computer-Assisted Telephone Interviewing (CATI), using a stratified sampling design with the objective of obtaining 42,000 interviews. In 2012, VHA added mail and Computer-Assisted Web Interviewing (CAWI) modes as part of VHA's ongoing experiments to reduce survey response bias.

ICF International, Inc. (ICF) has provided technical and data collection services to VHA in support of the Survey of Enrollees since 2005. This analysis of methodological experiments and non-response bias pertains to the 2012 data collection period from March 28 through June 21, 2012.

History of Survey of Enrollees Bias Assessments

Any information collection from the general public and conducted or sponsored by a Federal agency requires periodic Office of Management and Budget (OMB) clearance. As part of the Fiscal Year (FY) 2006 OMB clearance package, VHA was tasked with both conducting a non-response bias assessment, as well as examining the quality of the sampling frame. In 2006, VHA and ICF met with OMB to discuss the non-response analysis and agreed to develop methods to improve the survey program. OMB granted clearance to VHA but required that VHA improve the design, starting with the 2007 survey. Since then, the Survey of Enrollees has:

- Added a pre-survey notification letter sent from the Under Secretary for Health. The letter described the survey's purpose, explained that ICF is conducting the study on VHA's behalf, and provided a number to call with questions or to complete the survey;
- For Veterans with missing phone numbers, added a customized letter with an inbound phone number to call to complete the survey;
- Experimented with reverse-phone number look-up based on address information;
- Increased the maximum number of call attempts from six to seven; and
- Improved the weighting methodology to use a propensity score adjustment based on demographics and health care utilization administrative records.

Bias in the Survey of Enrollees exists in two forms, 1) differences between enrollees with and without a valid phone number (coverage bias), and 2) differences between those who respond to the telephone survey and those who do not (non-response bias). Thus, in 2012, VHA introduced a mail survey to offer participation to enrollees without a phone number or with a nonworking number. VA also experimented with the use of a mail survey for telephone non-responders. Finally, as an alternative to mail or telephone modes, VHA offered a Web survey.

This report provides an overview of the methodological experiments conducted in previous survey cycles, an analysis of the 2012 introduction of a multi-mode survey format, and an overall bias analysis.

Summary of Methodological Experiments, 2006–2011

For the past five years, we have conducted a bias assessment and have evaluated the results of methodological experiments designed to reduce bias. In 2006, ICF used the 2005 data to examine the survey process and potential biases resulting from missing or outdated contact information and survey non-response—including both the inability to make contact and the effects of respondent refusals. The report, submitted to the Office of Management and Budget (OMB), included several recommendations to improve the research design.

The 2007 Survey of Enrollees included several methodological experiments to gauge the impact of design enhancements. These experiments included sending pre-survey notification letters to potential respondents by the Under Secretary for Health; and, extending the maximum number of call attempts from 6 to 10. The results of these experiments are documented in the 2007 report, "Supplementary Analysis and Technical Assistance for the 2007 Annual Survey of Veteran Enrollees Health and Reliance on VA," dated February 14, 2008. The response rate among the experimental treatment group (pre-survey notification letter and 10 call attempts) doubled that of the control group (no pre-survey notification letters and 6 call attempts)—43.3 percent vs. 21.4 percent, respectively. Based on the experimental evidence, ICF recommended that VHA adopt both of these design enhancements for the 2008 Survey of Enrollees. VHA approved sending pre-survey notification letters and increasing the maximum call attempts to seven (concern for increased respondent burden prevented an increase to 10).

In 2008, VHA approved a methodological experiment to improve sample frame coverage: reverse telephone look-up directories that used respondent addresses to obtain valid telephone numbers from a sample of 62,516 enrollees. This process resulted in 59,426 potential respondents (95 percent coverage), and this group yielded 12,765 completed surveys.

The 2010 Survey of Enrollees followed the same methodology as 2008—including the reverse phone number look-up from a sample of 62,515 enrollees. Again, the results indicated that address matching improved contact information quality. This process resulted in 61,376 potential respondents (98 percent coverage), and this experimental group yielded 16,851 completed surveys.

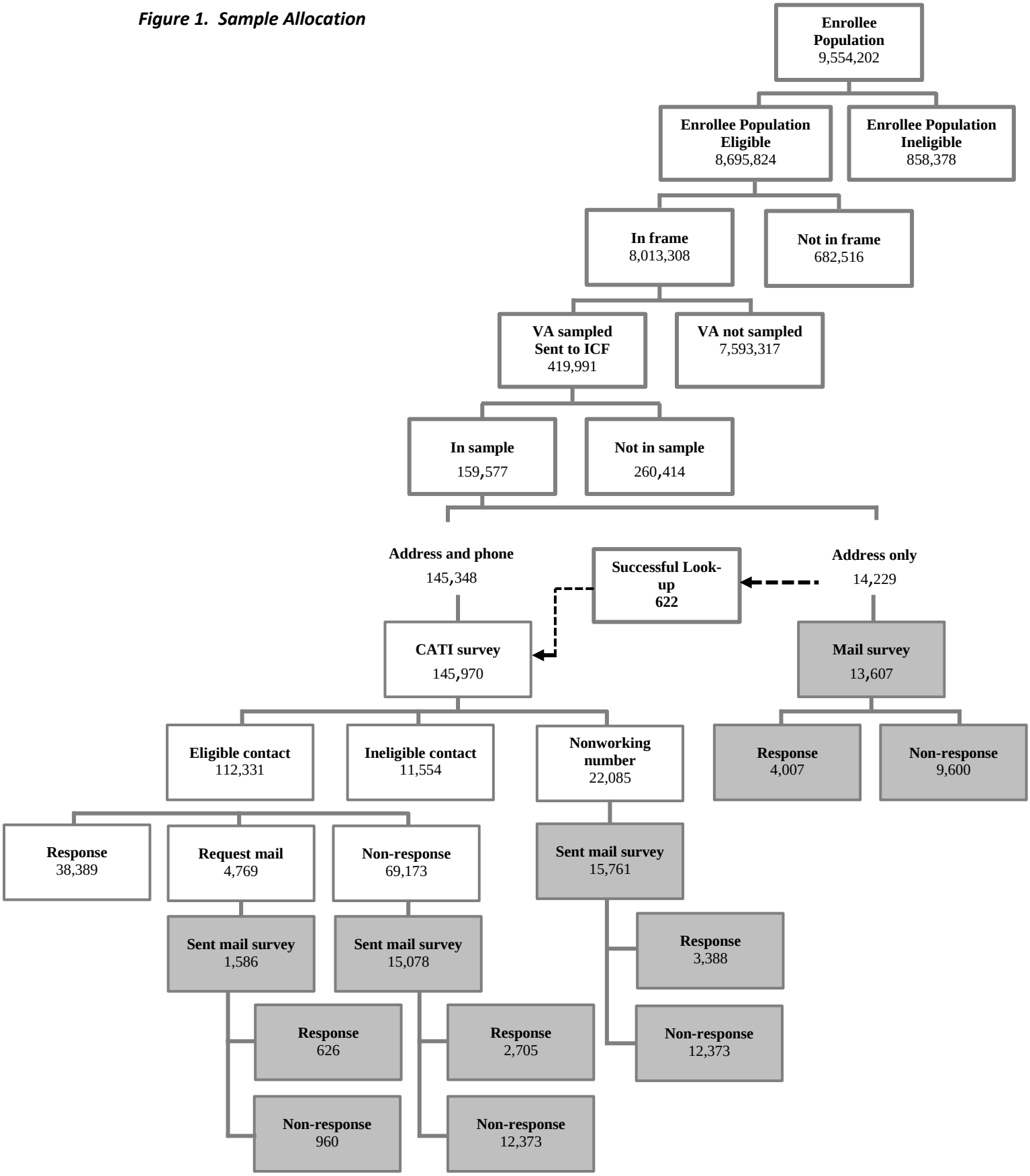
For 2011, the plan for the Survey of Enrollees also included reverse telephone look-ups. Unfortunately, this service was not implemented in 2011 because the address matching vendor was not able to comply with the project's security requirements. A 2011 experiment included a tailored pre-survey notification letter sent to enrollees with a known address but unknown telephone number, as listed in the database. This letter asked the enrollee to call ICF to conduct the survey. This experiment marked the first time that Veterans with unknown telephone numbers were included in the frame. This test yielded 244 interviews from 15,339 total enrollees without phone numbers. While relatively few, these respondents represent Veterans who would not otherwise be included in the survey results.

2012 EXPERIMENTS

Enrollee Records without a Valid Telephone Number

The Survey of Enrollees has been conducted as a telephone interview since its inception in 1999. Enrollees with invalid telephone numbers (e.g., missing or incorrect area code) or no telephone were not included, which was a source of bias. In 2012, VHA addressed this design bias by developing an experimental mail survey that was sent to all enrollees without a valid telephone number. In addition to adding a mail survey, VHA offered an experimental Web option for the first time. Enrollees were sent a pre-survey notification letter informing them of the survey and offering the opportunity to complete the survey online. Figure 1, below, presents the 2012 allocation of sample.

Figure 1. Sample Allocation



The shaded boxes in the figure above represent design features added in 2012. The lighter boxes represent the design as conducted in past iterations. The addition of mail and Web versions introduces many potential benefits:

1. Increases coverage to include enrollees unavailable to participate by phone;
2. Allows an additional response mode for those who prefer to take a self-administered survey online or on paper;
3. Offers a non-response follow-up option for those who did not respond to the phone survey; and,
4. Provides a second contact option for enrollees whose telephone number is no longer working.

Note that throughout this report, we refer to the "telephone survey" (CATI) and the "mail survey." The former term designates the traditional telephone design, as indicated by the lighter boxes in Figure 1; and the latter term designates features introduced by the mail survey, as indicated by the shaded boxes in Figure 1. The terms "telephone survey" and "mail survey" do not indicate whether the respondent answered the survey by telephone or mail. For example, some Veterans who were sent a mail survey called ICF and either completed an inbound CATI survey or provided telephone information that resulted in an outbound CATI survey.

We examine each of these benefits below.

Increased Coverage

One of the main concerns about the Survey of Enrollees design was coverage bias. Coverage bias can occur when population sub-groups—in this case, enrollees—are systematically excluded from the sample frame due a variety of factors. Among them, for telephone surveys, is the lack of a telephone number through which to contact the respondent. Coverage bias is the deviation of observed data values from the actual values due to differences between covered and non-covered cases. Telephone surveys suffer from coverage bias because they cannot include enrollees without telephones. In 2010, VHA experimented with reverse telephone number look-ups based on the enrollee's name and address (via LexisNexis, a business research service). This look-up found a telephone number for 5,731 of 6,870 enrollees (83 percent) without a telephone, and resulted in 870 interviews.

The telephone look-ups improved the sample frame and expanded coverage; however, the process was discontinued in 2011 because LexisNexis was unable to comply with VA data security requirements. Instead, ICF mailed a pre-survey notification letter to all sampled Veterans without a phone number. The pre-survey notification letter explained that we wanted to include them in the study, but we had no telephone number to do so. The letter was nearly identical to the pre-survey notification letter sent to Veterans for whom we had a telephone number; and, it contained the following additional text: **We do not have a current telephone number for you but would like to include you in our study. To participate please call ICF Macro at 1-888-871-0345.** The letter was sent to 15,339 enrollees. A total of 244 of these enrollees called in to complete the survey.

As part of the 2012 survey, ICF administered an experimental mail survey to all sampled enrollees without a phone number. The mail protocol included a pre-survey notification advance letter, followed by a cover letter and survey packet, a postcard reminder, and a second cover letter and survey packet. As expected, the mail mode resulted in many more completed surveys than were attained in previous years. In total, 14,229 (8.92 percent) enrollees did not have a valid telephone number. We were able to determine a phone number via area code

look-ups for 622 cases (4.37 percent), leaving 13,607 selected enrollees in the mail survey. From the mail sample, we obtained 4,007 completed surveys across all response modes, a 29.4 percent completion rate. The majority of these surveys were completed via mail (3,632). In addition, 327 of these enrollees completed the survey via Web, and 48 via telephone.

Alternate Response Modes

The addition of a mail survey component also allowed for alternative response options. In previous iterations of the Survey of Enrollees, some enrollees had requested a mail version of the survey. This was not possible in prior years, since no mail version existed. The addition of a mail survey component allowed us to honor these requests, and provided a means to follow up on non-response and non-working numbers in the CATI study.

Mail Survey Requests

In 2012, 1,586 enrollees requested and received mailed surveys, resulting in 556 completed returns by mail, a 35.1 percent completion rate for this group. Another 19 surveys from this group were completed by Web, and 51 surveys were completed by telephone, for a total of 626 responses, a 39.5 percent response rate.

Non-Response Follow-Up

Non-response occurs when an enrollee refuses, does not have time, or cannot be reached to conduct the telephone interview. In 2012, there were 69,173 non-responding enrollees. A subsample of 15,078 telephone non-responders was sent a mail survey. This resulted in 2,705 surveys completed across all response modes, a 17.9 percent response rate.

Nonworking Telephone Numbers

A final benefit of the mail survey is that it can be used to reach enrollees with non-working numbers. About 15 percent of the telephone numbers listed in the frame was nonworking. Since we had addresses for these enrollees, we could send a mail survey to seek a response. We mailed surveys to 15,761 enrollees with non-working numbers and received 3,388 responses across all response modes, a 21.5 percent response rate.

Impact of Mail Option on the Survey Estimates

To understand how the mail survey affects the survey response options, we divided the completed interviews into four groups based on the data collection protocol. The first group represents a control, in that the treatment of enrollees with valid telephone numbers is very similar to the historical telephone-only design. The other three groups represent treatment groups; here, we implemented data collection protocols that were made possible by the inclusion of a mail response channel. It is important to note that enrollees in each group could respond to the survey via any one of the four response channels—outbound CATI, inbound CATI, Web, or mail.

For example, an enrollee with a valid phone number (Group 1) could complete a survey via outbound CATI when contacted by an ICF agent; via inbound CATI by calling the ICF number printed on the pre-survey notification letter and displayed on caller ID; via Web using

instructions printed on the pre-survey notification letter; or, via mail if the enrollee requested a mail survey.

Table 1 provides counts of interviews completed by each of these groups broken out by response channel. The four groups of enrollees were:

Group 1 – Valid Phone; Enrollees with valid telephone numbers—this group most closely represents the historical telephone-only design used through 2011. It is slightly different than previous administrations of the survey in that enrollees could respond via Web.

Group 2 – Non-Working Phone; Enrollees with a non-working telephone number—this group started in the telephone survey, but was sent a mail survey once it became clear that the telephone number was nonworking.

Group 3 – Mail Request and Non-Response; Enrollees with a valid telephone number who requested a mail survey or who were telephone non-responders—this group was sent a mail survey upon request or when ICF satisfied dialing protocol without obtaining a completed interview.

Group 4 – Invalid Phone; Enrollees with an invalid telephone number listed on the frame—this group was administered a mail survey at the outset.

Table 1. Treatment Group by Response Channel

Description	Group	Outbound Phone	Inbound Phone	Web	Mail
CATI Eligible Response	Group 1	30,691	1,724	5,974	0
CATI Eligible Non-Response, Mail Response	Group 2	1	13	13	2,678
CATI Non-Working Number, Mail Response	Group 3	0	0	198	3,190
CATI Eligible Requested Mail, Mail Response	Group 3	12	39	19	556
	Group 3 Total	12	39	217	3,746
Mail Survey, Response	Group 4	4	44	327	3,632
Total Responses		30,708	1,820	6,531	10,056

We computed separate estimates for these four groups to demonstrate how they change based on each of the new features available with the multi modes. These characteristics were chosen since they are both important characteristics of enrollees and of interest to VHA.

Table 2. Comparison of Select Estimates of Coverage, Access, and Health Behaviors for Each Response Group

	All Enrollees	CATI Study Protocol			New Mail-based Protocol
		Valid Phone (Group 1)	Non-working Phone (Group 2)	Mail Request & Non-response (Group 3)	Invalid Phone (Group 4)
Medicare coverage (%)	58.4 (57.8, 59.0)	59.5 (58.8, 60.2)	51.0 (48.6, 53.5)	59.9 (57.5, 62.3)	51.5 (49.2, 53.8)
Medicaid coverage for some health care (%)	6.6 (6.3, 7.0)	6.9 (6.5, 7.3)	6.4 (5.2, 7.6)	4.8 (3.7, 5.8)	6.0 (4.9, 7.1)
Coverage by another individual or group health plan (%)	26.4 (25.8, 26.9)	25.1 (24.4, 25.7)	31.4 (29.1, 33.7)	26.3 (24.2, 28.4)	38.0 (35.7, 40.2)
Use VA services to meet….(%)					
01 All of my health care needs	31.8 (31.2, 32.4)	33.1 (32.4, 33.7)	27.0 (24.8, 29.2)	34.9 (32.5, 37.2)	17.6 (15.7, 19.5)
02 Most of my health care needs	17.9 (17.4, 18.4)	19.2 (18.6, 19.7)	10.9 (9.4, 12.4)	18.3 (16.4, 20.3)	9.3 (7.8, 10.8)
03 Some of my health care needs	29.8 (29.2, 30.4)	31.1 (30.5, 31.8)	25.1 (22.9, 27.3)	29.3 (27, 31.6)	17.8 (16.0, 19.6)
04 None of my health care needs	17.0 (16.5, 17.5)	13.5 (13.0, 14.0)	31.5 (29.2, 33.8)	14.8 (13.1, 16.5)	49.0 (46.6, 51.3)
05 I have no health care needs	3.5 (3.3, 3.7)	3.2 (2.9, 3.4)	5.5 (4.4, 6.7)	2.7 (1.9, 3.6)	6.4 (5.2, 7.5)
Self-Reported General Health (%)					
01 Excellent	10.7 (10.3, 11.1)	11.1 (10.6, 11.5)	9.0 (7.6, 10.4)	8.6 (7.2, 10.0)	11.1 (9.5, 12.7)
02 Very good	25.2 (24.7, 25,8)	24.8 (24.1, 25.4)	27.6 (25.4, 29.8)	25.7 (23.6, 27.9)	28.4 (26.3, 30.5)
03 Good	30.8 (30.2, 31.4)	30.1 (29.4, 30.8)	32.5 (30.2, 34.8)	35.5 (33.1, 37.8)	33.5 (31.3, 35.7)
04 Fair, or	22.0 (21.5, 22,6)	22.1 (21.5, 22.7)	22.4 (20.3, 24.4)	22.7 (20.7, 24.7)	20.2 (18.3, 22.1)
05 Poor	11.1 ((10.7, 11.5)	12.0 (11.5, 12.4)	8.6 (7.2, 10.0)	7.5 (6.2, 8.8)	6.8 (5.6, 8.0)
Employment Status (%)					
01 Employed Full-time	17.7 (17.3, 18.1)	16.0 (15.5, 16.4)	27.2 (25.0, 29.4)	19.1 (17.3, 21.0)	28.8 (26.8, 30.9)
02 Self-employed full-time	2.8 (2.6, 3.0)	2.7 (2.5, 3.0)	2.9 (2.0, 3.8)	3.5 (2.5, 4.5)	2.9 (2.1, 3.7)
03 Employed part-time	5.0 (4.7, 5.3)	5.0 (4.7, 5.3)	4.5 (3.5, 5.5)	4.8 (3.7, 5.8)	6.7 (5.3, 8.0)
04 Self-employed part-time	3.0 (2.8, 3.3)	3.1 (2.8, 3.4)	2.4 (1.7, 3.2)	3.3 (2.4, 4.2)	2.8 (2.0, 3.6)
05 Unemployed, looking for work, or laid off	6.2 (5.9, 6.4)	6.4 (6.0, 6.7)	5.4 (4.3, 6.5)	5.4 (4.2, 6.6)	5.1 (4.1, 6.1)
06 Currently not employed – either retired, a homemaker, student, etc.	65.2 (64.6, 65.8)	66.8 (66.2, 67.5)	57.6 (55.1, 60.1)	63.9 (61.5, 66.3)	53.8 (51.4, 56.2)
Current Smokers (%)	17.7 (17.2, 18.2)	17.4 (16.9, 18.0)	21.7 (19.6, 23.7)	16.9 (15.1, 18.8)	17.9 (16.1, 19.7)

Note: 95% Confidence Intervals

Note: Rao-Scott Chi-square tests of association were run on the measures reported in Table 1. In all cases these tests showed a highly significant association between the response group and the enrollee characteristic.

In most respects, respondents with valid telephone numbers (Group 1) and respondents who requested a mail survey and CATI non-responders (Group 3) have similar estimates. Less than 20 percent of these two groups are employed full-time, and approximately 65 percent of these two groups are not currently in the labor force. The other two groups, respondents who received a mail survey because of non-working numbers (Group 2) and respondents who received a mail survey because we had no telephone number (Group 4), have a higher percentage of respondents employed full-time, and a lower percentage not in the labor force. Compared to Groups 2 and 4, Groups 1 and 3 also have a higher percentage of enrollees covered by Medicare, and a smaller percentage covered by private health care. Over 50 percent of enrollees in Groups 1 and 3 receive all or most of their health care needs from the VA. Nearly 50 percent of the respondents in Group 4 do not use VA for their health care needs. This group has the highest percentage of enrollees, 38 percent, who are covered by private health insurance. Group 2 reported the highest smoking rates, with a 21.7 percent incidence of current smoking.

Although general patterns of self-reported health were similar across groups, the exception was enrollees self-reporting poor health, the highest being Group 1 enrollees at 12 percent.

We also examined a selected number of Key Driver questions in which the respondents were read a series of statements, and then asked if they: 1 completely agree, 2 agree, 3 neither agree nor disagree, 4 disagree, or 5 completely disagree. We present average scores in *Table 3*, below. Lower scores indicate higher agreement; higher scores indicate lower agreement.

Table 3. Comparison of Select Key Driver Responses for Each Response Group

	CATI Study Protocol			New Mail-based Protocol
	Valid Phone (Group 1)	Non-working Phone (Group 2)	Mail Request & Non-response (Group 3)	Invalid Phone (Group 4)
d11c: VA offers Veterans like me the best value for our health care dollar	2.08 (2.06, 2.09)	2.14 (2.09, 2.19)	1.87 (1.82, 1.91)	2.35 (2.30, 2.40)
d12b: Veterans like me who use VA are satisfied with the health care they receive	2.13 (1.12, 2.14)	2.22 (2.18, 2.27)	1.95 (1.90, 1.99)	2.39 (2.34, 2.43)
d13b: Veterans like me can get in and out of an appointment at VA in a reasonable time	2.22 (2.21, 2.24)	2.40 (2.35, 2.45)	2.06 (2.10, 2.11)	2.59 (2.53, 2.64)
d14d: I understand how my VA health benefits works	2.34 (2.33, 2.36)	2.75 (2.70, 2.80)	2.41 (2.36, 2.46)	2.95 (2.90, 3.00)
d15f: It is easy to get to my local VA facility	2.17 (1.16, 2.19)	2.27 (2.21, 2.31)	1.97 (1.92, 2.02)	2.39 (2.33, 2.44)
d16c: I would only use VA if I did not have access to any other source of health care	2.86 (2.84, 2.88)	2.77 (2.70, 2.83)	3.11 (3.04, 3.17)	2.66 (2.60, 2.73)

Note: 95% Confidence Intervals

Groups 1 and 3 provided the most favorable ratings for VA. The least favorable ratings came from the enrollees in Group 4. This group reported less use of VA for their health care needs than did the enrollees in the other three groups.

Adding a Web Survey

Another addition to the 2012 survey was a Web option. The Web survey offers enrollees the opportunity to respond online, instead of by mail or by telephone. All enrollees were sent a pre-survey notification letter that stated the following:

> ICF International, a respected research and management consulting company, is partnering with VHA to conduct the survey. Our goal is to make it as easy as possible for you to participate in this survey. Within the next few days, ICF International will contact you by telephone to complete the survey. Alternatively, you may contact ICF International directly to arrange to participate in the survey at 1-866-784-7219 referencing your passcode noted below. You may also complete the survey online by going to the Web site (*http://www.vhasurvey.com*), entering your unique passcode (Passcode: < MASTER ID>), and following the instructions.

Enrollees have always had the opportunity to call in to complete the survey, but 2012 was the first time they could complete it online. In 2011, telephone respondents completed 43,633 surveys, of which 3,085 (7.1 percent) were completed via inbound calls. Inbound calling was also an option in 2012, but it was utilized at about half the 2011 rate—possibly due to the availability of alternate response channels in 2012. Of the 38,389 completes from enrollees in the telephone-only portion of the survey, only 1,724 (4.5 percent) completed the survey via inbound calling.

Another 5,974 (15.6 percent) enrollees chose to respond via Web; this was more than three times the percentage of those responding via inbound telephone. The combined Web and inbound telephone response for 2012 (7,698) totaled 20 percent of the 38,389 interviews obtained from Group 1.

Including the enrollees who were sent a mail survey, 6,531 enrollees completed the survey online. This total represents 13.3 percent of all completed interviews and demonstrates an important new channel to engage this population. Web surveys can reduce call center labor hours and, potentially, data collection timelines.

Table 4, on page 12, shows the same enrollee characteristics depicted in *Table 2*, split out by response channel, or survey mode. While we can see differences in characteristics across modes, they cannot necessarily be attributed to mode effects.

Due to the study design, mode effects are confounded with the effects of reaching different sub-populations. For example, among enrollees with data collected via an outbound telephone interview, the full time employment rate was 15%, compared to 23% and 25% for enrollees responding via mail and Web, respectively. It is possible that this is due to population effects—those employed full time may find it easier to respond via web and mail, and are less likely to be found at home by an outbound call. On the other hand, differences observed in self report health status may be due to mode effects—speaking with a person may prompt different responses to these items than filling out a survey in private.

As we design the next cycle of this study, we can consider the possibility of embedding controlled experiments in the survey design that would allow us to tease apart the mode and population effects.

Table 4. Mode Analysis

	Outbound Phone			Inbound Phone			Web			Mail		
	Percent	Lower 95% Confidence Limit	Upper 95% Confidence Limit	Percent	Lower 95% Confidence Limit	Upper 95% Confidence Limit	Percent	Lower 95% Confidence Limit	Upper 95% Confidence Limit	Percent	Lower 95% Confidence Limit	Upper 95% Confidence Limit
Medicare coverage (%)	60.45	59.68	61.22	65.26	62.13	68.38	52.76	51.07	54.44	54.76	53.34	56.18
Medicaid coverage for some health care (%)	7.67	7.23	8.11	7.97	6.20	9.74	3.15	2.56	3.73	5.81	5.14	6.47
Coverage by another individual or group health plan (%)	24.39	23.70	25.07	23.43	20.67	26.18	29.71	28.19	31.24	31.05	29.73	32.36
Use VA services to meet….(%)												
01 All of my health care needs	34.18	33.43	34.93	35.05	31.92	38.18	26.50	25.01	27.98	27.38	26.08	28.68
02 Most of my health care needs	19.21	18.57	19.86	18.41	15.97	20.85	18.43	17.13	19.74	13.18	12.18	14.18
03 Some of my health care needs	30.65	29.89	31.41	30.72	27.61	33.83	32.98	31.36	34.59	24.21	22.96	25.47
04 None of my health care needs	12.58	12.03	13.13	12.93	10.70	15.16	19.63	18.28	20.98	30.34	29.04	31.65
05 I have no health care needs	3.38	3.08	3.67	2.89	1.71	4.07	2.47	1.93	3.01	4.88	4.23	5.52
Self-Reported General Health (%)												
01 Excellent	11.06	10.53	11.59	12.87	10.53	15.20	10.40	9.34	11.46	9.59	8.70	10.47
02 Very good	23.52	22.82	24.23	25.39	22.48	28.31	30.76	29.17	32.34	26.70	25.41	27.99
03 Good	29.47	28.73	30.22	26.98	24.10	29.85	33.96	32.34	35.57	33.83	32.46	35.20
04 Fair, or	22.80	22.13	23.48	21.32	18.71	23.93	18.78	17.47	20.08	22.15	20.94	23.35
05 Poor	13.14	12.59	13.69	13.44	11.19	15.70	6.11	5.32	6.90	7.74	6.96	8.52

	Outbound Phone			Inbound Phone			Web			Mail		
	Percent	Lower 95% Confidence Limit	Upper 95% Confidence Limit	Percent	Lower 95% Confidence Limit	Upper 95% Confidence Limit	Percent	Lower 95% Confidence Limit	Upper 95% Confidence Limit	Percent	Lower 95% Confidence Limit	Upper 95% Confidence Limit
Employment Status (%)												
01 Employed Full-time	15.03	14.51	15.56	9.81	7.99	11.63	22.83	21.51	24.15	24.49	23.28	25.70
02 Self-employed full-time	2.65	2.38	2.91	2.20	1.24	3.15	3.48	2.83	4.14	2.98	2.45	3.52
03 Employed part-time	4.71	4.35	5.07	4.79	3.36	6.22	6.22	5.38	7.07	5.25	4.57	5.92
04 Self-employed part-time	2.91	2.62	3.20	2.41	1.47	3.36	4.25	3.50	5.00	2.78	2.29	3.27
05 Unemployed, looking for work, or laid off	6.78	6.38	7.17	6.12	4.63	7.62	4.83	4.10	5.57	5.15	4.51	5.79
06 Currently not employed – either retired, a homemaker, student, etc.	67.92	67.18	68.67	74.67	71.89	77.44	58.38	56.72	60.04	59.35	57.92	60.79
Current Smokers (%)	18.58	17.96	19.20	17.66	15.16	20.16	11.92	10.84	12.99	19.25	18.10	20.41

SAMPLE DESIGN

Sampling Frame

VHA provided a random stratified sample of 419,991 records from its enrollee database as follows:

- VHA extracted the entire universe of enrollees who were listed as of September 30, 2011; this list included both institutionalized and non-institutionalized Veterans enrolled in VA health care and contained 9,554,202 records
- After dropping deceased, enrollment cancelled/declined, and enrollment ineligible cases (known as "current") enrollees, the VHA enrollment file contained 8,695,824 records

- VHA eliminated all records meeting the following criteria:
    - Lacking a valid address;
    - Not eligible for VA Healthcare;
    - Not in the U.S. or Puerto Rico; and,
    - Missing one of the stratification variables listed below.
- This left a file of 8,013,308 enrollees to be stratified by OEF/OIF/OND status, pre/post-enrollee status, priority group, and Veteran Integrated Service Network (VISN).

ICF then randomly selected a subsample of these records to meet the target sample sizes in each stratum. ICF released records into the study as needed, using a random selection algorithm. Operationally, this process was based on monitoring the number of completed interviews periodically during fielding. We compared the estimated sample yield (that is, the number of completed interviews we predicted we would obtain from the sample at a given point in the study) to the target number required by the sampling plan. Enrollee records were drawn randomly from the set of records provided by VA and released into the study for calling/mailing based on this analysis.

For cycles prior to 2008, the sampling frame had been stratified into 294 strata based on VISN (21), enrollee type[1] (2), and priority group (1–6 and 7/8). To increase the data utility for OEF/OIF/OND enrollees, VHA added additional strata based on OEF/OIF/OND status in 2008 and repeated this in 2010 and 2011.

For 2012, there were two modifications to the stratification. First, VHA combined the enrollee type stratum with the OEF/OIF/OND status stratum because very few enrollees were "pre" and OEF/OIF/OND. The new stratification variable was:

1. Post, not OEF/OIF/OND;
2. Pre, not OEF/OIF/OND; and,
3. OEF/OIF/OND.

Second, priority group 8 was stratified separately from priority group 7. In previous years, priority groups 7 and 8 were a combined stratum.

[1] Pre-enrollees are defined as those Veterans who used the VA Health Care System during fiscal years 1996, 1997, or 1998 or enrolled during the first six months of enrollment (October 1, 1998 to March 31, 1999). All other enrolled Veterans are considered Post-enrollees.

The stratification and sample allocation were based on achieving target sample sizes for OEF/OIF/OND enrollees, VISN, enrollee type, and priority. Each of the 21 VISN was allocated 2,000 interviews as follows:

1. 875 allocated to pre-enrollees, with
    a. 125 interviews each for priority groups 1 through 5, for a total of 625 interviews
    b. An additional 250 interviews proportionally allocated across priority groups 6 through 8
2. 875 allocated to post-enrollees, with,
    a. 125 interviews each for priority groups 1 through 5, for a total of 625 interviews
    b. An additional 250 interviews proportionally allocated across priority groups 6 through 8
    c. Within each priority group, the sample split proportionally between OEF/OIF/OND and non-OEF/OIF/OND enrollees.
3. 250 oversample for OEF/OIF/OND proportionally allocated across priority groups 1 through 8

A total of 145,970 enrollees with a valid telephone number (including 622 telephone look-ups) were sampled to meet the sample size requirements in all strata.

This was much higher than in 2011, which required about 137,000 records, but less than 2010, which required about 167,000 records. The introduction of a mail survey—with an administration cycle time nearly twice that of CATI—limited the number of sample waves in 2012 to just two. This outcome meant that sample draw estimates were less precise than in previous years when sample was released over several waves. In 2011, the sample yielded an average of one completed interview per 3.2 sampled records. In 2012, the yield for the telephone frame was one per 3.8 records.

However, when the mail survey is factored in, the yield for 2012 was 49,115 interviews from 159,577 records, or one in every 3.2 records. If the mail survey were to be used for all non-responders and all nonworking numbers, the yield could be as high as one in every 2.7 records.

Sampling Design and Interview Outcomes

The final sample for the Survey of Enrollees must pass through many stages—the sampling stages described above, as well as the survey process. The record had to lead to the correct enrollee, the enrollee had to be contacted, and the enrollee had to elect to respond to the survey.

The only stage that is a controlled random process—and, therefore, not subject to potential bias—is the random sample selection. All other stages have the potential to introduce non-random, systematic bias into enrollee estimates.

Frame Eligibility

Referring to *Table 6*, on page 20, 7,451,077 enrollees (92.9%) were eligible for the telephone sampling frame, leaving 562,231 enrollees (7.1%) ineligible for the telephone sampling frame due to incomplete telephone information.

At that time, according to administrative records, about 63 percent of enrollees received services (long-term, inpatient, or outpatient care) during the previous 12 months. Telephone frame eligibility was

higher for those who had received services compared to those who had not (97 versus 85 percent). Similarly, telephone frame eligibility was higher for the 55 percent of enrollees receiving the prescription drug service compared to the 45 percent who did not (97 versus 87 percent frame eligibility).

These percentages are similar to 2011; but in 2012, enrollees who were ineligible for the telephone frame were administered a mail survey. This reduced the risk of coverage bias by including responses from normally non-covered enrollees.

Valid Contact

All of the sampled enrollees were called at least once to initiate an interview, except for cases where no telephone number was available. During data collection, many telephone numbers were classified as invalid, including non-working numbers, wrong numbers at which the selected enrollee was not known, out-of-service numbers, fax or modem telephone numbers, and business numbers at which the enrollee was not known.

Enrollees with these invalid numbers were unable to complete the survey since the telephone number did not lead to the selected enrollee. This loss of the sample population in prior years may have introduced non-response bias in the survey estimates since these enrollees were part of the total population, yet could not be reached for interview.

The only way to obtain an alternate telephone number for use in the CATI study was to collect one if it was provided by an individual at the incorrect telephone number, or if the sampled enrollee called ICF in response to the pre-survey notification letter and provided a number.

In 2012, alternative response channels included a mail survey or a Web survey if the enrollee accessed the Web survey in response to pre-survey notification materials.

Enrollees with invalid contact information numbered 27 percent (33,639), with 20 percent (22,085) classified as nonworking numbers. Of the 22,085 nonworking numbers, 15,761 were sent a mail survey, which yielded 3,388 interviews, a 21.5 percent overall response rate.

Non-Response

After determining that the telephone contact information was accurate, the final stage of the process was either a complete interview (response) or unsuccessful attempts. ICF classifies non-response into two forms, enrollee refusal and enrollee non-contact.

Enrollee refusals result when an interviewer contacts an enrollee (or an enrollee agent), and communicates the sponsor (VHA) and purpose of the survey, but the enrollee elects not to participate by verbal refusal, hang-up, or another form of termination.

A non-contact means that an interviewer never reaches the enrollee (or an enrollee agent) directly; this includes answering machines and other technological barriers, language barriers, and busy numbers, as well as hang-ups and refusals *before or during* the survey introduction (where an enrollee's presence is not yet confirmed).

We sent a non-response mail survey to 15,078 out of the 69,173 non-responding enrollees in the CATI study. The follow-up was effective in obtaining responses from 2,705 (17.9 percent) of these telephone non-respondents.

In general, non-response is evaluated by examining a survey's response rate (i.e., the proportion of completed interviews relative to the selected sample, minus the identified ineligible sample elements). For the 2012 Survey of Enrollees, the final response rate using American Association of Public Opinion Research response rate calculations (AAPOR RR1[2]) was 39 percent for both the sample selected from the telephone frame as well as the sample selected from the mail-only frame. The overall response rate was 39 percent.

This rate is higher than the 35 percent obtained in 2010, but lower than the 42 percent in 2011.

[2] AAPOR response rates are more complex than a simple ratio, in order to account for records with unknown eligibility status. The RR1 is defined as
RR1 = I/(I + P) + (R + NC + O) + (UH + UO), where
I = Complete interview
P = Partial interview
R = Refusal and break-off
NC = Non-contact
O = Other
UH = Unknown if household/occupied HU
UO = Unknown, other
e = Estimated proportion of cases of unknown eligibility that are eligible

BIAS ANALYSIS

To facilitate bias analysis, the sample was divided into two groups:

- *No telephone records:* those records with a missing or incomplete telephone number (less than 10 digits) or lacking a valid area code and exchange (prefix) combination.[3]
    - For telephone numbers with seven digits or an invalid area code, we attempted to look up the correct number based on city and state. This resulted in 622 additional enrollees with telephone numbers that were included with the telephone survey.
    - The remaining enrollees with no telephone records were administered a mail survey.
- *Telephone records:* those records where the telephone number appeared valid—having 10 digits and a valid area code and exchange (prefix) combination were administered a telephone survey.
    - A sample of enrollees with nonworking numbers was sent a mail survey.
    - A sample of non-responding enrollees (with valid telephone numbers) was sent a mail survey.
    - A sample of enrollees (with valid telephone numbers) who requested a mail survey was sent one.

These groups were further subdivided into the following sub-populations, tallied in *Table 5*, below. The bias analysis then computes measures of enrollee characteristics, described below, for these populations, using comparisons of estimates across groups to assess bias through various stages of the survey process. Note that these population sub-groups may or may not correspond to treatment groups described in the preceding section.

Table 5 presents a cross-walk between these definitions. Some of the counts in the tables below and Figure 1 above may not match exactly due to definitional differences noted in the crosswalk.

Subpopulation 1: The enrollee population (excluding those with non-valid addresses, living outside the U.S. or Puerto Rico, or missing one of the stratification variables).

Subpopulation 2: Frame: telephone and mail only (considered ineligible in past years)

Subpopulation 3: The telephone sample

Subpopulation 4: Compares invalid versus valid telephone contact information

Subpopulation 5: Compares telephone respondents versus telephone non-respondents

Subpopulation 6: Compares all respondents (telephone and mail) versus all non-respondents

Subpopulations 1–5 represent the bias analyses as presented since 2007. Subpopulation 6 is the change in bias that resulted from including the mail survey. *Table 6* presents the counts for each stage.

[3] 85 percent of invalid phone numbers were missing completely. Another 5.5 percent of the invalid phone numbers contained only seven digits. The remaining 10 percent of invalid phone numbers was due to invalid area code and exchange (prefix) combinations.

Table 5. Sample Crosswalk

Subpopulation #/descriptor	Table 6 Column/Label	Figure 1 Label	Bias Figure Bar Label	Bias Table Comparison Group
1. Enrollee population	1-Enrollee Population	In frame	Population	Population
2. Frame: telephone and mail only (considered ineligible in past years)	2-Frame	-na-	Comparison of subgroups, below, estimates bias due to exclusion from telephone study due to missing phone data	
			Frame - Phone	In Frame - Telephone
			Frame - Mail	In Frame - Mail
3. Telephone Sample	3-Enrollees Selected	CATI survey. Does not match exactly, bias analysis does not include additional records resulting from phone lookup.	In Sample - Yes	Sampled - Yes
4. Valid Telephone Contacts	4-Correct Contact	Eligible contact. Does not match exactly, bias analysis includes records that were initially flagged as ineligible and subsequently returned a survey.	Comparison of subgroups, below, estimates bias due to ability to contact enrollee	
			Eligible - Yes	Valid Telephone - Yes
			Eligible - No	Valid Telephone - No
5. Telephone Respondents	5-Survey Responses	Response. Does not match exactly, differences in how records moved from one group to another were handled	Comparison of subgroups, below, assesses bias due to non-response in the CATI study	
			Phone Resp – Yes	Telephone Survey Response - Yes
			Phone Resp – No	Telephone Survey Response - No
6. All responses	6-All Survey Responses	Response	Comparison of subgroups, below, assesses bias due to non-response overall	
			All Resp - Yes	Telephone and Mail Survey Responses - yes
			All Resp - No	Telephone and Mail Survey Responses - No

Table 6. Sample Stages and Enrollee Totals for the 2012 Survey of Enrollees

			Enrollees with a Telephone Number				
		Enrollee Population	Frame	Enrollees Selected	Correct Contact	Survey Responses	All Survey Responses
Total		8,013,308	7,451,077	146,022	112,426	38,427	49,115
OEF/OIF/OND	N	7,194,207	6,673,799	107,070	83,095	31,053	40,288
OEF/OIF/OND	Y	819,101	777,278	38,952	29,331	7,374	8,827
VISN	1	339,473	317,182	6,906	5,533	1,835	2,294
	2	196,387	178,961	7,331	5,839	1,881	2,373
	3	298,276	267,786	9,207	7,124	1,980	2,609
	4	439,281	413,518	6,855	5,414	1,843	2,357
	5	206,534	188,133	8,242	6,140	1,822	2,409
	6	465,342	429,940	7,175	5,420	1,854	2,461
	7	526,440	496,906	6,961	5,197	1,781	2,314
	8	613,824	581,393	7,314	5,603	1,940	2,439
	9	377,434	354,916	6,186	4,721	1,832	2,265
	10	298,493	280,134	6,827	5,305	1,801	2,237
	11	370,877	342994	6,657	5,116	1,815	2,345
	12	333,194	311,806	6,734	5,304	1,817	2,284
	15	320,090	299,831	6,341	4,878	1,772	2,281
	16	658,673	615,087	7,247	5,454	1,892	2,410
	17	396,760	370,303	7,124	5,324	1,795	2,297
	18	342,704	305,050	6,404	4,873	1,753	2,281
	19	255,645	238,436	5,943	4,645	1,786	2,256
	20	374,293	344,598	5,991	4,573	1,789	2,266
	21	346,471	323,663	7,093	5,465	1,827	2,318
	22	444,999	404,794	7,660	5,849	1,823	2,353
	23	408,118	385,646	5,824	4,649	1,789	2,266
Priority	1	1,300,071	1,252,275	19,481	16,392	6,135	7,209
	2	628,637	586,300	20,643	16,578	5,725	7,218
	3	1,103,284	1,003,474	21,656	16,653	5,647	7,442
	4	199,831	188,482	19,193	13,738	4,856	5,851
	5	2,060,842	1,891,161	23,382	17,194	5,553	7,136
	6	553,138	517,792	10,051	7,308	1,993	2,575
	7	179,525	174,200	2,234	1,915	764	914
	8	1,987,980	1,837,393	29,382	22,648	7,754	10,770
Enrollee Type	POST	6,134,364	5,804,414	86,822	66,854	21,977	26,857
Enrollee Type	PRE	1,878,944	1,646,663	59,200	45,572	16,450	22,258

With the exception of the controlled random sampling process, all sample stages described in the previous section have the potential to introduce bias into the survey estimates. The impact of coverage (or frame) bias and non-response bias are difficult to assess since data are not available for those who do not participate in the survey. Therefore, there is no way to compare the groups (those who respond and those who do not) and draw inferences about the survey data. In lieu of responses from individuals who do not participate in the survey, we rely on secondary information available for both survey respondents and non-respondents. This information generally comes from the sampling frame and/or the population. In most cases, this information is limited; but in the case of VHA, there is considerable administrative data available about the enrollee population. This information allows review of frame coverage and non-response biases with respect to enrollees' use of various VHA services.

To allow ICF to conduct this bias analysis, VHA provided a file based on administrative records that indicated whether an enrollee had utilized any of the following services in the previous year. The file did not indicate the frequency of use or amount paid for any of these benefits:

1. Received long-term care services[4]
    a. Institutional
    b. Non-institutional
2. Received Inpatient treatment
    a. Mental Health or Substance Abuse (MHSA)
    b. Non-MHSA
3. Received Outpatient treatment
    a. MHSA
    b. Non-MHSA
4. Received VHA pharmacy services

Since 2007, VHA has evaluated the impact of non-response bias on the utilization indicators above. For the 2010 study, VHA evaluated differences between two administrative sources of service utilization:

- *"Original" indicators:* Service utilization sourced from VHA workload files based on bed section and clinic stop. This categorization indicates where a Veteran received care.
- **"***HSC" indicators:* Service utilization based on Health Service Categories (HSCs). This categorization indicates what type of care a Veteran received.

While the indicators were generally consistent, several comparisons stood out:

- For pharmacy services (RX), the two indicators are identical.
- For outpatient MHSA services, the HSC indicator identifies an additional nine percent of enrollees.
- For outpatient non-MHSA services, the HSC indicator identifies an additional five percent of enrollees.
- For home health care (now, non-institutional long-term care), the HSC measures usage at 1.44 percent. Although this is a very small percentage, it represents a 650 percent increase relative to the original indicator of 0.19 percent.

[4] In previous years, we evaluated the percentage of enrollees receiving home health service. We expanded this utilization statistic to include long-term care services in both institutional and non-institutional settings.

Considering that the HSC indicators are potentially more reflective of actual utilization, VHA determined to use these for the 2011 bias analysis and beyond. Thus, the results of the non-response analysis below are based on the HSC indicators. Differences in magnitude for estimates in reports prior to 2011 reflect the change in the administrative source and not necessarily a change in utilization.

1. Long-Term Care Benefits

A small proportion of enrollees receive long-term care, 0.54 and 2.73 percent for institutional and non-institutional care, respectively. This percentage is slightly higher for enrollees eligible for the telephone frame for both institutional and non-institutional care.

For institutional care, those with valid contact information are significantly less likely to have received institutionalized long-term care than those with invalid contact information ($p<0.0001$). This difference is most evident for pre-enrollee utilization rates comparing those with and without valid contact information (1.29 vs. 2.37 percent, respectively; $p<0.0001$) and Priority Group 1 (1.40 vs. 3.34 percent, respectively; $p<0.0001$).

Overall, the utilization rate is lower among enrollees that did respond to the survey than those that did not. This difference in utilization rates based on response status is highest for the Pre-enrollees and Priority Group 1 enrollees. Pre-enrollees and Priority Group 1 enrollees also were significantly different in terms of response rates in 2011.

Overall, enrollees with valid phone information have a higher percentage of non-institutionalized long-term care than those with invalid phone information (3.00 percent vs. 2.31 percent, $p<0.0001$). Compounding this bias, the percentage is higher for respondents versus non-respondents (3.42 percent vs. 2.74 percent, $p<0.0001$). When the responses gained from the mail survey are added (3.27 percent), the bias is lower, but the final estimate still overestimates the population value (2.73 percent).

Figure 2. Percentage of Enrollees Receiving Long-Term Care (LTC)
(a) Institutional

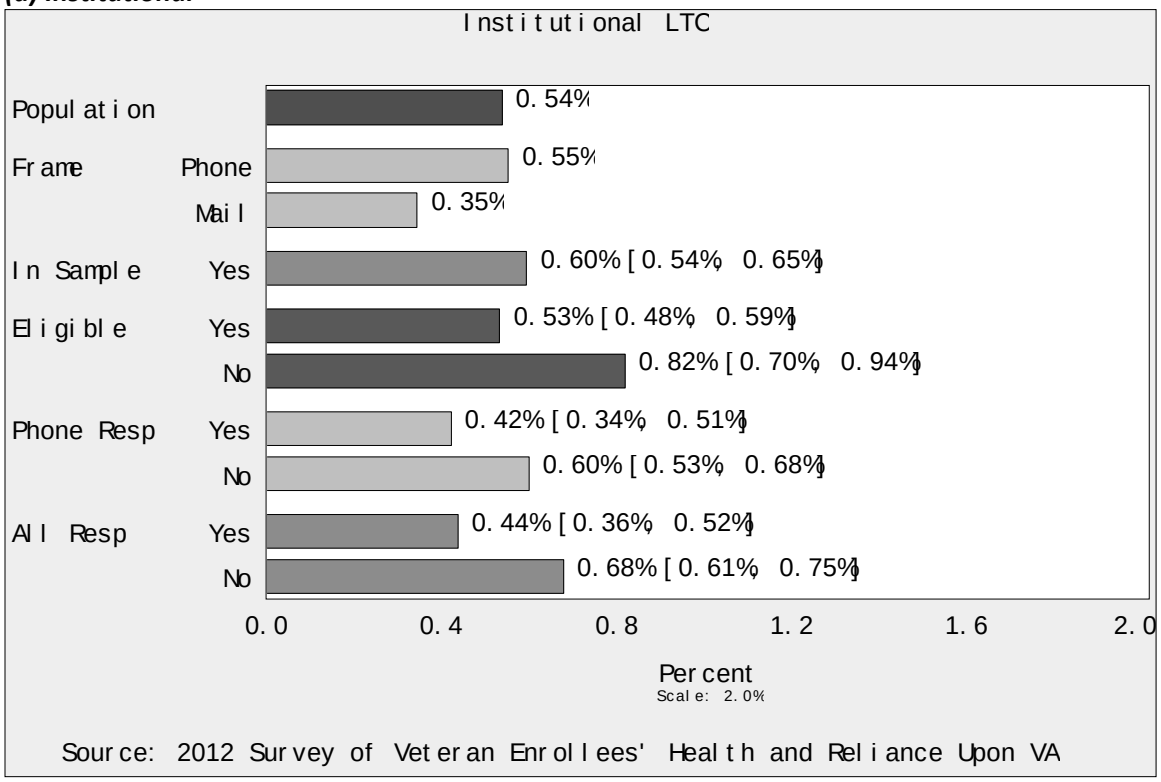


Figure 2. Percentage of Enrollees Receiving Long-Term Care (LTC)
(b) Non-Institutional

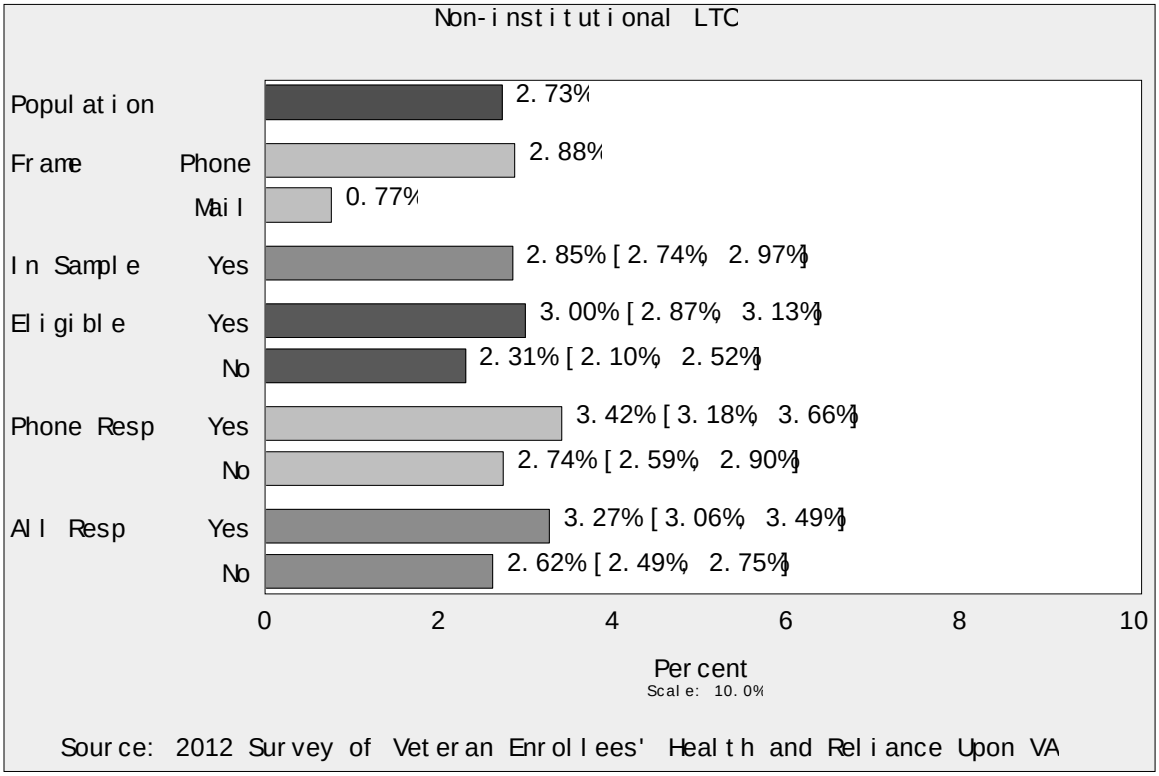


Table 7. Percentage of Enrollees Receiving Long-Term Care
(a) Institutional

			In Frame		Sampled	Valid Telephone			Telephone Survey Response			Telephone and Mail Survey Response		
		Population	Tele-phone	Mail	Yes	Yes	No	P-value	Yes	No	P-value	Yes	No	P-value
Total		0.54	0.55	0.35	0.60	0.53	0.82	0.0000	0.42	0.60	0.0019	0.44	0.68	0.0000
OEF/OIF/OND	N	0.60	0.61	0.37	0.66	0.59	0.93	0.0000	0.45	0.68	0.0003	0.47	0.77	0.0000
OEF/OIF/OND	Y	0.04	0.04	0.03	0.03	0.04	0.01	0.0758	0.03	0.04	0.8026	0.03	0.03	0.8997
VISN	1	0.57	0.58	0.43	0.57	0.53	0.71	0.5937	0.15	0.75	0.0029	0.28	0.71	0.0299
	2	0.54	0.57	0.30	0.46	0.32	1.03	0.0148	0.31	0.33	0.9373	0.39	0.49	0.5734
	3	0.50	0.53	0.30	0.53	0.41	0.97	0.0079	0.23	0.49	0.1355	0.19	0.66	0.0016
	4	0.64	0.66	0.35	0.80	0.71	1.17	0.1755	0.58	0.78	0.5090	0.54	0.94	0.1422
	5	0.73	0.76	0.43	0.80	0.67	1.22	0.0664	0.51	0.74	0.3719	0.57	0.90	0.1660
	6	0.37	0.38	0.23	0.31	0.26	0.49	0.3117	0.29	0.24	0.8180	0.27	0.34	0.6775
	7	0.33	0.33	0.26	0.26	0.27	0.22	0.6716	0.05	0.41	0.0064	0.04	0.38	0.0011
	8	0.43	0.44	0.29	0.72	0.69	0.83	0.5998	0.63	0.72	0.7653	0.74	0.70	0.9000
	9	0.45	0.46	0.27	0.41	0.34	0.64	0.3911	0.21	0.44	0.1754	0.18	0.55	0.0350
	10	0.60	0.60	0.69	0.61	0.59	0.70	0.7059	0.62	0.57	0.8112	0.55	0.64	0.6695
	11	0.63	0.65	0.35	0.80	0.63	1.44	0.0487	0.51	0.70	0.4949	0.57	0.94	0.1892
	12	0.76	0.78	0.46	0.72	0.62	1.07	0.1299	0.47	0.72	0.2317	0.45	0.86	0.0348
	15	0.52	0.54	0.27	0.56	0.37	1.23	0.0480	0.18	0.50	0.0466	0.17	0.78	0.0012
	16	0.40	0.41	0.27	0.48	0.48	0.50	0.9397	0.49	0.47	0.9393	0.58	0.43	0.5873
	17	0.45	0.46	0.24	0.36	0.35	0.39	0.7974	0.34	0.35	0.9378	0.32	0.38	0.7077
	18	0.65	0.70	0.28	0.81	0.81	0.82	0.9715	0.77	0.83	0.8571	0.75	0.85	0.7636
	19	0.56	0.56	0.45	0.62	0.59	0.75	0.6013	0.71	0.50	0.4240	0.73	0.55	0.4584
	20	0.52	0.54	0.28	0.64	0.66	0.59	0.8195	0.51	0.77	0.3653	0.44	0.77	0.1605
	21	0.72	0.74	0.56	0.82	0.67	1.38	0.0928	0.55	0.73	0.5040	0.57	0.95	0.1664
	22	0.56	0.58	0.36	0.47	0.46	0.51	0.7419	0.21	0.58	0.0364	0.25	0.56	0.0431
	23	0.79	0.81	0.53	1.01	0.83	1.78	0.0555	0.54	1.06	0.1288	0.53	1.35	0.0093
Priority	1	1.59	1.58	2.00	1.70	1.40	3.34	0.0000	0.90	1.74	0.0001	1.01	2.14	0.0000
	2	0.27	0.28	0.14	0.32	0.30	0.40	0.4254	0.36	0.26	0.3777	0.31	0.33	0.8477
	3	0.24	0.26	0.10	0.24	0.28	0.11	0.0266	0.27	0.29	0.9102	0.25	0.24	0.9519
	4	3.13	3.16	2.62	3.33	3.05	4.06	0.0015	2.66	3.27	0.0603	2.72	3.60	0.0023
	5	0.44	0.46	0.26	0.49	0.42	0.68	0.0703	0.40	0.43	0.8339	0.45	0.51	0.6606
	6	0.05	0.05	0.02	0.08	0.10	0.01	0.1576	0.13	0.09	0.7906	0.11	0.07	0.7151
	7	0.38	0.38	0.41	0.32	0.28	0.56	0.5335	0.18	0.36	0.5207	0.16	0.44	0.2940
	8	0.09	0.10	0.03	0.13	0.14	0.10	0.5079	0.07	0.18	0.1270	0.06	0.17	0.0593
Enrollee Type	POST	0.31	0.32	0.22	0.33	0.32	0.38	0.3486	0.28	0.34	0.3176	0.30	0.35	0.4348
	PRE	1.28	1.38	0.52	1.52	1.29	2.37	0.0000	0.93	1.51	0.0001	0.92	1.84	0.0000

Note: Statistical tests for independence are based on the Rao-Scott Chi Square statistic.

Table 7. Percentage of Enrollees Receiving Long-Term Care
(b) Non-Institutional

			In Frame		Sampled	Valid Telephone			Telephone Survey Response			Telephone and Mail Survey Response		
		Population	Tele-phone	Mail	Yes	Yes	No	P-value	Yes	No	P-value	Yes	No	P-value
Total		2.73	2.88	0.77	2.85	3.00	2.31	0.0000	3.42	2.74	0.0000	3.27	2.62	0.0000
OEF/OIF/OND	N	2.98	3.15	0.82	3.12	3.26	2.58	0.0000	3.60	3.05	0.0005	3.44	2.93	0.0003
OEF/OIF/OND	Y	0.52	0.54	0.21	0.55	0.59	0.44	0.0845	0.84	0.51	0.0091	0.84	0.48	0.0015
VISN	1	2.93	3.08	0.65	3.07	3.32	2.00	0.0050	3.20	3.39	0.7299	3.23	2.98	0.6075
	2	3.47	3.74	0.75	4.06	3.96	4.49	0.5008	4.23	3.82	0.5493	3.99	4.10	0.8566
	3	2.87	3.13	0.59	2.90	3.16	1.99	0.0040	3.84	2.89	0.1100	3.43	2.71	0.1480
	4	2.97	3.11	0.73	3.09	3.27	2.34	0.0974	4.59	2.51	0.0025	4.31	2.43	0.0021
	5	2.44	2.64	0.47	2.90	3.32	1.61	0.0001	3.22	3.37	0.8096	3.08	2.83	0.6430
	6	2.55	2.69	0.84	2.90	2.91	2.87	0.9495	2.97	2.87	0.8762	2.72	2.99	0.6350
	7	2.22	2.31	0.69	2.21	2.37	1.72	0.1554	2.26	2.44	0.7613	2.23	2.21	0.9587
	8	2.65	2.76	0.76	2.50	2.77	1.51	0.0039	3.20	2.51	0.2522	3.00	2.22	0.1248
	9	2.74	2.87	0.67	2.70	2.96	1.75	0.0191	3.28	2.73	0.3967	2.95	2.54	0.4626
	10	3.96	4.13	1.35	4.29	4.39	3.93	0.5208	5.18	3.92	0.0911	4.81	4.02	0.2334
	11	2.64	2.78	0.93	2.85	2.91	2.61	0.6442	2.95	2.88	0.9153	3.57	2.42	0.0586
	12	3.00	3.14	0.91	2.94	3.05	2.49	0.2427	3.48	2.80	0.2880	3.14	2.83	0.5683
	15	2.91	3.05	0.90	2.62	2.50	3.09	0.3642	2.82	2.29	0.3434	2.68	2.59	0.8556
	16	2.62	2.75	0.82	2.86	2.96	2.53	0.4607	2.99	2.94	0.9389	3.05	2.77	0.6197
	17	2.60	2.74	0.67	2.64	2.96	1.62	0.0048	4.19	2.28	0.0057	3.85	2.06	0.0027
	18	2.67	2.92	0.62	3.14	3.12	3.23	0.8729	4.56	2.19	0.0015	3.89	2.70	0.0668
	19	3.09	3.24	0.93	3.71	3.89	3.00	0.2512	3.39	4.25	0.2388	3.91	3.59	0.6343
	20	2.42	2.57	0.71	2.51	2.71	1.81	0.0835	3.45	2.12	0.0498	3.26	2.02	0.0348
	21	2.48	2.61	0.62	2.39	2.65	1.43	0.0029	3.12	2.38	0.2067	2.73	2.22	0.3014
	22	2.02	2.15	0.72	1.97	2.27	0.93	0.0001	2.76	2.03	0.1899	2.70	1.65	0.0375
	23	3.15	3.27	1.11	3.35	3.14	4.28	0.1976	3.74	2.69	0.1179	3.62	3.17	0.4760
Priority	1	5.57	5.68	2.64	6.07	6.10	5.87	0.6819	6.29	5.98	0.5015	6.20	5.98	0.6136
	2	2.04	2.15	0.56	2.04	2.07	1.92	0.6176	2.20	1.99	0.4254	2.15	1.98	0.4804
	3	1.74	1.87	0.39	2.00	2.11	1.66	0.1187	2.54	1.85	0.0279	2.45	1.77	0.0159
	4	14.52	15.05	5.79	14.68	15.56	12.41	0.0000	15.58	15.55	0.9563	15.48	14.32	0.0614
	5	2.79	2.97	0.80	2.59	2.84	1.87	0.0001	3.49	2.47	0.0029	3.28	2.27	0.0006
	6	0.44	0.47	0.13	0.49	0.56	0.24	0.1433	1.07	0.30	0.0666	0.94	0.30	0.0809
	7	2.66	2.70	1.52	2.18	2.11	2.63	0.6069	1.81	2.35	0.4999	1.79	2.49	0.3417
	8	1.03	1.10	0.20	1.17	1.26	0.82	0.0312	1.65	1.02	0.0089	1.55	0.95	0.0039
Enrollee Type	POST	1.98	2.05	0.67	2.04	2.17	1.59	0.0000	2.53	1.94	0.0003	2.43	1.83	0.0000
	PRE	5.17	5.77	0.91	5.67	5.89	4.84	0.0003	6.49	5.53	0.0022	6.22	5.37	0.0024

Note: Statistical tests for independence are based on the Rao-Scott Chi Square statistic.

2. Inpatient Treatment

Reasons Related to Mental Health or Substance Abuse (MHSA)

Overall, 1.18 percent of enrollees have been admitted to a hospital or medical facility for MHSA.

Similar to previous years, there is a considerable difference in inpatient MHSA utilization between enrollees with valid contact information and enrollees without valid contact information, with rates of 1.07 to 1.70 percent ($p<0.0001$) respectively. This underestimation—the difference between these two rates—is further compounded by the fact that non-respondents were more likely to have received inpatient treatment (1.21 percent vs. 0.84 percent, $p<0.0001$).

Both of these effects combine to result in a survey-based estimate that underestimates the true utilization based on the population rate (1.18) by 33 percentage points, or 38 percent of the population value. This is similar to 2011 and earlier—underestimation of utilization has been a consistent pattern for enrollees receiving inpatient care for substance abuse or mental health. The addition of mail respondents does not have a measurable impact on the final rate estimate (0.85 percent); there is still severe underestimation of the population. Moving to a full administration of the mail protocol could address some of this bias.

Reasons Unrelated to MHSA

For enrollees admitted to a hospital or medical facility for reasons unrelated to MHSA, the telephone sample-based estimate of the percentage of enrollees receiving inpatient treatment unrelated to MHSA issues is 5.14 percent, higher than the actual percentage of 4.25 percent. This is consistent with data from 2011 and 2010. The percentage of inpatient utilization unrelated to MHSA for enrollees eligible for the frame (4.43 percent) is considerably higher than utilization for enrollees not eligible for the frame (1.84 percent). This is compounded by both a higher rate of utilization among enrollees with eligible contact information and by significantly higher utilization among respondents (5.14 percent) relative to non-respondents (4.47 percent) ($p=0.0004$). The addition of the mail survey reduces this bias, but the estimated utilization rate of 5.04 percent still overestimates the true population rate of 4.25 percent.

Figure 3. Percentage of Enrollees Receiving Inpatient Treatment
(a) For Mental Health or Substance Abuse (MHSA)

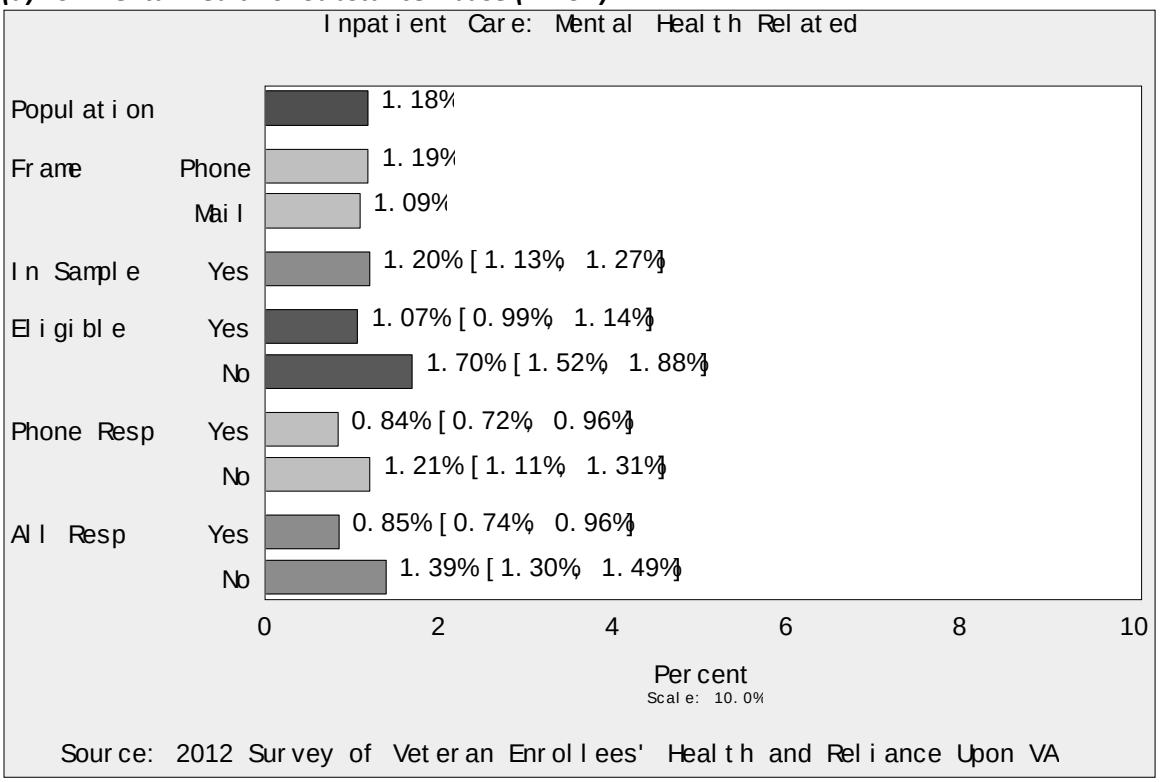


Figure 3. Percentage of Enrollees Receiving Inpatient Treatment
(b) For Neither Mental Health nor Substance Abuse

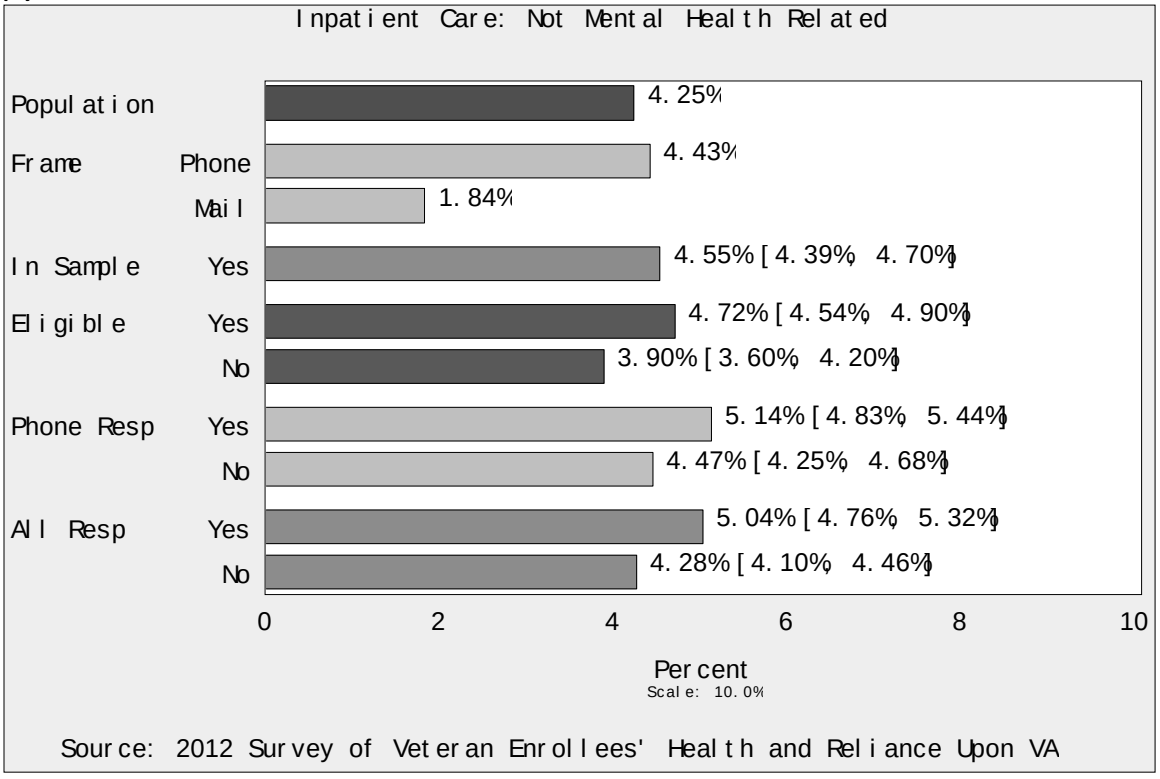


Table 8. Percentage of Enrollees Receiving Inpatient Treatment
(a) For Mental Health or Substance Abuse (MHSA)

			In Frame		Sampled	Valid Telephone			Telephone Survey Response			Telephone and Mail Survey Response		
		Population	Telephone	Mail	Yes	Yes	No	P-value	Yes	No	P-value	Yes	No	P-value
Total		1.18	1.19	1.09	1.20	1.07	1.70	0.0000	0.84	1.21	0.0000	0.85	1.39	0.0000
OEF/OIF/OND	N	1.15	1.16	1.07	1.17	1.04	1.68	0.0000	0.81	1.18	0.0000	0.82	1.37	0.0000
OEF/OIF/OND	Y	1.46	1.47	1.39	1.48	1.37	1.83	0.0033	1.27	1.40	0.4522	1.24	1.55	0.0401
VISN	1	1.44	1.45	1.23	1.38	1.38	1.41	0.9230	0.97	1.61	0.0560	1.00	1.58	0.0536
	2	1.20	1.25	0.72	1.25	1.16	1.66	0.2477	0.90	1.29	0.1981	0.89	1.43	0.0544
	3	1.15	1.18	0.89	1.24	1.05	1.89	0.0333	1.38	0.92	0.2379	1.28	1.22	0.8746
	4	1.19	1.20	1.13	1.18	1.00	1.95	0.0406	0.67	1.19	0.0516	0.71	1.44	0.0052
	5	1.31	1.28	1.54	1.52	1.55	1.43	0.7083	1.09	1.77	0.0740	0.96	1.74	0.0125
	6	1.20	1.21	1.13	1.08	0.94	1.57	0.0835	1.01	0.90	0.7593	0.96	1.14	0.5779
	7	1.16	1.17	1.10	1.46	1.49	1.38	0.8033	1.42	1.53	0.8262	1.26	1.58	0.4487
	8	1.05	1.05	1.07	0.86	0.71	1.40	0.0291	0.35	0.93	0.0067	0.38	1.12	0.0002
	9	1.32	1.34	1.02	1.65	1.47	2.28	0.1828	0.65	2.09	0.0006	0.87	2.15	0.0011
	10	1.39	1.39	1.51	1.19	1.01	1.89	0.0611	0.63	1.24	0.0244	0.64	1.48	0.0013
	11	1.09	1.10	1.04	1.09	0.98	1.52	0.2202	0.95	1.00	0.9128	0.99	1.15	0.6711
	12	1.32	1.29	1.69	1.25	1.15	1.63	0.2246	1.05	1.22	0.6106	1.01	1.39	0.1896
	15	1.39	1.38	1.49	1.74	1.40	2.99	0.0142	0.70	1.85	0.0020	0.76	2.30	0.0000
	16	1.22	1.24	0.92	1.57	1.37	2.26	0.0708	1.38	1.37	0.9939	1.61	1.55	0.8925
	17	1.25	1.26	1.13	1.24	1.26	1.20	0.8720	1.29	1.24	0.9033	1.13	1.29	0.6764
	18	1.05	1.09	0.76	1.45	1.18	2.42	0.0455	0.75	1.46	0.0695	0.67	1.91	0.0007
	19	1.15	1.15	1.09	1.09	0.95	1.61	0.1686	0.84	1.04	0.5289	0.78	1.28	0.0949
	20	1.16	1.18	0.83	0.81	0.57	1.65	0.0060	0.67	0.49	0.4705	0.63	0.93	0.2247
	21	0.95	0.94	1.02	0.91	0.80	1.32	0.2540	0.45	1.00	0.0423	0.48	1.13	0.0114
	22	1.02	1.00	1.13	0.66	0.41	1.51	0.0024	0.29	0.47	0.1631	0.48	0.74	0.2298
	23	1.04	1.03	1.17	0.86	0.88	0.78	0.7626	0.40	1.23	0.0039	0.36	1.22	0.0004
Priority	1	2.26	2.24	2.80	2.15	1.85	3.78	0.0000	1.65	1.99	0.1659	1.57	2.53	0.0000
	2	0.98	0.99	0.80	1.06	0.97	1.43	0.0601	0.83	1.05	0.2065	0.85	1.18	0.0472
	3	0.80	0.82	0.54	0.85	0.79	1.06	0.1619	0.40	1.03	0.0000	0.51	1.03	0.0002
	4	6.90	6.68	10.61	7.01	6.24	8.99	0.0000	4.44	7.29	0.0000	4.50	8.12	0.0000
	5	1.50	1.50	1.41	1.56	1.40	2.01	0.0147	1.14	1.55	0.0829	1.17	1.74	0.0073
	6	0.30	0.30	0.29	0.35	0.38	0.25	0.2773	0.28	0.44	0.3789	0.26	0.39	0.3902
	7	0.56	0.54	1.22	0.45	0.44	0.58	0.6798	0.27	0.57	0.3888	0.26	0.61	0.2551
	8	0.15	0.16	0.10	0.14	0.13	0.21	0.2659	0.05	0.17	0.0088	0.10	0.17	0.1835
Enrollee Type	POST	0.92	0.91	1.05	0.90	0.80	1.24	0.0001	0.66	0.89	0.0083	0.65	1.03	0.0000
	PRE	2.03	2.15	1.16	2.27	1.98	3.31	0.0000	1.47	2.30	0.0000	1.54	2.66	0.0000

Note: Statistical tests for independence are based on the Rao-Scott Chi Square statistic.

Table 8. Percentage of Enrollees Receiving Inpatient Treatment
(b) For Neither Mental Health nor Substance Abuse

			In Frame		Sam-pled	Valid Telephone			Telephone Survey Response			Telephone and Mail Survey Response		
		Popula-tion	Tele-phone	Mail	Yes	Yes	No	P-value	Yes	No	P-value	Yes	No	P-value
Total		4.25	4.43	1.84	4.55	4.72	3.90	0.0000	5.14	4.47	0.0004	5.04	4.28	0.0000
OEF/OIF/OND	N	4.60	4.81	1.93	4.93	5.09	4.33	0.0001	5.38	4.91	0.0226	5.27	4.73	0.0036
OEF/OIF/OND	Y	1.17	1.20	0.76	1.22	1.32	0.91	0.0014	1.66	1.20	0.0111	1.61	1.11	0.0018
VISN	1	3.56	3.73	1.18	3.49	3.61	2.95	0.2909	3.57	3.64	0.9168	3.83	3.31	0.3908
	2	3.64	3.87	1.30	4.07	3.87	4.91	0.1954	4.68	3.44	0.0916	4.40	3.91	0.4652
	3	3.18	3.41	1.18	3.35	3.37	3.28	0.8625	3.50	3.31	0.7126	3.51	3.29	0.6348
	4	3.42	3.53	1.71	3.94	3.90	4.14	0.7562	4.89	3.32	0.0341	5.07	3.34	0.0113
	5	3.97	4.16	2.02	4.38	4.65	3.58	0.0914	5.50	4.25	0.1090	5.13	4.09	0.1226
	6	4.16	4.34	1.91	3.86	3.80	4.05	0.7256	4.20	3.56	0.3497	4.08	3.74	0.5955
	7	3.90	4.02	1.86	4.64	5.16	2.96	0.0044	5.73	4.80	0.3375	5.49	4.18	0.1202
	8	5.04	5.19	2.20	5.06	5.47	3.57	0.0080	5.40	5.51	0.8978	5.33	4.90	0.5517
	9	5.02	5.21	1.99	5.51	5.91	4.05	0.0324	5.86	5.95	0.9237	5.64	5.43	0.7971
	10	4.35	4.50	2.11	4.43	4.46	4.30	0.8504	5.05	4.11	0.2421	5.01	4.12	0.2225
	11	3.84	3.99	2.01	3.78	4.06	2.73	0.0363	3.77	4.26	0.5199	3.68	3.84	0.8086
	12	4.50	4.68	1.83	4.30	4.45	3.74	0.3241	4.92	4.16	0.3173	4.55	4.17	0.5686
	15	5.09	5.26	2.52	5.81	6.16	4.52	0.0509	6.47	5.95	0.5890	6.25	5.55	0.4027
	16	4.72	4.91	2.02	5.38	5.36	5.45	0.9256	5.96	5.01	0.2888	6.44	4.85	0.0579
	17	4.29	4.48	1.58	4.51	4.85	3.42	0.0336	5.39	4.56	0.3120	5.06	4.25	0.2580
	18	4.74	5.14	1.53	4.99	4.97	5.06	0.9201	5.86	4.40	0.1032	5.56	4.66	0.2609
	19	4.30	4.46	1.98	4.24	4.43	3.51	0.2206	4.78	4.18	0.4467	4.74	3.93	0.2466
	20	4.19	4.41	1.61	4.76	4.98	3.99	0.2675	5.32	4.71	0.4946	5.09	4.54	0.4947
	21	4.34	4.51	1.98	4.66	4.60	4.90	0.7316	3.74	5.08	0.0997	3.85	5.08	0.0939
	22	4.17	4.38	2.13	4.33	4.76	2.89	0.0046	6.42	3.92	0.0051	6.20	3.51	0.0006
	23	3.84	3.95	2.04	4.62	4.77	3.95	0.3225	5.10	4.52	0.4998	4.73	4.53	0.7919
Priority	1	7.75	7.85	5.17	7.78	7.66	8.49	0.2168	7.50	7.76	0.6187	7.55	7.93	0.4303
	2	3.30	3.43	1.45	3.31	3.57	2.23	0.0000	4.32	3.14	0.0017	4.03	2.92	0.0008
	3	2.87	3.06	0.94	3.23	3.53	2.21	0.0000	3.94	3.29	0.1077	3.76	2.95	0.0231
	4	14.71	14.96	10.47	15.33	15.74	14.27	0.0181	15.72	15.75	0.9647	15.35	15.32	0.9670
	5	5.70	5.99	2.46	6.17	6.56	5.07	0.0009	7.39	6.09	0.0168	7.41	5.59	0.0001
	6	1.09	1.13	0.47	1.13	1.15	1.05	0.7780	1.32	1.06	0.5519	1.19	1.10	0.8057
	7	4.06	4.09	2.89	5.33	5.22	6.14	0.6553	5.79	4.76	0.4661	5.86	4.92	0.4832
	8	1.36	1.44	0.43	1.56	1.72	0.95	0.0001	2.05	1.51	0.0379	1.94	1.34	0.0076
Enrollee Type	POST	3.22	3.30	1.75	3.43	3.62	2.71	0.0000	4.16	3.30	0.0001	4.06	3.09	0.0000
	PRE	7.60	8.40	1.97	8.43	8.53	8.07	0.2195	8.56	8.51	0.9014	8.48	8.40	0.8136

Note: Statistical tests for independence are based on the Rao-Scott Chi Square statistic.

3. Outpatient Treatment

Outpatient Treatment Unrelated to MHSA

As in all years of this study, there is evidence of extreme systematic bias in the data describing outpatient treatment unrelated to MHSA. Overall, the population percentage of enrollees receiving non-MHSA outpatient treatment is 62.34 percent. Consistent with prior years, the percentage increases at each stage of the sampling process:

- 65.34 percent for frame eligible enrollees; 22.59 percent for frame ineligible enrollees;
- 71.59 percent for those with valid telephone numbers; 42.31 for those without ($p<0.0001$); and,
- 79.71 percent for telephone responders; 66.63 percent for telephone non-responders ($p<0.0001$).

All of these stages result in a telephone survey estimate that overestimates the population percentage by 17.34 percentage points, or 28 percent of the population value. The addition of the mail survey moves the estimated utilization of 77.19 percent closer to the population value, but it is still significantly higher.

This pattern of overestimation is consistent across VISNs, enrollee types, OEF/OIF/OND status, and priority groups. However, the pattern is not as extreme in Priority Group 1 and 7, the two priorities with the highest utilization, where the survey estimates overestimate the population by 5–7 percentage points. The bias is greatest in priority groups with lower utilization. *Table 9* below presents the priority groups ordered from lowest to highest levels of utilization. The table includes the population utilization, the survey estimate (based on all completes), and the percent overestimation.

Table 9. Priority groups ordered from lowest to highest levels of utilization

Order	Priority Group	Population Utilization	Survey Estimate	Percent Overestimation
1	6	44.38	39.20	12%
2	8	51.03	46.45	9%
3	3	58.21	56.07	4%
4	5	62.90	59.13	6%
5	2	65.80	63.59	3%
6	4	78.13	75.49	3%
7	7	81.05	80.39	1%
8	1	83.21	81.47	2%

Outpatient Treatment Related to MHSA

Overall, 15.14 percent of enrollees receive outpatient treatment for MHSA, and this percentage is higher when restricted to telephone frame-eligible enrollees (15.78 percent). The percentage is significantly higher for enrollees with valid contact information (16.61 percent) relative to those without (13.11 percent; $p<0.0000$). Both of these biases are similar to 2011. In 2012, there is no difference between respondents and non-respondents, a departure from 2011. As with the other utilization measures, the

addition of mail mode reduces bias by allowing a more diverse and representative group of enrollees to respond to the survey.

Priority Groups 1 and 4 have the highest percentage of enrollees receiving outpatient care for MHSA (35.91 percent and 29.59 percent, respectively). In Priority Group 1, the percentage of enrollees with valid contact information is significantly higher than those with invalid information (p=0.0002), but there is no significant difference between respondents and non-respondents (p=0.9692 for telephone, and p=0.6969 when including mail survey). Ultimately, the estimate, 36.46 percent, is close to the population percentage, 35.91 percent.

For Priority Group 4, there are significant differences in the MHSA outpatient utilization percentage between enrollees with valid contact information and those without valid information (p=0.3966), as well as respondents and non-respondents (p<0.0012). However, the differences are in opposite directions, and the estimate based on the respondents in this group is 28.48 percent, which is reasonably close to the population percentage of 29.59 percent.

Figure 4. Percentage of Enrollees Receiving Outpatient Treatment
(a) For Mental Health or Substance Abuse (MHSA)

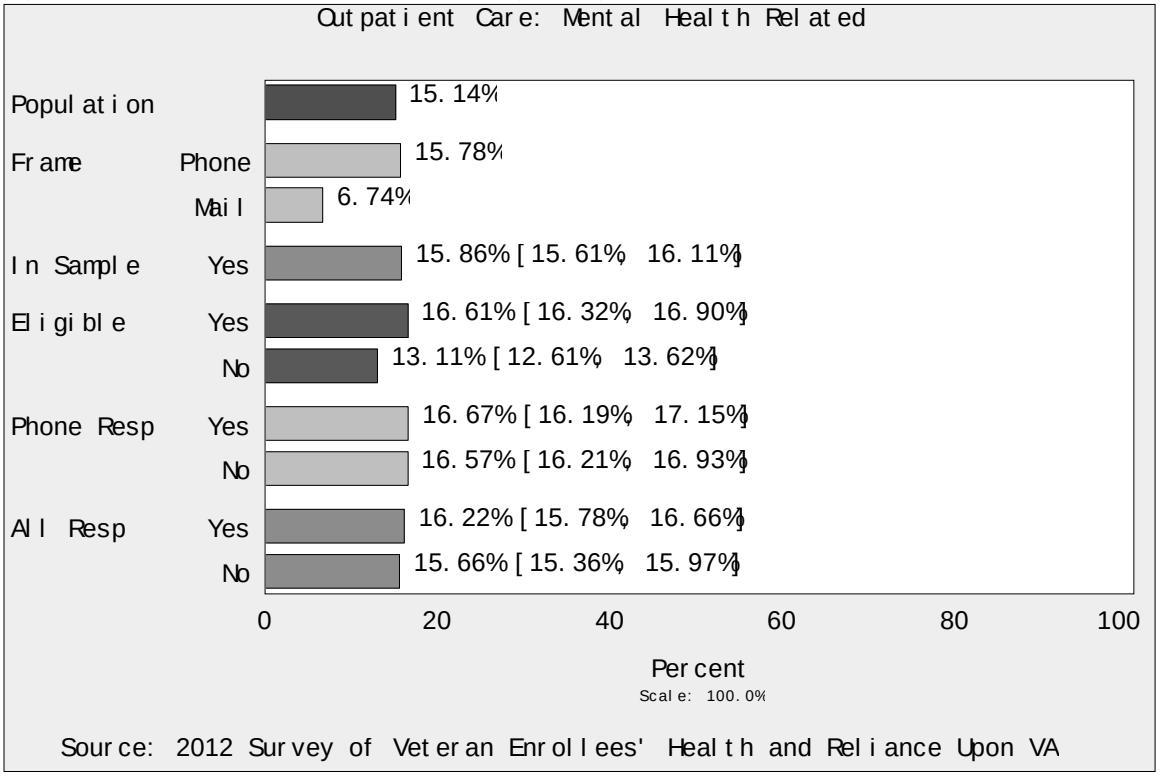


Figure 4. Percentage of Enrollees Receiving Outpatient Treatment
(b) For Neither Mental Health nor Substance Abuse

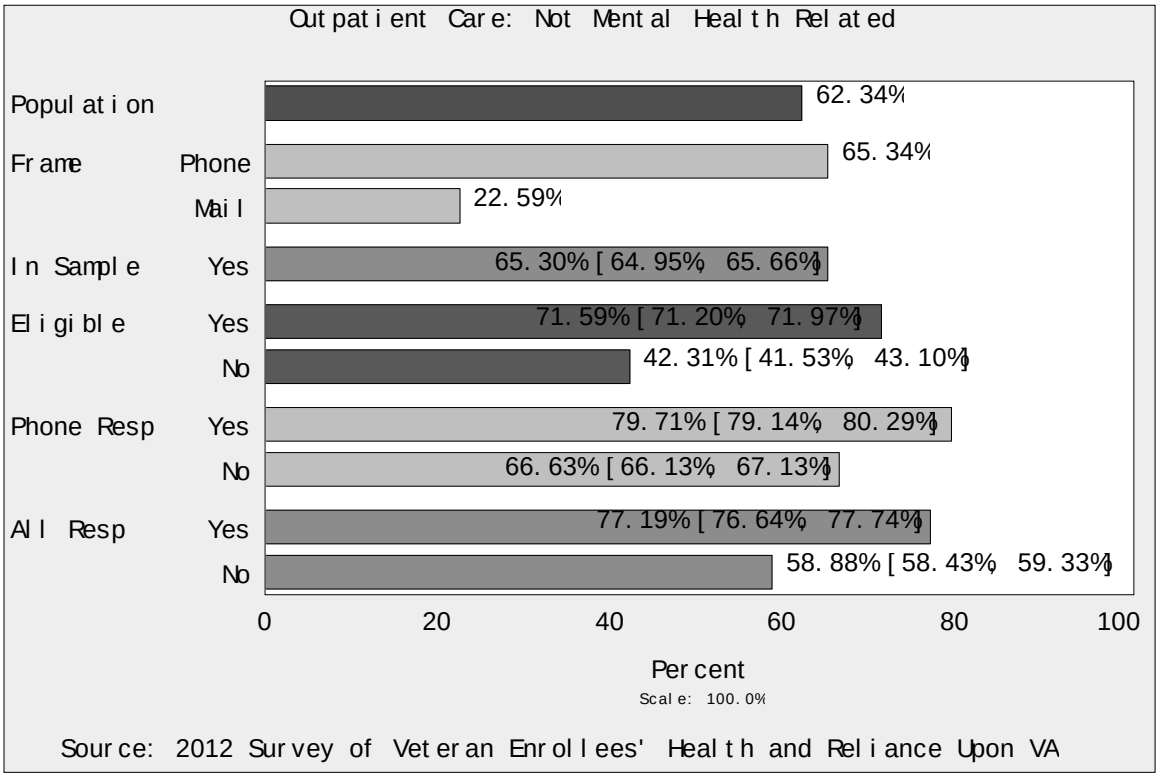


Table 10. Percentage of Enrollees Receiving Outpatient Treatment
(a) For Mental Health or Substance Abuse (MHSA)

			In Frame		Sampled	Valid Telephone			Telephone Survey Response			Telephone and Mail Survey Response		
		Population	Telephone	Mail	Yes	Yes	No	P-value	Yes	No	P-value	Yes	No	P-value
Total		15.14	15.78	6.74	15.86	16.61	13.11	0.0000	16.67	16.57	0.7400	16.22	15.66	0.0435
OEF/OIF/OND	N	14.43	15.06	6.26	15.14	15.80	12.65	0.0000	15.87	15.76	0.7543	15.48	14.95	0.0688
OEF/OIF/OND	Y	21.45	21.93	12.61	22.00	23.94	16.37	0.0000	28.17	22.53	0.0000	27.03	20.64	0.0000
VISN	1	15.32	15.98	6.00	15.67	16.65	11.51	0.0000	15.72	17.18	0.2259	15.47	15.78	0.7783
	2	12.62	13.42	4.43	13.83	14.43	11.30	0.0049	14.90	14.18	0.5299	14.71	13.41	0.2030
	3	13.12	14.09	4.64	13.57	14.20	11.29	0.0012	15.02	13.88	0.2836	14.04	13.39	0.4758
	4	12.98	13.41	6.09	14.23	14.47	13.23	0.3405	14.60	14.40	0.8674	14.01	14.36	0.7451
	5	13.56	14.22	6.79	14.87	16.08	11.17	0.0000	15.25	16.47	0.3306	14.94	14.83	0.9215
	6	15.23	15.89	7.25	15.61	16.29	13.17	0.0120	16.16	16.38	0.8647	15.76	15.52	0.8364
	7	16.90	17.49	7.11	18.39	19.68	14.17	0.0001	19.28	19.94	0.6616	18.52	18.32	0.8768
	8	16.03	16.52	7.17	16.43	17.11	13.98	0.0112	17.82	16.67	0.3839	17.28	15.96	0.2566
	9	16.14	16.77	6.23	16.80	17.85	12.97	0.0006	16.77	18.66	0.1997	16.59	16.94	0.7901
	10	17.15	17.78	7.56	18.37	19.18	15.27	0.0061	20.18	18.58	0.2618	20.02	17.51	0.0514
	11	14.18	14.70	7.79	14.10	14.75	11.66	0.0149	13.80	15.38	0.2262	12.86	14.83	0.0849
	12	14.24	14.71	7.28	14.83	15.80	11.06	0.0001	15.78	15.81	0.9797	15.25	14.60	0.5632
	15	14.86	15.35	7.59	16.57	17.32	13.76	0.0104	17.49	17.21	0.8419	17.21	16.19	0.4221
	16	16.66	17.35	6.97	17.02	17.37	15.81	0.2311	17.10	17.53	0.7482	17.32	16.87	0.7185
	17	16.42	17.13	6.44	16.57	18.08	11.72	0.0000	19.68	17.20	0.0865	18.75	15.53	0.0105
	18	15.36	16.57	5.57	16.36	17.11	13.70	0.0115	18.35	16.32	0.1631	16.97	16.01	0.4499
	19	15.50	16.07	7.72	16.33	16.78	14.55	0.1203	17.49	16.27	0.3860	17.08	15.85	0.3257
	20	15.23	15.99	6.39	15.30	16.03	12.71	0.0132	15.87	16.16	0.8353	15.57	15.12	0.7158
	21	15.20	15.75	7.47	16.82	17.79	13.20	0.0006	17.78	17.80	0.9927	16.89	16.79	0.9393
	22	15.25	16.01	7.57	16.38	17.08	14.01	0.0176	18.23	16.51	0.2157	18.43	15.49	0.0194
	23	12.22	12.50	7.44	11.92	12.37	9.93	0.0502	11.52	13.01	0.2103	11.20	12.43	0.2486

			In Frame		Sam-pled	Valid Telephone			Telephone Survey Response			Telephone and Mail Survey Response		
		Population	Tele-phone	Mail	Yes	Yes	No	P-value	Yes	No	P-value	Yes	No	P-value
Priority	1	35.91	36.49	20.73	36.25	36.91	32.63	0.0002	36.93	36.89	0.9692	36.46	36.12	0.6969
	2	17.52	18.27	7.10	18.36	19.27	14.71	0.0000	19.11	19.35	0.7553	18.32	18.39	0.9252
	3	10.95	11.66	3.83	11.72	12.42	9.35	0.0000	12.15	12.58	0.5281	11.71	11.72	0.9808
	4	29.59	29.77	26.60	29.61	30.33	27.76	0.0012	28.88	31.16	0.0109	28.48	30.10	0.0390
	5	15.20	15.81	8.37	15.97	16.58	14.20	0.0006	16.76	16.48	0.7217	16.47	15.73	0.2866
	6	8.74	9.06	4.10	9.12	9.98	6.21	0.0000	9.28	10.34	0.2973	9.12	9.11	0.9948
	7	9.31	9.32	8.96	9.02	8.40	13.38	0.0825	6.93	9.58	0.0886	7.65	10.11	0.1070
	8	3.93	4.15	1.32	4.45	4.62	3.80	0.0396	4.37	4.78	0.3178	4.34	4.52	0.6137
Enrollee Type	POST	13.09	13.42	7.25	13.43	14.10	10.96	0.0000	14.05	14.13	0.8188	13.69	13.29	0.2198
	PRE	21.86	24.10	6.00	24.31	25.30	20.67	0.0000	25.78	25.00	0.1698	25.05	23.91	0.0259

Note: Statistical tests for independence are based on the Rao-Scott Chi Square statistic.

Table 10. Percentage of Enrollees Receiving Outpatient Treatment
(b) For Neither Mental Health nor Substance Abuse

			In Frame		Sam-pled	Valid Telephone			Telephone Survey Response			Telephone and Mail Survey Response		
		Popula-tion	Tele-phone	Mail	Yes	Yes	No	P-value	Yes	No	P-value	Yes	No	P-value
Total		62.34	65.34	22.59	65.30	71.59	42.31	0.0000	79.71	66.63	0.0000	77.19	58.88	0.0000
OEF/OIF/OND	N	63.66	66.91	21.86	66.86	73.16	43.17	0.0000	80.61	68.33	0.0000	78.04	60.39	0.0000
OEF/OIF/OND	Y	50.79	51.82	31.58	51.86	57.22	36.25	0.0000	66.81	54.02	0.0000	64.57	48.40	0.0000
VISN	1	63.28	66.49	17.55	65.68	71.78	39.74	0.0000	80.27	66.96	0.0000	77.96	59.39	0.0000
	2	57.64	61.65	16.49	61.85	67.64	37.35	0.0000	76.09	63.15	0.0000	75.02	55.45	0.0000
	3	49.53	53.59	13.91	52.14	57.70	32.23	0.0000	68.32	53.43	0.0000	65.31	47.13	0.0000
	4	62.64	65.45	17.54	65.55	71.29	41.64	0.0000	82.76	64.73	0.0000	79.74	57.93	0.0000
	5	51.64	54.83	18.95	54.60	61.12	34.77	0.0000	67.64	58.07	0.0000	65.04	50.44	0.0000
	6	61.81	64.86	24.71	64.60	70.94	42.18	0.0000	78.33	66.39	0.0000	76.30	58.48	0.0000
	7	62.46	64.75	24.07	65.44	71.76	44.84	0.0000	76.63	68.69	0.0000	73.95	60.78	0.0000
	8	68.44	70.88	24.77	70.70	77.08	47.70	0.0000	84.56	72.41	0.0000	82.15	64.33	0.0000
	9	65.94	68.76	21.41	69.12	76.05	43.78	0.0000	83.34	70.60	0.0000	79.84	62.24	0.0000
	10	63.79	66.55	21.71	66.25	72.44	42.47	0.0000	79.64	68.13	0.0000	77.60	60.32	0.0000
	11	63.80	66.89	25.88	67.06	73.49	43.08	0.0000	81.51	68.16	0.0000	78.51	60.34	0.0000
	12	64.33	67.27	21.45	67.76	73.85	44.02	0.0000	79.79	70.20	0.0000	77.78	62.20	0.0000
	15	64.81	67.46	25.59	66.51	73.13	41.88	0.0000	82.23	67.18	0.0000	79.87	58.71	0.0000
	16	64.43	67.13	26.23	67.26	72.97	47.46	0.0000	82.79	67.19	0.0000	80.38	60.66	0.0000
	17	60.87	63.62	22.50	63.64	70.74	40.89	0.0000	78.58	66.40	0.0000	74.90	58.26	0.0000
	18	62.80	67.39	25.61	67.29	73.01	46.97	0.0000	82.31	67.05	0.0000	77.94	61.13	0.0000
	19	61.56	64.30	23.64	64.79	71.32	39.18	0.0000	77.37	66.99	0.0000	75.73	57.86	0.0000
	20	61.25	64.66	21.73	64.82	72.59	37.19	0.0000	78.80	67.74	0.0000	76.37	57.26	0.0000
	21	60.13	62.81	22.06	61.79	67.59	40.15	0.0000	74.87	63.45	0.0000	73.66	55.63	0.0000
	22	56.69	60.04	22.92	60.98	67.52	38.71	0.0000	77.60	62.47	0.0000	75.18	54.76	0.0000
	23	67.48	69.74	28.80	69.67	75.17	45.39	0.0000	81.17	70.64	0.0000	79.44	62.71	0.0000
Priority	1	83.21	84.53	48.44	84.39	87.37	67.94	0.0000	90.22	85.40	0.0000	88.87	81.47	0.0000
	2	65.80	68.78	24.44	68.35	74.02	45.34	0.0000	79.85	70.61	0.0000	77.18	63.59	0.0000
	3	58.21	62.37	16.46	62.31	69.60	37.71	0.0000	76.57	65.42	0.0000	74.09	56.07	0.0000
	4	78.13	79.86	49.27	79.99	86.12	64.28	0.0000	91.68	82.88	0.0000	90.23	75.49	0.0000
	5	62.90	66.22	25.92	66.23	73.66	44.86	0.0000	83.91	67.87	0.0000	81.32	59.13	0.0000
	6	44.38	46.23	17.38	46.02	52.78	23.16	0.0000	63.95	46.93	0.0000	61.70	39.20	0.0000
	7	81.05	81.89	53.75	82.51	83.49	75.73	0.0294	85.45	81.90	0.1353	85.18	80.39	0.0326
	8	51.03	54.21	12.28	54.32	60.95	28.99	0.0000	71.45	54.41	0.0000	68.04	46.45	0.0000
Enrollee Type	POST	59.85	61.75	26.31	61.70	68.11	38.32	0.0000	76.99	62.68	0.0000	74.41	54.83	0.0000
	PRE	70.48	77.98	17.29	77.83	83.66	56.31	0.0000	89.19	80.30	0.0000	86.88	72.96	0.0000

Note: Statistical tests for independence are based on the Rao-Scott Chi Square statistic.

4. VHA Pharmacy Services

As in previous cycles, the pattern of enrollees reporting participation in the VHA pharmacy service very closely follows the observed patterns for outpatient treatment unrelated to mental health or substance abuse. The proportion of enrollees participating in this service is 55.25 percent; this increases to 58 percent for frame-eligible enrollees. There is an increase ($p<0.0001$) to 63.80 percent when limiting to sampled enrollees with valid contact information, and another increase to 71.21 percent when measuring telephone-responding enrollees. The addition of the mail survey reduces the bias to a difference of 11.6 between the population figure and the survey estimate, but the final estimates are still considerably higher than the population. This pattern is consistent across all strata: an increase in the percentage from population to frame-eligible, with further increases in the percentage for enrollees with valid contact information, and then more in responding enrollees. All comparisons between enrollees with valid information and those without are significant. Further, all comparisons of responding to non-responding enrollees are significant. This is a pattern similar to those in 2008, 2010, and 2011.

Figure 5. Percentage of Enrollees Receiving Prescription Drug Services

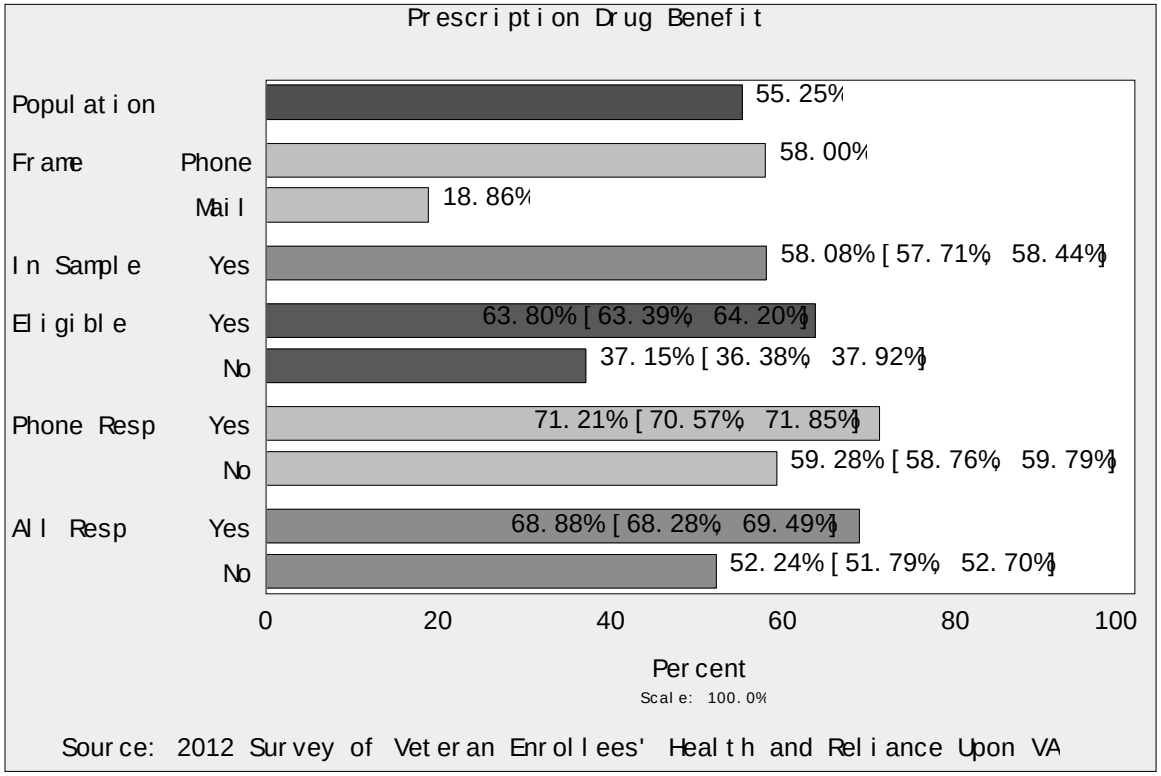


Table 11. Percentage of Enrollees Receiving Prescription Drug Services

			In Frame		Sampled	Valid Telephone			Telephone Survey Response			Telephone and Mail Survey Response		
		Population	Tele-phone	Mail	Yes	Yes	No	P-value	Yes	No	P-value	Yes	No	P-value
Total		55.25	58.00	18.86	58.08	63.80	37.15	0.0000	71.21	59.28	0.0000	68.88	52.24	0.0000
OEF/OIF/OND	N	57.06	60.07	18.57	60.16	65.90	38.56	0.0000	72.55	61.60	0.0000	70.14	54.39	0.0000
OEF/OIF/OND	Y	39.34	40.25	22.42	40.12	44.56	27.18	0.0000	52.09	42.04	0.0000	50.37	37.33	0.0000
VISN	1	54.64	57.51	13.80	57.41	62.60	35.33	0.0000	69.82	58.50	0.0000	67.86	52.06	0.0000
	2	50.80	54.44	13.43	54.40	59.44	33.12	0.0000	66.05	55.92	0.0000	65.05	49.23	0.0000
	3	42.71	46.29	11.29	45.22	50.12	27.70	0.0000	59.62	46.30	0.0000	57.04	40.73	0.0000
	4	54.08	56.56	14.16	57.44	63.08	33.97	0.0000	73.36	57.18	0.0000	70.07	50.66	0.0000
	5	44.70	47.56	15.46	47.10	52.60	30.37	0.0000	59.03	49.60	0.0000	56.60	43.32	0.0000
	6	56.34	59.21	21.42	59.25	64.96	39.06	0.0000	71.99	60.63	0.0000	69.81	53.72	0.0000
	7	56.16	58.28	20.52	59.38	65.33	39.98	0.0000	69.36	62.79	0.0006	67.02	55.20	0.0000
	8	59.71	61.93	19.94	61.19	67.25	39.34	0.0000	73.81	63.14	0.0000	71.60	55.39	0.0000
	9	59.28	61.93	17.56	62.44	69.08	38.13	0.0000	75.71	64.13	0.0000	72.48	56.00	0.0000
	10	57.09	59.61	18.68	58.88	64.29	38.05	0.0000	71.19	60.17	0.0000	69.65	53.24	0.0000
	11	57.46	60.30	22.52	60.03	65.63	39.15	0.0000	72.54	61.04	0.0000	69.80	54.30	0.0000
	12	57.70	60.43	17.84	60.92	66.55	38.94	0.0000	72.35	63.01	0.0000	70.62	55.54	0.0000
	15	58.77	61.26	21.90	60.94	67.01	38.35	0.0000	74.69	61.99	0.0000	73.17	53.80	0.0000
	16	58.87	61.45	22.39	61.94	67.50	42.68	0.0000	76.52	62.19	0.0000	74.10	55.83	0.0000
	17	54.89	57.48	18.69	57.33	64.12	35.55	0.0000	71.90	59.83	0.0000	68.87	51.82	0.0000
	18	55.75	59.98	21.48	60.53	65.93	41.34	0.0000	74.00	60.77	0.0000	70.07	55.02	0.0000
	19	53.54	55.98	19.74	57.33	63.04	34.90	0.0000	68.42	59.20	0.0000	66.61	51.44	0.0000
	20	54.06	57.18	17.81	57.66	64.13	34.65	0.0000	71.12	58.68	0.0000	68.49	50.58	0.0000
	21	52.43	54.85	17.98	52.97	57.87	34.66	0.0000	63.57	54.63	0.0000	62.61	47.97	0.0000
	22	48.42	51.31	19.35	52.19	58.06	32.20	0.0000	67.02	53.56	0.0000	65.18	46.50	0.0000
	23	58.83	60.89	23.46	60.73	65.62	39.19	0.0000	71.88	60.89	0.0000	70.02	54.13	0.0000
Priority	1	77.29	78.62	42.50	78.75	81.73	62.27	0.0000	84.60	79.75	0.0000	83.11	75.91	0.0000
	2	55.44	58.06	19.09	57.67	62.45	38.31	0.0000	66.97	59.80	0.0000	64.88	53.79	0.0000
	3	47.35	50.82	12.39	51.42	57.56	30.71	0.0000	62.88	54.37	0.0000	60.59	46.57	0.0000
	4	74.58	76.30	46.06	76.64	82.65	61.23	0.0000	87.19	80.01	0.0000	85.91	72.57	0.0000
	5	58.28	61.43	23.18	62.09	69.22	41.59	0.0000	79.28	63.53	0.0000	76.95	55.10	0.0000
	6	32.93	34.38	11.70	33.95	39.34	15.74	0.0000	46.87	35.39	0.0000	44.95	29.17	0.0000
	7	68.28	68.98	45.30	67.88	69.42	57.20	0.0050	72.59	66.85	0.0540	72.14	64.50	0.0063
	8	45.12	48.04	9.39	47.60	53.64	24.52	0.0000	63.54	47.49	0.0000	60.39	40.27	0.0000
Enrollee Type	POST	51.77	53.51	21.26	53.62	59.33	32.75	0.0000	67.49	54.35	0.0000	65.12	47.40	0.0000
	PRE	66.61	73.83	15.44	73.59	79.29	52.59	0.0000	84.14	76.33	0.0000	81.99	69.07	0.0000

Note: Statistical tests for independence are based on the Rao-Scott Chi Square statistic.

SURVEY WEIGHTING

In 2005, we conducted a non-response bias analysis for that year's Survey of Enrollees. One of the resulting recommendations was a *propensity score* weighting adjustment. This weighting adjustment, also used in 2007 and 2008, corrects for the differential non-response by health utilization and demographic information. To determine the adjustment, we:

- Used a probability model (described below) to estimate an enrollee's individual propensity (or probability) of being in the respondent sample;
- Grouped the estimated enrollees into five equal-sized classes (or quintiles) with similar probabilities; and,
- Weighted the respondents up to account for the non-respondents, using an independent adjustment for all classes.

The propensity score weighting adjustment reduces potential bias to the extent that non-respondents and respondents with similar response probabilities are also similar with respect to the survey statistics of interest.

During the 2007 Survey of Enrollees, enrollees were sampled only from a frame of enrollees with telephone numbers. Enrollees without telephone numbers had no chance of selection—thereby introducing coverage error. Therefore, the 2007 survey was susceptible to two forms of bias, coverage of enrollees with no chance of selection and non-response bias among enrollees who did not respond. For that reason, two separate propensity score adjustments were developed: one for frame coverage and another for non-response.

Since the 2008 Survey of Enrollees, the survey sample has been selected from a frame of enrollees with and without telephone numbers. Since the sample has been selected from this complete frame, coverage bias has not been a concern. However, non-response from a variety of sources, including invalid contact information, has remained a concern. Some of these sources have been addressed through the addition of a mail survey and a Web response channel. However, some remain. Therefore, a single propensity score adjustment has been used to focus on mitigating non-response bias.

Design Weights

Prior to calculating the non-response adjustment, we adjusted for differential selection probabilities. The sample was selected from the survey frame independently in each of the strata defined by VISN, priority, pre- and post- status and OEF/OIF/OED status; so the probability of selection is calculated in each stratum as $\Pr = \frac{n}{N}$, where:

- Pr is the sampling probability, *n=159,577* is the sample[5] size of enrollees, and

[5] The sample was selected in two stages. VHA provided a sample (n_1) of 419,991 enrollees. From this sample, we selected the final sample (n), a sub-sample of 159,577 enrollees, to meet all targets by OEF/OIF/OND, VISN, enrollee type, and priority status. The two stages allowed flexibility to reach targets without the need for multiple data transfers between VHA and ICF.

The probability of selection in each strata is: $\Pr = \frac{n_1}{N} \times \frac{n}{n_1} = \frac{n}{N}$

N=*8,013,308* is the total number of enrollees.

The inverse of these selection probabilities is the design weight, w1=1/Pr. The design weights were used in calculating the non-response adjustment.

Non-Response Adjustment

To calculate the non-response adjustment, each sampled respondent was classified into a non-response category using the indicator variable y based on whether we obtained an interview:

$$y = \begin{cases} 0 & \text{if nonresponse; no interview was obtained} \\ 1 & \text{if response; an interview was obtained} \end{cases}$$

Using logistic regression, we estimated the probability that an enrollee completed the interview given his or her characteristics:

$\Pr(y = 1 \mid x) = \dfrac{e^{x'\boldsymbol{\beta}}}{1 + e^{x'\boldsymbol{\beta}}}$, where *x* is a matrix of sampled enrollees; each enrollee has a set of *p* covariates, $\mathbf{x}_i' = (1, x_{1i}, \ldots x_{pi})$ for enrollee *i*. This set was used as explanatory (or predictor) variables, and $\boldsymbol{\beta} = (\beta_0, \beta_1, \ldots, \beta_p)$ was a set of regression coefficients, or parameters. The predictor variables included the sample design variables (OEF/OIF/OND, VISN, priority status, and enrollee type), the seven administrative health measures (see below), and demographic variables (age and gender).

VHA provides a file (based on administrative records) that indicates whether an enrollee had utilized any of the following services in the previous year (the file does not indicate the frequency or amount paid):

1. Received long-term care benefits
    a. Institutional
    b. Non-institutional
2. Inpatient treatment
    c. MHSA
    d. Non-MHSA
3. Outpatient treatment
    a. MHSA
    b. Non-MHSA
4. VHA pharmacy services

The utilization indicators have been used in the weighting process since 2007. From 2007–2010, the indicators were based on service utilization sourced from VHA workload files that were based on bed section and clinic stop. This categorization indicates *where* a Veteran received care. For the 2011 survey, the indicators were based on service utilization from Health Service Categories (HSCs). The categorization indicates *what* care a Veteran received. A second change in 2011 included long-term care in institutions and non-institutions. From 2007–2010, the indicator was a single measure of home health service.

For the modeling, in each stratum, we used design weights equal to the ratio of the frame total compared to the sample total. The outcome of the logistic regression model is the propensity score, the estimated probability that the enrollee is in the final sample of respondents, given their characteristics (VISN, priority status, enrollee type, age, gender, and service utilization). In 2012, we added to the model an indicator of whether the enrollee was eligible for the telephone frame.

After estimating each sampled enrollee's probability of completing an interview based on the predictor variables, respondents and non-respondents were grouped into quintiles based on their propensity score. Within each quintile, the design weights were increased by the ratio of the total design weight for both responders and non-responders to the total design weight for responders only. This resulted in numbers that represented the total population of enrollees. The first quintile represents the enrollees with the lowest propensity scores; this means that these enrollees are less likely to be in the final sample of respondents; thus, they receive the largest weights. The last quintile represents the enrollees with the highest propensity scores; this means that these enrollees are more likely to be in the final sample of respondents; thus, they receive the smallest weights.

Table 12. Non-Response Adjustment

	Response	Non-Response	Non-Response Adjustment
First quintile: *0–20th percentile*	257,402	1,345,181	6.23
Second quintile: *20–40th percentile*	440,505	1,162,178	3.64
Third quintile: *40–60th percentile*	574,547	1,028,152	2.79
Fourth quintile: *60–80th percentile*	711,982	890,605	2.25
Fifth quintile: *80–100th percentile*	813,765	788,993	1.97

Each respondent's design weight was multiplied by the adjustment factor (NR) from the quintile where he or she fell to calculate the non-response adjusted weights, $w_2 = w_1 \times NR$.

The preceding bias analysis was based on weighted data that accounts for the differential sampling probabilities for each stratum and does not adjust for non-response. We also performed the bias analysis using the non-response weights to determine whether the non-response adjustment reduces the biases observed for the health estimates. These results are listed in *Table 13*, below.

Table 13. Survey Estimates and Bias for Weighted, Unweighted, and Adjusted Data

		Telephone Base Weight				Telephone and Mail Base Weight				Telephone and Mail Base Weight and Non-Response Adjustment			
	Population	Estimate	Bias	Lower Bound	Upper Bound	Estimate	Bias	Lower Bound	Upper Bound	Estimate	Bias	Lower Bound	Upper Bound
1. Long-term care													
(a) Institutional	0.54	0.42	-0.12	-0.20	-0.03	0.44	-0.10	-0.18	-0.02	0.63	0.09	-0.03	0.21
(b) Non-institutional	2.73	3.42	0.69	0.45	0.93	3.27	0.55	0.33	0.76	2.95	0.22	0.03	0.42
2. Inpatient treatment													
(a) Related to MHSA	1.18	0.84	-0.34	-0.46	-0.23	0.85	-0.33	-0.44	-0.22	1.28	0.10	-0.06	0.25
(b) Unrelated to MHSA	4.25	5.14	0.89	0.58	1.20	5.04	0.79	0.51	1.07	4.60	0.35	0.10	0.61
3. Outpatient treatment													
(a) Related to MHSA	15.14	16.67	1.53	1.05	2.01	16.22	1.07	0.63	1.51	15.98	0.84	0.41	1.27
(b) Unrelated to MHSA	62.34	79.71	17.37	16.80	17.95	77.19	14.85	14.30	15.40	65.62	3.27	2.58	3.97
4. VHA Pharmacy service	55.25	71.21	15.96	15.32	16.60	68.88	13.63	13.03	14.23	58.44	3.19	2.50	3.87

The table above presents the bias estimates based on a telephone-only design, bias estimates based on a telephone and mail design (including responses in all channels), and bias estimates after conducting the non-response adjustment. In each case, adding the mail survey reduces bias, in amounts ranging from 2.33 percentage points to a tenth of a percentage point. Adding the non-response weighting then reduces the bias even further, in amounts ranging from 12 percentage points to a tenth of a percentage point. The large biases for outpatient treatment unrelated to MHSA and pharmacy services seen in the last two sets of rows in Table 10 were reduced from 16–17 percentage points down to 3–4 percentage points.

DISCUSSION AND RECOMMENDATIONS

This is the fifth report in the Experimental Methods Series. Recommendations that have stemmed from the annual analyses are to:

- Use propensity score weighting based on utilization of administrative records (**Full adoption)**;
- Send a pre-survey notification letter to Veterans prior to calling **(Full adoption)**;
- Increase the call attempts from 6 to 7 **(Full adoption)**;
- Use address information to locate and update telephone numbers via database look-ups **(Mixed adopton: full adoption** based on experiments in 2008 and 2010; **not implemented** in 2011 due to security and privacy concerns; **implemented sparingly** in 2012 for 7-digit telephone numbers and invalid area codes);
- Add a mail survey **(Partial adoption** as described in the current report); and,
- Add a Web survey **(Full adoption)**.

In 2012, thirteen percent of enrollees used the Web survey option instead of returning a mail survey or conducting a telephone survey. Web instruments are an effective way to reduce cost for large surveys. Programming the survey is a one-time expense and interviewer labor is removed. If 13 percent of respondents use the Web for a large survey such as the Survey of Enrollees, this can result in considerable cost savings on interviewer labor. Moreover, the Web survey provides a response channel that allows respondents to participate at their convenience.

Recommendation: VHA continue using the Web survey option.

For the mail survey the response rate and bias reduction benefits are positive. Counting responses via all four response channels (i.e., web, mail, inbound phone, and outbound phone) the addition of a mail component (mail survey, allowing mail requests, and mail follow-up) added 10,056 interviews. We can use the mail survey to improve results in a number of different ways: for those with no telephone number listed; for those with a nonworking telephone number listed; for those who would prefer to respond to a print survey rather than conduct a telephone interview; and, as a nonresponse follow-up. In each case, the Survey of Enrollees benefited from increased response. The response rate to the mail survey was the same as that for the telephone survey. Considering that the enrollees with telephone numbers on the frame tend to be the most vested in VHA services (higher utilization), which is associated with response rates, it is conceivable that a mail survey might result in higher response than a telephone survey if conducted on a larger scale.

Recommendation: VHA conduct an experiment where a sample of enrollees with both an address and a telephone number are randomly assigned to:

1. Mail-first, telephone follow-up treatment

2. Telephone-first, mail follow-up treatment (similar to 2012)

The benefits of such an experiment will be to compare overall response to these two designs, as well as to compare response differences between the two modes. This will address a limitation to the 2012 design: despite receiving both mail responses and telephone responses, the response sets are from different enrollee groups (those with a phone number and those without, those who refused the phone

survey and those who did not, etc.). Thus, we do not know if differences are due to mode or enrollee group.

Of the 15,761 enrollees who were sent a mail survey as a non-response follow-up, 2,705, or 18 percent completed a survey. We know that the telephone responders are different from telephone non-responders in terms of the HSC utilization indicators. However, the survey responses are very similar when comparing the telephone responders to the telephone non-responders who responded by mail. Our 2012 bias analysis suggests that while we are reducing bias by adding the mail survey, we still have differences between survey responders (mail and phone) and non-responders.

These telephone non-responders were sent one survey packet. They were not sent a postcard reminder or a second survey packet. A more rigorous follow-up protocol might yield more responses from these telephone non-responders, which should continue to reduce bias.

As part of our continuing research on improvements to the sampling and weighting methodologies, we will explore mode effects, including the option of including a weighting adjustment that would support trend analysis.

Recommendation: Add a postcard reminder and a second survey mailing for the telephone non-responders.

Recommendation: Include all telephone non-responders in the mail follow-up.

The benefits of moving from partial to full adoption of the mail survey, both in terms of broadening the application and the use of a more rigorous mail follow-up protocol, should be balanced against increased costs and a lengthened fielding period.

Operational challenges included item level non-response on the mail surveys, the handling of duplicated surveys, and the need to interpret hand written comments on mail surveys. We can begin assessing the costs of addressing these issues by extrapolating mail component costs from the 2012 study to a full application using estimated increases in mail volume.

Methodological components of this assessment include looking at statistical adjustments to ensure comparability for cross-year analysis and the design of an embedded experiment to untangle the mode- and group-effects present in the current sample design.