



Service Level Measurements – Community Care Survey Sampling Methodology Report

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Version 1
June 2020

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Executive Summary

The Community Care Survey is designed to measure customer experience with a number of interaction they may have in navigating Community Care benefits.

Veterans experience data is collected by using an online transactional survey disseminated via an invitation email sent to randomly selected beneficiary. The data collection occurs once per week with invitation being sent out within 8 days of calling the Community Care. The questionnaire is brief and contains general Likert-scale (a scale of 1-5 from Strongly Disagree to Strongly Agree) questions to assess customer satisfaction as well as questions assessing the knowledge, speed, and manner of the interaction. After the survey has been distributed, recipients have two weeks to complete the survey and will receive a reminder email after one week.

The overall sample size for the Community Care Survey population is selected to assure that, for each of the interactions targeted where sufficient sample is available, the reliability of monthly survey estimate is a +/-3% margin of error at a 95% confidence level. The survey will be sent to a representative sample of Veterans. Once data collection is completed, the participant responses in the online survey will be weighted.

This report describes the methodology used to conduct the Community Care Survey. Information about quality assurance protocols, as well as limitations of the survey methodology, is also included in this report.

Part I – Introduction

A. Background

The **Enterprise Measurement and Design** team (EMD) is part of the **Insights and Analytics** (I&A) division within the **Veterans Experience Office** (VEO). The EMD team is tasked with conducting transactional surveys of the Veteran population to measure their satisfaction with the Department of Veterans Affairs (VA) numerous benefit services. Thus, their mission is to empower Veterans by rapidly and discreetly collecting feedback on their interactions with such VA entities as NCA, VHA, and VBA. VEO surveys generally entail *probability* samples which only contact minimal numbers of Veterans necessary to obtain reliable estimates. This information is subsequently used by internal stakeholders to monitor, evaluate, and improve beneficiary processes. Veterans are always able to decline participation and have the ability to opt out of future invitations. A *quarantine* protocol is maintained to limit the number of times a Veteran may be contacted, in order to prevent survey fatigue, across all VEO surveys.

The VEO team designed six questionnaires for the Community Care Survey for each of the interaction targeted:

- Survey 1: Choosing VA Community Care
- Survey 2: Scheduling a VA Community Care Appointment
- Survey 3: Attending a VA Community Care Appointment
- Survey 4: Filling a Prescription Through the VA Community Care
- Survey 5: Understanding Financial Responsibility with VA Community Care
- Survey 6: Calling VA About Community Care Billing Questions

In order to continue to provide quality services to Veterans, VEO has been commissioned to measure the satisfaction with Community Care. To complete this goal, VEO proposed to conduct a brief transactional survey with selected Veterans who had interacted with Community Care. The surveys consists of seven questions developed using human-centered design, focusing on Veterans' experience with regard to their recent encounter and centered on to the factors of Trust, Ease, Effectiveness, Helpfulness, Quality and Emotion. These Likert-scale (a scale of 1-5) questions are designed through extensive Veteran input and recommendations from subject matter experts in the VA. Veterans also have an opportunity to provide a free-text response about their experience.

Veterans are selected to participate in the survey via an invitation email. A link is enclosed so the survey may be completed using an online interface, with customized participant information. The data is collected on a weekly basis and the survey is reported on a monthly basis. The purpose of this document is to outline the planned sample design and provide a description of the data collection and sample sizes necessary for proper reporting.

B. Basic Definitions

Coverage	The percentage of the population of interest that is included in the sampling frame.
Measurement Error	The difference between the response coded and the true value of the characteristic being studied for a respondent.
Non-Response	Failure of some respondents in the sample to provide responses in the survey.
Transaction	A <i>transaction</i> refers to the specific time a Veteran interacts with the VA that impacts the Veteran's journey and their perception of VA's effectiveness in caring for Veterans.
Response Rate	The ratio of participating persons to the number of contacted persons. This is one of the basic indicators of survey quality.
Sample	In statistics, a data sample is a set of data collected and/or selected from a statistical population by a defined procedure.
Sampling Error	Error due to taking a particular sample instead of measuring every unit in the population.
Sampling Frame	A list of units in the population from which a sample may be selected.
Reliability	The consistency or dependability of a measure. Also referred to as <i>standard error</i> .

C. Application to Veterans Affairs

Customer experience and satisfaction are usually measured at three levels to: 1) provide enterprises the ability to track, monitor, and incentivize service quality; 2) provide service level monitoring and insights; and 3) give direct point-of-service feedback. This measurement may bring insights and value to all stakeholders at VA. Front-line VA leaders can resolve individual feedback from Veterans and take steps to improve the customer experience; meanwhile VA executives can receive real-time updates on systematic trends that allow them to make changes.

- 1) To collect continuous customer experience data
- 2) To help field staff and the national office identify areas of improvement.
- 3) To understand emerging drivers and detractors of customer experience.

Part II – Methodology

A. Target Population, Frame, and Stratification

The target population of the Community Care Survey is defined as any Veterans who has interacted with Community Care in the past weeks. The table below summarizes the qualifying interactions.

Table 1. Target Population for Each Survey

Survey	Qualifying Interaction
Survey 1: Choosing VA Community Care	Selected Community Care coverage
Survey 2: Scheduling a VA Community Care Appointment	Made a Community Care appointment
Survey 3: Attending a VA Community Care Appointment	Saw a Community Care provider
Survey 4: Filling a Prescription Through the VA Community Care	Filled a prescription through Community Care
Survey 5: Understanding Financial Responsibility with VA Community Care	Receive a bill for Community Care
Survey 6: Calling VA About Community Care Billing Questions	Contacted VA about Community Care billing

The sample frame is prepared by extracting population information directly from VHA’s Corporate Data Warehouse. These extracts are also used to obtain universe figures for the sample weighting process. The Veteran is the primary sampling unit and is randomly selected from the population according to a stratified design. The primary stratification will be the type of contact which fall into 3 strata—nurse triage, pharmacy, and Licensed Independent Provider (LIP). The survey will also utilize implicit stratification or balancing by age, gender, and location.

B. Sample Size Determination

To achieve a certain level of reliability, the sample size for a given level of reliability is calculated below (Lohr, 1999):

For a population that is *large*, the equation below is used to yield a representative sample for proportions:

$$n_0 = \frac{Z_{\alpha/2}^2 pq}{e^2}$$

where

- $Z_{\alpha/2}$ = is the critical Z score which is 1.96 under the normal distribution when using a 95% confidence level ($\alpha = 0.05$).
- p = the estimated proportion of an attribute that is present in the population, with $q=1-p$.
 - o Note that pq attains its maximum when value $p=0.5$ or 50%. This is what is typically reported in surveys where multiple measures are of interest. When examining measures closer to 100% or 0% less sample is needed to achieve the same margin of error.
- e = the desired level of precision or margin of error. For example, for the Community Care Survey the targeted margin of error is $e = 0.03$, or +/-3.0%.

For a population that is relatively *small*, the finite population correction is used to yield a representative sample for proportions:

$$n = \frac{n_0}{1 + \frac{n_0}{N}}$$

Where

- n_0 = Representative sample for proportions when the population is large.
- N = Population size.

The margin of error surrounding the baseline proportion is calculated as:

$$\text{Margin of Error} = z_{\alpha/2} \sqrt{\frac{N-n}{N-1} \frac{p(1-p)}{n}}$$

Where

- $Z_{\alpha/2} = 1.96$, which is the critical Z score value under the normal distribution when using a 95% confidence level ($\alpha = 0.05$).
- N = Population size.
- n = Representative sample.
- p = the estimated proportion of an attribute that is present in the population, with $q=1-p$.

The proposed sample plan is designed to achieve an MOE of +/-3.0% at a 95% confidence for all surveys where sufficient sample is available. If insufficient sample is available given a maximum sample rate of 50%, the sample target accuracy will be set as per the table below. Each survey will have a maximum sample of 1,850 drawn weekly and a sample rate of no more than 50%

Table 2A indicates the amount of sample needed in a month to achieve various target accuracies (MOE/ Confidence). As the sample is drawn, population estimates will be made to determine the target accuracy appropriate for each of the six surveys. In this way, the sample will adjust depending on the sample availability and

Table 2A. Target Population Figures, Sample Size, and Email Contacts

Average Monthly Encounter w/ Email Addresses	Target MOE ¹	Confidence	Minimum Monthly Responses Needed	Response Rates	Minimum Monthly Sample Needed
> 14,228	3.00%	95%	1,068	15%	7,115
> 10,453	3.50%	95%	784	15%	5,227
> 8,003	4.00%	95%	601	15%	4,002
> 6,324	4.50%	95%	475	15%	3,162
> 5,122	5.00%	95%	385	15%	2,562
> 3,608	5.00%	90%	271	15%	1,805
> 2,185	5.00%	80%	164	15%	1,093

Table 2B shows the estimated minimum and rounded sample size needed for each target accuracy.

¹ MOE measures assume that non-response to the survey is randomly distributed.

Table 2B shows the weekly sample availability and sample needs.

Target MOE	Confidence	Minimum Weekly Sample Needed	Rounded Weekly Sample Targets
3.00%	95%	1,779	1,850
3.50%	95%	1,307	1,360
4.00%	95%	1,001	1,050
4.50%	95%	791	830
5.00%	95%	641	680
5.00%	90%	452	480
5.00%	80%	274	300

The sample will be drawn using a systematic sampling methodology. This statistical valid approach allows the team to balance the sample across several variables such as age, gender, and region. These balancing variables are often referred to as implicit strata. This has been shown to stabilize trends and improve accuracy of estimates.

Email addresses will be acquired by matching Veteran ID numbers to the VBA’s Enterprise Data Warehouse (EDW) and the VHA’s Corporate Data Warehouse (CDW). The CDW will be prioritized if the two sources produce different and valid email addresses. Each email address encountered is validated in several ways:

- Validation that the email address has a valid structure
- Comparison with a database of bad domains
- Correction of common domain misspellings
- Comparison of a database of bad emails including
 - o Opt outs
 - o Email held by multiple veterans
- Comparison to a database of valid TDLs (e.g. “.com”, “.edu”)

C. Data Collection Methods

Invitations will be sent out each week to assure that initial invites are sent within eight days of their call to the Community Care. Caller information will be regularly extracted from VHA database resource: the VHA’s Corporate Data Warehouse (CDW). The extraction process will be executed and validated by the Office of Performance Improvement and Assessment (PA&I). with the population extracts sent to VEO twice a week. Invitation will be sent on Mondays. Invitees that have not completed the survey will receive a reminder after one week. The survey will remain open for a total of two weeks. Survey responses are immediately available within VSIGNALS as soon as feedback is submitted.

D. Reporting

Researchers will be able to use the Veteran Signals (VSIGNALS) system for interactive reporting and data visualization. VA employees with a PIV card may access the system at <https://va.voice.medallia.com/sso/va/>. The scores may be viewed by Age Group, Gender, and Race/Ethnicity in various charts for different perspective. They are also depicted within time series plots to investigate trends. Finally, filter options are available to assess scores at varying time periods and within the context of other collected variable information.

Recruitment is continuous but the results should be combined into a *monthly* data file for more precise estimates, at the call center level. Short interval estimates are less reliable for small domains, (i.e., VAMC-level) and should only be considered for aggregated populations. Monthly estimates will have larger sample sizes, and therefore higher reliability. Estimates over longer periods are the most precise but will take the greatest amount of time to obtain and are less dynamic in that trends and short-term fluctuation in service delivery may be missed. Users examining subpopulation should be particularly diligent in assuring that insights stem from analysis with sufficient sample in the subpopulations being examined or compared.

E. Quality Control

To ensure the prevention of errors and inconsistencies in the data and the analysis, quality control procedures will be instituted in several steps of the survey process. Records will undergo a cleaning during the population file creation. The quality control steps are as follows.

1. Records will be reviewed for missing sampling and weighting variable data. When records with missing data are discovered, they will be either excluded from the population file or put into separate strata upon discussion with subject matter experts.
2. Any duplicate records will be removed from the population file to both maintain the probabilities of selection and prevent the double sampling of the same Veteran.
3. Invalid emails will be removed.

The survey sample loading and administration processes will have quality control measures built into them.

1. The survey load process will be rigorously tested prior to the induction of the survey to ensure that sampled customers is not inadvertently dropped or sent multiple emails.
2. The email delivery process is monitored to ensure that bounce-back records will not hold up the email delivery process.

The weighting and data management quality control checks are as follows:

1. The sum of the weighted respondents will be compared to the overall population count to confirm that the records are being properly weighted. When the sum does not match the population count, weighting classes will be collapsed to correct this issue.
2. The unequal weighting effect will be used to identify potential issues in the weighting process. Large unequal weighting effects indicate a problem with the weighting classes, such as a record receiving a large weight to compensate for nonresponse or coverage bias.

F. Sample Weighting, Coverage Bias, and Non-Response Bias

Weighting is commonly applied in surveys to adjust for nonresponse bias and/or coverage bias. Nonresponse is defined as failure of selected persons in the sample to provide responses. This is observed virtually in all surveys, in that some groups are more or less prone to complete the survey. The nonresponse issue may cause some groups to be over- or under-represented. Coverage bias is another common survey problem in which certain groups of interest in the population are not included in the sampling frame. The reason that these Veterans cannot participate is because they cannot be contacted (no email address available). In both cases, the exclusion of these portions of Veterans from the survey contributes to the measurement error. The extent that the final survey estimates are skewed depends on the nature of the data collection processes within an individual line of business and the potential alignment between veteran sentiment and their likelihood to respond.

Survey practitioners recommend the use of sample weighting to improve inference on the population so that the final respondent sample more closely resembles the true population. It is likely that differential response rates may be observed across different age and gender groups. Weighting can help adjust for the demographic representation by assigning larger weights to underrepresented group and smaller weights to overrepresented group. Stratification can also be used to adjust for nonresponse by oversampling the subgroups with lower response rates. In both ways of adjustments, weighting may result in substantial correction in the final survey estimates when compared to direct estimates in the presence of non-negligible sample error.

Weights are updated live within the VSignals reporting platform². Proportions are set based on the monthly distribution of the previous month.³

If we let w_{ij} denote the sample weight for the i^{th} person in group j ($j=1, 2, \text{ and } 3$), then the CW formula is:

$$w_{ij} = \frac{\% \text{ Veterans} \in \text{population} \in \text{group } j}{\% \text{ Veterans} \in \text{group } j \in \text{the sample}}$$

As part of the weighting validation process, the weights of persons in an age and gender group are summed and verified that they match the universe estimates (i.e., population proportion). Additionally, we calculate the *unequal weighting effect*, or UWE (see Kish, 1992; Liu et al., 2002). This statistic is an indication of the amount of variation that may be expected due to the inclusion of weighting. The unequal weighting effect estimates the percent increase in the variance of the final estimate due to the presence of weights and is calculated as:

$$UWE = 1 + cv_{weights}^2 = \left(\frac{s}{\bar{w}} \right)^2$$

where

- cv = coefficient of variation for all weights w_{ij} .
- s = sample standard deviation of weights.
- \bar{w} = sample mean of weights, $\bar{w} = \frac{1}{n} \sum_{ij} w_{ij}$.

G. Quarantine Rules

VEO seeks to limit contact with Veterans as much as possible, and only as needed to achieve measurement goals. These rules are enacted to prevent excessive recruitment attempts upon Veterans. VEO also monitors Veteran participation within other surveys, to ensure Veterans do not experience survey fatigue. All VEO surveys offer options for respondents to opt out, and ensure they are no longer contacted for a specific survey.

² Realtime weighting may cause some distortions at the beginning of each cycle due to empty cells or random variance in small sample distributions.

³ Using previous months data is a design option for handling the problem of setting targets prior to fielding each month. An alternative design is to set targets off annualized estimates to create more stability month to month. If the population is known to fluctuate from month to month, past month population estimates may not be the optimal solution.

Table 5. Proposed Quarantine Protocol

Quarantine Rule	Description	Elapsed Time
Past waves	Number of days between completing online survey any VEO survey and receiving another invitation.	30 Days
Active Waves	Number of days between receiving an invitation to a VEO survey and receiving another invitation.	14 Days
Anonymous	Callers explicitly wishing to remain anonymous will not be contacted.	N/A
Opt Outs	Persons indicating their wish to opt out of either phone or online survey will no longer be contacted.	N/A

Part III – Assumptions and Limitations

A) Population Estimation Error

The population estimates for this survey include some uncertainty due to 1) fluctuation in the call volumes due to the current pandemic (Covid 19); 2) an increase over time in the use of telemedicine over time; and 3) potential policy shift (e.g. shift to more reliance on contractor or LIP). Estimates tried to account for these factors. None-the-less, a large amount of uncertainty exists. To address this risk, we recommend evaluating the sample plan over time to determine how well the estimates hold up.

B) Coverage Bias due to Email-Only Data Collection

Since the Community Care Survey is email-only, there is a segment of the population of Community Care callers that cannot be reached by the survey. This will correspond to persons that lack access to the internet, and those who do not have an email address, or elect to not share their email address with the VA. Such beneficiaries may have different levels of general satisfaction with their service they received.

Appendix 1. List of Data Extraction Variables

Appendix 2. Survey Questions

Survey 1: Choosing VA Community Care
My VA primary care provider and/or VA coordinating team explained benefits offered through VA community care in a way I could understand.
After I chose VA community care, I knew what to expect.
I clearly understood why I was referred out of my local VA for care.
My VA provider and/or VA coordinating team discussed the urgency of my health care needs and means of transportation before referring me for VA community care.
I am confident VA will coordinate my care with my community provider.
I am satisfied with my VA provider and/or VA coordinating team's decision to use VA community care.
I trust VA community care to coordinate the best medical treatment for my health care

needs.

Survey 2: Scheduling a VA Community Care Appointment

The <scheduling entity> considered all of my needs when scheduling my VA community care appointment.

Scheduling a VA community care appointment was easy.

I was contacted to schedule my community care appointment shortly after I chose to use VA community care.

I was treated fairly and with respect when I was contacted to schedule my appointment.

I understood whom to contact to cancel or change my appointment with <CC Provider Name>.

The <scheduling entity> clearly explained what I should expect regarding my scheduled VA community care appointment.

I trust VA community care to coordinate my care with my community provider.

Survey 3: Attending a VA Community Care Appointment

I was satisfied with the amount of time I waited between scheduling and being seen by <CC provider name>.

I knew what to expect during my appointment with <CC provider name>.

I had no difficulties traveling to my last VA community care appointment.

VA community providers are well-versed in how to properly treat and care for Veterans.

I am confident that my VA health information was provided to <CC provider name> to ensure I received quality care.

I am satisfied with the care I received from <CC Provider Name>.

I trust VA community care to address my medical needs.

Survey 4: Filling a Prescription Through the VA Community Care

VA provided clear information on how to fill a prescription written by an authorized community provider.

I understand whom to contact if I have questions or concerns regarding filling a prescription written by an authorized community provider.

I received my prescriptions from my last VA community care appointment in a timely manner.

It was easy to fill a prescription written by my last VA community provider.

VA considered my medical needs when obtaining medication and/or medical equipment prescribed by a VA community provider.

VA pharmacists were helpful and informative when answering questions about prescriptions written by an authorized community provider.

I trust VA community care to coordinate the best medical treatment for my health care needs.

Survey 5: Understanding Financial Responsibility with VA Community Care

The financial documents I received from VA clearly explained my financial responsibilities related to my visit with an authorized community provider.

I was able to easily find a VA representative who could help address a billing question or concern regarding a community care appointment.

The VA representative addressed my financial concerns regarding my visit with <CC Provider Name> with respect and dignity.

VA provided clear instructions on how to address community care financial concerns.

I am satisfied with VA's ability to address billing concerns after being referred out to an authorized community provider.

Using VA community care has positively impacted my health and quality of life.

I trust VA to honor payments to community providers for authorized care.

Survey 6: Calling VA About Community Care Billing Questions

I understood whom to contact if I had billing concerns or credit reporting issues related to VA community care.

It was easy to contact the VA community care contact center to address a question or concern about an outstanding bill from a VA community care visit.

The VA addressed my billing concerns and adverse credit reporting issues with respect and dignity.

The VA quickly addressed my billing concerns and adverse credit reporting issues from my use of VA community care.

I am satisfied with VA's response to my VA community care billing concerns.

Using VA community care has positively impacted my health and quality of life.

I trust VA to resolve any billing issues that might result from my use of an authorized community provider.

Appendix 3. References

- Choi, N.G. & Dinitto, D.M. (2013). Internet Use Among Older Adults: Association with Health Needs, Psychological Capital, and Social Capital. *Journal of Medical Internet Research*, 15(5), e97
- Kish, L. (1992). Weighting for unequal P. *Journal of Official Statistics*, 8(2), 183-200.
- Lohr, S. (1999). *Sampling: Design and Analysis* (Ed.). Boston, MA: Cengage Learning.
- Liu, J., Iannacchione, V., & Byron, M. (2002). Decomposing design effects for stratified sampling. *Proceedings of the American Statistical Association's Section on Survey Research Methods*.