SUPPORTING STATEMENT – PART B

B.  COLLECTIONS OF INFORMATION EMPLOYING STATISTICAL METHODS

If the collection of information employs statistical methods, it should be indicated in Item 17 of OMB Form 83-I, and the following information should be provided in this Supporting Statement:

1.  Description of the Activity

Describe the potential respondent universe and any sampling or other method used to select respondents.  Data on the number of entities covered in the collection should be provided in tabular form for the universe as a whole and for each of the strata in the proposed sample.  Indicate the expected response rates for the collection as a whole, as well as the actual response rates achieved during the last collection, if previously conducted.

The population of interest for the 2021 ADSS consists of spouses of active duty members from the Army, Navy, Marine Corps, and Air Force who are below flag rank. In addition, for the spouse to remain eligible for the survey, they must indicate they are currently married to an active duty member at the time of the survey. OPA uses a sampling tool developed by the Research Triangle Institute (RTI) to determine the sample size needed to achieve 95% confidence and an associated precision of 5% or less on each reporting domain. We select a single-stage, non-proportional stratified random sample to ensure statistically adequate expected number of responses for the reporting categories (i.e., domains). For the active duty spouse survey, OPA uses Service, paygrade, gender, and family status to define the initial strata. We collapse these strata when there are fewer than 200 individuals in the stratum and there are 80 final strata. Attachment A contains a table with the number of individuals in the population and sample by strata. The expected weighted response rate for this survey is about 16%; the weighted response rate for this survey in 2019 was 16.3%.

2.  Procedures for the Collection of Information

Describe any of the following if they are used in the collection of information:

a.  Statistical methodologies for stratification and sample selection;

As described above, OPA uses a sampling tool developed by the Research Triangle Institute (RTI) to determine the sample size needed to achieve 95% confidence and an associated precision of 5% or less on each reporting category domain. We select a single-stage, non-proportional stratified random sample to ensure statistically adequate expected number of responses for the reporting domains. For the active duty spouse survey, OPA uses Service, paygrade, gender, and family status to define the initial strata. We collapse these strata when there are fewer than 200 individuals in the stratum. Once OPA determines the stratum-level sample sizes, a random number is assigned to every member of the population and the population is sorted by stratum and random number prior to sampling, which results in a randomly-ordered population within each stratum. We then select the appropriate number of spouses from each stratum.

b.  Estimation procedures;

OPA weights the eligible respondents in order to make inferences about the entire population of active duty spouses. The weighting methodology utilizes standard weighting processes. First, we assign a base weight to the sampled member based on the reciprocal of the selection probability. Second, OPA uses 20-30 administrative variables in the XGBoost application of Generalized Boosted Model (GBM) to predict survey eligibility and completion. OPA’s accurate and detailed administrative data on both survey respondents and nonrespondents provides confidence in our survey estimates. We adjust the sampling weights and then all prior-stage weights by the inverse of these model-predicted probabilities to adjust for nonresponse. Finally, we rake these adjusted weights to known population totals to further reduce the variance and bias of the estimates.

c.  Degree of accuracy needed for the Purpose discussed in the justification;

OPA creates variance strata so precision measures can be associated with each estimate. We produce precision measures for reporting categories using 95% confidence intervals with the goal of achieving a precision of 5% or less (e.g, 80% (+/- 5%) of spouses of Army E1-E4 are satisfied with their job).

d.  Unusual problems requiring specialized sampling procedures; and

OPA recognizes the response rates vary for certain domains of interest such as Service and paygrade. To account for this, we average the response rates for the previous three surveys at the stratum level and these response rates are utilized by the sampling tool to adjust the sample and compute expected sample sizes.

e.  Use of periodic or cyclical data collections to reduce respondent burden.

OPA conducts the ADSS survey every other year to reduce respondent burden.

3.  Maximization of Response Rates, Non-response, and Reliability

Discuss methods used to maximize response rates and to deal with instances of non-response.  Describe any techniques used to ensure the accuracy and reliability of responses is adequate for intended purposes.  Additionally, if the collection is based on sampling, ensure that the data can be generalized to the universe under study.  If not, provide special justification.

To maximize response rates, OPA offers the survey via the Web as well as a paper survey option. Reminder letters, emails, and phone calls to nonrespondents are used to maximize response rates. To reduce respondent burden, web-based surveys use “smart skip” technology to ensure respondents only answer questions that are applicable to them. To deal with instances of nonresponse, OPA adjusts for nonresponse in the weighting methodology. To ensure the accuracy and reliability of responses, OPA conducts a nonresponse bias analysis every other survey cycle and will conduct one for the 2021 survey. OPA uses probability sampling and appropriate weighting to ensure the survey data can be generalized to the universe under study.

4.  Tests of Procedures

Describe any tests of procedures or methods to be undertaken.  Testing of potential respondents (9 or fewer) is encouraged as a means of refining proposed collections to reduce respondent burden, as well as to improve the collection instrument utility.  These tests check for internal consistency and the effectiveness of previous similar collection activities.

Not applicable.

5.  Statistical Consultation and Information Analysis

a. Provide names and telephone number of individual(s) consulted on statistical aspects of the design.

Mr. David McGrath, Branch Chief; Statistical Methods Team, Methods, Analysis, and Systems Support, Office of People Analytics (OPA); (571) 372-0983.

Ms. Wendy Barboza, Team Lead; Statistical Methods Team, Methods, Analysis, and Systems Support, Office of People Analytics (OPA); (571) 372-1099.

b. Provide name and organization of person(s) who will actually collect and analyze the collected information.

The data will be collected by Data Recognition Corporation (DRC), which is OPA’s operations contractor. Ms. Valerie Waller is the Senior Managing Director at DRC.

The data will be analyzed by OPA analysts. Robin Myers, Jason Haynes, and Amy Campbell are the lead operations analysts.

Attachment A. ADSS 2101 - Population and Sample Size by Strata

|  |  |  |  |
| --- | --- | --- | --- |
| **Stratum** | **Stratum Definitions** | **Population Size** | **Sample Size** |
| All | Total | 665,074 | 65,818 |
| 1 | 001 ARMY\_E1-E4+E0\_MALE+UNK\_MAR+CHILD\_ | 23,301  | 2,635  |
| 2 | 002 ARMY\_E1-E4+E0\_MALE+UNK\_MARNOCHILD\_ | 23,287  | 2,436  |
| 3 | 003 ARMY\_E1-E4+E0\_FEMALE\_MAR+CHILD\_ | 4,462  | 615  |
| 4 | 004 ARMY\_E1-E4+E0\_FEMALE\_MARNOCHILD\_ | 7,329  | 1,036  |
| 5 | 005 ARMY\_E5-E6\_MALE+UNK\_MAR+CHILD\_ | 55,935  | 2,721  |
| 6 | 006 ARMY\_E5-E6\_MALE+UNK\_MARNOCHILD\_ | 21,464  | 963  |
| 7 | 007 ARMY\_E5-E6\_FEMALE\_MAR+CHILD\_ | 5,512  | 337  |
| 8 | 008 ARMY\_E5-E6\_FEMALE\_MARNOCHILD\_ | 4,966  | 291  |
| 9 | 009 ARMY\_E7-E9\_MALE+UNK\_MAR+CHILD\_ | 34,129  | 2,438  |
| 10 | 010 ARMY\_E7-E9\_MALE+UNK\_MARNOCHILD\_ | 4,364  | 297  |
| 11 | 011 ARMY\_E7-E9\_FEMALE\_MAR+CHILD\_ | 2,551  | 225  |
| 12 | 012 ARMY\_E7-E9\_FEMALE\_MARNOCHILD\_ | 889  | 77  |
| 13 | 013 ARMY\_W1-W5+W0\_MALE+UNK\_MAR+CHILD\_ | 9,401  | 136  |
| 14 | 014 ARMY\_W1-W5+W0\_MALE+UNK\_MARNOCHILD\_ | 1,602  | 21  |
| 15 | 015 ARMY\_W1-W5+W0\_FEMALE\_MARCHILD+NOCHILD\_ | 866  | 20  |
| 16 | 016 ARMY\_O1-O3+O0\_MALE+UNK\_MAR+CHILD\_ | 11,858  | 986  |
| 17 | 017 ARMY\_O1-O3+O0\_MALE+UNK\_MARNOCHILD\_ | 7,879  | 617  |
| 18 | 018 ARMY\_O1-O3+O0\_FEMALE\_MAR+CHILD\_ | 1,625  | 163  |
| 19 | 019 ARMY\_O1-O3+O0\_FEMALE\_MARNOCHILD\_ | 2,812  | 253  |
| 20 | 020 ARMY\_O4-O6\_MALE+UNK\_MAR+CHILD\_ | 18,869  | 1,317  |
| 21 | 021 ARMY\_O4-O6\_MALE+UNK\_MARNOCHILD\_ | 2,920  | 198  |
| 22 | 022 ARMY\_O4-O6\_FEMALE\_MAR+CHILD\_ | 2,435  | 190  |
| 23 | 023 ARMY\_O4-O6\_FEMALE\_MARNOCHILD\_ | 1,042  | 79  |
| 24 | 024 NAVY\_E1-E4+E0\_MALE+UNK\_MAR+CHILD\_ | 7,875  | 1,359  |
| 25 | 025 NAVY\_E1-E4+E0\_MALE+UNK\_MARNOCHILD\_ | 16,557  | 2,651  |
| 26 | 026 NAVY\_E1-E4+E0\_FEMALE\_MAR+CHILD\_ | 2,633  | 552  |
| 27 | 027 NAVY\_E1-E4+E0\_FEMALE\_MARNOCHILD\_ | 6,666  | 1,319  |
| 28 | 028 NAVY\_E5-E6\_MALE+UNK\_MAR+CHILD\_ | 40,219  | 2,171  |
| 29 | 029 NAVY\_E5-E6\_MALE+UNK\_MARNOCHILD\_ | 19,892  | 984  |
| 30 | 030 NAVY\_E5-E6\_FEMALE\_MAR+CHILD\_ | 5,428  | 366  |
| 31 | 031 NAVY\_E5-E6\_FEMALE\_MARNOCHILD\_ | 4,907  | 295  |
| 32 | 032 NAVY\_E7-E9\_MALE+UNK\_MAR+CHILD\_ | 21,098  | 2,143  |
| 33 | 033 NAVY\_E7-E9\_MALE+UNK\_MARNOCHILD\_ | 3,316  | 311 |
| 34 | 034 NAVY\_E7-E9\_FEMALE\_MAR+CHILD\_ | 1,756  | 216  |
| 35 | 035 NAVY\_E7-E9\_FEMALE\_MARNOCHILD\_ | 620  | 71  |
| 36 | 036 NAVY\_W1-W5+W0\_MALE+FEMALE\_MARCHILD+NOCHILD\_ | 1,647  | 33  |
| 37 | 037 NAVY\_O1-O3+O0\_MALE+UNK\_MAR+CHILD\_ | 7,687  | 962  |
| 38 | 038 NAVY\_O1-O3+O0\_MALE+UNK\_MARNOCHILD\_ | 5,435  | 601  |
| 39 | 039 NAVY\_O1-O3+O0\_FEMALE\_MAR+CHILD\_ | 1,117  | 163 |
| 40 | 040 NAVY\_O1-O3+O0\_FEMALE\_MARNOCHILD\_ | 1,820  | 243  |
| 41 | 041 NAVY\_O4-O6\_MALE+UNK\_MAR+CHILD\_ | 13,090  | 1,168  |
| 42 | 042 NAVY\_O4-O6\_MALE+UNK\_MARNOCHILD\_ | 2,392  | 206  |
| 43 | 043 NAVY\_O4-O6\_FEMALE\_MAR+CHILD\_ | 1,589  | 154  |
| 44 | 044 NAVY\_O4-O6\_FEMALE\_MARNOCHILD\_ | 771  | 81  |
| 45 | 045 USMC\_E1-E4+E0\_MALE+UNK\_MAR+CHILD\_ | 4,754  | 1,483  |
| 46 | 046 USMC\_E1-E4+E0\_MALE+UNK\_MARNOCHILD\_ | 14,104  | 3,935  |
| 47 | 047 USMC\_E1-E4+E0\_FEMALE\_MAR+CHILD\_ | 588  | 268  |
| 48 | 048 USMC\_E1-E4+E0\_FEMALE\_MARNOCHILD\_ | 2,148  | 743  |
| 49 | 049 USMC\_E5-E6\_MALE+UNK\_MAR+CHILD\_ | 14,297  | 2,612  |
| 50 | 050 USMC\_E5-E6\_MALE+UNK\_MARNOCHILD\_ | 8,338  | 1,428  |
| 51 | 051 USMC\_E5-E6\_FEMALE\_MAR+CHILD\_ | 893  | 199  |
| 52 | 052 USMC\_E5-E6\_FEMALE\_MARNOCHILD\_ | 1,039  | 228  |
| 53 | 053 USMC\_E7-E9\_MALE+UNK\_MAR+CHILD\_ | 10,162  | 2,773  |
| 54 | 054 USMC\_E7-E9\_MALE+UNK\_MARNOCHILD\_ | 1,194  | 304  |
| 55 | 055 USMC\_E7-E9\_FEMALE\_MARCHILD+NOCHILD\_ | 550  | 183  |
| 56 | 056 USMC\_W1-W5+W0\_MALE+FEMALE\_MARCHILD+NOCHILD\_ | 1,909  | 90  |
| 57 | 057 USMC\_O1-O3+O0\_MALE+UNK\_MAR+CHILD\_ | 2,965  | 951  |
| 58 | 058 USMC\_O1-O3+O0\_MALE+UNK\_MARNOCHILD\_ | 2,764  | 822  |
| 59 | 059 USMC\_O1-O3+O0\_FEMALE\_MARCHILD+NOCHILD\_ | 463  | 166  |
| 60 | 060 USMC\_O4-O6\_MALE+FEMALE\_MARCHILD+NOCHILD\_ | 5,928  | 1,765  |
| 61 | 061 USAF\_E1-E4+E0\_MALE+UNK\_MAR+CHILD\_ | 9,719  | 1,175 |
| 62 | 062 USAF\_E1-E4+E0\_MALE+UNK\_MARNOCHILD\_ | 17,578  | 2,137  |
| 63 | 063 USAF\_E1-E4+E0\_FEMALE\_MAR+CHILD\_ | 2,407  | 396  |
| 64 | 064 USAF\_E1-E4+E0\_FEMALE\_MARNOCHILD\_ | 7,294  | 984  |
| 65 | 065 USAF\_E5-E6\_MALE+UNK\_MAR+CHILD\_ | 38,106  | 1,881  |
| 66 | 066 USAF\_E5-E6\_MALE+UNK\_MARNOCHILD\_ | 18,594  | 875  |
| 67 | 067 USAF\_E5-E6\_FEMALE\_MAR+CHILD\_ | 5,732  | 341  |
| 68 | 068 USAF\_E5-E6\_FEMALE\_MARNOCHILD\_ | 5,099  | 276  |
| 69 | 069 USAF\_E7-E9\_MALE+UNK\_MAR+CHILD\_ | 20,524  | 1,686  |
| 70 | 070 USAF\_E7-E9\_MALE+UNK\_MARNOCHILD\_ | 3,333  | 261  |
| 71 | 071 USAF\_E7-E9\_FEMALE\_MAR+CHILD\_ | 3,699  | 352  |
| 72 | 072 USAF\_E7-E9\_FEMALE\_MARNOCHILD\_ | 1,199  | 103  |
| 73 | 073 USAF\_O1-O3+O0\_MALE+UNK\_MAR+CHILD\_ | 8,416  | 741 |
| 74 | 074 USAF\_O1-O3+O0\_MALE+UNK\_MARNOCHILD\_ | 7,048  | 573  |
| 75 | 075 USAF\_O1-O3+O0\_FEMALE\_MAR+CHILD\_ | 1,592  | 165  |
| 76 | 076 USAF\_O1-O3+O0\_FEMALE\_MARNOCHILD\_ | 2,880  | 250  |
| 77 | 077 USAF\_O4-O6\_MALE+UNK\_MAR+CHILD\_ | 16,894  | 1,096  |
| 78 | 078 USAF\_O4-O6\_MALE+UNK\_MARNOCHILD\_ | 3,083  | 191  |
| 79 | 079 USAF\_O4-O6\_FEMALE\_MAR+CHILD\_ | 2,578  | 201  |
| 80 | 080 USAF\_O4-O6\_FEMALE\_MARNOCHILD\_ | 1,190  | 84  |