SUPPORTING STATEMENT B
U.S. Department of Commerce
U.S. Census Bureau
National Sample Survey of Registered Nurses
OMB Control No. 0607-1002

B. Collections of Information Employing Statistical Methods

1. Universe and Respondent Selection

The National Sample Survey of Registered Nurses (NSSRN) is being conducted by the U.S. Census Bureau on behalf of the National Center for Health Workforce Analysis (NCHWA) in the Bureau of Health Workforce at the Health Resources and Services Administration (HRSA), U.S. Department of Health and Human Services (HHS). The objective of the survey is to sample and estimate the characteristics of the registered nurses and nurse practitioners in the nursing workforce. These data will provide the means for the evaluation and assessment of the evolving demographics, educational qualifications, and career employment patterns of RNs.

The NSSRN was last collected in 2018. Since then, there has been modifications to the questionnaire and data collection plan. The NSSRN will again use a probability-based sample design derived from a RN universe of the U.S. resident population holding an active nursing license in one or more states, covering the 50 states and the District of Columbia. The NSSRN will be collected from October 2022 through January 2023. Registered Nurses will be sampled as described in section B.1.1. An invitation to participate in the NSSRN with login information for the online survey instrument will be sent to each sampled RN, with a paper questionnaire follow up in mailing #3. Both modes are accompanied by Telephone Questionnaire Assistance (TQA). Contact methods are discussed further in section B.2.

1.1 Sampling Registered Nurses

The population of interest for the NSSRN is all registered nurses (RNs) and nurse practitioners (NPs) currently living in the U.S. with a valid nursing license as of January 1, 2021. For the 2022 NSSRN, up to 125,000 RNs will be selected to participate in the survey. The sample is selected from a compilation of files provided by the State Boards of Nursing, American Association of Nurse Practitioners (AANP), and the National Council of the State Boards of Nursing (NCSBN) and supplemented with administrative records-based information. The Census Bureau's Center for Economic Studies is maintaining the files and compiling them into a RN universe file. As background, CES is an interdisciplinary group in the Research and Methodology Directorate and is charged with the strategic re-use of administrative data from federal, state, and commercial providers. Information is combined from multiple sources to create new data products that would be impossible to produce using single data sets. While the majority of the states provide their nursing data to the NCSBN, there are 14 states that do not. These State Boards of Nursing had to be contacted individually for their nursing

data: Alaska, Arizona, California, Colorado, Connecticut, Maine, Michigan, New Hampshire, New Jersey, Pennsylvania, Rhode Island, Tennessee, Utah and Wisconsin.

There are a few states which required purchasing data. Those state nursing boards are: Hawaii, Georgia and South Carolina.

Additional data were needed to identify Nurse Practitioners. There are 13 states from the NCSBN file and 8 states from the individual state boards of nursing files where NPs could not be identified. Additional files were provided by the following states containing advanced practice registered nurses (APRN) licensure information:

- Alaska
- California
- Colorado
- Connecticut
- Washington, DC
- Georgia
- Hawaii
- Maine
- Maryland
- Massachusetts
- Michigan
- New Hampshire
- New Jersey
- Pennsylvania
- Rhode Island
- South Carolina
- Tennessee
- Utah
- Virginia
- Wisconsin
- Wyoming

The American Association of Nurse Practitioners was able to provide some NP state board listings to the Census Bureau. Those states are Georgia, Hawaii, Massachusetts, Michigan, New Hampshire, Rhode Island, South Carolina, Tennessee, and Wisconsin.

After the files are combined, missing data on race, ethnicity, and gender is filled with the most recent information (if available) from CES's administrative records. A Protected Identification Key (PIK) is provided for each record that is identified and then assigned a unique number (control number) to every record with the same PIK. The final sampling file contains the unique control number and the PIK is removed. The creation of the unique control number allows for data security of the administrative records CES uses to fill in data gaps.

The following RN records are not eligible to be sampled:

- Nurses who have died
- Addresses that are incomplete, i.e., not mailable
- Addresses that are out of the country
- Nurses whose license expired prior to January 1, 2021

A sampling stratum that indicates the primary licensing state will be created. For most records this will remain unchanged, except for RNs who live in AK or HI. For nurses who reside in AK or HI, their sampling stratum variable will be reassigned to match their state of residence, regardless of where they were licensed. Additionally, APRN identifiers

were not provided for Nebraska and New York. To select the sample of NPs from New York and Nebraska, the 2018 NSSRN NP flag will be used.

When duplicate records exist, the record indicating the license with the latest expiration date will remain eligible, while the other record(s) will be made ineligible. If the expiration date is missing for all records in a set of duplicates, the record in the state with the highest sampling rate will remain eligible, while the rest of the records in the set of duplicates will be made ineligible. For the 2022 NSSRN, we are unduplicating from the California Licensee Workforce/Demographic Survey.

There will be two strata per state, one for RNs holding an NP license and another for all other RNs. There will be different sampling rates for RNs and NPs across states, with the goal of having a large enough sample of RNs and NPs in each state to produce reliable state estimates of each population.

The universe counts for each strata within each state will be obtained from record counts in the universe file after duplicate records are removed. The expected response rate for each state in the 2022 NSSRN will be estimated by using the response rates from the 2018 NSSRN. Since the primary estimates of interest are employed nurses, taken into account is the percent employed in the state from the 2018 NSSRN. Lastly, the resulting estimated sample size is taken, and the expected variances will be calculated for the state estimates of employed RNs and employed NPs.[1] The state sample sizes are then increased enough to detect a minimum significant difference of 5% at the 90% confidence level for both RN and NP estimates. The variance calculations assume a conservative estimate of 50% from the base of employed RNs and NPs. The state level variances include a finite population correction factor since the NP sample is a large portion of the NP population in many states.

The nursing data will be sorted by age, gender, race, ethnicity, county, and zip code within each of the sampling strata prior to sample selection in order to improve the distribution of these variables in our sample and decrease the variance of survey estimates.

1.2 Expected Yield

The respondent universe for the NSSRN is all registered nurses (RNs) and nurse practitioners (NPs) currently living in the U.S. with a valid license as of January 1, 2021. Current estimates of active RNs in the United States include about 3.047 million

[1] The calculation of the variance for the state estimates of RNs is $\left(\frac{N_1}{N}\right)^2 \frac{.5}{n_1}^2 \left(\frac{N_1-n_1}{N_1}\right) + \left(\frac{N_2}{N}\right)^2 \frac{.5}{n_2}^2 \left(\frac{N_2-n_2}{N_2}\right)$ and the calculation of the variance for the state estimates of NPs is $\frac{.5}{n_2}^2 \left(\frac{N_2-n_2}{N_2}\right)$.

RNs[2] and approximately 234,000 NPs nationwide[3]. The initial sample size for the NSSRN is 125,000 RNs and NPs or about 67,090 RNs and 57,834 NPs. Table 1[4] shows the sampling rate for each stratum, total sample size, RN license alone (stratum 1) sample size, RNs with a NP license (stratum 2) sample size by each state and Washington, DC.

The sampling rate is the sample size divided by population size for each state. As previously mentioned, the sample size for each state is the minimum sample size needed to detect a significant difference of 5% on estimates of 50% of the employed RN and NP population by state at the 90% confidence level.

[2] Estimates taken from Bureau of Labor Statistics Occupational Employment and Wage Statistics Report from May 2021

[3] Estimates taken from Bureau of Labor Statistics Occupational Employment and Wage Statistics Report from May 2021

[4] The sample sizes and sampling rates will change when the state universe counts are adjusted for each stratum. This is expected to have little effect on the sample sizes by stratum, generally, the most noticeable effect will likely be the stratum 2 sample sizes for states with a small NP population.

Table 1. States Sample Sizes

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State	Stratum 1 Sampling Rate	Stratum 2 Sampling Rate	Stratum 1 Sample	Stratum 2 Sample
Alabama	0.027	0.367	1,584	1,566
Alaska	0.191	1.279	1,397	902
Arizona	0.022	0.248	1,537	1,363
Arkansas	0.049	0.615	1,564	1,287
California	0.003	0.058	1,231	1,276
Colorado	0.019	0.260	1,099	1,004
Connecticut	0.031	0.318	1,311	1,234
Delaware	0.145	1.326	1,405	781
District of Columbia	0.097	0.752	1,048	1,073
Florida	0.005	0.075	1,294	1,344
Georgia	0.015	0.180	1,370	1,506
Hawaii	0.100	1.477	2,145	787
Idaho	0.087	0.950	1,211	738
Illinois	0.008	0.154	1,278	1,187
Indiana	0.015	0.274	1,287	1,207
Iowa	0.032	0.494	1,374	1,070
Kansas	0.042	0.444	1,470	1,154
Kentucky	0.023	0.301	1,190	1,407
Louisiana	0.034	0.431	1,550	1,517
Maine	0.077	0.857	1,331	997
Maryland	0.013	0.220	793	900
Massachusetts	0.011	0.151	1,094	1,195
Michigan	0.010	0.187	1,270	1,154
Minnesota	0.014	0.257	1,113	1,095
Mississippi	0.045	0.491	1,587	1,762
Missouri	0.015	0.228	1,439	1,326
Montana	0.105	1.056	1,161	801
Nebraska	0.053	0.662	1,180	939
Nevada	0.072	0.858	1,459	1,061
New Hampshire	0.074	0.846	1,052	1,022
New Jersey	0.013	0.196	1,256	1,381
New Mexico	0.075	0.756	1,357	1,015
New York	0.006	0.081	1,400	1,609
North Carolina	0.011	0.174	1,171	1,102
North Dakota	0.140	1.287	1,230	695
Ohio	0.008	0.112	1,255	1,122
Oklahoma	0.043	0.613	1,661	1,177
Oregon	0.032	0.358	1,247	955
Pennsylvania	0.006	0.122	1,142	1,177
Rhode Island	0.120	1.588	1,518	1,237
South Carolina	0.039	0.663	1,515	1,399
South Dakota	0.104	1.098	1,157	590
Tennessee	0.015	0.169	1,181	1,558
Texas	0.005	0.084	1,281	1,369
Utah	0.042	0.461	1,199	1,066
Vermont	0.195	1.104	1,477	528
Virginia	0.012	0.168	955	1,137
Washington	0.014	0.243	902	1,159
West Virginia	0.083	0.808	1,593	1,143
Wisconsin	0.016	0.226	1,217	1,101
Wyoming	0.271	1.843	1,553	658
TOTALS			67,090	57,834

1.3 Estimation Procedures

There will be written specifications for weighting the data that will be collected in the 2022 NSSRN. Instructions for computing adjustments (e.g., coverage and nonresponse) and several final RN and NP weights will be provided.

1.4 Nonresponse Bias Analysis

Standard 1.3 of the OMB Standards and Guidelines for Statistical Surveys (2006) states that "Agencies must design the survey to achieve the highest practical rates of response, commensurate with the importance of survey uses, respondent burden, and data collection costs, to ensure that survey results are representative of the target population so that they can be used with confidence to inform decisions." Implicit in this standard is the assumption that the frame variables used at the design stage are sufficiently predictive of the collection variables for this to be feasible. Under this assumption, standard nonresponse bias analyses techniques can and will be applied to frame data variables to study potential areas of nonresponse bias (both item and unit) in the survey estimates.

2. Survey Collection Procedures

This section describes the data collection procedures that will be used in the NSSRN. The Census Bureau will request survey participation from approximately125,000 RNs via one of two modes: web survey or paper questionnaire. The 2022 NSSRN data collection procedures is a web push style. All potential respondents will receive an initial letter invitation with the web URL and login ID included in the letter. The secondary mode will be a mailed paper questionnaire with the Web URL and login ID included in a follow up package. See **Appendix D** for sample letters.

The 2022 NSSRN data collection plan is more streamlined compared to 2018. For the 2022 NSSRN we are planning up to six contact attempts, compared to 8 contact attempts in 2018. The 2022 NSSRN will include fewer contact strategies and one experiment to reduce both follow-up costs and nonresponse bias. The plan is to include a monetary incentive experiment in the first mailing. Approximately 90% of the sample would be eligible to receive $5 for the first contact attempt. The remaining 10% of RNs function as a control group and would receive no incentive in order to monitor the effectiveness of the cash incentive. This incentive strategy is designed to increase response and reduce nonresponse bias within the constraints of the budget.

The NSSRN (for both web and paper) will cover the following content areas: license and certification; education; employment; job changes; secondary jobs in nursing; nurse practitioners; nurses not working in nursing; prior nursing employment; nursing during the coronavirus pandemic; national practitioner data bank; and general demographic background. See **Appendix B** for a copy of the questionnaire.

3. Methods to Maximize Participation Rates and Deal with Nonresponse

In designing the various modes of the NSSRN questionnaire, attention is placed on the following design elements to help increase cooperation by prospective respondents.

- In developing and refining specific questions, the goal will be to create a logical, clear questionnaire with concrete question wording and simple grammar.
- The web and paper versions of the questionnaire will be attractive with clear and simple instructions on how to complete specific questions.
- Questions will be grouped according to subject areas.
- Questionnaire formatting will maximize readability, including appropriate question spacing, font type and size and easy to follow skip instructions.
- Questionnaire formatting considerations will also include the use of color and pictures to enhance respondent comprehension.
- Respondent contact strategies and letters have been carefully designed to grab the attention of the respondent and pique interest in the subject matter.
- Potentially some respondents will receive a $5 cash as an unconditional monetary incentive in the survey. See Section A.9 of the supporting statement for more information on incentives.

Data collection for the NSSRN will involve a series of mailings and nonresponse follow-up activities, encouraging questionnaire completion (see **Appendix D**). Our proposed approach to data collection and nonresponse follow-up is based on previous project experience and recommendations made by Dillman and colleagues (2009)[5].

Invitation Letter. An initial invitation letter will be mailed to all potential respondents providing details about the study, a web URL with the login ID for accessing the Web version of the questionnaire, and a toll-free number for the individual to call if there are questions or comments. In addition to the invitation letter, 90% of the sample will also receive a token of appreciation ($5 monetary unconditional incentive).

Additional mailings. Subsequent to the first invitation mailing, the Census Bureau will send all sample RNs a reminder pressure-sealed postcard containing the Web URL with the login ID. All non-respondents will then receive up to one paper questionnaire, pressure sealed reminder letters and a final web invitation letter.

[5] Dillman, D.A.; Smyth, J.D.; Christian, L.M. (2009). Internet, mail and mixed-mode surveys: The tailored design method, 3rd edition. Hoboken, NJ: John Wiley & Sons.

4. Individuals Responsible for Study Design and Performance

The Census Bureau will collect the information on behalf of HRSA NCHWA. Contact information for the Census Bureau's principal staff on the project is listed below:

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List of Attachments:
Appendix A – 2022 NSSRN Questionnaire Changes
Appendix B – 2022 NSSRN Questionnaire
Appendix C – Comments on 60-day Notice
Appendix D – NSSRN Letters