AAMC National Sample Survey of Physicians 2022: Documentation for Sampling and Weights

Overview

The 2022 National Sample Survey of Physicians (NSSP 2022) was conducted between May 10, 2022, and Nov 9, 2022, and the dataset consists of 5,917 active physicians in the U.S. The NSSP project was funded by The Association of American Medical Colleges (AAMC) and the survey content was designed by the Workforce Studies team at AAMC. The survey was conducted through an online survey fielded and managed by Toluna, following a sampling methodology provided by The University of Michigan Population Dynamics and Health Program. The NSSP 2022 project was reviewed and approved by the American Institutes for Research in the Behavioral Sciences Institutional Review Board (IRB00000436).

The NSSP 2022 is the second wave of the AAMC NSSP series. The first wave was conducted in 2019. (We refer to NSSP 2019 as Wave 1 and NSSP 2022 as Wave 2 throughout this document.) NSSP 2022 includes two groups of respondents: the repeating respondents from Wave 1 (N=2,429), and new invitees (N=3,488).

Sample Design and Probabilities of Selection

Overview

NSSP 2022 sampling followed a strategy developed by The University of Michigan Population Dynamics and Health Program team (PDHP). The data were collected in two phases: 1) all eligible respondents from the Wave 1 survey (N=4,418 of the 6,000 Wave 1 respondents, as 1,582 of Wave 1 respondents were no longer in the sampling frame – see Table 3 below) were invited; and 2) new invitees were selected via a stratified random sample with proportionate allocation, on the basis of the physician's sex, specialty group, age group, and rural status.

For all three distinct cohorts across both survey waves (Wave 1 survey, Wave 2 Follow-up, and Wave 2 Supplement), each invited respondent had an equal probability of selection within their respective cohorts. For the Wave 1 Survey and Wave 2 Follow-up, each eligible respondent received an invitation, and thus the probability of selection was a constant 1 for these two cohorts. For the Wave 2 Supplement, 16,900 invitees were selected via a stratified random sample with proportionate allocation (with 180 strata defined by cross-classes of urbanicity, age group, specialty group, and gender). The population proportions within each stratum were computed from the sample frame of eligible physicians as received from Toluna, and the selected sample (n=83,000) was allocated to these strata proportional to the population size of each stratum. This sample design results in a self-weighted sample, where all selected units have an equal probability of selection, and thus no adjustment for selection probability is required.

Response Rates

i) Wave 1: The traditional response rate does not apply, as data collection stopped once we had 6,000 respondents.

ii) Wave 2 Follow-up (repeating respondents): 2,429 Respondents/4,418 Invitees = 55.0% response rate.

iii) Wave 2 Supplement (new invitees): 3,488 Respondents/16,900 Invitees = 20.6% response rate.

Nonresponse adjustment

Differential nonresponse was modeled using data from the Wave 2 (2022) data collection, modeling the probability of a survey response as a function of age, specialty group, gender, and sample cohort (Wave 2 Follow-up vs. Wave 2 Supplemental sample). Since these same data were not available for the 2019 data collection, nonresponse was modeled using the Wave 2 data collection only, with those model-based adjustments also being applied out-of-sample to the 2019 data. The nonresponse adjustment is simply the inverse of the estimated probability for each invitee to respond, so that those invitees that are less likely to respond receive a proportionally higher weight (thus representing themselves and a higher share of those like them), and those that are more likely to respond receive a proportionally lower weight (representing themselves and a lower relative share of those like them).

Table 1. Differential nonresponse in Wave 2 (2022) Data Collection

AGE	**Code**	**Responders**	**Non-Responders**
< 50	1	44.3%	33.1%
50-59	2	25.9%	25.7%
60+	3	29.8%	41.1%
GENDER			
Male	0	69.5%	69.4%
Female	1	30.5%	30.6%
SPEC. GROUP			
Medical Specialties	1	20.8%	21.4%
Other	2	27.7%	25.6%
Primary Care	3	32.2%	34.6%
Surgery	4	19.3%	18.3%

Calibration

Adjusted weights following the nonresponse adjustment described above were then calibrated to known population distributions in each respective wave (i.e., 2019 survey respondent weights were calibrated to 2019 population distributions, and 2022 survey respondent weights were calibrated to 2022 population distributions, both based on American Medical Association data provided by AAMC) based on cross-classes of age group, specialty group, gender, and International Medical Graduate (IMG) status. This process ensures that weighted distributions of these key domain variables will exactly match the known population distributions for each cross-classed subgroup (these cross-classed subgroups are also called poststrata).

Table 2. Calibration variables and population distributions

AGE	***Code***	***2019 Percent (Wave 1)***	***2022 Percent (Wave 2)***
< 50	1	43.2%	40.7%
50-59	2	24.7%	24.4%
60+	3	32.1%	34.9%
GENDER			
Male	0	64.2%	62.9%
Female	1	35.8%	37.1%
SPEC. GROUP			
Medical Specialties	1	17.3%	17.5%
Other	2	32.9%	33.4%
Primary Care	3	31.1%	30.9%
Surgery	4	18.7%	18.2%
IMG GROUP			
USMG	0	24.8%	25.0%
IMG	1	75.2%	75.0%

Table 3.Non-eligible NSSP 2019 Respondents

Reason	**Count**	**Percent (out of 6,000)**
Dropped out/Retired	333	6%
Inactive (not taking part in surveys)	165	3%
Removed from panel (panel maintenance / quality issues)	194	3%
Other reason not eligible	45	1%
Unknown	845	14%
Total	**1,582**	**26%**

Summary of Weights Development

The University of Michigan Population Dynamics and Health Program team created a survey weight variable for both waves of the NSSP: the Wave 1 2019 survey of physicians and the Wave 2 2022 survey (comprised of the follow-up survey of doctors who responded to Wave 1, aka the "Follow-up", and the supplemental sample of new respondent physicians who did not participate in Wave 1). These weights are designed to allow for stand-alone analysis of each wave separately, or a combined analysis to assess trends from Wave 1 to Wave 2. Both weight variables are a) adjusted for differential non-response modeled using the NSSP Wave 2 (2022) survey invitees and b) calibrated back to known AMA population characteristics specific to each wave (i.e., calibration was done separately for both respective waves), which are included above in Table 1 (NOTE: descriptive statistics below are unweighted frequencies)