Redesign of the National Sample Survey of Registered Nurses (NSSRN)

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U.S. Census Bureau³
Outline

• Brief History
• 2018 Survey Redesign
• Questionnaire Expansion
• Sampling Frame Construction
• Complex Sample Design
• Data Collection Method
• Data Dissemination
NSSRN History

• Conducted by HRSA approximately every 4 years from 1977-2008
  • 2012 National Sample Survey of Nurse Practitioners (NSSNP)

• Mandate for NSSRN originally found in the Public Health Service Act

• Provide quality data for the nursing profession to support research and planning of the future workforce needs

• Topics include
  • Education and training in nursing
  • Current and past nursing workforce participation
  • Income and Demographic characteristics
  • Professional nursing certifications, and
  • States in which they hold current licenses
2018 Survey Redesign

• Collects data on new delivery systems, health reform, and the National Practitioner Data Bank

• Improves sampling frame by matching to Census administrative data

• Combines NSSRN with National Sample Survey of Nurse Practitioners (NSSNP)
  • Expands questionnaire
  • Enlarges overall sample size and oversamples NPs

• Selects representative sample at the state and national levels for Nurse Practitioners (NP), along with Registered Nurses (RN)
Questionnaire

New Question Items

- 2008 NSSRN and 2012 NSSNP questions
- Questions about the impact of health reform
- Items suggested by stakeholders, e.g. leading nursing organizations and top researchers
- Workforce issues related to new delivery systems
  - Telehealth,
  - Electronic Health Record, and
  - Team-based care, etc.
Questionnaire
Best practices in questionnaire design

• Questionnaire redesign
  • Subject experts – nursing leaders, researchers, and NCHWA
    • Refresh content with up-to-date issues
  • Census survey experts and
    • Reduce response burden
    • Optimize appearance, question wordings, drop down list and skip patterns

• Cognitive testing
• Review by external experts/stakeholders
• Usability testing
**An Example of Design of 2018 Questionnaire**

### 2008

- **Hospital (including all types of care at a hospital location):**
  - Inpatient unit
  - Nursing home unit in hospital
  - Outpatient clinic/medical practice located at a hospital but not owned by the hospital
  - Other administrative or functional area

- **Specialty hospital:**
  - Non-Federal (children's, heart, burns, cancer)
  - Inpatient unit
  - Outpatient clinic/medical practice owned by a hospital
  - Outpatient clinic/medical practice located at a hospital but not owned by the hospital
  - Other administrative or functional area

- **Long-term hospital, Non-psychiatric, Non-Federal:**
  - Inpatient unit
  - Nursing home unit in hospital
  - Other administrative or functional area

- **Federal Government hospital:**
  - Inpatient unit
  - Nursing home unit in hospital
  - Outpatient clinic/medical practice located at a hospital

- **Hospital unit in an institution (infirmary, correctional facility):**
  - All types

- **Type of Other hospital:**
  - Inpatient unit
  - Nursing home unit in hospital
  - Outpatient clinic/medical practice located at a hospital

- **Nursing Home/Extended Care Facility:**
  - Nursing home/extended care facility (not in a hospital)
  - Facility for mentally retarded or developmentally disabled
  - Residential care/assisted living facility

- **Other type of extended care facility:**

### 2018

- **Academic Education Program:**
  - Nursing aide and/or home health aide program
  - LPN/LVN program
  - Diploma program (RN)
  - Associate degree RN program
  - Bachelor's and/or higher degree RN program
  - Associate degree RN and LPN/LVN program
  - Associate degree and BSN program
  - Other education program, not patient education

- **Public or Community Health Setting:**
  - State Health or Mental Health Agency
  - City or County Health Department
  - Correctional facility (non-hospital)
  - Community mental health organization or clinic
  - Substance abuse center/clinic

- **Other community setting:**

- **School Health Service:**
  - School or school system (K-12)
  - College or university
  - Other school health setting

- **Occupational Health (Employee Health Services):**
  - Private industry
  - Government occupational health services
  - Other occupational health setting

- **Ambulatory Care Setting, not located in a hospital:**
  - Medical/physician practice
  - Inpatient unit
  - In-store or retail clinic
  - Community health center
  - Federal clinic (Military, VA, NIH or IHS-supported)
  - Federally-supported clinic (not a community health center)
  - Hospital-owned off-site clinic or surgery center
  - Ambulatory surgical center, not hospital-owned
  - Urgent care
  - Dental clinic or clinic, not in a hospital
  - Other ambulatory setting

- **Insurance Claims/Benefits/Utilization Review:**
  - Government insurance/benefits department: federal, state, or local
  - Insurance company or other private claims/benefits/utilization review organization

- **Other:**
  - Policy, planning, regulatory, or licensing agency
  - Consulting organization or self-employed
  - Home-based self-employment
  - Telehealth, telemonitoring, or call center
  - Pharmaceutical/medical device/medical software

- **Other:**

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**Health Resources & Services Administration**
Sampling Frame

- **Target population - currently actively licensed RNs**
  - Complete list in the U.S. does not yet exist

- **Frame construction from state licensure board listings**
  - National Council of State Boards of Nursing (NCSBN)
  - Individual state licensure boards
Sampling Frame
RN records from NCSBN/States

All RNs actively licensed to practice from each state including:

<table>
<thead>
<tr>
<th>Advanced Practice Nurses</th>
<th>Nurse Practitioners</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurse Practitioners</td>
<td>Certified Nurse Midwives</td>
</tr>
<tr>
<td>Certified Nurse Midwives</td>
<td>Certified Registered Nurse Anesthetists</td>
</tr>
<tr>
<td>Certified Registered Nurse Anesthetists</td>
<td>Clinical Nurse Specialist</td>
</tr>
</tbody>
</table>

Nurses recently licensed in a state either through endorsement or examination

Nurses who have recently had their licenses reinstated
# Sampling Frame

Variables Requested from NCSBN/States

<table>
<thead>
<tr>
<th>What to include:</th>
<th>Why we need this information:</th>
</tr>
</thead>
<tbody>
<tr>
<td>RN licensure information</td>
<td>Reconcile licensure status reported by the state and RN.</td>
</tr>
<tr>
<td>Indication of Advanced Practice</td>
<td></td>
</tr>
<tr>
<td>NCSBN ID</td>
<td>Determine for nurses registered in multiple states which state they should be listed.</td>
</tr>
<tr>
<td>Name</td>
<td>Contact information</td>
</tr>
<tr>
<td>Address</td>
<td></td>
</tr>
<tr>
<td>Email</td>
<td></td>
</tr>
<tr>
<td>Telephone number</td>
<td></td>
</tr>
<tr>
<td>Social Security Number</td>
<td>Identify nurses who may be registered in more than one state under slightly different names.</td>
</tr>
<tr>
<td>Date of birth</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Race</td>
<td></td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
</tr>
<tr>
<td>NSCBN sample flag</td>
<td></td>
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</tbody>
</table>
Sampling Frame
Frame Improvement

• Critics on estimated demographic distribution, i.e. race/ethnicity and age, based on previous NSSRN

• Matching to Census administrative records
  • “Administrative records” are files from IRS, HUD, Selective Service System (SSS), Indian Health Service (IHS), Medicare Enrollment (MEDB), and commercial data from various sources
  • Probabilistic linking to a reference file
    • The Census' Master Address File
    • Person Identification Validation System

• Improvements to the NSSRN frame
  • Filling in missing demographic information, e.g. race
  • Identifying multiple-state license holders
Sample Design

• Stratified systematic random sample
• Enlarged sample size (from 55,000 to 100,000)
• Response rate decreased from 60% in 2008 to about 50% in 2018
• Representative sample at the state level - minimum sample size for RNs and NPs
• Anticipated sampling hurdles
  • Small NP population in small states
  • Nurse Licensure Compacts
  • RN licensed in multiple states
  • High degree of interstate commuting
  • Federal facility employment
Data Collection

• **Mixed mode**
  • Contact by mail
  • Respond by mail or on-line
  • Experiment

• **Incentive**
  • Subsample of respondents will receive a lanyard and pen

• **Materials**
  • Infographics
  • Targeted paper mailings
  • Tabbed postcard reminders
  • Pressure sealed and manila envelopes
Data Processing

• Comprehensive editing
  • Legitimate responses
  • Range, consistency, and backfill edits
  • Backcoding open ended questions
  • Derived variables

• Missing data treatment
  • Imputation – hot deck method
  • Weighting
    • Base weight
    • Nonresponse Adjustment
    • Raking
    • Replicate weights
Correction for Estimation Bias

- Differential nonresponse rates by demographics
  - Nonresponse weight adjustment
- Time Gap between frame construction and interview
  - Raking to benchmark to frame distribution
Data Collection/Processing/Dissemination Schedule

- **Collection**: April to October of 2018
  - Included up to 8 mailings
- **Data Processing**: expected by mid 2019
- **Dissemination**:
  - Timeline: second half of 2019
  - **Public Access**
    - PUF data files (state file and county file)
    - A codebook
    - A methodology report
    - A findings report
  - **Access to restricted use file**
    - Hosted by the Census Bureau
    - Special Sworn Status
Contact Information

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