

# Operational Approaches to the Implementation of the National Health Interview Survey (NHIS)

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# Overview of Presentation

- Changes from previous to current NHIS sample design/frames
- Implementing new unit frame
- Enhancements to area frame
- Implementing new college housing frame

# Changes from Previous to Current NHIS Sample Design

- Approximately every ten years, NHIS undergoes a sample redesign
  - Uses updated information from most recent decennial Census
  - Current NHIS sample design began interviewing in January 2016
- Allows for enhancements to the frame, sample design, and operational components associated with implementing survey
- Previous NHIS sample design was predominantly an area frame-based sample
  - 2000 Census blocks sent out for a listing and living quarters within those blocks selected for interview
  - Complemented by a permit frame to help identify new growth

# Previous vs Current Design Changes (cont.)

- Current NHIS sample design saw drastic changes to the source of the sample cases
  - New address-based sampling frame accounts for ~85% of sample cases
    - Addresses selected from an information reseller, the Marketing Systems Group (MSG)
  - Area frame still exists but accounts for just ~15% of sample now
    - Predominantly in more rural parts of country
  - New college housing frame (operational for 2016 and 2017 interviewing only) accounted for ~1% of sample

# Unit vs Area Frame Counties

- Initial part of sample design entailed designating counties as either unit or area frame counties
  - Used Census Bureau's Master Address File (MAF) as a benchmark
  - Counties on MSG file with coverage greater than 85% placed in unit frame and use MSG as address source
  - Remaining placed in area frame and use block listings as a source

# Constructing Unit Frame

- Applying Filter
  - Internal filter is applied to each MSG file
  - Valid records are eligible for going out for an interview; invalid records are not (e.g., non-residential addresses and P.O. boxes)
- Geocoding MSG Addresses
  - Each MSG address comes with a set of geocodes (state, county, tract, block)
  - For consistency in the sampling and operational systems, records geocoded by Census' internal Geography Division
    - First production file, all valid records sent to be geocoded; semi-annual files, only new or changed valid records

# Constructing Unit Frame (cont.)

- Applying MSG file to database
  - After receiving first fully geocoded MSG file, all valid records in unit frame counties placed on database
    - UNIQUEID, address/geography-related information, and sampling-related information
  - Semi-annual updates from MSG applied to database, with variable from MSG aiding process
    - New records added to database
    - Records with address updates are matched to database on UNIQUEID and have address updates applied
    - Records marked as deletes by MSG or that are now invalid flagged to prevent them from going out for interview

# Constructing Unit Frame - Additional Considerations

- Drop Points
  - Records that serve multiple units (e.g., gated communities); have an associated drop count
  - Special time-of-interview field procedures to handle these records, if they fall into sample
  - Semi-annual MSG processing accounts for increases/decreases in drop count
- Basic Address Combining
  - Done to try and group units at same address together for time-of-interview purposes
- Sampling Considerations on Database
  - Initial 'primary' round of unit frame sampling occurred after initial load of database
  - New records since initial load of database go through new growth sampling systems



# Area Frame Considerations

- Area frame has blocks sent out for a listing, results applied to database, and final sampling occurring just like in previous design
  - Biggest difference is the size and location of it in current design compared to previous designs
- Captures Housing Units (HUs) and non-institutional Group Quarters (GQs) in blocks
- New set of blocks sent out each quarter, with block listing information returned to Census HQ monthly

# Area Frame Considerations (cont.)

- Criteria for selecting blocks to list each quarter includes the following:
  - Upcoming interviewing in the block AND
  - Block is likely to contain in-scope living quarters AND
    - Blocks meeting following criteria are flagged on database to prevent them from going out for listing:
      - Zero units in both 2000 and 2010 Census
      - National forests/other federal land
      - Military installations
      - National park service land
      - State park, forest, or recreation area
      - Water blocks
  - Block has not gone out for a listing yet OR
  - Block has already gone out for a listing AND
    - More than two years have passed OR
    - Previous listing was incomplete

# Area Frame Considerations (cont.)

- Modified listing schedule
  - Prevent blocks in the states of Alaska, Maine, Montana, and Wyoming from going out for a listing in the months of January - March
  - Allows for reduced costs and increased quality of listings
- Special considerations for GQs on database
  - HU to GQ and GQ to HU conversions
  - Changes in GQ population count
  - Changes in GQ type

# College Housing Frame

- Three primary drivers for creation of new sampling frame
  - Reduced size and nature of current vs previous area frame
  - Identification of student housing residences on MSG file
  - Operational and time-of-interview complications if advance listing is not conducted
- Constructed using information from the Integrated Post-Secondary Education Data System (IPEDS)
  - Free, publicly-available source of data
    - Amount of student housing offered at each school plus geography/address information

# College Housing Frame (cont.)

- Initial Sampling
  - Number of expected student housing at each school converted to measures, with one measure representing ten persons
  - Schools within same state/county grouped together and sampled from, resulting in schools in sample
  - High-level, simplified example:

Schools in State/County 88/008		
School	Student-Housing Capacity	# of Measures
College A	30	3
College B	10	1
College C	20	2
College D	50	5



Initial Sampling in State/County 08/008			
School	School Measure #	County Measure #	Selected for Sample
A	1	1	
A	2	2	X
A	3	3	X
B	1	4	X
C	1	5	
C	2	6	
D	1	7	
D	2	8	X
D	3	9	X
D	4	10	X
D	5	11	

- Schools A, B, and D selected for sample

# College Housing Frame (cont.)

- Telephone Listing Operation
  - IPEDS allowed for frame creation and sampling of schools to occur but did not have dorm-level information required for final sample selection
  - Questionnaire created to collect necessary dorm-level info for schools in sample
    - Name, address, and capacity of all school-owned dorms plus contact information of residence hall administrators
  - Conducted by staff at Census' National Processing Center (NPC) located in Jeffersonville, IN

# College Housing Frame (cont.)

- Final sample selection
  - Results of listing operation for each school populated on database
- Unduplication with unit and area frames
  - College dorms found in these frames assigned non-interview outcome codes
- Interview date assignment
  - Cases assigned interview dates between February - April and September - November
- Frame discontinued in January 2018, primarily due to low response rates in frame
  - Modifications to household roster questions in interview instrument

Questions?

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