

The Current NHIS Frame Design Features: Advancing the Use of an Address List

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Outline

- Background on the National Health Interview Survey (NHIS)
- Comparison of Frame Designs
 - Previous NHIS frame design compared to other surveys
 - Current NHIS frame design compared to other surveys
- Developments in ABS frame research
- Moving the research forward with the NHIS experience

Background on the NHIS

- Monitoring the health of the nation since 1957
- In person, CAPI interview of about 5,000 sample addresses each month
- Sample redesigns occur approximately every 10 years
- The former design ran from 2006-2015
- The current design launched in January 2016

Terms and Definitions

- Area frame
 - Blocks are sampled and then field representatives list all of the addresses in the sample blocks, which are subsampled after listing
- Address-Based Sampling (ABS) Frame or Unit Frame
 - Addresses sampled from an available list of addresses
- Coverage Ratios
 - Count of addresses in the new source over a count of addresses in a gold standard source
- Address Filter
 - Algorithm for selecting addresses for the frame from the original address source

Frame Construction in the Former NHIS Sample Design

- Almost entirely an area frame design
 - about 90% of the sample addresses
- Updated throughout the design with building permits (about 10% of the sample addresses)
- GQs were picked up in field listing

Frame Construction in the Current NHIS Sample Design

- Rising costs of field listing
- NHIS assessed the use of an ABS frame
 - Major departure from former design
 - County-level coverage ratios
 - Use ABS frame in counties where coverage meets expectations
 - Conduct field listings in counties falling below minimum coverage requirements
- College dormitory frame instituted and later dropped
 - Population now eligible for selection through family roster

Frame Construction in the Current NHIS Sample Design (cont)

Moving to a vendor-provided source of addresses

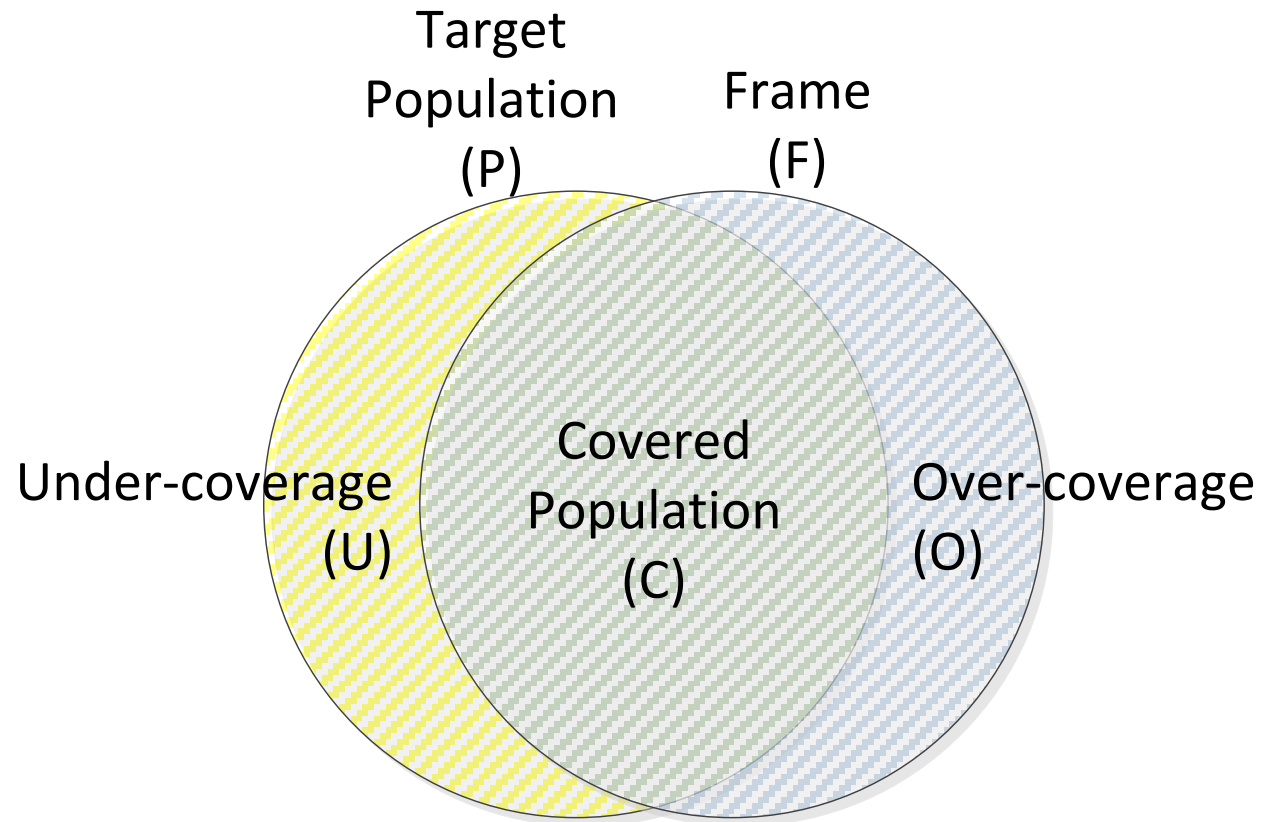
- Competitive process with a detailed statement of work
- Contract to span 5 years with regular updates to the initial delivery
- Researched the coverage of the vendor file as compared to the address source maintained at the Census Bureau

Frame Construction in the Current NHIS Sample Design (cont)

- The requirements for vendors applying to our request included
 - The delivery of a national-level file of residential addresses
 - The vendor's ability to assign to each address an ***unique identifier over time***
 - Classification of each address as having Sufficient or Insufficient quality
 - Flagging addresses on subsequent file delivery as either No change, Changed, Added or Deleted
 - Transparency regarding the details of how flags were set
- Marketing Systems Group (MSG) selected as the vendor
- The information exchange between Census and MSG has contributed to an improved address list

NHIS Frame Successes and Issues

Harter, Morton and Amaya (2017)



- Harter, et al, displayed the potential for coverage issues with this diagram
- This highlights that coverage problems can surface with either under- or over-coverage
- Goal is for the address list to represent $P = U + C$ and minimize O on the frame

NHIS Frame Successes and Issues (cont)

English, Kennel, Buskirk, Harter (2018)

- English, et al, describe primary vendors as “vendors with either their CDS* or DSF Second Generation* license from the USPS”
 - The NHIS vendor (MSG) is a “secondary” vendor; their source of addresses is a primary vendor
- Detecting mergers and reconfigurations at a basic street address
 - Field interviewers can add sample units; sample cases were added at a rate no more than 0.4% in a survey year since the launch of this design
- Current levels of field listing decrease the impact of coverage issues the authors raised with secondary vendors
 - Reviewing the required amount of field listing as initial plans were purposively conservative

** Computerized Delivery Sequencing (CDS) and Delivery Sequence File (DSF)

NHIS Frame Successes and Issues (cont)

Iannacchione (2011)

Author describes sources of ABS undercoverage for in-person surveys

- Unlocatable mailing addresses
 - Eg., rural routes; do not pass the NHIS address filter
- Geocoding errors: author provide the following area of concern
 - “...when geocoded approximation of the location of a housing unit is not the same as the actual physical location of the housing unit”
 - NHIS adaptation: Census re-geocodes the vendor list to match the geocodes to the field interviewer maps

NHIS Frame Successes and Issues (cont)

Out-of-Scope Rate for Addresses in 2017

Type	Rate	Type	Rate
Demolished	0.5%	Unused line of listing sheet	0.1%
House or trailer moved	0.2%	Other Type C	0.4%
Converted to permanent business or storage	0.4%	Removed during subsampling	0.0%
Merged	0.1%	Unit does not exist or unit is out of scope	1.3%
Condemned	0.1%	Total Out-of-Scope Rate	3.1%

Moving the Research Forward with the NHIS Experience

The Next Papers in this Panel

- Advancements in our processing systems
- Detecting and resolving irregularities on the vendor file
- MSG details on frame creation
- Discussant will provide final thoughts

References

- American Association for Public Opinion Research (2016). *Address-based Sampling*. Report prepared for AAPOR Council by the Task Force on Address-based Sampling.
- English, N., Kennel, T., Buskirk, T., Harter, R. (2018). *The construction, maintenance, and enhancement of address-based sampling frames*. *Journal of Survey Statistics and Methodology* (2018) 0, 1-27.
- Harter, R., Morton, K., Amaya, A. (2017). “Estimating Net Coverage of ABS Frames,” presented at the American Statistical Association Joint Statistical Meetings (2017), session 324756.
- Iannacchione, V. G. (2011). *The changing role of address-based sampling in survey research*. *Public Opinion Quarterly*, 75(3), 556–575.