

AGENCY FOR HEALTHCARE RESEARCH AND QUALITY

AHRQ

MEPS – HC

Sample Design

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Features of MEPS Sample

- MEPS sample is a sub-sample of National Health Interview Survey (NHIS)
- Each year a new panel of sample is selected from responding households to the previous year's NHIS
- Each Panel is followed for 2 years using 5 interview rounds (exception COVID years)
- MEPS full sample for each year is an overlap of 2 panels (exception COVID years)
- Subpopulations of interest are oversampled

MEPS Sample Design – Inherited from NHIS

- NHIS sample is based on complex stratified area sample design
- Hence MEPS is based on the same complex design
- Complexity of the sample design affects the accuracy of a survey estimate
- Complex multistage design is more cost-effective than single-stage or simple design

Simple Vs. Complex Design

- **Single Stage Simple Random Sampling**
  - List of all sampling units available
  - One stage selection
  - Equal Probability
  - Sample from all areas

Example: A sample of 10,000 persons selected directly from a list of all persons in the U.S.

- Efficient design i.e., estimates are more accurate
- Expensive to create frame and collect data

NHIS Stratified Multistage Area Sample Design up to 2015 (MEPS 2016)

- **First Stage or Primary Sampling Units (PSUs)**
  - Whole U.S. was partitioned into many PSUs
  - A PSU was a county or group of adjacent counties
  - A sample of PSUs was selected
- **Second Stage Units (SSUs)**
  - Each sampled PSU was divided into SSUs
  - An SSU was a cluster of housing units (Census blocks or tracts)
  - A sample of SSUs selected from each selected PSU

NHIS Stratified Multistage Area Sample Design up to 2015 (MEPS 2016)

- **Final Stage Units**
  - Sample of households from each selected SSUs
  - All families and persons within selected households were included
- **Same PSUs and SSUs but different HHs**
  - Every year the sample was selected from the same PSUs and SSUs but different households (hence different families and persons), unless a redesign of NHIS (roughly every 10 years)

NHIS Sample Redesign 2016 (MEPS 2017)

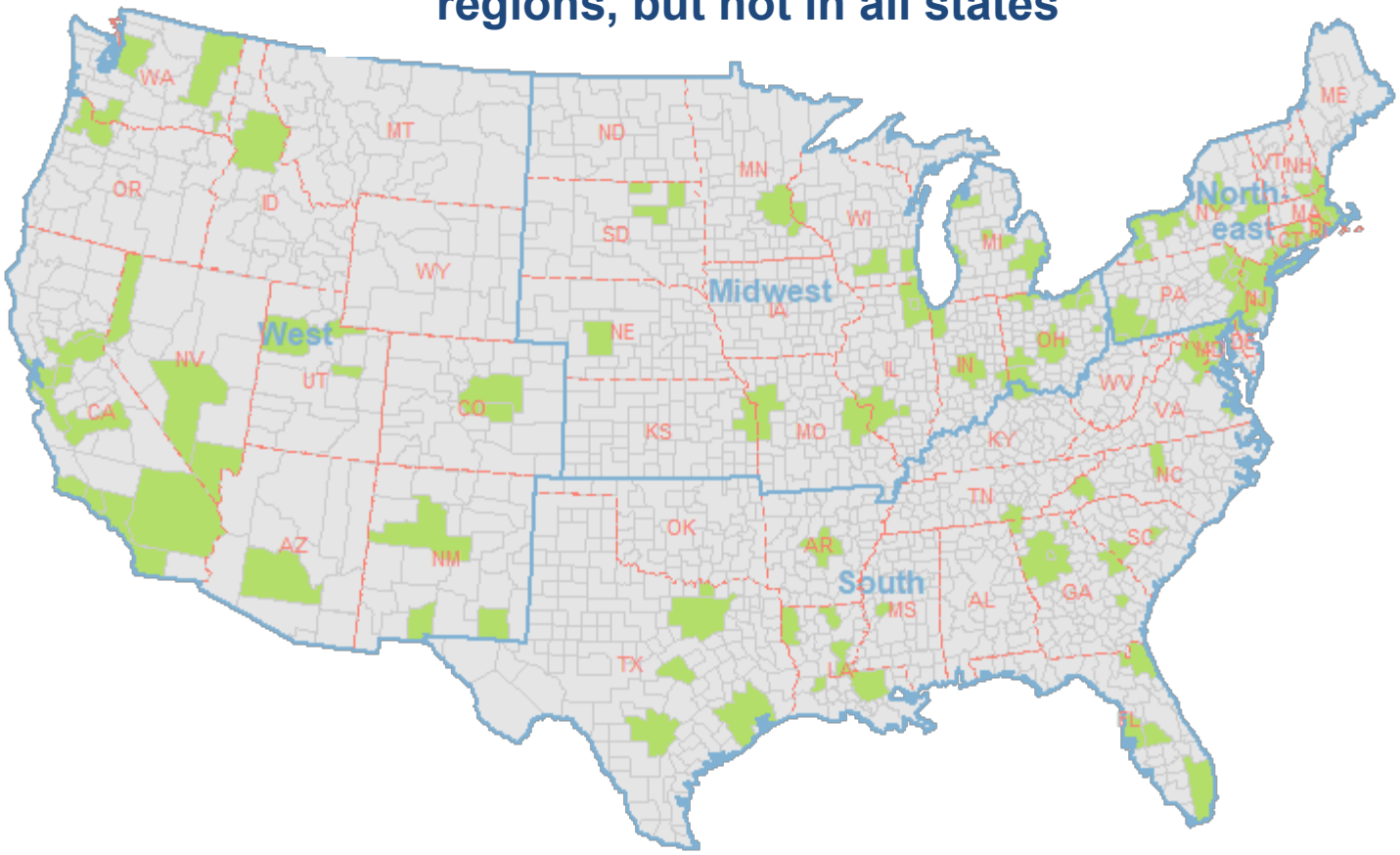
- A new design was introduced in 2016
- Stratification by State for State-level estimation
- PSUs formed and selected as before
- But households selected directly from USPS list of addresses within PSUs
  - ► USPS list available for most of the country
  - ► No need for listing of households
- Roughly 100 addresses (equal 1 cluster) selected from each PSU

NHIS Sample Redesign 2016 (MEPS 2017)

- Multiple clusters were selected from large PSUs
- A cluster includes many sub-clusters of 4 addresses
- Sub-clusters selected systematically from the PSU-wide list of addresses
- Traditional multistage design not needed anymore
- MEPS Panel 2017 based on the new design
- Same PSUs used for 10 years but different clusters every year

Illustration of Hypothetical 100 PSU Sample

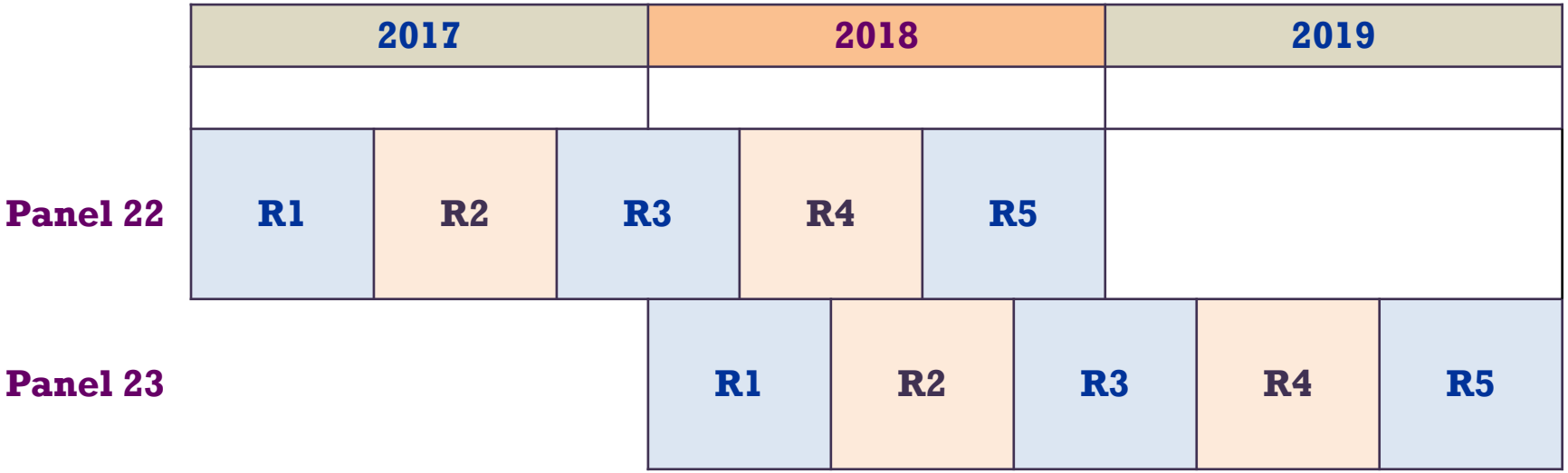
Sample sufficient in all regions, but not in all states



Oversampling in MEPS

- To produce reliable estimates for subpopulations of interest
- Oversampled subpopulations
  - Asians
  - Blacks
  - Hispanics
  - Veterans (2018 panel)
- Increases variation in selection probabilities and sampling weights

MEPS Overlapping Panel Design



FY 2018

Panel 22: R3, R4, R5

Panel 23: R1, R2, R3

MEPS Annual Files – Combination of Two Panels

Panel	Year		
	2017	2018	2019
21	Yr2		
22	Yr1	Yr2	
23		Yr1	Yr2
24			Yr1

Panels Overlap in MEPS Exception in COVID Years

- Due to COVID, response and completion of interviews were lower in 2020
- To compensate, the outgoing Panel 23 was extended initially for one year to 2020 and then for another year to 2021
- Panel 24 was also extended another year to 2022
- So there are 3 panels in 2020, 4 panels in 2021 and 3 panels in 2022.

MEPS Annual Files – Combination Panels

Panel	Year		
	2019	2020	2021
23	Yr2	Yr3	Yr4
24	Yr1	Yr2	Yr3
25		Yr1	Yr2
26			Yr1

Thank you!

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