



AGENCY FOR HEALTHCARE RESEARCH AND QUALITY



MEPS – HC

Sample Design

Sadeq Chowdhury, PhD

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**
- **MEPS full sample for each year is an overlap of 2 panels**
- **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 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**

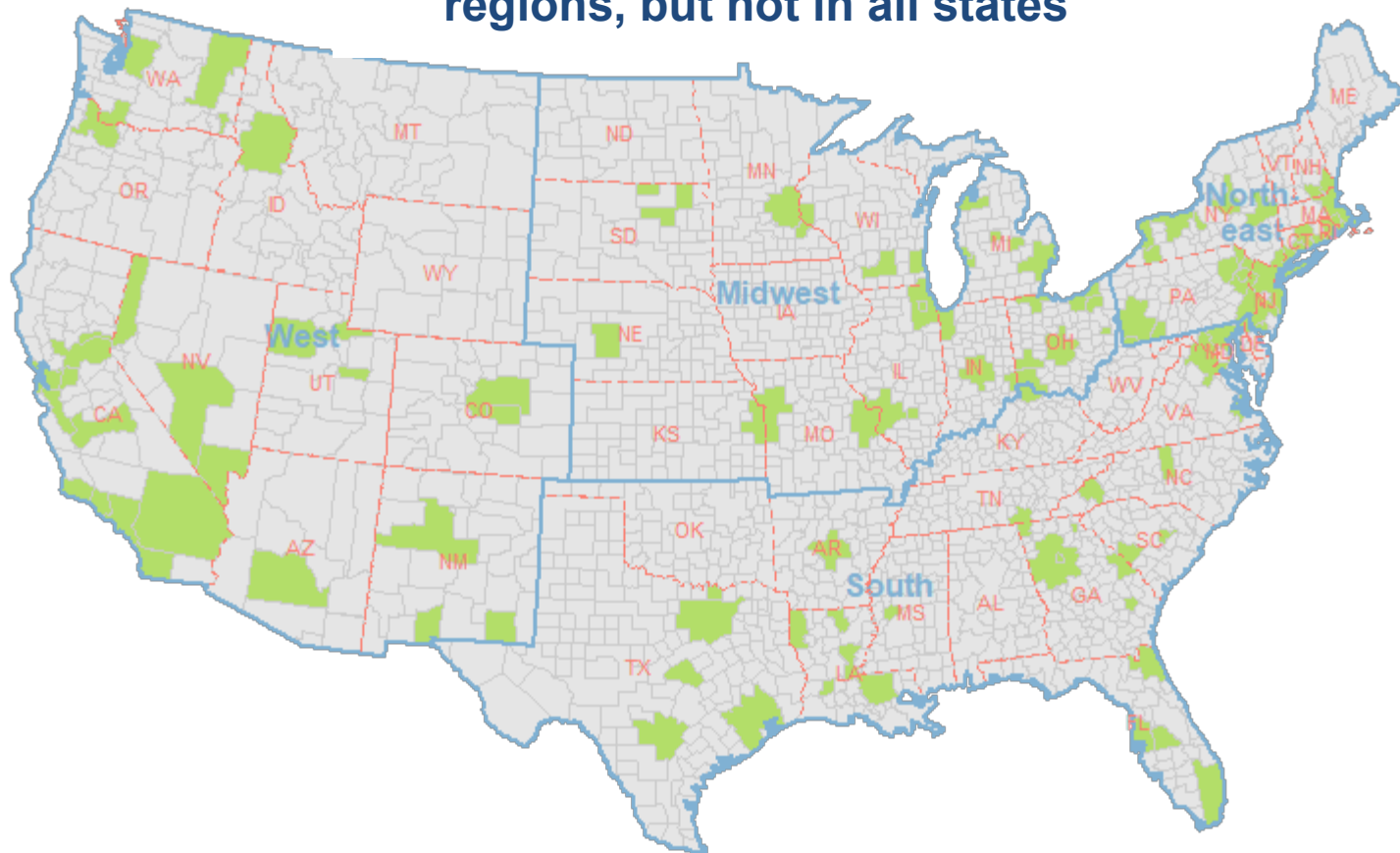
NHIS Sample Redesign 2016 (MEPS 2017)



- **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

	2017		2018			2019	
Panel 22	R1	R2	R3	R4	R5		
Panel 23			R1	R2	R3	R4	R5

FY 2018

Panel 22: R3, R4, R5

Panel 23: R1, R2, R3

MEPS Annual Files – Combination of Two Panels

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

Thank you!



Sadeq.Chowdhury@ahrq.hhs.gov