



U.S. Department of Health and Human Services

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Agency for Healthcare Research and Quality

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# **MEPS – HC Longitudinal and Other Analyses**

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**Marc Zodet, MS**

- Longitudinal analysis of MEPS panels
- Family-level estimation
- Other estimation possibilities
- State-level estimation



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# **Longitudinal Analysis Using MEPS**



# MEPS longitudinal analysis

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Example:

Panel 18 (2013-2014)





# MEPS longitudinal analysis

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- National estimates of person-level changes over two-year period
- Examine characteristics associated with changes over time



# Variables that may change between years or rounds

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- Insurance coverage
  - Monthly indicators (24 measures)
  - Annual summary (2 measures per person)
- Health status
  - Each round (5 measures)
- Having a usual source of care
  - Rounds 2 & 4 (2 measures)
- Use and expenditures
  - Annual (2 measures per person)



# Longitudinal weight (LONGWT)

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- Longitudinal weight is derived for persons with responses for entire period in scope, during the two years
- Produces national estimates for persons in two consecutive years
- For Panel 18 (2013-2014):

LONGWT>0	All 5 Rounds	Participated for entire period in-scope (not all 5 rounds)
16,714	15,467 (92.5%)	1,247 (7.5%)



# Selection of cases for analysis

Variable	Description
YEARIND	1=both years, 2=in 2013 only, and 3=in 2014 only
ALL5RDS	In-scope and data collected in all 5 rounds (0=no, 1=yes)
DIED	Died during the two-year survey period (0=no, 1=yes)
INST	Institutionalized for some time during the two-year survey period (0=no, 1=yes)
MILITARY	Active duty military for some time during the two-year survey period (0=no, 1=yes)
ENTRSRVY	Entered survey after beginning of panel (mainly births; also includes persons who had no initial chance of selection who moved into a MEPS sample household) (0=no, 1=yes)
LEFTUS	Moved out of the country after beginning of panel (0=no, 1=yes)
OTHER	Not identified in any of the above analytic groups (0=no, 1=yes)





# Estimates from the Panel 18 longitudinal file

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## Examples:

- Of those uninsured throughout 2013, an estimated 65.9% were also uninsured throughout 2014.
- An estimated 8.4% of the population had no insurance throughout 2013 / 2014.
- Of those with no expenses for health care in 2013, an estimated 44.8% had some expenses in 2014.



# MEPS longitudinal files (Panels 11-18)

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	<b>Panel 11 (06-07)</b>	<b>Panel 12 (07-08)</b>	<b>Panel 13 (08-09)</b>	<b>Panel 14 (09-10)</b>	<b>Panel 15 (10-11)</b>	<b>Panel 16 (11-12)</b>	<b>Panel 17 (12-13)</b>	<b>Panel 18 (13-14)</b>
<b>File Number</b>	HC-114	HC-122	HC-130	HC-139	HC-148	HC-156	HC-164	HC-172
<b>Number of Persons</b>	16,533	12,440	18,287	16,221	14,541	18,512	17,293	16,714



# Extending the longitudinal period MEPS-NHIS

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- MEPS-HC is a nationally representative subsample of responding households from previous year's National Health Interview Survey (NHIS) which is conducted by National Center for Health Statistics
  - Selected from ~200 of the ~400 NHIS Primary Sampling Units
- Each MEPS/NHIS link file contains a crosswalk to merge MEPS full-year public use data files to NHIS person-level public use data files
- NHIS contains data collected for MEPS respondents in the year prior to their initial year of MEPS participation



# Extending the longitudinal period MEPS-NHIS

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2012	2013	2014
	MEPS Panel 17 Year 2	
NHIS 2012 →	MEPS Panel 18 Year 1	MEPS Panel 18 Year 2
	NHIS 2013 →	MEPS Panel 19 Year 1



# Linked files, weighting, and estimation

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- Linking the two surveys expands the analytic capabilities
- Not all MEPS respondents link (birth, marriage, etc.)
- Weighting adjustment for non-linkage is recommended
- Informational resources:

2012 ASA proceedings paper (Chowdhury, Machlin, and Wun):

[https://meps.ahrq.gov/mepsweb/data\\_stats/Pub\\_ProdResults\\_Details.jsp?pt=Conference+Proceedings&opt=3&id=1241](https://meps.ahrq.gov/mepsweb/data_stats/Pub_ProdResults_Details.jsp?pt=Conference+Proceedings&opt=3&id=1241)

2013 FCSM proceedings paper (Mirel and Machlin):

[https://s3.amazonaws.com/sitesusa/wp-content/uploads/sites/242/2014/05/H2\\_Mirel\\_2013FCSM.pdf](https://s3.amazonaws.com/sitesusa/wp-content/uploads/sites/242/2014/05/H2_Mirel_2013FCSM.pdf)

# Family-Level Estimation



# Family-level estimation

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- Create family-level file from person-level file (see documentation)
- Two family type options:
  - MEPS: includes unmarried couples and foster children
  - CPS: unmarried couples not family unit
- Two time frame options:
  - December 31 (MEPS, CPS)
  - Any time during year (MEPS only)



# Family sample sizes, 2014

## (MEPS annual household file)

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Number of Families	MEPS Anytime during the year	MEPS Dec 31	CPS Dec 31
Unweighted	13,421	13,330	14,133
Weighted (million)	136.4	135.1	140.3
Family Weight Variable Name	FAMWT14F	FAMWT14F (subset to FMRS1231=1)	FAMWT14C





# Family-level estimation

Example: Average total health care expenses per MEPS family by family size, 2014

- Based on MEPS families in scope at any time during the year
- Average number of persons per family is about 2.3

Family size	Estimate	SE
All	\$10,629	\$284
1	\$7,375	\$420
2	\$13,123	\$421
3	\$11,821	\$778
4	\$12,651	\$1,075
5+	\$12,743	\$923

# Other Estimation Possibilities



# Medical event as unit of analysis

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- Event files can be used to estimate average expense per event

Example:

- In 2014,
  - ...the mean expense per office visit to a physician was \$222 (SE=\$4).
  - ...the mean expense per ER visit was \$997 (SE=\$38).
  - ...the mean expense per inpatient stay was \$13,450 (SE=\$575).



# Special supplements

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- Special supplement variables on person-level files
- Consult documentation for appropriate weight
  - Self Administered Questionnaire (SAQ) → SAQWTyyF
  - Diabetes Care Survey (DCS) → DIABWyyF
  - Cancer SAQ (CSAQ) → CSAQW11F  
*2011 full year file only*
  - Medical Organizations Survey (MOS) → MOSWTyyF  
*beginning with data year 2015*

Note: the above weights will appear in the full year population characteristics file with a “P” suffix (e.g., SAQWT15P)



# Special supplements: MOS

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- MOS supplement variables (including MOS weight) must be merged onto the full year person-level file using DUPERSID
  - this is different from the other supplemental variables (e.g., SAQ)
  - 2015 full year MOS file → HC-175



# Estimates from the MOS

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- Nationally representative of persons with a usual source of care (USC) that they visited at least once during the year.

Example:

- A slight majority of persons with a usual source of care provider and who visited them during 2015 had usual source of care that was an independent practice (54.7%).



# Inflating expenditures

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- Analyses involving multiple years
  - Typically adjust expenditures to most current MEPS data year
- CFACT guidelines on appropriate indices
  - Varies by...
    - 1) purpose of the analysis
    - 2) type of expenditure
- Resource page

[http://www.meps.ahrq.gov/mepsweb/about\\_meps/Price\\_Index.shtml](http://www.meps.ahrq.gov/mepsweb/about_meps/Price_Index.shtml)



# Crosswalk of price indices and MEPS analyses

	Recommended Index			
Objective of analysis	GDP or PCE	CPI	PHCE or PCE-Health Total	PHCE Component
Trends in expenditures	x			
Trends in out-of-pocket expenditures only		x		
Pooling total expenditures			x	
Pooling expenditures by type of service (e.g., prescription meds)				x
Trends with income measures		x		



# State-Level Estimation



# MEPS state-level data

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- Considerable interest in State-level estimates
- MEPS sample not designed for producing estimates for all States
  - Small sample sizes
  - Insufficient PSUs for variance estimation
- Public Use File does not include State identifiers to protect confidentiality
  - Tables and reports available on website for larger States (selected estimates)
  - Access to identifiers in Data Center
    - Need to use state-level sample design and state identifiers*



# State summary data tables

## 25 states in 2010

- Table 1 (total expenses) has 6 estimates by state
- Tables 2-4 (dental, office-based, Rx drug) have only 3 estimates

Table 1. Total Health Services - Percent of persons with an expense, mean expense per person with an expense, and distribution of expenses, by source of payment, United States, 2010 (25 states<sup>a</sup> are shown separately)

State	Unweighted sample size		Population (1,000s) <sup>f</sup>	Percent with an expense <sup>e</sup>	Mean per person with an expense <sup>c</sup>	Percent distribution of total expenses by source of payment <sup>b, g</sup>			
	All persons	Persons with an expense				Out of pocket	Private insurance <sup>d</sup>	Medicare	Medicaid
United States	31,228	24,786	308,574	84.6	4,838.6	14.2	40.1	25.7	10.4
California	5,041	3,584	30,800	75.8	3,946.3	14.8	37.8	24.9	14.3
Texas	2,918	2,052	21,492	74.7	4,569.2	12.4	39.4	26.7	10.2
New York	1,814	1,354	15,687	79.2	4,583.8	9.4	44.2	21.3	16.4
Florida	1,845	1,447	14,962	81.6	4,921.2	16.8	31.5	27.6	8.4
Illinois	1,189	1,010	10,617	88.9	5,671.4	12.5	50.7	15.9	14.1

Table 2. Dental Services - Percent of persons with a dental expense, mean expense per person with an expense, and percent of total paid out of pocket, United States, 2010 (25 states<sup>a</sup> are shown separately)

State	Unweighted sample size		Population (1,000s) <sup>b</sup>	Percent with an expense <sup>b</sup>	Mean per person with an expense <sup>b</sup>	Percent of total paid out of pocket <sup>b</sup>
	All persons	Persons with an expense				
United States	31,228	11,005	308,574	40.4	666.2	47.5
California	5,041	1,595	30,800	35.5	788.1	52.6
Texas	2,918	735	21,492	29.1	603.2	39.1
New York	1,814	553	15,687	35.8	528.4	33.1
Florida	1,845	535	14,962	35.1	708.0	54.4
Illinois	1,189	511	10,617	47.3	661.2	56.5



# Published state estimates



- Two on-line MEPS publications have state-level estimates

## Summary data tables

Table 1. Total Health Services - Percent of persons with an expense, mean expense per person with an expense, and distribution of expenses, by source of payment, United States, 2010 (25 states<sup>a</sup> are shown separately)

State	Unweighted sample size		Population (1,000s) <sup>c</sup>	Percent distribution of total expenses by source of payment <sup>b,c</sup>					
	All persons	Persons with an expense		Percent with an expense <sup>c</sup>	Mean per person with an expense <sup>c</sup>	Out of pocket	Private insurance <sup>d</sup>	Medicare	Medicaid
United States	31,228	24,786	308,574	84.6	4,838.6	14.2	40.1	25.7	10.4
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## Statistical briefs



Medical Expenditure Panel Survey

Agency for Healthcare Research and Quality

### STATISTICAL BRIEF #353

December 2011

#### Dental Expenditures in the 10 Largest States, 2008

Frederick Rohde, MA

#### Introduction

Dental care accounted for 7.3 percent of health care expenditures among the U.S. noninstitutionalized civilian population in 2008. Over 40 percent of the U.S. population had dental care expenditures, and among those with dental care expenditures, the mean expenditure was \$671.

Many factors can influence dental care expenses in a particular state, including the demographic, socioeconomic, and health status characteristics of the population. The generosity of health insurance plans' coverage for dental services and the prevalence of dental insurance may also vary across state populations, which would affect dental care use and expenses.

The Household Component of the Medical Expenditure Panel Survey (MEPS-HC) is designed to produce estimates of the health care use, expenditures, sources of payment, and insurance coverage among the U.S. noninstitutionalized civilian population. While the MEPS-HC was designed primarily to ensure reliable estimates at the national and regional level for a large variety

#### Highlights

- In 2008, the percentage of persons with dental expenditures was lower than the national average in Texas, Florida, and Georgia.
- Compared to the national average, the mean expense among persons with dental expenses was lower in Ohio and North Carolina.
- Compared to the nation, Florida had a lower percentage of dental expenses paid by private insurance; and California had a lower percentage paid out of pocket.



# Useful links

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- Accounting for clustering

[http://meps.ahrq.gov/mepsweb/survey\\_comp/hc\\_clustering\\_faq.pdf](http://meps.ahrq.gov/mepsweb/survey_comp/hc_clustering_faq.pdf)

- Using statistical software packages to produce estimates from MEPS

[http://meps.ahrq.gov/survey\\_comp/hc\\_samplecodes\\_se.pdf](http://meps.ahrq.gov/survey_comp/hc_samplecodes_se.pdf)



**Thank you**