

AGENCY FOR HEALTHCARE RESEARCH AND QUALITY



Web Resources and Programming Overview

Emily M. Mitchell, PhD

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MEPS Data Tools

<https://datatools.ahrq.gov>

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Communication

The Medical Expenditure Panel Survey (MEPS) is a set of large-scale surveys of families and individuals, their medical providers, and employers across the United States. MEPS is the most complete source of data on the cost and use of health care and health insurance coverage. [Learn more about MEPS.](#)

[Contact MEPS](#)

New to MEPS?

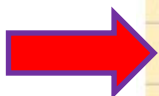
Select a profile:

- [General user](#)
- [Researcher](#)
- [Policymaker](#)
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MEPS Topics


- ▄ [Access to Health Care](#)
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[Click here for full topic list ...](#)



MEPS Data Tools (cont.)

<https://datatools.ahrq.gov>

**Agency for Healthcare
Research and Quality**

Search All AHRQ Sites | Careers | Contact Us | Español | FAQs | Email Updates

Data Tools Home | CAHPS | HCUP Fast Stats | HCUPnet | MEPS-HC | MEPS-IC | NHQDR | Data Tools FAQ

AHRQ Data Tools

Not sure where to start?

Click the dropdown for Topic Areas to help get you to the data you are looking for.

Topic Area


Select

Go

Search Across Data Tools

Search

Featured Dashboard



COVID-19 Impact

Explore the AHRQ Data Tools

Medical Coverage and Expenditures



The **Medical Expenditure Panel Survey (MEPS)** explores health insurance coverage, access to care, quality of care, healthcare use, and expenditures.

Healthcare | MEPS-HC

Household Component

For the U.S. civilian population

- Healthcare use and spending
- Health insurance coverage
- Access to care, diabetes care, and quality
- Treated medical conditions
- Prescribed drugs

Health Insurance | MEPS-IC

Insurance Component

National and state-level employer-based health insurance:

- Employer characteristics/offerings
- Employee take-up
- Premiums
- Contributions
- Cost-sharing

Medical Expenditure Panel Survey (MEPS) Household Component (HC)

Information on the health status of Americans, health insurance coverage, and access, use, and cost of health services.

For more information about MEPS, visit meps.ahrq.gov

AHRQ Data Tools



Data Files



Educational Links



MEPS GitHub Repository [↗](#)

Publications

Workshops

Explore the MEPS-HC Data Tools

The MEPS Household Component collects data on all members of sample households from selected communities across the United States. These data can be used to produce nationally representative estimates of medical conditions, health status, use of medical care services, charges and payments, access to care, experience with care, health insurance coverage, income, and employment.

The summary tables provide frequently used summary estimates for the U.S. civilian non-institutionalized population.

This tool is provided as a convenience. It is the responsibility of the user to review the results for statistical significance and overall reasonableness.

Use, Expenditures, and Population

Utilization, spending, and population totals by demographic attributes, event type, or source of payment.

Health Insurance

Number and percentage of people by insurance coverage and demographic attributes.

Accessibility and Quality of Care

Information on access to care, preventive care, diabetes care, and patient-reported quality of doctor's visits.

Medical Conditions

Utilization, spending, and number of people with care for medical conditions by demographic attributes.

Prescribed Drugs

Purchases and spending by prescribed drug or therapeutic class.

Direct link to this dashboard: <https://datatools.ahrq.gov/meps-hc?tab=use-expenditures-and-population&dash=12>

Statistics on health care utilization and expenditures. Types of data available include number of people, percentage of people with an expense, total expenditures, mean and median expenditures per person, total number of health care events, mean number of events per person, and mean spending per event. Data can be grouped by event type (such as prescription medicines or dental visits), by source of payment (such as Medicare or Medicaid), or by demographic characteristics (such as age, race, or sex).

Select the **Download Data** button for an accessible MS Excel version of the data visualization. The file size will depend on parameters selected.

If display is blank, please modify filter selections

Use, Expenditures, and Population

Trends

Mean expenditure per person by age groups, United States, 1996 to 2021

Cross-sectional

Estimates:

Mean expenditure per person...

Groups:

Age groups

Group Levels:

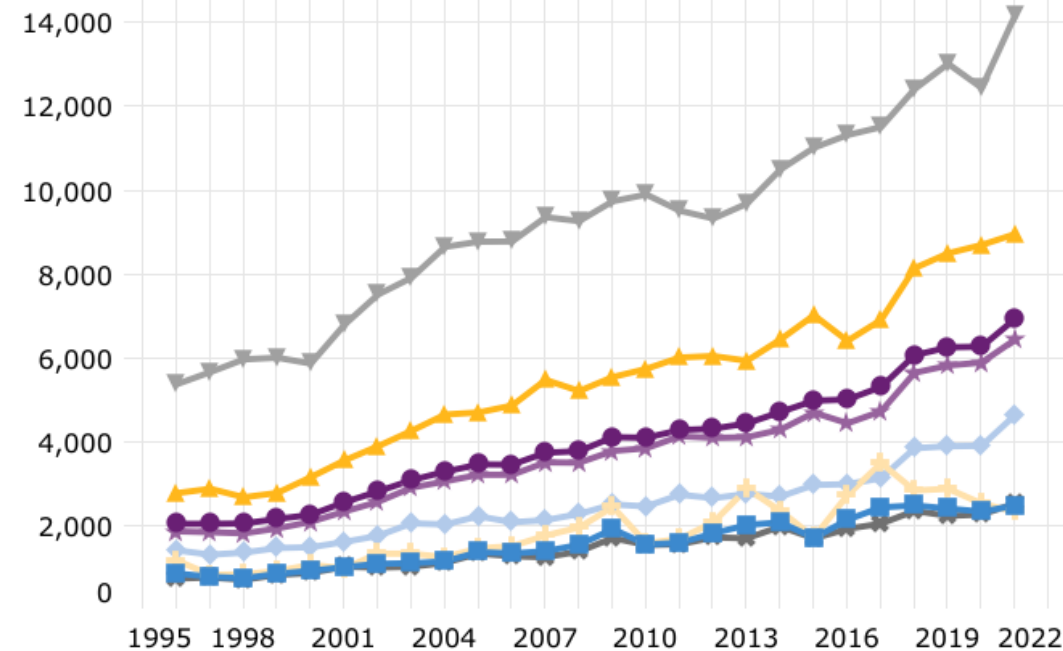
(All)

Start Year End Year

1996 2021

☐ Show 95% CI

Mean expenditure per person (\$)



Select a group level in the legend to filter graph and table.

Legend

- All persons
- Under 18
- Under 5
- 5-17
- 18-64
- 18-44
- 45-64
- 65+

Use, Expenditures, and Population

Trends

Cross-sectional

Estimates:

Mean expenditure per person...

Groups:

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Group Levels:

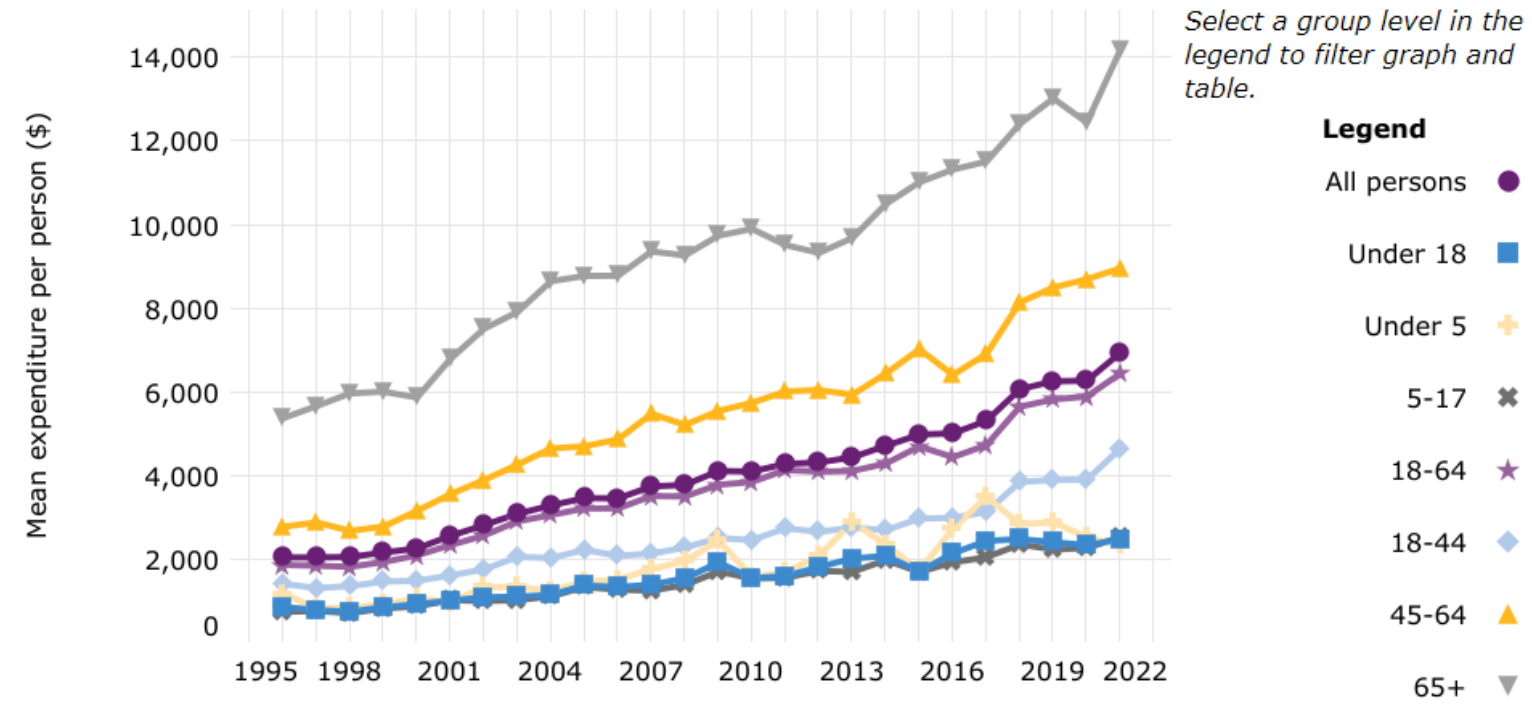
(All)

Start Year End Year

1996 2021

☐ Show 95% CI

Mean expenditure per person by age groups, United States, 1996 to 2021



Year	All persons		Under 18		Under 5		5-17	
	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error
2021	6,934	188.7	2,474	185.3	2,323	289.4	2,525	219.9
2020	6,266	164.4	2,331	235.7	2,525	648.8	2,263	228.8
2019	6,252	117.1	2,403	107.2	2,876	301.6	2,230	105.3
2018	6,063	128	2,479	110.5	2,835	307.7	2,349	104.9
2017	5,306	125.9	2,433	228.9	3,487	812.8	2,044	101.1
2016	5,006	117	2,138	198.3	2,725	696.9	1,921	98.5
2015	4,978	134.4	1,699	77.9	1,718	219.1	1,691	73.1

*Relative standard error is greater than 30%.

--Estimates suppressed due to inadequate precision.

Use, Expenditures, and Population

Trends

Cross-sectional

Estimates:

Mean expenditure per person...

Primary Groups:

Age groups

Primary Group Levels:

(All)

Secondary Groups:

Census region

Secondary Group Levels:

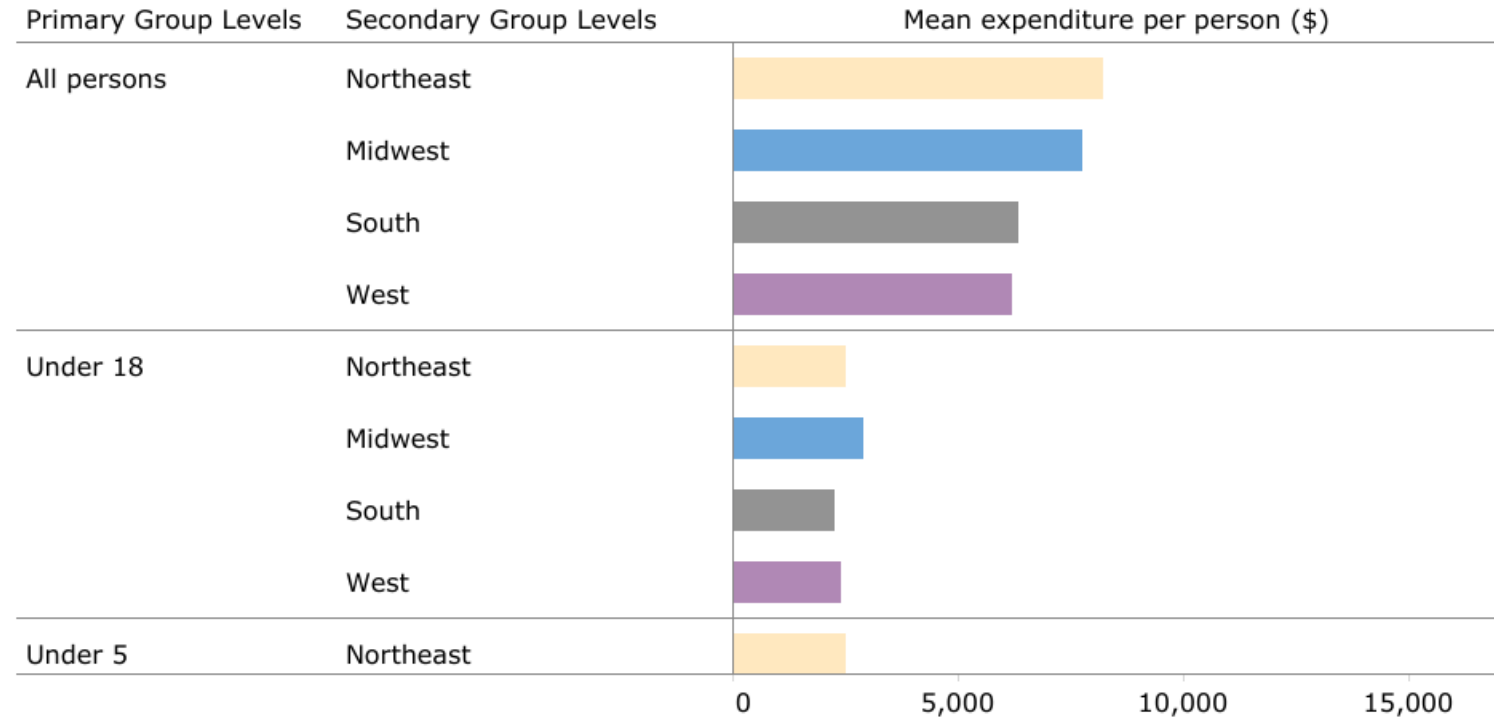
(Multiple values)

Years:

2021

☐ Show 95% CI

Mean expenditure per person by census region and age groups, United States, 2021



Secondary Group Levels	All persons		Under 18		Under 5		
	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	
Northeast	8,239	640.7	2,520	339.7	-- 2,532*	-- 1,072*	2,
Midwest	7,781	412	2,910	627.2	2,520	369.5	3,
South	6,339	276.1	2,256	219.6	1,993	386.4	2,
West	6,217	274.8	2,416	352.2	2,565	705	2,

*Relative standard error is greater than 30%.

--Estimates suppressed due to inadequate precision.

Use, Expenditures, and Population

Utilization, spending, and population totals by demographic attributes, event type, or source of payment.

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Utilization, spending, and number of people with care for medical conditions by demographic attributes.

Prescribed Drugs

Purchases and spending by prescribed drug or therapeutic class.

MEPS-HC Variable Explorer Tool

The MEPS-HC Variable Explorer Tool by AHRQ offers consumers of the Public Use Files a quick and easy way to find what they are looking for in terms of variables and files for research purposes. To begin, select a public use file subject area from below. Once the table loads, select the **Download Data** button for an accessible MS Excel version of the table. The file size will depend on parameters selected.

Direct link to variable explorer tool: <https://datatools.ahrq.gov/meps-hc#varExp>

- ☐ **Annual/Main Public Use Files (PUFS)** - Full-Year Consolidated files (FYC), FYC supplemental variables, Conditions, Jobs files, Person Round Plan, Point-in-Time files, and Event type files including the Multum Lexicon addendum files, RX-event linkage, and condition-event linkage files
- ☐ **Balanced Repeated Replicates (BRR)** - Contains 128 half-sample indicators needed to calculate standard errors using the balanced repeated replication (BRR) method
- ☐ **Employment Variables (2000-2013)** - Supplemental release of fully-imputed versions of selected employment variables
- ☐ **Food Security Files (2016-2017, 2020-2021)** - Data pertaining to food security
- ☐ **Longitudinal Data Files** - A two-year longitudinal file representing each Panel in the MEPS survey
- ☐ **Medical Organization Survey (2015-2016)** - Characteristics for usual source of care providers
- ☐ **Pooled Linkage Variance Structure** - Standardized variance strata and PSU variables for a pooled analysis.
- ☐ **Preventive Care SAQ (2014)** - Contains various person-level preventive health care data for adults

Go

Reset

Go

Reset

MEPS-HC Variable Explorer Tool: Annual/Main Public Use Files (PUFs) 1996 - 2021

Quick Search

Search Table

educ

Advanced Search

Variable

Data File:

(All)

Description

Years

(All)

Selecting a variable under the years will navigate to the codebook on the AHRQ Medical Expenditure Panel Survey website.

Variable	Data	Description	2021	2020	2019
EDRECODE	FYC	EDUCATION RECODE (EDITED)			
EDRECODE	PIT	EDUCATION RECODE (EDITED)			
EDUCYEAR	FYC	YEARS OF EDUC WHEN FIRST ENTERED MEPS			
EDUCYR	FYC	YEARS OF EDUC WHEN FIRST ENTERED MEPS	EDUCYR	EDUCYR	EDUCYR
EDUCYR	PIT	YEARS OF EDUC WHEN FIRST ENTERED MEPS			EDUCYR
EDUCYR1	FYC	COMPLETED YEARS OF EDUCATION-RD1			
EDUCYR1	PIT	COMPLETED YEARS OF EDUCATION			
EDUCYR13	PIT	YEARS OF EDUC WHEN FIRST ENTERED MEPS			
EDUCYR2	FYC	COMPLETED YEARS OF EDUCATION-RD2			
EDUCYR31	FYC	COMPLETED YEARS OF EDUCATION - R3/1			

Go

Reset

MEPS-HC Variable Explorer Tool: Annual

Quick Search

Search Table

educ

Advanced Search

Variable

Data File

(All)

Selecting a variable under the years will navigate to the codebook on

Variable	Data	Description
EDRECODE	FYC	EDUCATION RECODE (EDITED)
EDRECODE	PIT	EDUCATION RECODE (EDITED)
EDUCYEAR	FYC	YEARS OF EDUC WHEN FIRST ENTERED MEPS
EDUCYR	FYC	YEARS OF EDUC WHEN FIRST ENTERED MEPS
EDUCYR	PIT	YEARS OF EDUC WHEN FIRST ENTERED MEPS
EDUCYR1	FYC	COMPLETED YEARS OF EDUCATION-RD1
EDUCYR1	PIT	COMPLETED YEARS OF EDUCATION
EDUCYR13	PIT	YEARS OF EDUC WHEN FIRST ENTERED MEPS
EDUCYR2	FYC	COMPLETED YEARS OF EDUCATION-RD2
EDUCYR31	FYC	COMPLETED YEARS OF EDUCATION - R3/1

VALUE	UNWEIGHTED	WEIGHTED
-15 CANNOT BE COMPUTED	1	10,502
-8 DK	162	1,473,360
-7 REFUSED	29	166,200
-1 INAPPLICABLE	1,951	26,662,572
0 NO SCHOOL/KINDERGARTEN ONLY	822	9,772,933
1-8 ELEMENTARY GRADES 1 - 8	3,812	42,708,127
9-11 HIGH SCHOOL GRADES 9 - 11	2,607	26,370,342
12 GRADE 12	6,644	70,865,748
13 1 YEAR COLLEGE	1,395	17,017,671
14 2 YEARS COLLEGE	2,839	35,801,515
15 3 YEARS COLLEGE	716	9,465,451
16 4 YEARS COLLEGE	4,364	54,886,202
17 5+ YEARS COLLEGE	2,994	36,048,772
TOTAL	28,336	331,249,393

EDUCYR

EDUCYR

EDUCYR

EDUCYR

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https://meps.ahrq.gov/mepsweb/data_stats/download_data_files.jsp

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⌵ Discussion Forum

⌵ Participants' Corner

Select by year and/or data file type

Year: All available years ▼

Data file types to include in search (check all that apply). Click information icon ⓘ for file details. Click link for full list of file types in category.

☐ Search all data files ⓘ

☐ Household Component Full-Year files ⓘ

Expenditure and utilization data for the calendar year from several rounds of data collection.

☐ Full-Year Consolidated Data files

☐ Full-Year Population Characteristics files

☐ Full-Year Medical Organizations Survey Final file

☐ Full-Year Medical Organizations Survey Preliminary file

☐ Medical Conditions files

☐ Risk Adjustment Scores files

☐ Employment Variables file

☐ Jobs files

☐ Person Round Plan files

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⚡ Participants' Corner

[Update notes](#)

Documentation	File type
Documentation	PDF (540 KB) / HTML
Codebook	PDF (212 KB) / HTML *
SAS Programming Statements	TXT (74 KB)
SPSS Programming Statements	TXT (6.2 KB)
STATA Programming Statements	TXT (8.4 KB)
R Programming Statements	TXT (5.3 KB)

Data	File type**
Data File, ASCII format	ZIP (1.3 MB) / EXE (1.8 MB)
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Data File, XLSX format	ZIP (6.9 MB)

Questionnaires — see [Survey Questionnaires](#)

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[Update notes](#)

Documentation

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Questionnaires — see [Survey Questionnaires](#)

DVTTCH21	3813	3817	TOTAL DENTAL CARE VISIT CHARGES 21
DVTTRI21	3846	3849	ALL DENTAL CARE -TRICARE AMT 21
DVTVA21	3842	3845	ALL DENTAL CARE -VA/CHAMPVA AMT 21
DVTWCP21	3858	3858	ALL DENTAL CARE -WORKERS COMP AMT 21
EDUCYR	234	236	YEARS OF EDUC WHEN FIRST ENTERED MEPS
ELGRND21	163	163	ELIGIBILITY STATUS AS OF 12/31/21
ELGRND31	160	160	ELIGIBILITY - R3/1
ELGRND42	161	161	ELIGIBILITY - R4/2
ELGRND53	162	162	ELIGIBILITY - R5/3
EMPHAGED	342	343	AGE OF DIAGNOSIS-EMPHYSEMA
EMPHDX	339	341	EMPHYSEMA DIAGNOSIS (>17)
EMPST31	1178	1180	EMPLOYMENT STATUS RD 3/1
EMPST31H	1479	1480	EMPLOYMENT STATUS RD 3/1 (IMP)
EMPST42	1181	1183	EMPLOYMENT STATUS RD 4/2
EMPST42H	1481	1482	EMPLOYMENT STATUS RD 4/2 (IMP)
EMPST53	1184	1186	EMPLOYMENT STATUS RD 5/3
EMPST53H	1483	1484	EMPLOYMENT STATUS RD 5/3 (IMP)

[DVTCH21](#)

3813

3817

TOTAL DENTAL CARE VISIT CHARGES 21

[DVTTRI21](#)

[DVTVA21](#)

[DVTWCP21](#)

[EDUCYR](#)

[ELGRND21](#)

[ELGRND31](#)

[ELGRND42](#)

[ELGRND53](#)

[EMPHAGED](#)

[EMPHDX](#)

[EMPST31](#)

1178

1180

EMPLOYMENT STATUS RD 3/1

[EMPST31H](#)

1479

1480

EMPLOYMENT STATUS RD 3/1 (IMP)

[EMPST42](#)

1181

1183

EMPLOYMENT STATUS RD 4/2

[EMPST42H](#)

1481

1482

EMPLOYMENT STATUS RD 4/2 (IMP)

[EMPST53](#)

1184

1186

EMPLOYMENT STATUS RD 5/3

[EMPST53H](#)

1483

1484

EMPLOYMENT STATUS RD 5/3 (IMP)

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Data File, XLSX format

[ZIP](#) (6.9 MB)

post-2016

Questionnaires — see [Survey Questionnaires](#)

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For loading ASCII (.dat)
fixed-width files

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post-2016

Questionnaires — see [Survey Questionnaires](#)

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https://github.com/HHS-AHRQ/MEPS



 **MEPS** Public

 Edit Pins ▾


 Unwatch 27 ▾

 Fork 70 ▾

 Starred 148 ▾

 master ▾

 1 Branch  0 Tags

 Go to file




Add file ▾







 Code ▾

About



e-mitchell Adding 2022 Jobs file

3ca7191 · 2 weeks ago  364 Commits

 Quick_Reference_Guides	Adding 2022 Jobs file	2 weeks ago
 R	Fixing typos	6 months ago
 SAS	Fixing typos	6 months ago
 Stata	Fixing typos	6 months ago
 _images	Readding with suffix	last month
 README.md	Update README.md with new graphic name	last month







 README




Medical Expenditure Panel Survey (MEPS)

This repository provides example code for loading and analyzing data from AHRQ's Medical Expenditure Panel Survey (MEPS). More information about the survey and access to public use data files is available on our website

 meps.ahrq.gov

 r  stata  sas  survey-data  meps  ahrq

 Readme

 Activity

 Custom properties

 148 stars

 27 watching

 70 forks

22


Report repository

https://github.com/HHS-AHRQ/MEPS





 **MEPS** Public


 Edit Pins ▾


 Unwatch 27 ▾

 Fork 70 ▾

 Starred 148 ▾

 master ▾

 1 Branch  0 Tags

 Go to file




Add file ▾







 Code ▾

About



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




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Report repository

Quick Reference Guides

FYC	Conditions	PMED Events	Events	Jobs	PRPL	Longitudinal
h12	h06r	h10a	h10*f1	h07	h24	-
h20	h18	h16a	h16*f1	h19	h47f1	h23
h28	h27	h26a	h26*f1	h25	h47f2	h35
h38	h37	h33a	h33*	h32	h47f3	h48
h50	h52	h51a	h51*	h40	h47f4	h58
h60	h61	h59a	h59*	h56	h57	h65
h70	h69	h67a	h67*	h63	h66	h71
h79	h78	h77a	h77*	h74	h76	h80
h89	h87	h85a	h85*	h83	h88	h86

MEPS Public Use Files (PUFs)

Entity Relationship Diagram (ERD) with survey and linkage variables

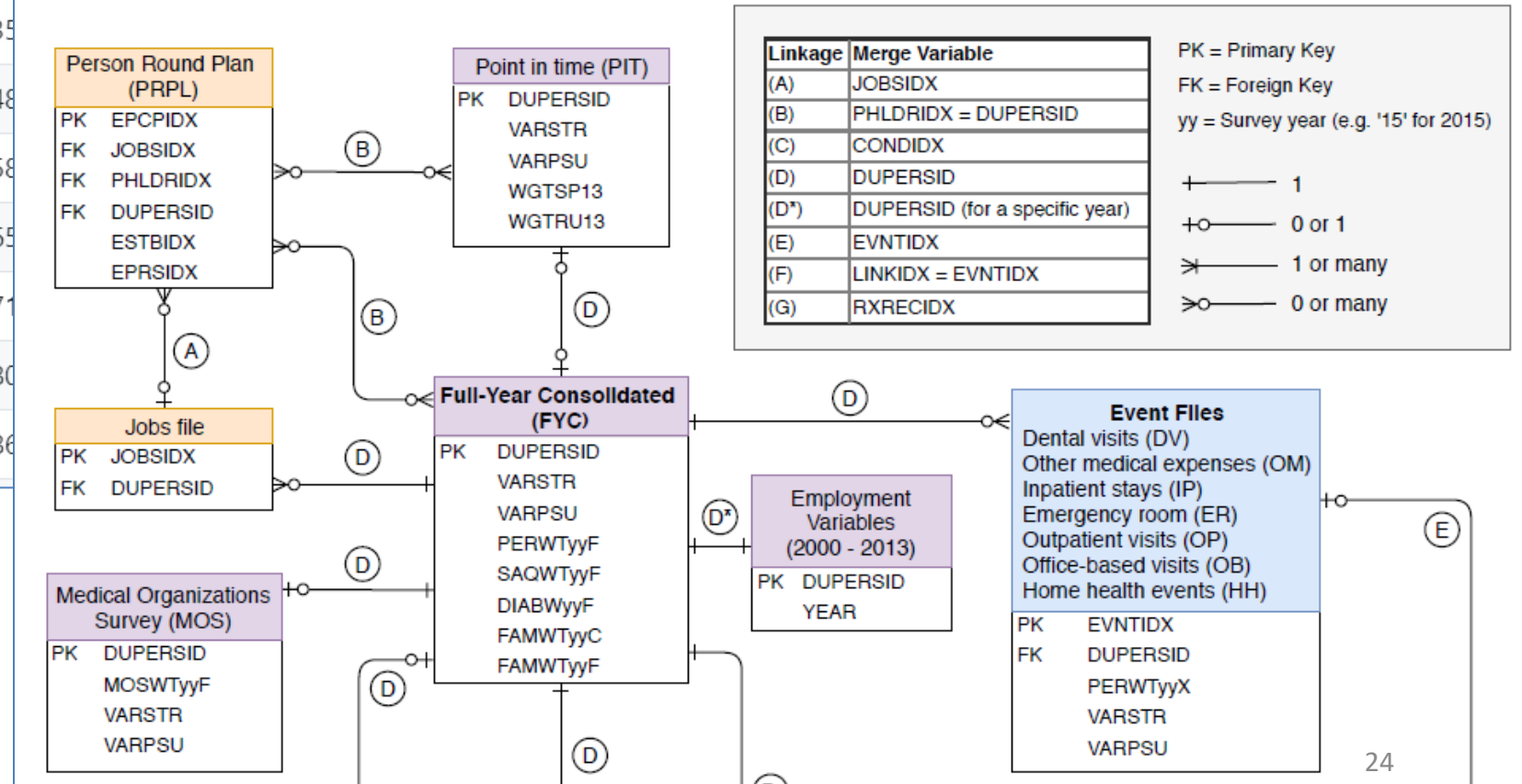


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Record Level and Identifiers

Person level

- ▶ FYC file
- ▶ Longitudinal files
- ▶ Point-in-Time file
- ▶ Medical Organizations Survey

Event level

- ▶ ER visits
- ▶ Inpatient stays
- ▶ Outpatient visits
- ▶ Office-based visits
- ▶ Dental visits
- ▶ Prescribed medicines
- ▶ Other medical expenses
- ▶ Home health

Conditions level

- ▶ Medical Conditions file

Jobs/Insurance-level

- ▶ Jobs file
- ▶ Person Round Plan file

Record Level and Identifiers (cont.)

Person-level files

PANEL	DUID	PID	DUPERSID
24	<u>2490001</u>	101	<u>2490001</u> 101
24	<u>2490001</u>	102	<u>2490001</u> 102
24	<u>2490002</u>	101	<u>2490002</u> 101

Event files

DUPERSID	EVNTIDX
2490001101	<u>2490001101</u> 003301
2490001101	<u>2490001101</u> 003401
2490002101	<u>2490002101</u> 002601
2490002101	<u>2490002101</u> 205301

Conditions file

DUPERSID	CONDN	CONDIDX
2490001102	3	<u>2490001102</u> 003
2490002101	2	<u>2490002101</u> 002
2490002101	8	<u>2490002101</u> 008
2490002101	11	<u>2490002101</u> 011

Jobs file

DUPERSID	RN	JOBNUM	JOBSIDX
2490001101	3	101	<u>2490001101</u> 3101
2490001101	3	104	<u>2490001101</u> 3104
2490001101	4	104	<u>2490001101</u> 4104
2490001102	3	103	<u>2490001102</u> 3103

Record Level and Identifiers (cont.)

Person-level files

PANEL	DUID	PID	DUPERSID
24	<u>2490001</u>	101	<u>2490001</u> 101
24	<u>2490001</u>	102	<u>2490001</u> 102
24	<u>2490002</u>	101	<u>2490002</u> 101

Event files

DUPERSID	EVNTIDX
2490001101	<u>2490001101</u> 003301
2490001101	<u>2490001101</u> 003401
2490002101	<u>2490002101</u> 002601
2490002101	<u>2490002101</u> 205301

Conditions file

DUPERSID	CONDN	CONDIDX
2490001102	3	<u>2490001102</u> 003
2490002101	2	<u>2490002101</u> 002
2490002101	8	<u>2490002101</u> 008
2490002101	11	<u>2490002101</u> 011

Jobs file

DUPERSID	RN	JOBNUM	JOBSIDX
2490001101	3	101	<u>2490001101</u> 3101
2490001101	3	104	<u>2490001101</u> 3104
2490001101	4	104	<u>2490001101</u> 4104
2490001102	3	103	<u>2490001102</u> 3103

Record Level and Identifiers (cont.)

Person-level files

PANEL	DUID	PID	DUPERSID
24	<u>2490001</u>	101	<u>2490001</u> 101
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Event files

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Jobs file

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2490001101	3	104	<u>2490001101</u> 3104
2490001101	4	104	<u>2490001101</u> 4104
2490001102	3	103	<u>2490001102</u> 3103

Variable Naming Conventions

Edited variables end in “X”

RACETHX

Year-specific variables use last two digits of year

TOTEXP21
PERWT21F

Round-specific variables use two-digit round

- ▶ Some questions only asked in certain rounds, e.g., the Self-Administered Questionnaire in rounds 2 and 4

AGE31X
AGE42X
AGE53X

Design changes indicated by “_M[YY]” suffix

JTPAIN31_M18

Estimation Variables

Weight Variables

- ▶ Person-level (e.g., PERWT21F, DIABW21F, SAQWT21F)
- ▶ Family-level (e.g., FAMWT21F, FAMWT21C)
- ▶ Longitudinal (e.g., LONGWT)

Variance-Estimation Variables (Stratum and PSU)

- ▶ Data after FY 2002: VARSTR, VARPSU
- ▶ FY 1996–2001 data: VARSTRyy, VARPSUyy
- ▶ Pooling data across 2002 OR 2019: STRA9621, PSU9621 in data file HC-036

MEPS Reserve Codes

-1	Inapplicable	Question was not asked due to skip pattern
-7	Refused	Question was asked and respondent refused to answer
-8	Don't know	Question was asked and respondent did not know answer
-9	Not ascertained	Interviewer did not record the data
-15	Cannot be computed	Value cannot be derived from data
-10	Top-coded	Variable was top-coded for confidentiality (e.g., hourly wage)

Programming Example

Compare average medical expenses for persons under age 65 vs. 65 and older in 2021.*

* Not including people that have \$0 in expenses

Process

Compare average medical expenses for persons under 65 vs. 65 and older in 2021.

1. Load datasets.
2. Create new variables.
3. Run survey procedure.
4. Examine results.

Process (cont.)

Compare average medical expenses for persons under 65 vs. 65 and older in 2021.

1. Load datasets.

2. Create new variables.

3. Run survey procedure.






4. Examine results.

2021 Full-Year Consolidated file
Person-level

Load Datasets

Data	File type**
Data File, ASCII format	ZIP (11 MB) / EXE (12 MB)
Data File, SAS transport format	ZIP (11 MB) / EXE (12 MB)
Data File, SAS V9 format	ZIP (13 MB)
Data File, Stata format	ZIP (13 MB)
Data File, XLSX format	ZIP (8 MB)



C:\MEPS\data			Search data
Name	Date modified	Type	
 h233.dat	8/16/2023	DAT File	
 h233.dta	8/16/2023	Stata Dataset	
 h233.sas7bdat	8/16/2023	SAS Data Set	
 h233.ssp	8/16/2023	SSP File	
 h233.xlsx	8/16/2023	Microsoft Excel W...	

Load Datasets* (cont.)

SAS

```
data WORK.h233;  
  set "C:\MEPS\data\h233.sas7bdat";  
run;
```

R

```
install.packages("haven")  
library(haven)  
  
h233 = read_dta("C:/MEPS/data/h233.dta")
```

Stata

```
use "C:\MEPS\data\h233.dta", clear  
rename *, lower
```

** For 2016 and earlier, see GitHub for examples to load SAS transport files*

Process

Compare average medical expenses for persons under 65 vs. 65 and older in 2021.

1. Load datasets.
2. Create new variables.
3. Run survey procedure.
4. Examine results.

Age groups:

AGELAST < 65

AGELAST >= 65

Any expenditures:

TOTEXP21 > 0

Create New Variables

SAS

```
data h233;  
  set h233;  
  
  if 0 <= AGELAST <= 64 then agecat = 1;  
  else if AGELAST > 64 then agecat = 2;  
  
  if TOTEXP21 > 0 then has_exp = 1;  
  else if TOTEXP21 = 0 then has_exp = 0;  
run;
```

R

```
install.packages("dplyr")  
library(dplyr)  
  
h233 = h233 %>% mutate(  
  agecat = ifelse(AGELAST > 64, 2, 1),  
  has_exp = ifelse(TOTEXP21 <= 0, 0, 1) )
```

Stata

```
gen agecat = 1  
replace agecat = 2 if agelast > 64  
  
gen has_exp = 1  
replace has_exp = 0 if (totexp21 <= 0)
```

Create New Variables (cont.)

Quality check on new variables

agecat	AGELAST		
	Min	Mean	Max
1 (< 65)	0	33.7	64
2 (65+)	65	73.9	85

has_exp	TOTEXP21		
	Min	Mean	Max
0	0	0	0
1	1	9,050	2,187,290

SAS

proc means
proc freq

R

group_by
summarise

Stata

bys
sum

Process

Compare average medical expenses for persons under 65 vs. 65 and older in 2021.

1. Load datasets.
2. Create new variables.
- 3. Run survey procedure.**
4. Examine results.

Mean TOTEXP21

- by Age groups
- if has_exp == 1

Run Survey Procedure

SAS

```
proc surveymeans data = h233 mean;  
  stratum VARSTR;  
  cluster VARPSU;  
  weight PERWT21F;  
  var TOTEXP21;  
  domain has_exp * AGECAT;  
run;
```

R

```
install.packages("survey")  
library(survey);  
options(survey.lonely.psu='adjust');  
  
mepsdsgn = svydesign(  
  id = ~VARPSU, strata = ~VARSTR, weights = ~PERWT21F,  
  data = h233, nest = TRUE)  
  
svyby(~TOTEXP21, by = ~agecat, FUN = svymean,  
  design = subset(mepsdsgn, has_exp==1))
```

Stata

```
svyset [pweight=perwt21f], strata(varstr) psu(varpsu) vce(linearized) singleunit(missing)  
  
svy, subpop(if has_exp==1): mean totexp21, over(agecat)
```

Run Survey Procedure (cont.)

has_exp	agecat	totexp21	
		Mean	Std. Err.
1	1 (< 65)	6,386	210.2
	2 (65+)	14,683	526.9

Why Survey Procedures?

Correct Analysis

has_exp	agecat	Mean	Std. Err.
1	1 (< 65)	6,386	210.2
	2 (65+)	14,683	526.9

Why Survey Procedures? (cont.)

Correct Analysis

has_exp	agecat	Mean	Std. Err.
1	1 (< 65)	6,386	210.2
	2 (65+)	14,683	526.9

Ignoring VARSTR, VARPSU

has_exp	agecat	Mean	Std. Err.
1	1 (< 65)	6,386	195.7
	2 (65+)	14,683	522.8

Why Survey Procedures? (cont.)

Correct Analysis

has_exp	agecat	Mean	Std. Err.
1	1 (< 65)	6,386	210.2
	2 (65+)	14,683	526.9

Ignoring VARSTR, VARPSU

has_exp	agecat	Mean	Std. Err.
1	1 (< 65)	6,386	195.7
	2 (65+)	14,683	522.8

Ignoring VARSTR, VARPSU, and PERWT

has_exp	agecat	Mean	Std. Err.
1	1 (< 65)	6,832	191.2
	2 (65+)	15,096	464.7

Process

Compare average medical expenses for persons under 65 vs. 65 and older in 2021.

1. Load datasets.
2. Create new variables.
3. Run survey procedure.
4. **Examine results.**



Examine Results

Does output make sense?

- ▶ Well-defined question
- ▶ Population estimates
- ▶ Inflation adjustment?

Consistent with other published results?


- ▶ Statistical Briefs
- ▶ MEPS-HC Data Tools

Are estimates reliable?

- ▶ Sample size ($n > 60$)
- ▶ Standard errors ($RSE < 0.3$)

Programming Checks

- ❑ Checked documentation
- ❑ Reserve codes addressed (-1, -9, -15, etc.)
- ❑ Datasets merged correctly
- ❑ Survey procedures
 - ❑ VARSTR, VARPSU, weights
 - ❑ Using correct weights
 - ❑ Correct subset analysis
 - ❑ **SAS**: domain
 - ❑ **R/Stata**: subset after defining survey design



Person-level	SAQ	Family-level
PERWT21F	LSAQWT	FAMWT21F
MOSWT16F	SAQWT21F	FAMWT21C
LONGWT	DIABW21F	
	VSAQW19F	
	CSAQW17F	

Exercises (★difficulty level)

SAS / Stata / R


<https://github.com/HHS-AHRQ/MEPS-workshop>


1. National healthcare expenses ★
2. Pooling multiple years of MEPS data ★★
3. Linking Medical Conditions to Events ★★★★


<https://github.com/HHS-AHRQ/MEPS-workshop>




 **MEPS-workshop** Public


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 r_exercises Updating


 sas_exercises Adding

 stata_exercises Updating Stata exercises

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 Agenda Updating materials



 README.md fixing typo

 README.md


MEPS Workshop

This repository contains the agenda, presentation slides, and programming exercises for the latest MEPS workshop.


Local Codespaces


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https://github.com/HHS-AHRQ/MEPS-workshop.git 

Use Git or checkout with SVN using the web URL.

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Thank you!



Emily.Mitchell@ahrq.hhs.gov