

AGENCY FOR HEALTHCARE RESEARCH AND QUALITY

AHRQ

MEPS Data Tools and Programming Overview

Emily M. Mitchell, PhD

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⚠ Moving this June !!

MEPS Data Tools

meps.ahrq.gov

- Survey Questionnaires

Data and Statistics

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- Data Files
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Communication

MEPS Topics

- Access to Health Care
- Children's Health
- Children's Insurance Coverage
- Elderly Health Care
- Health Care Costs/Expenditures
- Health Care Disparities
- Health Insurance
- Medical Conditions
- Medicare/Medicaid/SCHIP
- Men's Health
- Mental Health
- Obesity

Click here for full topic list ...

What's New Highlights

Upcoming Events

MEPS-HC Summary Data Tables

https://meps.ahrq.gov/mepstrends/home/index.html

Moving this June !!

Use, expenditures, and population

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

Health insurance

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

Accessibility and quality of care

Number and percentage of people with a usual source of care, difficulty accessing needed care, preventive care, diabetes care, and patient-reported quality of doctor's visits, by demographic characteristics.

Medical conditions, 1996–2015

Utilization, spending, and number of people with care for medical conditions by demographic characteristics, based on ICD-9 codes (1996-2015)

Medical conditions, 2016 and later

Utilization, spending, and number of people with care for medical conditions by demographic characteristics, based on ICD-10 codes (2016 and later)

Prescribed drugs

Purchases and spending by prescribed drug or therapeutic class.

MEPS-HC Summary Data Tables

https://meps.ahrq.gov/mepstrends/hc_ins/

Select statistic:

Number of people

Show standard errors

Select variable:

Insurance coverage, all ages

Select Levels

Select data view:

Trends over time

Cross-sectional

Year: **to:**

1996 2018

Table | Plot

Number of people in thousands (standard errors) by insurance coverage, all ages, United States, 1996-2018

Year	Any private, all ages	Public only, all ages	Uninsured, all ages
2018	220,492 (6,159)	84,595 (2,641)	21,240 (959)
2017	220,527 (4,602)	82,755 (1,939)	21,498 (811)
2016	216,880 (5,962)	81,653 (2,279)	24,609 (1,152)
2015	214,446 (6,141)	80,828 (2,472)	26,149 (1,099)
2014	208,377 (5,913)	78,739 (2,549)	31,324 (1,309)
2013	201,609 (5,235)	73,576 (2,334)	40,537 (1,585)
2012	201,911 (5,328)	71,733 (2,377)	39,847 (1,496)
2011	203,056 (5,365)	69,113 (2,151)	38,957 (1,376)
2010	200,580 (5,089)	67,557 (2,118)	40,437 (1,614)

MEPS-HC Summary Data Tables

https://meps.ahrq.gov/mepstrends/hc_ins/

Select statistic:

Number of people

Show standard errors

Select variable:

Insurance coverage, all ages

Select Levels

Select data view:

Trends over time

Cross-sectional

Year:

2018

Group by:

Race/ethnicity

Table | Plot

Number of people in thousands (standard errors) by race/ethnicity and insurance coverage, all ages, United States, 2018

Race/ethnicity	Any private, all ages	Public only, all ages	Uninsured, all ages
Hispanic	29,509 (1,465)	21,583 (1,580)	9,137 (770)
Black	23,224 (1,327)	13,954 (904)	2,926 (299)
White	146,776 (5,097)	40,572 (1,658)	7,418 (421)
Amer. Indian, AK Native, or mult. races	6,942 (454)	3,599 (269)	544 (106)
Asian, Hawaiian, or Pacific Islander	14,040 (1,209)	4,888 (520)	1,214 (209)

-- Estimates suppressed due to inadequate precision (see FAQs for details).

* Relative standard error is greater than 30%

Source: Center for Financing, Access and Cost Trends, Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2018

Notes

Race/ethnicity

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MEPS Public Use Data Files

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

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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)
Data File, SAS transport format	ZIP (1.5 MB) / EXE (2.0 MB)

Questionnaires — see Survey Questionnaires

*The PDF version of the codebook is recommended for printing; the HTML version is database driven and lets you navigate quickly to details on each variable.
**Right-click on the data file link, then select Save Target As or Save Link As to download the file.

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Codebook

MEPS Public Use Data Files

Name	Start	End	Description
REGION18	84	85	CENSUS REGION AS OF 12/31/18
REGION31	78	79	CENSUS REGION - R3/1
REGION42	80	81	CENSUS REGION - R4/2
REGION53	82	83	CENSUS REGION - R5/3

VALUE	UNWEIGHTED	WEIGHTED
-1 INAPPLICABLE	216	2,287,777
1 NORTHEAST	4,556	55,312,029
2 MIDWEST	6,388	67,715,629
3 SOUTH	11,795	123,494,938
4 WEST	7,506	77,517,515
TOTAL	30,461	326,327,888

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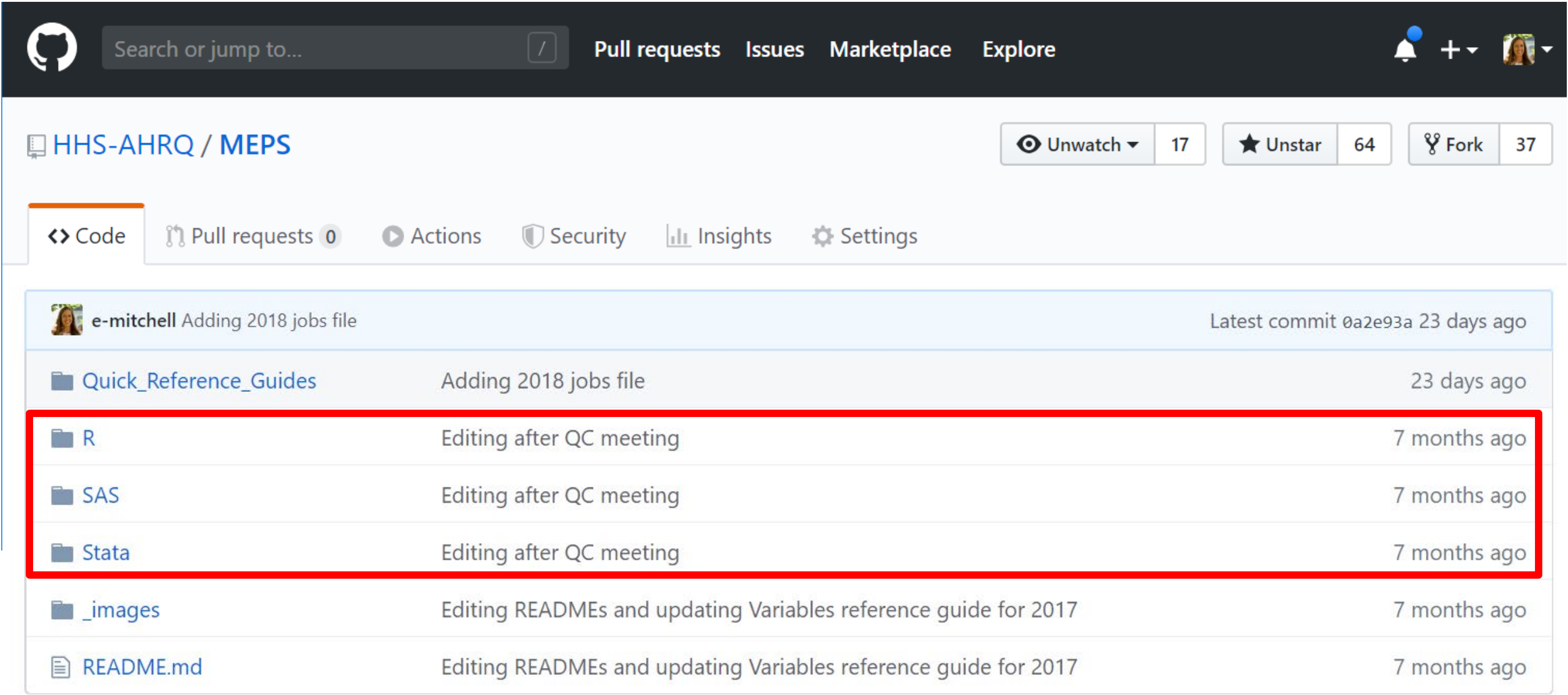
Documentation	File type
Documentation	PDF (252 KB) / HTML
Codebook	PDF (19 MB) / HTML*
SAS Programming Statements	TXT (1.1 MB)
SPSS Programming Statements	TXT (947 KB)
STATA Programming Statements	TXT (1.1 MB)
R Programming Statements ★	TXT (92 KB)

Data	File type**
Data File, ASCII format	ZIP (7.9 MB) / EXE (8.4 MB)
Data File, SAS transport format	ZIP (9.7 MB) / EXE (10 MB)
Data File, SAS V9 format	ZIP (1.3 MB) / EXE (1.8 MB)
Data File, CSV format	ZIP (1.2 MB) / EXE (1.8 MB)
Data File, Stata format	ZIP (1.0 MB) / EXE (1.5 MB)

Starting DY 2019

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



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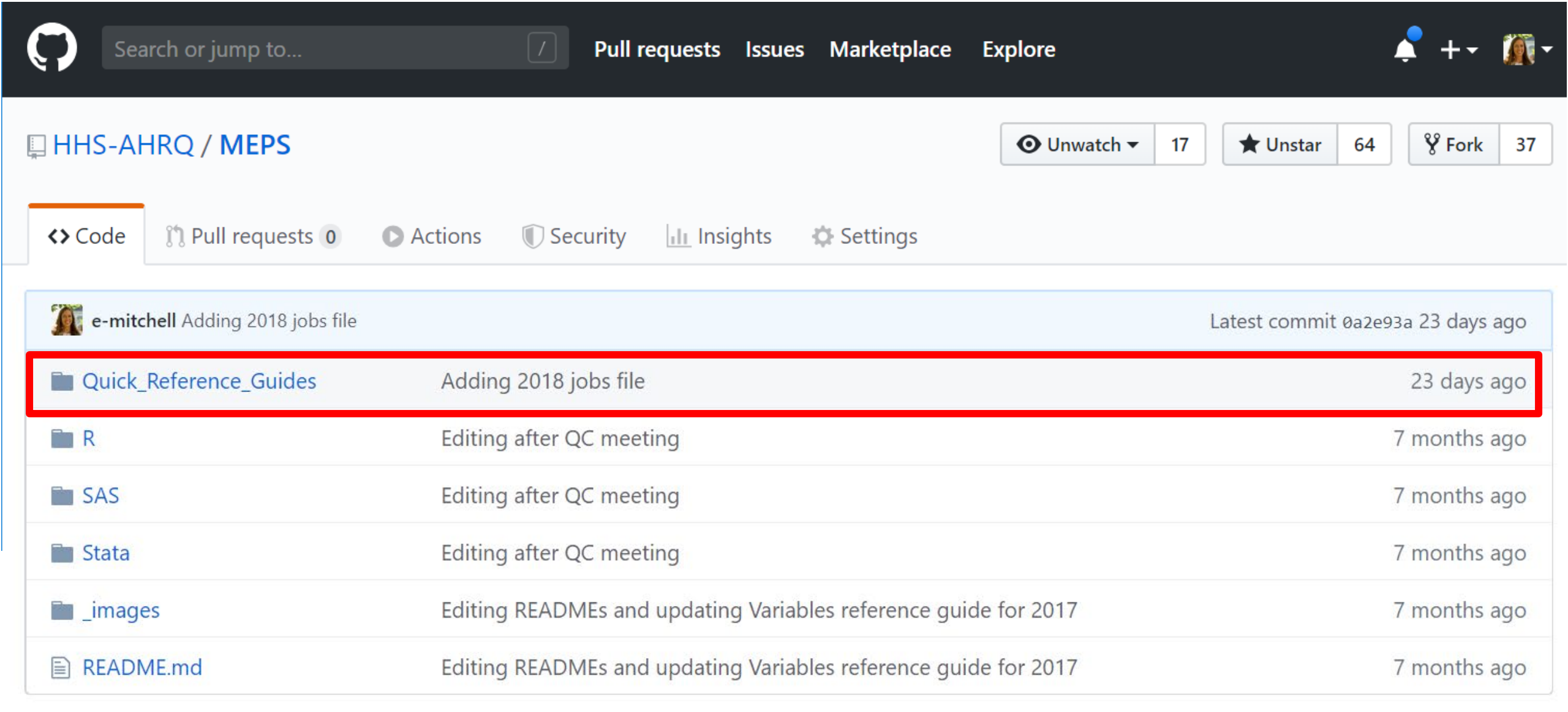
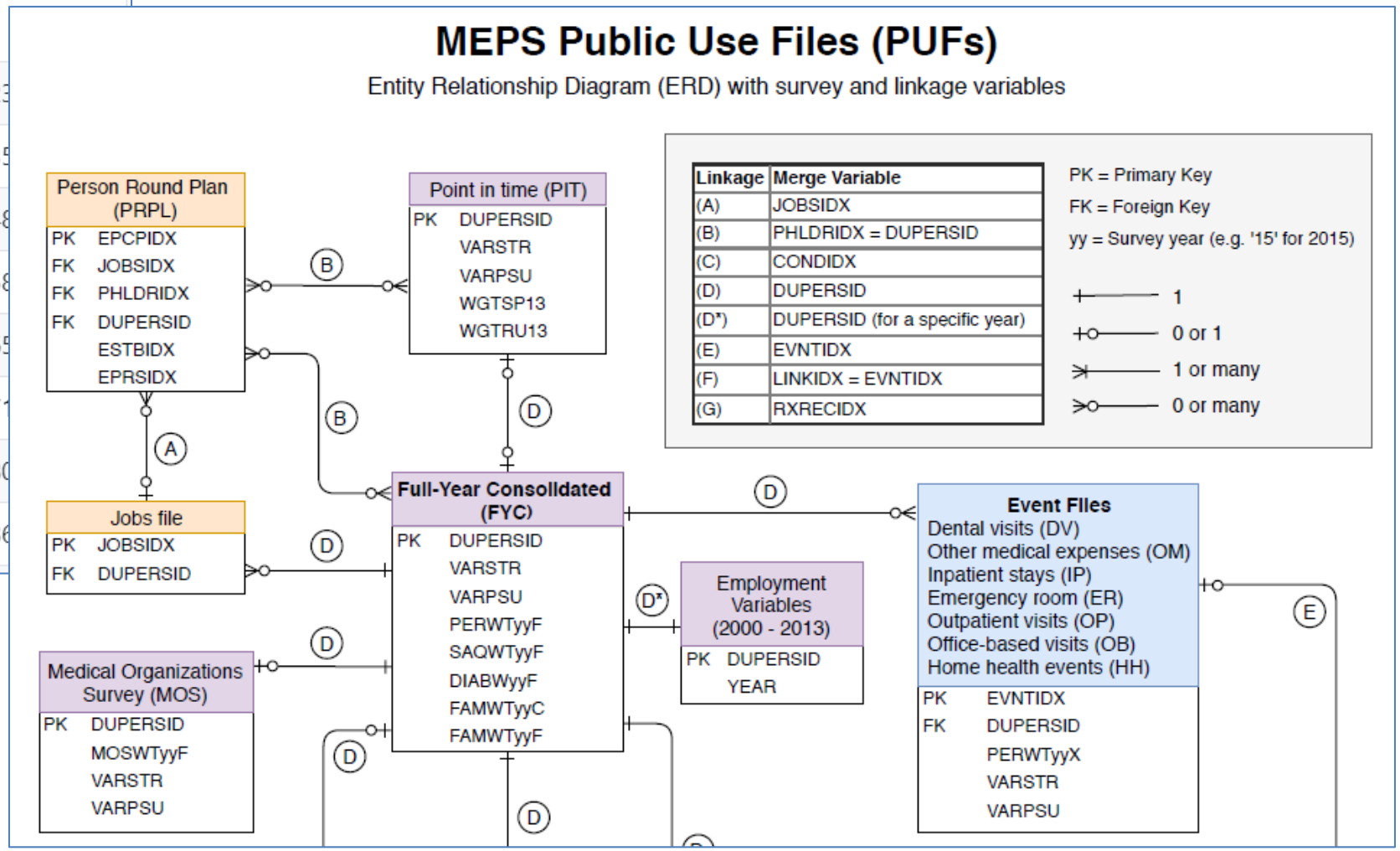


Quick reference guides

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



Record-Level and Identifiers

Person-level

- Full-year consolidated file
- Longitudinal files

Event-level

- Event files: PMED, DN, OM, IP, ER, OP, OB, HH

Condition-level

- Medical conditions file

Job-level

- Jobs file

Record-Level and Identifiers

Person-level

PANEL	DUID	PID	DUPERSID
22	2290001	101	2290001101
22	2290001	102	2290001102
22	2290002	101	2290002101

Event-level

DUPERSID	EVNTIDX
2290001101	22900011010033 01
2290001101	22900011010034 01
2290002101	22900021010026 01
2290002101	22900021012053 01

Conditions-level

DUPERSID	CONDN	CONDIDX
2290001102	3	2290001102003
2290002101	2	2290002101002
2290002101	8	2290002101008
2290002101	11	2290002101011

Jobs-level

DUPERSID	RN	JOBNUM	JOBSIDX
2290001101	3	101	2290001101 3101
2290001101	3	104	2290001101 3104
2290001101	4	104	2290001101 4104
2290001102	3	103	2290001102 3103

Record-Level and Identifiers

Person-level

PANEL	DUID	PID	DUPERSID
22	2290001	101	2290001101
22	2290001	102	2290001102
22	2290002	101	2290002101

Event-level

DUPERSID	EVNTIDX
2290001101	2290001101003301
2290001101	2290001101003401
2290002101	2290002101002601
2290002101	2290002101205301

Conditions-level

DUPERSID	CONDN	CONDIDX
2290001102	3	2290001102003
2290002101	2	2290002101002
2290002101	8	2290002101008
2290002101	11	2290002101011

Jobs-level

DUPERSID	RN	JOBNUM	JOBSIDX
2290001101	3	101	2290001101 3101
2290001101	3	104	2290001101 3104
2290001101	4	104	2290001101 4104
2290001102	3	103	2290001102 3103

Record-Level and Identifiers

Person-level

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Event-level

DUPERSID	EVNTIDX
2290001101	22900011010033 01
2290001101	22900011010034 01
2290002101	22900021010026 01
2290002101	22900021012053 01

Conditions-level

DUPERSID	CONDN	CONDIDX
2290001102	3	2290001102003
2290002101	2	2290002101002
2290002101	8	2290002101008
2290002101	11	2290002101011

Jobs-level

DUPERSID	RN	JOBNUM	JOBSIDX
2290001101	3	101	2290001101 3101
2290001101	3	104	2290001101 3104
2290001101	4	104	2290001101 4104
2290001102	3	103	2290001102 3103

Record-Level and Identifiers

2017

Person-level

PANEL	DUID	PID	DUPERSID
22	90001	101	90001101
22	90001	102	90001102
22	90002	101	90002101

Jobs-level

DUPERSID	RN	JOBSN	JOBSIDX
90001101	3	1	90001101301
90001101	3	4	90001101304
90001101	4	4	90001101404
90001102	3	3	90001102303

2018

Person-level

PANEL	DUID	PID	DUPERSID
22	2290001	101	2290001101
22	2290001	102	2290001102
22	2290002	101	2290002101

Jobs-level

DUPERSID	RN	JOBNUM	JOBSIDX
2290001101	3	101	22900011013101
2290001101	3	104	22900011013104
2290001101	4	104	22900011014104
2290001102	3	103	22900011023103

Variable Naming Conventions

Edited Variables end in an “X”

RACE**X**

Year-specific variables use last two digits of year

TOTEXP**18**
PERWT**18**F

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

AGE**31**X
AGE**42**X
AGE**53**X

Estimation Variables

Weight Variables

- Person-level (e.g. PERWT18F, DIABW18F, SAQWT18F)
- Family-level (e.g. FAMWT18F, FAMWT18C)
- Longitudinal (e.g. LONGWT)

Variance-Estimation Variables (Stratum and PSU):

- After 2002 FY data: VARSTR, VARPSU
- 1996-2001 FY data: VARSTRyy, VARPSUyy
  - When calculating variances with ***pooled data***, use STRA9618, PSU9618 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 **New for 2018**
-10	Top-Coded	Variable was top-coded for confidentiality

MEPS Reserve Codes

-1	Inapplicable
-7	Refused
-8	Don't Know
-9	Not Ascertained
-15	Cannot be computed
-10	Top-Coded

EXAMPLES

FYC file: Pregnancy

Event file: Expenditures for phone calls

Jobs file: Hourly Wage

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Programming Example

Compare average medical expenses for persons under age 65 vs. 65 and older in 2018.*

* Not including people that have $0 in expenses

Process

Compare average medical expenses for persons under 65 vs. 65 and older in 2018.*

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

Process

Compare average medical expenses for persons under 65 vs. 65 and older in 2018.*

1. Load datasets

2. Create new variables

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4. Examine results

2018 Full-Year Consolidated File
Person-level

Load datasets

- Data Overview
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Must use ASCII for 2018 files in R/Stata

Questionnaires — see **Survey Questionnaires**

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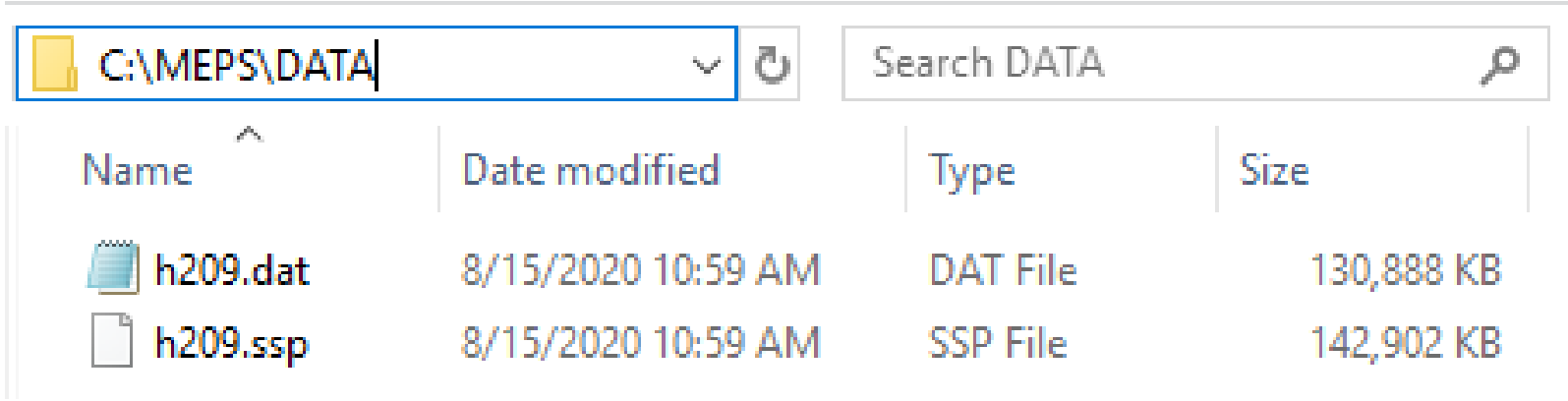
Load datasets

Store .dat or .ssp file in a local directory:



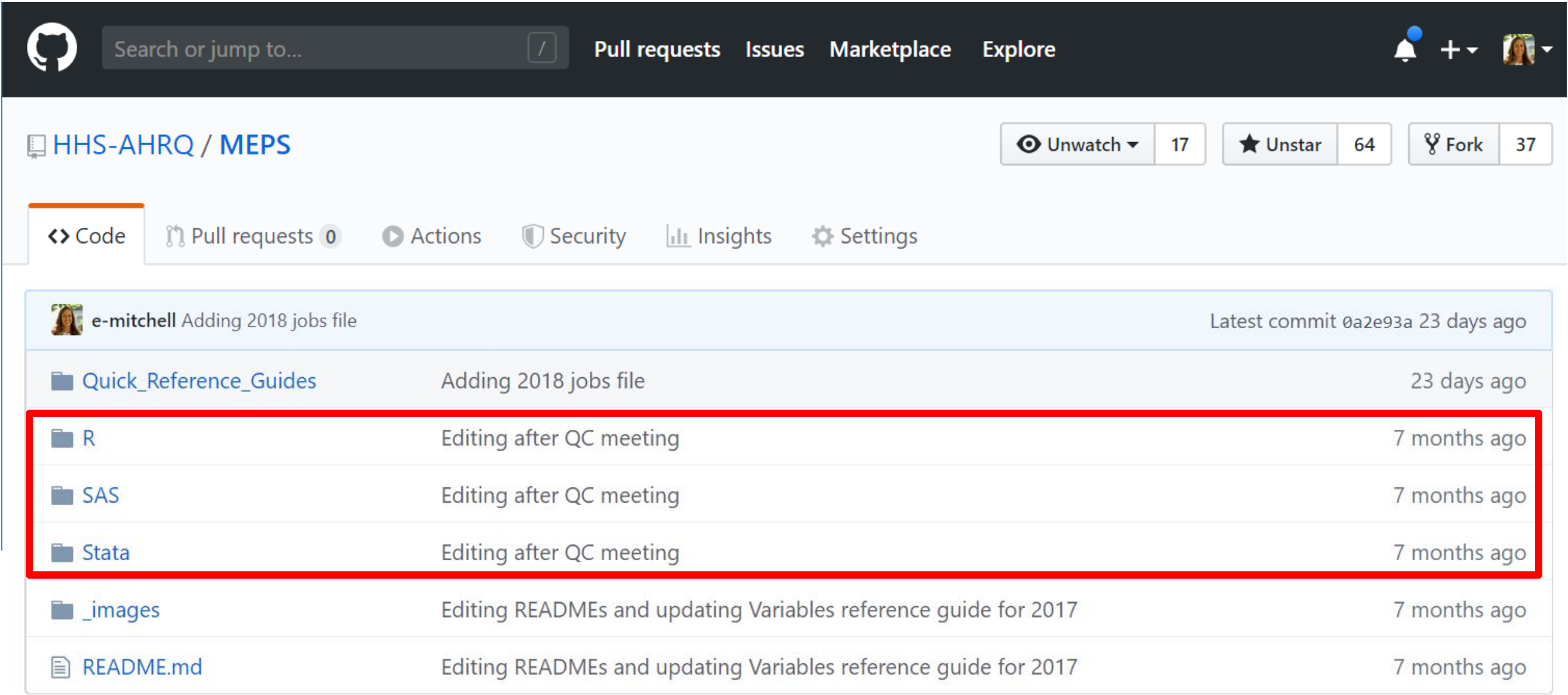
Load datasets

	1996-2017	2018
SAS	FILENAME in1 'C:\MEPS\data**h201.ssp**'; **proc xcopy** in = in1 out = WORK IMPORT; **run**;	FILENAME in1 'C:\MEPS\data**h209.ssp**'; **proc cimport** data = h209 infile = in1; **run**;
Stata	**import** sasxport "C:\MEPS\data**h201.ssp**"	**cd** C:\MEPS\DATA; clear; **infix** long DUID 1-7 int PID 8-10 … **using H209.dat**;
R	**install.packages**("foreign"); **library**(foreign); **h201** = read.xport("C:/MEPS/data/**h201.ssp**")	**install.packages**("readr"); **meps_path** = "C:/MEPS/data/**h209**.dat" **source**("https://meps.ahrq.gov/mepsweb/data_stats/download_data/pufs/**h209**/**h209ru**.txt")

PROGRAMMING STATEMENTS

Load datasets

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



Process

Compare average medical expenses for persons under 65 vs. 65 and older in 2018.*

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

Age groups:

AGELAST < 65

AGELAST >= 65

Any expenditures:

TOTEXP18 > 0

Create new variables

SAS

```
data h209;
  set h209;

  if 0 <= AGELAST <= 64 then agecat = 1;
  else if AGELAST > 64 then agecat = 2;

  if TOTEXP18 > 0 then has_exp = 1;
  else if TOTEXP18 = 0 then has_exp = 0;
run;
```

Stata

```
gen agecat = 1
replace agecat = 2 if agelast > 64

gen has_exp = 1
replace has_exp = 0 if (totexp18 <= 0)
```

R

```
install.packages("dplyr")
library(dplyr)

h209 = h209 %>% mutate(
    agecat = ifelse(AGELAST > 64, 2, 1),
    has_exp = ifelse(TOTEXP18 <= 0, 0, 1) )
```

Create new variables

Quality check on new variables

agecat	agelast		
	Min	Mean	Max
1 (< 65)	0	31.6	64
2 (65+)	65	73.8	85

has_exp	totexp18		
	Min	Mean	Max
0	0	0	0
1	1	7,183	807,611

SAS

proc means
proc freq

Stata

bys
sum

R

group_by
summarise

Process

Compare average medical expenses for persons under 65 vs. 65 and older in 2018.*

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

Mean TOTEXP18
- by Age groups
- if has_exp == 1

Run survey procedure

SAS

```
proc surveymeans data = h209 mean;
      stratum VARSTR;
      cluster VARPSU;
      weight PERWT18F;
      var TOTEXP18;
      domain has_exp * AGECAT;
run;
```

R

```
library(survey); options(survey.lonely.psu='adjust');

mepsdsgn = svydesign(
  id = ~VARPSU,
  strata = ~VARSTR,
  weights = ~PERWT18F,
  data = h209,
  nest = TRUE)

svyby(~TOTEXP18, by = ~agecat, FUN = svymean,
    design = subset(mepsdsgn, has_exp==1))
```

Stata

```
svyset [pweight=perwt18f], strata(varstr) psu(varpsu) vce(linearized) singleunit(missing)

svy, subpop(if has_exp==1): mean totexp18, over(agecat)
```

Run survey procedure

has_exp	agecat	totexp18	
		Mean	Std. Err.
1	1 (< 65)	5,650	133.2
	2 (65+)	12,866	329.0

Why survey procedures?

Correct Analysis

has_exp	agecat	Mean	Std. Err.
1	1 (< 65)	5,650	133.2
	2 (65+)	12,866	329.0

Why survey procedures?

Correct Analysis

has_exp	agecat	Mean	Std. Err.
1	1 (< 65)	5,650	133.2
	2 (65+)	12,866	329.0

Ignoring VARSTR, VARPSU

has_exp	agecat	Mean	Std. Err.
1	1 (< 65)	5,650	**133.9**
	2 (65+)	12,866	**339.5**

Why survey procedures?

Correct Analysis

has_exp	agecat	Mean	Std. Err.
1	1 (< 65)	5,650	133.2
	2 (65+)	12,866	329.0

Ignoring VARSTR, VARPSU

has_exp	agecat	Mean	Std. Err.
1	1 (< 65)	5,650	**133.9**
	2 (65+)	12,866	**339.5**

Ignoring VARSTR, VARPSU, and PERWT

has_exp	agecat	Mean	Std. Err.
1	1 (< 65)	**5,639**	**120.8**
	2 (65+)	**13,123**	**312.8**

Process

Compare average medical expenses for persons under 65 vs. 65 and older in 2018.*

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

Examine results

Does output make sense?

- Population estimates
- Inflation adjustment?

Are estimates reliable?

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

Consistent with other published results?

- Stat briefs
- Summary tables

Programming checklist

- ❑ Well-defined question
- ❑ Checked documentation
- ❑ Reserve codes addressed (-1, -9, -15, etc.)
- ❑ Datasets merged correctly
- ❑ Adequate sample size / precision (PERWT18F)
- ❑ Survey procedures
  - ❑ PERWT, VARSTR, VARPSU
  - ❑ Using correct weights (PERWT / FAMWT / LONGWT)
  - ❑ 'domain' analysis for subsets (SAS)
- ❑ Results make sense

Exercises (⭐ difficulty level)

SAS / Stata / R

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

1. National health care expenses ⭐
2. Purchases and expenses for narcotic analgesics ⭐⭐
3. Pooling multiple years of MEPS data ⭐⭐⭐
4. Logistic regression ⭐⭐⭐

Emily.Mitchell@ahrq.hhs.gov