

AGENCY FOR HEALTHCARE RESEARCH AND QUALITY

AHRQ

MEPS-HC
Prescribed Medicines (PMED) File

Rebecca Ahrnsbrak

Household PMED Data Collection

- Respondents encouraged to use memory aids
  - Pill bottles/containers
  - Pharmacy receipts, patient portal, or other records
- Respondents prompted about any medicines prescribed during reported medical visits
  - For hospital stays, respondents are asked to report only drugs prescribed on discharge
  - Respondents are asked to report only prescribed medicines that they filled
- Prescribed medicines section asks about prescribed medicines obtained at any pharmacy:
  - Any new prescription medicines or refills
  - Any prescribed medicines taken only as needed
  - Any diabetic equipment or supplies

Pharmacy Data Collection

- Requires written authorization from sample member to request their pharmacy records
- Asks pharmacies for “patient profile” or information on patient’s drug fills
- Used primarily for expenditure information and detailed drug characteristics (form, strength, quantity, etc.)
- Used as imputation donor pool for those without PC data and those with incomplete PC data
  - ► Not all sample members give permission to contact pharmacies
  - ► Not all pharmacies respond
  - ► Respondents may not report all pharmacies

Elements Collected: HC and PC

Household Component

- Medicine name, strength, and form
- Number of fills in round
- Associated condition(s)
- When first used
- Pharmacy information
- Authorization to contact pharmacies

Pharmacy Component

- Drug name
- Detailed drug characteristics (strength, form, days supplied, etc.)
- National Drug Code (NDC)
- Payers
- Amount paid by each payer (including out of pocket)

Editing HC and PC Data

- The HC and PC data do not share a common identifier
  - A Generic Product Indicator (GPI) is assigned to both HC and PC records to facilitate matching
- Before HC and PC data are combined, editing and imputation are done separately on each file
  - Review outliers – flag and impute when implausible
  - Price benchmarking for PC data
  - Impute missing data elements in each file

Combining HC and PC Data

- Iterative and progressively less restrictive matching process
  - Matching is done at the person-round-drug level
  - For those with PC data, attempts to match within the person's PC data are attempted first
  - For those with no or incomplete PC data, a PC record that matches as closely as possible is imputed
  - Inexact matches are permitted when exact match attempts fail
- Utilization (fill records) are based only on household-reported data
  - MEPS does not create new PMED records based on PC data
- Post-match editing is performed on the combined data

PMED PUF

- The PMED PUF is unfolded to the acquisition (fill or refill) level
  - Each record represents a unique fill of a prescribed medicine for a sample person
- Not everyone on the FYC will have PMED records
- Rarely used drugs are masked (to -15) to protect respondent confidentiality
  - In these cases, Multum therapeutic class information replaces the medication name in RXDRGNAM
- Can be linked to:
  - FYC (person-level) PUF by DUPERSID
  - Medical Conditions PUF by CLNK PUF
  - Medical event PUFs by RXLK PUF

PMED PUF Structure

- DUPERSID – Unique person identifier
- RXRECIDX – Unique identifier for each record (fill) on the file
- DRUGIDX – Unique drug identifier for a given person
- LINKIDX – Unique person-round-drug identifier for linking to other files

DUPERSID	DRUGIDX	RXRECIDX	PURC HRD	LINKIDX	RXDRGNAM
2510001101	2510001101001	25100011010011030001	1	251000110100110 3	ATORVASTATIN
2510001101	2510001101001	25100011010011030002	1	251000110100110 3	ATORVASTATIN
2510001101	2510001101001	25100011010012030003	2	251000110100120 3	ATORVASTATIN
2510001101	2510001101002	25100011010022030004	2	251000110100220 3	AMOXICILLIN

1 person 2 drugs 4 fills 3 LINKIDXs 2 drugs

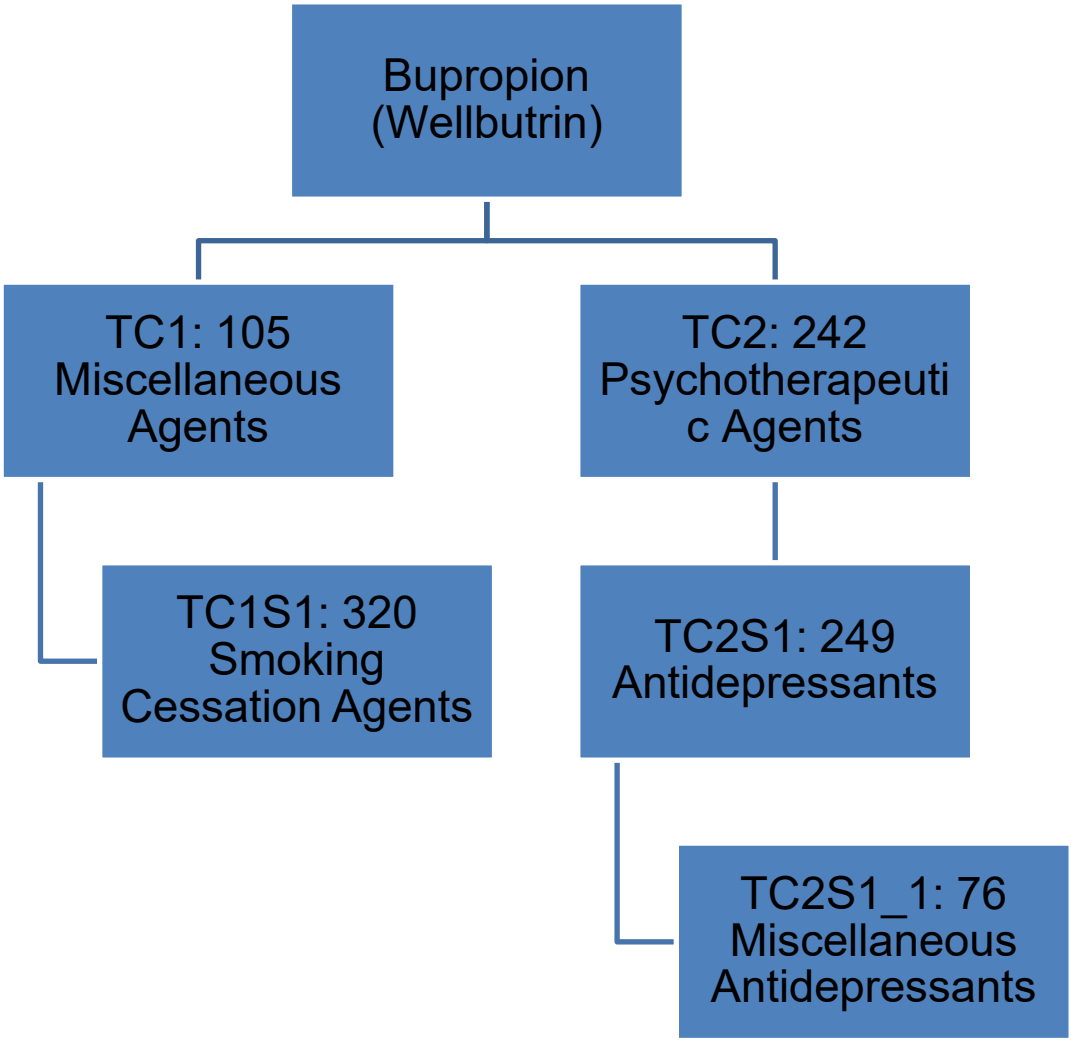
Additional PMED File Contents

- Medication name
  - RXDRGNAM: standardized generic drug name
  - RXNAME: pharmacy-reported drug name
- NDC
- Total payment
- Amount paid by payer type
- Pharmacy types
- Quantity dispensed
- Days supplied
- Strength
- Form
- Purchase round
- Flag for diabetic equipment or supplies
- Month and year person started taking drug
- Whether person has PC data
- Imputation information
- Multum therapeutic classes and pregnancy category
- Person-level weight and design variables

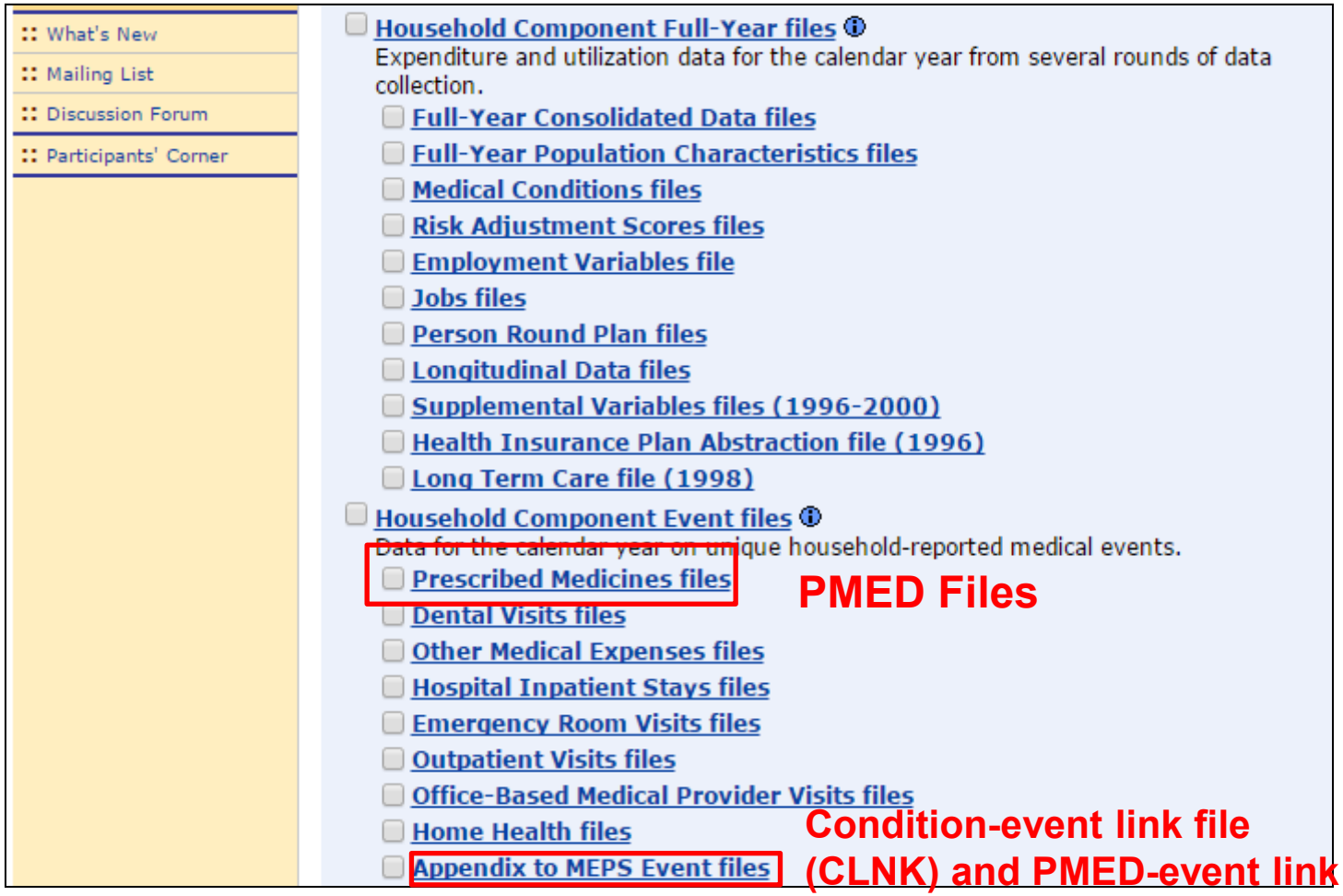
Multum Therapeutic Classes

- Classifies drugs into therapeutic classes, subclasses, and sub sub-classes
  - TCn - assigns a drug to one or more therapeutic/chemical categories
    - Can have up to three therapeutic classes per drug
  - TCnSn - assigns one or more therapeutic subclasses to an assigned therapeutic class
  - TCnSn_n - assigns one or more sub sub-classes to a given therapeutic subclass
- Classification scheme can change over time
  - Check documentation for each year
- For 1996-2013, use the Multum Lexicon Addendum Files

Example: Multum Therapeutic Classes



Finding PMED and Linking Files



Linking PMEDs to Medical Conditions

PMED File

DUPERSID	DRUGIDX	PURCHRD	LINKIDX	RXRECIDX
2310001101	2310001101002	1	2310001101002103	2310001101002103001
2310001101	2310001101002	1	2310001101002103	2310001101002103002
2310001101	2310001101002	2	2310001101002203	2310001101002203001

CLNK File

DUPERSID	CONDIDX	EVNTIDX	EVENTYPE
2310001101	2310001101001	2310001101002103	8
2310001101	2310001101001	2310001101002203	8

Medical Conditions File

DUPERSID	CONDIDX	ICD10CDX
2310001101	2310001101001	Z13

- EVENTYPE = 8 on CLNK file indicates PMED event
- Merge LINKIDX from the PMED file to EVNTIDX on the CLNK file
- If linking PMEDs to associated conditions, you only need to use CLNK!

Linking PMEDs to Other Event Files

PMED File

DUPERSID	DRUGIDX	PURCHRD	LINKIDX	RXRECIDX
2310001101	2310001101002	1	2310001101002103	2310001101002103001
2310001101	2310001101002	1	2310001101002103	2310001101002103002
2310001101	2310001101002	2	2310001101002203	2310001101002203001

RXLK File

DUPERSID	LINKIDX	EVNTIDX	EVENTYPE
2310001101	2310001101002103	2310001101200501	1

OB File

DUPERSID	EVNTIDX	VSTCTGRY
2310001101	2310001101200501	2

Caution: Many PMEDs do not link to other medical events

- Pharmacists often call a physician directly for a renewal (and thus there is no medical visit for the respondent where it is prescribed)
- Respondents can enter MEPS with enough refills of a drug to not need a prescription renewal

Linking: Examples

- Analyze expenditures for prescribed medicines used to treat hypertension
  - Use CLNK PUF to link PMED PUF to conditions PUF
- Analyze expenditures for prescribed medicines obtained from emergency room visits
  - Use RXLK PUF to link PMED PUF to ER event PUF
  - But see caution on last slide!
- Analyze expenditures for prescribed medicines obtained from ER visits and used to treat hypertension
  - Use both CLNK and RXLK PUFs

Caveats and Limitations

- Potential underreporting of drugs
- MEPS only measures prescribed medicines obtained in an outpatient setting (retail and mail-order pharmacies)
  - ► It does not measure drugs administered in a medical office, clinic, or inpatient setting
- MEPS does not measure if drugs were actually taken (just those that were filled)
- Fills are not standardized for days supplied

Caveats and Limitations

- MEPS is not well suited to studying prescribers
  - ► See slide on linking PMEDs to events
- PMED expenditures do not include rebates between manufacturers and pharmacy benefit managers (PBMs) or government programs
- Pharmacy type variables are those reportedly used by the person in the purchase round and any prior rounds
  - ► Not unique to a specific drug or fill
  - ► Definitions of pharmacy types are fuzzy to respondents

Interpreting Trends

- Be cautious interpreting year-over-year changes
  - Policy changes
  - Changes in PMED data processing procedures (especially 2007-2009 and 2017)
  - MEPS design changes (especially 2013 and 2018)
- Read the PMED documentation for each year being analyzed
- Consider techniques to stabilize or smooth trends

COVID-19

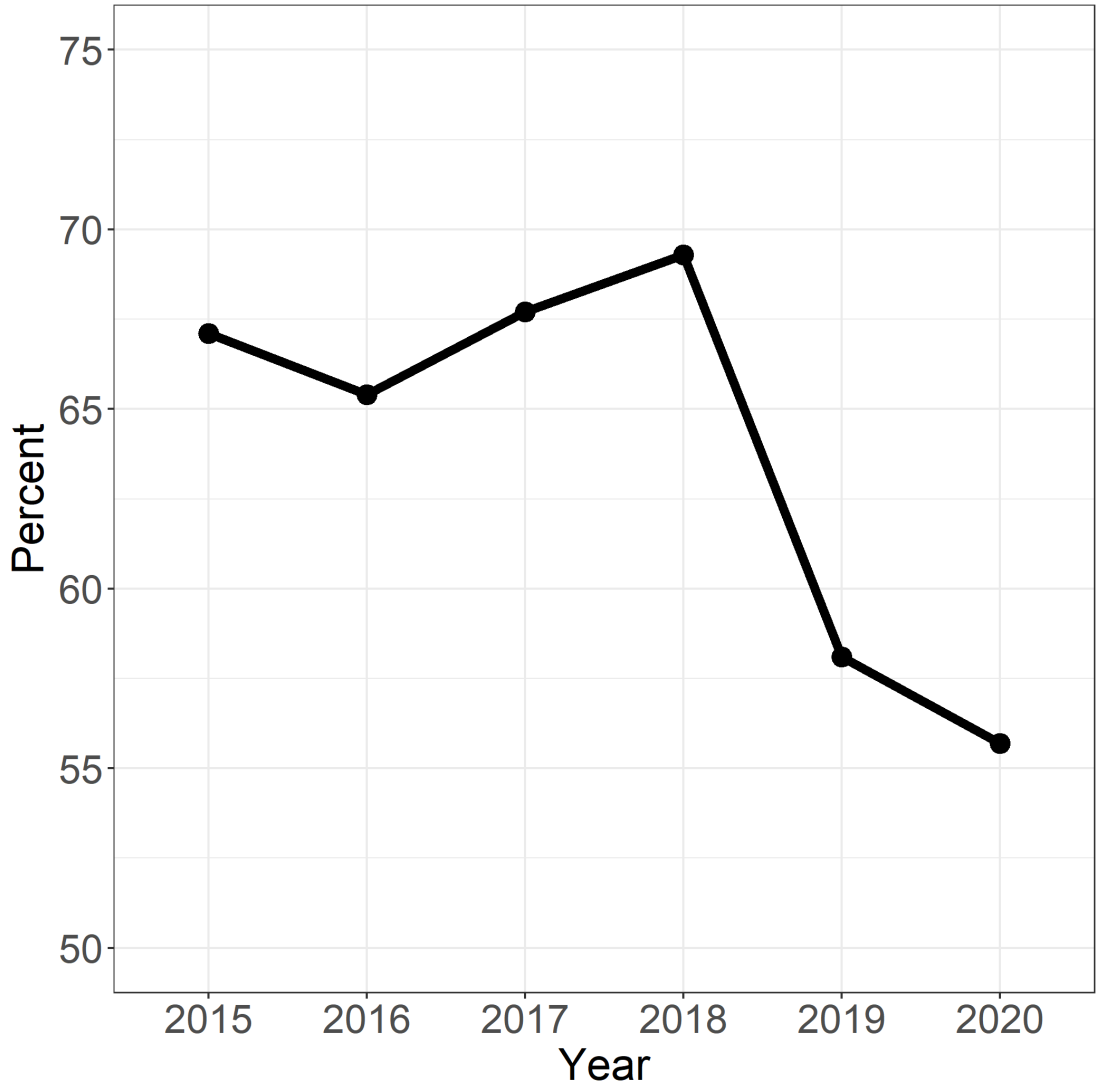
- COVID-19 introduced significant disruptions to:
  - Face-to-face data collections like MEPS-HC
    - See earlier presentation
  - Pharmacy participation in MEPS-PC starting with 2019 data
    - 2019 PC data were collected beginning in 2020
  - The actual healthcare landscape

COVID-19 Effects: Examples

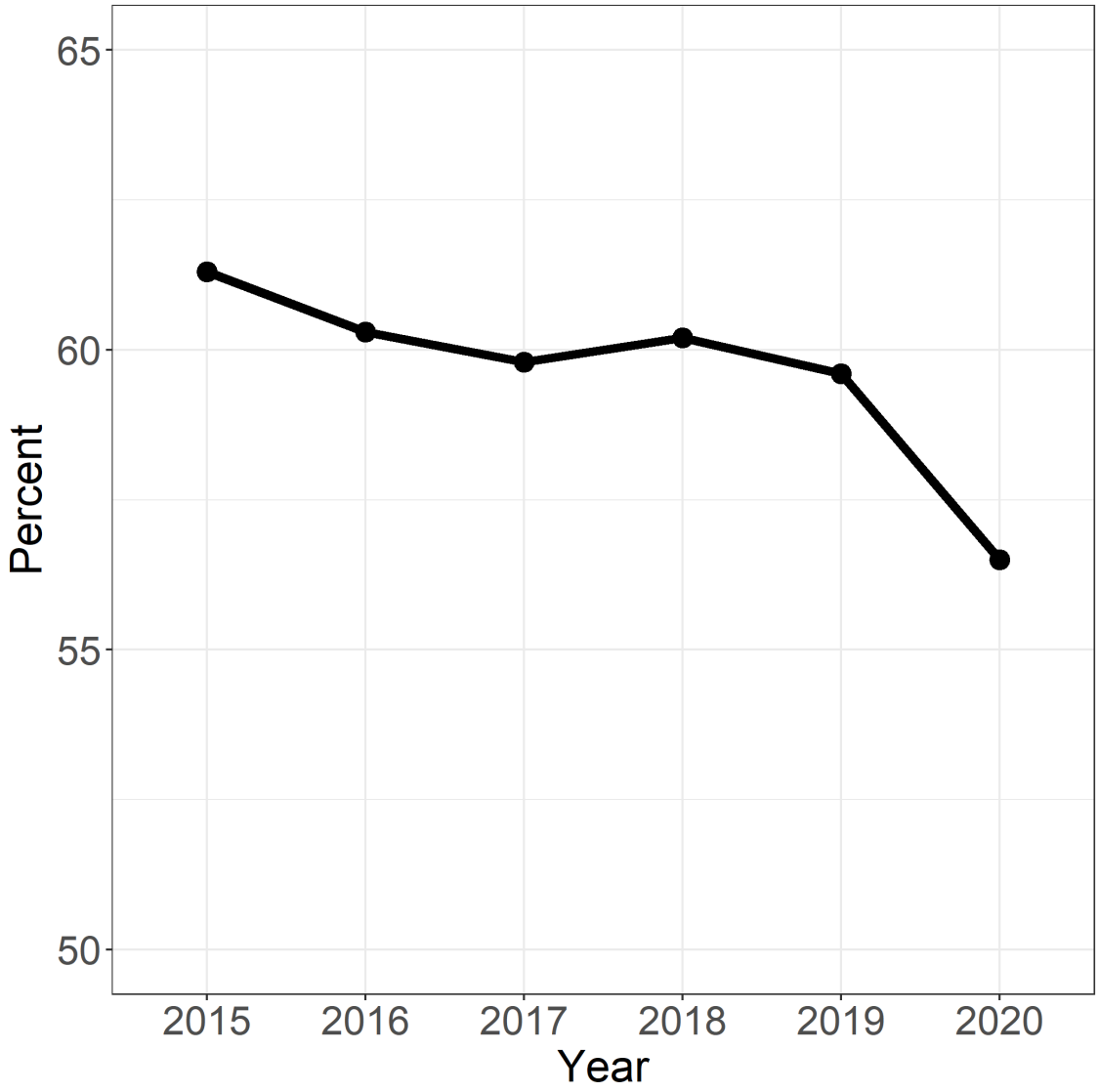
The next slides show graphical examples of:

- Methodological effects
  - ► Fewer sample members with PC data
- Some ongoing trends that were exacerbated by COVID-19
  - ► Decreasing percent of people with a PMED expense
  - ► Increases in ‘3 month’ days supplied and decreases in ‘1 month’ days supplied
- Some data points that likely reflect (at least in part) true changes in the healthcare landscape due to COVID-19
  - ► A decrease in fills for amoxicillin

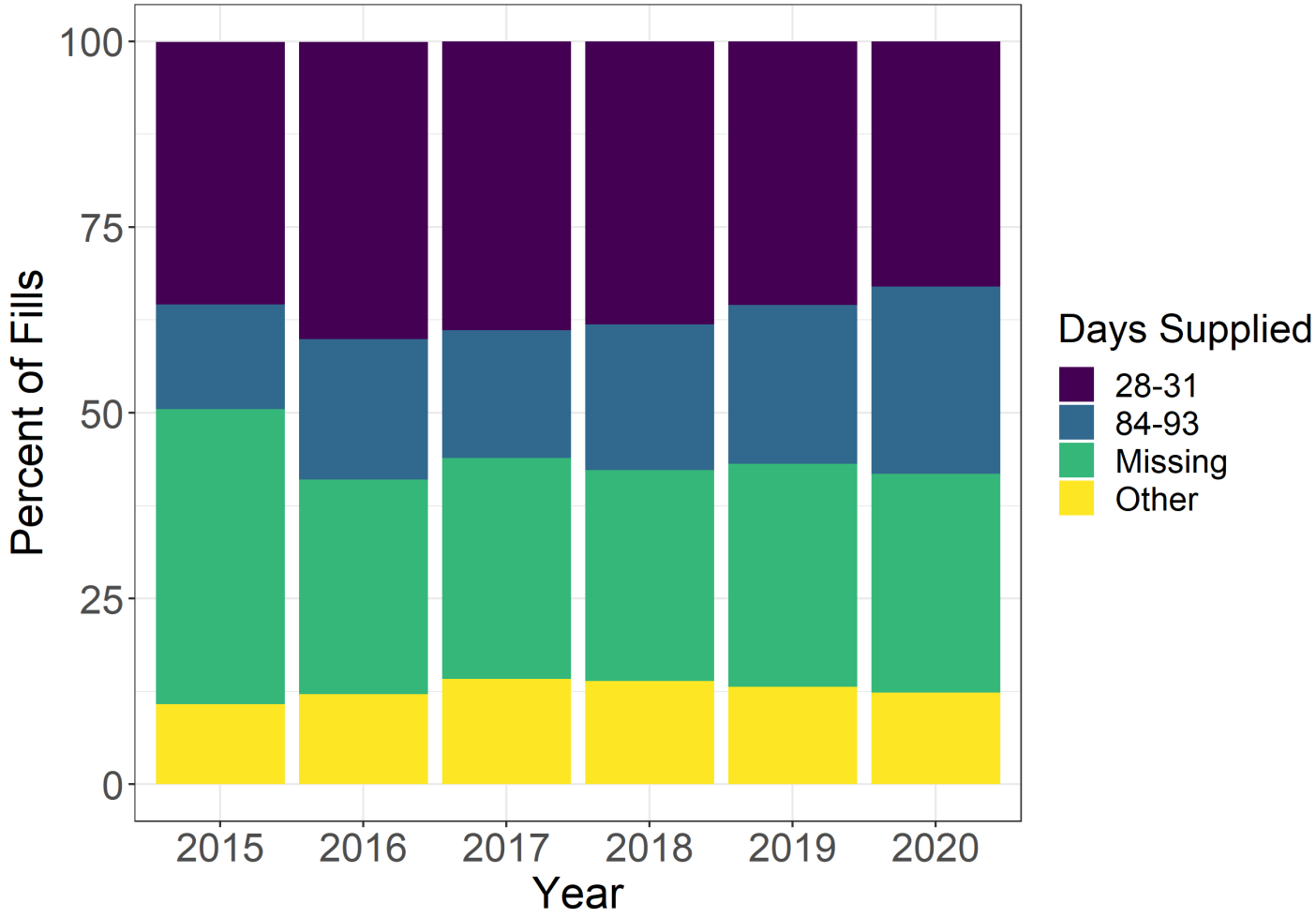
Weighted Percent of People With At Least One PC Record



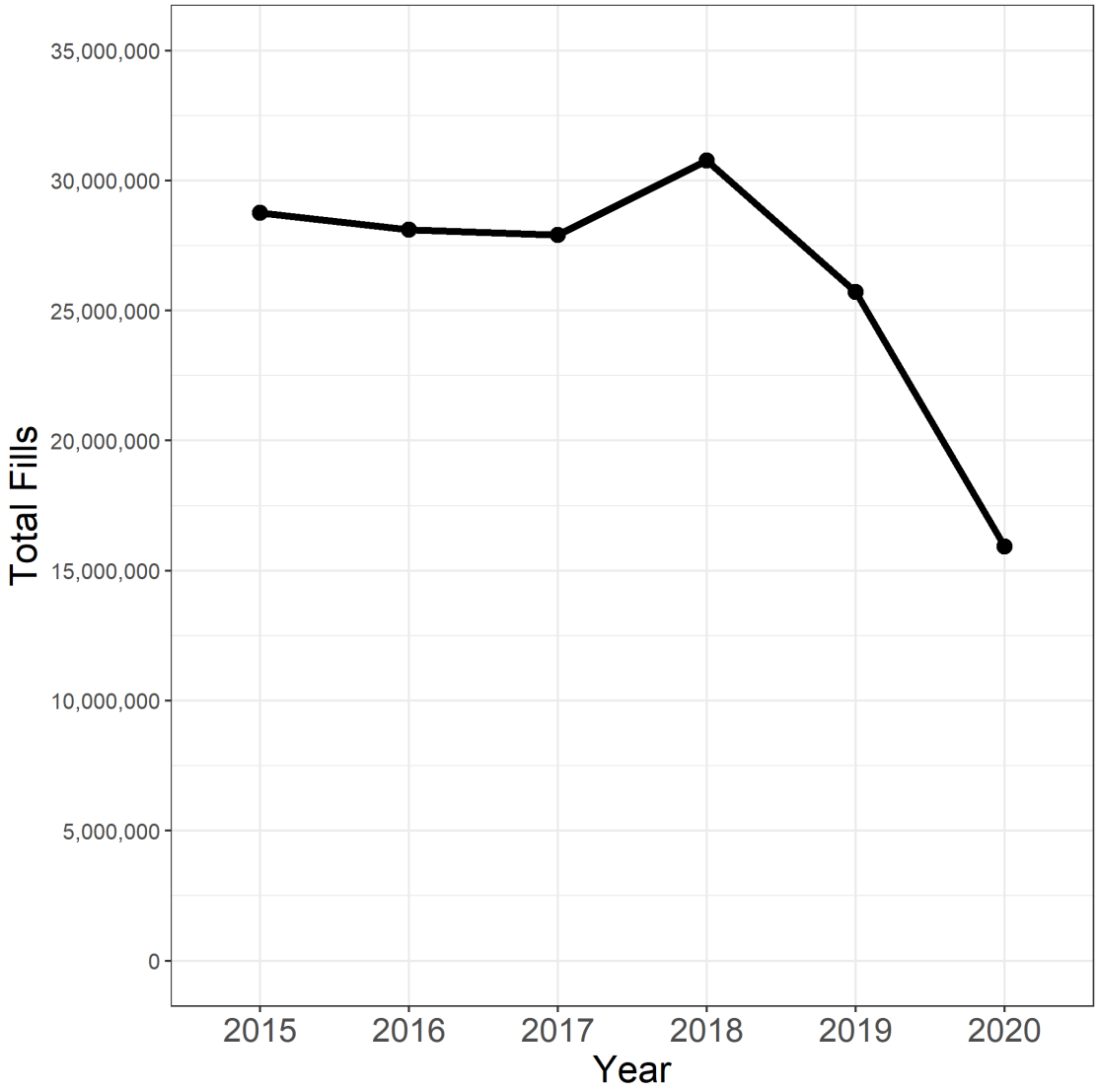
Weighted Percent of People with a PMED Expense



Trends in Days Supplied



Total Fills for Amoxicillin



Resources

- Annual public use file documentation
- Outpatient Prescription Drugs: Data Collection and Editing in the 2011 Medical Expenditure Panel Survey
- MEPS-HC online data tools
- MEPS GitHub (includes example code in R, SAS, and Stata)
- The Impacts of the COVID-19 Pandemic on the Medical Expenditure Panel Survey
- Pre-COVID-19 Retail Use and Expenditures for Drugs That Were Subsequently Used to Treat COVID-19

Thank you!

Rebecca.Ahrnsbrak@ahrq.hhs.gov