### DATA-INTENSIVE RESEARCH CONFERENCE

Pre-conference workshop presented by **IPUMS** and **NDiRA** 

# Longitudinal Data from IPUMS: IPUMS CPS

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### Linking CPS Data

### **Opportunities and Challenges**





### Opportunities

- Large sample sizes
- Good coverage of subpopulations
- Short-run changes in employment and families; reactions to births and losses (death, divorce)
- Combine rich sources of information about different topics
  - Work and volunteering; veterans and employment





### Challenges

• Rotation pattern

• Linking keys

• Same variables with different codes

• Non-response





### Challenges: Rotation Pattern

- CPS is NOT a longitudinal survey that follows one or several cohorts as they age
- CPS does have a panel component where individuals are observed up to 8 times over 16 months, but the way they move through the survey is in a 4-8-4 rotation





# **Defining Terms**

- Rotation Pattern: The way households move through the CPS
- Month in sample (MIS): The term CPS uses to index where a household is in the CPS rotation pattern
- **CPS Cohort or Rotation Group**: The term we use to describe a group of households that started the CPS at the same time and move through the CPS together





### Challenges: Rotation Pattern

- 4-8-4
- In 4 months
  - MIS 1, 2, 3, 4
- Out 8 months
  - No MIS values because not in survey
- In 4 months
  - MIS 5, 6, 7, 8

Month-in-sample – MIS The way CPS indexes where a household is in the CPS rotation pattern





### **Rotation Groups**

- 8 rotation groups (cohorts) in the sample during every month
- In every month, 1/8 of sample is interviewed for the
  - First time
  - Second time
  - ... Eighth (last) time
- The 1/8 interviewed for the first time replaces the 1/8 interviewed for the last time in the previous month
- Rotation groups 4 & 8 are called "outgoing rotation groups" because they are exiting the survey





Year X+1

| Jan | Feb | Mar | Apr        | May | Jun | Jul | Aug | Sept | Oct | Nov | Dec |
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|     |     |     |            |     |     |     |     |      |     |     |     |
| A5  |     |     |            |     |     |     |     |      |     |     |     |
|     | A6  |     |            |     |     |     |     |      |     |     |     |
|     |     | A7  |            |     |     |     |     |      |     |     |     |
|     |     |     | <b>A</b> 8 |     |     |     |     |      |     |     |     |





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| A5  |     |     |            |     |     |     |     |      |     |     |     |
|     | A6  |     |            |     |     |     |     |      |     |     |     |
|     |     | A7  |            |     |     |     |     |      |     |     |     |
|     |     |     | <b>A</b> 8 |     |     |     |     |      |     |     |     |

|     | Year X |     |     |     |     |     |     |      |     |     |     |  |  |  |
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| Jan | Feb    | Mar | Apr | May | Jun | Jul | Aug | Sept | Oct | Nov | Dec |  |  |  |
| A1  | B1     |     |     |     |     |     |     |      |     |     |     |  |  |  |
|     | A2     | B2  |     |     |     |     |     |      |     |     |     |  |  |  |
|     |        | A3  |     |     |     |     |     |      |     |     |     |  |  |  |
|     |        |     | A4  |     |     |     |     |      |     |     |     |  |  |  |
|     |        |     |     |     |     |     |     |      |     |     |     |  |  |  |
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#### Year X+1

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|     |     |     |     |     |     |     |     |      |     |     |     |
| A5  |     |     |     |     |     |     |     |      |     |     |     |
|     | A6  |     |     |     |     |     |     |      |     |     |     |
|     |     | A7  |     |     |     |     |     |      |     |     |     |
|     |     |     | A8  |     |     |     |     |      |     |     |     |

| Year X |     |     |     |     |     |     |     |      |     |     |     |  |  |
|--------|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|--|--|
| Jan    | Feb | Mar | Apr | May | Jun | Jul | Aug | Sept | Oct | Nov | Dec |  |  |
| A1     | B1  |     |     |     |     |     |     |      |     |     |     |  |  |
|        | A2  | B2  |     |     |     |     |     |      |     |     |     |  |  |
|        |     | A3  | B3  |     |     |     |     |      |     |     |     |  |  |
|        |     |     | A4  |     |     |     |     |      |     |     |     |  |  |
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#### Year X+1

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| A5  |     |     |     |     |     |     |     |      |     |     |     |
|     | A6  |     |     |     |     |     |     |      |     |     |     |
|     |     | A7  |     |     |     |     |     |      |     |     |     |
|     |     |     | A8  |     |     |     |     |      |     |     |     |



Year X+1

| Jan | Feb | Mar | Apr        | May | Jun | Jul | Aug | Sept | Oct | Nov | Dec |
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| A5  |     |     |            |     |     |     |     |      |     |     |     |
|     | A6  |     |            |     |     |     |     |      |     |     |     |
|     |     | A7  |            |     |     |     |     |      |     |     |     |
|     |     |     | <b>A</b> 8 |     |     |     |     |      |     |     |     |



Year X+1

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|     |            |     |     |     |     |     |     |      |     |     |     |
| A5  | <b>B</b> 5 |     |     |     |     |     |     |      |     |     |     |
|     | A6         |     |     |     |     |     |     |      |     |     |     |
|     |            | A7  |     |     |     |     |     |      |     |     |     |
|     |            |     | A8  |     |     |     |     |      |     |     |     |



Year X+1

| Jan | Feb        | Mar        | Apr        | May | Jun | Jul | Aug | Sept | Oct | Nov | Dec |
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|     |            |            |            |     |     |     |     |      |     |     |     |
| A5  | <b>B</b> 5 |            |            |     |     |     |     |      |     |     |     |
|     | A6         | <b>B</b> 6 |            |     |     |     |     |      |     |     |     |
|     |            | A7         |            |     |     |     |     |      |     |     |     |
|     |            |            | <b>A</b> 8 |     |     |     |     |      |     |     |     |



Year X+1

| Jan | Feb        | Mar        | Apr        | May | Jun | Jul | Aug | Sept | Oct | Nov | Dec |
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|     |            |            |            |     |     |     |     |      |     |     |     |
|     |            |            |            |     |     |     |     |      |     |     |     |
| A5  | <b>B</b> 5 |            |            |     |     |     |     |      |     |     |     |
|     | A6         | <b>B</b> 6 |            |     |     |     |     |      |     |     |     |
|     |            | A7         | B7         |     |     |     |     |      |     |     |     |
|     |            |            | <b>A</b> 8 |     |     |     |     |      |     |     |     |



Year X+1

| Jan | Feb        | Mar        | Apr | May | Jun | Jul | Aug | Sept | Oct | Nov | Dec |
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|     |            |            |     |     |     |     |     |      |     |     |     |
|     |            |            |     |     |     |     |     |      |     |     |     |
| A5  | <b>B</b> 5 |            |     |     |     |     |     |      |     |     |     |
|     | A6         | <b>B</b> 6 |     |     |     |     |     |      |     |     |     |
|     |            | A7         | B7  |     |     |     |     |      |     |     |     |
|     |            |            | A8  | B8  |     |     |     |      |     |     |     |

|     | Year X |     |            |     |     |     |     |      |     |     |     |  |  |  |
|-----|--------|-----|------------|-----|-----|-----|-----|------|-----|-----|-----|--|--|--|
| Jan | Feb    | Mar | Apr        | May | Jun | Jul | Aug | Sept | Oct | Nov | Dec |  |  |  |
| A1  | B1     | C1  | D1         | E1  | F1  | G1  | H1  | 11   | J1  | K1  | L1  |  |  |  |
| Z2  | A2     | B2  | C2         | D2  | E2  | F2  | G2  | H2   | 12  | J2  | K2  |  |  |  |
| Y3  | Z3     | A3  | <b>B</b> 3 | C3  | D3  | E3  | F3  | G3   | H3  | 13  | JЗ  |  |  |  |
| X4  | Y4     | Z4  | A4         | B4  | C4  | D4  | E4  | F4   | G4  | H4  | 14  |  |  |  |
| O5  | P5     | Q5  | R5         | S5  | Т5  | U5  | V5  | W5   | X5  | Y5  | Z5  |  |  |  |
| ZZ6 | O6     | P6  | Q6         | R6  | S6  | Т6  | U6  | V6   | W6  | X6  | Y6  |  |  |  |
| YY7 | ZZ7    | 07  | P7         | Q7  | R7  | S7  | Т7  | U7   | V7  | W7  | X7  |  |  |  |
| XX8 | YY8    | ZZ8 | O8         | P8  | Q8  | R8  | S8  | Т8   | U8  | V8  | W8  |  |  |  |

#### Year X+1

| Jan | Feb | Mar | Apr       | May        | Jun | Jul | Aug | Sept | Oct | Nov | Dec |
|-----|-----|-----|-----------|------------|-----|-----|-----|------|-----|-----|-----|
| AA1 | BB1 | CC1 | DD1       | EE1        | FF1 | GG1 | HH1 | ll1  | JJ1 | KK1 | LL1 |
| L2  | AA2 | BB2 | CC2       | DD2        | EE2 | FF2 | GG2 | HH2  | 112 | JJ2 | KK2 |
| K3  | L3  | AA3 | BB3       | CC3        | DD3 | EE3 | FF3 | GG3  | HH3 | 113 | JJ3 |
| J4  | K4  | L4  | AA4       | BB4        | CC4 | DD4 | EE4 | FF4  | GG4 | HH4 | 114 |
| A5  | B5  | C5  | D5        | E5         | F5  | G5  | H5  | 15   | J5  | K5  | L5  |
| Z6  | A6  | B6  | C6        | D6         | E6  | F6  | G6  | H6   | 16  | J6  | K6  |
| Y7  | Z7  | A7  | В7        | C7         | D7  | E7  | F7  | G7   | H7  | 17  | J7  |
| X8  | Y8  | Z8  | <b>A8</b> | <b>B</b> 8 | C8  | D8  | E8  | F8   | G8  | H8  | 18  |

|                   |                   |                   |                  |                  | Yea              | ar X             |                  |                  |                  |                  |                  |
|-------------------|-------------------|-------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Jan               | Feb               | Mar               | Apr              | May              | Jun              | Jul              | Aug              | Sept             | Oct              | Nov              | Dec              |
| A1                | B1                | C1                | D1               | E1               | F1               | G1               | H <mark>1</mark> | 11               | J1               | K1               | L1               |
| Z <mark>2</mark>  | A2                | B <mark>2</mark>  | C <mark>2</mark> | D2               | E <mark>2</mark> | F <mark>2</mark> | G <mark>2</mark> | H2               | 12               | J <mark>2</mark> | K2               |
| Y <mark>3</mark>  | Z <mark>3</mark>  | A <mark>3</mark>  | B <mark>3</mark> | C <mark>3</mark> | D <mark>3</mark> | E <mark>3</mark> | F <mark>3</mark> | G <mark>3</mark> | H3               | 13               | J <mark>3</mark> |
| X <b>4</b>        | Y4                | Z4                | A4               | B <mark>4</mark> | C4               | D4               | E4               | F4               | G4               | H <mark>4</mark> | 14               |
| 0 <mark>5</mark>  | P5                | Q <mark>5</mark>  | R <mark>5</mark> | S <mark>5</mark> | T5               | U <mark>5</mark> | V <mark>5</mark> | W5               | X5               | Y5               | Z <mark>5</mark> |
| ZZ <mark>6</mark> | 06                | P <mark>6</mark>  | Q <mark>6</mark> | R6               | S <mark>6</mark> | T <mark>6</mark> | U <mark>6</mark> | V6               | W <mark>6</mark> | X6               | Y <mark>6</mark> |
| YY <mark>7</mark> | ZZ7               | 07                | P <b>7</b>       | Q <b>7</b>       | R7               | S7               | Т7               | U <b>7</b>       | V <b>7</b>       | W <b>7</b>       | X7               |
| XX <mark>8</mark> | YY <mark>8</mark> | ZZ <mark>8</mark> | 0 <mark>8</mark> | P8               | Q <mark>8</mark> | R8               | S <mark>8</mark> | Т8               | U <mark>8</mark> | V <mark>8</mark> | W <mark>8</mark> |
| Year X+1          |                   |                   |                  |                  |                  |                  |                  |                  |                  |                  |                  |
| Jan               | Feb               | Mar               | Apr              | May              | Jun              | Jul              | Aug              | Sept             | Oct              | Nov              | Dec              |
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| Jan              | Feb               | Mar               | Apr               | May               | Jun               | Jul               | Aug               | Sept              | Oct               | Nov               | Dec               |
|------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| AA1              | BB <mark>1</mark> | CC1               | DD1               | EE1               | FF1               | GG <mark>1</mark> | HH1               | ll1               | JJ1               | KK1               | LL1               |
| L2               | AA <mark>2</mark> | BB <mark>2</mark> | CC2               | DD <mark>2</mark> | EE <mark>2</mark> | FF <mark>2</mark> | GG <mark>2</mark> | HH <mark>2</mark> | 112               | JJ <mark>2</mark> | KK <mark>2</mark> |
| K3               | L3                | AA <mark>3</mark> | BB <mark>3</mark> | CC <mark>3</mark> | DD <mark>3</mark> | EE <mark>3</mark> | FF <mark>3</mark> | GG <mark>3</mark> | HH <mark>3</mark> | II <mark>3</mark> | JJ <mark>3</mark> |
| J4               | K4                | L4                | AA4               | BB <mark>4</mark> | CC4               | DD4               | EE4               | FF4               | GG <mark>4</mark> | HH <mark>4</mark> | 114               |
| A <mark>5</mark> | B5                | C5                | D5                | E5                | F5                | G <mark>5</mark>  | H5                | 15                | J <mark>5</mark>  | K5                | L5                |
| Z <mark>6</mark> | A <mark>6</mark>  | B6                | C6                | D6                | E <mark>6</mark>  | F6                | G <mark>6</mark>  | H <mark>6</mark>  | 16                | J <mark>6</mark>  | K <mark>6</mark>  |
| Y <b>7</b>       | Z7                | A7                | B7                | C7                | D7                | E <mark>7</mark>  | F7                | G <b>7</b>        | H7                | 17                | J <b>7</b>        |
| X8               | Y <mark>8</mark>  | Z8                | A8                | B8                | C8                | D8                | E8                | F8                | G <mark>8</mark>  | H8                | 18                |

| Year X |     |     |     |     |      |     |     |      |     |     |     |
|--------|-----|-----|-----|-----|------|-----|-----|------|-----|-----|-----|
| Jan    | Feb | Mar | Apr | May | Jun  | Jul | Aug | Sept | Oct | Nov | Dec |
| A1     | B1  | C1  | D1  | E1  | F1   | G1  | H1  | I1   | J1  | K1  | L1  |
| Z2     | A2  | B2  | C2  | D2  | E2   | F2  | G2  | H2   | 12  | J2  | K2  |
| Y3     | Z3  | A3  | B3  | C3  | D3   | E3  | F3  | G3   | H3  | 13  | J3  |
| X4     | Y4  | Z4  | A4  | B4  | C4   | D4  | E4  | F4   | G4  | H4  | 14  |
| O5     | P5  | Q5  | R5  | S5  | Т5   | U5  | V5  | W5   | X5  | Y5  | Z5  |
| ZZ6    | O6  | P6  | Q6  | R6  | S6   | Т6  | U6  | V6   | W6  | X6  | Y6  |
| YY7    | ZZ7 | 07  | P7  | Q7  | R7   | S7  | Т7  | U7   | V7  | W7  | X7  |
| XX8    | YY8 | ZZ8 | 08  | P8  | Q8   | R8  | S8  | Т8   | U8  | V8  | W8  |
|        |     |     |     |     | Year | X+1 |     |      |     |     |     |
| Jan    | Feb | Mar | Apr | May | Jun  | Jul | Aug | Sept | Oct | Nov | Dec |
| AA1    | BB1 | CC1 | DD1 | EE1 | FF1  | GG1 | HH1 | ll1  | JJ1 | KK1 | LL1 |
| L2     | AA2 | BB2 | CC2 | DD2 | EE2  | FF2 | GG2 | HH2  | 112 | JJ2 | KK2 |
|        |     |     |     |     |      |     |     |      |     |     |     |

EE3

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Year X

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| Jan | Feb | Mar | Apr | May | Jun  | Jul  | Aug | Sept | Oct | Nov | Dec |
| A1  | B1  | C1  | D1  | E1  | F1   | G1   | H1  | I1   | J1  | K1  | L1  |
| Z2  | A2  | B2  | C2  | D2  | E2   | F2   | G2  | H2   | 12  | J2  | K2  |
| Y3  | Z3  | A3  | B3  | C3  | D3   | E3   | F3  | G3   | H3  | 13  | J3  |
| X4  | Y4  | Z4  | A4  | B4  | C4   | D4   | E4  | F4   | G4  | H4  | 14  |
| O5  | P5  | Q5  | R5  | S5  | Т5   | U5   | V5  | W5   | X5  | Y5  | Z5  |
| ZZ6 | O6  | P6  | Q6  | R6  | S6   | Т6   | U6  | V6   | W6  | X6  | Y6  |
| YY7 | ZZ7 | 07  | P7  | Q7  | R7   | S7   | Т7  | U7   | V7  | W7  | X7  |
| XX8 | YY8 | ZZ8 | 08  | P8  | Q8   | R8   | S8  | Т8   | U8  | V8  | W8  |
|     |     |     |     |     | Year | X+1  |     |      |     |     |     |
| Jan | Feb | Mar | Apr | May | Jun  | Jul  | Aug | Sept | Oct | Nov | Dec |
| AA1 | BB1 | CC1 | DD1 | EE1 | FF1  | GG1  | HH1 | ll1  | JJ1 | KK1 | LL1 |
| L2  | AA2 | BB2 | CC2 | DD2 | EE2  | FF2  | GG2 | HH2  | 112 | JJ2 | KK2 |
| К3  | L3  | AA3 | BB3 | CC3 | DD3  | EE3  | FF3 | GG3  | HH3 | 113 | JJ3 |
| J4  | K4  | L4  | AA4 | BB4 | CC4  | DD4  | EE4 | FF4  | GG4 | HH4 | 114 |
|     |     |     |     |     |      |      |     |      |     |     |     |

A5

Z6

Y7

X8

B5

A6

Z7

Y8

C5

B6

A7

Z8

D5

C6

B7

A8

E5

D6

C7

B8

F5

E6

D7

C8

G5

F6

E7

D8

H5

G6

F7

E8

15

H6

G7

F8

J5

16

H7

G8

K5

J6

17

H8

L5

K6

J7

18

|     |     |     |     |     | Yea  | ar X |     |      |     |     |     |
|-----|-----|-----|-----|-----|------|------|-----|------|-----|-----|-----|
| Jan | Feb | Mar | Apr | May | Jun  | Jul  | Aug | Sept | Oct | Nov | Dec |
| A1  | B1  | C1  | D1  | E1  | F1   | G1   | H1  | 11   | J1  | K1  | L1  |
| Z2  | A2  | B2  | C2  | D2  | E2   | F2   | G2  | H2   | 12  | J2  | K2  |
| Y3  | Z3  | A3  | B3  | C3  | D3   | E3   | F3  | G3   | H3  | 13  | J3  |
| X4  | Y4  | Z4  | A4  | B4  | C4   | D4   | E4  | F4   | G4  | H4  | 14  |
| O5  | P5  | Q5  | R5  | S5  | Т5   | U5   | V5  | W5   | X5  | Y5  | Z5  |
| ZZ6 | O6  | P6  | Q6  | R6  | S6   | Т6   | U6  | V6   | W6  | X6  | Y6  |
| YY7 | ZZ7 | 07  | P7  | Q7  | R7   | S7   | Т7  | U7   | V7  | W7  | X7  |
| XX8 | YY8 | ZZ8 | 08  | P8  | Q8   | R8   | S8  | Т8   | U8  | V8  | W8  |
|     |     |     |     |     | Year | X+1  |     |      |     |     |     |
| Jan | Feb | Mar | Apr | May | Jun  | Jul  | Aug | Sept | Oct | Nov | Dec |
| AA1 | BB1 | CC1 | DD1 | EE1 | FF1  | GG1  | HH1 | ll1  | JJ1 | KK1 | LL1 |
| L2  | AA2 | BB2 | CC2 | DD2 | EE2  | FF2  | GG2 | HH2  | 112 | JJ2 | KK2 |
| K3  | L3  | AA3 | BB3 | CC3 | DD3  | EE3  | FF3 | GG3  | HH3 | 113 | JJ3 |
| J4  | K4  | L4  | AA4 | BB4 | CC4  | DD4  | EE4 | FF4  | GG4 | HH4 | 114 |
| A5  | B5  | C5  | D5  | E5  | F5   | G5   | H5  | 15   | J5  | K5  | L5  |

F6

E7

D8

Z6

Y7

X8

A6

Z7

Y8

B6

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B7

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G6

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16

H7

G8

J6

17

H8

K6

J7

18

|     |          |          |     |     | Yea  | ar X  |     |      |     |     |          |
|-----|----------|----------|-----|-----|------|-------|-----|------|-----|-----|----------|
| Jan | Feb      | Mar      | Apr | Мау | Jun  | Jul   | Aug | Sept | Oct | Nov | Dec      |
| A1  | B1       | C1       | D1  | E1  | F1   | G1    | H1  | 11   | J1  | K1  | L1       |
| Z2  | A2       | B2       | C2  | D2  | E2   | F2    | G2  | H2   | 12  | J2  | K2       |
| Y3  | Z3       | A3       | B3  | C3  | D3   | E3    | F3  | G3   | H3  | 13  | J3       |
| X4  | Y4       | Z4       | A4  | B4  | C4   | D4    | E4  | F4   | G4  | H4  | 14       |
| O5  | P5       | Q5       | R5  | S5  | Т5   | U5    | V5  | W5   | X5  | Y5  | Z5       |
| ZZ6 | O6       | P6       | Q6  | R6  | S6   | Т6    | U6  | V6   | W6  | X6  | Y6       |
| YY7 | ZZ7      | 07       | P7  | Q7  | R7   | S7    | Т7  | U7   | V7  | W7  | X7       |
| XX8 | YY8      | ZZ8      | 08  | P8  | Q8   | R8    | S8  | Т8   | U8  | V8  | W8       |
|     |          |          |     |     | Year | · X+1 |     |      |     |     |          |
| Jan | Feb      | Mar      | Apr | May | Jun  | Jul   | Aug | Sept | Oct | Nov | Dec      |
| AA1 | BB1      | CC1      | DD1 | EE1 | FF1  | GG1   | HH1 | ll1  | JJ1 | KK1 | LL1      |
| L2  | AA2      | BB2      | CC2 | DD2 | EE2  | FF2   | GG2 | HH2  | 112 | JJ2 | KK2      |
| K3  | L3       | AA3      | BB3 | CC3 | DD3  | EE3   | FF3 | GG3  | HH3 | 113 | JJ3      |
| J4  | K4       | L4       | AA4 | BB4 | CC4  | DD4   | EE4 | FF4  | GG4 | HH4 | 114      |
| A5  |          |          |     |     |      |       |     |      |     |     |          |
| AS  | B5       | C5       | D5  | E5  | F5   | G5    | H5  | 15   | J5  | K5  | L5       |
| Z6  | B5<br>A6 | C5<br>B6 |     |     |      |       |     |      |     |     | L5<br>K6 |
|     |          |          | D5  | E5  | F5   | G5    | H5  | 15   | J5  | K5  |          |

|     |     |     |     |     | Tea  | ar X  |     |      |     |     |     |
|-----|-----|-----|-----|-----|------|-------|-----|------|-----|-----|-----|
| Jan | Feb | Mar | Apr | May | Jun  | Jul   | Aug | Sept | Oct | Nov | Dec |
| A1  | B1  | C1  | D1  | E1  | F1   | G1    | H1  | I1   | J1  | K1  | L1  |
| Z2  | A2  | B2  | C2  | D2  | E2   | F2    | G2  | H2   | 12  | J2  | K2  |
| Y3  | Z3  | A3  | B3  | C3  | D3   | E3    | F3  | G3   | H3  | 13  | J3  |
| X4  | Y4  | Z4  | A4  | B4  | C4   | D4    | E4  | F4   | G4  | H4  | 14  |
| O5  | P5  | Q5  | R5  | S5  | Т5   | U5    | V5  | W5   | X5  | Y5  | Z5  |
| ZZ6 | O6  | P6  | Q6  | R6  | S6   | Т6    | U6  | V6   | W6  | X6  | Y6  |
| YY7 | ZZ7 | 07  | P7  | Q7  | R7   | S7    | Т7  | U7   | V7  | W7  | X7  |
| XX8 | YY8 | ZZ8 | 08  | P8  | Q8   | R8    | S8  | Т8   | U8  | V8  | W8  |
|     |     |     |     |     | Year | · X+1 |     |      |     |     |     |
| Jan | Feb | Mar | Apr | May | Jun  | Jul   | Aug | Sept | Oct | Nov | Dec |
| AA1 | BB1 | CC1 | DD1 | EE1 | FF1  | GG1   | HH1 | ll1  | JJ1 | KK1 | LL1 |
| L2  | AA2 | BB2 | CC2 | DD2 | EE2  | FF2   | GG2 | HH2  | 112 | JJ2 | KK2 |
| K3  | L3  | AA3 | BB3 | CC3 | DD3  | EE3   | FF3 | GG3  | HH3 | 113 | JJ3 |
| J4  | K4  | L4  | AA4 | BB4 | CC4  | DD4   | EE4 | FF4  | GG4 | HH4 | 114 |
| A5  | B5  | C5  | D5  | E5  | F5   | G5    | H5  | 15   | J5  | K5  | L5  |
| Z6  | A6  | B6  | C6  | D6  | E6   | F6    | G6  | H6   | 16  | J6  | K6  |
| Y7  | Z7  | A7  | B7  | C7  | D7   | E7    | F7  | G7   | H7  | 17  | J7  |
|     |     |     |     |     |      |       |     |      |     |     |     |

#### Year X



### **Challenges: Rotation Pattern**

- Enter IPUMS CPS <u>RoPES</u>
- Motivation
  - Easily see CPS rotation pattern
  - Explore what topical supplements can be examined together



### https://cps.ipums.org/cps/

### IPUMS CPS

#### **CURRENT POPULATION SURVEY**

HOME | SELECT DATA | MY DATA | SUPPORT



#### **IPUMS CPS**

ABOUT REGISTER DONATE TO IPUMS

#### DATA

BROWSE AND SELECT DATA ANALYZE DATA ONLINE DOWNLOAD OR REVISE MY DATA

#### DOCUMENTATION

COVID-19 AND CPS SAMPLE DESCRIPTIONS TECHNICAL DOCUMENTS LINKING THE CPS REVISION HISTORY

#### SUPPORT

FAQ VIDEO TUTORIALS C USER FORUM C TRAINING MATERIALS

RESEARCH

### CURRENT POPULATION SURVEY DATA FOR SOCIAL, ECONOMIC AND HEALTH RESEARCH

IPUMS CPS harmonizes microdata from the monthly U.S. labor force survey, the Current Population Survey (CPS), covering the period 1962 to the present. Data include demographic information, rich employment data, program participation and supplemental data on topics such as fertility, tobacco use, volunteer activities, voter registration, computer and internet use, food security, and more.

#### USE IT FOR GOOD -- NEVER FOR EVIL



| 477 3897<br>1411<br>1479,                                 | 15625634872846861<br>77341272869321437<br>935657121934596<br>96276667574317<br>9862276397. |  |                      | ✓ Select All                                   | Co                                    | olor Blind Friendly Mode | 2               |          |                        |                          |                  |               |
|---|--|--|----------------------|--|---------------------------------------|--------------------------|-----------------|----------|------------------------|--------------------------|------------------|---------------|
| 15264<br>65147<br>32, 479<br>941, 279<br>841, 279         |  | PU   | IVID                 | ASEC   | V Food                                | I Security               | Vork Schedules  |          | Fertility and Marriage | Education                | Voter            |               |
| 18262246<br>6847212<br>5536767<br>7281<br>3694<br>5938744 |  | PS   |                      | Z Agricultural Wo                              | rker 🗹 Immu                           | unization                | ✓ Job Tenure    | •        | Displaced Worker       | Computer and Inte<br>Use | ernet Veteran    | ;             |
|   |  |  |                      | <b>Z</b> Tobacco Use                           | Child                                 | l Support                | Contingent Work |          | Public Arts            | Volunteer                | Civic En         | gagement      |
|   |  |  |                      | ✓ Un(der)banked                                |                                       |                          |                 |          |                        |                          |                  |               |
| Years   | January  | February                                     | March                | April  | May                                   | June                     | July            | Augu     | st September           | October                  | November         | December      |
|   | Displac Job Te   |  | ASEC                 |  |                                       | Fertility and Marri      |                 | Veterans |                        | Education                | Voter            | Food Security |
| 2017  |  |  |                      |  |                                       |                          |                 |          |                        |                          |                  |               |
|   |  |  | ASEC                 |  | Contingent Work                       | Un(der)banked            |                 | Veterans | Volunt Civic E         | Education                | Computer and Int | Food Security |
| 2018  |  |  |                      |  |                                       |                          |                 |          |                        |                          |                  |               |
|   | Displac Job Te   |  | ASEC                 |  |                                       | Fertility and Marri      | Tobacco Use     | Veterans |                        | Education                | Voter            | Food Security |
| 2019  | A1   | A2 B1  | A3 B2 C1             | A4 B3 C2 D1                                    | B4 C3 D2                              | C4 D3                    | D4              |          |                        |                          |                  |               |
|   | Tobacco Use  |  | ASEC                 |  | Tobacco Use                           | Un(der)banked            |                 | Vetera.  |                        | Education                | Computer and Int | Food Security |
| 2020  | A5 E1  | A6 B5 E2 F1                                  | A7 B6 C5 E3<br>F2 G1 | A8 B7 C6 D5   E4 F3 G2 H1   Included in this ✓ | B8 C7 D6 F4<br>G3 H2<br>♣ ♣ ♣ ♣ ₱ 75% | C8 D7 G4 H3              | D8 H4           |          |                        |                          |                  |               |
|   | Displac Job Te   | E6 F5  | ASEC                 | E8 F7 G6 H5                                    | F8 G7 H6                              | G8 H7                    | H8              |          |                        |                          |                  |               |
| 2021  |  |  |                      |  |                                       |                          |                 |          |                        |                          |                  |               |
|   | 12.5%  | <b>****</b> ******************************** | <b>37.5%</b>         | <b>**</b> **** 50%                             | <b>***</b> 37.5%                      | <b>****</b> 25%          | 12.5%           |          |                        |                          |                  | -             |



# Challenges

Rotation pattern

• Linking keys

• Same variables with different codes

• Non-response





# Challenges: Linking Keys

- Changes in variables needed to link
  - Technical changes
  - Privacy protection changes
- Duplicate and recycled identifiers
  - Feng 2001
  - Flood et al. 2020





### Challenges: Linking Keys

| January 1976<br>to December<br>1993 | January 1994<br>to April 2004 | May 2004 + |
|-------------------------------------|-------------------------------|------------|
| HRHHID                              | HRHHID                        | HRHHID     |
| PULINENO                            | PULINENO                      | PULINENO   |
| STATEFIPS                           | STATEFIPS                     | STATEFIPS  |
| HUHHNUM                             | HUHHNUM                       |            |
|                                     | HRSAMPLE                      | HRHHID2    |
|                                     | HRSERSUF                      |            |





# Challenges: Linking Keys

- CPSID(P) an IPUMS-created unique identifier
- Bridges changes in variable names as well as the technical aspects of how to link
- Available for 1976 forward
- <u>Drew, Flood, & Warren, 2014</u> Journal of Economic and Social Measurement
- Flood et al., (forthcoming) Journal of Economic and Social Measurement





# **CPSID(P)** Limitations

- Mechanical
  - Created solely based on Census Bureau linking keys
  - Does NOT condition on AGE, SEX, RACE
- Not available for all respondents in ASEC
  - only those who are also in the March BMS
- Cannot overcome unlinkable files & unlinkable records

IPUMS

• See Flood et al., 2020 for details



### Challenges

Rotation pattern

• Linking keys

• Same variables with different codes

• Non-response





### Challenges: Same variables, different codes

- IPUMS!
- Harmonized across time to deal with changes in codes
- Use it for good, never for evil!
  - (Also, please cite us!)





### Challenges

Rotation pattern

• Linking keys

• Same variables with different codes



• Non-response





### Challenges: Non-response

- Households that were eligible to participate in CPS but did not because of
  - Non-response (at any point in the rotation)
  - Death
  - Migration
- Imputation





### Challenges

Rotation pattern

- Linking keys
- Same variables with different codes

Non-response



### Future Linking Work & Further Resources





### Future Linking Work

• Upcoming CPS linking features from IPUMS

- Make ASEC oversamples linkable using CPSIDP
- A version of CPSIDP that is validated on AGE, SEX, RACE matches
  - Coming very soon!





### **Further Resources**

- Rivera Drew, J. A., Flood, S., & Warren, J. R. (2014). Making full use of the longitudinal design of the Current Population Survey: Methods for linking records across 16 months. *Journal of economic and social measurement*, *39*(3), 121-144.
- Flood, S. M., & Pacas, J. D. (2017). Using the annual social and economic supplement as part of a current population survey panel. *Journal of Economic and Social Measurement*, 42(3-4), 225-248.
- Flood, S., Rodgers, R., Pacas, J., Kristiansen, D., & Klaas, B. (2020). Extending current population survey linkages: Obstacles and solutions for linking monthly data from 1976 to 1988. *Journal of Economic and Social Measurement*, (Preprint), 1-28.
- <u>CPS Linking Workshop Materials</u>
- <u>CPS ASEC Longitudinal Extracts</u>



### Questions?

