A Stitch in Time:

Evaluating Seam Bias in the Redesigned SIPP

Federal Committee on Statistical Methodology
October 2022

Neil Bennett
Mark Klee
Robert Munk

United States® Census Bureau

SEHSD
Social, Economic, and Housing Statistics Division

Motivation

- Declining labor market fluidity in the United States (Molloy et al, 2016)

- Labor force turnover has been explored in the SIPP (Gottschalck, 2004; Beckhusen, 2014; Ham et al., 2016)

- Seam bias has been documented in longitudinal surveys, Survey of Income and Program Participation (SIPP) and Panel Study of Income Dynamics. Authors have attempted to uncover the source of this bias. (Callegaro, 2007; Callegaro, 2008; Ham et al, 2009)

United States® Census Bureau

Research Question

- What do job transitions look like in the redesigned 2014 SIPP?
  - We find that seam bias is present among job transitions in the first week of the calendar year

United States® Census Bureau

Research Question

- What do job transitions look like in the redesigned 2014 SIPP?
  - We find that seam bias is present among job transitions in the first week of the calendar year

- How do job transitions in the SIPP compare to job transitions from other data sources?
- What could be driving this bias?
  - Imputation, survey feedback, proxy interviews

United States® Census Bureau

Snapshot of Findings

- Seam bias among job transitions in the 2014 SIPP
  - The average turnover rate in the first week of the year is 20 percent, relative to an average of 1 percent among all other weeks of the year
- Job Openings and Labor Turnover Survey (JOLTS) shows some indication of job cyclicality in January, but not of the same magnitude as in SIPP
- Little evidence that bias is linked to imputation, survey feedback, or proxy interviews

United States® Census Bureau

Data

- 2014 SIPP
  - Calendar years 2013-2016
  - Use an employment recode (RWKESR) to generate a person-week panel for labor force participation
  - SIPP collects information on seven jobs for any given respondent, we use information about individual jobs to develop a measure of job transitions

United States® Census Bureau

Definitions

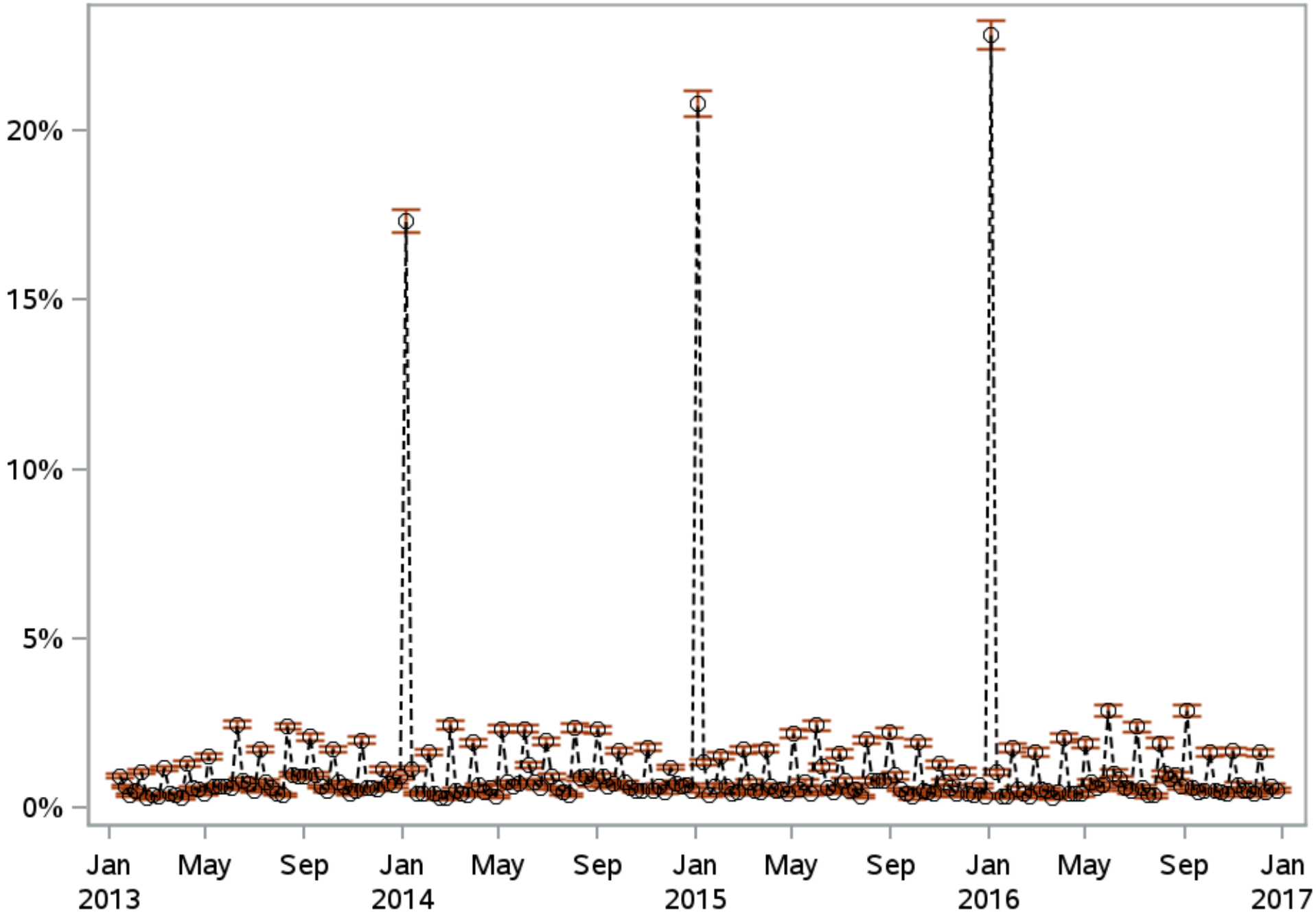
- **Employment Transition:** A change in employment status between two consecutive weeks
  - **Move to employment:** A person goes from being not employed (either not in the labor force or unemployed) to employed
  - **Job separation:** A person goes from being employed to being not employed (either not in the labor force or unemployed)
  - **Job transition:** A person moves from one job to another over the course of two consecutive weeks
- **Primary employer:** The employer for which the person worked the most hours during the week
- **Turnover Rate:** The total number of employment transitions divided by the total number of employed people within a week

United States® Census Bureau

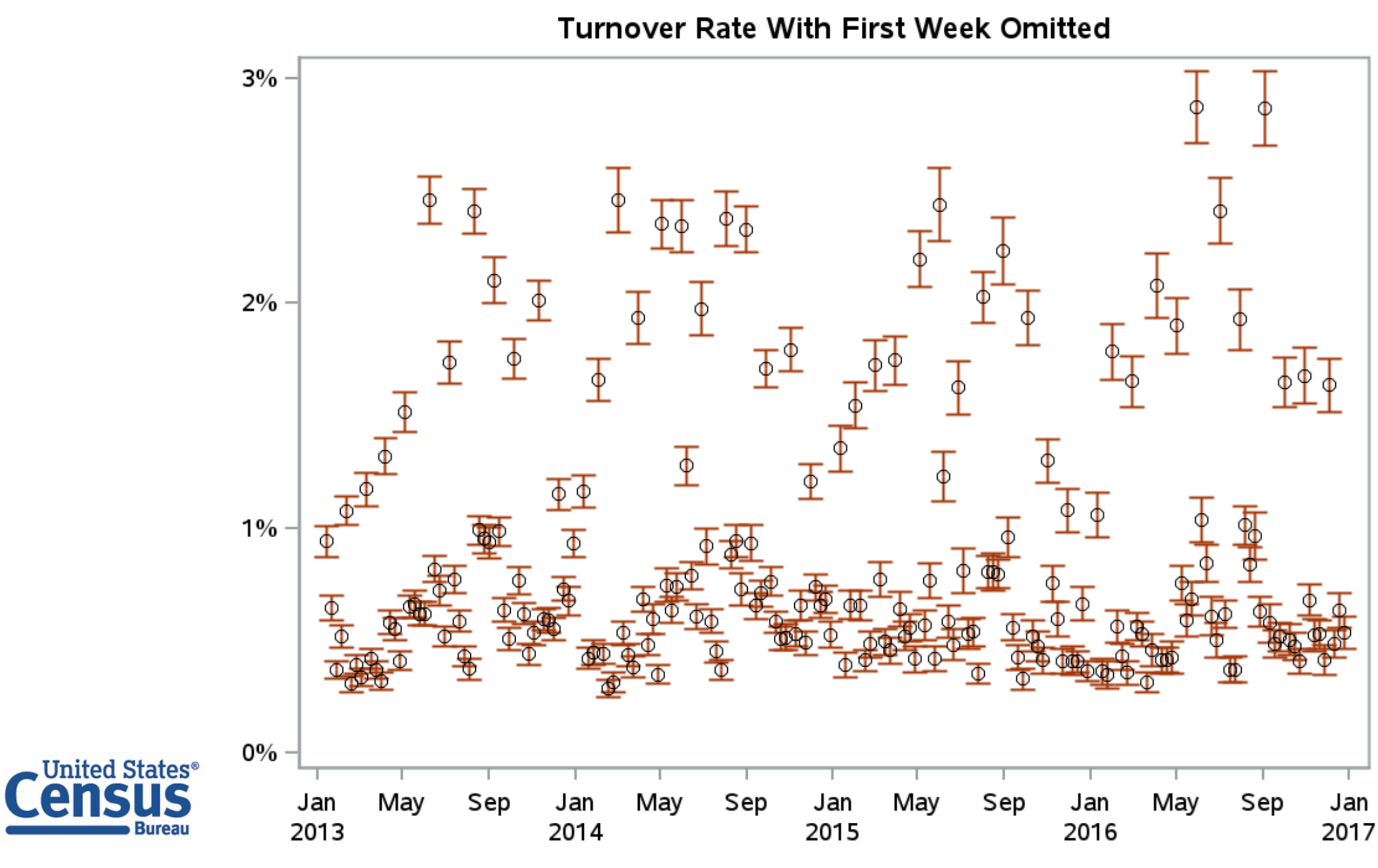
Weekly Turnover Rate: January 2013 to December 2016

○ Turnover rate = Number of Events / Total Employment

= Standard Errors

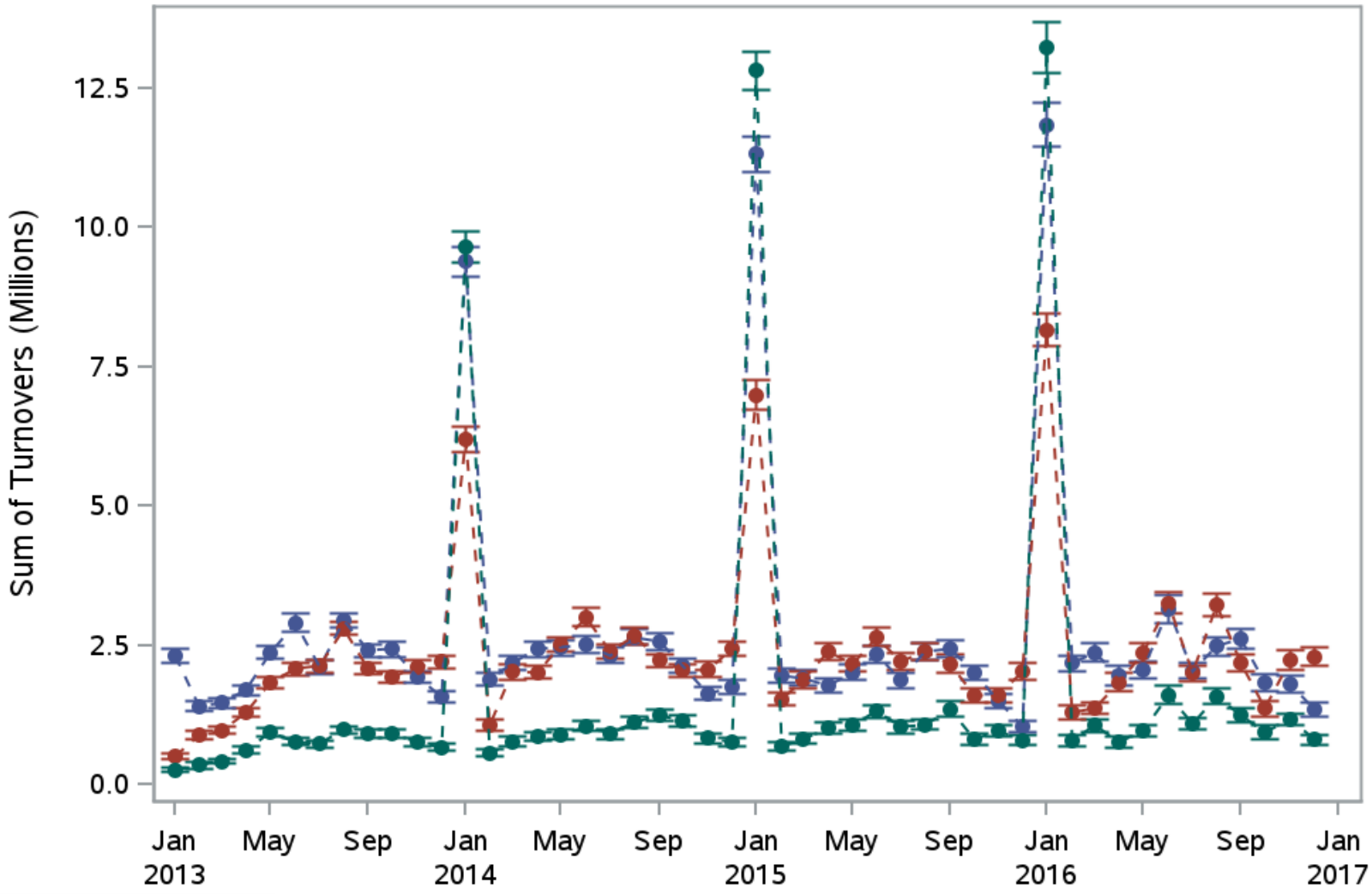


United States® Census Bureau



United States® Census Bureau

Monthly Transitions by Type of Transition



- Plot shows the overall number of transitions as opposed to the relative change between types of job transitions
  - Largest jumps in job transitions and transitions to employment
  - Smallest jump in job separations

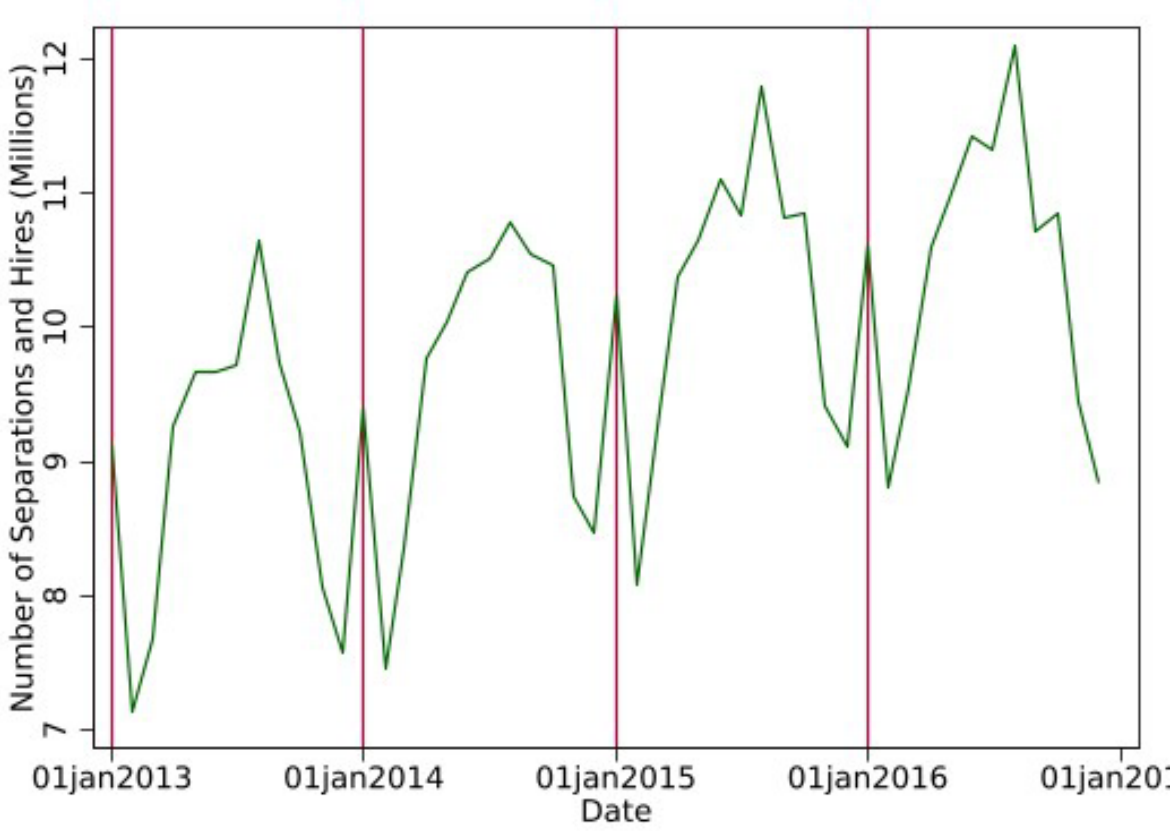
United States® Census Bureau

How Does the SIPP Compare to JOLTS?

- The Job Openings and Labor Turnover Survey (JOLTS)
  - Monthly data on job openings, hires, and separations
  - Produced by the BLS and draws its frame from the QCEW
  - New establishments are added in January of each year, and followed for three years
- **Hires** are measured as total nonfarm hires, not seasonally adjusted
- **Separations** are the total number of quits, layoffs, and discharges from a job

United States® Census Bureau

JOLTS: Number of Hires and Separations Over Time



- There does appear to be a ‘spike’ in the number of turnover events in January
  - Not of the same magnitude as what we see in the SIPP
- Additional indication of cyclicality in transitions over the course of the year

United States® Census Bureau

Comparing Job Transitions Between SIPP and JOLTS

$$Turnovers_{my} = \alpha + \gamma_m + \delta_y + \epsilon_{my}$$

- In January, there are 18 million more transitions in the SIPP on average, relative to December
- JOLTS estimates about 1.3 million more transitions in January, relative to December

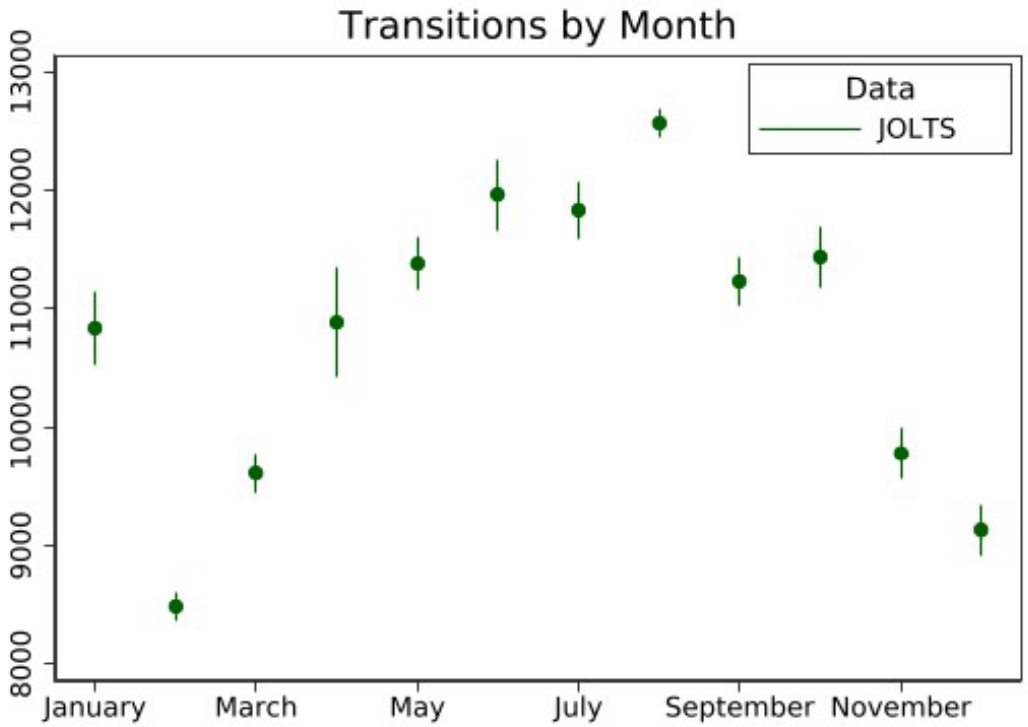
	(1) JOLTS	(2) SIPP
January	1,350***	18,000***
	(152)	(6540)
February	-627***	-788
	(178)	(871)
March	208	-115
	(162)	(828)
April	1,510***	232
	(130)	(914)
May	1,840***	982
	(141)	(1030)
June	2,150***	2230**
	(139)	(912)
July	2,100***	773
	(146)	(1034)
August	2,830***	2,150*
	(170)	(1110)
September	1,950***	1,430
	(196)	(968)
October	1,850***	359
	(190)	(1250)
November	417***	215
	(133)	(1100)
Average Depen	10,000	6,630
Year Fixed Effec	X	X
Observations	48	48

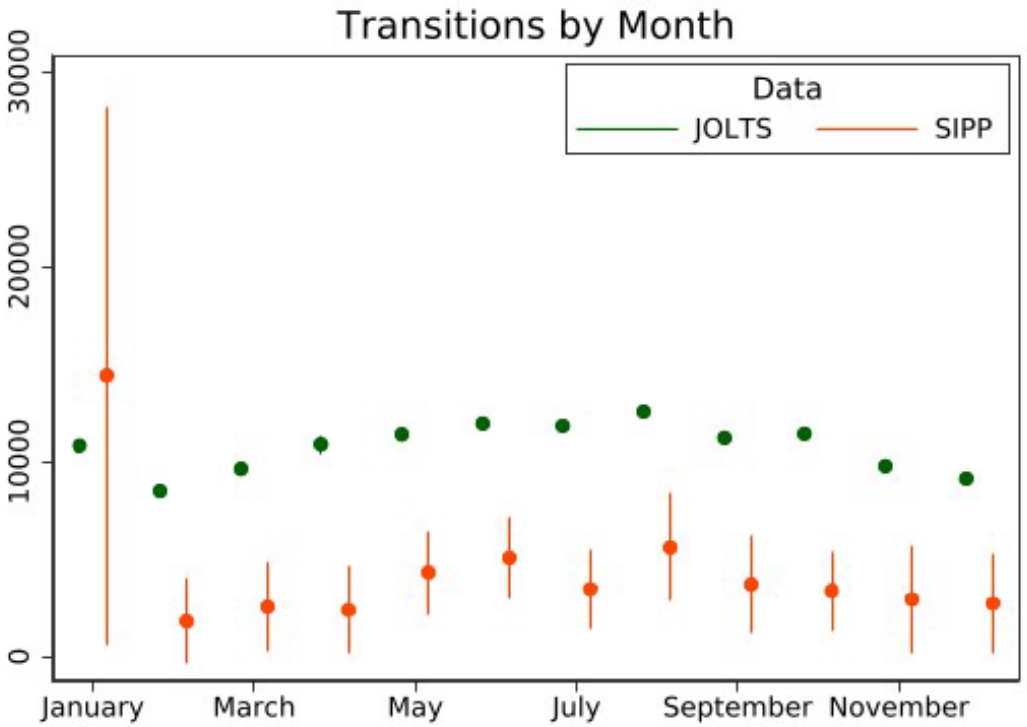
Dependent variable is number of people who either moved into a new job or separated from a job, in thousands. Standards errors are robust. Significance is given at the * p< 0.1, ** p<0.05, and *** p< 0.01 levels.

Visualizing this Comparison

$$Turnovers_{my} = \alpha + \gamma_m + \delta_y + \epsilon_{my}$$

- Standard errors are robust





United States® Census Bureau

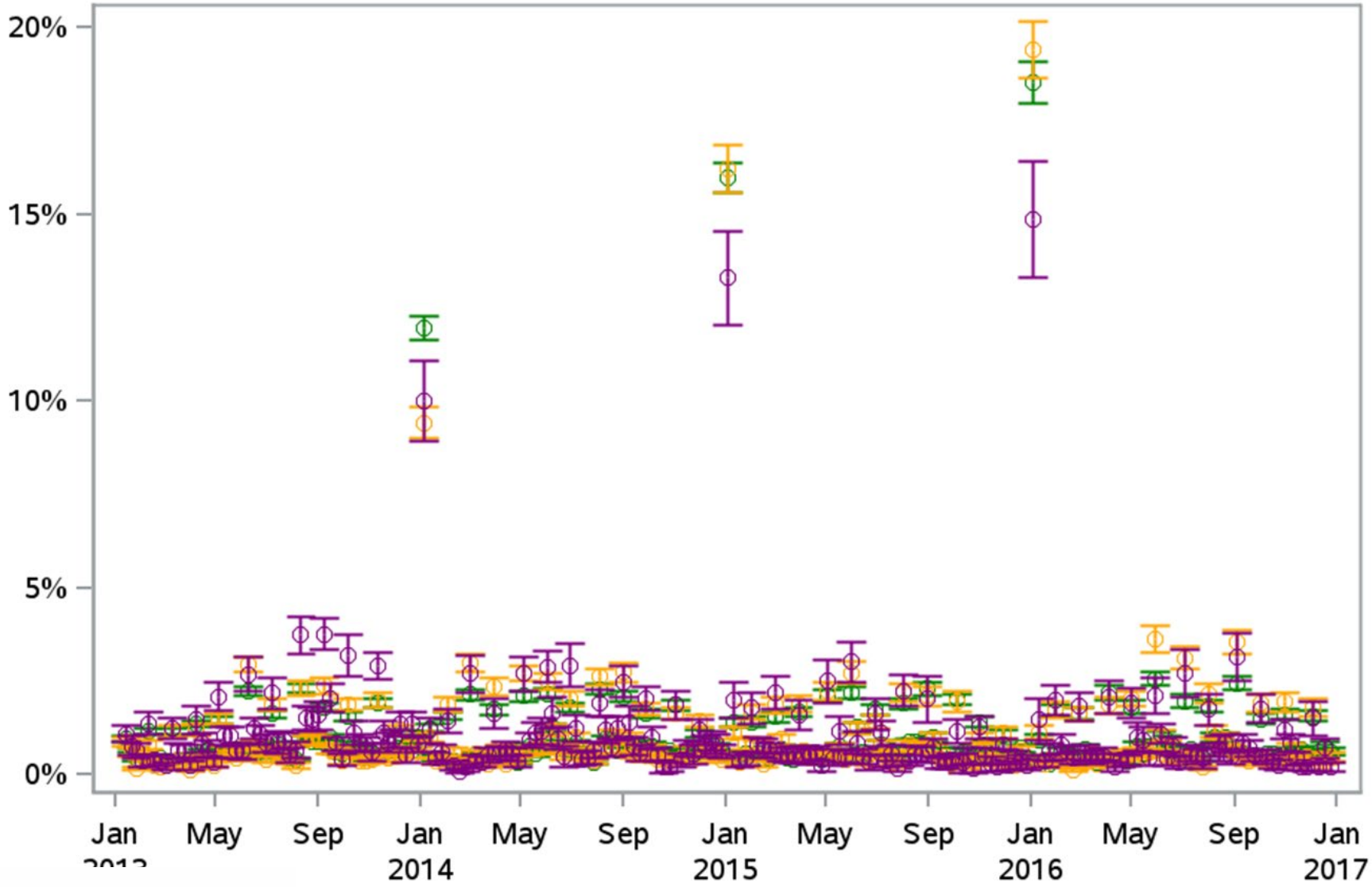
The average annual transitions in SIPP and JOLTS are not statistically different for 2014-2016

What Could be Driving the Seam Bias?

- It is possible that several methods for data collection in the SIPP could result in a greater amount of seam bias
  - **Type of Interview**- May observe more bias in proxy interviews if people have trouble recalling employment changes for others
  - **Survey Feedback**- May observe more bias if people do not agree to have their information recalled to them in later waves
  - **Imputation**- Differences in employment turnover based on how responses are imputed

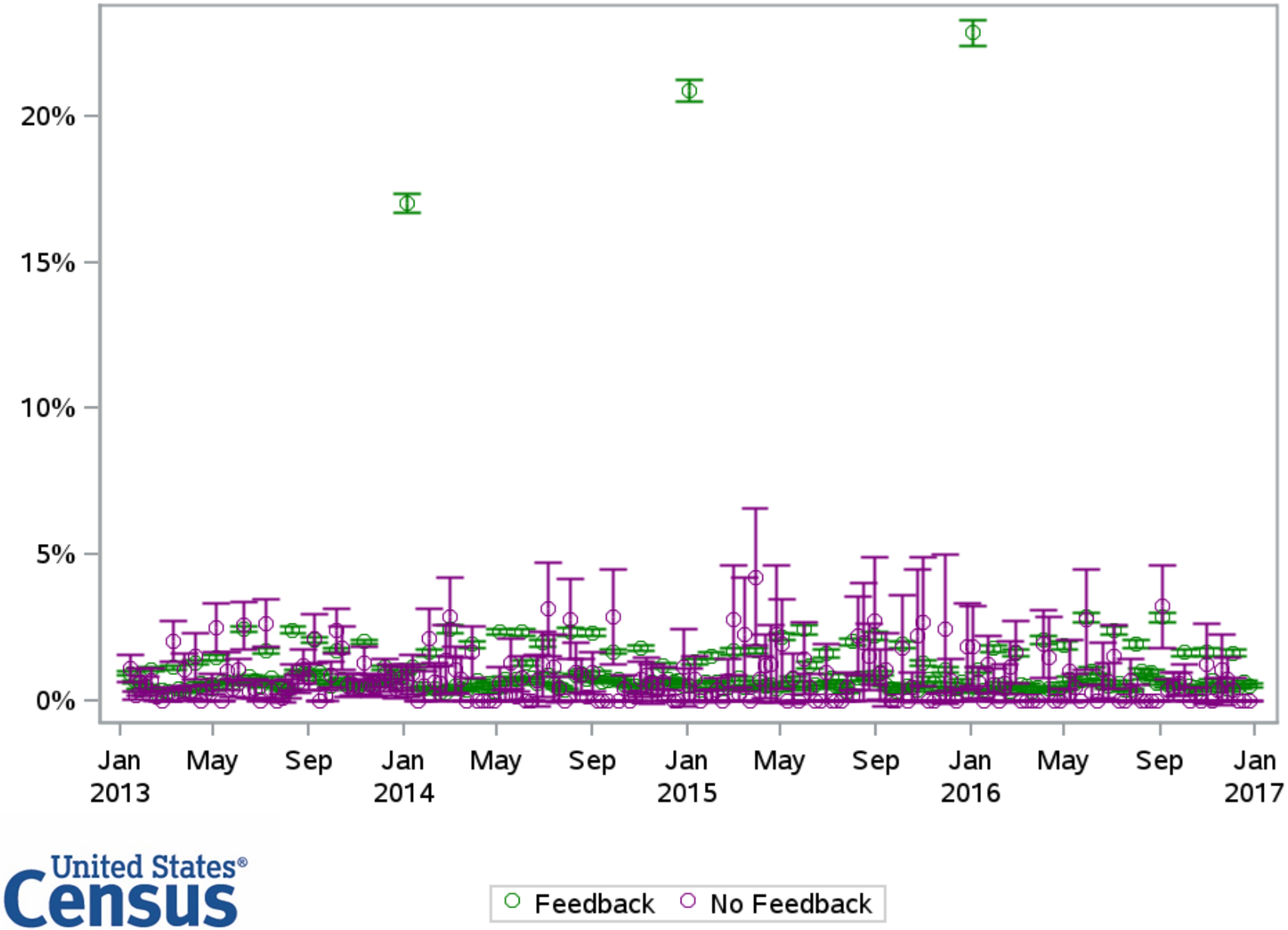
United States® Census Bureau

Seam Bias and Type of Interview



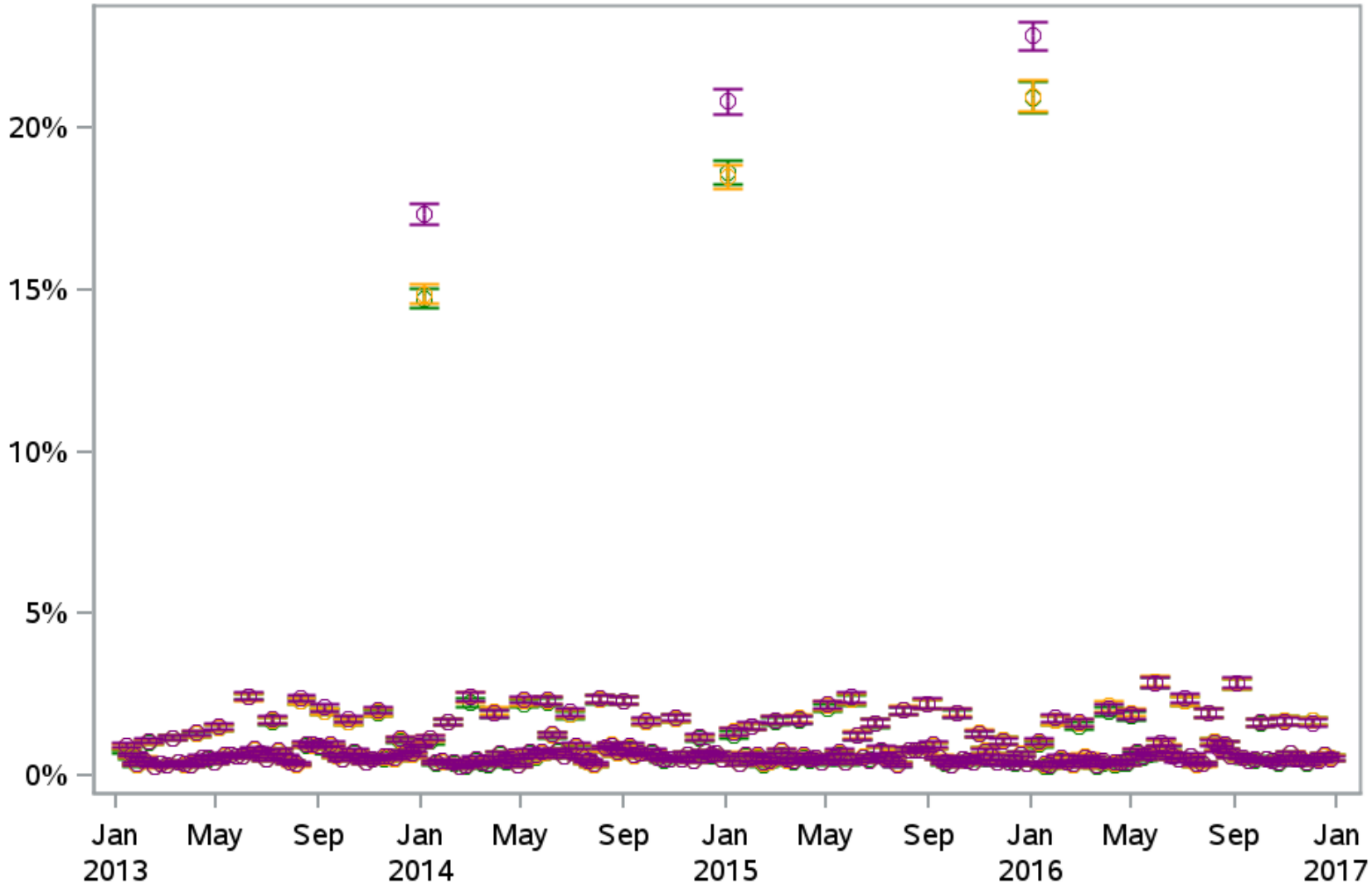
- In all years, seam bias appears to be present for each different interview type
  - While proxy reporting appears to be larger in later years, it is not significantly different from self-reported interviews
  - Type Z interviews do appear to have less seam bias (and are generally noisier in other weeks), but there is still significant seam bias

Seam Bias and Survey Feedback



- When people have interviews fed back to them in later survey years, there is still evidence of seam bias
  - Opposite of what we might expect
- There does not appear to be seam bias in instances of no feedback

Seam Bias and Imputation



- When the beginning month of a spell is imputed, relative to reported cases and the start week being imputed, the seam bias appears to be higher
  - Though, there is still seam bias in reported cases and cases where start week is imputed

United States® Census Bureau

Discussion and Conclusion

- Seam bias is present in job turnovers in the 2014 SIPP
  - More prevalent in SIPP than in other surveys
  - Differences in magnitude of the seam bias based on the type of employment transition
  - Not related to imputation or proxy interviews

United States® Census Bureau

Next Steps

- Finding potential solutions
  - LFSB is considering changes to instrument to improve survey data
- In the project
  - Oaxaca-Blinder decomposition
  - Comparing job transitions with administrative data

United States® Census Bureau

Thank you!

- Neil Bennett
  - Neil.bennett@census.gov
- Mark Klee
  - Mark.a.klee@census.gov
- Robert Munk
  - Robert.o.munk@census.gov

United States® Census Bureau