

What's New in LEHD

May 2026

Andrew Foote, Heath Hayward, and Raza Lamb
Center for Economic Studies, U.S. Census Bureau

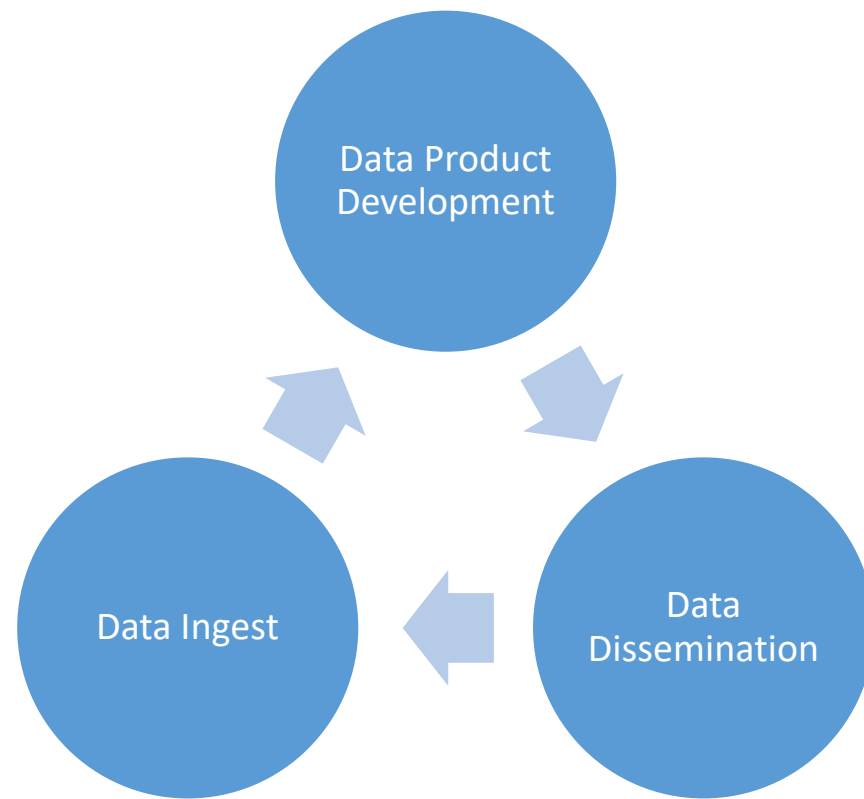
Any opinions and conclusions expressed herein are those of the author and do not represent the views of the U.S. Census Bureau. All tables and figures use data that is publicly available.

Purpose of the Census Bureau, CES and LEHD

- The Census Bureau's mission is to **serve as the nation's leading provider of quality data about its people and economy.**
- The Center for Economic Studies (CES) partners with stakeholders within and outside the Census Bureau to **improve measures of the economy and people of the United States through research and the development of innovative data products.**
- LEHD Mission: Our mission is to provide **new dynamic information on workers, employers, and jobs with state-of-the-art confidentiality protections and no additional data collection burden.**

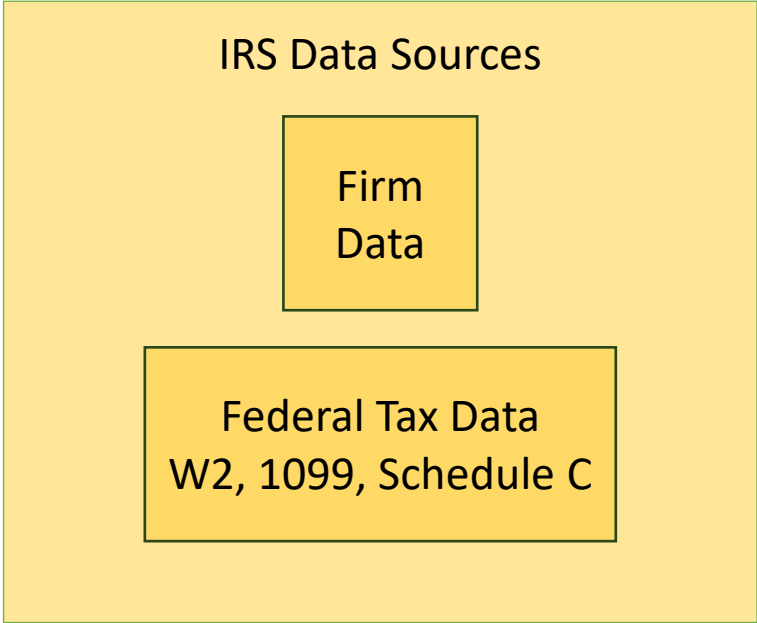
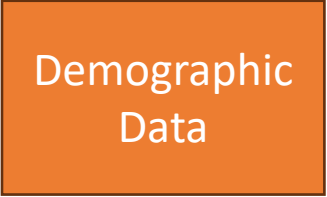
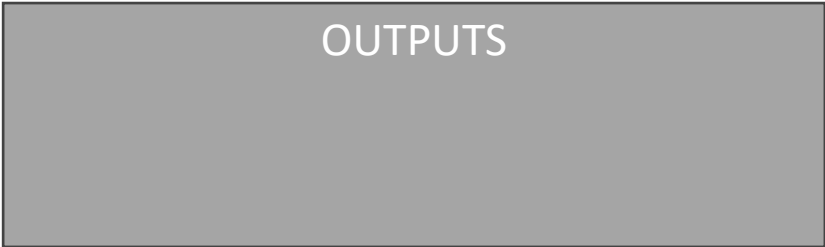
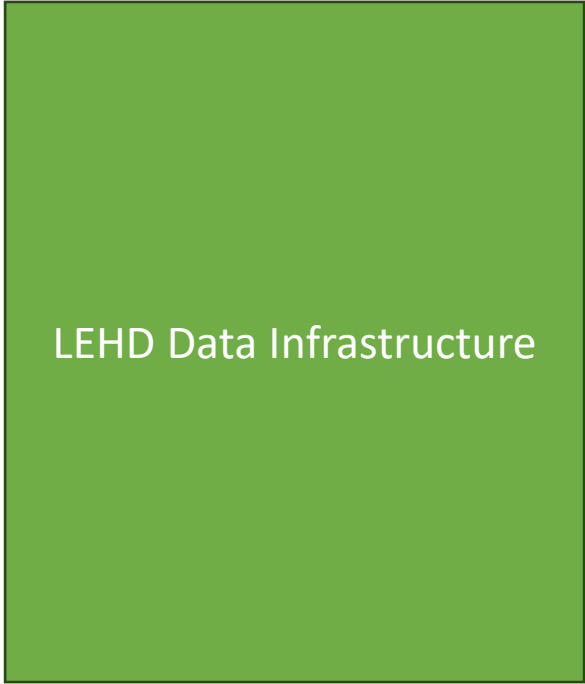
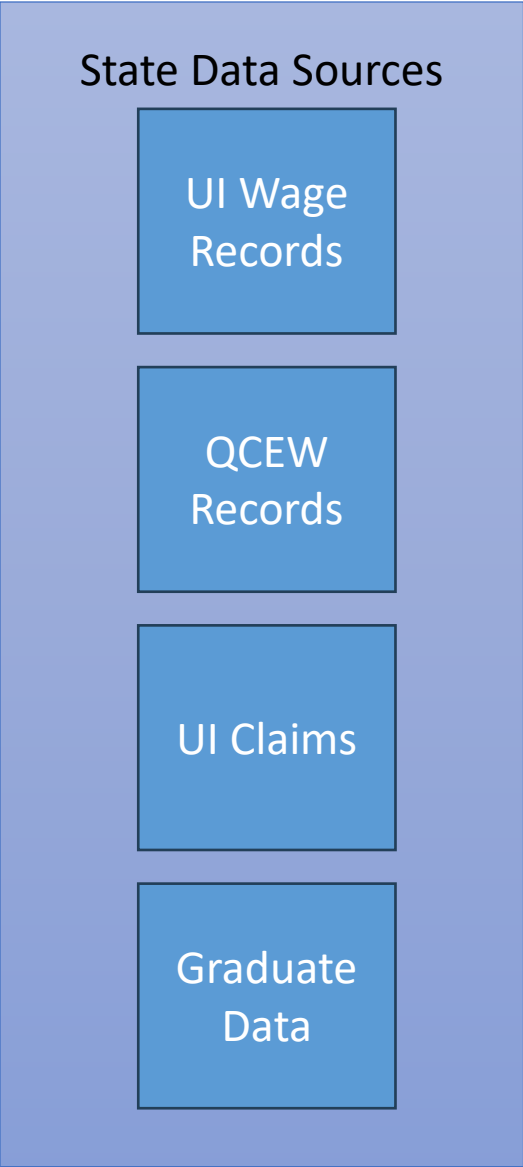
Three Legs of the LEHD Stool

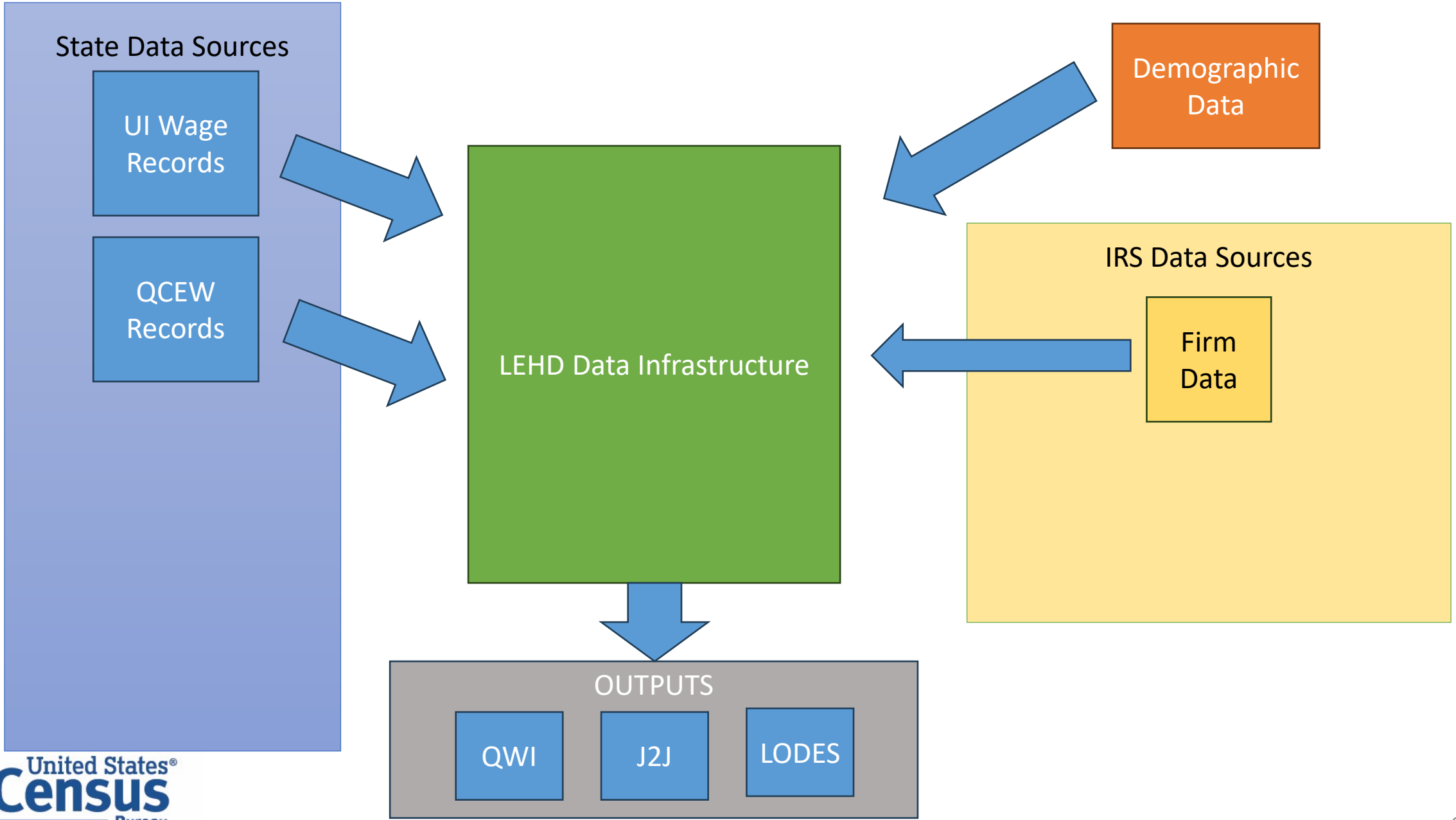
- **Data Ingest:** State relationships and contracts
- **Data Product Development:** Using new and existing administrative data to develop data products
- **Data Dissemination:** Making data accessible to customers



LEHD Team

LEHD Contracts	LEHD Economists	LEHD Production	LEHD Dissemination Team
Barbara Downs	Henry Hyatt	Stephen Tibbets	Heath Hayward
Claudia Perez	Kevin McKinney	Jeff McHugh	Jody Hoon-Starr
Joyce Hahn	Kristin Sandusky	Carol Aristone	Raza Lamb
	Lee Tucker	Camille Norwood	Chaoling Zheng
	Moises Yi	David Carlson	
	Cody Orr	Kevin Liu	
	Larry Warren	Andrew Bennett	
	David Wasser	Tony Matacale	
	Fil Babalievsky	Steven Hood	
	Hubert Janicki		





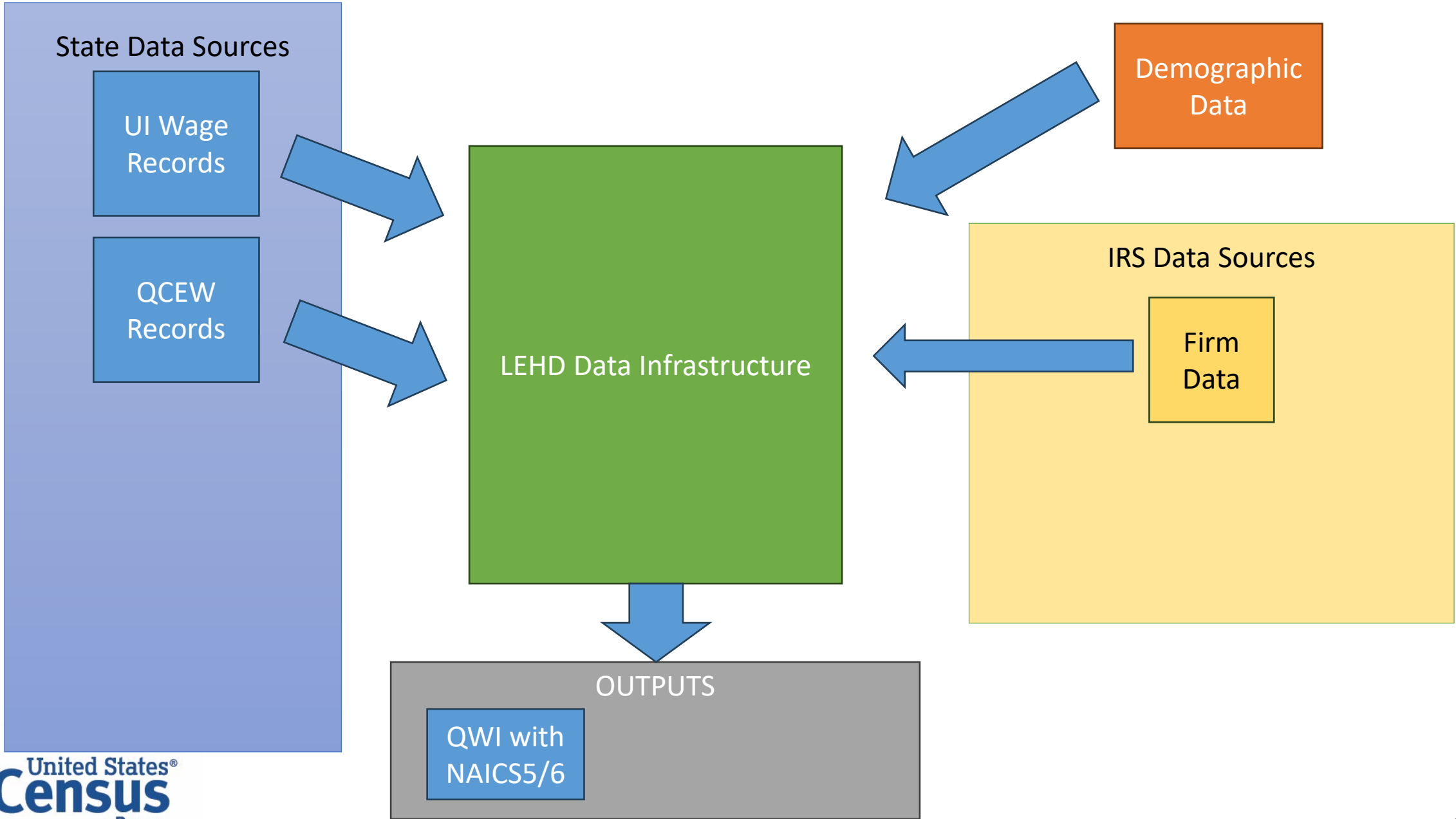
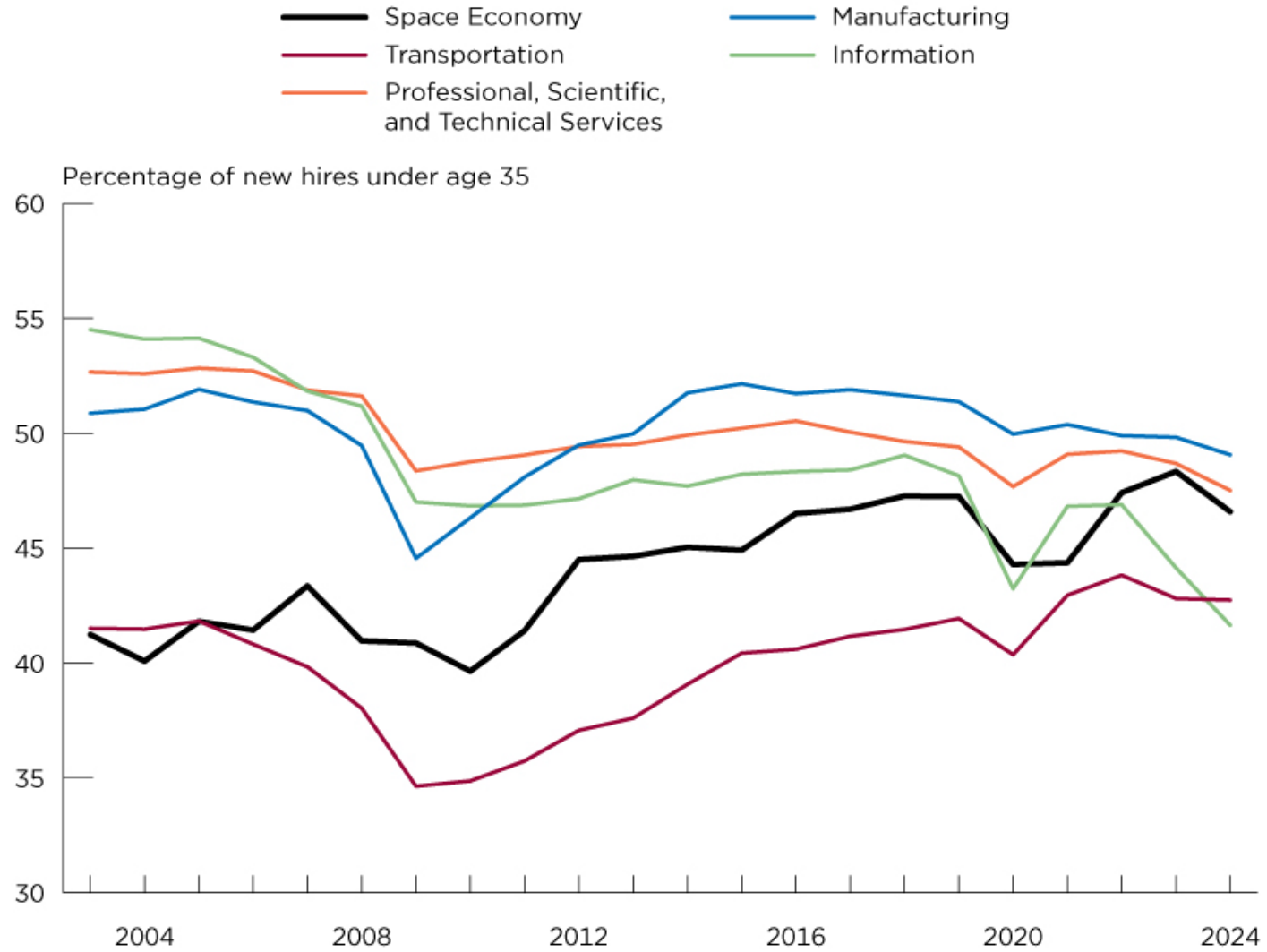
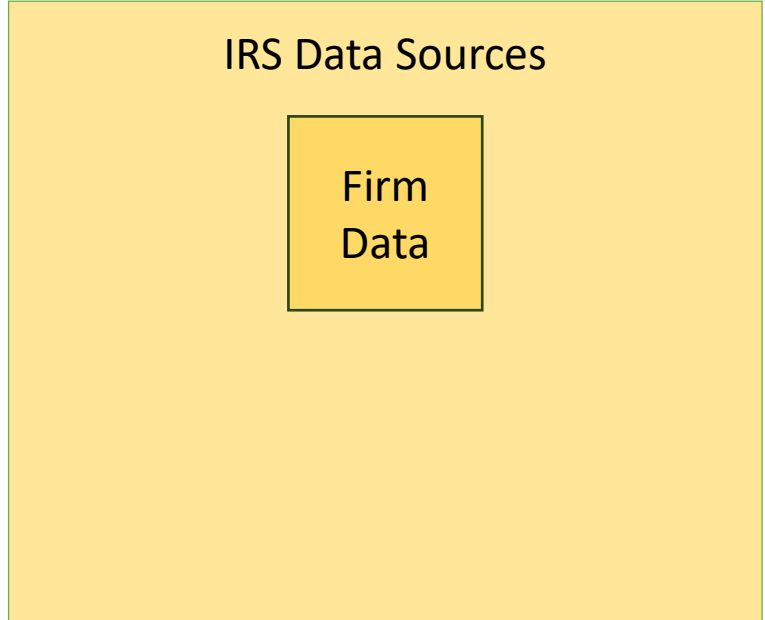
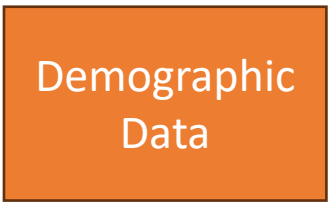
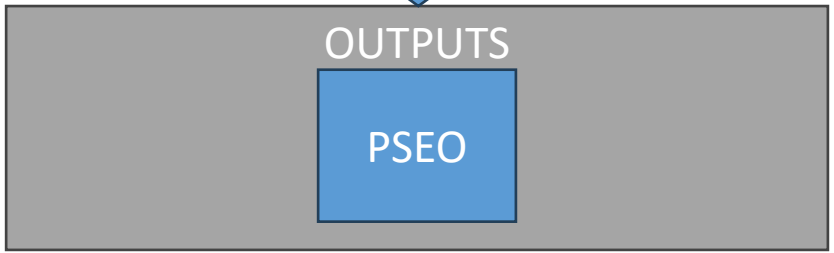
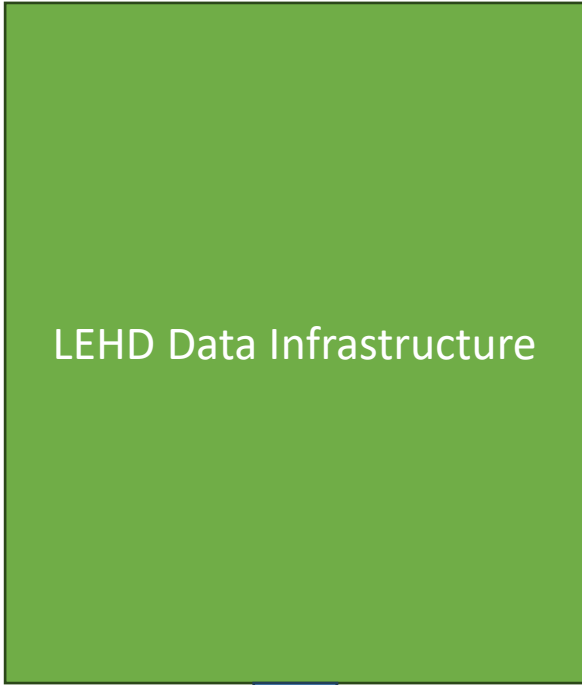
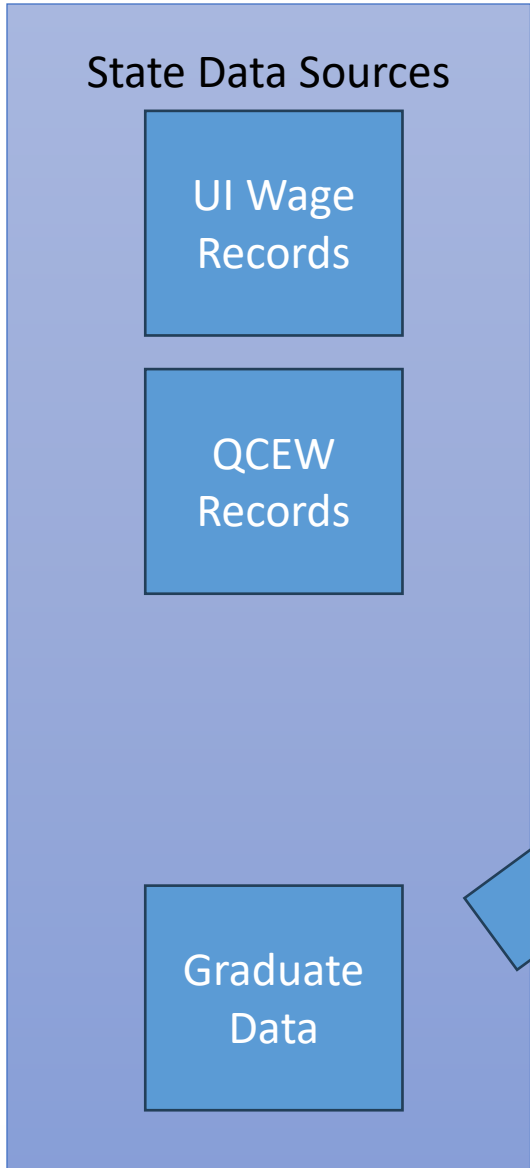


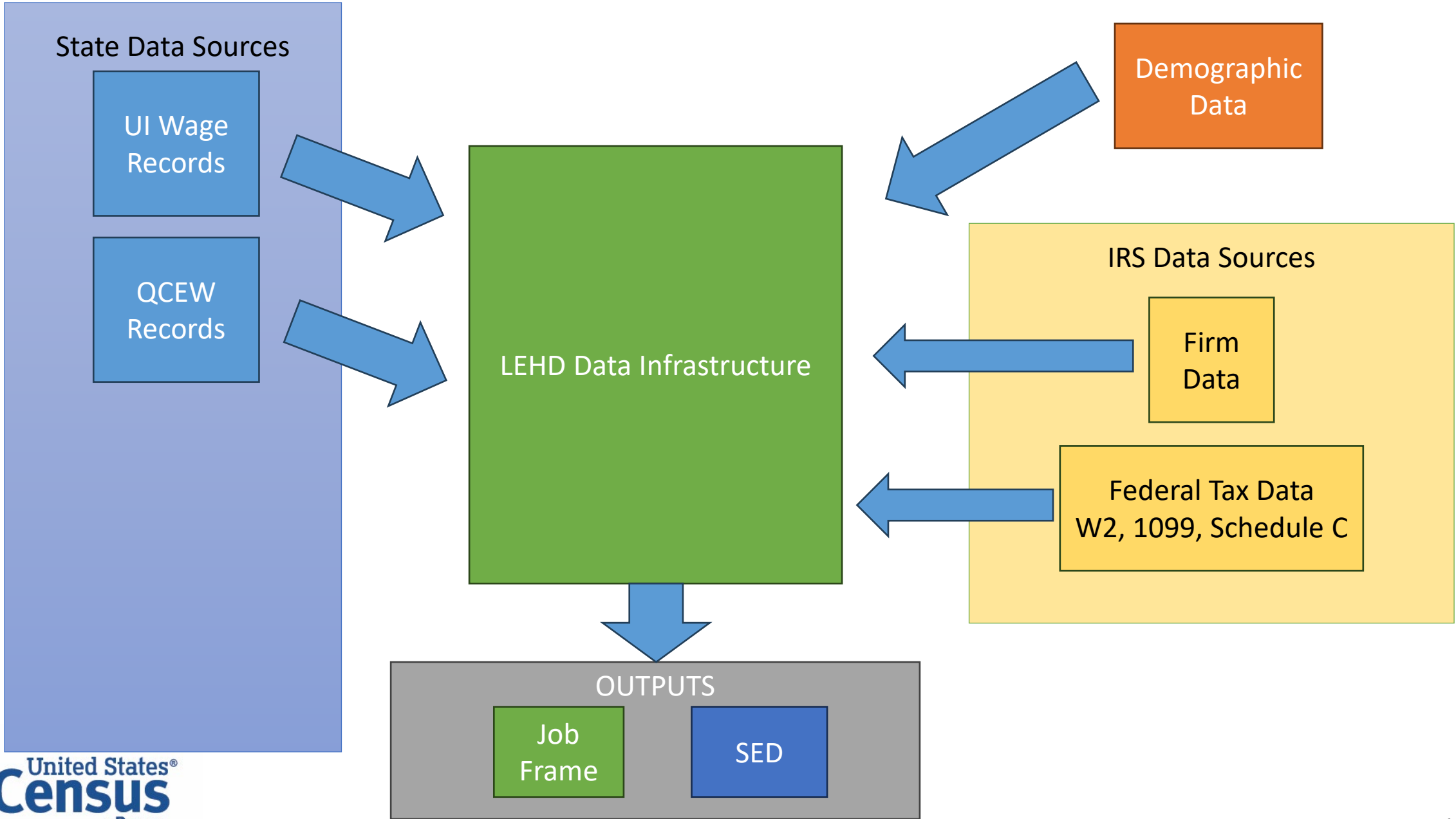
Figure 1.
Trends in Young New Hires: 2003-2024



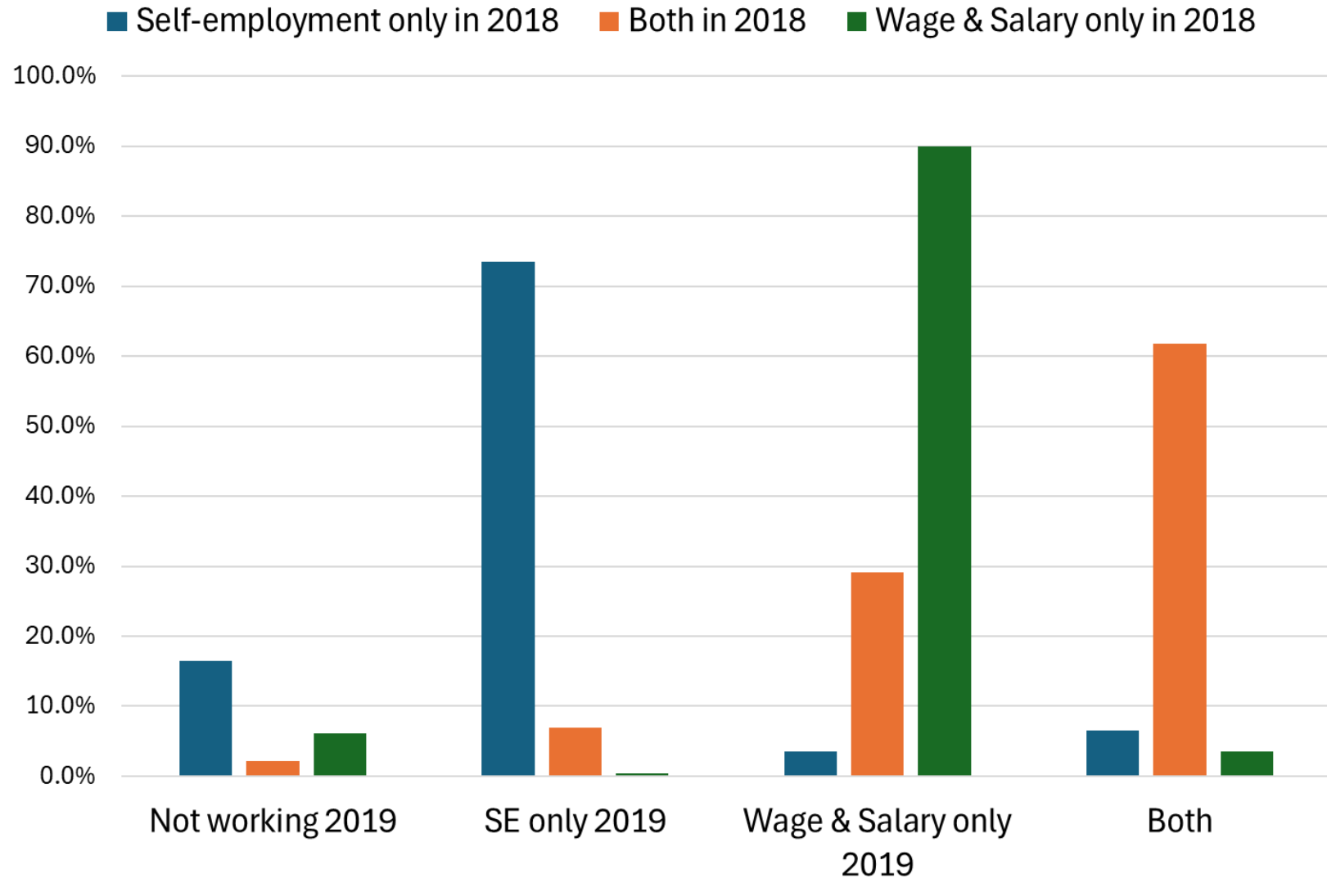
Note: Manufacturing, Transportation, Information, and Professional, Scientific, and Technical Services sector hire shares exclude all industries included in the space economy.

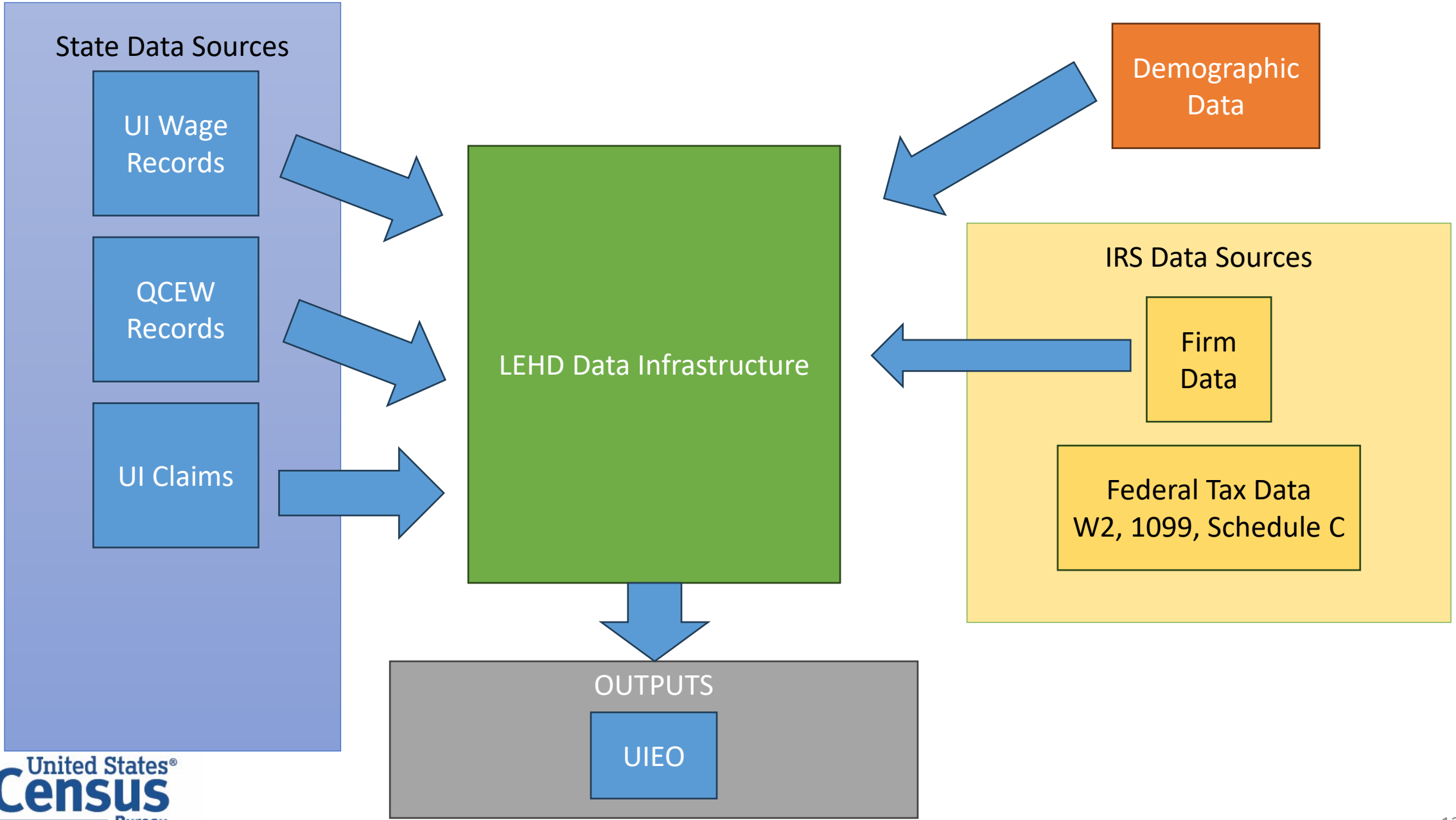
Source: U.S. Census Bureau, Quarterly Workforce Indicators R2025Q4, hires (not seasonally adjusted).



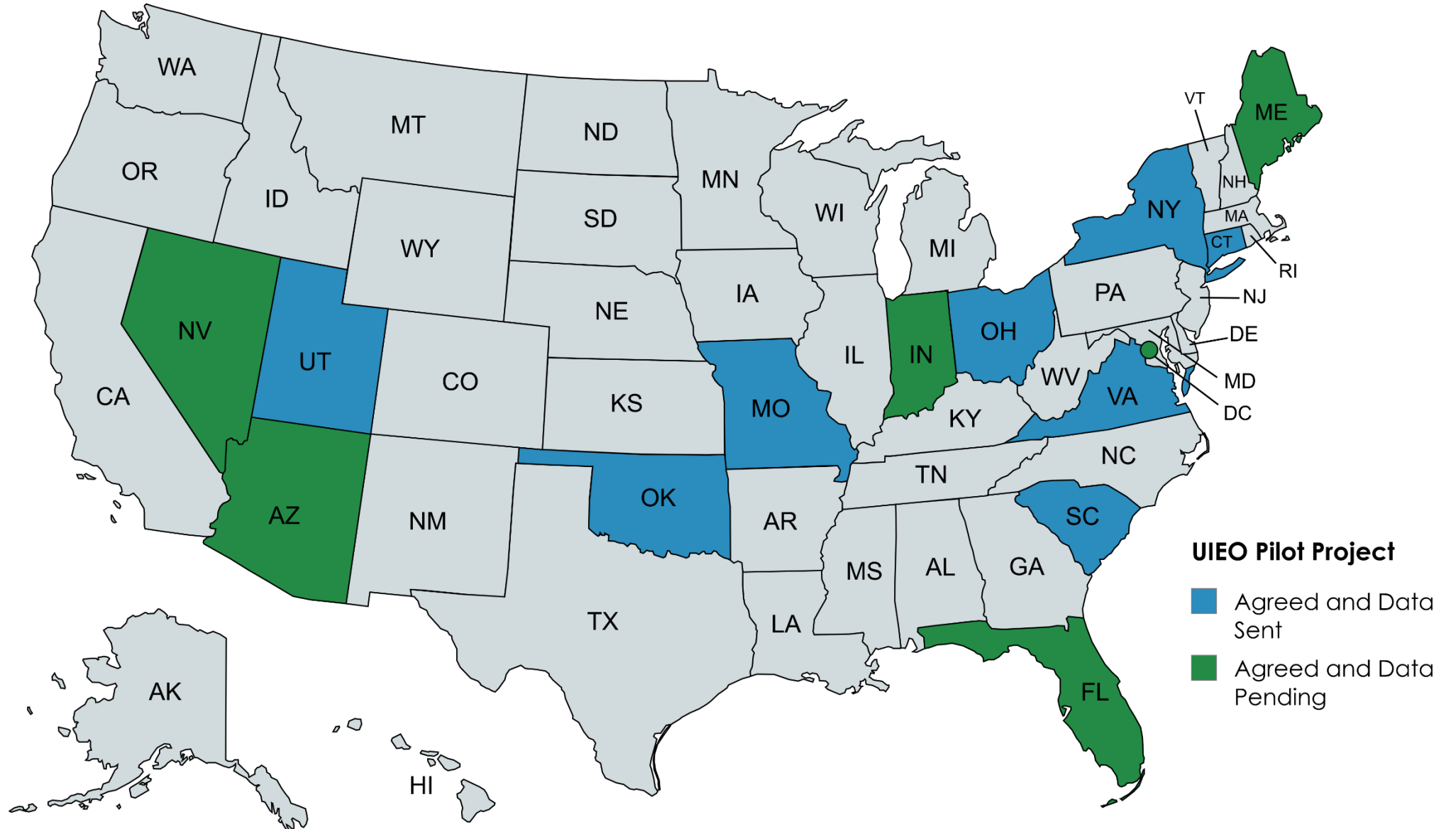


Transitions between Self-employment and Wage & Salary work





State Partners as of March 2026



Sector Transition Probabilities

		Destination Sector																			
		-11: Agriculture	-21: Mining	-22: Utilities	-23: Construction	-31-33: Mfg	-42: Wholesale	-44-45: Retail	-48-49: Transport	-51: Info	-52: Finance	-53: Real Estate	-54: Prof Svc	-55: Mgmt of Cos	-56: Admin	-61: Educ	-62: Health	-71: Arts	-72: Hosp & Food	-81: Other Svc	-92: Public
Origin Sector	11: Agriculture	.71			.03	.06	.02	.05	.02						.05		.02		.03		
	21: Mining		.57	.01	.08	.07		.03	.06		.01	.01	.03	.01	.05	.01	.01		.01	.01	.02
	22: Utilities			.84	.06			.04							.06						
	23: Construction	.00	.00	.00	.83	.03	.01	.02	.01	.00	.00	.01	.01	.00	.03	.00	.01	.00	.01	.01	.00
	31-33: Mfg	.00	.00	.00	.01	.85	.01	.02	.02	.00	.00	.00	.01	.00	.03	.00	.01	.00	.01	.00	.00
	42: Wholesale	.00	.00		.03	.06	.62	.05	.04	.01	.01	.01	.03	.01	.05	.01	.02	.00	.02	.01	.01
	44-45: Retail	.00		.00	.01	.03	.02	.69	.03	.01	.01	.01	.02	.01	.04	.01	.04	.01	.04	.02	.01
	48-49: Transport	.00	.00		.01	.03	.02	.04	.74	.00	.01	.01	.01	.01	.04	.01	.02	.00	.02	.01	.00
	51: Info				.02	.02	.02	.06	.02	.55	.03	.01	.08	.01	.06	.02	.03	.01	.03	.01	.01
	52: Finance				.01	.02	.02	.06	.02	.02	.54	.01	.07	.02	.08	.02	.06	.01	.02	.01	.01
	53: Real Estate		.00		.03	.03	.02	.06	.04	.01	.02	.54	.03	.01	.06	.02	.05	.01	.04	.02	.01
	54: Prof Svc	.00	.00	.00	.02	.03	.02	.04	.02	.02	.03	.01	.61	.01	.07	.02	.04	.01	.02	.01	.01
	55: Mgmt of Cos				.02	.04	.02	.05	.03	.01	.03	.01	.04	.58	.05	.02	.06	.01	.03	.01	.01
	56: Admin	.00	.00	.00	.03	.06	.02	.05	.04	.01	.02	.01	.04	.01	.58	.02	.06	.01	.03	.01	.01
	61: Educ				.00	.01	.00	.02	.01	.00	.01	.00	.02	.00	.02	.79	.05	.01	.02	.01	.01
	62: Health	.00			.00	.01	.00	.03	.01	.00	.01	.00	.01	.01	.03	.02	.83	.00	.02	.01	.01
	71: Arts				.01	.01	.01	.05	.02	.01	.01	.01	.02	.00	.03	.02	.04	.70	.05	.01	.01
	72: Hosp & Food	.00		.00	.01	.02	.01	.07	.02	.00	.01	.01	.01	.01	.04	.01	.04	.01	.72	.01	.00
	81: Other Svc	.00			.01	.02	.01	.05	.02	.00	.01	.01	.02	.00	.03	.02	.04	.01	.03	.72	.01
	92: Public				.01	.02	.01	.03	.02	.00	.01	.01	.02	.00	.04	.03	.06	.01	.02	.01	.71

State Data Sources

UI Wage
Records
INCLUDING
OCCUPATION

QCEW
Records

LEHD Data Infrastructure

Demographic
Data

IRS Data Sources

Firm
Data

OUTPUTS

State Data Sources

UI Wage
Records
INCLUDING
OCCUPATION

QCEW
Records

UI Claims

Graduate
Data

LEHD Data Infrastructure

Demographic
Data

IRS Data Sources

Firm
Data

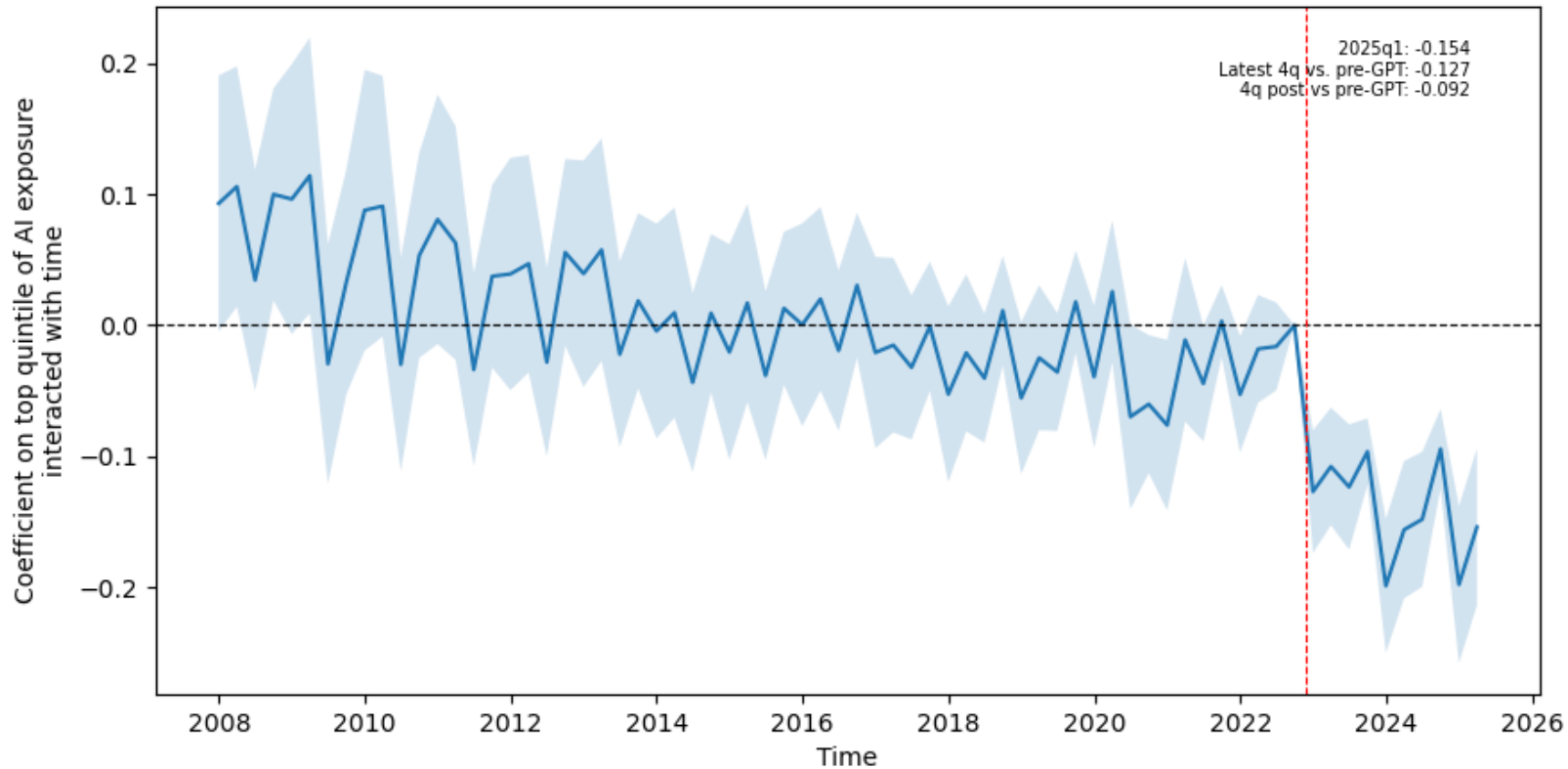
Federal Tax Data
W2, 1099, Schedule C

OUTPUTS

QWI: Indexed early career employment (ages 22-24) by industry AI exposure



QWI: Event study of early career hires in the most AI-exposed industries



Updates from the Development and Applications Innovation Group (DAIG)

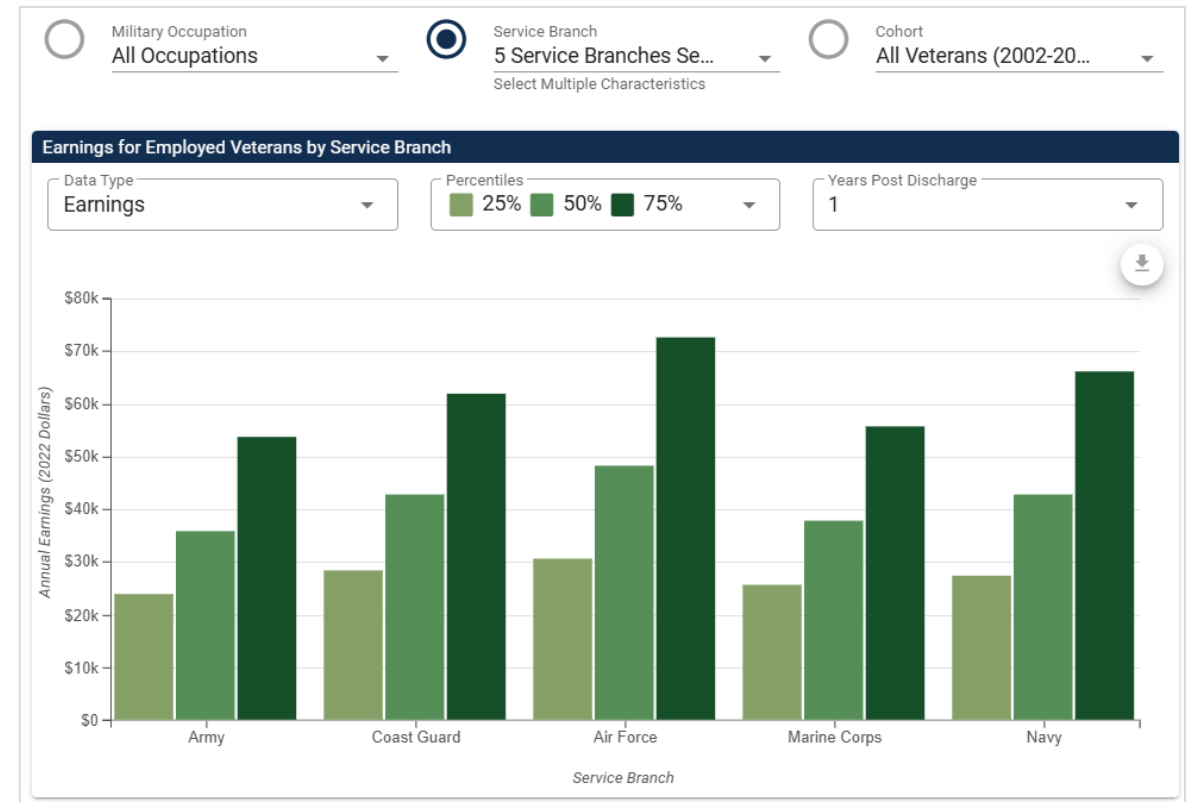
May 2026

Heath Hayward

Center for Economic Studies, U.S. Census Bureau

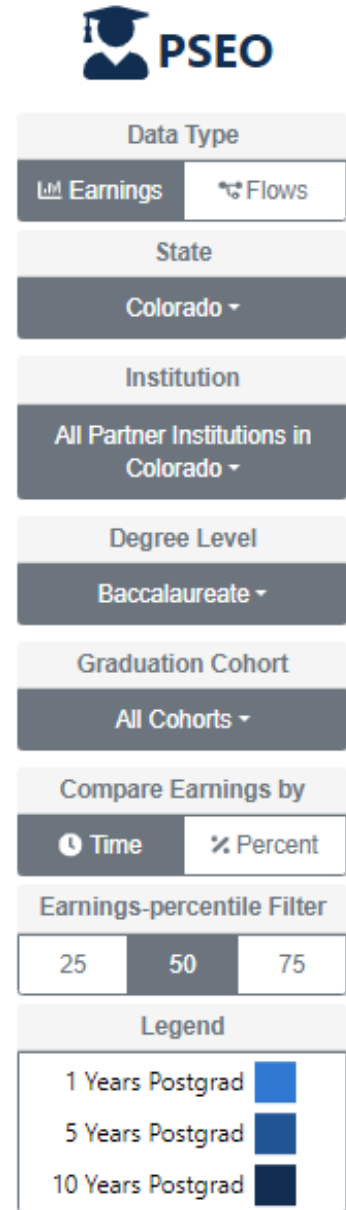
Outline

- Dissemination/application changes since last workshop
 - Regular data releases
 - New tools/data
- What's coming in the next year
 - Expected releases
 - Under the hood work
- Longer term outlook



Updated data

- Quarterly QWI and J2J data
- LODES 2023 added to OnTheMap
- LODES 2023 and new ACS added to OnTheMap for Emergency Management
- PSEO 2025Q4 data released
- BDS 2023 released



The screenshot displays the PSEO OnTheMap interface with the following filter settings:

- Data Type:** Earnings (selected), Flows
- State:** Colorado
- Institution:** All Partner Institutions in Colorado
- Degree Level:** Baccalaureate
- Graduation Cohort:** All Cohorts
- Compare Earnings by:** Time (selected), Percent
- Earnings-percentile Filter:** 25, 50 (selected), 75
- Legend:** 1 Years Postgrad (light blue), 5 Years Postgrad (medium blue), 10 Years Postgrad (dark blue)

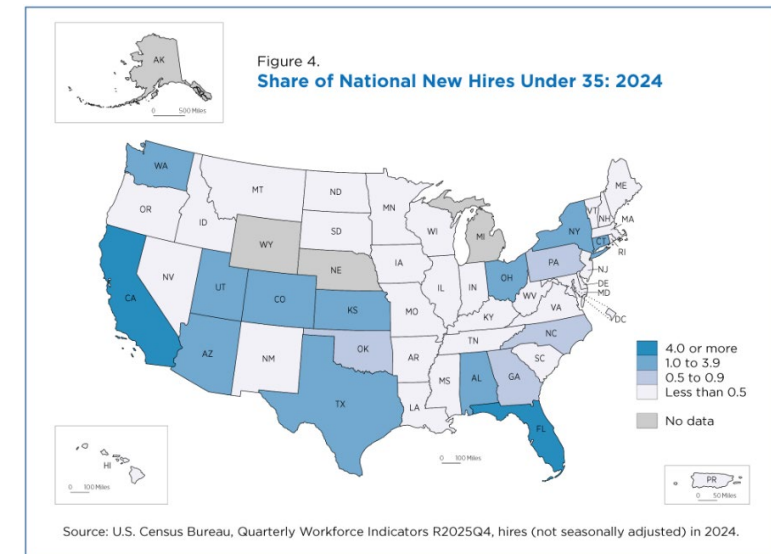
New/updated tools

QWI Explorer and LED Extraction Tool

- NAICS 5/6 Tabulations now available in both tools
- Explorer UI updated to resolve bugs with conflict popups and overall user experience

OnTheMap for Emergency Management

- Updated Wildfire event boundary source



Upcoming application releases

LODES 2024 coming in early Fall 2026

- Will be added to OnTheMap with 2025 TIGER/Line geovintage

OnTheMap for Emergency Management

- ACS 2021-2026 5-year estimates to be added to the tool in early 2027
- LODES 2024 data added into OTM-EM at the same time

BDS Explorer

- Updating to BDS 2024 at end of September 2026

Upcoming application releases

LEHD Code Samples

- Add modules for QWI and J2J data

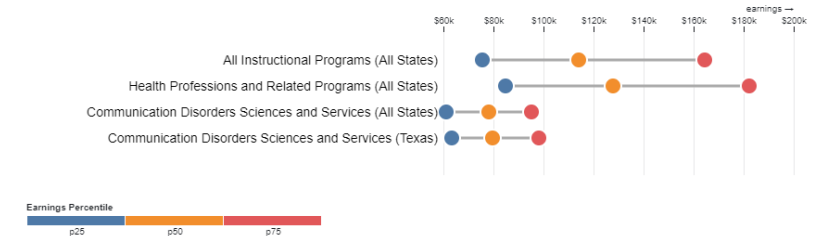
PSEO Explorer

- R2026Q2 data releasing in Summer 2026
- Sometime in 2027, data with new margins
- Tool updates to handle new margins and become more phone-friendly

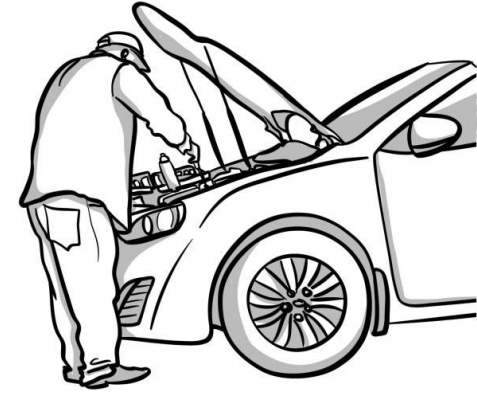
Data: Margins

Earnings for Grads with a Doctoral - Professional Practice degree

Years Postgrad y1 y5 y10



Work under the hood



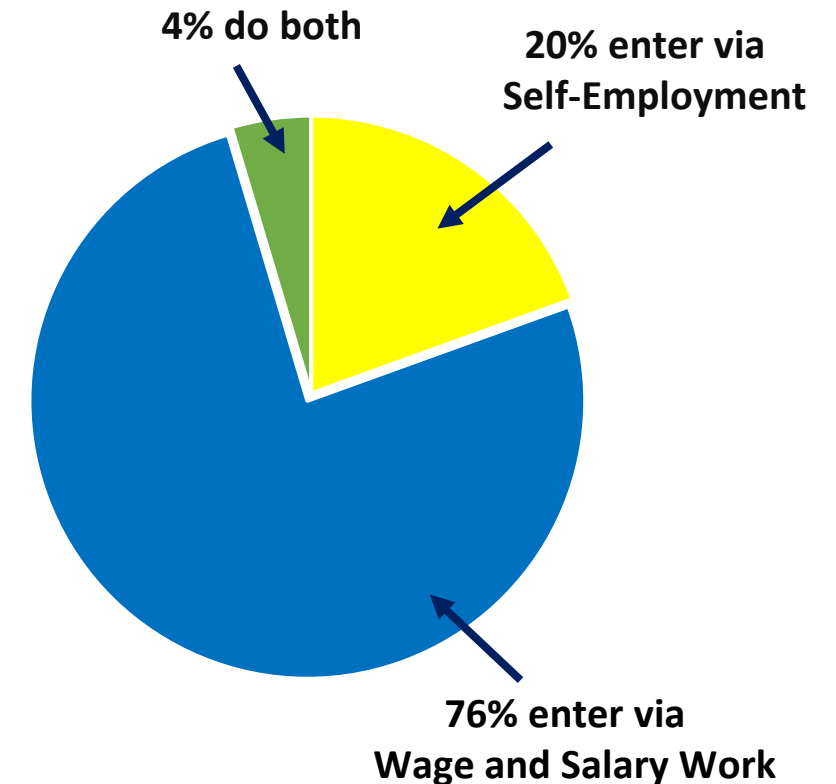
Two major migrations approaching:

- **Software**
 - Update old application code (Python2, other dependencies)
 - Move to newer version of RHEL
- **Hardware**
 - Uncertain future for our hardware, will adapt as needed!

Longer term application development

- UIEO Explorer
- Self-Employment Dynamics Explorer
- OnTheMap, OnTheMap for Emergency Management, QWI Explorer redesign?

Self Employment Dynamics



Solicitation of Feedback

- What pain points do you have with the current data files or data tools?
- What new tool/resource could we create to make your workflows easier?
- What can we do better?

- Contact Us!
 - General Questions: CES.Local.Employment.Dynamics@census.gov
 - LODES/OnTheMap: CES.OnTheMap.Feedback@census.gov
 - QWI/QWI Explorer: CES.QWI.Feedback@census.gov
 - J2J/J2J Explorer: CES.J2J.Feedback@census.gov
 - PSEO: CES.PSEO.Feedback@census.gov

Identifying Remote Workers Using Machine Learning with LODES/ACS

Raza Lamb – Data Scientist, LEHD

LED Partnership Workshop

May 12, 2026

Overview

- ✓ LODES Review
 - What is LODES?
 - File Structure
- ✓ What can we say with LODES?
- ✓ Predicting Work-From-Home
- ✓ Next Steps

Disclaimer: Any opinions and conclusions expressed herein are those of the authors and do not represent the views of the U.S. Census Bureau. The Census Bureau has ensured appropriate access and use of confidential data and has reviewed these results for disclosure avoidance protection (Project 7535738: CBDRB-FY26-CES011-008)

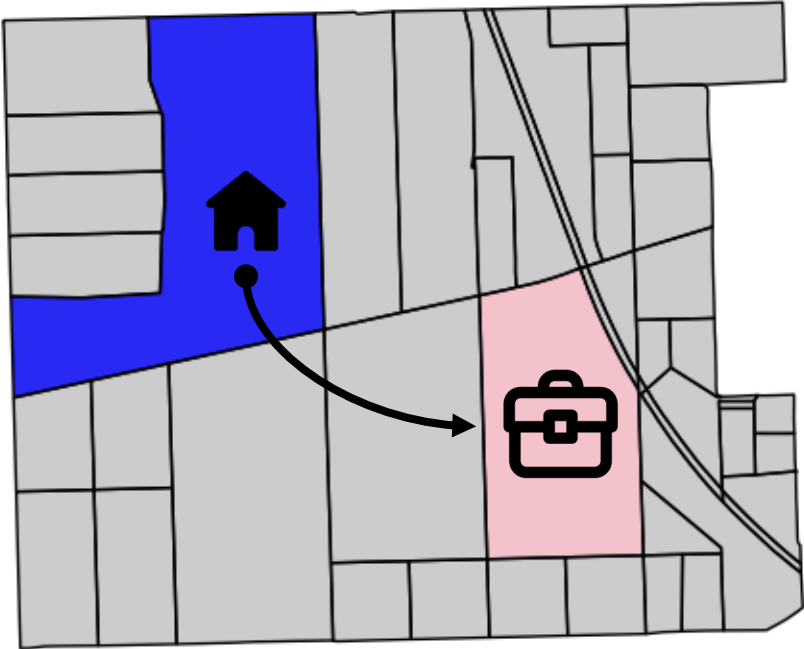
What is LODES?

- LODES: LEHD Origin-Destination Employment Statistics
- Geographic patterns of jobs
 1. by employment locations
 2. and residential locations
 3. as well as connections between the two
- Tabulated by several categorical variables
 - Demographics: age, sex, race, ethnicity, and education
 - Job Characteristics: earnings, job type, and job dominance
 - Firm Characteristics: industry, firm age, and firm size

Detail at the Block Level

Number of workers with residences in a block by various category.

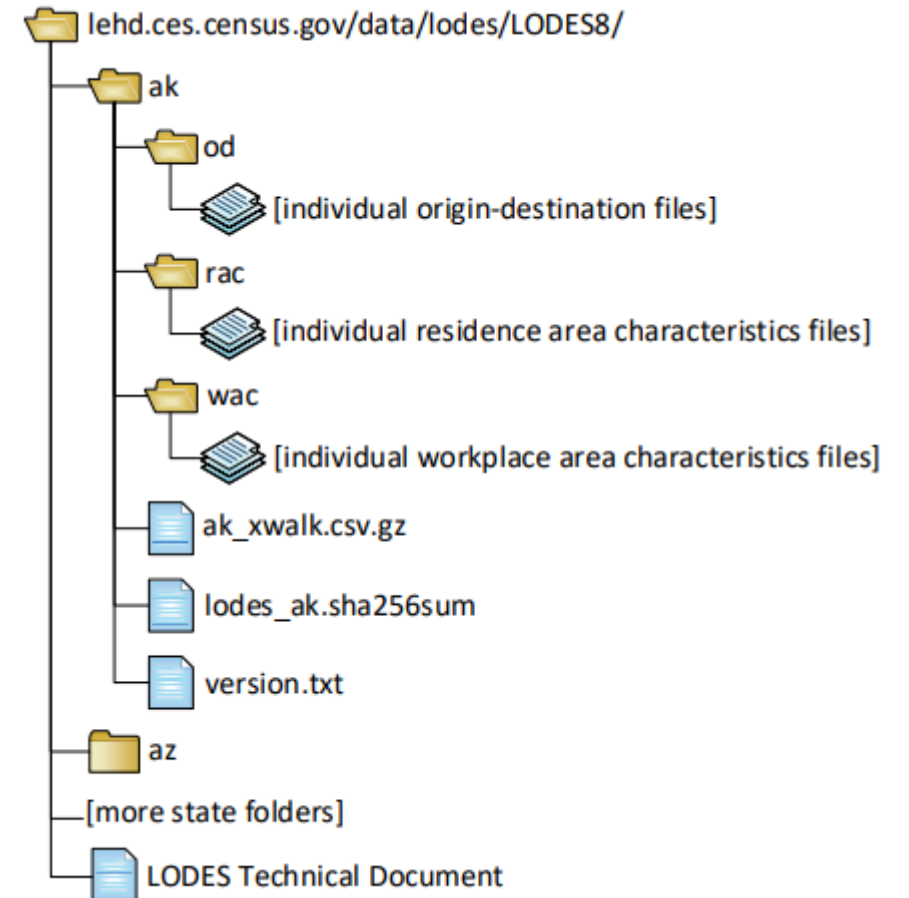
Number of workers with a workplace in one block and a residence in another



Number of workers with workplaces in a block by various category.

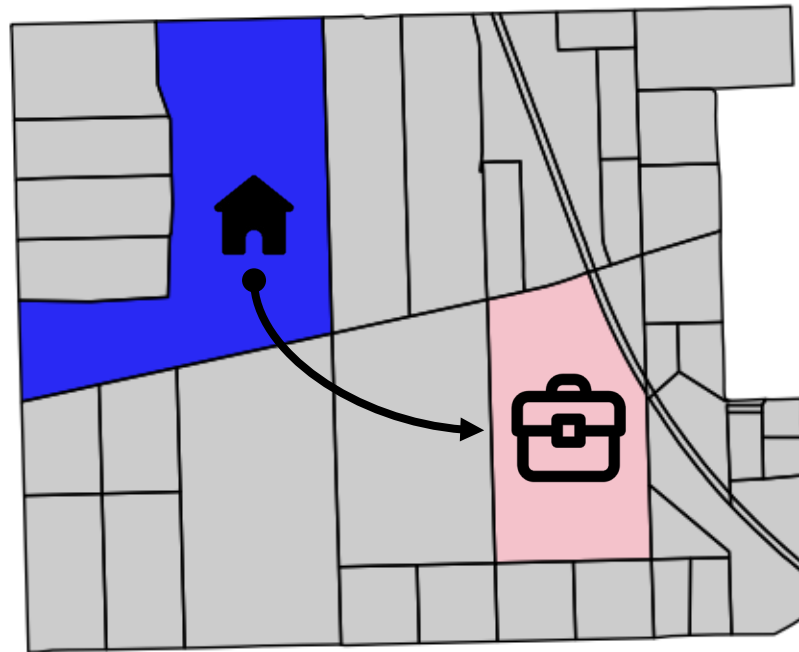
LODES File Structure

- File Types:
 - **rac** – Residence Area Characteristics
 - **wac** – Workplace Area Characteristics
 - **od** – Origin-Destination; 2 flavors:
 - main – Work in state and live *in state*
 - aux – Work in state and live *out of state*
 - Crosswalk – blocks to various geographies
 - i.e. Census tracts, zip codes, places, etc.



What Can We Say?

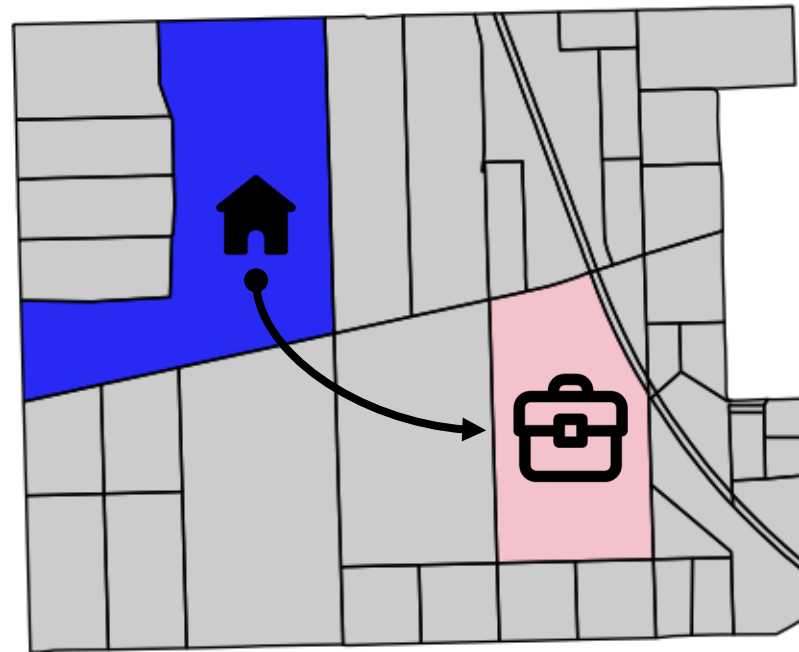
These workers have a
residence in block A
and a **workplace in**
block B



What Can't We Say?



These workers commute from **block A** to **block B**

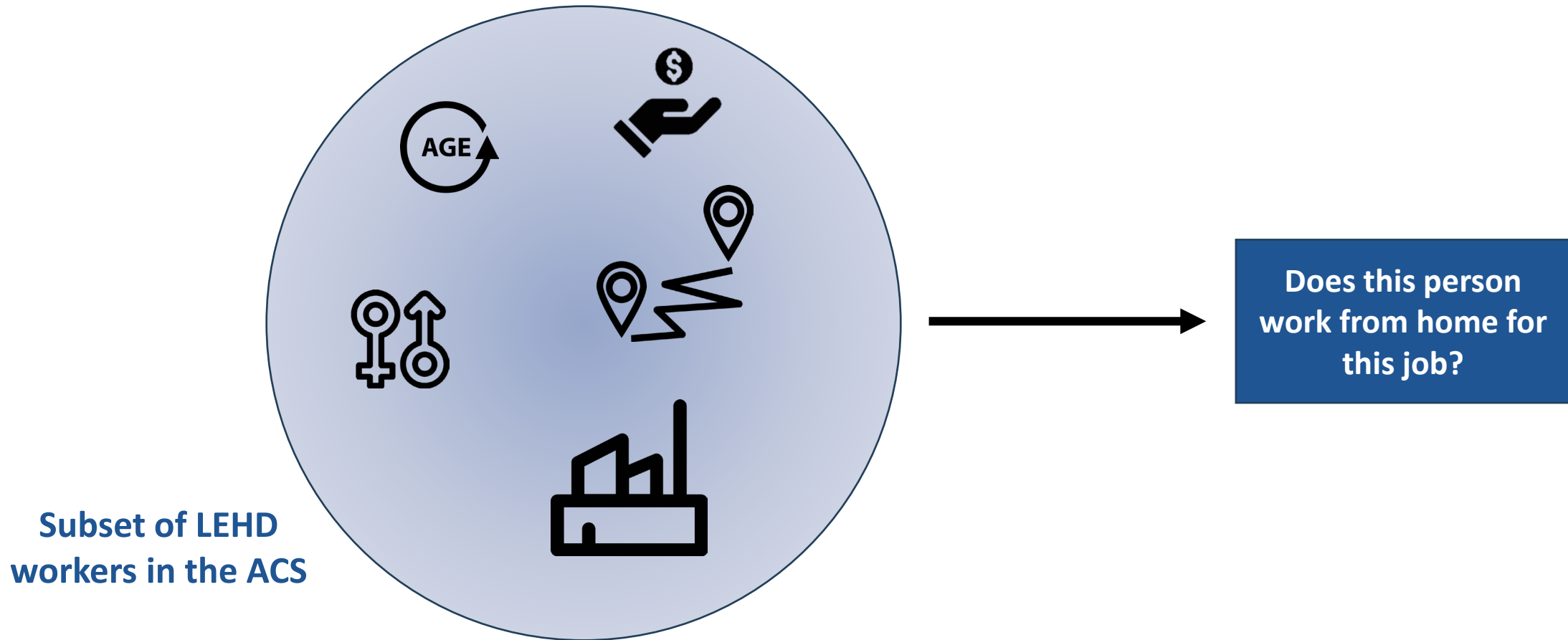


- Remote workers
- Alternative job-sites
- On-demand workers

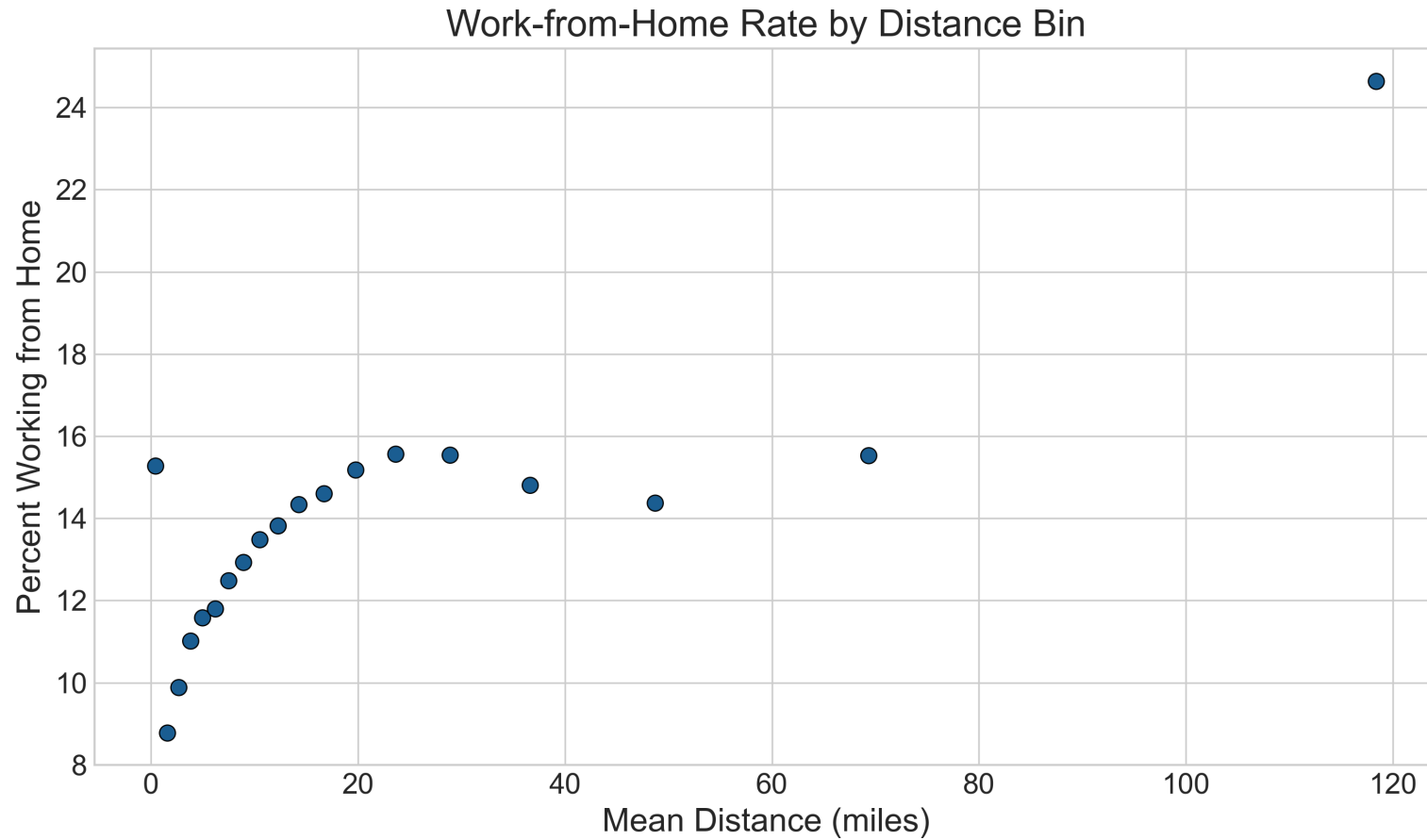
Predicting Work from Home Using ACS

- American Community Survey
 - Annual survey of ~3.5 million households
 - Includes “Means of Transportation to Work” question
- Generate Work-From-Home dataset:
 1. Attach American Community Survey responses to LEHD job frame (microdata)
 2. Identify top-earning job in quarter survey was conducted
 3. Include job, firm, and demographic characteristics
 4. Calculate distance from home to work (and other calculated variables)

Predicting Work from Home Using ACS



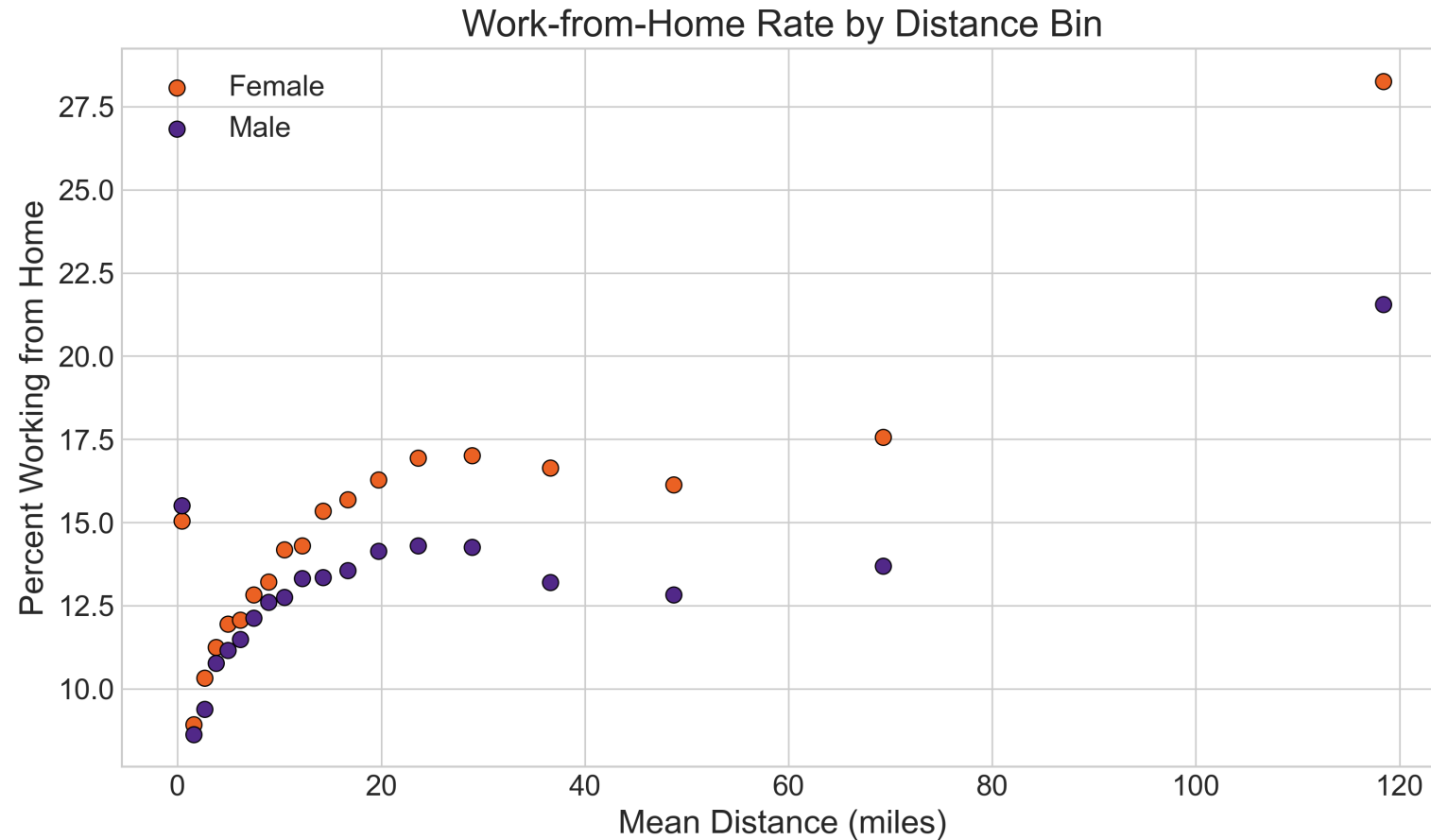
Preliminary Results



The highest-distance bin is excluded because its value distorts the scale of the figure.

Cleared for Public Release - DRB Clearance Number: CBDRB-FY26-CES011-008

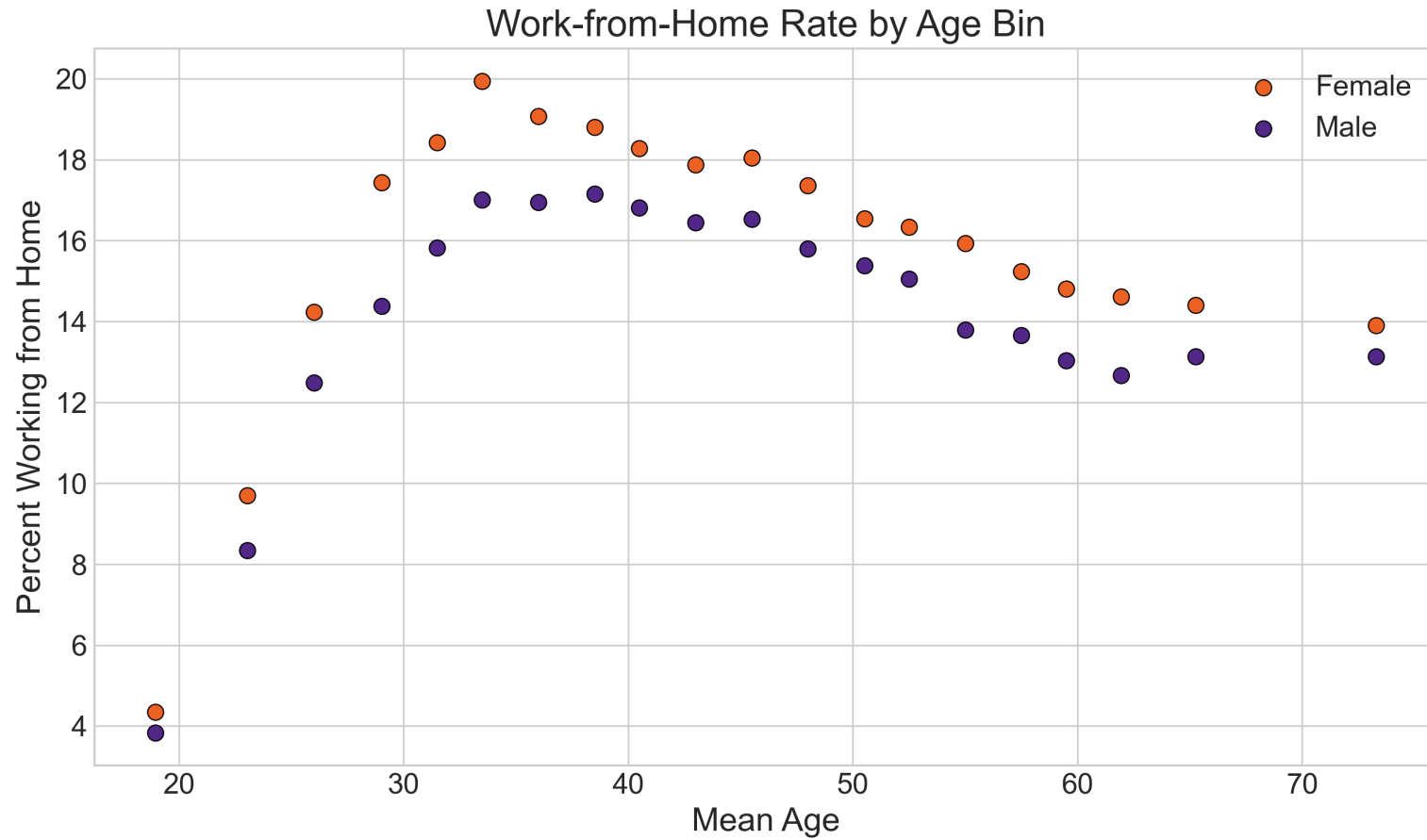
Preliminary Results



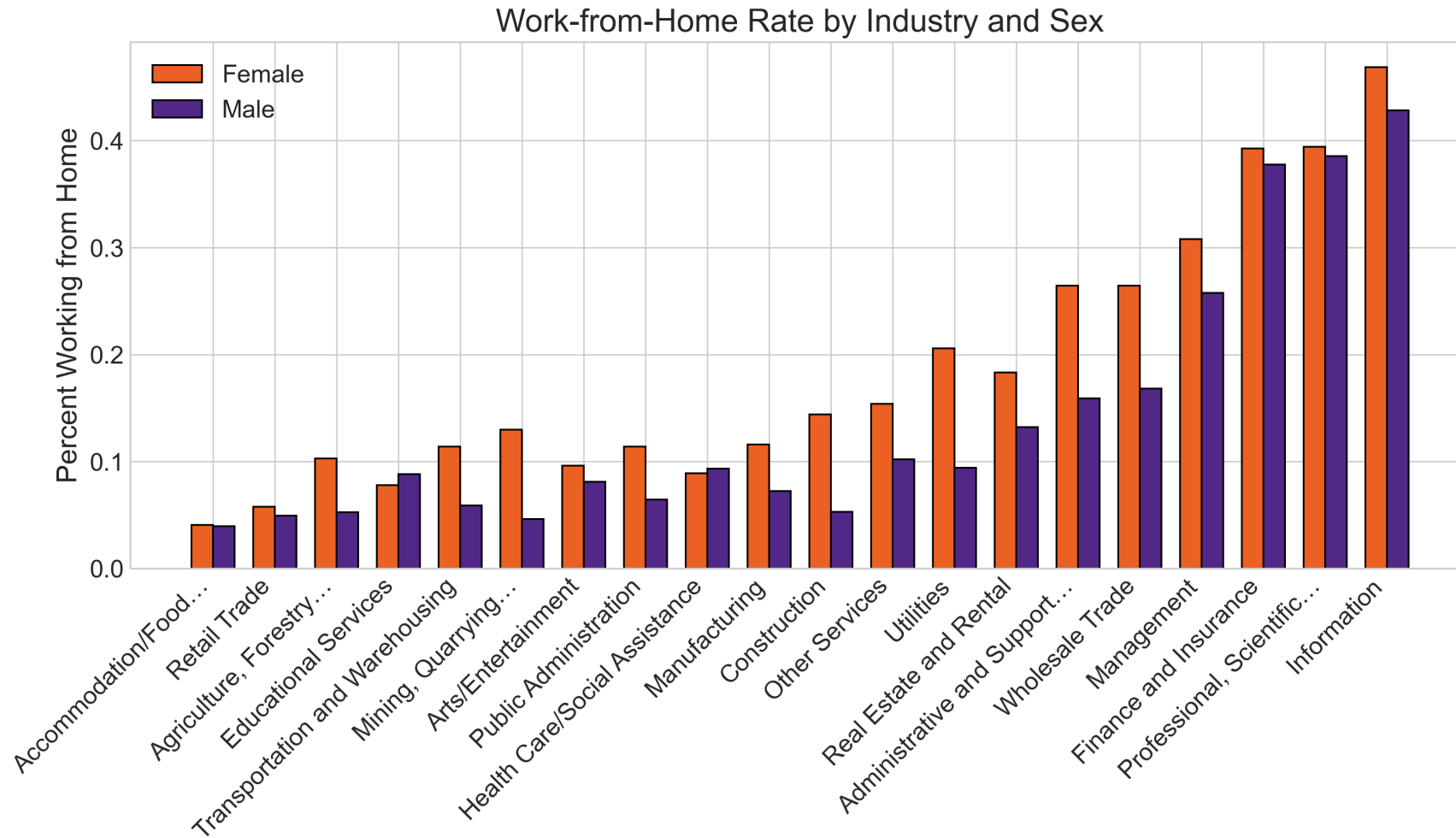
The highest-distance bin is excluded because its value distorts the scale of the figure.

Cleared for Public Release - DRB Clearance Number: CBDRB-FY26-CES011-008

Preliminary Results



Preliminary Results



Next Steps – What Does this Lead To?

- Evaluate whether remote work can be reliably predicted from merged ACS and LEHD microdata.
- Continue testing additional predictors, temporal signals, and spatial relationships.
- Ideal long-term outcome:
 - Incorporate remote work status directly into LODES (i.e. rac/wac/od)
 - Or publish a research dataset estimating remote work patterns
- Important caveat:
 - Remote work behavior may not be fully predictable from available data points

Best Case Scenario

Current WAC/RAC

Block Number	Total Jobs	Number of Jobs: Male	...	Number of Jobs: NAICS 11
170318241051001	4	3		1
170318241051004	1	0		0

Future WAC/RAC

Block Number	Total Jobs	Number of Jobs: Male	...	Number of Jobs: NAICS 11	Number of Jobs: WFH
170318241051001	4	3		1	1
170318241051004	1	0		0	0

Thank You!

Feedback

- Contact: raza.h.lamb@census.gov

Resources

- LODES Technical Document: <https://lehd.ces.census.gov/doc/help/onthemap/LODESTechDoc.pdf>
- OnTheMap: <https://onthemap.ces.census.gov/>
- LODES Code Samples: <https://lehd.ces.census.gov/data/lehd-code-samples/sections/lodes.html>
- ACS Travel to Work: <https://www.census.gov/topics/employment/commuting/guidance/acs-1yr.html>