What's New in LEHD

September 2025

Andrew Foote, Heath Hayward, Larry Warren, and Martha Stinson
Center for Economic Studies, U.S. Census Bureau

United States® Census Bureau

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
	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	
	Nicole Gandre		
	Caelan Wilkie-Rodgers		

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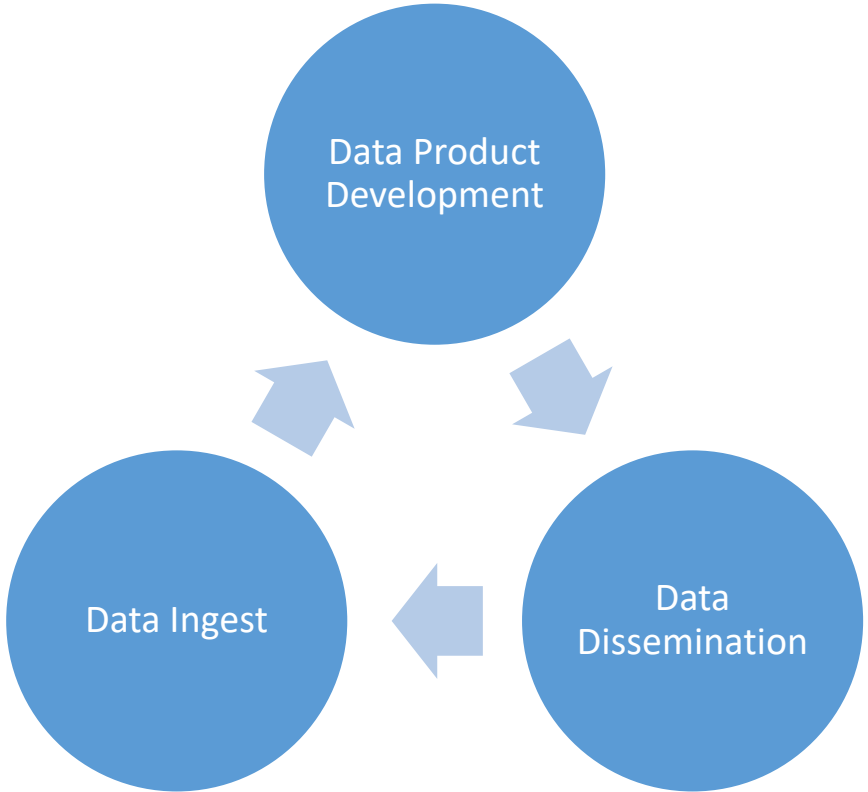
Three Legs of the LEHD Stool

- **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



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State of LEHD: Data Ingest

- Added 9 new partners to PSEO
- Moved most LED MOUs to 10-year contracts, which helps ease personnel burden on both sides
- 3 new states have opted into participating in UI Claims pilot project, at least 4 more states have opted to send more years of data

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Partnership with State LMI offices

- One unique aspect of the LED Partnership is that we get to be so close to our customer base
- We track feedback from you, and are in regular internal discussions about how to leverage our products for you
- Ways to provide feedback:
  - Steering committee regional representatives
  - LEHD Feedback email: CES.Local.Employment.Dynamics@census.gov
    - We try to respond within 2 business days
  - This conference!

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Data Product Development

- **Unemployment Insurance Employment Outcomes**: Linking UI Claims to LEHD wage data
- **Quarterly Workforce Indicators**: Releasing State x NAICS5/6 tabulations in December
- **Post-Secondary Employment Outcomes**: On track to hit 1000 institutions next year, continued development of additional data tables
- **Self-Employment Dynamics**: Using Job Frame, tabulating in- and out-flows of self-employment over time, by demographics/industry.
- **Veteran Employment Outcomes**: New version covering all armed service branches released in January 2025

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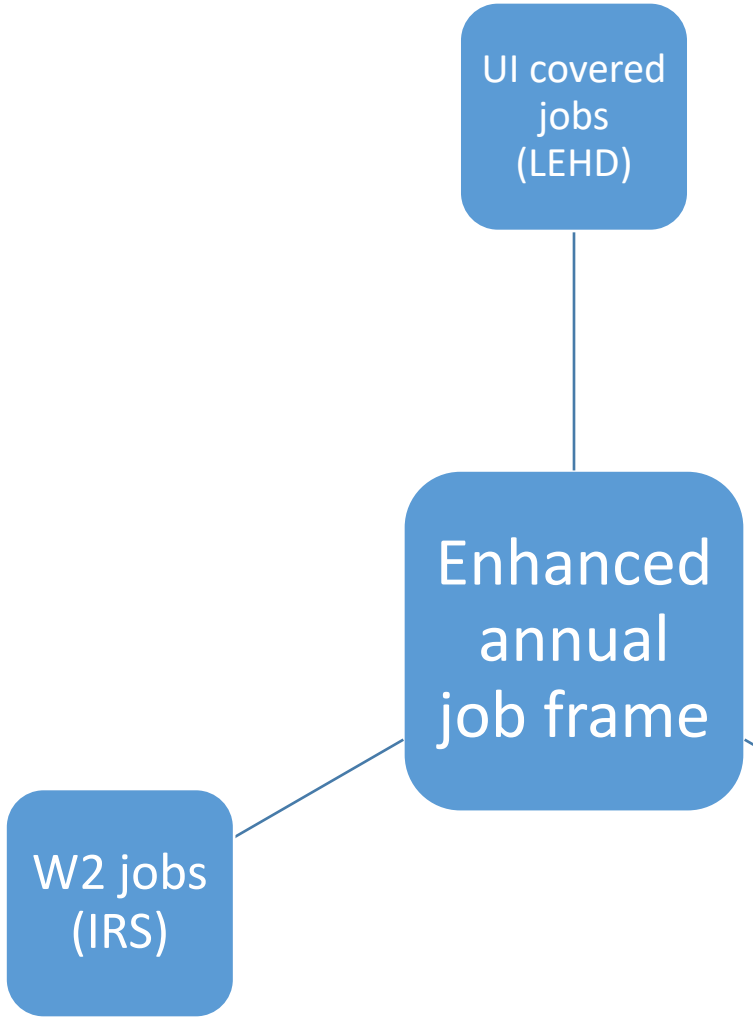
Enhanced Job Frame

Overall Design:



LEHD jobs (state UI)
For quarterly-frequency economic statistics, point-in-time employment, job-to-job transitions (QWI, J2J) and FSRDC research

W2 jobs
For jobs not covered in state UI or states missing in LEHD frame

SE jobs
Not covered in either W2 or UI are 1099 gig jobs and self-employed workers

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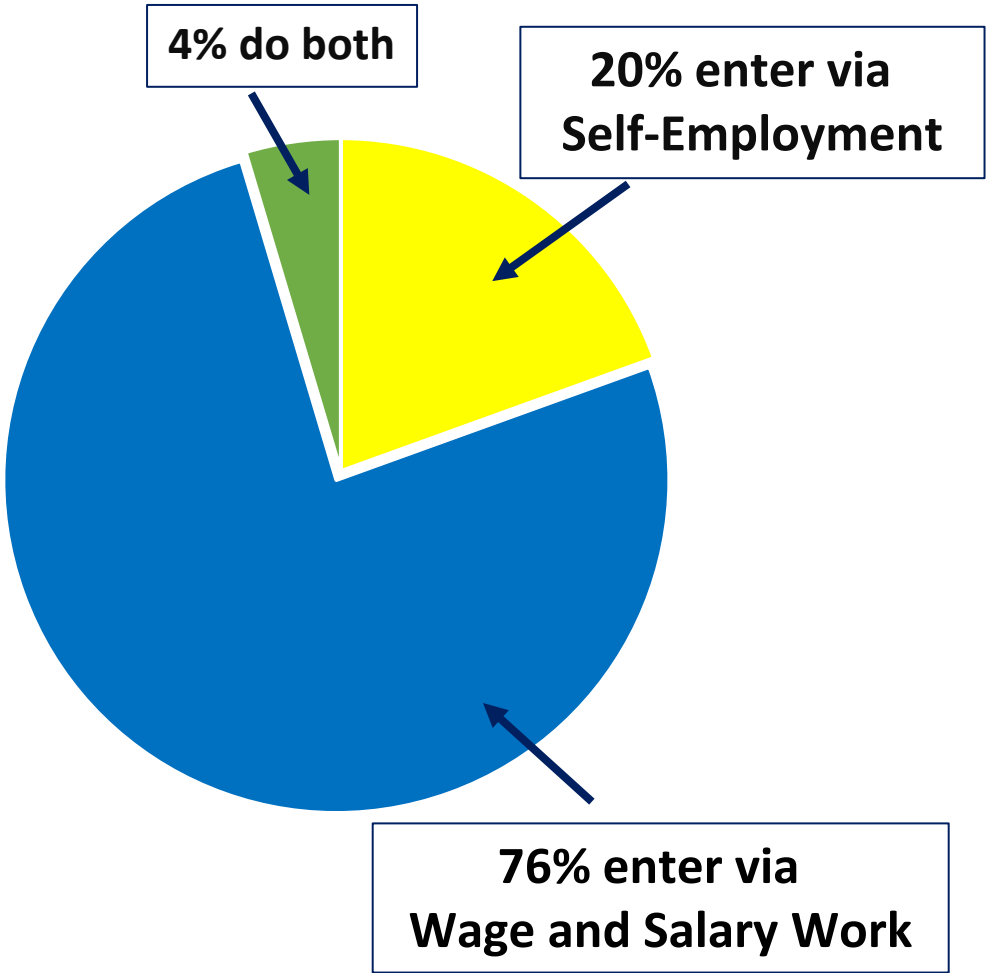
Self-employment Dynamics

Capture previously unmeasured workforce dynamics such as differences across groups and changes over time in how workers use self-employment to earn a living:

- main job vs. supplemental (for example, persistent moonlighting)
- stopgap following displacement
- to ease transition into or out of the labor market.
- Employer business formation

Example: Self-employment, including contract work, “gig” employment, and starting a business, is an important entry point into the workforce.

In 2019, 5% of workers ages 35-54 returned to the labor market after taking at least one year off work. What type of work did they do?



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Updates from the Development and Applications Innovation Group (DAIG)

September 2025

Heath Hayward
Center for Economic Studies, U.S. Census Bureau

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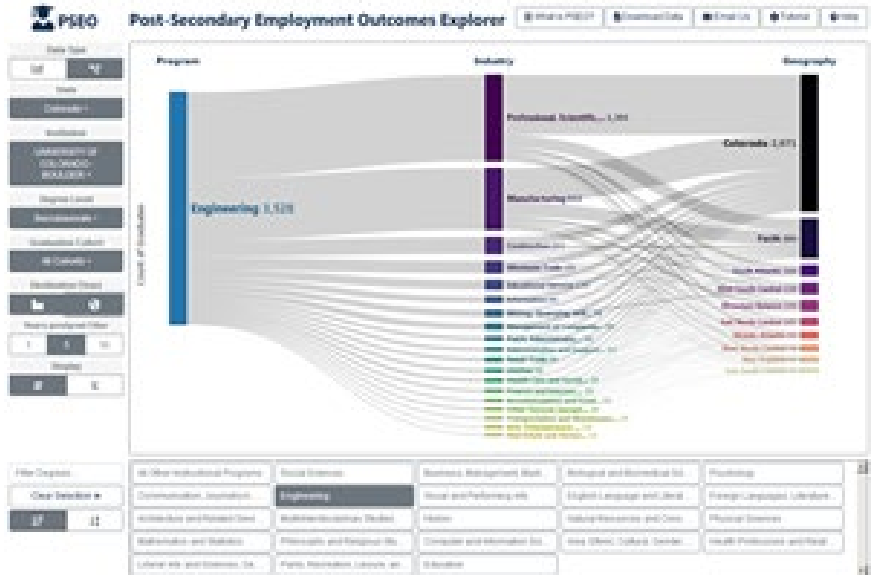
Outline

- 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 (raw files and in data tools)

- Quarterly QWI and J2J data
- LODES 2022 added to OnTheMap
- LODES 2022 and new ACS added to OnTheMap for Emergency Management
- Three PSEO data releases
- BDS 2022 released

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New/updated tools

VEO Explorer 2.0

- Expansion to include additional branches of the military
- Explorer allows comparisons within and across branches

LODES in the LED Extraction Tool

LEHD Code Samples

Census Research Exploration and Analysis Tool (CREAT)

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Upcoming application releases

LODES 2023 coming in Fall 2025

- Mississippi to be included and backfilled with missing years (2019-2022)
- Will be added to OnTheMap with 2024 TIGER/Line geovintage

OnTheMap for Emergency Management

- ACS 2020-2024 5-year estimates to be added to the tool in early 2026
- LODES 2023 data added into OTM-EM at the same time

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Upcoming application releases

BDS Explorer

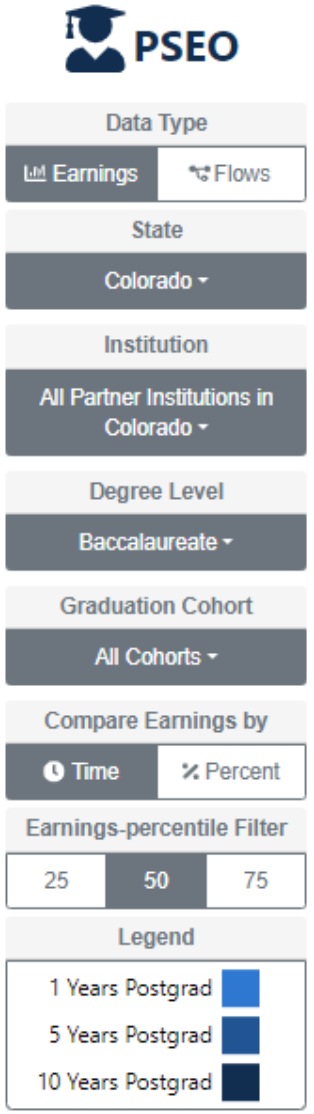
- Updated data with BDS 2023 releasing end of September 2025

PSEO Explorer

- R2024Q4 data releasing in January 2026

QWI Explorer and LED Extraction Tool

- Make new NAICS 5/6 available in both tools



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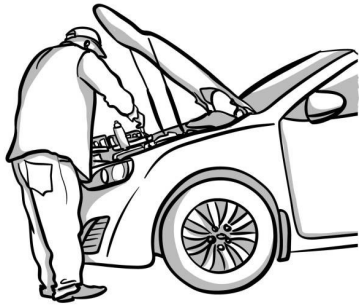
Work under the hood



Two major migrations fast approaching:

- **Software**
  - Update old application code (Python2, other dependencies)
  - Move to newer version of RHEL
- **Hardware**
  - Migrate from on-premises/bare metal servers to the cloud
  - Optimize applications for cloud performance

Team will need to focus on these tasks over new application functionality in the medium term.

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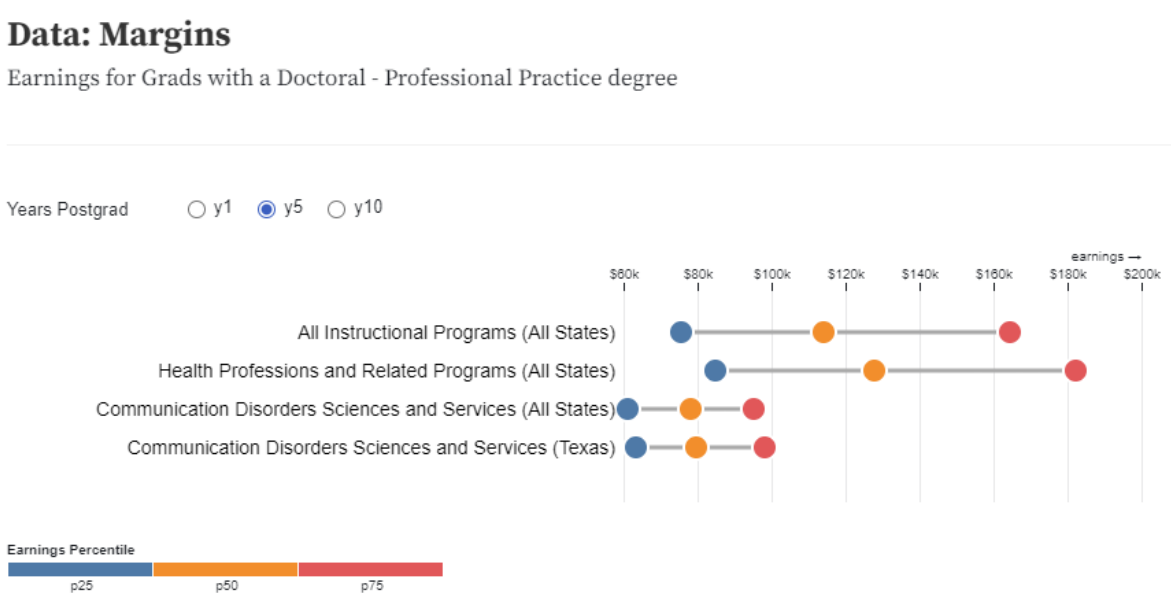
Longer term application development

- PSEO Explorer 2.0
  - Short-term - make the tool more mobile friendly
  - Longer-term - major redesign
- UIEO Explorer
- Self-Employment Dynamics Explorer



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

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Unemployment Insurance Employment Outcomes (UIEO) Pilot Project

Larry Warren, David Wasser, and Caelan Wilkie-Rogers

LED Partnership Workshop

September 3, 2025

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 7515812: CBDRB-FY25-0417).

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UIEO Team

Larry Warren

David Wasser

Caelan Wilkie-Rogers

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Goal

Research and Develop a prototype public data release highlighting new UI claims data.

- Utilize the strengths of LEHD data - longitudinal, employer-employee link and characteristics, national coverage - alongside weekly, individual-level UI claims.
- Augment existing public data sources on the UI system.
- Prototype – Be able to respond to early feedback from potential data users and stakeholders before significant production investments (privacy, explorer tools).

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UI Claims Data

- Weekly UI claims from each participant state, 2020
  - PROMIS files or similar
- Precise information about payment amounts, timing, duration
- Linkable to LEHD
  - Pre- and Post-unemployment spell jobs, earnings
  - Employer characteristics (industry, size, age)
  - Worker characteristics (demographics, earnings, *occupation*)
  - Location/migration

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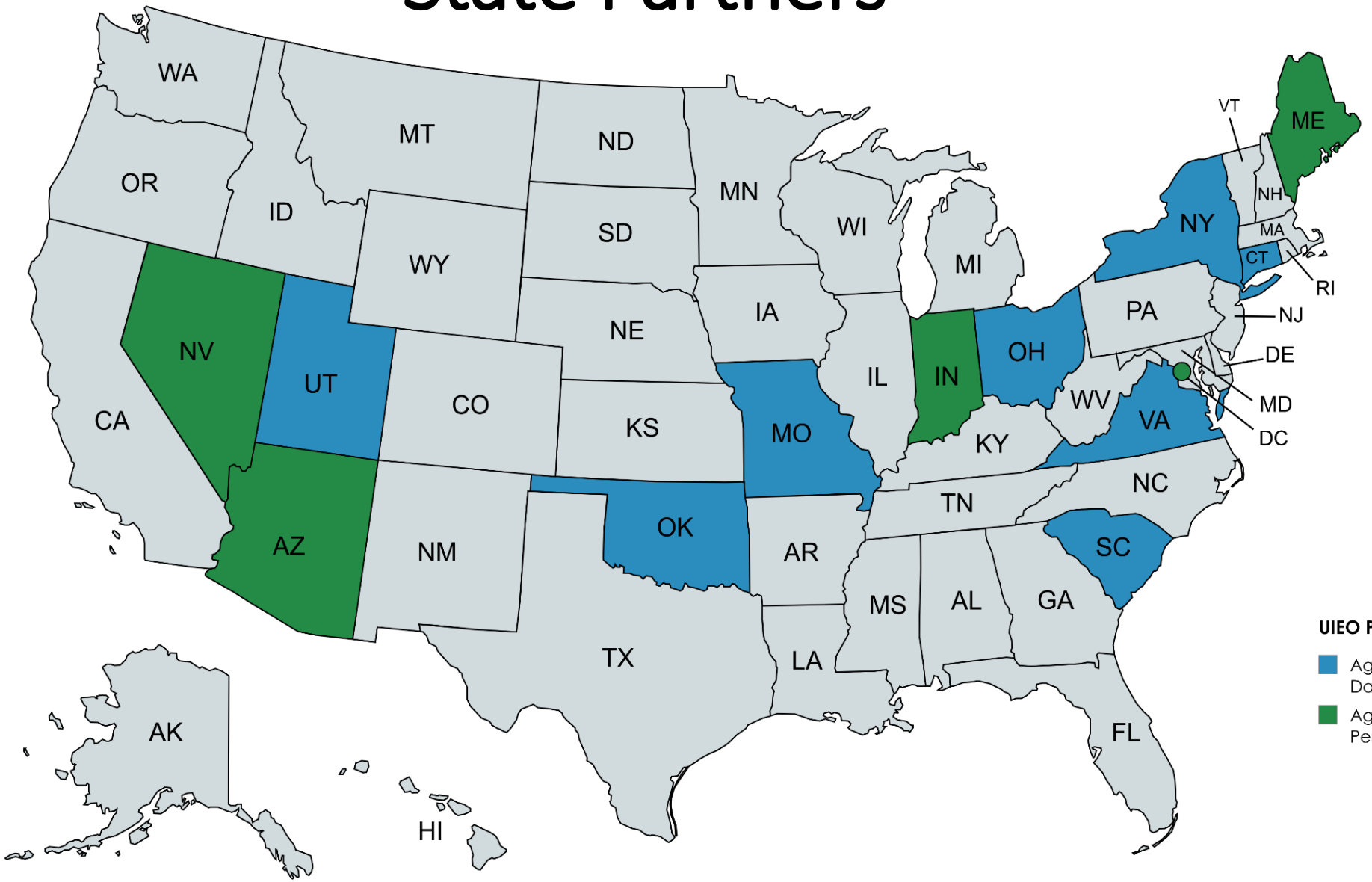
State Partners



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The State of Public UI Data

Most individual outcomes data are smaller survey samples – e.g. CPS, SIPP

- Measurement error in who collects UI is a major issue in surveys.
- Other admin. sources limited in ability to track outcomes nationally over time.

Most program-level data are aggregates

- Average replacement rates, collection rates, state-level aggregates (at best) .
- No breakdown of who collects, or how much, by demographics, industry, etc. No tracking of outcomes.

State-level admin data cannot track workers across state borders

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UIEO Pilot Project

- Detailed data tracking outcomes of unemployed UI claimants.
  - Stitch weekly claims into UI spells
  - Merge with LEHD quarterly earnings history, worker demographics.
  - Identify pre-spell and post-spell employer within 8 quarters of UI spell.

- This Presentation: Focus on UI spells with a matched pre-and post spell job. Focus on full-quarter earnings (interior quarter with earnings > 0).

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A Preview

UI Spell Characteristics

- Demographics (Age, Sex, Race/Ethn, Edu)
- Duration of spell
- Earnings level and distribution
- Industry
- Mobility (Recall, Sector Change, Move)
- *Occupation*

UI Spell Outcomes

- Share of Claims Population
- Duration of UI spell
- Weekly Benefit Amount
- % earnings change
- Share Recalled, Sector Change, Moved
- Planned: *Self-employment Earnings*

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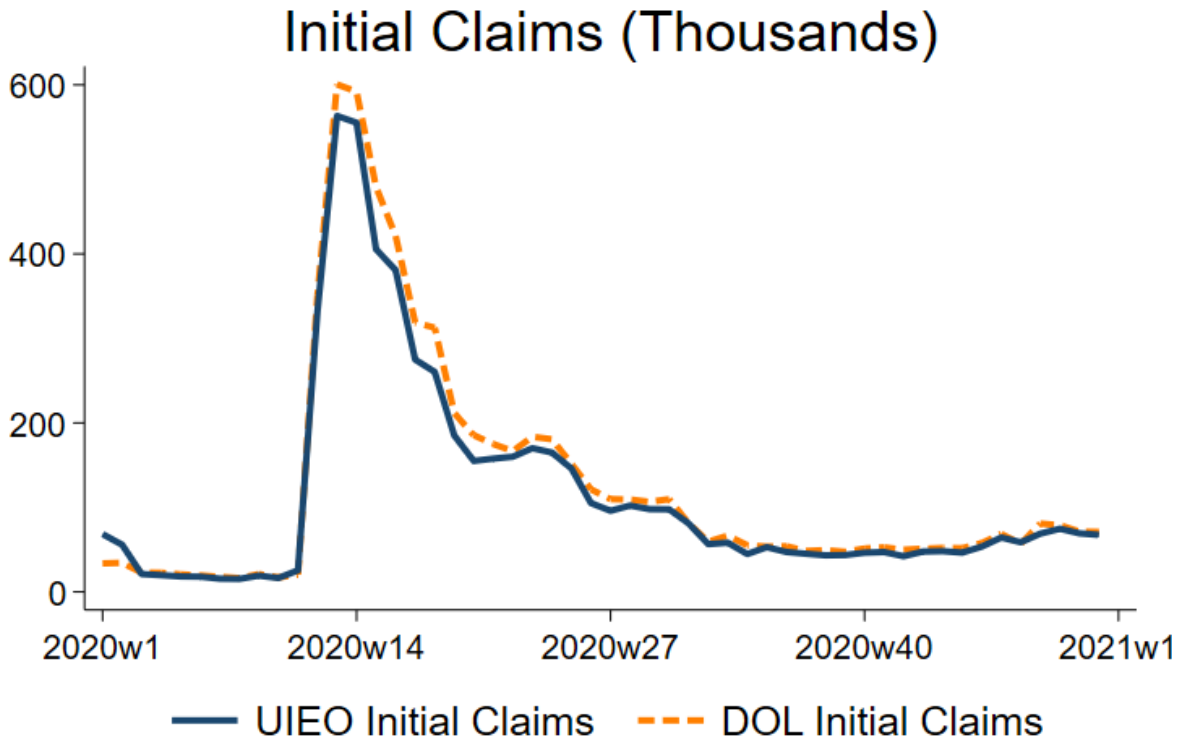
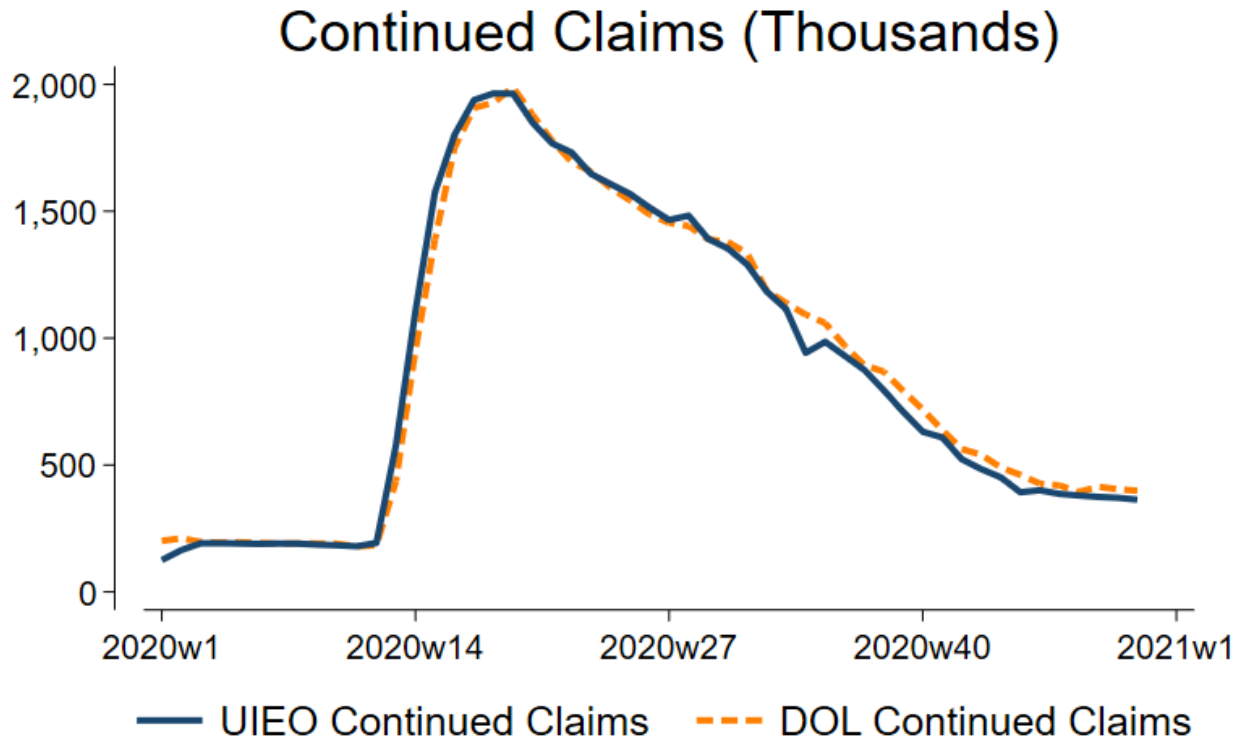
Weekly Claims





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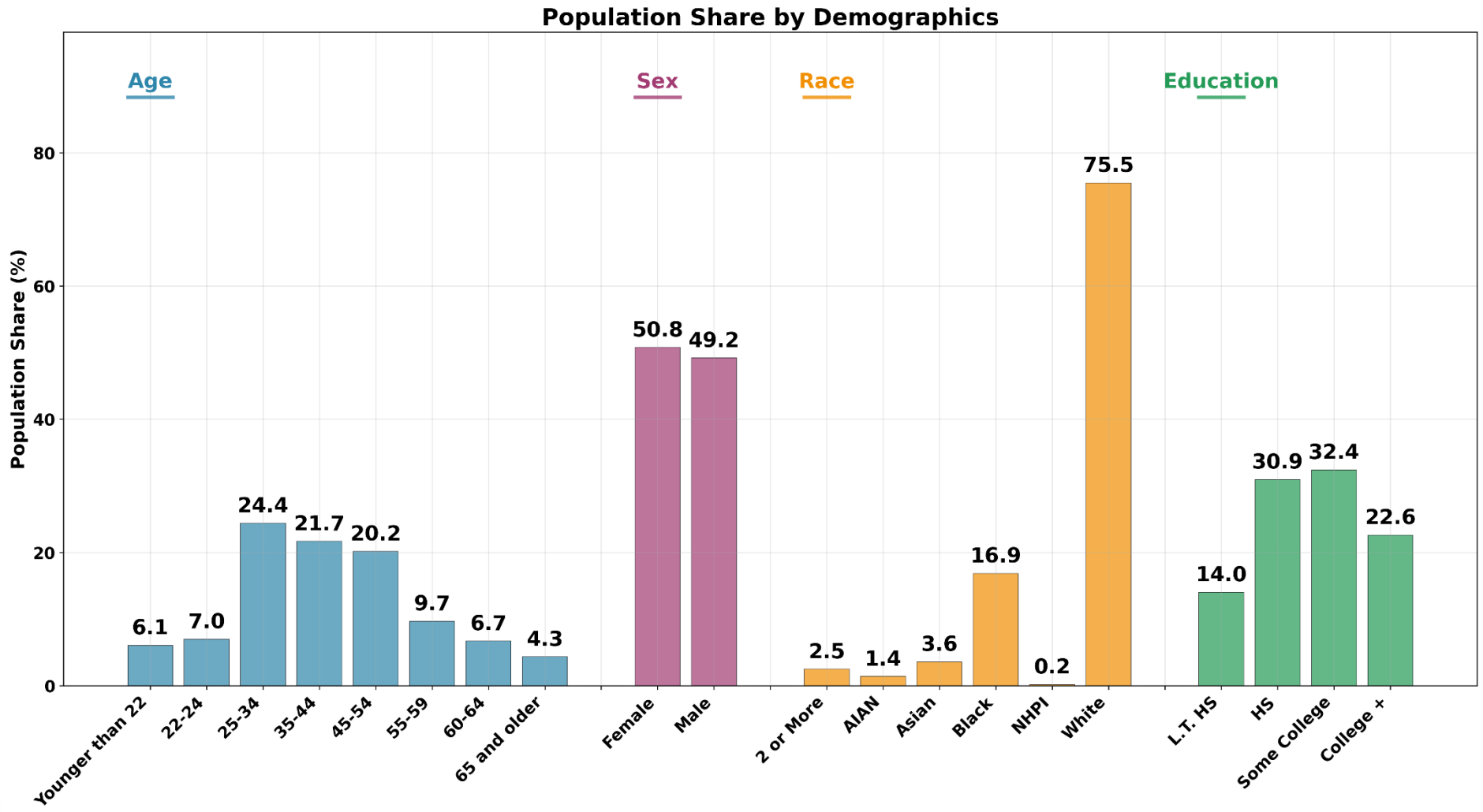
Demographics of Claimants - Composition



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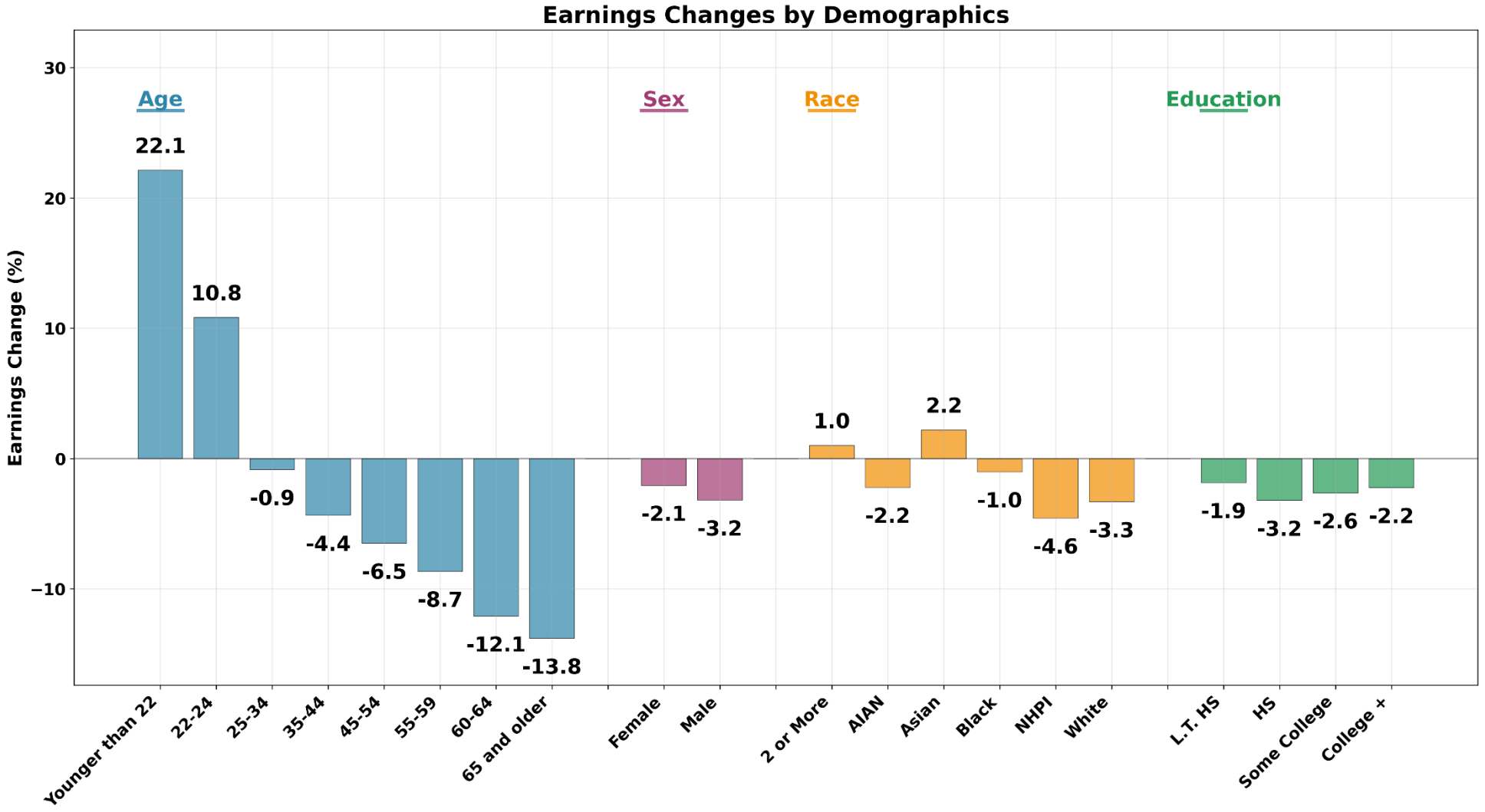
Demographics of Claimants - Outcomes



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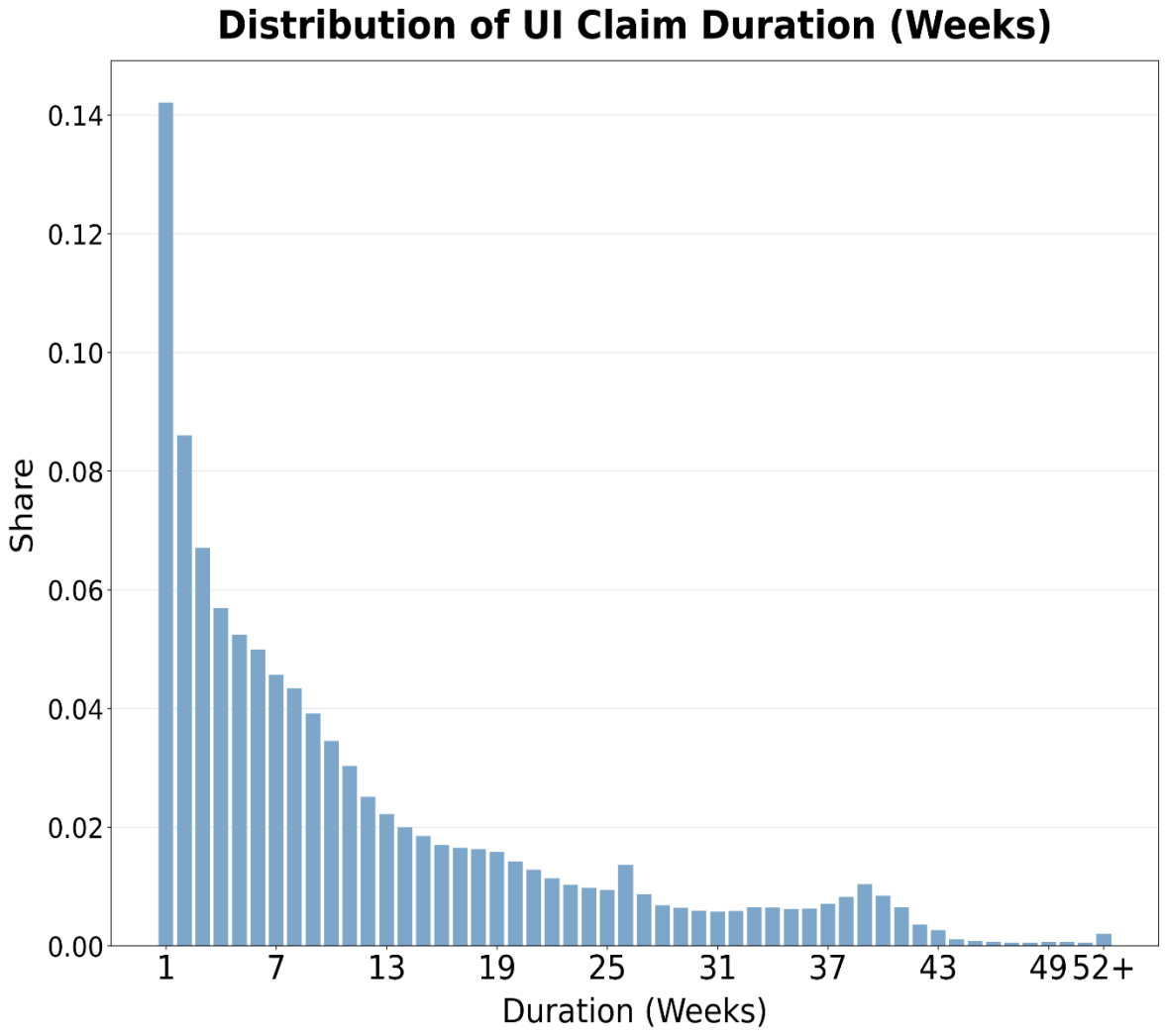
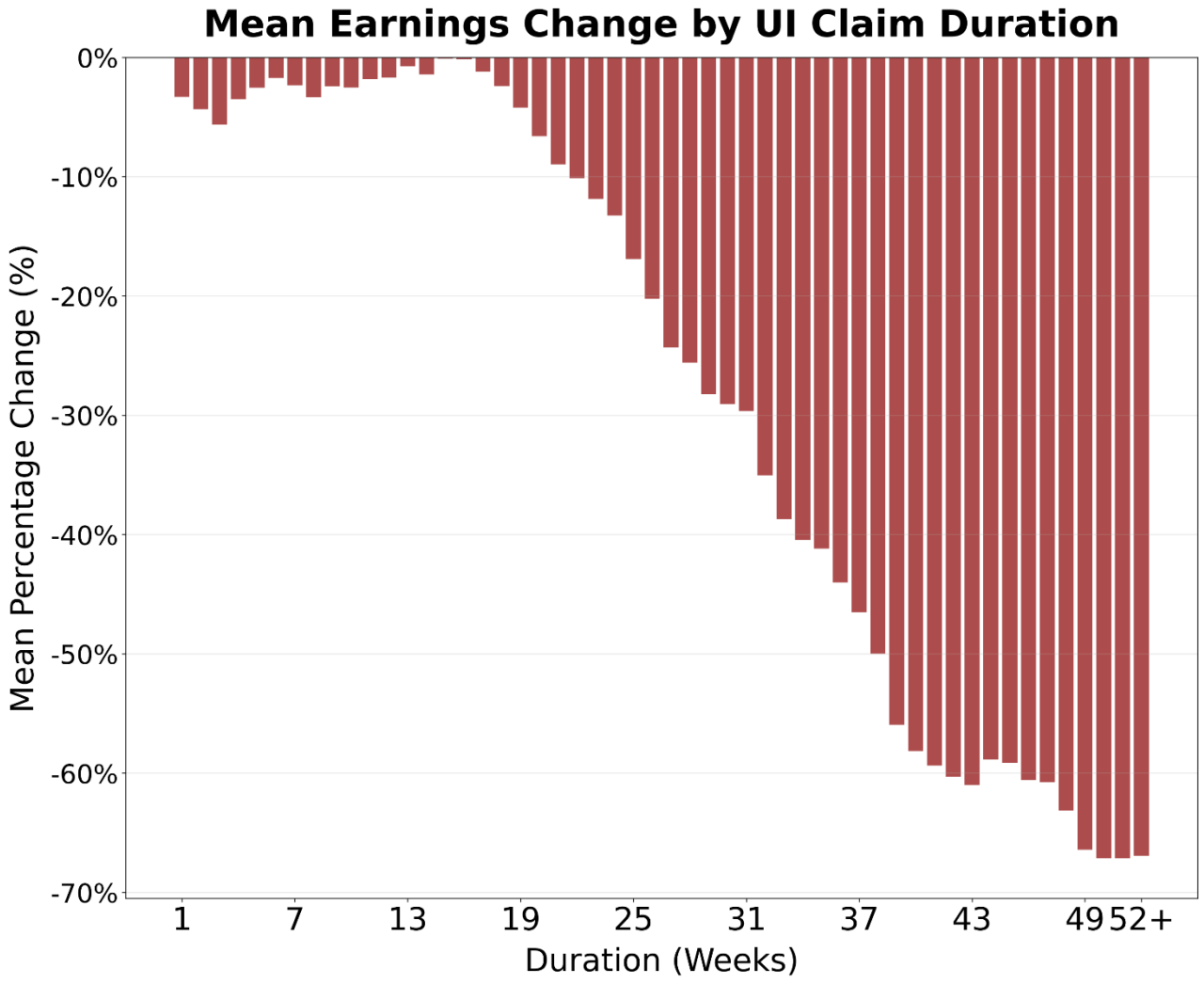
Duration of UI Spells (Weeks)





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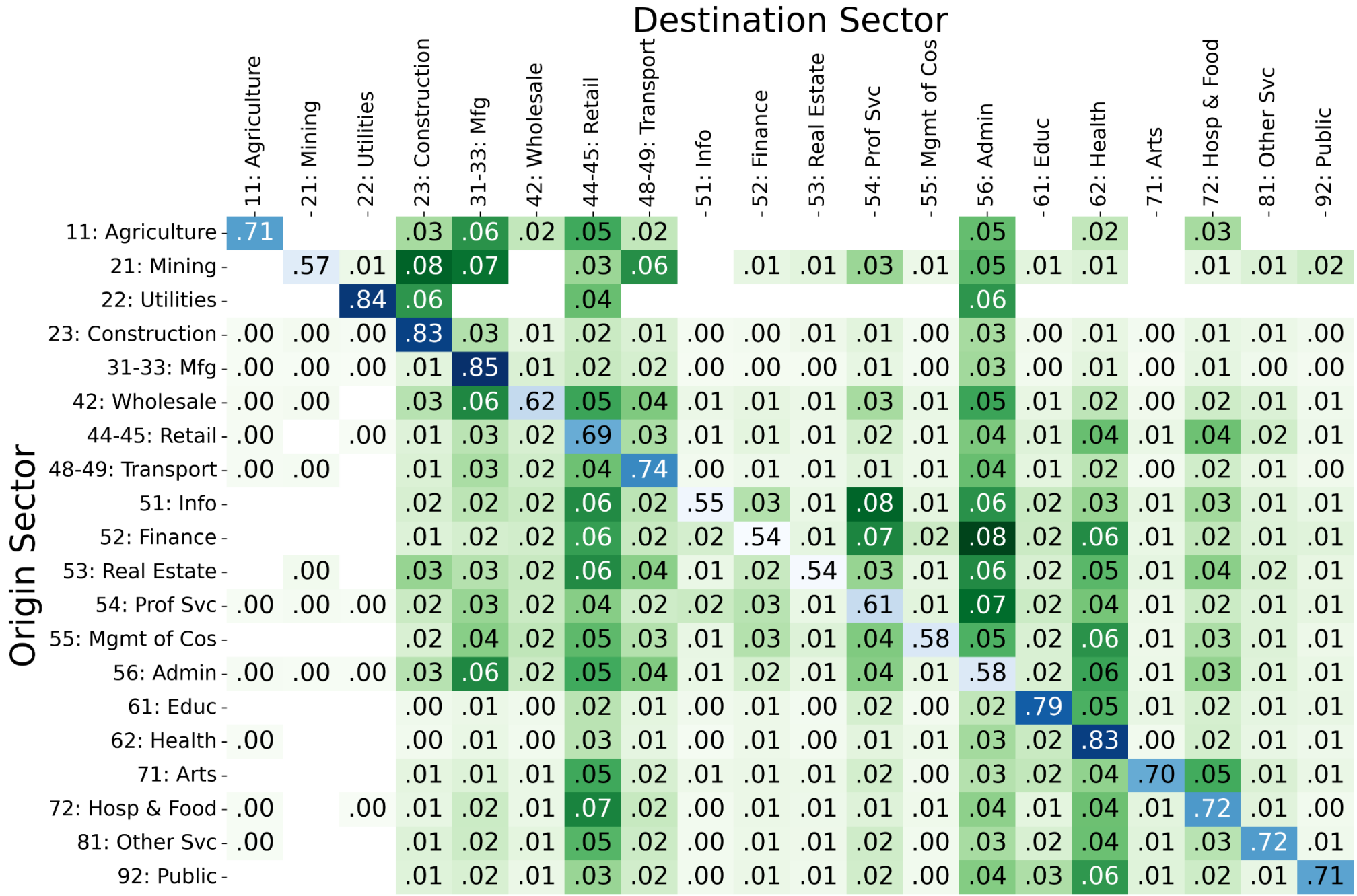
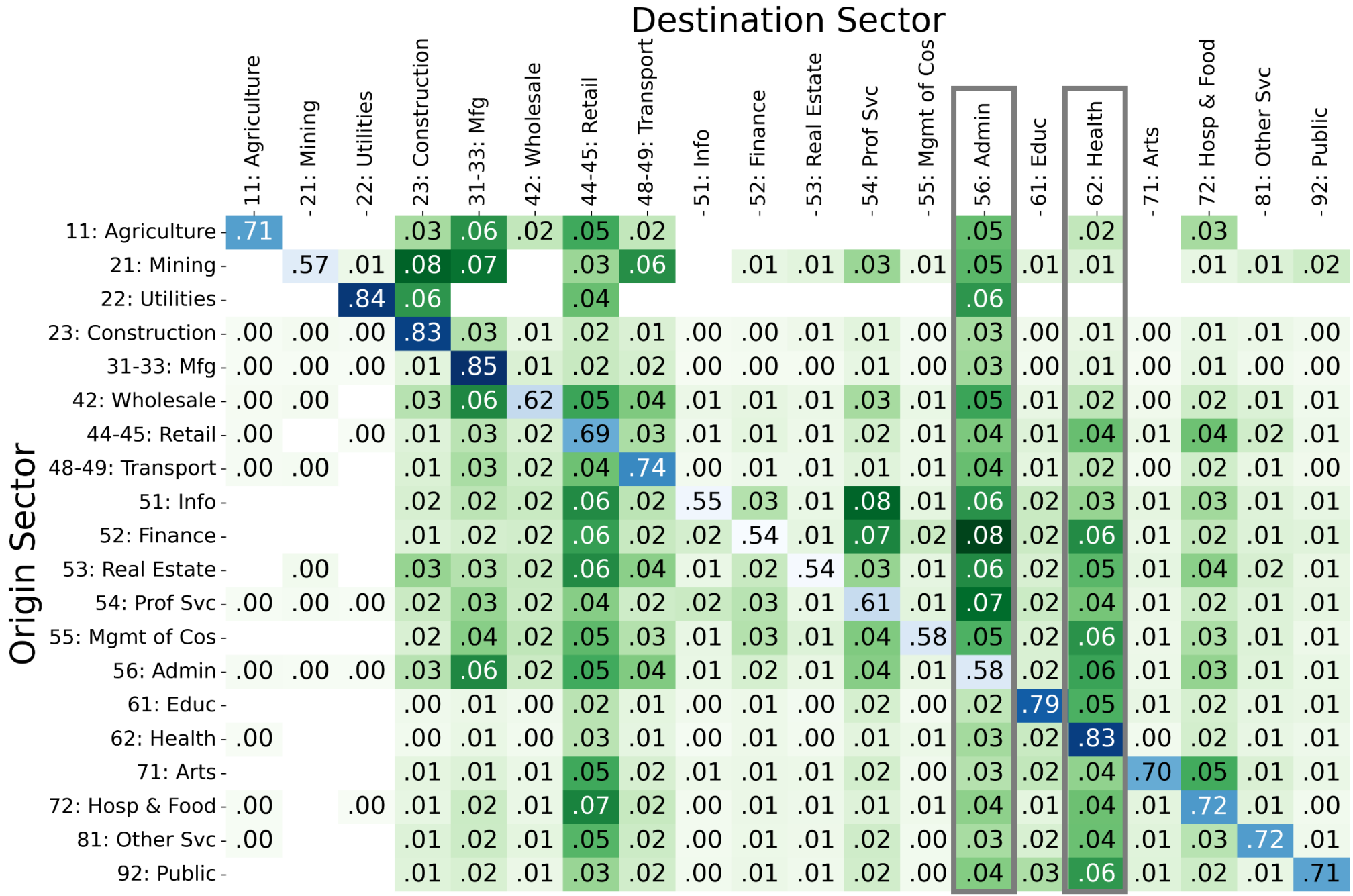
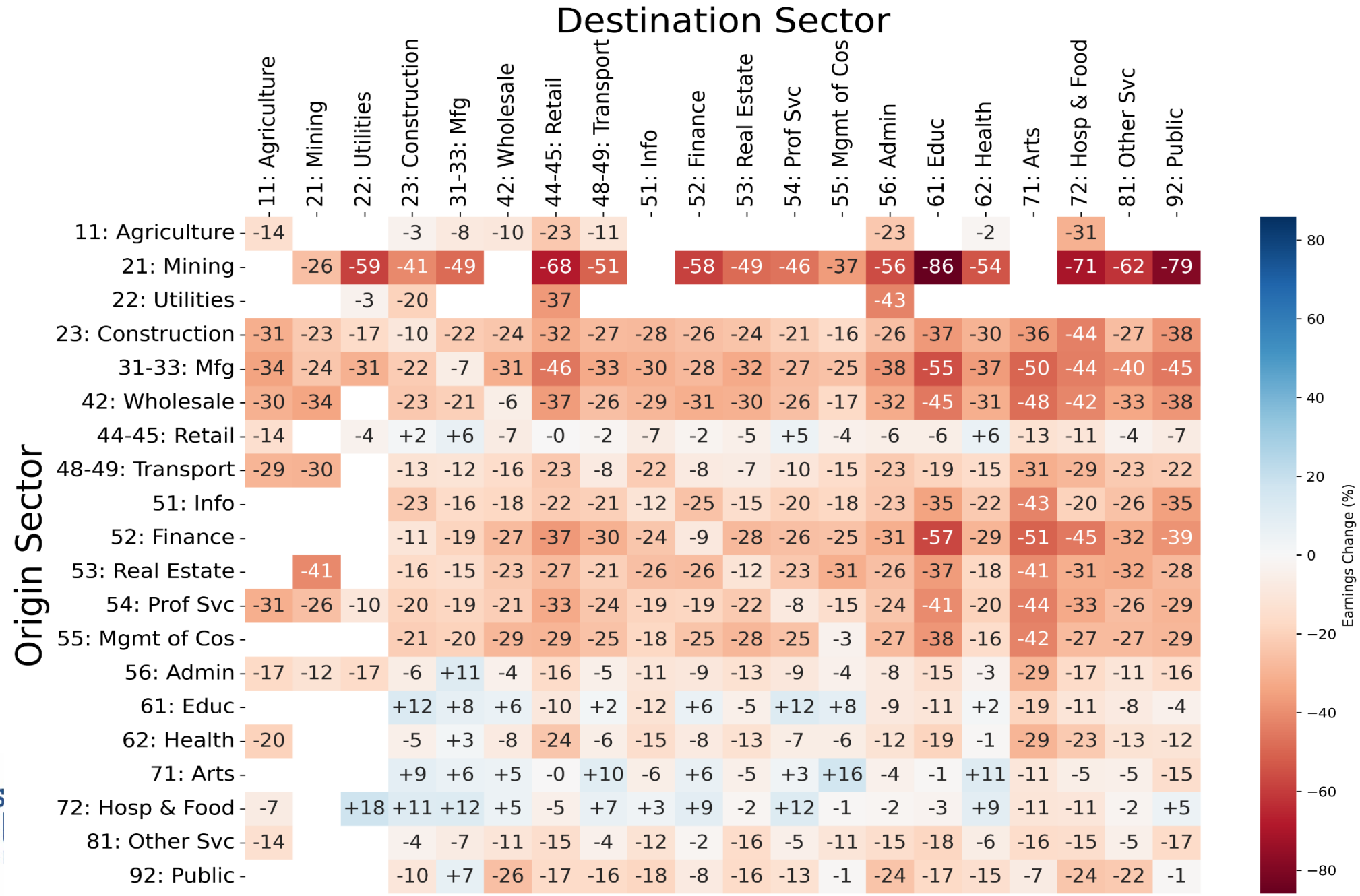
Sector Transition Probabilities



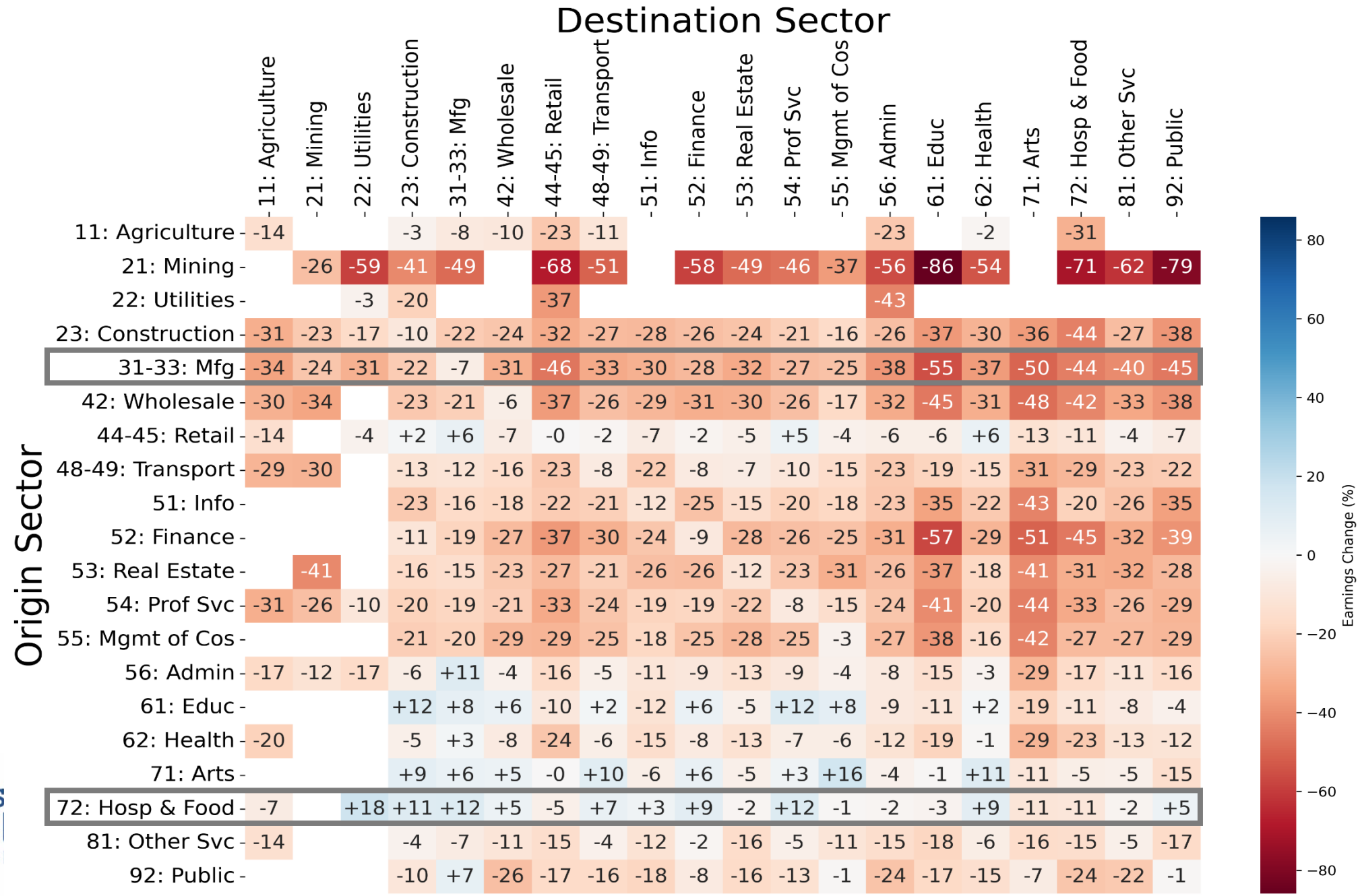
Sector Transition Probabilities



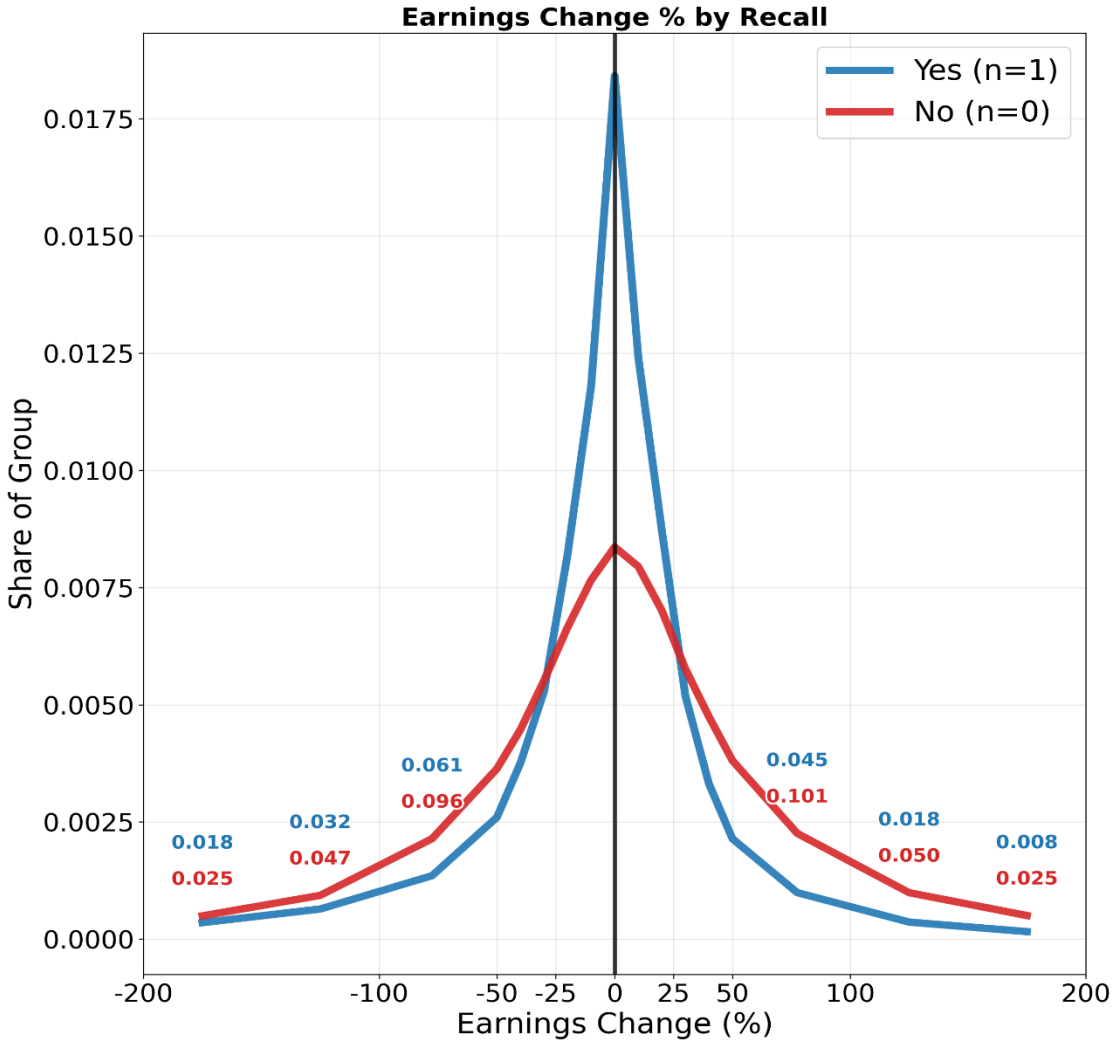
Mean Earnings Change by Sector Transition

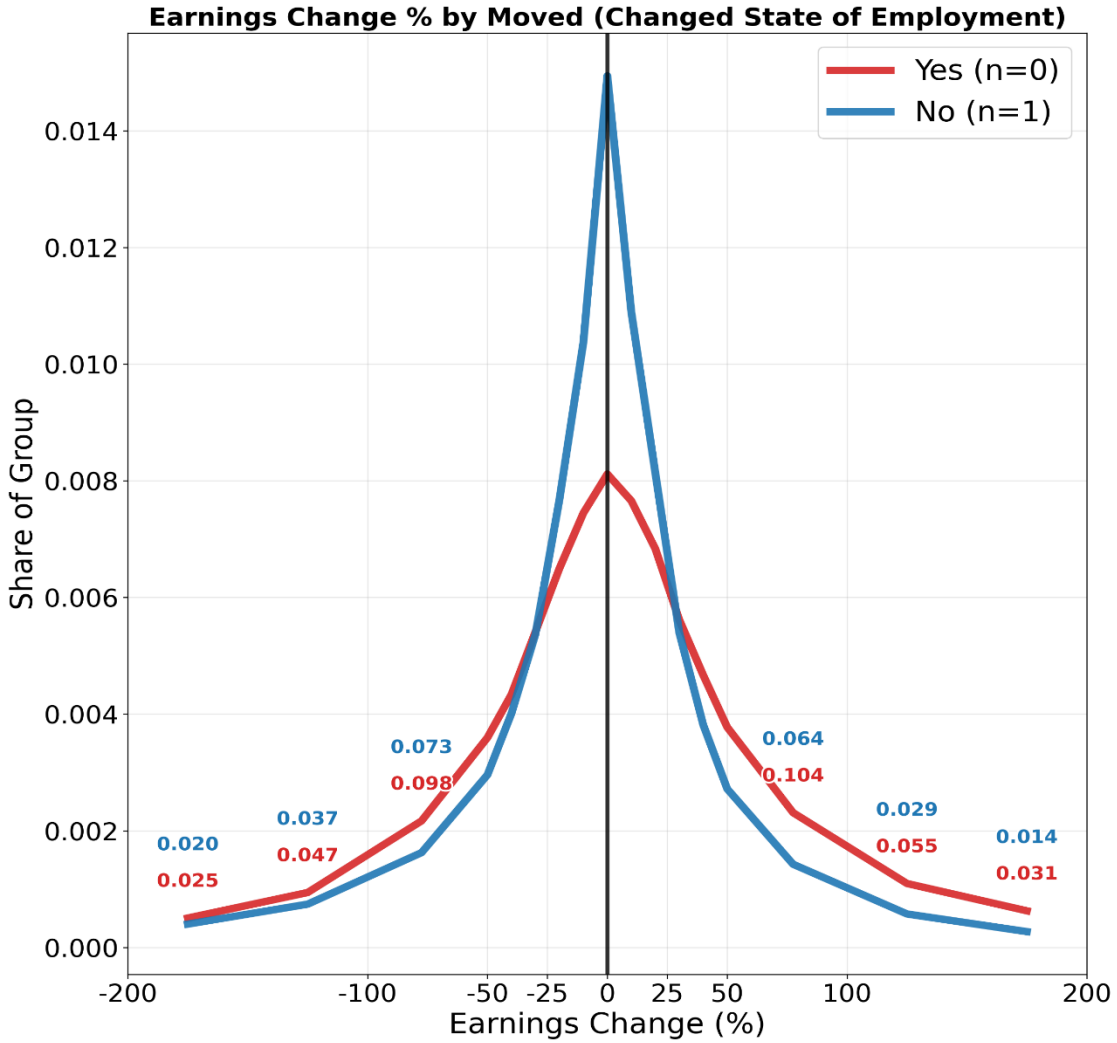


Mean Earnings Change by Sector Transition



Mobility Across Employers and States





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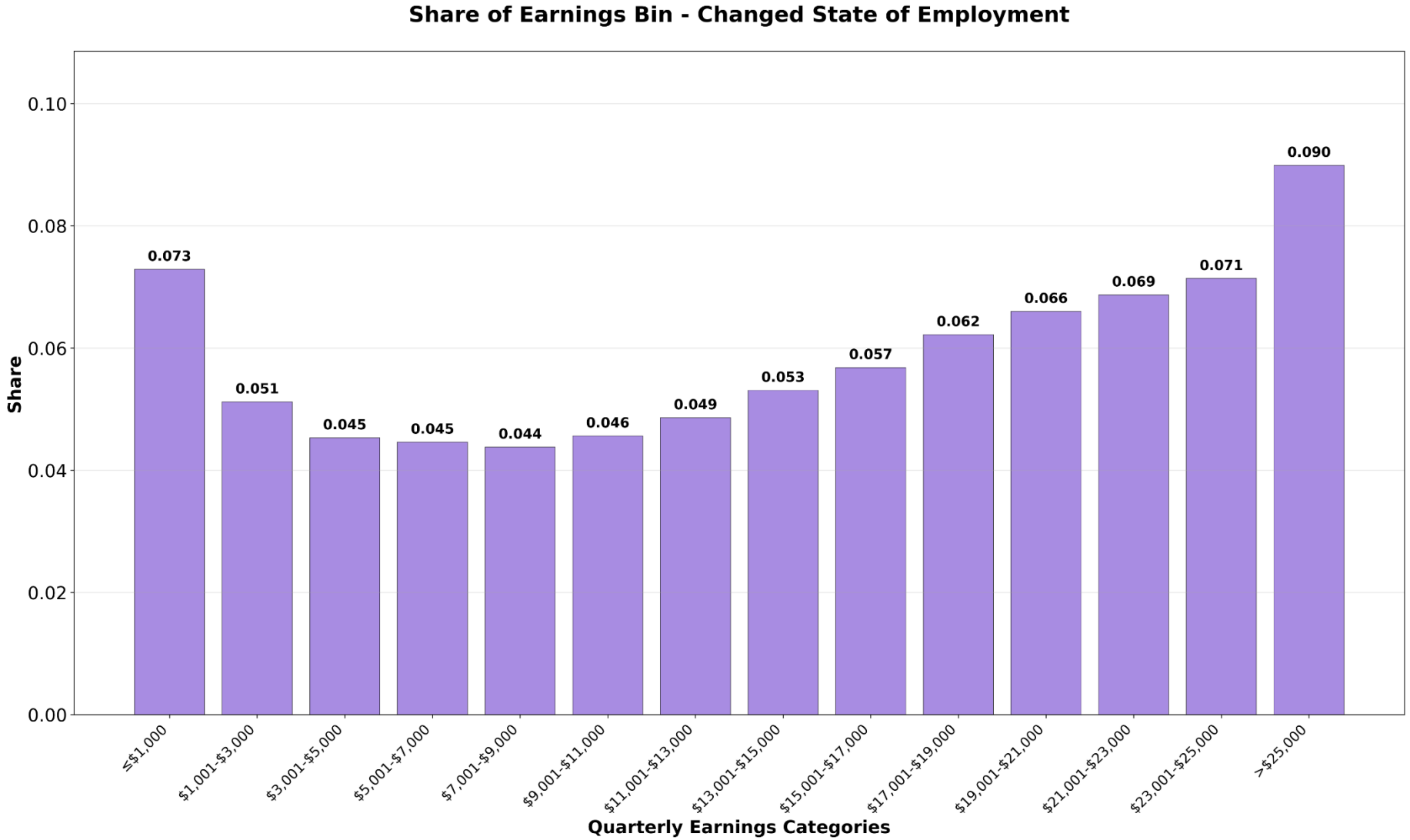
Mobility Across States



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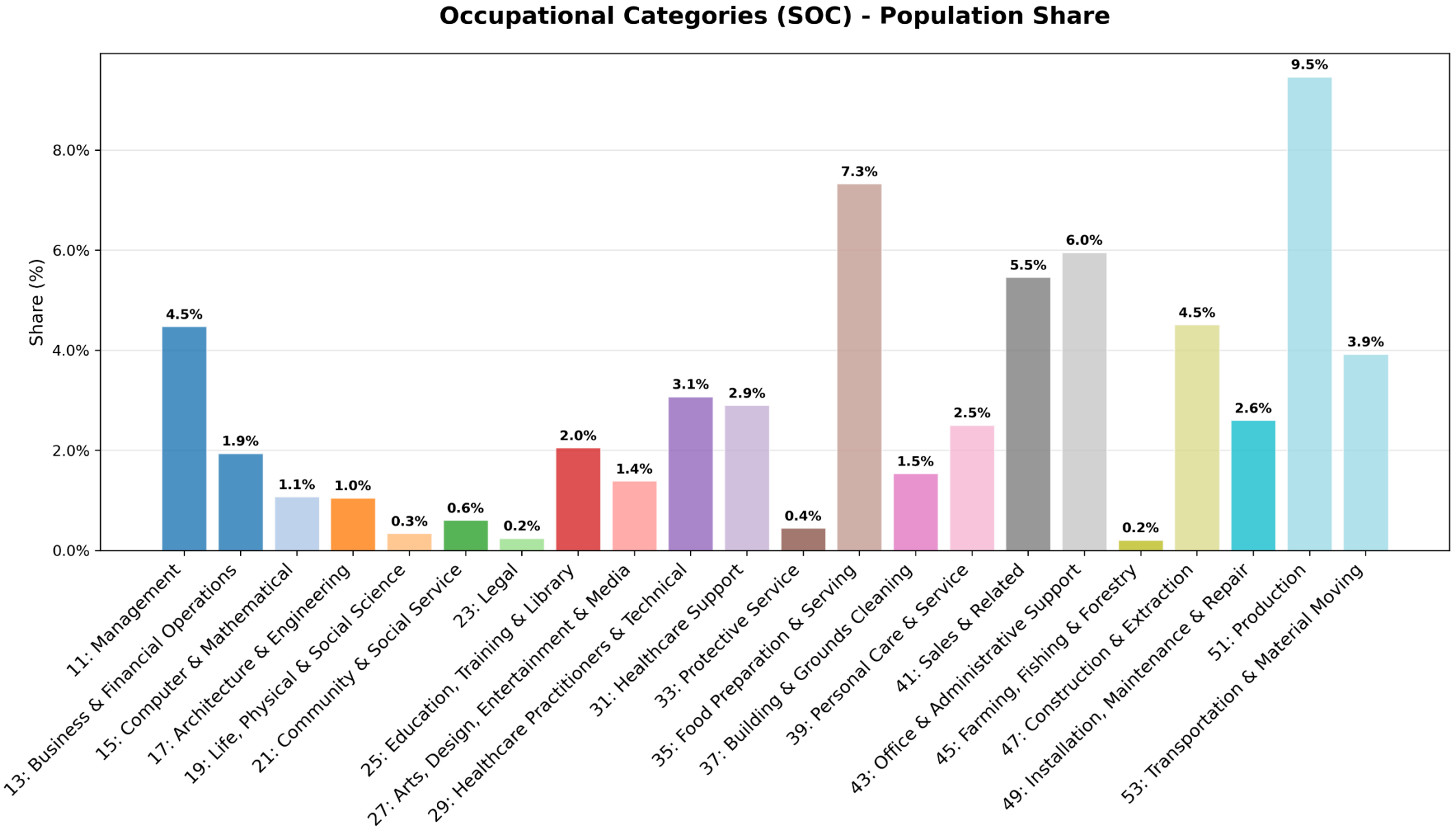
Occupation


Occupational Categories (SOC) - Population Share
Share (%)
0.0%
2.0%
4.0%
6.0%
8.0%
4.5%
1.9%
1.1%
1.0%
0.3%
0.6%
0.2%
2.0%
1.4%
3.1%
2.9%
0.4%
7.3%
1.5%
2.5%
5.5%
6.0%
0.2%
4.5%
2.6%
9.5%
3.9%
11: Management
13: Business & Financial Operations
15: Computer & Mathematical
17: Architecture & Engineering
19: Life, Physical & Social Science
21: Community & Social Service
23: Legal
25: Education, Training & Library
27: Arts, Design, Entertainment & Media
29: Healthcare Practitioners & Technical
31: Healthcare Support
33: Protective Service
35: Food Preparation & Serving
37: Building & Grounds Cleaning
39: Personal Care & Service
41: Sales & Related
43: Office & Administrative Support
45: Farming, Fishing & Forestry
47: Construction & Extraction
49: Installation, Maintenance & Repair
51: Production
53: Transportation & Material Moving

Looking Forward

More data (States and Years)

- More states will add (disclosable) detail, future potential for *MSA.*
- Currently 2020, some states delivering data from 2010-2024. Long-run outcomes of UI spells.

Complementarities with other Census and LEHD products

- Self-employment Jobs Frame
- Validating occupation and education data for LEHD improvements

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Thank You!

Feedback

- Contact: lawrence.fujio.warren@census.gov
- Contact: david.n.wasser@census.gov

Working Paper Coming Soon!

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An Introduction to Business Dynamics Statistics of Human Capital (BDS-HC)

Martha Stinson

Principal Economist, Center for Economic Studies

2025 Local Employment Dynamics Partnership Virtual Workshop

September 3, 2025

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Business Dynamics Statistics (BDS): Background

- Purpose: Track how businesses change over time
  - how many new businesses form and hire employees
  - how many existing businesses cease to have any employees
  - How many existing businesses increase or decrease employment
- Content
  - Annual summary statistics from a database of businesses 1978-2022
  - Stratify by many characteristics of the business:
    - Importer/exporter
    - Patenting firm
    - Detailed industry (4-digit NAICS)
    - County-level geography

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BDS Comparison to QWI

- Main differences
  - Unit of observation is a business establishment vs. a worker
  - Federal vs. state data sources
    - IRS business tax filings
    - Census annual surveys (Survey of Organization)
    - Economic Census (every 5 years)
  - Annual vs. quarterly
- BDS useful features
  - Business estabs. are linked together across state lines to create firms
  - Workers can be matched to firms using W-2 records
- Classification
  - QWI uses characteristics of *firms* (size, age) to classify **workers**
  - BDS uses characteristics of *workers (age, sex)* to classify **firms**

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New Experimental Product: Business Dynamics Statistics of Human Capital

- Firms file IRS quarterly payroll tax filings (IRS Form 941)
  - Report all employees on payroll, remit taxes withheld from paychecks
- Once a year, firms issue Form W-2 to each employee reporting total amount paid and different taxes withheld
  - Contains employer identifier (EIN) and person identifier (PIK)
- W-2 records are similar to UI wage records
  - Link workers to employers
  - Total amount paid in the year but no hours or start and end months
- Link characteristics of workers (age, sex, race, ethnicity, education, foreign-born) to W-2 records using LEHD demographics

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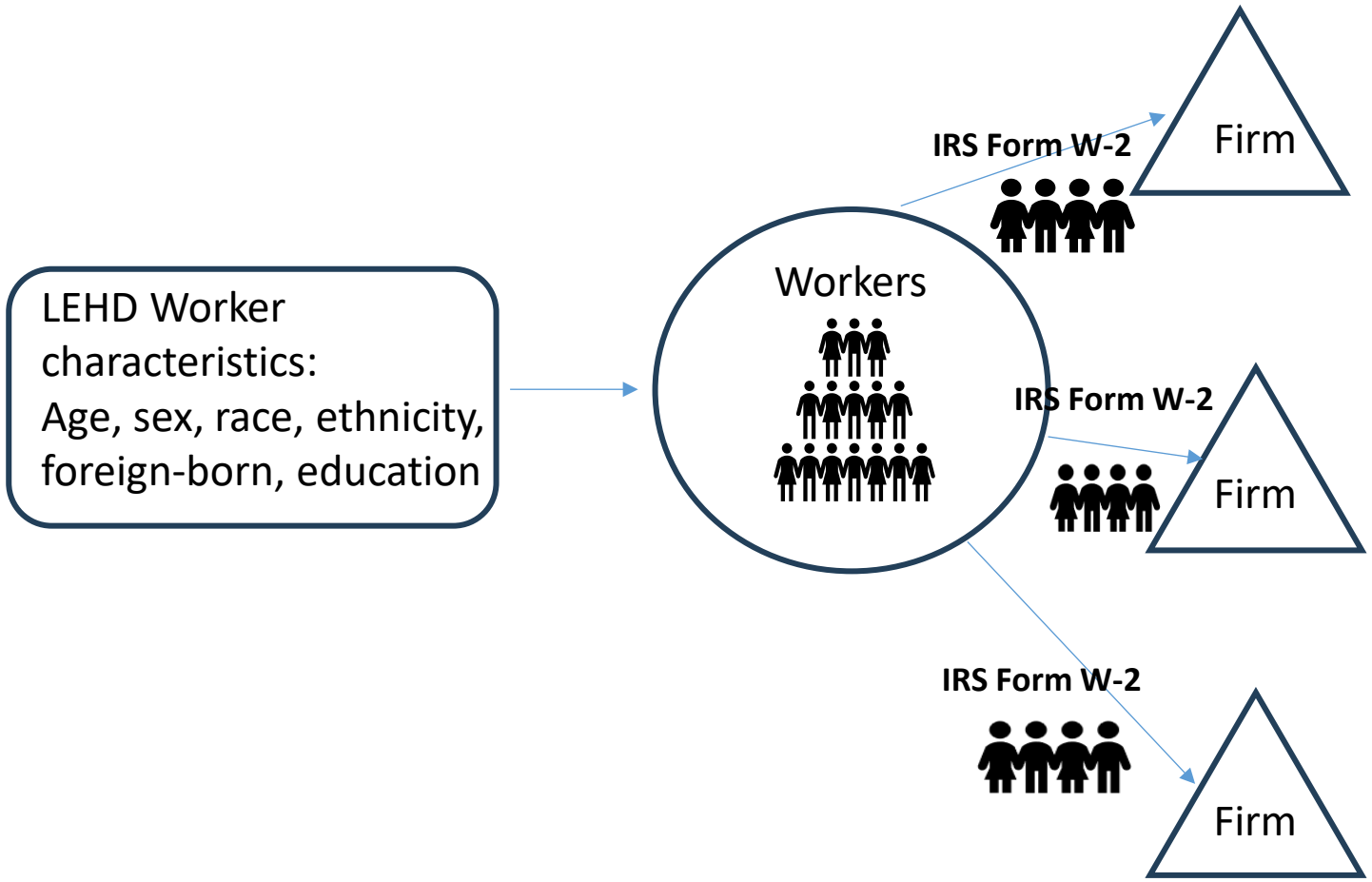
Picture of linking



Firm information:

- Point in time: Total employment pay period of March 12th as reported on IRS Form 941, Q1
- Total for the year: All workers employed at some point during the year who received a W-2

Classify firms on the basis of types of workers

Count how many W-2 workers are in a given category at each firm

- How many workers age 55 and older?

What share of W-2 workers at the firm belongs to each group?

$$\frac{\text{Total W-2 workers age 55+ at the firm}}{\text{Total W-2 workers at the firm}} = \text{share of workers age 55+}$$

Group firms together with similar share of workers in a category

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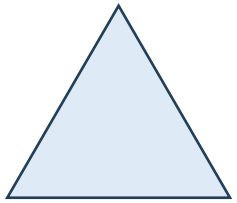
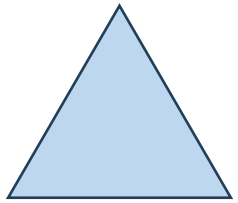
Classification of Firms

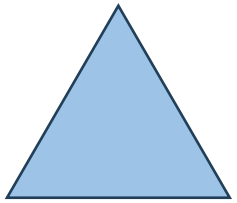
Firms are grouping according to the answer to this question: What share of the firm's workforce is age 55 and older?



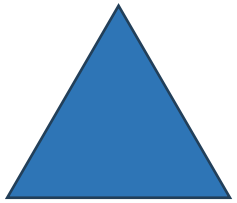
Firms with less than 10% older workers



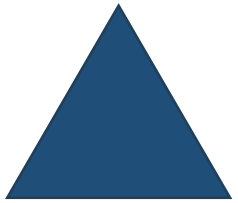
Firms with 10%-25% older workers



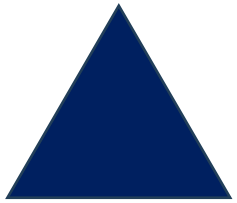
Firms with 25%-50% older workers



Firms with 50%-75% older workers



Firms with 75%-90% older workers



Firms with greater than 90% older workers

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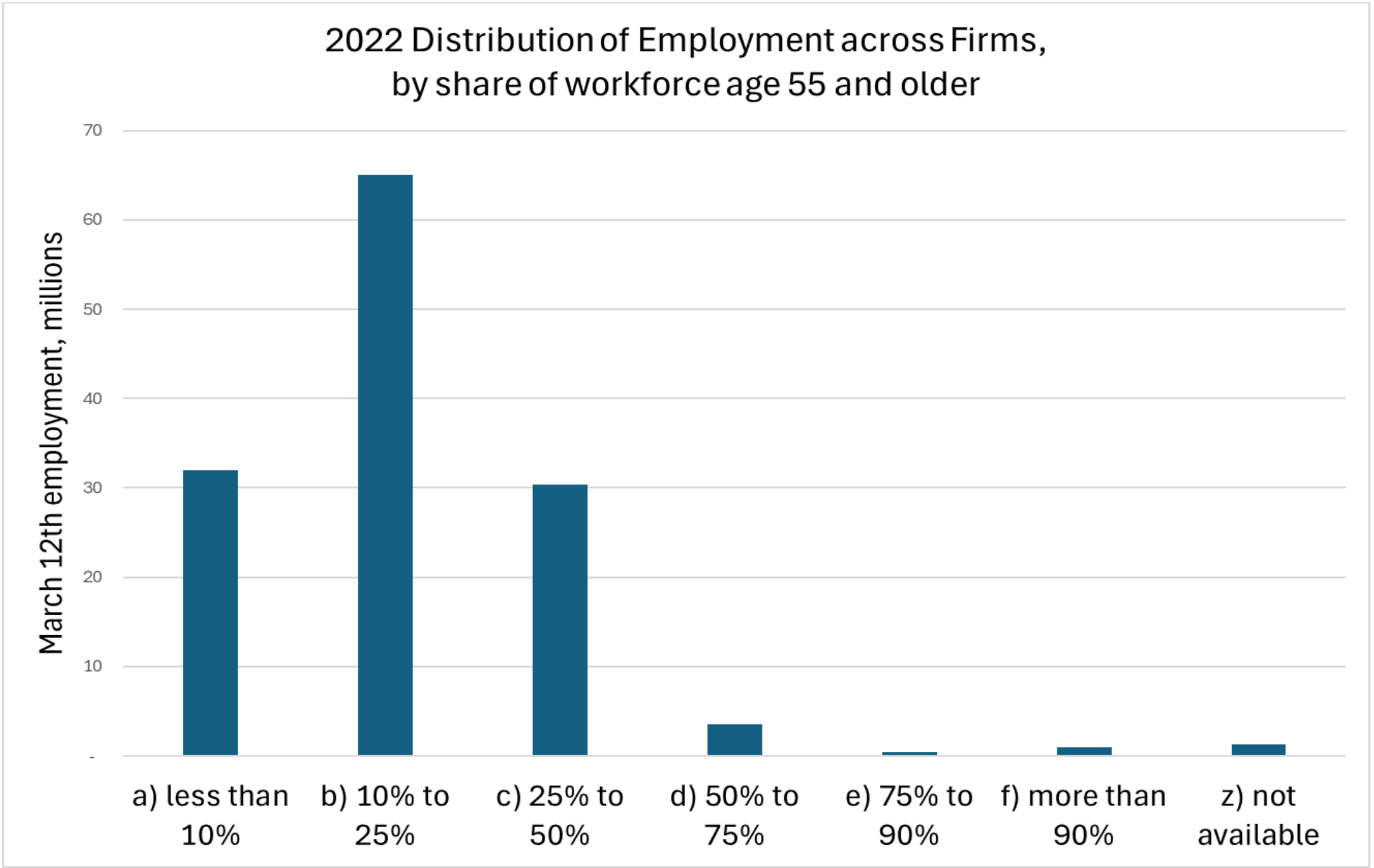
Firms classified by share of workers age 55 and older

Year	Firm size	Share	Firm Count	Estab. Count	March 12th employment
2022	a) 1 to 19	a) less than 10%	2,109,698	2,124,951	8,764,173
2022	a) 1 to 19	b) 10% to 25%	635,528	650,000	5,654,885
2022	a) 1 to 19	c) 25% to 50%	784,484	802,484	5,337,542
2022	a) 1 to 19	d) 50% to 75%	599,938	608,504	2,481,888
2022	a) 1 to 19	e) 75% to 90%	83,910	85,497	400,142
2022	a) 1 to 19	f) more than 90%	618,244	619,528	982,561
2022	a) 1 to 19	z) not available	86,195	87,542	256,834
2022	b) 20 to 499	a) less than 10%	180,801	292,383	10,562,017
2022	b) 20 to 499	b) 10% to 25%	235,911	427,133	17,144,513
2022	b) 20 to 499	c) 25% to 50%	166,766	312,824	10,751,873
2022	b) 20 to 499	d) 50% to 75%	20,297	32,599	843,700
2022	b) 20 to 499	e) 75% to 90%	954	1,538	50,666
2022	b) 20 to 499	f) more than 90%	496	825	23,445
2022	b) 20 to 499	z) not available	6,850	18,336	455,845
2022	c) 500+	a) less than 10%	3,992	312,645	12,615,395
2022	c) 500+	b) 10% to 25%	11,341	718,044	42,196,204
2022	c) 500+	c) 25% to 50%	5,274	294,582	14,259,665
2022	c) 500+	d) 50% to 75%	137	4,630	239,627
2022	c) 500+	e) 75% to 90%	11	706	27,492
2022	c) 500+	f) more than 90%	28	1,061	15,432
2022	c) 500+	z) not available	353	4,716	625,132

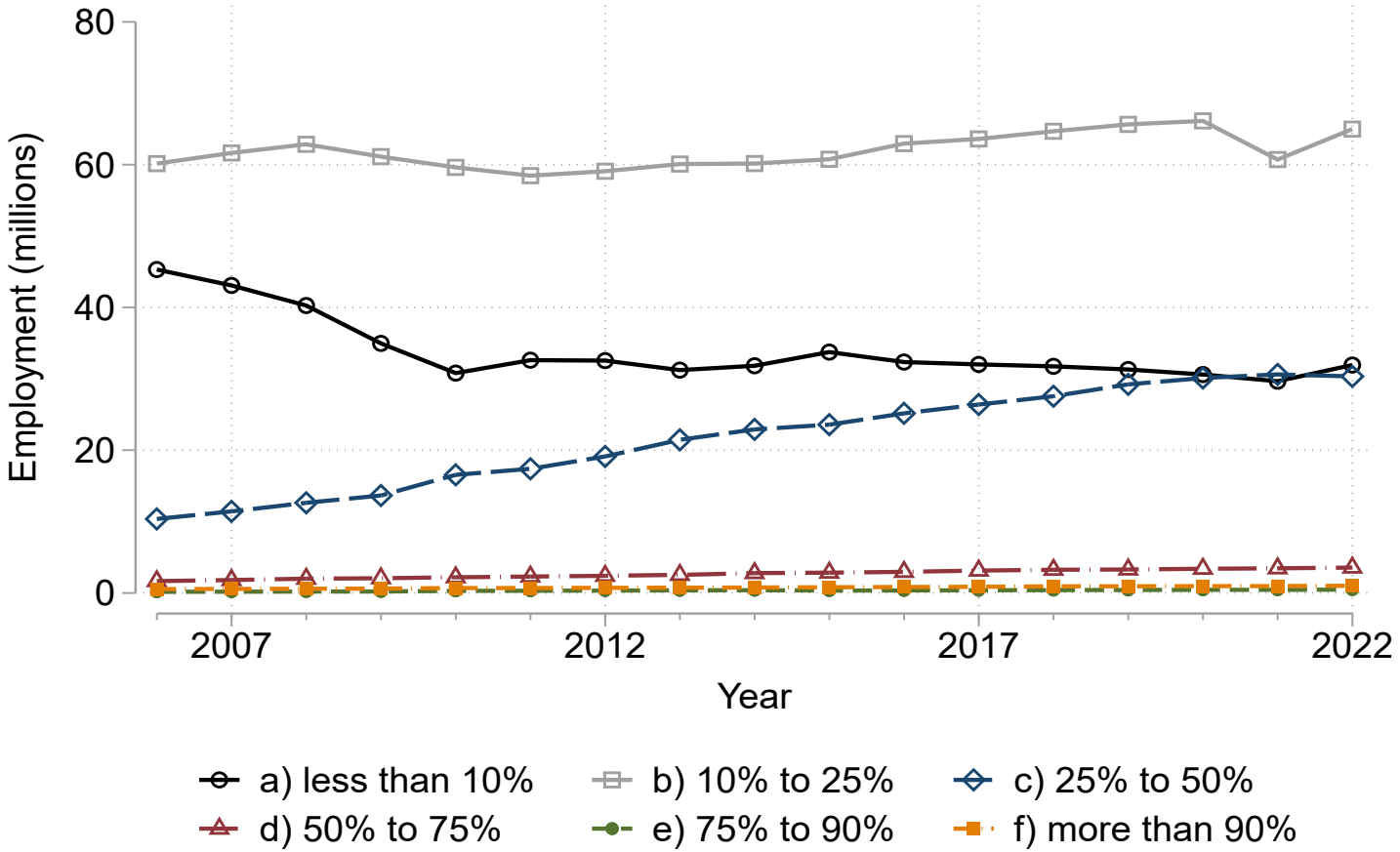
United States® Census Bureau

Workers age 55 and older made up 24% of the U.S. workforce in 2022.



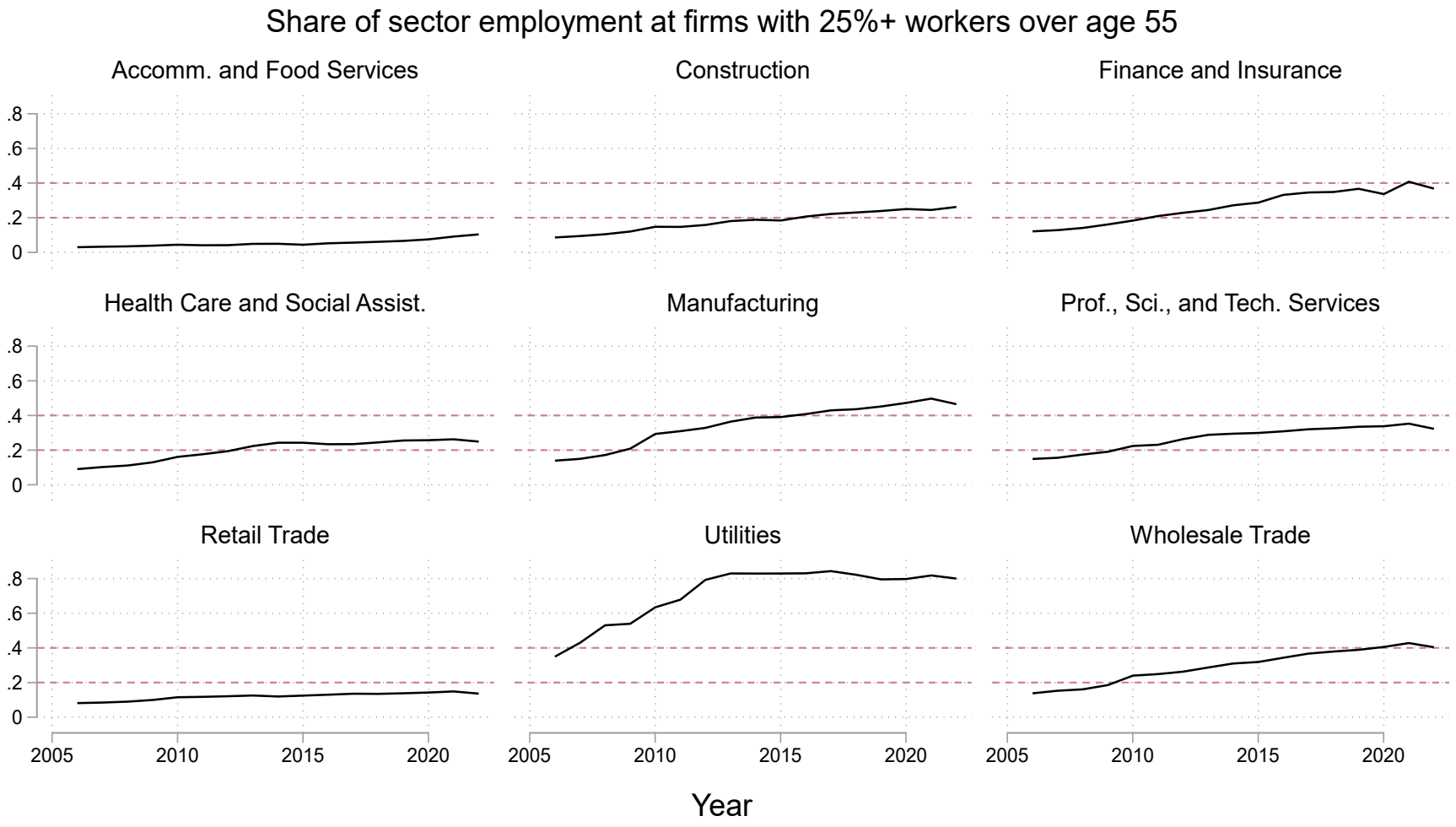
United States® Census Bureau

Trends over time: Firm workforces are aging

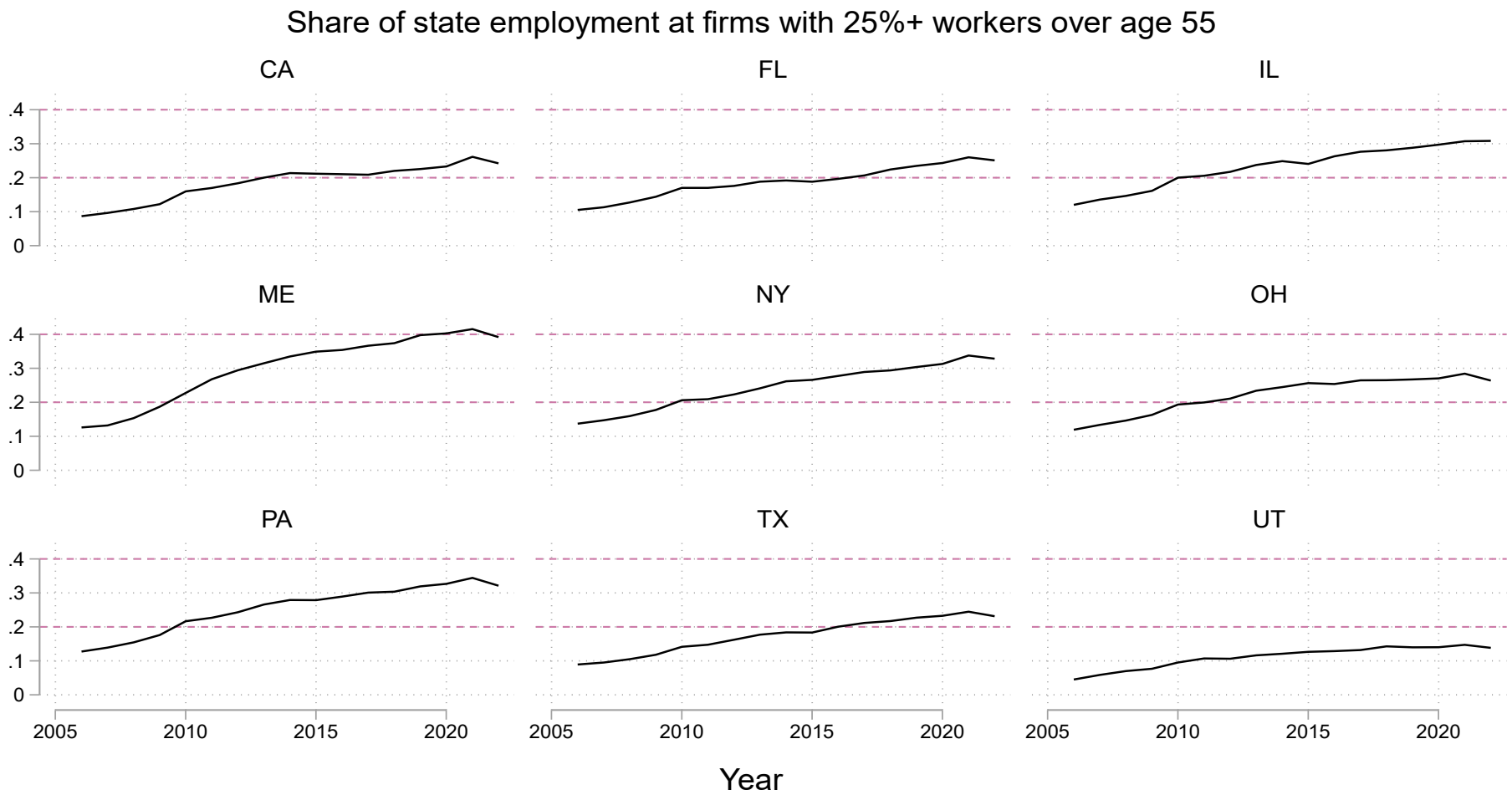


United States® Census Bureau

Trends over time: different by industry



Trends over time: different by geography



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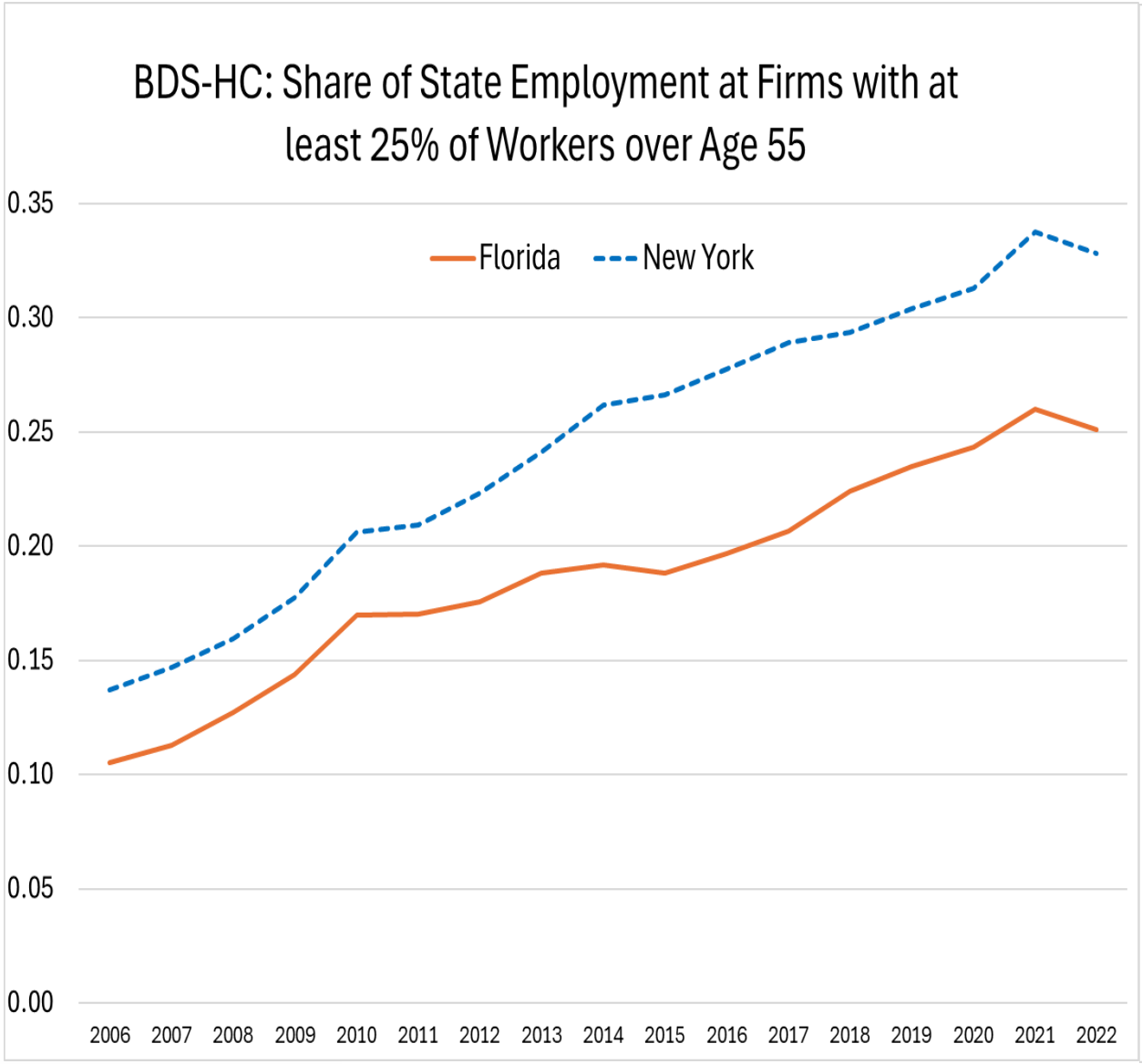
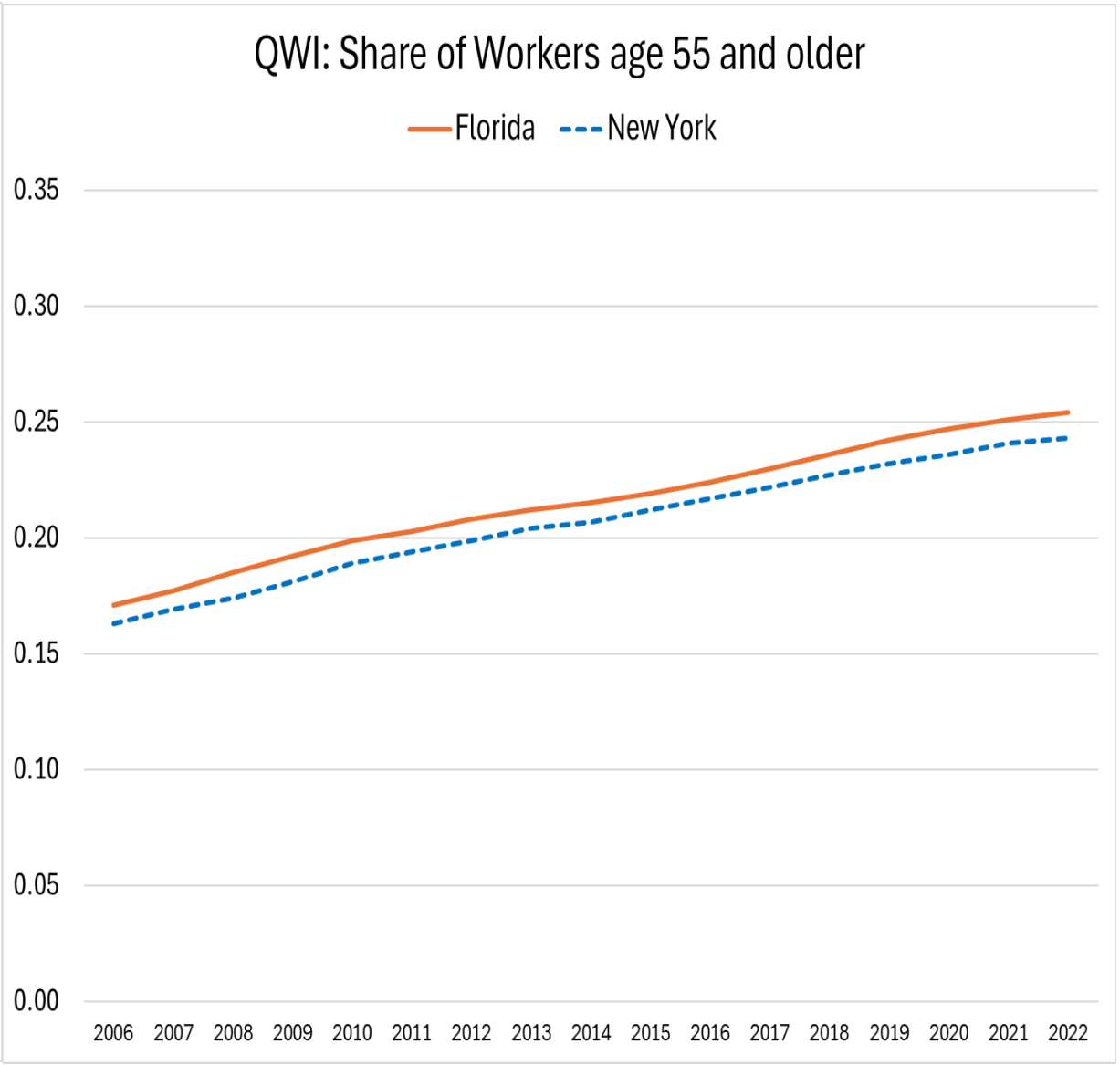
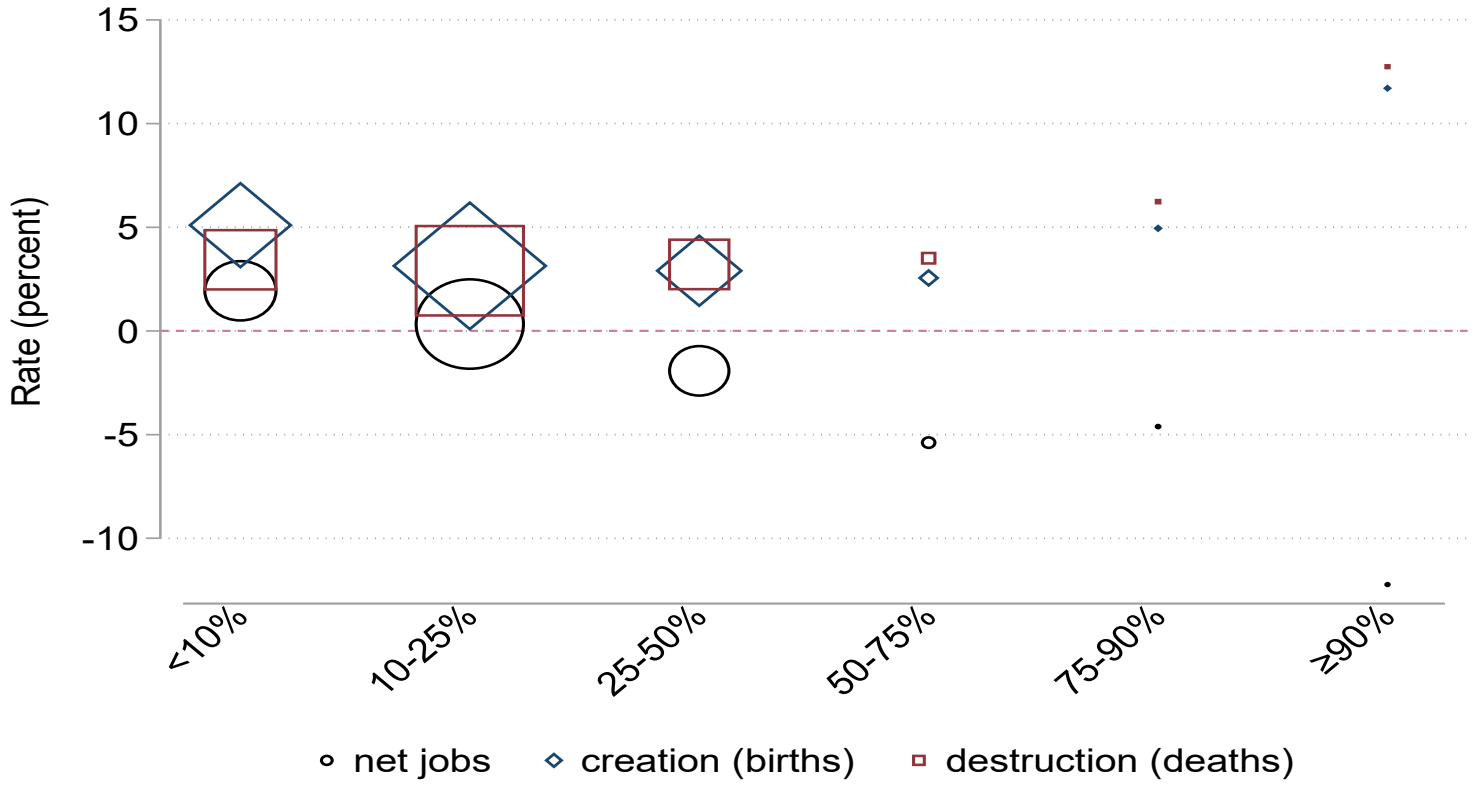




United States® Census Bureau

Relationship between growth and workforce age

2022 Net Job Creation Rate, Job Creation Rate from Births, Job Destruction Rate from Deaths at Establishments, Classified by type of firm workforce



Share of firm employment age 55 and older

United States® Census Bureau

Main Takeaways

- Linked employee-employer data can be tabulated in multiple ways:
  - Characteristics of the firm attached to the worker (QWI)
  - Characteristics of the workers attached to the firm (BDS-HC)
- BDS-HC provides new information about how workers are grouped together within firms
  - Where in the economy is a high share of employment concentrated at firms with lots of older workers?
    - Manufacturing, Utilities, Finance
    - Maine, New York, Pennsylvania
  - What types of dynamics are older workers exposed to?
    - Less net job creation
- BDS-HC and QWI are complements and tell us different things about the labor market
  - How many older workers are there and what are the characteristics of their firms?
  - How do different types of workers match to firms and how is this related to other characteristics of firms?

United States® Census Bureau

Where to find BDS-HC Data

https://www.census.gov/data/experimental-data-products/bds-human-capital.html

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Please reach out with questions:
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Thank you!

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