

Post-Secondary Employment Outcomes

Using National Jobs Data to Measure Graduate Impacts

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What is LEHD?

- The Longitudinal Employer-Household Dynamics (LEHD) Program has constructed unique linked employer-employee data for the United States.
- It uses existing administrative data to create innovative data products and microdata for research.
- Post-Secondary Employment Outcomes (PSEO) is the most recent example of the usefulness of the data.

LEHD Public-use statistics

QUARTERLY WORKFORCE INDICATORS (QWI)

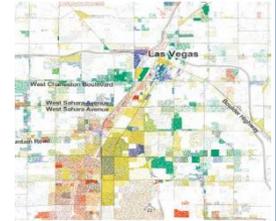
- Employment, Hires, Separations, and Wages by Worker Demographics
- Key uses:
 - Understanding the aging workforce
 - Examining hiring trends in local labor markets
 - Identifying where wages are high or where wages are growing in local labor markets

JOB-TO-JOB FLOWS (J2J)

- Hires and separations by worker origin and destination employment characteristics
- Key uses:
 - What labor markets are we losing workers to?
 - What industries are we attracting workers from?
 - Who is hiring workers from unemployment?

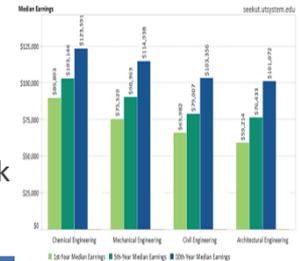
LEHD ORIGIN-DESTINATION EMPLOYMENT ESTIMATES (LODES)

- Block-level employment by where workers live and work
- Key uses:
 - Local economic development planning
 - Emergency planning
 - Business site selection



POST-SECONDARY EMPLOYMENT OUTCOMES (PSEO)

- New pilot statistics on earnings for college graduates by institution and major
- Key uses:
 - Estimating returns to degree
 - Short run and long run returns
 - Industries and regions graduates work



PSEO: Meeting a Data Need

There is a great deal of interest in making the economic returns to higher education more transparent.

- Institutions want to know how their graduates are doing after they leave campus
- Students want to know how much a degree could increase their earning potential, and whether or not borrowing for college is a sound investment.
- Policy makers/economic/workforce development specialists want to better understand the role of higher education in regional economic development.

Comparison with other initiatives

College Scorecard:

- Obama administration initiative to promote transparency in returns to college
- Data on earnings by institution, for enrollees who received financial aid
- *Shortcomings*: No program level data, not broken out by whether student graduated with a degree

State-level initiatives

- Lots of state higher education boards and university systems have partnered with their workforce agencies to match UI data to university records
- Publically available data from these projects vary, but many release institution or program level data
- *Shortcomings*: Earnings captured only for graduates that remain in the state, no universal methodology makes comparing earnings across programs difficult

Post-Secondary Employment Outcomes (PSEO)

A new collaboration between university systems and the Census Bureau

A joint pilot project between university systems, state longitudinal data systems, and the Census Bureau, the **Post-Secondary Employment Outcomes (PSEO)** are experimental tabulations providing national earnings statistics for graduates of post-secondary institutions.

Goal:

- Provide students and parents better data on the return on investment to post-secondary degrees

The PSEO provides:

- 25th, 50th, and 75th percentiles of annual earnings for college and university graduates
- Employment by industry and region of the country (scheduled for future release)
- By degree level, degree major, and post-secondary institution
- One year, five years, and 10 years after graduation.

Current Partners

Currently partnering with Census for the PSEO pilot are:

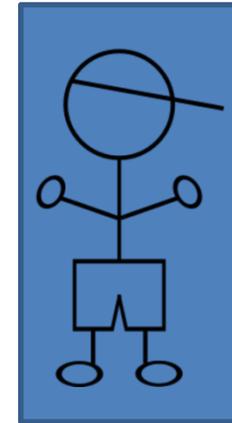
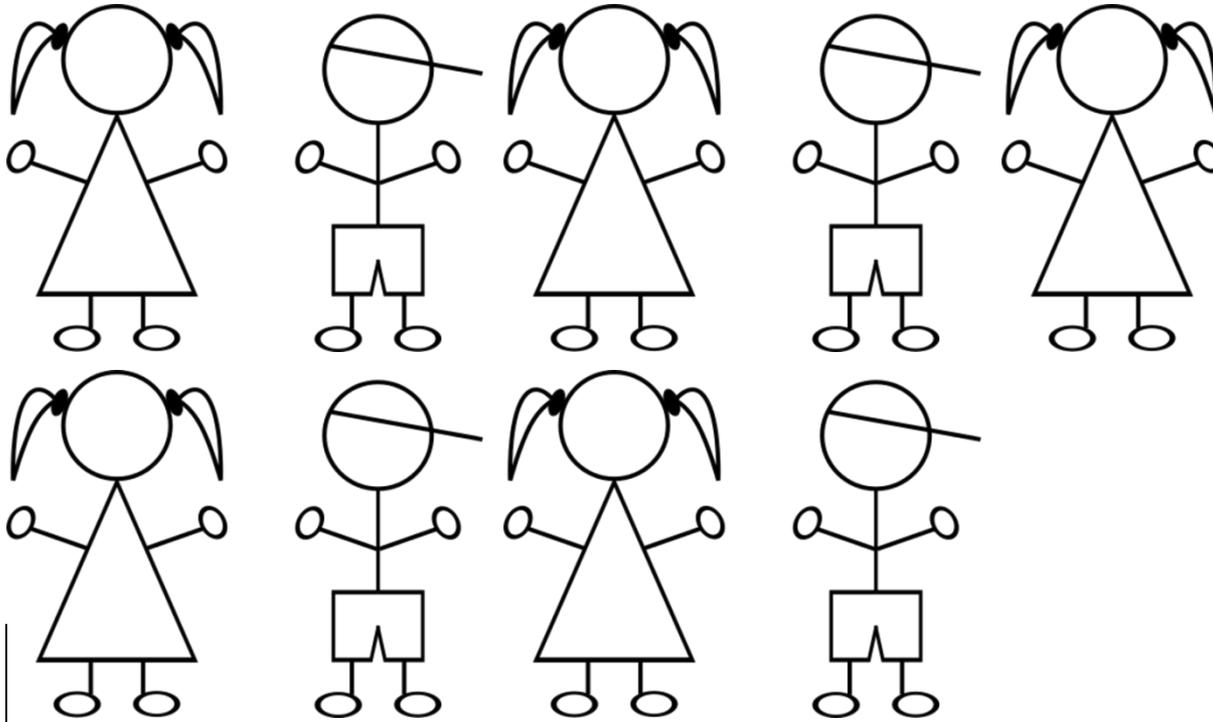
- The University of Texas System
- Colorado Department of Higher Education (all public two- and four-year institutions in Colorado)
- University of Michigan, Ann Arbor; University of Wisconsin, Madison.

Currently in talks to expand pilot to public four-year institutions and community colleges in seven states.

What about student privacy?

Protecting the Microdata

- Title 13 requirements
 - The existence of a job held by an individual is confidential
- We do not have a monopoly on microdata
- All previous statistical releases considered public knowledge



In-State Average Earnings: \$80,000

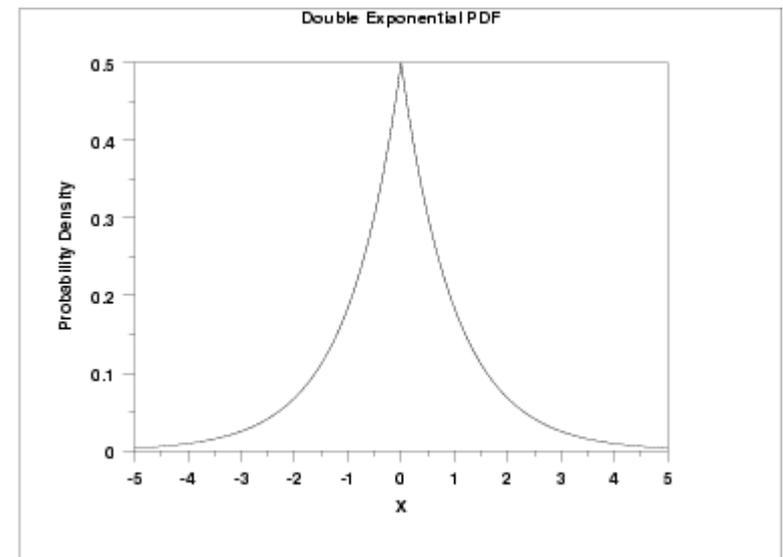
National Average Earnings: \$85,000

Solution: Differential Privacy

- Differential privacy guarantees that outputs from two neighboring databases (differing by one observation) not differ by a significant extent
- Formally, it puts an upper bound on how much a person can update their priors about an individual's characteristics
- Conceptually, it makes an individual indifferent about whether to be in the sample or not (since the output is insensitive to their omission/inclusion)

Example of Differentially Private Protection

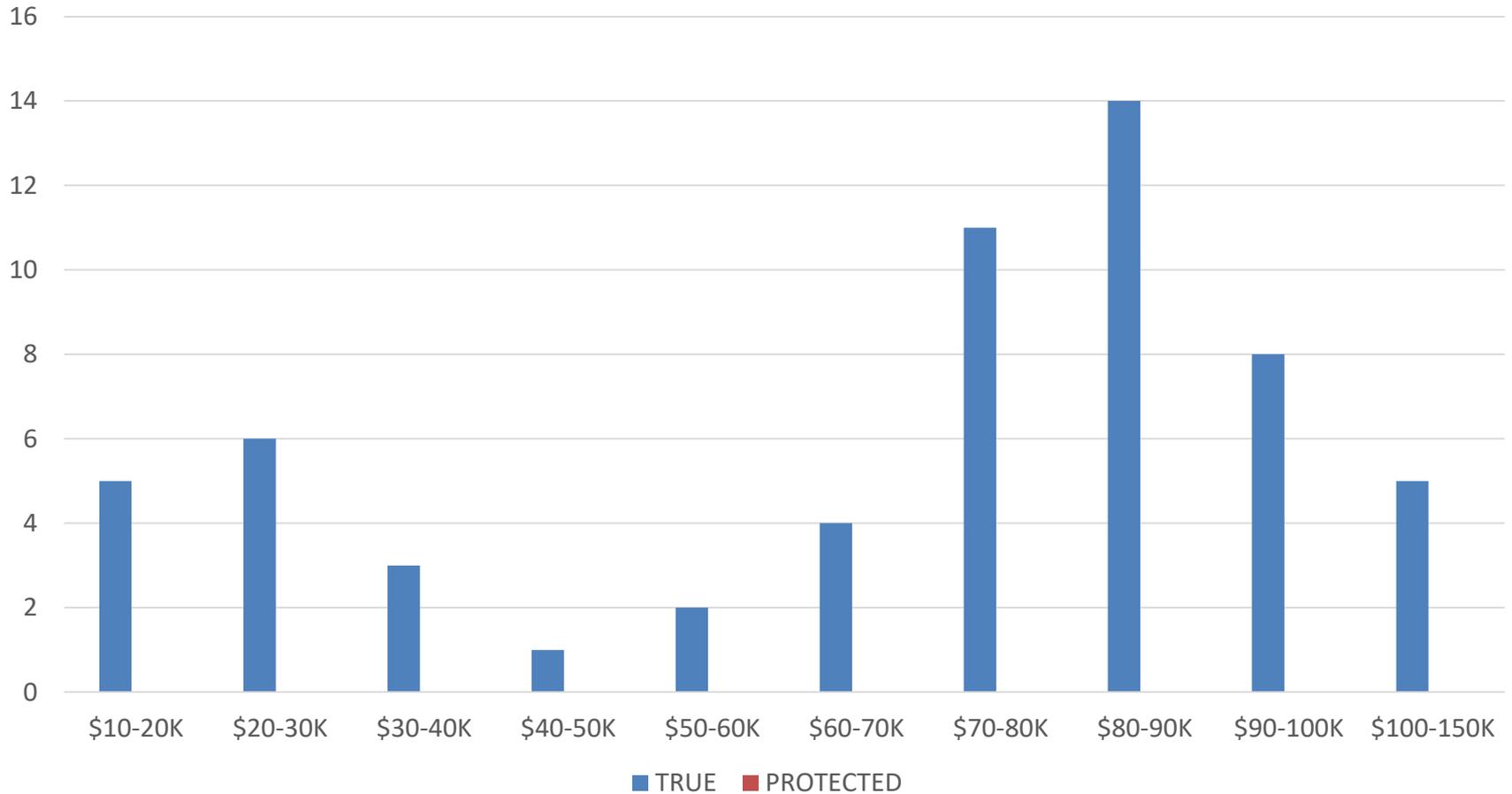
- Output: How many people in room are above 6 feet tall?
- True answer: 6
- Sensitivity: 1
- Noise: Laplace($1/\epsilon$)
- Protected Answer: 8



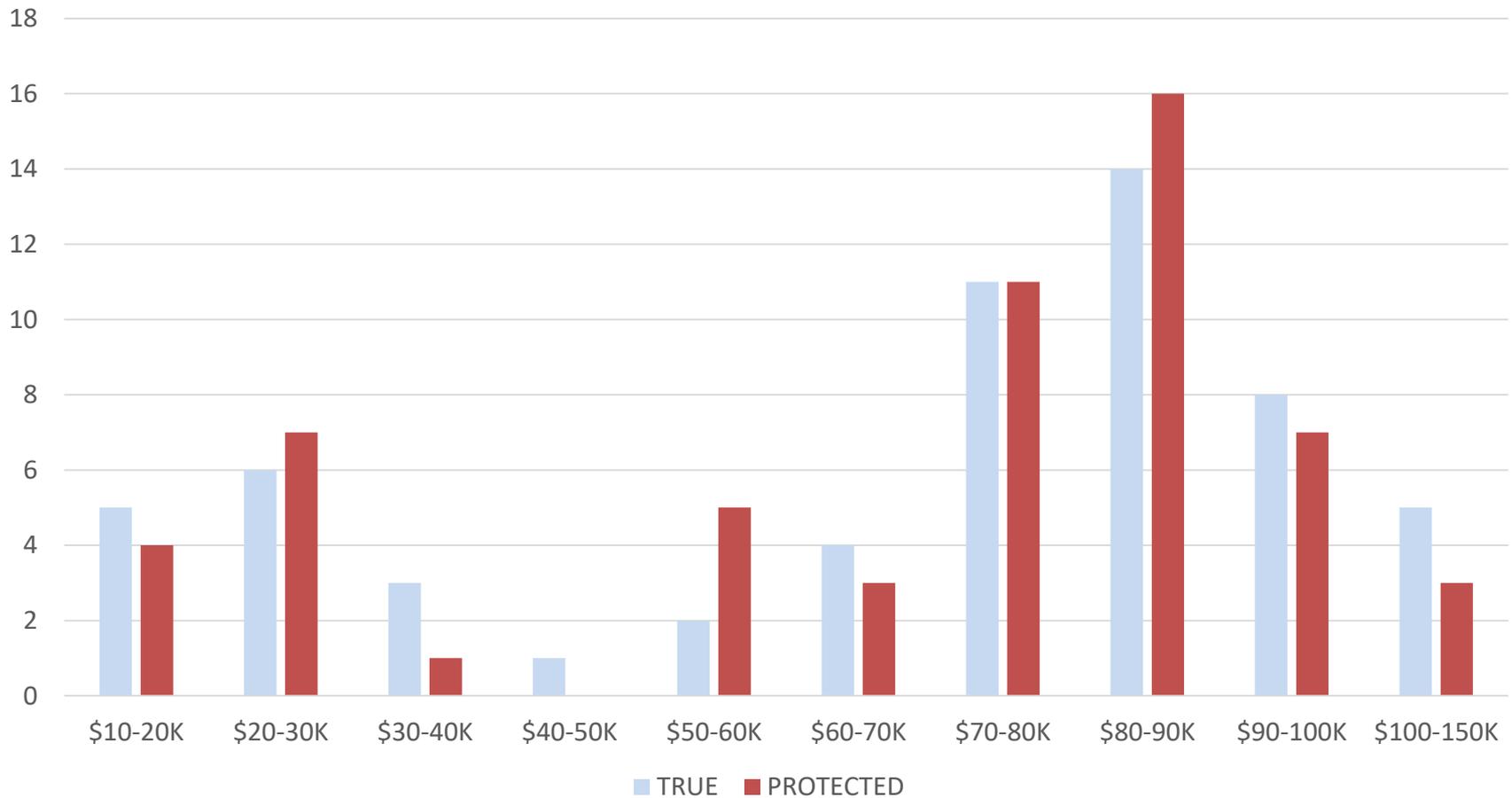
Implementing DP

- For the PSEO Graduate Earnings data, we construct a histogram of earnings
- Add noise to each histogram bin
- Calculate the percentiles from the noisy histogram values

Simulated Data



Simulated Data with Noise



Protection Continued

- Functions of differentially private outputs retain privacy guarantee.
- We take the protected histograms, and extract percentiles from the resulting CDF.

Strengths and Shortcomings of PSEO

Strengths:

- *National* earnings and employment outcomes for college graduates by degree
- Uniform measurement of earnings outcomes across institutions
- Census Bureau expertise on measurement and confidentiality protection ensures high-quality statistics while protecting student privacy

Shortcomings:

- Privacy/information trade-offs: to maximally protect student privacy, data contain more noise than less protected tabulations
- No breakouts by gender or race (cohorts are too small)
- Earnings provided for attached workers only

Data Viz Tool Demonstration

https://lehd.ces.census.gov/data/pseo_beta_viz.html

What is next?

The initial University of Texas data release was featured in *The Chronicle of Higher Education*, *Houston Chronicle*, and *Inside Higher Ed*.

Many potential new partners have reached out to join the pilot:

- Several state longitudinal data systems, public university systems, and associations of independent colleges and private for-profit universities.

Next:

- PSEO release for the University of Michigan at Ann Arbor, and the University of Wisconsin, Madison in early 2019
- New statistics on employment by industry and region of the country (early 2019)
- Expansion of pilot to include new partners

Questions?

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