Estimating State- and Industry-Specific Denominators for Calculating Workers' Compensation Claim Rates

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Report Overview

- This presentation is based on a draft technical report from the National Institute for Occupational Safety and Health.

- The report was developed to aid state public health agencies using their workers compensation (WC) claims data to compute claims rates by industry, thus helping set injury and illness prevention priorities.

Using FTE data as a claim rate denominator

- NUMERATOR: State agencies compile information on number of workers' compensation (WC) claims by industry.
- FTE DENOMINATORS: Full-time equivalent employees are generally preferred for claim rates because the number of claims per employee (EE) is a function not only of the hazard levels of work tasks, but also the number of hours EEs spend at work.
- WC data systems typically do not include numbers of EEs or FTEs.

Determining the best ways of obtaining FTE denominators on the industry-state level for 3- and 4-digit NAICS industries.

The Quarterly Census of Employment and Wages (QCEW) provides authoritative EE count data based on a census of employers but does not provide hours of work data.

FTE Estimation Method:

Multiply an EE count from the QCEW by an FTE adjustment factor from a survey data source such as the ACS or the BLS Office of Productivity and Technology (OPT)

Estimated FTEs = **Employee Count** (QCEW data on industry level from BLS or on employer level from state workforce agency) X **FTE employee per Employee ratio (FTE/EE)** (calculated on industry level using data from a national or state survey)

FTE/EE Data Source Comparison: ACS vs OPT

	OPT	ACS
Industry coding	NAICS	Census industry codes, mapped to NAICS
	Employer-based survey	Lower accuracy of survey responses in household surveys*
Sampling error/ industry detail	small errors; data available for 3- & 4-digit NAICS industries	Significant sampling error; data available for most 3-digit & some 4-digit NAICS industries
Measurement of work time		Imperfect alignment between questions about industry "last week" and questions about work time that refer to previous 12 months
Capture of variation among states?	No: national data only	Yes: state and sub-state level data

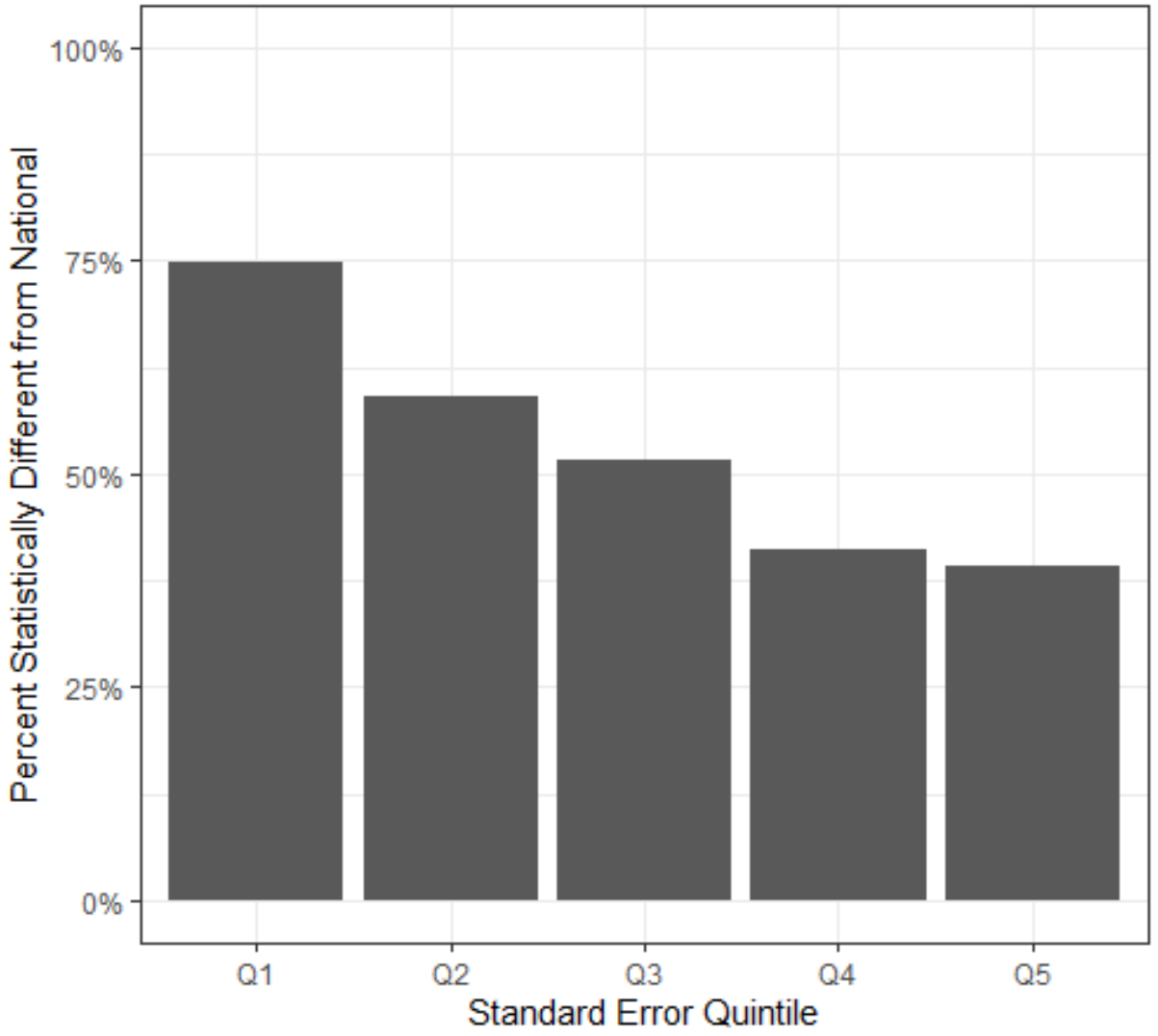
* See Isenberg E, Landivar LC, Mezey E [2013]. A comparison of person-reported industry to employer-reported industry in survey and administrative data. Working paper. Washington, DC: U.S. Census Bureau, No. CES-13-47, https://www.census.gov/library/working-papers/2013/adrm/ces-wp-13-47.html

How much of the variation among state-level FTE/EE estimates based on ACS data is due to:

real differences in FTE/EE *versus* imprecision in estimates?

- FTE/EE estimates were computed for all available state-industry combinations. (3-digit NAICS)
- Estimates were grouped into quintiles based on standard error.
- The figure shows the percent of state-level FTE/EE estimates with a statistically significant difference from the national FTE/EE by standard error quintile.

Summary: Even estimates with relatively high standard errors often provide statistically significant evidence of difference from the national average.



ACS: Usual weekly hours to estimate FTEs

ACS respondents are asked about:

- Industry of their current or most recent job ("primary job")
- Usual weekly hours and weeks worked during all jobs held the previous year, even though multiple jobs might be in different industries

To estimate FTEs on the basis of hours worked per week:

- For the individual respondent: FTE = usual weekly hours / 40 hours

Upward bias in FTE estimate:

- Usual weekly hours include hours in all jobs in last 12 months

←----------12 months----------→
Previous primary job	Current primary job
Previous second job	Current second job

- Workers are only classified to the industry of their primary job. 2nd jobs, which generally have fewer hours, are not included.

Do differences in data source and method for estimating FTE/EE have a significant impact on industry claim rates and the ranking of industries by claim rate?

- If variation among industries in the claim rate is large enough, a limited amount of error in the denominators might have little impact on industry rate ranking.

- Using data for Washington State, this issue is examined for FTE/EE estimates using both ACS and OPT data. We also include EE denominator estimates: QCEW data without FTE/EE adjustment.

- Calculations show that these various sets of denominator estimates produced similar results in terms of ranking the ten industries with the highest claim rates.

Thank you for your interest!

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How much of the variation among state-level FTE/EE estimates based on ACS data is due to

real differences in FTE/EE *versus* imprecision in estimates?

Figure 2.15 ACS FTE/EE By State, with 95% Confidence Intervals, and ACS National Average FTE/EE for Crop Production (NAICS 111), ACS 2010-2014 data

The vertical solid line in the middle of the graph represents the national ratio, and the vertical dashed lines next to it represent the national ratio's confidence interval.

This figure shows that many relatively imprecise, state-level estimates of FTE/EE are likely to be better estimates for the state than the national average FTE/EE.