

Technical Appendix on Data and Methods

The Invisible Workforce Rebuilding Los Angeles after the January 2025 Wildfires

Chhandara Pech and Paul M. Ong

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This document describes the data sources and analytical methods used in the study, *The Invisible Workforce Rebuilding Los Angeles after the January 2025 Wildfires*. The analyses were designed to support an assessment of how wildfire recovery labor markets intersect with Latino workers and fire-impacted communities in Los Angeles County.

The methods are organized around three primary research questions:

1. Who works in high-risk post-fire recovery occupations?
2. Where do workers employed in fire-impacted areas live?
3. What share of workers connected to fire-impacted communities may lack unemployment insurance coverage?

Each section below describes the data sources, geographic definitions, and analytical approach used to address these questions.

Research Question 1. Who Works in High-Risk Post-Fire Recovery Occupations?

Data Source: American Community Survey Public Use Microdata Sample (ACS PUMS)

This analysis uses the American Community Survey (ACS) Public Use Microdata Sample (PUMS). The ACS is an annual survey conducted by the U.S. Census Bureau that provides detailed demographic, social, and economic information about the U.S. population. The PUMS files contain anonymized individual-level records that allow researchers to analyze characteristics of workers, including occupation, industry, earnings, poverty status, and health insurance coverage.

For this study, we use 2019–2023 five-year ACS PUMS data and restrict the analysis to individuals age 16 and older in the civilian labor force residing in Los Angeles County.

Key variables used in the analysis include:

- **INDP** – Industry of employment
- **OCCP** – Occupation
- **HISP / RAC** – Hispanic origin and race

- **PERNP** – Annual earnings
- **POVT** – Poverty status
- **HICOV** – Health insurance coverage
- **COW** – Class of worker

Defining Post-Fire Recovery Occupations: The analysis focuses on field-based jobs involved in wildfire recovery and rebuilding activities, including construction, debris removal, infrastructure repair, utility restoration, and landscape stabilization following wildfire events. Workers were identified using selected industry (INDP) and occupation (OCCP) codes in ACS PUMS. While no single classification fully captures all disaster recovery work, the selected codes represent sectors most directly involved in on-the-ground rebuilding and cleanup.

Analytical Approach: Workers employed in the selected industries and occupations were identified within the ACS PUMS dataset. The analysis then estimated the racial and ethnic composition of workers in post-fire recovery occupations, along with measures of earnings, poverty status, and health insurance coverage. All estimates were weighted using ACS person weights.

Post-Fire Recovery Industries (INDP): The following industries were included because they are commonly associated with wildfire recovery activities.

Construction and Site Cleanup

- 0770 – Construction
- 7790 – Waste Management and Remediation Services

Utilities and Infrastructure Repair

- 0570 – Electric Power Generation, Transmission, and Distribution
- 0580 – Natural Gas Distribution
- 0670 – Water Supply and Irrigation Systems, and Steam and AC Supply

Transportation and Logistics

- 6170 – Truck Transportation

Landscaping and Environmental Services

- 7770 – Landscaping Services

Post-Fire Recovery Occupations (OCCP): These occupations represent field-based roles involved in rebuilding and cleanup.

Construction and Extraction Occupations

- 6200–6950 – Construction and extraction occupations
- Examples include construction laborers, electricians, plumbers, roofers, heavy equipment operators, and hazardous materials removal workers.

Utilities and Infrastructure Repair

- 7315 – HVAC mechanics and installers
- 7340 – Maintenance and repair workers
- 7410 – Electrical power-line installers and repairers
- 7420 – Telecommunications line installers and repairers

Transportation and Material Movement

- 9130 – Truck drivers and delivery workers
- 9600 – Industrial truck and tractor operators
- 9620 – Hand laborers and material movers
- 9720 – Refuse and recyclable materials collectors
- 9760 – Other material moving workers

Landscaping and Vegetation Management

- 4251 – Landscaping and groundskeeping workers
- 4252 – Tree trimmers and pruners

Research Question 2: Where Do Workers Employed in Fire-Impacted Areas Live?

Data Source: LEHD Origin–Destination Employment Statistics (LODES)

Worker commuting patterns were analyzed using the Longitudinal Employer–Household Dynamics (LEHD) Origin–Destination Employment Statistics (LODES) dataset produced by the U.S. Census Bureau. LEHD LODES provides administrative data on employment and commuting flows between workers’ home and workplace locations at fine geographic levels, including census blocks. For this analysis, we use average primary job flows from 2018–2022.

The dataset is derived primarily from state unemployment insurance wage records and federal employment data, and therefore primarily captures wage and salary employment covered by unemployment insurance programs. Because LEHD is based on unemployment insurance records, it does not capture certain types of workers, including some self-employed individuals, informal workers, and other workers outside UI-covered employment. In addition, the workplace location in LEHD reflects the employer’s reporting address, which may differ from the physical location where work is performed. Despite these limitations, LEHD provides one of the most detailed datasets available for analyzing worker commuting patterns and employment flows.

Defining Fire-Impacted Areas: Fire perimeters were derived from CAL FIRE wildfire perimeter GIS shapefiles. Census blocks whose centroids lie within the fire perimeter were classified as located within the wildfire zone. This analysis focuses on two wildfire-affected areas: the Eaton Fire perimeter, primarily encompassing the Altadena community, and the Palisades Fire area, primarily encompassing the Pacific Palisades neighborhood.

Worker Flow Classification. Using LEHD origin–destination data, workers were grouped into three categories:

- **Inflow Workers:** Workers who live outside the fire-impacted area but commute into the area for work.
- **Live-Work Workers:** Workers who both live and work within the fire-impacted area.
- **Outflow Workers:** Workers who live within the fire-impacted area but commute elsewhere for work.

Linking Worker Origins to Neighborhood Characteristics: To examine the characteristics of neighborhoods where workers live, residence census blocks from the LEHD LODES data were assigned to their corresponding census tracts. Because census blocks are nested within tracts, the tract identifier was extracted from the block geographic code. Tract-level demographic characteristics were then merged using American Community Survey (ACS) data. The average Latino composition of home census tracts was then calculated for each worker flow group to examine patterns in the neighborhoods where workers employed in fire-impacted areas reside.

Research Question 3: What Share of Workers May Lack Unemployment Insurance Coverage?

Data Sources: To estimate potential gaps in unemployment insurance (UI) coverage, this analysis compares two complementary datasets.

LEHD LODES (2017–2021 five-year average): As described in Research Question 2, LEHD LODES provides employment counts derived primarily from state unemployment insurance wage records and federal employment data and therefore primarily captures wage and salary employment covered by unemployment insurance programs.

Census Transportation Planning Products (CTPP) (2017–2021 five-year estimates): The Census Transportation Planning Products (CTPP) dataset is derived from the American Community Survey (ACS) and provides tabulations of worker residence, workplace, and commuting patterns. Unlike LEHD LODES, CTPP captures the full civilian workforce, including self-employed individuals and workers in nontraditional employment arrangements.

Because LEHD captures primarily UI-covered employment, while CTPP captures the broader workforce regardless of employment classification, comparing the two datasets provides an estimate of workers who may fall outside unemployment insurance coverage.

Geographic Definition: This analysis focuses on two wildfire-affected areas: the Eaton Fire perimeter, primarily encompassing the Altadena community, and the Palisades Fire area, primarily encompassing the Pacific Palisades neighborhood. For consistency across datasets, these areas are defined using census tracts, which represent the

smallest geography available in the CTPP workplace file. Although tract boundaries do not perfectly match wildfire perimeters, both communities experienced substantial wildfire impacts and provide a reasonable approximation of the affected areas.

Estimating UI Non-Coverage: Potential gaps in unemployment insurance coverage are estimated using the following formula:

$$\text{UI Non-Coverage Rate} = (\text{CTPP Count} - \text{LEHD Count}) / \text{CTPP Count}$$

This calculation estimates the share of workers who appear in the broader workforce dataset but are not in UI-covered employment.

Estimates are calculated separately for:

- Workers **living in the area**
- Workers **employed in the area**¹

¹ There is overlap between the two groups, some workers both live and work in the same area. As a result, simply adding the residence and workplace counts would lead to double counting. To avoid this, unduplicated counts can be estimated use flow data, which allows for categorizing workers in three groups: (1) those who live elsewhere but work in the area (inflow); (2) those who live and work in the same area, (3) those who live in the area but work elsewhere (outflow). Both CTPP and LEHD offer flow data, but they differ in how they capture place-of-work information. CTPP is based on the American Community Survey, where respondents self-report their place of work. In contrast, LEHD assigns jobs to the employer's reporting address, which may not reflect where the work is physically performed. This makes LEHD less suitable for estimating unduplicated labor force.