

## Documentation for the Urban Institute's Summary Files of the LEHD Origin-Destination Employment Statistics (LODES)

LODES data provide a unique national source of fine-grained data over time by describing the number of jobs by place of work and place of residence. It includes tabulations for many characteristics of workers (race and ethnicity, education, income, and gender) and firms (industry, age, and size). The Census Bureau has published LODES data for most states at the block level annually from 2002 to 2015 (see table below for exceptions). It has not published a schedule for the 2016 release.

To make these data accessible to more analysts, the Urban Institute has published files summarized at the census tract level for public use. This is a brief description of the source and Urban Institute-provided data. For more information, see [the full Census documentation](#).

The LODES data are derived from the Longitudinal Employer-Household Dynamics (LEHD) microdata. LEHD data link employee and employer data by combining administrative state unemployment insurance wage records with the American Community Survey and other administrative data. The source data are aggregated to the block level and adjusted when necessary to protect confidentiality.

The LEHD data infrastructure tracks jobs, as opposed to people, as its unit of observation. As such, the system captures more than one job per person when available in the data. The "primary" job for an individual is defined as the job that earned the individual the most money. The Census Bureau publishes files for all jobs and for primary jobs.

The Urban Institute has published a total of eight datasets derived from LODES drawn from the following core datasets:

- Residence Area Characteristic (RAC): the number of jobs by census tract where the employee lives
- Workplace Area Characteristic (WAC): the total number of jobs by the census tract where the employee works

For these two categories, we have produced the following four files:

- All jobs: includes multiple jobs per worker and federal employment for 2010 and later
- Primary jobs: includes primary jobs (i.e., one job per worker); also includes federal employment for 2010 and later
- All federal jobs: includes all federal jobs in [most agencies](#)
- Primary federal jobs: includes federal jobs in [most agencies](#) that are classified as primary jobs

The Census Bureau publishes a third file not summarized by Urban at this time—the Origin-Destination (OD) file, which lists, at the Census Block level, the number of jobs for which a person works in one Census block and lives in another Census block.

### Notes on definitions and changes in variables

LODES contains data included in the Unemployment Insurance program (for civilian jobs) and the Office of Personnel Management (for the federal jobs). Thus, it does not include the military, self-employed workers, informally employed people, and several other specific classes of workers.

Datasets for 2009 to 2015 contain additional variables (race, ethnicity, education, and sex) on the RAC and WAC files that are not available in other years of data. And datasets for 2011 to 2015 contain further additional variables (firm age and firm size) on the WAC file.

Datasets for 2010 and later contain additional job types that cover federal employment as supplied by the Office of Personnel Management. Federal employee numbers might change between 2014 and 2015 in a given geography because OPM released guidance exempting additional federal job categories from being counted in LODES. The magnitude of the change led to a 14 percent decline in federal counted jobs in LODES from 2014 to 2015. For more detail, see <https://lehd.ces.census.gov/doc/help/onthemap/LODESDataNote-FedEmp2015.pdf>.

### Notes on years and geography

The US Census Bureau released data for 2015 in September 2017, and there is currently no public information about the next release.

Some states are missing data for some years, as listed in the table below.

#### State-Year Combinations without OD/WAC Data

Arizona	2002–2003
Arkansas	2002
District of Columbia	2002–2009
Massachusetts	2002–2010
Mississippi	2002–2003
New Hampshire	2002
Wyoming	2014–2015

Puerto Rico	All Years
US Virgin Islands	All Years

The data are enumerated with 2010 census blocks. We merged the data files with the Census-provided geographic crosswalks by the 2010 census tabulation block code (tabblk2010—the primary identifier) to obtain the most recent definitions of legal, statistical, or administrative areas. We then summarized by the census tract code provided. Note that in 0.01 percent of the blocks, the census tract assignment differed from the census tract associated with the tabulation block code. In a very small percent of cases, this difference also resulted in a change in state. The number of jobs affected was very small—less than 0.05 percent. However, this difference resulted in a few block observations for states without WAC data (primarily Massachusetts, as per the table above, for which we are missing the most WAC data) for years in which data were not published. We deleted those blocks before creating our tract-level files.

### Analytic examples

Urban researchers have used LODES to [analyze capital flows in Detroit](#) or [create scores for Opportunity Zones](#). The National Neighborhood Indicators Partnership (NNIP) has also compiled many examples from their member organizations on the [NNIP website](#), including an analysis of [neighborhood change in Minneapolis](#) or of [opportunity in the Kansas City region](#).

### Code and replication

The code used to collect, transform, and process the files can be found on [Github](#) and is usable under the MIT license.

### Citation and license

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U.S. Census Bureau. LEHD Origin-Destination Employment Statistics Data (2002-2015) [computer file]. Washington, DC: U.S. Census Bureau, Longitudinal-Employer Household Dynamics Program [distributor], accessed on February 19<sup>th</sup>, 2018 at <https://lehd.ces.census.gov/data/#lodes>. LODES 7.3 [version]