Longitudinal Employer-Household Dynamics: LED Partnership, Public-Use Data, and Innovative Web Tools

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Presented by: Eric Coyle
Data Dissemination Specialist
U.S. Census Bureau
Agenda

Longitudinal Employer-Household Dynamics (LEHD)/Local Employment Dynamics (LED)
  • LEHD/LED Overview

Understanding N.A.I.C.S.

Census Geography Hierarchy

LEHD/LED Web Tools

Additional Resources

Q&A
Longitudinal Employer-Household Dynamics (LEHD)

What is LEHD?

Until recently, many interactions between workers and firms were unobservable because there existed no link between employer and household data in the U.S. statistical system.

Since 1999 the Longitudinal Employer-Household Dynamics (LEHD) program at the U.S. Census Bureau has sought to fill this gap in the nation’s statistical infrastructure by building a comprehensive database of longitudinally linked jobs data. The potential uses of the LEHD jobs data are far-reaching, both for unraveling important economic questions and for the provision of new statistical products.
Where Do the Data Come From?

• Local Employment Dynamics (LED) Partnership
  • Begun in late 1990s with a few states
  • Some states have time series back to 1990 (AZ goes back to 2004)
  • Not currently producing data for *Wyoming, Puerto Rico, and Virgin Islands

*Wyoming data available in Quarterly Workforce Indicator (QWI) Explorer tool
Local Employment Dynamics (LED) Data

• Provides unprecedented detail about America’s jobs, workers and local economies.

• Provides longitudinal record of U.S. Employment

• Integrates existing data from state-supplied administrative records on workers and employers

• LED is an integral part of the DOC Open Government Plan to unlock public access to high-value government data
Building on State Inputs

• We combine **state records** with other admin/census/survey data from the **Census Bureau** and **other Federal agencies**

• We can then create public statistics on:
  • Firms & Establishments
  • Jobs & Workers
  • By Firm and Person Characteristics

• Without new respondent burden
Admin. Records & LED Infrastructure

Economic Survey Data
Business Register
UI* Wage Records
OPM*
Federal Records
Demographic Census/Survey Data
QCEW*
Firm Data
Household Data
Linked National Jobs Data

QCEW = Quarterly Census of Employment and Wages
UI = Unemployment Insurance
OPM = Office of Personnel Management
Local Employer-Household Dynamics: Public Use Data Products

The Quarterly Workforce Indicators (QWI)

- Employment
- Job Creation, Job Destruction, Hires, Separations, Turnover
- By industry, county, CBSA, state, Workforce Investment Area (WIA) and worker characteristics

OnTheMap/LEHD Origin-Destination Employment Statistics (LODES)

- Employment at the Census block level by where workers live and work
- Popular uses - local economic development, business site selection, and emergency planning

Job-to-Job Flows (J2J)

- Traces worker movement through industries, geographic labor markets, and to/from employment
Important to Know

- Job data cover over 95% of private employment and most state, local, and federal jobs.
- Data availability: 1990-2018, start year varies by state and application, rolling end date.
- Contains only UI-covered jobs: no US Post Office, no military jobs, no self-employed, 1099s, etc.
- Excludes some secretive 3-letter agencies (NSA, FBI).
- Employment and wages measured at start of Q2.
- OnTheMap: “Distance” is a straight-distance calculation: reported primary place of work, reported home location. Not on a road network, not a commute measurement.
- OnTheMap: 2-digit NAICS in the data now; working on 3-digit.
North American Industry Classification System (NAICS)
Getting Started: Learning Your Industry

NAICS Codes

• North American Industry Classification System
  • Launched in 1997 as part of NAFTA
  • Codes are updated every 5 years (end in 2 & 7)
  • Hierarchical

<table>
<thead>
<tr>
<th>Level</th>
<th>Code</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sector</td>
<td>45</td>
<td>Retail Trade</td>
</tr>
<tr>
<td>Sub-Sector</td>
<td>451</td>
<td>Sporting Goods, Hobby, Book, and Music Stores</td>
</tr>
<tr>
<td>Industry Group</td>
<td>4511</td>
<td>Sporting Goods, Hobby, and Musical Instrument Stores</td>
</tr>
<tr>
<td>Industry</td>
<td>45112</td>
<td>Hobby, Toy, and Game Stores</td>
</tr>
<tr>
<td>U.S. Industry</td>
<td>451120</td>
<td>Hobby, Toy, and Game Stores</td>
</tr>
</tbody>
</table>
More Information

- Industry definitions and Concordance tables
- Relationships to other systems
- Federal Register Notices
Census Geography
Selected Census Geographic Concepts—Statistical Areas

- Regions
- Divisions
- Census County Divisions
- Census Designated Places
- Public Use Microdata Areas (PUMA)
- Zip Code Tabulation Areas (ZCTAs)
- Census Tracts
- Block Groups
- Block

Unemployment Rate by Census Tracts in Bernalillo County

Source: U.S. Census Bureau, 2012-2016 American Community Survey 5-Year Estimates
Central axis describes a nesting relationship

Blocks are not defined by population and are the smallest geographic level at which data are ever released (Decennial Census, not the ACS)

- 600 to 3,000 population
- 240 to 1,200 housing units
LEHD Public Data Tools
QWI Explorer

- 32 Quarterly Workforce Indicators
- Flexible Pivot Table and Map/Chart interface
- Data on detailed interactions between firms and workers include employment, employment change (individual and firm), and earnings
- Analyze/report by worker demographics: age, earnings, race, ethnicity, educational attainment, and sex
- Analyze/report by firm characteristics
  - NAICS classification (sector, 3, 4)
  - Firm age and firm size
- Quarterly data
  (9-12 months old)
- National and 50 states available (plus DC)
OnTheMap

✓ Where do workers live?
✓ Where do residents work?
✓ What are the commuter flows of a particular area?
✓ Analyze/report by worker demographics
  ✓ Age, earnings, race, ethnicity, educational attainment, and sex
✓ Analyze/report by firm characteristics
  ✓ NAICS Sector, firm age, and firm size
✓ 2002-2015 annual data
✓ 50 states available (plus DC)
✓ User-selected areas
✓ Based on Census Blocks
✓ Disclosure protection
✓ Flexible Inputs/Outputs

(OnTheMap)
OnTheMap for Emergency Management

Hurricanes, Floods, Winter Storms

Disaster Areas

Wildfires

Demographic & Economic Data

New Public Data Service for Emergency Preparedness & Response

- Comprehensive Reports
- Real-time Data Updates
- Easy-to-use & Interoperable
- Historical Event Archive
- Flexible Analyses & Visualizations

(OnTheMapEM)
LED Extraction Tool

- Comprehensive QWI Data Coverage – Access 32 indicators, all available years/quarters, all firm/worker

- Characteristics, the Beta release of National QWI data, and all 50 states (plus the District of Columbia).

- Intuitive Interface – Streamlined interface walks users through the process of selecting the data they need and ignoring the data they don’t. Complex and confusing choices are made invisible to the user by not allowing false combinations and graying-out unavailable options.

- Quick Results – Data queries are processed quickly through a sequential job queue, then CSV and/or ZIP files (complete with metadata) area available for download. All completed data queries from a user’s current session are saved for easy access in a query results list.

- Easy-To-Use Documentation – Online documentation, including tutorials and walkthroughs

(LED Extraction Tool)
J2J Explorer (Beta)

- 40 Measures of Worker Reallocation
- Six Visualization Modules with a flexible dashboard interface
- Export reports to Excel or CSV
- Trace worker movements through industries, geographic labor markets, and to/from employment
- Analyze/report by origin and destination at the national and state level
- Analyze/report by origin/destination firm characteristics, NAICS Sector, Firm age/firm size
- Analyze/report by worker demographics: age, earnings, race, ethnicity, educational attainment, and sex
- Data updated every quarter

(J2J Explorer)
Post-Secondary Employment Outcomes (PSEO) (Beta)

- Experimental tabulations
- Earnings and employment outcomes for college & university graduates by degree level, degree major, and post-secondary institution.
- State-of-the-art confidentiality protection mechanisms to protect the underlying data
- Data sharing partnerships between universities, university systems, State DOE, State Labor Market Information offices, and the U.S. Census Bureau
- Data are currently only available for post-graduate institutions whose transcript data has been made available to Census Bureau through a data-sharing agreement (Texas & Colorado)

Download Public-Use Data

Two classes of files for Graduate Earnings tabulations:

- Comprehensive dataset, which includes all institutions and crossings.
- Earnings for each system, which is a subset of the above release.
Choosing Among LED Data Products

<table>
<thead>
<tr>
<th>What do you want?</th>
<th>Potential Drawbacks</th>
<th>Data Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employment, hires, separations, turnover, or earnings by detailed firm and person characteristics; quarterly time resolution; relatively short data lag</td>
<td>No geography below county; no residential information</td>
<td>QWI</td>
</tr>
<tr>
<td>Employment for detailed or customized geography; residential patterns of the workforce; relationship between worker employment and home locations</td>
<td>Annual time resolution; less detailed firm/person characteristics</td>
<td>LODES</td>
</tr>
<tr>
<td>Transitions between jobs by timing and firm or worker characteristics; transitions to/from nonemployment</td>
<td>No worker characteristics by firm characteristics (except geography), no geography below states</td>
<td>J2J</td>
</tr>
</tbody>
</table>
Choosing Among LED Data Access Points

<table>
<thead>
<tr>
<th>Data Product</th>
<th>Explore the data, answer questions, or get visualizations</th>
<th>Bulk data for use in analysis process/software</th>
<th>Live queries for building web applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>QWI</td>
<td>QWI Explorer</td>
<td>LED Extraction Tool Raw data download</td>
<td>Census Bureau API</td>
</tr>
<tr>
<td>LODES</td>
<td>OnTheMap OnTheMap for Emergency Management</td>
<td>Raw data download</td>
<td>Future development</td>
</tr>
<tr>
<td>J2J</td>
<td>Job-to-Job Explorer</td>
<td>Raw data download</td>
<td>Future Development</td>
</tr>
</tbody>
</table>
Useful Links

- QWI Explorer
  - Video Walkthrough
  - Example Scenarios
- J2J Explorer
  - Analysis Guides
  - FAQs
- OnTheMap
  - Getting Started
  - Analysis Guides
  - Other Tutorials
**Takeaways**

- The LED Partnership provides unique workforce information and analysis tools at a relatively low cost.
- LED data products can give insight into local and regional economies and labor markets.
- LED’s web tools provide free, 24/7 access to a basic analytical platform for the data.
Stay Current

NEWSROOM
The latest news releases and statements from the U.S. Census Bureau. Also, find upcoming events, and useful information for media.
census.gov/newsroom.html

AMERICA COUNTS
Featured stories on various topics such as families, housing, employment, business, education, the economy, emergency preparedness, and population.
census.gov/AmericaCounts

DIRECTOR’S BLOG
This blog gives the director’s point of view on everything from Census Bureau news to how we measure America’s people, places and economy.
census.gov/newsroom/blogs/director.html

STATS FOR STORIES
Provides links to timely story ideas highlighting the Census Bureau’s newsworthy statistics that relate to current events, observances, holidays, and anniversaries.
census.gov/newsroom/stories.html
census.gov/newsroom/facts-for-features.html
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More information on the American Community Survey: https://www.census.gov/acs

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Public Information Office (Media)
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linkedin.com/company/us-census-bureau
Additional Resources:
Want Free Training?
Need Local Stats?

U.S. Census Bureau
Data Dissemination Specialist

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Additional Assistance:
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Q&A and Thank You!