Exploring Workforce Data with LEHD Web Tools

Kentucky State Data Center’s Affiliate Meeting

2 August 2017

Earlene Dowell
LEHD Program
Center for Economic Studies
U.S. Census Bureau
Outline

• What is LED and LEHD and how can I use it?
• LEHD Public-use Data and Web Tools
• Live Demonstrations
• Questions
What are LEHD and LED?

• LEHD (Longitudinal Employer-Household Dynamics)
  – The LEHD Program at the US Census Bureau has constructed unique linked employer-employee data for the United States.
  – It connects administrative records with census and survey data to produce new public-use data products as well as microdata for research.

• LED (Local Employment Dynamics) Partnership
  – LEHD accesses state data through the LED Partnership - a cooperative partnership with states and DC, PR, and USVI
  – State-provided data:
    • Unemployment Insurance (jobs/workers)
    • Quarterly Census of Employment and Wages (firms)
  – Other data available to the Census Bureau
    • Censuses, Surveys, and Tax Information
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 1990s
  – Not currently producing data for Wyoming, Puerto Rico, and Virgin Islands
Admin. Records & LED Infrastructure

Economic Survey Data

QCEW*

Business Register

UI* Wage Records

OPM*

Federal Records

Demographic Census/Survey Data

QCEW = Quarterly Census of Employment and Wages
UI = Unemployment Insurance
OPM = Office of Personnel Management

Jobs Data

Firm Data

Person Data

Linked National Jobs Data

Public-Use Data Products...

- Job data cover over 95% of private employment and most state, local, and federal jobs
- Data availability: 1990-2016, start year varies by state, rolling end date
Why Are LED Data Special?

– 100% Coverage of UI Covered Jobs
– Firm Characteristics crossed with Worker Characteristics
– Detailed Geography
– Data Currency
– Accessible via powerful and easy-to-use tools
– Flexible outputs: PDF reports, Excel tables, high-quality images, and shapefiles
Data Products

- Quarterly Workforce Indicators (QWI)
  - 32 indicators by
    - Industry (NAICS 2, 3, and 4-digit), Firm Age, Firm Size
    - Worker Age, Race, Ethnicity, Sex, Education
    - State, County, CBSA, WIB Area
  - >150 Million job records processed each quarter
  - Longitudinal series starts in 1990 for some states

- LEHD Origin-Destination Employment Statistics (LODES)
  - Connects a job/worker’s employment and residential locations
  - Data at census block detail
  - Less characteristic detail than QWI

- Job-to-Job Flows (J2J) - Beta
  - Flows between jobs as well as into/out of nonemployment
Dissemination Tools/Applications

• J2J Flows Explorer (Beta)
  – Dashboard-style analysis tool for Job-to-Job Flows
• OnTheMap
  – Map-based analysis tool for LODES
• OnTheMap for Emergency Management
  – Integrates live feeds of emergency/disaster areas
• QWI Explorer
  – Dashboard-style analysis tool for QWI
• LED Extraction Tool
  – Provides precise extracts of data (QWI only for now)
### 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>
J2J Explorer

- 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 geographies: national and state-level tabulations
- Analyze/report by origin and destination firm characteristics: NAICS Sector, firm age, and firm size
- Analyze/report by worker demographics: age, earnings, race, ethnicity, educational attainment, and sex
- Data updated every quarter
Job-to-Job Flows (J2J) fills an important data gap:

• Job-to-Job Flows is a beta release of new national statistics on job mobility in the U.S.

• With this data, users can learn more about workers entering and exiting nonemployment as well as those moving from one job to another.

• It therefore fills an important gap that other available data sources do not currently cover.
Net migration of out-of-state workers into the North Dakota mining sector: 2010-2014

• J2J gives us a better understanding of reallocation of workers across different geographies.

Source: J2J origin-destination data. J2J data is not yet available for Massachusetts and Kansas, data for all other states is present. Net migration of out-of-state workers is hires into the North Dakota mining sector of workers who recently held a job in a different state, minus flows of North Dakota mining workers to jobs in that state.
Job-to-Job Flows from 50 States to Manufacturing in Kentucky
Guided Entry

1. Start Here

Frame your question by selecting from the three dropdowns below; then click one of the blue links on the right to go to your customized results.

- Hires to
- Kentucky
- Manufacturing

2. Then Choose an Analysis

Analysis of Job-to-Job Flows

- From (Origin Job)
  - Which States?
  - Which Industries?

- To (Destination Job)
  - Kentucky
  - Manufacturing

Analysis of Hires Over Time

- Are hires to jobs in Kentucky Manufacturing coming from nonemployment or another job?
Job-to-Job Flows from 20 Industries in 5 States to Manufacturing in Kentucky

- Indiana – Administrative and Support and Waste Management
- Michigan - Professional, Scientific, and Technical Services
- Ohio and Tennessee - Administrative and Support and Waste Management and Remediation Services
- Texas - Administrative and Support and Waste Management and Remediation Services, Whole Trade and Accommodations and Food Services
OnTheMap

Recognized by United Nations as a major U.S. statistical innovation

- 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
- 2002-2014 annual data (2015 coming soon!)
- 50 states available (plus DC)
- User-selected areas
- Based on Census Blocks
- Disclosure protection
- Flexible Inputs/Outputs
Opportunity Score
powered by Walk Score

Enter an address
to get a score

Opportunity Score
100

Job Seeker's Paradise
Many jobs can be reached by public transit and walking.

509,835 Jobs Paying At Least $40,000. Data From The Department Of Commerce

Job Type
Percentage of Jobs within 30 Minutes by Transit and Walking, Top Categories

- Public Administration 20%
- Professional, Scientific, and Technical Services 20%
- Other Services 10%
Area Profile of Scott County

onthemap.ces.census.gov
Custom Detailed Geography
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
Hurricane Sandy

Event Class: Wind History 34kn (Cumulative Swath)

Time: Tue, 30 Oct 2012 02:49:58 GMT

Analysis Area: Event Area

<table>
<thead>
<tr>
<th>Household Type</th>
<th>Estimate</th>
<th>Margin of Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>70,187,503</td>
<td>±16,174</td>
</tr>
<tr>
<td>In family households</td>
<td>58,314,589</td>
<td>±29,618</td>
</tr>
<tr>
<td>In nonfamily households</td>
<td>11,872,914</td>
<td>±25,989</td>
</tr>
</tbody>
</table>

All tabulations contain derived estimates and margins of error.

2 - The data in some cells in this tabulation are not published in order to protect confidentiality.

Map data ©2017 Google, INEGI. Terms of Use.

United States Census Bureau
U.S. Department of Commerce
Economic and Statistics Administration
U.S. CENSUS BUREAU
census.gov
Disaster Declaration: DR-4278
Sat, 27 Aug 2016 00:00:01 GMT

OnTheMap for Emergency Management
LEHD Home OnTheMap Help and Documentation

United States Census Bureau
Economics and Statistics Administration
U.S. CENSUS BUREAU
census.gov
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 very current (9-12 months old)
✓ National and 50 states available (plus DC)
Facing a labor shortage and an aging workforce, companies across the industry are trying out new methods for recruiting younger employees.

- **Graying Hard Hats: Builders Are Desperate to Hire Millennials**
- Facing a labor shortage and an aging workforce, companies across the industry are trying out new methods for recruiting younger employees. A Bloomberg Business article, displayed an analysis using QWI that showed the share of industry workers by age, based on moving average of seasonally-adjusted data.
Aging Workforce in Manufacturing

https://qwiexplorer.ces.census.gov
Takeaways

• The LED Partnership provides unique workforce information and analysis tools at a relatively low cost

• LED data products (QWI, LODES, J2J) can give insight into local and regional economies and labor markets

• LED’s web tools provide free, 24/7 access for users to analyze and visualize the data
Suggested Citations:

- OnTheMap Application

- LODES Data
Web Addresses for Public Data Tools

• QWI Explorer
  – qwiexplorer.ces.census.gov/

• J2J Explorer
  – j2jexplorer.ces.census.gov/

• OnTheMap
  – onthemap.ces.census.gov/

• OnTheMap for Emergency Management
  – onthemap.ces.census.gov/em.html

• LED Extraction Tool
  – ledextract.ces.census.gov/
Useful Links

• QWI Explorer
  – Video Walkthrough
  – Example Scenarios

• J2J Explorer
  – Analysis Guides
  – FAQs

• OnTheMap
  – Getting Started
  – Analysis Guides
  – Other Tutorials
Contacts

• LEHD
  – lehd.ces.census.gov (Website)
  – CES.Local.Employment.Dynamics@Census.gov
  – CES.OnTheMap.Feedback@census.gov
  – CES.QWI.Feedback@census.gov
  – CES.J2J.Feedback@census.gov

• Data/Applications
  – lehd.ces.census.gov/data
  – lehd.ces.census.gov/applications