# Local Employment Dynamics with Job-to-Job Flows Explorer

## and Job-Related Census Data Tools

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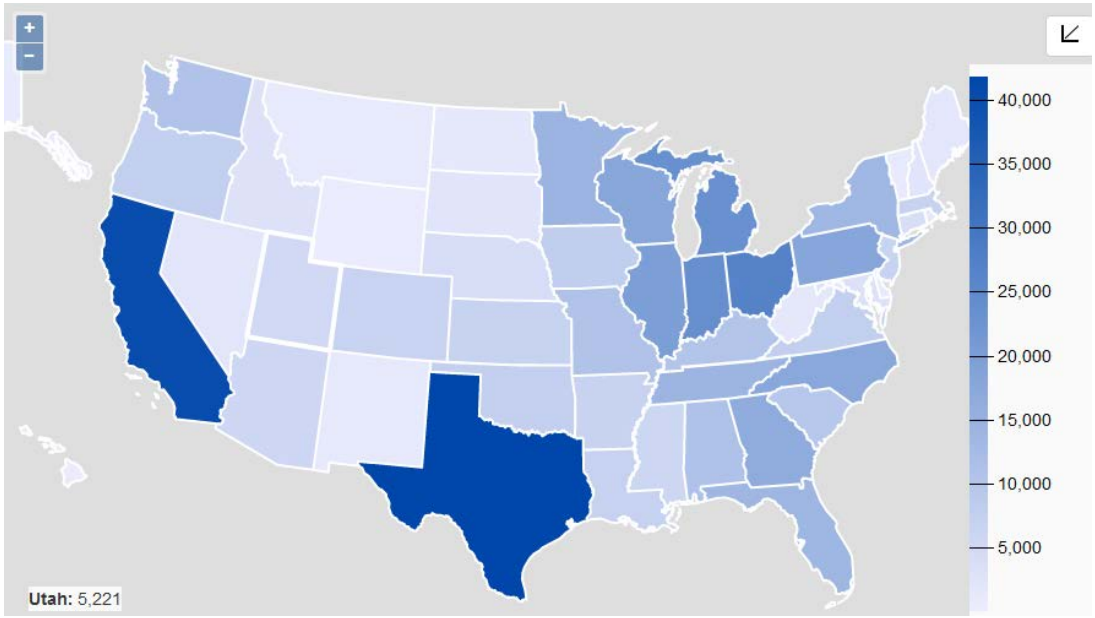
United States Census Bureau

U.S. Department of Commerce
Economics and Statistics Administration
U.S. CENSUS BUREAU

# Outline

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

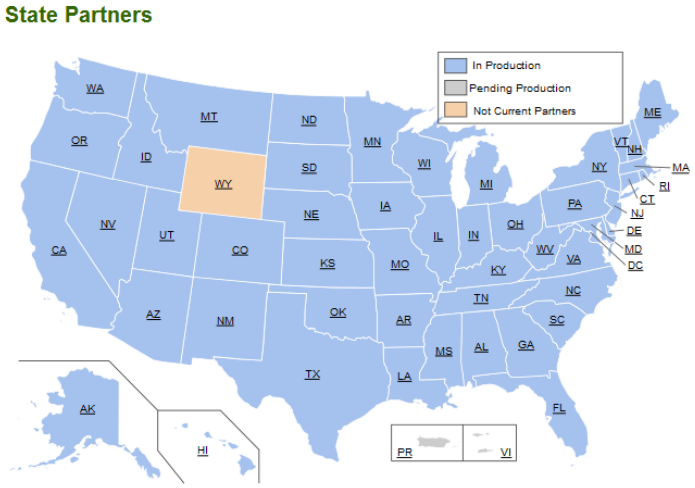


# What are LEHD and LED?

- 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

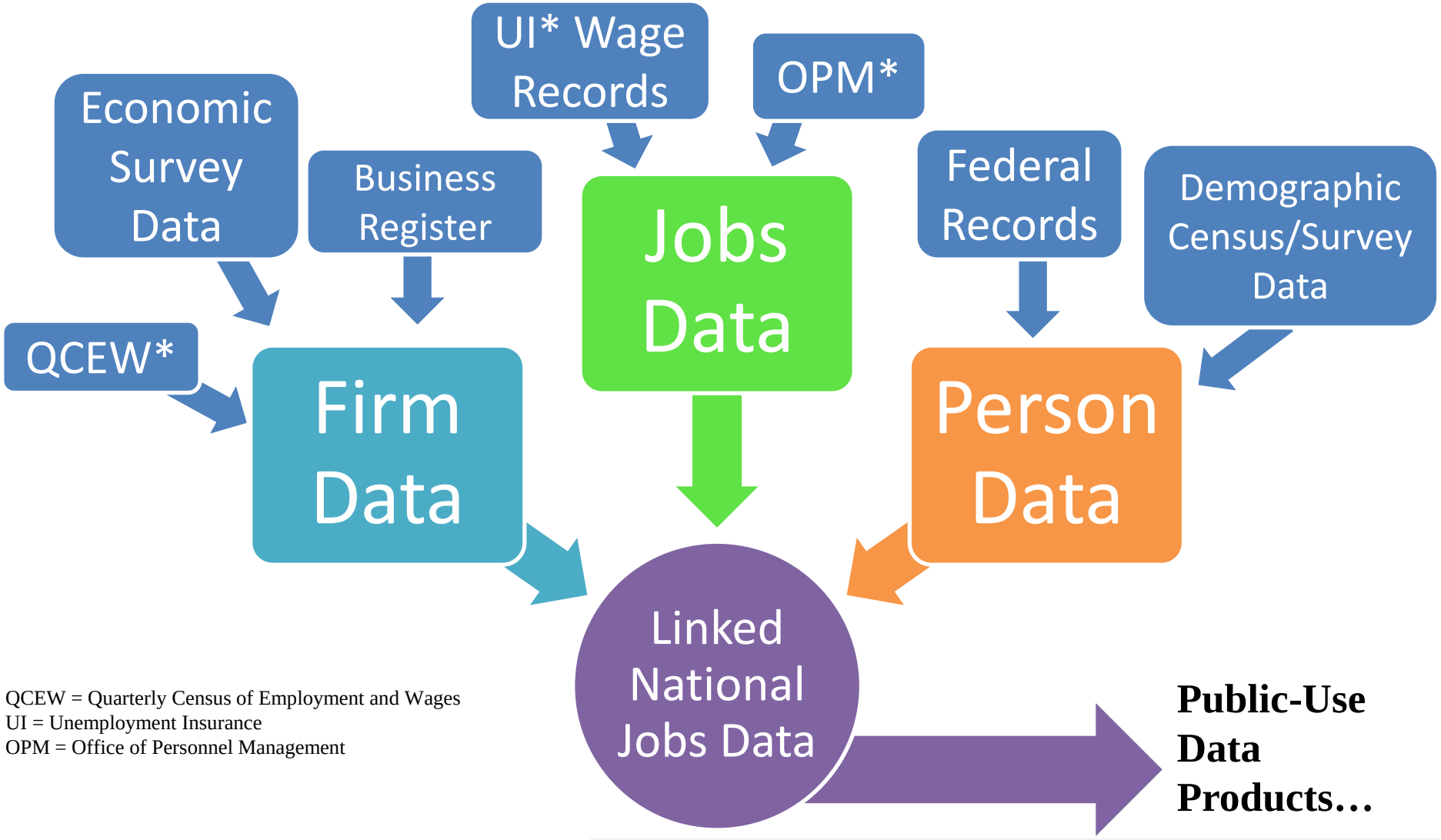
# Where Does the Data Come From?

- Local Employment Dynamics (LED) Partnership
  - Begun in late 1990s with a few states
  - Not currently producing data for Alaska, Puerto Rico, and Virgin Islands




| | | | |
|---|---|---|---|
| Alabama | Illinois | Montana | Rhode Island |
| Alaska | Indiana | Nebraska | South Carolina |
| Arizona | Iowa | Nevada | South Dakota |
| Arkansas | Kansas | New Hampshire | Tennessee |
| California | Kentucky | New Jersey | Texas |
| Colorado | Louisiana | New Mexico | Utah |
| Connecticut | Maine | New York | Vermont |
| District of Columbia | Maryland | North Carolina | Virginia |
| Delaware | Massachusetts | North Dakota | Washington |
| Florida | Michigan | Ohio | West Virginia |
| Georgia | Minnesota | Oklahoma | Wisconsin |
| Hawaii | Mississippi | Oregon | Wyoming |
| Idaho | Missouri | Pennsylvania | Puerto Rico |
| | | | Virgin Islands |

# Admin. Records & LED Infrastructure




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

- **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 Emp. 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

# Choosing Among LED Data Products

| What do you want? | Potential Drawbacks | Data Product |
|---|---|---|
| Employment, hires, separations, turnover, or earnings by detailed firm and person characteristics; quarterly time resolution; relatively short data lag | No geography below county; no residential information | QWI |
| Employment for detailed or customized geography; residential patterns of the workforce; relationship between worker employment and home locations | Annual time resolution; less detailed firm/person characteristics | LODES |
| Transitions between jobs by timing and firm or worker characteristics; transitions to/from nonemployment | No worker characteristics by firm characteristics (except geography), no geography below MSA | J2J |

# Dissemination Tools/Applications

- J2J 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)

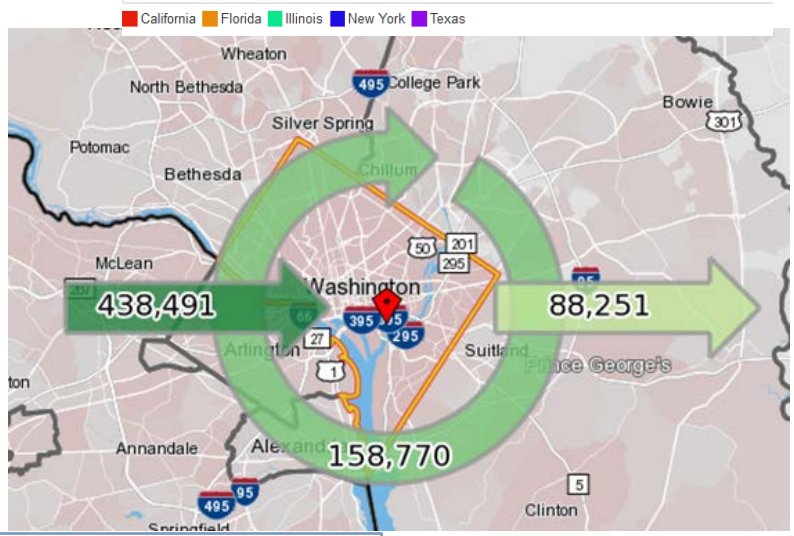
# Choosing Among LED Data Access Points

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

# Data Tools

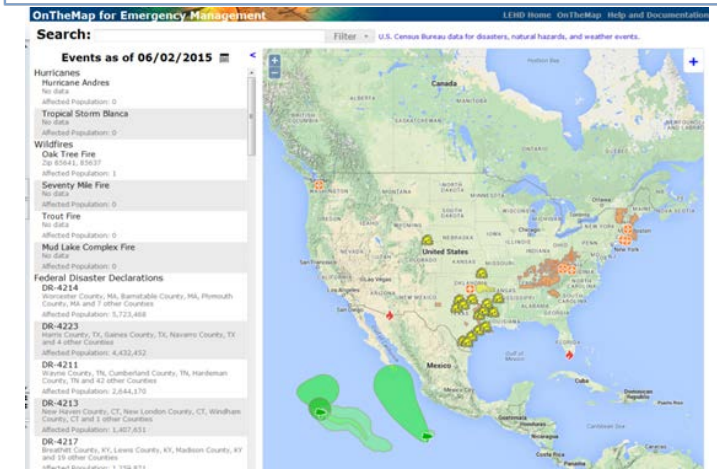
J2J Explorer

QWI Explorer



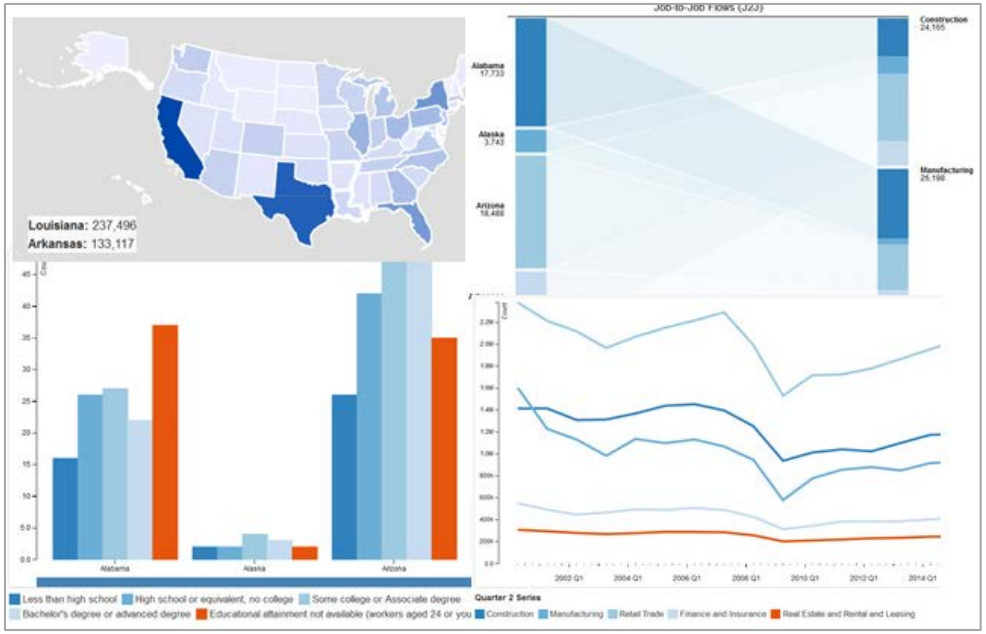

OnTheMap

OnTheMap for Emergency Management



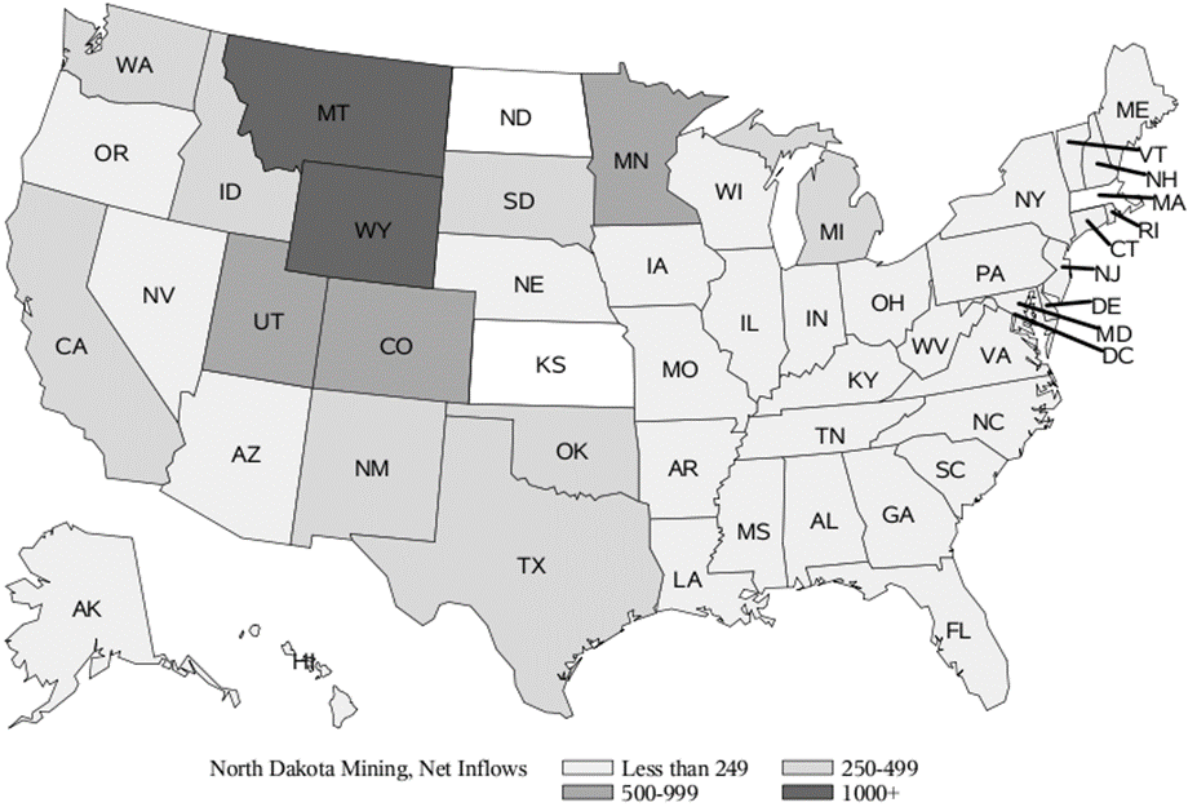
# J2J Explorer

- ✓ 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

# Net migration of out-of-state workers into the North Dakota mining sector: 2010-2014

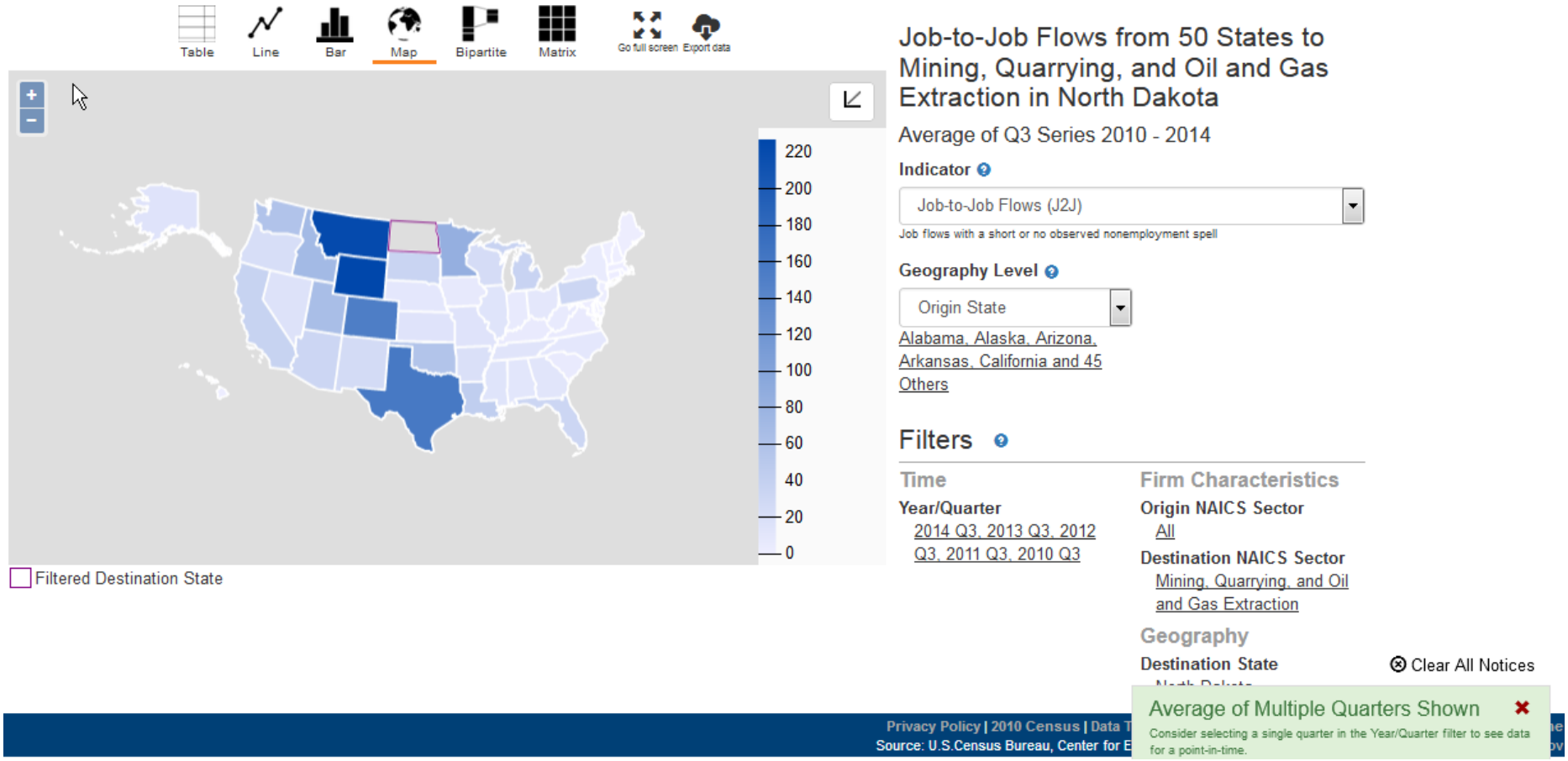



Source: U.S. Bureau of Census, Job-to-Job Flows

- 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.

# J2J Explorer

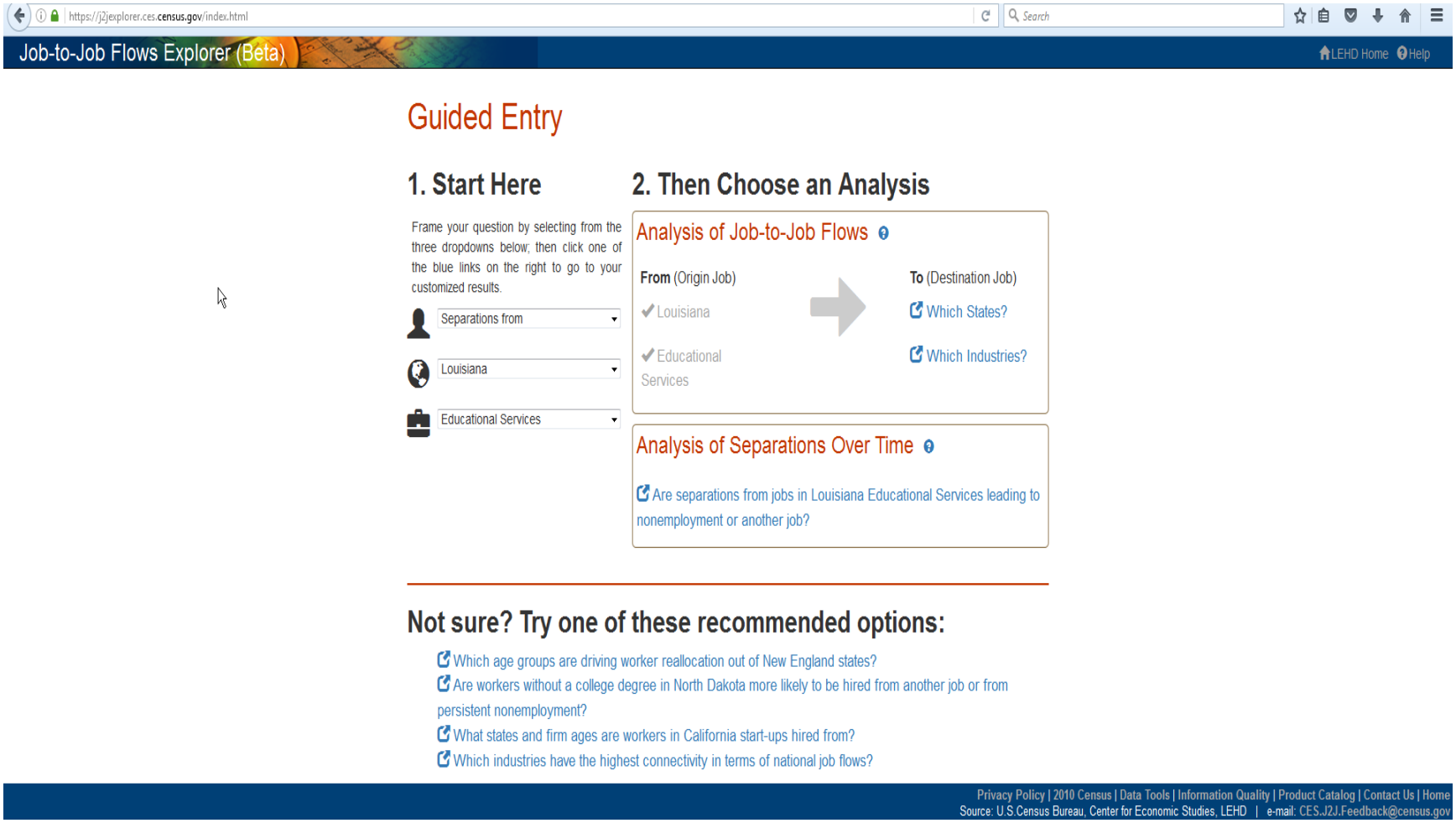


# Where are Louisiana's teachers going?

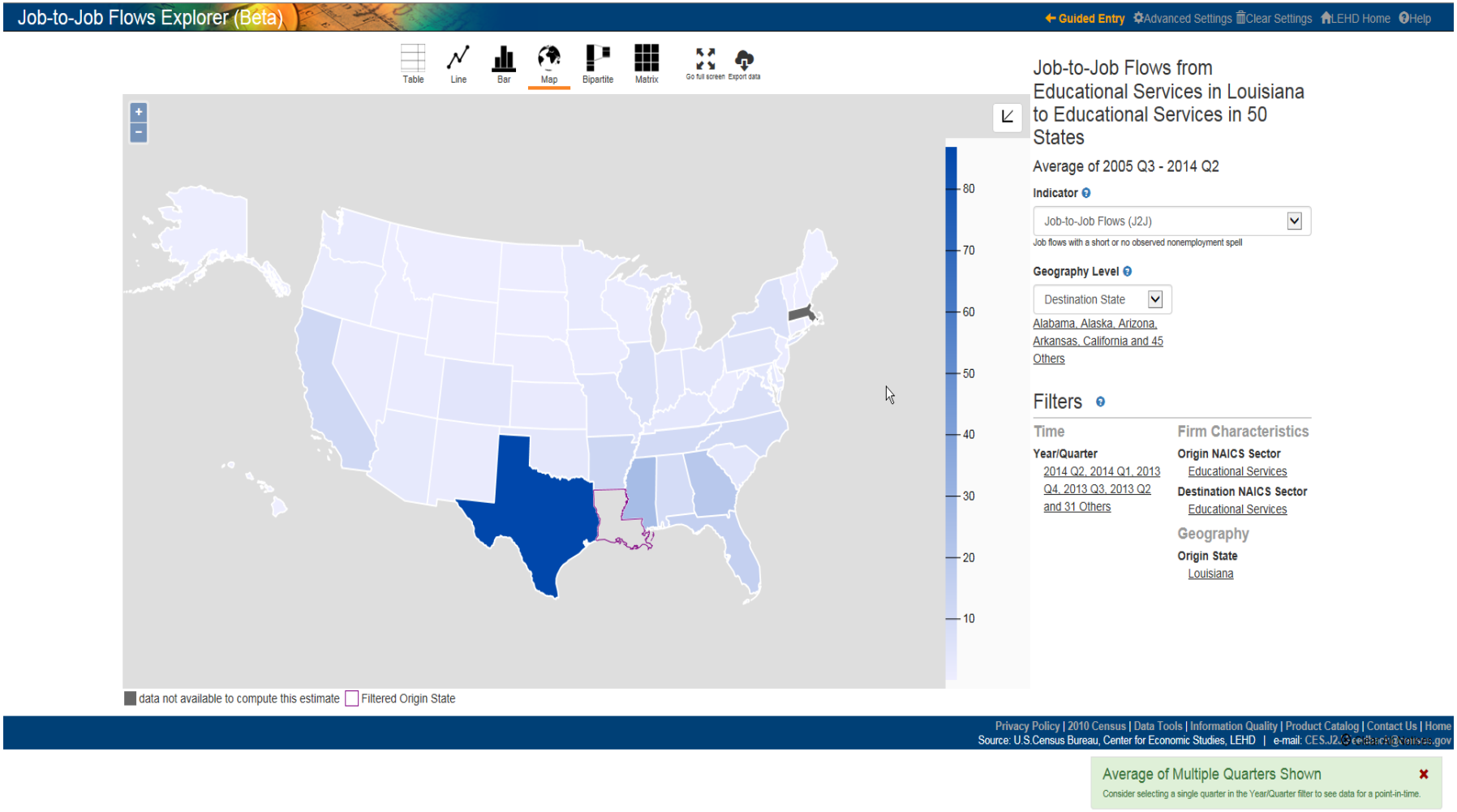
- After Hurricane Katrina, there were concerns that evacuees who were teachers weren't coming back to Louisiana
  - That they found jobs and stayed put

- In this example, we look at the J2J data to answer the question
  - How many teachers are leaving Louisiana for other jobs, both in education or in another industry?

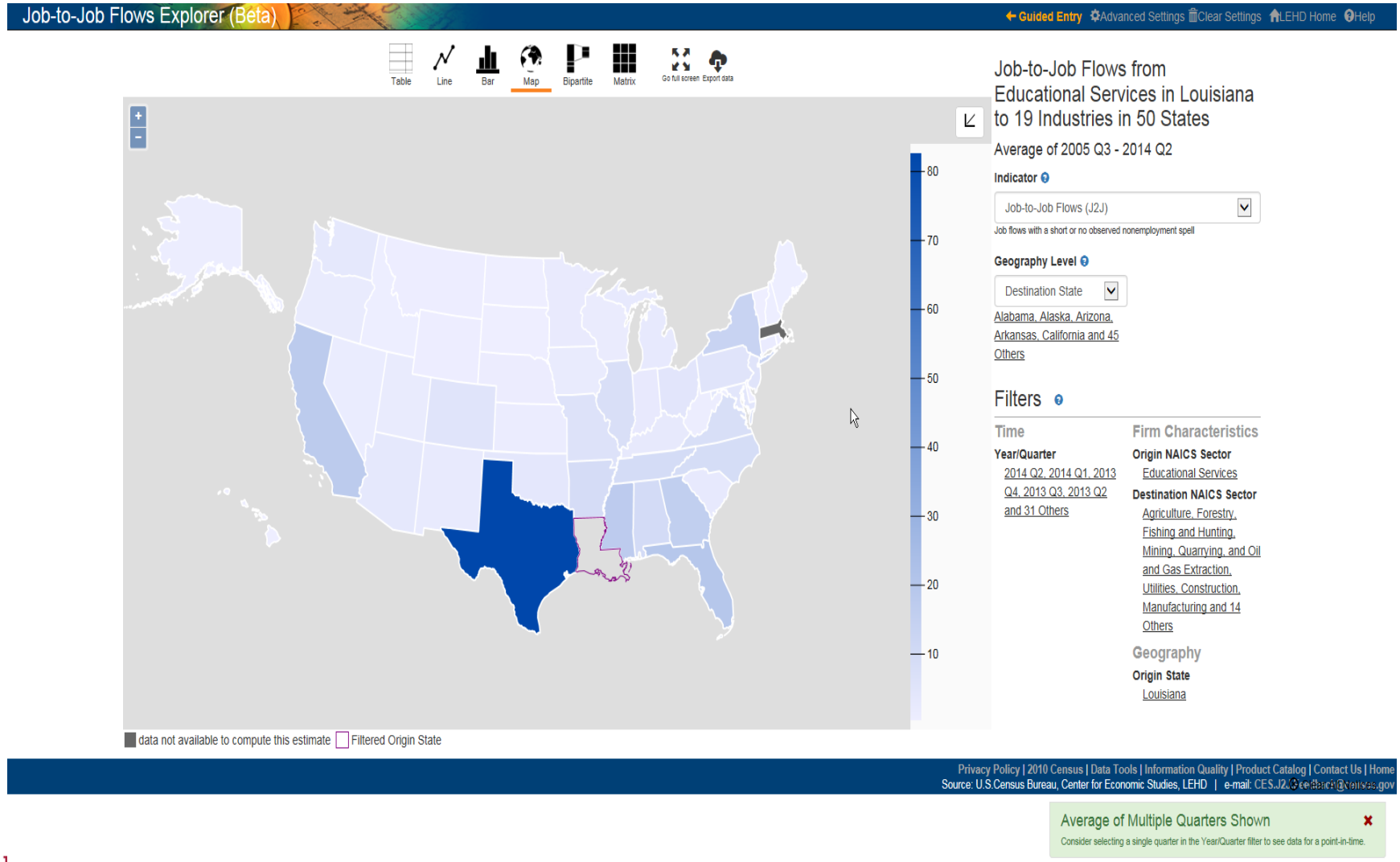
# Starting with the Guided Entry



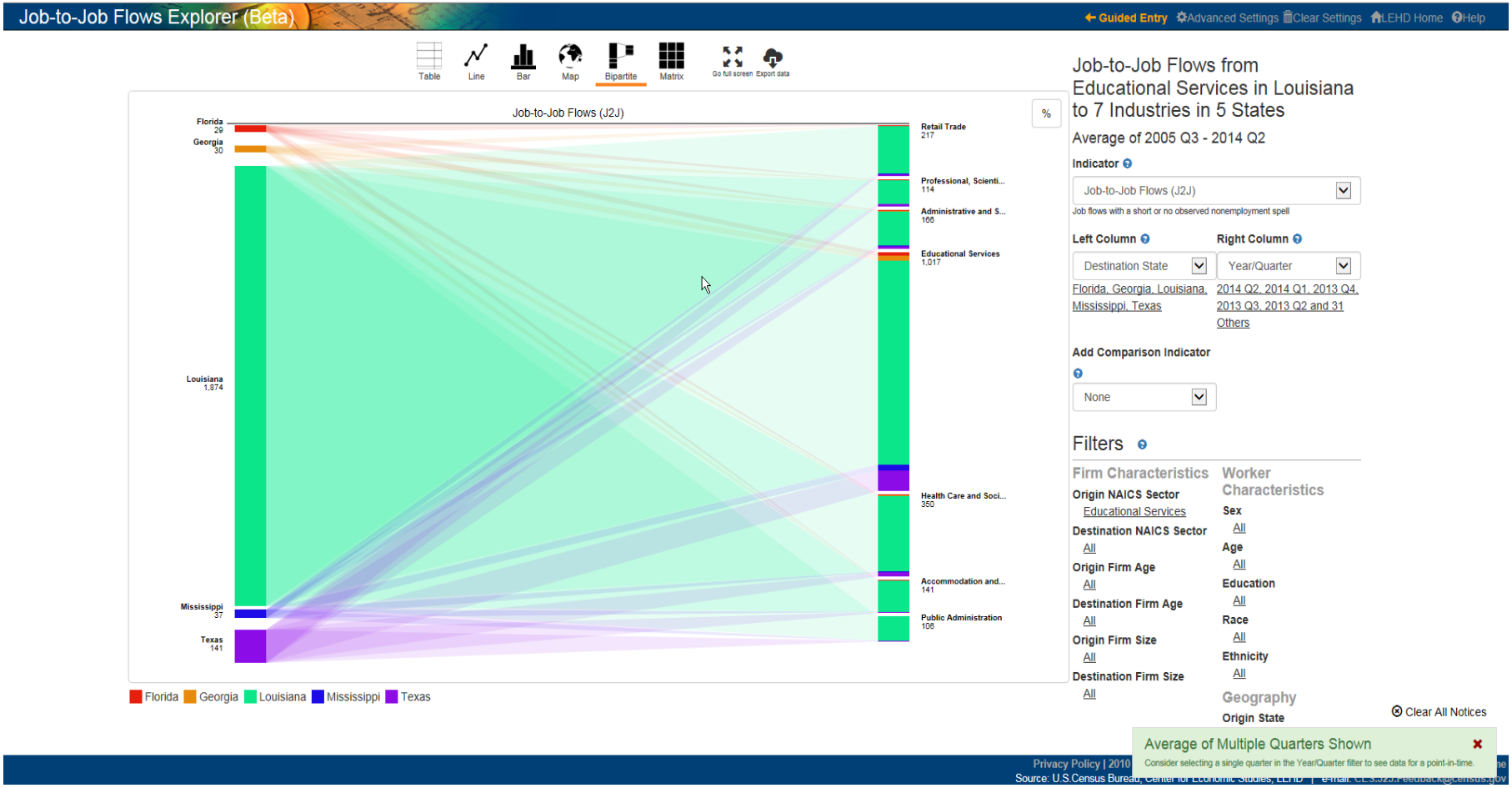
# Louisiana education workers leaving to take education jobs out-of-state: 2005.3-2014.2



# Louisiana education workers leaving to take *non-education* jobs out-of-state: 2005.3-2014.2



# Job-to-Job Flows from Educational Services in Louisiana to 7 industries in 5 states



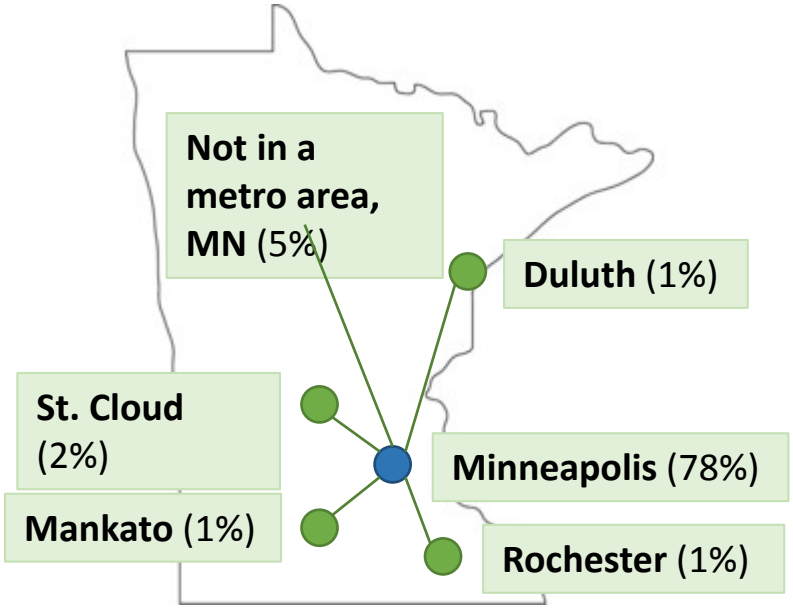
# Go Live!

- https://lehd.ces.census.gov/
- https://j2jexplorer.ces.census.gov/

## What's new in the newly released J2J:

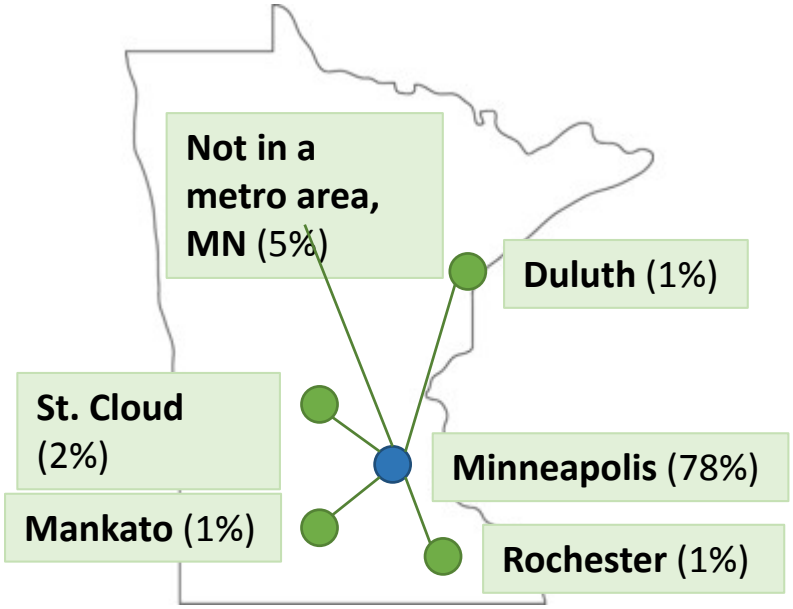
- New metro-area tabulations
  - Count and origin-destination data
- New earnings variables
  - Earnings by origin and destination job in OD data
  - Earnings for hires and separations as well as job stayers in count data
- More detailed cross-tabulations
  - Industry by demographics

# Workers leaving jobs in Minneapolis went to jobs in…



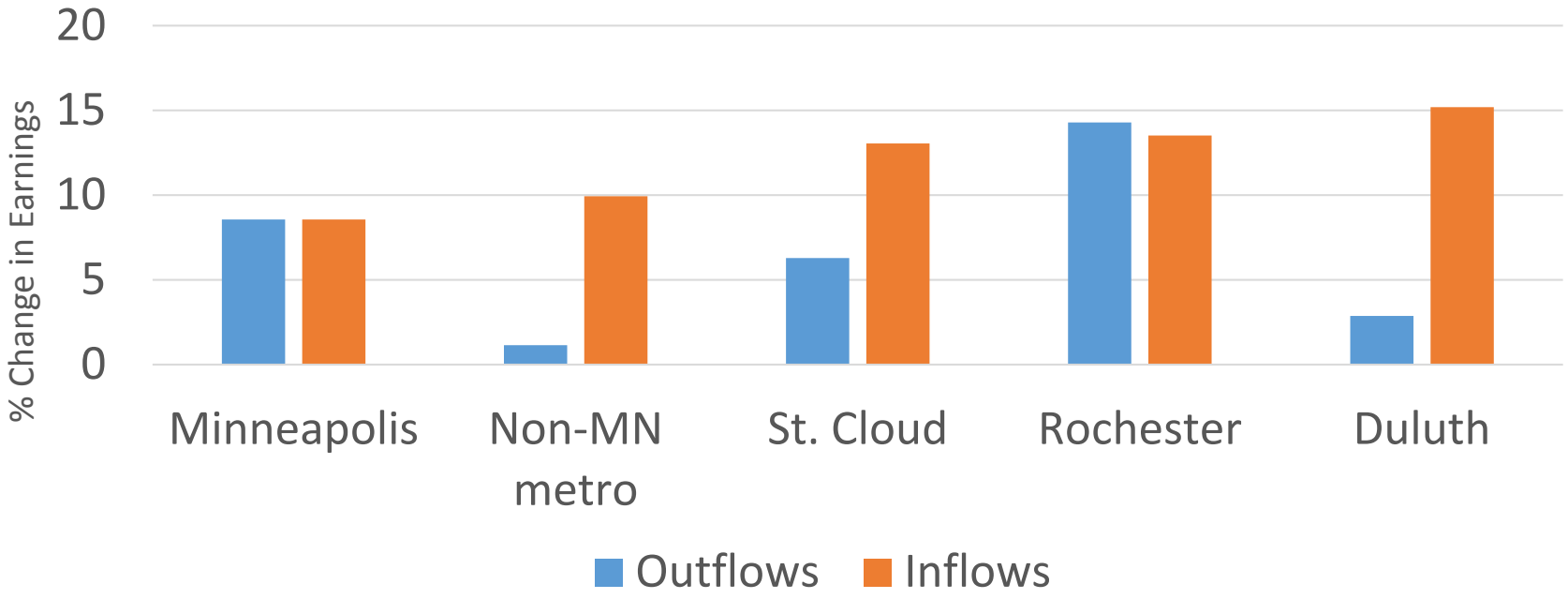

**Other top destinations**
Not in a metro area, WI (1%)
Chicago (1%)
Fargo (<1%)
Los Angeles (<1%)
Milwaukee (<1%)

# Workers starting jobs in Minneapolis came from jobs in…



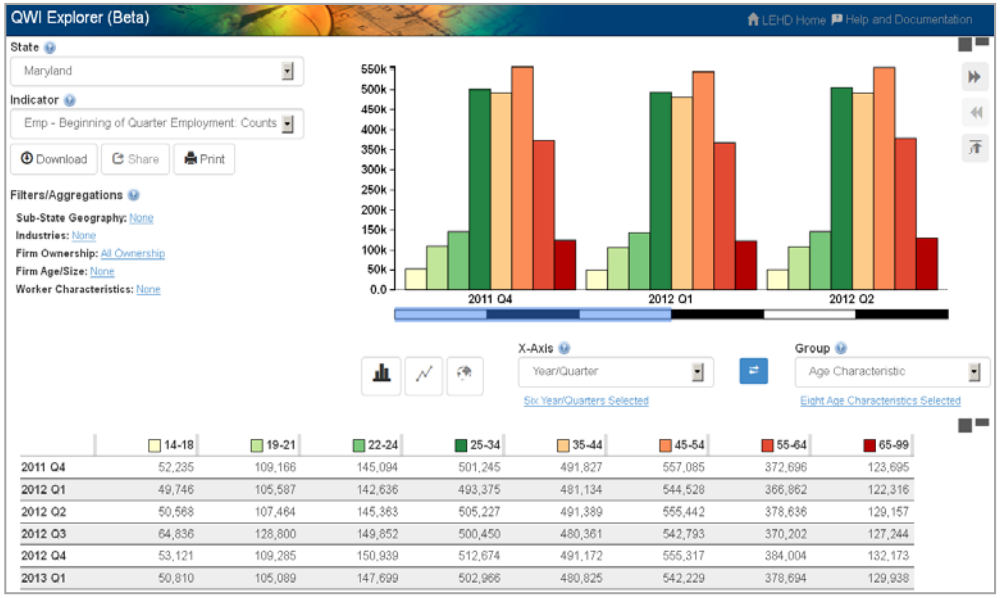

**Other top origin**
Not in a metro area, WI (1%)
Chicago (1%)
Fargo (1%)
Milwaukee (<1%)
Eau Claire (<1%)

# Earnings increased more for job changers whose new jobs were in Minneapolis



# 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




| | 14-18 | 19-21 | 22-24 | 25-34 | 35-44 | 45-54 | 55-64 | 65-99 |
|---|---|---|---|---|---|---|---|---|
| 2011 Q4 | 52,235 | 109,166 | 145,094 | 501,245 | 491,827 | 557,085 | 372,696 | 123,695 |
| 2012 Q1 | 49,746 | 105,587 | 142,636 | 493,375 | 481,134 | 544,528 | 366,862 | 122,316 |
| 2012 Q2 | 50,568 | 107,464 | 145,363 | 505,227 | 491,389 | 555,442 | 378,636 | 129,157 |
| 2012 Q3 | 64,836 | 128,800 | 149,852 | 500,450 | 480,361 | 542,793 | 370,202 | 127,244 |
| 2012 Q4 | 53,121 | 109,285 | 150,939 | 512,674 | 491,172 | 555,317 | 384,004 | 132,173 |
| 2013 Q1 | 50,810 | 105,089 | 147,699 | 502,966 | 480,825 | 542,229 | 378,694 | 129,938 |

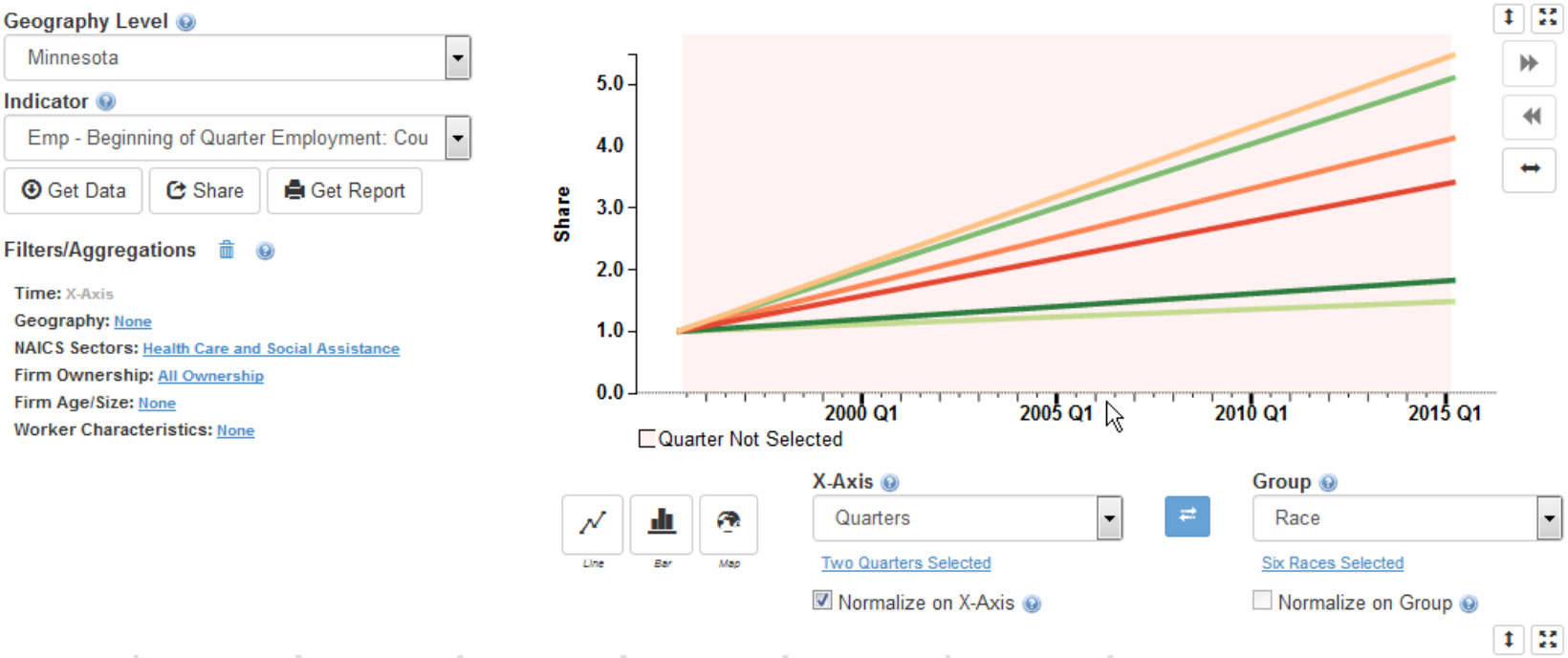
- ✓ Analyze/report by firm characteristics: NAICS classification (sector, 3, 4), firm age, and firm size
- ✓ Quarterly data very current (9-12 months old)
- ✓ National and 50 states available (plus DC)

# Diversity in Greater Minnesota

| Table 3: Health Care and Social Assistance Jobs by Race or Origin, 1995-2014 | | | | | | |
|---|---|---|---|---|---|---|
| | Twin Cities | | | Greater Minnesota | | |
| | Jobs, 1995 | Jobs, 2014 | Change from 1995-2014 | Jobs, 1995 | Jobs, 2014 | Change from1995-2014 |
| All Races | 139,870 | 242,620 | 73.5% | 131,509 | 212,581 | 61.6% |
| White Alone | 125,153 | 183,386 | 46.5% | 128,388 | 199,429 | 55.3% |
| Black or African American | 9,244 | 37,164 | 302.0% | 528 | 4,933 | 834.3% |
| American Indian or Alaska Native | 1,033 | 1,732 | 67.7% | 823 | 2,264 | 175.1% |
| Asian or Other Pacific. Islander | 3,250 | 16,081 | 394.8% | 1,100 | 3,887 | 253.4% |
| Two or More Races | 1,189 | 4,256 | 257.9% | 668 | 2,068 | 209.6% |
| Hispanic or Latino | 2,482 | 8,753 | 252.7% | 1,281 | 5,080 | 296.6% |

*Source: U.S. Census Bureau, LEHD, Quarterly Workforce Indicators*

# QWI Explorer

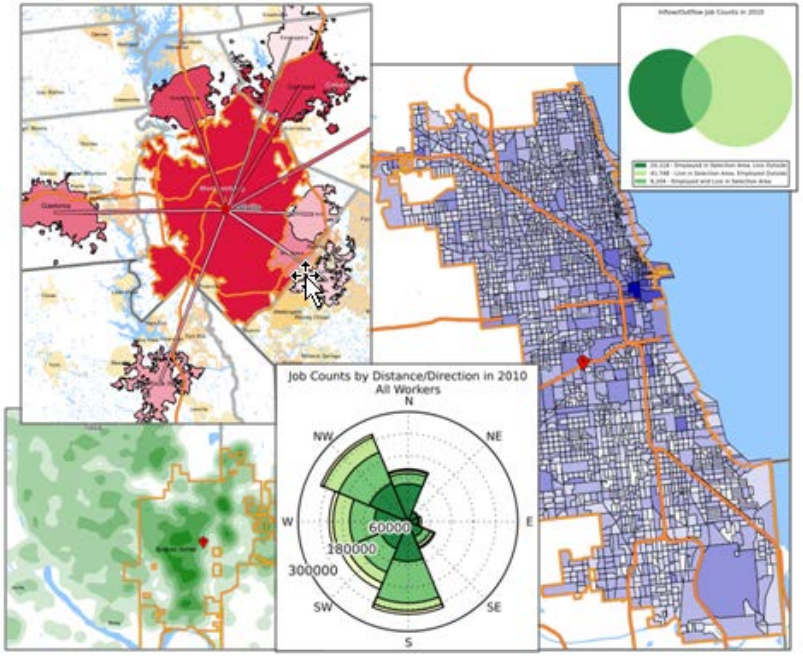



| | White Alone | Black or African American Alone | American Indian or Alaska Native Alone | Asian Alone | Native Hawaiian or Other Pacific Islander Alone | Two or More Race Groups |
|---|---|---|---|---|---|---|
| 1995 Q2 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 2015 Q2 | 1.488 | 5.116 | 1.831 | 5.486 | 4.137 | 3.421 |

# OnTheMap

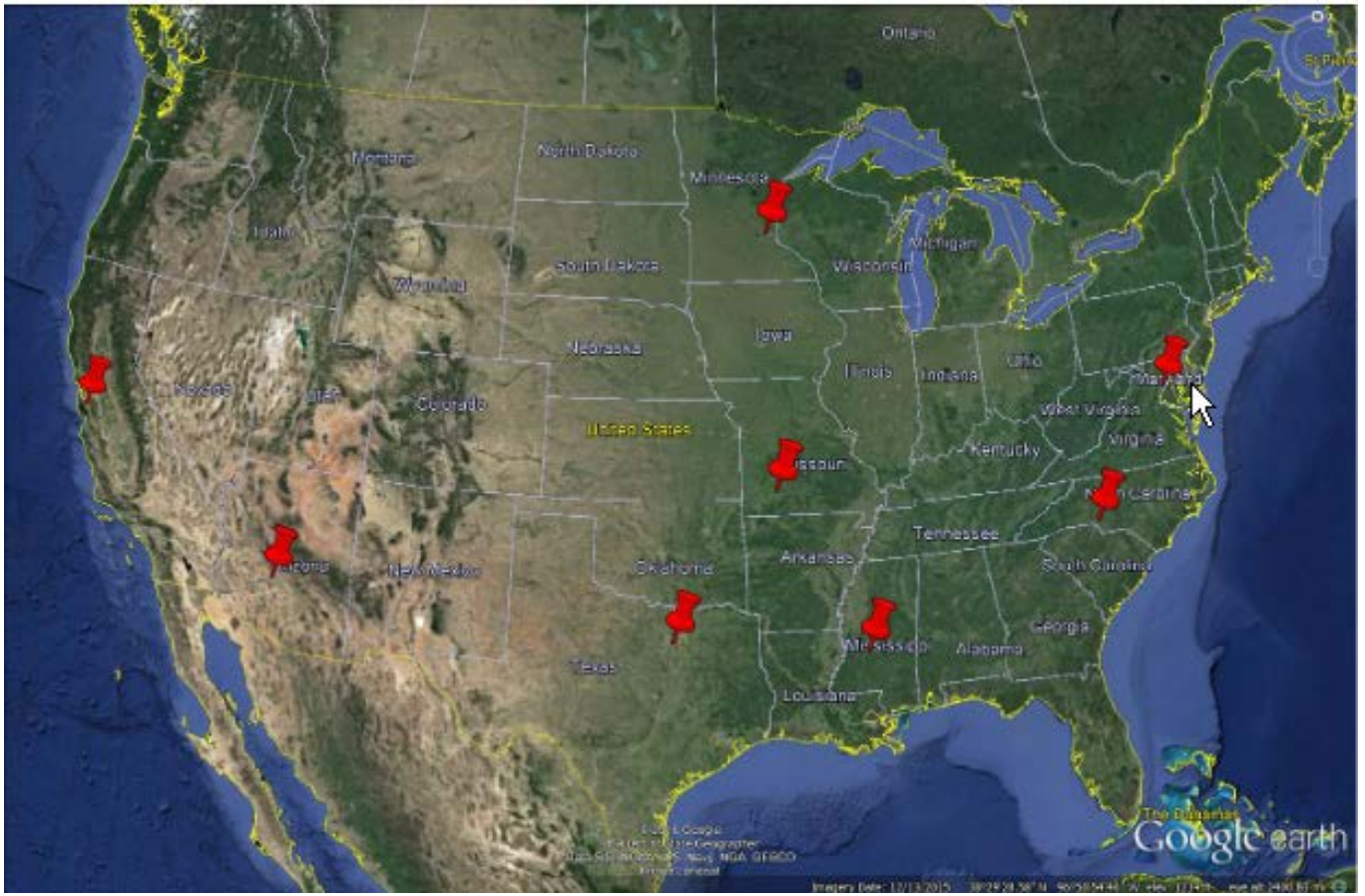
Recognized by United Nations as a major U.S. statistical innovation

- ✓ 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

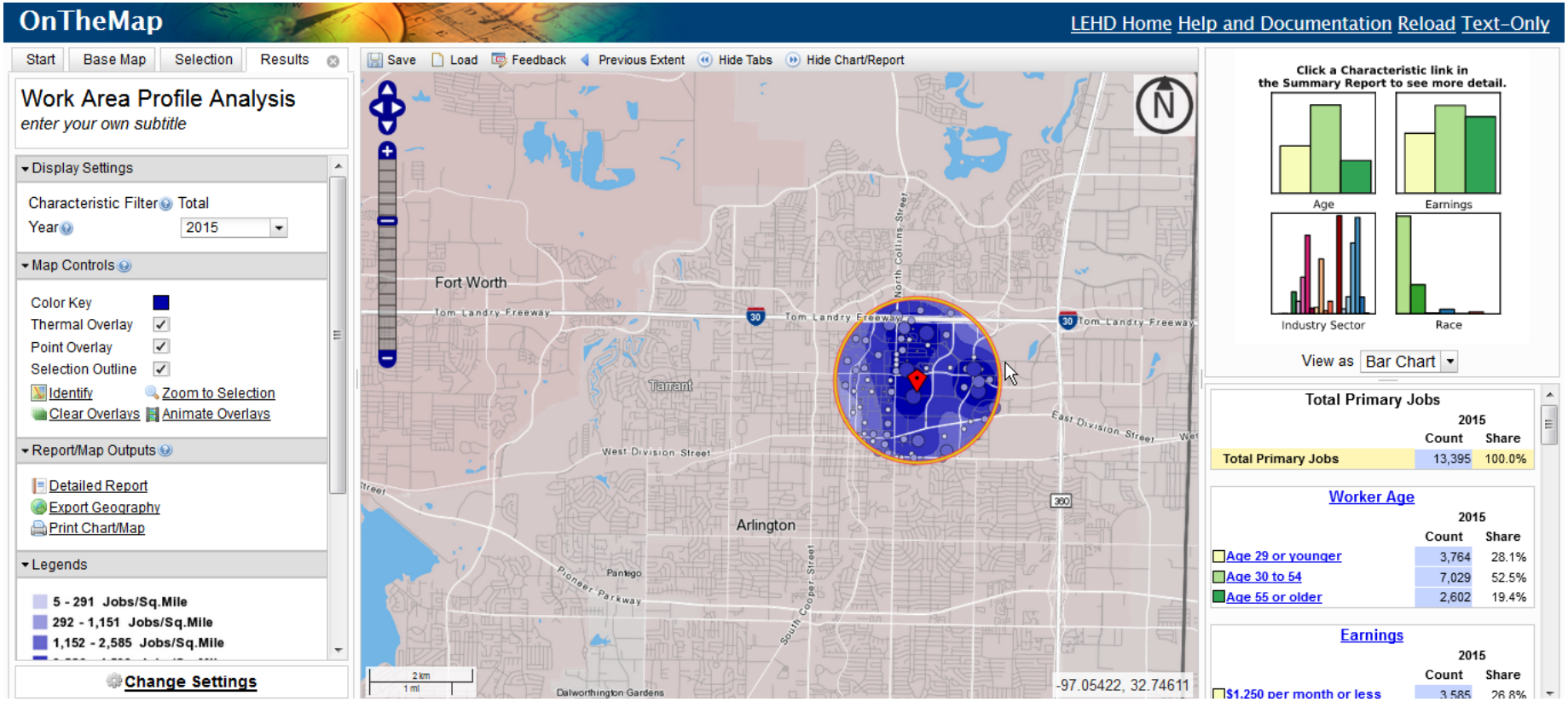



- ✓ 2002-2014 annual data (2015 coming soon!)
- ✓ 50 states available (plus DC)
- ✓ User-selected areas
- ✓ Based on Census Blocks
- ✓ Disclosure protection
- ✓ Flexible Inputs/Outputs

# If You Build It Will They Come? Examining Urban Economic Growth and Development from Sports Stadiums and Arenas



# Arlington, TX



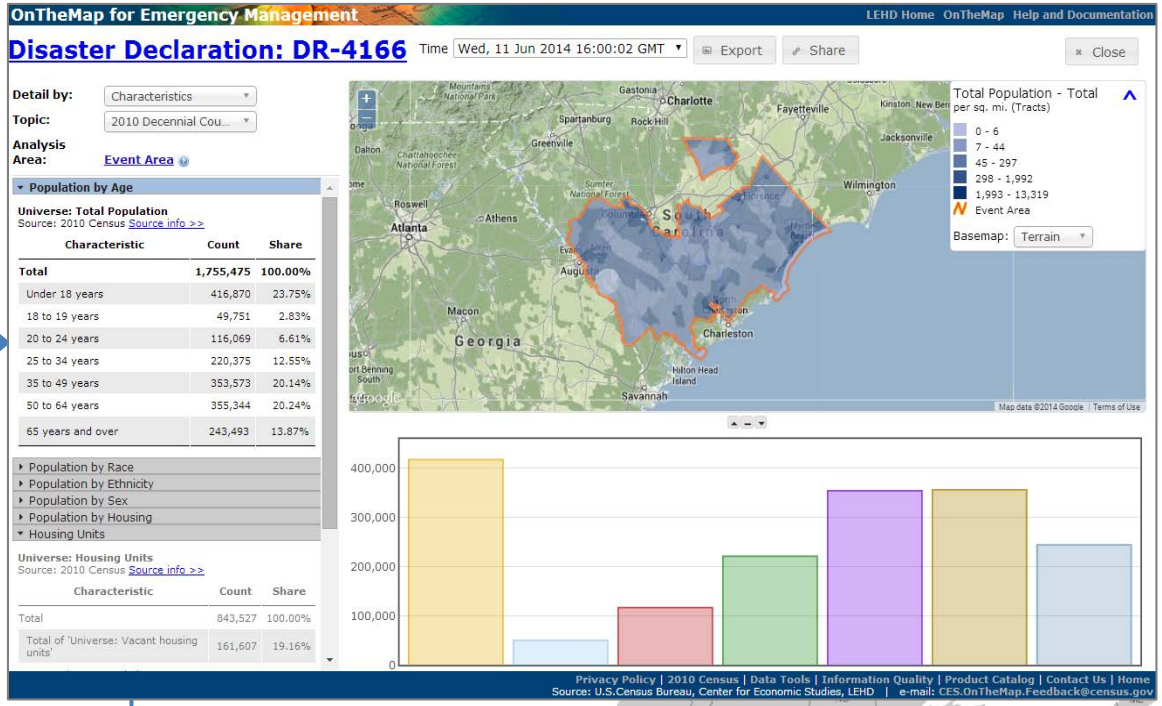
# OnTheMap for Emergency Management

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

# Mapping the Impact of Wildfires and Other Natural Disasters

In Figure 1 below, ACS population data is being mapped for areas potentially impacted by the Atlas fire that recently roared through parts of northern California (boundary as of October 11, 2017).

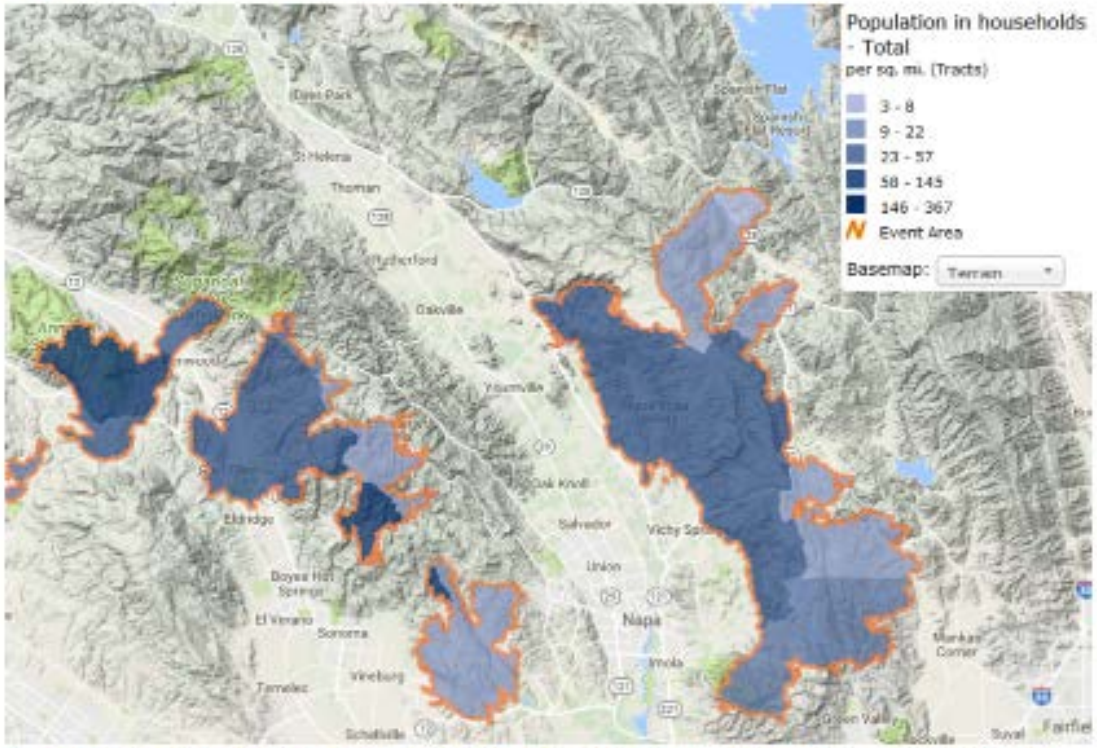



**Figure 1: Population Characteristics for October 11, 2017 Atlas Fire Perimeter (Source: U.S. Census Bureau, 2011-2015 American Community Survey 5-Year Estimates, accessed via OnTheMap for Emergency Management)**

# EM-3396

## Emergency Declaration: EM-3396

Fri, 08 Dec 2017 20:00:08 GMT

Export | Share | Close

**Detail by:** Characteristics

**Topic:** 2011-2015 ACS Char...

**Analysis Area:** Event Area

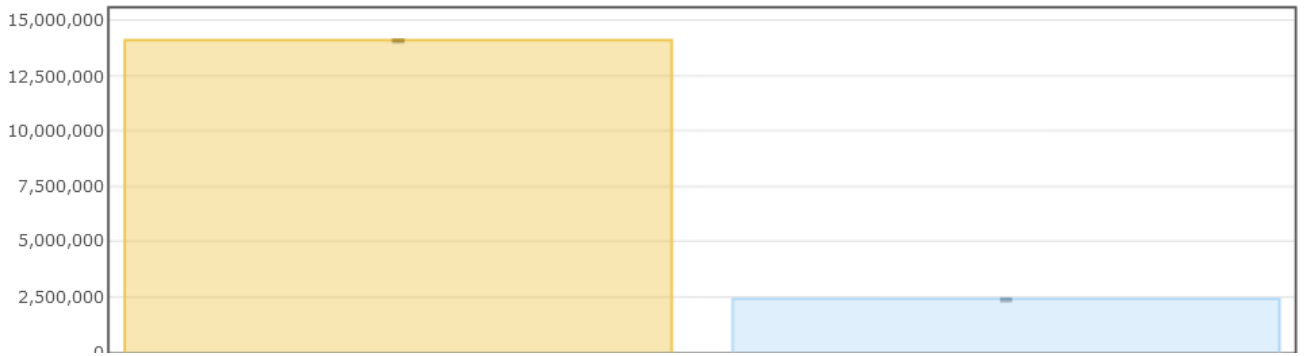
### Household Type

**Universe: Population in households**
Source: American Community Survey, 2011-2015. Source info >>

| Characteristic | Estimate | Margin of Error |
|---|---|---|
| **Total** | **16,507,443** | **±4,651** |
| In family households | 14,098,221 | ±13,378 |
| In nonfamily households | 2,409,222 | ±12,531 |

- Race
- Hispanic or Latino Origin
- Ability to Speak English by Age
- Ability to Speak English by Language Spoken at Home
- Disability Status by Poverty Status
- Disability Status by Age
- Ratio of Income to Poverty Level in the Past 12 Months

*All tabulations contain derived estimates and margins of error.*



# 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

# Works Cited

- Suggested Citations:
  - OnTheMap Application
    - U.S. Census Bureau. 2016. OnTheMap Application. Longitudinal-Employer Household Dynamics Program. http://onthemap.ces.census.gov/
  - LODES Data
    - U.S. Census Bureau. 2016. LODES Data. Longitudinal-Employer Household Dynamics Program. http://lehd.ces.census.gov/data/lodes/

# 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
  - 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