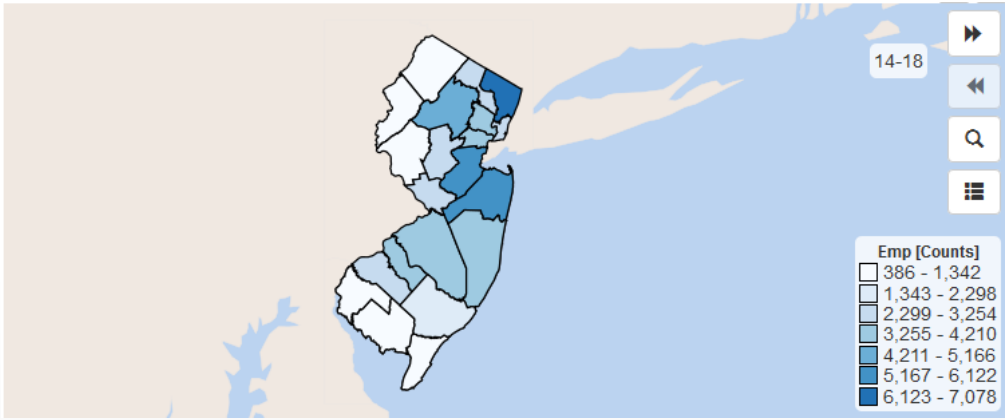
Local Employment Dynamics:

Measuring Job-to-Job Flows

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

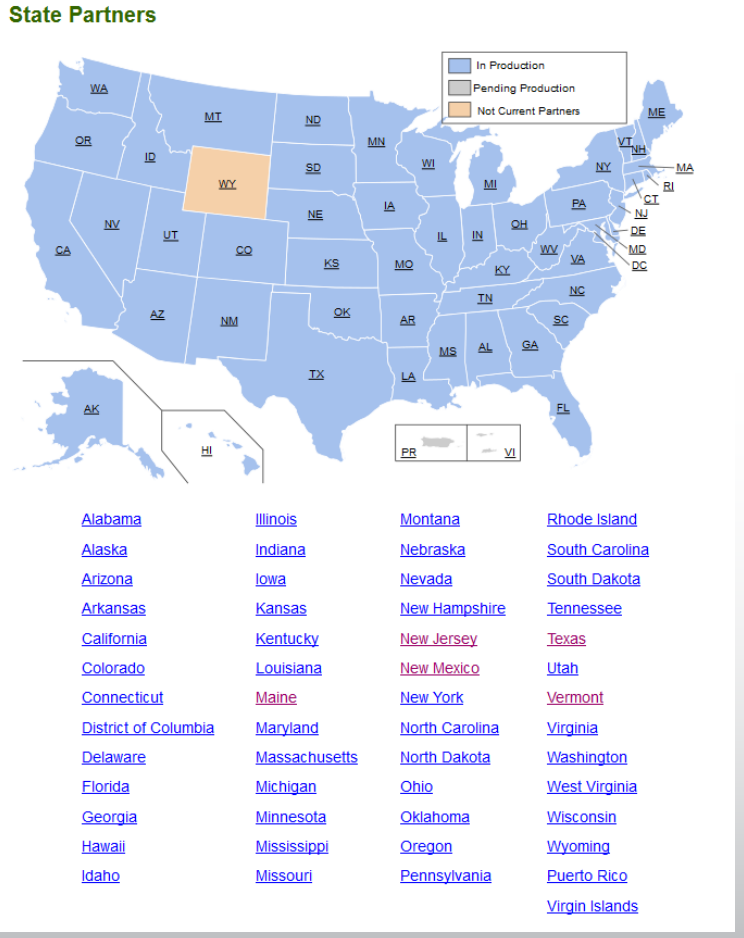
Outline

- What is the difference between LED and LEHD?
- LED Public-use Data and Web Tools
- Introduction to Job-to-Job Flows
- Live Demonstration



Where Does the Data Come From?

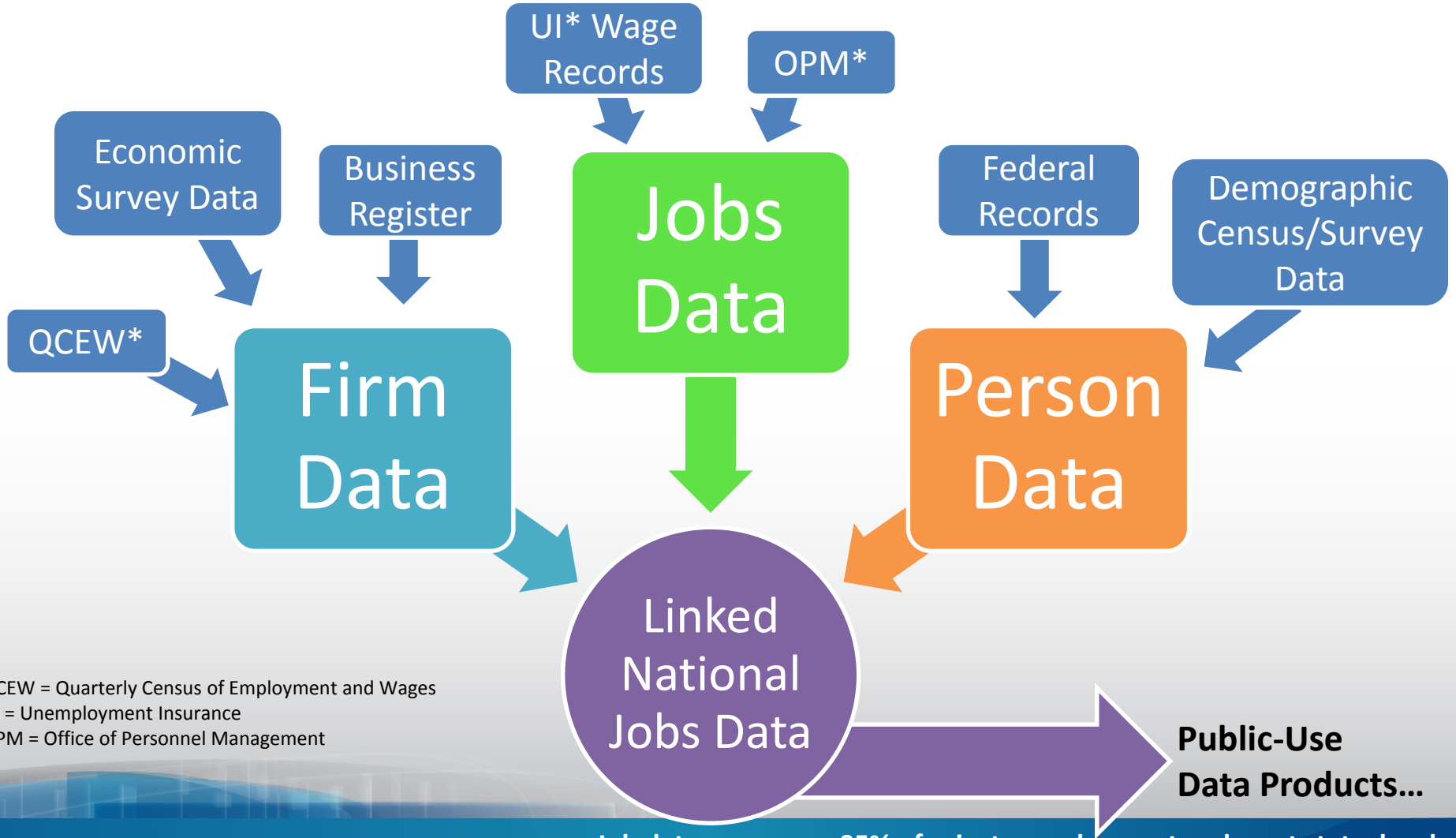
- LED or Local Employment Dynamics Partnership
  - Begun in late 1990s with a few states
  - Currently producing data for Massachusetts with data as far back as 2010
  - Pending territories include Puerto Rico and Virgin Islands



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

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: 1990-2014, start year varies by state, rolling end date**

LEHD: Longitudinal Employer-Household Dynamics Program

- Public data products
- Quarterly Workforce Indicators (QWI) - QWI Explorer, LED Extraction Tool, and National QWI (Coming in September)
- LEHD Origin Destination Employee Statistics (LODES) – OnTheMap and OnTheMap for Emergency Management
- Job-to-Job Flows

LED Data Products

- **Quarterly Workforce Indicators (QWI)**
  - Employment, Job Creation, Job Destruction, Hires, Separations, Turnover, Earnings
  - By industry, county, and worker characteristics
- **LEHD Origin Destination Employment Statistics (LODES)**
  - Employment and Workplace-Residence Connections
  - Detailed geography + firm/worker characteristics
- **Job-to-Job Flows (J2J)**
  - Data on job transitions broken down by origin/destination industry and geography and worker characteristics
    - Flows between Jobs
    - Flows to/from Nonemployment
  - Beta data being released over coming months

Choosing Among LED Data Products

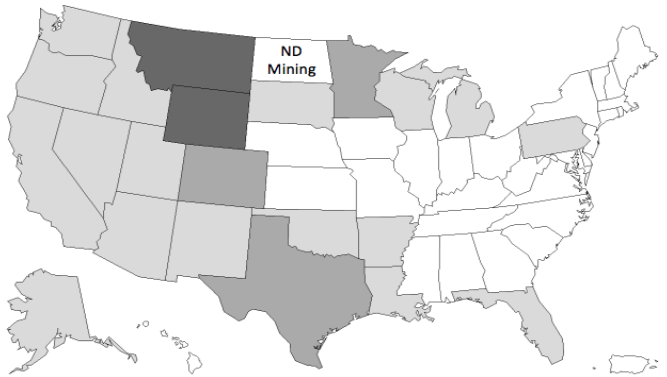
Data Product	Why Choose It?	Potential Drawbacks
QWI	You need employment, hires, separations, turnover, or earnings by detailed industry or person characteristics, quarterly time resolution, or a relatively short data lag	No geography below county; no residential information
LODES	You need employment for detailed or customized geography, residential patterns of the workforce, or relationship between worker employment and home locations	Annual time resolution; less detailed firm/person characteristics; significant data lag (temporary)
J2J	You need to understand transitions of workers among jobs	No worker characteristics by industry, no geography below Metro/Micro Areas*

*Data product is still under development.

Job-to-Job Flows

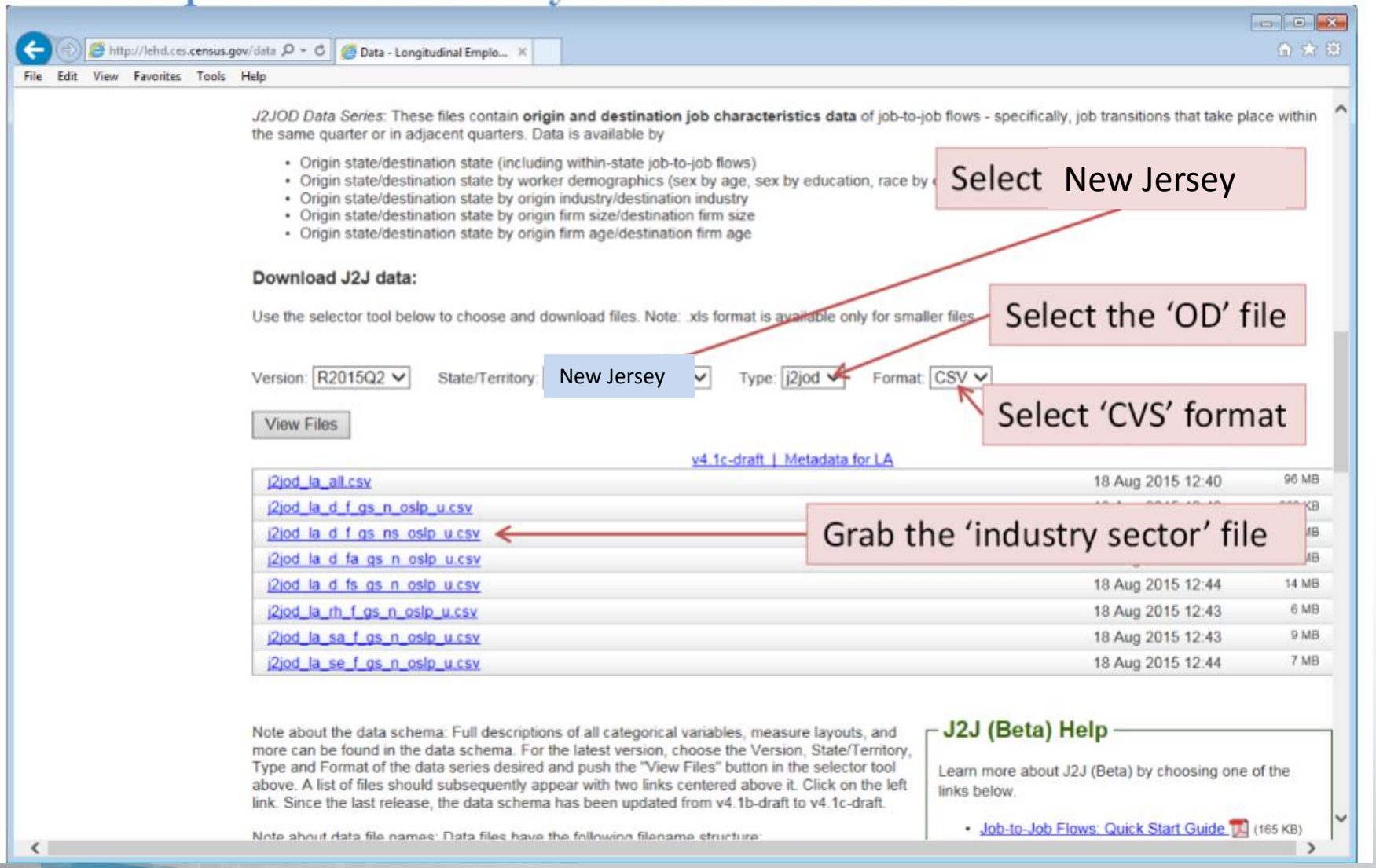
- Types of questions that can be answered with this soon-to-be released application:
  - Where are North Dakota's oil boom workers coming from?
- Download data from http://lehd.ces.census.gov/data/j2j_beta.html

Where are the out-of-state workers coming from?
Net economic migration into ND mining sector: 2008-2012

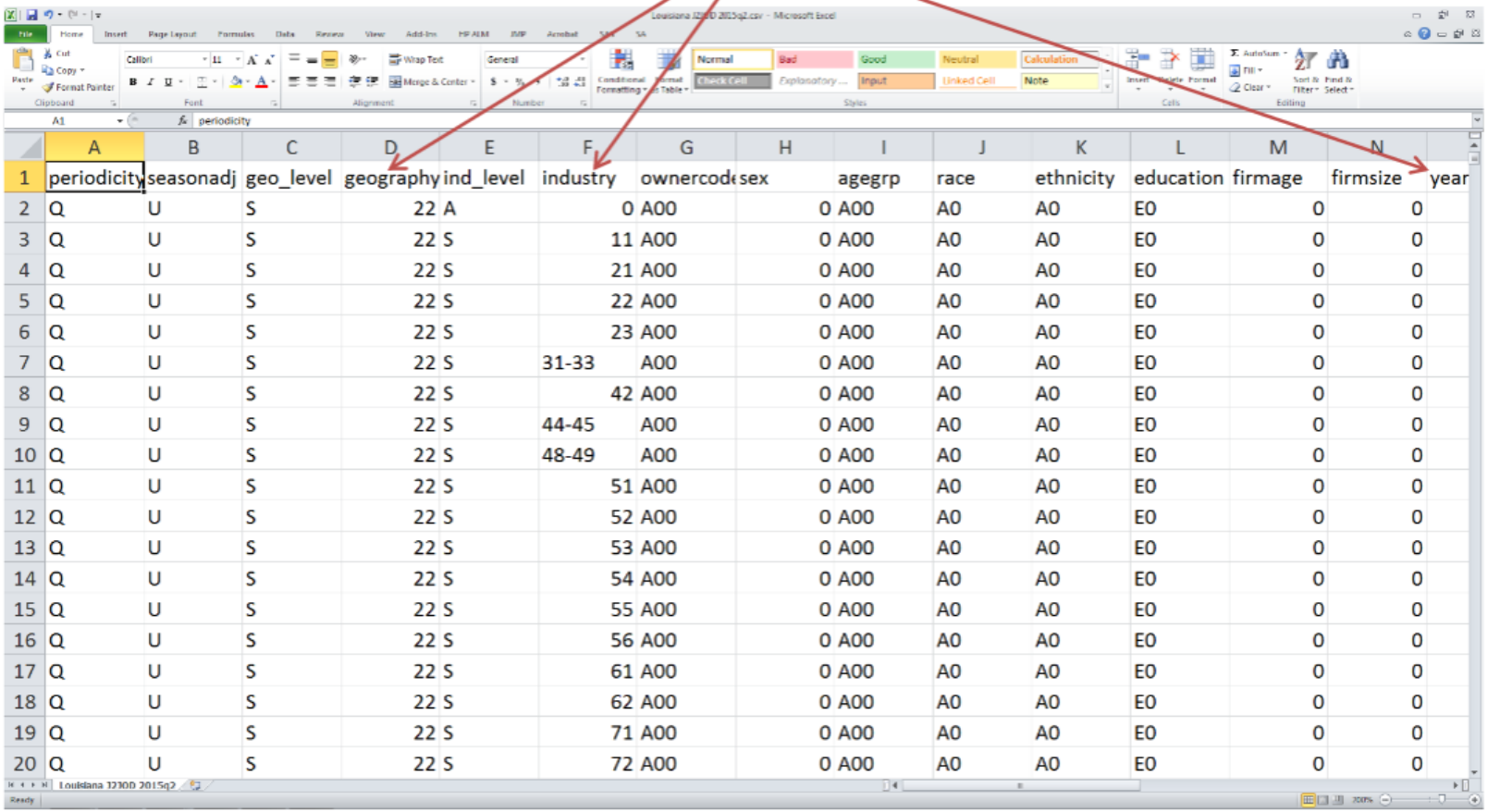


Where are all the teachers going? (Industry/Geography)

First pull the industry sector level data

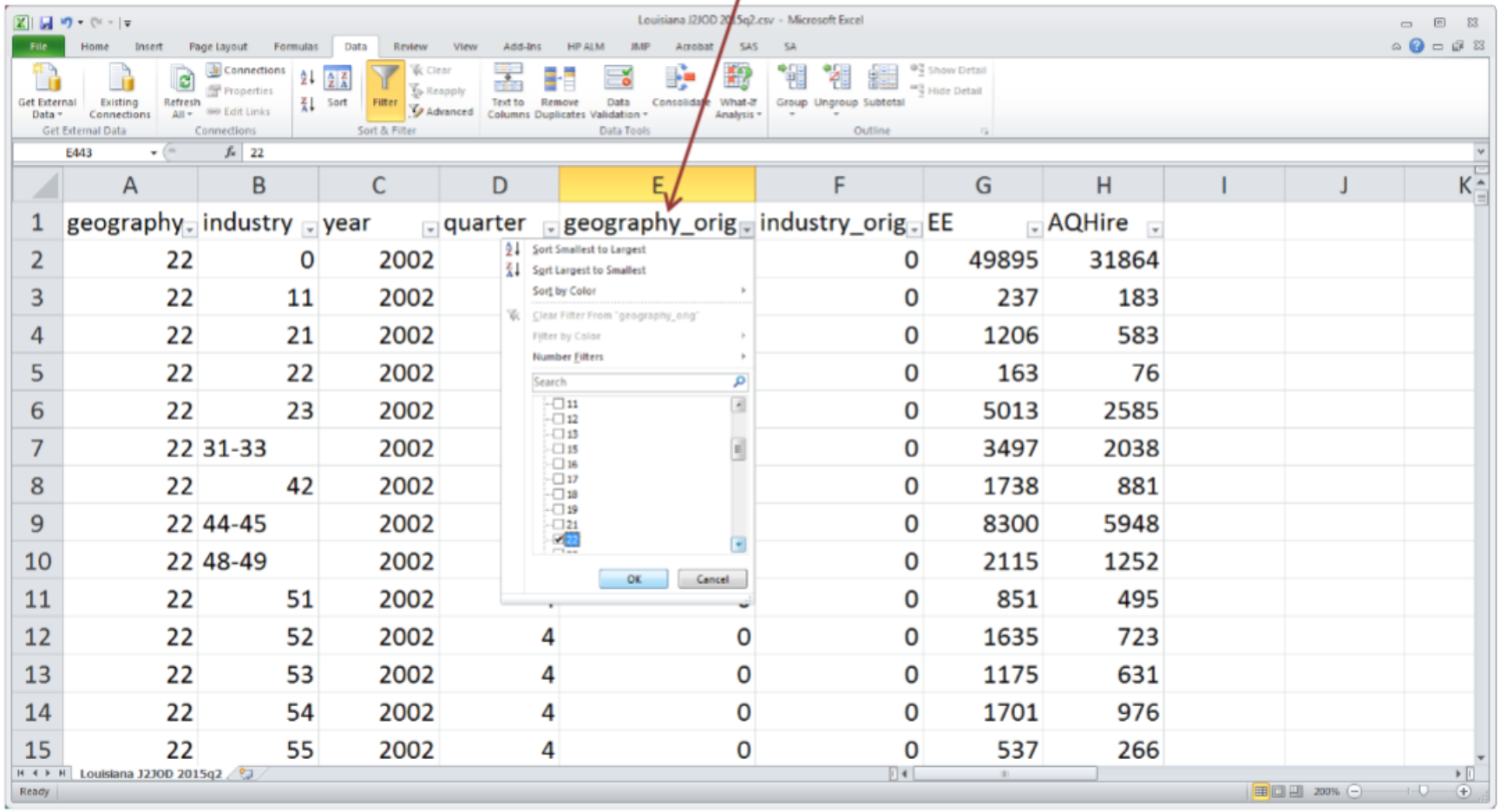


Keep geography, industry, year, quarter, geography_orig, industry_orig, EE, and AQHire. Delete all other columns.



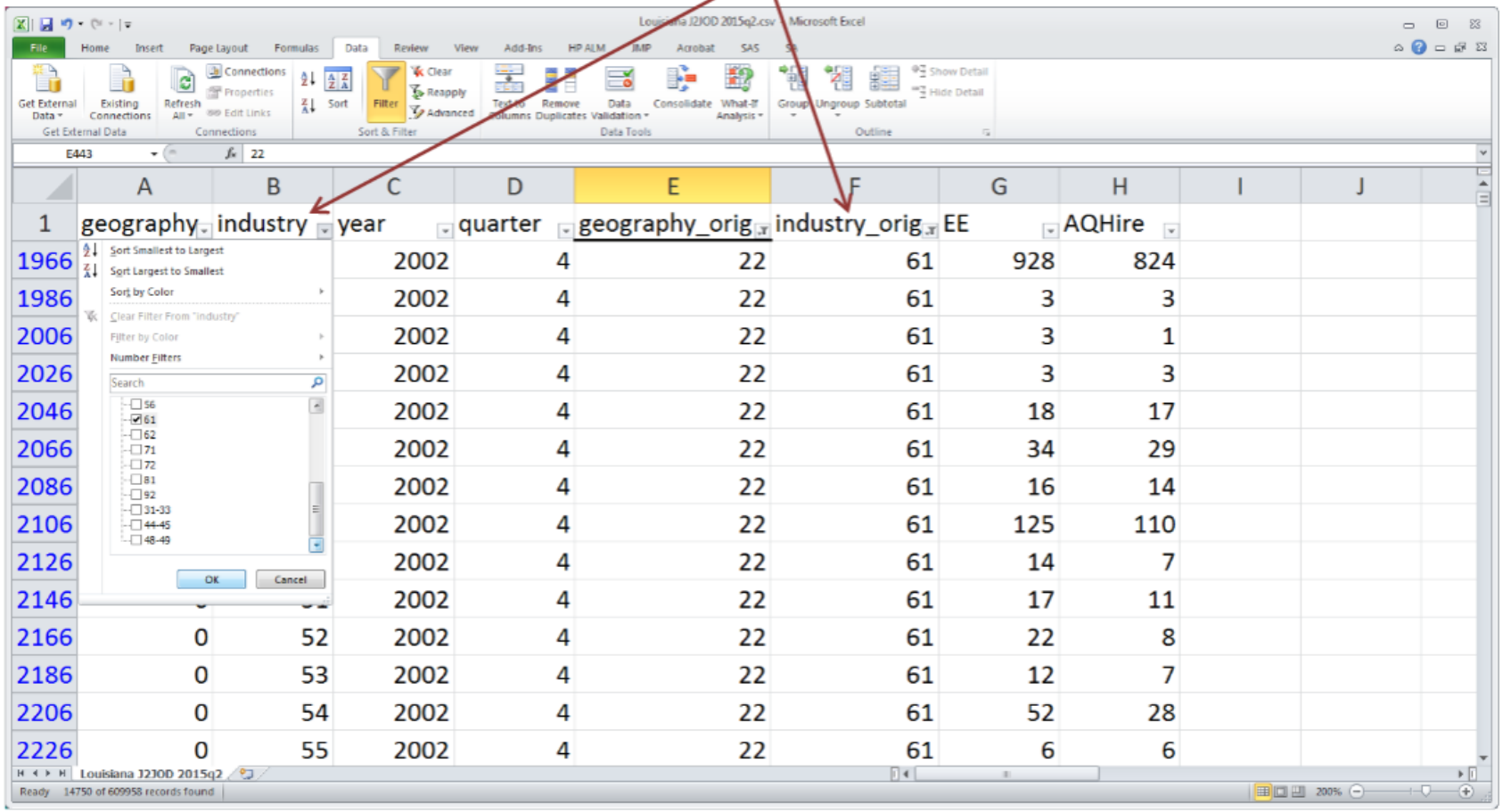
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	
1	periodicity	seasonadj	geo_level	geography	ind_level	industry	ownercode	sex	agegrp	race	ethnicity	education	firmage	firmsize	year
2	Q	U	S	22	A	0	A00	0	A00	A0	A0	E0	0	0	
3	Q	U	S	22	S	11	A00	0	A00	A0	A0	E0	0	0	
4	Q	U	S	22	S	21	A00	0	A00	A0	A0	E0	0	0	
5	Q	U	S	22	S	22	A00	0	A00	A0	A0	E0	0	0	
6	Q	U	S	22	S	23	A00	0	A00	A0	A0	E0	0	0	
7	Q	U	S	22	S	31-33	A00	0	A00	A0	A0	E0	0	0	
8	Q	U	S	22	S	42	A00	0	A00	A0	A0	E0	0	0	
9	Q	U	S	22	S	44-45	A00	0	A00	A0	A0	E0	0	0	
10	Q	U	S	22	S	48-49	A00	0	A00	A0	A0	E0	0	0	
11	Q	U	S	22	S	51	A00	0	A00	A0	A0	E0	0	0	
12	Q	U	S	22	S	52	A00	0	A00	A0	A0	E0	0	0	
13	Q	U	S	22	S	53	A00	0	A00	A0	A0	E0	0	0	
14	Q	U	S	22	S	54	A00	0	A00	A0	A0	E0	0	0	
15	Q	U	S	22	S	55	A00	0	A00	A0	A0	E0	0	0	
16	Q	U	S	22	S	56	A00	0	A00	A0	A0	E0	0	0	
17	Q	U	S	22	S	61	A00	0	A00	A0	A0	E0	0	0	
18	Q	U	S	22	S	62	A00	0	A00	A0	A0	E0	0	0	
19	Q	U	S	22	S	71	A00	0	A00	A0	A0	E0	0	0	
20	Q	U	S	22	S	72	A00	0	A00	A0	A0	E0	0	0	

Then filter geography_orig to obtain the origin state of interest.



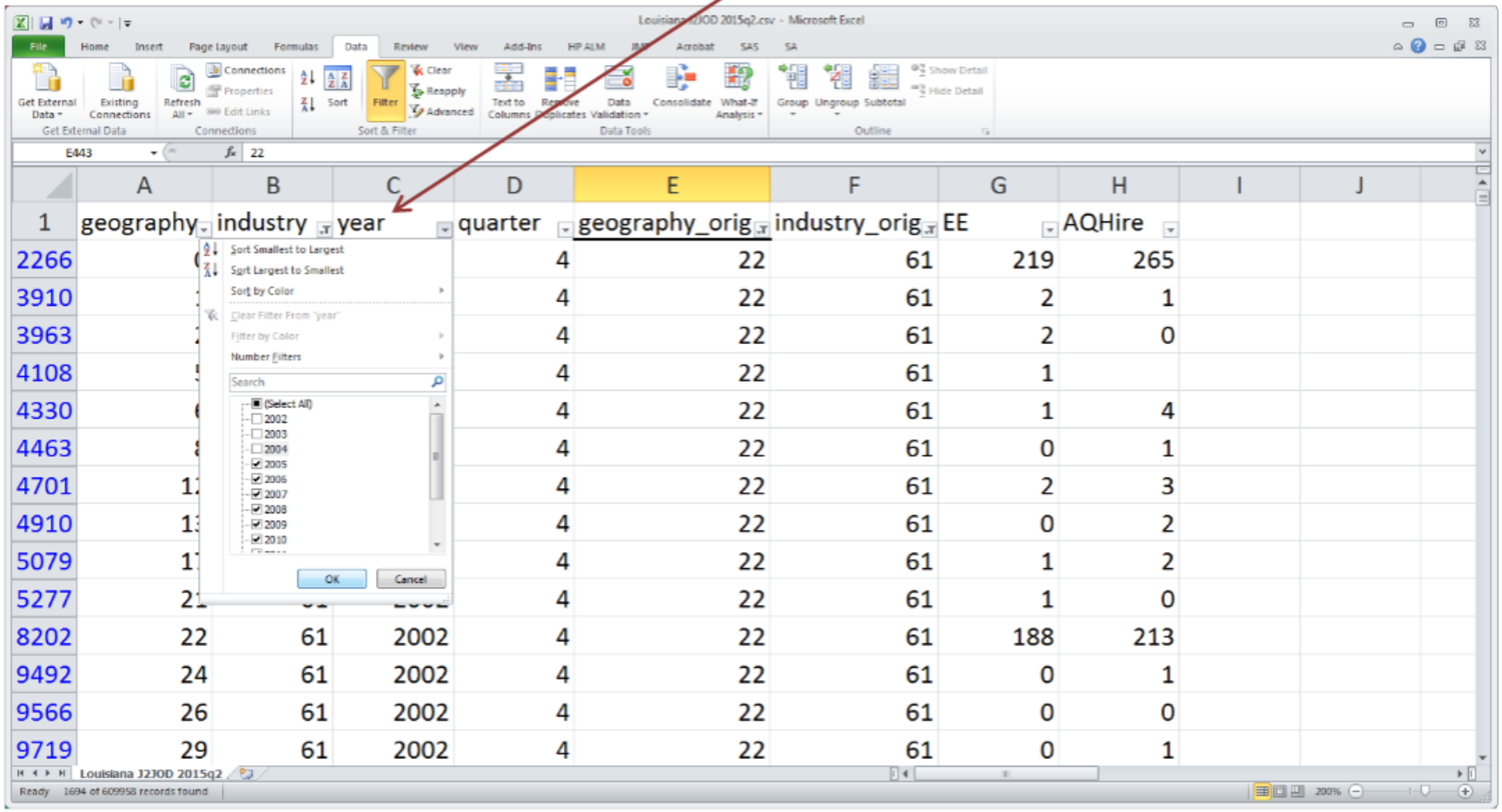
	A	B	C	D	E	F	G	H
1	geography	industry	year	quarter	geography_orig	industry_orig	EE	AQHire
2	22	0	2002			0	49895	31864
3	22	11	2002			0	237	183
4	22	21	2002			0	1206	583
5	22	22	2002			0	163	76
6	22	23	2002			0	5013	2585
7	22	31-33	2002			0	3497	2038
8	22	42	2002			0	1738	881
9	22	44-45	2002			0	8300	5948
10	22	48-49	2002			0	2115	1252
11	22	51	2002			0	851	495
12	22	52	2002	4	0	0	1635	723
13	22	53	2002	4	0	0	1175	631
14	22	54	2002	4	0	0	1701	976
15	22	55	2002	4	0	0	537	266

Then filter industry_orig to obtain the origin industry of interest.
Repeat with industry for the destination industry of interest.



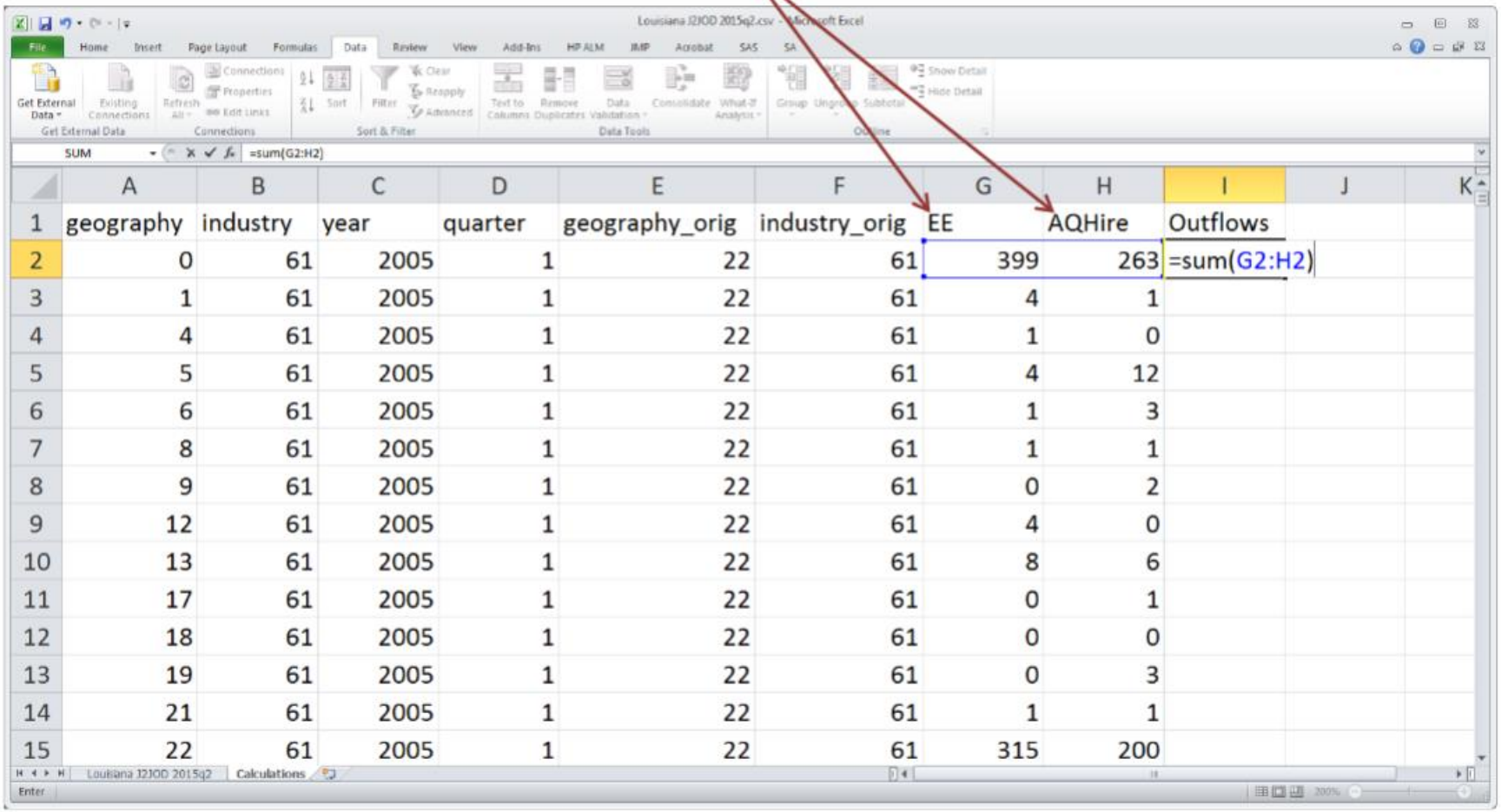
	A	B	C	D	E	F	G	H	I	J
1	geography	industry	year	quarter	geography_orig	industry_orig	EE	AQHire		
1966			2002	4	22	61	928	824		
1986			2002	4	22	61	3	3		
2006			2002	4	22	61	3	1		
2026			2002	4	22	61	3	3		
2046			2002	4	22	61	18	17		
2066			2002	4	22	61	34	29		
2086			2002	4	22	61	16	14		
2106			2002	4	22	61	125	110		
2126			2002	4	22	61	14	7		
2146			2002	4	22	61	17	11		
2166	0	52	2002	4	22	61	22	8		
2186	0	53	2002	4	22	61	12	7		
2206	0	54	2002	4	22	61	52	28		
2226	0	55	2002	4	22	61	6	6		

Then filter years to obtain the period of interest. (In the interest of time, let's choose only one quarter: 2015.1



	A	B	C	D	E	F	G	H	I	J
1	geography	industry	year	quarter	geography_orig	industry_orig	EE	AQHire		
2266				4	22	61	219	265		
3910				4	22	61	2	1		
3963				4	22	61	2	0		
4108				4	22	61	1			
4330				4	22	61	1	4		
4463				4	22	61	0	1		
4701				4	22	61	2	3		
4910				4	22	61	0	2		
5079				4	22	61	1	2		
5277				4	22	61	1	0		
8202	22	61	2002	4	22	61	188	213		
9492	24	61	2002	4	22	61	0	1		
9566	26	61	2002	4	22	61	0	0		
9719	29	61	2002	4	22	61	0	1		

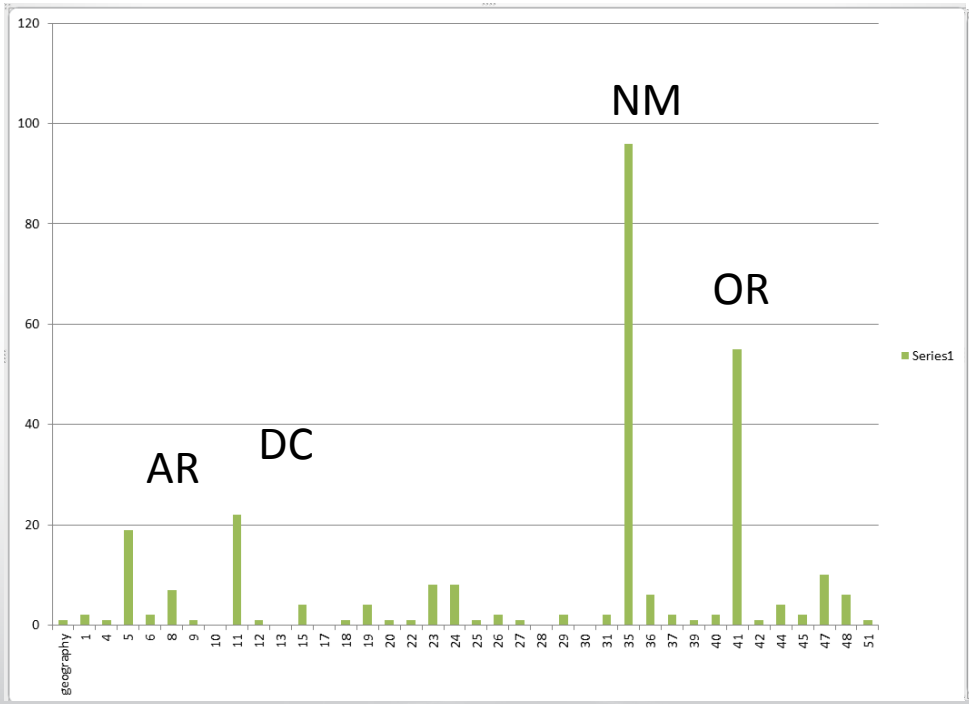
Then sum EE and AQHire to get all Outflows for every state by year and quarter.



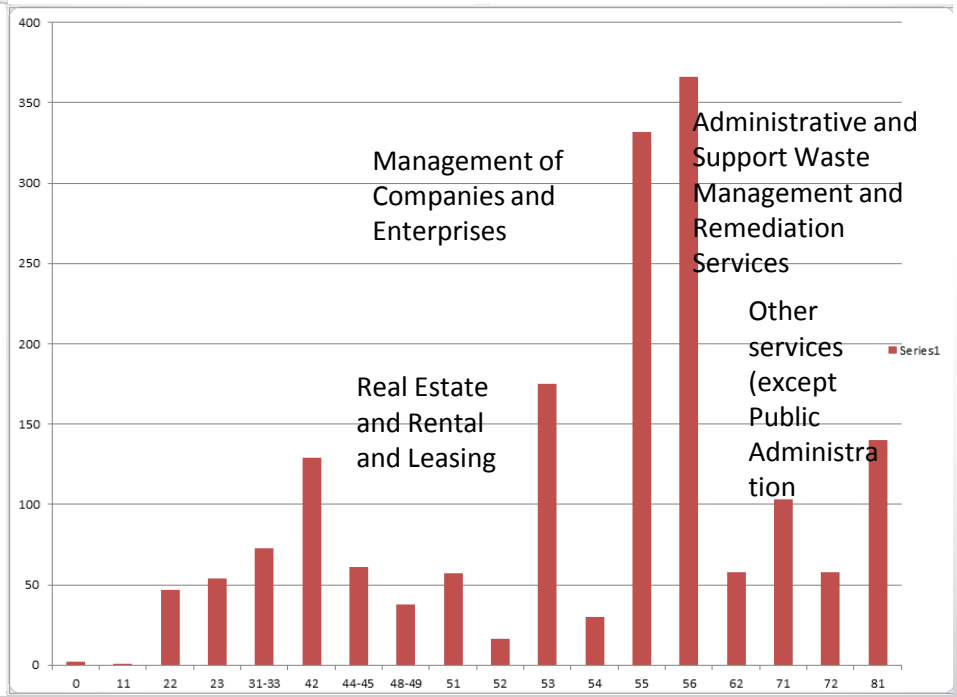
	A	B	C	D	E	F	G	H	I	J	K
1	geography	industry	year	quarter	geography_orig	industry_orig	EE	AQHire	Outflows		
2	0	61	2005	1	22	61	399	263	=sum(G2:H2)		
3	1	61	2005	1	22	61	4	1			
4	4	61	2005	1	22	61	1	0			
5	5	61	2005	1	22	61	4	12			
6	6	61	2005	1	22	61	1	3			
7	8	61	2005	1	22	61	1	1			
8	9	61	2005	1	22	61	0	2			
9	12	61	2005	1	22	61	4	0			
10	13	61	2005	1	22	61	8	6			
11	17	61	2005	1	22	61	0	1			
12	18	61	2005	1	22	61	0	0			
13	19	61	2005	1	22	61	0	3			
14	21	61	2005	1	22	61	1	1			
15	22	61	2005	1	22	61	315	200			

Where are all the teachers going?

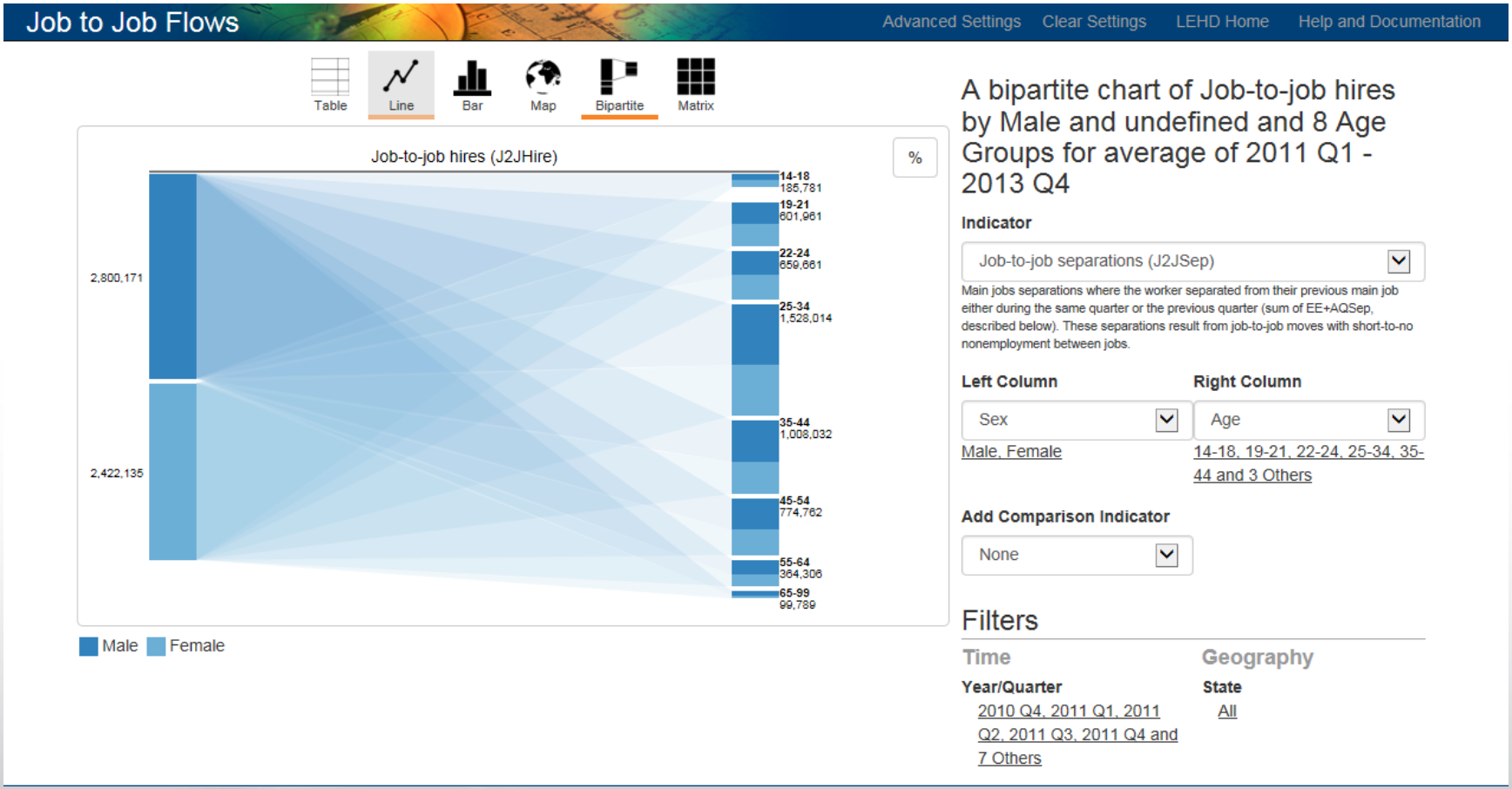
Geography in 2015 Quarter 1



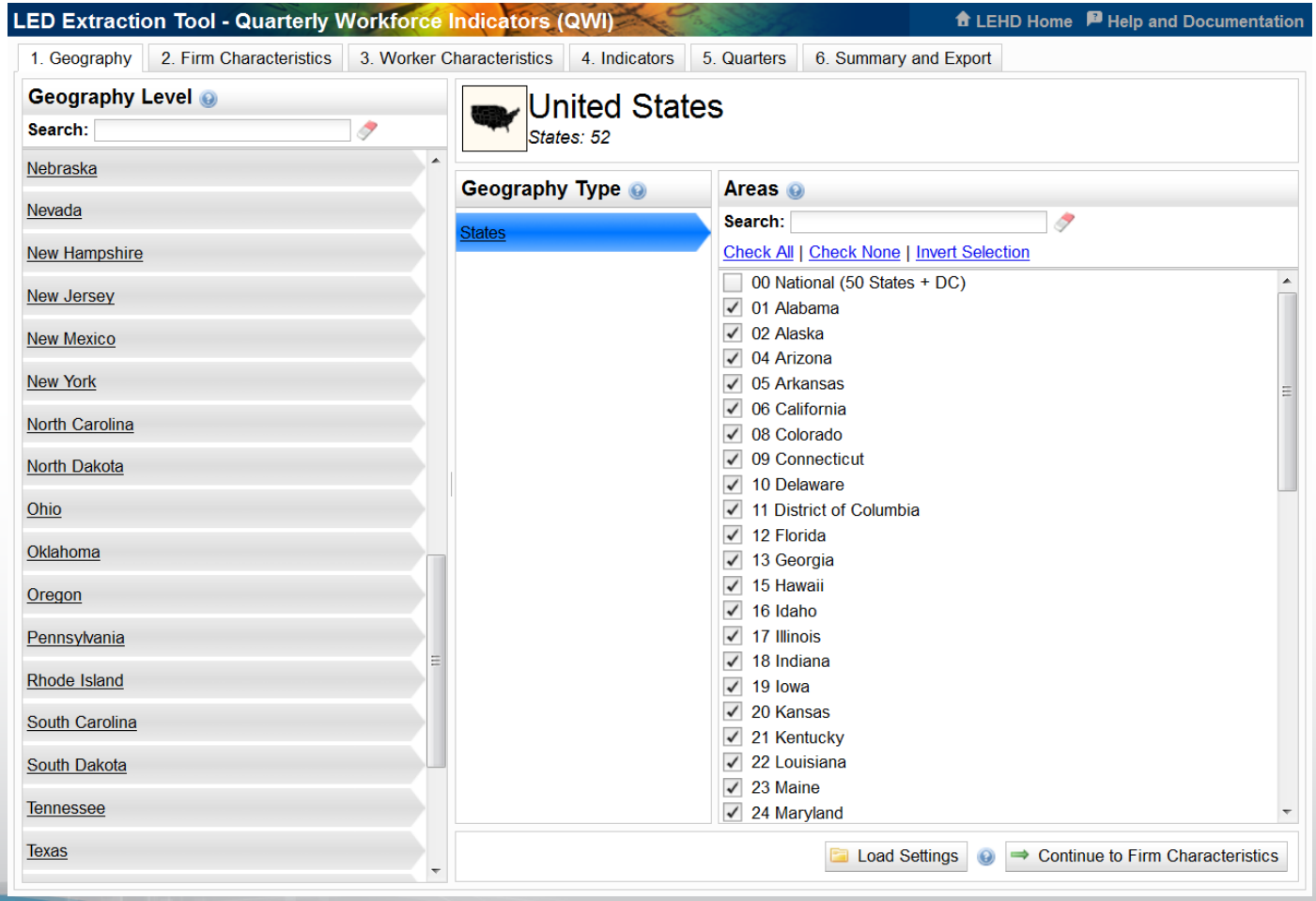
Industry in 2015 Quarter 1



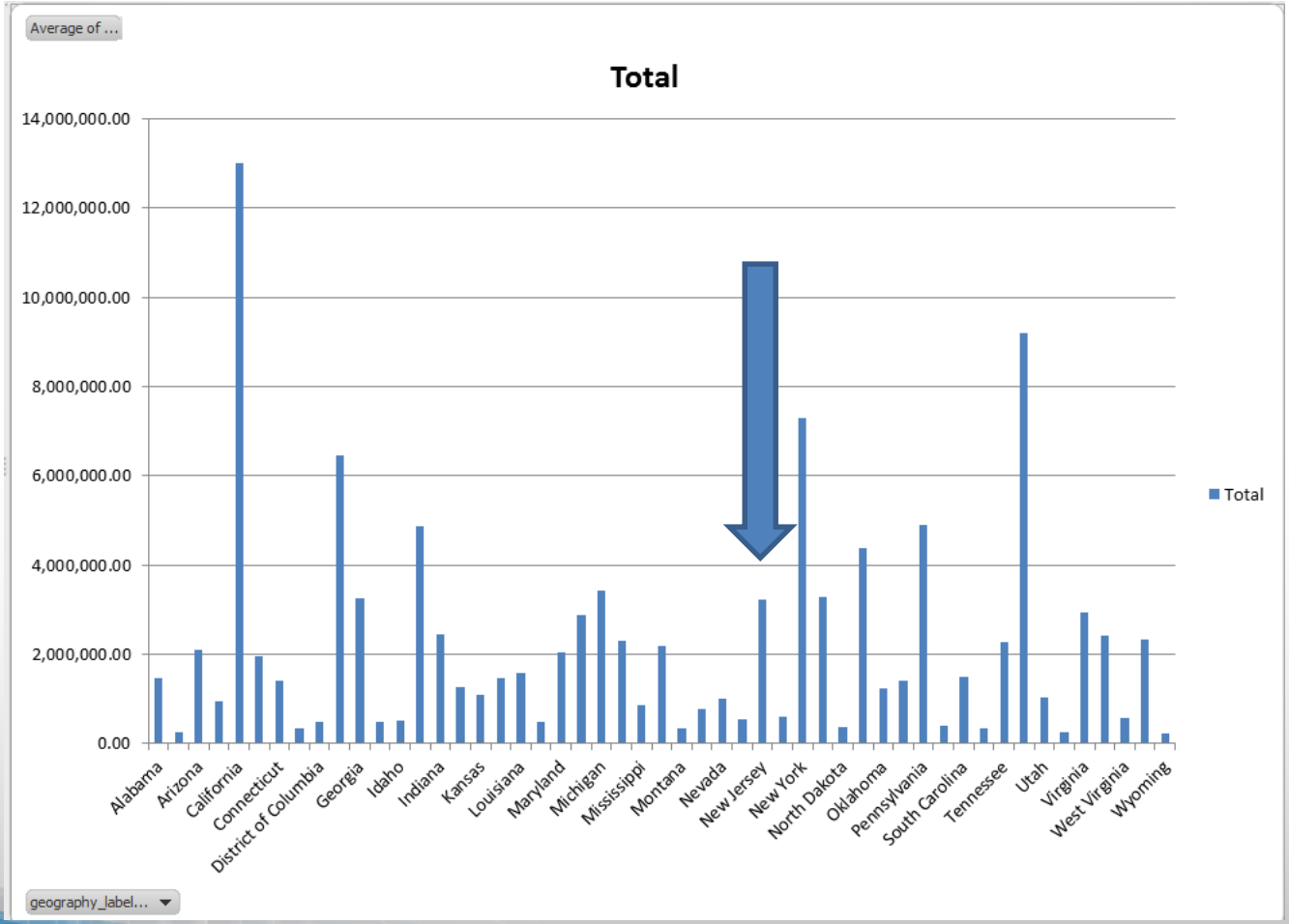
Job to Job Flows



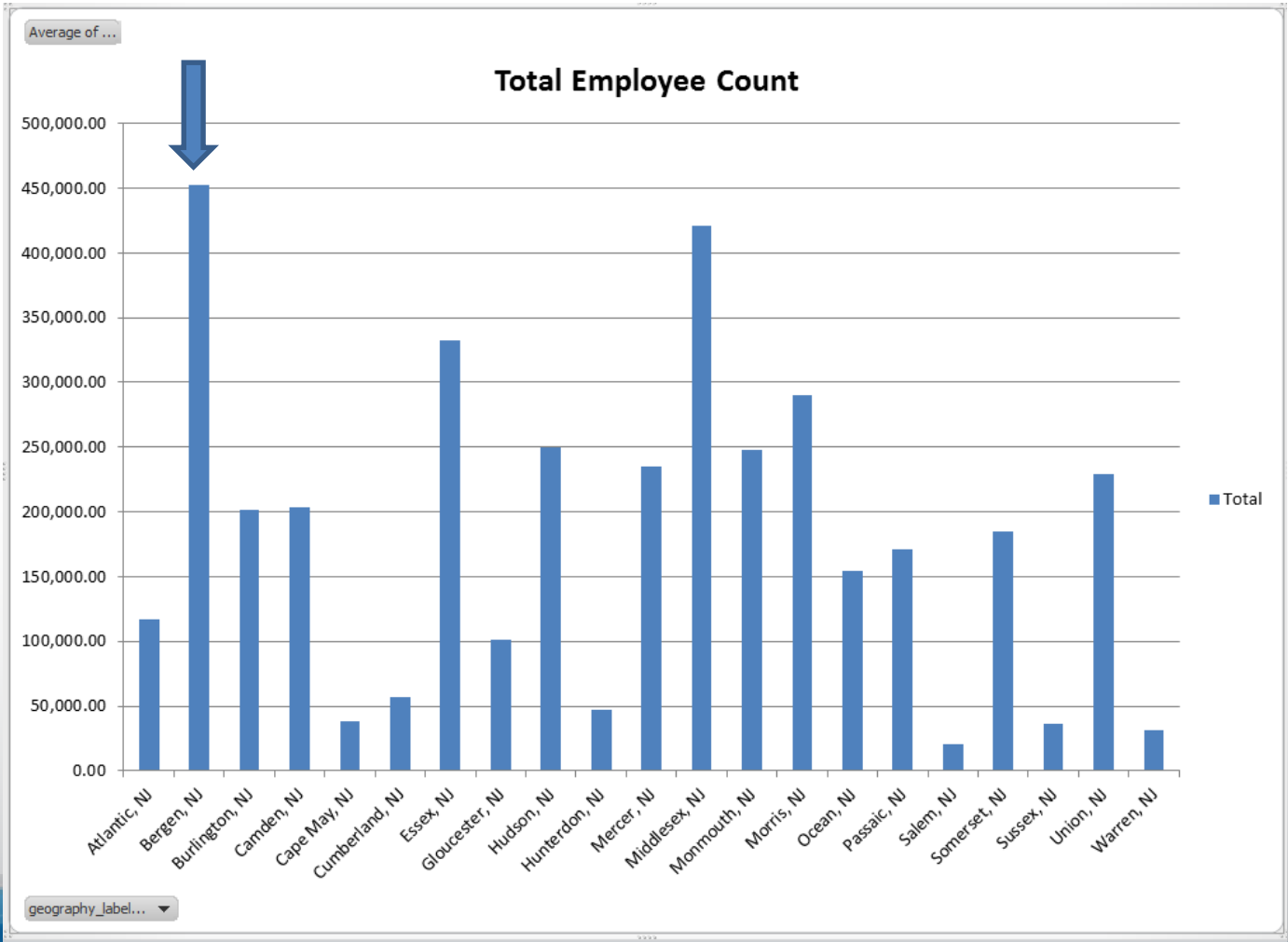
LED Extraction Tool



National QWI

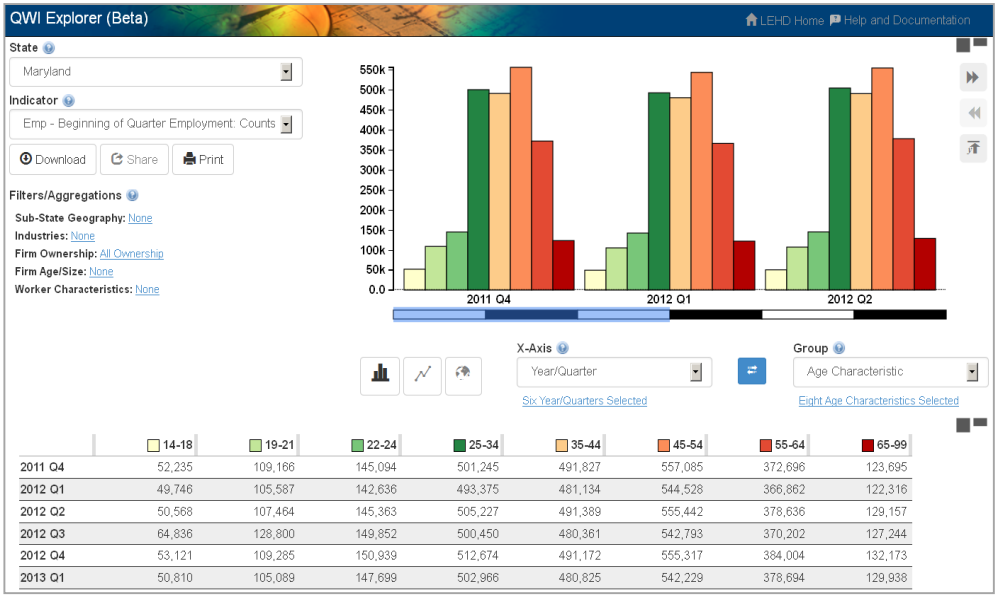


Employment Count by Counties



QWI Explorer

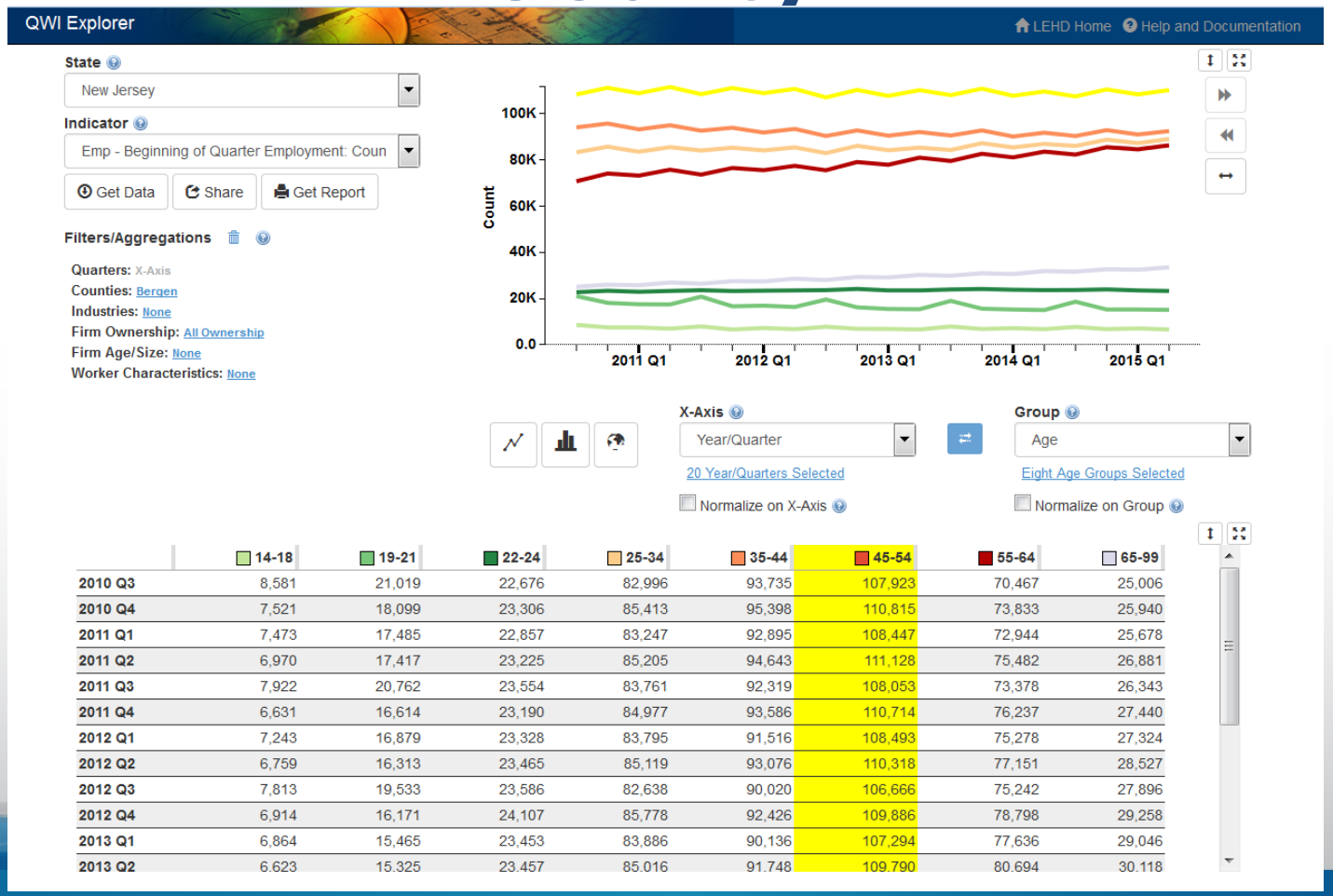
- ✓ 32 Quarterly Workforce Indicators
- ✓ Flexible Pivot Table and Map/Chart interface
- ✓ Data on detailed interactions between firms and workers include employment, employment change (individual and firm), and earnings
- ✓ Analyze/report by worker demographics: age, earnings, race, ethnicity, educational 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

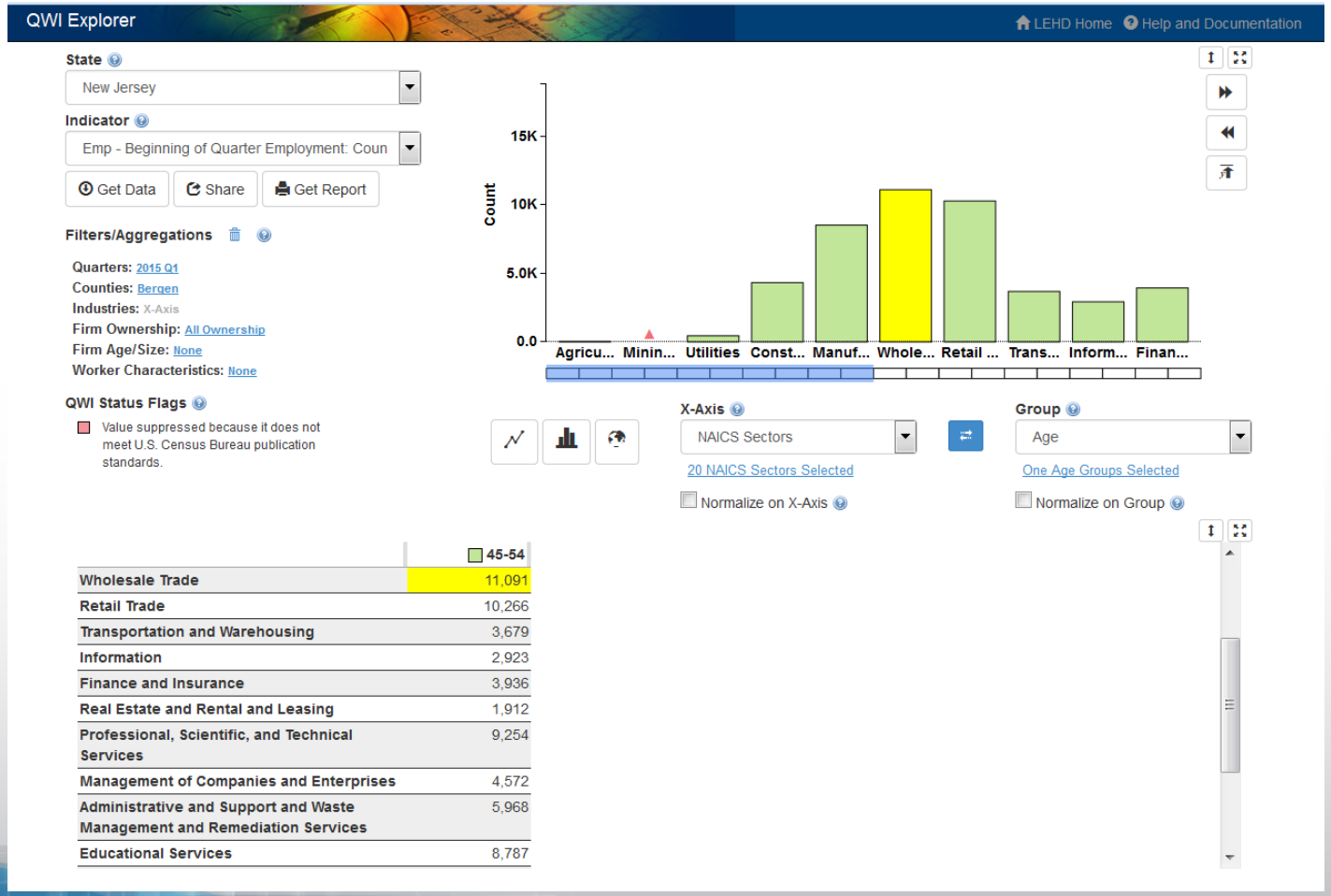
- ✓ Analyze/report by firm characteristics: NAICS classification (sector, 3, 4), firm age, and firm size
- ✓ Quarterly data very current (9-12 months old)
- ✓ National and 50 states available (plus DC)

What age group is the highest employment count in Bergen County?



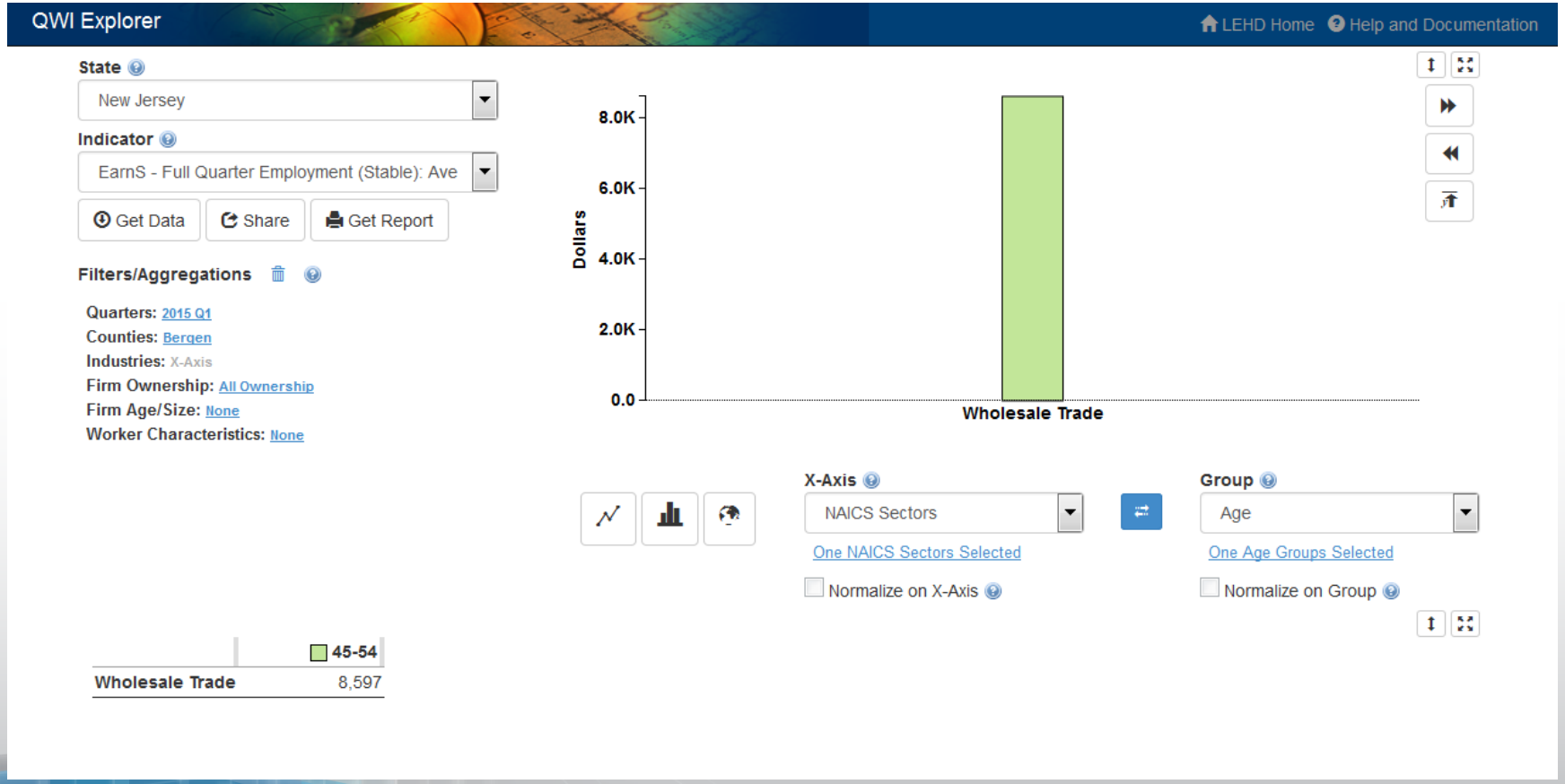
	14-18	19-21	22-24	25-34	35-44	45-54	55-64	65-99
2010 Q3	8,581	21,019	22,676	82,996	93,735	107,923	70,467	25,006
2010 Q4	7,521	18,099	23,306	85,413	95,398	110,815	73,833	25,940
2011 Q1	7,473	17,485	22,857	83,247	92,895	108,447	72,944	25,678
2011 Q2	6,970	17,417	23,225	85,205	94,643	111,128	75,482	26,881
2011 Q3	7,922	20,762	23,554	83,761	92,319	108,053	73,378	26,343
2011 Q4	6,631	16,614	23,190	84,977	93,586	110,714	76,237	27,440
2012 Q1	7,243	16,879	23,328	83,795	91,516	108,493	75,278	27,324
2012 Q2	6,759	16,313	23,465	85,119	93,076	110,318	77,151	28,527
2012 Q3	7,813	19,533	23,586	82,638	90,020	106,666	75,242	27,896
2012 Q4	6,914	16,171	24,107	85,778	92,426	109,886	78,798	29,258
2013 Q1	6,864	15,465	23,453	83,886	90,136	107,294	77,636	29,046
2013 Q2	6,623	15,325	23,457	85,016	91,748	109,790	80,694	30,118

What industry are they working in?

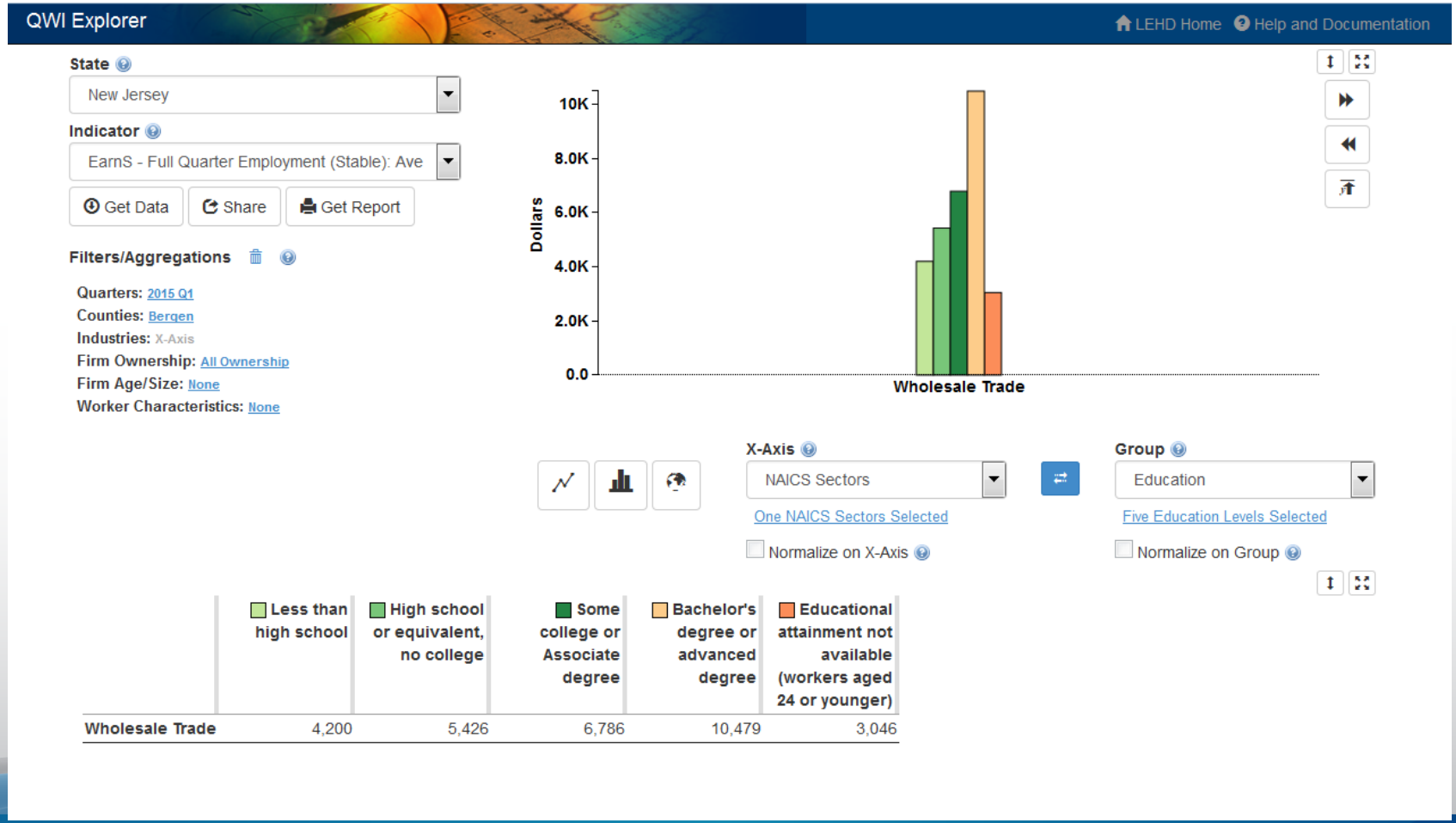


	45-54
Wholesale Trade	11,091
Retail Trade	10,266
Transportation and Warehousing	3,679
Information	2,923
Finance and Insurance	3,936
Real Estate and Rental and Leasing	1,912
Professional, Scientific, and Technical Services	9,254
Management of Companies and Enterprises	4,572
Administrative and Support and Waste Management and Remediation Services	5,968
Educational Services	8,787

What are their earnings?



Earnings by Education Level

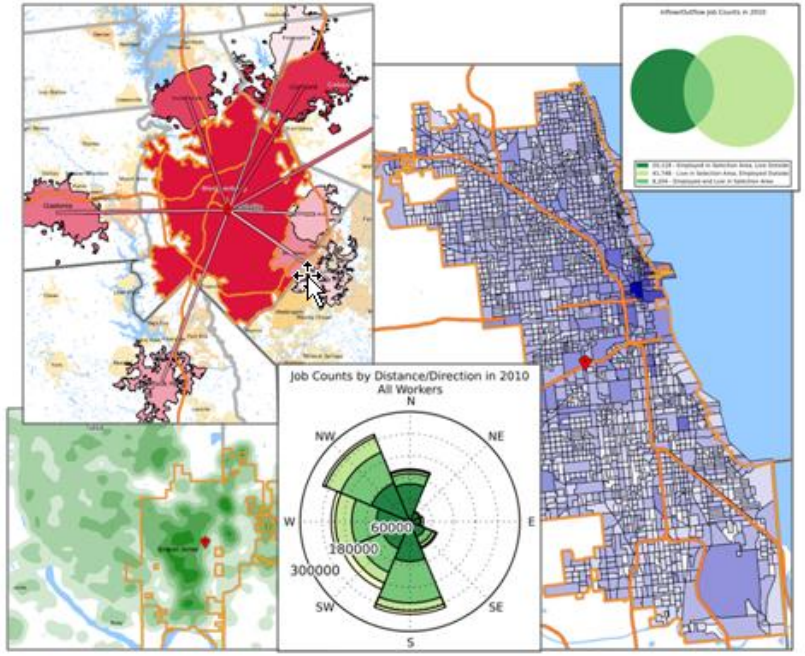


	Less than high school	High school or equivalent, no college	Some college or Associate degree	Bachelor's degree or advanced degree	Educational attainment not available (workers aged 24 or younger)
Wholesale Trade	4,200	5,426	6,786	10,479	3,046

OnTheMap

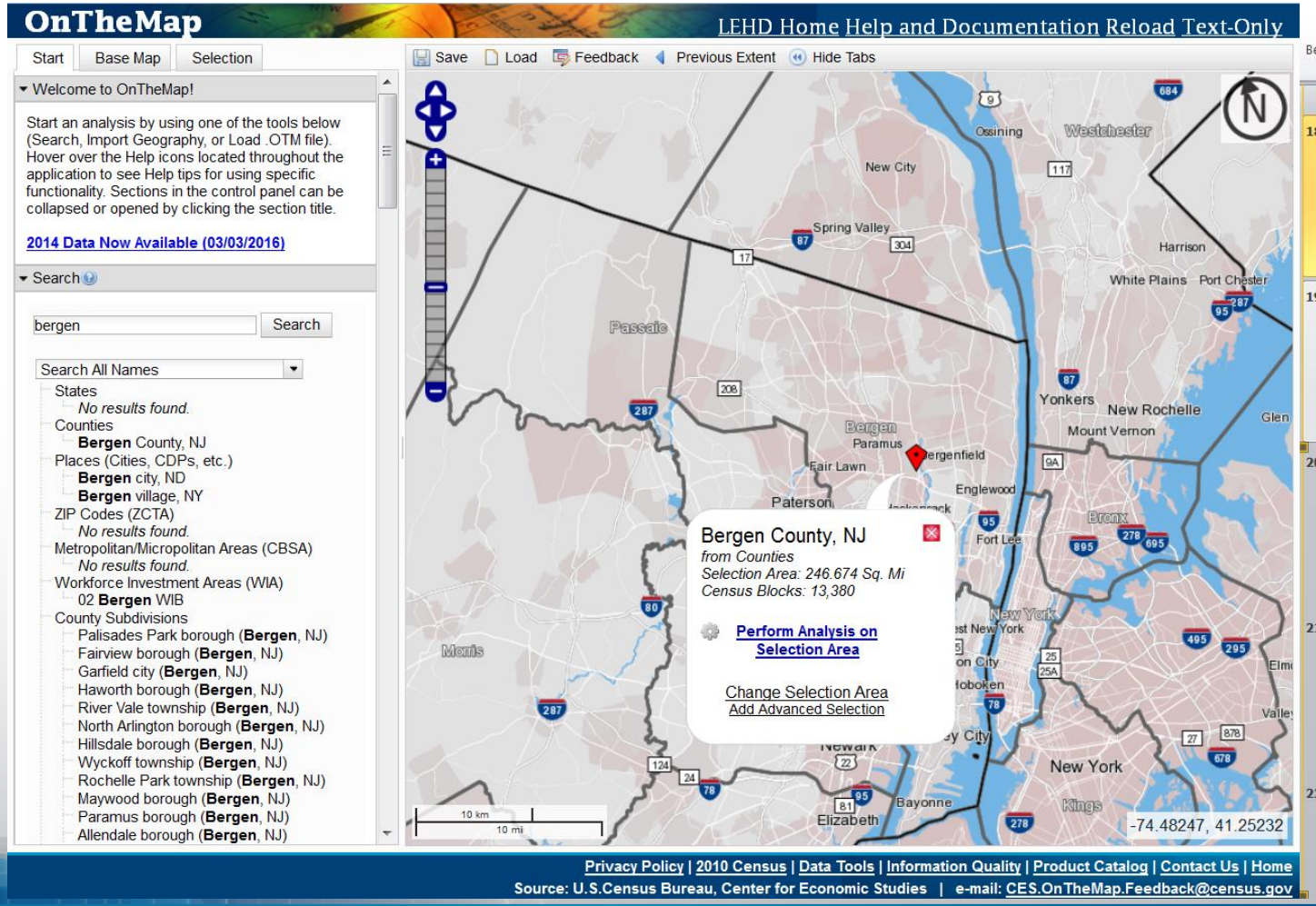
Recognized by United Nations as a major U.S. statistical innovation

- ✓ 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

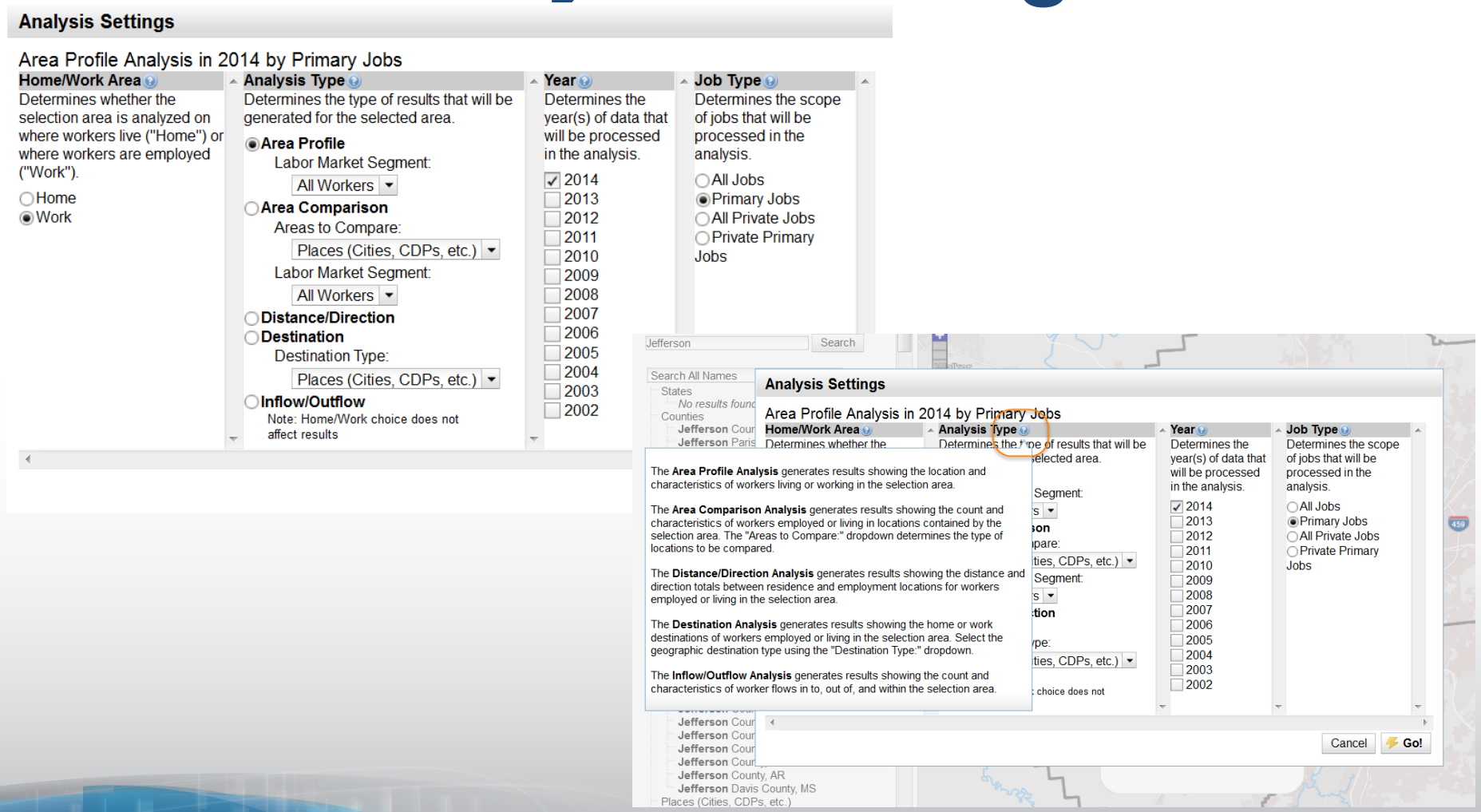


- ✓ 2002-2014 annual data
- ✓ 50 states available (plus DC)
- ✓ User-selected areas
- ✓ Based on Census Blocks
- ✓ Disclosure protection
- ✓ Flexible Inputs/Outputs

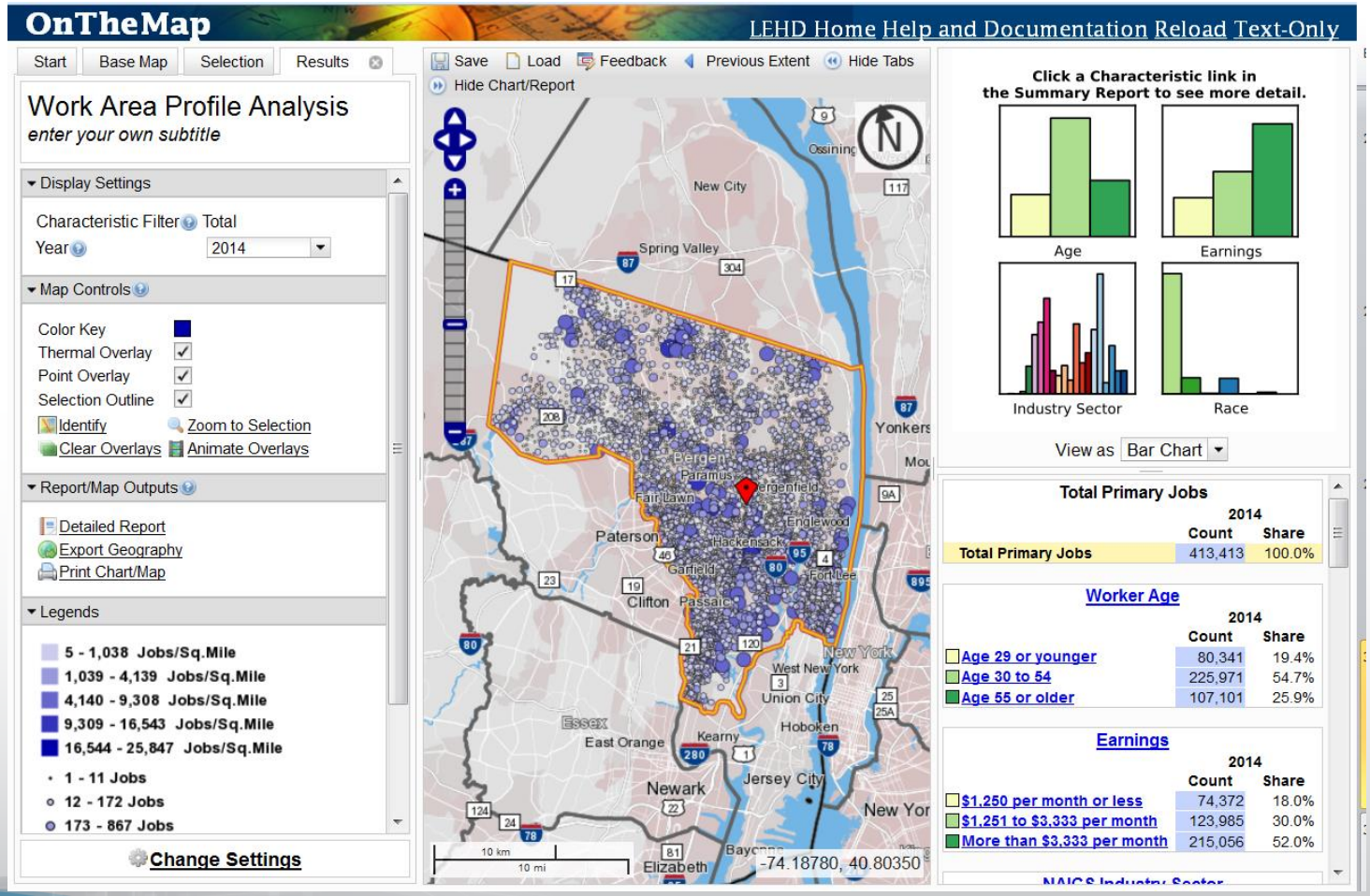
Getting Started



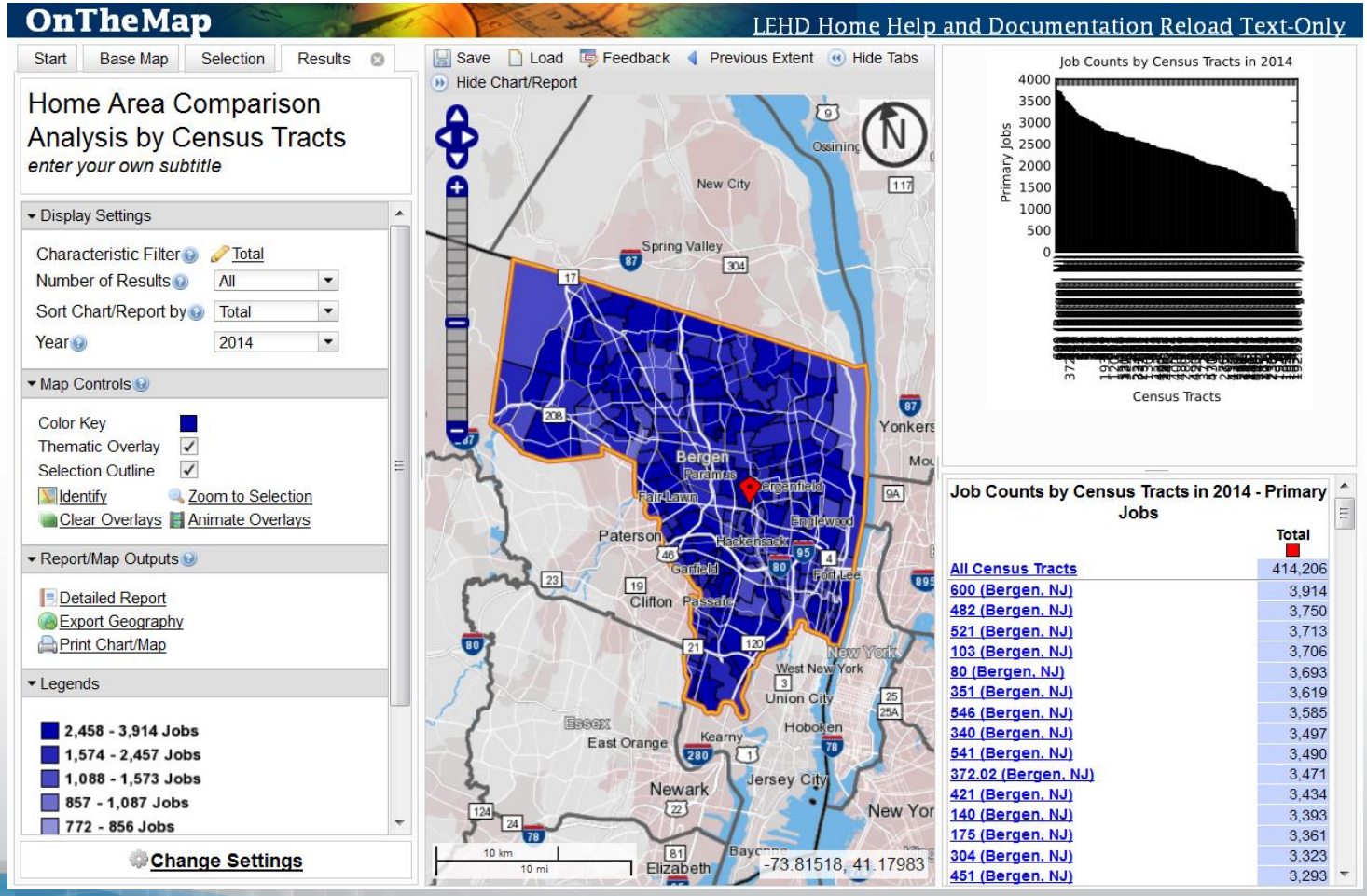
Analysis Settings



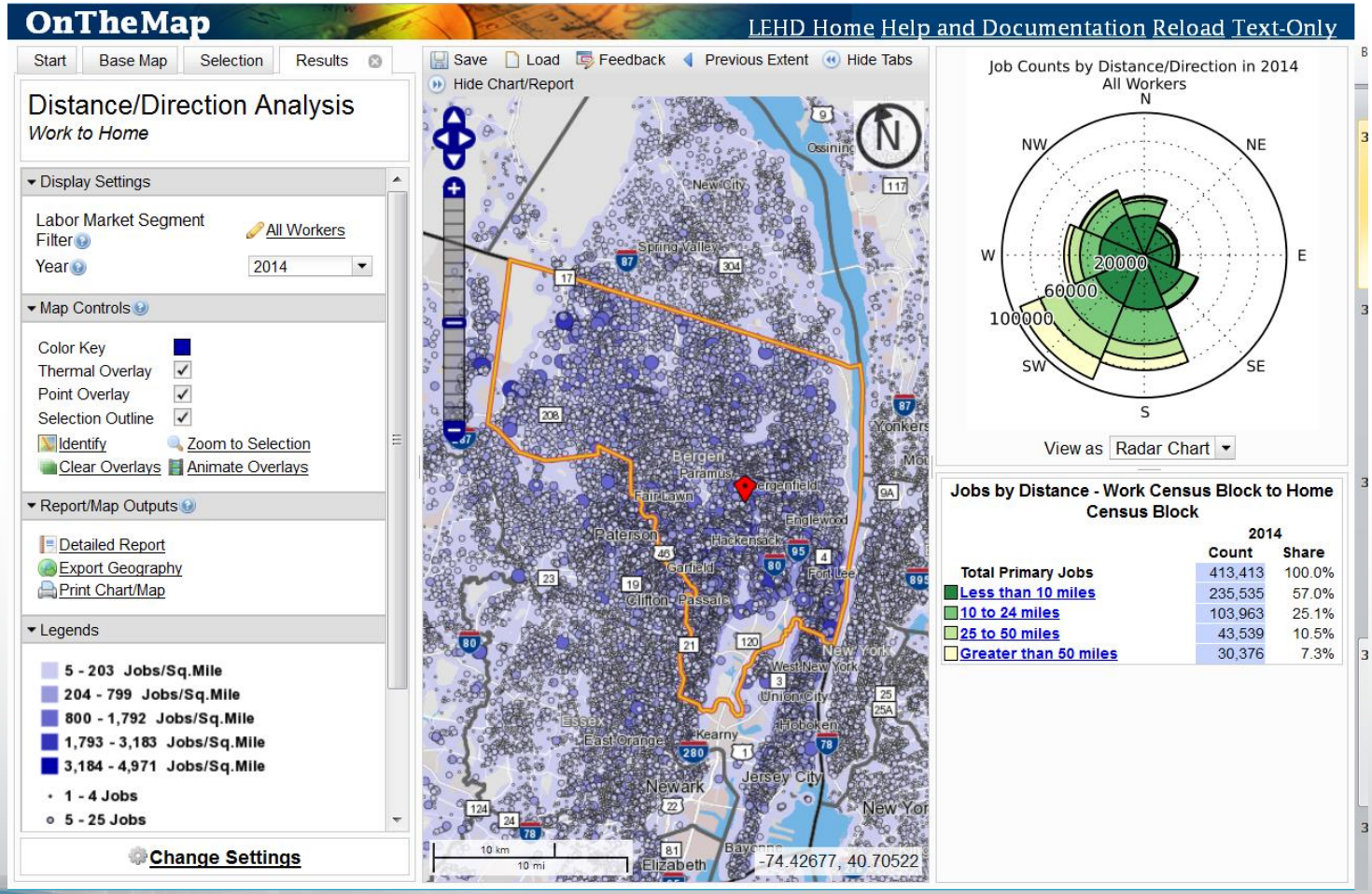
Area Profile



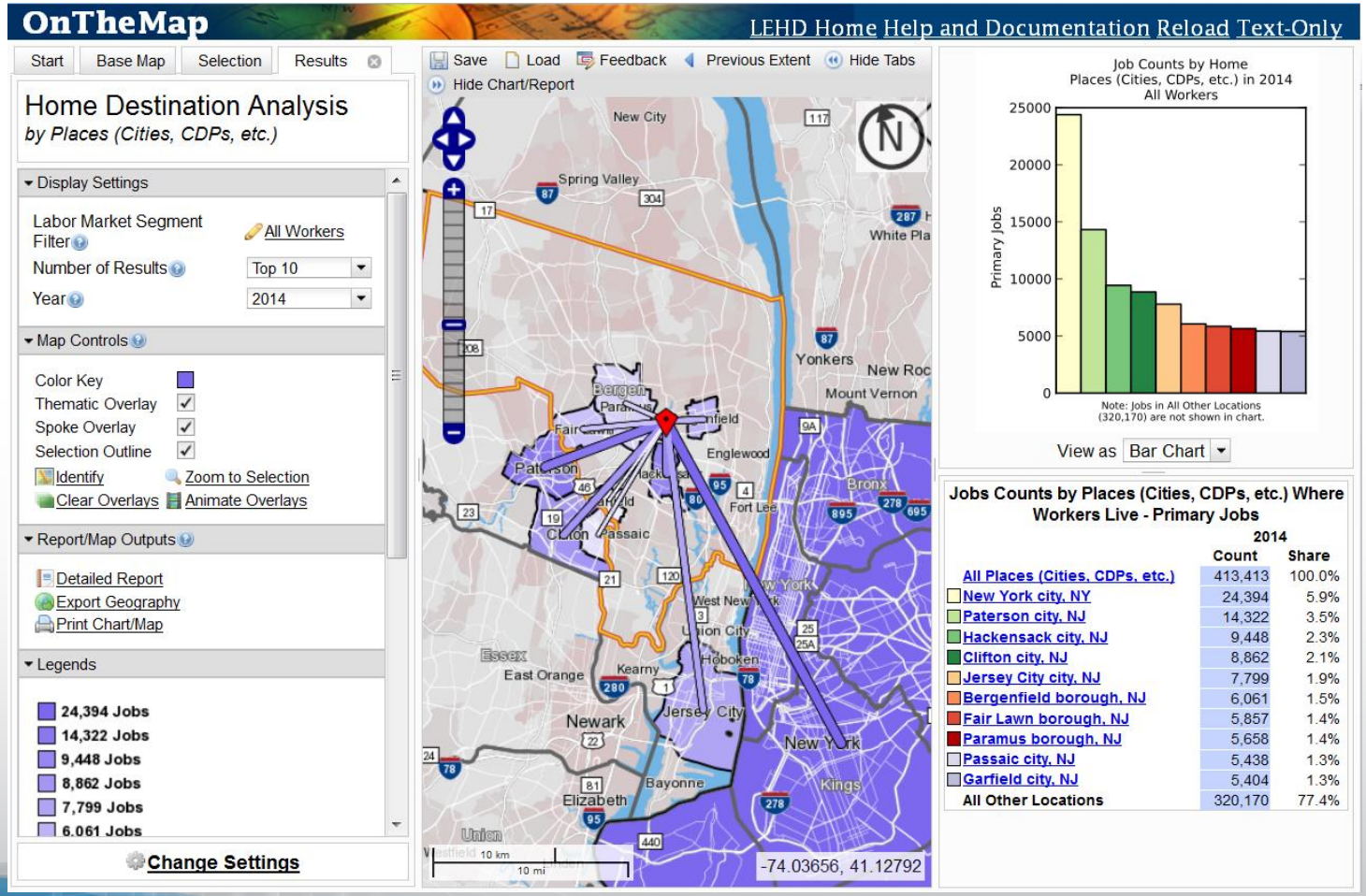
Home Area Comparison



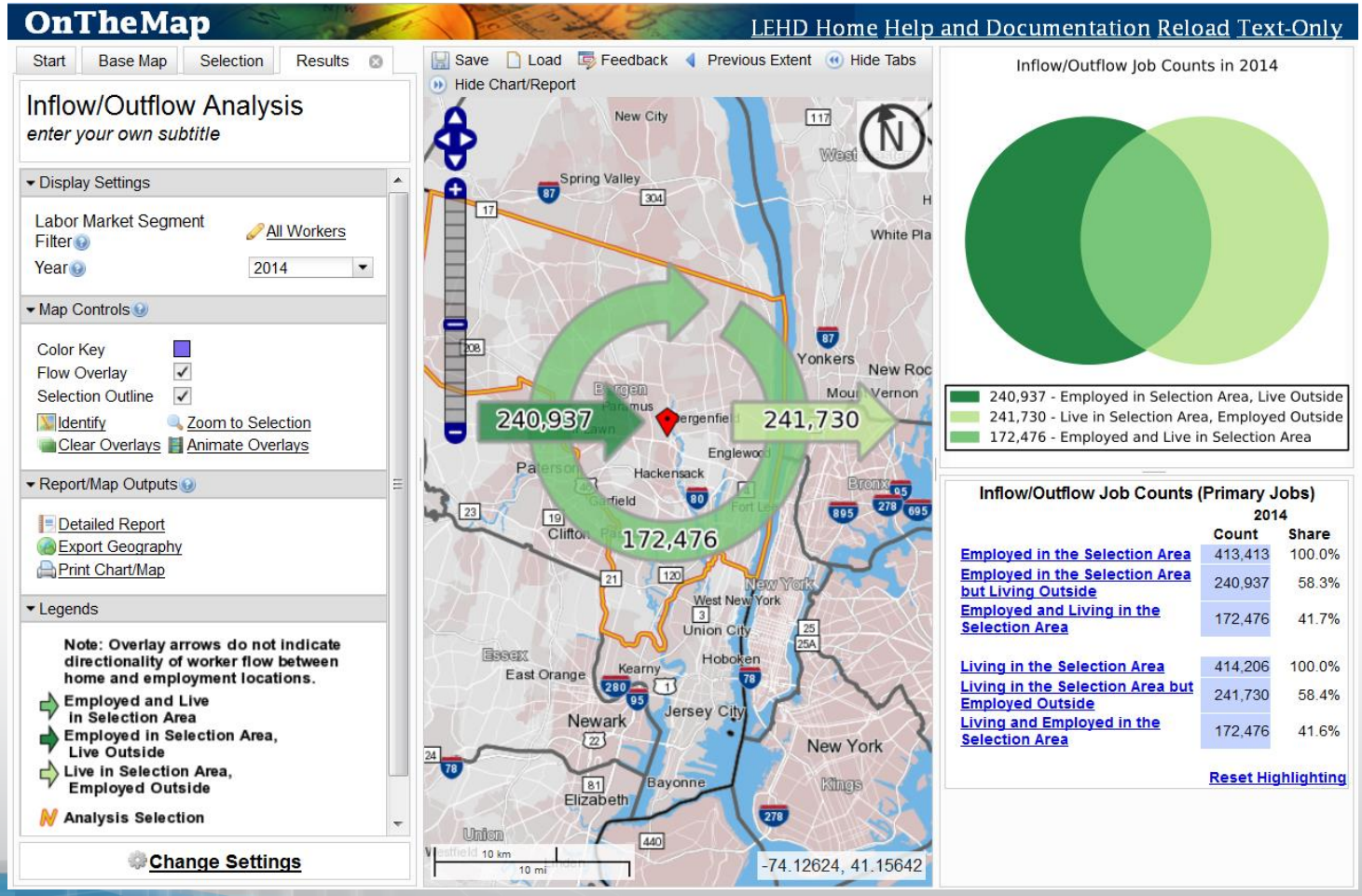
Distance/Direction



Destination



Inflow/Outflow



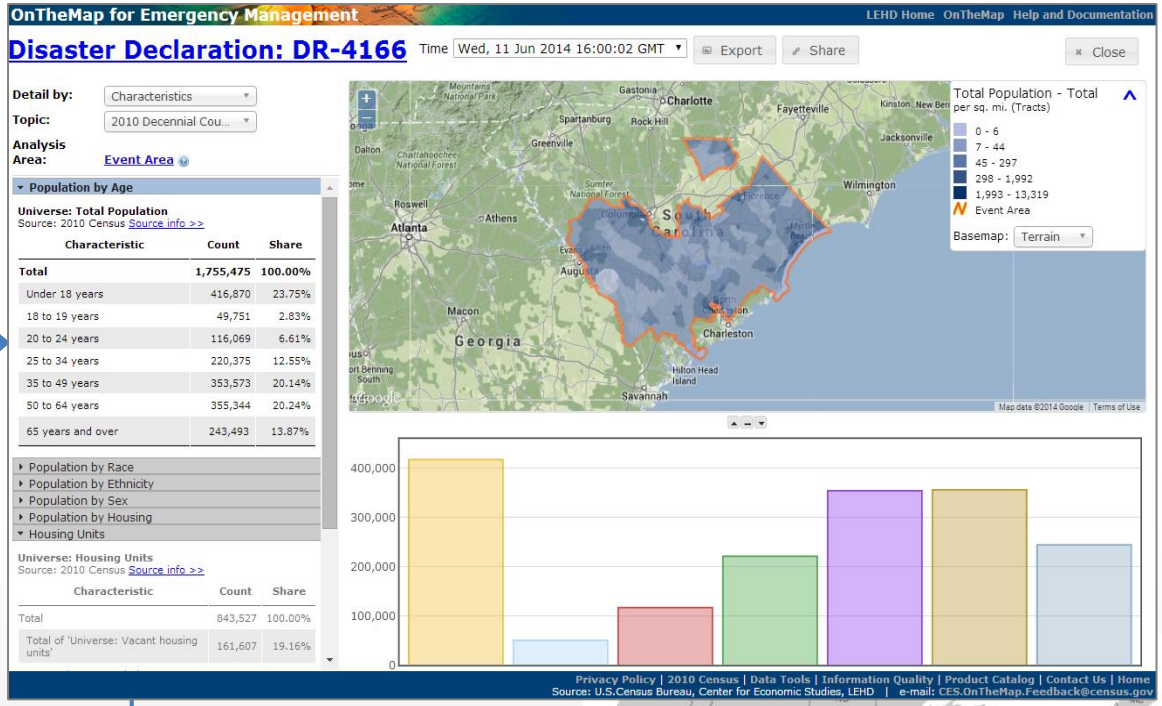
OnTheMap for Emergency Management

Hurricanes, Floods, Winter Storms

Disaster Areas

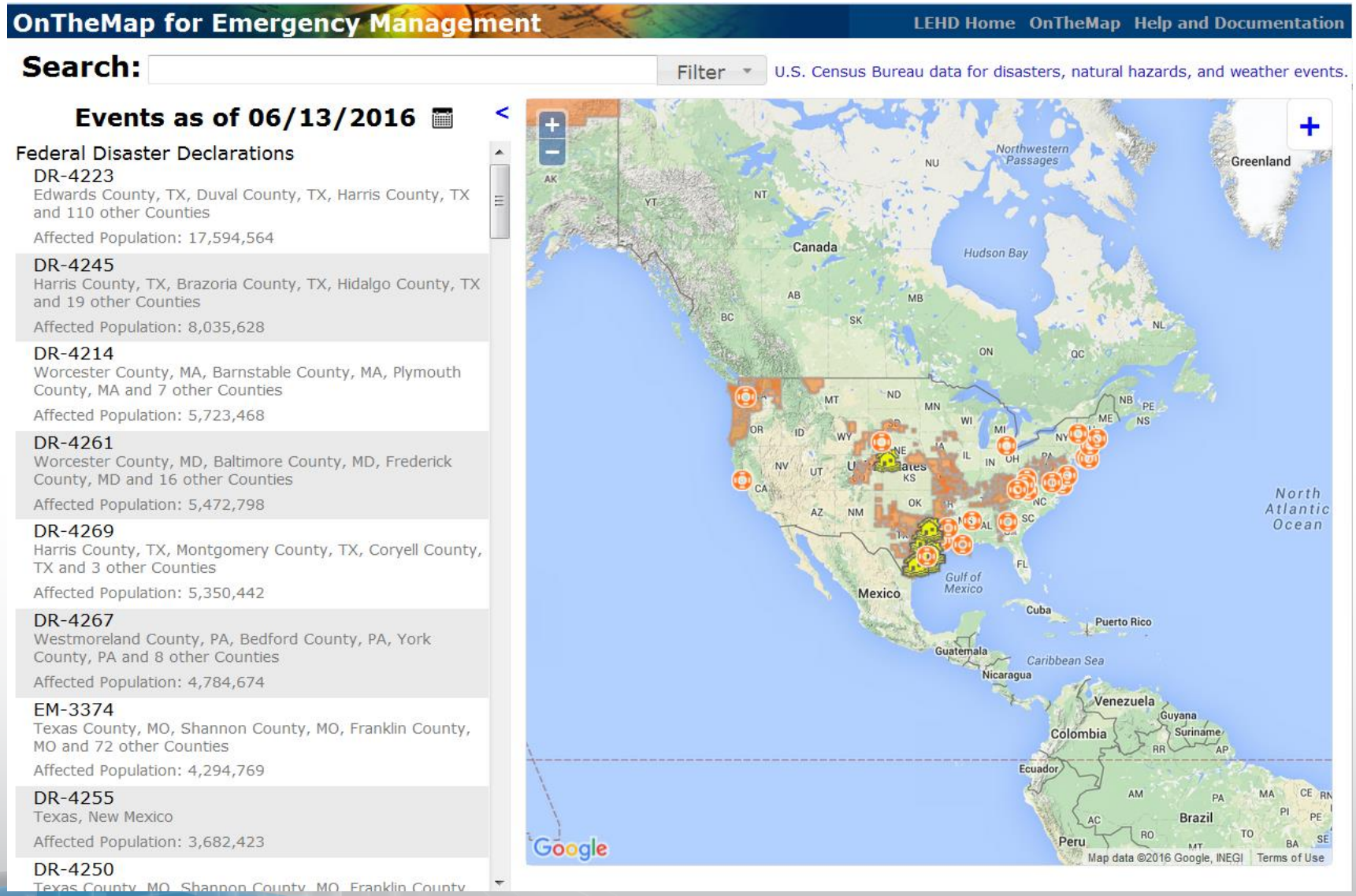
Wildfires

Demographic & Economic Data

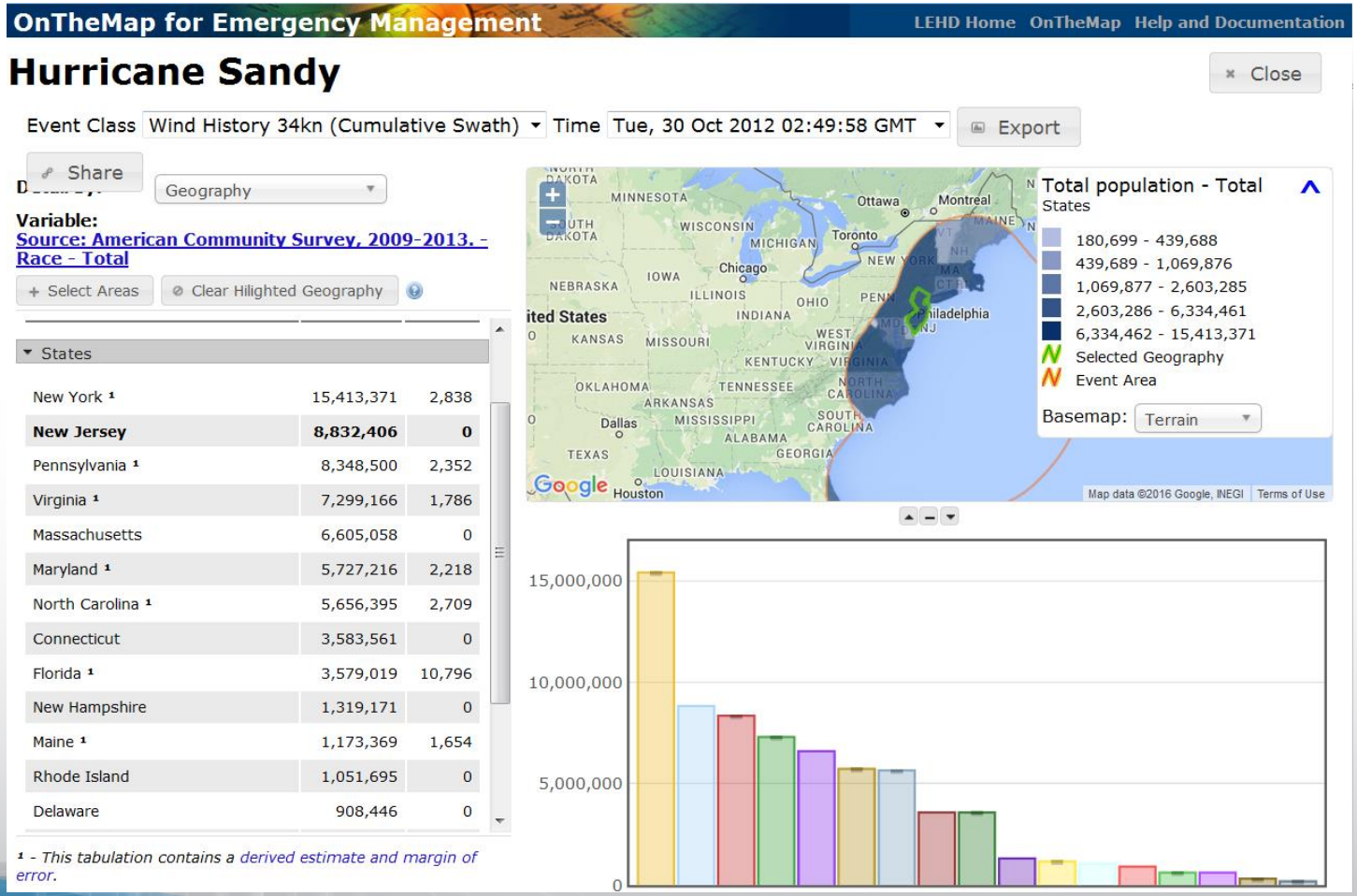


New Public Data Service for Emergency Preparedness & Response

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


OnTheMap for Emergency Management
LEHD Home OnTheMap Help and Documentation
Search:
Filter
U.S. Census Bureau data for disasters, natural hazards, and weather events.
Events as of 06/13/2016
Federal Disaster Declarations
DR-4223
Edwards County, TX, Duval County, TX, Harris County, TX and 110 other Counties
Affected Population: 17,594,564
DR-4245
Harris County, TX, Brazoria County, TX, Hidalgo County, TX and 19 other Counties
Affected Population: 8,035,628
DR-4214
Worcester County, MA, Barnstable County, MA, Plymouth County, MA and 7 other Counties
Affected Population: 5,723,468
DR-4261
Worcester County, MD, Baltimore County, MD, Frederick County, MD and 16 other Counties
Affected Population: 5,472,798
DR-4269
Harris County, TX, Montgomery County, TX, Coryell County, TX and 3 other Counties
Affected Population: 5,350,442
DR-4267
Westmoreland County, PA, Bedford County, PA, York County, PA and 8 other Counties
Affected Population: 4,784,674
EM-3374
Texas County, MO, Shannon County, MO, Franklin County, MO and 72 other Counties
Affected Population: 4,294,769
DR-4255
Texas, New Mexico
Affected Population: 3,682,423
DR-4250
Texas County, MO, Shannon County, MO, Franklin County
Canada
Hudson Bay
Greenland
Northwestern Passages
Mexico
Gulf of Mexico
Cuba
Puerto Rico
Caribbean Sea
Guatemala
Nicaragua
Venezuela
Guyana
Suriname
Colombia
Ecuador
Brazil
Peru
North Atlantic Ocean
Google
Map data ©2016 Google, INEGI
Terms of Use

Hurricane Sandy



Web Addresses for Tools

- QWI Explorer
  - http://qwiexplorer.ces.census.gov/
- OnTheMap
  - http://onthemap.ces.census.gov/
- OnTheMap for Emergency Management
  - http://onthemap.ces.census.gov/em.html
- LED Extraction Tool
  - http://ledextract.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 to a basic analytical platform for the data

Useful Links

- **QWI Explorer**
  - Video Walkthrough: http://lehd.ces.census.gov/applications/help/qwi_explorer.html#!video_walkthrough
  - Example Scenarios: http://lehd.ces.census.gov/applications/help/qwi_explorer.html#!example_scenarios
- **OnTheMap**
  - Getting Started: http://lehd.ces.census.gov/doc/help/onthemap/GettingStartedwithOnTheMap.pdf
  - Analysis Guides: http://lehd.ces.census.gov/applications/help/onthemap.html#!analysis_guides
  - Other Tutorials: http://lehd.ces.census.gov/applications/help/onthemap.html#!more_tutorials

Thank You!

- Local Employment Dynamics
  - http://www.lehd.ces.census.gov
- Questions and Feedback
  - CES.OnTheMap.Feedback@census.gov
  - CES.QWI.Feedback@census.gov
  - CES.Local.Employment.Dynamics@census.gov