

# Longitudinal Employer- Household Dynamics (LEHD): Quarterly Workforce Indicators and OnTheMap

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Economics and Statistics Administration  
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# Agenda

- Local Employment Household Dynamics (LEHD): An Overview
- Choosing among LED Products
- Data Products: QWI and OntheMap
- OTM Demonstrations

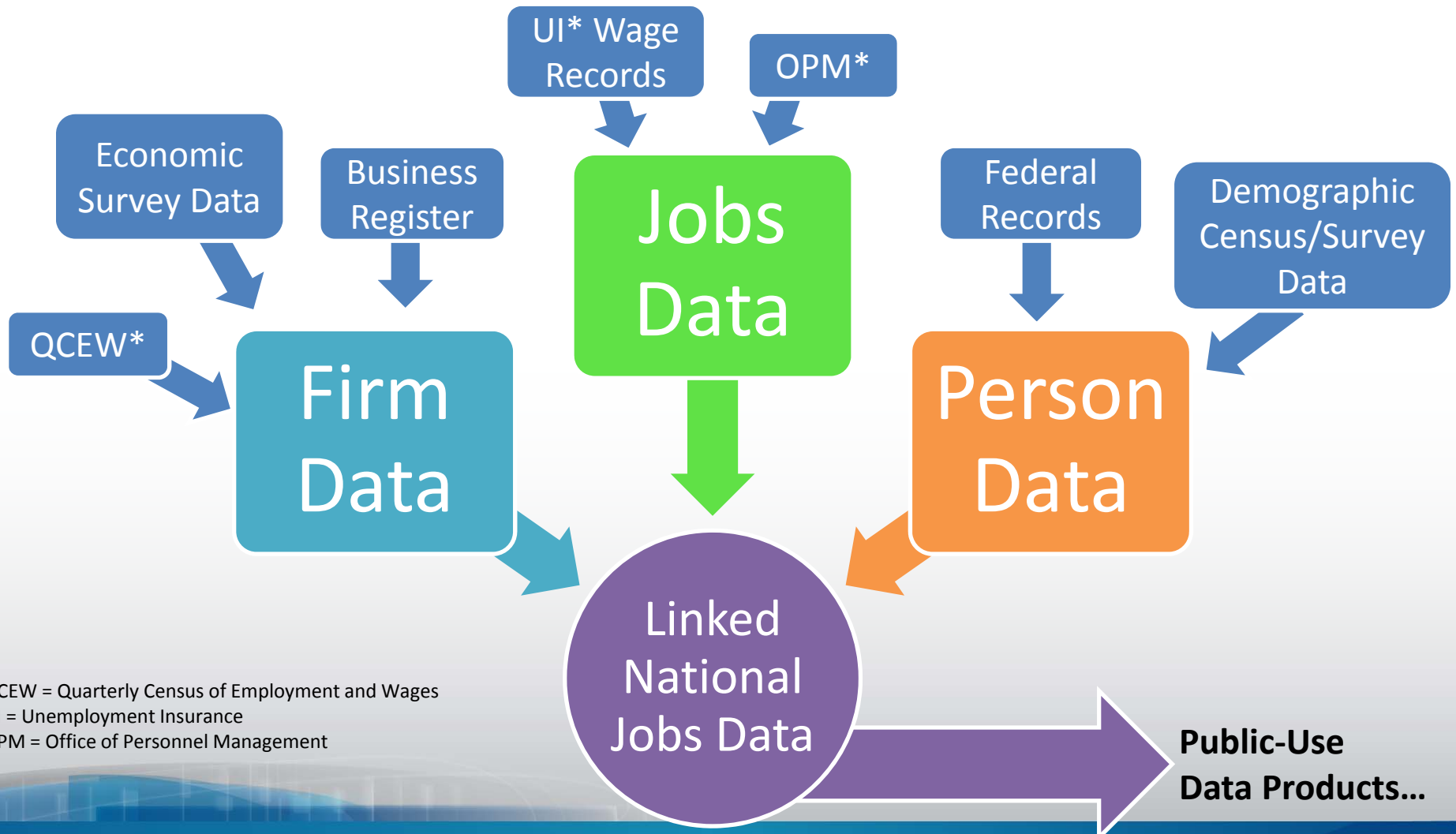
# Local Employment Dynamics Partnership

- Then:
  - Begun in late 1990s with a few states
  - Goal to generate new labor market statistics from existing records (UI and firm info)
- Now:
  - 53 partner states/territories
  - 3 data products
  - 4 web-based data tools
  - A culture of innovation and cost savings

# 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



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

# 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)—OntheMap**
  - Employment and Workplace-Residence Connections
  - Detailed geography + firm/worker characteristics

# 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, or you need the residential patterns of the workforce	Annual time resolution; less detailed firm/person characteristics; significant data lag (temporary)

# Choosing Data 1

When should I be interested in using LED data compared to other available statistics?

Suppose I'm primarily interested in **Employment**

Do I need the latest national estimate available?



- ***Current Employment Statistics*** (CES)
  - Employment by industry - 'the payroll survey'
- ***Current Population Survey*** (CPS)
  - Employment status and demographics - 'the household survey'

Some sub-state geographies are available concurrently through ***Local Area Unemployment Statistics*** (LAUS)



# Choosing Data 2

But suppose I need either sub-national employment data or statistics by detailed industry:



## ***Quarterly Census of Employment and Wages (QCEW)***

- Employment by detailed industry, sub-state geography and better employment coverage (6-month lag)

## ***Quarterly Workforce Statistics (QWI)***

- Employment by detailed industry, sub-state geography, and *worker demographics* (age, sex, education, race) and *fewer cell suppressions* than the QCEW (9-month lag)

## ***American Community Survey (ACS)***

- Employment status by more sub-state geographies than CPS/LAUS (9-month lag)

## ***LODES/OnTheMap***

- Employment at the *block-level* (>1 year lag)

## ***County Business Patterns (CBP)***

- Employment at the zipcode-level (>1 year lag)

# Choosing Data 3

Suppose I'm primarily interested in

## Hires/Separations/Turnover

Do I need the most current national data (1 month lag) or do I want to differentiate between quits and layoffs?

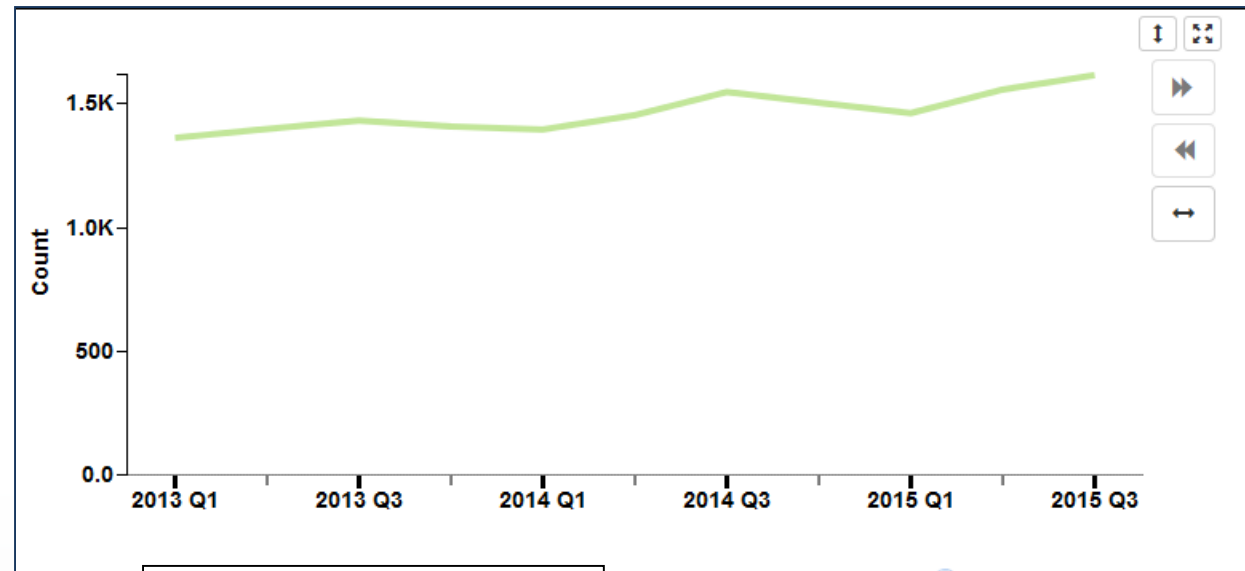
- ***Job Openings and Labor Turnover Survey*** (JOLTS)

Do I need sub-national data (state/county), data by worker demographics, or for detailed industries?

- ***Quarterly Workforce Statistics*** (QWI)

# Quarterly Workforce Indicators (QWI)

- Detailed workforce dynamics, by worker characteristics and firm characteristics
- **Popular uses:**
  - Local workforce demographics
  - Local industry workforce trends
  - Workforce turnover, job creation and destruction



	Scientific Research and Development Services
2015 Q3	1,616
2015 Q2	1,558
2014 Q3	1,548
2014 Q4	1,505
2015 Q1	1,463
2014 Q2	1,455
2013 Q3	1,433
2013 Q4	1,409
2013 Q2	1,399

What are the trends for Baltimore biotech employment in recent quarters showing?

# Quarterly Workforce Indicators (QWI)

- Detailed workforce dynamics, by worker characteristics and firm characteristics

Salaries for biotech workers in Baltimore with a Bachelor's Degree or Higher

- **Popular uses:**
  - Local workforce demographics
  - Local industry workforce trends
  - Workforce turnover, job creation and destruction

Quarter	Full Quarter Employment (Stable): Average Monthly Earnings
2014 Q1	8,061
2014 Q2	6,957
2014 Q3	7,421
2014 Q4	8,279
2015 Q1	8,374
2015 Q2	7,089
2015 Q3	

# Quarterly Workforce Indicators (QWI)

Monthly Earnings by Race for workers employed at Firms 1 year or younger

- Can see workforce composition by detailed firm characteristics
- Such as how much are workers at startup firms making, by race?

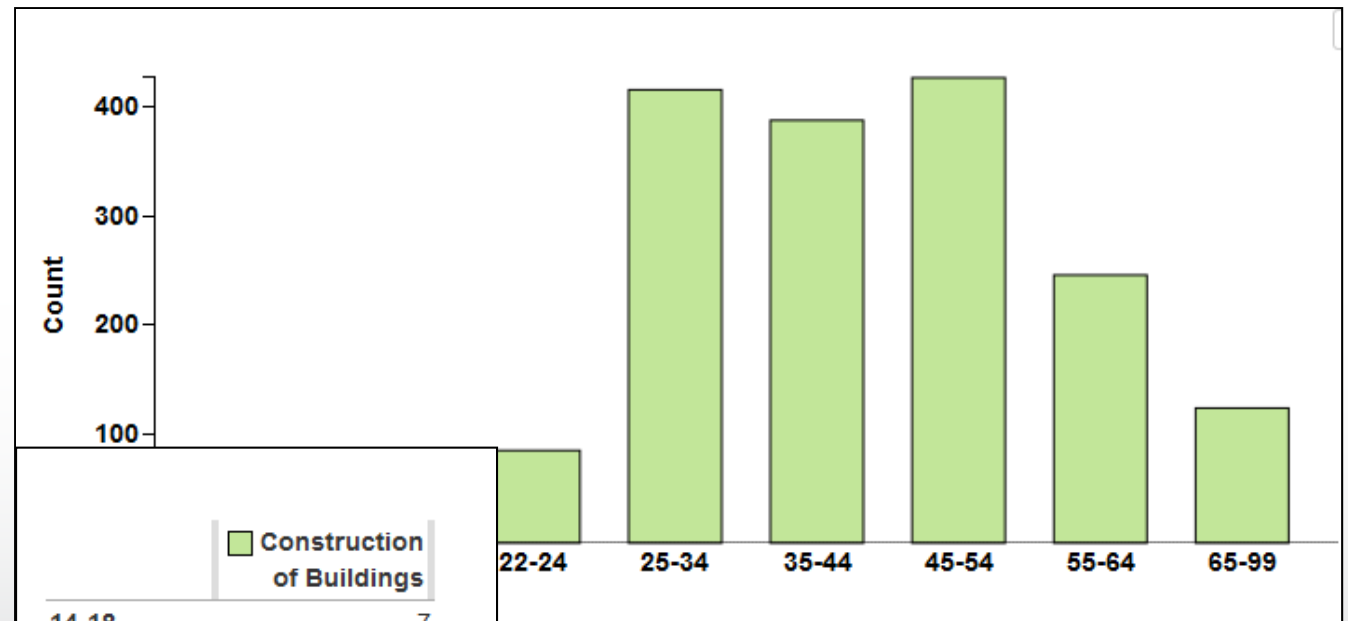
■ Full Quarter Employment (Stable): Average Monthly Earnings

White Alone	3,188
Black or African American Alone	2,073
American Indian or Alaska Native Alone	2,272
Asian Alone	2,403
Native Hawaiian or Other Pacific Islander Alone	2,233
Two or More Race Groups	2,556

# Quarterly Workforce Indicators (QWI)

## Age distribution of building construction workers In Baltimore

- Can see workforce composition by detailed firm characteristics
- Such as age distribution of workers in particular sectors

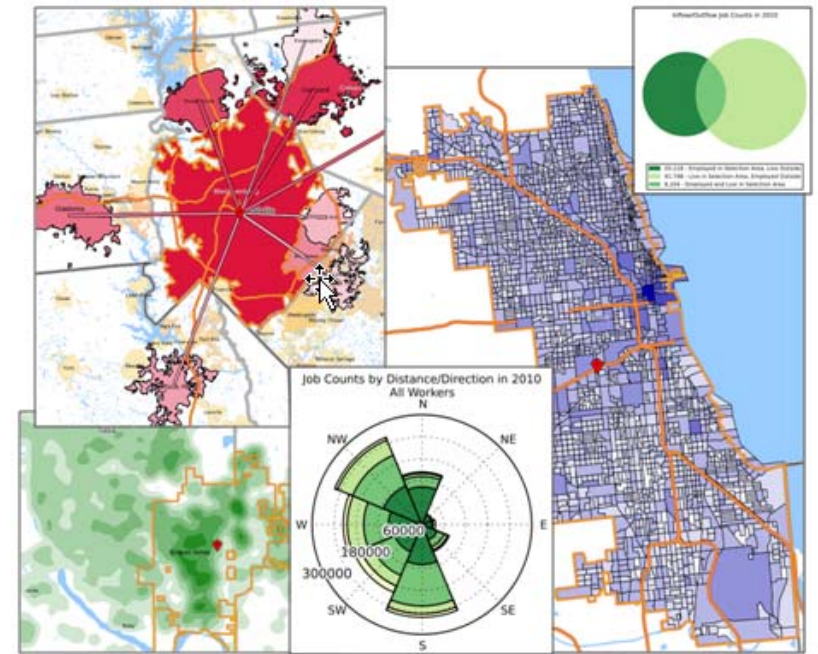


Age Group	Count
14-18	7
19-21	52
22-24	85
25-34	416
35-44	388
45-54	427
55-64	246
65-99	124

# 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

# OnTheMap: Getting Started

OnTheMap

LEHD Home [Help](#) and [Documentation](#) [Reload](#)

Start Base Map Selection

Previous Extent Hide Tabs

Welcome to OnTheMap!

Start an analysis by using one of the tools below (Search, Import Geography, or Load .OTM file). Hover over the Help icons located throughout the application to see Help tips for using specific functionality. Sections in the control panel can be collapsed or opened by clicking the section title.

[2014 Data Now Available \(03/03/2016\)](#)

Search

Virginia Beach, VA Search

Search All Names

- States
  - No results found.
- Counties
  - Virginia Beach city, VA
- Places (Cities, CDPs, etc.)
  - Virginia Beach city, VA
- ZIP Codes (ZCTA)
  - No results found.
- Metropolitan/Micropolitan Areas (CBSA)
  - Virginia Beach-Norfolk-Newport News, VA-NC
- Workforce Investment Areas (WIA)
  - No results found.
- County Subdivisions
  - Virginia Beach city (Virginia Beach city, VA)
- 114th Congressional Districts
  - 1 (Tract 462.25, Virginia Beach city, VA)
  - 5 (Tract 440.03, Virginia Beach city, VA)

Start by searching your geography, then double click your specific selection from the list.

Seattle

San Francisco

Los Angeles

San Diego

El Paso

Dallas

Austin

Houston

Jacksonville

Detroit

Columbus

Baltimore

Philadelphia

New York

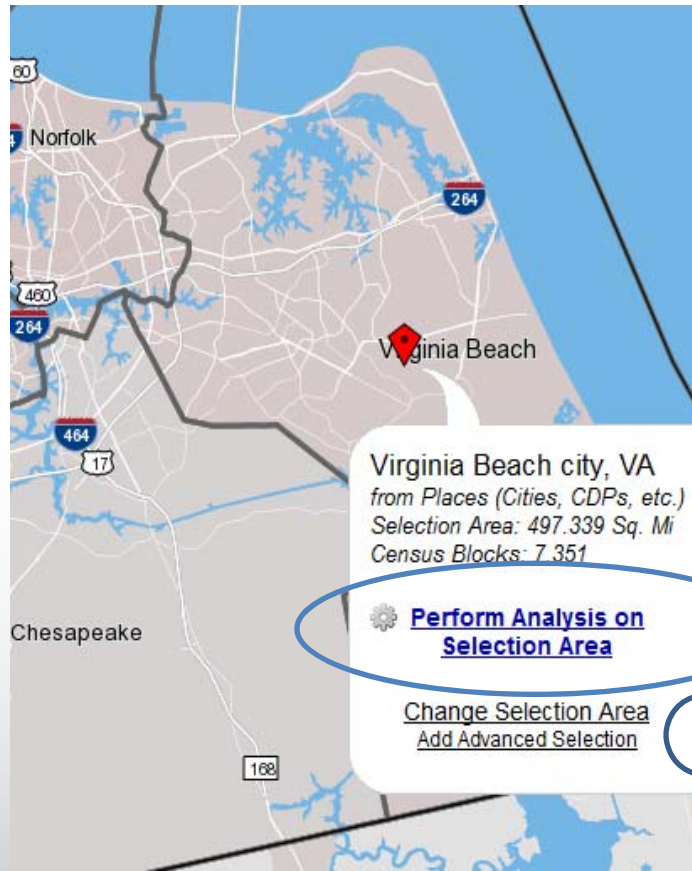
Boston

-60.657

<http://onthemap.ces.census.gov/>



# OnTheMap: Getting Started



### Analysis Settings

Area Profile Analysis in 2014 by Primary Jobs

**Home/Work Area**  
Determines whether the selection area is analyzed on where workers live ("Home") or where workers are employed ("Work").

Home  
 Work

2

**Analysis Type**  
Determines the type of results that will be generated for the selected area.

**Area Profile**  
Labor Market Segment: All Workers

**Area Comparison**  
Areas to Compare: Places (Cities, CDPs, etc.)  
Labor Market Segment: All Workers

**Distance/Direction**

**Destination**  
Destination Type: Places (Cities, CDPs, etc.)

**Inflow/Outflow**  
Note: Home/Work choice does not affect results

**Year**  
Determines the year(s) of data that will be processed in the analysis.

2014  
 2013  
 2012  
 2011  
 2010  
 2009  
 2008  
 2007  
 2006  
 2005  
 2004  
 2003  
 2002

**Job Type**  
Determines the scope of jobs that will be processed in the analysis.

All Jobs  
 Primary Jobs  
 All Private Jobs  
 Private Primary Jobs

1) Click to **Perform Analysis on Selection Area**, then be prepared to 2) choose your **Analysis Settings!**

# OnTheMap: Analysis Settings

## Analysis Settings

Area Profile Analysis in 2014 by Primary Jobs

### Home/Work Area

Determines whether the selection area is analyzed on where workers live ("Home") or where workers are employed ("Work").

- Home  
 Work

### Analysis Type

Determines the type of results that will be generated for the selected area.

#### Area Profile

Labor Market Segment:

All Workers

#### Area Comparison

Areas to Compare:

Places (City)

Labor Market Segment:

All Workers

#### Distance/Direction

#### Destination

Destination Type:

Places (City)

#### Inflow/Outflow

Note: Home/Work area selection will affect results

### Year

Determines the year(s) of data that will be processed in the analysis.

- 2014  
 2013  
 2012  
 2011  
 2010  
 2009  
 2008  
 2007  
 2006  
 2005  
 2004  
 2003  
 2002

### Job Type

Determines the scope of jobs that will be processed in the analysis.

- All Jobs  
 Primary Jobs  
 All Private Jobs  
 Private Primary Jobs

## Home/Work

Differentiates between where people work and place of residence. No matter which you select, all numbers will be related to "jobs."

## Year

Gives you the ability to look at data from 2002-2014; you can also animate your map to show changes over time!

## Job Type

Allows for a true analysis of all jobs in a given area.

Cancel

Go!

# OnTheMap: Analysis Settings

## *Analysis Types*

The first 2 Types provide demographics on workers!

### Analysis Type

**Area Profile**

Labor Market Segment:

All Workers ▼

**Area Comparison**

Areas to Compare:

Places (Cities, CDPs, etc.) ▼

Labor Market Segment:

All Workers ▼

**Area Profile** – Complete analysis for Employees and the Locations of Jobs by Industry

**Area Comparison** - Compare lower level geographies within an area

# OnTheMap: Analysis Settings

## *Analysis Types*

The last 3 Types show the geographic relationship between workers' homes and their jobs!

### Analysis Type

Distance/Direction

Destination

Destination Type:

Places (Cities, CDPs, etc.) ▼

Inflow/Outflow

Note: Home/Work choice does not affect results

**Distance Direction** – Specific commute patterns from work census block to home census block and vice versa.

**Destination** – Provides a look at specific work/home locations down to a census tract level.

**Inflow/Outflow** – Graphic illustration of total numbers of jobs/residents and work vs. home locations.

# OnTheMap: Area Profile

## Work Area Profile Analysis Baltimore

[Detailed Report](#)  
[Export Geography](#)  
[Print Chart/Map](#)

▼ Legends

- 5 - 4,092 Jobs/Sq.Mile
- 4,093 - 16,355 Jobs/Sq.Mile
- 16,356 - 36,794 Jobs/Sq.Mile
- 36,795 - 65,408 Jobs/Sq.Mile
- 65,409 - 102,198 Jobs/Sq.Mile

- 1 - 17 Jobs
- 18 - 267 Jobs
- 268 - 1,347 Jobs
- 1,348 - 4,257 Jobs
- 4,258 - 10,392 Jobs

**N** Analysis Selection

► Analysis Settings

Click a Characteristic link in the Summary Report to see more detail.

Age

Earnings

Industry Sector

Race

View as  ▼

Total Primary Jobs	319,786	100.0%
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**Worker Age**

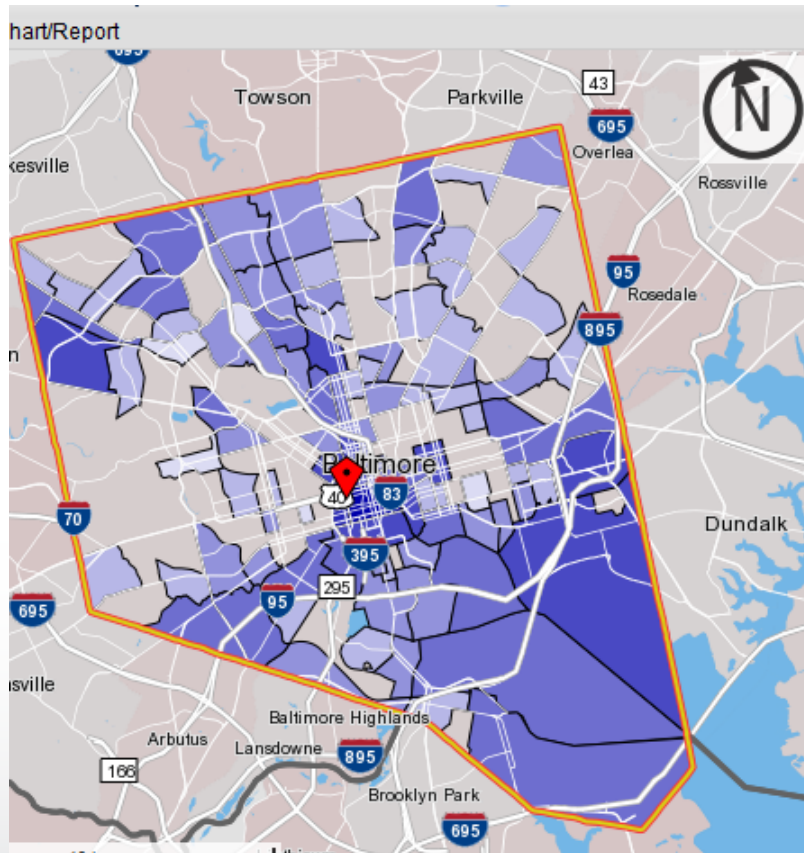
	2014	
	Count	Share
<a href="#">Age 29 or younger</a>	61,303	19.2%
<a href="#">Age 30 to 54</a>	180,635	56.5%
<a href="#">Age 55 or older</a>	77,848	24.3%

Area Profile is the default analysis setting. It provides:

- ✓ Job Density
- ✓ Job Location (down to the Census Block)
- ✓ Jobs by Industry
- ✓ Worker Demographics
- ✓ Robust Interactive Mapping + More!

U.S. Department of Economics and Statistics  
U.S. CENSUS BUREAU  
census.gov

# OnTheMap: Area Comparison



Job Counts by Census Tracts in 2014 - Primary Jobs	
	Total
<b>All Census Tracts</b>	<b>319,786</b>
<a href="#">401 (Baltimore city, MD)</a>	55,087
<a href="#">402 (Baltimore city, MD)</a>	17,172
<a href="#">2801.02 (Baltimore city, MD)</a>	14,207
<a href="#">604 (Baltimore city, MD)</a>	13,147
<a href="#">2606.05 (Baltimore city, MD)</a>	11,552
<a href="#">704 (Baltimore city, MD)</a>	9,179
<a href="#">2201 (Baltimore city, MD)</a>	8,718
<a href="#">2605.01 (Baltimore city, MD)</a>	8,310
<a href="#">1202.02 (Baltimore city, MD)</a>	7,776
<a href="#">1102 (Baltimore city, MD)</a>	6,902
<a href="#">302 (Baltimore city, MD)</a>	6,756
<a href="#">1702 (Baltimore city, MD)</a>	6,597
<a href="#">2501.03 (Baltimore city, MD)</a>	6,597
<a href="#">203 (Baltimore city, MD)</a>	6,597
<a href="#">2604.04 (Baltimore city, MD)</a>	6,597
<a href="#">2717 (Baltimore city, MD)</a>	6,597
<a href="#">1207 (Baltimore city, MD)</a>	6,597
<a href="#">2801.01 (Baltimore city, MD)</a>	6,597
<a href="#">2401 (Baltimore city, MD)</a>	6,597
<a href="#">2505 (Baltimore city, MD)</a>	6,597

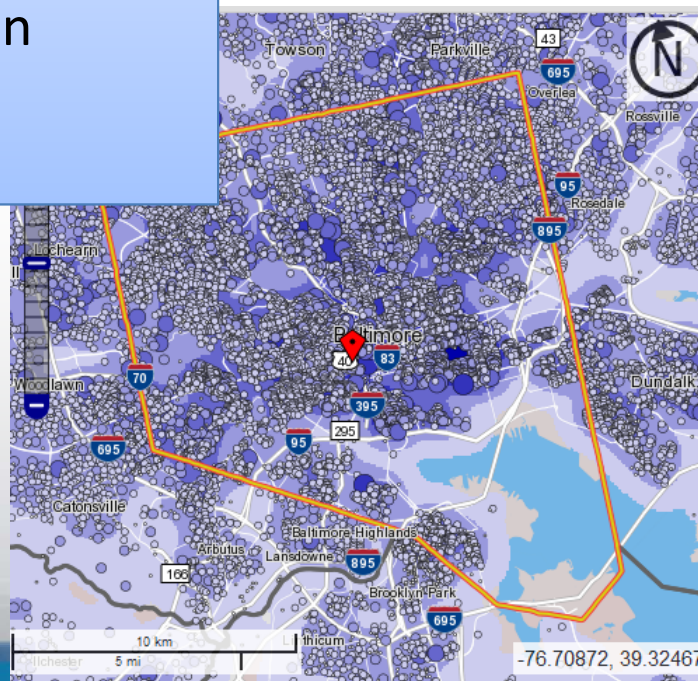
Area Comparison shows smaller geographies within the selected area, and includes:

- ✓ Work/Home locations down to the Block Group
- ✓ Top 5 –Top 100
- ✓ Sortable by Industry and Worker Demographics

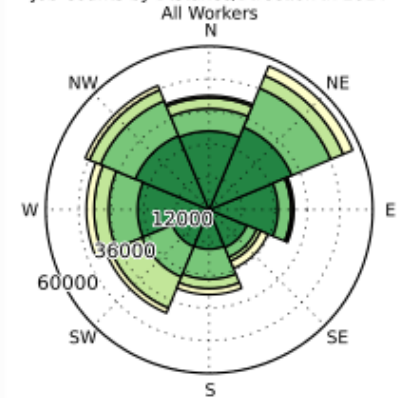
# OnTheMap: Distance/Direction

Use Distance/Direction to:

- ✓ View home-to-work commute (AM)
- ✓ View work-to-home commute (PM)
- ✓ Get a sense of how far/which direction people commute



Job Counts by Distance/Direction in 2014



View as

**Jobs by Distance - Work Census Block to Home Census Block**

	2014	
	Count	Share
<b>Total Primary Jobs</b>	319,786	100.0%
<b>Less than 10 miles</b>	186,922	58.5%
<b>10 to 24 miles</b>	79,754	24.9%
<b>25 to 50 miles</b>	36,631	11.5%
<b>Greater than 50 miles</b>	16,479	5.2%

# OnTheMap: Destination

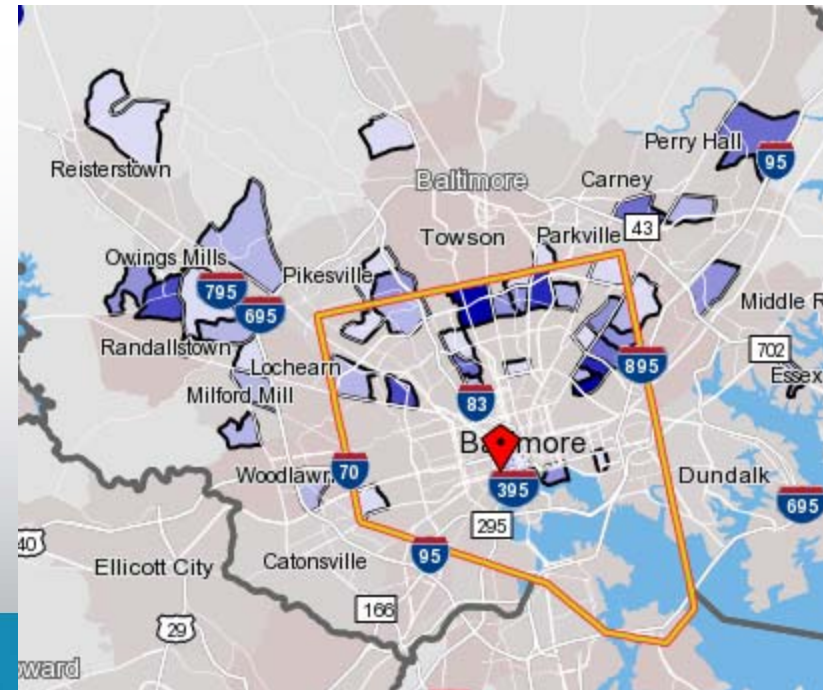
## Jobs Counts by Census Tracts Where Workers Live - Primary Jobs

2014

	Count	Share
<b>All Census Tracts</b>	<b>319,786</b>	<b>100.0%</b>
2712 (Baltimore city, MD)	1,271	0.4%
1102 (Baltimore city, MD)	1,236	0.4%
2603.02 (Baltimore city, MD)	1,217	0.4%
2708.03 (Baltimore city, MD)	1,198	0.4%
2602.02 (Baltimore city, MD)	1,163	0.4%
4025.09 (Baltimore, MD)	1,100	0.3%
1511 (Baltimore city, MD)	1,073	0.3%
1307 (Baltimore city, MD)	1,062	0.3%
4114.07 (Baltimore, MD)	1,013	0.3%
4113.09 (Baltimore, MD)	1,008	0.3%
2602.01 (Baltimore city, MD)	1,002	0.3%
2708.02 (Baltimore city, MD)	983	0.3%
2704.01 (Baltimore city, MD)	975	0.3%
4924.02 (Baltimore, MD)	974	0.3%
4036.02 (Baltimore, MD)	970	0.3%
2708.05 (Baltimore city, MD)	965	0.3%
203 (Baltimore city, MD)	954	0.3%
401 (Baltimore city, MD)	954	0.3%
2601.02 (Baltimore city, MD)	940	0.3%
4407.01 (Baltimore, MD)	937	0.3%
4023.03 (Baltimore, MD)	926	0.3%

Use Destination Analysis to:

- ✓ Determine specific job destinations at a closer geographic level
- ✓ Determine specific home locations within your selected area down to a tract level





# OnTheMap: Inflow/Outflow

## Analysis Settings

### Inflow/Outflow Analysis in 2014 by Primary Jobs

#### Home/Work Area

Determines whether the selection area is analyzed on where workers live ("Home") or where workers are employed ("Work").

- Home  
 Work

#### Analysis Type

Determines the type of results that will be generated for the selected area.

##### Area Profile

Labor Market Segment:

All Workers

##### Area Comparison

Areas to Compare:

ZIP Codes (ZCTA)

Labor Market Segment:

All Workers

##### Distance/Direction

##### Destination

Destination Type:

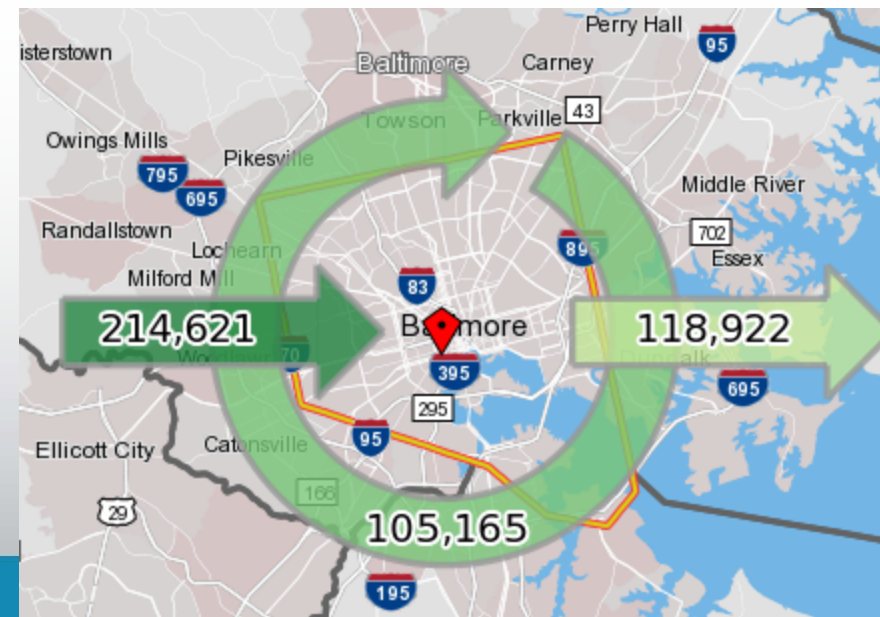
ZIP Codes (ZCTA)

##### Inflow/Outflow

Note: Home/Work choice does not affect results

## Inflow/Outflow shows:

- ✓ # People coming into the area for work
- ✓ # People leaving the area for work
- ✓ # People living and working within selected area



# OTM Example: *Drawing Tools – Draw Polygon*

The screenshot displays a GIS application interface. On the left, a 'Selection Preview' panel shows a red-outlined polygon with a green checkmark and buttons for 'Confirm Selection' and 'Confirm and Add Advanced Selection'. Below this is a 'Drawing Tools' panel with a blue circle around the 'Draw Polygon (Freehand)' button. The main map area shows a street grid with a pink-shaded polygon drawn over it. A tooltip for the 'Selection Area' provides the following information:

- Selection Area
- Freehand Drawing
- Selection Area: 4.678 Sq. Mi
- Census Blocks: 979
- [Perform Analysis on Selection Area](#)
- [Change Selection Area](#)
- [Add Advanced Selection](#)

The map includes navigation controls on the left, a scale bar at the bottom (5 km / 3 miles), and various map features like roads and water bodies.

# OTM Example: *Drawing Tools – Draw Point; Buffer – Simple Ring*

The screenshot displays a GIS application interface with the following components:

- Top Menu:** Start, Base Map, Selection, Advanced, Res, Save, Load, Feedback, Previous Extent, Hide Tabs, Hide Chart/Report.
- Selection Preview:** A red circle with an orange border. Buttons: Confirm Advanced Selection (checked), Cancel Advanced Selection.
- Drawing Tools:** Navigation, Draw Polygon (Freehand), Draw Line, **Draw Point(s)** (highlighted), Edit Drawn Shape, Clear Selection.
- Add Layer Selection:** No Selected Layer.
- Add Buffer to Selection:** **Simple/Ring** (selected), Radius: 3 miles, Donut, Plume.
- Map:** Shows the Hampton Roads area with a red diamond point near Virginia Beach and a red ring buffer around it. Labels include Poquoson city, Hampton, Norfolk, Portsmouth, Chesapeake, and Virginia Beach.
- Selection Area Popup:** Freehand Drawing buffered 3.00 miles, Selection Area: 28.261 Sq. Mi, Census Blocks: 463. Options: Perform Paired Area Analysis, Perform Analysis on: Both Areas, Intersected Areas, Selection Area minus Advanced Area, Change Selection Area, Change Advanced Selection.

# OTM Example: *Drawing Tools – Draw Point; Buffer – Donut*

The screenshot displays a GIS application interface with a sidebar on the left and a map on the right. The sidebar contains several sections:

- Selection Preview:** Shows a donut-shaped buffer around a point. Below it are buttons for "Confirm Advanced Selection" (checked) and "Cancel Advanced Selection".
- Drawing Tools:** A list of tools including "Navigation", "Draw Polygon (Freehand)", "Draw Line", "Draw Point(s)" (circled in blue), "Edit Drawn Shape", and "Clear Selection".
- Add Layer Selection:** A dropdown menu currently set to "No Selected Layer".
- Add Buffer to Selection:** Radio buttons for "Do Not Buffer", "Simple/Ring", "Donut" (selected and circled in blue), and "Plume". Below "Donut" are input fields for "Inside Radius: 1.5 miles" and "Outside Radius: 4.5 miles".

The map on the right shows a coastal area with cities like Norfolk and Virginia Beach. A pink point is located near Virginia Beach, surrounded by a donut-shaped buffer with an inner orange ring and an outer red ring. A tooltip box is open over the map, displaying the following information:

- Area between 1.50 and 4.50 miles around Freehand Drawing
- Selection Area: 56.523 Sq. Mi
- Census Blocks: 2,641
- Buttons for "Perform Paired Area Analysis", "Perform Analysis on:" (with sub-options: "Both Areas", "Intersected Areas", "Selection Area minus Advanced Area"), "Change Selection Area", and "Change Advanced Selection".

# OTM Example: *Drawing Tools – Draw Line; Buffer – Plume*

The screenshot displays the OTM software interface. On the left, the 'Selection' panel includes a 'Selection Preview' showing a red line with a buffer. Below it are buttons for 'Confirm Advanced Selection' (checked), 'Cancel Advanced Selection', 'Navigation', 'Draw Polygon (Freehand)', 'Draw Line' (circled in blue), 'Draw Point(s)', 'Edit Drawn Shape', and 'Clear Selection'. The 'Add Layer Selection' dropdown is set to 'No Selected Layer'. The 'Add Buffer to Selection' section has radio buttons for 'Do Not Buffer', 'Simple/Ring', 'Donut', and 'Plume' (selected and circled in blue). The 'Plume' section has input fields for 'Start Radius: 0.5 miles' and 'End Radius: 0.5 miles'. The main map shows a city area with a red line and an orange buffer. A 'Plume Buffer' popup window displays: 'Freehand Drawing buffered starting 0.50 to 0.50 miles', 'Selection Area: 18.612 Sq. Mi', and 'Census Blocks: 1,677'. It also offers options for 'Perform Paired Area Analysis' and 'Perform Analysis on: Both Areas, Intersected Areas, Selection Area minus Advanced Area'. At the bottom, the United States Census Bureau logo and U.S. Department of Commerce information are visible.



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