

# Using LEHD data to create a declining dynamics graph

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LED State Workshop  
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# Disclaimer

Any opinions and conclusions expressed herein are those of the author and do not necessarily represent the views of the U.S. Census Bureau.

All results have been reviewed to ensure that no confidential information is disclosed.

# Background

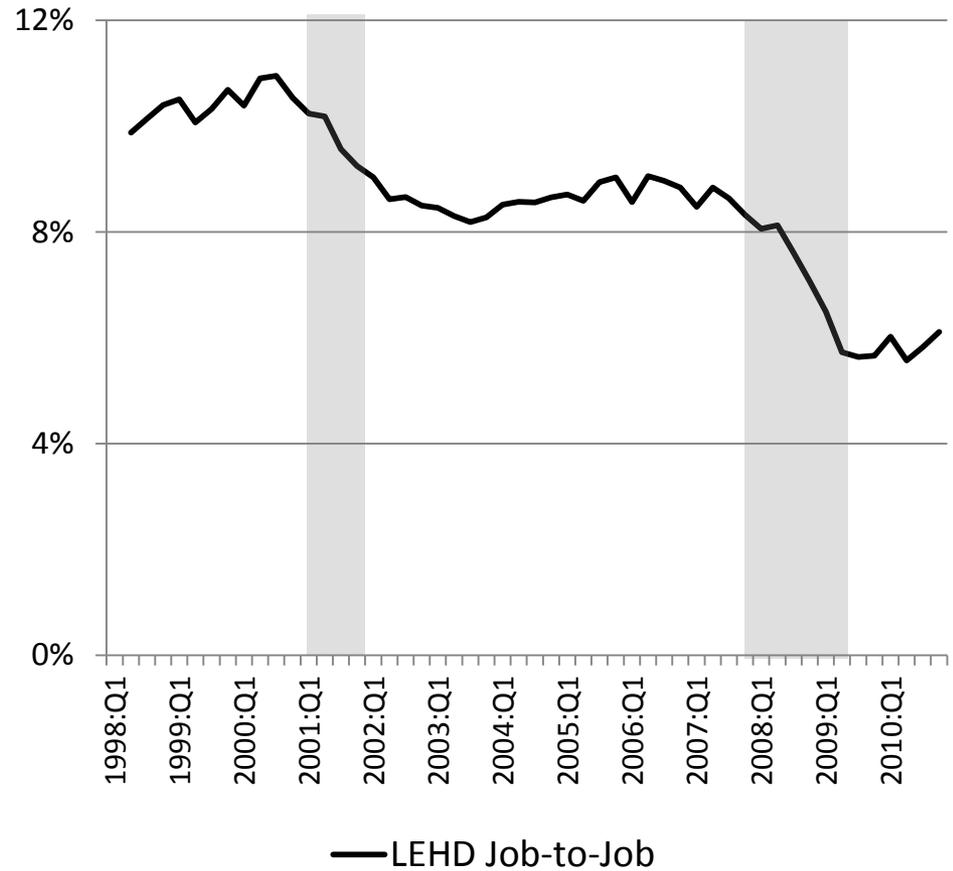
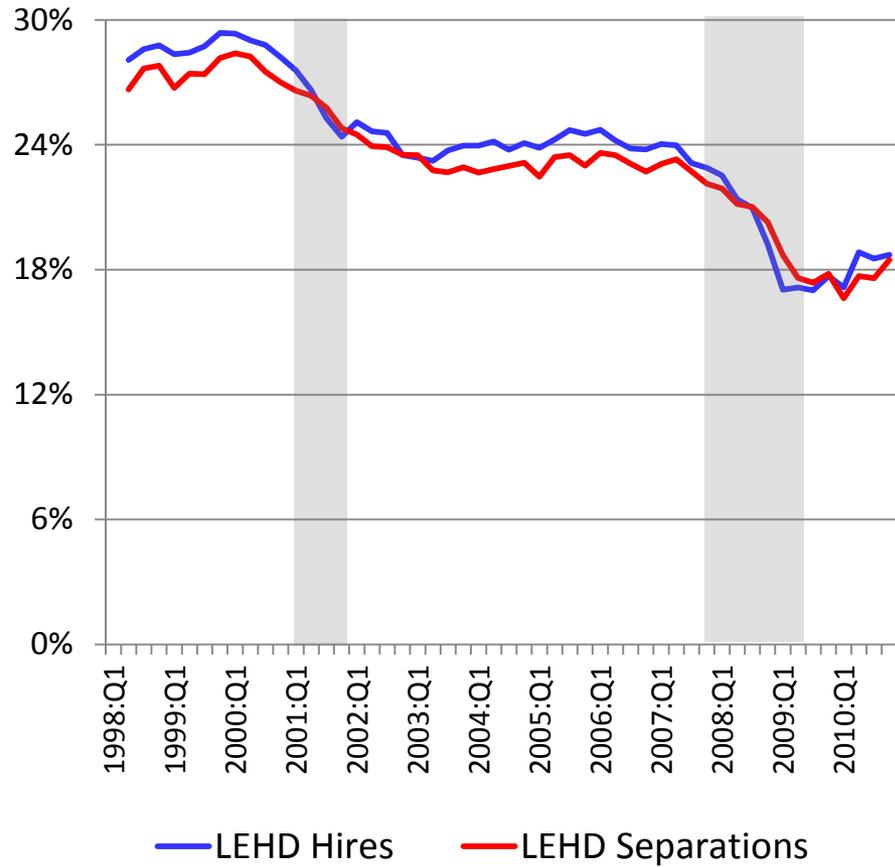
The motivation for this presentation is taken from a 2013 research paper by Hyatt and Spletzer:

The Recent Decline in Employment Dynamics

Published in *The IZA Journal of Labor Economics*

<http://www.izajole.com/content/pdf/2193-8997-2-5.pdf>

# Employment Dynamics



# Employment Dynamics

Measure	Source	Rate in 1998	Rate in 2010	Proportionate Decline
<b>Hires</b>	LEHD	28.1%	18.7%	-38%
<b>Separations</b>	LEHD	26.6%	18.5%	-36%
<b>Job Creation</b>	LEHD	7.7%	5.5%	-33%
<b>Job Destruction</b>	LEHD	6.4%	5.1%	-23%
<b>Job-to-Job flows</b>	LEHD	9.9%	6.1%	-47%

# Employment Dynamics

Measure	Source	Rate in 1998	Rate in 2010	Proportionate Decline
<b>Hires</b>	LEHD	28.1%	18.7%	-38%
	JOLTS*	14.1%	10.6%	-28%
	CPS	19.4%	17.3%	-11%
<b>Separations</b>	LEHD	26.6%	18.5%	-36%
	JOLTS*	14.3%	10.1%	-34%
	CPS	19.1%	17.2%	-10%
<b>Job Creation</b>	LEHD	7.7%	5.5%	-33%
	BED	8.3%	6.6%	-23%
<b>Job Destruction</b>	LEHD	6.4%	5.1%	-23%
	BED	7.6%	6.1%	-22%
<b>Job-to-Job flows</b>	LEHD	9.9%	6.1%	-47%
	CPS	7.9%	4.6%	-53%

# Are the Declines Important?

High levels of employment dynamics are often associated with higher economic growth

- Schumpeterian creative destruction
- Businesses & workers seeking their most productive match
- Much wage growth occurs at (voluntary) job change

The recent decline may be worrisome

- declining innovation or declining labor market flexibility?

But declining dynamics can also be good

- increased job stability due to better worker-firm matching?

Net effect on the labor market is ??? [we don't know]

# Are the Declines Important?

August 22<sup>nd</sup> speech by Fed Chair Janet Yellen:

The assessment of labor market slack is rarely simple and has been especially challenging recently. Estimates of slack necessitate difficult judgments about the magnitudes of the cyclical and structural influences affecting labor market variables, including labor force participation, the extent of part-time employment for economics reasons, and labor market flows, such as the pace of hires and quits. A considerable body of research suggests that the behavior of these and other labor market variables has changed since the Great Recession.

# Goal of this Presentation

A step-by-step tutorial of how to use publicly available LEHD data to create a graph which shows the declining hires and separations rates in your State

# Start with LEHD website <http://lehd.ces.census.gov/>

The screenshot shows the top of the LEHD website. At the top right, there are links for "U.S. Department of Commerce | Blogs | Index A-Z | Glossary | FAQs". Below this is a search bar. The main navigation bar is blue and contains the following items: "United States Census Bureau" logo, "Topics: Population, Economy", "Geography: Maps, Geographic Data", "Library: Infographics, Publications", "Data: Tools, Developers", "About the Bureau: Research, Surveys", and "Newsroom: News, Events, Blogs". Below the navigation bar is a green bar with the title "Longitudinal Employer-Household Dynamics" and a secondary navigation menu with buttons for "Main", "Applications", "Data", "Learn More", "Research", "State Partners", and "Partner with Us".

## Applications

- [QWI Explorer](#)
- [OnTheMap](#)
- [OnTheMap for Emergency Management](#)
- [LED Extraction Tool](#)
- [QWI Online](#)
- [Industry Focus](#)

## Useful Links

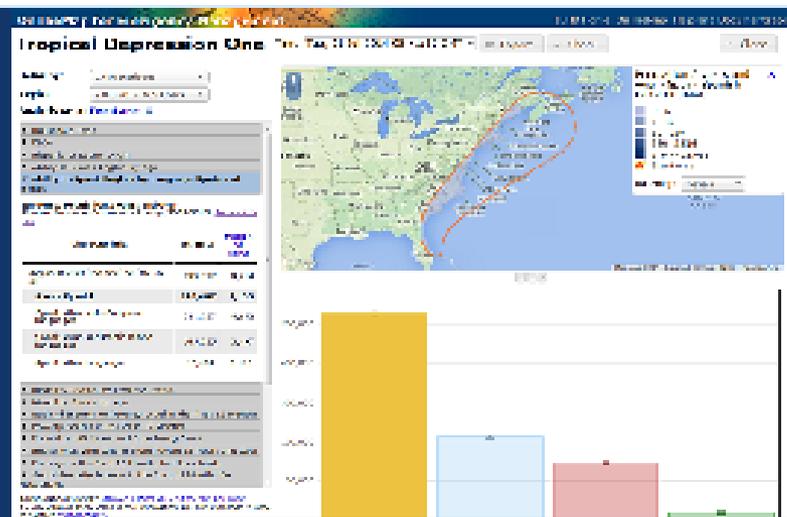
- [Center for Economic Studies](#)
- [QWI Data](#)
- [LODES Data](#)
- [LED Workshop](#)
- [CED HotReport](#)

**OnTheMap for Emergency Management** provides information of potential effects of disasters on the U.S. workforce and population with detailed social, economic, and housing data.

[Learn more](#)  (66 KB)

[Start OnTheMap for Emergency Management](#)

[<](#) [1](#) [2](#) [3](#) [4](#) [5](#) [6](#) [>](#)



# Click on “LED Extraction Tool”

The screenshot shows the U.S. Census Bureau website. At the top, there is a navigation bar with the following links: U.S. Department of Commerce | Blogs | Index A-Z | Glossary | FAQs. Below this is a search bar and a main navigation menu with categories: Topics (Population, Economy), Geography (Maps, Geographic Data), Library (Infographics, Publications), Data (Tools, Developers), About the Bureau (Research, Surveys), and Newsroom (News, Events, Blogs). The main content area features a large heading: "Longitudinal Employer-Household Dynamics". Below this heading is a secondary navigation bar with links: Main, Applications, Data, Learn More, Research, State Partners, and Partner with Us. On the left side, there is a sidebar with the heading "Applications" and a list of tools: GWI Explorer, OnTheMap, OnTheMap for Emergency Management, LED Extraction Tool (highlighted with a red box), and Industry Focus. Below this is a "Useful Links" section with links to the Center for Economic Studies, GWI Data, LODES Data, LED Workshop, and CED HotReport. The main content area contains a large blue box with the text: "OnTheMap for Emergency Management provides information of potential effects of disasters on the U.S. workforce and population with detailed social, economic, and housing data." Below this text is a "Learn more" link with a PDF icon and the text "(66 KB)", and a "Start OnTheMap for Emergency Management" link. To the right of this text is a screenshot of the "OnTheMap for Emergency Management" tool interface, which includes a map of the United States, a sidebar with various data filters, and a bar chart showing data for different regions.

# Choose a State (today: WA)

WA is 1 of 4 states {IL, MD, WA, WI} whose data starts in 1990:Q1

The screenshot shows the 'LED Extraction Tool - Quarterly Workforce Indicators' interface. The '1. Geography' tab is active. Under the 'State' section, a list of states is displayed. 'Washington' is highlighted with a red box, and a red arrow points to it from the right. To the right of the state list, a preview for 'Washington' is shown, including a map icon and the text 'Washington Counties: 39, Metro/Micropolitan Areas: 22, Workforce Im'. Below the state list, the 'Geography Type' section has 'States' selected. The 'Areas' section shows a search bar and a list of 53 Washington areas, with the first one checked.

# Move onto Step 2

The screenshot displays the 'LED Extraction Tool' interface. At the top, a navigation bar shows six steps: 1. Geography, 2. Firm Characteristics, 3. Worker Characteristics, 4. Indicators, 5. Quarters, and 6. Summary and Export. Step 2, 'Firm Characteristics', is highlighted with a red box. Below the navigation bar, the 'State' dropdown menu is open, listing various states. 'Washington' is selected and highlighted with a red box. To the right of the state list, a map of Washington is shown with the text 'Washington' and 'Counties: 39, Metro/Micropolitan Areas: 22, Workforce Im'. Below the map, the 'Geography Type' dropdown is set to 'States'. To the right of the 'Geography Type' dropdown, the 'Areas' section shows a search bar and a list of areas with a checked box next to '53 Washington'. A red arrow points from the 'Firm Characteristics' step to the 'Washington' state selection.

# For today, stick with defaults

**LED Extraction Tool - Quarterly Workforce Indicators**

1. Geography | 2. Firm Characteristics | 3. Worker Characteristics | 4. Indicators | 5. Quarters | 6. Summary and Export

**Industry Detail Level** 

NAICS Sectors  
 NAICS 3-digit Subsectors  
 NAICS 4-digit Industries

**Firm Ownership** 

All  
 All Private

**Firm Age** 

All Firm Ages  
 0-1 Years  
 2-3 Years  
 4-5 Years  
 6-10 Years  
 11+ Years

**Industries** 

Search:  

[Check All](#) | [Check None](#) | [Invert Selection](#)

00 All NAICS Sectors  
 11 Agriculture, Forestry, Fishing and Hunting  
 21 Mining, Quarrying, and Oil and Gas Extraction  
 22 Utilities  
 23 Construction  
 31-33 Manufacturing  
 42 Wholesale Trade  
 44-45 Retail Trade  
 48-49 Transportation and Warehousing  
 51 Information  
 52 Finance and Insurance  
 53 Real Estate and Rental and Leasing

# Move onto step 3

**LED Extraction Tool - Quarterly Workforce Indicators**

1. Geography | 2. Firm Characteristics | **3. Worker Characteristics** | 4. Indicators | 5. Quarters | 6. Summary and Export

**Industry Detail Level**

- NAICS Sectors
- NAICS 3-digit Subsectors
- NAICS 4-digit Industries

**Firm Ownership**

- All
- All Private

**Firm Age**

- All Firm Ages
- 0-1 Years
- 2-3 Years
- 4-5 Years
- 6-10 Years
- 11+ Years

**Industries**

Search:

[Check All](#) | [Check None](#) | [Invert Selection](#)

- 00 All NAICS Sectors
- 11 Agriculture, Forestry, Fishing and Hunting
- 21 Mining, Quarrying, and Oil and Gas Extraction
- 22 Utilities
- 23 Construction
- 31-33 Manufacturing
- 42 Wholesale Trade
- 44-45 Retail Trade
- 48-49 Transportation and Warehousing
- 51 Information
- 52 Finance and Insurance
- 53 Real Estate and Rental and Leasing

# For today, stick with defaults

**LED Extraction Tool - Quarterly Workforce Indicators**

1. Geography | 2. Firm Characteristics | 3. Worker Characteristics | 4. Indicators | 5. Quarters | 6. Summary and Export

Select Worker Characteristics by: Sex and Age

**Sex and Age**

**Sex**

- Male and Female
- Male
- Female

**Age**

- All Ages (14-99)
- 14-18
- 19-21
- 22-24
- 25-34
- 35-44
- 45-54
- 55-64
- 65-99

# Move onto step 4

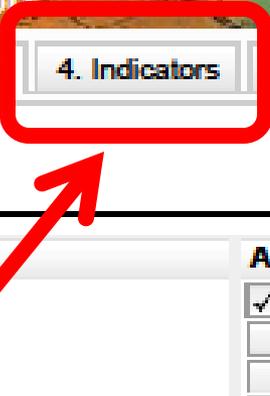
LED Extraction Tool - Quarterly Workforce Indicators

1. Geography | 2. Firm Characteristics | 3. Worker Characteristics | **4. Indicators** | 5. Quarters | 6. Summary and Export

Select Worker Characteristics by: Sex and Age

### Sex and Age

Sex	Age
<input checked="" type="checkbox"/> Male and Female	<input checked="" type="checkbox"/> All Ages (14-99)
<input type="checkbox"/> Male	<input type="checkbox"/> 14-18
<input type="checkbox"/> Female	<input type="checkbox"/> 19-21
	<input type="checkbox"/> 22-24
	<input type="checkbox"/> 25-34
	<input type="checkbox"/> 35-44
	<input type="checkbox"/> 45-54
	<input type="checkbox"/> 55-64
	<input type="checkbox"/> 65-99



# Hires & Separations Rates (1 of 6)

**LED Extraction Tool - Quarterly Workforce Indicators**

1. Geography | 2. Firm Characteristics | 3. Worker Characteristics | 4. Indicators | 5. Quarters | 6. Summary and Export

Select one of more **Quarterly Workforce Indicators** by clicking the checkboxes below. The set of currently selected indicators can be categorized, simply click the text of the category heading. Standard and Technical Descriptions for each indicator can be displayed by clicking the checkboxes below. For more information on the indicators, please see the [QWI 101](#) [PDF, 203k] document.

**Employment**

**Employment Change, Individual**

<input type="checkbox"/> <b>HirA</b> Hires All: Counts (Accessions)	Estimated number of workers who started a new job in the specified quarter. Includes hires that are new hires and recalls.
<input type="checkbox"/> <b>HirN</b> Hires New: Counts	Estimated number of workers who started a new job. More specifically, those who worked for an employer in the specified quarter, were not employed by any of the previous four quarters.
<input type="checkbox"/> <b>HirR</b> Hires Recalls: Counts	Estimated number of workers who returned to the same employer within the previous year (i.e., total hires that are not new hires).
<input type="checkbox"/> <b>Sep</b> Separations: Counts	Estimated number of workers whose job with a given employer ended in the specified quarter.
<input type="checkbox"/> <b>HirAEnd</b> End-of-Quarter Hires	Estimated number of workers who started a new job in the specified quarter and did not return to the same employer in the next quarter.
<input type="checkbox"/> <b>HirAEndR</b>	Hires as a percent of average employment

Show Descriptions  Show Technical Descriptions

# Hires & Separations Rates (2 of 6)

LED Extraction Tool - Quarterly Workforce Indicators

1. Geography | 2. Firm Characteristics | 3. Worker Characteristics | 4. Indicators | 5. Quarters | 6. Summary and Export

Select one of more **Quarterly Workforce Indicators** by clicking the checkboxes below. The set of currently selected indicators can be categorized, simply click the text of the category heading. Standard and Technical Descriptions for each indicator can be displayed by clicking the checkboxes. For more information on the indicators, please see the [QWI 101](#) [PDF, 203k] document.

Employment

Employment Change, Inflows and Outflows

HirA  
Hires All: Counts (Accessions)

HirN  
Hires New: Counts

HirR  
Hires Recalls: Counts

Sep  
Separations: Counts

HirAEnd  
End-of-Quarter Hires

HirAEndR

Show Descriptions  Show Technical Descriptions

There is no hires rate nor separations rate for download

We will have to compute the hires and separations rate using the formulas:

hires rate = (hires level / employment)

separat rate = (separat level / employ)

# Hires & Separations Rates (3 of 6)

LED Extraction Tool - Quarterly Workforce Indicators

1. Geography | 2. Firm Characteristics | 3. Worker Characteristics | 4. Indicators | 5. Quarters | 6. Summary and Export

Select one of more Quarterly Workforce Indicators by clicking the checkboxes below. The set of currently selected indicators can be categories, simply click the text of the category heading. Standard and Technical Descriptions for each indicator can be displayed by c indicators, please see the [QWI 101 \[PDF, 203k\]](#) document.

Employment

Employment Change, In

HirA  
Hires All: Counts (Accessions)

HirN  
Hires New: Counts

HirR  
Hires Recalls: Counts

Sep  
Separations: Counts

HirAEnd  
End-of-Quarter Hires

HirAEndR

Show Descriptions  Show

There is no hires rate nor separations rate for download

We will have to compute the hires and separations rate using the formulas:

hires rate = (hires level / employment)

separat rate = (separat level / employ)

First, download hires & separations levels

# Hires & Separations Rates (4 of 6)

LED Extraction Tool - Quarterly Workforce Indicators

1. Geography | 2. Firm Characteristics | 3. Worker Characteristics | 4. Indicators | 5. Quarters | 6. Summary and Export

Select one of more Quarterly Workforce Indicators by clicking the checkboxes below. The set of currently selected indicators can be categories, simply click the text of the category heading. Standard and Technical Descriptions for each indicator can be displayed by c indicators, please see the [QWI 101](#) [PDF, 203k] document.

Employment 

Employment Change, In

HirA  
Hires All: Counts (Accessions)

HirN  
Hires New: Counts

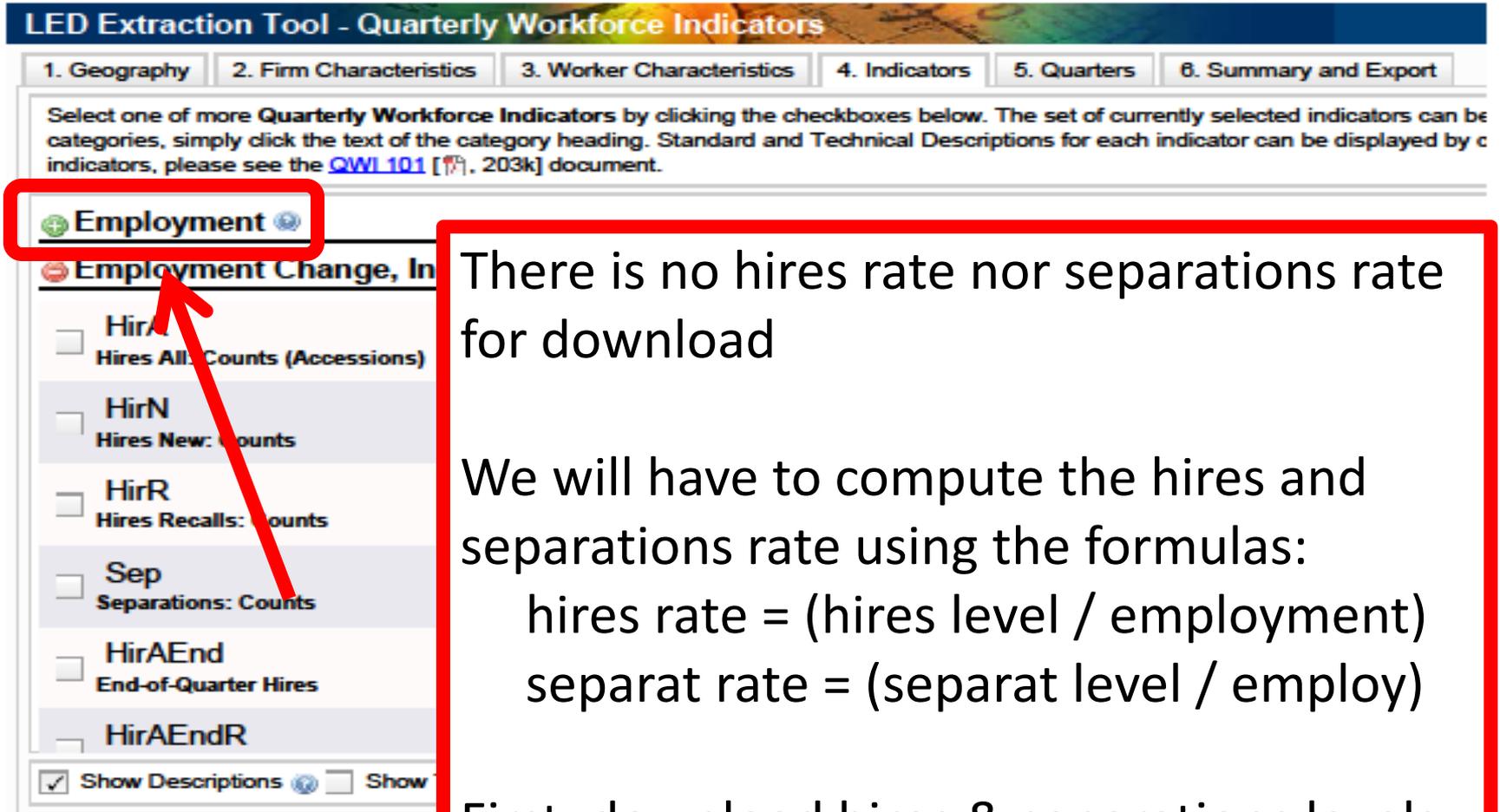
HirR  
Hires Recalls: Counts

Sep  
Separations: Counts

HirAEnd  
End-of-Quarter Hires

HirAEndR

Show Descriptions   Show



There is no hires rate nor separations rate for download

We will have to compute the hires and separations rate using the formulas:

hires rate = (hires level / employment)

separat rate = (separat level / employ)

First, download hires & separations levels

**Second, download employment levels**

# Hires & Separations Rates (5 of 6)

## LED Extraction Tool - Quarterly Workforce Indicators

1. Geography | 2. Firm Characteristics | 3. Worker Characteristics | 4. Indicators | 5. Quarters | 6. Summary and Export

Select one of more **Quarterly Workforce Indicators** by clicking the checkboxes below. The set of currently selected indicators can be categories, simply click the text of the category heading. Standard and Technical Descriptions for each indicator can be displayed by clicking the checkboxes. For more information on the indicators, please see the [QWL101 \[PDF, 203k\]](#) document.

### Employment

- |   |  |
|---|--|
| <input checked="" type="checkbox"/> <b>Emp</b><br>Beginning of Quarter Employment: Counts         | Estimate of the total number of jobs on the first day of the reference quarter. Employment counts are similar to point-in-time employment counts (see: <a href="http://www.bls.gov/cew/">www.bls.gov/cew/</a> ).   |
| <input type="checkbox"/> <b>EmpEnd</b><br>End of Quarter Employment: Counts                       | Estimate of the number of jobs on the last day of the quarter.   |
| <input type="checkbox"/> <b>EmpS</b><br>Full-Quarter Employment (Stable): Counts                  | Estimate of stable jobs, i.e., the number of jobs that are held for a full quarter with the same employer. This is often, but not necessarily, employed for a full quarter (e.g., an on-call substitute teacher three consecutive quarters, but intermittently). |
| <input type="checkbox"/> <b>EmpSpv</b><br>Full-Quarter Employment in the Previous Quarter: Counts | Estimate of stable jobs in the quarter before the reference quarter for certain special-purpose analyses.  |
| <input type="checkbox"/> <b>EmpTotal</b><br>Employment - Reference Quarter: Counts                | This is a count of people employed in a firm at any time during the reference quarter. This measure may also be referred to as "flow" employment.  |

### Employment Change, Individual

- Show Descriptions   Show Technical Descriptions 

# Hires & Separations Rates (6 of 6)

## LED Extraction Tool - Quarterly Workforce Indicators

1. Geography | 2. Firm Characteristics | 3. Worker Characteristics | 4. Indicators | 5. Quarters | 6. Summary and Export

Select one of more **Quarterly Workforce Indicators** by clicking the checkboxes below. The set of currently selected indicators can be categories, simply click the text of the category heading. Standard and Technical Descriptions for each indicator can be displayed by c indicators, please see the [QWL101 \[PDF, 203k\]](#) document.

### Employment

Emp  
Beginning of Quarter Employment: Counts

EmpEnd  
End of Quarter Employment: Counts

EmpS  
Full-Quarter Employment (Stable): Counts

EmpSpv  
Full-Quarter Employment in the Previous Quarter: Counts

EmpTotal  
Employment - Reference Quarter: Counts

### Employment Change, Individual

Show Descriptions  Show Technical Descriptions

Which employment measure should be used in the denominator of the hires and separations rates?

Use the average of “Beginning of Quarter Employment” and “End of Quarter Employment”

# Move onto step 5

**LED Extraction Tool - Quarterly Workforce Indicators**

1. Geography | 2. Firm Characteristics | 3. Worker Characteristics | 4. Indicator | **5. Quarters** | 6. Summary and Export

Select one of more **Quarterly Workforce Indicators** by clicking the checkboxes below. The set of currently selected indicators can be categorized, simply click the text of the category heading. Standard and Technical Descriptions for each indicator can be displayed by clicking the checkboxes below. For more information on the indicators, please see the [QWL101 \[PDF, 203k\]](#) document.

**Employment**

<input checked="" type="checkbox"/> <b>Emp</b> Beginning of Quarter Employment: Counts	Estimate of the total number of jobs on the first day of the reference quarter. Employment counts are similar to point-in-time employment counts (see: <a href="http://www.bls.gov/cew/">www.bls.gov/cew/</a> ).
<input type="checkbox"/> <b>EmpEnd</b> End of Quarter Employment: Counts	Estimate of the number of jobs on the last day of the quarter.
<input type="checkbox"/> <b>EmpS</b> Full-Quarter Employment (Stable): Counts	Estimate of stable jobs, i.e., the number of jobs that are held for a full quarter with the same employer. This is often, but not necessarily, employed for a full quarter (e.g., an on-call substitute teacher three consecutive quarters, but intermittently).
<input type="checkbox"/> <b>EmpSpv</b> Full-Quarter Employment in the Previous Quarter: Counts	Estimate of stable jobs in the quarter before the reference quarter for certain special-purpose analyses.
<input type="checkbox"/> <b>EmpTotal</b> Employment - Reference Quarter: Counts	This is a count of people employed in a firm at any time during the quarter. This measure may also be referred to as "flow" employment.

**Employment Change, Individual**

Show Descriptions |  Show Technical Descriptions

# Choose a Time Period

**LED Extraction Tool - Quarterly Workforce Indicators**

1. Geography | 2. Firm Characteristics | 3. Worker Characteristics | 4. Indicators | 5. Quarters | 6. Summary and Export

Select the desired quarters of data by clicking the checkboxes below. Click the green check icons to select an entire year or entire set selected in the **Geography** tab. Not all measures will be available in all quarters. Data by Firm Age or Firm Size are not available in th

	Q1	Q2	Q3	Q4
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2013 <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2012 <input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2011 <input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2010 <input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2009 <input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2008 <input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2007 <input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2006 <input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2005 <input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2004 <input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2003 <input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2002 <input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2001 <input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2000 <input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1999 <input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1998 <input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1997 <input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1996 <input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1995 <input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

# Choose a Time Period

## LED Extraction Tool - Quarterly Workforce Indicators

1. Geography 2. Firm Characteristics 3. Worker Characteristics 4. Indicators 5. Quarters 6. Summary and Export

Select the desired quarters of data by clicking the checkboxes below. Click the green check icons to select an entire year or entire set selected in the **Geography** tab. Not all measures will be available in all quarters. Data by Firm Age or Firm Size are not available in th

Seasonally Adjusted LEHD data are not available

One could choose all quarters and seasonally adjust elsewhere (in SAS)

	Q1	Q2	Q3	Q4
2013	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2012	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2011	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2010	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2009	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2008	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2007	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2006	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2005	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2004	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2003	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2002	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2001	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2000	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1999	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1998	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1997	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1996	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1995	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

# Choose a Time Period

## LED Extraction Tool - Quarterly Workforce Indicators

1. Geography 2. Firm Characteristics 3. Worker Characteristics 4. Indicators 5. Quarters 6. Summary and Export

Select the desired quarters of data by clicking the checkboxes below. Click the green check icons to select an entire year or entire set selected in the Geography tab. Not all measures will be available in all quarters. Data by Firm Age or Firm Size are not available in th

Seasonally Adjusted LEHD data are not available

One could choose all quarters and seasonally adjust elsewhere (in SAS)

Today, we'll download Q1 data

	Q1	Q2	Q3	Q4
2013	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2012	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2011	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2010	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2009	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2008	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2007	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2006	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2005	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2004	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2003	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2002	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2001	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2000	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1999	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1998	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1997	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1996	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1995	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

# Move onto step 6

## LED Extraction Tool - Quarterly Workforce Indicators

1. Geography

2. Firm Characteristics

3. Worker Characteristics

4. Indicators

5. Quarter

6. Summary and Export

Select the desired quarters of data by clicking the checkboxes below. Click the green check icons to select an entire year or entire set selected in the **Geography** tab. Not all measures will be available in all quarters. Data by Firm Age or Firm Size are not available in th

	Q1	Q2	Q3	Q4
2013 	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2012 	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2011 	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2010 	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2009 	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2008 	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2007 	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2006 	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2005 	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2004 	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2003 	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2002 	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2001 	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2000 	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1999 	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1998 	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1997 	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1996 	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1995 	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

# Download Data

ED Extraction Tool - Quarterly Workforce Indicators (QWI) LHD Home Help and Documentation

1. Geography 2. Firm Characteristics 3. Worker Characteristics 4. Industries 5. Counties 6. Summary and Report

**Estimated Results Size**

Number of Rows: 20  
Size of CSV: Less than a Megabyte  
Size of ZIP: Less than a Megabyte  
Run Time: Less than a Minute

**Submit Request**

Include Labels  
Including labels will drastically increase processing time and file size.

Email results:

**Request Progress**

Click "Submit Request" to send your request to the server.

Submission → Waiting → Processing → Finished

**Additional Information**

**Basic QWI Information**  
[QWI Data Schema](#) (5, 138)  
[QWI API](#) (5, 250)

**Comprehensive QWI Information**  
[Detailed QWI Definitions](#) (5, 272)  
[The ED Infrastructure, APIs, and the Creation of the Quarterly Workforce Indicators documents](#) (5, 766)

**Data Notices/Updates**  
[QWI Data History Notices](#) (5, 4724)

**Query Results**

Current

Previous

# Download Data

The screenshot displays the 'LEO Extraction Tool - Quarterly Workforce Indicators (QWI)' interface. The top navigation bar includes 'LEO Home' and 'Help and Documentation'. Below the navigation bar, there are tabs for '1. Geography', '2. Firm Characteristics', '3. Worker Characteristics', '4. Indicators', '5. Quarters', and '6. Summary and Report'. The main content area is divided into several sections:

- Estimated Results Size:** Number of Rows: 38; Size of CSV: Less than a Megabyte; Size of ZIP: Less than a Megabyte; Run Time: Less than a Minute.
- Submit Request:** Includes a 'Submit Request' button, a 'Cancel Request' button, and checkboxes for 'Include Labels' and 'Email results'.
- Request Progress:** A progress bar showing 'Submitted', 'Waiting', 'Processed 100%', and 'Finished'.
- Additional Information:** Links for 'Basic QWI Information' (QWI Data Schema, QWI UI) and 'Comprehensive QWI Information' (Detailed QWI Definitions, The LEO Data Infrastructure).
- Query Results:** A section with a 'Current' tab showing 'QWI, 1 Show, 1 Center, All Services' and 'Rows returned: 38'. Below this, there are links for 'Download' (CSV (18 columns) | CSV & Headers (32)) and 'Previous'.

A red arrow points from a red-bordered box containing the text 'Clicking on "CSV" will open an excel file' to the 'CSV (18 columns) | CSV & Headers (32)' link in the 'Query Results' section.

# Creating the graph (1 of 6)

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
1	periodicity	seasonadj	geo_level	geography	Ind_level	Industry	ownercode	sex	agegrp	race	ethnicity	education	firmage	firmsize	year	quarter	Emp	EmpEnd	HirA	Sep
2	Q	U	S	53	A	0	A00	0	A00	A0	A0	E0	0	0	1990	1	1848406			423976
3	Q	U	S	53	A	0	A00	0	A00	A0	A0	E0	0	0	1991	1	1968695	2002713	465721	431708
4	Q	U	S	53	A	0	A00	0	A00	A0	A0	E0	0	0	1992	1	2008025	2034477	433266	406814
5	Q	U	S	53	A	0	A00	0	A00	A0	A0	E0	0	0	1993	1	2030743	2059641	414800	385902
6	Q	U	S	53	A	0	A00	0	A00	A0	A0	E0	0	0	1994	1	2101740	2124587	440921	418074
7	Q	U	S	53	A	0	A00	0	A00	A0	A0	E0	0	0	1995	1	2158146	2190775	476216	443587
8	Q	U	S	53	A	0	A00	0	A00	A0	A0	E0	0	0	1996	1	2191405	2216351	470101	445156
9	Q	U	S	53	A	0	A00	0	A00	A0	A0	E0	0	0	1997	1	2274376	2309840	511657	476194
10	Q	U	S	53	A	0	A00	0	A00	A0	A0	E0	0	0	1998	1	2384689	2415631	507595	476653
11	Q	U	S	53	A	0	A00	0	A00	A0	A0	E0	0	0	1999	1	2448861	2468945	514968	494884
12	Q	U	S	53	A	0	A00	0	A00	A0	A0	E0	0	0	2000	1	2507115	2544206	541394	504303
13	Q	U	S	53	A	0	A00	0	A00	A0	A0	E0	0	0	2001	1	2550793	2562693	496844	484945
14	Q	U	S	53	A	0	A00	0	A00	A0	A0	E0	0	0	2002	1	2483408	2481802	407209	408816
15	Q	U	S	53	A	0	A00	0	A00	A0	A0	E0	0	0	2003	1	2503695	2542194	442272	403773
16	Q	U	S	53	A	0	A00	0	A00	A0	A0	E0	0	0	2004	1	2499198	2516826	405352	387724
17	Q	U	S	53	A	0	A00	0	A00	A0	A0	E0	0	0	2005	1	2568586	2600392	434982	403177
18	Q	U	S	53	A	0	A00	0	A00	A0	A0	E0	0	0	2006	1	2660096	2687653	481178	453621
19	Q	U	S	53	A	0	A00	0	A00	A0	A0	E0	0	0	2007	1	2731692	2766198	493389	458883
20	Q	U	S	53	A	0	A00	0	A00	A0	A0	E0	0	0	2008	1	2799937	2823511	473803	451239
21	Q	U	S	53	A	0	A00	0	A00	A0	A0	E0	0	0	2009	1	2741592	2723228	354555	372919
22	Q	U	S	53	A	0	A00	0	A00	A0	A0	E0	0	0	2010	1	2636907	2647269	325218	314857
23	Q	U	S	53	A	0	A00	0	A00	A0	A0	E0	0	0	2011	1	2663168	2672769	331454	321853
24	Q	U	S	53	A	0	A00	0	A00	A0	A0	E0	0	0	2012	1	2695797	2716701	353257	332352
25	Q	U	S	53	A	0	A00	0	A00	A0	A0	E0	0	0	2013	1	2759777	2770138	370458	360097

# Creating the graph (2 of 6)

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
1	periodicity	seasonadj	geo_level	geography	ind_level	industry	ownercode	sex	agegrp	race	ethnicity	education	firmage	firmsize	year	quarter	Emp	EmpEnd	HirA	Sep
2	Q	U	S	53	A	0	A00	0	A00	A0	A0	E0	0	0	1990	1	1968695	2002713	465721	431708
3	Q	U	S	53	A	0	A00	0	A00	A0	A0	E0	0	0	1991	1	1968695	2002713	465721	431708
4	Q	U	S	53	A	0	A00	0	A00	A0	A0	E0	0	0	1992	1	2008025	2034477	433266	406814
5	Q	U	S	53	A	0	A00	0	A00	A0	A0	E0	0	0	1993	1	2030743	2059641	414800	385902
6	Q	U	S	53	A	0	A00	0	A00	A0	A0	E0	0	0	1994	1	2101740	2124587	440921	418074
7	Q	U	S	53	A	0	A00	0	A00	A0	A0	E0	0	0	1995	1	2158146	2190775	476216	443587
8	Q	U	S	53	A	0	A00	0	A00	A0	A0	E0	0	0	1996	1	2191405	2216351	470101	445156
9	Q	U	S	53	A	0	A00	0	A00	A0	A0	E0	0	0	1997	1	2274376	2309840	511657	476194
10	Q	U	S	53	A	0	A00	0	A00	A0	A0	E0	0	0	1998	1	2384689	2415631	507595	476653
11	Q	U	S	53	A	0	A00	0	A00	A0	A0	E0	0	0	1999	1	2448861	2468945	514968	494884
12	Q	U	S	53	A	0	A00	0	A00	A0	A0	E0	0	0	2000	1	2507115	2544206	541394	504303
13	Q	U	S	53	A	0	A00	0	A00	A0	A0	E0	0	0	2001	1	2550793	2562693	496844	484945
14	Q	U	S	53	A	0	A00	0	A00	A0	A0	E0	0	0	2002	1	2483408	2481802	407209	408816
15	Q	U	S	53	A	0	A00	0	A00	A0	A0	E0	0	0	2003	1	2503695	2542194	442272	403773
16	Q	U	S	53	A	0	A00	0	A00	A0	A0	E0	0	0	2004	1	2499198	2516826	405352	387724
17	Q	U	S	53	A	0	A00	0	A00	A0	A0	E0	0	0	2005	1	2568586	2600992	434982	403177
18	Q	U	S	53	A	0	A00	0	A00	A0	A0	E0	0	0	2006	1	2660096	2687653	481178	453621
19	Q	U	S	53	A	0	A00	0	A00	A0	A0	E0	0	0	2007	1	2731692	2766198	493389	458883
20	Q	U	S	53	A	0	A00	0	A00	A0	A0	E0	0	0	2008	1	2799937	2822511	473808	451229
21	Q	U	S	53	A	0	A00	0	A00	A0	A0	E0	0	0	2009	1	2741592	2723228	354555	372919
22	Q	U	S	53	A	0	A00	0	A00	A0	A0	E0	0	0	2010	1	2636907	2647269	325218	314857
23	Q	U	S	53	A	0	A00	0	A00	A0	A0	E0	0	0	2011	1	2663168	2672769	331454	321853
24	Q	U	S	53	A	0	A00	0	A00	A0	A0	E0	0	0	2012	1	2695797	2716701	353257	332352
25	Q	U	S	53	A	0	A00	0	A00	A0	A0	E0	0	0	2013	1	2759777	2770138	370458	360097

After confirming we have the correct data (columns A-N), we need

- hires level
- separations level
- employment level

to define hires and separations rates and create the graph

# Creating the graph (3 of 6)

	A	B	C	D	E	F	G	H	I	J
1	year	quarter	Emp	EmpEnd	HirA	Sep		Employment	Hires Rate	Seps Rate
2	1990	1		1848406		423976				
3	1991	1	1968695	2002713	465721	431703				
4	1992	1	2008025	2034477	433266	406814				
5	1993	1	2030743	2059641	414800	385902				
6	1994	1	2059641	2088025	406814	385902				
7	1995	1	2088025	2117360	385902	358700				
8	1996	1	2117360	2146695	358700	315600				
9	1997	1	2146695	2176025	315600	261940				
10	1998	1	2176025	2205360	261940	216653				
11	1999	1	2205360	2234695	216653	148840				
12	2000	1	2234695	2264025	148840	143030				
13	2001	1	2264025	2293360	143030	149450				
14	2002	1	2293360	2322695	149450	188160				
15	2003	1	2322695	2352025	188160	137730				
16	2004	1	2352025	2381360	137730	177240				
17	2005	1	2381360	2410695	177240	131770				
18	2006	1	2410695	2440025	131770	136210				
19	2007	1	2440025	2469360	136210	188830				
20	2008	1	2469360	2498695	188830	112290				
21	2009	1	2498695	2528025	112290	291900				
22	2010	1	2636907	2647269	325218	314857				
23	2011	1	2663168	2672769	331454	321853				
24	2012	1	2695797	2716701	353257	332352				
25	2013	1	2759777	2770138	370458	360097				

Define new variables as:

$$\text{Employment} = (B+E)/2$$

$$\text{Hires Rate} = H/\text{Emp}$$

$$\text{Seps Rate} = S/\text{Emp}$$

# Creating the graph (4 of 6)

	A	B	C	D	E	F	G	H	I	J
1	year	quarter	Emp	EmpEnd	HirA	Sep		Employment	Hires Rate	Seps Rate
2	1990	1		1848406		423976				
3	1991	1	1968695	2002713	465721	431703		1,985,704	23.5%	21.7%
4	1992	1	2008025	2034477	433266	406814		2,021,251	21.4%	20.1%
5	1993	1	2030743	2059641	414800	385902		2,045,192	20.3%	18.9%
6	1994	1	2059641	2088406	408704	380704		2,113,164	20.9%	19.8%
7	1995	1	2088406	2117171	395587	35587		2,174,461	21.9%	20.4%
8	1996	1	2117171	2145936	382156	35156		2,203,878	21.3%	20.2%
9	1997	1	2145936	2174701	368194	36194		2,292,108	22.3%	20.8%
10	1998	1	2174701	2203466	354653	36653		2,400,160	21.1%	19.9%
11	1999	1	2203466	2232231	341111	34884		2,458,903	20.9%	20.1%
12	2000	1	2232231	2261046	327630	34303		2,525,661	21.4%	20.0%
13	2001	1	2261046	2289861	314145	34945		2,556,743	19.4%	19.0%
14	2002	1	2289861	2318676	301166	38816		2,482,605	16.4%	16.5%
15	2003	1	2318676	2347491	288187	43773		2,522,945	17.5%	16.0%
16	2004	1	2347491	2376306	275208	47724		2,508,012	16.2%	15.5%
17	2005	1	2376306	2405121	262229	51777		2,584,489	16.8%	15.6%
18	2006	1	2405121	2433936	249250	55830		2,673,875	18.0%	17.0%
19	2007	1	2433936	2462751	236271	59883		2,748,945	17.9%	16.7%
20	2008	1	2462751	2491566	223292	63936		2,811,224	16.9%	16.1%
21	2009	1	2491566	2520421	210313	67989		2,732,410	13.0%	13.6%
22	2010	1	2636907	2647269	325218	314857		2,642,088	12.3%	11.9%
23	2011	1	2663168	2672769	331454	321853		2,667,969	12.4%	12.1%
24	2012	1	2695797	2716701	353257	332352		2,706,249	13.1%	12.3%
25	2013	1	2759777	2770138	370458	360097		2,764,958	13.4%	13.0%

Define new variables as:

Employment = (B+E)/2

Hires Rate = H/Emp

Seps Rate = S/Emp

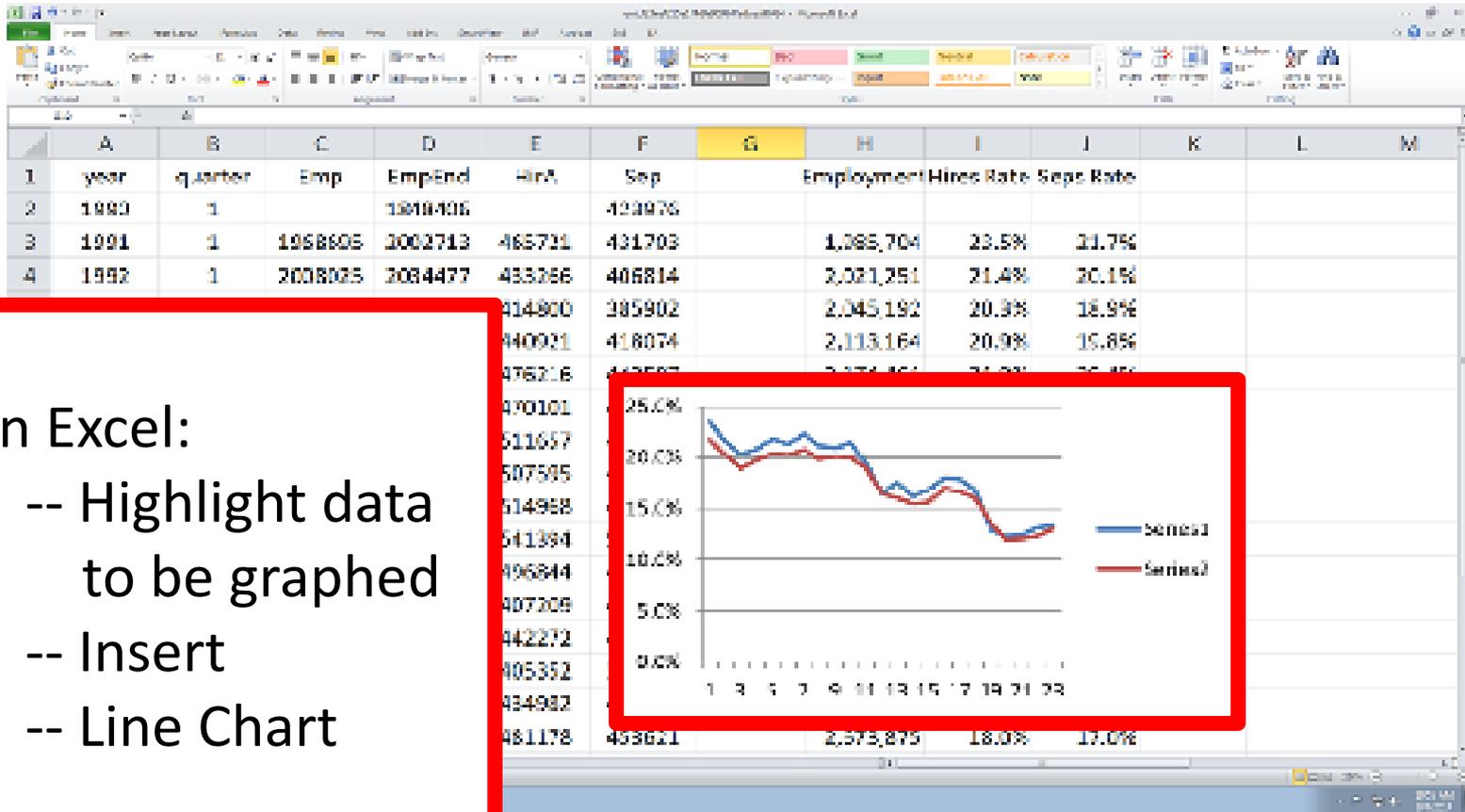
# Creating the graph (5 of 6)

In Excel:

- Highlight data to be graphed
- Insert
- Line Chart

	A	B	D	E	F	G	H	I	J	K
	year	quarter	EmpEnd	HrA	Sep		Employment	Hires Rate	Seps Rate	
1	1990	1	1848406		423976					
2	1991	1	2002719	465721	431708		1,985,704	23.5%	21.7%	
3				433266	406814		2,021,251	21.4%	20.1%	
4				414800	385902		2,045,192	20.3%	18.9%	
5				440921	418074		2,113,164	20.9%	19.8%	
6				476216	443587		2,174,461	21.9%	20.4%	
7				470101	445156		2,203,878	21.3%	20.2%	
8				511657	476194		2,297,108	22.3%	20.8%	
9				507595	476653		2,400,160	21.1%	19.9%	
10				514966	494884		2,458,903	20.9%	20.1%	
11				541394	504303		2,525,661	21.4%	20.0%	
12				496844	484945		2,556,743	19.4%	19.0%	
13				407209	408816		2,482,605	16.4%	16.5%	
14				442272	403773		2,522,945	17.5%	16.0%	

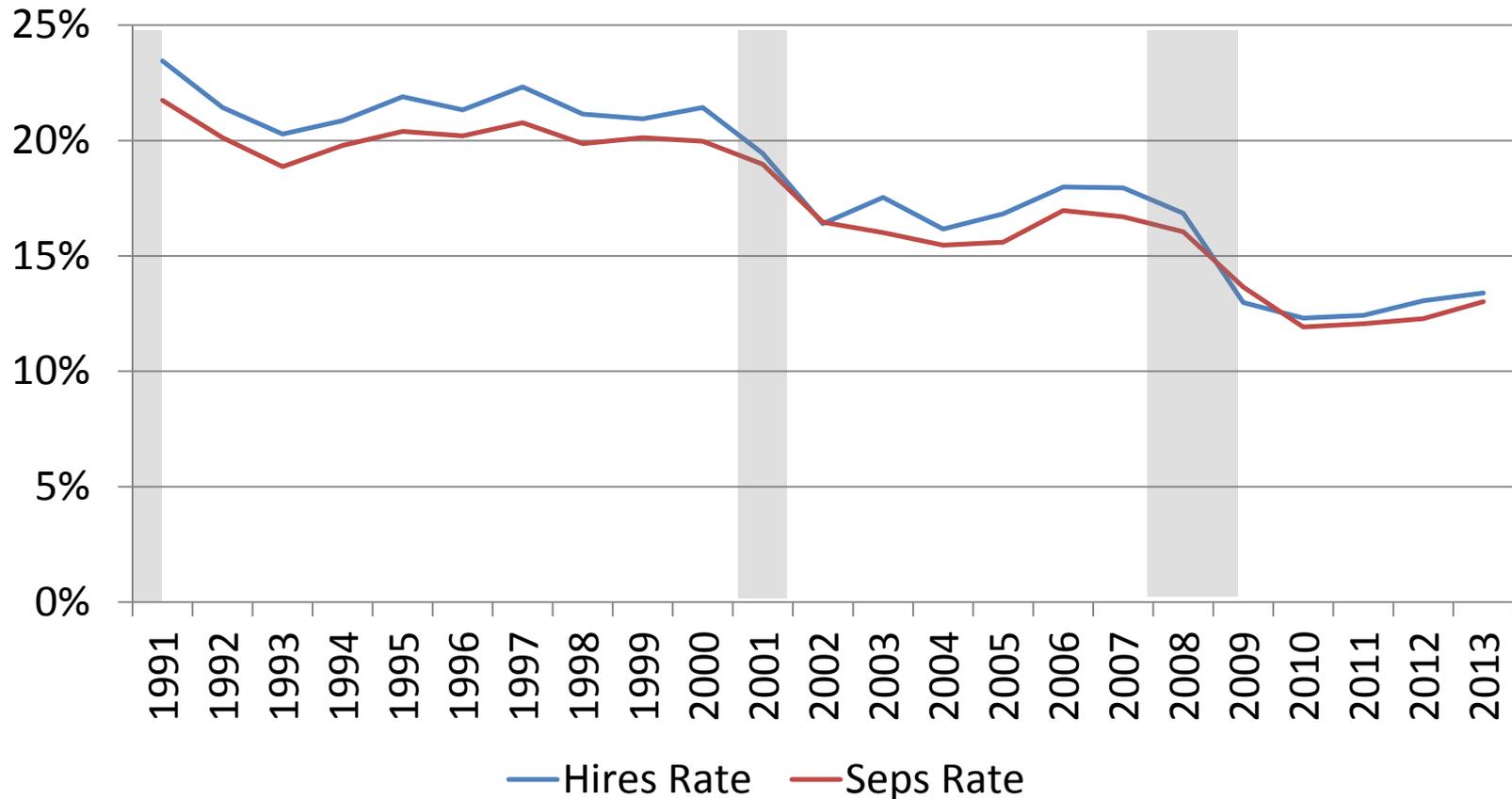
# Creating the graph (6 of 6)



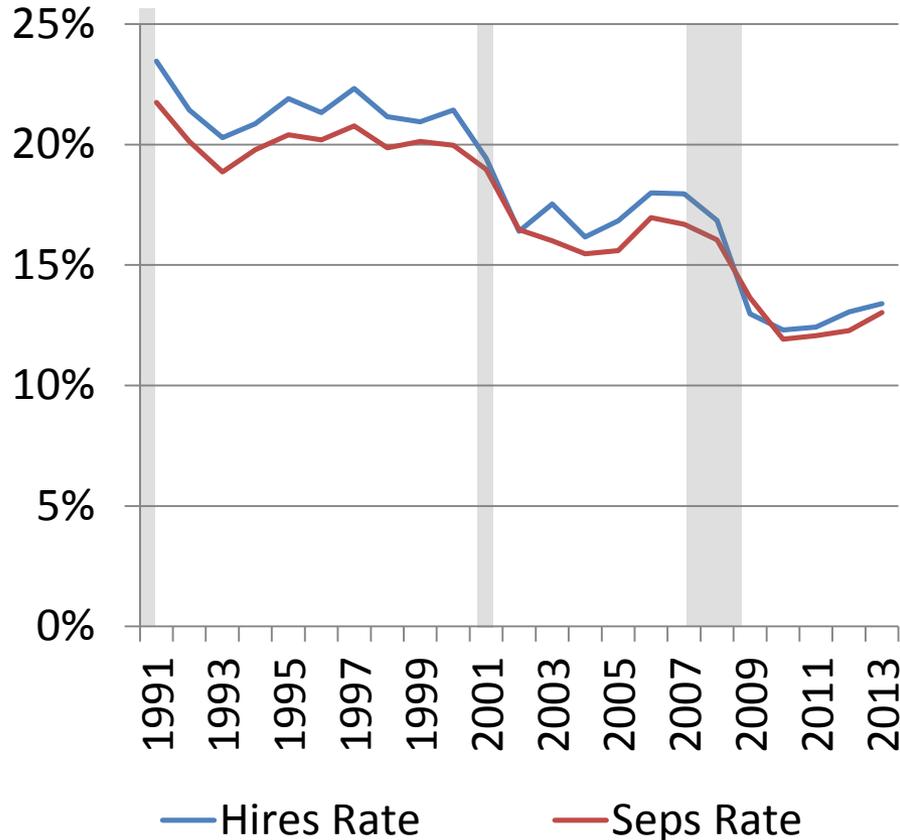
In Excel:

- Highlight data to be graphed
- Insert
- Line Chart

# “Tidy up” the excel chart



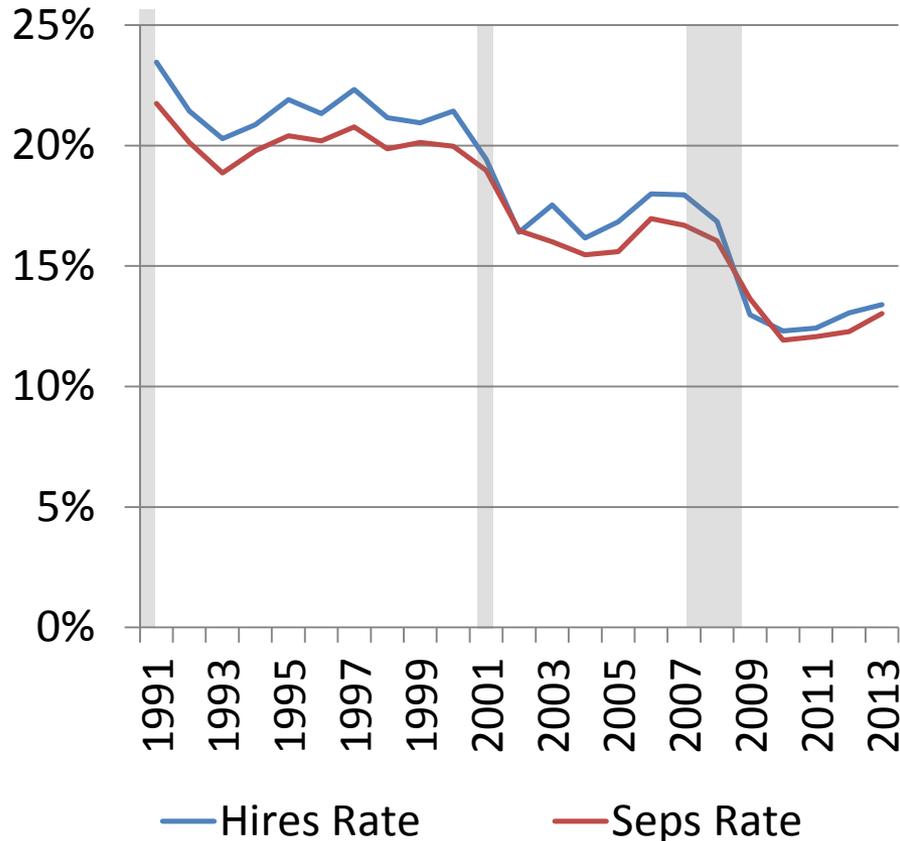
# Declining Dynamics (1 of 2)



In WA, using Q1 data:

- The hires rate fell from 23.5% in 1991 to 13.4% in 2013
- The separations rate fell from 21.7% in 1991 to 13.0% in 2013

# Declining Dynamics (2 of 2)



2 key questions motivating research on employment dynamics:

- 1) Why have hires and separations rates declined during the last 2 decades?  
*[we don't know]*
- 2) Is this decline good or bad for the labor market  
*[we don't know]*

# Why is This Important?

Declining dynamics of hires, separations, job creation, job destruction, and job-to-job flows is pervasive, occurring in all states we have examined

Where are these declines occurring?

- certain age groups?
- certain industries?
- certain firm ages or sizes?

Are these declining dynamics correlated with trends in employment or earnings?

# Contact Information

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LED State Workshop  
September 10, 2014