LEHD Public-use Data

QWI Measures

• Jobs are aggregated to generate estimates of QWI measures at desired levels

• Measures are all built from linearly aggregable components
  – Means are calculated, rather than medians

• Some measures on the public use files may be further aggregated, others not
  – Some firm-based flow measures are not aggregable
  – Components of average earnings measures not available
  – Turnover may be recalculated using component pieces
QWI Measures

• References:
  – Schema, naming: Schema document
  – Overview of concepts: QWI 101
### QWI Measures

The following tables and associated mapping files list the indicators available on each file. The **Indicator Variable** is the short name of the variable on the CSV files, suitable for machine processing in a wide variety of statistical applications. When given, the **Alternate name** may appear in related documentation and articles. The **Status Flag** is used to indicate publication or data quality status (see Status Flags). The **Indicator Name** is a more verbose description of the indicator.

<table>
<thead>
<tr>
<th>Indicator Variable</th>
<th>Alternate name</th>
<th>Status Flag</th>
<th>Indicator Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emp</td>
<td>B</td>
<td>sEmp</td>
<td>Beginning-of-Quarter Employment: Counts</td>
</tr>
<tr>
<td>EmpEnd</td>
<td>E</td>
<td>sEmpEnd</td>
<td>End-of-Quarter Employment: Counts</td>
</tr>
<tr>
<td>EmpP</td>
<td>P</td>
<td>sEmpP</td>
<td>Full-Quarter Employment: Counts</td>
</tr>
<tr>
<td>EmpP8</td>
<td>sEmpP8</td>
<td></td>
<td>Full-Quarter Employment (Stable): Counts</td>
</tr>
<tr>
<td>EmpTotal</td>
<td>M</td>
<td>sEmpTotal</td>
<td>Employment - Reference Quarter: Counts</td>
</tr>
<tr>
<td>HirA</td>
<td>A</td>
<td>sHirA</td>
<td>Hires: All Counts (Accessions)</td>
</tr>
<tr>
<td>HirN</td>
<td>H</td>
<td>sHirN</td>
<td>Hires: New: Counts</td>
</tr>
<tr>
<td>HirR</td>
<td>R</td>
<td>sHirR</td>
<td>Hires: Recall: Counts</td>
</tr>
<tr>
<td>Sep</td>
<td>S</td>
<td>sSep</td>
<td>Separations: Counts</td>
</tr>
<tr>
<td>HirAEnd</td>
<td>A2</td>
<td>sHirAEnd</td>
<td>End-of-Quarter Hires</td>
</tr>
<tr>
<td>HirAEndR</td>
<td>A2R</td>
<td>sHirAEndR</td>
<td>End-of-Quarter Hiring Rate</td>
</tr>
<tr>
<td>SepBeg</td>
<td>S2</td>
<td>sSepBeg</td>
<td>Beginning-of-Quarter Separations</td>
</tr>
<tr>
<td>SepBegR</td>
<td>S2R</td>
<td>sSepBegR</td>
<td>Beginning-of-Quarter Separation Rate</td>
</tr>
<tr>
<td>HirAe</td>
<td>A3</td>
<td>sHirAe</td>
<td>Hires: All (Stable): Counts (Flows into Full-Quarter Employment)</td>
</tr>
<tr>
<td>HirNs</td>
<td>H</td>
<td>sHirNs</td>
<td>Hires: New (Stable): Counts (New Hires to Full-Quarter Status)</td>
</tr>
<tr>
<td>SepS</td>
<td>S3</td>
<td>sSepS</td>
<td>Separations (Stable): Counts (Flow out of Full-Quarter Employment)</td>
</tr>
<tr>
<td>SepSns</td>
<td>S3R</td>
<td>sSepSns</td>
<td>Separations (Stable): Next Quarter: Counts (Flow out of Full-Quarter Employment)</td>
</tr>
<tr>
<td>TurnOvS</td>
<td>FT</td>
<td>sTurnOvS</td>
<td>Turnover (Stable)</td>
</tr>
<tr>
<td>FrmJobG</td>
<td>JC</td>
<td>sFrmJobG</td>
<td>Firm Job Gains: Counts (Job Creation)</td>
</tr>
<tr>
<td>FrmJobL</td>
<td>JD</td>
<td>sFrmJobL</td>
<td>Firm Job Loss: Counts (Job Destruction)</td>
</tr>
<tr>
<td>FrmjobC</td>
<td>JF</td>
<td>sFrmjobC</td>
<td>Firm Job Change: Net Change</td>
</tr>
<tr>
<td>HirAEndRepl</td>
<td>EI</td>
<td>sHirAEndRepl</td>
<td>Replacement Hires</td>
</tr>
<tr>
<td>HirAEndReplr</td>
<td>EIR</td>
<td>sHirAEndReplr</td>
<td>Replacement Hiring Rate</td>
</tr>
<tr>
<td>FrmJobGSt</td>
<td>FG</td>
<td>sFrmJobGSt</td>
<td>Firm Job Gains (Stable): Counts</td>
</tr>
<tr>
<td>FrmJobLS</td>
<td>FLD</td>
<td>sFrmJobLS</td>
<td>Firm Job Loss (Stable): Counts</td>
</tr>
<tr>
<td>FrmjobCSt</td>
<td>FLP</td>
<td>sFrmjobCSt</td>
<td>Job Change (Stable): Net Change</td>
</tr>
<tr>
<td>EarnM</td>
<td>ZVg</td>
<td>sEarnM</td>
<td>Full-Quarter Employment (Stable): Average Monthly Earnings</td>
</tr>
<tr>
<td>EarnBeg</td>
<td>ZVb</td>
<td>sEarnBeg</td>
<td>Beginning-of-Quarter Employment: Average Monthly Earnings</td>
</tr>
<tr>
<td>EarnHirAS</td>
<td>ZWFA</td>
<td>sEarnHirAS</td>
<td>Hires: All (Stable): Average Monthly Earnings</td>
</tr>
<tr>
<td>EarnHireNS</td>
<td>ZWFP</td>
<td>sEarnHireNS</td>
<td>Hires: New (Stable): Average Monthly Earnings</td>
</tr>
<tr>
<td>EarnSepS</td>
<td>ZWFS</td>
<td>sEarnSepS</td>
<td>Separations (Stable): Average Monthly Earnings</td>
</tr>
</tbody>
</table>
LEHD Public-use Data
QWI Aggregation Levels - Establishment

• Establishment level characteristics for aggregation:
  – Geography
    • National totals (beta, new since 2015)
    • State totals
    • County, Metro, Workforce Investment Board areas
  – Industry
    • All industries
    • NAICS Sectors, Sub-sectors (3-digit), Industry groups (4-digit)
  – Ownership
    • Federal (1)
    • Local, state, and private (2-5)
    • Private-only (5)
  – Firm size (5 detailed categories)
  – Firm age (5 detailed categories)
LEHD Public-use Data: QWI Aggregation Levels - Employee

- Employee level characteristics for aggregation
  - Age
    - All ages
    - 14-18, 19-24, 25-34, 35-44, 45-54, 55-64, 65-99
    - (Workforce Investment Act age categories)
  - Sex
    - Both sexes
    - Male, Female
  - Education (since 2011Q1)
    - Only for individuals age 25+
      - Less than a High School Diploma
      - High School Diploma, No College
      - Some college or Associate’s Degree
      - Bachelor’s Degree or Above
LEHD Public-use Data: QWI Aggregation Levels - Employee

• Employee level characteristics for aggregation
  – Race
    • OMB categories
      – White alone
      – African-American or Black alone
      – Asian or Pacific alone
      – Native Hawaiian or Other Pacific Islander alone
      – American Indian or Alaska Native alone
      – Two or More Races
  – Ethnicity
    • Hispanic or Latino
    • Not Hispanic or Latino
LEHD Public Use: QWI Measures

• The QWI public use files contain a series of 30 measures
  – Employment: stock/flow measures
  – Earnings

• These measures are reported for all of the aggregation listed in previous slides

• The entire time series is re-estimated and re-released in every data release ("R2012Q3")

• A broader range of theoretical measures are defined in the technical papers, though many are not estimated in regular production
QWI Access Tools

- All access tools are linked from http://lehd.ces.census.gov/data/
  - Bulk download available through selector tool on that page, or directly from http://lehd.ces.census.gov/pub/
  - LED Extraction Tool http://ledextract.ces.census.gov/ allows to cut large sets of time-series into smaller chunks
  - QWI Explorer is a graphing tool with data extraction capabilities at http://qwiexplorer.ces.census.gov/
LEHD Data

Quarterly Workforce Indicators (QWI)

The Quarterly Workforce Indicators (QWI) are a set of economic indicators including employment, job creation, earnings, and other measures of employment flows. The QWIs are reported based on detailed firm characteristics (geography, industry, age, size) and worker demographics information (sex, age, education, race, ethnicity) and are available tabulated at national, state, metropolitan/micropolitan areas, county, and Workforce Investment Board (WIB) areas.

*Note: National QWIs are currently released as Beta and can be accessed at [http://lehd.ces.census.gov/data/qwi_national_beta.html](http://lehd.ces.census.gov/data/qwi_national_beta.html).

QWI data can be accessed through the following tools:

- Comparisons and Rankings with QWI Explorer
- Custom queries with the LED Extraction Tool
- Direct data download using the tool below

To browse state-level QWI data files in their directory structure or to access them with a FTP program (must be able to access HTTP), go to [http://lehd.ces.census.gov/qwi](http://lehd.ces.census.gov/qwi). National QWI (Beta) data files can be accessed at [http://lehd.ces.census.gov/qwi](http://lehd.ces.census.gov/qwi).
LEHD QWI Bulk Download

- Typically the last three releases are available
- Additional releases may be available at http://download.vrdc.cornell.edu/qwipu/
- Files may be large (discussed later)
LED Extraction Tool

• Graphical user-driven tool to cut the very large bulk download files into more convenient pieces
• Only has the latest release at any one point in time (identified in metadata)
QWI Explorer

Data - Longitudinal Emp
QWI Explorer
qwiexplorer.ces.census.gov/#x=0&g=0

State
Alaska

Indicator
Emp - Beginning of Quarter Employment: Coun

Filters/Aggregations
Quarters: X-Axis
Sub-State Geography: None
Industries: None
Owner Ownership: All Ownership
Firm Age/Size: None
Worker Characteristics: None

X-Axis
Year/Quarter
 Normalize on X-Axis

Group
Age
 Eight Age Groups Selected
 Normalize on Group

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2010 Q2</td>
<td>6,514</td>
<td>13,736</td>
<td>17,286</td>
<td>66,418</td>
<td>62,756</td>
<td>73,664</td>
<td>45,128</td>
<td>9,065</td>
</tr>
<tr>
<td>2010 Q3</td>
<td>10,364</td>
<td>19,166</td>
<td>21,648</td>
<td>74,530</td>
<td>66,875</td>
<td>76,856</td>
<td>47,502</td>
<td>10,419</td>
</tr>
<tr>
<td>2010 Q4</td>
<td>7,020</td>
<td>14,785</td>
<td>18,417</td>
<td>69,140</td>
<td>63,824</td>
<td>73,371</td>
<td>46,420</td>
<td>9,747</td>
</tr>
<tr>
<td>2011 Q1</td>
<td>6,149</td>
<td>13,428</td>
<td>16,838</td>
<td>65,585</td>
<td>61,476</td>
<td>70,638</td>
<td>45,359</td>
<td>9,360</td>
</tr>
<tr>
<td>2011 Q2</td>
<td>6,058</td>
<td>14,118</td>
<td>17,589</td>
<td>88,945</td>
<td>83,916</td>
<td>73,262</td>
<td>48,072</td>
<td>10,042</td>
</tr>
</tbody>
</table>

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QWI Explorer

• Focus on viewing time series, but rich interface

• Allows users to download the data behind the graphs, as well as graphs in various formats
Learning about QWI data structure

  - Describes the data schema for QWI files.
  - For each variable, a set of allowable values is defined.
  - Definitions are provided as CSV files, with header variable definitions.
  - The naming conventions of the data files is documented in [lehd_csv_naming.html](http://lehd.ces.census.gov/data/schema/latest/lehd_public_use_schema.html).
QWI Public Use Files: File Naming

[type][fipsalpha][demo][fas][geocat][indcat][ownercat][sa]

*e.g. qwi_ak_sa_f_gc_ns_op_u.csv.gz*

• Components:
  – State or national overall coverage
  – Demographic breakdown
  – Firm age and size breakdown
  – Geographic level
  – Industry categorization
  – Ownership categorization
  – Seasonal adjustment

• Not all combinations of components exist
QWI Public Use Files: File Naming

[type][fipsalpha][demo][fas][geocat][indcat][ownercat][sa]
e.g. qwi_ak_sa_f_gc_ns_op_u.csv.gz

• Components:
  – State or national overall coverage
  – Demographic breakdown
    • d - All demographics
    • rh - Race by Ethnicity tabulations
    • sa - Sex by Age tabulations
    • se - Sex by Education tabulations
  – Firm age and size breakdown
  – Geographic level
  – Industry categorization
  – Ownership categorization
  – Seasonal adjustment
QWI Public Use Files: File Naming

[type]_[fipsalpha]_[demo]_[fas]_[geocat]_[indcat]_[ownercat]_[sa]
e.g. qwi_ak_sa_f_gc_ns_op_u.csv.gz

• Components:
  – State or national overall coverage
  – Demographic breakdown
  – Firm age and size breakdown
    • f - All firm sizes and ages
    • fa - Tabulations by firm age
    • fs - Tabulations by firm size
  – Geographic level
  – Industry categorization
  – Ownership categorization
  – Seasonal adjustment

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QWI Public Use Files: File Naming

[type]_[fipsalpha]_[demo]_[fas]_[geocat]_[indcat]_[ownercat]_[sa]
e.g. qwi_ak_sa_f_gc_ns_op_u.csv.gz

• Components:
  – State or national overall coverage
  – Demographic breakdown
  – Firm age and size breakdown
  – Geographic level
    • gc - Counties
    • gm - Metropolitan/Micropolitan
    • gn - National (50 States + DC)
    • gs - States
    • gw - Workforce Investment Areas
  – Industry categorization
  – Ownership categorization
  – Seasonal adjustment
QWI Public Use Files: File Naming

```
[type]_[fipsalpha]_[demo]_[fas]_[geocat]_[indcat]_[ownercat]_[sa]
e.g. qwi_ak_sa_f_gc_ns_op_u.csv.gz
```

• Components:
  – State or national overall coverage
  – Demographic breakdown
  – Firm age and size breakdown
  – Geographic level
  – Industry categorization
    • n - all industries
    • ns - NAICS sectors
    • n3 - NAICS subsectors
    • n4 - NAICS industry groups
  – Ownership categorization
  – Seasonal adjustment
QWI Public Use Files: File Naming

\[ \text{[type]} \_ \text{[fipsalpha]} \_ \text{[demo]} \_ \text{[fas]} \_ \text{[geocat]} \_ \text{[indcat]} \_ \text{[ownercat]} \_ \text{[sa]} \]
\[ \text{e.g. qwi_ak_sa_f_gc_ns_op_u.csv.gz} \]

• Components:
  – State or national overall coverage
  – Demographic breakdown
  – Firm age and size breakdown
  – Geographic level
  – Industry categorization
  – Ownership categorization
    • fg - Federal government (QWI Code A01)
    • op - All Private (QWI Code A05)
    • oslp - State, local, and private ownership categories (QWI Code A00)
  – Seasonal adjustment
    • u – unadjusted
    • s – seasonally adjusted
QWI Public Use Files: Status Flags

• Data quality flags
  – start with s, followed by name of variable
    • -2  no data available in this category for this quarter
    • -1  data not available to compute this estimate
    •  1  OK
    •  5  Value suppressed because it does not meet US Census Bureau publication standards.
    •  9  data significantly distorted, distorted value released
  – Suppression does not mean zero
  – Ref: Schema documentation and label_flags.csv
QWI Public Use Files: Other Notes

• Text files, comma-separated values, with labels for classifications
  – Compressed using gzip
    • PC-based software can be used to decompress
    • If using on UNIX, file may be processed without decompressing (see SAS filename statements)

• Data can be processed using statistical software (e.g., SAS, STATA, SPSS) or database software (e.g., Access)
  – Excel 2007 or later may also be able to manipulate complete QWI files

• Most aggregations contain both totals and components
  – Be sure to set all appropriate filters to extract only the records you want