An Analysis of the Similarities and Differences Between Real Time Job Postings and Traditional LMI

C2ER Webinar
6/14/13
Who is EMSI?

- **Comprehensive** economic data and professional services

- *Used by* hundreds of economic & workforce development organizations, colleges (2-year and 4-year), and private industry

- *Focuses on* industry, workforce and education data and makes meaningful connections between them
Overview of EMSI data

- Aggregate and unsuppress government data sources— BLS, BEA, Census
- County and ZIP level data for 6-digit NAICS and 6-digit SOCs
- 10-year employment forecasts
- EMSI Social Accounting Matrix (i.e.: input-output model)
Overview of Presentation

• How are real time job postings and traditional labor market data similar?
• How are they different?
• Data comparisons
• Case study
• Recommendations for practitioners
Similarities

• Both are useful as ordinal variables but cannot be combined to measure level changes

• Planning tools: Short-term vs. Long-term
Differences: Outcomes vs. Intentions

Reasons a job shows up in LMI

- Person was hired
- Person started their own business
Differences: Outcomes vs. Intentions

Reasons a job shows up in real-time data

- Company needs to hire now
- Company needs to hire in 3 to 6 months
- Company already hired and is now collecting résumés
- That thing is still posted?
Differences: Outcomes vs. Intentions

Chart 2. Employment vs. Labor Demand
U.S. Seasonally Adjusted Data

Source: The Conference Board, BLS
Traditional LMI Demand

\[ \text{Demand} = \text{New Jobs} + \text{Replacement Jobs} - \text{Job Loss} \]

- Distinction between business expansion and job replacement is clear
- Can be negative due to job losses
- Represents actions rather than intentions
- Lagged by a quarter or two
Real Time Job Postings

Demand = New Jobs + Replacement Jobs + Job Churn – nothing

- More comprehensive regarding job churn
- No clear distinctions between any categories
- Cannot be negative
- More timely
- Allows for skills-based queries
Data Analysis Approach

- 4 Metropolitan Statistical Areas
  - Baltimore, Miami, Los Angeles, Houston
- Comparison of demand month-by-month
  - 5-digit SOC
  - 2-digit SOC
- Correlations of real time job postings with various job characteristics
Demand by Month

"Better Jobs" and EMSI Openings, July 2012 - January 2013

Thousands of Jobs

Better Jobs
EMSI

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### Statistical Relationship

$$y_{emsi} = \alpha + \gamma_1 y_{t-1} + \beta_1 x_{time} + \beta_2 x_{MA2(bj)} + e$$

<table>
<thead>
<tr>
<th>Category</th>
<th>Coefficients</th>
<th>Standard Error</th>
<th>T-Stat</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-2080205.32</td>
<td>730286.98</td>
<td>-2.85</td>
<td>0.10</td>
</tr>
<tr>
<td>AR1</td>
<td>-2.23</td>
<td>0.91</td>
<td>-2.46</td>
<td>0.13</td>
</tr>
<tr>
<td>Time</td>
<td>14059.10</td>
<td>19487.56</td>
<td>0.72</td>
<td>0.55</td>
</tr>
<tr>
<td><em>Two-month Moving Average of Better Jobs</em></td>
<td>10.73</td>
<td>3.41</td>
<td>3.15</td>
<td>0.09</td>
</tr>
</tbody>
</table>

Adjusted $R^2 = 0.83$
Comparison Methodology

- Ratio of “Better Jobs” demand to EMSI demand
  - $x = \text{Sum of Better Monthly Jobs Postings}$
  - $y = \text{Sum of EMSI Monthly Openings}$
  - $\frac{x}{y} = \text{ratio}$

  **Average Ratio** $= 4.6$
  **Standard Deviation** $= 10.7$
Comparison of 2-digit SOC

Above 1 Ratio of "Better Jobs" Postings to EMSI Openings,
(July 2012-January 2013)

<table>
<thead>
<tr>
<th>Category</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer and Mathematical Management</td>
<td>37</td>
</tr>
<tr>
<td>Healthcare Practitioners and Technical</td>
<td>12</td>
</tr>
<tr>
<td>Installation, Maintenance, and Repair</td>
<td>9</td>
</tr>
<tr>
<td>Office and Administrative Support</td>
<td>5</td>
</tr>
<tr>
<td>Personal Care and Service</td>
<td>4</td>
</tr>
<tr>
<td>Sales and Related</td>
<td>3</td>
</tr>
<tr>
<td>Business and Financial Operations</td>
<td>3</td>
</tr>
<tr>
<td>Transportation and Material Moving</td>
<td>3</td>
</tr>
<tr>
<td>Healthcare Support</td>
<td>3</td>
</tr>
</tbody>
</table>
Comparison of 2-digit SOC

Below 1 Ratio of "Better Jobs" Postings to EMSI Openings, (July 2012-January 2013)

- Construction and Extraction: 0.99
- Arts, Design, Entertainment, Sports, and Media: 0.72
- Building and Grounds Cleaning and Maintenance: 0.43
- Production: 0.41
- Education, Training, and Library: 0.18
- Farming, Fishing, and Forestry: 0.02
Computer Occupations

- SOC 15-1000
- Group Average Ratio = 38.0

"Better Jobs" and EMSI Openings, July 2012 - January 2013

Thousands of Jobs

Better Jobs
EMSI
## Computer Occupations

<table>
<thead>
<tr>
<th>SOC</th>
<th>Title</th>
<th>Better Jobs</th>
<th>EMSI</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-1179</td>
<td>Information Security Analysts, Web Developers, and Computer Network Architects</td>
<td>10,118</td>
<td>80</td>
<td>125.71</td>
</tr>
<tr>
<td>15-1132</td>
<td>Software Developers, Applications</td>
<td>5,097</td>
<td>84</td>
<td>60.97</td>
</tr>
<tr>
<td>15-1111</td>
<td>Computer and Information Research Scientists</td>
<td>125</td>
<td>2</td>
<td>50.12</td>
</tr>
<tr>
<td>15-1142</td>
<td>Network and Computer Systems Administrators</td>
<td>4,797</td>
<td>99</td>
<td>48.36</td>
</tr>
<tr>
<td>15-1131</td>
<td>Computer Programmers</td>
<td>1,692</td>
<td>39</td>
<td>43.49</td>
</tr>
<tr>
<td>15-1141</td>
<td>Database Administrators</td>
<td>1,038</td>
<td>38</td>
<td>27.53</td>
</tr>
<tr>
<td>15-1159</td>
<td>Computer Support Specialists</td>
<td>3,165</td>
<td>190</td>
<td>16.69</td>
</tr>
<tr>
<td>15-1133</td>
<td>Software Developers, Systems Software</td>
<td>1,061</td>
<td>109</td>
<td>9.70</td>
</tr>
<tr>
<td>15-1121</td>
<td>Computer Systems Analysts</td>
<td>447</td>
<td>110</td>
<td>4.05</td>
</tr>
</tbody>
</table>
Regional Comparisons

Ratio for Computer and Mathematical Occupations by MSA

Los Angeles: 65
Baltimore/DC: 53
Houston: 24
Miami: 13
Real-time data are higher among...

- Occupations with higher average wages
- Occupations with higher average educational levels
- Areas with higher population concentration (e.g.: Los Angeles and Baltimore/DC)
Georgia Power

Forest

Trees

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EMSI Snapshot

Computer Systems Analysts (SOC: 15-1121)

Job Distribution

Overview

Annual Openings Estimate (2013): 501
Related Completions (2011): 1,636

Current Job Postings: 0

Gender
Male: 68%
Female: 32%

Age
14-18: 0%
19-24: 3%
25-44: 57%
45-64: 38%
65+: 2%

16,505 Jobs (2013)
National Location Quotient: 1.55

14.1% % Change (2013-2023)
Nation: 19.5%

$37.39/hr Median Earnings
Nation: $36.63/hr

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Historic and Projected Growth

<table>
<thead>
<tr>
<th>Region</th>
<th>2001 Jobs</th>
<th>2023 Jobs</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atlanta MSA</td>
<td>15,699</td>
<td>18,836</td>
<td>20.0%</td>
</tr>
<tr>
<td>United States</td>
<td>532,245</td>
<td>706,769</td>
<td>32.8%</td>
</tr>
</tbody>
</table>

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General Recommendations

- Be careful when mixing use of real-time and traditional sources
- Job postings for technology intensive jobs and professional services jobs are *far* higher than for all other job types
- Job postings tend to be lower for low-tech occupations
- Some job types seem to rely more on personal connections than online advertising
Questions?
Contact Information

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