

# Job Posting and Net Employment Change Relationship

## Preliminary Findings

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### Analysis Description

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In order to begin the research to understand the relationship between online job postings and employment we looked at monthly job postings in Michigan from January 2007 through September 2013 and monthly net employment change over the same time-period. Job posting data is provided by Burning Glass Technologies and employment data is provided by the Bureau of Labor Statistics.<sup>1</sup> Because the majority of the data is from 2010 through September 2013, this analysis is focused on the economic recovery in Michigan and does not attempt to make generalizations about “steady state” or stable economic times.

We looked closely at lagged net employment change data and its relationship with postings. “Lagged” means that for postings in January of 2010, we compared net job changes for February 2010 (1-month), March 2010 (2-months), and April 2010 (3-months). We do this because the market is slightly “sticky”; postings do not always result in immediate hiring. It is more likely that postings result in hiring, and therefore employment change, several weeks to several months after posting occurs.

For analysis purposes we also looked at 6-month moving average of employment change because the data fluctuates so much it is difficult to draw conclusions on the month to month changes. Another analysis we performed with this data is looking at the ratio of postings to net job change. Looking at a ratio allows us to see the simple relationship of “how many postings” correlate with “how many jobs”.

### Hypothesis

We believe that online posting activity can help signal both short run (1-month to 3-months) and long run (1-year or more) economy-wide employment changes. Since postings may not immediately result in hiring, we analyze monthly job postings against lagged net employment change (1-month to 3-month). Because of the fluctuations in data we are more interested in the average relationship over time rather than individual, static month-to-month changes.<sup>2</sup>

### Scope

Our current analysis looks at the state of Michigan in aggregate and all industries in aggregate. Next steps include expanding the geographic focus to look at posting and employment at the county-level and expanding industries to cross-cut the data by 2-digit NAICS industries.

### Preliminary Findings

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1. Job posting behavior has some fluctuation but was generally stable and growing over the 2007 to September 2013 time-period. There is no posting data available for 2008 and 2009.
2. While monthly net employment change data fluctuates month to month it follows a generally upward trend, which is expected because the data we are looking at covers dates coming out of the recession.
3. The 6-month moving average of net employment change follows a similar trajectory and pattern to monthly postings. Because the posting data is lagged by 2-months, the similar patterns of growth and decline between

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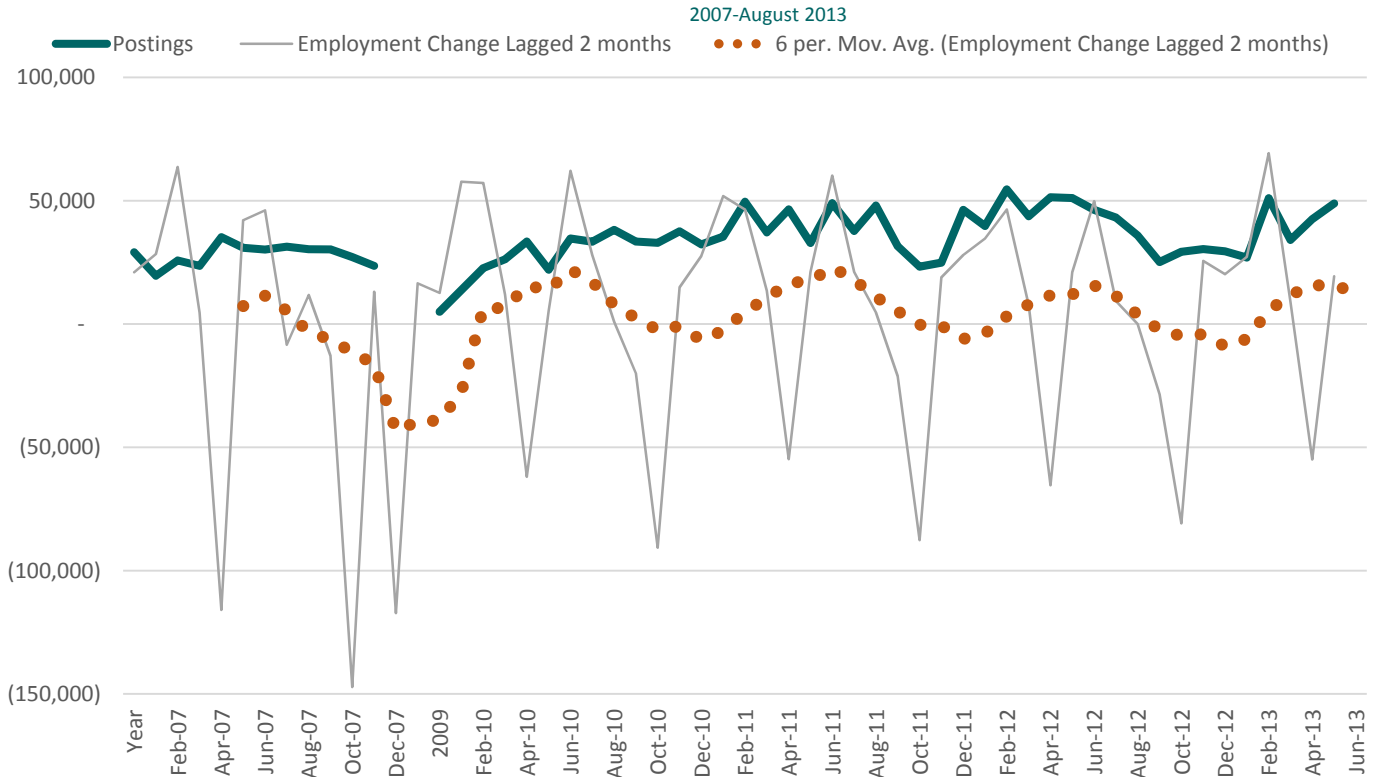
<sup>1</sup> Job posting data is not available for the 2008 and 2009 calendar years, therefore we only used 2007 and 2010 through 2013 to-date.

<sup>2</sup> We use the term “hiring” as a stand-in for net job change. The analysis on hiring, rather than total employment change, would result in much lower ratios of postings to hiring. This analysis focuses solely on net employment changes and uses “hiring” as a term for ease of understanding.

postings and employment indicate the posting behavior may give some insight into what employment changes will be several months after the postings.

The graph below highlights the month to month trajectory in net employment changes and job posting. Note that the dotted line 6-month moving average of net employment change has a similar trend and shape as job postings over the time period analyzed.

### Monthly Job Postings and 2-Month Lagged Net Employment Change



Data: Posting data comes from Burning Glass Technologies, employment data provided by the Bureau of Labor Statistics.

- The ratio of postings to lagged net employment change indicate that for the time period analyzed (2007, and January 2010-September 2013) there were approximately 2 postings per net job increase in Michigan. The average ratio is near 2 whether the data was lagged at 1-, 2-, or 3-months. This finding is important because it suggests that while there are extreme fluctuations in the data month to month, on average and over several months, and several years, there is a clear and stable relationship between posting and hiring coming out of the recession. Most years of analysis have a ratio that is close to “1.5”, but 2010’s higher ratio of about 4 postings per hire is pulling up the average across the data set. We project that we’ll see ratios close to “1” or lower as the economy becomes more stable.

The table below shows the average annual ratio of postings to net job change. The fluctuation in the data is partially explained by the fact that not all posting results in a job and not all jobs are the result of a posting. 2007 for example, prior to the recession, shows that there was less than one posting per hire.

Ratio of Online Job Posting to Hiring in Michigan							
	2007	2010	2011	2012	2013	Average Ratio 2007-2013	Average Ratio 2011-2013
Average Annual Ratio 1-Month Lag	0.73	4.00	1.55	1.63	1.94	2.01	1.81
Average Annual Ratio 2-Month Lag	0.57	4.28	1.56	1.54	1.46	2.04	1.79
Average Annual Ratio 3-Month Lag	0.55	3.99	1.41	1.66	1.76	1.90	1.64