

NYCLMIS RESEARCH BRIEF

Do Online Job Ads Predict Hiring?

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Introduction

The New York City Labor Market Information Service (NYCLMIS), housed within the Center for Urban Research at the City University of New York Graduate Center, maintains one of the largest employment-related data warehouses in New York City, including information gleaned from the Census Bureau, Bureau of Labor Statistics, O*NET, and the New York State Department of Labor. As part of its regular validation procedures, NYCLMIS compares employment and demographic estimates obtained from various sources with one another.

Recently, NYCLMIS began issuing research tools and reports using Wanted Analytics™, a real-time labor market information (LMI) web-based application. Real-time LMI fills a previously unmet need for information about the labor market that is both current and geographically specific. It comes from the daily scraping and analysis of online labor exchanges and provides insight into the nature and extent of current employer demand, emerging occupations and skill requirements. Although real-time LMI is useful in its own right, its relationship to actual hiring activity is not yet clear. This paper contains the results of NYCLMIS's analysis of the relationship between online job ad volume and new hires in New York City.

Data

NYCLMIS downloaded a four-year time series of total monthly volume of online job ads using Wanted Analytic's™ hiring demand dashboard. The analysis included unduplicated, new ads issued by direct employers (i.e., excluding employment intermediaries). Monthly data was pooled to quarterly data so that it would be directly comparable to the new hiring data.

NYCLMIS obtained new hire data from Quarterly Workforce Indicators (QWI), a product of the longitudinal employer-household dynamics program at the U.S. Census Bureau. QWI data were downloaded from Cornell University's Virtual Research Data Center's public use website. NYCLMIS used

the “Hires All” variable (*HirA*) to indicate the number of employees hired per quarter. The *HirA* variable measures total accessions, i.e., new hires plus recalls.[‡] The *HirA* variable was aggregated over all sectors and demographic variables to produce the total number of accessions in New York City during a quarter. Both data sets were limited to the five counties (boroughs) of the New York City labor region: Bronx, Kings (Brooklyn), New York (Manhattan), Queens and Richmond (Staten Island).

Results and Discussion

Quarterly online job ad volume and total hires were poorly correlated ($R^2 = 0.063$). However, there was a strong relationship between job ads and total hiring when hiring was lagged by one quarter.

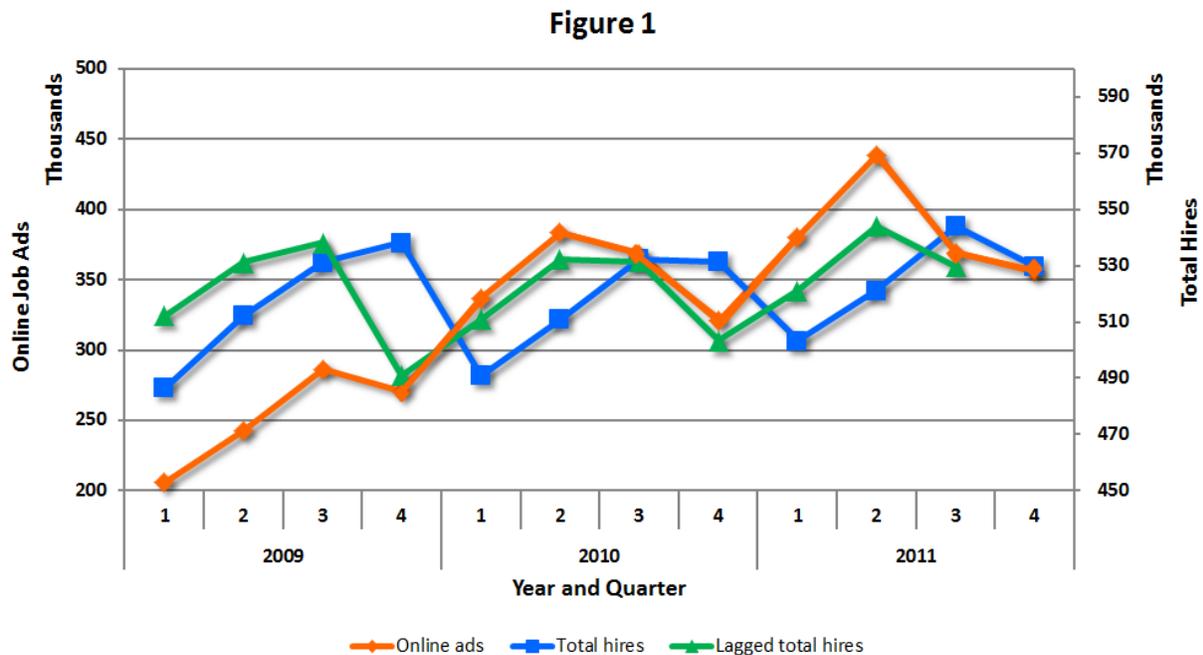
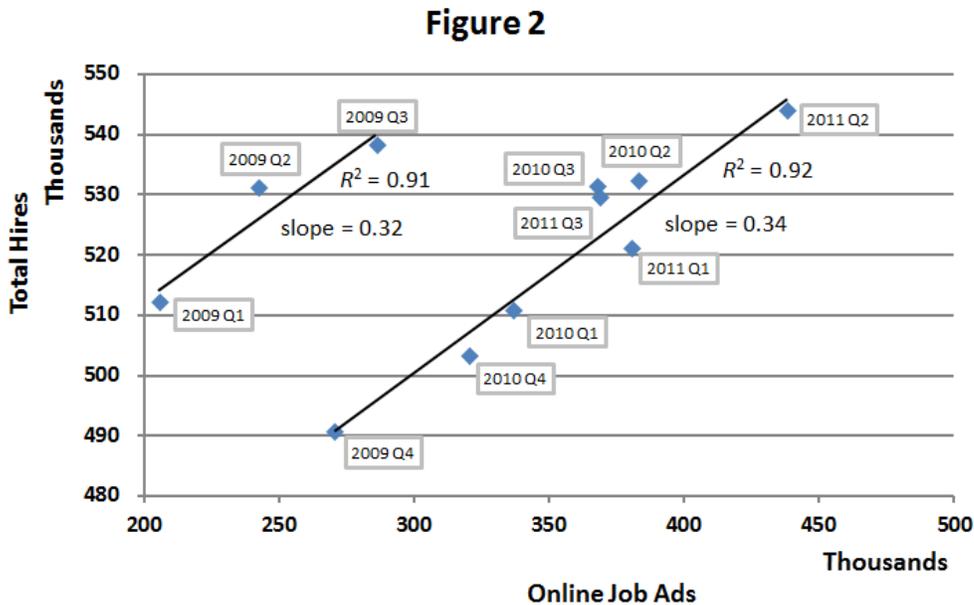


Figure 1 shows that the volume of online ads (orange, left axis) was lower relative to total hires (unlagged in blue, lagged in green, right axis) in 2009 than it was in 2010 and 2011. This suggests that, during the recession and in its immediate aftermath (Q1 through Q3 2009), employers reduced their volume of job postings even more than they reduced actual hiring.

During Q1 to Q3 2009 and during 2010 and 2011, the online ad volume fluctuated more widely than did total hiring. Ad volume and lagged hiring follow nearly identical patterns, demonstrating that online ads were a reliable leading indicator of hiring throughout the three year period. That is, hiring increased one quarter after ad volume increased and hiring decreased one quarter after ad volume decreased.

NYCLMIS also plotted job ads and lagged hiring values into a scatterplot (Figure 2). Figure 2 shows two distinct clusters, each with a strong, linear trend. The left cluster represents ads and lagged

hiring in the first three quarters of 2009. The cluster to the right represents ads and lagged hiring in the remainder of 2009 through 2010 and 2011. As was also observed in Figure 1, Figure 2 shows that ad volume was lower relative to hiring in 2009 – during the final months of and immediately following the national economic contraction.



NYCLMIS fitted the two clusters seen in Figure 2 with separate regression lines. The statistical results confirmed that the relationship between ads and hiring in both periods was strong (R^2 : 0.91 and 0.92) and of similar magnitude (slope: 0.32 and 0.34).

Conclusions

Job-ad volume was lower in 2009 relative to hiring. That is, employers reduced the number of job advertisements they placed online more than they reduced their hiring. The reasons for this are not evident from the data. Likely explanations, all of which are related to economic conditions during and immediately following the last national economic contraction, include:

- In 2009, employers paid for fewer online ads as a way of controlling costs;
- In 2009, employers used other recruitment methods such as word of mouth or direct referral by incumbent staff; and/or
- Higher unemployment rates produce larger supplies of labor. During 2009, employers were able to access larger pools of candidates for each advertised opening. Employers may have used the ‘excess’ applicant pool to identify candidates for other, unadvertised positions in their firms.

Finally, at least during the study period, online job ads were a very good leading indicator of subsequent hiring activity. The time lag suggests that the average duration between online job ad placement and ultimate hiring is about three months or one quarter.

It should be noted that the scope of the data on which the analysis was done was limited to 11 data points. The conclusions drawn from this analysis cannot yet be confidently generalized beyond 2009 to 2011 until they are validated using a longer time series. It is also possible that a longer trend would reveal any secular trends in the use of online job boards. NYCLMIS plans to issue a follow-up research brief later in 2013 containing the results of an analysis of a longer-term time series.

[†] We thank our Center for Urban Research colleague Dr. Joseph Pereira for his help and advice.

[‡] Abowd, J.M. & Vilhuber, L. (2010). National estimates of gross employment and job flows from the quarterly workforce indicators with demographic and industry detail. Discussion Paper, U.S. Census Bureau, Washington, DC. Available at: <http://www2.vrdc.cornell.edu/news/data/qwi-national-data/>.

NEW YORK CITY LABOR MARKET INFORMATION SERVICE

From Data to Information to Intelligence

New York City's policy makers and practitioners engaged in workforce development, education, and economic development operate within a dynamic and complex labor market. The New York City Labor Market Information Service (NYCLMIS) develops research and tools that help them make sense of the labor market and make informed decisions that benefit their constituents as well as New York City's economy as a whole.