



## Internet use and job search

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### ABSTRACT

Regression analysis augmented with propensity score methods is used to estimate the effect of Internet use on job search. The formal distinction between the unemployed and the discouraged is exploited, where both desire employment but the latter has ceased active job search. Results indicate broadband use at home or at public locations reduces the probability that the unemployed cease job search by over 50% relative to unemployed persons who do not use the Internet at all. The results suggest that even public connections (e.g., at libraries) in unserved and underserved areas may produce substantial social benefits.

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### 1. Introduction

The Internet is widely viewed as one of the most important forces in social, political, and economic development, and its consequences for the labor market have garnered high interest for some time. As detailed by Nakamura, Shaw, Freeman, Nakamura, and Pyman (2009), the Internet has facilitated a large number of employment innovations for both job seekers and those seeking employees. Specific websites (e.g., Monster.com), employment portal websites for major corporations, streamlined online application systems, and many other innovations have greatly reduced the costs of looking for jobs, looking for employees, and exchanging resumes or filling out applications. Stevenson (2009, p. 3) reported that, "...workers believe that the Internet is helping them find jobs. ... [A]mong those that began a job in mid-2002, 22% credited the Internet as the primary means by which they found their job ... [O]ver half of those surveyed felt that the Internet was an effective method of job search ... ." Although it is slightly hazardous to generalize from such first order effects to characteristics of the resulting equilibria, it would be quite surprising if these cost-reducing innovations did not result in improved job matching and decreased search cost and duration (Weber & Mahringer, 2008).

In stark contrast to these general observations, specific studies using employment data suggest that the Internet is of limited effectiveness or worse. The widely discussed findings of Kuhn and Skuterud (2004, p. 219), which utilized longitudinal observations on Internet use and subsequent employment for a group of unemployed persons, found that once allowance is made for different values of relevant covariates, use of the Internet actually appears to reduce the prospects of job seekers slightly. They remark, "[o]nce observable differences between Internet and other searchers are held constant, however, we find no differences in unemployment durations, and in some specifications even significantly longer durations among Internet users," and later, "[w]e conclude that either (a) Internet job search is ineffective in reducing unemployment durations or (b) Internet job searchers are adversely selected on unobservable

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characteristics: further research is needed to disentangle these two possibilities.” The analysis of Fountain (2005, p. 1253) offers only a very slightly more positive assessment: “[r]esults suggest the Internet’s contribution to an unemployed searcher’s information pool may afford a small advantage only to the extent that other job searchers are not using it.”

While the jury may still be out as to the effects of Internet use on particular types of labor market outcomes such as unemployment duration, as many, including Autor (2001) and Stevenson (2009) have noted, the Internet surely reduces the direct costs of search for both job seekers and employers. In most plausible circumstances, this reduction in cost will lead to increased job search. In this paper, the role of Internet use in sustaining job search activity is studied in a specialized setting made possible by the format of government statistics. Specifically, this study exploits the Bureau of Labor Statistics’ (BLS) formal distinction between the unemployed and the marginally attached, a distinction based solely on differences in recent job search activity. If Internet users are more likely to continue active job search, then Internet users are more likely to remain unemployed (actively seeking work) and less likely to become marginally attached (not actively seeking work in the past four weeks). More specifically, the data permits us to focus on the effects of Internet use on the probability that an unemployed person ceases active job search due to discouragement, another formal distinction in the government statistics implying that unemployed persons have ceased looking for work for reasons arising from their perceptions of the nature of the labor market, rather than perhaps temporary or exogenous barriers such as illness in the family. It is not expected *ex ante* that Internet use has any effect on whether a person will cease job search due to external constraints such as family responsibilities (labeled the marginally attached but not discouraged), but this hypothesis can be evaluated using the Census data.

The results indicate that Internet use does influence job search. Internet use reduces the probability an unemployed person ceases active job search due to labor market discouragement, thereby suggesting that the information obtained from the Internet reduces the likelihood that the unemployed feel there are no jobs, or no jobs for which they could qualify. Internet use does not, however, have much influence on the unemployed who terminate search efforts due to external constraints. The main results are obtained using a variety of estimators, different samples due to the propensity score matching, and even when modifications to the BLS definitions of marginal attachment are introduced that, in our opinion, better reflects the potential impacts of Internet use. In each case, the results tell largely the same story. The credibility of these findings is further supported by an informal test of unconfoundedness, whereby the possibility that some unobserved and unaccounted for factor is determining both Internet use and job search activity is evaluated. Such testing is made prudent due to the observational nature of the sample.

The paper is organized as follows. Section 2 outlines the empirical strategy for estimating the effects of Internet use on labor market discouragement and describes the data. Section 3 summarizes the results from alternative estimations, and presents an indirect test of the unconfoundedness assumption. Conclusions are provided in Section 4.

## 2. Empirical strategy and data

Employment status is multi-faceted, and government statistics employ such notions as employment, under-employment, unemployment, marginal attachment to the labor force, and so on.<sup>1</sup> Of particular importance to the question of Internet use and job search are the marginally attached, defined by the BLS as those persons not in the labor force who want and are available for a job, and who looked for work in the past 12 months, but who are not currently looking (i.e., within the past four weeks).<sup>2</sup> These marginally attached persons resemble the unemployed but for the fact that the marginally attached have not searched for work in the past four weeks (where the unemployed have). Thus, the distinction between the unemployed and the marginally attached provides a useful measure of job search activity.

In an effort to distinguish between the reasons for terminating job search, the BLS divides these marginally attached into two classes: (1) discouraged and (2) marginally attached but not discouraged. A discouraged worker is no longer seeking work because they believe either that there are no jobs available, or else no jobs for which they are qualified (see Table 2 for more detail). As shown in Table 1, discouraged workers amounted to around 1.3 million individuals in the final month of 2010, or about 50% of the marginally attached and 21% of those who wanted a job.<sup>3</sup> The remainder of the marginally attached includes those persons not looking for work due to external constraints such as family responsibilities or transportation problems. At the end of 2010, these marginally attached but not discouraged individuals were likewise 1.3 million strong. Table 1 also shows that discouragement rose sharply in 2010, both in absolute terms, and relative to the marginally attached but not discouraged. Marginally attached persons are economically and sociologically significant, and their circumstances are of public concern.

By restricting the analysis to the behavior of the unemployed, the role of Internet use on job search can be evaluated by exploiting the distinction between the unemployed and the marginally attached, as well as exploiting the distinction between the two types of marginal attachment. Specifically, this study implements empirical tests that estimate the difference in the probability an unemployed person becomes marginally attached attributable to that person’s Internet use. Since the distinction between the unemployed and the marginally attached is based on job search, these empirical

<sup>1</sup> See, for example, Bureau of Labor Statistics (2009).

<sup>2</sup> Notably, casual Internet search for jobs does not count as active job search.

<sup>3</sup> See Bureau of Labor Statistics (2010).

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