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Unemployment, Underemployment, and Employment Opportunities: Results from a Correspondence Audit of the Labor Market for College Graduates

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Abstract

We conduct a résumé audit to estimate the impact of unemployment and underemployment on the employment prospects facing recent college graduates. We find no evidence that employers use current or past unemployment spells, regardless of their length, to inform hiring decisions. By contrast, college graduates who became underemployed after graduation receive about 15-30 percent fewer interview requests than job seekers who became “adequately” employed after graduation. Internship experience obtained while completing one’s degree reduces the negative effects of underemployment substantially.

JEL categories: J23, J24, J64, J70

Key words: underemployment, unemployment, duration dependence, employment opportunities, interships, labor demand, field experiments, correspondence studies

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1 Introduction

The unemployment and underutilization of human capital suffered by college graduates who began their careers during and following the Great Recession is unprecedented.¹ It is important to understand how recessions harm new entrants to the labor market, as the largest increases in pay and promotions generally occur during the initial career phase (Murphy and Welch 1990). Research shows that college graduates who enter the labor force during recessions have lower life-time earnings and diminished career advancement (Oeropoulos, von Wachter and Heisz 2012). Following the 2007-2008 recession, the unemployment rate of recent college graduates was significantly higher than the national unemployment rate (Spreen 2013). In addition, many recent college graduates who were able to find work acquired jobs that were below their skill level (Abel, Dietz and Su 2014). While the question of whether the duration of unemployment influences re-employment probabilities has been studied extensively (e.g., Eriksson and Rooth 2014; Imbens and Lynch 2006; Kroft, Lange and Notowidigdo 2013; Shimer 2008), less emphasis has been placed on the labor-market consequences associated with underemployment.

We conduct a résumé audit of the labor market for recent college graduates to investigate the effects of unemployment and underemployment on subsequent employment opportunities. We represent the labor-market experiences realized by college graduates who completed their degrees following the last recession by randomly assigning job seekers spells of unemployment and underemployment. For a seven-month period during 2013, over 2300 online help-wanted advertisements were answered with fictitious résumés from recent college graduates who completed their degrees in May 2010. Differences in interview-request rates across a variety of perceived productivity characteristics signaled on the résumés constitute the outcomes of interest. Job seekers in our sample were either unemployed at the time of application, had an initial spell of unemployment after graduation, or continuous employment following

¹The severity of the employment crisis experienced by this cohort of “unlucky” young people has led to such undesirable monikers as the “New ‘Lost’ Generation” (See Casselman and Walker 2013).

graduation. Because recent college graduates are also likely to experience underemployment, applicants are randomly assigned work experience that either requires no college education or requires a college education and is specific to the industry of the potential employer.

We applied to job openings in seven major cities across the following job categories: banking, finance, insurance, management, marketing and sales. A key feature of our experimental design allows us to incorporate variation in premarket productivity characteristics that closely match the skill-sets specific to these industries. First, we randomly assign traditional business degrees in accounting, economics, finance, management, and marketing and degrees from arts and sciences in biology, english, history, and psychology. Secondly, applicants could have an industry-specific internship, which occurs the summer before graduation, assigned independent of the undergraduate major.

We find no evidence that unemployment spells, whether current or in the past, affect the employment prospects of recent college graduates. Moreover, we find that the duration of current or past unemployment is unrelated to interview requests. However, we find strong evidence that underemployment harms job seekers' subsequent employment prospects in economically and statistically significant ways. Applicants who are currently underemployed are about 30 percent less likely to receive an interview request than applicants who are currently adequately employed.² The interview-request differential between job seekers who were previously underemployed but currently unemployed and those who were previously adequately employed but currently unemployed is also large and negative. Internship experience obtained during the completion of one's degree reduces the interview-request gap between the currently underemployed and the currently adequately employed by about 50 percent, and internship experience completely eliminates the interview-request gap between the previously underemployed and the previously adequately employed. The strong, positive, causal relationship between internship experience and interview requests likely represents a lower-bound effect, as the internships last only three months and occurred approximately

²Throughout the manuscript, we use the terms "adequate employment" to reflect employment in a job that requires a college degree and is specific to the job category.

four years prior to the date applications were submitted. This finding is both surprising and encouraging, as incentivizing firms to take on interns could be a relatively low-cost option for policymakers interested in mitigating the negative effects of recessions on young workers. However, more research is needed to determine whether internships alter productivity or serve as a signal of ability.

2 Background

Theoretical research emphasizes the loss of skill (Acemoglu 1995; Ljungqvist and Sargent 1998), signaling (Lockwood 1991; Vishwanath 1989), ranking (Blanchard and Diamond 1994) and search behavior (e.g., Rogerson, Shimer, and Wright 2005) as the mechanisms through which re-employment probabilities are affected by unemployment duration. There is a voluminous empirical literature on the relationship between unemployment spells and re-employment probabilities. Machin and Manning (1999) conduct a review of the literature on duration dependence in Europe, concluding that the empirical evidence does not strongly support the notion that re-employment probabilities are negatively affected by the length of unemployment spells. Using data from the U.S., Imbens and Lynch (2006) find evidence of negative duration dependence.³ In addition, the importance of duration dependence appears to vary across countries (van den Berg and van Ours 1994) and race within a country (van den Berg and van Ours 1996).⁴

³Imbens and Lynch (2006) find that duration dependence is stronger when the labor market is tight. By contrast, Dynarski and Sheffrin (1990) find the opposite. Abbring, van den Berg and van Ours (2001) find that the interaction effect varies with the duration of the unemployment spell. Using experimental data, Kroft, Lange and Notowidigdo (2013) provide support for the conclusions of Imbens and Lynch (2006).

⁴The aforementioned studies focus on labor-market consequences of contemporaneous unemployment. An empirical literature also exists on the impact of past unemployment spells on employment (Arulampalam, Booth and Taylor 2001; Burgess et al. 2003; Heckman and Borjas 1980; Gregg 2001; Ruhm 1991). The findings from this literature are mixed. However, most European studies generally find negative effects of past unemployment on current (un)employment probabilities, while U.S. studies tend to find little empirical support for such effects. In addition, there are a number of studies that examine the “scarring” effects of unemployment on future earnings (Arulampalam 2001; Gregory and Jukes 2001; Jacobson, LaLonde and Sullivan 1993; Mroz and Savage 2006; Ruhm 2001; Stevens 1997). For the most part, these studies report that past unemployment/displacement results in reductions in long-term earnings.

Because the majority of studies in the duration dependence literature rely on administrative or survey data, it is difficult to know whether the results reflect a causal relationship or unobserved heterogeneity (e.g., Shimer 2008).⁵ The existing literature is also primarily concerned with supply-side behavior, as the demand-side of the market is a reflection only of the sample of workers who have accepted wage offers from firms and, as a result, the full distribution of wage offers is unobserved. The lack of information in existing survey/administrative data regarding the pool of workers from which firms choose also limits our ability to understand the micro-foundations of the process through which firms match with workers (Petrongolo and Pissarides 2001).

More recently, researchers have conducted field experiments to examine the effect of job applicants' unemployment spells on firms' hiring decision (Eriksson and Rooth 2014; Kroft, Lange and Notowidigdo 2013; Oberholzer-Gee 2008). Kroft, Lange and Notowidigdo (2013) use the correspondence methodology to study labor demand in the U.S. and find strong evidence of negative duration dependence.⁶ Oberholzer-Gee (2008) recruits two job seekers and conducts a job search on their behalf. The experiment manipulates the duration of unemployment by assigning spells of six, 12, 18, 24 and 30 months to the recruited job seekers. Oberholzer-Gee finds strong evidence of duration dependence in the labor market for administrative assistants. Eriksson and Rooth (2014) conduct a correspondence audit of the labor market in Sweden, finding some evidence of duration dependence for unemployment spells over nine months in length for low- and medium-skilled job applicants. However, they find no evidence that employers condition interview requests on periods of unemployment when job seekers apply to high-skilled jobs (defined as occupations which require a university degree).⁷

⁵Heckman (1991) and Machin and Manning (1999) provide detailed information on the empirical issues related to identifying the causal effect of unemployment duration on re-employment probabilities.

⁶Riach and Rich (2002) and Page (2007) provide excellent discussion on the correspondence methodology and its alternatives.

⁷Eriksson and Rooth (2014) also examine the impact of past unemployment spells on employment prospects, but their experimental data indicate that employers do not use past unemployment spells to inform current hiring decisions. These findings suggest that the subsequent work experience obtained after a past unemployment spell mitigates its "scarring" effect.

Abel, Deitz and Su (2014) document the widespread experience of college graduates who accept jobs below their skill level (i.e. underemployment), which is often attributed in the popular press to the Great Recession. Although they show that rates of underemployment had begun to increase in response to the 2001 recession, the latest recession has led to even higher rates of underemployment among graduates entering the labor force. In terms of theory, underemployment and unemployment could have similar effects on employment prospects; that is, both underemployment and unemployment could result in the depreciation of skills and/or serve as a signal of low ability/productivity. We return to this issue in section 4.5 when we discuss the importance of gaining relevant experience early in a job seeker’s career.

3 Experimental Design

We submitted approximately 9400 résumés to online job advertisements. The résumés were submitted in seven large cities (Atlanta, GA, Baltimore, MD, Boston, MA, Dallas, TX, Los Angeles, CA, Minneapolis, MN and Portland, OR) across six job categories (banking, financial services, insurance, management, marketing and sales). The résumés were submitted over a seven-month period, which spans from January 2013 through the end of July 2013.

We submitted four résumés per job advertisement. We used the résumé-randomizer developed by Lahey and Beasley (2009) to assign various résumé credentials to the fictitious applicants. In particular, we randomly assign each applicant a name, a street address, a university where they completed their Bachelor’s degree, an academic major, (un)employment status, whether they report their grade point average (GPA), whether the applicant completed their Bachelor’s degree with an Honor’s distinction, the type of work experience the applicant obtained after completing their degrees, the type of job the applicant had while enrolled in college, and whether the applicant obtained internship experience while completing their Bachelor’s degree.

In the interest of brevity, we describe the aspects of the experiment that are the focus of this study. The details of the other résumé characteristics are either discussed when they are used in our empirical models or in the Appendix.⁸ The key résumé characteristics are the (un)employment statuses and the type of work experience applicants accumulate after completing their degrees. For the (un)employment variables, there are seven possibilities for the applicants: *(i)* currently employed with no gaps in work history; *(ii)* currently employed but was unemployed for three months after completing their Bachelor’s degree; *(iii)* currently employed but was unemployed for six months after completing their Bachelor’s degree; *(iv)* currently employed but was unemployed for 12 months after completing their Bachelor’s degree; *(v)* currently unemployed for the last three months but no prior gaps in work history; *(vi)* currently unemployed for the last six months but no prior gaps in work history; and *(vii)* currently unemployed for the last 12 months but no prior gaps in work history. Twenty-five percent of our applicants are assigned no gap in their work histories, while the remaining 75 percent of applicants have either a “front-end” (after graduation) or “back-end” (current) unemployment spell. Applicants with some type of unemployment spell in their work history are assigned one of the six possible work-history gaps with equal probability.

In an effort to examine the impact of underemployment on employment prospects, applicants were randomly assigned two types of work experience. The first type is what we consider underemployment, which is employment for which a college degree is not likely required. In our experiment, underemployment is working at national retail stores with the title of “Retail Associate” or “Sales Associate”.⁹ Fifty percent of the fictitious applicants are randomly assigned work histories that indicate that they (a) are currently underemployed or (b) were previously underemployed but unemployed at the time of application. The remaining 50 percent of applicants are randomly assigned work experience that requires a college degree and is specific to job category for which they are applying. Specifically, in-field work

⁸Appendix Section 1.1 provides detailed information on each of the résumé characteristics; Section A1.2 provides sample résumés used in the experiment; and Section A1.3 describes the application process.

⁹When applying to job advertisements in the sales job category, we use “Retail Associate” exclusively. For the other job categories, applicants are randomly assigned “Retail Associate” or “Sales Associate”.

experience is working either previously or currently as a “Bank Branch Assistant Manager” in the banking job category; “Accounts Payable” or “Financial Advisor” in the finance job category; “Insurance Sales Agent” in the insurance job category; “Distribution Assistant Manager” or “Administrative Assistant” in the management job category; “Marketing Specialist” in the marketing job category; and “Sales Representative” or “Sales Consultant” in the sales job category. Throughout the manuscript, we refer to in-field employment as “adequate” employment.¹⁰

Our fictitious applicants have one job after graduation. As a result, it is *not* possible for an applicant to have been underemployed and then adequately employed or vice versa. There are four possibilities with respect to the type of work experience and (un)employment status that an applicant could possess at the time of application: (*i*) currently underemployed, (*ii*) currently adequately employed, (*iii*) currently unemployed but previously underemployed, and (*iv*) currently unemployed but previously adequately employed.¹¹

There are some aspects of the experiment that are held constant. Firstly, all applicants have a Bachelor’s degree. A sample of college graduates is used due to our interest in the labor-market opportunities facing recent college graduates in the aftermath of the worst economic downturn since the Great Depression. Secondly, we applied exclusively to job openings in business-related fields. The submission of résumés to business-related jobs is due to our interest in examining the ways in which mismatches in qualifications affect job opportunities. Lastly, we applied to jobs that did not (a) require a certificate or specific training, (b) require the submission of a detailed firm-specific application, and (c) require materials other than a résumé to be considered for the job. The decision to apply to jobs that meet these criteria stems from the need to avoid introducing unwanted variation into

¹⁰Jobs that are “in field” are “adequate” in the sense that a college degree would be a minimum requirement to obtain these types of jobs.

¹¹Applicants who are currently underemployed or currently adequately employed could either have an initial spell of unemployment after graduation or no gap in their work histories. By contrast, applicants who are currently unemployed but previously underemployed or previously adequately employed would not experience an initial spell of unemployment after graduation; thus, such applicants would have no gap in their work history until the current spell of unemployment takes place.

the experiment and to generate the largest amount of data points at the lowest possible cost.

Job opportunities are measured by interview requests from prospective employers. The use of interview requests follows other studies that rely on the correspondence methodology to study labor-market opportunities (Baert et al. 2013; Bertrand and Mullainathan 2004; Carlsson and Rooth 2007; Eriksson and Rooth 2014; Kroft, Lange and Notowodigdo 2013; Lahey 2008; Oreopolous 2011). When employers call or email applicants to set up an interview or to discuss the job opening in more detail, we treat such calls or emails as interview requests. The majority of calls or emails received fall into the interview-request category, but a small number of the responses from prospective employers were difficult to classify. In particular, there were 17 “callbacks” that were difficult to code.¹² Our strategy to deal with each of these atypical employer inquiries is to (a) include observation-specific dummy variables for these types of employer responses, (b) code these employer responses as interview requests, and (c) code these employer responses as non-interview requests. Regardless of how these employer responses are treated, our findings are unaffected.¹³ Because our results are not sensitive to ways in which the questionable callbacks are coded, the estimates presented in the manuscript are based on such callbacks being treated as interview requests.

Table 1 provides summary statistics on the interview rates for applicants with different (un)employment statuses. Panel A presents summary statistics for applicants who are currently or were adequately employed or underemployed; Panel B presents summary statistics for applicants who are currently or were underemployed; and Panel C presents summary statistics for applicants who are currently or were adequately employed. In Panels A, B

¹²Six employers asked if the applicant was interested in other positions. One employer asked for information on the applicant’s salary requirements. Two employers asked if the applicants were interested in full- or part-time work. Eight employers asked if the applicants had location preferences.

¹³In addition, 108 applicants were contacted to complete a detailed application through the employer’s website. When this happened, all four applicants in a four-person pool received the same phone call or email, making it possible that the response was automated. However, such responses could be non-discriminatory. It is important to point out that there is no variation in interview requests that received these types of employer responses within a four-applicant pool. Because our specifications are based on within-job-advertisement variation (discussed in the next section), these types of “callbacks” do not materially affect our estimates. Nevertheless, we used the strategy described above to examine the influence of these 108 observations, finding that the ways in which these employer responses are treated does not affect our estimates.

and C, we show the interview rates for four types of job seekers: all applicants, applicants who have no gaps in the work histories, applicants who are currently employed but had an unemployment spell immediately after graduation, and applicants who became employed immediately after graduation but are unemployed at the time of application. When lumping together applicants who became underemployed and adequately employed at some point after graduation, there is little variation in the interview rates, with a range between 16 and 17 percent (Panel A). The interview rates are markedly lower for applicants who became underemployed at some point after graduation, as they range from about 13-15 percent (Panel B). For applicants who became adequately employed at some point after graduation, the interview rates are higher than those for applicants overall and for applicants who became underemployed, as the interview rates range from about 19-20 percent (Panel C). In order to examine whether unemployment spells and/or underemployment, both current or in the past, affect employment opportunities, we turn to regression analysis in the next section.

4 Results

The results section is divided into five subsections. The first focuses on the estimated impact of unemployment and different length unemployment spells, both current and immediately after graduation, on employment prospects; the second focuses on the estimated impact of underemployment on employment prospects; the third is focused on testing whether unemployment or underemployment affects job opportunities more adversely; the fourth examines premarket factors that might mitigate the harmful effects of underemployment on employment opportunities;¹⁴ and the fifth summarizes the key findings and relates our findings to the existing literature.

4.1 Unemployment Spells and Job Opportunities

¹⁴Note that we focus exclusively on underemployment, because we find no evidence that employers use gaps in work history to inform decisions regarding interview requests.

We begin our analysis by focusing on the impact of current unemployment spells on job opportunities. In particular, we estimate the following regression model:¹⁵

$$interview_{imcfj} = \beta_0 + \beta_1 unemp_i + \gamma \mathbf{X}_i + \phi_m + \phi_c + \phi_f + \phi_j + u_{imcfj}. \quad (1)$$

The subscripts i , m , c , f and j index applicants, the month the application was submitted, the city where the application was submitted, the category of the the job opening and the job advertisement, respectively. The variable *interview* is a dummy variable that equals one when an applicant receives an interview request and zero otherwise; *unemp* is a zero-one indicator that equals one when an applicant is unemployed at the date of application and zero otherwise; \mathbf{X} is vector of résumé-specific controls (discussed in Section 3 and in Appendix Section A1.1); ϕ_m , ϕ_c , ϕ_f and ϕ_j are sets of dummy variables for the month the application was submitted, the city where the application was submitted, the job category (i.e. banking, finance, insurance, management, marketing and sales), and the job advertisement, respectively; u represents unobserved factors that affect the interview rate that are not held constant. Because we rely on randomization, the characteristics on the résumés are orthogonal to u , giving the parameter estimates a causal interpretation. We are primarily interested in the estimate for β_1 , which measures the average difference in the interview rate between applicants who are currently unemployed relative to applicants who are currently employed.

In the next specification, we examine whether different length unemployment spells affect employment prospects differently. Similar to equation 1, we are focused, again, on the impact of current unemployment spells on job opportunities. Formally, we estimate the following regression model:

¹⁵All regression model are estimated using linear probability models. However, we check the robustness of the marginal effects by using the logit/probit specifications, finding similar results. As a result, the estimates presented in the tables are based on linear probability models. In addition, standard errors are clustered at the job-advertisement level in all models.

$$\begin{aligned}
interview_{imcfj} = & \beta_0 + \beta_1 unemp_i^{3mo} + \beta_2 unemp_i^{6mo} + \beta_3 unemp_i^{12mo} \\
& + \gamma \mathbf{X}_i + \phi_m + \phi_c + \phi_f + \phi_j + u_{imcfj}.
\end{aligned}
\tag{2}$$

All subscripts and variables in equation 1 are defined above, except $unemp^{3mo}$, $unemp^{6mo}$ and $unemp^{12mo}$. The variable $unemp^{3mo}$ is a dummy variable that equals one when an applicant is assigned a current unemployment spell of three months and zero otherwise; $unemp^{6mo}$ is a dummy variable that equals one when an applicant is assigned a current unemployment spell of six months and zero otherwise; and $unemp^{12mo}$ is a dummy variable that equals one when an applicant is assigned a current unemployment spell of 12 months and zero otherwise. The parameter β_1 gives the average difference in the interview rate between applicants who are assigned a three-month current unemployment spell and applicants who are currently employed; β_2 gives the average difference in the interview rate between applicants who are assigned a six-month current unemployment spell and applicants who are currently employed; β_3 gives the average difference in the interview rate between applicants who are assigned a 12-month current unemployment spell and applicants who are currently employed; $\beta_2 - \beta_1$ gives the average difference in the interview rate between applicants who are assigned a six-month unemployment spell and applicants who are assigned a three-month current unemployment spell; $\beta_3 - \beta_1$ gives the average difference in the interview rate between applicants who are assigned a 12-month unemployment spell and applicants who are assigned a three-month current unemployment spell; and $\beta_3 - \beta_2$ gives the average difference in the interview rate between applicants who are assigned a 12-month unemployment spell and applicants who are assigned a six-month current unemployment spell.

Table 2 presents the estimates from equations 1 and 2. Panel A presents the estimate for the overall impact on the interview rate of being currently unemployed relative to being currently employed, i.e. β_1 from equation 1. The estimated differential is positive, but it is not significant in an economic or statistical sense. Panel B presents the estimates concerning how different length current unemployment spells affect employment opportunities, i.e. the

estimates for β_1 , β_2 , β_3 , $\beta_2 - \beta_1$, $\beta_3 - \beta_1$ and $\beta_3 - \beta_2$ from equation 2. From column (1), we find that applicants who are assigned current three-month unemployment spells have higher interview rates than applicants who are currently employed; applicants who are assigned six-month current unemployment spells have higher interview rates than applicants who are currently employed; and applicants who are assigned 12-month current unemployment spells have lower interview rates than applicants who are currently employed. However, none of the estimated differences in column (1) are statistically significant. In column (2), the comparison group is applicants who are assigned three-month current unemployment spells. We find that applicants with six-month and 12-month current unemployment spells are less likely to receive an interview request than applicants who are assigned three-month current unemployment spells, but these estimated differentials are not economically or statistically significant. In column (3), we use applicants who are assigned six-month current unemployment spells as the comparison group. Applicants with 12-month current unemployment spells are less likely than applicants with six-month current unemployment spells to receive interview requests, but the estimated differential is not significant in an economic or statistical sense.¹⁶

The estimates presented in Table 2 do not differentiate between “front-end” and “back-end” unemployment spells. As a part of our experimental design, 75 percent of our fictitious applicants were assigned a gap in work history. With equal probability, applicants were assigned an unemployment spell that either occurred immediately after they graduated from college or at the time that they were submitting applications to prospective employers. The former are referred to as front-end gaps, while the latter are referred to as back-end gaps. In the next specification, we examine impact of front-end and back-end unemployment spells on employment opportunities as well as the relative difference between front- and back-end

¹⁶Due to our experimental design, the fictitious applicants necessarily have different amounts of work experience. While it would be expected that applicants with gaps in their work history to have less experience than otherwise identical applicants without gaps in their work history, we checked the robustness of our results to an alternative sample based on months of work experience. In particular, we subset the data set to include only observations from applicants with two years of work experience; that is, we examine only applicants with 24-35 months of work experience. When we re-estimate equations 1 and 2 using this subset of the full sample, we find similar results: being currently unemployed does not affect employment prospects statistically or economically.

unemployment spells. We estimate that following regression model:

$$interview_{imcfj} = \beta_0 + \beta_1 front_i + \beta_2 back_i + \gamma \mathbf{X}_i + \phi_m + \phi_c + \phi_f + \phi_j + u_{imcfj}. \quad (3)$$

All subscripts and variables in equation 3 are defined above, except *front* and *back*. The variable *front* is a dummy variable that equals one when an applicant is assigned a three-, six- or 12-month unemployment spell immediately following graduation and zero otherwise, and the variable *back* is a dummy variable that equals one when an applicant is assigned a three-, six- or 12-month current unemployment spell and zero otherwise. The base category in equation 3 is job seekers with no gaps in their work histories. Thus, β_1 gives the average difference in the interview rate between applicants with front-end unemployment spells and applicants without a front-end or a back-end unemployment spell, and β_2 gives the average difference in the interview rate between applicants with current unemployment spells and applicants without a front-end or a back-end unemployment spell. The linear combination of parameters $\beta_2 - \beta_1$ gives the average difference in the interview rate between applicants with current unemployment spells and applicants with unemployment spells that occurred immediately after graduating from college. The estimates from equation 3 are presented in Table 3, which indicate that the interview rates between applicants with front-end and back-end unemployment spells and applicants who had no gaps in their work histories are not economically or statistically different from one another. In addition, the interview differential between applicants with back-end gaps and applicants with front-end gaps are not economically or statistically significant.

In the next specification, we consider the impact of different length front-end and back-

end unemployment spells. In particular, we estimate the following regression model:

$$\begin{aligned}
interview_{imcfj} = & \beta_0 + \beta_1 front_i^{3mo} + \beta_2 front_i^{6mo} + \beta_3 front_i^{12mo} \\
& + \beta_4 back_i^{3mo} + \beta_5 back_i^{6mo} + \beta_6 back_i^{12mo} \\
& + \gamma \mathbf{X}_i + \phi_m + \phi_c + \phi_f + \phi_j + u_{imcfj}.
\end{aligned} \tag{4}$$

All subscripts and variables in equation 4 are defined above, except $front^{3mo}$, $front^{6mo}$, $front^{12mo}$, $back^{3mo}$, $back^{6mo}$ and $back^{12mo}$. The variable $front^{3mo}$ is a dummy variable that equals one when an applicant is assigned a three-month unemployment spell immediately after graduating from college and zero otherwise; $front^{6mo}$ is a dummy variable that equals one when an applicant is assigned a six-month unemployment spell immediately after graduating from college and zero otherwise; $front^{12mo}$ is a dummy variable that equals one when an applicant is assigned a 12-month unemployment spell immediately after graduating from college and zero otherwise; $back^{3mo}$ is a dummy variable that equals one when an applicant is assigned a three-month current unemployment spell and zero otherwise; $back^{6mo}$ is a dummy variable that equals one when an applicant is assigned a six-month current unemployment spell and zero otherwise; and $back^{12mo}$ is a dummy variable that equals one when an applicant is assigned a 12-month current unemployment spell and zero otherwise. The base category in equation 4 is job seekers with no gaps in their work histories. Thus, the β_k give the average difference in the interview rate between applicants with a particular unemployment spell relative to that for applicants without a front-end or back-end unemployment spell. Linear combinations of the β_k can be used to test for differences in the interview rate between, for example, applicants with a 12-month back-end unemployment spell and applicants with a 12-month front-end unemployment spell (i.e., $\beta_6 - \beta_3$). The estimates for the β_k and an exhaustive set of comparisons between applicants with different length front-end and different length back-end unemployment spells are presented in Table 4. Rather than comment on each of the estimates presented in Table 4, it is sufficient to note that none of the estimated interview differentials are statistically significant, and it is difficult to argue that any of the

estimated differentials are important in an economic sense.

4.2 Underemployment and Job Opportunities

For our next set of estimates, we examine the impact of underemployment on employment opportunities. We estimate two model specifications to investigate the effects of being underemployed on job opportunities. The first specification examines the total effect of underemployment, while the second specification estimates whether there is a differential between being currently underemployed and previously underemployed. The first specification is

$$interview_{imcfj} = \beta_0 + \beta_1 under_i + \gamma \mathbf{X}_i + \phi_m + \phi_c + \phi_f + \phi_j + u_{imcfj}. \quad (5)$$

All variables in equation 5 except *under* are defined above.¹⁷ The variable *under* is a dummy variable that equals one when an applicant is randomly assigned work experience that is indicative of underemployment (i.e. employment at a job that does not require a college degree) and zero otherwise. Thus, β_1 gives the average difference in the interview rate between applicants who are or were underemployed relative to applicants who are or were “adequately” employed.

The second specification incorporates an interaction between underemployment (*under*) and unemployment (*unemp*). We include this interaction term so that we are able to test whether current underemployment and underemployment in the past have different effects on employment opportunities. Formally, we estimate the following regression model:

$$interview_{imcfj} = \beta_0 + \beta_1 under_i + \beta_2 unemp_i + \beta_3 under_i \times unemp_i + \gamma \mathbf{X}_i + \phi_m + \phi_c + \phi_f + \phi_j + u_{imcfj}. \quad (6)$$

All variables in equation 6 are defined above. The parameter β_1 gives the average difference

¹⁷Note that \mathbf{X} in equation 5 includes controls for unemployment spells, i.e. $unemp^{3mo}$, $unemp^{6mo}$ and $unemp^{12mo}$, listed in equation 2 as well as the other control variables discussed in Section 3 and Appendix Section A1.1.

in the interview rate between applicants who are currently underemployed and applicants who are currently adequately employed; $\beta_1 + \beta_3$ gives the average difference in the interview rate between applicants who were previously underemployed but are currently unemployed and applicants who were previously adequately employed but are currently unemployed; and β_3 provides a way to test whether estimated interview differential between applicants who became underemployed and applicants who became adequately employed are larger, smaller, or similar between the applicants who are currently unemployed versus applicants who are currently employed.¹⁸

Table 5 presents the estimates from equations 5 and 6. Column (1) presents the estimate for β_1 from equation 5. The ever-underemployed are about four percentage points less likely than their ever-adequately-employed counterparts to receive interview requests. This estimated differential translates into an approximately 24 percent lower interview rate for the ever-underemployed relative to applicants who are or were adequately employed.

The estimates in columns (2), (3) and (4) of Table 5 are based on equation 6. In particular, the estimate in column (2) is β_1 , the estimate in column (3) is $\beta_1 + \beta_3$, and the estimate in column (4) is β_3 . For applicants who are currently employed, the underemployed have a 4.8 percentage point lower interview rate than the adequately employed, which translates into about a 29 percent difference in interview rates. Among the unemployed, the previously underemployed are about 2.5 percentage points less likely to receive interview requests than their previously-adequately-employed counterparts. In terms of probability, the previously underemployed are about 15 percent less likely to receive an interview request than applicants who were adequately employed in the past. The relative difference of being underemployed versus adequately employed between the unemployed and employed, which is measured by β_3 , is positive and statistically significant at the 10-percent level. The positive sign indicates

¹⁸The parameter estimate for β_3 is a difference-in-differences estimator, as it captures the difference between two differences. The first difference is that between the currently unemployed but previously underemployed and currently unemployed but previously adequately employed ($\beta_1 + \beta_3$), and the second difference is that between the currently underemployed and currently adequately employed (β_1). The difference between these two differences is $\beta_1 + \beta_3 - \beta_1 = \beta_3$.

that the previously underemployed are treated more favorably in the labor market than applicants who are currently underemployed. Admittedly, it is not easy to explain this result. We contend that these differentials, which are somewhat counterintuitive, could be the result of employers (a) having a preference for workers who can start working at the job immediately, (b) having a greater demand for the unemployed because such workers might require less compensation (e.g., they may have lower reservation wages) than those who are currently employed, and/or (c) using underemployment status as a means to generate a separating equilibrium in which current underemployment and previous underemployment signal unobservables, such as ambition, motivation, and/or ability. In the case of (c), perhaps current underemployment sends a stronger signal than past underemployment. Unfortunately, there are no clear-cut tests to sort out these three possible explanations. In any case, the data support the conclusion that underemployment harms employment prospects in economically important ways, regardless of whether the underemployment is current or occurred in the past.

4.3 Underemployment Versus Unemployment

While the results from Sections 4.1 and 4.2 suggest that underemployment negatively affects employment prospects more so than unemployment, we conduct formal tests to determine whether the effects of current unemployment and current underemployment are statistically different from each another. We estimate a model that examines the differences in the interview rate between (a) the currently underemployed and the currently unemployed who were adequately employed in the past and (b) the currently underemployed and the currently unemployed who were underemployed in the past. To conduct these tests, we estimate the following regression model:

$$\begin{aligned}
 interview_{imcfj} = & \beta_0 + \beta_1 under_i^{emp} + \beta_2 under_i^{unemp} + \beta_3 in.field_i^{unemp} \\
 & + \gamma \mathbf{X}_i + \phi_m + \phi_c + \phi_f + \phi_j + u_{imcfj}.
 \end{aligned} \tag{7}$$

All variables in equation 7 are defined above, except $under^{emp}$, $under^{unemp}$, and $infield^{unemp}$. The variable $under^{emp}$ is a zero-one indicator that equals one when an applicant is currently underemployed and zero otherwise; $under^{unemp}$ is a zero-one indicator that equals one when an applicant is currently unemployed but was underemployed in the past; $infield^{unemp}$ is a zero-one indicator that equals one when an applicant is currently unemployed but was adequately employed in the past and zero otherwise. The inclusion of $under^{emp}$, $under^{unemp}$ and $infield^{unemp}$ makes the base category applicants who are currently adequately employed (i.e. $infield^{emp}$). Column (1) of Panel A presents the estimate for β_1 , which is the average difference in the interview rate between applicants who are currently underemployed versus applicants who are currently unemployed who were adequately employed in the past. The estimate in column (1) of Panel B is based on the following linear combination of parameters $\beta_1 - \beta_2$, which provides a test for whether the interview rate differs between the currently underemployed and the currently unemployed who were underemployed in the past. To produce the remaining estimates in Table 6, we must reformulate equation 7 so that we can test for differences in interview rates between (a) applicants who are currently underemployed versus applicants who were adequately employed but have been unemployed for three, six and 12 months (columns (2), (3) and (4) of Panel A) and (b) applicants who are currently underemployed versus applicants who were previously underemployed but have been unemployed three, six and 12 months (columns (2), (3) and (4) of Panel B). In the interest of brevity, we omit the formal exposition of this reformulation of the regression model.¹⁹

From Panel A, the currently underemployed are less likely to receive interview requests than applicants who are currently unemployed but were adequately employed in the past. The currently underemployed are 4.2 percentage points less likely to receive an interview request than applicants who are currently unemployed but were adequately employed in the past; 4.7 percentage points less likely to receive an interview request than applicants who have been unemployed for three months but were adequately employed in the past; 4.3

¹⁹The reformulation of equation 7 is presented in Appendix Section A2.

percentage points less likely to receive an interview request than applicants who have been unemployed for six months but were adequately employed in the past; and 3.9 percentage points less likely to receive an interview request than applicants who have been unemployed for 12 months but were adequately employed in the past. The estimates in columns (1) and (2) are statistically significant at the 0.1 percent level, while those in columns (3) and (4) are statistically significant at the one-percent level.

From Panel B, the currently underemployed are less likely to receive interview requests than applicants who are currently unemployed but were underemployed in the past. The currently underemployed are 1.7 percentage points less likely to receive an interview request than applicants who are currently unemployed but were underemployed in the past; 2.6 percentage points less likely to receive an interview request than applicants who have been unemployed for three months but were underemployed in the past; 1.7 percentage points less likely to receive an interview request than applicants who have been unemployed for six months but were underemployed in the past; and approximately one percentage point less likely to receive an interview request than applicants who have been unemployed for 12 months but were underemployed in the past. The estimates in columns (1) and (2) are statistically significant at the 10- and five-percent levels, respectively, while those in columns (3) and (4) are not statistically significant at conventional levels.

4.4 Mitigating Factors

In this subsection, we examine the possibility that premarket factors mitigate the negative effects of being currently or previously underemployed on employment prospects. Perhaps the underemployed are high-quality applicants but were unlucky and took a job that was below their skill level.²⁰ The premarket factors that were randomly assigned to our fictitious

²⁰It is also possible that applicants might accept jobs that are below their skill level out of need. A measure of “need” might be applicants’ socioeconomic statuses. We investigated this possibility by using the street addresses that are randomly assigned to applicants. For each city, applicants are assigned one of four street addresses. Two of the street addresses are in neighborhoods where house prices exceed \$750,000, while the remaining two street addresses are in neighborhoods where house prices are below \$120,000. Ultimately,

applicants include graduating with a business degree, an indicator of high academic ability, and internship experience. Our fictitious applicants accumulate these accolades while completing their college education. Applicants are assigned business-related and non-business-related degrees. The business degrees are accounting, economics, finance, management, and marketing, while the non-business degrees are biology, english, history and psychology.²¹

Given that we apply exclusively to business-related jobs, it is possible that a business degree increases the odds of receiving an interview request. The applicants are also randomly assigned quality indicators, which include reporting a GPA of 3.9 on their résumé or reporting that they completed their degree with an Honor’s distinction. Applicants are randomly assigned neither or only one of these attributes. We combine these two variables as a means to signal a high-quality applicant. Lastly, some of the applicants were randomly assigned internship experience that took place during Summer 2009, the year before the applicants graduated with their Bachelor’s degree in May 2010. The internship experience is a form of in-field experience, as it is specific to the job category for which the applicant is applying. In particular, internship experience is working as a(n) “Equity Capital Markets Intern” in the banking job category; “Financial Analyst Intern” in the finance job category; “Insurance Intern” in the insurance job category; “Project Management Intern” or “Management Intern” in the management job category; “Marketing Business Analyst” in the marketing job category; and “Sales Intern” or “Sales Future Leader Intern” in the sales job category.

Our goal is to conduct tests that allow us to determine whether the aforementioned pre-market factors can mitigate the negative effects of becoming underemployed after graduation.

these results indicate no difference in the interview rates between the underemployed who live in high-socioeconomic-status areas and those who live in low-socioeconomic-status areas. To the extent that the street addresses signal socioeconomic status reliably, it does not appear that firms treat applicants who are or have been underemployed differently based on socioeconomic status.

²¹As a robustness check, we included economics in the non-business-degree category, as economics is a social science and many economics departments are housed outside of business schools. But the estimates are not sensitive to this alternative classification. In our sample, it is likely that prospective employers consider economics as a “business-related” degree.

To study these mitigating factors, we estimate the following regression model:

$$\begin{aligned}
interview_{imcfj} = & \beta_0 + \beta_1 under_i^{emp} + \beta_2 under_i^{unemp} + \beta_3 infield_i^{unemp} \\
& + \beta_4 bus_i + \beta_5 quality_i + \beta_6 intern_i + \gamma \mathbf{X}_i \\
& + \phi_m + \phi_c + \phi_f + \phi_j + u_{imcfj}.
\end{aligned} \tag{8}$$

All variables except *bus*, *quality* and *intern* are defined above. The variable *bus* is a zero-one indicator variable that equals one when an applicant is assigned a business degree and zero otherwise; *quality* is a zero-one indicator that equals one when applicant is assigned a resume characteristics that indicates a GPA of 3.9 or that the applicant completed their degree with an Honor's distinction and zero otherwise; and *intern* is a zero-one indicator that equals one when an applicant is assigned an internship while completing their Bachelor's degree and zero otherwise.

We use equation 8 to examine whether the premarket factors reduce the extent of differential treatment based on current and previous underemployment. Table 7 presents the results from these tests. Column (1) of Panels A and B present the baseline estimates: The estimates presented in column (1) of Panel A are the same as those that were presented in column (2) of Table 5, and the estimates in column (1) of Panel B are the same as those that were presented in column (3) of Table 5. Columns (2)-(5) in Panels A and B shows the results of the empirical tests designed to examine whether premarket factors mitigate the harmful effects of underemployment, both current and past, on employment prospects. The linear combinations of parameters that are used to conduct the tests are included below the estimates in Panels A and B.

From Panel A, it is apparent that business degrees do little to reduce the extent of the differential treatment based on current underemployment (column 2), and the same is true for applicants who report a high GPA or an Honor's distinction on the résumé (column 3). However, internship experience reduces the harmful effect of current underemployment on employment opportunities substantially (column 4). For applicants with all three of the

premarket factors, the interview differential between applicants who are currently underemployed and applicants who are currently adequately employed is eliminated (column 5).

In Panel B, we observe a similar pattern, except the magnitude of the baseline differential in the interview rate between the previously underemployed and those who were adequately employed in the past is smaller (-0.017 versus -0.042). Again, business degrees do not materially reduce the estimated differential in interview rates (column 2). The statistical significance of the differential is nonexistent for applicants who report a high GPA or have an Honor's distinction (column 3). While the academic-quality signals (GPA and Honor's) eliminate the statistical significance of the differential, the estimated difference is still somewhat significant in an economic sense (about two percentage points in absolute value). However, the statistical and economic significance are eliminated when we test whether internship experience mitigates the effects of previous underemployment (column 4). It is also the case that the interview rates for applicants who are currently unemployed but were previously underemployed that have all three premarket characteristics are not statistically different from applicants who are currently unemployed but were adequately employed in the past (column 5).²²

4.5 Discussion of Results

We find no evidence that unemployment spells or their duration, whether current or in the past, affect the interview rates of recent college graduates. These findings are corroborated in large part by Eriksson and Rooth (2014), who find no effect of unemployment spells on job applicants who apply for jobs that require a college degree, and the survey of the

²²While the estimates for the effects of the mitigating factors (i.e. business degrees, quality indicator and internship experience) on employment prospects are not presented in Table 7, we note that each of these characteristics has a positive impact on interview rates. Business degrees and the quality indicator increase the interview rate by less than one-percentage point each, and internship experience raises the interview rate by over two percentage points. The estimates for business degrees and the academic-quality indicator are not statistically significant at conventional levels, but the estimate for internship experience is statistically significant at the 0.1 percent level. As such, it is not surprising that internship experience has the largest mitigating effect on the interview differentials stemming from underemployment, regardless of whether the underemployment is current or occurred in the past.

literature in Europe by Machin and Manning (1999).²³ However, our findings are at odds with those of Kroft, Lange and Notowidigdo (2013). While there is no way to reconcile the two sets of findings with any degree of certainty, there are potentially important differences in our experiment which could be responsible for our different conclusions regarding the effect of unemployment spells on employment opportunities. The key differences are that we (a) construct a different sample and (b) examine a different time period. They examine job seekers of varying degrees of skill, educational attainment and work histories. By contrast, we focus on recent college graduates, who have short work histories (maximum of three years of work experience) and the same educational attainment. Our study began in January 2013, while their data collection began in July 2011. We suspect their evidence of duration dependence and our lack of support for duration dependence is due to the differences in characteristics of the fictitious applicants and/or the timing of data collection. Another explanation for our different results is that employers might have expected to observe gaps in the work histories of recent college graduates, given that they graduated at a time (May 2010) when the national unemployment rate was near 10 percent and the unemployment rate was higher for recent college graduates than the national unemployment rate (13 percent versus 10 percent) and the unemployment rate of all college-degree holders (13 percent versus four percent) (Abel, Deitz and Su 2014; Spreen 2013).

Despite finding no evidence that gaps in work history inform the hiring decisions of employers, we find strong evidence that underemployment harms the employment prospects facing recent college graduates. Oeropoulos, von Wachter, and Heisz (2012) study the effect of recessions on life-cycle earnings with a matched data set of Canadian college graduates and their employers. They find long-term earnings losses associated with recessions are primarily a consequence of the quality of the employer with whom graduates initially find work. Oeropoulos, von Wachter, and Heisz (2012) also find that time required to recover

²³It is important to point out that Eriksson and Rooth (2014) find evidence of duration dependence for applicants with current unemployment spells of nine months or more when they apply to low- to medium-skill jobs.

from poor initial labor-market conditions depends on the quality of the job candidate, with the less able college graduates suffering the effects of recessions longer. Hence, our findings could indicate that employers perceive applicants who are underemployed as lower quality employees, given that such applicants have not found employment that matches their skill set three to four years after graduation.

Our experimental design and findings are also in line with recent stylized facts concerning new college graduates' experience in the labor market. Abel, Deitz and Su (2014) document high rates of underemployment among recent college graduates, but they argue that rates of underemployment began to rise following the 2001 recession and became exacerbated during and following the Great Recession. Abel, Deitz and Su (2014) also find there is substantial variation in labor-market outcomes across majors and argue that universities should form closer relationships with firms so that students can be better informed regarding the latest skill requirements from different industries.

It is possible for recent college graduates to become underemployed because of bad luck and/or a strong need to obtain jobs because of liquidity constraints. Therefore, premarket factors may help mitigate the effects of becoming underemployed. We examine three premarket factors: having a business degree, reporting a high GPA or an Honor's distinction on one's résumé, and internship experience. Business degrees and academic-quality indicators do not reduce the extent of the differential treatment stemming from underemployment in economically important ways, but internship experience helps substantially. The strong, positive effect of internship experience on employment prospects is an encouraging result.

While internships have not received much attention in the literature, there is a closely related literature that focuses on the effect of structured apprenticeship programs in European labor markets (Adda et al. 2013; Fersterer, Pischke, and Winter-Ebmer 2008; von Wachter and Bender 2006).²⁴ Some have argued that apprenticeships, particularly in Ger-

²⁴Knouse, Tanner and Harris (1999) are one of the few to examine the effects of internships on employment prospects. They find that business students who received internships had higher grade point averages and were also more likely to receive offers of employment. However, it is difficult to know whether their findings reflect a causal relationship.

many where approximately 60 percent of youth apprentice, offer substantial labor-market returns for participants and reduce youth unemployment by structuring the school-to-work transition (Ryan 2001). The mechanisms through which apprenticeships affect employment outcomes and labor market dynamics are, however, complex and likely vary based on the quality of the apprenticeship (Adda et al. 2013; Ryan 2001). The same is likely true of internships.

With internship and in-field experience, young workers may accumulate industry-specific experience that is valued by employers. Neal (1995) finds that workers who are displaced from jobs are better able to recover wage losses if they find a job in the same pre-displacement industry. Our experiment does not allow a direct test of whether the observed return to internships occurs through industry-specific human capital, as internship experience was assigned specific to the industry of the observed firm. However, the results for internships suggest that the accumulation of industry-specific capital could be an important channel through which young workers increase their marketability. It could also be that an applicant with in-field internship experience signals higher match quality with the firm. Further study with a richer set of internship characteristics and work histories is warranted.

5 Conclusions

The labor market that college graduates entered in 2010 was particularly weak due to the Great Recession. As a result, it is possible that high-quality job seekers became unemployed or underemployed due to bad luck. We study labor market demand in the U.S. for recent college graduates with a large-scale résumé-audit study. Approximately 9400 résumés were submitted to prospective employers from fictitious job seekers who graduated in May 2010. The sample period runs from January 2013 through the end of July 2013. Unemployment spells of a year or less were randomly assigned to job seekers. Applicants were also randomly assigned in-field work experience as well as job experience that did not require a college

degree (i.e. underemployment). In our experimental design, we randomly assigned a number of “premarket” characteristics, including whether the applicant received a business degree, whether the applicant reports a high grade point average or an Honor’s distinction on their résumés (a signal of high quality) and internship experience.

We find no evidence of negative duration dependence, as unemployment spells (of any length) have no statistically significant impact on interview rates. Alternatively, underemployment has a strong, negative effect on interview rates: Job seekers who became underemployed after graduation receive 15 to 30 percent fewer interview requests than those who became adequately employed after graduation. We also test whether premarket factors reduce the extent of differential treatment based on underemployment status. Business degrees and signals of high quality do little to reduce the gap in interview rates between the underemployed and the adequately employed. However, a three-month internship in Summer 2009 increases the interview rate in 2013 by about 15 percent, which ultimately reduces the negative effect of underemployment by approximately 50 percent. The effect of internships are also likely understated because there is an approximate four-year lag time between reported internship experience and job application. Additionally, the internship only lasted for three months and the fictitious job seekers were also applying to a company for which he/she did not intern. We believe these results have important implications for policy, as incentivizing firms to hire college students as interns could alleviate the negative effects on their life-time earnings from entering the labor market during and following an economic downturn. However, more research is warranted in order to determine the whether internship experience serves as a signal or if such labor-market experience improves productivity.

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Table 1: Interview Rates by Employment Status

	All Applicants	No Gap in Work History	Currently Employed with Unemployment Spell After Graduation	Currently Unemployed
	(1)	(2)	(3)	(4)
<i>Panel A: Overall</i>				
Interview Rate	16.6%	15.8%	17.1%	16.8%
Observations	9396	2394	3486	3516
<i>Panel B: Underemployed</i>				
Interview Rate	14.6%	12.9%	14.5%	15.8%
Observations	4681	1160	1754	1767
<i>Panel C: Adequately Employed</i>				
Interview Rate	18.7%	18.6%	19.7%	17.7%
Observations	4715	1234	1732	1749

Table 2: The Effects of Current Unemployment on Job Opportunities

	Base Category		
	Employed	Unemployed Three Months	Unemployed Six Months
	(1)	(2)	(3)
<i>Panel A: Overall</i>			
Unemployed	0.0056 (0.0066)	–	–
<i>Panel B: Unemployment Duration</i>			
Unemployed 3 Months	0.0125 (0.0095)	–	–
Unemployed 6 Months	0.0059 (0.0101)	-0.0065 (0.0126)	–
Unemployed 12 Months	-0.0015 (0.0095)	-0.0139 (0.0125)	-0.0074 (0.0121)

Notes: Estimates are marginal effects from linear probability models. Standard errors clustered at the job-advertisement level are in parentheses. The estimates presented in Panel A are based on equation 1, while those in Panel B are based on equation 2. The full sample of 9396 observations is used. The R-squared for equation 1 (i.e. Panel A) is 0.724, while the R-squared for equation 2 (i.e. Panel B) is 0.725.

Table 3: The Impact of Front- and Back-End Gaps on Job Opportunities

	Base Category	
	No Gap in Work History (1)	Front-End Gap (2)
Front-End Gap	-0.0021 (0.0082)	–
Back-End Gap	0.0043 (0.0081)	0.0064 (0.0074)

Notes: Estimates are marginal effects from linear probability models. Standard errors clustered at the job-advertisement level are in parentheses. The estimates presented are based on equation 3 and use the full sample of 9396 observations. The R-squared is 0.724.

Table 4: The Impact of Different Length Front- and Back-End Gaps on Job Opportunities

	Base Category					
	No Gap in Work History	Three-Month Front-End Gap	Six-Month Front-End Gap	Twelve-Month Front-End Gap	Three-Month Back-End Gap	Six-Month Back-End Gap
	(1)	(2)	(3)	(4)	(5)	(6)
Three-Month Front-End Gap	0.0061 (0.0115)	–	–	–	–	–
Six-Month Front-End Gap	-0.0038 (0.0108)	-0.0099 (0.0130)	–	–	–	–
Twelve-Month Front-End Gap	-0.0082 (0.0107)	-0.0143 (0.0126)	-0.0044 (0.0122)	–	–	–
Three-Month Back-End Gap	0.0114 (0.0107)	0.0053 (0.0129)	0.0152 (0.0126)	0.0195 (0.0119)	–	–
Six-Month Back-End Gap	0.0047 (0.0112)	-0.0015 (0.0133)	0.0084 (0.0129)	0.0128 (0.0125)	-0.0067 (0.0126)	–
Twelve-Month Back-End Gap	-0.0027 (0.0104)	-0.0088 (0.0129)	0.0011 (0.0127)	0.0054 (0.0121)	-0.0141 (0.0125)	-0.0074 (0.0121)

Notes: Estimates are marginal effects from linear probability models. Standard errors clustered at the job-advertisement level are in parentheses. The estimates presented are based on equation 4 and use the full sample of 9396 observations. The R-squared is 0.724.

Table 5: The Impact of Underemployment on Job Opportunities

	Overall	Employed	Unemployed	Unemployed Relative to Employed
	(1)	(2)	(3)	(4)
Underemployed	-0.0398*** (0.0059)	-0.0484*** (0.0079)	-0.0253** (0.0101)	0.0230+ (0.0133)

Notes: Estimates are marginal effects from linear probability models. Standard errors clustered at the job-advertisement level are in parentheses. +, ** and *** indicate statistical significance at the 10, 1, and 0.1 percent levels, respectively. The estimates in column (1) are based on equation 5, while those in columns (2), (3) and (4) are based on equation 6. The full sample of 9396 observations is used. The R-squared for equation 5 is 0.724, while the R-squared for equation 6 is 0.726.

Table 6: The Relative Effects of Underemployment and Unemployment on Job Opportunities

	Base Category			
	Unemployed Three, Six, or Twelve Months	Unemployed Three Months	Unemployed Six Months	Unemployed Twelve Months
	(1)	(2)	(3)	(4)
<i>Panel A: Currently Underemployed versus Previously Adequately Employed</i>				
Under vs. Adequate	-0.0424*** (0.0089)	-0.0472*** (0.0134)	-0.0434** (0.0148)	-0.0387** (0.0131)
<i>Panel B: Currently Underemployed versus Previously Underemployed</i>				
Under vs. Under	-0.0171+ (0.0091)	-0.0260* (0.0130)	-0.0174 (0.0136)	-0.0092 (0.0139)

Notes: Estimates are marginal effects from linear probability models. Standard errors clustered at the job-advertisement level are in parentheses. +, *, ** and *** indicate statistical significance at the 10, 5, 1, and 0.1 percent levels, respectively. The estimates presented in column (1) of Panels A and B are based on equation 7. The estimates presented in columns (2), (3) and (4) of Panels A and B are based on an augmented version of equation 7. The reformulation that produces the estimates in columns (2), (3) and (4) is described in Appendix Section A2. The estimation of equation 7 and its augmented version use the full sample. The R-squared for the estimated version of equation 7 is 0.725, while it is 0.727 for the augmented version of equation 7.

Table 7: Factors that Mitigate the Harmful Effects of Underemployment

	(1)	(2)	(3)	(4)	(5)
<i>Panel A: Currently Underemployed versus Currently Adequately Employed</i>					
Currently Underemployed	-0.0482*** (0.0078)	-0.0450*** (0.0101)	-0.0412*** (0.0097)	-0.0260*** (0.0097)	-0.0159 (0.0127)
Linear Combination	-	$\beta_1 + \beta_4$	$\beta_1 + \beta_5$	$\beta_1 + \beta_6$	$\beta_1 + \beta_4 + \beta_5 + \beta_6$
<i>Mitigating Factors:</i>					
Business Degree	No	Yes	No	No	Yes
Quality Signal	No	No	Yes	No	Yes
Internship	No	No	No	Yes	Yes
<i>Panel B: Previously Underemployed versus Previously Adequately Employed</i>					
Previously Underemployed	-0.0249* (0.0101)	-0.0217+ (0.0121)	-0.0179 (0.0113)	-0.0027 (0.0117)	-0.0043 (0.0187)
Linear Combination	-	$\beta_2 - \beta_3 + \beta_4$	$\beta_2 - \beta_3 + \beta_5$	$\beta_2 - \beta_3 + \beta_6$	$\beta_2 - \beta_3 + \beta_4 + \beta_5 + \beta_6$
<i>Mitigating Factors:</i>					
Business Degree	No	Yes	No	No	Yes
Quality Signal	No	No	Yes	No	Yes
Internship	No	No	No	Yes	Yes

Notes: Estimates are marginal effects from linear probability models. Standard errors clustered at the job-advertisement level are in parentheses. +, * and *** indicate statistical significance at the 10, 5, and 0.1 percent levels, respectively. The estimates presented in Panels A and B are based on equation 8 and use the full sample of 9396 observation. The R-squared for the estimated version of equation 8 is 0.725.

For Review Purposes Only

Appendix

A1 Data

A1.1 Résumé Characteristics

While details on the résumé characteristics are provided in what follows, Table A1 summarizes the variable names, definitions and provides the means of the variables. Some of the variables are omitted from Table A1 (e.g., university that the applicant graduated from) per our agreement with our respective institution review boards.

Applicant Names

Following the work of other correspondence studies, we randomly assign names to applicants that are distinct to a particular racial group. For our purposes, we chose eight names: Claire Kruger, Amy Rasumussen, Ebony Booker, Aaliyah Jackson, Cody Baker, Jake Kelly, DeShawn Jefferson, and DeAndre Washington. Claire Kruger and Amy Rasumussen are distinctively white female names; Ebony Booker and Aaliyah Jackson are distinctively black female names; Cody Baker and Jake Kelly are distinctively white male names; and DeShawn Jefferson and DeAndre Washington are distinctively black male names. The first names and surnames were taken from various websites that list the most female/male and the blackest/whitest names. The Census breaks down the most common surnames by race, and we chose our surnames based on these rankings.¹ The whitest and blackest first names, which are also broken down by gender come from the following website: <http://abcnews.go.com/2020/story?id=2470131&page=1>. The whitest and blackest first

¹Here is the link to the most common surnames in the U.S.: <http://www.census.gov/genealogy/www/data/2000surnames/index.html>.

names for males and females are corroborated by numerous other websites and the baby name data from the Social Security Administration.

The names listed above are randomly assigned with equal probability. Once a name has been randomly assigned within a four-applicant group (i.e. the number of résumés we submit per job advertisement), that name can no longer be assigned to the other applicants in the four-applicant pool. That is, there can be no duplicate names within a four-applicant pool.

We created an email address and a phone number for each name, which were all created through <http://gmail.com>. Each applicant name had an email address and phone number that is specific to each city where we applied for jobs. As an example, DeAndre Washington had seven different phone numbers and seven different email addresses. For each city, we had the emails and phone calls to applicants within a particular city routed to an aggregated Google account, which was used to code the interview requests.

Street Address

Four street addresses were created for each city. The addresses are created by examining house prices in and around the city in which the applications are submitted. Two of these addresses are in high-socioeconomic-status areas, while the other two are in low-socioeconomic-status areas. High-socioeconomic-status addresses are in areas where house prices on the street are in excess of \$750,000, while those in low-socioeconomic-status addresses are in areas where house prices on the street are less than \$120,000. We obtained house price information from <http://trulia.com>. Each applicant is assigned one of the four possible street addresses within each city. Applicants are assigned high- and low-socioeconomic-status addresses with equal probability, i.e. 50 percent. The table below shows the high- and low-socioeconomic street addresses used for each city.

Addresses				
	High Socio-Economic 1	High Socio-Economic 2	Low Socio-Economic 1	Low Socio-Economic 2
Atlanta	4164 Paran Pines Dr Nw Atlanta, GA 30327	908 Kings Ct Ne Atlanta, GA 30306	698 Moreland Ave Se Atlanta, GA 30316	4300 Rosewell Rd Atlanta, GA 30342
Baltimore	207 Club Rd Baltimore, MD 21210	2303 Essex St Baltimore, MD 21224	2998 Sollers Point Rd Baltimore, MD 21222	2803 Roselawn Ave Baltimore, MD 21214
Boston	590 E 8Th St Boston, MA 02127	71 School St Boston, MA 02129	38 Messinger St Boston, MA 02126	1409 River St Apt 37 Boston, Ma 02136
Dallas	3443 Normandy Ave Dallas, TX 75205	7360 Paldao Dr Dallas, TX 75240	3906 Antigua Dr Dallas, TX 75244	18211 Muir Cir Dallas, TX 75287
Los Angeles	6970 La Presa Dr Los Angeles, CA 90068	181 S Gardner St Los Angeles, CA 90036	10738 Gorman Ave Los Angeles, CA 90059	5608 Fortuna St Los Angeles, CA 90011
Minneapolis	1832 Kenwood Pkwy Minneapolis, MN 55405	4628 W Lake Harriet Pkwy Minneapolis, MN 55410	2526 Ulysses Ne St Minneapolis, MN 55418	4301 14th S Ave Minneapolis, MN 55407
Portland	5472 Sw Champion Pl Portland, OR 97225	3239 Sw 55Th Dr Portland, OR 97221	5715 Se 83Rd Ave Portland, OR 97266	309 N Bridgeton Rd Portland, OR 97217

Universities

The fictitious applicants were randomly assigned one of four possible universities. The universities are likely recognizable by prospective employers, but they are unlikely to be regarded as prestigious; thus, we can reasonably conclude that “name recognition” of the school plays little role as a determinant of receiving an interview from a prospective employer. In addition, each of the applicants is randomly assigned each of these four universities at some point during the collection of the data. While the university one attends likely matters, our data suggest that the universities that we randomly assigned to applicants do not give an advantage to our fictitious applicants. That is, there is no difference in the interview rates between the four possible universities.

Academic Major

The following majors were randomly assigned to our fictitious job applicants with equal probability: accounting, biology, economics, english, finance, history, management, marketing, and psychology. We chose these majors because they are commonly selected majors by college students. In fact, the Princeton Review² rates business-related majors as the most selected by college students; psychology is ranked second; biology is ranked fourth; english is ranked sixth; and economics is ranked seventh.

Grade Point Average and Honor’s Distinction

²Visit the following webpage: <http://www.princetonreview.com/college/top-ten-majors.aspx>.

Twenty-five percent of our fictitious applicants are randomly assigned an *résumé* attribute that lists their GPA. When an applicant is randomly assigned this *résumé* attribute, a GPA of 3.9 is listed. Twenty-five percent of the fictitious applicants were randomly assigned an Honor’s distinction for their academic major. Note that applicants were not randomly assigned both of these attributes; that is, applicants receive one of the two or neither. Below is an example of how the “Honor’s” (left) and “GPA” (right) traits were signaled on the *résumés*.³

<p>Education</p> <hr style="border: 0.5px solid black;"/> <p>Bachelor of Science, May 2010 University of XYZ English (Honors)</p>	<p><u>Education</u></p> <p>University of XYZ Bachelor of Science, May 2010 English GPA 3.9</p>
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(Un)Employment Status

Applicants were randomly assigned one of the following (un)employment statuses: employed at the date of application with no gap in work history, unemployed for three months at the date of application, unemployed for six months at the date of application, unemployed for 12 months at the date of application, unemployed for three months immediately following their graduation date but currently employed, unemployed for six months immediately following their graduation date but currently employed, and unemployed for 12 months immediately following their graduation date but currently employed. Applicants receive no gap in their work history at a 25 percent rate, while the different unemployment spells are randomly assigned with equal probability (12.5 percent). The (un)employment statuses are not mutually exclusive. It is possible for two workers in a four-applicant pool to be randomly assigned, for example, a three-month current unemployment spell. The unemployment spells were signaled on the *résumés* via gaps in work history, either in the past or currently.

In-Field, Out-of-Field, Internship and College Work Experience

³The university name was replaced with XYZ to conform to the terms of the agreement with our institutional review boards.

For each job category (i.e. banking, finance, management, marketing, insurance and sales), applicants were randomly assigned “in-field” or “out-of-field” work experience. “In-field” work experience is specific to the job category that the applicant is applying. “Out-of-field” experience is either currently working or having previously worked as a sales person in retail sales. Ultimately, out-of-field experience represents a form of “underemployment,” as a college degree is not a requirement for these types of jobs. Fifty percent of applicants are randomly assigned “in-field” experience, and the remaining 50 percent of applicants are randomly assigned “out-of-field” experience. Twenty-five percent of the applicants were randomly assigned internship experience during the summer 2009, which is the summer before they complete their Bachelor’s degree. The internship experience is specific to the job category. All of the applicants were assigned work experience while completing their college degree, which consisted of working as a barista, tutor, customer service representative and sales associate. The following series of tables provide detailed information on each type of work experience by job category:

Banking		
	Job Title	Resume Description
Infield 1	Bank Branch Assistant Manager	<ul style="list-style-type: none"> •Evaluate present market conditions to decide resource allocation to different products and services •Design employee schedules, appointed temporary workforce for a busy seasons, and interview and hire all new employees •Kept in depth records of all industry activities to attain the regulatory needs •Focus on process flow improvement by examining sales relationships and visit several company locations frequently to ensure smooth processes •Produce thorough budgets for the number of operations, tracked the actual expenditures and reviews exceptions •Train and handle a number of employees and build operational principles •Manage branch employees with a focus on branch compliance
Infield 2	Bank Branch Assistant Manager	<ul style="list-style-type: none"> •Trained 30 new employees and attained significant improvements in their productivity over time •Visited several company locations frequently to ensure smooth processes •Maintain records of cash limits, checks, deposits, fund transfer, money orders, debit cards issued and other banking activities •Suggested new methods for business, developing services for business clients and reducing wait for the personal account clients •Overhauled accounting systems, bookkeeping operations, and interview processes •Provide support in all clerical responsibilities and other daily tasks within the bank
Internship 1	Equity Capital Markets Intern	<ul style="list-style-type: none"> •Created analytical models and spreadsheets •Assessed market capacity for equity products •Analyzing cost of capital of various financing options
Internship 2	Capital Markets Intern	<ul style="list-style-type: none"> •Created statistical models to capture and present quantitative data •Generated reports and prepared presentations to assist senior managers •Used Excel and Access to perform analysis and conduct research

Finance		
	Job Title	Resume Description
Infield 1	Accounts Payable	<ul style="list-style-type: none"> •Prepare and analyze fund statements, balance sheets and salary schedules for firm and her subsidiaries •Responsible for supporting program managers in the development and analysis of financial reports, and spending plans •Review all invoices for appropriate documentation and approval prior to payment •Responds to questions and makes calls regarding billing problems; acts as a liaison between department and vendors
Infield 2	Financial Advisor	<ul style="list-style-type: none"> •Conduct in-depth reviews of clients' financial circumstances and prepared plans best suited to their requirements •Design detailed financial strategies and explained reports to cliental •Contact clients with news of new financial products or changes to legislation that may affect their savings and investments •Meet all regulatory aspects of the role, e.g. requirements for disclosure, and costs of services provided •Responsible for preparing and maintaining financial statements and invoices in an accurate manner
Internship 1	Financial Analyst Intern	<ul style="list-style-type: none"> •Conducted financial and business analysis to generate insights that influenced cross-functional decision-making •Led process innovation to drive efficiency and deliver insightful perspective on key business drivers •Leveraged data and information systems to forecast performance and articulate key drivers of change
Internship 2	Financial Analyst Intern	<ul style="list-style-type: none"> •Conducted financial and business analysis to generate insights that influenced cross-functional decision-making •Led process innovation to drive efficiency and deliver insightful perspective on key business drivers •Leveraged data and information systems to forecast performance and articulate key drivers of change

Insurance		
	Job Title	Resume Description
Infield 1	Insurance Sales Agent	<ul style="list-style-type: none"> •Customize insurance programs to suit individual customers, often covering a variety of risks •Develop marketing strategies to compete with other individuals or companies who sell insurance •Seek out new clients and develop clientele by networking to find new customers and generate lists of prospective clients •Prepared activity reports with the interpretation, implementation and enforce company policies, strategies and procedures •Monitor insurance claims to ensure they are settled equitably for both the client and the insurer •Inspect property, examining its general condition, type of construction, age, and other characteristics, to decide if it is a good insurance risk •Resolved clients' claim issues in assistance of manager
Infield 2	Insurance Sales Agent	<ul style="list-style-type: none"> •Sell various types of insurance policies to businesses and individuals on behalf of insurance companies, including automobile, fire, life, property, medical and dental insurance or specialized policies such as marine, farm/crop, and medical malpractice •Strive to achieve optimum customer satisfaction and access coverage, liability and damage •Responsible for appointing a legal representative for the court cases and communicating with the agents to resolve the issues •Ensure that policy requirements are fulfilled, including any necessary medical examinations and the completion of appropriate forms •Calculate premiums and establish payment method
Internship 1	Intern	<ul style="list-style-type: none"> •Asked probing and challenging questions to uncover a prospective clients needs •Identified and understood a prospect's needs to help create solutions •Handled objections and effectively built relationships
Internship 2	Intern	<ul style="list-style-type: none"> •Asked probing and challenging questions to uncover a prospective clients needs •Identified and understood a prospect's needs to help create solutions •Handled objections and effectively built relationships

Marketing		
	Job Title	Resume Description
Infield 1	Marketing Specialist	<ul style="list-style-type: none"> •Conducted qualitative and quantitative research to help guide new creative efforts •Evaluated all potential sponsorship/partnership opportunities •Researched multi-channel marketing efforts of five key advertisers to prepare comprehensive report on how to target consumers for agency-wide project •Directed and manage 4 internal staff and network of 3 external local-market agencies/consultants •Developed, sold, moderated, and interpreted results for more than 100 qualitative focus groups and one-on-one sessions for firm •Evaluated target markets and proposed marketing strategies •Turned 17% sales decline into 20% increase in two years by overhauling entire marketing effort and launching company's first-ever national advertising campaign
Infield 2	Marketing Specialist	<ul style="list-style-type: none"> •Analyzed regular corporate retail sales reports and tailor each local marketing profit-plan with retail leadership •Programs increased average store traffic 21% and sales averaging 12%, contributing to unprecedented growth •Explored multi-cultural trends and developed volumetric sales analysis to convince firm to address diverse "non-traditional" audiences across all brands •Created 5 integrated and multi-tiered new store opening programs in domestic & international locations •Designed, developed and implemented marketing and sales campaigns, fundraisers, employee incentive programs and contests •Introduced planning discipline and mass advertising techniques to entertainment retailer with more than ten million in sales •Managed all phases of direct mail projects; monitored production teams; recruited and guided vendors; oversaw print operations and coordinated mailing process
Internship 1	Marketing Business Analyst Intern	<ul style="list-style-type: none"> •Analyzed the divisional business to identify problems, opportunities, and trends •Executed elements of the marketing plan, including price promotions •Managed multiple projects
Internship 2	Marketing Business Analyst Intern	<ul style="list-style-type: none"> •Analyzed the divisional business to identify problems, opportunities, and trends •Executed elements of the marketing plan, including price promotions •Managed multiple projects

Sales		
	Job Title	Resume Description
Infield 1	Sales Representative	<ul style="list-style-type: none"> •Sold and marketed packaging products to manufacturers in a two-state territory •Managed account base of 70 which is an increase of 14 accounts over from previous year •Assigned responsibility to mentor/develop three inside salespeople for promotion to outside sales positions •Recaptured 4 lost accounts during first year of employment •Developed strong referral system which provides continuous leads for new business development •Exceptional leadership, organizational, oral/written communication, interpersonal, analytical, and problem resolution skills •Named "Salesman of the Month" four times during work tenure
Infield 2	Sales Consultant	<ul style="list-style-type: none"> •Proactive leader with refined business acumen and exemplary people skills. Facilitate a team approach to achieve organizational objectives, increase productivity and enhance employee morale •Helped develop an expansive plan to increase sales by over 30% over the next five years •Conduct new product training for the sales force and dealer network including providing test units to region managers and key dealers for use in demonstrations. •Quick study, with an ability to easily grasp and put into application new ideas, concepts, methods and technologies •Dedicated, innovative and self-motivated team player/builder •Thrive in both independent and collaborative work environments •Review product pricing and gross margin goals for existing products annually
Internship 1	Sales Intern	<ul style="list-style-type: none"> •Assisted sales representatives, who sold Auto, Home, Life, and other insurance products •Spent time out of the office observing and assisting with sales events •Worked with Sales Reps to identify prospective customers using established lead methods
Internship 2	Sales Future Leader Intern	<ul style="list-style-type: none"> •Utilized analytical and fact-based selling skills to grow volume, revenue, and profitability goals for the assigned territory •Activated local and national marketplace initiatives and promotions through merchandising products and building creative displays •Performed at a fast pace in a self-motivated position

Out-of-Field & College		
	Job Title	Resume Description
Outfield 1	Sales Associate ¹	<ul style="list-style-type: none"> •Team leader in sales for two consecutive months •Greet patrons at door and assisted them in locating their desired purchases •Manage sales desk while assisting customers with purchase •Promote company brands whenever possible •Communicate to manager any possible areas of improving the customer service experience •Restock items on sales floor as needed •Handle customer complaints and problems in the most efficient way possible
Outfield 2	Retail Associate	<ul style="list-style-type: none"> •Open and close cash registers, performing tasks such as counting money, separating charge slips, coupons, and vouchers, balancing cash drawers, and making deposits •Recommend, select, and help locate or obtain merchandise based on customer needs and desires •Describe merchandise and explain use, operation, and care of merchandise to customers •Place special orders or call other stores to find desired items
College 1	Barista	<ul style="list-style-type: none"> •Ensured counters, customer areas are neat, clean and presentable •Maintained sanitized and polished counters, steam tables, and other cooking equipment, and clean glasses, dishes, and fountain equipment •Served food, beverages, or desserts to customers in a fast paced environment •Followed cash handling procedures and cash register policies
College 2	Tutor ²	<ul style="list-style-type: none"> •Worked with students to help them better understand _____³ concepts •Identified the preferred communication style of the students and adjusted tutorial sessions accordingly •Taught tailored large-group review sessions before exams
College 3	Customer Service Representative	<ul style="list-style-type: none"> •Served as a resource by providing accurate and current information regarding recreation and university-related programs and facilities •Maintained current certifications in first aid, CPR, and AED. •Counseled peers on personal, academic, and career concerns •Assist with data entry of fitness and intramural participants into Access database and IMTrack
College 4	Sales Associate	<ul style="list-style-type: none"> •Asked lifestyle questions to thoroughly understand customer needs, offers relevant services, solutions, and accessories so customer can make informed decision to complete their purchase •Leveraged on-line resources, tools, and peer knowledge to self-train •Utilized all relevant sales tools to drive profitable growth

Notes:

1. For jobs within the 'Sales' field, this job title was changed to Retail Associate.
2. The candidate was a tutor for their specific major. For example, if candidate A was a finance major, he/she would be a finance tutor)
3. The first bullet point within the resume description had a tailored line for each major but followed the same outline (e.g., Economics tutor - •Worked with students to help them better understand **economic** concepts)

A1.2 Sample Résumés

In this section, we present a few résumés that capture the essence of our résumé-audit study. The names of schools and companies where the applicants attended and worked have been removed per our agreement with our respective institutional review boards.

Ebony Booker

ebonybooker231@gmail.com
(678) 753-5139
908 Kings Ct Ne
Atlanta, GA 30306

Education

ABC University

Bachelor of Science, May 2010
Management

Work Experience

May 2010 - July 2012

Administrative Assistant
XYZ Company

- Communicated with managers and coordinated the financial reporting of five locations to consolidate financial data
- Decentralized accounts payable to facilitate transition from cost centers to profit centers, and trained employees in the new system
- Recognized for efforts to identify new processes to improve quality, reduce costs, and increase margin
- Coordinated the administration of product orders, understood customer needs and guaranteed delivery of company's commitment
- Accustomed to working in fast-paced environments with the ability to think quickly and successfully handle difficult clients
- Excellent interpersonal skills, ability to work well with others, in both supervisory and support staff roles
- Developed strong relationships with established accounts while acquiring new accounts

September 2006 - May 2010

Sales Associate
DEF Company

- Asked lifestyle questions to thoroughly understand customer needs, offers relevant services, solutions, and accessories so customer can make informed decision to complete their purchase
- Leveraged on-line resources, tools, and peer knowledge to self-train
- Utilized all relevant sales tools to drive profitable growth

Cody Baker

codybaker589@gmail.com
(404) 913-4459
4300 [Rosewell Rd](#)
Atlanta, GA 30342

Education

University of ABC
Bachelor of [Science](#), May 2010
Psychology
GPA 3.9

Work Experience

Sales Associate

May 2010 - Present
XYZ Company

- Team leader in sales for two consecutive months
- Greet patrons at door and assisted them in locating their desired purchases
- Manage sales desk while assisting customers with purchase
- Promote company brands whenever possible
- Communicate to manager any possible areas of improving the customer service experience
- Restock items on sales floor as needed
- Handle customer complaints and problems in the most efficient way possible

Customer Service Representative

September 2006 - May 2010
University of ABC Recreation Center

- Served as a resource by providing accurate and current information regarding recreation and university-related programs and facilities
- Maintained current certifications in first aid, CPR, and AED.
- Counseled peers on personal, academic, and career concerns
- Assist with data entry of fitness and intramural participants into Access database and [IMTrack](#)

DeShawn Jefferson

d2jefferson@gmail.com
(678) 653-0550
698 Moreland Ave Se
Atlanta, GA 30316

Education

Bachelor of Science, May 2010
University of ABC
Management

Work Experience

XYZ Company
May 2010 - Present
Distribution Assistant Manager

- Responsible and accountable for the coordinated management of multiple related projects directed toward strategic business and other organizational objectives
- Build credibility, establish rapport, and maintain communication with stakeholders at multiple levels, including those external to the organization
- Maintain continuous alignment of program scope with strategic business objectives, and make recommendations to modify the program to enhance effectiveness toward the business result or strategic intent
- Fostered customer loyalty by ensuring that our customers fully utilize the value of our solutions and services
- Direct the coordination of all implementation tasks involving third party vendors as well as provide consultation to clients on system implementation
- Coach, mentor and lead personnel within a fast paced environment

DEF Company
May 2009 – September 2009
Project Management Intern

- Implemented a program to reduce operation costs
- Designed a new program to increase employee moral
- Handled multiple projects simultaneously and effectively built relationships

GHI Company
September 2006 - May 2010
Barista

- Ensured counters, customer areas are neat, clean and presentable
- Maintained sanitized and polished counters, steam tables, and other cooking equipment, and clean glasses, dishes, and fountain equipment
- Served food, beverages, or desserts to customers in a fast paced environment
- Followed cash handling procedures and cash register policies

DeAndre Washington
deandre.washington129@gmail.com
(971) 225-0374

309 N Bridgeton Rd Sliph
Portland, OR 97217

Education

Bachelor of Science, May 2010
University of Colorado at ABC
Accounting

Work Experience

May 2010 - Present
Sales Representative
XYZ Company

- Sold and marketed packaging products to manufacturers in a two-state territory
- Managed account base of 70 which is an increase of 14 accounts over from previous year
- Assigned responsibility to mentor/develop three inside salespeople for promotion to outside sales positions
- Recaptured 4 lost accounts during first year of employment
- Developed strong referral system which provides continuous leads for new business development
- Exceptional leadership, organizational, oral/written communication, interpersonal, analytical, and problem resolution skills
- Named "Salesman of the Month" four times during work tenure

Sales Future Leader Intern, May 2009 – September 2009
DEF Company

- Utilized analytical and fact-based selling skills to grow volume, revenue, and profitability goals for the assigned territory
- Activated local and national marketplace initiatives and promotions through merchandising products and building creative displays
- Performed at a fast pace in a self-motivated position

GHI Company, September 2006 - May 2010
Barista

- Ensured counters, customer areas are neat, clean and presentable
- Maintained sanitized and polished counters, steam tables, and other cooking equipment, and clean glasses, dishes, and fountain equipment
- Served food, beverages, or desserts to customers in a fast paced environment
- Followed cash handling procedures and cash register policies

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Education

Bachelor of Science, May 2010
University of ABC
Finance (Honors)

Work Experience

XYZ Company (May 2010 - December 2012)
Retail Associate

- Open and close cash registers, performing tasks such as counting money, separating charge slips, coupons, and vouchers, balancing cash drawers, and making deposits
- Recommend, select, and help locate or obtain merchandise based on customer needs and desires
- Describe merchandise and explain use, operation, and care of merchandise to customers
- Place special orders or call other stores to find desired items.

DEF Company (September 2006 - May 2010)
Barista

- Ensured counters, customer areas are neat, clean and presentable
- Maintained sanitized and polished counters, steam tables, and other cooking equipment, and clean glasses, dishes, and fountain equipment
- Served food, beverages, or desserts to customers in a fast paced environment
- Followed cash handling procedures and cash register policies

A1.3 The Application Process

We applied to online postings for job openings in six categories: banking, finance, insurance, management, marketing and sales. To obtain a list of openings, we chose specific search criteria through the online job posting websites to find the appropriate jobs within each of the aforementioned job categories. We further constrained the search by applying only to jobs that had been posted in the last seven days within 30 miles of the city center.

Job openings would be applied to if they had a “simple” application process. An application process was deemed “simple” if it only required a résumé to be submitted or if the information to populate the mandatory fields could be obtained from the résumé (e.g., a candidate’s name or phone number). Jobs that required a detailed application were discarded for two reasons. First and foremost, we wanted to avoid introducing variation in the application process that could affect the reliability of our results. A detailed application specific to a particular firm might include variation that is difficult to hold constant across applicants and firms. Second, detailed applications take significant time, and our goal was to submit a large number of résumés to increase the power of our statistical tests. Job openings were discarded from our sample if any of the following were specified as minimum qualifications: five or more years of experience, an education level greater than a bachelor’s degree, unpaid or internship positions, or specific certifications (e.g., CPA or CFA).

We used the résumé-randomizer from Lahey and Beasley (2009) to generate four résumés to submit to each job advertisement. Templates were created for each job category (i.e. banking, finance, insurance, management, marketing and sales) to incorporate in-field experience. After the résumés were generated, we then formatted the résumés to look presentable to prospective employers (e.g., convert Courier to Times New Roman font; make the applicant’s name appear in boldface font, etc.). We then uploaded the résumés and filled out required personal information, which included the applicant’s name, the applicant’s location, the applicant’s desire to obtain an entry-level position, the applicant’s educational attainment (i.e. Bachelor’s), and whether the applicant is authorized to work in the U.S. All job advertisement identifiers and candidate information was recorded. Upon receiving a interview request, we promptly notified the firm that the applicant was no longer seeking employment to minimize the cost incurred by firms.

A2 Details on the Estimates Presented in Table 6

In this section, we provide details on how to obtain the estimates for columns (2), (3) and (4) in Panels A and B of Table 6. Recall that equation 7 is used to obtain the estimates presented in column (1) in Panels A and B of Table 7. To produce the remaining estimates, we estimate the following regression model:

$$\begin{aligned}
 interview_{imcfj} = & \beta_0 + \beta_1 under_i^{emp} + \beta_2 under_i^{u3} + \beta_3 under_i^{u6} + \beta_4 under_i^{u12} \\
 & + \beta_5 infield_i^{u3} + \beta_6 infield_i^{u6} + \beta_7 infield_i^{u12} \quad ?? \\
 & + \gamma \mathbf{X}_i + \phi_m + \phi_c + \phi_f + \phi_j + u_{imcfj}.
 \end{aligned}$$

All variables are defined above, except $under^{u3}$, $under^{u6}$, $under^{u12}$, $infield^{u3}$, $infield^{u6}$ and $infield^{u12}$. The variable $under^{emp}$ is a zero-one indicator that equals one when an applicant is currently underemployed and zero otherwise; $under^{u3}$ is a zero-one indicator variable that equals one when an applicant is current unemployed for a period of three months but was underemployed in the past and zero otherwise; $under^{u6}$ is a zero-one indicator variable that equals one when an applicant is current unemployed for a period of six months but was underemployed in the past and zero otherwise; $under^{u12}$ is a zero-one indicator variable that equals one when an applicant is current unemployed for a period of 12 months but was underemployed in the past and zero otherwise; $infield^{u3}$ is a zero-one indicator variable that equals one when an applicant is current unemployed for a period of three months but was adequately employed in the past and zero otherwise; $infield^{u6}$ is a zero-one indicator variable that equals one when an applicant is current unemployed for a period of six months but was adequately employed in the past and zero otherwise; $infield^{u12}$ is a zero-one indicator variable that equals one when an applicant is current unemployed for a period of 12 months but was adequately employed in the past and zero otherwise. The base category is applicants who are currently adequately employed ($infield^{emp}$). The equation depicted above is used

to produce the estimates in columns (2), (3) and (4) in Panels A and B from Table 6.

To compute the estimates in columns (2), (3) and (4), we use linear combinations of the parameter estimates. For Panel A, $\beta_1 - \beta_5$ gives the average difference in the interview rate between applicants who are currently underemployed relative to applicants who are currently unemployed for a period of three months but were previously adequately employed (column 2); $\beta_1 - \beta_6$ gives the average difference in the interview rate between applicants who are currently underemployed relative to applicants who are currently unemployed for a period of six months but were previously adequately employed (column 3); and $\beta_1 - \beta_7$ gives the average difference in the interview rate between applicants who are currently underemployed relative to applicants who are currently unemployed for a period of 12 months but were previously adequately employed (column 4). For Panel B, $\beta_1 - \beta_2$ gives the average difference in the interview rate between applicants who are currently underemployed relative to applicants who are currently unemployed for a period of three months but were previously underemployed (column 2); $\beta_1 - \beta_3$ gives the average difference in the interview rate between applicants who are currently underemployed relative to applicants who are currently unemployed for a period of six months but were previously underemployed (column 3); and $\beta_1 - \beta_4$ gives the average difference in the interview rate between applicants who are currently underemployed relative to applicants who are currently unemployed for a period of 12 months but were previously underemployed (column 4).

Table A1: Résumé Characteristics, Definitions, and Means

Variable Name	Variable Definitions	Mean
<i>black</i>	=1 if applicant has a distinctively black name	0.497
<i>female</i>	=1 if applicant has a distinctively female name	0.499
<i>econ</i>	=1 if applicant has a Bachelor's degree in Economics	0.115
<i>finance</i>	=1 if applicant has a Bachelor's degree in Finance	0.101
<i>acctg</i>	=1 if applicant has a Bachelor's degree in Accounting	0.112
<i>mgt</i>	=1 if applicant has a Bachelor's degree in Management	0.114
<i>mkt</i>	=1 if applicant has a Bachelor's degree in Marketing	0.111
<i>eng</i>	=1 if applicant has a Bachelor's degree in English	0.110
<i>psych</i>	=1 if applicant has a Bachelor's degree in Psychology	0.114
<i>bio</i>	=1 if applicant has a Bachelor's degree in Biology	0.116
<i>hist</i>	=1 if applicant has a Bachelor's degree in History	0.108
<i>nogap</i>	=1 if applicant has a no gap in their work history	0.255
<i>front3</i>	=1 if applicant has a 3-month gap in their work history after finishing degree	0.125
<i>front6</i>	=1 if applicant has a 6-month gap in their work history after finishing degree	0.121
<i>front12</i>	=1 if applicant has a 12-month gap in their work history after finishing degree	0.125
<i>back3</i>	=1 if applicant has a current 3-month gap in their work history	0.124
<i>back6</i>	=1 if applicant has a current 6-month gap in their work history	0.123
<i>back12</i>	=1 if applicant has a current 12-month gap in their work history	0.127
<i>intern</i>	=1 if applicant worked as an intern while completing their degree	0.248
<i>infield</i>	=1 if applicant worked in the field for which they are applying for a job	0.500
<i>highses</i>	=1 if applicant has an address in a high-socioeconomic-status area	0.499
<i>honors</i>	=1 if applicant reports completing their degree with an Honor's distinction	0.248
<i>gpa</i>	=1 if applicant reports a grade point average (GPA) of 3.9 on their résumé	0.249
<i>exp</i>	Number of months that applicant has worked since completing their degree	30.02