College Major, Internship Experience, and Employment Opportunities: Estimates from a Résumé Audit

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Abstract

We use experimental data from a résumé audit to estimate the impact of particular college majors and internship experience on employment prospects. Despite applying exclusively to business-related job openings, we find no evidence that business degrees improve employment prospects. By contrast, internship experience increases the interview rate by 14 percent. The returns to internship experience are larger for (a) nonbusiness majors and (b) applicants with high academic ability. Our data support signaling as the most likely explanation for the effect of internships on employment opportunities.

JEL categories: J23, J24, J60

Key words: college major, internship, employment, field experiments, correspondence studies, résumé audit

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1 Introduction

The reduction in initial employment opportunities for recent college graduates brought about by the last recession has led many policymakers, researchers, and prospective students to question the value of a college education. Popular internet newsboards regularly feature articles that reference academic research on the projected labor-market demand for and life satisfaction associated with particular undergraduate degrees. However, such information on degree choice might be influenced by those who advertise on the same webpages that feature the articles.[1]

In addition to academic decisions, a bevy of extra-curricular activities are available to college students. The National Association of Colleges and Employers' (NACE) 2011 survey indicates that over 50 percent of graduating seniors had worked as interns at some point while completing their degrees.[2] Recent industry surveys of U.S. employers indicate that relevant work experience is the most important factor in the hiring decision, and that on-the-job experience, even if only part time, for recent college graduates is more important than their relevant coursework (Cappelli 2014).

We use experimental data from a résumé audit to estimate differences in job opportunities between recent college graduates (a) with particular degrees and (b) with and without industry-relevant internship experience. The focus of our study is on credentials job seekers accumulate prior to graduating from college.[3] From January 2013 through the end of July 2013, we submitted approximately 9400 randomly-generated résumés to online job openings

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[1]For example, see the article and corresponding advertisements in the find-a-program tabs through the following webpage: http://education.yahoo.net/articles/avoid_these_majors.htm.

[2]For more details, visit the following webpage: http://www.schools.com/news/survey-majority-of-internships-done-by-college-class-of-2011-were-paid.html.

[3]Using the same experimental data, Nunley, Pugh, Romero and Seals (2014) examine the effects of unemployment and underemployment spells on employment prospects, while Nunley, Pugh, Romero and Seals (2015) test for racial discrimination. In Nunley, Pugh, Romero and Seals (2014), we find that applicants who take jobs after graduation that do not require a college degree are penalized in the job market, whereas the employment prospects of recent college graduates who experience spells of unemployment are unaffected. Nunley, Pugh, Romero and Seals (2015) find that employers discriminate against candidates with black-sounding names, and the racial gap in interview rates is concentrated in customer-focused occupations and increases with perceived productivity characteristics.

in banking, finance, management, marketing, insurance and sales. The fictive job applicants each report a college graduation date of May 2010. Our experimental design circumvents common identification issues associated with selection bias by randomly assigning academic majors and internship experience to fictitious job applicants.

The following academic majors are randomly assigned to job applicants: accounting, biology, economics, english, finance, history, management, marketing, and psychology. Because we apply exclusively for jobs in business-related industries, we are primarily interested in whether the business degrees, i.e. accounting, economics, finance, management and marketing, generate better job opportunities than nonbusiness degrees, i.e. biology, english, history, and psychology.[4] To measure the impact of internship experience on employment prospects, a portion of the fictitious applicants are randomly assigned a three-month industry-relevant[5] internship, which occurred during the summer of 2009.

We find no evidence that employers prefer to interview job seekers with business degrees over applicants with nonbusiness degrees, despite applying exclusively to business-related job openings. In addition, there is no advantage, in terms of job opportunities, associated with particular business degrees. However, we find strong evidence that internship experience improves employment prospects: the interview rate for applicants who worked as interns (Summer 2009) before they graduated with their Bachelor's degrees (May 2010) is about 14 percent higher than that for those who did not work as interns. The estimate for internship experience likely represents a lower bound for two reasons. First, the internship occurred approximately four years before date of application. Second, the fictitious applicants in our study were seeking employment at places other than where they interned, and it is common for people to be hired by the same firm for which they interned. Although the "return"

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[4]It is not clear how to classify economics degrees, as economics is a social science and many economics departments are housed outside of business schools. However, it is typically the case that business students must take economics courses, even when the economics department is housed in a different college/school. We check the robustness of our estimates by including economics in the nonbusiness-degree category, but the estimates are not sensitive to this reclassification.

[5]For example, an applicant to a job opening in the banking industry who is randomly assigned internship experience would report an internship in the banking sector on his/her résumé.

to internship experience is quite large for all majors and applicants who and do not signal high academic ability (via the inclusion of a high grade point average on their résumés), the effect is even larger for applicants with nonbusiness degrees and applicants who signal high academic ability.

Our results suggests that promoting internships (e.g., through employer incentives or better coordination between universities and employers) could help smooth the transition from school to work for young workers. From a policy standpoint, it is important to understand whether internship experience signals unobservables, such as innate ability, or augments a worker's skill-set. If internships simply signal unobserved ability to employers, policy interventions could muddle the signal such that it no longer helps employers sort or rank job candidates. By contrast, if internship experience improves a job seeker's skill-set, it is possible to justify interventions designed to increase the demand for interns.

Four aspects of our experimental data support signaling as the most likely explanation for the effect of internships on employment opportunities. First, we model the initial phase of the hiring process, in which signaling plays an important role. Second, the internships took place approximately four years prior to application, making it likely that any skills gained would have depreciated substantially. Third, the return to three-month industry-relevant internships, which occurred about four years before the date of application, is about half that of post-graduation industry-relevant work experience of 20-38 months that is more recent, which suggests that internship experience indicates something other than relevant work experience to prospective employers. Fourth, there is no interaction effect between internship experience and post-graduation work experience, which is difficult to reconcile with a human capital model as we would expect industry-relevant experience to be stackable (e.g., Neal 1995).

Despite the strong evidence supporting signaling, it is difficult to make a definitive policy recommendation. On the one hand, a government intervention that stimulates demand for interns could muddle the effectiveness of the signal. On the other hand, it is possible skills

gained with internship experience are more salient during the interview phase but not in the initial decision to interview a job candidate. However, we are unable to examine later stages of the interview process, which prohibits a complete assessment of whether or not internships produce skills demanded by employers.

The remainder of the manuscript is organized as follows. Section 2 discusses the relevant literature and the theoretical channels through which particular college majors and internship experience could affect employment prospects. Section 3 describes our experimental design and data. Section 4 is divided into two subsections: Section 4.1 presents the estimates from our econometric models, and Section 4.2 discusses the possible explanations for our findings with respect to business degrees and internship experience. Section 5 concludes. In addition, we provide an appendix that contains supplementary estimates as well as detailed information on our experiment.

2   Theoretical Background

The return to education has long been of interest to labor economists. However, research on the effect of specific training/degree choice on labor-market outcomes is relatively sparse. The existing literature focuses on the effects of college attendance, university quality, and degree choice on labor-market outcomes (e.g., Oreopoulos and Petronijevic 2013; Altonji, Blom, and Meghir 2012). These studies also share a common limitation: the choice of academic major could be driven by unobservables that make individuals more or less likely to have success in the labor market. To highlight this potential issue, the disparity in earnings between some undergraduate degrees has been shown to be as large as the difference between college and high-school graduates (Altonji, Blom, and Meghir 2012).[6]

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[6]Altonji, Blom, and Meghir (2012) incorporate key elements of existing theoretical research on degree choice to develop a model in which specific areas of study are sequentially chosen when an agent is uncertain about his/her future wages, learning ability, and preferences for different fields of study and occupations. The complexity of sequential-choice models render them difficult to estimate without making simplifying assumptions and recent literature has attempted to bridge this gap (e.g., Arcidiacono et al. 2012). Although this area of research is clearly important to understand the return to specific degrees, our study sidesteps these issues by focusing exclusively on the initial phase of the hiring process.

Skill-sets associated with specific degrees may lessen training costs for new workers. For example, job applicants with degrees in finance or economics may be more likely to receive interviews for financial and economic analyst positions. However, the majority of courses taken by college students in the United States are not specific to a major.[7] Because a small proportion of industry-specific courses could be taken during one's undergraduate years, the impact of specific degrees on initial and subsequent employment prospects may be less pronounced.

In the U.S., workers with nonbusiness degrees commonly work in business-related occupations. According to data from the American Community Survey (ACS), approximately seven percent of nonbusiness majors work in a business-related occupation, while approximately thirty percent of business majors work in a business-related occupation.[8] However, the earnings of business and nonbusiness majors working in business-related jobs are striking: nonbusiness majors who obtain such employment earn *more*, on average, than their business-major counterparts. While the explanation for this phenomenon is unclear, it could be that nonbusiness majors who obtain business-related occupations possess unobservables that are valued by employers in business-related sectors.

Applicants with job experience, either through post-graduation work or college internships, working at specific occupations/industries may also be preferred because of the skills acquired through that experience (e.g., Neal 1995).[9] We examine the human-capital hypothesis with our data by testing whether the returns to internship experience vary with (a)

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[7]As an anecdotal example, at Auburn University, students majoring in economics are only required to take 36 credit hours (of the 120 credit hours required to graduate) of classes with economics as the subject heading. As another example, consider an accounting major at the University of Wisconsin–La Crosse. The successful accounting major must complete 48 general education credits and 34 accounting credits. The remainder of the 120 total credits required to graduate might come from other business-related courses (at least 16 credits must come from courses in the business school) or non-business-related courses. Thus, only about 30 percent of the student's coursework is required to be taken in the field of accounting.

[8]The degrees used in the ACS calculations were the same as the degrees used in our experiment: business degrees–accounting, economics, finance, management and marketing; and nonbusiness degrees–biology, english, history, and psychology

[9]Unfortunately, we are unable to pin down whether or not industry-specific human capital is a channel through which internships affect employment opportunities because we do not randomly assign out-of-industry internship experience to any of our fictitious applicants.

academic ability and (b) the type of work experience obtained after graduating from college. In our experiment, academic ability is signaled via the inclusion of one's grade point average (GPA). For the type of work experience obtained after graduating, the fictive applicants obtained either a job that matches or does not match the industry for which the applicant is applying. We refer to the former as in-field or industry-relevant experience and the latter as out-of-field experience. In our study, the firm is the unit of observation.

To our knowledge, the economics literature on labor-market consequences associated with internship experience is currently limited to two studies: ours and Saniter and Siedler (2014).[10] The relative absence of economic studies on the impact of internship experience on labor-market outcomes is likely due to the lack of data on internships and/or the complications associated with identification. In the latter case, it is likely that high-ability students are more likely to obtain internships. Such students would also tend to have greater success in the labor market. Saniter and Siedler (2014) control for self-selection into internships by estimating the impact of mandatory internships (and their subsequent abolishment) in Germany. For those who complete internships, wages rise by approximately six percent. However, these wage gains appear to be driven by initial placement in workforce (e.g., working full time in lieu of part time) during the first five years after graduation.

Internship experience, particular degrees, and overall academic performance could represent skill-sets employers value and/or signal higher future productivity because the cost of acquiring such credentials could be much higher for lower-quality applicants. Although the résumé-audit framework allows the researcher to control for selection bias and experimenter effects, our observation of the hiring process ends at the end of the first phase, i.e. whether an applicant receives an interview. Hence, signaling may be more important for receiving an

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[10]One example from the human-resources literature is Knouse, Tanner, and Harris (1999), who use survey data to estimate the effect of internships on employment outcomes. They find that internships increase employment opportunities for business majors. However, they also find that those who receive internship experience had significantly higher grade point averages, which suggests there may be estimation problems associated with self selection. Saniter and Siedler (2014) cite several studies from the education literature. But these studies, with the exception of Klein and Weiss (2011), lack identification strategies to address the problem of self selection. Klein and Weiss (2011) examine the effect of compulsory internships in Germany and find no effect of internships on employment outcomes.

interview request and an applicant's skill-set may influence the hiring decision to a greater extent during the interview stage. While the résumé-audit framework does not allow us to investigate employment outcomes beyond the interview request, differences in interview rates are strong predictors of differences in wages and employment (Lanning 2013).

3   Experimental Design

From January 2013 through the end of July 2013, we submitted approximately 9400 randomly-generated, fictitious résumés to online job openings in the following job categories: banking, finance, insurance, management, marketing and sales.[11] We submitted résumés to cities with large labor markets in the northwestern, southwestern, northeastern, midwestern and southeastern regions of the United States. The cities in which applicants applied to job openings are Atlanta, GA, Baltimore, MD, Boston, MA, Dallas, TX, Los Angeles, CA, Minneapolis, MN and Portland, OR. We submitted résumés to jobs that were entry level, required a college degree, only required the submission of a résumé to be considered for the job[12] and did not require a certificate or special training. Four résumés were submitted to each advertisement.

The credentials listed on the résumés were randomly assigned to job seekers using the résumé-randomizer developed by Lahey and Beasley (2009).[13] Lahey and Beasley's (2009) program allowed us to automate the creation of thousands of different randomized résumés instead of relying on résumé templates, which could introduce experimenter bias. We randomly assigned the following characteristics to the fictive job seekers' résumés: a name, a

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[11]We performed power calculations before beginning our experiment. For detectable effect size of 0.01, alpha error probability of 0.01, and power of 0.99, with 50 regressors (counting interaction terms), we would need 2407 observations. These requirements are more stringent than "conventional" effect size, alpha error and power criteria.

[12]Some job openings require that applicants complete a detailed firm-specific application. We did not submit résumés to these job openings for two reasons. First, the detailed application introduces unwanted variation into the experimental design that is difficult to hold constant across applicants. Second, the completion of detailed applications takes considerable time, and our objective was to generate as many data points as possible at the lowest possible cost.

[13]Lahey and Beasley's program as well as instructions on how to use it are available at the following website: http://www.nber.org/resume-audit/.

street address, a university where they completed their Bachelor's degree,[14] an academic major, (un)employment status, whether they report their grade point average (GPA), whether the applicant graduated with an Honor's distinction, the type of work experience the applicant obtained after completing their degree, and whether the applicant obtained internship experience while completing their degree.[15] In the next paragraph, we describe the résumé characteristics that are the focus of this study: college major and internship experience. The other aforementioned résumé characteristics are described in Appendix A.[16]

The first résumé characteristic that is the focus of this study is college major. Applicants are randomly assigned one of the following majors: accounting, biology, economics, english, finance, history, management, marketing and psychology. Each of these majors are assigned with equal probability. These majors were chosen because of their popularity and also to give us an opportunity to compare the relative return to degrees that are more specific to the job advertisements we answer. The second résumé characteristic that is the focus of this study is internship experience. In our experiment, 25 percent of applicants are assigned an "in-field" (or "industry-relevant") internship that lasted for three months during the summer (2009) prior to graduating with their Bachelor's degrees (May 2010).[17] In our context, "in field" means that the internship matches the industry or job category. For example,

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[14]It is important to point out that the universities that we used for this résumé attribute are likely recognizable to prospective employers, but it is unlikely that the universities would be regarded as prestigious or elite. While we are unable to disclose the names, the universities chosen were public, non-flagship universities. We cannot disclose the specifics of the admission criteria for these schools without potentially compromising the anonymity of the universities. However, two of the four schools have sliding scales based on GPA, high-school credits and ACT/SAT scores. One of the schools has a standard admission policy based on minimum standards for grades and ACT/SAT scores. Another one of the schools does not articulate admissions standards for test scores or grades in high school. With the exception of the school that does not have admission standards clearly described, the other three schools can be characterized as admitting students who are in the 60th percentile in high school grades and ACT/SAT scores. In our regressions, we find that the interview rates do not vary between the four universities assigned to applicants.

[15]These characteristics were chosen after reviewing many example résumés online. Ultimately, our goal was to create résumés similar to those used by actual job seekers.

[16]Appendix A, which provides detailed information on the experiment, is organized as follows. Section A1 provides detailed information on each of the résumés characteristics; Section A2 provides examples of the résumés that were submitted to the job advertisements (with sensitive information suppressed); and Section A3 details the process through which applications were submitted.

[17]While our IRB will not allow us to disclose their specific identities, the companies our applicants worked for as interns are nationally recognized firms.

internship experience is working as a(n) "Equity Capital Markets Intern" in the banking job category; "Financial Analyst" 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 Intern" in the marketing job category; and "Sales Intern" or "Sales Future Leader Intern" in the sales job category. Internship experience and college majors are assigned independent of each other.

While the majority of résumé characteristics are randomly assigned, there are some features of the experiment that are held constant: (*i*) all of the fictitious job seekers graduated in May 2010; (*ii*) the fictitious job seekers have one job after graduating from college; (*iii*) résumés were submitted to job openings in business-related fields; and (*iv*) résumés were submitted to job openings in seven cities (See first paragraph of this section). These restrictions on the experimental design were imposed because the data from this study were collected to answer other research questions in addition to the subject of this study.

We focus on recent college graduates because it is well documented this group had a particularly difficult time finding employment during and immediately following the Great Recession (Spreen 2013) and, conditional on finding a job, employment commensurate with their education level (Abel, Dietz and Su 2014). In Nunley, Pugh, Romero and Seals (2014), we examine the effects of unemployment (spells of 3, 6 and 12 months) and underemployment (working at a job below one's education level) on employment prospects, finding no statistical evidence of negative duration dependence[18] and a strong negative effect associated with underemployment. In addition, we simplified the work histories of our fictive applicants in an effort to study racial discrimination, as shorter and simpler work histories help in sorting out the mechanism through which racial discrimination operates (See Nunley, Pugh, Romero and Seals 2015). Lastly, we apply exclusive to job openings in business-related industries to study how mismatch in qualifications affects employment prospects (e.g., nonbusiness degrees, un-

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[18]Kroft, Lange and Notowidigdo (2013), Oberholzer-Gee (2008) and Eriksson and Rooth (2014) tests for negative duration dependence using data from résumé audits. These studies report, for the most part, evidence of negative duration dependence.

deremployment). The seven cities we chose for our experiment are large metropolitan areas that span all regions of the United States (i.e. the northeast, southeast, southwest, northwest and midwest regions).

Although the résumé-randomizer was used to assign résumé credentials, it is important to verify that the randomization of résumé credentials worked. Table 1 presents the randomization probabilities chosen for each résumé credential along with summary statistics for each of the résumé credential. Column (1) lists the randomization probability that we chose for the résumé credentials; column (2) displays the sample means; and column (3) presents the sample standard deviations. It is clear from comparing columns (1) and (2) that the randomization of the résumé credentials was effective, as the sample means are very similar to the randomization probabilities.[19]

We measure employment opportunities by examining whether an applicant receives a request for an interview from a prospective employer, which follows other researchers who use the résumé-audit framework (Baert et al. 2014; Bertrand and Mullainathan 2004; Carlsson and Rooth 2007; Eriksson and Rooth 2014; Kroft, Lange and Notowidigdo 2013; Lahey 2008; Oreopoulos 2011). We consider contact from a prospective employer an interview request when they call or email to (a) schedule an interview and (b) discuss the job opening in more detail. While the majority of the calls/emails received from employers are classified as interview requests, there are a few instances in which the proper way to code the inquiry from employers was unclear.[20] However, our estimates are not sensitive to ways in which

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[19]While it appears that the randomization of the résumé credentials was effective, we demonstrate that the résumé credentials were assigned randomly to (a) business and nonbusiness majors and (b) applicants with and without internship experience in Table A1. The estimates in Table A1 are based on a linear regression of the business-degree and internship indicator variables on a constant and the other résumé characteristics. Ultimately, we find that the other résumé credentials are not statistically significant, individually or jointly, in these regressions.

[20]Seventeen calls/emails, in particular, were difficult to classify in the "interview" or "non-interview" categories. These unclear "callbacks" consisted of employers asking whether the applicants were interested in other positions; requesting salary requirements; asking whether the applicants were interested in part- or full-time work; and inquiring about location preferences. In addition, there were 108 "callbacks" in which all four applicants that were submitted to an advertisement received an call/email from employers. These 108 cases could be due to an automated response, or such callbacks could be non-discriminatory. Our estimates are not sensitive to the ways in which these 125 employer responses are coded.

these questionable calls/emails are treated.

To gain insight into the interview rates for (a) business and nonbusiness majors and (b) applicants with and without internship experience, we present the average interview rates for all applicants and for each group in Table 2. The overall interview rate is about 16 percent (column 1); the interview rates for business and nonbusiness majors (columns 2 and 3) range from 16-17 percent; and the interview rate for applicants with internship experience experience is higher than that for those without internship experience (18.4 versus 16.1 percent). In the next section, we turn to regression analysis to determine whether the interview rates between (a) business and nonbusiness majors and (b) applicants with and without internship experience are statistically different from each other.

4   Results

4.1   Business Degrees, Internships and Employment Opportunities

In our baseline model, we estimate the returns (in terms of interview requests) generated by business degrees and internship experience.[21] The baseline regression model is specified as follows:

$$interview_{imcfj} = \beta_0 + \beta_1 bus_i + \beta_2 intern_i + \theta \mathbf{X}_i + \phi_m + \phi_c + \phi_f + \phi_j + u_{imcfj}. \quad (1)$$

The subscripts i, m, c, f, and j index applicants, months, cities, job categories/industries and job advertisements, respectively. The variable *interview* is a zero-one indicator equal to one when an applicant receives an interview request and zero otherwise; *bus* is a zero-one indicator that equals one when an applicant is assigned a business degree (i.e. accounting, economics, finance, management or marketing) and zero otherwise;[22] *intern* is a zero-one

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[21] All regression models are estimated as linear probability models. However, we check the robustness of the marginal effects by estimating logit/probit specifications, and we find similar results. In addition, standard errors are clustered at the job-advertisement level in all model specifications, which follows other studies based on data from résumé audits (e.g., Lahey 2009; Neumark 2012).

[22] As a robustness check, we estimate equation 1 with economics included in the non-business degree, given that many economics departments are housed outside of business schools. However, in the majority of

indicator equal to one when an applicant is assigned an industry-specific internship and zero otherwise; $\mathbf{X}$ is a vector of résumé controls;[23] ϕ_m, ϕ_c, ϕ_f and ϕ_j represent intercept terms for the month the résumé was submitted, the city where the résumé was submitted, the job category/industry in which the job advertisement fits (i.e. banking, finance, insurance, management, marketing and sales), and the job advertisement, respectively; and u represents unobserved determinants of the dependent variable not accounted for in equation 1. The β_0, β_1, β_2 and θ are parameters to be estimated. The random assignment of business majors and internship experience to fictitious job seekers implies the variables *bus* and *intern* are assigned independent of the error term in equation 1. Thus, the estimate for β_1 give the causal average difference in the interview rate between business and nonbusiness majors, and the estimate for β_2 gives the average causal difference in the interview rate between applicants with and without internship experience. Although we interpret the estimates as causal effects, we must rely on existing theory to determine the channel through which business degrees and internship experience affect employment prospects. We return to this issue toward the end of this section.

There are six columns of estimates presented in Table 3, which vary based on the control variables held constant. The successive addition of right-hand-side control variables is a useful means to gauge the sensitivity of the estimates. In column 1, we present estimates from a regression model that includes none of the controls listed in equation 1. In columns 2-6, we successively add the controls listed in equation 1 (i.e. $\mathbf{X}$, ϕ_m, ϕ_c, ϕ_f, and ϕ_j). The estimates for β_1 and β_2 are stable as control variables are successively added to the regression models. The stability of the estimates provides additional support the randomization of résumé credentials was effective. We find no statistical evidence linking business degrees to interview rates, despite applying exclusively for jobs in business-related job categories.

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cases, economics departments service business schools by teaching courses in the core curriculum. It is likely that the prospective employers in our sample view economics as a business-related degree. In any case, the estimates are not sensitive to this alternative coding of the *bus* variable.

[23]Detailed information on the résumé attributes is provided in Section 3, Table 1 and Appendix Section A1.

Furthermore, the sizes of the estimated differentials in interview rates between business and nonbusiness majors are small (i.e. less than one-half of a percentage point). By contrast, we find strong evidence that internship experience raise interview rates. Applicants with internship experience are 14 percent (2.2. percentage points) more likely to receive an interview request that those without internship experience.[24]

The estimates presented in Table 1 suggest business degrees do not materially affect employment prospects. However, it is possible that particular business degrees yield better job opportunities than particular non-business degrees. Our next specification examines this possibility. Formally, we estimate the following regression equation:

$$
\begin{aligned}
interview_{imcfj} = \beta_0 &+ \beta_1 actg_i + \beta_2 bio_i + \beta_3 econ_i + \beta_4 eng_i \\
&+ \beta_5 fin_i + \beta_6 hist_i + \beta_7 mgt_i + \beta_8 mkt_i \\
&+ \theta \mathbf{X}_i + \phi_m + \phi_c + \phi_f + \phi_j + u_{imcfj}.
\end{aligned}
\tag{2}
$$

The subscripts i, m, c, f and j and the variables $interview$, $\mathbf{X}$, ϕ_m, ϕ_c, ϕ_f, ϕ_j and u are defined in equation 1. The variable $actg$ is a zero-one indicator that equals one when an applicant is assigned a degree in accounting and zero otherwise; bio is a zero-one indicator that equals one when an applicant is assigned a degree in biology and zero otherwise; $econ$ is a zero-one indicator that equals one when an applicant is assigned a degree in economics and zero otherwise; eng is a zero-one indicator that equals one when an applicant is assigned a degree in english and zero otherwise; fin is a zero-one indicator that equals one when an applicant is assigned a degree in finance and zero otherwise; $hist$ is a zero-one indicator that equals one when an applicant is assigned a degree in history and zero otherwise; mgt is a zero-one indicator that equals one when an applicant is assigned a degree in management and

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[24]In Appendix Table A1, we present estimates from an augmented version of equation 1 by including a set of interaction terms between $intern$ and ϕ_f, which allows us to test whether the return to internship experience varies across industries. Overall, we find the economic impact of internship experience is smallest in the banking and marketing industries, as we find null effects in those industries. By contrast, the returns to internship experience are economically large (between 2.6 and 3.0 percentage points) in the finance, insurance, management and sales job categories.

zero otherwise; and mkt is a zero-one indicator that equals one when an applicant is assigned a degree in marketing and zero otherwise. The base category in equation 2 is $psych$, which is a zero-one indicator that equals one when an applicant is assigned a degree in psychology and zero otherwise. We are interested in conducting an exhaustive set of comparisons between each business degree and each nonbusiness degree. As examples, the average difference in the interview rate between applicants with accounting and biology degrees is $\beta_1 - \beta_2$; the average difference in the interview rate between applicants with economics and history degrees is $\beta_2 - \beta_6$; and the average difference in the interview rate between applicants with marketing and psychology degrees is $\beta_7 - \beta_8$.[25]

Table 4 presents the estimated interview differentials between each non-business degree and each business degree.[26] Rather than comment on each of the estimates, it is sufficient to note that none of the particular business majors give job seekers an advantage, in terms of job opportunities, over the particular nonbusiness majors. Although the estimated differences are not statistically significant, economic significance could be argued for a few of the estimated interview differentials. In particular, finance majors have a 1.9 (column 3, row 1) and 2.3 (column 3, row 3) percentage point higher interview rates than biology and history majors, respectively. Additionally, economics majors have a 2.1 percentage point higher interview rate than history majors (column 2, row 3).The remaining estimated interview differentials presented in Table 4 are economically small as well as statistically indistinguishable from zero. Because we find particular business degrees do not generate markedly higher interview rates, we return to analyzing business degrees in general in the next and subsequent econometric specifications.[27]

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[25]We use STATA's `lincom` to compute the parameter estimates and standard errors for linear combinations of parameters (e.g., $\beta_1 - \beta_2$, $\beta_2 - \beta_6$ and so on). Details on the `lincom` command can be found at the following webpage: http://www.stata.com/manuals13/rlincom.pdf.

[26]It should be pointed out that $intern$ is in the vector $\mathbf{X}$ in equation 2. We omit the estimated effects of internship experience because the point estimate is identical to that presented in Table 3.

[27]In Appendix Tables B2 and B3, we present estimates from equation 2 that test for differences in interview rates between particular business degrees (e.g., marketing versus management) (Appendix Table B2) and particular nonbusiness degrees (e.g., history versus biology) (Appendix Table B3). In Appendix Table B4, we present estimates on the impact of majoring in a degree program that matches the industry of the prospective employer (e.g., economics and finance "match" the banking and financial industries). In Appendix Tables

Because the return to internship experience could depend on whether applicants possess business or nonbusiness degrees, we augment equation 1 by adding an interaction term between *bus* and *intern*. Thus, we estimate the following regression model:

$$
\begin{aligned}
interview_{imcfj} = \beta_0 + \beta_1 bus_i + \beta_2 intern_i + \beta_3 bus_i \times intern_i \\
+ \theta \mathbf{X}_i + \phi_m + \phi_c + \phi_f + \phi_j + u_{imcfj}.
\end{aligned}
\tag{3}
$$

The subscripts i, m, c, f and j and variables *interview*, *bus*, *intern*, $\mathbf{X}$, ϕ_m, ϕ_c, ϕ_f, ϕ_j and u are defined in equation 1. We are interested in a number of different parameters and linear combinations of parameters from equation 3, including the average difference between business and nonbusiness majors with internship experience ($\beta_1 + \beta_3$), the average difference between business and nonbusiness majors without internship experience (β_1), the average difference between job seekers with and without internship experience who have business degrees ($\beta_2 + \beta_3$), and the average difference between job seekers with and without internship experience who have nonbusiness degrees (β_2). In addition, the estimate for β_3 is of interest, as it tests whether the "return" to internship experience differs between business and nonbusiness majors.

The estimates for each of the aforementioned parameters and linear combinations of parameters are presented in Table 5. For applicants with and without internship experience, business and nonbusiness majors receive interview requests rates that are not statistically different from one another. However, the signs of the estimated interview differentials differ: business majors with internship experience tend to receive fewer interview requests than nonbusiness majors with internship experience (column 1), while business majors without internship experience tend to receive more interview requests than nonbusiness majors without internship experience (column 2). The return to internship experience differs between nonbusiness and nonbusiness majors (columns 3 and 4). However, both business and nonbusi-

B2, B3 and B4, we continue to find no statistical evidence linking particular majors to better (or worse) job opportunities.

ness majors with internship experience have higher interview rates than counterparts who did not work as interns. In particular, relative to nonbusiness majors without internship experience, nonbusiness majors with internship experience have a 19 percent higher probability of receiving an interview request. In comparison to business majors without internship experience, business majors with internship experience have an 8 percent higher probability of receiving an interview request. The difference between the estimates in columns 1 and 2 (and, equivalently, columns 3 and 4), which tests whether the return to internship experience is statistically different for business and nonbusiness majors, is negative, but it is not statistically significant at conventional levels (column 5). However, an argument can be made for economic significance, as the estimate indicates that the return to internship experience is 11 percent lower for business majors relative to that for nonbusiness majors.[28]

In the next specification, we interact the business degree and internship experience identifiers with an indicator of high academic ability. In our experiment, a portion of the fictitious job seekers report a high grade point average of 3.9 grade point average on their résumé, which is a proxy for high academic ability. We estimate the following regression model:

$$
\begin{aligned}
interview_{imcfj} = \beta_0 &+ \beta_1 bus_i + \beta_2 intern_i + \beta_3 gpa_i + \beta_4 bus_i \times gpa_i \\
&+ \beta_5 intern_i \times gpa_i + \theta \mathbf{X}_i + \phi_m + \phi_c + \phi_f + \phi_j + u_{imcfj}.
\end{aligned}
\tag{4}
$$

The subscripts i, m, c, f and j and variables bus, $intern$, $\mathbf{X}$, ϕ_m, ϕ_c, ϕ_f , ϕ_j and u are defined in equation 1. The variable gpa is a zero-one indicator that equals one when an applicant is assigned a high grade point average and zero otherwise, and $bus \times gpa$ and

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[28]In Appendix Tables B5, B6 and B7, we present estimates based on an augmented version of equation 3, which replaces business degrees in general with the full set of specific college majors and interacts those variables with the internship-experience indicator. With this specification, we are able to test whether the return to internship experience varies across particular college majors. It is important to point out that the standard errors for each of the estimated interview differentials are quite large. The inflated standard errors are due to the relatively small numbers of observations in the cells of interest. However, the size of the estimated interview differentials has the potential to be informative. Overall, the patterns in the data are somewhat nuanced. However, we can conclude from Appendix Table B5 that the overall greater return to internship experience realized by nonbusiness majors is driven primarily by relatively larger returns received by history and psychology majors (as opposed to biology and english majors).

intern × *gpa* are interaction terms. From equation 4, we are interested in whether the "return" to business degrees and internship experience depends on the academic ability of applicants. In particular, we present estimates for the following estimated parameters and linear combinations of parameters in Table 6: β_1 and β_2 (column 1), $\beta_1 + \beta_4$ and $\beta_2 + \beta_5$ (column 2), and β_4 and β_5 (column 3). Table 4 is divided into two panels of estimates. Panel A presents the estimates for the differentials between business and nonbusiness majors, and Panel B presents the estimates for applicants without and with internship experience.

From Panel A of Table 4, the interview rates of business majors and nonbusiness majors are not statistically different from one another, regardless of whether a high grade point average is signaled (columns 1 and 2). In addition, the test for whether the impact of high academic ability differs between business and nonbusiness majors indicates no statistical evidence of a differential between the two types of degree-holders (column 3). From Panel B of Table 4, applicants with internship experience have higher interview rates than those without internship experience both without (column 1) and with (column 2) a high grade point average. These estimated differentials are statistically significant at the ten- and one-percent levels, respectively. The return to internship experience is markedly higher for those who signal a high grade point average relative (28 percent higher interview rate) to those that do not (8 percent higher interview rate). Moreover, the test for whether the estimated differential in column 2 is statistically different from the estimate in column 1 reveals that the two estimates are indeed statistically different from one another. That is, the return to internship experience for applicants who reports a high grade point average is larger economically and statistically from that of applicants who do not report a high grade point average.

The findings in Tables 3, 4, 5 and 6 indicate business degrees do not affect employment prospects. By contrast, the return to internship experience is positive and significant in an economic and statistical sense. The return to internships is larger for (a) nonbusiness majors and (b) applicants who report high academic ability. The strong positive link between

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internships and employment opportunities warrants further attention, as it is important from a policy and theoretical perspective to determine whether internships signal unobservables, such as innate ability, or augment skill-sets. The estimates presented in Tables 3, 5 and 6 regarding the impact of internship experience on employment prospects are reconcilable with both signaling and human-capital models.

Our strategy to shed light on the mechanism through which internships affect employment opportunities is to estimate a regression model that interacts pre- and post-graduation industry-relevant work experience. In the context of this specification, a signaling interpretation could be justified if (a) the returns to pre-graduation industry-relevant internship experience do not depend on post-graduation industry relevant work experience and (b) the returns to post-graduation industry-relevant work experience does not depend on pre-graduation industry-relevant internship experience. By contrast, one could not reject the human-capital model in the event that there is an positive interaction effect between pre- and post-graduation industry-relevant work experience. A second way to examine the signaling hypothesis is to examine the relative returns to pre- and post-graduation industry-relevant experience. In particular, finding that industry-relevant internship experience provides a greater return (at the margin) than industry-relevant work experience would be indicative of signaling, as (a) the internships occurred about four years prior to the date of application and (b) the internships only lasted for three months whereas post-graduation industry-relevant experience ranges from 20-38 months and is more recent.[29]

Formally, we estimate the following regression model:

$$
\begin{aligned}
interview_{imcfj} = \beta_0 &+ \beta_1 intern_i + \beta_2 infield_i + \beta_3 intern_i \times infield_i \\
&+ \theta \mathbf{X}_i + \phi_m + \phi_c + \phi_f + \phi_j + u_{imcfj}.
\end{aligned}
\tag{5}
$$

The subscripts i, m, c, f and j and variables $intern$, $\mathbf{X}$, ϕ_m, ϕ_c, ϕ_f , ϕ_j and u are de-

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[29]Note that the variation in months worked after graduation stems from the random assignment of different unemployment spells, either immediately after graduation or at the time of application, to the fictive applicants. Appendix A1 provides more details on the random assignment of the unemployment spells.

fined in equation 1. The variable $infield$ is a zero-one indicator that equals one when an applicant is assigned industry-specific work experience after graduation and zero when the applicant is assigned out-of-industry work experience after graduation, and $intern \times infield$ is an interaction term. From equation 5, we present the following parameters and linear combinations of parameters in Table 7: β_1 (column 1), $\beta_1 + \beta_3$ (column 2), β_2 (column 3) and $\beta_2 + \beta_3$ (column 4). From Table 7, the return to internship experience does not depend on the type of work experience obtained after graduation, as evidenced by identical percentage point differences in the interview rates between applicants with out-of-field work experience (column 1) and those with in-field work experience (column 2). Moreover, the return to post-graduate in-field work experience does not depend on whether the applicant had prior work experience as an undergraduate student, as the percentage point differences in the interview rates are identical (columns 3 and 4). The estimates presented in Table 7 are supportive of a signaling interpretation, as there is no interaction effect between internship experience and post-graduation work experience, which are both industry specific, and the return to a three-month internship that took place about four years prior generates about 55 percent of the return to industry-relevant work experience that is lengthier in duration and more recent.[30]

4.2 Discussion

It is unclear why business degrees in general or particular business degrees do not translate into better job opportunities, given that we applied exclusively to business-related job openings. While it is not possible to arrive at one explanation for these findings, we put forward four hypotheses that could explain the null effects. First, the fictive applicants in our experiment completed their Bachelor's degrees approximately three years prior to submitting their résumés to the job openings. Thus, it could be that business degrees or particular business degrees matter for initial job placement, but that their effects fade over a short period of

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[30]We present the main effects from equations 3, 4 and 4 in Table A2. The main effects from equation 2 are omitted from Table A2, but these estimates are available upon request.

time (in our case, three years). Second, business and nonbusiness students take about 40 percent of their coursework from general education categories in the United States. Even for business students, about 60-70 percent of the coursework is taken in areas outside of their major. Thus, it is possible that a business degree does not provide adequate skill or proficiency in a particular subject area to affect hiring. Third, nonbusiness majors applying for business-related jobs may send a strong, positive signal. Perhaps nonbusiness majors who apply for business-related jobs possess unobservables, on average, that employers value, such as ability, motivation, and/or general skills (e.g., communication and critical thinking). Indeed, statistics from the National ACT Profile Report for the graduating class of 2011 indicate that the ACT scores of students who planned to major in business and nonbusiness fields are different. For example, the average ACT score for students who planned to major in business is 21.1, while the average ACT scores for students expecting to major in science, social science and English are 23.9, 22.0 and 24.2, respectively.[31] The argument that the nonbusiness majors in our experiment would be expected to possess more innate ability than business majors is supported by the ACT data. The greater return associated with internship experience for nonbusiness majors bolsters this line of reasoning (See Table 6). The selection-based explanation is further supported by data from the ACS (discussed in more detail in Section 2), which indicate that nonbusiness majors who work in business-related occupations earn *more* than business majors who work in business-related occupations. These hypotheses, whether individually or collectively, could explain the lack of evidence supporting a statistically and economically important link between business degrees and employment prospects in business-related industries.

We find strong evidence that industry-relevant internship experience improves employment prospects. From a policy standpoint, it is important to determine whether internship experience (a) signals unobservables or (b) augments a worker's human capital (i.e. skills). Admittedly, our data are imperfect at definitively testing either of these theories. However,

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[31]See Table 4.1 in the following report: http://www.act.org/newsroom/data/2011/pdf/profile/National2011.pdf.

we contend that our experiment and the data collected from it tend to support a signaling interpretation. There are four reasons that lead us to this conclusion.

First, we model the initial part of the hiring process. Thus, signaling likely plays an important role in the sorting and ranking of prospective applicants. Second, applicants accumulate the internship experience approximately four year prior to the date of application and it is likely any skills accumulated via the internships would substantially depreciate. Third, the return to three-month industry-relevant internships is about half that associated with post-graduation industry-relevant work experience (compare the averages of the estimates in columns 1 and 2 to those in columns 3 and 4 from Table 5). In the context of the human-capital model, it is difficult to reconcile the fact that a three-month internship completed four years prior to the date of application generates about 55 percent of the return produced by more recent industry-relevant work experience that ranges from 20-38 months.[32] Fourth, we detect no interaction effect between pre- and post-graduation industry-specific work experience. The absence of a positive interaction between industry-relevant internship experience and post-graduation industry-relevant work experience strongly contests a human-capital explanation, as one would expect a positive and statistically significant interaction effect in order to conclude that internships augment skill-sets. Taken together, these findings support signaling as the most likely explanation.

In terms of policy, it is difficult to make a specific recommendation based upon our experimental data. Because our data support a signaling interpretation, it seems policy interventions which boost the demand for interns could muddle the effectiveness of the signal.[33] Such an intervention would make it more difficult for firms to sort and rank prospective job

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[32]It is important to point out that the firms who employed our fictive applicants as interns and employees after graduation are nationwide firms. Thus, the greater return, at the margin, associated with internship experience is unlikely due to those firms being regarded as more "prestigious" than the firms who our fictive applicants worked for after graduation.

[33]Despite the strong likelihood that internships signal unobservables in our data, it is possible for internships to help jobs seekers and firms match, which could be efficiency-enhancing. For example, a prospective employer, say, in the field of banking may be better able to identify suitable candidates in the field of banking by investigating whether they have banking experience via an internship. Such an internship could signal to a firm that the prospective job seeker has worked in the banking sector before and would like to continue working in that sector.

candidates. However, it is possible signaling is important in the initial phase of hiring (i.e. the decision to extend an interview opportunity), but that skill-sets are a more important part of the interview phase. Unfortunately, we are unable to examine the interview phase of the hiring process, which is a limitation of résumé-audit studies.[34]

5   Conclusions

We use experimental data from a résumé audit to study the impact of college majors and internship experience on job opportunities, which is measured via interview requests from prospective employers. Despite applying exclusively to business-related jobs, we find no evidence linking business degrees in general or particular business degrees to better job opportunities. However, we find strong evidence that industry-relevant internship experience has a large, positive effect on employment opportunities. Job seekers with internship experience, obtained while completing their college degree, have interview rates approximately 14 percent higher than those without internship experience. The positive effects of internship experience are greater for those who obtain nonbusiness degrees.

The internship results are potentially policy-relevant, as the government could incentivize firms to offer internships and universities to work more closely with employers to facilitate internships. These interventions could be justified if internships help the transition from school to work for young college graduates, a group which has had a difficult time finding employment commensurate with their education during and following the Great Recession. Recent work by Saniter and Siedler (2014) shows that the positive effect of internships on the wages of German workers operates through the employment probabilities and job placement for those workers in the first five years of their careers. In the words of Saniter and Siedler (2014), internships are a "door opener" to the labor market.

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[34]One key estimation problem to overcome for future research is heterogeneity of internships, as in the literature on apprenticeships (e.g., Adda, Dustman, Meghir, and Robin. 2013; Fersterer, Pischke, Winter-Ebmer 2008). There are likely important interaction effects between degree choice, internship experience, and other extra-curricular activities that could also be captured in future studies.

From a policy standpoint, it is crucial to understand whether internship experience (a) signals unobservables, such as innate ability, or (b) augments a worker's skill-set. If internships signal unobserved ability to employers, interventions on the part of the government could reduce the effectiveness of the signal. By contrast, if internship experience improves the skill-sets of young workers, there is the potential to justify interventions designed to increase the demand for interns.

A limitation of résumé audits is that (a) the entire pool of applicants for any specific job advertisement, (b) the complete interview process and (c) subsequent wage offers are unobserved. However, the receipt of an interview request is a necessary step to obtain employment. Lanning (2013) develops a search model calibrated with data from prominent résumé-audit studies combined with nationally-representative survey, and he demonstrates that differences in callback/interview rates can translate into large differences in employment and earnings. Thus, it appears the initial step in the interview process is an important determinant of subsequent labor-market outcomes.

The features of our experiment and patterns in our data support the idea that internships signal unobservable attributes to prospective employers. First, the initial stage of the hiring process likely consists of a substantial amount of signaling, as job seekers attempt to make themselves attractive to employers and employers search for characteristics that help them sort and rank applicants. Second, the human capital gained from an internship completed approximately four years prior to application would have substantially depreciated by the time the fictive applicants submit their résumés to job openings. Third, post-graduation, industry-relevant work experience only generates about two times the return associated with industry-relevant internship experience. The internships lasted only three months and occurred about four years prior to the application date, whereas the industry-relevant post-graduation work experience lasted from 20-38 months and is more recent. Fourth, there is no evidence of a positive interaction effect between internship experience and post-graduation work experience, which are both industry specific. The absence of a positive interaction

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effect strongly contests a human-capital explanation, as one would expect both types of industry-relevant work experience to reinforce each other. Taken together, the aforementioned factors from the experiment and patterns in the data support signaling as the most likely explanation for the effect of internships on employment opportunities.

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Table 1: Summary Statistics for Résumé Characteristics

Variable	Randomization Probability (1)	Sample Mean (2)	Standard Deviation (3)
Internship Experience	0.250	0.249	0.432
Business Degree	0.555	0.552	0.497
High Grade Point Average	0.250	0.249	0.433
Industry-Specific Work Experience	0.500	0.501	0.500
Graduated with Honors	0.250	0.248	0.432
3-month Front-end Work Gap	0.125	0.125	0.330
6-month Front-end Work Gap	0.125	0.121	0.326
12-month Front-end Work Gap	0.125	0.125	0.331
3-month Back-end Work Gap	0.125	0.124	0.330
6-month Back-end Work Gap	0.125	0.123	0.329
12-month Back-end Work Gap	0.125	0.127	0.333
No Gap in Work History	0.250	0.254	0.436
High Socioeconomic Status	0.500	0.499	0.500
Black	0.500	0.497	0.500
Female	0.500	0.500	0.500
University #1	0.250	0.251	0.433
University #2	0.250	0.250	0.433
University #3	0.250	0.249	0.433
University #4	0.250	0.249	0.433

Notes: Column (1) displays the randomization probabilities for each résumé credential; Columns (2) and (3) presents the sample means and standard deviations of the résumé credentials randomly assigned to the fictive job applicants. All of the résumé credentials are zero-one indicator variables.

Table 2: Average Interview Rates

	Overall	Business Majors	Nonbusiness Majors	With Internship Experience	Without Internship Experience
	(1)	(2)	(3)	(4)	(5)
Interview Rate	16.6%	17.0%	16.2%	18.4%	16.1%
Observations	9396	5189	4207	2335	7061

Table 3: Business Degrees, Internships, and Job Opportunities

	(1)	(2)	(3)	(4)	(5)	(6)
Business	0.007	0.007	0.007	0.007	0.007	0.003
Degree	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.007)
Internship	0.023***	0.022***	0.022***	0.022***	0.023***	0.022***
Experience	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Controls:						
Résumé	No	Yes	Yes	Yes	Yes	Yes
Month	No	No	Yes	Yes	Yes	Yes
City	No	No	No	Yes	Yes	Yes
Industry	No	No	No	No	Yes	Yes
Advertisement	No	No	No	No	No	Yes
R^2	0.001	0.006	0.008	0.019	0.045	0.724
Observations	9396	9396	9396	9396	9396	9396

Notes: Estimates are marginal effects from linear probability models. Standard errors clustered at the job-advertisement level are in parentheses. *** indicates statistical significance at the one-percent level. To produce the estimates presented, we estimate equation 1. However, the estimates in columns (1)-(6) differ based on the control variables that are held constant in regression model. In column (1), we estimate a simple regression model that include no control variables; column (2) adds controls for the résumé characteristics (See Table 1); column (3) adds controls for the month in which the applications were submitted; column (4) adds controls for the city in which the applications were submitted; column (5) adds controls for the job category that describes the opening; and column (6) adds controls for the job advertisement.

Table 4: Differences Between Particular Business and Non-Business Degrees

	Comparison Group				
	Accounting	Economics	Finance	Management	Marketing
	(1)	(2)	(3)	(4)	(5)
Biology	-0.005	-0.018	-0.019	-0.010	-0.003
	(0.013)	(0.014)	(0.013)	(0.013)	(0.014)
English	0.009	-0.004	-0.005	0.004	0.014
	(0.013)	(0.014)	(0.013)	(0.013)	(0.014)
History	-0.008	-0.021	-0.023	-0.013	-0.000
	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)
Psychology	0.013	-0.004	-0.002	0.008	0.017
	(0.013)	(0.014)	(0.014)	(0.013)	(0.014)

Notes: Estimates are marginal effects from linear probability models. Standard errors clustered at the job-advertisement level are in parentheses. Each column of estimates uses a different business degree as the base category (e.g., column 1 uses Accounting as the basis for comparison). The estimates in columns (1)-(5) are based on the same regression model, which uses the full set of control variables (i.e. the résumé characteristics and the dummy variables for the month, city, job category and job advertisement) and full sample of 9396 observations.

Table 5: Returns to Internship Experience for Business and Nonbusiness Majors

	Business versus Nonbusiness Majors		Internship versus No Internship Experience		Difference in Return to Internship Experience between Business and Nonbusiness Majors
	With Internship	Without Internship	Business Majors	Nonbusiness Majors	
	(1)	(2)	(3)	(4)	(5)
Difference in Interview Rate	−0.010 (0.013)	0.008 (0.007)	0.014* (0.009)	0.032** (0.011)	−0.018 (0.015)
Parameters and Linear Combinations of Parameters	$\beta_1 + \beta_3$	β_1	$\beta_2 + \beta_3$	β_2	β_3

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- and one-percent levels, respectively. To produce the estimates presented, we estimate equation 2 and compute linear combinations of parameters using STATA's `lincom` command.

Table 6: Business Degrees, Internship Experience and Grade Point Average

	High GPA Not Signaled	High GPA Signaled	High GPA Signaled versus High GPA Not Signaled
	(1)	(2)	(3)
Panel A: Business Degrees			
Difference in the Interview Rate	0.003 (0.007)	0.006 (0.013)	0.003 (0.014)
Parameter or Linear Combination of Parameters	β_1	$\beta_1 + \beta_4$	β_4
Panel B: Internship Experience			
Difference in the Interview Rate	0.013* (0.007)	0.048*** (0.015)	0.035* (0.018)
Parameter or Linear Combination of Parameters	β_2	$\beta_2 + \beta_5$	β_5

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- and one-percent levels, respectively. To produce the estimates presented, we estimate equation 3 and compute linear combinations of parameters using STATA's `lincom` command.

Table 7: Returns to Pre-Graduation and Post-Graduation Work Experience

	Returns to Internship Experience		Returns to Infield Experience	
	With Out-of-Field Experience	With Infield Experience	Without Internship	With Internship
	(1)	(2)	(3)	(4)
Difference in the Interview Rate	0.022** (0.009)	0.022** (0.010)	0.040*** (0.007)	0.040*** (0.012)
Parmaeters and Linear Combinations of Parameters	β_1	$\beta_1 + \beta_3$	β_2	$\beta_2 + \beta_3$

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 five- and one-percent levels, respectively. To produce the estimates presented, we estimate equation 4 and compute linear combinations of parameters using STATA's `lincom` command.

Table A1: Correlation Between Business Degrees and
Internship Experience and the Other Resume Characteristics

	Dependent Variable	
	Business Degree	Internship Experience
	(1)	(2)
Internship Experience	0.014	–
	(0.012)	–
Business Degree	–	0.010
	–	(0.009)
High GPA	-0.000	0.014
	(0.011)	(0.013)
Industry Experience	0.010	0.003
	(0.009)	(0.010)
Graduated with Honors	0.000	0.002
	(0.011)	(0.013)
No Gap in Work History	-0.009	0.029
	(0.015)	(0.018)
3-month Front-end Work Gap	0.015	0.028
	(0.018)	(0.021)
6-month Front-end Work Gap	-0.002	0.017
	(0.018)	(0.021)
3-month Front-end Work Gap	0.002	0.001
	(0.018)	(0.021)
6-month Front-end Work Gap	-0.026	0.018
	(0.018)	(0.021)
12-month Back-end Work Gap	-0.013	0.014
	(0.018)	(0.020)
High Socioeconomic Status	-0.015	-0.008
	(0.009)	(0.010)
Black	-0.001	-0.001
	(0.009)	(0.010)
Female	0.001	-0.013
	(0.009)	(0.010)
University #1	-0.014	-0.011
	(0.015)	(0.012)
University #2	0.008	0.004
	(0.014)	(0.013)
University #3	-0.012	0.008
	(0.013)	(0.013)
p-value for Joint-Exclusion F-test	0.253	0.363
R^2	0.002	0.002
Adjusted R^2	0.000	0.000
Observations	9396	9396

Notes: Estimates are marginal effects from linear probability models. Standard errors clustered at the job-advertisement level are in parentheses. The estimates presented in columns (1) and (2) are based on linear regression models of the business-degree and internship-experience indicator variables on the full set of resume characteristics.

Table A2: Main Effects from Equations 1, 3, 4 and 5

	(1)	(2)	(3)	(4)
Business Degree	0.003	0.008	0.003	0.003
	(0.007)	(0.007)	(0.007)	(0.007)
Business Degree× High GPA	–	–	0.003	–
	–	–	(0.014)	–
Internship Experience	0.022***	0.032***	0.013*	0.022**
	(0.006)	(0.011)	(0.008)	(0.009)
Internship Experience × Business Degree	–	-0.018	–	–
	–	(0.015)	–	–
Internship Experience × High GPA	–	–	0.035*	–
	–	–	(0.018)	–
Internship Experience × Industry Experience	–	–	–	0.000
	–	–	–	(0.015)
High GPA	0.009	0.009	0.001	0.009
	(0.007)	(0.007)	(0.008)	(0.007)
Industry Experience	0.040***	0.040***	0.040***	0.039***
	(0.006)	(0.006)	(0.006)	(0.007)
Graduated with Honors	0.004	0.005	0.004	0.004
	(0.007)	(0.007)	(0.007)	(0.007)
3-month Front-end Work Gap	0.006	0.006	0.006	0.006
	(0.011)	(0.011)	(0.011)	(0.011)
6-month Front-end Work Gap	-0.003	-0.004	-0.003	-0.003
	(0.011)	(0.011)	(0.011)	(0.011)
12-month Front-end Work Gap	-0.008	-0.008	-0.008	-0.008
	(0.011)	(0.011)	(0.011)	(0.011)
3-month Back-end Work Gap	0.011	0.012	0.011	0.011
	(0.011)	(0.011)	(0.011)	(0.011)
6-month Back-end Work Gap	0.005	0.005	0.005	0.005
	(0.011)	(0.011)	(0.011)	(0.011)
12-month Back-end Work Gap	-0.002	-0.002	-0.002	-0.002
	(0.010)	(0.010)	(0.010)	(0.010)
High Socioeconomic Status	-0.007	-0.007	-0.007	-0.007
	(0.006)	(0.006)	(0.006)	(0.006)
Black	-0.022***	-0.022***	-0.022***	-0.022***
	(0.006)	(0.006)	(0.006)	(0.006)
Female	0.006	0.006	0.006	0.006
	(0.006)	(0.006)	(0.006)	(0.006)
University #1	0.004	0.004	0.004	0.004
	(0.008)	(0.008)	(0.008)	(0.008)
University #2	-0.009	-0.009	-0.009	-0.009
	(0.008)	(0.008)	(0.008)	(0.008)
University #3	-0.000	-0.000	-0.000	-0.000
	(0.008)	(0.008)	(0.008)	(0.008)
R^2	0.724	0.724	0.724	0.724
Adjusted R^2	0.630	0.630	0.630	0.630
Observations	9396	9396	9396	9396

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 1-percent levels, respectively.

Appendix

A Data

A1 Résumé Characteristics

Applicant Names

Following the work of other correspondence studies (e.g., Bertrand and Mullainathan 2004; Carlsson and Rooth 2007; Nunley et al. 2011), 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 Rasmussen 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 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

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

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 a 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 Review[2] 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

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 our 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]

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[2]Visit the following webpage: `http://www.princetonreview.com/college/top-ten-majors.aspx`.

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

Education
_____

Bachelor of Science, May 2010
University of XYZ
English (Honors)

(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

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	•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	•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	•Created analytical models and spreadsheets •Assessed market capacity for equity products •Analyzing cost of capital of various financing options
Internship 2	Capital Markets Intern	•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	•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	•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	•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	•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	•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	•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	•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	•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	•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	•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	•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	•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	•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	•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	•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	•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]	•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	•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	•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]	•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	•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	•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)

A2 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 Slipb
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

A3 The Application Process

We applied to online postings for job openings in six categories: banking, finance, insurance, management, marketing and sales. To obtain an 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 Beasely (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.

B Supplementary Estimates

Table B1: Impact of Internship Experience by Industry

	Job Category					
	Banking	Finance	Insurance	Management	Marketing	Sales
	(1)	(2)	(3)	(4)	(5)	(6)
Internship	0.001	0.029*	0.028***	0.030	-0.002	0.026*
	(0.016)	(0.015)	(0.010)	(0.020)	(0.023)	(0.016)
R^2	0.724	0.724	0.724	0.724	0.724	0.724
Observations	9396	9396	9396	9396	9396	9396

Notes: Estimates are marginal effects from linear probability models. Standard errors clustered at the job-advertisement level are in parentheses. * and *** indicate statistical signifance at the 10- and one-percent levels, respectively. Column (1) presents the difference in the interview between applicants with internship experience and applicants without internship experience without internships experience in the banking job category; column (2) presents the difference in the interview between applicants with internship experience and applicants without internship experience without internships experience in the finance job category; column (3) presents the difference in the interview between applicants with internship experience and applicants without internship experience in the insurance job category; column (4) presents the difference in the interview between applicants with internship experience and applicants without internship experience without internships experience in the management job category; column (5) presents the difference in the interview between applicants with internship experience and applicants without internship experience without internships experience in the marketing job category; and column (6) presents the difference in the interview between applicants with internship experience and applicants without internship experience without internships experience in the sales job category. Each column of estimates uses the full set of control variables (i.e. the résumé characteristics and the dummy variables for the month, city, job category and job advertisement.

Table B2: Differences Between Particular Business Degrees

	Degree Used As Comparison Group			
	Accounting	Economics	Finance	Management
	(1)	(2)	(3)	(4)
Economics	0.014 (0.013)	–	–	–
Finance	0.014 (0.013)	0.001 (0.013)	–	–
Management	0.005 (0.013)	-0.008 (0.013)	-0.010 (0.013)	–
Marketing	-0.005 (0.013)	-0.018 (0.014)	-0.019 (0.014)	-0.009 (0.013)
R^2	0.724	0.724	0.724	0.724
Observations	9396	9396	9396	9396

Notes: Estimates are marginal effects from linear probability models. Standard errors clustered at the job-advertisement level are in parentheses. Each column of estimates uses a different business degree as the base category (e.g., column 1 uses Accounting as the basis for comparison). The estimates in columns (1)-(5) are based on the same regression model, which uses the full set of control variables (i.e. the résumé characteristics and the dummy variables for the month, city, job category and job advertisement.)

Table B3: Differences Between Particular Non-Business Degrees

| | Degree Used As Comparison Group | | |
| | Biology | English | History |
	(1)	(2)	(3)
English	0.014 (0.013)	–	–
History	-0.003 (0.014)	-0.017 (0.014)	–
Psychology	0.013 (0.013)	0.004 (0.013)	0.020 (0.014)
R^2	0.724	0.724	0.724
Observations	9396	9396	9396

Notes: Estimates are marginal effects from linear probability models. Standard errors clustered at the job-advertisement level are in parentheses. Each column of estimates uses a different nonbusiness degree as the base category (e.g., column 1 uses Accounting as the basis for comparison). The estimates in columns (1)-(5) are based on the same regression model, which uses the full set of control variables (i.e. the résumé characteristics and the dummy variables for the month, city, job category and job advertisement.)

Table B4: Impact of Degrees that Match the Job Category

	(1)	(2)	(3)	(4)
Match	0.005	0.013	0.003	0.014
	(0.009)	(0.009)	(0.010)	(0.009)

Notes: Estimates are marginal effects from linear probability models. Standard errors clustered at the job-advertisement level are in parentheses. Columns (1)-(4) differ based on the definition of the "match" variable, which is discussed in the text. Each column of estimates uses the full set of control variables (i.e. the résumé characteristics and the dummy variables for the month, city, job category and job advertisement. We use four different codings of the "match" variable in an attempt to gauge the sensitivity of the estimates. The first measure is equals one when the applicant's degree is finance or economics in the banking and finance job categories; when the applicant's degree is management in the management job category; and when the applicant's degree is marketing in the marketing and sales job categories. The second measure equals one when the applicant's degree is finance or economics in the banking, finance and insurance job categories; when the applicant's degree is management in the management job category; and when the applicant's degree is marketing in the marketing and sales job categories. The third measure equals one when the applicant's degree is finance or economics in the banking and finance job categories; when the applicant's degree is management in the management job category; and when the applicant's degree is marketing in the marketing job category. The fourth measure equals one when the applicant's degree is finance or economics in the banking, finance and insurance job categories; when the applicant's degree is management in the management job category; and when the applicant's degree is marketing in the marketing job category.

Table B5: Difference Between Particular Business and Non-Business Degrees with Internships

| | Business Degree Used As Comparison Group | | | | |
| | Accounting | Economics | Finance | Management | Marketing |
	(1)	(2)	(3)	(4)	(5)
Biology	0.006	-0.006	-0.022	-0.010	0.024
	(0.029)	(0.029)	(0.029)	(0.029)	(0.030)
English	0.012	-0.000	-0.016	-0.004	0.029
	(0.033)	(0.033)	(0.032)	(0.033)	(0.033)
History	0.038	0.026	0.009	0.021	0.056*
	(0.032)	(0.032)	(0.032)	(0.032)	(0.033)
Psychology	0.032	0.032	0.003	0.016	0.050
	(0.031)	(0.031)	(0.031)	(0.031)	(0.031)
R^2	0.725	0.725	0.725	0.725	0.725
Observations	9396	9396	9396	9396	9396

Notes: Estimates are marginal effects from linear probability models. Standard errors clustered at the job-advertisement level are in parentheses. * indicates statistical significance at the 10-percent level. Each column of estimates uses a different business degree as the base category (e.g., column 1 uses Accounting as the basis for comparison). The estimates in columns (1)-(5) are based on the same regression model, which uses the full set of control variables (i.e. the résumé characteristics and the dummy variables for the month, city, job category and job advertisement.)

Table B6: Differences Between Particular Business Degrees
for Applicants with Internship Experience

| | Degree Used As Comparison Group | | | |
| | Accounting | Economics | Finance | Management |
	(1)	(2)	(3)	(4)
Economics	0.012 (0.026)	–	–	–
Finance	0.028 (0.025)	0.016 (0.026)	–	–
Management	0.016 (0.025)	0.004 (0.025)	-0.012 (0.024)	–
Marketing	-0.018 (0.027)	-0.030 (0.027)	-0.046* (0.027)	-0.034 (0.026)
R^2	0.724	0.724	0.724	0.724
Observations	9396	9396	9396	9396

Notes: Estimates are marginal effects from linear probability models. Standard errors clustered at the job-advertisement level are in parentheses. * indicates statistical significance at the 10-percent level. Each column of estimates uses a different business degree as the base category (e.g., column 1 uses Accounting as the basis for comparison). The estimates in columns (1)-(5) are based on the same regression model, which uses the full set of control variables (i.e. the résumé characteristics and the dummy variables for the month, city, job category and job advertisement.)

Table B7: Differences Between Particular Non-Business Degrees
for Applicants with Internship Experience

	Degree Used As Comparison Group		
	Biology	English	History
	(1)	(2)	(3)
English	0.006 (0.028)	–	–
History	0.032 (0.028)	0.026 (0.031)	–
Psychology	0.026 (0.027)	0.020 (0.030)	0.016 (0.031)
R^2	0.724	0.724	0.724
Observations	9396	9396	9396

Notes: Estimates are marginal effects from linear probability models. Standard errors clustered at the job-advertisement level are in parentheses. Each column of estimates uses a different nonbusiness degree as the base category (e.g., column 1 uses Biology as the basis for comparison). The estimates in columns (1)-(5) are based on the same regression model, which uses the full set of control variables (i.e. the résumé characteristics and the dummy variables for the month, city, job category and job advertisement.)