Discrimination in the Credential Society: An Audit Study of Race and College Selectivity in the Labor Market

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Racial inequality in economic outcomes, particularly among the college educated, persists throughout US society. Scholars debate whether this inequality stems from racial differences in human capital (e.g., college selectivity, GPA, college major) or employer discrimination against black job candidates. However, limited measures of human capital and the inherent difficulties in measuring discrimination using observational data make determining the cause of racial differences in labor-market outcomes a difficult endeavor. In this research, I examine employment opportunities for white and black graduates of elite top-ranked universities versus high-ranked but less selective institutions. Using an audit design, I create matched candidate pairs and apply for 1,008 jobs on a national job-search website. I also exploit existing birth-record data in selecting names to control for differences across social class within racialized names. The results show that although a credential from an elite university results in more employer responses for all candidates, black candidates from elite universities only do as well as white candidates from less selective universities. Moreover, race results in a double penalty: When employers respond to black candidates, it is for jobs with lower starting salaries and lower prestige than those of white peers. These racial differences suggest that a bachelor's degree, even one from an elite institution, cannot fully counteract the importance of race in the labor market. Thus, both discrimination and differences in human capital contribute to racial economic inequality.

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Introduction

> "Education is the most important determinant yet discovered of how far one will go in today's world."
>
> —Randall Collins, *The Credential Society* (1979, 3)

A popular notion in US society is that education is the great equalizer. From a young age, children learn that education helps individuals overcome social disadvantage and opens doors of opportunity. But not everyone can go to college, and those who do enter into a tiered system of schools and exit into a labor market that values more than educational credentials. Although education scholars document the ways that institutions at the primary and secondary levels reinforce a stratified system with deep racial divides in outcomes, scholars have devoted less attention to differences among college graduates.

Some research highlights the discouraging finding that racial economic inequality is greatest among the college educated (Cancio, Evans, and Maume 1996; Zhang 2008). This finding perhaps is explained by the stratified higher-education system in the United States; blacks, Hispanics, and low-income students are much less likely to attend highly selective institutions than whites, Asians, and high-income students (Alon and Tienda 2007; Bowen and Bok 1998; Carnevale and Rose 2003). However, it is unclear how much employers value degrees from highly selective institutions and if there are racial differences in the returns to these degrees (Brewer and Ehrenberg 1996; Dale and Krueger 2002, 2011; Zhang 2008).

Rather than serving as the great equalizer, a higher-education credential, even one from a highly prestigious institution, may not fully erase employer biases—implicit or explicit—against blacks. Since the passage of the Civil Rights Act, researchers have consistently found evidence of racial discrimination in the labor market using a variety of methods (Bendick, Jackson, and Reinoso 1994; Bertrand and Mullainathan 2004; Kirschenman and Neckerman 1991; Pager 2007a). No research, however, has explored whether employers engage in racial discrimination against applicants with prestigious college degrees. Such research would increase our understanding of the possibilities and limitations of education in reducing social inequality.

In this article, I examine the employment opportunities for white and black graduates of elite versus less selective institutions to determine if racial economic inequality among the college educated is explained by racial differences in human capital, racial discrimination in the labor market, or both. Unfortunately, nationally representative data have fallen short in addressing these issues. Some potentially important human-capital measures, such as college selectivity, GPA, and major, are often not available. Moreover, while researchers in the 1980s and early 1990s were able to assess employers' thoughts on discrimination through surveys and interviews, legal concerns and social-desirability bias have reduced the viability of these methods in assessing discrimination today. Using field experiments, researchers can control for human capital and race, and more closely examine employer decision processes. Thus, an audit study is well suited to examine racial economic inequality among the college educated.

I conduct an audit by matching candidate pairs and applying for jobs listed on a national job-search website. In total, I apply for 1,008 jobs in three geographic regions in the United States to examine how race and college selectivity affect the likelihood of receiving an employer request via e-mail or phone for a job interview. Then, among those job candidates receiving responses, I analyze how race and college selectivity influence candidates' potential salary range and occupational type. The results suggest that higher-education credentials do not equalize employment opportunities for blacks compared to whites, even among elite university graduates. Credentials from an elite university result in more callbacks for all candidates, but black candidates from an elite university only do as well as white candidates from a less selective university. Moreover, race results in a double penalty: When employers respond to black candidates, it is for jobs with lower starting salaries and lower prestige than those of white peers. These racial differences suggest that even a bachelor's degree from an elite institution cannot fully counteract the importance of race in the labor market. Thus, both discrimination and differences in human capital contribute to racial economic inequality among the college educated.

Background and Theory

There is no denying that college degrees generally yield economic benefits. Individuals with a bachelor's degree have 66 percent higher expected lifetime earnings and are less than half as likely to be unemployed than individuals with a high school diploma (Baum, Ma, and Payea 2010). However, racial inequality is prevalent among college graduates; black men make approximately 75 percent of the wages of white men, and black women make approximately 90 percent of the wages of white women (Bradbury 2002). In fact, racial differences in earnings (Cancio, Evans, and Maume 1996; Zhang 2008) and unemployment (Wilson, Tienda, and Wu 1995) are highest among those who hold a bachelor's degree. This racial inequality incites a rich debate over whether the source is human-capital differences (Heckman 1998; Neal and Johnson 1996) or employer biases and discrimination (Lucas 2008; Pager 2003).

Racial Inequality Due to Differences in Human Capital

Scholars in the human-capital tradition argue that employers look to make the best possible investments when hiring employees and choose those with measurable superiority. Among high school graduates, employers choose white over black candidates at higher rates due to differences in high school quality, curriculum, and other indicators of human capital (Farkas and Vicknair 1996; Heckman 1998; Neal and Johnson 1996; O'Neill 1990). Racial discrimination is often downplayed. Nobel Prize–winning economist James Heckman called racial discrimination "the problem of an earlier era" (1998, 102).

At the heart of this research is an effort to explain differences in outcomes based on a number of variables, such as knowledge, IQ, effort, and experience. Critics point out that these models fail to explain how employers determine applicants' abilities apart from their educational attainment and often fail to capture

important mechanisms (Tomaskovic-Devey, Thomas, and Johnson 2005). Recent research that attempts to more accurately model these processes finds racial differences in the return to education after accounting for human capital (Alon and Haberfeld 2007; Tomaskovic-Devey, Thomas, and Johnson 2005).

College selectivity is one potentially important human-capital explanation for racial inequality. The most selective colleges admit smaller percentages of black students than less selective colleges (Soares 2007, 174–75), and black students are also much less likely than white students to attend and graduate from highly selective institutions (Alon and Tienda 2007; Bowen and Bok 1998; Carnevale and Rose 2003). However, employers must place a higher value on credentials from selective institutions for this racial difference to manifest as economic inequality. Research on the effects of college selectivity is somewhat mixed. Comparisons of broad categorical classifications show some positive effects of college type on occupational status and income (Brewer, Eide, and Ehrenberg 1999; Monks 2000), while other results show that students at more selective colleges are more likely to graduate, more likely to attend graduate or professional programs, and earn higher wages (Alon and Tienda 2005; Bowen and Bok 1998; Brand and Halaby 2006; Brewer and Ehrenberg 1996). Social capital and institutional networks at elite schools also benefit graduates (Mullen 2010; Rivera 2011).

Non-experimental data, though, are subject to potential bias due to correlations between unobserved factors, such as student ability and motivation, that may influence both admission to selective colleges and outcomes such as graduation and wages (Dale and Krueger 2002, 2011; Gerber and Cheung 2008). Scholars using more sophisticated methods to address selection bias find mixed results about the effect of college selectivity. Black and Smith (2004) match similar individuals from different institutions using test scores and find that college selectivity has a positive effect on wages. Using a regression discontinuity design, Hoekstra (2009) finds that white men who barely made the admissions cutoff at a flagship state university experience 20 percent higher wages than white men who barely missed the admissions cutoff. Dale and Krueger (2002) use the College and Beyond Survey to examine wage returns 15 years after graduation and find no effect of college selectivity when matching students based on institutions they were admitted to but did not attend. In a follow-up, Dale and Krueger (2011) include an additional cohort and again find no effect of college selectivity on earnings after adjusting for selection. Additional research presents mixed conclusions on the existence and size of selection bias (Behrman, Rosenzweig, and Taubman 1996; Long 2008).

Thus, it is somewhat unclear whether college selectivity has a causal effect on labor market outcomes. If racial differences in the *qualitative* aspect of educational credentials, that is, college selectivity, explain racial economic inequality, then establishing the effect of college selectivity is paramount. This leads to my first research question: (1) Does college selectivity affect labor-market outcomes?

Racial Inequality Due to Discrimination

Research using a variety of methods has found evidence of racial discrimination at various stages of the labor market, particularly for low-wage job seekers. These

studies have documented the role of employer attitudes toward and opinions of blacks (Kirschenman and Neckerman 1991; Moss and Tilly 2001; Waldinger 1997), the role of racially targeted recruitment (Braddock and McPartland 1987; Moss and Tilly 2001; Kirschenman and Neckerman 1991), and racial differences in employment outcomes using experimental methods (Bertrand and Mullainathan 2004; Pager 2003, 2007a; Pager, Western, and Bonikowski 2009). Unfortunately, these studies do not reveal whether higher-education credentials attenuate racial discrimination.

Explicit examination of labor-market discrimination is an important but difficult endeavor for social science research. Although there are clear merits to Title VII of the Civil Rights Act of 1968, which gives individuals the right to sue discriminatory employers, it appears to have made identifying discrimination more difficult without entirely eliminating it. As Doug Massey states, "when pushed by the federal government to end overt discriminatory practices, [whites] are likely to innovate new and more subtle ways to maintain their privileged position in society." (2007, 54). Researchers are presented with the methodological puzzle of adopting new ways to measure something that can no longer be directly observed.

Direct questions about prejudiced attitudes and beliefs are less valuable today than in the past. Research finds increasingly lower affirmative response rates to such questions (Bobo 2001; Schuman et al. 2001; see also Blank, Dabady, and Citro 2004). One reason is the development of a social consciousness regarding such attitudes and beliefs, or social-desirability bias (Pager and Quillian 2005). Individuals may present a public facade about non-whites that hides their true opinions (Bonilla-Silva 2010). Additionally, although information collected from surveys on attitudes can be important, it says nothing of discriminatory actions (see Pager and Quillian 2005).

Thus, many scholars have relied on statistical residuals to examine discrimination. Discrimination is assumed when there is an otherwise unexplainable racial difference on a dependent variable (Lucas 2008). Often, scholars must account for as many important variables as possible and defend the residual as an estimated effect of discrimination based on observables. This method is hindered by a number of serious problems, including omitted-variable bias, sample-selection bias, and inadequate measurement of cumulative discrimination effects (Blank, Dabady, and Citro 2004; Jones and Kelley 1984; Lucas 2008; Quillian 2006). Omitted-variable bias can lead to improper attribution of the residual to the effect of discrimination. For example, if human capital is not adequately measured and there are mean differences in human capital between whites and blacks, the effect of the omitted variable (human capital) is incorrectly attributed to discrimination. Residual attribution presents uncertainty, so some researchers have turned to field experiments, arguing that they represent a vast improvement over standard observational models to examine discrimination.

Some research explores racial heterogeneity in the effects of human capital and finds a mix of larger positive effects (Dale and Krueger 2011; Loury and Garman 1995), no differential effects (Long 2010; Monks 2000), or smaller positive effects (Cooper and Cohn 1997) of college selectivity on wages for

blacks compared to whites. Others have found that individuals least likely to attend college receive the largest economic benefits from college (Brand and Halaby 2006; Brand and Xie 2010; see also Hout 2012).

Observational research makes it unclear whether racial discrimination occurs among bachelor's degree holders and whether college selectivity attenuates potential discrimination. These issues lead to my final two research questions: (2) Does race affect labor-market outcomes among bachelor's degree holders? and (3) Do race and college selectivity have an interactive effect on labor-market outcomes?

Using Audit Studies to Examine Labor-Market Outcomes

An audit study is a field experiment that matches two individuals with nearly identical characteristics to test an outcome. Audit research began with in-person examinations of housing discrimination in the 1970s (see Yinger 1995), but audits have evolved to include correspondence by mail and computerized (online correspondence) versions. Researchers may properly attribute differences in outcomes due to careful sampling and randomization along with matching on important criteria between auditors. The audit method has grown in popularity, particularly to examine racial discrimination, with the rise of online applications for housing and employment. In recent years, sociologists, economists, and political scientists have implemented creative and influential computerized audit studies (e.g., Ahmed and Hammarstedt 2008; Butler and Broockman 2011; Hogan and Berry 2011; Lauster and Easterbrook 2011; Tilcsik 2011).

In-person audits require human assistants to participate in the research process. Critics of the in-person method suggest that researchers are unable to control for important characteristics that may differ between individuals, such as delays in speech, differences in poise, and so forth; in other words, differences in characteristics that employers can witness but the researcher cannot (Heckman 1998; Heckman and Siegelman 1993). By removing the human element of the audit, researchers may alleviate many of these problems.

Although in-person audits use personal appearance to convey race, correspondence and computerized audits must rely on written information to convey race. Research often uses racialized names, but scholars have raised concerns that these names may conflate race and social class and bias the results (Fryer and Levitt 2004; Pager 2007b). Despite some ex post facto examinations, no research has incorporated race and social class of names directly into the design stage of the study.

The choice of audit type must align with standard practices in the real world. For instance, audits of the low-wage labor market require an in-person method because these jobs are not traditionally listed online. By contrast, a broad range of jobs targeted toward the college educated require candidates to apply online. A computerized audit study closely mimics the real experiences of college-educated job seekers today, as employers are increasingly less likely to accept job applications in person or by mail.

Data and Methods

Between March and August 2011, I conducted a computerized audit study following four general steps (detailed below): I (1) created a series of candidate profiles varying race, gender, social class, college selectivity, and college major; (2) carefully matched candidate profiles; (3) selected and applied to jobs in three geographic regions in the United States; and (4) recorded employer responses.

Creating Candidate Profiles—College Selectivity, Race, and Social Class

To examine college selectivity, I selected elite universities that ranked highly in both the US News and World Report and Barron's rankings and paired them with a nationally ranked but less selective university ranked below the elite university (US News and World Report 2011). I used the following pairs: (1) Harvard and University of Massachusetts–Amherst; (2) Stanford and University of California–Riverside; and (3) Duke and University of North Carolina–Greensboro.[1]

I obtained data from the New York State Department of Health on births during the early 2000s that list the total number of births by (1) name and race; and (2) name and mother's education. I searched for first names with at least 50 births per year in the state and at least 75 percent born to mothers of one particular race (black or white). I then chose names from this list that were similar on mother's education to select three names for each race and gender combination, representing three tiers of education levels (upper, middle, and lower). In total, I used 12 different names: Jalen, Lamar, and DaQuan (black/male); Nia, Ebony, and Shanice (black/female); Caleb, Charlie, and Ronny (white/male); and Aubrey, Erica, and Lesly (white/female). I then selected last names using frequently occurring surnames from the 2000 Census that were approximately race neutral (US Census Bureau 2008) (see appendix table A1 and the online appendix for more information on first and last names, respectively).

There are potential shortcomings from using these names. First, names in New York may not be representative of the US population. I attempt to limit these differences by not selecting any obvious immigrant or black Muslim names. Second, the time period of the names data is not perfectly aligned, as individuals graduating from college in 2011 were born around 1989. Although the social class or racial-naming patterns of these 12 names may have changed over a decade, data limitations prevent me from exploring this issue.[2]

Creating Candidate Profiles—Résumés, Cover Letters, and Other Information

To create candidate résumés, I combined elements of actual resumes used by job seekers prior to data collection. I used two style templates to create résumés (each candidate could be assigned either template, but each job had two applicants with different templates), entered the candidate information, and instituted random assignment across pertinent variables.

I created two basic résumés, each with a short objective statement, four to five activities in student organizations with two leadership roles, a list of skills, and an employment history. Each list of activities came from real organizations on each campus and was matched as closely as possible across campuses. Listed skills matched with those used or reasonably attained in the specified employment history. Finally, each candidate's employment history included work in one typical part-time student job (e.g., sales, wait staff) and one internship position using real employers with offices in every region. The total time of employment across candidates was the same.

To examine additional human-capital differences[3] that may contribute to race and gender inequality in observational studies, I used two possible college majors for each résumé: economics and psychology. Each of these majors is one of the top choices by gender for men and women, respectively (Altonji, Blom, and Meghir 2012; Carnevale, Strohl, and Melton 2011). Furthermore, these majors provide general knowledge and skills that can be used to apply for a broad range of jobs.

I then created two different cover letters to assign to each candidate. The overall content of each cover letter was the same, but I altered the specific words, phrases, and order. Each cover letter contained information on college courses, leadership experience, skills, and an explanation that the candidate had recently relocated from their college town to a residence local to the employer. Finally, I randomly assigned cover letters prior to the job-application process so that a matched pair never used the same cover letter.

For each candidate/school combination, I obtained a unique telephone number with a local area code and a voice mailbox using Google Voice, a Google e-mail account, and a mailing address. Individuals matching the race and gender of the candidate recorded identical outgoing voice-mail messages, apart from the candidate's name. Because employers might be aware of differences in rental prices in local areas, I used Google to investigate apartments and select an address for each candidate (also adjusted for cost of living across regions).

The Matching Procedure

An advantage of the audit method is that a researcher is able to isolate the difference on a single characteristic between testers in a matched pair to examine the effect of that characteristic. Critics suggest that a variety of unmeasured differences may exist between testers, and matches between testers with a single difference may inflate the importance of that difference (Heckman 1998; Heckman and Siegelman 1993). Careful design in a computerized audit reasonably removes any concern of *unmeasured* differences. The use of multiple *measured* differences may sometimes be useful; prior audit studies have both intentionally and unintentionally examined two *measured* differences between testers in a matched pair (e.g., Ahmed and Hammarstedt 2008; Bertrand and Mullainathan 2004).

In this study, a number of conditions led me to simultaneous vary two characteristics within matched pairs. To examine college selectivity as the singular

difference, I would need to simultaneously hold race, gender, and social class constant within pairs. However, the nature of the measurement of these variables would require that candidates have the same first name. Employers likely would be more suspicious of two applications received within days of each other with the same distinctive name (particularly black names), possibly eliminating both candidates from consideration. To examine race as the singular difference, a similar problem arises because employers likely would be more suspicious of two applicants with the same degree from the same college (particularly elite schools). Results from a pilot study confirm that these options increase the likelihood of experiment discovery and bias the results by reducing the overall sample size in an unmeasurable way.[4] Thus, I chose to simultaneously vary *both* characteristics within pairs and made matches on the basis of gender, social class, major, and region. Table 1 shows the 24 core matched pairs.[5]

This design is very similar to the traditional design of a factorial experiment, as all two-by-two combinations are represented in the data (Gonzalez 2009). However, unlike the traditional experimental design, audit studies derive overall effects from a combination of within-pair and between-pair effects.[6] Traditional experiments randomly assign individuals to either a treatment or control condition and examine all individuals on the same outcome measure. Audit studies use a similar approach but often include random assignment of pairs to social actors or situations that then form the basis of the outcome measure. For example, housing audits randomly assign pairs to real estate agents and employment audits randomly assign pairs to employers. No single real estate agent or employer creates the outcome measure for more than one pair. Thus, between-pair comparisons are unbiased, although the estimates are less efficient than within-pair comparisons, when a researcher institutes proper random assignment of pairs and verifies that no significant differences across social actors or situations exist (see Pager 2003, 957).

By examining a combination of within-pair and between-pair effects with random assignment of employers to matched pairs, this research closely approximates a similar design to using four candidates per job (black/elite degree, black/less selective degree, white/elite degree, white/less selective degree) but without the limitations and ethical concerns previously discussed. An additional advantage of this design is that employers do not focus on a single difference between candidates. It is highly unlikely that employers in real-world scenarios have to make the unrealistic choices that the typical matched-pair process requires of them, potentially inflating the estimates of characteristics such as race in prior audits.

Selecting and Applying to Jobs

For two separate weeks during May and June 2011, I used a programming script that I wrote in Ruby to query the employment website and download all posted jobs in the cities in my three selected regions that fit the following search criteria: college degree (BA) required, listed as "entry level" or "student," posted in the past 30 days, and located in a 50-mile radius of the cities. I then eliminated any jobs that required the applicant to leave the website and apply at an external site and those

Table 1. Basic Matching Procedure

ID	A1 Race	A1 Univ. type	A1 Gender	A1 Social class	A1 Major	A2 Race	A2 Univ. type	A2 Gender	A2 Social class	A2 Major
01	White	LS	Male	Upper	Econ	Black	Elite	Male	Upper	Econ
02	White	LS	Male	Upper	Psych	Black	Elite	Male	Upper	Psych
03	White	LS	Male	Mid	Econ	Black	Elite	Male	Mid	Econ
04	White	LS	Male	Mid	Psych	Black	Elite	Male	Mid	Psych
05	White	LS	Male	Low	Econ	Black	Elite	Male	Low	Econ
06	White	LS	Male	Low	Psych	Black	Elite	Male	Low	Psych
07	White	LS	Female	Upper	Econ	Black	Elite	Female	Upper	Econ
08	White	LS	Female	Upper	Psych	Black	Elite	Female	Upper	Psych
09	White	LS	Female	Mid	Econ	Black	Elite	Female	Mid	Econ
10	White	LS	Female	Mid	Psych	Black	Elite	Female	Mid	Psych
11	White	LS	Female	Low	Econ	Black	Elite	Female	Low	Econ
12	White	LS	Female	Low	Psych	Black	Elite	Female	Low	Psych
13	White	Elite	Male	Upper	Econ	Black	LS	Male	Upper	Econ
14	White	Elite	Male	Upper	Psych	Black	LS	Male	Upper	Psych
15	White	Elite	Male	Mid	Econ	Black	LS	Male	Mid	Econ
16	White	Elite	Male	Mid	Psych	Black	LS	Male	Mid	Psych
17	White	Elite	Male	Low	Econ	Black	LS	Male	Low	Econ
18	White	Elite	Male	Low	Psych	Black	LS	Male	Low	Psych
19	White	Elite	Female	Upper	Econ	Black	LS	Female	Upper	Econ
20	White	Elite	Female	Upper	Psych	Black	LS	Female	Upper	Psych
21	White	Elite	Female	Mid	Econ	Black	LS	Female	Mid	Econ
22	White	Elite	Female	Mid	Psych	Black	LS	Female	Mid	Psych
23	White	Elite	Female	Low	Econ	Black	LS	Female	Low	Econ
24	White	Elite	Female	Low	Psych	Black	LS	Female	Low	Psych

Note: A1 = applicant 1, A2 = applicant 2, LS = less selective. These 24 pairs represent the total set of candidate pairs that applied to jobs across the three regions.

that required specialized degrees or training (e.g., nursing, engineering, etc.). The script saved the data into a text file and the HTML file for each job listing. This became the sampling frame for each region. In each sampling frame, I generated a random number for each job, ordered them, and kept the first 336 jobs to create my three samples across regions. With the jobs randomly ordered, I assigned pair IDs (see table 1) to each job and split the application order across pairs.

Once I matched jobs and candidates for a particular geographic region, I applied for 240 jobs (two candidates per job) in each home region (e.g., Boston and New York City for Harvard and UMass graduates) and 96 jobs in one of the two outside regions. I implemented a 24-hour delay between the first and second

applications to reduce the chance of employer discovery. In total, I applied for 1,008 jobs (2,016 data points). I then waited for 10 weeks after the submission of each application for employers to make decisions and respond to candidates before concluding the data-collection phase.

Descriptive Results

Table 2 shows descriptive statistics for the candidates by order of application. There is an attrition rate of 5.6 percent due to employers removing a job advertisement before one or both candidates could apply for the job. Of the 952 successful candidate pairs submitted, there are equal numbers of candidates across

Table 2. Applicant Descriptive Statistics

	Applicant 1		Applicant 2		Total	
	N	% (mean)	*N*	% (mean)	*N*	% (mean)
White	469	49.3%	483	50.7%	952	50.0%
Black	483	50.7%	469	49.3%	952	50.0%
Elite university	482	50.6%	470	49.4%	952	50.0%
Less selective university	470	49.4%	482	50.6%	952	50.0%
Male	475	49.9%	475	49.9%	950	49.9%
Female	477	50.1%	477	50.1%	954	50.1%
Upper class	322	33.8%	322	33.8%	644	33.8%
Middle class	309	32.5%	309	32.5%	618	32.5%
Lower class	321	33.7%	321	33.7%	642	33.7%
Region—Southeast	318	33.4%	318	33.4%	636	33.4%
Region—Northeast	320	33.6%	320	33.6%	640	33.6%
Region—West	314	33.0%	314	33.0%	628	33.0%
Home region	673	70.7%	673	70.7%	1346	70.7%
Out of home region	279	29.3%	279	29.3%	558	29.3%
Major—Economics	479	50.3%	479	50.3%	958	50.3%
Major—Psychology	473	49.7%	473	49.7%	946	49.7%
Response—E-mail	74	7.8%	67	7.0%	141	7.4%
Response—Phone	76	8.0%	80	8.4%	156	8.2%
Response—Both	32	3.4%	35	3.7%	67	3.5%
Response—Total (either e-mail or phone)	118	12.4%	112	11.8%	230	12.1%
Removed	56	5.6%	56	5.6%	112	5.6%
N	952	94.4%	952	94.4%	1904	94.4%

Note: Applicant 1 and 2 refers to the order of application to a job within a pair. Removed indicates attrition from the sample—an employer removed a job advertisement before one or both applicants could apply for the job.

race and college selectivity. The remaining variables differ between pairs, so some characteristics are not evenly divided due to attrition.

Employers responded to job applications from candidates in one of three ways: e-mail, phone, or both.[7] Employers used e-mail to solicit additional information or set up a time for a phone or in-person interview. When employers called candidates, they almost always requested an interview. Generally, e-mails were less urgent and represented an additional interim stage before a phone call (e.g., "Please fill out this questionnaire if you wish to still be considered for this position") while phone calls were more urgent and represented a more advanced stage in the process than e-mails (e.g., "We would love to hear back from you as soon as possible with a time that works best for you"). Occasionally, employers responded to both candidates with a generic e-mail that did not indicate a clear interest.[8] As table 2 shows, the average response rates were 7.4 percent by e-mail, 8.2 percent by phone, 3.5 percent by both, and 12.1 percent total.

Table 3 shows descriptive statistics for the job advertisements by application set. Set 1 refers to a black candidate with an elite degree and a white candidate with a less selective degree (Pair IDs 1–12 from table 1); set 2 refers to a white candidate with an elite degree and a black candidate with a less selective degree (Pair IDs 13–24 from table 1). Each job advertisement or employer received applications from only one pair, creating a different sample of jobs for each set. However, table 3 indicates that the different sets did not apply for significantly different types of jobs with respect to occupational category, listed salary ranges, or rate of attrition. The sample of jobs each set applied to are approximately 23 percent sales, 17–19 percent customer service, 15 percent administrative assistant, 9–10 percent analyst, 8–9 percent clerical, 5–6 percent human resources, 5 percent managerial, and 13–16 percent other categories. Set 1 applied for jobs with listed starting salary ranges averaging between $31,000 and $37,600, and set 2 applied for jobs with listed starting salary ranges averaging between $31,800 and $37,900. Finally, the attrition rates are similar; 6.2 percent of job advertisements for set 1 and 5.0 percent for set 2.

Methods of Analysis

For simple bivariate analyses, I use a two-tailed paired *t*-test to test for significant differences within pairs from the same sample (Kutner et al. 2004). However, to examine between-pair effects, I use a less efficient estimator because the sample and sample size vary between the two groups. The Welch's *t*-test is appropriate with two independent samples of unequal sample size and unequal variance (Kutner et al. 2004).

A logistic regression equation predicting odds ratios controls for all observed characteristics, returns estimates that are weighted based on the small differences due to attrition, and allows for cluster-corrected standard errors at the employer level:

$$\ln\left(\frac{\hat{p}}{1-\hat{p}}\right) = \alpha_i + \beta_1 CS_i + \beta_2 R_i + \beta_3 SC_i + \beta_4 G_i + \beta_5 M_i + \beta_6 RE_i + \beta_7 X_i. \quad (1)$$

Table 3. Job Advertisement Descriptive Statistics

	Set 1		Set 2		Difference	Total	
	N	% (mean)	*N*	% (mean)	*p*-value	*N*	% (mean)
Occupational category							
Administrative assistant	73	15.4%	72	15.0%	0.863	145	15.2%
Analyst	48	10.2%	45	9.4%	0.696	93	9.8%
Clerical	39	8.3%	43	9.0%	0.688	82	8.6%
Customer service	82	17.3%	91	19.0%	0.507	173	18.2%
Human resources	26	5.5%	31	6.5%	0.527	57	6.0%
Managerial	25	5.3%	24	5.0%	0.848	49	5.1%
Other—Kids	27	5.7%	21	4.4%	0.351	48	5.0%
Other—Physical	12	2.5%	13	2.7%	0.865	25	2.6%
Other	29	6.1%	28	5.9%	0.853	57	6.0%
Sales	112	23.7%	111	23.2%	0.854	223	23.4%
Listed salary—Low	141	$30,977	148	$31,790	0.438	289	$31,393
Listed salary—Mean	141	$34,306	148	$34,834	0.640	289	$34,576
Listed salary—High	141	$37,635	148	$37,879	0.855	289	$37,760
Removed	31	6.2%	25	5.0%	0.410	56	5.6%
N	473	93.9%	479	95.0%		952	94.4%

Note: Set 1 refers to black candidates with a degree from an elite university and white candidates with a degree from a less selective university (Pair IDs 1–12 in table 1); set 2 refers to white candidates with a degree from an elite university and black candidates with a degree from a less selective university (Pair IDs 13–24 in table 1). Difference indicates the *p*-value of a two-tailed *t*-test examining the difference in values between sets 1 and 2. Removed indicates attrition from the sample—an employer removed a job advertisement before one or both applicants could apply for the job.

In the equation above, α_i is the individual-level intercept; the β coefficients 1–6 represent the coefficients for college selectivity, race, social class, gender, college major, and region, respectively; and X_i represents a vector of control variables.

Among only those candidates who receive responses for jobs that include a listed salary range, I run OLS regression models to examine differences in these listed salaries:

$$Y_i = \alpha_i + \beta_1 CS_i + \beta_2 R_i + \beta_3 SC_i + \beta_4 G_i + \beta_5 M_i + \beta_6 RE_i + \beta_7 X_i + u_i + e_{ij}. \quad (2)$$

In the equation above, Y_i is one of three possible variables that capture information about the salary range: the lowest listed value in the range, the mean of the

range, or the highest listed value in the range. I run three separate regressions, one for each possible listed salary outcome variable.

Finally, among only those candidates who receive an employer response, I run logistic regression models predicting whether the response is for an analyst or managerial job versus all other jobs:

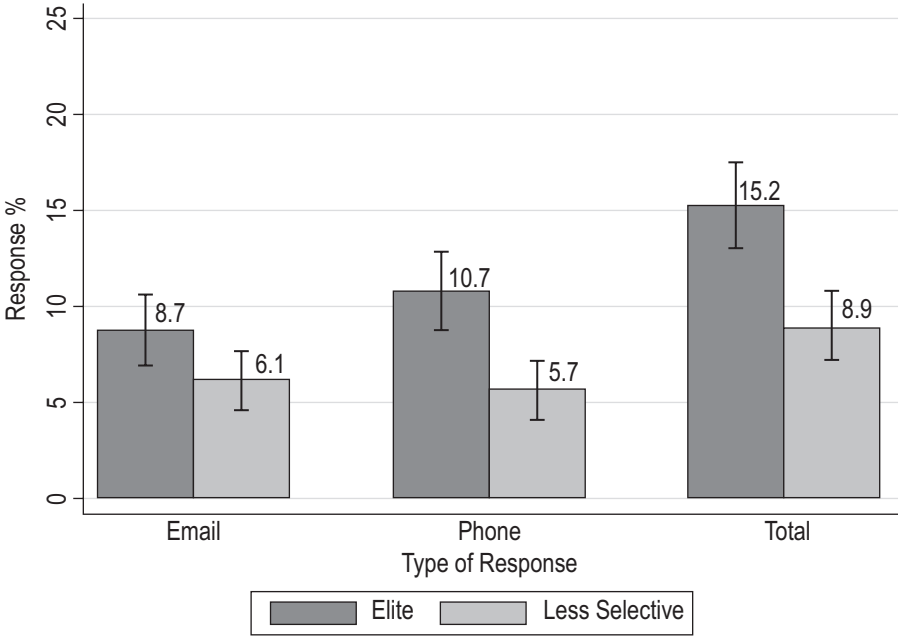
$$\ln\left(\frac{\hat{p}}{1-\hat{p}}\right) = \alpha_i + \beta_1 CS_i + \beta_2 R_i + \beta_3 SC_i + \beta_4 G_i + \beta_5 M_i + \beta_6 RE_i + \beta_7 X_i. \quad (3)$$

Results[9]

Employer Responses by College Selectivity and Race

The first two figures show the bivariate results of employer responses (e-mail, phone, and total response percentages) by the two main characteristics of interest: college selectivity and race.[10] Figure 1 shows that candidates with a degree from an elite university receive more e-mail responses than candidates with a degree from a less selective university at a rate of approximately 1.4 to 1 (8.7 versus 6.1 percent). This difference is larger when examining phone responses from employers: 1.9 to 1 (10.7 versus 5.7 percent). The results examining either an e-mail or phone response (total response) from employers show that

Figure 1. Employer responses by college selectivity



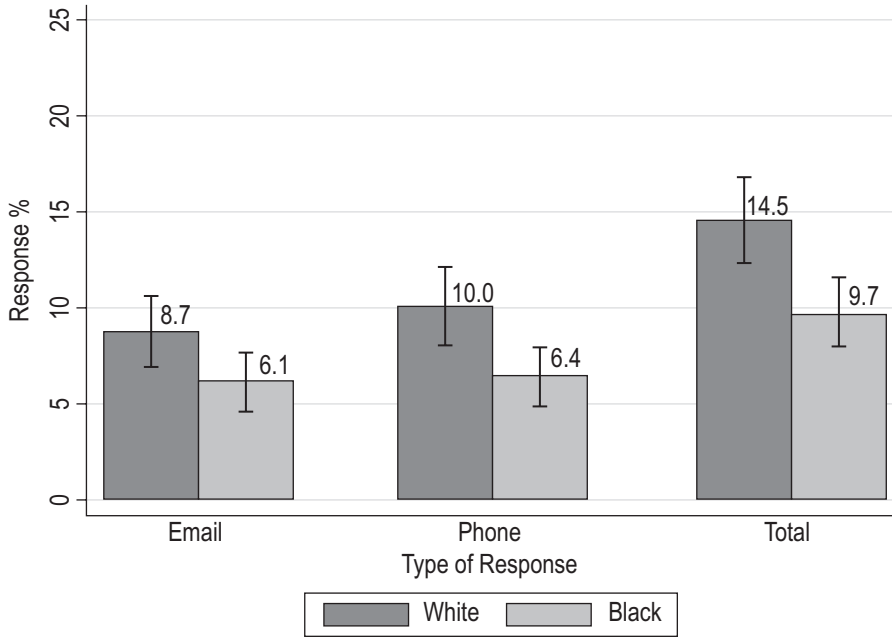
Note: The outer lines represent the 95 percent confidence interval using a two-tailed Welch's *t*-test.

candidates with a degree from an elite university are 1.7 times as likely to get any response as candidates with a degree from a less selective university (15.2 versus 8.9 percent). In all cases, a two-tailed Welch's *t*-test shows that the differences in means are statistically significant ($p < 0.05$ for e-mail; $p < 0.001$ for phone and total responses).

Figure 2 reports employer responses for white versus black candidates. White candidates receive more e-mail responses than black candidates at a rate of approximately 1.4 to 1 (8.7 versus 6.1 percent) and more phone responses at a rate of approximately 1.6 to 1 (10.0 versus 6.4 percent). For total responses from an employer, white candidates are 1.5 times as likely to get a response as black candidates (14.5 versus 9.7 percent). These results are significantly different between the two racial categories ($p < 0.05$ for e-mail; $p < 0.01$ for phone and total responses).

These results tentatively suggest that both educational credentials and race are important; both have strong relationships with the rate of employer responses. Due to the small differences in attrition across the two samples of job advertisements, it is important to examine logistic regressions predicting employer responses. The results of these models, shown in table 4, closely match those of the bivariate figures. Compared to whites, blacks are 62.8 percent as likely to receive any type of employer response. Candidates with a degree from an elite university are 184.1 percent as likely as candidates with a degree from a less selective university to receive any type of employer response.

Figure 2. Employer responses by race



Note: The outer lines represent the 95 percent confidence interval using a two-tailed Welch's *t*-test.

Table 4. Logistic Regressions Predicting Employer Response

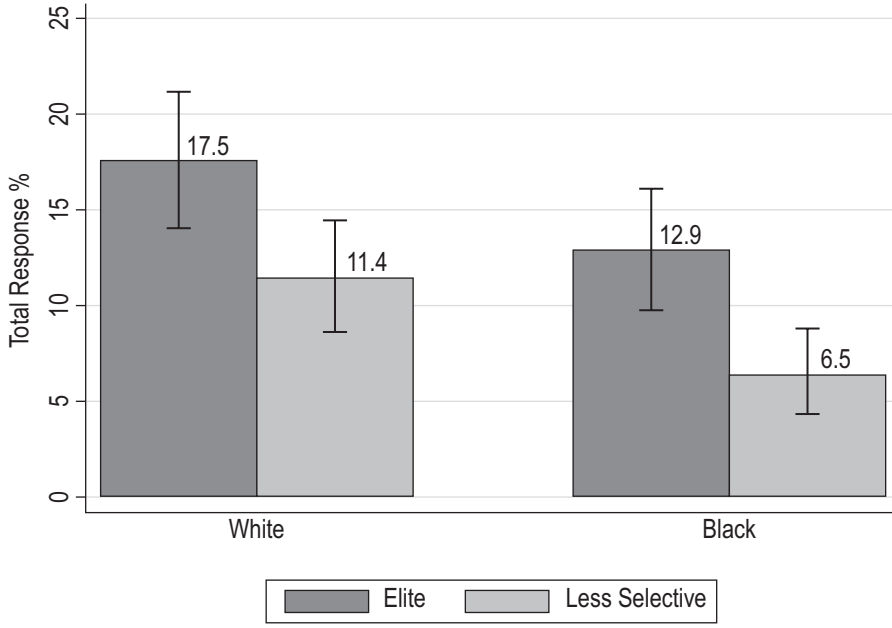
	E-mail	Phone	Total
Black (ref: White)	0.677**	0.616***	0.628***
	(0.086)	(0.090)	(0.071)
Elite (ref: Less selective)	1.472**	2.007***	1.841***
	(0.188)	(0.300)	(0.211)
Female (ref: Male)	0.923	0.864	0.956
	(0.200)	(0.166)	(0.161)
Lower-class (ref: Upper/Middle)	0.599*	0.560*	0.607*
	(0.150)	(0.132)	(0.120)
Major—Psychology (ref: Economics)	0.853	0.825	0.860
	(0.185)	(0.159)	(0.145)
Region—Northeast (ref: Southeast)	1.606†	1.412	1.475†
	(0.414)	(0.326)	(0.298)
Region—West	0.989	1.044	1.052
	(0.278)	(0.257)	(0.226)
Out of home region	0.881	1.045	1.015
	(0.211)	(0.221)	(0.186)
Application submission (2nd)	0.897	1.062	0.943
	(0.114)	(0.152)	(0.105)
Constant	0.093***	0.086***	0.135***
N	1904	1904	1904

Note: All completed cases are included. Regressions also control for résumé type, cover letter type, and employment history type. Odds ratios shown. Cluster-corrected (job-advertisement level) standard errors in parentheses.
*** $p < 0.001$ ** $p < 0.01$ * $p < 0.05$ † $p < 0.10$

Overall, these results suggest that employers strongly value a degree from an elite university but also discriminate against candidates with black names. An additional area of inquiry is how these variables work together. For instance, can black candidates close the gap with white candidates when they have a degree from an elite university compared to a degree from a less selective university?

In figure 3, I examine total employer responses across race and college selectivity. These results suggest a tiered pattern of responses: White candidates with a degree from an elite university have the highest response rate (17.5 percent), followed by black candidates with a degree from an elite university (12.9 percent) and white candidates with a degree from a less selective university (11.4 percent),[11] and finally black candidates with a degree from a less selective university have the lowest response rate (6.5 percent).[12] Thus, a white candidate with a degree from an elite university can expect an employer response for every six résumés submitted, while an equally qualified black candidate must submit

Figure 3. Employer responses by race and college selectivity



Note: The outer lines represent the 95 percent confidence interval using a two-tailed paired *t*-test. The differences between white candidates with a degree from an elite university and all other candidates are statistically significant ($p < 0.05$ for black candidates with a degree from an elite university; $p < 0.01$ for white candidates with a degree from a less selective university; $p < 0.001$ for black candidates with a degree from a less selective university). The differences between black candidates with a degree from a less selective university and all other candidates are statistically significant ($p < 0.01$ for white candidates with a degree from a less selective university; $p < 0.001$ for white candidates with a degree from an elite university and black candidates with a degree from an elite university).

eight résumés to receive a response; white candidates with a degree from a less selective university need to submit nine résumés to expect a response, while a similar black candidate needs to submit 15 résumés to receive a response.

In other logistic regression models (results available upon request), I explore potential interaction effects of race and educational credentials. In multiple model specifications, the interaction effect of black candidate and degree from an elite university is positive although never statistically significant. These results suggest that, compared to white candidates, black candidates do not gain more or less from a degree from an elite university over a degree from a less selective university.

Listed Salary Range of Jobs by College Selectivity and Race

Educational credentials and race affect employer response rates, but the effects extend beyond the number of responses a candidate receives. Candidates are sorted through a system that presents or restricts opportunities in multiple ways.

Two additional pieces of information from the job advertisements are the dependent variables in the following sections: the listed salary range and the occupational category of each job.

When employers post a job advertisement, they include a variety of information to attract job candidates. In 289 cases in the sample (30.4 percent of the job advertisements), employers included information about the salary range. As previously mentioned, I created three variables for listed salary: low, mean, and high values from each job advertisement (see table 3). Among those candidates who receive any type of response from an employer, 93 cases come from a job advertisement with a listed salary range (40.4 percent of the responses).[13]

Table 5 reports the effects of candidate and application characteristics on these salary variables from three OLS regressions.[14] Using the low-salary variable

Table 5. OLS Regressions Predicting Listed Salary Range of Job Advertisements

	Low	Mean	High
Black (ref: White)	–3071.13**	–2922.83*	–2774.53
	(1125.15)	(1432.55)	(1887.71)
Elite (ref: Less selective)	2601.45*	3240.31*	3879.17*
	(1291.51)	(1407.58)	(1627.26)
Female (ref: Male)	–1405.89	–1302.45	–1199.01
	(1730.20)	(1956.30)	(2393.46)
Lower-class (ref: Upper/Middle)	–30.75	–234.40	–438.06
	(1833.06)	(1882.52)	(2206.54)
Major—Psychology (ref: Economics)	–2851.72	–3173.60	–3495.48
	(1935.13)	(2095.53)	(2471.90)
Region—Northeast (ref: Southeast)	4759.56*	6711.64**	8663.72**
	(2199.89)	(2207.62)	(2600.56)
Region—West	5469.73*	6971.03*	8472.33*
	(2447.56)	(2728.59)	(3231.61)
Out of home region	998.76	540.12	81.48
	(2128.87)	(2134.94)	(2422.91)
Application submission (2nd)	75.66	931.68	1787.70
	(1183.06)	(1274.26)	(1482.12)
Both applicants received response	–1535.42	–820.04	–104.66
	(2210.75)	(2335.30)	(2756.79)
Constant	28994.00***	29741.61***	30489.22***
N	93	93	93

Note: Cases with no listed salary range or no employer response are dropped. Regressions also control for occupation type, résumé type, cover letter type, and employment history type. Cluster-corrected (job-advertisement level) standard errors in parentheses.
*** $p < 0.001$ ** $p < 0.01$ * $p < 0.05$

(model 1), I find that black candidates receive responses for jobs that have a listed salary $3,071 lower than white candidates. Candidates with a degree from an elite university receive responses for jobs that have a listed salary $2,601 higher than candidates with a degree from a less selective university. In models 2 and 3, I find similar results when the outcome is mean or high salary, but the coefficient for black candidate is not significant in model 3.

The results from table 5 suggest that black candidates face a double penalty of discrimination in the labor market. Not only are they less likely to receive a response than white candidates, but the jobs that are potentially available to them are listed with ~10 percent lower starting salary ranges. Conversely, candidates with a degree from an elite university get a double bonus from their educational credentials in the labor market in the forms of more responses and 8–13 percent higher listed salary ranges.

Occupation Type by College Selectivity and Race

One final way to analyze labor-market opportunities is to examine the differences in occupational categories of job advertisements for which candidates receive responses. Although there are a number of ways to quantify the "best" occupational categories among those in the sample, I use two criteria: educational credential requirements and listed salary range. All of the job advertisements in the sample require a college degree, but two occupational categories more consistently list this requirement than others: analyst and managerial. Moreover, these two occupational categories have higher average listed salary ranges than others.[15] I deem these two occupational categories "high value" and compare responses against all other categories. Of the 952 job advertisements, 142 (14.9 percent) are high-value occupations.

I run logistic regression models predicting whether an employer response is for a high-value occupation or not using a sample that includes only candidates who receive any type of employer response. The first two models of table 6 show the results from these regressions. In the first model, I find that black candidates are 56.1 percent as likely as white candidates to receive a response for a high-value occupation versus other occupations. No other variables of note are statistically significant, including the coefficient for a degree from an elite university. In model 2, I control for whether both applicants received a response and find no significant changes in the effects across models. In sum, one out of every four responses for a white candidate was for a high-value occupation, while one out of every six responses for a black candidate was for a high-value occupation.

As a final test, I run logistic regressions predicting whether an employer response is for a customer-service occupation (18.2 percent of the sample) or not. Only candidates who receive any type of employer response are included. The third and fourth models of table 6 show the results from these regressions. These two models show that candidates with a degree from an elite university are 53–56 percent as likely as candidates with a degree from a less selective university to receive an employer response for a customer-service job. Race and all other variables are not statistically significant in these models.[16]

Table 6. Logistic Regressions Predicting Type of Occupation Response

	High value (1)	High value (2)	Customer service (1)	Customer service (2)
Black (ref: White)	0.561*	0.528**	1.053	1.011
	(0.147)	(0.130)	(0.290)	(0.268)
Elite (ref: Less selective)	1.194	1.311	0.533*	0.559*
	(0.319)	(0.333)	(0.137)	(0.151)
Female (ref: Male)	1.263	1.259	1.268	1.284
	(0.492)	(0.489)	(0.590)	(0.600)
Lower-class (ref: Upper/Middle)	0.989	0.960	1.431	1.396
	(0.458)	(0.445)	(0.932)	(0.931)
Major—Psychology (ref: Economics)	0.610	0.588	0.741	0.725
	(0.264)	(0.257)	(0.264)	(0.344)
Region—Northeast (ref: Southeast)	1.635	1.583	1.108	1.096
	(0.746)	(0.717)	(0.694)	(0.683)
Region—West	0.536	0.525	1.546	1.533
	(0.304)	(0.300)	(1.014)	(1.003)
Out of home region	0.384+	0.380†	1.198	1.217
	(0.188)	(0.189)	(0.543)	(0.552)
Application submission (2nd)	0.852	0.835	1.124	1.126
	(0.222)	(0.218)	(0.398)	(0.400)
Both applicants received response		1.356		1.189
		(0.566)		(0.550)
Constant	0.439†	0.386†	0.115***	0.105***
N	230	230	230	230

Note: Cases with no employer response are dropped. Models for high-value occupations compare the likelihood of a response for managerial or analyst jobs versus all others. Models for customer-service occupation compare the likelihood of a response for customer-service jobs versus all others. Regressions also control for résumé type, cover letter type, and employment history type. Odds ratios shown. Cluster-corrected (job-advertisement level) standard errors in parentheses.
*** $p < 0.001$ ** $p < 0.01$ * $p < 0.05$ † $p < 0.10$

Employer Sentiment about Elite Universities

Beyond employer contact with candidates, employers also exchanged internal e-mails among themselves. In 13 cases, employers accidentally included candidates on correspondence that was intended for other employees of the company, presumably in the human resources department. Most of these e-mails were forwarded versions of the brief e-mail with limited candidate information that is sent to employers notifying them of a new application. Typically, the sender included a sentence indicating that the intended recipient should examine

a particular candidate. In five cases, these messages, in an excited or urgent tone, explicitly mentioned the institution from which a candidate held a degree:

1. "ok, she had me at Stanford. Eat our dust [competitor]."
   —referencing white female applicant
2. "forget the others: HARVARD GRAD"
   —referencing white male applicant
3. "Kids coming out of Duke are by far the most capable. Push this one to the top of the list."
   —referencing black female applicant
4. "Harvard guy wants to work for us!"
   —referencing white male applicant
5. "We had a real bright app pop up this morning—Stanford grad with great credentials."
   —referencing white male applicant

These accidental e-mails provide some limited qualitative insight into the importance employers place on a degree from an elite university. In zero of the 13 cases did an employer explicitly mention one of the less selective universities, race, gender, or any other characteristics. Thus, it is likely that the signal of an elite credential is at the forefront of employers' minds.

Discussion

As higher-education credentials become more common in the labor market, an examination of labor-market outcomes among individuals with a college degree is critical to understanding education's role in reducing or exacerbating inequalities. One goal of this study was to examine the effects of college selectivity on early stage job-market outcomes for recent college graduates to add clarity to the debate on the importance of qualitative aspects of human capital. The results suggest that a degree from an elite university increases the likelihood that an employer will respond to a job application with an offer for an interview, and those responses are for jobs with higher listed salaries. Human capital, operationalized as college selectivity, clearly matters in the job market.

Scholars have questioned whether racial economic inequality is the product of racial heterogeneity in human capital or racial discrimination. However, data limitations have precluded examinations of qualitative differences in human capital among the college educated. Since whites are more likely than blacks to have a degree from an elite university (Alon and Tienda 2007; Carnevale and Rose 2003), the results of this study suggest that at least part of racial economic inequality can be attributed to differences in educational credentials.

Yet, these results suggest that discrimination also plays a large role in employer decisions. Just as audit studies have uncovered racial discrimination in the low-wage labor market (Pager 2003; Pager, Western, and Bonikowski

2009), I find significant evidence of racial discrimination in a section of the labor market that demands highly educated employees. The opportunities that arise upon graduation from an elite university are not equal between whites and blacks. Although there is clearly a premium to a degree from an elite university over a less selective university for both white and black candidates, black candidates still lag behind white candidates in employer responses. Additionally, when black candidates receive responses, they are for jobs with lower listed salaries and less often for managerial or analyst jobs. Thus, even if we assume that black candidates could simply work harder and apply to many more jobs than their white counterparts, inequality would still pervade the labor market.

Surprisingly, there is no interaction effect between race and college selectivity; the black-white gap in employment outcomes is similar for both types of degrees. The results presented here suggest a different picture than the romanticized idea that education is the great equalizer. On a number of quantitative and qualitative aspects, blacks are at a disadvantage compared to their white peers. While both whites and blacks may be able to alter their educational trajectories to improve the name of the institution on their college degree, blacks can never shed the penalty of race and catch up to whites.

This research has important implications for the current debate regarding affirmative action in higher education. Using data prior to statewide bans on affirmative action, researchers have estimated that minority enrollment at highly selective public universities nationwide would drop without affirmative-action policies (Bowen and Bok 1998; Espenshade and Chung 2005). Other studies have found that after California, Texas, and Washington implemented bans on affirmative action, state university systems began to look more racially, stratified with whites and Asians at the highly selective flagship universities and blacks and Hispanics at less selective universities (Brown and Hirschman 2006; Card and Krueger 2005; Long 2007). Fully eliminating race-based affirmative action in higher education would likely guarantee that fewer black students would attend and graduate from highly selective public universities and thus lead to increased racial inequality in employment and wages between whites and blacks.

Unfortunately, one significant shortcoming of audit studies is the inability to examine the entire employment process. In this case, I cannot see how the employer sorting process might play out through the interview and job-offer stage. It is unclear once employers meet a candidate face-to-face how they might respond to a candidate's race with both offers of employment and salary. Likely, some employers do not pick up on the racial cues from an individual's name, and the levels of discrimination reported here might be underestimated. This study, however, presents a clear picture of the opportunity structure for candidates in the initial stages.

It is also unclear how much the use of the computerized audit method and an online national job-search website affects the results. The overall effects of college selectivity estimated here are likely conservative; previous research finds that some benefits of attending a highly selective institution come through

the social capital and networks made available from those institutions (Rivera 2011). These effects are not captured through an audit, as applicants apply with no prior contact through such networks. Social capital may not only increase any main effects of college selectivity but also potentially exacerbate any racial differences. However, Dale and Krueger (2011) suggest that social capital might be the reason why they find positive effects of college selectivity for minorities and low-income students in their survey data. Future research should explore these possibilities.

Alternatively, if employers using the website do not often see candidates with a degree from an elite university in their applicant pool, these results may be overstated compared to the effect of college selectivity across all hiring processes. Two studies suggest that, at the very least, it is a common practice for both employers and job seekers to use the Internet to search for employment opportunities. First, a recent survey of companies found that 25 percent of new hires came from national job-search websites and nearly all surveyed companies attributed at least one hire in 2010 to the website used in this audit (Crispin and Mehler 2011). Additionally, data from 2006 found that 62 percent of individuals between 18 and 28 years old used the Internet for job searches, a figure that had almost certainly increased by the time of this data collection (Brown 2008). It is unclear if there are differences by college selectivity in the likelihood of using the Internet for job search; no data to fully adjudicate this question seem to exist.

Another limitation of this study is that I cannot attribute the effect of educational credentials to a specific mechanism, whether human or cultural capital. As stated above, social capital as a mechanism has been effectively ruled out. In most cases, employers privilege candidates with a degree from an elite university, as evidenced by the quantitative results and qualitative e-mail responses, but it is unclear if employers do so because they believe these candidates have obtained superior knowledge and skills or because they believe these candidates come from the proper social background. However, employers are also less likely to contact candidates with a degree from an elite university for customer-service jobs, which suggests that employers may have concerns about job mismatch and overqualified workers. Future research could gain traction on these mechanisms with more in-depth qualitative analysis (see Rivera [2012] for one such study in the context of elite firms).

A final point is that this study is somewhat circumscribed by time, location, and the chosen set of universities, so it is difficult to compare this study with prior work on educational credentials in the labor market. Although the results differ from some of the most methodologically advanced survey research on college selectivity, prior research has focused on the employment outcomes of older cohorts of college graduates later in their careers. Both time period and age might explain the differences in findings, but we cannot be certain whether *qualitative* differences in educational credentials matter more now than in previous years because of *quantitative* changes in educational credentials, or if qualitative aspects of educational credentials simply matter less later in an individual's career. Moreover, differences in the measurement of outcomes

could be to blame; research on how job interviews translate to actual job offers and wages is limited (although see Petersen, Saporta, and Seidel 2000; Barron, Bishop, and Dunkelberg 1985). Finally, during the data collection, labor-market conditions were tight and unemployment was still somewhat high nationwide, potentially giving employers more power and thus providing a high-end estimation of effects.

This research addresses a number of gaps in our knowledge concerning educational credentials and racial inequality and raises a number of important issues. The results suggest that other scholars should be more cautious when measuring college education as one category of a variable. Although this research tests employment outcomes only at the entry-level stage, college selectivity may be important at other stages of employment and for other outcomes. Furthermore, education, even an elite education, does not erase racial inequality during the preliminary stages of the employment process. Other research finds that overall racial inequality in the labor market increases over the career and is typically lowest at the point of entry into the labor market, suggesting that future research should examine whether graduating from an elite university may help attenuate or exacerbate inequalities over time (Tomaskovic-Devey, Thomas, and Johnson 2005).

Overall, this research contributes to our theoretical and empirical understanding of the possibilities and limits of education in reducing social inequality. Randall Collins was not wrong in 1979 when he described education as "the most important determinant yet discovered of how far one will go in today's world" (3). Since then, young black men and women pursuing the American Dream have gained an increasingly larger share of college degrees in the educational credentials arms race (Gaddis 2013). However, education apparently has its limits because even a Harvard degree cannot make DaQuan as enticing as Charlie to employers.

Notes

1. The exact National University Rankings were (1) Harvard, (5) Stanford, (10) Duke, (94) UMass–Amherst, (97) UC–Riverside, and (190) UNC–Greensboro.
2. Using survey experiments, I find that individuals accurately classify race for these particular names (see Gaddis 2014).
3. One additional potential human-capital difference is GPA. Each résumé includes a GPA based on the requirements listed for graduation with honors (cum laude) for each school and does not vary within school.
4. Additionally, simply sending more than two applications to a single employer compounds this problem and increases the amount of time a single employer must spend reviewing applications, raising additional ethical concerns. Experiment discovery by employers introduces other ethical concerns, such as termination or other economic harm of individual employees involved in the audit (see Gaddis 2013).
5. Cover letter type, résumé template, employment history, and application order also vary equally across pairs.
6. Audit studies often do not discuss the differences in these effects. Within-pair effects are directly observed, but between-pair effects are indirectly observed.

7. Additionally, I calculate total response rates (either e-mail or phone).
8. In these cases, I sent a third test application with credentials that did not meet the qualifications of the posted job. If the third candidate received an identical response, I removed any employer response in the data.
9. Although response rates vary somewhat by social class, gender, college major, and region, detailed examination of those results is beyond the scope of this article. Both the design of the audit method and the logistic regression models control for these characteristics to avoid biased coefficients.
10. The total response percentage does not equal e-mail plus phone because some employers responded by both e-mail and phone.
11. These two categories are never statistically different across any employer response type.
12. The differences between white candidates with a degree from an elite university and all other candidates are statistically significant ($p < 0.05$ for black candidates with a degree from an elite university; $p < 0.01$ for white candidates with a degree from a less selective university; $p < 0.001$ for black candidates with a degree from a less selective university). The differences between black candidates with a degree from a less selective university and all other candidates are statistically significant ($p < 0.01$ for white candidates with a degree from a less selective university; $p < 0.001$ for white candidates with a degree from an elite university and black candidates with a degree from an elite university).
13. I find no significant differences in region or occupation type between job advertisements that include salary information and those that do not (results available upon request).
14. The models presented here include dummy variables for the occupational categories of each job because both salaries and responses are correlated with occupational categories. Without this control, the coefficients for black candidate are larger in size and the coefficients for candidate with a degree from an elite university remain largely unchanged (results available upon request). This suggests that the type of job for which black candidates receive responses accounts for some of the difference in listed salaries. However, candidates with a degree from an elite university appear to receive responses for higher-salary jobs regardless of the job type.
15. Although sales also has a higher than average listed salary range, the range has significant variation.
16. Moss and Tilly (2001) suggest that blacks may be at a disadvantage for jobs involving direct customer interaction. Although I find no evidence to support this claim, the job advertisements often make it difficult to distinguish between face-to-face customer interaction and other types of interaction, which may make this a somewhat noisy measure.

About the Author

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