Precarious Work, Race, Space and Labor Market Stratification in the New Economy.

By

Quan Dang Hien Mai

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Approved:

Daniel B. Cornfield, Ph.D.
Larry W. Isaac, Ph.D.
David J. Hess, Ph.D.
Arne L. Kalleberg, Ph.D.
David S. Pedulla, Ph.D.

To my mother, Dang Hoang Phuoc Hien,
To my father, Mai Quynh Nam,
And to my dear wife, Mai-Linh T. Hoang,

You know why…

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Chapter 1: Introduction

The changing contexts of labor markets

The U.S. labor market has undergone several fundamental transformations in recent decades. The new economy is characterized by a set of norms and relationships that mark a dramatic shift from the employment conditions seen in the industrial period. In terms of employment relations, in the age of economic restructuring and the erosion of internal labor markets, work becomes more contingent, insecure and precarious. With respect to racial relations, the demographic composition of the labor force is changing rapidly with the integration of racial and ethnic minorities into the workplace. Nowhere are these changes more apparent than in urban labor markets. Cities are key sites where the dynamics of employment precarization and racialized economic inequality simultaneously manifest.

The changing contexts of the labor market serve as a launching pad for this research. The dissertation is motivated by the interplay of the two important sets of changes: the precarization of the economy and its labor market consequences for jobseekers, along with the diversification of the workforce and racialized inequality in opportunity structures. The research also aims to contextualize these major changes in the urban labor markets, which are themselves confronted by important transfigurations both in terms of industrial structure and demographic composition. By doing so, this research systematically analyzes how hiring practices operate in a post-bureaucratic society characterized by an ethnically diverse workforce, and how such practices are shaped by demographic and industrial conditions of the urban sites in which they are embedded. In terms of employment relations, the traditional 9-to-5 job characterized by a long-term contract and benefits is becoming much less normative. As part of the societal shift to the on-demand economy, the gig economy, or the 1099-s economy, millions of workers are joining

the precarious workforce (Kalleberg 2000a, Kalleberg 2009). Scholars of different disciplines linked a number of changes in the American socio-economic landscape to the rise of nonstandard work. Among the possible causes are weakened labor unions, the advent of neoliberalism and globalization, technological change and the hollowing out of middle-skill jobs, changes in labor law administered by courts and state legislatures to facilitate the rise of labor market intermediaries, and the rise of the discourse of individualism and personal responsibility (Acemoglu and Autor 2011, Cappelli 2001, Gonos 1997, Kalleberg 2011, Katz and Kearney 2006, Miles 2000, Stone 2006, Wallerstein and Western 2000). While the relative importance of these factors in shaping the rise of precarious work in general and freelancing in particular remains a matter of debate, the fact is that this emerging workforce is growing rapidly and contributing substantially to the American economy. The National Survey of the New Workforce (NSNW) – a study commissioned by the Freelancers Union – provides some astounding numbers. Fifty-three million Americans – representing 34% of the total workforce that brings an annual total of $715 billion to the national economy – have "engaged in supplemental, temporary, or project – or contract-based work in the past 12 months" (Union and Elance 2015). This definition includes temporary-help workers, "moonlighters"[1] and independent contractors. Independent contractors, or freelancers, make up an important part of these three groups. According to the same survey, as of 2015, 21.1 million workers are full-time independent contractors – a 2.5-fold increase from 8.5 million in 1997 (Cohany 1998a). This total is equal to the combined population of the following 16 states and the District of Columbia: Wyoming, Vermont, Alaska, North Dakota, South Dakota, Delaware, Montana, Rhode Island, Maine, New Hampshire, Hawaii, Idaho, West Virginia, Nebraska, New Mexico, and Nevada. Some have even

[1] Moonlighters are workers who engage in temporary and project and contract-based work, in addition to their full-time jobs, mostly to receive supplemental side income.

labeled this drastic change in the workforce the "Industrial Revolution of our time" (Horowitz 2015:1).

Reflecting broader demographic trends in U.S. society, the workforce is also becoming more racially and ethnically diverse. In 2005, non-Hispanic whites still represented a large share of the workforce (70 percent). However, that share has been declining and this trend is projected to continue over the next 30 years. Hispanics and Asians are the fastest growing ethnic groups in the workforce. The Bureau of Labor Statistics projects that Hispanics will constitute a quarter of the workforce by 2050. Asians are projected to continue the upward trend and account for 8% of the labor force in 2050, a two-fold increase from 4 percent in 2005. African-Americans' share of the workforce is also predicted to grow to 14% in 2050 (Lee and Mather 2008, Toossi 2002). In response to the growth of minority share of minorities in the workforce, issues of 'workplace diversity' and 'diversity management' adopt an increasingly important role in the organizational discourses (Konrad 2003, Ogbonna and Harris 2006).

Urban labor markets are a key geographical site in which the intersection of changes in employment relations and racial relations is manifested. As a consequence of the post-industrial employment transition, many U.S cities are seeing an increase in non-standard work and self-employment (Greenberg and Lewis 2017). Workers are moving "away from traditional corporate communities, working class centers, and even many Sunbelt regions" to generate a new geography of creativity (Florida 2003:8-9). At the same time, as cities become more diverse, the concentration of minorities and its labor market consequences have attracted substantial attention from scholars who are concerned with the implications of diverse cities on the shaping of local inequality regimes and spatial dimension of stratification (Beggs et al. 1997, Cohen 1998, Huffman and Cohen 2004, McCall 2001b).

The precarization of work, the diversification of the workforce, and changing urban labor markets represent important trends that characterize the transformation of the U.S. labor markets in the post-industrial era. How do these important structural changes intersect to generate new forms of labor market stratification in the new economy? The following section provides a broad overview of the sociological literature on the topic and identifies the gaps that motivate this dissertation.

Gaps in the literature

The literature on the shifting nature of the labor market highlights a higher degree of fluidity between modes of employment, as job-hopping becomes more normative, career tracks more volatile, and employment more uncertain. Important works in the literature have addressed the questions of how workers transition out of traditional modes of employment to the precarious workforce. They have also examined how these individuals have adapted to the changing labor market's norms while operating in the new economy as temporary workers or freelancers (Barley and Kunda 2006, McRobbie 2016, Osnowitz 2010, Smith 2002). The flip-side of that process - what are barriers and opportunities when workers attempt to transition out of precarity and back into full-time employment – received less scholarly attention. The studies that have addressed the penalties facing non-standard workers as they attempt to reintegrate themselves into permanent organizational careers have focused on other segments of the non-standard workforce, such as part-time and temporary workers (Pedulla 2016b). The literature on the U.S. labor market thus overlooks the labor market consequences associated with freelancing. This is a pressing issue because from the demand side, large numbers of employers are hiring from the external labor market and from the supply side, a significant portion of the freelancers wish to obtain more secure employment, partly due to the inherent precarious nature of this mode of employment.

Race and ethnicity represent other key axes of stratification in the U.S labor market. Due to its methodological advantages in detecting discrimination in hiring, audit and correspondence studies dominate the empirical literature on race- and ethnic- based discrimination that occurs at the hiring interface in the labor market. The Black-White gap in the likelihood of getting a job interview, plays a prominent role in this literature. Field experiments consistently report severe discrimination against Black applicants. The results remain robust, whether race is studied separately (Bertrand and Mullainathan 2004) or in conjunction with other conditions such as criminal history record (Pager 2003), educational prestige (Gaddis 2014), or employment history (Pedulla 2018b). A recent meta-analysis of the experimental studies indicates that the levels of discrimination against Black jobseekers has not changed since 1989 (Quillian et al. 2017). Compared to the Black-White gap, the Latino-White gap has received less attention. Audit studies that analyze this racial gap found evidence of discrimination against Latinos, but Latinos are preferred candidates, compared to otherwise similar Black jobseekers (Kenney and Wissoker 1994, Pager et al. 2009a). The Asian-White gap in hiring has been severely understudied. While the labor market outcome gaps between Blacks and Whites – and Hispanics, to a lesser extent – have been well-documented, little is known about how Asians might be disadvantaged at the hiring interface, compared to Whites. The only audit study analyzing the Asian-White gap has been conducted in the Canadian labor market (Oreopoulos 2011).

With respect to urban contexts, this dissertation is concerned with [1] the demographic and [2] the industry composition of urban labor markets, specifically with their roles in shaping the severity of hiring discrimination that minority workers and unemployed workers encounter. How do urban demographic contexts shape the dynamics of labor market discrimination that minorities face? A long line of empirical research linking minority concentration to various

measures of socioeconomic inequality consistently shows that percent Black in urban areas results in worsened outcomes for Blacks relative to Whites with respect to earnings (Cohen 2001, Frisbie and Neidert 1977, Huffman and Cohen 2004, Tienda and Lii 1987), poverty (Tomaskovic-Devey and Roscigno 1996), occupational segregation (Huffman and Cohen 2004, Semyonov et al. 2000), and labor force attachment (D'Amico and Maxwell 1995, McCreary et al. 1989). Hiring, an outcome that operates at another stage in the process of labor market stratification, remains understudied in this literature. It remains unclear if minority concentration has the same effects on minorities' likelihood of getting hired, as it does on other labor market outcomes.

While the questions presented in the previous section on urban context is concerned with the racially marginalized groups, the question in this section is concerned with workers who do not have a seamless work history. Specifically, the second area of inquiry on urban context asks: how do unemployed jobseekers fare in the context of an entrepreneurial city? Empirical work using survey data and experimental data consistently show the enduring negative consequences of an unemployment spell (Eriksson and Rooth 2014, Ghayad 2013, Pedulla 2018b, Ruhm 1991, Stevens 1997), and outlines mechanisms to explain the "scarring effect" of unemployment (Gibbons and Katz 1991, Lockwood 1991, Oberholzer-Gee 2008, Vishwanath 1989). Scholars have recently attempted to analyze how the unemployment experience is shaped by the institutional and economic labor market context (Sharone 2013). They have found that the adverse outcomes associated with unemployment are mitigated by generous unemployment insurance programs or by strict labor market regulations, and are intensified in tight labor markets (Gangl 2006, Kroft et al. 2013). While the role of welfare systems and unemployment rates have been analyzed as contextual factors shaping unemployment, the prevalence of self-

employment – a factor that constitutes a crucial feature of a labor market – remains understudied in this literature. Self-employment measures the prevalence of entrepreneurial activities in a market, and variation in this measure could shape the parameters on which labor market decisions made by both the jobseekers and the employers are based. It is possible that variation in self-employment rates across urban labor markets affects the degree to which unemployed workers are discriminated against at the hiring interface.

Outline of the dissertation

This dissertation is theoretically motivated by the aforementioned gaps in the literature. It focuses on three major themes - precarious work, race, and space - and how these themes intersect to shape discriminatory behaviors at the hiring interface in the new economy. The chapters adopt a kaleidoscopic view of the three themes: Chapter 2 focuses on precarious work and race, Chapter 3 on race and space, and chapter 4 on work and space.

Chapter 2 asks the following question: how do workers' non-standard employment histories intersect with their racial and ethnic identities to create stratified outcomes at the hiring interface? The chapter assesses the likelihood of freelancing jobseekers getting invited for a job interview compared to unemployed and full-time candidates. This study also examines whether the labor market consequences associated with a history of freelancing are equally distributed across workers of different racial/ethnic groups. Empirically, this chapter presents results from an original large-scale field experiment that involves submitting 12,000 fictitious applications to actual job postings in 50 U.S cities. The resumes were manipulated along two axes: workers' employment histories (full-time, freelance, unemployed) and racial/ethnic identities (White, Asian, Latino, Black).

Chapter 3 explores how labor market opportunity structures for minorities are affected by the demographic composition of the urban labor markets in which they operate. Theoretically, the chapter synthesizes two important branches of literature on labor market stratification that developed and operated independently of each other. The experimental literature on stratification in hiring is adept at detecting and quantifying measures of discrimination, but overlooks the contexts in which discrimination takes place. The broad quantitative body of work on the positive association between minority concentration and increased labor market inequality is widely known as the 'visibility-discrimination' literature. This literature provides an excellent theoretical tool to study the impact of the demographic context of urban labor markets, but it lacks the methodological tool to derive causally valid measures of racial- and ethnic-based bias in hiring. Asians and Latinos are understudied in both literatures. Empirically, this chapter relies on the same original field experiment to derive various minority-White callback gaps, and to analyze how such gaps can be explained by minority concentration in the cities in the sample.

The focus of Chapter 4 is on how the prevalence of self-employment in an urban labor market complicates the labor market consequences for a marginalized group of workers– unemployed jobseekers. Drawing from both 'signaling' and the 'queuing' theories, this chapter offers a multi-level theoretical argument: unemployment generates adverse outcomes for jobseekers generally, but such outcomes are exacerbated in cities with high rates of self-employment. From the 'signaling' perspectives, employers could punish unemployed jobseekers for not seeking alternative forms of work in labor markets where it is common to do so. From the 'queuing' perspective, the potential availability of self-employed jobseekers might incentivize employers to relegate unemployed applicants to lower positions in the job queue. Empirically, this chapter uses two data sources. The primary empirical base comes from the original field

experiment, and the secondary one comes from a panel of 51 U.S states (including Washington D.C) for the 19-year period from 1997-2015.

Theoretical and Empirical Contributions

This dissertation makes several theoretical contributions. Chapter 2 addresses the understudied questions about labor market barriers that nonstandard workers face when they transition back to the full-time workforce. This chapter analyzes how this barrier operates in the case of freelancers – a segment frequently overlooked in the precarious work literature. It also presents novel insights on how the consequences of freelancing vary in important ways across four of the large racial/ethnic groups in the United States. Two of these groups (Asians and Latinos – to a lesser extent) are consistently overlooked in the literature on hiring inequality. Chapter 3 synthesizes two separate but related branches of literature. It is the first study to explore how demographic concentration affects minorities hiring outcomes in an urban labor market. Chapter 4 incorporates two bodies of theoretical literature to provide a novel theoretical argument that links labor market-level self-employment to individual-level unemployment outcomes.

In addition to the theoretical innovations, the three chapters presented in this dissertation also contain important methodological contributions. The field experiment described in this research constitutes an important empirical expansion. The large empirical literature using audit and correspondence studies makes major sociological contributions to the understanding of how discrimination occurs at the hiring stage and is becoming more popular as a sociological mode of inquiry into labor market stratification generally. However, like any other method, this approach still has several limitations that should be noted. First, despite the large number of freelancers in the new economy and the important role this segment plays in the non-standard workforce, no audit study has included freelancers in its design. Second, Asians and Asian-Americans remain

persistently understudied in the audit literature. Third, audit studies typically undertheorize urban contexts, since the experiments are carried out in a relatively small number of labor markets. The experimental design of this dissertation simultaneously addresses these three shortcomings. Motivated by both the theoretical and methodological gaps, the experiment includes workers with freelancing experience, incorporates Asians into the same design with three other racial/ethnic groups, and submits fictitious resumes to 50 cities. These methodological contributions are consistent with the changing contexts of the modern labor market that characterized the historical moment in which this dissertation situates itself. By including freelancers, this study contributes to a better understanding of labor market consequences associated with an increasingly heterogeneous precarious workforce. Since it includes Asians with Whites, Latinos, and Blacks, this design improves upon existing studies by reflecting the demographic changes that have been observed in the labor market. Finally, by expanding the scope of extant studies to include 50 cities, the experiment takes context seriously and allows stratified outcomes to be situated in the milieus of urban labor markets.

The dissertation proceeds with three separate but interrelated empirical chapters, followed by a conclusion in Chapter 5. The conclusion offers a summary of the findings, discusses the theoretical and policy implications of the research, and outlines directions for future studies.

Chapter 2: Energetic Entrepreneurs or Failed Mercenaries: The Racialized Labor Market Consequences of Freelancing in the New Economy

Introduction

The substantial changes that the American labor market has undergone in the last 40 years complicate the system of stratification in contemporary society. In terms of employment relations, jobs are becoming more precarious and career tracks more flexible. With respect to racial relations, the issue of workplace diversity assumes a central position as the workforce becomes increasingly multi-ethnic. These important transformations of the market produce opportunities for sociologists to explore how these broad changes conjointly create social contexts for the emergence of new dynamics of social inequality. This paper is concerned with the question of how jobseekers' employment histories and racial identities intersect to produce new norms of labor market stratification. This question is subsumed under a broader line of inquiry, which explores how multiple marginalized social identities interact with one another to generate inequality in the wider society.

The traditional full-time job with benefits has become much less normative in the last few decades, as more Americans transition to participants of the "gig-economy," also known as "the 1099s economy" or "the on-demand economy." As the Karl Polanyian pendulum swings away from the period of relative security (1940s to 1970s) and towards the current period of market-driven flexibility (see Kalleberg 2009), a substantial number of part-time, on-call, temporary workers, and independent contractors, or "freelancers," emerge as important segments of the new precarious workforce or '*precariat'* (Standing 2011). The National Survey of the New Workforce (NSNW) provides statistical indicators of this fundamental transformation in

employment relations. In 2014, 53 million Americans –34% of the total workforce that brings an annual $715 billion to the national economy – have "engaged in supplemental, temporary, or project – or contract-based work in the past 12 months." (Elance-oDesk 2015:3) This definition includes not only independent contractors, but also temporary-help workers and "moonlighters."[2] Independent contractors[3] make up an important part of these three groups. According to the same survey, as of 2015, 21.1 million workers are full-time independent contractors – a 2.5-fold increase from 8.5 million in 1997 (Cohany 1998b). The size of the new precarious workforce equals the combined population of 16 U.S states and the District of Columbia[4].

Despite this important shift in employment relations, sociological studies on freelancing are still limited in number and lacking methodological diversity. Most of these studies focus on how freelancers transition out of the traditional mode of employment and operate in the new economy, ignoring precarious workers who seek to return to full-time employment. What is more, the few studies of nonstandard workers attempting to return to full-time employment have mainly assessed the labor market penalty associated with some forms of contingent work, such as part-time work and temporary agency employment (Gash 2008, Pedulla 2016b). They thus overlook the labor market consequences of independent contracting, or the degree to which employers discriminate against freelancers who seek permanent employment. This issue is of particular significance because employers are recruiting employees from external labor markets and a substantial number of freelancers are seeking full-time employment and pursuing organizational careers. Teicher (2015) reports that more than two-thirds of freelancers would

[2] Moonlighters are workers who engage in temporary and project and contract-based work, in addition to their full-time jobs, mostly to receive supplemental side income.
[3] For the purpose of this paper, I will be using the terms "independent contractor" and "freelancer" interchangeably.
[4] The 16 states are: Wyoming, Vermont, Alaska, North Dakota, South Dakota, Delaware, Montana, Rhode Island, Maine, New Hampshire, Hawaii, Idaho, West Virginia, Nebraska, New Mexico, and Nevada.

consider giving up their freelancing projects for standard jobs with benefits, and almost one-third of respondents would unquestionably accept such offers. In another industry study, Gandia (2012) shows that more than 55% of involuntary freelancers and 38% of voluntary freelancers would be open to transitioning to full-time employment. Little, however, is known about the obstacles freelancers encounter as they seek permanent employment and how employers evaluate job applicants with freelance employment histories.

This study takes place in a historical moment characterized not only by further fluidity between the bureaucratic/post-bureaucratic transition, but also by racialized economic inequality manifested in socially embedded urban labor markets. The American labor market is in the midst of a sweeping demographic transition, with racial/ethnic minorities entering the workforce at an increasing rate. In 2002, workers of color made up about a third of the labor force, a significant increase from 23% in 1992. The BLS projects that this number will approach 40% in 2022 (Toossi 2013). At the same time, the issues of 'workplace diversity' have adopted a more prominent position in business discourses: "few trends have received as much publicity or gained as much attention in managerial circles, as the recent interest in managing diversity." (Prasad 1997:3) Within the contexts of growing minority share and simultaneous precarization of the labor market, the norms of labor allocation and decision making in hiring have been complicated, not only by the multiplicity of modes of employment, but also by the increasingly multi-ethnic characteristic of labor markets. The penalties associated with non-standard employment histories are likely racialized, as workers' labor market outcomes depend on both their work experience and employers' perception of the racial signals that workers' identities carry. Given the emergence of racism and xenophobia as backlashes against globalization and immigration, the

issue of how racial/ethnic identities complicate the labor market stratification process, in light of key reconfigurations in the employment system, important and timely questions beckon.

This paper poses three such questions:

[1] *Is there a labor market penalty associated with a history of freelancing?* This study explores this question by comparing the labor market outcomes of workers with three different kinds of employment history: unemployed, freelance, and full-time work.

[2] *How do employers rank comparable workers of different races?* The paper explores the extent to which race continues to serve as a critical impediment to full-time employment, and empirically assesses the prevalence of race-based discrimination in the contemporary American labor market. The study includes four major racial/ethnic groups: White, Asian, Latino, and Black.

[3] The third question stems from the first two: *If there are labor market consequences associated with histories of freelancing, are the penalties equally distributed across racial/ethnic groups? In other words, how do employment histories and racial/ethnic categories intersect to generate labor market inequality?*

In sum, this research tackles complicated questions associated with an increasingly intersectional, normative restructuring of the nation's labor queues associated with the coincidence of [1] the shift in employment relations accompanying neoliberalism and [2] the advent of multi-ethnic urban labor markets in the era of globalization and high immigration. This is the first study to examine the effects of the intersections between job applicants' freelance employment history and their race/ethnicity on hiring, as gauged by one of the largest and most geographically contextualized audit study on employer callback rates in 50 U.S urban labor markets. The field experiment explores how employers' decisions in the hiring process

determine employment opportunities for workers with freelancing experience in the new economy and examines how such opportunities or consequences vary by the workers' racial/ethnic identities. The experiment manipulated the workers' races by using racialized names, and employment history by varying the applicants' latest work experience shown in the fictitious resume. The empirical evidence indicates that while freelancing put workers in a disadvantaged position compared to maintaining full-time positions, it can operate as an effective buffer against the scarring effects of unemployment. The relative position of freelancing compared to being unemployed and holding full-time jobs, however, vary in important ways, depending on the employers' perception of workers' racial/ethnic identities. In other words, race and ethnicity operate as crucial intervening factors on the causal effects of nonstandard work on workers' subsequent labor market chances.

Discrimination based on nonstandard work experience

Freelancing in the New Economy

This section offers a definition of independent contracting, explains why it has the defining features of nonstandard work, and contrasts it with other forms of nonstandard employment. Compared to their full-time counterparts, nonstandard workers often find their employment to be more precarious (Kalleberg 2000b, 2009). The nonstandard workforce is heterogeneous. It includes, but is not limited to, part-time workers, temporary agency workers, and independent contractors.

This research focuses solely on independent contractors. I define independent contractors as *self-employed workers who operate entirely on a project-to-project basis, do not have a constant employer, do not have any employees, and are not primarily affiliated with staffing agencies*. This definition also excludes self-employed entrepreneurs who hire other workers

because their working entity becomes a small business, and they likely face different experiences of work precarity. Additionally, I do not consider workers who rely exclusively on temporary agencies to be independent contractors. This paper uses 'freelancers' and 'independent contractors' interchangeably.

Freelancing fits the norms of nonstandard work arrangements, since workers are not hired on a full-time basis, are not bound by long-term contracts, and do not have to be at the employer's office to conduct work tasks. Freelancing work is inherently precarious for several reasons. First, due to the project-based nature of their work, freelancers are unable to rely on a constant stream of income. Compared to full-time employees who know exactly when their next paychecks will come and how large they will be, freelancers have to continuously engage in a cycle of finding new projects, enlarging existing clienteles, negotiating new arrangements, and evaluating available options (Osnowitz 2010). Second, the lack of official employee status excludes freelancers from employer-provided benefits. Freelancers are responsible for financing their own insurance plans and retirement accounts. Parental/maternal and medical leave are guaranteed to produce income gaps. Their ambiguous legal status also leaves freelancers vulnerable to any violation or discrimination they might face. Third, freelancing work arrangements offer very limited opportunities for independent contractors to unionize or to engage in collective bargaining (Osnowitz 2013). Fourth, freelancing might not have been workers' primary choice to begin with. Corporate downsizing and sudden changes in personal circumstances might have led to involuntary freelancing careers. Fifth, the difficulties in proving constant sources of income, challenge freelancers' ability to get mortgages and accumulate assets (McGrath and Keister 2008, Wiens- Tuers 2004). For those reasons, while some independent contractors prefer the flexibility that this work arrangement affords, it is also understandable that

a sizeable portion of independent contractors wish to embrace an organizational career given these difficulties. However, in order to do so, they face the hiring process. A series of questions arises at this juncture: How do employers perceive freelancers' employment histories? What signals does a history of freelancing send?

Labor Market Consequences of Freelancing?

Several studies compare various aspects of nonstandard and permanent work and reveal that nonstandard workers report lower wages, reduced benefits, lower job satisfaction, and worse physical and mental health outcomes (Puig-Barrachina et al. 2014, Tilly 1996, Tompa et al. 2007). While the literature is consistent in showing these outcomes, the evidence on another consequence of nonstandard work – subsequent labor market transition – is much more mixed. Kalleberg (2000b:349) notes: "For many workers, working as a temporary is often temporary. However, the extent to which temporary workers are able to obtain permanent jobs is an unresolved issue." On the one hand, some scholars argue that contingent work can act as a "stepping stone" to permanent employment. On the other hand, more pessimistic accounts maintain that temporary jobs are "dead-end," hindering a worker's subsequent occupational mobility. This debate is extensive and is framed with many different labels including: "stepping stone" or "dead-end" (Booth et al. 2002), "bridge" or "trap" (Gash 2008), and "protected" or "penalized" (Pedulla 2016b). However, despite the heterogeneity of the precarious workforce, the extant literature focuses primarily on temporary agency workers. Little is known about the labor market penalties associated with other types of nonstandard work, particularly independent contracting. The studies focusing on freelancers like Osnowitz (2010) and Barley and Kunda (2006) offer extraordinarily rich insights about the challenges that independent contractors encounter. However, they have less to say about whether or not this population faces systematic

discrimination in the transition to full-time jobs. This study advances the literature by analyzing hiring discrimination that freelancers of different races and situated in different labor market contexts may face.

Relying on status characteristic theory and the "ideal worker" perspective (Kelly et al. 2010, Williams 2001), existing audit studies highlight the role of perceived competence and commitment as central mechanisms on how employers evaluate workers' profiles (Correll et al. 2007). Following these works, I discuss how hiring officers could perceive signals of competence and commitment, while screening applicants with a freelancing history. On the one hand, workers whose work histories include periods of independent contracting could be sending negative signals about their competence and commitment. Employers could be raising questions about *competence,* by asking whether or not contractors have been updating their skills while freelancing. Since the tasks that independent contractors performed while working on freelancing projects are difficult to verify, employers might have some doubts about whether freelancers actually trained and developed their skills. The employer could also doubt the freelancers' motive for going full-time again. The hiring companies might question if the freelancers are abandoning their failed self-employed businesses. They could be asking if independent contractors are able to continuously find new projects and to constantly generate income streams, why do they want to go back to being employees? Besides, HR managers could also be concerned with freelancers' ability to work within a team, since freelancers are accustomed to performing work independently. Employers could doubt freelancers' ability to adjust to being back in organizational hierarchies. *Commitment* arguably represents a bigger concern from hiring managers' viewpoint. In my sample, all freelancers previously held full-time jobs. Hiring companies might be concerned that if freelancers left the organizational system before, they

might struggle to perform well when returning to a full-time employment setting. Independent contractors usually become contractors for the following reasons: dislike for office politics, managerial incompetence, inefficiency of administrative tasks and meetings, compensation inequality, etc. (see Barley and Kunda 2006). Freelance job-seekers are likely to re-encounter these problems once they return to organizational settings. As a result, employers could be concerned whether these problems will overwhelm freelancers if they are hired. If firms are hiring during an economic downturn, they might be uneasy about freelancers' commitment. One can assume that hiring officials will be wondering if job-seeking contractors are just trying to find a "parking spot" until the economy recovers, since freelancers can be stereotyped as "mercenaries", who are willing to forfeit their full-time options once their situations improve.

On the other hand, a history of freelancing could send positive signals to some hiring officers in terms of both competence and commitment. As for *competence*, hiring officials could place a premium on independent contractors' entrepreneurial spirit. Since freelancers run their own businesses, employers may assume that freelancers have strong work ethics, are passionate about their work, and have good knowledge about the operation of a small company. According to Bidwell and Briscoe (2009)'s findings, the likelihood of contracting increases with a worker's skill level. Therefore, a history of freelancing could serve as a positive signal of ability. If freelancers are able to consistently obtain new projects, it is also likely that they are skilled at pitching, selling, negotiating, and operating independently. These skill sets could be considered valuable to the hiring firm. Since independent contractors need to regularly engage in name branding and networking to find the next income stream, their social capital also tends to be extensive. The evolution of co-working spaces, which are shared working environments that attract large numbers of telecommuting professionals, contribute to this process. Employers

could thus benefit from both the freelancers' human and social capital. Concerning workers' potential commitment, employers could think that freelancers must be dissatisfied with certain aspects of their working lives as contractors and would be committed to and grateful for full-time opportunities.

In sum, there are several ways in which employers can perceive the signals that a history of independent contracting indicates. From the perspective of hiring officials, freelancers could be viewed as either *energetic entrepreneurs* or *failed mercenaries*. Work history, however, isn't the only signal-sending item from workers' resumes. Before making hiring decisions, employers try to get as much information as possible by examining factors that operate as signals of workers' potential performance. As previous literature shows, hiring officials typically rely on another aspect of jobseekers' profiles: their race and ethnicity. The next section reviews this literature.

Discrimination based on race

Existing approaches to studying racial discrimination

Blacks, Latinos and other minority groups consistently underperform Whites, with respect to various key measures of labor market outcomes. The Black-White and the Latino-White labor market gaps have been shown to operate at various stages in the process of stratification including: hiring (Bertrand and Mullainathan 2004, Pager et al. 2009b), earnings (Grodsky and Pager 2001, McCall 2001b), and unemployment rates (Wilson et al. 1995). Scholars offer different theoretical explanations for these employment gaps. Differentials in labor market outcomes can be attributed to the selective behavior of employers, who are responsible for making personnel decisions with relatively limited information under time constraints. They thus resort to mechanisms that help them to eliminate allegedly weak candidates. These mechanisms

can manifest as statistical discrimination and/or taste discrimination. Statistical discrimination occurs when firms infer productivity levels from nonproductive characteristics - such as race – since actual productivity is difficult to measure. On the other hand, taste discrimination operates when employers find it undesirable to work with minorities and avoid doing so by eliminating non-White applicants from consideration (Aigner and Cain 1977, Altonji and Pierret 2001, Arrow 1998). This study does not aim to take a position in this debate, as parsing out two dynamics of discrimination is a notoriously challenging task. Moss and Tilly (2001:4) noted that employers typically "combine objective assessment of workforce skills with racial stereotypes, and it is very hard to draw the line between the two."

To unpack the black box of hiring discrimination, scholars have analyzed both employers' attitudes and behavior. Qualitative-oriented studies play a crucial role in research examining hiring officials' attitudes. In one of the first studies of this kind, Kirschenman and Neckerman (1991) interviewed almost 200 Chicago employers and reported that employers held negative perceptions of Black workers, ranking them lower than Latinos and Whites, respectively. In addition to following up on and confirming many of Kirschenman and Neckerman's insights, Moss and Tilly (2001) show that employers use stereotypes about racial minorities to derive judgements about minority jobseekers' skills. Another line of scholarship analyzes employers' attitudes by administering establishment surveys (Moss and Tilly 2006). These surveys offer a considerable advantage of quantitatively capturing hiring officials' racial attitudes, as well as situating these observations within the organizational or industrial contexts, thereby generating insights on how norms of discriminatory attitudes vary across firms and industries. Complementing the surveys, the qualitative interviews offer incredibly detailed accounts of how the dynamics of discrimination unfold in the workplace. As a result, these

studies make a crucial contribution to the study of labor market stratification. These accounts, however, are hampered by issues of generalizability and limited samples. Employers' attitude surveys, while addressing some issues of sample representativeness, are subjected to other problems. Due to the illegality of hiring discrimination and to social-desirability bias (Gaddis 2014), employers might avoid revealing or underreport their true racial attitudes, despite the offer of survey anonymity.

Scholars also pay attention to employers' behavior, since their negative perception of minorities might not translate into actual discriminatory practices. Many studies rely on large-scale administrative and experimental data for this kind of inquiry. Quantitative research uses wage gap decompositions or employer-employee matched data to study labor market discrimination (see Hellerstein and Neumark 2006, van der Meulen Rodgers 2006). These studies control for many variables that are theoretically expected to predict labor market outcomes. They use the portion that is unexplained by regressors – or the residual racial differences - to derive estimates of discrimination. There are several shortcomings associated with this approach (Quillian 2006). Omitted variable bias is the first problem. It is difficult to establish that all relevant predictors are controlled for, and almost impossible to rule out all alternative explanations that might account for the statistical residuals. Other problems exist beyond issues of including all potential determinants. Issues related to improper measurement of elusive concepts such as 'human capital' (Bukowitz et al. 2004) and the difficulty in establishing causality (Pager 2003) continue to operate as major obstacles for studies using observational data.

Scholars have turned to experimental methods to detect and quantify labor market discrimination. Audit studies typically send matched pairs of applicants to actual job openings

and measure discrimination by capturing the variation in callback rates – or the likelihood of getting invited to proceed to the next round of the job search process. Applicants can be real trained auditors, in the case of in-person studies, or fictitious, in the case of resume or computerized studies. The experimental designs in these studies alleviate omitted variable bias, since besides the experimental conditions, observed and unobserved differences are either held constant or cancelled out through randomization. This characteristic allows experimenters to rule out alternative explanations. The only operating conditions are the experimentally manipulated ones, allowing researchers to attribute any variation in outcome to such factors. Scholars consider experimental methods to be highly suitable for studies of hiring discrimination. Quillian (2006:303) calls experiments: "the best method for assessing causality", which can "produce a clean estimate" of the incidents of racial discrimination for the outcome examined."

Existing results from audit studies

Due to its several advantages, field experiments have gained popularity in recent years. In this section, I review some of the results that existing audit studies on racial discrimination have yielded. Since Bertrand and Mullainathan (2004) seminal work reporting concrete evidence of race-based hiring discrimination against African-Americans, sociological experiments of racial discrimination in labor markets examine the effect of race in job applications in conjunction with other covariates, such as criminal record (Pager 2003) and school selectivity (Gaddis 2014). Pager (2003) conducted an audit study in which matched pairs of auditors applied for entry-level jobs to analyze the effects of race and criminal record on employment outcomes. She found that non-criminal Whites were more than twice as likely to get a callback than non-criminal Blacks. There was no significant differences in callback rates between Whites with criminal records and Blacks without criminal records. Gaddis (2014) reports a finding that is similar to previous

accounts. *Ceteris paribus,* Blacks are half as likely as Whites to receive a callback. He also finds that Black candidates who graduated from elite universities and White applicants with degrees from less selective universities have comparable labor market outcomes.

Compared to the Black-White gap, the Latino-White hiring gap has received much less attention from scholars. In an in-person audit study, Kenney and Wissoker (1994) sent resumes from pairs of comparable Anglo and Latino applicants to 360 employers in Chicago and San Diego, then tracked outcomes at three stages of the hiring process: application, interview, and job offer. They found that the Anglo applicants significantly outperformed the Latino counterparts at all three stages. Latino applicants received 30% fewer interviews and 52% fewer job offers. In one of the first audit studies that broke the norm of binary Black-White comparison, Pager et al. (2009b) reflected racial heterogeneity in labor markets by comparing hiring outcomes for matched pairs of White, Latino, and Black applicants in a New York City low-wage labor market. They reported the success rates of White, Latino, and Black applicants to be 31, 25.2, and 15.2 percent, respectively. The authors reported a remarkable finding that Latinos and Blacks with clean criminal records received slightly lower callback rates than White ex-felons.

The Latino-White hiring gap is understudied, but the evidence on hiring discrimination against Asians is even scarcer. Sakamoto et al. (2009:256) note that studies explicitly examining various outcomes of Asian and Asian-Americans are "more the exception than the rule," and that this subject has "not been an especially popular topic in sociology." To my knowledge, to date, there is no U.S-based audit study that compared the likelihood of getting an interview between Asian applicants and other racial groups. Kang et al. (2016) analyze Asian and Black applicants in an experimental platform, but their focus is on the effects of resume-whitening on labor

market outcomes, not on comparing callback rates between racial groups. Oreopoulos (2011) compares callback rates between candidates with Asian-sounding names and English-sounding names, but he focuses exclusively on the Canadian labor market.

Contributions of this research

This research makes several contributions to the sociology of work, the literature on racial discrimination, and the methodological subfield of audit studies. First, as discussed in the previous sections, despite the increasing prevalence of freelancing in the labor market, little is known about how workers transition in and out of this segment of the workforce. On one hand, studies on the consequences of precarious work typically overlook freelancers. On the other hand, studies on freelancers focus primarily on how these workers operate in the new economy, while offering few insights on the processes through which freelancers pursue more secure employment. As the first experimental study to include freelancers, this research fills in this important gap.

Second, while some existing studies look at the intersection of race and other attributes, such as college selectivity (Gaddis 2014), criminal history (Pager 2003), unemployment status (Pedulla 2018a), little is known about how race interacts with nonstandard work – particularly freelancing. Pager et al. (2009b:779) noted how the roles of race vary across employment interactions: "racial preferences or biases are unlikely to be expressed in any static or uniform way, but will vary in intensity and consequence depending on other characteristics of the applicants […]". Sociologist of work also acknowledge that the racial variation across dimensions of work precarity remains "complex and as yet also little understood." (Kalleberg and Vallas 2017:15). The question of how workers' racial identities intersect with histories of precarious employment – of freelancing in particular - to generate variations in labor market

outcomes, albeit an important and timely one, remains understudied. Does a history of precarious work attenuate the racial penalty for some groups? Do freelancing and race operate as a 'double-jeopardy' (Greenman and Xie 2008) for other groups? These questions are of major significance, given the fundamental changes in the modern labor market in the U.S.

Third, the literature on labor market stratification, including the audit studies, continually overlooks Asian and Asian-Americans as racial minority. While the labor market outcome gaps between Blacks and Whites – and Latinos, to a lesser extent – have been well-documented, little is known about how labor market performances of Asians compare to the other well-studied demographic groups. Sakamoto et al. (2009:256) note that studies explicitly examining various outcomes of Asian and Asian Americans are "more the exception than the rule," and that this subject has "not been an especially popular topic in sociology." The Model Minority Myth viewpoint (MMM) (see Kim and Sakamoto 2010) might account for the systematic overlooking of Asians in sociological works of racial relations. Asians are stereotyped as overachieving hard workers who attain economic success due to thriftiness, a focus on education, and strong familial values. The roots of these stereotypes are based, at least in part, on the fact that Asian Americans on average are not subjected to the same social problems typically associated with the lower class or with other racial minorities. These include juvenile delinquency, single parent households, low educational attainment, drug addiction, and unemployment (Fong 2002). The fact that Asian Americans' various measures of socioeconomic achievement are on par with Whites, might result in Asians being "a sociological minority that is often not officially classified as a minority" and that they "do not actually matter." (Sakamoto et al. 2009:256) While some of the aggregate indicators suggest that Asian Americans constitute a growing minority group that mirrors Whites in many aspects of their socioeconomic outcomes, very little is known about the

dynamics of social exclusions that this group faces. Studying labor market discrimination that Asians might face would yield interesting theoretical insights on how groups that appear otherwise advantaged, could in fact experience forms of social segregation that are supposedly reserved for disadvantaged groups, and contributes to the debate about whether or not Asians actually achieve labor market parity with Whites (Kim and Sakamoto 2010, Wang et al. 2017). This study's inclusion of Asians along with Whites, Latinos, and Blacks makes it the first sociological field experiment to simultaneously include four major racial/ethnic groups in the U.S.

Fourth, this field experiment covers 50 cities, which is a significant empirical expansion from existing audit studies. To put this into perspective, the number of markets analyzed in recent audit studies is considerably smaller: seven (Tilcsik 2011), three (Gaddis 2014), and two (Wallace et al. 2014). Enlarging the geographical scope allows this research to assess the spatial variation of how race and employment history combine to affect labor market chances across major American cities. Since it is the first sociological field experiment to include freelancers, four racial/ethnic groups, and 50 cities, this study expands on the design of current audit studies and contributes to this methodological subfield's quest to more fully grasp with the multifaceted ways in which American society is changing.

The field experiment

This study used a unique field experiment that involved submitting approximately 12,000 applications to 6,000 job openings in 50 Metropolitan Statistical Areas (MSAs) between January and March 2017. The IRB-approved protocol included several restrictions. First, all voicemails and emails that fictitious applicants received from employers had to be deleted. This guaranteed that employers' information remains unidentifiable. Second, I was unable to contact firms at any

point, before, during, or after data collection, with only one exception explained in the third point below. Third, once I received the call-back or email-back, I was required to reply within 24 hours to state that the applicant no longer wished to be considered for the position. This withdrawal ensured that employers would not select a fictitious candidate over a real jobseeker. By adhering to these restrictions, this study minimized the risks of employers participating in the research and mitigated important ethical concerns associated with resume audit studies.

Selecting cities, job types, and matching pairs of applicants.

The study used a major national online job board, which lists job openings in all major cities. I submitted fictitious applications to three different job types: marketing, sales, and administrative assistant. I chose these job types because freelancing is common in these fields. Freelancers can operate as independent marketing specialists/consultants, self-employed sales agents, and independent or virtual administrative assistants. It is reasonable to assume that HR managers can realistically expect to receive applications from workers with freelancing experience in these fields. Choosing fields where freelancing is uncommon could result in applicants being rejected for reasons that are different from the ones that the experiment is designed to expect.

I selected the top 50 MSAs based on 2016 Census population estimates.[5] There was a considerable amount of geographical variation among the urban sites chosen, with 17 South and Southwestern, 10 Midwestern, 12 Western, and 11 Northeastern cities. To determine which job-city combination to send the resumes to, I randomly sampled with replacement from the lists of 50 MSAs and three jobs 6,000 times. From the returned list of 6,000 job-city combinations, I

[5] From the original list of 50 most populous MSAs, I replaced Virginia Beach-Norfolk-Newport News, VA-NC and Birmingham-Hoover, AL with Bridgeport-Stamford-Norwalk, CT and Omaha-Council Bluffs, NE-IA because there are simply not enough job openings in the former two MSAs. Since I conducted pilot studies prior to rolling out the field experiment based on listings in St. Louis, MO-IL and Milwaukee-Waukesha-West Allis, WI, I replaced these two cities with Grand Rapids-Wyoming, MI and Rochester, NY.

sorted the list by cities alphabetically and send out applications to jobs located in one city after another.

To obtain a list of available openings in each city, I used a Visual Basic Application (VBA) code that required two inputs: the job type keyword and the MSA's name. The code returned a list of all job openings with the corresponding keyword within 25 miles of the city. Once I obtained the list of openings for three job types, I filtered the list by employers and kept only one listing per employer. This avoided overburdening the same employers with more than one pair of applications. I eliminated all jobs that were entry-level, not full-time, and required the applicant to apply from the employers' site instead of directly from the job board's interface. I then randomized the order of the remaining jobs in the list.

I then created a series of different candidate profiles with three employment histories (full-time employed, freelancing, and unemployed) and four racial/ethnic categories (White, Asian, Latino, and Black). Simultaneously varying these two axes yielded 12 profiles – or different combinations of employment history-racial/ethnic categories. I randomly selected two from these 12 profiles to send to each of the 6,000 job-city combinations. For the first candidate, I selected at random from the list of twelve. I made sure that the second candidate in the pair did not overlap in either of the attributes with the first one. For instance, if the first candidate was a Latino freelancer, the second candidate's attributes were randomly selected from a combination of two employment histories (full-time, part-time), and three racial/ethnic groups (White, Asian, and Black). This restriction created an advantage for the experiment: Gaddis (2014:1459) posits 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." Appendix A shows an example of the treatment used in this experiment.[6]

Signalling applicants' race, class, and educational credentials.

Similar to extant audit studies, I signal race using racialized names. This is a complicated issue, since names can also operate as indicators of socioeconomic status (Figlio 2005). Gaddis (2014) tackles this issue by obtaining birth record data and extracting racialized names while controlling for the education level of the subjects' mothers. Compared to earlier audit studies that simply selected the most common names among racial/ethnic groups while ignoring potential class confounds, this approach represents an important step forward. The only drawback of his approach is the time period of the data. Due to data limitation, Gaddis had to rely on birth record data in the early 2000s to create names for applicants that were born in 1989. This study overcame this limitation by using birth record data from the California Department of Public Health, which included information on all babies born in California in 1989 and 1990. I selected these two years because the fictitious applicants in my sample graduated from college in the late 2010s. Therefore, it is reasonable to assume that they were born in the late 1980s. The dataset included the babies' names and races, as well as their mothers' educational level.

[6] I did not vary gender within audit pairs for two reasons. First, my primary focus is not on gender. Second, while varying two axes simultaneously is quite common among audit studies, varying three axes is rare. Varying too many simultaneous axes over-complicates the signal sent to employers, making it difficult to pinpoint which signal recruiters are specifically responding to. In this study, employers will receive resumes either from two male or two female applicants. All applicants for sales jobs are male, and all applicants for administrative assistant positions are female. I randomly assign gender to applicants for marketing jobs. These gender assignments are somewhat consistent with the gender breakdown of these job types. According to the BLS (2016), secretaries and administrative assistants are dominated by women (94.6% of total employed). Employment of marketing specialists is about evenly split between males and females (55% women). Although the gender distribution of sales jobs is fairly even (49% women), in order to keep the number of male and female applicants close to each other, I made sure that sales jobs are male only.

After obtaining the California birth record data, I used the same procedure to select first names and last names for applicants of all races. I filtered for first names with at least 75% born to mothers of a particular race and chose names that were generally comparable in terms of percent born to mothers who attended college. I repeated this process for last names. For each of the eight candidate profiles (4 races *2 genders), I selected two names for a total of 16 names. Appendix B displays the two-tailed, two-proportion z-tests showing the non-significant differences between callback rates for two names associated with each of the eight candidate profiles. These results provide further justification for the selection of these names[7].

I also made sure that fictitious applicants sent comparable class signals, as they are all graduates from large top-20 public universities. The research design thus attempts to extract a racial/ethnic effect from the race-class mixed signals by holding constant candidates' and their mothers' educational levels. Another issue associated with signaling race is immigration status. This problem is particularly relevant to Asian and Latino applicants. U.S employers face legal restrictions when employing immigrants, since they are responsible for the additional cost of applying for H1-B visas, if their employees do not maintain permanent resident status. These restrictions, as well as assumptions about linguistic proficiency and cultural assimilation, could provide employers with disincentives when hiring immigrants. To remove this potential source of hiring bias, I added variations of the following phrase in all fictitious resumes: "Authorized to work for any U.S. employer." A survey of the real resume bank shows that large numbers of applicants include this line in their resumes.

[7] A drawback of the vital statistics data is that for 1989 and 1990, the state of California did not differentiate Whites and Hispanics/Latinos. I selected 4 names - Nelson Rodrigues, Gabriel Pereira, Monica Fernandes, and Veronica Gomes – to signal Latino applicants. The first names and last names were selected using the same filtering procedure applied to other racial/ethnic groups.

As for the applicants' educational history, I split the MSAs into four large Census regions: the Northeast, the Midwest, the South, and the West. I then selected two large public degree-granting institutions with comparable prestige from each region. No pair of schools chosen differed by a margin larger than 2 in terms of 2016 U.S News and World Report ranking. The schools chosen were (regions and rankings in parentheses): University of Connecticut and University of Maryland (Northeast: 19-19), University of Wisconsin-Madison and University of Illinois- Urbana-Champaign (Midwest: 11-11), University of Florida and University of Texas-Austin (South: 14-16), and University of California – Irvine and University of California – San Diego (West: 9-9)[8].

Signaling applicants' work histories, cover letters, and contact

To create resumes that resemble the ones that employers evaluate in real-life settings, I relied on an online, publicly available bank of real resumes. Immediately after obtaining their college degrees, each applicant had a first job that lasted for 26 months and then moved on to a second job, where they stayed for 40-44 months. I experimentally manipulated the third professional block in their resumes, which lasted 20 months for all applicants. A third of the applicants were long-term unemployed, another third transitioned to freelancing, and the last third took another full-time job. To ensure that the lengths of unemployed candidates' resumes were comparable to those of other applicants, I added a three-month internship right after college. The details of work histories were constructed from the large sample that I gathered from the online resume bank. I also created nine different cover letters, one for each job type-work history combination.

[8] In terms of the candidates' college major, psychology and economics are areas of studies that provide general knowledge and skills, which are applicable to a wide range of occupations and are very popular among undergraduates. Gaddis (2014) also reported that employers do not prefer graduates of either major in making hiring decisions: this variable had no effect in all of the models reported. For those three reasons, all candidates held B.A.s in either psychology or economics, with the degree being held constant within each pair.

I based these cover letters on real ones from accepted applicants. The cover letters were essentially equivalent in overall content, they differed slightly only in terms of wording and phrase selection.

I then created home addresses, local phone numbers, and email addresses for all applicants. In selecting the home addresses, I paid attention to the neighborhood where the applicants resided for two reasons. First, employers might prefer local candidates due to greater availability for in-person interviews, as well as lower relocation time and cost. For this reason, all applicants had addresses that are within 25 miles of the corresponding MSA. Second, previous studies have shown evidence of discrimination against workers living in neighborhoods that are characterized by high unemployment rates, high crime rates, and high concentration of ethnic minorities (Kirschenman and Neckerman 1991). To ensure that candidates reside in comparable neighborhoods, I used rent price as the proxy for neighborhood quality. I relied on RentJungle.com rental data to select apartment complexes with monthly rents roughly equivalent to the MSA's average. Additionally, as much as possible, I also attempted to keep the addresses within the same neighborhood. The addresses included real apartment buildings, but the apartment numbers were fictitious. I purchased eight unique phone numbers for each race-gender combination for each city. I used a total of 400 MSA-specific area code numbers to signal locality. For each racial/ethnic group-gender combination, I asked one person of that profile to record a mailbox message. All voice providers had fluent, regionally and racially neutral accents. I also created 48 unique email addresses, one for each applicant-employment history combination. When voicemails were undecipherable, I coded the data point as missing. For additional safety, I purchased two different Internet Protocol (IP) leasing services. I used one IP address from one provider for the first applicant, and another IP address from another provider

for the second one. This additional step reduced possible suspicion from employers and alleviated the likelihood of usernames getting banned from the server of the job board.

Once I obtained all information required for each applicant, I used another VBA code to automatically populate corresponding resume templates with candidates' names, addresses, emails, schools, and city-specific employers. The code instantly created a total of 96 resumes for each city, and converted the resumes to .pdf format. This formatting removes the file's metadata on the file creator, reducing employers' potential suspicions. There were 48 resumes for marketing jobs (3 employment histories *4 races * 2 genders, * 2 names for each profile), 24 for sales, and 24 for administrative jobs, since these jobs are either all males or all females. The resume templates were informally pre-tested by four HR specialists, who considered all applicants' first two professional experiences to be comparable and the resumes realistic.

After creating the resumes, I started submitting the applications. I used another code that automatically filled the application forms, based on a pre-loaded set of applicants' information. This tool drastically reduced the application time. After sending the first application, I established a 24-hour waiting period before sending the second application. I allowed employers 15 weeks to respond to applicants, either via email or by phone. After 15 weeks from the day the application was sent, I considered the application failed[9]. The data collection finished after I recorded the number of callbacks and the deleted employers' identifying information.

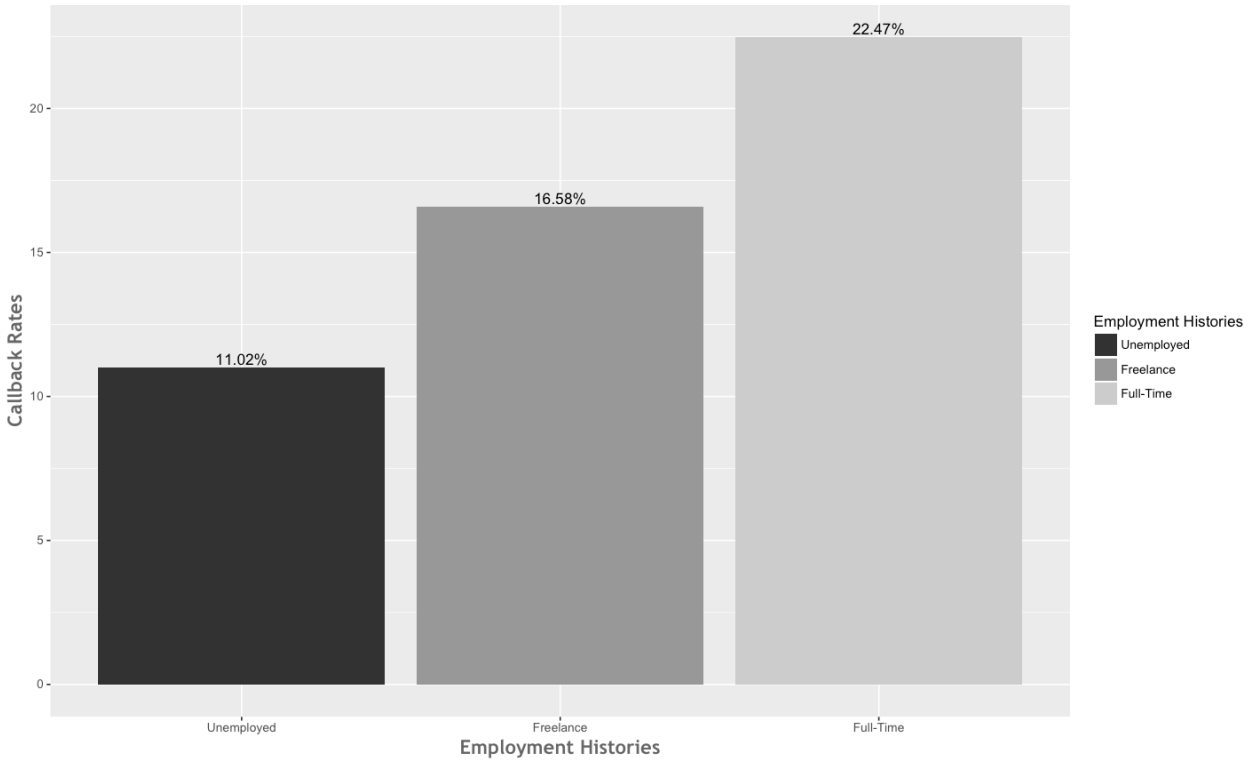
[9] When evaluating the response rate, I cannot possibly know if the employer did not contact the applicant because the company was not interested in the application or because the resume was simply ignored. This issue did not bias the data collection because in practice, a job search is considered failed if the applicant does not hear from the employer for whatever reason.

Results

Labor Market Consequences of Freelancing

Figure 1 displays the callback rates for three different employment histories. For consistency, I used two-tailed two-sample tests for equality of proportions with continuity correction in all comparisons.

Figure 1: Callback Rates for Different Employment Histories

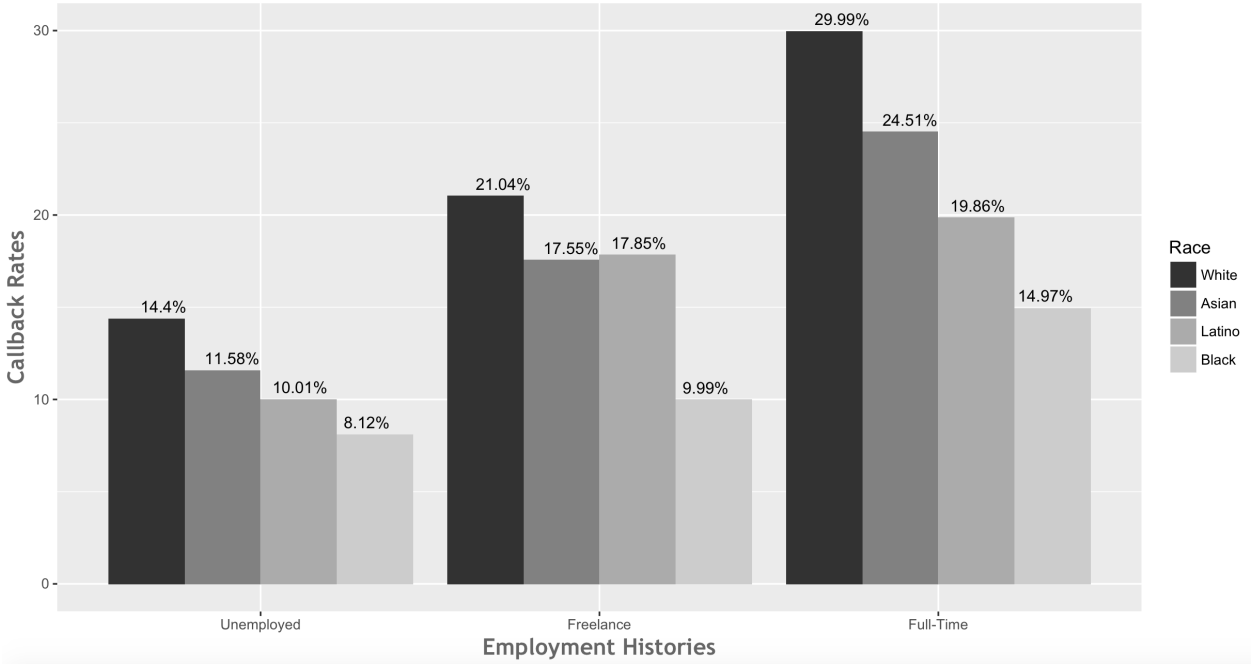


A total 11,871 of applications were actually sent out, instead of 12,000 as originally planned. This 1.07% attrition rate results from employers removing the job listings after I submitted the first application, but before I did the second one. The overall callback rate was 16.68%. Freelancers received a 16.58 percent callback rate. This rate was significantly higher than the callback rate for long-term unemployed workers (16.58% versus 11.02 percent, $p<0.01$), and significantly lower than the callback rate for full-timers (16.58 percent versus 22.47 percent,

$p<0.01$)[10]. These results indicate that freelancing occupies a middling position between full-timers and long-term unemployed workers. Freelancing has a scarring effect compared to maintaining full-time status. However, employers seem to find workers with freelancing work experience more desirable than those who are unemployed. Therefore, a history of freelancing isn't as damaging as remaining jobless. On the other hand, it is not as convincing to prospective employers as a full-time position.

Race and the Labor Market Consequences of Freelancing

Figure 2: Callback Rates for Different Intersections of Race and Employment Histories



How do the results reported in the previous section intersect with workers' racial/ethnic identities? Figure 2 displays the callback rates for different intersections of race and employment histories. Whites' callback rates were higher than all other groups, and Blacks' callback rates

[10] The overall callback rate, while generally comparable to the ones reported in some existing audit studies (Pager 2003, Pager et. al 2009), was considerably higher than the rates shown in other studies (Gaddis 2014, Pedulla 2016, Tilcsik 2011). It is important to note that the field experiment took place in early 2017, when the national unemployment rate declined to its lowest level in almost a decade. The results of this study should be interpreted within this specific economic climate, since employers cannot afford to be too selective as the economy approaches full employment. Therefore, it is likely that the callback rates were inflated and the results underestimated the impact of race and employment history on the interview likelihood.

were the lowest in all three employment categories. While Asian-full-timers and Asian unemployed workers were selected ahead of their Latino counterparts, Latino freelancers enjoyed a slightly higher callback rates than Asian ones. Table 1 shows the callback ratios between three employment histories broken down by workers' race/ethnicity.[11]

Table 1: Employment Histories Callback Ratios broken down by Workers' Race

	Ratios			
	Unemployed	Freelance/ Unemployed	Full-Time/ Unemployed	Full-Time/ Freelance
White	1	1.46	2.08	1.42
Asian	1	1.51	2.11	1.40
Latino	1	1.78	1.98	1.11
Black	1	1.23	1.84	1.49

In terms of within-racial/ethnic group comparison between employment histories, there were important similarities between the results for Whites and those for Asians. For both Whites and Asians, full-timers and freelancers outperformed their long-term unemployed counterparts of the same racial/ethnic group by ratios of roughly 1.5 and 2.1, respectively. The callback ratio between full-timers and freelancers for both groups were also comparable: 1.42 for Whites and 1.40 for Asians. Latinos stood out in terms of freelancing-to-unemployed ratio: freelancing Latinos could expect to receive a callback for every 5.6 resumes sent, while unemployed Latinos had to send out about 10 resumes to receive an invitation to an interview. Latinos' freelancing-to-unemployed ratio was highest among four groups, suggesting that compared to being long-term unemployed, Latinos benefitted the most from freelancing. Latino full-timers were not further ahead of Latino freelancers: the gap between callback rates for these two groups were non-significant (17.85 percent versus 19.86 percent, p=.27). Latino was the only group where

[11] When coding callbacks by emails, there were several cases where it is unclear if the response were automatic or the employer was interested in bringing in both candidates. I used a separate code to flag these cases. The flagged cases were generally equally distributed across experimental conditions. Regardless of whether those cases were coded as callbacks or not, the overall results remain robust.

full-timers did not significantly outperform freelancers. By contrast, Blacks benefitted the least from freelancing, compared to remaining unemployed. The callback rate for unemployed Blacks were on par with the callback rate for freelancing Blacks (8.12 versus 9.99 percent, p=.17). These low callback rates for freelancing Blacks contributed to the gap between full-timers and freelancers being largest for Blacks compared to the other three groups. Interestingly, the low callback rate for fulltime Blacks also contributes to the fact that Blacks had the lowest full-time-to-unemployed callback ratio among all groups.

Table 2 shows the comparisons between callback rates by race-employment history combinations. Among unemployed workers, Whites outperformed Latinos and Blacks, but had comparable callback rates to Asians. Unemployed Asian workers reported higher callback rates than their Black counterparts, but did not significantly outperform unemployed Latino jobseekers. The difference between unemployed Latino and unemployed Black applicants was nonsignificant. Among freelancers, Whites also had a higher callback rate than Latinos and Asians, although the difference was nonsignificant at the 0.05 alpha level. Black freelancers received significantly lower callback rates than all other racial/ethnic groups did. Among full-timers, the differences are more evident. Whites significantly outperformed Asians, who in turn had a significantly higher callback rate than Latinos and Blacks. Finally, employers consistently selected full-time Latino applicants over full-time Black ones.

Some between-employment history differences are also worth noting. Freelancing Blacks had a callback rate that was significantly lower than unemployed Whites, and comparable to unemployed Asians, unemployed Latinos, and unemployed Blacks. I also found no evidence that employers preferred full-time Blacks over unemployed Whites, freelancing Asians, or freelancing Latinos. In terms of freelancing to full-time comparisons, freelancing Whites'

callback rate is on par with full-time Asians' and full-time Latinos', and significantly higher than full-time Blacks'.

Despite reporting higher overall callback rates, the between-races callback rates *ratio* in this study is remarkably consistent with exisiting audit studies. In the literature, the White-Black callback ratio ranges from 1.5 to 3.4 (Bertrand and Mullainathan (2004), Gadids (2014), Pager (2003)). In this research, the White-Black callback ratio is 2.01. Pager et. al (2009) reported the White-Latino and Latino-Black callback ratios to be 1.23 and 1.65, respectively. These ratios in this study are 1.37 and 1.46, respectively. Oreopoulos (2011) showed that holding constant education and work experience, the callback ratio between applicants with English names and those with Chinese last names and English first names is 1.26. This study also uses Chinese last names and English first names to signal Asian-ness, and reports a White-Asian ratio of 1.24. The consistencies with existing research highlights this field experiment's reliability.

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Table 2 : Results of two-proportions tests of differences between callback rates of race-employment history combinations

		Unemployed				Freelance				Full-Time			
		White	Asian	Latino	Black	White	Asian	Latino	Black	White	Asian	Latino	Black
Un-employed	White	1											
	Asian	n.s	1										
	Latino	+***	n.s	1									
	Black	+***	+*	n.s	1								
Freelance	White	-***	-***	-***	-***	1							
	Asian	n.s	-***	-***	-***	n.s	1						
	Latino	-*	-***	-***	-***	n.s	n.s	1					
	Black	+**	n.s	n.s	n.s	+***	+***	+***	1				
Full-Time	White	-***	-***	-***	-***	-***	-***	-***	-***	1			
	Asian	-***	-***	-***	-***	n.s	-***	-***	-***	+**	1		
	Latino	-**	-***	-***	-***	n.s	n.s	n.s	-***	+***	+*	1	
	Black	n.s	-*	-**	-***	+***	n.s	n.s	-**	+***	+***	+**	1

Note: The cells display results of proportion tests comparing callback rates for groups in the columns versus those in the rows. For example, the positive and significant sign on row 3 of the first column indicates that unemployed Whites' callback rate (column title) is significantly higher than that of unemployed Latinos (row title). Cells with "n.s" indicate that the difference is statistically non-significant. All tests performed are two-tailed 2-sample test for equality of proportions with continuity correction. $^{*}p < .05$; $^{**}p < .01$; $^{***}p < 0.001$

had a significantly higher callback rate than Latinos and Blacks. Finally, employers consistently selected full-time Latino applicants over full-time Black ones. Some between-employment history differences are also worth noting. Freelancing Blacks had a callback rate that was significantly lower than unemployed Whites, and comparable to unemployed Asians, unemployed Latinos, and unemployed Blacks. I also found no evidence that employers preferred full-time Blacks over unemployed Whites, freelancing Asians, or freelancing Latinos. In terms of freelancing to full-time comparisons, freelancing Whites' callback rate is on par with full-time Asians' and full-time Latinos', and significantly higher than full-time Blacks'.

Despite reporting higher overall callback rates, the between-races callback rates *ratio* in this study is remarkably consistent with exisiting audit studies. In the literature, the White-Black callback ratio ranges from 1.5 to 3.4 (Bertrand and Mullainathan (2004), Gadids (2014), Pager (2003)). In this research, the White-Black callback ratio is 2.01. Pager et. al (2009) reported the White-Latino and Latino-Black callback ratios to be 1.23 and 1.65, respectively. These ratios in this study are 1.37 and 1.46, respectively. Oreopoulos (2011) showed that holding constant education and work experience, the callback ratio between applicants with English names and those with Chinese last names and English first names is 1.26. This study also uses Chinese last names and English first names to signal Asian-ness, and reports a White-Asian ratio of 1.24. The consistencies with existing research highlights this field experiment's reliability.

Do these observational results hold up in regression settings? Table 3 displays a series of regression models with race, employment histories, and job types predicting the likelihood of an applicant getting a callback. The even-numbered models contain interaction terms between race and employment histories, while the odd-numbered ones only include main effects. Models 1 and 2 are logistic regression models with standard errors clustered by job openings. These two

Table 3. Logistic and Generalized Linear Mixed Results of Employment History and Race Predicting the Likelihood of Getting a Callback

	Dependent Variable: Likelihood of getting a callback					
	Logistic Regression		Generalized Linear - Mixed Effects			
	(1)	(2)	(3)	(4)	(5)	(6)
Race (ref = White)						
Asian	-.266***	-.296**	-.263***	-.287**	-.267***	-.304**
	(.060)	(.104)	(.067)	(.102)	(.067)	(.103)
Black	-.838***	-.920***	-.837***	-.914***	-.840***	-.922***
	(.069)	(.114)	(.075)	(.114)	(.075)	(.115)
Latino	-.404***	-.575***	-.403***	-.567***	-.409***	-.576***
	(.063)	(.107)	(.068)	(.106)	(.068)	(.106)
Employment (ref = Full-Time)						
Unemployed	-.868***	-.972***	-.864***	-.958***	-.869***	-.971***
	(.057)	(.116)	(.064)	(.115)	(.064)	(.116)
Freelance	-.375***	-.493***	-.374***	-.487***	-.381***	-.501***
	(.050)	(.106)	(.058)	(.105)	(.058)	(.105)
Job Type (ref = Sales)						
Admin	-.525***	-.525***	-.531***	-.530***	-	-
	(.073)	(.073)	(.060)	(.060)		
Marketing	-.609***	-.613***	-.610***	-.614***	-	-
	(.074)	(.074)	(.061)	(.062)		
Interaction Effects						
Asian * Unemployed		.034		.021		.043
		(.176)		(.168)		(.169)
Black * Unemployed		.289		.277		.283
		(.193)		(.188)		(.188)
Latino * Unemployed		.174		.158		.165
		(.185)		(.178)		(.178)
Asian * Freelance		.070		.061		.083
		(.166)		(.155)		(.156)
Black * Freelance		.032		.028		.037
		(.181)		(.175)		(.175)
Latino * Freelance		.371*		.361*		.364*
		(.163)		(.156)		(.157)
Constant	-1.248***	-1.183***	-0.549***	-0.489***	-0.936***	-0.871***
	(.231)	(.238)	(.069)	(.082)	(.064)	(.077)
N	11,870	11,870	11,871	11,871	11,871	11,871
AIC	10,238.51	10,240.80	10,239.50	10,242.10	10,285.10	10,288.00
BIC	10,659.27	10,705.85	10,305.90	10,352.80	10,344.20	10,391.40

*p<0.05; **p<0.01; ***p<0.001

models include city fixed-effects. However, these coefficients are not displayed. Models 3 through 6 are all generalized hierarchical linear models without city-level predictors, but they have different nesting structures. Models 3 and 4 are two-level models with applicants nested in 150 job-city combinations, which are, in turn, nested in 50 cities. The results are consistent across all models. In terms of penalties for not holding full-time jobs, model 1 affirms a scarring effect of freelancing. After controlling for race, job type, and labor market, the odds of obtaining a job interview decrease by 31% when a job-seeker goes from being a full-timer to a freelancer. Similarly, *ceteris paribus,* compared to maintaining fulltime employment, 20 months of unemployment decreases the odds of a jobseeker getting a callback by 58%. Despite lagging behind workers with seamless employment histories, freelancers are steadily selected ahead of their long-term unemployed counterparts. In terms of racial/ethnic penalties, compared to being White, being Asian reduces the odds of getting interviewed by 23%, holding all other factors constant. These numbers for Latinos and Blacks are 33% and 57%, respectively. Is the labor market penalty associated with freelancing consistent across racial/ethnic groups? The interaction terms between being Latino and having a freelancing history are substantial in size and statistically significant in Models 2,4, and 6, indicating that the answer is no. These coefficients suggest that employers discriminate differently against Latino freelancers. While being Latino and freelancing both dampen workers' chances of getting a callback, the negative effect of freelancing is reduced for Latino applicants. This finding suggests that there are important racial/ethnic differences in the consequences of freelancing.[12]

[12] The significant interaction effect between being unemployed and being Black presents itself when different reference groups are used. When "Latino" and "Freelance" operate as baseline categories for the variables "Race" and "Employment", respectively, the results (not shown) indicate that the interaction term Black*Unemployed becomes significant in Models 2,4, and 6.

Figure 3: Interaction Effect of Employment History and Race on the Predicted Probabilities of Getting a Callback

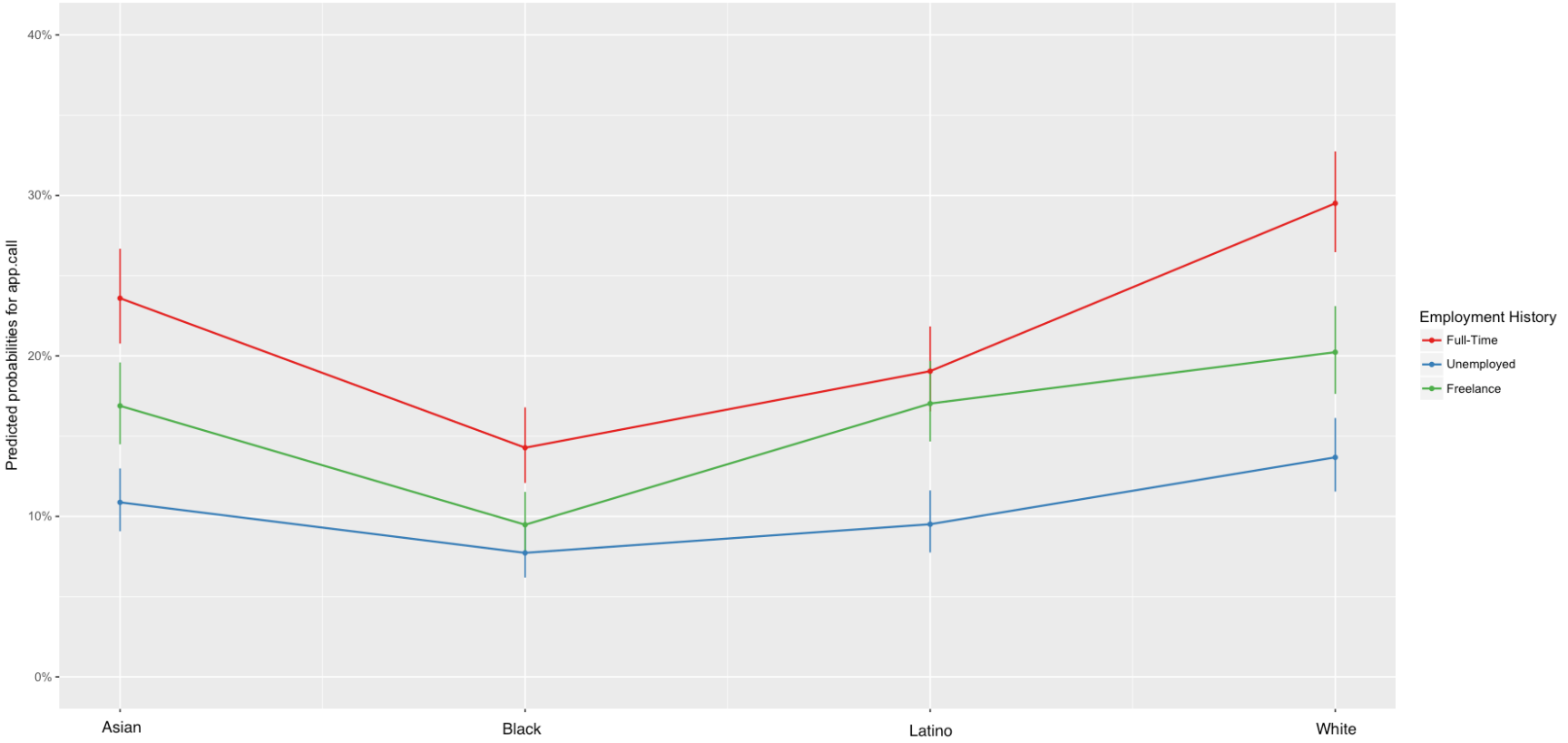


Figure 3 displays the interaction plot generated from the coefficients that Model 6 in Table 2 yielded. The plot includes confidence intervals for predicted probabilities shown in the vertical axis. The confidence intervals for Asians and Whites do not overlap at all. This suggests that there is a clear gradient in terms of employer preference: employers prefer full-timers over freelancers, and freelancers over unemployed jobseekers. However, for Blacks and Latinos, the stories are different. For Blacks, the confidence intervals for the effects of being a freelancer and of being unemployed on the predicted probabilities of getting a callback overlapped. This means that freelancing Blacks do not significantly outperform their unemployed counterparts. Similarly, for Latinos, the overlapping of the confidence intervals for the effects of freelancing and full-time work indicates that freelancing Latinos do not significantly underperform fulltime workers of the same ethnic group.

Three important findings emerge from this study. First, the results demonstrate that in terms of likelihood of getting an interview, freelancers' chances are between those of long-term unemployed workers and full-timers. This is a new finding because the extent to which a history of freelancing might be rewarded or punished at hiring interface hasn't been explored in the current literature. Second, the results also indicate that in terms of between-racial/ethnic group comparison, the racial/ethnic hierarchy of White-Asian-Latino-Black – listed in terms of declining employer preference – largely holds across three employment histories. The only exception can be found among freelancers, where Latinos slightly outperform their Asian counterparts. The third finding pertains to the intersection of racial/ethnic identities and work histories. Compared to remaining unemployed, freelancing tremendously boosts Latinos' labor market prospects. Freelancing also operates as a protective force for Latinos in the new economy: it attenuates the negative effect of being Latino and not holding full-time job. By

contrast, freelancing does little to improve Blacks' desirability from employers' perspective, as freelancing Blacks fared no better than their unemployed counterparts.

Discussion

To make sense of the intriguing findings regarding the relative performance of Black and Latino freelancers, I rely on joint insights from the industrial literature on ethnic entrepreneurship and the social psychological literature on employers' perception of minorities. The relative success of Latino independent contractors could be attributable to the high rates at which Latinos engage in entrepreneurial activities relative to other racial/ethnic groups. Entrepreneurship plays a large role in the Latino community. Unlike Asian entrepreneurs who see business ownership as a coping mechanism against open market discrimination and do not want their offspring to continue managing self-employed businesses, Latinos demonstrate higher levels of commitment to entrepreneurship. Latinos consider self-employment as a strategy both to avoid labor market discrimination and to establish financial foundations for intergenerational mobility (Raijman and Tienda 2000). According to the BLS, in 2011, the percentage of nonincorporated self-employed businesses[13] owned and operated by Blacks and Asians are 6% and 4.6%, respectively. The number for Latinos is 15.1%, considerably than the combined rates of the other two minority groups (Layne 2013). The five-year average growth rate of the number of Latino-owned businesses is also impressive: it went from 43.6% in 2002-2007 to 46.9% between 2007-2012, compared to those of non-Latino-owned businesses at which were 4.4% and 3.6% during those two respective periods (SLEI 2015). According to the Kauffman Index of Entrepreneurial

[13] Non-incorporated self-employment refers to workers who are either sole proprietors or independent contractors. This definition is closer to my definition of freelancer listed on the front end of the paper. Incorporated self-employed businesses "exist as entities legally separate from their shareholders or members," and are usually classified as C and S corporations (Layne 2013:2). Owners of such businesses are unlikely to be solo-employed, and thus face different dynamics of labor market insecurity. Latinos are also more likely to be self-employed in incorporated businesses. The percentages of incorporated self-employment for Latinos, Asians, and Blacks are 8.1, 6.6 and 4.4, respectively.

Activity, Latinos outpace all other racial/ethnic groups every year from 2002 to 2016 in the rate of new entrepreneurs (Farlie et al. 2016). Employers might be aware of the high rate of self-employment among Latinos and recognize that it is a common track during Latino workers' careers. As a consequence, Latino workers might be less penalized for adopting such a track[14]. On the other hand, existing studies routinely report that Latinos face several negative perceptions in the workplace. Latinos are stereotyped to be low-skilled, to struggle linguistically, and to have questionable immigration status (Knouse et al. 1992, Moss and Tilly 2001, Ramirez 1988). I argue that due to the design of the experiment, it is unlikely that these negative stereotypes were operating to the disadvantage of Latino freelancers in this study. All applicants in the experiment, Latinos included, graduated from top-20 public universities with good grades, wrote grammatically accurate resumes and cover letters, used accent-neutral voicemails, and specifically noted that they were eligible to work for any U.S-based employer in their application. These class signals likely negated stereotypes that employers might have held while evaluating freelancing Latinos' applications.

While employers might recognize the popularity of self-employment among Latino communities, freelancing among African Americans is much less normative. The strikingly low self-employment rate among African-American is an established fact. Several socio-economic factors could account for the large gap in self-employment rates across racial/ethnic groups. In terms of human capital, Blacks are more likely to have lower levels of education and assets, and less likely to have self-employed parents. Longstanding discrimination against Blacks in the

[14] It is also worth pointing out that the relatively low callback rates for unemployed and full-time Latinos could account for the large freelance-unemployed gap observed in this group. This study shows that unemployed Latinos need to send 9.3 resumes to get a callback, whereas Asians and Whites with the same employment history need to send only 7.6 and 6.22 resumes, respectively. Similarly, among full-timers, callback rates for Latinos are significantly lower than those for Whites and Asians.

labor market, also limits African American entrepreneurs' access to loans and other forms of financial capital (Light and Gold 2000) and to several business areas (Feagin and Imani 1994). With respect to reliance on protected co-ethnic markets, Boyd (1990) asserts that poverty in Black communities challenges Black entrepreneurs' efforts to generate sufficient cashflow to keep their businesses afloat. As a consequence, Fairlie (1999) shows that compared to White men, Black men have lower rates of entry into self-employment, and have substantially higher rates of exit out of self-employment. Bogan and Darity (2008:2018) delivers a poignant conclusion on the state of Black entrepreneurship: "While there is a history dotted with success stories, Black entrepreneurs still stuggle to even approach the success of most immigrant groups […] Consistently throughout history, discriminatory practices, institutions, and legislations have restricted African American entrepreneurs at every stage of business development."

Existing studies also show that employers consistently hold negative stereotypes about nonstandard Black workers. In addition to being perceived as hostile, lazy and unmotivated, Black workers are also characterized as lacking soft-skills and assuming spotty employment histories (Pedulla 2017). Shih (2002:109) provides the following quotes in which employers display their perception of Black workers hostility: "I don't want to sound like I am stereotyping, but many [African-Americans] have an attitude problem" and "My experience has been that they're more hostile […] towards management." Using in-depth interview of employers in Los Angeles, Moss and Tilly (2001) showed that among the firms they interviewed, 33.7 percent reported that they perceive Blacks to be lacking hard skills, 26.7 percent indicated that Blacks have bad interaction skills, and 50.6 percent consider Blacks to be unmotivated. There is some evidence that these forms of discrimination and negative stereotypes aren't limited to the Black underclass. Feagin (1991) documents the persistent color stigma that haunts affluent Blacks in

both protected and less protected social settings. In their study of Chicago-area employers, Kirschenman and Neckerman (1991) report that when asked about differences in work ethics among racial minority workers, more than a third of employers ranked Blacks last, and state that for some employers, the negative opinion of Blacks transcends class lines. Gaddis (2014) also shows that a degree from an elite university does not completely offset the penalty for being Black in the labor market. The persistently damaging stereotypes associated with Black applicants and the possibility that these negative characterizations cut across class lines, could contribute to explaining why employers do not differentiate between unemployed and freelancing Blacks in this study. As argued earlier in this paper, a history of freelancing has a certain degree of ambiguity and could send either positive (independent, energetic, entrepreneurial) or negative (nonstandard career path, lack of commitment, questionable teamwork skills, unable to hold full-time jobs) signals to employers. It is possible that because the negative stereotypes of freelancing align more closely with the longstanding assessment of Black workers, employers still penalize Black freelancers in this study, even though they held respectable educational credentials and had relative success in their self-employed careers.

Implicit discrimination (Bertrand et al. 2005) or implicit categorization (Ashby and Waldron 1999) could alternatively provide a mechanism through which the results related to Black freelancers can be explained. Fryer and Jackson (2008) argues that actors rely on sorting and categorizing to make decisions, and this categorization can be biased by the frequency with which objects appear in the population. Specifically, "types of experiences and objects that are less frequent in the population tend to be more coarsely categorized and lumped together […] This can result in discrimination against minority groups, even when there is no malevolent taste for discrimination." (Oreopoulos 2011:152) As argued before, freelancing is exceedingly rare

among African-Americans. When confronted with a resume with a Black freelancer, a category that occurs very infrequently among the set of possible applications, employers might lump Black freelancers into another category with which they are more familiar: Black applicants more generally. Black applicants are, in turn, stereotyped to be lazy, to lack commitment and to be unable to hold full-time jobs. Through the process of coarse categorization, employers lump Black freelancers, an object that is less frequent in the population, with Black unemployed workers, a category that is deemed more prototypical or stereotypical. This is a possible mechanism that could account for the finding that freelancing Blacks do not outperform their unemployed counterparts.

Conclusion

Despite the growth of freelancing in the new economy, this mode of employment and its consequences is understudied in the literature. To date, the scholarship on contingent employment offered little systematic evidence on challenges or penalties that independent contractors might face while reintegrating into the full-time workforce. This paper addresses this gap in the literature by conducting a large-scale audit study of labor market consequences associated with histories of freelancing. It contributes to the literature in two ways. First, it provides concrete evidence on the scarring effect that freelancers face while applying for full-time jobs. Second, it examines the interactions of these effects with race/ethnicities, thereby extending the literature beyond the traditional Black-White focus.

Evidence on the scarring effect of freelancing in the new economy.

This study provides direct evidence for the labor market penalties associated with freelancing. Employers consistently choose full-time workers over their counterparts with recent histories of freelancing, even when hiring officers are disincentivized to discriminate as the national

economy approaches full employment. Freelancers are, in turn, steadily chosen ahead of unemployed workers. These results reveal a new finding: for hiring preference, freelancers occupy a place between full-timers and unemployed workers in the hierarchy. This finding contributes to the literature on the labor market consequences of contingent work. Pedulla (2016b) found that part-time work, skill underutilization, and temporary agency employment do not receive higher callback rates than unemployed job-seekers. This paper's finding that freelancers significantly outperform unemployed workers could speak to the premium that employers put on workers' agency and entrepreneurial spirit. Compared to other forms of contingent work, freelancers could be seen as more enterprising and proactive, since they continually seek clients and income, as opposed to part-time, temporary agency or skills underutilizing workers, who can be perceived as more passive. This finding sheds more light on the discourse of individualism and entrepreneurship in the American labor market and supports the view that the contingent workforce is heterogeneous and should be studied using disaggregated data.

Comparing across racial/ethnic groups

In terms of *between-racial group* differences, the racial hierarchy remains somewhat constant. In all three employment histories considered, Whites are selected first in the queue, followed by Asians, who in turn outperform Latinos. Resumes with Black names receive fewer callbacks than comparable resumes with Latino, Asian, and White names in all three employment history groups. In terms of *within-racial group* differences, as discussed above, freelancers occupy a middling status between staying unemployed and continuing with full-time jobs. However, the gap between employment histories varies by race. Compared to remaining unemployed, Latinos

benefit the most from freelancing, Blacks the least, with Whites and Asians in between. The implications of this finding is discussed below.

When workers find themselves unemployed, they face two choices. Assuming their ultimate goal is to join the full-time workforce, they can focus exclusively on obtaining a full-time job. They can do so knowing that employers routinely discriminate against unemployed job-seekers (see Pedulla 2016 and Kroft et al. 2012). On the other hand, they can start freelancing, since this type of employment has lower barriers to entry, allows otherwise unemployed workers to obtain and update skills that could prove valuable in the market, and can serve as a stepping stone that serves as a path to long-term employment. These results provide insights for workers who are at this fork on the road. The short answer is: workers should consider embracing independent contracting careers, unless they are Black. Compared to remaining jobless, freelancing does accelerate reintegration into the full-time workforce, as employers prefer workers who choose to freelance over those who stay unemployed. African-Americans, however, are the exception to this rule. For Blacks, freelancing operates more like a 'trap' than a 'bridge', since employers show no preference for freelancing Blacks over unemployed ones. This finding means that if the full-time job is the final goal, unemployed Black workers could be better off dedicating their time to searching for a long-term position, rather than opening up a solo-business, since it won't significantly earn them credentials from the employers' perspectives. For Latino unemployed workers, on the other hand, freelancing could benefit them greatly. In light of the finding that there are no significant differences in callback rates between freelancing Latinos and their full-time counterparts, a short-term and successful entrepreneurial career could essentially serve as another full-time job for Latinos.

Limitations of the study

The study has a number of limitations. First, and this limitation is more general of computerized audit studies, it does not go beyond the initial stage of the job application process. The current design does not allow researchers to analyze the dynamics of job interviews, salary negotiation, and subsequent career advancement. Second, the research ignores networking and referral mechanisms, an important factor that is known to impact hiring decisions. This limitation does not bias the results, however, since none of the applicants had any prior contact or interpersonal relationship with the firms. Third, the findings of this paper can only be generalized to the three job types that are considered. Future studies could widen the scope, include different job types and improve generalizability. Fourth, the study could not expand itself to include the ethnic heterogeneity within racial groups. It is very likely that Korean-Americans and Japanese-Americans will fare differently from Filipino- or Cambodian-Americans in the hiring process. The intensity of hiring discrimination likely varies across Cuban-Americans, Mexican-Americans, and Puerto Rican-Americans. The beauty of the experimental method lies in its simplicity and the ability to pinpoint a specific cause. Adding another signal will immensely complicate the design and the theorization, while making it very difficult to identify the exact cause of discrimination. Since it is almost impossible to include all racial ethnic subgroups in the same research due to the massive number of experimental cells being generated, future studies should look into variations in labor market outcomes of different subgroups within the same racial or ethnic group. Fifth, the study shows that freelancers are preferred over unemployed workers, but are disadvantaged compared to full-timers. However, the findings do not pinpoint the specific mechanisms underlying such differences. Future studies should consider using survey experiments to collect data on such mechanisms.

Appendix A: Field Experimental Treatments

This appendix shows an example of the treatment used in the field experiment. The examples are taken from the resumes used to apply for administrative assistant openings in Houston, TX. The names of employers have been altered. Recall that the first two jobs for all applicants were full-time standard jobs, before the treatment takes place. The treatment occurs for the third segment of workers' job histories, and starts 20 months before the applications are sent out.

1. *Full-Time Standard Jobs*

05/2015 to Current Administrative Assistant *Large Company A* ─ Houston, TX

- Work with clients by receiving and directing calls, scheduling appointments, negotiating fees and turn times, and researching client information.
- Collaborate with the client's customers to schedule appointments, manage schedules, prepare presentations, compile and process highly confidential information.
- Set up and maintain paper and electronic filing systems for records, correspondence, and other material.

2. *Freelance*

04/2015 to Current Virtual Assistant Freelancing ─ Houston, TX

- Coordinate meetings (on and off site), conference calls, arranges for facilities, equipment, and catering. Prepare and distribute notices, agendas, and information packets along with meeting minutes.
- Execute multiple administrative tasks including hotel and flights booking, invoicing, mailers, corporate letters, outreach marketing, data entry, and updating databases.
- Operate independently, taking initiative in meeting quick turn-around times and deadlines. Manage diverse customers' teams using a combination of communication technologies such as Skype, phone and email correspondence.

3. *Unemployed*

The last employment history was unemployment, so I substitute a period of work experience with a 3-month post-college internship to ensure resumes are of comparable lengths.

06/2009 ─ 09/2009 Administrative Assistant Intern *Bank B* ─ Houston, TX

- Performed a variety of entry-level professional administrative staff work, gradually increasing in level of difficulty and responsibility.
- Prepared reports, presentations, operational documents, and correspondence.
- Organized team events and carried out special projects as requested by managers.

Appendix B: First and Last Names used in the study and results of two-proportion z-test

Race	Gender	First Name			Last Name			Percent Callback	X-Squared	P-value (all non-significant)
		Name	% Born to Mothers of the Same Race	% Born to Mothers who Attended College	Name	% Born to Mothers of the Same Race	% Born to Mothers who Attended College			
White	Male 1	Edward	76%	27.80%	Henson	78.12%	34.00%	25.03%	0.302	.582
	Male 2	Frank	85%	19.78%	Flanagan	80.56%	34.48%	26.42%		
	Female 1	Jessica	86.39%	28.36%	Stallings	84.78%	33.33%	20.16%	3.007	.083
	Female 2	Chelsie	92.35%	26.21%	Langley	92.85%	32.69%	16.58%		
Black	Male 1	Terrell	98.20%	28.30%	Washington	94.85%	34.64%	14.13%	0.426	.514
	Male 2	Tyrone	84.62%	25.45%	Winston	75.30%	32.81%	12.83%		
	Female 1	Ebony	93.20%	25.00%	Jefferson	85.80%	30.83%	9.34%	1.185	.276
	Female 2	Tanisha	78.40%	28.99%	Muhammad	97.78%	34.09%	7.63%		
Latino	Male 1	Nelson	82.38%	25.27%	Rodrigues	92.31%	30.00%	15.53%	3.799	0.051
	Male 2	Gabriel	76.57%	26.34%	Pereira	32.04%	86.56%	19.48%		
	Female 1	Monica	76.57%	26.34%	Fernandes	32.04%	86.56%	14.31%	0.001	0.999
	Female 2	Veronica	91.17%	18.06%	Gomes	88.32%	27.27%	14.30%		
Asian	Male 1	Jacky	77.77%	28.57%	Zhou	100.00%	34.04%	20.69%	0.202	.653
	Male 2	Winson	100%	22.22%	Kong	94.78%	28.44%	19.62%		
	Female 1	Winnie	75%	25.93%	Yin	93.75%	33.33%	14.76%	0.205	.650
	Female 2	Kimmy	100%	40.00%	Zhu	100.00%	25.00%	15.74%		

Chapter 3: Contextualizing Discrimination: The Role of Urban Demographic Context in Shaping Racial Hiring Discrimination

Introduction

The manifestation of racial inequality in diverse urban labor markets remains an important theme in modern American society. As racial exclusion and segregation in various occupational outcomes plays an important role in reproducing social stratification, a wide range of sociological literature is developed to grasp the complexity of this multifaceted social problem. Among them are two broad and important literatures: [1] the literature on discriminatory hiring behaviors, and [2] the literature on demographic contexts of occupational inequality. Since their emergence in the middle of the last century, these two sets of literature made a substantial contribution to the field. The first literature originated when the Department of Housing and Urban Development launched a series of tests for racial discrimination in the housing market (Pager 2007). It is not until after the mid-2000s, since the pioneering studies such as Pager (2003) and Bertrand and Mullainathan (2004), that sociologists saw a proliferation of audit studies that analyze how racial discrimination operates and persists in labor markets (Gaddis 2014, Kang et al. 2016b, Oreopoulos 2011, Pager et al. 2009b, Pedulla 2016a). Conversely, one can trace the theoretical roots of the second branch of literature back to arguments on the impact of group size on social stratification in communities (Allport 1954, Blalock 1956, Simmel 1950). A considerable number of theoretical developments and empirical tests of these perspectives appeared from the late 1970s to the 1990s (Beggs et al. 1997, Burr et al. 1991, Cohen 1998, Frisbie and Neidert 1977, Tienda and Lii 1987, Wilcox and Roof 1978), but scholarship in this tradition became scarcer since the mid-2000s. For simplicity, I'll refer to this literature as the 'demographic context' literature.

I argue that these two literatures made limited references to one another and largely developed independently. I also argue that these bodies of work can be connected because they have strengths and weaknesses that are complementary to one another. Audit studies are effective at detecting hiring discrimination, but are under-contextualized because they typically cover a relatively small number of cities. Research on how minority concentration impacts socioeconomic inequality, on the other hand, deeply contextualize stratification, but lack proper methodological tools to quantify discrimination in hiring. Additionally, the studies in both literatures, to varying extent, overlook the role of Asians and Latinos in the stratification process.

The limitations of these literatures leave a critical research question underexplored. *How do demographic contexts of urban labor markets shape hiring discrimination across different racial-ethnic groups?* Theoretically, this research synthesizes two literatures to derive expectations about how demographic contexts of labor markets conditions race- and ethnic-based discrimination that manifest within them. Empirically, this paper is motivated by the task of generating a large-scale field experiment that covers a broad range of urban sites and several jobseekers' racial/ethnic-identities, while simultaneously maintaining the methodological advantages associated with traditional audit studies. This paper presents the results from an original field experiment that involves submitting nearly 12,000 fictitious applications, which were manipulated across four racial/ethnic groups (White, Asian, Latino, and Black) and three employment histories (unemployed, freelance, and full-time). The resumes were submitted to real job openings in 50 cities, allowing the research to gauge the extent to which the chances of getting a callback is conditioned by variation in urban demographic contexts.

This research makes a number of contributions. *Theoretically*, this paper situates hiring outcomes in urban contexts by using insights from the literature linking urban demographic composition to social stratification and makes contributions to both subfields. It brings urban context to the audit studies of hiring discrimination, and tests theoretical frameworks derived by

the urban inequality scholarship on hiring differentials – a stage in the process of stratification that the 'power-threat' literature overlooks. Additionally, the design of this research also includes Asians and Latinos, two racial/ethnic groups understudied in both literatures. *Empirically*, with close to 12,000 fictitious resumes manipulated across four racial/ethnic groups and submitted to job openings across 50 metropolitan statistical areas, this research is one of the most expansive audit study done on the topic of race and employment to date in sociology with respect to scope and geographical coverage.

The paper proceeds as follows. I provide a review of two literatures and discuss their strengths and limitations. I then argue that combining these two perspectives is a productive exercise that benefits both literatures. After deriving hypotheses based on a combined model of both literatures, I describe the data at both the individual and city levels. After outlining the method of data analysis, I present the results. The paper concludes with a discussion of the findings, limitations of the current study, and areas for future research.

Field experiments on employer discriminatory behavior

Racial/ethnic discrimination takes place in multiple areas of social life, including housing, credit markets, consumer markets, etc. (Gaddis and Ghoshal 2015, Hogan and Berry 2011, Pager and Shepherd 2008) The labor market is no exception. Academic accounts reveal consistent evidence of employers' discriminatory behaviors. Minority applicants are selected at much lower rates compared to otherwise similar White jobseekers (Bertrand and Mullainathan 2004, Gaddis 2014, Pager 2003, Pager et al. 2009b, Pedulla 2016a), and the level of discrimination that Black applicants face remain strikingly consistent over the last 30 years (Quillian et al. 2017). Field experiments dominate this area of sociological inquiry. The audit method embodies several unique features. The ability to identify specific experimental condition that gave rise to observed hiring differentials, the capability of making causally valid claims, and the capacity to rule out alternative explanations make audit and correspondent studies particularly conducive to

examining discrimination. Scholars generally consider experimental studies to be "the best method for assessing causality" and audit studies "the only method that can reliably document discrimination in a fashion that is difficult to debate." (Quillian 2006:303-04) Leveraging these important advantages, research using audit methods were successful at detecting and quantifying discrimination that occurs at hiring stage and made major contributions to our understanding of the persistent ways in which race remains a key stratifying force in our society. Despite offering compelling evidence, like any other methodological approaches, audit studies have limitations. Critics of this method point to a number of concerns: internal validity, generalizability, inflated effect size, and other ethnical issues (see Pager 2007 for a discussion). I argue that another limitation of existing audit studies is that they operate within a small number of experimental sites. For instance, some of the most well-known and well-cited audit studies took place in the following cities or set of cities: New York City (Pager et al. 2009b), Chicago and Boston (Bertrand and Mullainathan 2004), Washington D.C (Bendick et al. 1999), New York City, Atlanta, Los Angeles, Chicago, and Boston (Pedulla 2016a). The relatively small number of urban sites challenges scholars' attempts to systematically explore how certain characteristics of the cities in which the experiment took place could shape dynamics of hiring discrimination reported. By undertheorizing urban sites, existing studies conceptualize hiring officials as relatively autonomous agents who engage in discriminatory behaviors as responses to experimentally manipulated signals, as opposed to actors whose actions are conditioned by demographic and economic forces that shape the arenas in which they operate.

I argue that with few exceptions, extant field experiments on hiring discrimination are largely under-contextualized. Due to the dominance of field experiments in studies in hiring discrimination, a limitation in the methodological subfield contributes to leaving a theoretical area of contextualizing hiring discrimination underexplored. In recent year, numerous studies highlighted the role of organizational and institutional norms in shaping employment

discrimination (Hirsh and Kornrich 2008, Light et al. 2011, Midtbøen 2015). However, the literature on hiring discrimination still lacks studies that explicitly conceptualize urban sites as important arenas in which discrimination manifest and specifically situate discriminatory behaviors in the structural context of metropolitan areas.

Why should hiring discrimination be contextualized in urban areas? Theoretically, discrimination is a socially constructed process where the discriminatory acts are shaped by social settings in which they manifest. Hiring officers are gatekeepers who are constrained by the structural forces beyond themselves and beyond the organizations that they represent. Since the process of discrimination is embedded in larger metropolitan contexts, characteristics of urban sites are theoretically expected to affect employers' decision making, which in turn generate processes that lead to stratified outcomes among jobseekers of different marginalized categories. Therefore, it is of theoretical importance to explore how such contextualization takes place and to unpack how variation in attributes to urban sites might give rise to differences in the dynamics of race- and ethnic- based hiring discrimination that occur in diverse labor markets. Such a task would deepen our understanding of how urban conditions shape processes of discrimination and labor market stratification more broadly. Pager and Shepherd (2008:197) highlights the necessity of contextualizing discrimination: "Members of racial minority groups may be systematically disadvantaged […] because the prevailing system of opportunities and constraints favors the success of one group over another. In addition to the organizational factors […], broader structural features of a society can contribute to unequal outcomes […]". Besides being theoretically important, situating hiring discrimination in different urban contexts also embodies practical significance. Millions of jobseekers live outside of megalopolis and operate in markets with populations of less than 2 million. It is therefore crucial to expand the scope of existing audit studies to analyze how race- and ethnic- based discriminatory behaviors vary across a broader range of cities. With respect to policy implications, understanding how employment

discrimination and social stratification more generally manifest across labor markets that vary in terms of population, immigration history, racial makeup, and economic conditions, could yield initiatives that contributes to reducing inequality in urban areas.

The literature on demographic context of labor market stratification

There has been a long line of research exploring the role of minority demographic composition in shaping various measures of labor market stratification within cities. The theoretical roots of this literature can be traced back to Simmel (1950)'s emphasis on the impact of group size on social processes. The theoretical accounts developed by Williams (1947) and Allport (1954) both argued that the likelihood of racial conflict and discrimination are functions of the percentage of minority in given communities. As a consequence of the majority group feeling threatened – economically, politically, or culturally – as the numerical size of minority groups increases, communities experience increased rates of prejudice, intergroup conflicts, and discrimination. (Blalock 1956). Blau (1977:33)'s macrosociological theory of social structure also outlines how researchers can analyze the influence of macrostructural conditions on social inequality within any given spatially demarcated units by highlighting certain quantitative properties: "the number of persons in different positions and size of groups, […], the degrees to which differentiation occurs within or among society's substructures; and how these structural conditions affect the rates of social association among groups and strata."

Tienda and Lii (1987) build on Blau's theorization and derive four competing mechanisms through which minority concentration causally determines intra- and intergroup socioeconomic inequality within given ecological units. The *overflow thesis* maintains that once the size of certain minority groups become large enough, some members of these groups will inevitably break traditional occupational norms and attain higher-status jobs, typically associated with the dominant subgroup. The *power thesis* supplements this perspective: once a certain numerical threshold is reached, disadvantaged groups will exercise their political power and

economic leverage to protect the distribution of social goods to their members. The other two mechanisms offer predictions that counter the overflow and power theses. The *discrimination thesis* posits that the majority groups, anticipating the socioeconomic threats associated with a growing number of minority subgroups, will mobilize their existing resources to raise the barrier of access to various social goods in order to maintain their undiluted position of power. The *subordination* thesis builds on this concept. Instead of totally blocking out minorities' access to social resources, the hegemonic group will limit such access to low-wage, low-pay, and insecure positions to control disadvantaged groups' socioeconomic gains and social mobility.

Research in this literature outline a number of theories linking minority size to inequality, some perspectives are more consistent with the discrimination/subordination thesis, while others are in line with the overflow/power expectations. Among these theories, the "*visibility-discrimination*" thesis is the most developed and supported argument linking markets' local structure to racial discrimination (Burr et al. 1991). At the core of the thesis is how Whites' reaction to the rising number of minorities causally determines intergroup socioeconomic inequality within given ecological units. The thesis predicts that in response to the socioeconomic threats associated with a growing number of minority subgroups, the racial majority will respond by: [1] raising level of racial prejudice and discrimination, and [2] mobilizing their existing resources to raise the barrier of access to various social goods, including good jobs with long-term contracts and decent pay, in order to maintain their privileged position (Blalock 1967).

Alternatively, *job queuing theory* contends that labor markets are organized along racial lines (Lieberson 1980) with the racially dominant group concentrated at the top and subordinate groups at the bottom. An increase in minority group size boosts the supply of minority labor, providing the context for job segregation: racial minorities, particularly Blacks, are increasingly channeled into predominantly Black jobs, thereby increasing job segregation along racial lines.

This process also benefits Whites since Whites can vacate non-desirable jobs -now filled by minorities- to obtain jobs higher in the occupational hierarchy at the expense of minorities (Semyonov et al. 2000). The queuing perspective, however, also notes that special circumstances might arise when minority size passes certain thresholds. Consistent with Tienda and Lii (1987)'s hypothesized 'overflow' mechanism, this thesis predicts that once minority size reaches a critical mass, superordinate gatekeepers can upgrade subordinate group members and provide minorities with skilled jobs that racial majorities otherwise hold. This 'spillover' process occurs partly because there simply aren't enough majorities to hold desirable positions (Glenn 1964, Spilerman and Miller 1977).

In sum, in cities with high concentration of racial/ethnic minorities, the 'visibility-discrimination' hypothesis and the 'job queuing' perspective both predict higher majority-minority inequality. The difference is between the mechanisms offered: the former expects the gap to widen because of increased hiring discrimination against minorities, the latter hypothesizes the exacerbation of inequality due to the channeling of racial/ethnic minorities into low-paid and undesirable jobs[15]. The only exception is the 'overflow' thesis, where minorities will start to obtain desirable positions as their size increase. A large body of literature explores the relationship between minority concentration and several socioeconomic outcomes in geographical units. The empirical evidence in this field show overwhelming evidence of the positive correlation between minority concentration and various measures of socioeconomic inequality. (Beggs et al. 1997, Blalock 1956, Frisbie and Neidert 1977, Semyonov et al. 2000, Tomaskovic-Devey and Roscigno 1996, Wilcox and Roof 1978). I argue that there are two important limitations to the literature linking minority and work stratification. First, scholarly

[15] In this study, the fictitious applications were sent to three job types: administrative assistant, sales, and marketing. These are all middle-class, white-collar jobs that require college degrees. When minorities' applications fail, it could be due to either discrimination, or to the fact that minorities being channeled to lower-paid positions. This experiment thus could not distinguish between these two mechanisms.

work focuses almost exclusively on Black-White differences without paying sufficient attention to Latinos and Asians in the multiracial setting of modern urban labor markets. A small number of studies, such as Frisbie and Neidert (1977) and Tienda and Lii (1987), considered the role of Latinos, while Asians remain largely, if not totally, ignored. While previous studies provide convincing evidence that Black-White inequality widens as Black population increases (Fossett and Kiecolt 1989, Quillian 1996), it is unclear if these predictions extend to Asians and Latinos. On the one hand, it is possible that Whites perceive all minorities, including Asians and Latinos, to be equally threatening as Blacks. Blalock (1967:183) asserts that: "Provided that minority competition underlies prejudice, there should be a positive relationship between minority percentage and discrimination." In this case, the level of animosity and discriminatory behaviors should be evenly distributed across different racial/ethnic minority groups. Following this line of thought, it is possible that in cities with over-representation of minorities, Whites maintain high-status jobs while spreading low-pay and low-quality jobs across all minority groups rather than reserving these jobs for Blacks only (Semyonov et al. 2000). On the other hand, there are theoretical reasons to expect how Whites' prejudice do not remain constant across minority groups. The discourses of "model minority" and "honorary whites" (Tuan 1998, Zhou 2004) suggest that Asians might not be discriminated as heavily as Blacks due to their high level of educational and socioeconomic attainment. Latinos represent a broad ethnic group consisting of different racial identities (Skerry 1997). The variation in terms of racial proximity to Whiteness complicates the process through which members of these groups are discriminated against (Tienda and Lii 1987). For these reasons, it is conceivable that the Asian and Latino concentration in a given area does not affect these two groups in the ways that the Black concentration impact Blacks. Empirical research on Whites' attitude suggest that minority concentration has different effects on different minority groups. Taylor (1998:512) found that various measures of Whites' anti-Black attitudes intensified as the local Black population

enlarged, but "concentrations of local Asian-American and Latino populations do not engender white antipathy toward these groups."

Second, in this literature, black concentration has been shown to widen White-Black inequality in several labor market outcomes such as: income and earnings (Cohen 2001, Frisbie and Neidert 1977, Tienda and Lii 1987), poverty (Tomaskovic-Devey and Roscigno 1996), occupational segregation (Huffman and Cohen 2004, Semyonov et al. 2000), and unemployment (D'Amico and Maxwell 1995). Inequality in hiring has been overlooked by this large literature. This is an important gap to fill because hiring operates at another stage in the process of stratification, and could potentially be affected differently by minority concentration compared to those aforementioned outcomes. Reviewing existing empirical evidence on labor market stratified outcomes, Pager and Shepherd (2008) indeed noted varying levels of conclusivity with respect to results on majority-minority disparities in terms of hiring, employment, and wage. Examining how cities' demographic concentration shape racial inequality in hiring thus requires synthesizing the literature on urban context of stratification with the literature on hiring discrimination, which the following section explores.

Synthesizing the two literatures

As described in the previous sections, the broad sociological literature on labor market stratification saw the emergence of two separate literatures: [1] the literature on employer discriminatory behaviors using field experimental methods (Bertrand and Mullainathan 2004, Gaddis 2014, Pager 2003, Pager et al. 2009b, Pedulla 2016a) and [2] the studies linking the size of minority group with their relative socioeconomic outcomes using quantitative data (Beggs et al. 1997, Burr et al. 1991, Frisbie and Neidert 1977, Huffman and Cohen 2004, McCreary et al. 1989, Semyonov et al. 2000, Wilcox and Roof 1978). While both literatures play important roles in shaping the sociology of labor markets and employment outcomes, they largely develop independently of each other. In order to explore the research question of how minority

demographic composition can shape racial hiring discrimination in urban labor markets, these two theoretical perspectives need to be combined. I argue that these two lines of scholarly works complement one another nicely, as the limitations associated with one literature can be alleviated by the strength of the other body of work and vice versa.

On the one hand, the audit and correspondence studies are effective at detecting and quantifying hiring discrimination. The built-in features of experimental methods allow researchers to make causal claims, rule out alternative explanations, and isolate theoretically-derived drivers for hiring differentials. The weakness of these studies stems from the fact that they are relatively under-contextualized. Experiments typically take place in a small number of major cities, challenging their authors' efforts to generalize the findings to other cities, or to situate results in various urban contexts. On the other hand, the scholarly works linking minority demographic composition to labor market stratification operates from a long tradition of theoretical insights on how context influences inequality and relies on datasets that have large geographical coverage. However, relying on survey data, research in this subfield cannot detect hiring discrimination sharply and address causality effectively in the ways that experimental studies are designed to do. The difficulty in providing a clean measure of race- and ethnic-based hiring discrimination makes hiring an understudied labor market outcome in this literature. The urban inequality literature can bring context to the literature on hiring discrimination, and the experiments can provide a precise estimate of hiring discrimination – an issue that the urban literature struggles with extensively. Theoretically, combining insights from these two literatures would allow scholars to engage in the important task of examining how race and ethnic discrimination in hiring can be situated in urban labor market contexts. Empirically, this requires a multi-site large-scale field experiment, one that covers a large enough number of cities to derive a reasonable estimate of the effect of urban context on hiring outcomes. By submitting fictitious resumes to 50 cities, this research represents a significant empirical expansion. To put it

in perspective, the number of markets analyzed in recent audit studies are considerably smaller: seven (Tilcsik 2011), five (Pedulla 2016a), three (Gaddis 2014), and two (Wallace et al. 2014). Additionally, the studies in both literatures tend to overlook the role of Asians and Latinos in the stratification process. By expanding the geographical scope of existing audit studies and including Asians and Latinos in the design, this research takes a first step forward in examining the effects of urban context on race and ethnic discrimination in hiring.

A significant portion of the literature on hiring discrimination aims to uncover the mechanisms through which employers discriminate between workers of different races and ethnicities (Pager and Shepherd 2008). Classical theoretical works offer two ways in which discrimination manifests at the hiring interface: taste-based discrimination and statistical discrimination. Becker (1957)'s theory of taste-based discrimination maintains that racial animosity motivates employers' discriminatory behaviors. Employers consider working with racial/ethnic minorities to be undesirable regardless of their productivity, and indulge the 'taste' by eliminating minority applicants from the job queue, or by paying them less once hired. On the other hand, statistical discrimination theory predicts that discrimination can occur even in the absence of racial animus. Operating under time constraint and limited information, employers still need to make relatively accurate predictions about prospective workers' ability to produce once hired. To reduce uncertainty, they thus rely on non-productive characteristics – such as race/ethnicity – as proxies to predict applicants' productivity. Employers can rely either on real-life observed variation in terms of productivity between races, or on their perception (or stereotypes) of such variation (Aigner and Cain 1977, Arrow 1972, Phelps 1972). This research does not aim to adjudicate between these theories but rather to use them to theorize the connection between demographic composition of minorities at the city level and discriminatory hiring behavior by employers.

How can one synthesize insights from the 'visibility-discrimination' or the 'power-threat' literature with those from the 'taste-based discrimination' and the 'statistical discrimination' tradition to generate theoretically derived predictions on how cities' demographic composition affect employers' discriminatory behavior? For Black workers, the 'power-threat' or 'visibility-discrimination' thesis provides a good framework for understanding how 'taste-based discrimination' might intensify in cities with high rates of Black concentration, as a number of studies show a positive correlation between Black population and Whites' various attitudinal measures of racial animosity. Fossett and Kiecolt (1989) show that percent Black significantly predicts opposition to racial integration and Whites' perceived threat from Blacks. Quillian (1996) and Taylor (1998) demonstrate that the proportion of Blacks in the population positively predicts heightened levels of Whites' antipathy, operationalized as measures of traditional prejudice, opposition to race targeting, and several policy-related beliefs. Racial antipathy can operate beyond attitude and manifest as discriminatory behavior, which this literature also shows to have a positive linkage with the size of the Black population. Huffman and Cohen (2004:905) show that Black workers are segregated to black-dominated jobs and that "behavior contributing to racial segregation would be especially strong in areas with larger local black populations". This line of literature thus provides ample evidence that proportion of Blacks in given geographical areas boosts racial animus, which in turn is predicted to shape higher rates of hiring discrimination that Blacks face. Beside 'taste-based discrimination', there are also theoretical grounds to expect that percent Blacks in labor markets also increases the level of 'statistical discrimination' Black workers might encounter. The literature provides empirical support for the thesis that a high percentage of Blacks results in Blacks assuming lower wages (Beggs et al. 1997, Cohen 1998, Cohen 2001, McCall 2001a), higher rates of poverty (Tomaskovic-Devey and Roscigno 1996), higher odds of working in unskilled and low-skilled occupations (Semyonov et al. 1984, Semyonov et al. 2000), and higher rates of underemployment (Tigges and Tootle 1993).

The poor labor market outcomes of Blacks in cities with high percent Black drives down the group average measures that employers rely on to make predictions about Black workers' potential productivity. When making hiring decisions, employers operating in labor markets where Blacks face such low levels of occupational attainment, which are also markets with a high concentration of Blacks, would believe that Black workers belong to a minority group that on average underperform the majority workers, thus facing reduced incentives to hiring Blacks. In other words, high concentration of Blacks results in lower rates of Blacks' labor market achievement, which in turn generates a statistical context for employers to discriminate against all Black workers regardless of the applicants' actual credentials. This is a mechanism through which Black workers could face lower hiring rates even in the absence of direct racial animosity from the employer. In sum, higher Black concentration provides a demographic context for both taste-based and statistic-based discrimination. I thus expect that:

Hypothesis 1: Percent Black in urban labor markets will have a significant widening effect on the Black-White hiring gap.

The degree to which one can extend the 'power-threat' perspective to make sense of the labor market discrimination that Asians and Latinos face is uncertain. Geographically, Asian Americans' population distribution is skewed: they reside disproportionally in the cities in the West Coast and a few high cost-of-living East Coast metropolitan areas[16]. Asian Americans might have preference for living in these areas because their extended families are more likely to reside in these locations, and because Asian Americans might be more concerned than other racial groups about settling near or with their aging parents due to cultural norms (Xie and Goyette 2004). If the 'power-threat' thesis indeed applies to Asians and Asians are discriminated

[16] In my sample the top 10 cities with respect to percent Asians from the ages of 18-65 are: San Jose-Sunnyvale-Santa Clara (32%), San Francisco-Oakland-Fremont (24.6%), Los Angeles-Long Beach-Santa Ana (15.9%), Sacramento--Arden-Arcade-Roseville (13.1%), Seattle-Tacoma-Bellevue (12.7%), San Diego-Carlsbad-San Marcos (11.9%), New York-Northern New Jersey-Long Island (11.0%), Las Vegas-Paradise (10.0%), Washington-Arlington-Alexandria (9.8%), and Boston-Cambridge-Quincy (7.2%).

more heavily in areas with high concentration of Asians, one can expects that: [1] Whites' racial animosity against Asians in these areas increases – as the 'taste-based discrimination' thesis anticipates, or [2] Asians labor market outcome suffer in these areas, resulting in employers being more hesitant to hire Asians because of their low group average productivity - as the 'statistical discrimination' model expects. Scholars found little evidence for either of these predictions. With respect to racial animus, the literature gives little indication that Whites' anti-Asian animosity increases in urban sites with high Asian concentration. Taylor (1998:528) concludes that "whites' views about Asian Americans show no significant sensitivity to the Asian American population share." Moss and Tilly (2001:97) interviewed a large number of employers in different cities, and showed that in Los Angeles, a city with a large Asian population, 14.3% of employers think that Asians are better workers. In Atlanta and Detroit, cities with much lower Asian population, these numbers are 8.9% and 3.3%, respectively. The authors also report that "When managers did speak to Latinos' and Asians' skills, positive comments outnumbered negative ones" (p.114). Commenting on Asians, an employer said: "As a spectrum, I see the Asians on the high end of work ethic and working hard and privately and quietly." (p.117) While these opinions might not be representative of all employers' attitude, it is difficult to locate evidence that Whites' attitudes towards Asians, and tendency for taste-based discrimination, significantly increases in cities with strong Asian presence. With respect to statistical discrimination, it is also unclear if Asians are subjected to higher rates of statistic-based discrimination as the proportion of Asians increases. A long line of research comparing wages of Asian Americans and Whites show relatively consistent results. Hirschman and Wong (1984) demonstrate that Asian Americans approach socioeconomic parity with Whites due to high levels of educational achievement. Kim and Sakamoto (2010) show that 1.5-generation Asian American men seem to reach full parity with their White counterparts. While some scholars argue that Asians' high wages is a function of Asians residing in areas with higher costs

of living, Wang et al. (2017) treats cost of living as an endogenous variable and concludes that "Native born Asian Americans seem to have overcome the disadvantage of being non white in the labor market at least in regard to wages." It thus seems unlikely that Asian concentration drives down Asian wages and productivity. In brief, the literature gives little grounds for believing that [1] negative attitudes towards Asians or [2] Asians' labor market underperformance both increase with the size of the Asian population. Therefore, it appears improbable that the 'power-threat' explanation can be extended to the Asian population, since the relative Asian concentration is unlikely to drive up either 'taste-based or 'statistically-based' discrimination that Asians face. I thus expect that:

Hypothesis 2: Percent Asian in urban labor markets will have no impact on the Asian-White hiring gap.

It is also unclear how well the 'power-threat' perspective maps on to potential discriminations that Latinos might face. If Latinos indeed face harsher discrimination in areas with high Latino population, the joint operation of the 'power-threat' perspective, the 'taste-based discrimination' hypothesis, and the 'statistical discrimination' thesis would expect that [1] Latinos are viewed more negatively and [2] Latinos will have lower labor market outcomes as percent Latinos increase. Existing scholarship found little support for both expectations. Taylor (1998) found no relationship between the concentration of Latinos and increased white antipathy towards Latinos. Dixon and Rosenbaum (2004) reported a negative and insignificant correlation between percent Hispanic and anti-Hispanic stereotype, and conclude that the large presence of Hispanics does not represent as large of a threat to Whites as does a large concentration of Blacks. Hood III and Morris (1997) suggest a more mixed result. While "Anglos living in heavily Hispanic or Asian areas generally have a more positive outlook on the potential contributions that these two groups can make to society" (p.315), percent Hispanic had no effect on Anglos' positive affective evaluation of this group. To date, there is little evidence on the

relationship between Latinos' concentration and their relative labor market performance. Reimers (1984) reported mixed findings on how proportion Hispanics yield different effects on the wages of different ethnic groups: the fraction of Hispanic population does not impact the wages for Cubans and Puerto Ricans, but drive down earnings of Mexican Americans and "other Hispanics." McCall (2001b) shows that percent immigrant widens the Latino-White wage gap, but it is unclear which immigrant group is driving the effect. All in all, the existing evidence shows that strong concentration of Latinos is unlikely to fuel anti-Latino attitude, but might drive down Latinos' labor market outcome, which might, in turn, increases employers' tendency to statistically discriminate. Therefore, I expect that:

Hypothesis 3: Percent Latinos in urban labor markets will have a widening effect on the Latino-White hiring gap, but the effect size will be smaller than that of the coefficient linking percent Black to the Black-White hiring ratio.

Data and method

This section presents results from the original field experiment described in the previous chapter. In addition to the experimental data, this research also combines city-level variables as indicators of urban context with individual-level I controlled for applicants' race, employment history, and job type. At the city-level, racial composition was measured by percent Black, percent Asian, and percent Latino. In addition, I included a variable capturing percent minority within a given city. Although this paper focuses primarily on the impact of minority composition, the literature identified a number of other possible drivers of labor market inequality. I included these measures as control variables. For local economic conditions, following Huffman and Cohen (2004), I used the unemployment rate as a proxy for short-term economic vitality and net percent migration as a measure of long-term regional economic vitality. Additionally, I incorporated two measures of cities' industrial structure: percent employed in manufacturing and percent

employed in services. Finally, I also included population to capture the size of the labor market and a dummy variable to account for regional variation.

The nested structure of the data drives the selection of generalized hierarchical linear model as a proper modeling technique. At level 1, I derive adjusted racial hiring gap by estimating individual-level models for each city. At level 2, these adjusted racial gaps were modeled as outcomes predicted by city-level regressors. Specifically, at the individual level, I estimated callback gaps between whites and minorities using the following model:

$$\ln \frac{p_{ij}}{1\text{-}p_{ij}} = \beta_{0j} + \beta_{1j}Asian + \beta_{2j}Black + \beta_{3j}Latino + \beta_{4j}Freelance + \beta_{5j}FullTime + \beta_{6j}Admin + \beta_{7j}Marketing \quad (1)$$

The dependent variable is the log odds of individual i getting a callback versus not getting one in city j. β_{0j} is the intercept for job market j. β_{1j}, β_{2j} , and β_{3j} represent the adjusted differences in log odds of getting a callback in city j between Whites and Asians, Whites and Blacks, and Whites and Latinos, respectively. With Whites being the baseline category, a positive coefficient suggests that minorities are more likely to get a callback than Whites. These coefficients are adjusted in the sense that they are estimated in models that account for other individual-level variables such as employment history and job type. I did not control for gender because I did not vary gender within pairs and because I used job type specifically to determine applicants' genders[17]. I estimated 50 of these models, one for each city.

At the city-level, after obtaining the 50 values for $\beta_{0j,}\beta_{1j}, \beta_{2j,}$ and β_{3j} (one for each labor market), I used them as dependent variables in a series of models estimating the association between labor market conditions and adjusted the racial call-back gap. Specifically, I used the following models:

[17] All fictitious applications sent to sales jobs were from male applicants. Contrastingly, all applicants to administrative assistant positions were female. I randomized gender for applications to marketing positions.

$$\beta_{0j} = \gamma_{00} + R_j\gamma_1 + \mu_{1j}, \quad (2)$$

$$\beta_{1j} = \gamma_{10} + R_j\gamma_2 + \mu_{2j}, \quad (3)$$

$$\beta_{2j} = \gamma_{20} + R_j\gamma_3 + \mu_{3j}, \quad (4)$$

$$\beta_{3j} = \gamma_{30} + R_j\gamma_4 + \mu_{4j}. \quad (5)$$

$\beta_{0j}, \beta_{1j}, \beta_{2j}$, and β_{3j} are derived from equation (1).[18] They represent the adjusted racial difference in callback rates and serve as outcome measures in equations 3 to 5.[19] In other words, these four coefficients are slopes in equation (1) and dependent variables in the subsequent four equations. Each equation has its own error structure estimated by different error terms. R represents a vector of city-level predictors operationalizing cities' demographic composition and economic climate. Table 4 displays the list of these variables, their definitions, their sources, and their descriptive statistics.

[18] The paper is primarily concerned with the racial hiring gap, so equations 3 to 5 are of more substantive interest than equation 2. Results from equation 2, with the level-1 intercept as outcome variables, are shown in Appendix F.
[19] A drawback of this method of looking at the racial callback gap is the researcher could only analyze the gap itself, rather than study the changes of the numerator and the denominator that shape the gap. For instance, if a minority-White gap widens, the research is not designed to indicate if it is due to White gain, to minority loss, or to both.

Table 4. Definition, Source, and Descriptive Statistics for Metropolitan Statistical Area - Level Predictors

Variable	Definition	Descriptive Statistics			
		Min	Max	Mean	Standard Deviation
Demographicl Composition					
Percent Minority[a]	Share of non-white population aged 18-65	0.11	0.65	0.35	0.15
Percent Black	Share of Black population aged 18-65	0.01	0.45	0.14	0.09
Percent Asian	Share of Asian population aged 18-65	0.01	0.33	0.06	0.05
Percent Latino	Share of Latino population aged 18-65	0.01	0.52	0.15	0.13
Industrial Makeup					
Percent Manufacturing[b]	Share of manufacturing employment	2.90	20.70	9.67	3.70
Percent Service[c]	Share of service employment	14.50	29.60	17.48	2.30
Economic Condition					
Unemployment Rate[d]	Percent of the civilian labor force unemployed	3.20	5.90	4.50	0.70
Percent net migration[e]	Cumulative estimates of Resident Population change from 2010 to 2015, percent	-0.80	16.60	5.90	3.90
Control Variables					
Population (thousands)[f]	Total population from 18-65	483.30	12112.10	2073.00	1073.50

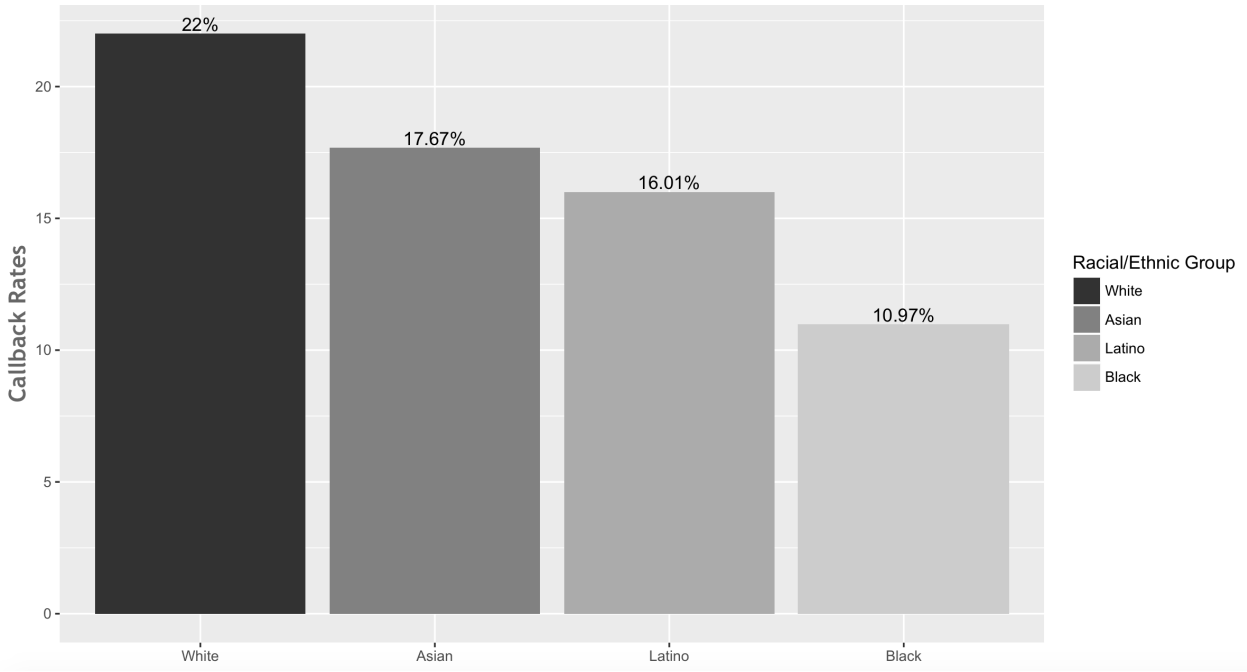
Sources: [a]Data for racial composition come from the U.S. Census Bureau 2012 Intercensal Population Estimates
[b] Data come from estimates of "civilian employed population 16 years and over – Manufacturing. ACS 2016
[c] Data come from estimates of "civilian employed population 16 years and over – Service occupations. ACS 2016
[d] Unemployment rates data come estimates of "Unemployment Rates for Metropolitan Areas, Not Seasonally Adjusted" , Bureau of Labor Statistics. February 2017
[e] Migration data come from the U.S Census 2015 Population Estimates;
[f] Data on population come from the U.S Census Intercensal Population Estimate

Results

Descriptive Results

Figure 4 displays the callback rates for workers of four different racial/ethnic groups. For consistency, I use two-tailed two-sample tests for equality of proportions with continuity correction in all between-group comparisons.

Figure 4: Callback Rates by Jobseeker Race-Ethnicity

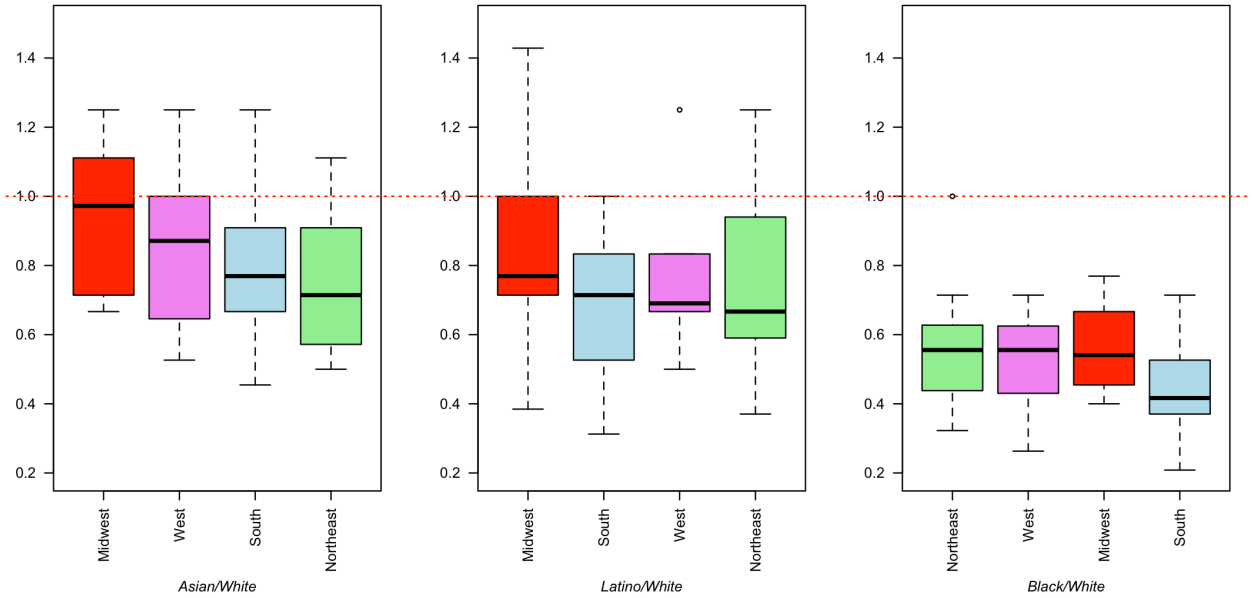


A clear pattern emerges from the figure: Whites outperform all the other racial/ethnic groups. The callback rate that Whites received was significantly higher than the rate for Asian (22 percent versus 17.67 percent, $p<0.01$), for Latinos (22 percent versus 16.01 percent, $p<0.01$), and for Blacks (22 percent versus 10.97 percent, $p<0.01$). Black applicants find themselves underperforming their Latino and Asian counterparts, with $p<0.01$ in both cases. Interestingly, there was no statistically significant difference between the callback rates that Asians and

Latinos received (17.76 percent versus 16.01 percent, p=0.09)[20]. In sum, the descriptive results show that White workers are selected at the top of the queue, Black workers at the bottom, with Asians and Latinos in between.

However, the majority-minority gaps do not stay constant across geographical areas. The boxplots in Figure 5 show the regional variation of the unadjusted White/minority callback rates ratio. These ratios are obtained by dividing the raw callback ratios of Whites to those of minorities, without accounting for individual-level observables.

Figure 5: Regional Variation of the Unadjusted Racial-Ethnic Callback Ratios



The dotted line that crosses the vertical axis at 1 signifies parity with Whites. Any ratios below this line suggest that employers favor White applicants over minority ones, and vice versa. The racial gaps narrow as the ratios approach 1. In other words, the larger the ratio, the better the minority group's performance relative to Whites. The Black/White gap is widest in the South

[20] This nonsignificant difference in callback rates between Asians and Latinos do not hold up in the regression context once controlled for employment history and/or job type. Once these factors are included in the model, Asians significantly outperform Latinos.

and smaller in the Midwest, West, and Northeast. There does not seem to be a large difference in hiring gap between these three regions. The regional patterns of racial hiring gap are similar for Asians and Latinos. Both groups are most likely to get callbacks in the Midwest, least likely in the Northeast, with the Western and Southern regions in between. For Asians and Latinos, given their substantial concentration in the Northwestern and Southwestern regions, the fact that they are more likely to get job interviews in the Midwest might simply be a consequence of their willingness to relocate (Kulkarni 2008). Generally, these results show broad parallels with the ones reported in studies analyzing the racial *wage* gap across regions nearly 20 years ago (Cohen 1998, McCall 2001b). These parallels suggest that different facets of labor market stratification tend to manifest in conjunction: in labor markets where minorities are unlikely to get *paid* as much as Whites, they are also unlikely to get *hired* as frequently as Whites.

I use table 5 to explore the possibility that labor markets that discriminate against one racial minority group might also discriminate against another. All correlations are positive and at least moderate in size, suggesting some degree of regional convergence in hiring gap. The overlap between hiring gaps for Asians and Latinos appears to be sizeable, with *r* ranging from .46 to .55, indicating that labor markets with high levels of Asian-White inequality are also likely to have large Latino-White hiring gaps. Black-White and Latino-White hiring inequality are also likely to be found in the same markets, as the correlations between these gaps range from .34 to .41. The lowest set of correlations are between Asian-White and Black-White hiring gaps, suggesting that employers who discriminate against Blacks and the ones that discriminate against Asians tend to be located in different labor markets.

Table 5: Correlations between Racial/Ethnic Callback gaps across 50 urban labor markets

		Asian/White		Latino/White		Black/White	
		Unadjusted	Adjusted	Unadjusted	Adjusted	Unadjusted	Adjusted
Asian/White	Unadjusted	1.00	-	-	-	-	-
	Adjusted	0.95	1.00	-	-	-	-
Latino/White	Unadjusted	0.55	0.48	1.00	-	-	-
	Adjusted	0.47	0.46	0.94	1.00	-	-
Black/White	Unadjusted	0.26	0.20	0.40	0.34	1.00	-
	Adjusted	0.24	0.22	0.40	0.41	0.92	1.00

Table 6: Demographic Composition and Economic Condition Predicting the Micro-Adjusted Racial-Ethnic Callback Gap

	Adjusted Black-White Gap						Adjusted Asian-White Gap						Adjusted Latino-White Gap					
	(1.1)	(1.2)	(1.3)	(1.4)	(1.5)	(1.6)	(2.1)	(2.2)	(2.3)	(2.4)	(2.5)	(2.6)	(3.1)	(3.2)	(3.3)	(3.4)	(3.5)	(3.6)
Demographic Composition																		
% Minority	-.22**	-.24**					-.01	-.06					-.14	-.18				
	(.07)	(.06)					(.07)	(.07)					(.09)	(.09)				
% Black			-.25**	-.22**							-.11	-.18**					-.21**	-.24**
			(.05)	(.06)							(.07)	(.07)					(.07)	(.08)
% Asian					-.12	-.11			.13*	.14*							-.04	-.03
					(.07)	(.07)			(.06)	(.06)							(.08)	(.08)
% Latino					.07	-.03					-.03	-.08			.06	.03		
					(.07)	(.07)					(.07)	(.07)			(.09)	(.09)		
Industry Variables																		

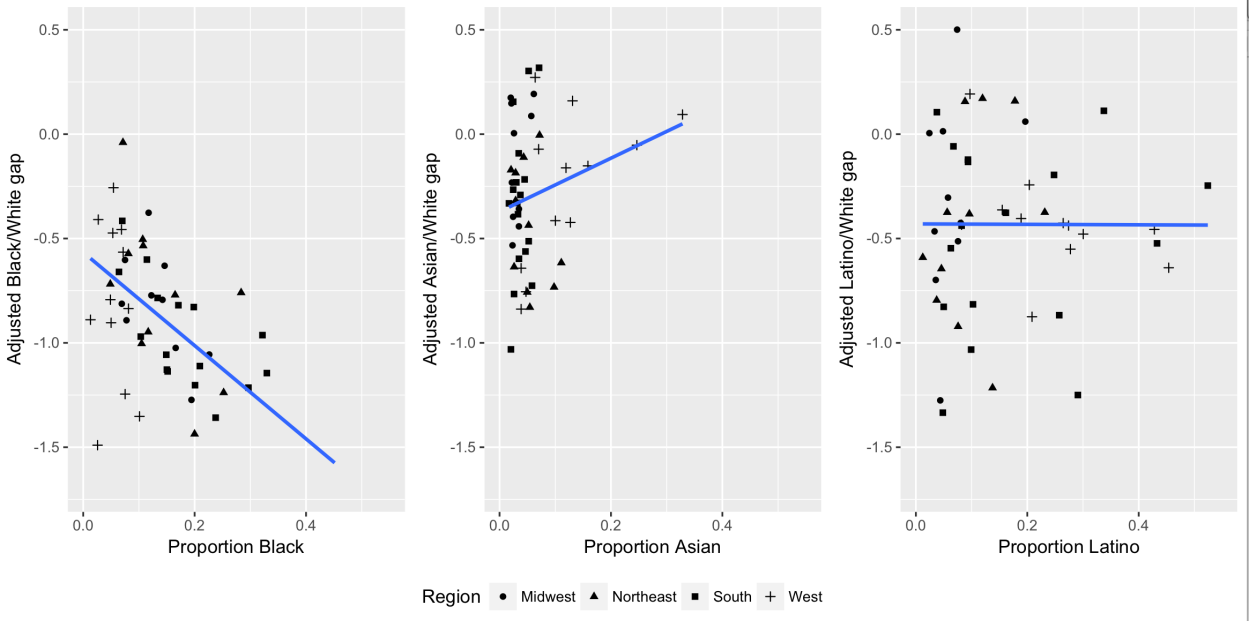
% Manufacturing Employment (logged)	-.05		-.07		-.02		.15*		.14*		.12		.11		.13		.08	
	(.06)		(.05)		(.06)		(.06)		(.06)		(.06)		(.08)		(.08)		(.08)	
% Service Employment (logged)	-.05		-.10		-.12		.05		.07		.06		.08		.04		.04	
	(.06)		(.05)		(.06)		(.06)		(.06)		(.06)		(.07)		(.08)		(.07)	
Economic Condition																		
Unemployment Rate		.02		-.02		-.04		.09		.10		.12		.08		.02		.05
		(.06)		(.05)		(.07)		(.06)		(.06)		(.06)		(.08)		(.08)		(.07)
% Net Migration		.19*		.05		.15		.05		.03		.01		.12		.06		-.01
		(.07)		(.07)		(.09)		(.08)		(.08)		(.08)		(.10)		(.11)		(.10)
Control Variables																		
Population (logged)	.11	.12*	.03	.03	.02	.04	.02	.02	-.02	-.04	.04	.05	.05	.05	-.04	-.04	.01	.005
	(.06)	(.05)	(.04)	(.04)	(.06)	(.06)	(.06)	(.06)	(.05)	(.05)	(.06)	(.06)	(.07)	(.08)	(.07)	(.07)	(.06)	(.06)
Northeast	.05	.13	.02	.08	.11	.15	-.17	-.34*	-.21	-.39*	-.19	-.37*	-.01	-.10	-.001	-.11	-.03	-.14
	(.15)	(.13)	(.14)	(.13)	(.17)	(.15)	(.16)	(.16)	(.15)	(.15)	(.15)	(.15)	(.20)	(.19)	(.20)	(.20)	(.19)	(.18)
South	.03	-.16	-.07	-.10	-.22	-.37*	-.03	-.19	-.05	-.25	.04	-.003	.08	-.15	-.11	-.31	.05	-.01
	(.16)	(.16)	(.13)	(.17)	(.16)	(.17)	(.16)	(.19)	(.14)	(.17)	(.16)	(.19)	(.21)	(.23)	(.20)	(.23)	(.18)	(.23)
West	.26	.11	-.20	-.24	.20	.04	-.02	-.05	-.23	-.31	-.10	-.12	.08	.01	-.11	-.20	-.19	-.24
	(.16)	(.16)	(.14)	(.14)	(.20)	(.19)	(.16)	(.18)	(.18)	(.18)	(.17)	(.17)	(.21)	(.22)	(.22)	(.23)	(.23)	(.22)
Constant	-.96**	-.87**	-.81**	-.80**	-.87**	-.79**	-.24	-.14	-.17	-.05	-.24*	-.18	-.48**	-.36*	-.37*	-.25	-.40**	-.34*
	(.12)	(.11)	(.10)	(.11)	(.13)	(.12)	(.12)	(.13)	(.11)	(.12)	(.12)	(.12)	(.15)	(.16)	(.15)	(.16)	(.14)	(.15)
N	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
R^2	.30	.40	.44	.41	.20	.25	.20	.14	.27	.22	.25	.26	.13	.12	.10	.05	.25	.24
AIC	37.22	29.14	25.47	28.82	45.58	42.24	40.31	43.90	35.65	39.11	39.09	38.43	64.00	64.52	66.09	68.69	59.04	59.74
BIC	54.43	46.35	42.68	46.03	64.69	61.36	57.51	61.11	52.85	56.31	58.21	57.55	81.21	81.73	83.29	85.90	78.16	78.87

*p<0.05; **p<0.01. Standardized coefficients, two-tailed tests.

Regression Results

Figure 6 offers a series of scatterplots of the 50 cities with minority concentration on the x-axes and micro-adjusted minority-majority callback gaps on the y-axes. The adjusted callback gaps are derived from equation (1). The plots also include different shape-coded data points for four regions, and three regression lines that arises from three equations with the outcome variables being the callback gaps and the only predictors being percent minority. To put it differently, the regression equations take the forms of equations (2),(3), and (4), with R being a vector that only consists of percent minority.

Figure 6: Scatterplots linking Adjusted Minority/White callback gaps and Minority Concentration in Labor Markets



A steep downward trend emerges in the scatterplot linking percent Black to the Black-White callback gap, suggesting a negative relationship between Black concentration and relative labor market outcome for Blacks. The plot also shows several Southern cities concentrating on the lower right quadrant of the plot, indicating that these are the urban sites with a high percentage of Blacks and higher rates of hiring discrimination against this minority group. In contrast, the plot linking percent Asian to the adjusted Asian-White gap shows a marginally

upward trend, suggesting that Asians' relative labor market performance slightly increases in cities with high Asian concentration. However, it is evident that the slope is much less steep than the one observed in the first scatterplot, with a number of West coast cities primarily driving the trend. An identification exercise reveals that the four cities that are closest to the regression lines are all in California: Los Angeles-Long Beach-Santa Ana, San Diego-Carlsbad-San Marcos, San Francisco-Oakland-Fremont, and San Jose-Sunnyvale-Santa Clara. No clear trend emerges from the third scatterplot. The slope of the regression line is quite flat, almost horizontal, suggesting that there might be no relationship between percent Latino and the Latino-White callback gap. The next set of regression tables explore the extent to which these regression lines change when more predictors are added to the equations.

Table 6 displays results from a total of 18 models, with 6 models for each majority-minority comparison. The dependent variables are micro-adjusted racial/ethnic callback gap between minorities and Whites. All models include logged population and Region dummies as controls.

Models 1.1 to 1.6 show that Blacks are worse off compared to Whites in cities with an over-representation of all racial minorities and where there is a high concentration of Blacks. The finding provides unequivocal support for the visibility-discrimination thesis in the case of Blacks and for hypothesis 1. According to model 1.3, *ceteris paribus,* for every 9 percent increase in Black population from ages 18 to 65, the odds of a Black applicant getting a callback decreases by about 22% percent (equivalent to a .25 decrease in log odds) compared to a White applicant. Overall minority concentration also significantly worsens the relative labor market performance of Blacks, but the fact that percent Latinos and percent Asians show no significant impact on the Black-White gap (as model 1.5 and 1.6 shows) suggests that the percentage of Blacks is the

primary driver of this effect.[21] Additionally, the effect size of the coefficients associated with percent Black in model 1.3 and 1.4 are substantial. The proportion of the dependent variable explained are also largest, and the AICs and BICs smallest, in these two models. Altogether, these results indicate that percent Black is a significant widening effect on the Black-White gap. This effect could also be interpreted as a cross-level interaction in the context of traditional hierarchical linear models: being Black reduces one's chance of getting a callback, an effect amplified in cities with high proportions of Black residents. This evidence demonstrate how the two literatures jointly operate: Black workers are heavily penalized (as predicted by the literature on hiring discrimination), and the penalty intensifies when they live in cities with high rates of Black concentration (as predicted by the demographic context literature).

Models 2.1 to 2.6 show that the callback gap between Whites and Asians is unaffected by overall minority concentration, unemployment rate, percent net migration and population. Asians also see a decrease in relative hiring rates in cities with high levels of Black concentration, as shown in model 2.6. This finding replicates the effects found in existing work on wage gap, and "this association probably stems from the coresidence of low-income Asians in cities with large black populations, and the coresidence of high-income Asians in cities without large black populations, rather than any direct causal relationship between the two." (McCall 2001b:531) Unexpectedly, percent Asian seems to have a narrowing effect on the Asian-White hiring gap: the coefficients are positive and statistically significant in models 2.3 and 2.4. According to model 2.4, an increase in 6 percent of Asian population between the age of 18 and 65 increases the odds of an Asian candidate getting a callback by 15% relative to a White candidate - equivalent to a .14 increase in logged odds. These associations, albeit suggestive, are not

[21] I also tested for nonlinear effects for all three measures of racial composition but found no statistical significance.

conclusive since percent Asians is highly correlated with another control – "Region." The polyserial correlation between these variables are moderately high (.65). The correlation makes substantive sense, as Asians "tend to settle in large metropolitan areas and concentrate in the West" (Zhou 2004:31), and to a lesser extent, in the South. When 'Region' is excluded, the percent Asian variable became nonsignificant (p=.10) in model 2.3 and marginally significant (p=.06) in model 2.4. Being in the Northeast considerably reduces the odds of getting hired for Asians.

Models 3.1 to 3.6 indicate that the Latino-White callback gaps are unaffected by overall minority concentration, percent Asian, percent Latino, or by various measures of economic conditions and controls. The only significant predictor of the gap is the Black population: Latinos seem to underperform in cities with high rates of Black concentration.

Alternative Specifications

Table 7 displays 12 models of various specifications. The dependent variable operating in these models is the micro-adjusted Black-White callback gap. Percent Black in logged form is included in all models (Percent minority variables are not in logged forms in Table 6). Regardless of specification, percent Black remains negative and statistically significant in all 12 models. This evidence is in support of hypothesis 1, or of the 'visibility-discrimination' thesis.

Table 8 also displays 12 models of different specifications, but the dependent variable is the micro-adjusted Asian-White callback gap. The main variable of interest if percent Asian. Unlike in Table 6, this variable is presented in logged form. Percent Asian is positive and statistically significant in models 7 to 12, marginally significant in model 1, 5 and 6, and nonsignificant in model 2,3 and 4. Altogether, the evidence shown in Table 6 and 8 provide

Table 7: Alternative Specification: Percent Black and the Micro-Adjusted Black-White Callback gap

	Adjusted Black-White Callback Gap											
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
% Black (logged)	-.17**	-.16**	-.18**	-.21**	-.21**	-.21**	-.24**	-.21**	-.25**	-.28**	-.24**	-.24**
	(.05)	(.05)	(.05)	(.05)	(.06)	(.06)	(.07)	(.07)	(.07)	(.08)	(.09)	(.09)
Industry Variables												
% Manufacturing Employment (logged)	-.05			-.08	-.09	-.09	-.08			-.10	-.07	-.07
	(.05)			(.06)	(.07)	(.07)	(.06)			(.06)	(.08)	(.08)
% Service Employment (logged)	-.08			-.07	-.12†	-.12†	-.07			-.06	-.08	-.08
	(.05)			(.05)	(.07)	(.07)	(.05)			(.06)	(.07)	(.07)
Economic Condition												
Unemployment Rate		-.002			.06	.06		.01			.06	.06
		(.06)			(.07)	(.07)		(.06)			(.07)	(.07)
% Net Migration		-.003			-.02	-.02		.10			.07	.07
		(.05)			(.06)	(.06)		(.07)			(.08)	(.08)
Demographic Composition												
% Asian (logged)			-.01	-.02					-.01	-.03		
			(.06)	(.06)					(.07)	(.08)		
% Latino (logged)			-.06	-.07					-.07	-.08		
			(.05)	(.06)					(.07)	(.08)		
Control Variables												
Population	-	-	-	-	-	-	Yes	Yes	Yes	Yes	Yes	Yes
Region	-	-	-	-	-	-	Yes	Yes	Yes	Yes	Yes	Yes
Constant	-.87**	-.87**	-.87**	-.87**	-.87**	-.87**	-.74**	-.72**	-.83**	-.79**	-.70**	-.70**
	(.04)	(.05)	(.05)	(.04)	(.05)	(.05)	(.11)	(.11)	(.11)	(.12)	(.12)	(.12)
N	50	50	50	50	50	50	50	50	50	50	50	50
R^2	.24	.20	.24	.27	.26	.26	.33	.33	.32	.36	.35	.35

† <0.1, *p<0.05; **p<0.01. Standardized coefficients, two-tailed tests.

Table 8: Alternative Specification: Percent Asian and the Micro-Adjusted Asian-White Callback gap

	Micro-Adjusted Asian-White Callback Gap											
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
% Asian (logged)	.08†	.07	.07	.08	.08†	.08†	.19**	.18*	.18*	.22**	.18*	.18*
	(.05)	(.05)	(.06)	(.06)	(.05)	(.05)	(.07)	(.08)	(.07)	(.08)	(.07)	(.07)
Industry Variables												
% Manufacturing Employment (logged)	.17**			.17**	.20**	.20**	.18**			.15*	.17*	.17*
	(.05)			(.06)	(.06)	(.06)	(.06)			(.06)	(.07)	(.07)
% Service Employment (logged)	.05			.05	.05	.05	.09			.11†	.07	.07
	(.05)			(.05)	(.06)	(.06)	(.05)			(.06)	(.07)	(.07)
Economic Condition												
Unemployment Rate		.04			.05	.05		.07			.04	.04
		(.06)			(.06)	(.06)		(.06)			(.07)	(.07)
% Net Migration		-.001			.08	.08		-.02			.04	.04
		(.06)			(.06)	(.06)		(.08)			(.08)	(.08)
Demographic Composition												
% Black (logged)			-.06	.01					-.13†	-.10		
			(.05)	(.05)					(.07)	(.08)		
% Latino (logged)			-.05	.004					-.06	-.05		
			(.06)	(.06)					(.07)	(.07)		
Control Variables												
Population	-	-	-	-	-	-	Yes	Yes	Yes	Yes	Yes	Yes
Region	-	-	-	-	-	-	Yes	Yes	Yes	Yes	Yes	Yes
Constant	-.29**	-.29**	-.29**	-.29**	-.29**	-.29**	-.14	-.04	-.05	-.11	-.12	-.12
	(.04)	(.05)	(.05)	(.04)	(.04)	(.04)	(.11)	(.12)	(.12)	(.12)	(.12)	(.12)
N	50	50	50	50	50	50	50	50	50	50	50	50
R^2	.22	.04	.07	.22	.26	.26	.32	.22	.24	.35	.33	.33

† <0.1, *p<0.05; **p<0.01. Standardized coefficients, two-tailed tests.

weak support for hypothesis 2. Although percent Asian shows no relationship with the dependent variable in some specification, this variable shows a narrowing effect on the Asian-White gap in other models. This lack of robustness across specifications suggests that this finding needs further empirical verification.

Discussion

The findings indicate that sources of hiring inequality vary across racial groups. This paper replicates the longstanding finding that an area's proportion of Blacks worsen Black-White inequality by showing that Blacks' chances of getting an interview are reduced in cities with high percentages of Blacks, and where Whites are more exposed to Blacks. In contrast, Asians' chances of getting a callback increase in cities with higher levels of Asian concentration, although this effect is inconsistent. Latino concentration does not significantly predict the Latino/White hiring gap.

The finding on Black concentration and the Black/White hiring gap confirms a long line of research on the topic and highlights the unique dynamics of discrimination that African-Americans face in the labor market. Huffman and Cohen (2004) outline two mechanisms linking Black concentration to White/Black inequality – job segregation and devaluation – and found support for the former. This paper's findings also support the job segregation perspectives. Out of the three job types considered, none of them are Black-dominated. The percentages of Blacks in marketing, sales, and administrative assistant jobs are 5%, 11%, and 8.6%, respectively (BLS 2016). The discrimination detected in this study could operate as an outcome of employers funneling Black applicants into more Black-dominated jobs, providing support for both the visibility-discrimination and the job segregation theses.

The "overflow thesis" represents an alternative theory linking minority concentration and minority-White inequality. The perspective maintains that once the size of certain minority groups is large enough, some members of these groups will inevitably break traditional occupational norms and attain quality jobs, typically associated with the dominant group (Tienda and Lii 1987). While the evidence on percent Black support the visibility-discrimination thesis, the findings on percent Asian seem to be more consistent with the overflow thesis, as Asians appear to perform slightly better in cities with a strong Asian presence. It is possible that the overflowing process depends on the minorities' education level and the majority group's perception of the minorities, as both of these factors are intrinsically linked to labor market performance. These mechanisms could explain the observed pattern for Asians, who have been shown to be evaluated more favorably than other minority groups (Jackson et al. 1996, Stangor et al. 1991) and to have high levels of educational attainment (Hirschman and Wong 1984). However, it is important not to overstate this finding since the effects of Asian concentration are not robust across specifications. This speculative finding requires further empirical evaluation using a design that encompasses a broader range of cities.

The lack of significant factors predicting the Latino/White gap is also noteworthy. Existing works point to factors that could drive Latino/White labor market gap: age, education, geographic location, immigration status, and language difficulties (Reimers 1983b). It is crucial to note that the experimental method eliminates all of these differences. It is possible that the lack of findings linking percent Latinos to White-Latino gap reflect dynamics particular to job types that this study focuses on and does not generalize to other occupations. Another possibility is that for Latinos, the 'visibility-discrimination' dynamic and the 'overflow' theses are both at work, and either these two processes cancel each other out, or the sample size is not sufficient to

adjudicate their relative strength. It is also possible that Latino concentration truly has no impact on the White/Latino hiring gap, partly because Whites' attitude towards Latinos is unaffected by the size of this minority group in the locale (Taylor 1998).

Conclusion

Hiring discrimination is a prominent issue in modern American society. The passing of the Civil Rights Act of 1964 was considered a "crowning achievement of the Civil Rights Movement" (Walsh 2015:13). Considering the inclusion of race, color, and national origin in the title VII of the Act, coupled with the rising importance of skill and the changing structure of the economy, some studies questioned the enduring significance of race as a factor in shaping the process of social stratification (Heckman 1998, Wilson 1978). However, the implementation of the legal entitlement only shifted the nature of racial discrimination from 'blatant and covert' to 'subtle and covert', and scholars find ample evidence of racial disparity in many areas of social life (Bonilla-Silva 2017).

The field experiments provide an ideal tool to detect and derive causal estimates of racial discrimination, but remains under-contextualized due to having a relatively small number of experimental sites. The question of "How does racial discrimination vary across urban labor markets?" thus remains under-explored. To fill in this gap, this research merges insights from the experimental literature on hiring discrimination with the quantitative literature on urban inequality. By doing so, this research contributes to both literatures. With respect to audit studies, theoretically, this research brings context to hiring discrimination. Empirically, it expands the scope of existing resumes experiments. The study also contributes to the urban inequality literature: it uses the theoretical tools derived by the literature to analyze discrimination at hiring

interface, a different stage in the process of labor market stratification that this literature lacks the empirical tool to analyze.

This research synthesizes theoretical insights from two lines of literature to generate predictions about how demographic composition of labor market affect minorities' relative labor market performance. Consequently, this study can inform future research in multiple ways. First, albeit covering a broad range of racial/ethnic groups, this research offers little insight into the ethnic heterogeneity of the racial/ethnic categories covered. Future studies could explore the dynamics of discrimination that job seekers from different ethnic sub-groups face. For example, do the findings related to Asians extend several racial/ethnic subgroups, or do forms of labor market penalties vary for Japanese Americans, Vietnamese Americans, and Chinese Americans? Similarly, research could also analyze if the null finding related to the effect of Latino population size and Latino-White hiring gap holds constant across Cuban Americans, Puerto Rican Americans, and Mexican Americans. Second, the current research analyzes employers from only three job types: marketing, administrative assistant, and sales. These job types are generally considered mid-skilled, white collar jobs since they require at least college degree. Future studies should test the generalizability of the model that this paper proposes on a wider range of job types, as such research would generate great insights on the intersection of race and class in the new economy. Third, the 50 cities covered in this study is considered a significant empirical expansion, and it is a relatively large number in a substantive sense, but not so much in the statistical sense. Future studies could expand this research to cover an even broader range of cities, as such task would allow researchers to verify the generalizability of the model and data.

Chapter 4: A contextual theory of unemployment scarring: the role of self-employment in shaping labor market consequences of joblessness.

Introduction

Although the national economy is enjoying a steady recovery from the Great Recession of 2009, millions of Americans still find themselves struggling with unemployment. Empirical work provides overwhelming evidence of the negative consequences of joblessness: studies from different disciplinary or methodological backgrounds consistently yield significant estimates of the scarring effect of unemployment (Eriksson and Rooth 2014, Farber 1996, Ghayad 2013, Gibbons and Katz 1991, Mooi-Reci and Ganzeboom 2015, Pedulla 2018b, Ruhm 1991, Stevens 1997). Scholars have postulated several theories to explain the discriminatory practices that jobless applicants face in the labor market. These theories can be broadly categorized as variants of 'signaling theory' and 'queuing theory'. 'Signaling theory' posits that unemployment represents a stigmatized status and/or deteriorated skills, factors that employers rely on as proxies to statistically discriminate; and 'queuing theory' predicts that unemployed jobseekers are seen as less desirable or less trainable, and are therefore relegated to the bottom of the job queue (Acemoglu 1995, Karren and Sherman 2012, Lieberson 1980, Lockwood 1991, Oberholzer-Gee 2008, Reskin and Roos 1990, Vishwanath 1989).

In recent years, scholars argue that the experience of unemployment is embedded in the labor market contexts in which job-seeking takes place, and institutional and economic variation in such contexts could play a key role in determining the consequences of unemployment. Some examples of these works are Gangl (2006) and Kroft et al. (2013), who point to the role of welfare provision and labor market tightness in shaping the adverse outcomes of joblessness. I

argue that self-employment rates – a proxy of entrepreneurial activities taking place in a geographically demarcated area – constitute an important characteristic of the local labor market and play an important role in shaping the labor market consequences of unemployment. Building on both the 'signaling' and 'queuing' perspectives, this chapter provides a theoretical argument as to how entrepreneurial cities provides a normative context in which unemployed jobseekers' labor market penalties are exacerbated compared to cities in which wage and salaried workers predominate. Empirically, I combine city-level secondary data with individual-level original field experimental data to demonstrate that the hiring gap between full-time applicants and their otherwise similar unemployed counterparts is higher in cities with high rates of self-employment. Additionally, I increase the empirical leverage by conducting a supplementary analysis of the relationship between self-employment rates and unemployment duration in a panel that covers 50 U.S states and D.C across 19 years from 1997-2015. Unemployment duration is commonly used as a measure of the difficulties associated with transitioning out of joblessness. I show that self-employment rates have a consistent prolonging effect on unemployment duration. This effect is robust across a wide range of modelling assumptions, measurements, and specifications.

The paper proceeds as follows. I review the existing empirical evidence and theoretical accounts on the unemployment scarring effect. After arguing that the role of self-employment in shaping consequences of unemployment is under-theorized in this literature, I rely on 'signaling' and 'queuing' perspectives to offer a theoretical argument linking self-employment to worsened labor market outcomes for unemployed jobseekers. I proceed by describing and presenting results from two datasets, both of which provide empirical support for my theoretical expectation that the adverse outcomes associated with unemployment deepen in entrepreneurial labor markets. The chapter concludes by reviewing the theoretical contributions of this new finding,

demonstrating how it enriches the growing narratives of the consequences of nonstandard work and societal costs of creative cities, discussing potential policy implications, and outlining avenues for future research.

Scarring effect of unemployment.

Existing theories and evidence of the unemployment's scarring effect

Existing quantitative works reveal extensive evidence of how an episode of unemployment yields adverse outcomes that have a lasting impact on workers' subsequent career opportunities in terms of reemployment and wage levels. In a pioneering work, Ruhm (1991) shows that layoffs have a boosting effect on the length of unemployment. For two years after a layoff, dislocated workers are eight more times more likely than their counterparts who weren't laid off to be unemployed for more than six months. They are also 16 times more likely to be jobless for more than a year. The wage-reducing effect of displacement is also substantial: dislocated workers are expected to earn 16 percent less than their otherwise comparable counterparts after being laid-off, and the effect do not weaken in with time. Ruhm (1991)'s findings were replicated by studies that used the same data (Stevens 1997) and different data sources (Farber 1996, Gangl 2006).

Scholars have recently relied on experimental data to derive causally valid estimates of the scarring effect of unemployment on subsequent employment opportunities. Eriksson and Rooth (2014) submitted fictitious resumes that varied by unemployment duration to Norwegian employers. They reported that employers severely penalized applicants who were out of the workforce for nine months. Kroft et al. (2013) sent experimentally manipulated resumes to employers in the U.S. They found that the likelihood of getting invited for an interview drops substantially as the length of unemployment increases, with most of this effect occurring in the

first eight months. In a similar vein, Ghayad (2013) also reported a strong employer distaste for long periods of unemployment and Pedulla (2018b) showed that a 12-month unemployment stint reduces the applicants' odds of getting a callback by 46% compared to jobseekers with seamless employment histories.

The extant empirical evidence leaves little doubt that spells of unemployment dampen workers' chances of returning to full-time employment status. Labor market sociologists and labor economists outline several theories to explain this phenomenon. There have been excellent reviews of this literature (Gangl 2006, Kroft et al. 2013), and such a review will not be repeated here. Instead, the chapter focuses on two key strands of theories that provide mechanisms through which employers evaluate workers with a history of unemployment: 'signaling' theory and 'queuing' theory.

One line of thought in this literature theorizes that employers are hesitant to select workers who endured joblessness because of the stigmatized status associated with unemployment. (Belzil 1995, Biewen and Steffes 2010, Blau et al. 2013, Lockwood 1991, Mooi-Reci and Ganzeboom 2015, Oberholzer-Gee 2008, Vishwanath 1989). In this case, the 'scarring' effect stems from a culturally normative label for a status characteristic – unemployment – that is chastised or attributed to laziness in a morally punitive individualistic society (see Sharone 2013). Goffman (1963) offers a typology that includes three distinct types of stigma: abomination of the body, tribal, and blemishes of individual character. Unemployment is subsumed under the third category, since joblessness is presumed to be indicative of personal shortcomings. The 'stigma' perspective is closely related to 'signaling' theory, since both theoretical arguments generate similar expectations: unemployment sends signals that workers

are deficient in either [1] motivation, [2] competence, or [3] other unobserved attributes to employers.

In terms of motivation, unemployed workers could be characterized as lacking sufficient initiative to transition out of unemployment and to obtain a full-time job. Unemployment has been shown to demotivate jobseekers, making them less attractive from the perspectives of employers who do not want to bear the risk of hiring candidates with low morale and a poor job attitude (Layard et al. 1991). This perceived lack of drive operates in conflict with the 'ideal worker' prototype (Kelly et al. 2010, Williams 2001), which organizations rely on to make hiring decisions. Employers could also consider unemployed jobseekers to be lacking flexibility. Competence is another crucial parameter that makes employers hesitant to hire unemployed jobseekers. The human capital model (Acemoglu 1995, Becker 1994) predicts that the further a worker is removed from the workforce, the more his/her skills deteriorate. This theory thus expects that the longer workers remain unemployed, the harder it is for them to get invitations for job interviews due to the deterioration of their skills. Beside motivation and competence, there are also other unobserved characteristics that may not be apparent to employers at the onset of the hiring process. Given the uncertain conditions at hiring interface, firms often use long periods of unemployment as a basis to statistically discriminate and to derive estimates of otherwise unobserved characteristics (Vishwanath 1989). The 'rational herding' model (Lockwood 1991, Oberholzer-Gee 2008) posits that long-term unemployment is detrimental to workers because employers assume that the unemployed jobseekers were turned down by various employers in the past due to some unobserved, but presumably undesirable characteristics. Employers operate under the assumption that more qualified workers have higher unemployment exit rates, therefore, those who have experienced long-term unemployment are of

lower quality. Hiring firms thus consider long unemployment spells to be indicative of the jobseekers' low employability since more qualified candidates can find suitable position more quickly. In other words, hiring officials rely not only on the 'private signal' they obtain from reading the applicant's file, but also on the 'external signal' generated by other firms earlier in the applicant's job search process. In sum, a broad range of mechanisms linking long-term unemployment to discrimination can be included under the broad umbrella of 'signaling' theory (Van Belle et al. 2017): joblessness either signals weak motivation, deteriorated human capital, or other adverse unobserved characteristics.

Complementary to 'signaling' theory, the 'queing' perspective also outlines key mechanisms to explain why long-term unemployed jobseekers are disadvantaged in hiring. Thurow (1975) conceptualizes the labor market as a queue, where employers maintain that members of some groups are more trainable and thus more desirable than those of other groups. Hiring officials place workers in a ranked sequence, or a queue, with members of the desired group pushed to the top and the less desirable relegated to the bottom. Queuing theory or ranking models were widely used and supported in scholars' attempts to explain various forms of labor market segregation (Doeringer and Piore 1971, Kornrich 2009, Lieberson 1980, Reskin and Roos 1990) including male-female, white-black, and high skill – low skill job types. Predictions derived from queuing theory would place unemployed workers at the bottom of the queue, and full-time workers at the top.

Scarring effect in context

Several of the mechanisms outlined above can be affected by the nature of the labor market in which the job search is embedded. The experience of unemployment is shaped by the institutional and economic characteristics of the labor market where job-seeking activities from

applicants and gatekeeping decisions from employers take place. Indeed, empirical studies support the theoretical perspectives that take unemployment' embeddedness seriously. Gangl (2006) shows that the dampening effect of unemployment on workers' subsequent earnings are moderated by generous unemployment benefits systems in labor markets with stricter regulations. Kroft et al. (2013) found that workers' chances of getting an interview decreases as the length of their unemployment spell increases, but this effect is stronger in tight local labor markets. While the role of labor market institutions and economic conditions have been shown to shape the impact of unemployment spells on subsequent career prospects, I argue that self-employment rates – which constitute a key normative characteristic of a local labor market – is overlooked in this literature. By capturing the presence of small and very small businesses operating in an economy, self-employment rates provide a proxy for the magnitude of an entrepreneurial ethos in a local labor market. Similar to other measures of labor market institutions and economic conditions, self-employment rates represent an important feature of a local economy, and operate as a key framework in which labor market actions are embedded. Since jobseekers and employers are intrinsically embedded in local labor markets and self-employment represents a key normative characteristic of an economic area, how hiring discrimination operates in labor markets characterized by vibrant entrepreneurial activities could differ from that in areas with limited start-up undertakings. How can unemployment scarring be situated in the context of local labor markets with strong entrepreneurial presence? The next section builds on both the 'signaling' and the 'queuing' perspectives to theorize the role of local-level entrepreneurialism on the challenges that long-term unemployed workers face.

A contextual theory of unemployment scarring: the role of self-employment.

I argue that unemployed workers face harsher penalties in labor markets with high self-employment rates than the unemployed in areas with low self-employment rates. I propose a framework that outlines two mechanisms through a which the high level of entrepreneurial activity reduces the labor market prospects of unemployed jobseekers. From the 'signaling' perspective, in labor markets where freelancing, independent contracting, or engaging in entrepreneurial activities is prevalent, unemployed workers – who are stereotyped as lacking motivation to begin with – could be perceived by employers as being even less committed to reintegrating into the workforce and keeping their skills updated. From the 'queuing' perspective, the strong presence of small self-employed businesses change the composition of the job queues from which employers select candidates for full-time employment. Given the high failing rates of start-ups, the potential availability of freelancers and self-employed workers who wish to return to organizational careers could motivate hiring officers to relegate unemployed competitors to lower positions in the queues.

The previous section demonstrates that employers stigmatize jobseekers with long periods of unemployment. Employers might blame the unemployed workers: "the individual could have (or should have) found some form of work, rather than remain unemployed for so long", and this "may reinforce the stigma that laid-off worker is deficient (e.g. a poor performer, unmotivated, etc.) in some manner." (Karren and Sherman 2012:856). However, existing studies have shown that employers do take the circumstances surrounding unemployment into consideration when evaluating unemployed jobseekers. In labor markets with high rates of unemployment, unemployment spells may be less indicative of workers' skills and more reflective of the overall condition of the labor market (Kroft et al. 2013). Similarly, workers who

are displaced in mass layoffs or plant closures are less penalized than those who are dismissed due to their own presumed shortcomings (Gibbons and Katz 1991). In other words, the literature demonstrates that employers take into account the contexts in which unemployment takes place. I argue that self-employment adds an important layer to the context within which employers evaluate unemployed jobseekers.

The presence of freelancers or self-employed workers in a labor market can impact employers' perceptions of unemployed jobseekers. Self-employment has relatively few barriers to entry: self-employed businesses involve no employees besides the owner and do not require large amounts of start-up capital (Hurst and Lusardi 2004). Most self-employed businesses operate in industries with low overhead, little required certification, and relatively low barriers for entry (Rissman 2003). In labor markets with high rates of self-employment, the stigmatized identity associated with long-term unemployment can intensify because employers in these markets discriminate against long-term unemployed jobseekers even more. Employers could perceive unemployed jobseekers as unwilling to seek alternatives to unemployment, while it is common for others to do so. Atkinson et al. (1996:80) note that employers consider unemployed workers' unwillingness to "adapt to alternative types of jobs" to be a "particularly negative attribute" and a "potential deterrent.", and such attitude could amplify in areas where there is a certain degree of normativity associated with seeking alternative job types. A high rate of self-employment could also suggest that the market has a strong entrepreneurial culture, or that it is situated in a city or state with policies that support entrepreneurship. This atmosphere can provide a context for U.S employers, who maintain a strong expectation of individual achievement and high performance, an ideology that is rooted in the Protestant work ethic (Karren and Sherman 2012, Sharone 2013), to perceive the long-term unemployed as lacking

initiative and being more willing to accept government-provided welfare rather than proactively keeping their skills updated.

In addition to worsening the stigma attached to unemployed jobseekers, the presence of self-employed workers in a labor market can alter unemployed workers' position in the labor queue. Queuing theory offers a mechanism through which labor market stratification is generated: employers place workers in an ordered categorization with desirable applicants at the top, and lower ranked jobseekers at the bottom. The likelihood of getting an interview and being hired improves, as workers move up in the queue. Reskin and Roos (1990:31) argue that queues have three structural properties: [1] the *ordering* of the elements, [2] the *shape* of the elements, and [3] the intensity of rankers' preference; and that alterations in these properties generate stratified outcomes. As discussed in the previous section, unemployed workers carry a stigma, which results in being perceived as less desirable from the employer's perspectives. In a queue with both full-time and unemployed workers, all else being constant, one can expect full-time jobseekers to be at the top of the queue and unemployed applicants at the bottom.

The presence of self-employed workers in a market complicates the standing of unemployed workers in the labor queue relative to full-timers. I argue that the presence of self-employed workers changes all three structural properties of the queue. *First,* in terms of the order of the components, Chapter 2 gives evidence that self-employed workers outperform unemployed ones: employers consistently select self-employed workers at a higher rate than they do unemployed applicants who are otherwise similar in other measures. Therefore, freelancers or self-employed workers assume a position in between full-timers and unemployed jobseekers in the queue. This queue structure with self-employed workers being the preferred group, compared to the unemployed, makes sense from human capital, social capital, and signaling perspectives.

All else being constant, employers expect self-employed workers' skills to be more up-to-date, professional networks to be broader, and for them to be less stigmatized by the lack of connection to the workforce, compared to the long-term unemployed. The inclusion of self-employed jobseekers in the queue pushes unemployed workers further down the ranked order. This has the effect of widening the gap between this group and full-time workers.

Second, self-employed workers alter the labor queue's shape, which is determined by the size of the population subgroups functioning in ranked order. The queuing literature shows that the measures of the elements operate in both *absolute* and *relative* forms: the less preferred candidates' chances of a getting a job is affected by both the size of the preferred group, and the size of the favored group relative to that of the disadvantaged group (Lieberson 1980, Reskin and Roos 1990). Since self-employed workers are the preferred group, the 'queuing' thesis would expect that the relative position of long-term unemployed workers worsens as self-employment increases in a given labor market.

Figure 7: Hypothetical labor queues ordered by different employment types

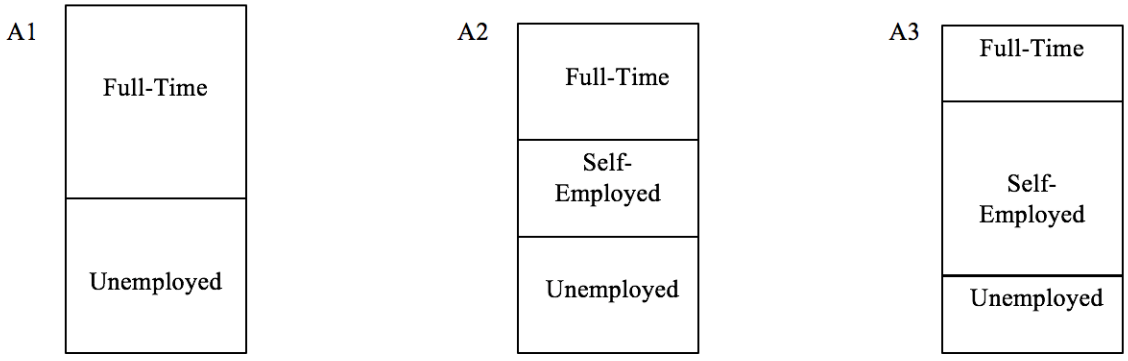


Figure 7 provides a conceptual illustration for this theoretical argument. As shown in Panel A2, self-employed workers obtain a middling position between full-timers and unemployed workers. As the number of self-employed workers increases in the queue, the gap between full-timers and

unemployed workers are expected to widen as demonstrated in Panel A3. The gap between self-employed and unemployed workers can widen as well: employers select self-employed applicants before they do unemployed workers, so the larger the pool of self-employed candidates in the queue, the more disadvantaged unemployed jobseekers are. This argument assumes that self-employed workers are part of the queue. This means that employers can expect the concentration of self-employed workers in a labor market to translate into the presence of self-employed jobseekers in the labor queue based on which hiring decisions are made. This is a reasonable assumption. As argued in Chapter 2, large numbers of self-employed workers would wish to transition back to the full-time workforce due to the high level of uncertainty and instability inherently associated with entrepreneurship. Self-employment arrangements are unregulated and risky, resulting in most individuals either failing as entrepreneurs or occupying less desirable self-employed jobs (Arum 2004). Employers operating in labor markets with high self-employment rates can therefore expect to find workers with histories of self-employment in the job queue as a large portion of the self-employed workforce attempts to switch the paid jobs.

Third, as argued in the first part of this section, the concentration of self-employment could exaggerate employers' negative perception of unemployed workers, thus changing the *intensity of the rankers' preference*. In an entrepreneurial labor market, unemployed jobseekers' stigmatized status could intensify, since employers downgrade them for lacking motivation and willingness to keep their skills updated in an environment where self-employment is commonly sought as an alternative to joblessness.

In summary, I predict that self-employment will have a negative impact on the subsequent outcomes of unemployed workers. From the signaling perspective, the presence of self-employed workers might worsen the stigma associated with long-term unemployment. From

the 'queuing' standpoint, self-employed workers push the unemployed further down the ordered arrangement, lowering their expected callback rates. I also expect that both the *absolute* and *relative* size of the self-employed workforce is important in generating these effects. I thus derive four hypotheses. The first two capture the effect of the *absolute* size, while the other two test the impact of the *relative* size of the self-employed workers on unemployed jobseekers' labor market outcome relative to full-timers and freelancers.

Hypothesis 1: Self-employment rate has a widening effect on the hiring gap between full-time and unemployed workers.

Hypothesis 2: Self-employment rate has a widening effect on the hiring gap between freelancers and unemployed workers.

Hypothesis 3: Self-employment rate -to-unemployment rate ratio has a widening effect on the hiring gap between full-time and unemployed workers.

Hypothesis 4: Self-employment rate-to-unemployment rate ratio has a widening effect on the hiring gap between freelancers and unemployed workers.

Data and methods

The experimental data used in this chapter is derived from the field experiment outlined in Chapter 2. In addition to the individual-level data, I also include variables that operate at the city-level. The main variables of interest in this chapter represent two proxies of entrepreneurial activities within cities. As with other forms of non-standard work, self-employment or entrepreneurship are concepts that are difficult to operationalize (Felstead and Jewson 1999, Mai 2017, Rodgers and Rodgers 1989). Glaeser and Kerr (2010:1) consider measurement to be "the first problem in assessing the causes of local entrepreneurship", and that the extant literature did not generate a "clear, empirically usable definition." To capture the entrepreneurial nature of

cities, I use two measures of self-employment rates. Self-employment is the most widely used proxy for entrepreneurship (Light and Munk 2016). In discussing the usage of the self-employment rate as a proxy for entrepreneurship, Faggio and Silva (2014) show that self-employment robustly correlates with business creation and innovation in urban areas – the sites on which this article focuses. They conclude that "self-employment, business creation and innovation are well lined-up in urban areas because they capture the same economic phenomenon – namely, genuine entrepreneurship." (p.67). The first measure of self-employment rate - SE.ACS1 - comes from the 2012-2016 American Community Survey (ACS) 5-year estimates. This measure is defined as the percent of workers who are self-employed in their own unincorporated businesses among the population of employed civilians over the age of 16. In addition, I rely on tax data to derive another measure of self-employment activities in cities. The Internal Revenue Service (IRS)'s Statistics of Income (SOI) program provides administrative records of individual income tax returns filed using Form 1040. These records are available at the metropolitan area level. The data includes information on the number of returns with self-employment tax, which is generated from individuals who operate as sole proprietors. Consistent with the definition of the first measurement, this measurement captures the frequency of the unincorporated self-employed in cities, since the IRS requires sole proprietors to file and pay self-employment tax as part of their individual tax, whereas incorporated businesses file tax as corporations. Given the challenges associated with measuring self-employment, several scholars have advocated the use of tax data to capture these elusive concepts in recent years (Abraham et al. 2016, Katz and Krueger 2016). In this paper, I obtain the second measure of self-employment, SE.IRS1, by dividing the number of returns with "self-employment tax" by the "number of

returns" in a given metropolitan area. SE.ACS and SE.IRS capture self-employment rates and measure the *absolute* size of self-employed workers.

Since I also expect the *relative* size of the self-employed workforce to be correlated with adverse outcomes for unemployed workers, I use two additional measures: SE.ACS2 and SE.IRS2. SE.ACS2 represents the SE.ACS/unemployment rate ratio. Similarly, SE.IRS2 is derived by dividing SE.IRS by the unemployment rate. I, therefore, use a total of four measures of self-employment: SE.ACS1 and SE.ACS2 come from the ACS' data on worker classification, while SE.IRS1 and SE.IRS2 are derived from the IRS's administrative data on tax records.

Table 9: Correlation Matrix Between Four Measures of Self-Employment

	SE.ACS1	SE.ACS2	SE.IRS1	SE.IRS2
SE.ACS1	1			
SE.ACS2	0.83***	1		
SE.IRS1	0.73***	0.59***	1	
SE.IRS2	0.62***	0.86***	0.75***	1

**p<0.01; ***p<0.001.

Table 9 displays the correlation matrix of a data frame which consists of these four measures. The correlation coefficients are all positive, statistically significant at the 0.01 alpha level, and at least moderate to large size, indicating some internal consistency between these measures[22]. Cities that obtain a high score in one measure are likely to have a high score in another measure of self-employment.

[22] Measures of self-employment rates that are derived from the ACS and IRS are highly correlated (r=.73, p<0.01), but not perfectly so. For a discussion of the discrepancy and potential factors that gave rise to it, see Katz and Krueger (2016).

In addition to the self-employment measures, this paper also includes several control variables. I use 'unemployment rate' as a measure of short-term economic performance and 'percent net migration' as proxy for long-term economic vitality. 'Percent employed in manufacturing' and 'Percent employed in services' are used as measures of cities' industrial structures. I also include a dummy variable to differentiate Southern and non-Southern cities, and another variable to measure cities' population.

The clustered nature of the data with jobseekers nested in cities and the binary outcome variable (getting a callback versus not getting one) drives the selection of generalized hierarchical linear modelling methods. I use two sets of equations, one for the individual-level and another for the city-level variations. For the first set of equations at level-1, I derive the adjusted callback gaps between freelancers and unemployed workers, and between full-timer and unemployed workers, by estimating individual-level models for all 50 cities. For the second set of equations at level 2, I use adjusted callback gaps derived from the first set of equations as dependent variables, and various city-level variables described above to predict these outcomes. Specifically, at the individual level, I use the following equation:

$$\ln \frac{p_{ij}}{1\text{-}p_{ij}} = \beta_{0j} + \beta_{1j} FullTime + \beta_{2j} Freelance + \beta_{3j} Asian + \beta_{4j} Latino + \beta_{5j} Black + \beta_{6j} Admin + \beta_{7j} Marketing \quad (6)$$

The dependent variable is the logged odds of applicant i getting a callback versus not getting one in city j. $\boldsymbol{\beta_{1j}}$ represents the difference in the logged odds of getting a callback between a full-time jobseeker and a long-term unemployed one in city j. Similarly, $\boldsymbol{\beta_{2j}}$ represents the difference in the logged odds of getting an invitation for an interview between a freelancing applicant and his/her unemployed counterpart. Negative values for $\boldsymbol{\beta_{1j}}$ and $\boldsymbol{\beta_{2j}}$ suggest that unemployed applicants outperform the other two groups, while positive

coefficients indicate that freelancers and full-time workers are more likely to receive a callback than unemployed applicants. The larger the coefficient, the wider the fulltime-unemployed and freelance-unemployed gaps become. The equation also includes workers' racial/ethnic group and job type, as represented by $\boldsymbol{\beta_{3j}}$, $\boldsymbol{\beta_{4j}}$, $\boldsymbol{\beta_{5j}}$, $\boldsymbol{\beta_{6j}}$, and $\boldsymbol{\beta_{7j}}$. Since there are 50 cities in the sample, j takes values from 1 to 50. The coefficient matrix, therefore, includes 50 rows, and there are 50 values that correspond to β_{1j} and β_{2j}, respectively.

At the city-level, the vectors β_{1j} and β_{2j} serve as dependent variables for a series of the following equations:

$$\beta_{1j} = \gamma_{10} + R_j\gamma_2 + \mu_{2j}, \quad (7)$$

$$\beta_{2j} = \gamma_{20} + R_j\gamma_3 + \mu_{3j}, \quad (8)$$

As explained above, β_{1j} and β_{2j} represent adjusted callback gaps between full-time workers and unemployed workers, and between freelancers and unemployed jobseekers, respectively. These two sets of coefficients are derived from models that hold constant workers' racial/ethnic group and job type. R is comprised of a vector of independent variables at the city level. Table 10 displays the list of all city-level variables, their definitions, original sources, and descriptive statistics.

Results

Descriptive Results

Figure 8: Regional Variation of the Adjusted Callback Gaps and Different Measures of the Self-Employment Rates

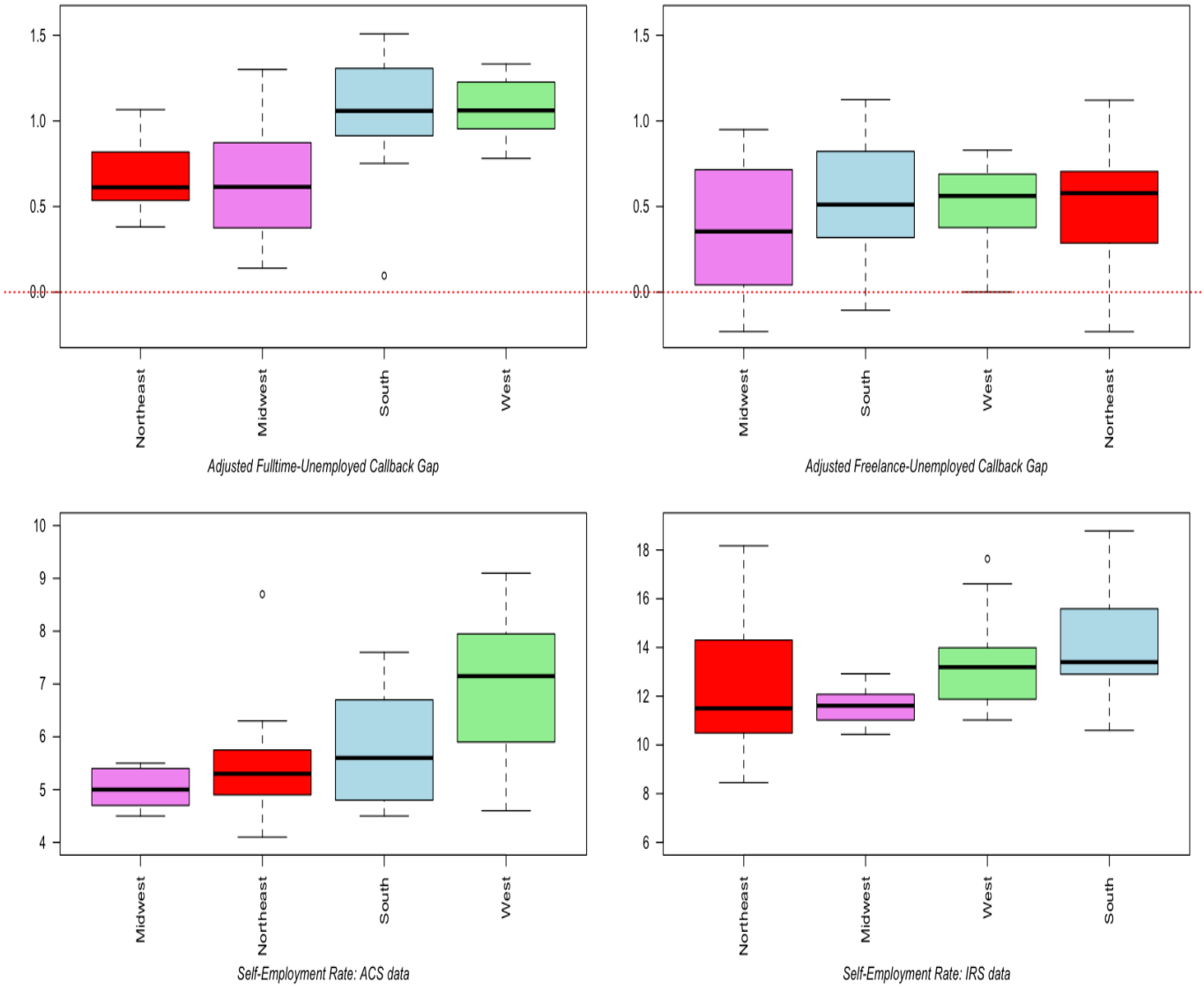


Table 10. Definition, Source, and Descriptive Statistics for Metropolitan Statistical Area - Level Predictors

Variable	Definition	Descriptive Statistics			
		Min	Max	Mean	Standard Deviation
Self-Employment Measures					
SE.ACS1[a]	Percent of workers who are self-employed in own not incorporated businesses among the population of employed civilian 16 years and over.	4.10	9.10	5.88	1.28
SE.ACS2[a]	SE.ACS1/Unemployment Rate.	0.69	2.60	1.33	0.39
SE.IRS1[b]	Percent of number of returns with self-employment tax / total number of returns	8.45	18.78	12.98	2.26
SE.IRS2[b]	SE.IRS1/Unemployment Rate.	1.43	4.75	2.94	0.72
SE.ACS3[a]	Percent of workers who are self-employed in own not incorporated business; Management, business, science, and arts occupations	3.70	8.70	5.13	1.23
SE.ACS4[a]	Percent of workers who are self-employed in own not incorporated business; Service occupations	4.70	13.30	8.37	1.98
SE.ACS5[a]	Percent of workers who are self-employed in own not incorporated business; Sales and office occupations	2.30	6.20	3.79	1.98
SE.ACS6[a]	SE.ACS3/Unemployment Rate.	0.66	2.40	1.17	0.37
SE.ACS7[a]	SE.ACS4/Unemployment Rate.	0.86	3.57	1.91	0.59
SE.ACS8[a]	SE.ACS5/Unemployment Rate.	0.39	1.60	0.86	0.27
Economic Condition					
Unemployment Rate[c]	Percent of the civilian labor force unemployed	3.20	5.90	4.53	0.70
Percent net migration[d]	Cumulative estimates of Resident Population change from 2010 to 2015, percent	-0.80	16.60	5.95	3.92
Industrial Makeup					

Percent Manufacturing[e]	Share of manufacturing employment	2.90	20.70	9.67	3.70
Percent Service[f]	Share of service employment	14.50	29.60	17.48	2.30
Control Variables					
Population (thousands)[g]	Total population from 18-65	483.30	12112.15	2073.63	2073.56

Sources: [a]Data for SE.ACS1 and SE.ACS2 come from the 2012-2016 American Community Survey (ACS) 5-Year Estimates

[b] Data for SE.IRS1 and SE.IRS2 come from Internal Revenue Service (IRS)'s Statistics of Income (SOI).

[c] Unemployment rates data come estimates of "Unemployment Rates for Metropolitan Areas, Not Seasonally Adjusted" , Bureau of Labor Statistics February 2017.

[d] Migration data come from the U.S Census 2015 Population Estimates

[e] Data come from estimates of "civilian employed population 16 years and over – Manufacturing. ACS 2016

[f] Data come from estimates of "civilian employed population 16 years and over – Service occupations. ACS 2016

[g] Data on population come from the U.S Census Intercensal Population Estimate

Figure 8 displays a series of boxplots that illustrates the regional variation of four variables. The regional variation of adjusted full-time-unemployed callback gaps and the adjusted freelance-unemployed callback gaps – plots (I) and (II) - are displayed on the first row. On the second row are plot (III) and (IV), these plots display how SE.ACS1 and SE.IRS1, two measures of self-employment rates, vary across regions. Recall that in equation (6), a coefficient of 0 means that there is no difference between the likelihood of getting a callback between workers of different employment histories In the first row, a horizontal red line passing by point 0 in the y axes of plot (I) and (II), signals parity between full-time workers and unemployed workers in the first plot, and freelancers and unemployed workers in the second one. In plot (I), every single data point is above the red line, suggesting that full-time workers had higher callback rates than comparable unemployed workers in all 50 cities. This result is consistent with previous findings in the literature on the unemployment scarring effect. The gap between full-time workers and unemployed workers are largest in the South and West and are smaller in the Northeast and Midwest. While the median values of the callback gaps in these two regions are comparable (both around 0.62), the variation is larger in the Midwest. Plot (II) shows a drastically different pattern. In all regions, there were some cities in which freelancers did not outperform unemployed workers. However, all the median values are above the red line. The gap between freelancers and unemployed are smallest in the Midwest, increases in the South and the West, and becomes largest in the Northeast.

In contrast to the two series of boxplots in the first row, the ones in the second row show more consistency. In both plot (III) and (IV), the Northeast and the Midwest have lower self-employment rates, while cities in the South and the West have higher levels of entrepreneurialism. In both plots, the median values for Midwestern and Northeastern cities are

close to one another. Plot (III) and (IV) both show relatively small variation in self-employment rates for cities in the Midwest. Another difference lies in the relative ranking of Southern and Western cities. ACS-derived data indicate that Western cities have higher self-employment rates than their Southern counterparts, while IRS data points to the contrary. Nevertheless, there is some level of consistency in terms of the regional rankings shown in plot (I), (III), and (IV), with the South and the West clustering at the top and the Northeast and Midwest at the bottom, suggesting the need for further investigation.

Figure 9: Scatterplots linking Adjusted Fulltime-Unemployed and Freelance-Unemployed callback gaps and Different Measurement of Self-employment Rates in Labor Markets

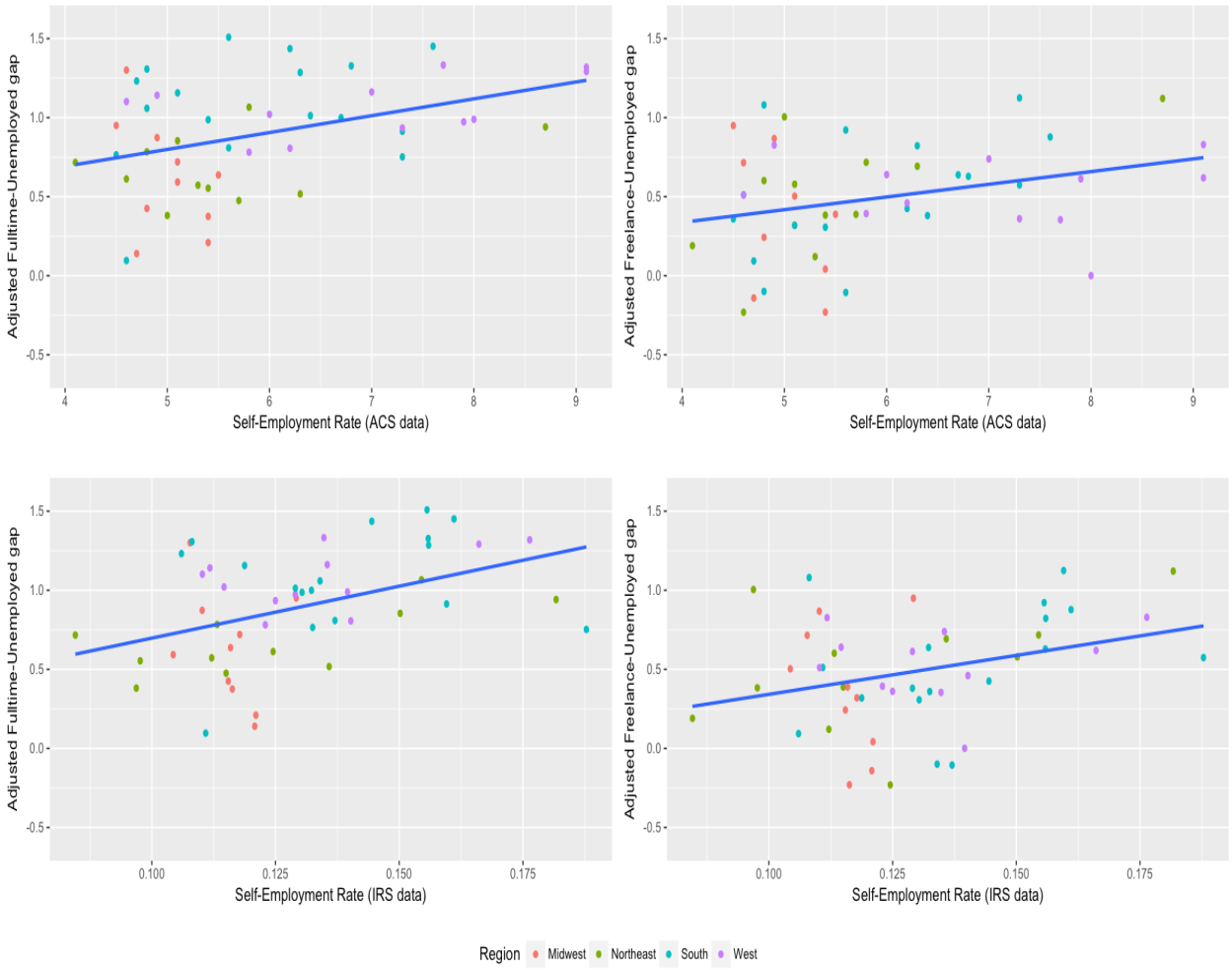


Figure 9 displays four scatterplots of 50 cities. The adjusted callback gaps between full-time workers and unemployed workers are on the y-axes of plots (I) and (III), whereas the adjusted callback gaps between freelancers and unemployed jobseekers are on the y-axes of plot (II) and (IV). Two indicators of self-employment are used in these plots: SE.ACS1 is shown on plots (I) and (II)SE.IRS1 is on plots (III) and (IV). Cities are color-coded by region, and the blue lines represent the regression lines linking the predictors (SE.ACS1 and SE.IRS1) to the outcome variables (adjusted callback gaps between full-timers and unemployed workers and between freelancers and unemployed workers) when there are no additional controls. In other words, these lines are the coefficients represented by R in equations (7) and (8), where the vector consists solely of one regressor.

The regression lines in plots (I) and (III) trend upwards, suggesting a positive relationship between self-employment rates and the full-time – unemployed callback gap. The slopes in plots (II) and (IV) are also upward trending but are less steep than the ones shown in the plots on the left hand-side of the figure.

Table 11: Correlation Matrix between SELFEMP1, SEFLEMP.PERTAX, the micro-adjusted callback gaps between fulltime workers and unemployed workers, and between freelancers and unemployed workers.

	SE.ACS1	SE.IRS1	ADJUSTED FT-UE GAP	ADJUSTED FL-UE GAP
SE.ACS1	1			
SE.IRS1	0.730***	1		
ADJUSTED FT-UE GAP	0.391**	0.423**	1	
ADJUSTED FL-UE GAP	0.295*	0.318**	0.420**	1

*p<0.5; **p<0.01; ***p<0.001.

The correlation matrix displayed in Table 11 tells a similar story. The correlation between two measures of self-employment rates and the adjusted callback gaps between full-timers and unemployed workers is statistically significant and moderate in size (0.39 and 0.42). These correlation coefficients are larger than the ones linking the two measures of self-employment to

the other outcome: the callback gap between freelancers and unemployed workers (0.29 and 0.32). The next set of results explores how these correlations change, when a series of controls are added to the equations.

Multivariate Results – Absolute measures of self-employment

Table 12 displays a series of specifications with the dependent variable being the micro-adjusted callback gap between full-time and unemployed workers. The first six models (1.1 to 1.6) use SE.ACS1 as the key self-employment indicator, whereas the last six models (2.1 to 2.6) use SE.IRS1. Models 1.2 and 2.2 control for measures of economic conditions, Models 1.3 and 2.3 account for variables capturing the industrial composition of cities, Models 1.4 and 2.4 include population and regional controls, while the other four models include combinations of these sets of variables.

SE.ACS1 was positive and statistically significant in Models 1.1 to 1.6. Based on Model 1.2, for every 10% increase in the value of SE.ACS1, the callback gap between full-timers and unemployed workers increases by 5% (or .53*log(1.1)). Models 2.1 to 2.6 show that SE.IRS was a significant predictor of the outcome variable at the 0.05 level in four out of six specifications. In the other two models, this variable was marginally significant. The effect sizes of the IRS-derived measure on the dependent variable are slightly larger than those of the ACS-derived variable. All in all, measures of self-employment are all positive and relatively consistent: the variables were significant at the 0.05 level in 10 out of 12 specifications. I interpret these findings as supportive of Hypothesis 1: the callback gaps between full-time workers and unemployed jobseekers widen in cities with higher rates of self-employment.

Except for the regional dummy variable, the other control variables do not show any consistent correlation with the outcome variable. Most noteworthy might be the lack of

Table 12: Two Measures of the Absolute Size of the Self-Employed Workforce Predicting the Micro-Adjusted Callback Gap between Full-Timers and Unemployed Workers

	Dependent Variable: Micro-Adjusted Callback Gap between Full-timers and Unemployed Workers											
	(1.1)	(1.2)	(1.3)	(1.4)	(1.5)	(1.6)	(2.1)	(2.2)	(2.3)	(2.4)	(2.5)	(2.6)
Measures of Self-Employment												
SE.ACS1 (logged)	.659**	.530*	.658**	.578**	.529*	.577*						
	(.227)	(.237)	(.231)	(.211)	(.247)	(.216)						
SE.IRS1 (logged)							.879**	.703*	.901**	.553†	.737*	.605†
							(.269)	(.306)	(.290)	(.314)	(.315)	(.327)
Economic Condition												
% Net Migration		.094†			.095			.066			.078	
		(.056)			(.062)			(.060)			(.064)	
Unemployment Rate		.019			.019			.004			-.004	
		(.054)			(.060)			(.054)			(.059)	
Industry Variables												
% Manufacturing Employment (logged)			-.104		.003	.039			.035		.113	.104
			(.135)		(.153)	(.132)			(.140)		(.151)	(.140)
% Service Employment (logged)			-.181		.005	.053			.095		.288	.215
			(.477)		(.541)	(.448)			(.475)		(.530)	(.470)
Other Controls												
Population				.080†		.082†				.058		.058
				(.044)		(.046)				(.052)		(.053)
South				.281**		.291**				.220*		.238*
				(.090)		(.098)				(.103)		(.107)
Constant	-.261	-.034	.484	-.215	-.055	-.453	-1.347†	-.899	-1.753	-.591	-2.056	-1.574
	(.400)	(.417)	(1.569)	(.372)	(1.731)	(1.494)	(.686)	(.782)	(1.832)	(.789)	(1.960)	(1.853)
N	50	50	50	50	50	50	50	50	50	50	50	50
R^2	.149	.204	.160	.320	.204	.322	.182	.208	.183	.259	.219	.269

*p<0.05; **p<0.01. Standardized coefficients, two-tailed tests.

Table 13: Two Measures of the Absolute Size of the Self-Employed Workforce Predicting the Micro-Adjusted Callback Gap between Freelancers and Unemployed Workers

	Dependent Variable: Micro-Adjusted Callback Gap between Freelancers and Unemployed Workers											
	(1.1)	(1.2)	(1.3)	(1.4)	(1.5)	(1.6)	(2.1)	(2.2)	(2.3)	(2.4)	(2.5)	(2.6)
Measures of Self-Employment												
SE.ACS1 (logged)	.494*	.497†	.499*	.432†	.543*	.438†						
	(.235)	(.254)	(.239)	(.240)	(.262)	(.244)						
SE.IRS1 (logged)							.595*	.654†	.598†	.470	.649†	.465
							(.284)	(.328)	(.306)	(.347)	(.339)	(.362)
Economic Condition												
% Net Migration		.001			-.016			-.026			-.025	
		(.060)			(.066)			(.064)			(.069)	
Unemployment Rate		.004			.020			-.010			-.002	
		(.057)			(.063)			(.058)			(.064)	
Industry Variables												
% Manufacturing Employment (logged)			-.091		-.127	-.051			.002		-.022	-.001
			(.139)		(.163)	(.149)			(.148)		(.163)	(.155)
% Service Employment (logged)			-.337		-.476	-.329			-.148		-.198	-.204
			(.494)		(.574)	(.507)			(.502)		(.571)	(.520)
Other Controls												
Population				.067		.067				.046		.049
				(.050)		(.052)				(.057)		(.059)
South				.067		.053				.014		.012
				(.102)		(.110)				(.113)		(.119)
Constant	-.377	-.381	.775	-.290	1.175	.754	-1.027	-1.179	-.615	-.715	-.554	-.116
	(.414)	(.446)	(1.626)	(.422)	(1.837)	(1.689)	(.726)	(.839)	(1.936)	(.871)	(2.113)	(2.052)
N	50	50	50	50	50	50	50	50	50	50	50	50
R^2	.084	.084	.096	.122	.101	.131	.084	.087	.086	.097	.089	.101

*p<0.05; **p<0.01. Standardized coefficients, two-tailed tests.

correlation between unemployment rates and the full-time-unemployed callback gap. I suspect that this lack of relationship could be the result of the duration of unemployment. All unemployed jobseekers in my sample are long-term unemployed: they have been out of the workforce for 20 months. Kroft et al. (2013)'s experimental study on the adverse effect of long-term unemployment and its relationship with labor market tightness reports that "market tightness might have little or no effect on callback rates for the long-term unemployed." (p. 1155). This finding is consistent with the results presented here.

The models in Table 12 show evidence that long-term unemployed workers underperform relative to full-time workers in cities with high self-employment rates. However, do long-term unemployed workers underperform relative to freelancers in those cities? Table 13 displays the same set of model specifications, but with a different dependent variable: the micro-adjusted callback gap between freelancers and unemployed workers. Among the two main variables of interest, SE.ACS1 was significant either at the 0.05 level or at the 0.1 level in all 6 specifications, while SE.IRS1 was significant at the 0.05 level only in one model, marginally significant in 3 models and non-significant in two others. Altogether, these results show some inconsistent support of Hypothesis 2: there seems to be inconsistent evidence to support the prediction that the freelancer-unemployed workers gap widens in entrepreneurial cities.

Multivariate Results – Relative measures of self-employment

While Tables 12 and 13 use self-employment rate as measures of the *absolute* size of the self-employed, Tables 14 and 15 use the self-employment rate / unemployment rate ratio to capture the *relative* size of the self-employed workforce. SE.ACS2 and SE.IRS2 measure the size of the share of self-employed workers relative to unemployed workers. In addition to altering the

Table 14: Two Measures of the Relative Size of the Self-Employed Workforce Predicting the Micro-Adjusted Callback Gap between Full-Timers and Unemployed Workers

	Dependent Variables: Micro-Adjusted Callback Gap between Full-timers and Unemployed Workers											
	(1.1)	(1.2)	(1.3)	(1.4)	(1.5)	(1.6)	(2.1)	(2.2)	(2.3)	(2.4)	(2.5)	(2.6)
Measures of Self-Employment												
SE.ACS2 (logged)	.442*	.510*	.450*	.415**	.509*	.450**						
	(.168)	(.236)	(.176)	(.152)	(.246)	(.158)						
SE.IRS2 (logged)							.528**	.687*	.595**	.364†	.717*	.470*
							(.189)	(.308)	(.214)	(.188)	(.316)	(.208)
Economic Condition												
% Net Migration		.096†			.096			.068			.079	
		(.056)			(.063)			(.060)			(.064)	
Unemployment Rate		.099			.098			.112			.108	
		(.066)			(.073)			(.069)			(.073)	
Industry Variables												
% Manufacturing Employment (logged)			-.051		.002	.106			.058		.107	.160
			(.138)		(.154)	(.132)			(.147)		(.152)	(.143)
% Service Employment (logged)			.162		.019	.403			.449		.294	.544
			(.496)		(.542)	(.457)			(.521)		(.532)	(.498)
Other Controls												
Population				.094*		.095*				.080†		.077
				(.043)		(.045)				(.046)		(.047)
South				.288**		.315**				.247*		.276**
				(.090)		(.097)				(.096)		(.100)
Constant	.782**	.765**	.430	.691**	.706	-.710	.339	.171	-1.142	.427*	-.935	-1.596
	(.063)	(.075)	(1.606)	(.064)	(1.752)	(1.498)	(.204)	(.327)	(1.803)	(.197)	(1.787)	(1.731)
N	50	50	50	50	50	50	50	50	50	50	50	50
R^2	.126	.199	.135	.320	.199	.334	.140	.204	.154	.269	.213	.294

*p<0.05; **p<0.01. Standardized coefficients, two-tailed tests.

Table 15: Two Measures of the Relative Size of the Self-Employed Workforce Predicting the Micro-Adjusted Callback Gap between Freelancers and Unemployed Workers

	Dependent Variables: Micro-Adjusted Callback Gap between Full-timers and Unemployed Workers											
	(1.1)	(1.2)	(1.3)	(1.4)	(1.5)	(1.6)	(2.1)	(2.2)	(2.3)	(2.4)	(2.5)	(2.6)
Measures of Self-Employment												
SE.ACS2 (logged)	.301†	.504†	.290	.281	.551*	.272						
	(.175)	(.251)	(.183)	(.174)	(.260)	(.183)						
SE.IRS2 (logged)							.327	.684*	.329	.250	.677†	.246
							(.198)	(.328)	(.226)	(.209)	(.338)	(.236)
Economic Condition												
% Net Migration		.001			-.017			-.027			-.028	
		(.059)			(.066)			(.064)			(.069)	
Unemployment Rate		.083			.106			.096			.103	
		(.070)			(.077)			(.073)			(.078)	
Industry Variables												
% Manufacturing Employment (logged)			-.056		-.132	-.009			-.001		-.024	.014
			(.144)		(.163)	(.152)			(.156)		(.162)	(.162)
% Service Employment (logged)			-.110		-.472	-.111			.023		-.187	-.061
			(.516)		(.572)	(.527)			(.550)		(.569)	(.564)
Other Controls												
Population				.078		.079				.068		.070
				(.049)		(.051)				(.051)		(.054)
South				.073		.070				.045		.048
				(.103)		(.111)				(.107)		(.114)
Constant	.413**	.362**	.853	.393**	1.987	.732	.145	-.230	.081	.211	.364	.357
	(.065)	(.080)	(1.671)	(.073)	(1.849)	(1.728)	(.214)	(.348)	(1.903)	(.220)	(1.913)	(1.963)
N	50	50	50	50	50	50	50	50	50	50	50	50
R^2	.059	.088	.062	.111	.105	.112	.054	.094	.054	.089	.096	.090

*p<0.05; **p<0.01. Standardized coefficients, two-tailed tests.

variables of main interest, the models in Tables 14 and 15 use the same specifications as the respective models in Tables 12 and 13. The results that Tables 14 and 15 yielded are very similar to the ones shown in Tables 12 and 13, respectively. Tables 14 and 12 share the same dependent variable: the micro-adjusted callback gaps between full-timers and unemployed workers. SE.ACS2 was shown to be positive and statistically significant in all models, whereas SE.IRS2' coefficients were significant at the 0.05 level in five specifications and marginally significant in only one – model 2.4 (p=.059). These results provide robust support for Hypothesis 3: the relative size of the self-employed workforce also widens the full-time – unemployed callback gap.

Table 15 tells a story that is very similar to Table 13. The coefficients of the variables capturing the relative size of the self-employed are inconsistent in the set of models shown in Table 15. The variables of main interest show statistical significance in Models 1.5 and 2.2, marginal significance in models 1.1, 1.2, and 2.5, and no significance in all other models. This set of results provides no support for Hypothesis 4. The self-employed workforce's size relative to the unemployed population seems to be unrelated to the freelance-unemployed callback gap.

Alternative Specifications

It is possible to argue that the impact of self-employment rates on unemployed jobseekers' relative disadvantage could be occupation-specific. The field experiment submitted applications to three job types: sales, marketing, and administrative positions. The dynamics of discrimination against unemployed jobseekers might function in a narrower sense: employers might penalize unemployed jobseekers in markets with high self-employment rates in the jobseekers' occupations, rather than in markets with high *overall* self-employment rates. For example, unemployed applicants for service jobs might face consequences in cities with large

Table 16: Alternative Specifications: Absolute Measures of Industry-Specific Self-Employment Rates Predicting the Micro-Adjusted Callback Gap between Full-Timers and Unemployed Workers

	Dependent Variable: Micro-Adjusted Callback Gap between Full-timers and Unemployed Workers																	
	(1.1)	(1.2)	(1.3)	(1.4)	(1.5)	(1.6)	(2.1)	(2.2)	(2.3)	(2.4)	(2.5)	(2.6)	(3.1)	(3.2)	(3.3)	(3.4)	(3.5)	(3.6)
Measures of Self-Employment																		
SE.ACS3 (logged)	.64**	.56*	.69**	.66**	.62*	.69**												
	(.21)	(.21)	(.22)	(.19)	(.23)	(.20)												
SE.ACS4 (logged)							.59**	.46*	.62**	.46*	.49*	.50*						
							(.20)	(.22)	(.21)	(.19)	(.23)	(.20)						
SE.ACS5(logged)													.62**	.49*	.63**	.58**	.51*	.58**
													(.20)	(.22)	(.21)	(.19)	(.23)	(.19)
Economic Condition																		
% Net Migration		.11*			.11†			.09			.08			.08			.08	
		(.05)			(.06)			(.06)			(.06)			(.06)			(.06)	
Unemployment Rate		.03			.05			.03			.01			.01			.01	
		(.05)			(.06)			(.05)			(.06)			(.05)			(.06)	
Industry Variables																		
% Manufacturing Employment (logged)			-.14		-.04	.01			-.08		.01	.05			-.12		-.03	.02
			(.13)		(.15)	(.13)			(.13)		(.15)	(.13)			(.13)		(.16)	(.13)
% Service Employment (logged)			-.51		-.38	-.24			.21		.31	.35			-.33		-.12	-.08
			(.49)		(.56)	(.44)			(.49)		(.54)	(.46)			(.48)		(.55)	(.44)
Other Controls																		
Population				.07†		.08†				.08†		.08†				.08†		.08†
				(.04)		(.04)				(.04)		(.05)				(.04)		(.04)
South				.32**		.33**				.26**		.27**				.30**		.30**
				(.09)		(.09)				(.09)		(.10)				(.09)		(.10)
Constant	-.14	-.01	1.54	-.28	1.05	.33	-.33	-.08	-.84	-.17	-1.03	-1.37	.09	.25	1.28	.03	.62	.19
	(.35)	(.34)	(1.51)	(.32)	(1.72)	(1.40)	(.42)	(.46)	(1.71)	(.39)	(1.82)	(1.63)	(.27)	(.29)	(1.51)	(.25)	(1.74)	(1.43)

N	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
R^2	.16	.23	.18	.37	.24	.38	.15	.20	.17	.30	.20	.31	.16	.21	.18	.35	.21	.35

*p<0.05; **p<0.01. Standardized coefficients, two-tailed tests.

Table 17: Relative Measures of Industry-Specific Self-Employment Rates Predicting the Micro-Adjusted Callback Gap between Full-Timers and Unemployed Workers

	Dependent Variable: Micro-Adjusted Callback Gap between Full-timers and Unemployed Workers																	
	(1.1)	(1.2)	(1.3)	(1.4)	(1.5)	(1.6)	(2.1)	(2.2)	(2.3)	(2.4)	(2.5)	(2.6)	(3.1)	(3.2)	(3.3)	(3.4)	(3.5)	(3.6)
Measures of Self-Employment																		
SE.ACS6 (logged)	.44**	.54*	.44*	.47**	.59*	.48**												
	(.16)	(.21)	(.17)	(.14)	(.23)	(.15)												
SE.ACS7 (logged)							.39*	.45*	.44**	.33*	.48*	.41**						
							(.15)	(.22)	(.16)	(.14)	(.23)	(.15)						
SE.ACS8 (logged)													.46**	.48*	.46**	.46**	.49*	.47**
													(.16)	(.22)	(.16)	(.14)	(.23)	(.15)
Economic Condition																		
% Net Migration		.11*			.11†			.09			.08			.08			.08	
		(.05)			(.06)			(.06)			(.06)			(.06)			(.06)	
Unemployment Rate		.11†			.14†			.10			.09			.08			.09	
		(.06)			(.08)			(.07)			(.07)			(.06)			(.07)	
Industry Variables																		
% Manufacturing Employment (logged)			-.08		-.04	.09			-.03		.01	.11			-.06		-.03	.10
			(.14)		(.15)	(.13)			(.14)		(.15)	(.13)			(.14)		(.16)	(.13)
% Service Employment (logged)			-.05		-.34	.22			.44		.31	.61			.06		-.10	.31
			(.48)		(.57)	(.43)			(.52)		(.54)	(.49)			(.48)		(.55)	(.44)
Other Controls																		
Population				.09*		.09*				.09*		.09*				.09*		.09*
				(.04)		(.04)				(.04)		(.04)				(.04)		(.04)

South				.32**		.34**				.27**		.29**				.30**		.32**
				(.09)		(.09)				(.09)		(.10)				(.09)		(.09)
Constant	.84**	.83**	1.16	.73**	1.89	-.12	.66**	.62**	-.56	.60**	-.30	-1.44	.98**	.98**	.96	.88**	1.34	-.24
	(.05)	(.05)	(1.55)	(.05)	(1.82)	(1.42)	(.10)	(.14)	(1.71)	(.09)	(1.75)	(1.60)	(.06)	(.06)	(1.55)	(.06)	(1.81)	(1.43)
N	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
R^2	.14	.23	.14	.36	.23	.37	.12	.19	.15	.30	.20	.33	.15	.20	.16	.35	.20	.36

*p<0.05; **p<0.01. Standardized coefficients, two-tailed tests.

portions of small businesses or startups in the service occupations, rather than being penalized in those cities where self-employment rates are driven by entrepreneurial activities in natural resources, construction, and maintenance. Employers also might have knowledge about how common self-employment is in these specific job types, rather than in all occupations in the labor market. To test this possibility, I used two sets of occupations-specific measures. Each includes three separate occupation-specific measures of self-employment. All these measures are derived from the American Community Survey. The first set includes [1] percent self-employed in management, business, science, and arts occupations (SE.ACS3), [2] percent self-employed in service occupations (SE.ACS4), and [3] percent self-employed in sales and office occupations(SE.ACS5). The second set provides the ratios of measures in the first set over the unemployment rates (SE.ACS6, SE.ACS6,SE.ACS8). The first set and the second set offer the *absolute* and *relative* measures of occupation-specific self-employment.

All six measures of the occupation-specific self-employment rates yield positive and significant coefficients in all model specifications in Tables 16 and 17. Both *absolute* and *relative* measures of occupation-specific self-employment rates are robustly correlated with an enlarged gap in callback between full-time workers and freelancers.

In summary, I find strong support for Hypotheses 1 and 2, weak support for Hypothesis 3, and no support for Hypothesis 4. These results show that the entrepreneurial contexts do matter for the labor market outcomes of unemployed workers. Unemployed workers underperform full-time workers in all 50 cities in the sample. However, this effect is intensified in cities with high rates of self-employment. This finding is relatively robust across different measures of both the absolute and relative size of the self-employed workforce. However, the strong concentration of self-employed workers in labor markets do not seem to systematically

benefit freelancers who wish to transition back to the full-time workforce. While the *absolute* measures of self-employment rates show a relatively consistent effect in widening the freelance-unemployed gap, the *relative* ones show no such consistency. In a set of models (not shown), I use the micro-adjusted callback gap between full-timers and freelancers as the dependent variable, and the equations shown in Tables 12,13, and 14 to predict this outcome. No variable shows a consistent effect. These results indicate that the high concentration of self-employed workers create a context, in which long-term unemployed workers are further disadvantaged, and provide little benefit in terms of subsequent transition to paid jobs for freelancers.

Supplemental Analysis

While the analysis of experimental data yields valid estimates of gaps between workers of different employment histories, the generalizability of these findings might be unclear. This uncertainty stems from some issues related to design, several intrinsic to the experimental method. Compared to large scale quantitative inquiries, experimental studies are more limited in the ability to account for a wider range of potentially meaningful conditions. For instance, the experiment used in this study did not vary the applicants' number of months spent at the most recent employment situation, only analyzed three job types, and covered only 50 cities. I thus aim to supplement the analysis described above, with a quantitative analysis of unique panel data.

The panel data covers all U.S states and the District of Columbia from 1997 to 2015. With 51 spatial units and 19 temporal ones, the matrix comprises of 969 State-Years. The structure of the panel fits the prototype of Time-series of Cross-Sections (TSCS) data (Beck and Katz 1995). The panel is balanced and has no missing data. The dependent variable in the supplemental study is the median duration of unemployment. I measure states' self-employment

rate by using data from the Census' non-employer statistics (NES) program. The Census Bureau defines non-employers as: "A non-employer business is one that has no paid employees, has annual business receipts of $1,000 or more ($1 or more in the construction industries), and is subject to federal income taxes. Non-employer businesses are generally small, such as real estate agents and independent contractors. Most non-employers are self-employed individuals operating very small unincorporated businesses, which may or may not be the owner's principal source of income." (Census 2016). This definition makes this measurement generally consistent with the two measurements used in the analysis of experimental data. I measure the *absolute* size of the self-employed group by using the number of non-employer establishments per capita, and the *relative* size by using the non-employer establishment per capita-to-unemployment rate ratio. I also control for unemployment rate, median household income and union density. In order to account for the industrial composition of a state, I include two additional controls: percent GDP generated from manufacturing and service-producing industries. Appendix C displays the variables' definition and data source.

Since it is a hybrid form of cross-sectional data and time-series data, TSCS data typically has three sets of problems: unit heterogeneity, serial correlation, and panel heteroscedasticity. The first problem is typically associated with data across space, the second with data across time, and the third is unique to panel data. Beck and Katz (2011)'s pioneering paper recommends a modeling approach that deals with these three problems simultaneously: using a fixed effect to absorb unobserved unit-specific variation, including a lagged dependent variable to resolve issues of serial autocorrelation, and adjusting for panel heteroscedasticity and contemporaneously correlated errors using panel-corrected standard error (PCSE). Following

Beck and Katz, I specify the following model with a lagged dependent variable and fixed effects. The standard errors will be corrected after the estimation.

$$y_{it} = \delta y_{it-1} + \beta X_{it} + \alpha_i + u_{it} \quad (9)$$

where y_{it} represents the median unemployment duration in state i in year t; δ is the coefficient associated with the lagged dependent variable (median unemployment duration in state i and year t-1); X represents the vector of predictors at i and t; α is a vector containing 51 intercepts for each state (and D.C); and u_{it} represents the error term.

In addition to following Beck and Katz's rationale, I selected the fixed effect (FE) estimation after ascertaining that the FE approach is superior to the OLS and the Random Effect (RE) models for this specification. For each of the three modelling approaches, I specified a model with median unemployment duration as the outcome variable. The predictors include a lagged dependent variable, non-employer establishment per capita (logged), unemployment rate, median household income, union density, percent manufacturing, percent service, and population. With respect to the comparison with the OLS model, the F test for individual effect rejects the null hypothesis of no fixed effect ($F=7.54$; $df1=50$; $df2=910$; $p<0.001$), indicating that the FE model is preferable to the OLS model. As for comparing with the RE model, the Hausman test also rejects the null hypothesis that unique errors are uncorrelated with predictors (Chi-square=7716; df=8; $p<0.001$). The Hausman test suggests that the FE model is the preferred model. I repeat these steps with the *relative* measure and the results were very consistent with those shown above: both tests recommend the use of FE models over OLS and RE specifications.

The inclusion of the lagged dependent variable in analyzing TSCS data is still a matter of debate. While some scholars suggest that "there is nothing pernicious in using a lagged dependent variable" (Beck and Katz 2011:331), others maintain that such variables dominate the

Table 18: Effects of Absolute and Relative Measures of Nonemployer Establishments on States' Median Unemployment Duration (1997-2015). Fixed effects included, PCSE in parentheses

	Dependent Variable: Median Unemployment Duration											
	(1.1)	(1.2)	(1.3)	(1.4)	(1.5)	(1.6)	(2.1)	(2.2)	(2.3)	(2.4)	(2.5)	(2.6)
Lagged Dependent Variable												
$MEDIANDU_{t-1}$				.437***	.437***	.403***				.443***	.440***	.406***
				(.015)	(.015)	(.032)				(.015)	(.015)	(.031)
Variables of Main Interest												
Absolute Measure: Nonemployer establishment per capita (logged)	10.024***	7.577***	8.815***	3.124***	2.501*	4.778**						
	(1.379)	(1.700)	(2.459)	(.864)	(1.018)	(1.633)						
Relative Measure: Nonemployer establishment per capita / Unemployment rate (logged)							5.856***	3.996***	4.709***	2.882***	2.590***	3.378***
							(1.067)	(1.129)	(1.127)	(.652)	(.695)	(.795)
Control Variables												
Unemployment Rate	2.186***	2.165***	1.637***	1.651***	1.646***	1.175***	3.175***	2.813***	2.330***	2.098***	2.041***	1.663***
	(.061)	(.061)	(.106)	(.050)	(.050)	(.084)	(.180)	(.190)	(.221)	(.112)	(.120)	(.164)
Median Household Income	-.011	-.007	.181	.784***	.750***	.449*	.058	.017	.135	.777***	.726***	.422*
	(.316)	(.307)	(.259)	(.205)	(.202)	(.194)	(.349)	(.326)	(.258)	(.206)	(.202)	(.192)
Union Density	-.283**	-.326***	-.052	-.042	-.051	-.046	-.470***	-.444***	-.081	-.068	-.061	-.055
	(.090)	(.090)	(.070)	(.053)	(.052)	(.050)	(.087)	(.086)	(.071)	(.048)	(.049)	(.049)
Percent Manufacturing		-4.721	-3.643		-6.941	-4.537		-9.809	-1.963		-8.167*	-3.987
		(7.289)	(6.277)		(4.315)	(4.269)		(7.314)	(6.194)		(4.140)	(4.141)
Percent Service		-4.475	5.385		-7.296*	-.387		-4.368	9.300		-6.998*	1.628
		(5.909)	(5.312)		(3.553)	(3.613)		(6.166)	(5.134)		(3.533)	(3.440)
Population		.587*	.201		.095	.102		.795**	.268		.076	.105
		(.258)	(.218)		(.147)	(.138)		(.257)	(.211)		(.139)	(.132)
Year- dummy	-	-	Yes	-	-	Yes	-	-	Yes	-	-	Yes
N	969	969	969	969	969	969	969	969	969	969	969	969
R-squared	.823	.826	.908	.905	.906	.926	.816	.823	.909	.906	.907	.927

*p<0.05; **p<0.01; ***p<0.001

regression and suppress other variables' explanatory power (Achen 2000, see Keele and Kelly 2005). I, therefore, present both specifications with and without the lagged dependent variable. Table 18 displays 12 models showing the effects of the two main variables of interest. The effects of the *absolute* measure are shown in Models 1.1 to 1.6, whereas those of the *relative* measure are displayed in Models 2.1 to 2.6. Models 1.1 to 1.3, and Models 2.1 to 2.3 do not include the lagged dependent variable, while Models 1.4 to 1.6 and 2.4 to 2.6 do. All models include state-fixed effects and Models 1.3, 1.6, 2.3, and 2.6 also include year-fixed effects. The panel-corrected standard errors are in parentheses.

Both *absolute* and *relative* measures show positive and statistically significant coefficients in all 12 models. Since additional controls, including the lagged dependent variable and the year-dummy fixed effects, are introduced to the model, the two measures seem to decrease in size but remain robust, positive, and statistically significant. These consistent and positive coefficients indicate that the number of self-employed businesses has a lengthening effect on unemployment duration. This is a possible indicator that unemployed workers have a harder time getting a job in entrepreneurial cities. Workers are more likely to be unemployed for a longer period in states with high rates of self-employment, providing further support for my theorization. Furthermore, it is evident that the control variables are important in predicting the outcome variable. Unemployment rates show consistent, positive, and significant effects across specifications. These positive coefficients make substantive sense, since unemployed jobseekers might find it challenging to obtain full time employment in slack labor markets. An alternative explanation is more straightforward: there might be more longer-term unemployed workers simply because there are more unemployed workers generally. The effects of median household income change dramatically, when the lagged dependent variable is included in specifications.

The coefficient became positive and significant in Models 6,7 and 8, indicating that unemployment duration tends to lengthen in richer states. By contrast, union density ceases to have a shortening effect on unemployment duration, as the model becomes more stringent, or the beneficial impact of union density operates in locales where self-employment is relatively low. This finding might reflect the weakening of labor unions in their ability to operate as a labor market institution, or the fact that unions are concerned with protecting permanent employees rather than facilitating transitions back to the full-time workforce for unemployed workers.

Robustness Checks and Alternative Specifications

Table 19 took the two most stringent specifications – 1.6 and 2.6 - from Table 18 and applies two alternative robust standard error structures. I rely on the White method (Arellano 1987, White 1980, White 2014) to estimate a robust covariance matrix of parameters for these two fixed effect estimations. Models (1) and (2) show standard errors that are robust with serial correlation, and Models (3) and (4) show those that are robust with cross-sectional correlation. Note that the coefficients remain unchanged. Both variables of main interest remain positive and robust, when these standard errors are applied.

The models in Table 20 use the same set of predictors in Table 16's most conservative specifications – Models 1.6 and 2.6 – but change the dependent variable. The outcome variable is another measure of unemployment duration: it is the mean employment duration instead of the median unemployment duration that was used in all previous models in this section. Once again, both *absolute* and *relative* measures show positive and significant coefficients across all models. Tables 18, 19, and 20 shows that both the *absolute* measure and the *relative* measure show consistent and positive effects across a wide range of models with different specifications, measurements, assumptions, and error structures. I interpret these sets of evidences as supportive

Table 19: Effects of absolute and relative measure of Nonemployer Establishments on states' median unemployment duration (1997-2015). Fixed effects included, White Robust SEs in parentheses

	Dependent Variable: Median Unemployment Duration			
	Robust vs. Serial Correlation		Robust vs. Cross-Sectional Correlation	
	(1)	(2)	(3)	(4)
Lagged Dependent Variable				
$MEDIANDU_{t-1}$	.403***	.406***	.403***	.406***
	(.036)	(.039)	(.037)	(.039)
Variables of Main Interest				
Absolute Measure: Nonemployer Establishment per capita (logged)	4.778*		4.778*	
	(2.024)		(2.052)	
Relative Measure: Nonemployer Establishment per capita / Unemployment Rate (logged)		3.378***		3.378***
		(.831)		(.842)
Control Variables				
Unemployment Rate	1.175***	1.663***	1.175***	1.663***
	(.061)	(.144)	(.062)	(.146)
Median Household Income	.449	.422	.449	.422
	(.369)	(.371)	(.374)	(.376)
Union Density	-.046	-.055	-.046	-.055
	(.054)	(.054)	(.054)	(.055)
Percent Manufacturing	-4.537	-3.987	-4.537	-3.987
	(4.720)	(4.310)	(4.785)	(4.369)
Percent Service	-.387	1.628	-.387	1.628
	(2.718)	(2.687)	(2.756)	(2.724)
Population	.102	.105	.102	.105
	(.127)	(.124)	(.128)	(.126)
Year- dummy	Yes	Yes	Yes	Yes

*p<0.05; **p<0.01; ***p<0.001

Table 20: Effects of Absolute and Relative Measures of Nonemployer Establishments per capita on States' Mean Unemployment Duration (1997-2015). Fixed effects included, PCSE in parentheses

	Dependent Variable: Mean Unemployment Duration	
	(1)	(2)
Lagged Dependent Variable		
$MEDIANDU_{t-1}$	.459***	.473***
	(.035)	(.035)
Variables of Main Interest		
Absolute Measure: Nonemployer Establishment per capita (logged)	5.535*	
	(2.255)	
Relative Measure: Nonemployer Establishment per capita / Unemployment Rate (logged)		2.297*
		(1.015)
Control Variables		
Unemployment Rate	1.402***	1.726***
	(.107)	(.196)
Median Household Income	-.007	-.013
	(.290)	(.291)
Union Density	-.014	-.034
	(.075)	(.074)
Percent Manufacturing	2.297	3.451
	(5.823)	(5.691)
Percent Service	8.241	10.187*
	(5.223)	(5.041)
Population	.196	.249
	(.201)	(.195)
Year- dummy	Yes	Yes

*p<0.05; **p<0.01; ***p<0.001

of my thesis that self-employment has a prolonging effect on unemployment duration.

Discussion and Conclusion

The substantial scarring effect of unemployment has attracted the attention of scholars from different disciplines. While a wide range of scholarship provides consistent results confirming the insights that joblessness operates as a trigger event and generates long-lasting negative impacts on individuals' subsequent career transition, only a few studies explicitly situate the experience of unemployment in the context of labor markets. Among the institutional and economic contextual factors considered are employment protection legislation and unemployment insurance in cross-national comparative analysis (Gangl 2006) and labor market tightness- measured by unemployment rates and the vacancy/unemployment ratio – in several cities within the U.S (Kroft et al. 2013). The role of self-employment in shaping the intensity of unemployment's scarring effect remains under-explored. This research offers evidence that is consistent with previous findings in the unemployment scarring literature. Chapter 2 documents the severe labor market disadvantages that long-term unemployed workers face, compared to their otherwise similar counterparts who are full-timers or freelancers. This chapter shows that unemployed workers underperform full-timers in all 50 labor markets. In addition, this chapter also explores the scarring effects in the entrepreneurial context of labor markets and theorizes that the commonality of self-employment in labor market exacerbates the penalties that long-term unemployed jobseekers endure. I argue that this effect is manifested through two mechanisms. From the 'signaling' perspective, employers can further stigmatize long-term unemployed workers for their perceived lack of willingness to participate in the gig or on-demand economies, or to keep their human capital updated, while operating in labor markets where self-employment is relatively common. From the 'queuing' perspective, the presence of

self-employed workers changes both the order and the shape of the labor queue. Employers regard self-employed workers as preferred candidates, compared to unemployed jobseekers (as shown in Chapter 2). They are more willing to relegate long-term unemployed workers to a lower position in the labor queue, as the number of self-employed workers increases in a given labor market. In both the primary analysis of experimental data and the supplemental analysis of quantitative data, I find evidence that is supportive of the theorized relationship between self-employment and unemployment scarring in labor markets. In the primary analysis, using two different measures of self-employment rates from two different data sources (the American Community Survey and the Internal Revenue Service), I show that both predictors are correlated with an increase in the callback gap between full-timers and unemployed jobseekers in the 50 cities. This result remains robust across both the *absolute* and *relative* measure of self-employment rates. In the supplemental analysis, I use a panel of 50 U.S states and D.C across 19 years to gauge the relationship between self-employment rates and unemployment duration – a proxy of the difficulty associated with transitioning out of unemployment. The results from analyzing the panel data are consistent with the ones obtained from the analysis of experimental data. I found both the *absolute* and *relative* measures of self-employment to be correlated with a prolonged period of unemployment. The effects are very robust across a wide range of control variables, outcome measures, standard error structures, and modelling assumptions. By theorizing and documenting the impact of self-employment on unemployment scarring, this research contributes to a growing literature on the role of institutional arrangements and economic conditions in shaping the experience of unemployment more specifically, and the dynamics of stratification more broadly. The result advances our understanding of the negative

consequences of unemployment and sheds new light on the context under which such consequences can be intensified.

This research makes important contributions to the theoretical literature linking self-employment to unemployment. The association between these two modes of employment in labor markets is "shrouded with ambiguity" (Carree and Thurik 2005:442). The literature on this topic generates predictions that are contradictory and inconsistent in terms of exogenous causality. Theories of income choice predict that high unemployment generates higher rates of self-employment. People are "pushed" into entrepreneurship to escape unemployment or to avoid the challenges associated with finding a job in a market with more jobseekers than openings. This is known as the "entrepreneur push" or the "refugee effect." The second line of thought reverses the causal arrows and expects entrepreneurship to negatively predict unemployment. The mechanism proposed is that as small business becomes larger in stature, they rely on local human resources to grow. Small business' hiring activities thus contribute to lowered unemployment rates. This prediction is termed the "entrepreneurial effect." Summarizing this body of scholarship is beyond the scope of this research (for a review of this literature, see Thurik et al. 2008). This research generates findings that this literature did not anticipate. Instead of finding that unemployment is reduced in entrepreneurial labor markets, I find that unemployed workers are discriminated more heavily in such a context. I argue that these findings are not contradictory. The difference in finding stems partly from different assumptions about discriminatory actors. The "entrepreneurial effect" literature argues that entrepreneurship has an unemployment-reducing effect, and this effect is manifested through small business hiring mechanisms. The employers in my sample are not self-employed businesses. Most employers in my sample are larger incorporated companies, and this 'entrepreneurship effect' literature does

not theorize about these actors' discriminatory behavior. It is possible that small businesses are not as competitive as large organizations, in terms of attracting full-time workers or even freelancers – who would want to seek security – so they adopt a less stigmatized view of unemployed workers simply due to less availability in the queue. The 'entrepreneurial effects' were also primarily tested at the national level on samples of European countries. Such a thesis might not operate as well in cities and states in the U.S, where existing work shows that the job-creation effects of small businesses are vastly overstated (Kliesen and Maues 2011). It is also possible that this study's findings only generalize to long-term unemployed workers, and the stigma associated with shorter-term unemployment is not significantly intensified in entrepreneurial cities. These explanations are currently speculative. Future research is needed to provide theoretical and empirical expansion on these points.

The finding that this paper generates also uncovers an underexplored consequence of non-standard work. A large body of literature reveals that precarious work has a detrimental effect on non-standard workers and their families. Workers report lower wages, benefits, physical health, mental health, job satisfaction, and are more likely to delay family formation and report work-life conflict (Blossfeld et al. 2006, Bohle et al. 2004, Giesecke and Groß 2003, Kalleberg 2000a, Kalleberg 2009, Kivimäki et al. 2003, Marmot et al. 2008, McGinnity et al. 2005, Pedulla 2016a, Quinlan et al. 2001). This research reveals another societal consequence of precarity: the representation of non-standard work, or self-employed work in this case, also negatively affects another group of workers, who are the long-term unemployed jobseekers. This can be characterized as the spin-off costs of precarious work for others in the labor market. This finding is consistent with recent accounts of how the neo-liberalized norms of employment relations, manifested as the urbanized knowledge economy, contributes to generating the major

urban crises, such as unaffordability, gentrification, and economic segregation (Florida 2017). This research thus enriches the conversation on how non-standard work contributes to deepening labor market segmentation and growing economic inequality.

Despite showing the association between self-employment rates and harsher discrimination against unemployed jobseekers and theorizing that the unemployment stigma intensifies in entrepreneurial cities, this research did not empirically verify this expectation. This study also makes a reasonable assumption that employers are aware of the entrepreneurial nature of markets in which they operate and might consciously or subconsciously modify their behavior as a result of or in response to labor market economic conditions. Future research would benefit by selecting employers from cities with varying rates of self-employment and empirically measuring their awareness of how entrepreneurial the markets in which they are embedded are, and their perception of unemployed jobseekers in these markets.

While this research shows the detrimental impact of self-employment rates on unemployed workers, it also shows that freelancers do not benefit by living in entrepreneurial cities. While there is some inconsistent evidence that the freelancer-unemployed gap widens in cities with high rates of self-employment, additional analysis (not shown) shows that the city-level self-employment gap has no significant relationship with the callback gap between full-timers and freelancers. This lack of finding is noteworthy, and future research is encouraged to explore factors that could benefit or harm freelancers' subsequent market transition. Such studies would yield tremendous theoretical relevance and policy significance. The findings also have policy implications. By documenting the labor markets in which unemployed workers might face further roadblocks to employment, this research shows the areas in which unemployment-reducing programs or policies could be implemented. How to effectively execute job creation

programs, unemployment benefit schemes, or federally subsidized work-sharing programs in cities with high self-employment rates, can be a topic of considerable interest to both scholars and policy makers.

Appendix C . Definition, Source, and Descriptive Statistics for MSA - Level Predictors

Variable	Definition	Data Source
Dependent Variable		
MEDIANDU	Median Unemployment Duration	Labor Force Statistics from the Current Population Survey
Independent Variables		
ESTAB.PERCAP	Number of non-employer businesses per capita	U.S. Census Bureau's Nonemployer Statistics
UNEMP	Unemployment Rate	Local Area Unemployment Statistics, U.S. Bureau of Labor Statistics (BLS)
INC	Median Household Income (chained to 2015 U.S Dollars)	U.S. Census Bureau, Current Population Survey
UDEN	Union Density	Hirsch et. al (2001).
PER.MANU	GDP from manufacturing/ total GDP	Bureau of Economic Analysis, U.S Department of Commerce Regional Data
PER.SER	GDP from private services-providing industries/ total GDP	
POPU	Population	U.S. Census Bureau, State Intercensal Datasets

Chapter 5: Conclusion

Changes in the modern labor markets

Since the mid-1970s, the U.S labor market has undergone fundamental changes. The interplay of the neoliberal project, globalization, and technological changes gave rise to what is known as the "new economy." The reconfiguration of the modern labor market is multifaceted, and changes in *employment* relations and *racial* relations play critical roles in the process. In the area of employment relations, work norms shift away from permanent and secure to precarious and nonstandard (Kalleberg 2000a, Kalleberg 2009). Millions of workers are experiencing the transitions that are characteristics of the 1099-s economy, the on-demand economy, or the gig economy. In addition to major changes in employment relations, the labor market is undergoing a demographic transition with racial and ethnic minorities seeing themselves having greater representation in the workplace. These changes reflect broader demographic trends in the society as a whole. At the same time, discourses of diversity and inclusivity assume a more prominent position in modern American life. This research is even more timely and relevant against the backdrop of a 2016 presidential election characterized by discourses of xenophobia and nativism.

The city represents an important site in which these changes in employment relation and racial relation take place. Urban sites are not only becoming more diverse, but also simultaneously more entrepreneurial and creative. This dissertation is thus concerned not only with two major sets of changes in the economy that intersect to generate new norms of stratification, it also focuses its analytical lens on situating these forms of inequality in the context of urban social space, that is, in the context of changing urban labor markets (Greenberg and Lewis 2017).

This dissertation thus revolves around three major themes: precarious work, race, and space. The analysis focuses on the role of these themes in shaping gatekeeping or labor market

decision-making in the new economy. The chapters present a kaleidoscopic exploration into the intersections of these themes. Chapter 2 examines issues related to work and race, Chapter 3 is concerned with race and space, and chapter 4 focuses on work and space.

Summary of findings and contributions

Chapter 2 explores the question of how the freelancing experience intersects with racial and ethnic identities to generate new forms of labor market stratification in the new economy. Using a large-scale audit study that includes sending approximately 12,000 fictitious resumes to job openings in 50 metropolitan statistical areas, this research examines labor market opportunities for workers of three employment histories (unemployed, freelance, full-time) and four races (White, Asian, Latino, Black). I show that freelancers occupy a middling status between full-timers and unemployed workers, but the penalties associated with freelancing are not distributed equally across racial groups. For African-Americans, freelancing operates more like a 'trap' than a 'bridge,' as employers show no significant preference for freelancing Blacks over unemployed ones. For Latinos, on the other hand, a successful short-term freelancing career could serve as an alternative to another full-time job, as interview request rates for freelancing Hispanics and their full-time counterparts are comparable. The findings shed light on how work and race intersect to generate new dynamics of stratification in the changing contexts of the modern American labor market.

Chapter 3 addresses the question of how the demographic compositions of urban labor markets shape the dynamics of race- and ethnic-based hiring discrimination that takes place within them. It is theoretically motivated by the task of synthesizing two branches of literature that developed largely independently of one another. On the one hand, the experimental studies on labor market discrimination offer a sharp tool to derive causally valid estimates of racial bias in

hiring, but undertheorize the contexts in which discriminatory behaviors take place. On the other hand, the broad quantitative literature linking demographic composition to various forms of social stratification deeply theorizes urban context but lacks the proper methodological tool to assess how labor market discrimination operates at hiring interface. Both literatures underexplore the role of Asians and Latinos in the multiracial context of urban labor markets. Theoretically, this research merges the insights from these two literatures to anticipate how racial makeup of cities shapes the extent to which minorities are disadvantaged in urban labor markets. Empirically, this chapter extends the geographical scope of existing audit studies to cover 50 cities, and simultaneously includes four racial-ethnic groups, allowing the estimation of city-level effects on the minority-white gaps in callbacks. The chapter finds that the Black-White callback gap widens in cities with a high concentration of Blacks, confirming the well supported 'visibility-discrimination' thesis. It also shows that this thesis cannot be extended in a straightforward way to examine the Asian-White and the Latino-White callback gaps. In a relatively surprising finding, I find a small and inconsistent narrowing effect of percent Asian on the Asian-White hiring gap. Finally, high Latino concentration appears to be unrelated to the Latino-White callback gap.

Chapter 4 pursues the theoretical question: how are the labor market disadvantages that long-term unemployed workers face situated in an urban context of entrepreneurialism? Using insights from 'signaling' and 'queuing' theories, the chapter generates a theoretical argument to explain how the prevalence of self-employment in cities exacerbates the adverse outcomes that are associated with long-term unemployment. I argue that employers operating in entrepreneurial cities might consider unemployed jobseekers to be less proactive in keeping their skills updated, or less flexible in seeking alternative forms of employment. This chapter also theorizes how the presence of self-employed workers in the labor market pushes unemployed workers to a lower

position in the labor queue. Using field experimental data, I show that the callback gap between full-timers and unemployed workers enlarges in markets with high concentrations of self-employed workers. In a supplemental analysis, I rely on a panel data of 51 U.S states (and Washington D.C) over 19 years to show that self-employment is positively correlated with a prolonged period of unemployment. The results are robust across a wide range of measures, modeling assumptions, and standard error structures.

Taking place in a historical moment characterized by further fluidity in modes of employment and racialized labor market stratification manifested in the contexts of the creative urban inequality regimes, this research makes numerous contributions, both theoretically and empirically. Each chapter makes its own theoretical contributions. Chapter 2 analyzes the racialized labor market consequences of freelancing, and shows how employment histories and racial ethnic identities intersect to produce stratified outcomes against the backdrop of a new economy characterized by precarious employment and racial diversity. The findings of the chapter speak to the broad sociological question that scholars of social stratification concern themselves with, namely, how do different dimensions of marginalization combine to generate inequality. By bringing two independent subfields of social stratification together, chapter 3 complicates and contributes to both experimental studies on hiring discrimination and quantitative work on urban contexts of stratification. Chapter 4 presents a theory that situates the scarring effect of unemployment in entrepreneurial background of urban markets and contributes to growing scholarly attention on the contextualization of the experience of unemployment.

This project also includes methodological innovations. To the best of my knowledge, the research is the first to include freelancers and four racial/ethnic groups in the U.S simultaneously (White, Asian, Latino, Black). The field experiment also submitted fictitious resumes to employers

nested in 50 major urban sites. With respect to scope and geographical coverage, this is one of the most expansive sociological audit studies on the topic of employment and race.

Implications for Future research

This dissertation opens various avenues for future research on several stages in the process of labor market stratification. This section discusses how these implications can be broken down to discrimination at the hiring interface, and beyond.

At the hiring interface

The field experiment conducted in this dissertation covers a broad range of racial/ethnic groups, but overlooks ethnic heterogeneity. Partly due to data availability, the wage gap or income differentials between ethnicities of within the same race have attracted scholarly attention, while the hiring gap remains underexplored. For instance, among Asian-Americans, the variation in income between Filipinos, Koreans, Chinese, Japanese, Asian Indian, and Vietnamese have been examined in previous studies (Barringer et al. 1990, Kim and Sakamoto 2010). Similarly, among different Latino groups, existing work documents the wage gap between Mexicans, Puerto Ricans, Cubans, and other Central-South American groups (Borjas 1982, McManus et al. 1983, Reimers 1983a). Little is known about how well these wage gaps map on to the possible inter-ethnic hiring gaps. Are ethnic groups that receive lower wages also likely to be discriminated at hiring interface? This area remains underexplored in the literature. Puerto Ricans underperform Cubans in terms of wage levels, but it is unclear if employers prefer a Cuban applicant to an otherwise similar Puerto Rican one. Similarly, Japanese Americans on average out-earn Korean Americans, but there is little evidence on whether Japanese applicants are selected ahead of a comparable Korean one in the labor queue. Research that takes seriously the ethnic heterogeneity has the potential to make a

contribution to both to the race and ethnic literature (Bonilla-Silva 2004) and the audit literature on hiring discrimination (Pager et al. 2009a, Quillian et al. 2017).

The audit study literature can benefit from moving beyond analyzing employers' discrimination against applicants who are protected under the Title VII Protected Classes of the 1964 Civil Rights Act. This work would involve sharpening the new targets of discrimination including culturally stigmatized status groups, and address questions such as: Do employers place a premium on collegiate athletic activities? Do hiring officers prefer applicants who have worked for start-ups versus traditional corporations? Do employers discriminate against applicants whose work histories are associated with stigmatized industries, such as pornography, guns, gambling, or marijuana. The last question, for instance, has the theoretical potential of bringing together theories of social stigma and labor market stratification. To add a race or gender lens to the questions listed above could generate a broad, coherent, and important research agenda.

The audit method is conducive for detecting discrimination, but faces challenges associated with pinpointing the precise mechanisms that underlie such discriminatory practices. Research on labor market consequences of freelancing could use other experimental approaches such as vignette experiments or survey experiments to examine hiring decision-makers' perceptions of precariously employed workers and their awareness of the entrepreneurial nature of the markets in which they operate. These studies would contribute to assessing the mechanisms that underlie the discrimination observed in the field experiment presented here, thus providing a more comprehensive account of freelancers' disadvantages in the hiring process.

Beyond analyzing precarious work, researchers in recent years combined field experiment and lab-based or field-based survey experiments to test the moderating and/or mediating effects of theorized mechanisms linking experimentally manipulated conditions to observed differences in

outcomes. This practice is innovative in the sense that it allows researchers not only to generate estimates of discrimination, but also to empirically verify vehicles of stratified outcomes to further analyze the processes through which discriminatory behaviors occur. There is possible room for improvement in these designs, however. In these cases, the field experiment and the survey experiments are targeted at separate populations of decision-makers. The field experiment submits resumes to one group of employers, and the survey experiment measures perceptions of another. While these groups are both subsets of a larger population of employers, researchers make the assumption that the distribution of perception and discriminatory behaviors are identical in these two subsets. While this assumption is not unreasonable, it is theoretically better not to have to make it. In other words, if the researcher can measure both the behavior and the perception of the same set of employers, the validity of the derived estimates of discrimination and the tested mechanisms can be improved from the current design. Methodologically, it is possible to complete such a task by taking the following steps. First, the resumes are submitted to a set of employers. Once stratified outcomes are generated – or when employers decide to call one applicant back, but not the other one – the field experiment concludes and the survey experiment starts. The employers who made the decisions are then debriefed, and are invited to participate in the survey experiment which seeks to explore the motives behind the discriminatory behavior. In addition to combining the subsets of employers whose behavior and perception are measured, this approach also has an ethical advantage because employers are debriefed about the nature of their participation in the experiment. A drawback of this method might be the lower response rate in the survey experiment: employers might feel that they had already committed too much time to the field experiment already, and do not wish to further participate in the study.

Beyond the hiring interface

Albeit deriving causally valid estimates of how employment histories and racial ethnic identities intersect to create unequal outcomes at hiring interface, this research, like most audit studies, does not surpass the initial stage in the process of labor market stratification. While Chapter 2 quantifies the labor market consequences of freelancing, future studies could investigate how these consequences change when freelancers fully integrate themselves into the full-time workforce. Once freelancers get their foot in the door, are internal organizational gatekeepers still mindful of workers' histories of nonstandard work and penalize them at subsequent stages such as offer, negotiation, pay, promotion, etc.? or does the "scarring effect" of freelancing effectively stop when applicants receive an offer? Existing work shows ample evidence of how a history of unemployment leaves a lasting negative impact on workers' subsequent pay, but it is unclear how such a prediction could be extended to precarious workers. Additionally, how do possible scarring effects of freelancing intersect with other axes of stratification such as race, gender, disability status, and so on. How can these consequences be situated in the organizational contexts – do they vary by firm size, industry, and sector? Research addressing to these questions would speak to issues of social integration in the workplace, contributes to theoretical subfields of work and organizations, and have considerable real world significance.

The question of negotiation (Leibbrandt and List 2014, Stuhlmacher and Walters 1999) is also underexplored in the sociological literature on the racial wage gap. It is possible that minorities are less willing to negotiate for a better salary and/or working conditions. Failure to negotiate at the initial stage results in an immediate wage gap, which might widen as minorities' careers progress within the organization. Some of the future research that I aim to pursue would explore two interrelated questions of race and salary negotiation. The first question comes from the

jobseeker's side: are racial/ethnic minorities more reluctant to negotiate? The second question comes from the employer's side: once minorities choose to negotiate, how is such negotiation perceived by employers? Do they achieve the desired outcome? If minorities do receive what they negotiated for, do these outcomes "raise eyebrows" in organizations and result in minorities incurring a penalty in the next round of negotiation and promotion?

I argue that the experimental designs can shed light on both of these questions. Regarding the first question, in order to test the proposition that racial minorities might be less likely to negotiate, a field experiment could be designed to generate multiple fictitious job listings which would attract a sample of real applicants (see Leibbrandt and List 2014). Information on the applicants' racial identities would then be collected. The researcher would subsequently assign applicants to two groups in a random manner. In the first group, applicants would be informed that the wage is negotiable. In the second group, there would be more ambiguity: the job listing would not explicitly mention whether it was possible to negotiate for higher wages. The researcher could then observe the distributions of [a] the decision to negotiate or not to negotiate and [b] how the amount of salary that the applicants ask for varies across racial groups. The design differs in several respects from a traditional audit study. Instead of observing real employers, this design observes the behavior of real applicants. Instead of using fictitious resumes, this design uses a fictitious job listing. This research would have the potential to make an important contribution to our understanding of the persistent racial wage gap that is observed in the empirical literature.

As for the second question, an experimental design could address discrimination that occurs after the hiring/interview stage. It could also evaluate how racial stratification is manifested in organizations. Once racial/ethnic minorities move pass the first set of gatekeepers, how does race continue to operate as an impediment in the wage setting process? How do gatekeepers

evaluate and react to negotiation that is initiated by racial minorities? Is there a White-minority gap in the negotiation outcome? If minorities get the negotiated outcome, are there subsequent penalties in the next round of promotion? Vignette experiments focus on gauging the decision-markers' perception of varying experimentally manipulated conditions and operate effectively as a methodological tool to understand some of these questions. The researcher could create vignettes of emails in which negotiations take place. The vignettes would follow a factorial design, where jobseekers' race and ethnicities are signaled by first name, last names, or a combination of both. The researcher would proceed to question evaluators (students, online participants, or preferably real hiring officers). Evaluators would be asked not only to [1] make decision about whether or not to meet the jobseekers' request, but also to [2] judge the jobseekers' predicted productivity, personality, and professionality, based on the ways in which the negotiation takes place. The researcher would then measure the racial gap between the evaluators' decision on the outcome of the negotiation and their perception of the jobseekers' personal attributes. This research would shed light on an important, yet understudied, mechanism underlying the persistent racial wage gap. In summary, labor market stratification is a multi-dimensional and multi-stage process, and experimental studies provide powerful methodological tools to unpack these complexities.

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