

Methodos Series 14

S. Michael Gaddis *Editor*

# Audit Studies: Behind the Scenes with Theory, Method, and Nuance

 Springer

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S. Michael Gaddis  
Editor

# Audit Studies: Behind the Scenes with Theory, Method, and Nuance

 Springer

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Methodos Series

ISBN 978-3-319-71152-2

ISBN 978-3-319-71153-9 (eBook)

<https://doi.org/10.1007/978-3-319-71153-9>

Library of Congress Control Number: 2017963885

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Printed on acid-free paper

This Springer imprint is published by the registered company Springer International Publishing AG part of Springer Nature.

The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

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**Part I**  
**The Theory Behind and History**  
**of Audit Studies**

# Chapter 1

## An Introduction to Audit Studies in the Social Sciences



S. Michael Gaddis

**Abstract** An audit study is a specific type of field experiment primarily used to test for discriminatory behavior when survey and interview questions induce social desirability bias. In this chapter, I first review the language and definitions related to audit studies and encourage adoption of a common language. I then discuss why researchers use the audit method as well as when researchers can and should use this method. Next, I give an overview of the history of audit studies, focusing on major developments and changes in the overall body of work. Finally, I discuss the limitations of correspondence audits and provide some thoughts on future directions.

**Keywords** Audit studies · Correspondence audits · Discrimination · Field experiments

### 1.1 Introduction

Since the 1960s, researchers have had a methodological tool at their disposal unlike any other: the audit study.<sup>1</sup> The audit study is a specific type of field experiment that permits researchers to examine difficult to detect behavior, such as racial and gender discrimination, and decision-making in real-world scenarios. Audit studies allow researchers to make strong causal claims and explore questions that are often difficult or impossible to answer with observational data. This type of field experiment has exploded in popularity in recent years, particularly to examine different types of discrimination, due to the rise of online applications for housing and employment and easy access to decision makers across many contexts via email.

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<sup>1</sup>These types of studies are known by a variety of names, often depending on the decade of publication, the context and method used for testing, discipline, or country. Audits are also sometimes referred to as correspondence tests or situation tests. For now, I refer to all this research as “audit studies.” Later in this chapter, I define and clarify these terms.

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However, the learning curve for designing and implementing these experiments can be quite steep, despite appearing to be a simple and quick method for examining discrimination. Thus, we have written this book to help scholars design, conduct, and analyze their own audits. This book draws upon the knowledge of a variety of social scientists and other experts who combined have implemented dozens of in-person and correspondence audits to examine a variety of research questions. These experienced scholars share insights from both their successes and failures and invite you, the reader, “behind the scenes” to examine how you might construct your own audit study and improve upon this method in the future. We write this book with a wide audience in mind and hope that you will find this book useful whether you have already fielded your own audit study, are just thinking about how you might design an audit study, or just want to learn more about the method to better understand research using audits.

In this introductory chapter, I approach the subject as one might with a lay audience. However, even experienced researchers with in-depth knowledge of the audit method should find this chapter useful. I mostly focus on the aspects of audit studies related to research rather than those related to activism or law and policy.<sup>2</sup> I begin this chapter with the basics – a discussion of the language and definitions related to audit studies. Significant differences in language persist between studies, researchers, and disciplines, and I hope that this part will help readers understand these differences as well as encourage researchers to adopt a common language. Next, I give a succinct overview of why researchers began using audits to examine discrimination. The audit method is a powerful tool to answer certain types of questions and I attempt to outline when researchers can and should use this method. I then give an overview of the history of audit studies. Although others have written superb reviews of this body of literature in the past (Baert, Chap. 3 of this volume; Oh and Yinger 2015; Riach and Rich 2002; Zschirnt and Ruedin 2016), I focus on the forest rather than the trees in this part and provide a narrative of the arc of audit studies over time.<sup>3</sup> Finally, I close this chapter with a succinct discussion of the limitations of correspondence audits and thoughts on how we might improve this method, which complements the closing chapter of this book (Pedulla, Chap. 9 of this volume).

Readers looking for additional information on audit studies should consult two resources. First, we have created a website – [www.auditstudies.com](http://www.auditstudies.com) – to go along with the release of this volume. There you will find a comprehensive database of audits, information about subscribing to an audit method listserv, as well as additional information. Second, at the end of this chapter I provide a brief recommended reading list of important comprehensive works, reviews, and other methods-based articles and books.

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<sup>2</sup>For an excellent chapter on the connections to activism, see Cherry and Bendick (Chap. 2 of this volume) and for an excellent, although a bit outdated, chapter on the links between audits and law and policy, see Fix et al. (1993).

<sup>3</sup>Some of the work in this section stems from and expands upon work I did to examine the signals of race conveyed by names in correspondence audits (Gaddis 2017a, b, c, d).

Beyond this introductory chapter, several accomplished scholars present their expert knowledge about audit studies. In the first part – The Theory Behind and History of Audit Studies – the authors cover a wide range of history, explain why we should conduct audit studies, examine the connections between audit studies and activism, and outline what researchers have uncovered about labor market processes using audit studies in the past decade. In the second part – The Method of Audit Studies: Design, Implementation, and Analysis – the experts provide guidance on designing your own audit study, discuss the challenges and best practices regarding email, review extensive issues of validity, and consider the technical setup of matching procedures. In the final part – Nuance in Audit Studies: Context, Mechanisms, and the Future – the authors focus on more nuanced aspects of audit studies and address limitations and challenges, examine the use of context to explore mechanisms, and consider the value of variation. I return to a brief discussion of the rest of this book at the end of this chapter.

## 1.2 The Basics of Audit Studies: Language and Definitions

Field experiments encompass a wide range of studies and ideas and describe the highest level of the hierarchy I focus on here. Audit studies are one type of field experiment. At their core, field experiments in the social sciences attempt to mimic the experiments of the natural sciences by implementing a randomized research design in a field setting (as opposed to a lab or survey setting). Although many may think of psychology as the disciplinary home to social science experiments, researchers in economics, political science, and sociology have ramped up the quantity and quality of field experiments conducted in these disciplines over the past few decades. Although not the only reason for the increase in field experiments across these disciplines, audit studies do represent a major part of the heightened activity.

Audit studies generally refer to a specific type of field experiment in which a researcher randomizes one or more characteristics about individuals (real or hypothetical) and sends these individuals out into the field to test the effect of those characteristics on some outcome. Historically, audit studies have focused on race and ethnicity (Daniel 1968; Bertrand and Mullainathan 2004; Wienk et al. 1979) and gender (Ayres and Siegelman 1995; Levinson 1975; Neumark et al. 1996). In recent years, researchers have expanded the manipulated characteristics to include age (Ahmed et al. 2012; Bendick et al. 1997; Farber et al. 2017; Lahey 2008; Neumark et al. 2016; Riach 2015; Riach and Rich 2010), criminal record (Baert and Verhofstadt 2015; Evans 2016; Evans and Porter 2015; Furst and Evans 2016; Pager 2003), disability (Ameri et al. *forthcoming*; Baert 2014a; Ravaud et al. 1992; Turner et al. 2005; Verhaeghe et al. 2016), educational credentials (Carbonaro and Schwarz, Chap. 7 of this volume; Darolia et al. 2015; Deming et al. 2016; Deterding and Pedulla 2016; Gaddis 2015, 2017e; Jackson 2009), immigrant assimilation or generational status (Gell-Redman et al. 2017; Ghoshal and Gaddis 2015; Hanson and Santas 2014), mental health (Baert et al. 2016a), military service (Baert and Balcaen

2013; Figinski 2017; Kleykamp 2009), parental status (Bygren et al. 2017; Correll et al. 2007; Petit 2007), physical appearance (Bóo et al. 2013; Galarza and Yamada 2014; Maurer-Fazio and Lei 2015; Patacchini et al. 2015; Ruffle and Shtudiner 2015; Stone and Wright 2013), religious affiliation (Adida et al. 2010; Pierné 2013; Wallace et al. 2014; Wright et al. 2013), sexual orientation (Ahmed et al. 2013; Baert 2014b; Bailey et al. 2013; Drydakakis 2009, 2011a, 2014; Mishel 2016; Tilcsik 2011; Weichselbaumer 2015), social class (Heylen and Van den Broeck 2016; Rivera and Tilcsik 2016), and spells of unemployment and part-time employment (Birkelund et al. 2017; Eriksson and Rooth 2014; Kroft et al. 2013; Pedulla 2016), among other characteristics (Baert and Omey 2015; Drydakakis 2010; Kugelmass 2016; Tunstall et al. 2014; Weichselbaumer 2016).

The “individuals” sent into the field may be actual people in an in-person audit or simply applicants or emails from hypothetical people in correspondence audits (more below). The outcomes may be an offer to interview for a job (Bertrand and Mullainathan 2004; Darolia et al. 2015; Deming et al. 2016; Gaddis 2015), a job offer (Bendick et al. 1994, 2010; Pager et al. 2009a, b; Turner et al. 1991a), the order in which applicants are contacted (Duguet et al. 2015), a response to a housing inquiry (Ahmed and Hammarstedt 2008; Bengtsson et al. 2012; Carlsson and Ericksson 2014; Carpusor and Loges 2006; Ewens et al. 2014; Feldman and Weseley 2013; Hogan and Berry 2011; Van der Bracht et al. 2015), the types of housing shown (Galster 1990a; Turner et al. 2002, 2013), information about the availability of a house for purchase or rent (Galster 1990b, Turner et al. 2002, 2013; Yinger 1986), an offer of different housing than requested or racial steering (Galster and Godfrey 2005; Turner et al. 1990), a response to a mortgage application or request for information (Hanson et al. 2016; Smith and Cloud 1996; Smith and DeLair 1999), a response to a roommate request (Gaddis and Ghoshal 2015, 2017; Ghoshal and Gaddis 2015), an offer to schedule a doctor’s appointment (Kugelmass 2016; Sharma et al. 2015), a response from a politician or other public official (Broockman 2013; Butler and Broockman 2011; Chen et al. 2016; Distelhorst and Hou 2014; Einstein and Glick 2017; Hemker and Rink *forthcoming*; Janusz and Lajevardi 2016; McClendon 2016; Mendez and Grose 2014; White et al. 2015), a response from a professor (Milkman et al. 2012, 2015; Zhao and Biernat 2017), the price paid or bargained for during economic transactions for goods (Anagol et al. 2017; Ayres 1991; Ayres and Siegelman 1995; Besbris et al. 2015; Doleac and Stein 2013), or a number of other outcomes (Allred et al. 2017; Edelman et al. 2017; Giulietti et al. 2015; Ridley et al. 1989; Wallace et al. 2012; Wissoker et al. 1998; Wright et al. 2015).

Two main variations of audits exist: in-person audits and correspondence audits. In-person audits rely on trained assistants to conduct the experiment. Early audit studies almost exclusively referred to the research subjects posing as legitimate applicants for employment or housing as testers or auditors. This is due, in part, to the fact that the language for such research was adopted from early testing for legal violations for enforcement rather than research purposes (see Boggs et al. 1993 and Fix and Turner 1999 for an in-depth discussion of differences between paired testing for enforcement purposes versus research). However, as correspondence audits overtook in-person audits as the norm and real individuals posing as subjects were

not required, researchers shifted their language to refer to applicants, candidates, constituents, prospective tenants, etc. In other words, the language should match what the audit context dictates. Although the language identifying testers, auditors, or applicants may vary due to the nature of the study, we recommend that researchers adopt a common language of “in-person audits” to identify field cases using live human beings and “correspondence audits” to identify online, telephone, or by mail audits using hypothetical individuals or recorded messages in the case of some audits by telephone.

Although most audit studies include paired (or sometimes triplet) testing with comparisons of two (or three) testers or applicants, not all do (for example, see Hipes et al. 2016; Lauster and Easterbrook 2011; Rivera and Tilcsik 2016). Paired testing, also referred to as matched testing, is a design in which the subject or organization being audited (e.g., employer, real estate agent, etc.) receives applications or emails from two or more of testers with different characteristics. Conversely, non-paired testing is a design in which the subject or organization being audited only ever receives a single tester application or email. For example, a paired test design might send both a black couple and a white couple to each real estate agent’s office in the sample whereas a non-paired test design would send only one of the two couples (randomly) to each real estate agent’s office in the sample. There can be statistical advantages to paired testing, however, in some cases it may be necessary to implement a non-paired test design to reduce suspicion and avoid experiment discovery (Vuolo et al. 2016, Chap. 6 of this volume; Weichselbaumer 2015, 2016).

### 1.3 The Need for Audit Studies<sup>4</sup>

Not coincidentally, the rise of audit studies by researchers corresponds with the public policy of the civil rights era aimed to stop racial discrimination and reduce, if not eliminate, racial inequality. Prior to the 1960s, racial discrimination in the United States occurred openly in public, was relatively common, had minimal stigma attached to it, was shaped by open prejudicial attitudes and beliefs, and arguably was informed by a conscious or active racial prejudice. Individual employers, real estate agents, and landlords could discriminate with impunity and often made public their beliefs and actions. In the United States, the Civil Rights Act of 1964 intended to change these behaviors, if not beliefs and attitudes, by outlawing discrimination on the basis of race, color, religion, sex, or national origin. The Equal Employment Opportunity Commission (EEOC) gained the ability to litigate discrimination cases following the passage of the Equal Employment Opportunity Act in 1972. Title VII of the Civil Rights Act of 1964 finally could be enforced.

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<sup>4</sup>In this section, I discuss audits from the perspective of racial discrimination. However, the need for and use of audits is similar across other types of discrimination as well as some non-discrimination-based domains of inquiry.

However, we can imagine and, indeed do live in, a world where the Civil Rights Act may have changed the *act* of discrimination without changing the *amount* of discrimination, *intentions* behind discrimination, or an individual's *desire* to discriminate. Although not a sharp change overnight, discrimination of all types has changed in response to the Civil Rights Act. Modern discrimination has become more covert, uncommon, and stigmatized, while being shaped by private prejudicial attitudes and beliefs, and, perhaps, informed by an unconscious or latent racial prejudice. Individuals may fear litigation for engaging in discrimination or have a social desirability bias to not acknowledge discriminatory actions. This makes it difficult for researchers to document and examine discrimination.

Thus, two traditional methods of social science inquiry are difficult, if not impossible, to employ to examine discrimination in the post-civil rights era. First, pointed interviews and survey questions asking perpetrators about racial discrimination are unlikely to elicit truthful responses. To my knowledge, the most recent research project to successfully elicit clearly truthful responses from employers about engaging in racial discrimination occurred in the late 1980s (Kirschenman and Neckerman 1991). Moreover, surveys and interviews do not document actions, but rather self-reported beliefs, attitudes, recollections of past actions, or predictions of future actions. Due to respondents' fear and social desirability bias, and the sometimes unconscious nature of racial prejudice, direct questions about discrimination through interviews and surveys exhibit low construct validity.

Second, statistical analyses using secondary data that do not have explicit questions about discrimination also fail to adequately capture discrimination. To understand the difficulty of this process, let's first consider a definition of discrimination. In a 2004 book stemming from the Committee on National Statistics' Panel on Methods for Assessing Discrimination, panelists defined racial discrimination as "differential treatment on the basis of race that disadvantages a racial group" (Blank et al. 2004: 39). Although researchers can document the second (race) and third parts (disadvantage) of the definition with secondary data, directly capturing the first part (differential treatment) is impossible. Thus, secondary data analysis must use indirect residual attribution to suggest that, after including a litany of control variables that affect the dependent variable of interest on which blacks and whites differ, any remaining coefficient for race represents discrimination (Blank et al. 2004; Lucas 2008; Neumark forthcoming). However, this method is unlikely to correctly attribute the true amount of racial discrimination (Quillian 2006), due to omitted variable bias, among other issues (Altonji and Blank 1999; Blank et al. 2004; Farkas and Vicknair 1996; Lucas 2008).

Researchers developed the audit method as a means of catching individuals and organizations in the act of discrimination. Generally, experiments *can* be done when a presumed cause is manipulable and *should* be done when it is otherwise difficult to prove non-spuriousness. Many, if not all, types of discrimination are great candidates for examination through experimental means because the presumed cause often is manipulable in many contexts and, as discussed earlier, traditional methods of social science inquiry have been unable to directly document discrimination or

rule out a spurious relationship. If we consider the previously stated definition of racial discrimination – “differential treatment on the basis of race that disadvantages a racial group” (Blank et al. 2004: 39) – we see that audit studies manipulate the second part (race) to directly capture the first part (differential treatment) of the definition. Thus, by carefully controlling and counterbalancing all other variables in the experimental process, audit studies provide strong causal evidence of discrimination.

## 1.4 A History of Audit Studies

### 1.4.1 *The Early Years: The First In-Person and Correspondence Audits*

In-person audits began in the 1940s and 1950s by means of activists and private organizations with some assistance from academic researchers. One of the earliest media mentions of audits occurred in the New York Times in 1956 (Rowland). In Chap. 2, Frances Cherry and Marc Bendick Jr. (Chap. 2 of this volume) do an excellent job of covering some of this early work, so I leave discussion of that part of the history of audit studies to them.

The earliest known published audit study of significant scope and scale was conducted in England in the late 1960s. With the Race Relations Acts of 1965, Parliament passed the first legislation addressing racial discrimination in the United Kingdom in public domains. The following year, the U.K. Parliament created the Race Relations Board, which was tasked with reviewing complaints falling under the Race Relations Act. However, the Race Relations Act did not cover employment and housing discrimination until 1968, so in tandem with the National Committee for Commonwealth Immigrants, the Race Relations Board commissioned a study on racial discrimination in employment, housing, and other contexts. Along with surveys and interviews, the study implemented the audit method to extensively examine discrimination (Daniel 1968).

Described as “situation tests,” the audits were born when Daniel and the research team had doubts over whether surveys and interviews would give them an accurate portrayal of the state of discrimination. Moreover, the team was unsure if the “findings would appear conclusive to those people who are strongly passionate or committed about the subject on one side or the other” (1968: 20). That doubt led them “not to depend entirely on what people told us in interviews, but to put the matter to the test in a way that would provide objective evidence” (ibid). These tests were conducted with triplets of candidates – usually white English, white immigrant, and black applicants – in the domains of housing (both rental and purchase), employment, and other services. The tests consistently uncovered discrimination against blacks and immigrants.



At the time, this commissioned study of racial discrimination was monumentally important. Along with the hard work of researcher William Wentworth Daniel, results from this study led to the revised Race Relations Act of 1968 outlawing racial discrimination in employment and housing (Smith 2015). However, this study often has been overlooked or forgotten by academics; at the time of this writing, Google Scholar reports that the resulting book by Daniel (1968) has garnered fewer than 500 citations in nearly 50 years. Still, *Racial Discrimination in England's* use of the audit method in government-sponsored research marks the beginning of a series of high profile in-person audits conducted to examine racial discrimination.

Just a few years later, in 1969, the first-ever correspondence audit was conducted in the United Kingdom. Published by two researchers from the non-profit institute Social and Community Planning Research, this study sought to examine racial discrimination among employers looking to hire white-collar workers (Jowell and Prescott-Clarke 1970). The authors chose to conduct a correspondence audit through the mail because “postal applications were possible and, in many cases, necessary” to apply for employment (1970: 399). The authors matched British-born whites with four different immigrant groups to test for racial discrimination across an ambitious-for-the-time 128 job postings (256 total applicants) and noted the importance of both realism in the application and controlling for all differences between candidates including aspects such as handwriting. Again, although this study has collected few citations in nearly 50 years (fewer than 150 at the time of this writing), it remains an incredibly important entry in the annals of the audit method because it introduced the world to correspondence audits.

#### ***1.4.2 The First Wave: The Early 1970s Through the Mid 1980s***

In the United States, a number of non-academic-based audits followed the two UK studies. Private fair housing audits rose to prominence in the late 1960s and 1970s in the United States following passage of the Civil Rights Act of 1968 (also known as the Fair Housing Act), which provided federal enforcement of anti-discrimination housing law through an office of the U.S. Department of Housing and Urban Development (HUD). These audits were often conducted in partnership with academic researchers (often local) and often focused on one major city, such as Akron, Ohio (Saltman 1975), Chicago (as reported in Cohen and Taylor 2000), Detroit (Pearce 1979), Los Angeles (Johnson et al. 1971), and New York (as reported in Purnell 2013). Additionally, organizations often produced method-based manuals and guides for the practice of auditing (Kovar 1974; Leadership Council for Metropolitan Open Communities 1975; Murphy 1972).

However, the largest, and arguably most important, audit on housing discrimination during this era, the Housing Market Practices Survey (HMPS), occurred in 1977 (Wienk et al. 1979). This first large-scale housing audit was commissioned by HUD to test for discrimination against blacks in both the sale and rental housing

markets. HUD paired with local fair housing organizations and other organizations to recruit and train testers to conduct the in-person audits. This research included 3264 audits across 40 metro areas, with a plurality of the audits occurring in five metro areas. The HMPS found discrimination against blacks in reported housing availability, treatment by real estate agents, reported terms and conditions, and the types and levels of information requested by real estate agents. This research was critically important in leading the way for future audits, including three additional national housing audits commissioned by HUD (Turner and James 2015; Turner et al. 2002, 2013; Turner et al. 1991b; Yinger 1991, 1993), several smaller local audits (see below), and the Urban Institute employment audits a decade later (Cross et al. 1990; Mincy 1993; Turner et al. 1991a). Arguably, four aspects of the HMPS were important in shaping future audits. First, the HMPS showed that large-scale audits for discrimination in the United States were possible. Second, this research essentially gave auditing a gold seal of approval from an arm of the federal government (for more details on audits and the courts, see Boggs et al. 1993; Fix et al. 1993; Pager 2007a). Third, it was the first research to show the extent to which racial discrimination was widespread across many cities. Finally, the HMPS showed creativity in expanding the outcomes examined by audits.

Other one-off in-person and correspondence audits conducted during the 1970s and early 1980s examined housing and employment discrimination in the United Kingdom (McIntosh and Smith 1974), housing discrimination in France (Bovenkerk et al. 1979) and the United States (Feins and Bratt 1983; Galster and Constantine 1991<sup>5</sup>; Hansen and James 1987; James et al. 1984; Newburger 1984; Roychoudhury and Goodman 1992, 1996<sup>6</sup>), and employment discrimination in the United States (Hitt et al. 1982; Jolson 1974; Levinson 1975; McIntyre et al. 1980; Newman 1978), Canada (Adam 1981; Henry and Ginzberg 1985), Australia (Riach and Rich 1987, 1991), and England (Brown and Gay 1985; Firth 1981; Hubback and Carter 1980). Additionally, George Galster (1990a, 1990b) reviewed several fair housing audits conducted in the 1980s that were mostly unpublished and analyzed data from 71 separate audits.

During this period, researchers also began to expand the domains in which they investigated discrimination. As early as 1985, Galster and Constantine (1991) investigated housing discrimination based on parental and relationship status among women. Ayres (1991 and Ayres and Siegelman 1995) examined racial and gender discrimination in bargaining for new car prices, while Ridley et al. (1989) examined racial discrimination in hailing a taxi. Other research from this period examined discrimination based on disability (Fry 1986; Graham et al. 1990; Ravaud et al. 1992). The first wave of audits conducted in the 1970s and 1980s filled in a number of gaps in our knowledge about the extent and geography of discrimination, conditions under which discrimination occurred, and variations in outcomes that were affected by discrimination, particularly in housing and, to some degree, employment.

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<sup>5</sup> Conducted in 1985

<sup>6</sup> Conducted throughout the 1980s.

### ***1.4.3 The Second Wave: The Late 1980s Through the Late 1990s***

Beginning with the last part of the 1980s and continuing throughout the 1990s, a second wave of audits was ushered in with the second iteration of the HUD housing audit (Turner Micklensons and Edwards 1991; Yinger 1991, 1995) and a series of large-scale employment audits conducted by the Urban Institute (Cross et al. 1990; Mincy 1993; Turner et al. 1991a), in part, aided by guidelines for adapting housing audits to hiring situations (Bendick 1989). The HUD housing audit in 1989, known as the Housing Discrimination Study (HDS) 1989, was conducted in partnership with the Urban Institute. The HDS 1989 varied from and improved on the HMPS in 1977 in many ways. First, the former included Hispanic testers paired with whites for some audits to examine discrimination against Hispanics as well (Ondrich et al. 1998; Page 1995), something that was only done in an extension of the HMPS and only in Dallas (Hakken 1979). Second, in the HDS 1989 auditors focused on specific advertised housing units, whereas in the HMPS auditors approached agents about more general housing options fitting certain criteria. Thus, the HDS 1989 could more accurately examine racial steering. Third, the HDS 1989 examined fewer metro areas (25 instead of 40), but conducted more audits (3800 instead of 3264). Overall, the HDS 1989 replicated the general finding of the HMPS that housing discrimination against blacks was prevalent and widespread. However, there was no strong evidence suggesting that discrimination increased or decreased between the two data collection periods (Elmi and Mickelsons 1991).

The first of the Urban Institute employment audits was conducted in Chicago and San Diego in 1989 and examined discrimination against Hispanics (Cross et al. 1990). Researchers sampled newspaper advertisements and matched pairs successfully applied to almost 300 entry-level jobs in the two cities. The study found that Hispanics faced discrimination at both the application and interview phases, which lead to fewer interviews and fewer job offers when compared with their white counterparts. In 1990, the Urban Institute conducted a similar employment audit in Chicago and Washington, D.C. to examine discrimination against African Americans (Turner et al. 1991a). Matched pairs successfully completed nearly 450 audits in the two cities. The study found that employers discriminated against blacks in accepting their applications, inviting them to interview, and offering them a job. Black applicants were also more likely to be steered toward lower quality jobs rather than the advertised position to which they responded. Additionally, whites were treated more favorably in a number of respects, including waiting time, length of interview, and positive comments.

The Urban Institute studies were the first large-scale true employment audits conducted in the U.S. Researchers and staff went to great lengths to make the study as methodologically sound as possible and paid close attention to detail in sampling, creating matched pairs, and standardizing procedures for the audits (Mincy 1993). Although these studies provided a meticulous model for subsequent researchers to follow when conducting employment audits, others have extensively critiqued the

Urban Institutes studies and the in-person audit method more broadly (Heckman 1998; Heckman and Siegelman 1993). However, by moving development and knowledge of the method forward and by providing extensive guidance (along with Bendick 1989) for the numerous employment audits that followed them, the Urban Institute audits were clearly of great importance.

Following the HDS 1989 and the Urban Institute employment audits, a wave of audits examining employment, housing, and other forms of discrimination occurred. Many audits were conducted in Europe through the International Labour Office (ILO) based on guidelines developed by Frank Bovenkerk (1992). Studies in the U.S. (Bendick et al. 1991, 1994; James and DelCastillo 1992; Nunes and Seligman 1999) and Europe (Arriijn et al. 1998; Bovenkerk et al. 1995; de Prada et al. 1996; Esmail and Everington 1993, 1997; Goldberg et al. 1995; Smeesters and Nayer 1998) focused on race and ethnic discrimination. Researchers conducted sex discrimination employment audits in the U.S. (Neumark et al. 1996; Nunes and Seligman 2000) and Europe (Weichselbaumer 2000), as well as age and disability-based discrimination employment audits in the U.S. (Bendick et al. 1999) and Europe (Graham et al. 1990; Gras et al. 1996). This period also included the continuation of telephone-based (Bendick et al. 1999; Massey and Lundy 2001; Purnell et al. 1999) and written correspondence audits (Bendick et al. 1997; Gras et al. 1996; Weichselbaumer 2000). Still, the cost-prohibitive nature of in-person audits and labor-intensive nature of correspondence audits during the 1990s meant that use of the audit method was relatively rare.

#### ***1.4.4 The Third Wave: The Early 2000s Through the Late 2000s***

Until the early 2000s, most audits were conducted in-person and relied on trained assistants to physically participate in the process. With housing and employment applications increasingly taking place over the internet, researchers began conducting more correspondence audits. However, some important audits in the early 2000s were still in-person, including the second iteration of HUD and the Urban Institute's Housing Discrimination Study (HDS 2000: Bavan 2007; Ross and Turner 2005; Turner et al. 2002). Devah Pager was the first to examine the effects of a criminal record using an audit study (2003) and produced an incredibly strong body of work during this period consisting of in-person audits as well as examinations of the method (Pager 2007a, b; Pager et al. 2009a, b; Pager and Quillian 2005; Pager and Shepherd 2008).

The 2000s brought about significant changes in the audit method and the importance of this era is highlighted by the fact that the two most cited audit studies of all time both occurred in the early 2000s. Devah Pager's (2003) in-person audit study of race and criminal record in the low-wage labor market in Milwaukee has garnered over 2000 citations according to Google Scholar. Marianne Bertrand and