

**Using Administrative Data to
Address Federal Contractor
Violations of Equal Employment
Opportunity Laws**

July 15, 2013

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DISCLAIMER

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ABSTRACT

This study uses administrative data from the Office of Federal Contract Compliance Programs (OFCCP) on reviews of federal contractors that closed between fiscal years 2003 and 2012 to examine trends in, and factors associated with, violations and re-violations of equal employment opportunity laws and the effectiveness of remedies and press releases to deter re-violations. Although data quality limits the reliability of the study's findings, the methods for using and extracting data and the models developed to address research questions of interest to OFCCP highlight the capacity of the data to be used as a monitoring tool after data limitations are lessened. The study also identified two key areas in which data improvements should be made: (1) ensuring the accuracy and completeness of violation status and information, identification of contractors across reviews, and remedies; and (2) standardizing information across different entities and investigations.

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EXECUTIVE SUMMARY

The Office of Federal Contract Compliance Programs (OFCCP), an agency within the U.S. Department of Labor (DOL), enforces and administers equal employment opportunity (EEO) and affirmative action laws that (1) prohibit federal contractors and subcontractors from discriminating against applicants and employees on the basis of race, color, religion, sex, national origin, disability, or protected veterans' status, and (2) require contractors to take concrete steps to reach equality. Contractors can be found to violate EEO laws by discriminating against employees or applicants (discrimination violation), or by failing or refusing to comply with OFCCP regulations (technical violation). To enforce EEO laws, OFCCP reviews contractors' personnel policies in scheduled compliance evaluations and in complaint investigations. If a review finds evidence of a violation, OFCCP develops solutions to correct it. Solutions to technical violations often are administrative directives, but solutions to discrimination violations often require more extensive remedies to make victims whole. OFCCP enumerates remedies in conciliation agreements (CAs) and consent decrees (CDs). Under some circumstances, OFCCP may debar a contractor or notify the public of the contractor's violation through a press release.

OFCCP's investigation and enforcement practices are codified and well documented, but a comprehensive analysis of the factors associated with OFCCP's program effectiveness has not been conducted. The Chief Evaluation Office (CEO) in DOL sponsored this study to provide a better understanding of violations and repeat violations of EEO laws. The study addresses the general research question: *How can OFCCP administrative data be used to better understand violations and re-violations of EEO laws among federal contractors?* It uses administrative data currently available from OFCCP to examine the potential of those data to explore violations and re-violations of EEO laws and to assess how the data might be enhanced to better address specific questions of violations and re-violations. The core of its analysis focuses on three research questions:

1. What are the violation rates among federal contractors OFCCP investigates, and what are the characteristics of violators?
2. What are the re-violation rates among federal contractors OFCCP investigates, and what are the characteristics of re-violators?
3. Is the remedy process associated with deterring re-violations?

Although data currently available might not be reliable enough to make accurate assessments of the associations between OFCCP remedies and press releases and tools and EEO violations, the methods used and findings illustrate the types of analyses that could be conducted as data quality improves.

A. Data and Methods

The OFCCP information system (OFIS) provides information on the characteristics of contractors, types of reviews conducted, and the nature of violations for 46,198 reviews closed during fiscal years 2003 through 2012. We augmented OFIS data with three sources of information: (1) 2,650 CA and CD documents provided information on remedies agreed to by violators, (2) 33 press releases provided information on press releases issued, and (3) Bureau of Labor unemployment statistics provided information on the local labor market that existed at the time of the review.

Though OFCCP reviews establishments, a single establishment may have multiple reviews. Analyses must therefore make a clear distinction between reviews and establishments. In this study, we conducted most analyses at two levels: (1) establishments, and (2) parents of establishments reviewed.¹ High rates of missing data in identifying parents dictate caution in interpreting results of analysis at that level. We also analyzed the associations between likelihood that a review contained a violation and certain contractor, review, and external environment characteristics. Descriptive and multivariate statistics helped uncover patterns between (1) contractors that did and did not violate EEO laws, (2) violators who did and did not re-violate laws, and (3) violators who faced different remedies. The reader should note that these methods do not allow for causal inferences.

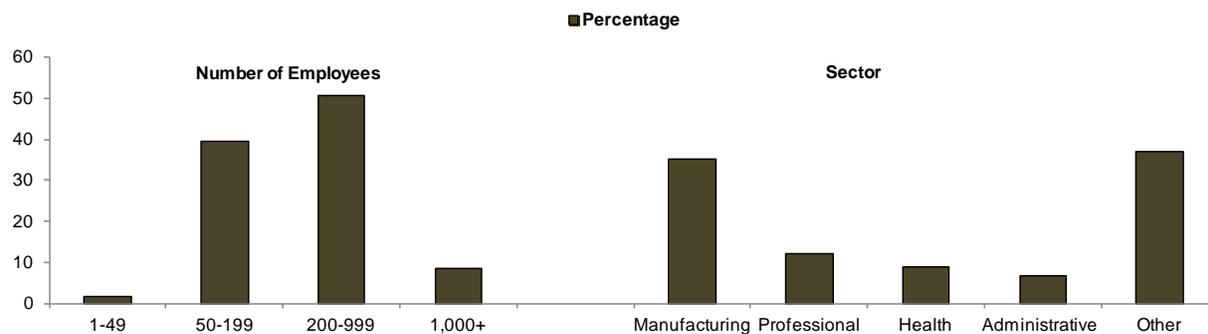
Data limitations restrict the reliability of our results. Potential data quality issues include the accuracy of information on each review's violation status and violation information, identification of contractors across reviews, and remedies and press releases. We also caution against applying violation and re-violation rates to the general population of federal contractors, because rates were computed only for the sample of contractors reviewed by OFCCP. If, for example, establishments that were selected for review violated EEO laws at a higher rate than contractors not selected for review, calculations of violation rates would be higher than those that exist among all contractors.

B. Overview of the Study's Findings

OFCCP closed about 4,620 reviews per year between 2003 and 2012, with only a slight variation over the period. About 72 percent of the reviews were initiated under the selection system process, and more (about 22 percent) were conducted by the Southeast regional DOL office than any other office. Reviews were concentrated among mid-size contractors and contractors in one of four industries: (1) manufacturing, (2) professional/scientific/technical, (3) health and social assistance, and (4) administrative support. Figure 1 highlights these concentrations by showing the percentage of contractors reviewed in each category. In general, contractors that had reviews close between 2003 and 2012 had between 50 and 999 workers (90.0 percent) and were in the manufacturing (35.0 percent) or professional/scientific/technical sector (12.3 percent).

¹ While OFCCP conducts most reviews at the establishment level, the OFIS includes information on parent companies of the establishments reviewed. We conduct analyses at the parent level in order to determine whether there is any evidence of spillover effects between establishments within the same parent company. For example, if OFCCP has applied a particular remedy or press release to one establishment within a parent company, are other establishments within that company less likely to violate in the future?

Figure 1. Size and Sector of Establishments, Reviews Closed 2003 and 2012



Source: Table E.1, Appendix E.

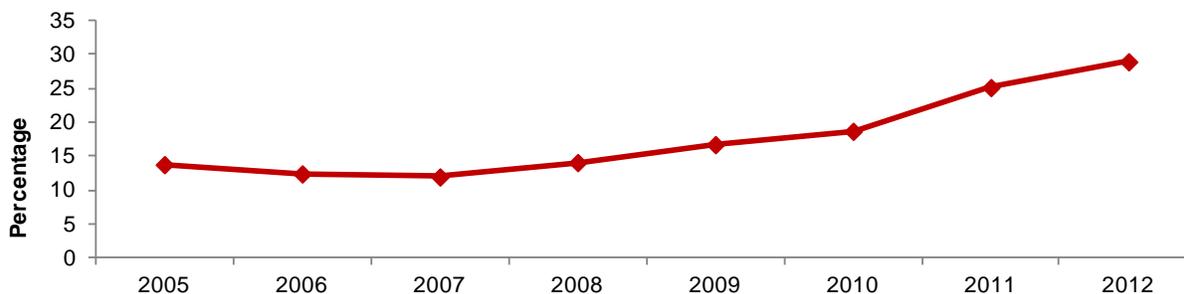
Note: Professional includes scientific and technical sectors. Health includes social assistance. Administrative is administrative support.

Using this backdrop of reviews and contractors, we summarize results of analysis that addresses each question:

1. What are the violation rates among federal contractors OFCCP investigates, and what are the characteristics of violators?

During fiscal years 2005 to 2012, about 18 percent of the reviews that were closed found violations. The rate of violations found was relatively steady from 2005 to 2008, at about 14 percent, and increased steadily thereafter, to 29 percent in 2012. One possibility for this increase is the expansion in enforcement initiatives that occurred under the Obama Administration. Figure 2 illustrates this increase by showing the rate at which reviews found a violation of EEO laws in each year between 2005 and 2012.

Figure 2. Violation Rates in Reviews Closed 2005 to 2012



Source: OFCCP administrative data.

Notes: Data irregularities in 2003 and 2004 reviews produced distortions in the violation rates in these years.

The rate at which violations were found from 2003 to 2012 varied with the OFCCP regional office conducting the review and the industry and size (number of employees) of the establishment being reviewed (Table E.3, Appendix E):

- On average, OFCCP found violations in about 20 percent of establishments between 2003 and 2012.

- The administrative support and health care and social assistance sector had above-average violation rates, and the manufacturing sector and sectors outside the four largest reviewed² had below-average violation rates.
- Establishments with 200 to 999 employees had below-average rates, as did reviews that closed in 2008 or earlier.
- Reviews undertaken by the Southeast, Pacific, and Northeast regions had above-average violation rates, and reviews undertaken by the mid-Atlantic and Southwest regions and the National Office had below-average violation rates.³

Violation rates largely reflect whether a technical violation was found, as about 88 percent of the establishments with violations had only technical violations. Only 12 percent had a discrimination violation.⁴

Multivariate analysis of the factors associated with the probability of a review finding a violation shows that the probability depended on whether the violation was technical or discrimination. For technical violations, we see that:

- Reviews of larger establishments (that is, more employees) had a lower probability of finding a technical violation.
- Reviews of contractors in the manufacturing industry had the lowest probability of finding a technical violation.
- Reviews initiated by the Southeast office had a higher probability of finding a technical violation.

For discrimination violations, we see that:

- Reviews of larger establishments had a higher probability of finding a discrimination violation.
- Reviews of contractors in the professional/scientific/technical industry had the lowest probability of finding a discrimination violation.
- Reviews initiated in the Pacific office had a higher probability of finding a discrimination violation (compared to the Southeast office).⁵

² The four largest sectors are: manufacturing, professional/scientific/technical, health and social assistance, and administrative support.

³ Northeast, mid-Atlantic, and Pacific regions had a dramatically growth in reviews between 2002 and 2012 from five to 40 percent, while the Pacific region grown was more modest from 10 to 30 percent. The Southeast, Midwest, and Southwest regions had little growth over the period.

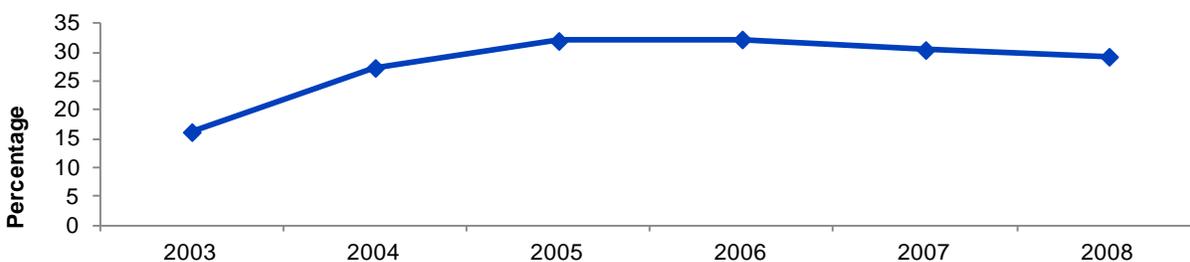
⁴ There was a slight, but insignificant, increase in findings of discrimination violations (Table E.4, Appendix E) over the period. Between 57 (compliant reviews) and 66 percent (complaint investigations) of discrimination violations also contained at least one technical violation.

⁵ We use the Southeast office as our reference group in multivariate analyses because it is the office with the largest number of reviews.

2. What are the re-violation rates among federal contractors OFCCP investigates, and what are the characteristics of re-violators?

Analysis of contractors that re-violate EEO laws must be confined to establishments and parents that were found to violate EEO laws and had a subsequent review for another violation from 2003 to 2012. Figure 3 shows the rate at which known violators of EEO laws who were reviewed again between 2003 and 2012 were found to re-violate EEO laws. The graph shows the re-violation rate for first reviews that closed between 2003 and 2008 to allow enough time for subsequent reviews by 2012. About 25 percent of violators who had another review during the period of observation were found to re-violate EEO laws. Re-violation rates for establishments increased sharply between 2003 and 2004, from 16 to 27 percent, and remained relatively flat through 2008.⁶

Figure 3. Establishments' Re-Violation Rates, First Review Closed 2003 to 2008



Source: OFCCP administrative data.

Note: The re-violation rate is not shown for first reviews that closed in 2009 or later because too few were reviewed again.

Parents with at least two reviews that closed between 2003 and 2012 had a re-violation rate of 51 percent. The higher level (than that of establishments) at which parents were found to re-violate EEO laws might reflect the likelihood that several establishments under a parent were found to violate EEO laws, rather than a single establishment under the parent being found to re-violate laws.

The rate of re-violations among establishments varied with the OFCCP regional office conducting the review and the industry and size (number of employees) of the establishment (Table E.6, Appendix E):

- Smaller establishments (1 to 199 employees) had statistically significantly higher re-violation rates than the average.
- Violators with first reviews finding systemic discrimination⁷ had below-average re-violation rates.

⁶ The finding of an increase between 2003 and 2004 should be viewed with caution because the violation rates in these years are unstable.

⁷ The OFIS includes an indicator variable for systemic discrimination, and treats systemic discrimination as a violation code similar to hiring or selection/testing.

- Establishments with first reviews conducted by the Northeast and Southeast regional offices had above-average re-violation rates, and those with reviews conducted in the Pacific and Southwest regions had below-average re-violation rates.

The only significant differences from the average rate for parent re-violations is that parents with 200 to 999 employers had below average re-violation rates and parents with more than 1,000 employees had higher than average rates. Small cell sizes inhibit an ability to achieve statistical significance in this analysis.

Multivariate results supported differences in re-violations rates among establishments and parents by contractor characteristics, regional office conducting the first review, and whether the first violation was technical or discrimination based, although the differences were not always consistent with the variations in the descriptive analysis shown here. Re-violation rates were higher if the first violation was a technical violation than if it was a discrimination violation; however, neither rate was statistically significantly different from the average rate.

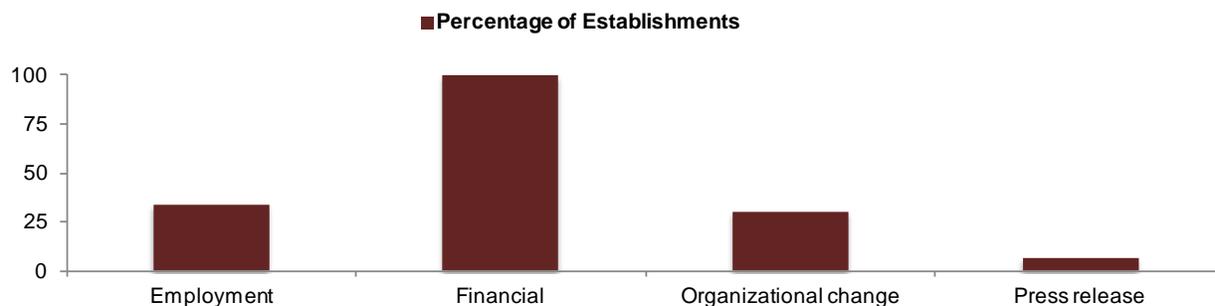
3. Is the remedy process associated with deterring re-violations?

We focus on three categories of remedies issued to contractors found to have a discrimination violation:⁸ (1) financial remedies (the payment of compensation to individuals or covering the cost of a training); (2) employment remedies (offers of employment or status changes, such as promotions); (3) organizational change remedies (ceasing harmful practices or modifying structures in the contractor's organization). We also analyze press releases OFCCP issued in response to certain major discrimination violations. A single review may result in more than one or all of these responses. Approximately 20 percent of reviews resulted in all three types of remedies.

Figure 4 shows the prevalence of each of the remedies (as well as press releases) issued to establishments with discrimination violators. All discrimination violators were issued a financial remedy (because OFCCP defines discrimination violation cases as those in which a financial remedy and victims are found). Across all of their reviews, about 34 percent of discrimination violators were issued an employment remedy, about 30 percent were issued an organizational change remedy,⁹ and about 7 percent had a press release.

⁸ We focus on remedies most closely associated with discrimination violations because they are of greater consequence to the employees, applicants, and contractors.

⁹ Because we had a CA/CD available in the OFCCP Administrative Database for only about half the contractors, employment and organizational change remedies might be understated, as that information came from those sources.

Figure 4. Remedies/Press Releases Issued to Discrimination Violators, 2003 to 2012

Source: Table E.2, Appendix E.

Our multivariate analysis of the association between re-violations and these remedies and press releases suggests that they might deter re-violations of EEO laws, although data limitations dictate caution in drawing inferences from findings until they are confirmed after the data quality has improved. Having a press release issued in the first violation lowered the probability of a re-violation being found for establishments, but not for parents, which suggests that a press release does not have spillover effects to other establishments under the same parent as the violator. However, the estimated relationship between re-violation and remedies suggests that employment and financial remedies in one establishment might serve as deterrents in other establishments under the same parent.

C. Looking Forward: The Potential of the Data

Our research highlights three areas in which the OFIS data could be a powerful tool for monitoring violations and re-violations of EEO laws: (1) over time trends in violations and re-violations of the EEO laws that OFCCP enforces; (2) characteristics of contractors associated with the probability of violating and re-violating EEO laws; and (3) effectiveness of OFCCP tools in deterring violations (that is, the review process) or re-violations (that is, remedies and press releases).

Unfortunately, data limitations severely restrict the reliability of analyses, such as ours, that are grounded in currently available data. We identified four key areas in which data improvements are needed to achieve the potential of the data and enable OFCCP to use them to monitor procedures it has set in place:

1. **Improve tracking of violation information in each review.** Accurate tracking of violation information in each review is critical in understanding whether and how a contractor is found to violate EEO laws.
2. **Ensure accuracy and completeness in identifying contractors across different reviews.** Performing analyses of re-violators, or of the effectiveness of remedies and press releases in preventing re-violation, requires the ability to identify the same contractor across several reviews.
3. **Ensure accuracy and completeness of information on remedies.** Analyses of the effectiveness of remedies on deterring re-violations depend on nonmissing and accurate remedy information.
4. **Standardize information across review types and between establishments and parents.** Unless the data collected for all entities are the same, analyses can be compared only in limited ways. For example, violation codes should be standardized between

reviews, and violation bases should be provided for each violation found in a complaint investigation. Industry and number of employees should be entered both for parents and establishments, as well as for all types of reviews.

In addition, if DOL or OFCCP desires to understand violation or re-violation rates of the population of federal contractors, and not just the sample of contractors reviewed, information on contractor population is needed.

Although data quality limits the reliability of the findings of this study, the methods for using and extracting data and the models developed to address research questions of interest to OFCCP highlight the capacity of the data to be used as a monitoring tool after these data limitations are lessened.

I. EQUAL EMPLOYMENT OPPORTUNITY

The 1960s were a fertile time for improving the legal rights of Americans to equal employment opportunity (EEO).¹⁰ In 1963, Congress passed the Equal Pay Act, which prohibited sex-based wage discrimination. The Civil Rights Act of 1964 barred employment discrimination based on race, sex, color, religion, or national origin. Specific antidiscrimination requirements for federal contractors were established in 1965, when President Lyndon B. Johnson signed Executive Order (EO) 11246 and established nondiscrimination and affirmative action as conditions of contracting with the federal government (U.S. Department of Labor, Office of Federal Contract Compliance Programs n.d.). Two agencies are charged with enforcing EEO requirements: (1) the U.S. Equal Employment Opportunity Commission (EEOC), an independent federal agency created by the Civil Rights Act; and (2) the Office of Federal Contract Compliance Programs (OFCCP), an agency within the U.S. Department of Labor (DOL), created by EO 11246. Both agencies administer and enforce regulations that prohibit discrimination and focus on finding and resolving discrimination, but they differ in scope: the EEOC has a general mission to all employers, workers, and job applicants, and OFCCP has a mission that applies to firms contracting with the federal government.

To enforce EEO laws, OFCCP regularly reviews contractors' personnel data and policies and responds to complaints. If OFCCP finds evidence of a violation during a review, it attempts to work with the contractor to define actions the contractor will take to stop the violation, prevent its recurrence, and, if applicable, compensate victims. OFCCP may also pursue termination of a contract or debarment from future federal contracts if a contractor fails to agree to take acceptable remedial actions. Although OFCCP's investigation and enforcement practices are codified and well documented, there has not been a comprehensive analysis of factors associated with OFCCP's program effectiveness. This study helps fill that gap.

This research, sponsored by the Chief Evaluation Office (CEO) in DOL and conducted for OFCCP, aims to provide a better understanding of violations and repeat violations of EEO laws by federal contractors, and to generate information to inform development of policies and procedures that will improve adherence to those laws. It addresses the general research question: *How can OFCCP administrative data be used to better understand violations and re-violations of EEO laws among federal contractors?* In doing so, it develops (1) a framework for examining EEO law violations and re-violations, and (2) specific research questions to structure an analysis of violations and re-violations. It uses administrative data currently available from OFCCP to explore violations and re-violations of EEO laws and to assess how the data might be enhanced to better address specific questions of violations and re-violations. Because of current data limitations, the empirical findings presented in this report are intended to be illustrative of the types of analyses that could be conducted using OFCCP data. As data quality improves, more accurate estimates could be obtained to help inform and foster program improvement.

The rest of this chapter discusses EEO legislation and enforcement (Section A), describes our research (Section B), and provides a roadmap to the report (Section C).

¹⁰ Before the 1960s, President Franklin D. Roosevelt signed an executive order in 1941 that prohibited employment discrimination by federal government contractors with respect to race, color, and national origin. Presidents Harry Truman and John F. Kennedy extended these prohibitions with executive actions and created an enforcement body for them.

A. OFCCP Enforcement of EEO Legislation

OFCCP enforces three EEO laws that prohibit contractors and subcontractors with the federal government from discriminating against applicants and employees on the basis of race, color, religion, sex, national origin, disability, or protected veterans' status:

1. EO 11246, as amended, prohibits federal contractors from discriminating in hiring and other personnel decisions on the basis of race, color, religion, sex, or national origin. In addition, contractors must take affirmative action against discrimination, ensuring their workforce compositions reflect the local labor market and developing plans to correct any underutilization of protected groups. The order provides that the Secretary of Labor may sanction, terminate the contracts of, or bar from further government contracts contractors that do not comply with these provisions. It applies to most direct contractors that provide at least \$10,000 worth of services annually and to subcontractors, vendors, and firms that receive federally assisted construction contracts.
2. Section 503 of the Rehabilitation Act of 1973, as amended, extends affirmative action provisions to people with disabilities. It applies to federal contracts for the procurement of personal property or nonpersonal services, including construction, in excess of \$10,000 (29 USC Sec. 793 1993).
3. Vietnam Era Veterans' Readjustment Assistance Act of 1974 (VEVRAA), as amended, further extends EEO provisions to qualified veterans, including those who are disabled, served on active duty during a war, or recently left the military (41 CFR Sec. 4212).

As a result of such requirements, the equal opportunity clauses in government contracts require contractors¹¹ to take two types of actions. First, they must not only avoid discrimination, but also proactively work to address it by ensuring their labor force reflects the local labor market. Second, they must adhere to more technical reporting requirements and post notices explaining the nondiscrimination provisions of their contracts in "conspicuous places" at work sites, notify union or employee representatives of these provisions if employees are covered by collective bargaining agreements, mention their antidiscrimination policies when advertising job openings, and report on their compliance and cooperate with OFCCP investigations (for example, by providing access to their records [41 CFR Sec. 60–1.4]). As these requirements suggest, contractors violate EEO laws by (1) discriminating against employees or applicants or failing to take appropriate affirmative action steps (*discrimination violation*), or (2) failing or refusing to comply with OFCCP regulations (*technical violation*).

1. OFCCP Investigative Tools

The investigative tools that OFCCP uses to determine whether a contractor is complying with EEO discrimination requirements (Office of Federal Contract Compliance Programs [FCCM] 1998) fall into two categories: (1) selection system reviews, and (2) non-selection system reviews. Reviews usually are performed at the establishment level (which OFCCP defines as a facility or unit that

¹¹ We use *contractor* to refer to contractors, subcontractors, and contractors engaged in federally assisted construction contracts in transactions of \$10,000 or less, including contracts/subcontracts for indefinite quantities, work outside the United States. Some contracts are exempt: those with certain educational institutions and work on/near Indian reservations. Contracts with religious entities are exempt from religion provision.

produces goods or services), in most instances at a physically separate facility at a single location (FCCM 1998).

Selection system reviews seek to determine whether contractors' human resources practices violate regulations OFCCP enforces. Since December 2010, OFCCP has used the Federal Contractor Selection System (FCSS) as the neutral selection system that identifies contractor establishments for the selection system review.

Selection system reviews begin with a desk audit that reviews the documents and materials submitted by covered contractors and subcontractors in an Affirmative Action Plan (AAP). The desk audit determines if the contractor is complying with EEO requirements, found not to be in violation of the laws, and taking affirmative action to ensure EEO without regard to race, color, religion, national origin, sex, disability, or Vietnam-era veteran (FCCM 1998). If the material that the contractor submits does not demonstrate a reasonable effort to meet the EEO requirements, or the contractor's AAP is determined to be unacceptable, an on-site review is scheduled.¹² An establishment should not be scheduled for another compliance evaluation for 24 months after a review is closed or after the expiration of a conciliation agreement (CA) or consent decree (CD) (discussed below).

OFCCP also schedules non-selection system reviews, such class complaint investigations;¹³ directed reviews initiated by OFCCP's National Office, based on reports of an alleged violation; pre-award evaluations in response to contract award notices received from federal contracting officers; and reviews intended to monitor the execution of CAs (<http://www.dol.gov/ofccp/regs/compliance/faqs/fcssfaqs.htm>).

2. Violations

During a review, OFCCP looks for technical violations of EEO laws (such as failure to keep required records or send job postings to organizations that work with minority groups) and discrimination violations (which involve harm to an employee or applicant due to a prohibited factor such as race, sex, or disability status) (FCCM 1998, chapter 7, sec 7C00). Discrimination violations may relate to a variety of personnel practices, including the accommodation of disabilities, hiring, harassment, promotion, salary/wages, seniority, and termination. OFCCP seeks to identify both overt, disparate treatment and disparate impact in its reviews. Disparate treatment results from a contractor intentionally treating similarly situated people differently due to prohibited factors (for example, deciding not to hire a candidate because she is a woman). Disparate impact occurs when "a facially neutral employment process/practice has an unjustified exclusionary effect on minorities or women (for example, where a particular job requirement unjustifiably screens out most women but

¹² The major purposes of an on-site investigation are to investigate potential problem areas identified by the desk audit, verify the contractor's implementation of its AAPs, begin to resolve violations committed in the preceding 24 months, and ensure the circumstances of the previous on-site review have not substantially changed.

¹³ A complaint review is conducted after a written charge is filed with OFCCP by an employee, former employee, applicant for employment, or a third party. If a complaint involves discrimination against only one person, OFCCP will normally refer it to the EEOC; in general, OFCCP investigates complaints that involve groups of people or indicate patterns of discrimination. Complaints filed under EO 11246, as amended, must be filed within 180 days from the date of the alleged discrimination. Complaints alleging violations of Section 503 and VEVRAA must be filed within 300 days, unless the time for filing is extended for good cause shown.

not most men)” (FCCM 1998, chapter 7, sec 7C03). Because disparate treatment and disparate impact operate through different mechanisms, OFCCP uses different means to investigate each. The investigation of disparate treatment focuses on contractors’ intent. The investigation of disparate impact focuses on the consequences of employment practices or policies (for example, determining a statistically significant difference in women’s and men’s pass rates on a test).

3. Remedies and Press Releases

In general, the remedies OFCCP applies differ for technical and discrimination violations. The remedies for technical violations often are administrative directives to correct the violation and are specific to the violation (for example, provide records to OFCCP, reach out to professional organizations that represent specific minority groups, complete the AAP, post the correct signage), and the violation usually is correctable on-site within 10 to 15 working days after the compliance evaluation.

Discrimination violations, however, often require more extensive solutions. Data provided contain the most complete information on financial remedies, which involve the payment of compensation (such as back pay, salary or wage increases, or lump-sum payments) to individuals, or other actions that cost contractors money (such as covering the cost of a training).¹⁴ We analyze two other types of remedies: employment and organizational change. Employment remedies involve offers of employment or status changes (such as promotions, seniority increases, or reinstatement) for individual applicants or employees. Organizational change remedies involve ceasing harmful practices or modifying structures in the contractor’s organization. They include such items as establishing seniority rules for promotion, transfer, layoff and recall, overtime allocation, vacation, and shift scheduling; goals for minority representation in certain jobs; a special inspector to oversee implementation of programs to combat discrimination; an employee ombudsperson to hear and investigate complaints; and diversity training (Hegewisch et al. 2011; Ichniowski 1981). A single violation can result in more than one type of remedy being applied. If a contractor fails to agree to or implement acceptable remedies, or if a violation is egregious or repetitive, OFCCP may pursue termination of a contract or notify the public of the contractor’s violation through a press release (FCCM 1998, Sec. 8A).

From 2001 through 2010, OFCCP conducted nearly 45,000 compliance evaluations and collected about \$350 million in financial remedies for approximately 153,000 workers through settlements with the contractors evaluated (Table I.1). Busch and Dunleavy (2011) analyzed financial remedies in fiscal year 2010,¹⁵ including 65 CAs and four CDs, and show that about 84 percent of the settlements involved allegations of discrimination in hiring, about 10 percent involved compensation, 3 percent involved employee placement, and about 1 percent (each) involved promotion and termination decisions.

¹⁴ As described in Appendix A, OFCCP defines discrimination violation cases as having a financial remedy. It is atypical, but technical violations may also have financial remedies. They usually involve covering the cost of training (personal correspondence OFCCP February 27, 2013).

¹⁵ Because a two- to three-year lag exists between evaluation and settlement, 2010 settlements were likely to stem from evaluations initiated years earlier.

Table I.1. OFCCP Activities, 2001 Through 2010

| Fiscal Year | Financial Remedies Obtained | Workers Recompensed by OFCCP Agreement | Compliance Evaluations |
|--------------|-----------------------------|--|------------------------|
| Total | \$348,596,529 | 153,067 | 44,999 |
| 2010 | \$9,750,272 | 12,397 | 4,960 |
| 2009 | \$9,314,978 | 21,839 | 4,000 |
| 2008 | \$67,518,982 | 24,508 | 4,333 |
| 2007 | \$51,680,950 | 22,251 | 4,923 |
| 2006 | \$51,525,235 | 15,273 | 3,975 |
| 2005 | \$45,156,462 | 14,761 | 2,730 |
| 2004 | \$34,479,294 | 9,615 | 6,529 |
| 2003 | \$26,220,356 | 14,361 | 4,698 |
| 2002 | \$23,975,000 | 8,969 | 4,135 |
| 2001 | \$28,975,000 | 9,093 | 4,716 |

Source: Busch and Dunleavy (2011).

Note: The drop in remedies obtained between 2008 and 2009 reflects the fact that OFCCP stopped including annualized salaries in financial settlements in fiscal year 2009. It does not reflect a drop in enforcement efforts (Smith 2010).

OFCCP uses a process called conciliation to resolve most major, substantive violations of EEO laws (FCCM 1998, sec. 8F & 8H). Through this process, an OFCCP Area Office and the contractor negotiate remedies that the contractor will take to resolve the alleged violations, and sign a CA that enumerates the violations identified in the review and the remedies to which the parties have agreed. A contractor does not need to admit guilt to resolve a review through the conciliation process—it merely needs to agree to implement the remedies. If OFCCP and the contractor cannot reach an agreement through conciliation, the contractor violates the terms of its CA, or the violations are extremely serious, OFCCP may refer the case to an administrative law judge. Before evidence is received, though, the parties may negotiate a CD, which is similar to a CA but occurs at this later stage in the process and is based on negotiations with a Solicitor of Labor (41 CFR sec. 60-30.13; FCCM 1998 chapter 8). If formal enforcement through the legal system proceeds, the review may end in actions such as contract termination. Such serious actions are rare, however, and our analysis does not focus on them due to a lack of data.

In addition, OFCCP can issue press releases about the violation(s) in an attempt to use negative publicity to deter repeat violations. Although the press release does not provide a solution to a specific discrimination violation, it might provide an incentive for a contractor to avoid discriminatory practices. Such releases expose contractors by notifying the public that a complaint against them has been filed and outlining the nature of the complaint, the legislation it violates, and the settlement reached (see <http://www.dol.gov/opa/media/press/ofccp/> for examples). Indeed, consumer research suggests that negative publicity can devastate a firm (Ahluwalia et al. 2000) by decreasing product and brand evaluation (Tybout et al. 1981; Wyatt and Badger 1984; Huang and Chen 2006) and sales (Elberse and Eliashberg 2003; Eliashberg and Shugan 1997; Basuroy et al. 2003).

4. Effectiveness

Very little research has examined how OFCCP investigative tools and remedies affect the probability of violating or re-violating EEO laws. We know of no study that has examined the influence of investigative tools on the probability of violating laws. Furthermore, little detailed systematic information exists on OFCCP responses to discrimination violations (Cohen and Dunleavy 2009; Government Accountability Office [GAO] 2008), despite a relatively high level of

activity. Most of the evidence on effectiveness that exists must be inferred from research on EEOC practices or surveys of human resource managers in the private sector. Such research suggests that:

- **Potential financial penalties might be the most compelling incentive for firms to adopt effective practices to combat discrimination and eliminate EEO complaints.** The equity value of firms involved in class action law suits for discrimination fell nearly 16 percent, on average, when the suit was filed (Hersch 1991), making financial penalties a powerful deterrent to discrimination (Foy 2000). Still, external stakeholders can invoke large costs on a firm if discrimination diminishes its reputation (James and Wooten 2006).
- **Firms have adopted many practices to comply with EEO policies and combat discrimination.**¹⁶ One of the most common is workplace training programs, particularly diversity training programs. The effectiveness of diversity training programs varies with their structure. Those that focus on individual attitudes have only modest effects, but comprehensive approaches based in the theory of organizational development are more effective (Bendick et al. 2001). Mandatory programs—particularly those supported by top management, with managers explicitly rewarding support for diversity—were found to be highly successful at preventing discrimination, although the length of training and amount of post-training evaluation and follow-up affect overall success (Rynes and Rosen 1994).
- **Affirmative action policies (Lundberg 1991) and selection system reviews may increase employment and promotion of women and minorities and alter organizational structures to produce greater management diversity (Kalev and Dobbin 2006).** Reviews of enterprises might force contractor-wide remedies, many of which lead to changes that provide formal guidance to managers. Such guidance reduces inadvertent employment biases (Bielby 2000) and the subjectivity in personnel decisions that might be grounded in “habitual and unconscious” reliance on stereotypes or on the influence of segregated social networks on hiring and other personnel decisions. Indeed, Kalev et al. (2006) found that the most effective solutions to promoting diversity came from assigning organization responsibility for change, rather than targeting psychological and social-relational sources of inequality, and that federal requirements typically lead to the assignment of responsibility for compliance.

Not all research suggests positive outcomes of EEO legislation and enforcement. Kalev and Dobbin (2006) suggest that the cost of EEO compliance might provide a disincentive for employers to hire women and minorities, because not hiring them reduces the likelihood of incurring a penalty. Rynes and Rosen (1995) suggest that the legal provisions of the legislation and remedies might produce formal structures of compliance that lead to procedural, rather than substantive, compliance. Such processes might eliminate only overt discrimination but not address underlying

¹⁶ The strategy that reduces discrimination is not obvious. For example, firms have long debated whether managers should consider group identities such as race and gender in making personnel decisions. That is, should they formally take group identity into account in decisions, or adopt “identity-blind” policies, which seek to ensure that the personnel decision-making process is the same for every individual? Research supports identity-conscious management structures with slightly increased female and minority representation in management roles and no statistically significant relationships between identity-blind structures and female/minority representation (Konrad and Linnehan 1995).

problems, as suggested by the survey showing only about one-third of human resource professionals believed their training programs were successful in the long term (Edelman 1992).

5. Potential Variation Among Contractors

Despite efforts to promote EEO in the labor market, studies designed to audit processes suggest that discrimination is still present in the workplace.¹⁷ For example, Bertrand and Mullainathan (2003) show that employers were less likely to call job applicants with “African American sounding” names for interviews than their counterparts with “white sounding” names and otherwise identical resumes. They found the same patterns among federal contractors and firms that advertised they were EEO employers as among firms not having these characteristics.

The attributes of the contractor appear to be one mitigating factor in whether a contractor engages in discriminatory behavior. For one, a contractor’s organizational capacity might underlie its ability to comply with EEO legislation. For example, a firm’s capacity to make accommodations has been shown to be a better predictor of employees receiving accommodations for disabilities than employee needs for accommodation (Balser 2007), and firms with dysfunctional organizational routines and practices that hinder their ability to learn from past transgressions seem to lack the organizational capacity to avoid discrimination or may develop practices that inadvertently perpetuate it (Wooten and James 2004, 2005). Capacity might be related to size, because employees of larger firms are less likely to file claims (Hirsh and Kornrich 2008), and larger firms are less likely to realize negative consequences from complaints (Hirsch 2008). Private- versus public-sector employment might be another dimension that underlies compliance. Firms in the private sector might be less likely than firms in other sectors to provide equal employment opportunities. Public-sector workers with physical disabilities were more likely to report receiving accommodations than workers in private firms (Balser 2007), and nonprofits might be more likely than private-sector firms to call African American applicants (Bertrand and Mullianatthan 2003).

B. Our Study

This study sheds light on how administrative data can be used to monitor how frequently contractors re-violate EEO laws in light of the remedies received. Its strength lies in its ability to structure a framework, data extraction, and data analysis that (1) provide an example of how data might be used, after data improvements are in place, to inform EEO policy and OFCCP programs; and (2) suggest areas in which future research might focus after data quality are improved. Even though current data might not be reliable enough to make accurate assessments of the associations between OFCCP remedies and tools and EEO violations, the research highlights their potential and shows how the data can be enhanced to reach this potential.

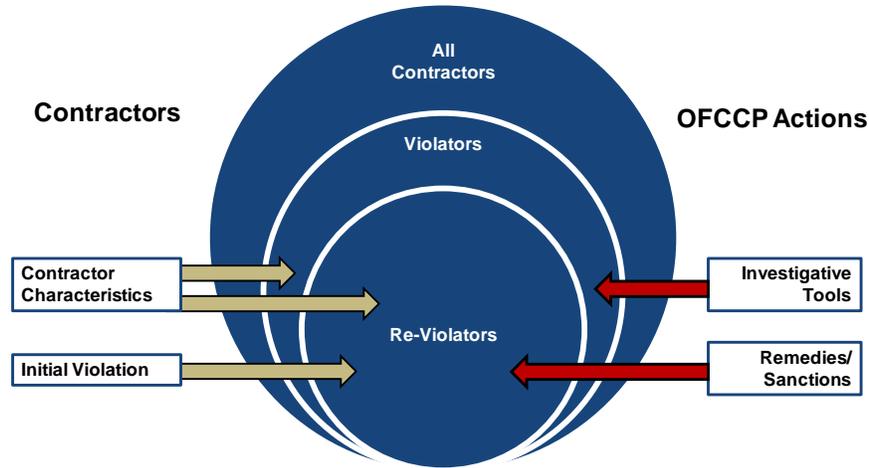
1. Framework and Research Questions

Figure I.1 depicts our conceptual framework for understanding how contractor characteristics and OFCCP actions might affect violations and re-violations of EEO laws. The figure shows that (1) the characteristics of contractors and of the investigative tools that OFCCP uses might affect the

¹⁷ Capturing discrimination empirically is difficult because it is hard to distinguish between employment and wage differences (for example) that are due to differences in production capabilities—not all of which can be measured accurately—and those due to discrimination.

probability of violating EEO legislation; and (2) the characteristics of contractors and of previous reviews that found violations, as well as the remedies and sanctions imposed as corrective measures, could affect whether the contractor is found to violate EEO legislation again.

Figure I.1. Conceptualization of Factors Influencing Violations and Re-Violations of EEO Laws



The conceptualization is based on three underlying premises. First, a contractor’s capacity or desire to comply with legislation influences the probability of violating and re-violating EEO legislation. These factors may be correlated with available data on a contractor’s characteristics, such as size and industry. The tan arrows between contractor characteristics and violators and re-violators in Figure I.1 visually portray these relationships.

Second, the nature of a contractor’s initial violation could affect whether it will violate legislation a second time. Characteristics of the violation could indicate underlying organizational issues that might affect the contractor’s ability and incentive to sustain an EEO environment. For example, it might be easy to correct a technical violation in a manner that maintains a violation-free environment, but sustainable changes to combat systemic discrimination could be more difficult to implement. The tan arrow between initial violation and re-violators in Figure I.1 visually portrays this relationship.

Finally, OFCCP investigative tools are designed to reduce the probability that a contractor violates EEO legislation initially, and its remedies and sanctions are designed to reduce the probability that a known violator violates a second time. The solid red arrows between investigative tools and violators and between remedies and sanctions and re-violators in Figure I.1 visually portray these relationships.

Outside forces might also affect the probability that a contractor violates or re-violates EEO laws. Contractors might be more likely to engage in discrimination and violate (or re-violate) EEO laws when labor is plentiful (that is, unemployment is high) and might have different incentives to violate with different enforcement regimes (such as changes that occurred in 2008 when President Obama took office) (DCI Consulting, Inc. 2011).

We use this framework to structure the three questions to guide the research analysis:

1. What are the violation rates among federal contractors OFCCP investigates, and what are the characteristics of violators?

2. What are the re-violation rates among federal contractors OFCCP investigates, and what are the characteristics of re-violators?
3. Is the remedy process associated with deterring re-violations?

The first two research questions provide insights into the prevalence and characteristics of violators and re-violators of EEO laws that OFCCP enforces. This information could be used to identify areas system for further research to identify opportunities for strengthening tools and remedies to reduce discrimination and violations of EEO laws. The third research question is designed to gain insights into the associations between remedies and re-violations among contractors that have been found to violate EEO laws and that have been subsequently re-reviewed for compliance. Although the data currently available are not complete or accurate enough to provide reliable answers to these questions, our analysis provides suggestive evidence on rates and associations that could be refined in future research.

2. Unit of Analysis

Answers to these research questions might differ with the unit of analysis. Violation rates, for example, will differ with the unit for which the rate is computed. Three units come into play: (1) reviews, (2) establishments, and (3) parents. As previously discussed, reviews usually are performed at the establishment level, but a clear distinction must be made between reviews and establishments, because an establishment can have more than one review. Furthermore, establishments may or may not be part of a larger entity, and the parent organization¹⁸ could have several establishments subject to OFCCP reviews. Therefore, the rate of violation for reviews, establishments, and parents could differ.

Table I.2 demonstrates how the unit of analysis can affect results. Table I.2 presents five establishments (A through E), each associated with a different parent company. An establishment that was reviewed and found to have a violation is designated with a 1 in the year. An establishment that was reviewed and found not to have a violation is designated with a 0 in the year. If an establishment was not reviewed, it has a -- in the year. A parent is considered to be a violator if a violation is found in any of its establishments, consistent with the definition of a violator in our analysis.

An analysis of violation rates of *reviews* over time would show an increase, from 25 to 67 percent. An analysis of violation rates of *establishments* during the period would show an 80 percent rate (establishment E was never found to violate, and establishments A and C were deemed violators in early years, so final-year violations do not change their status). An over-time analysis of establishment violation rates would show a consistent rate of 20 percent. An analysis of violation rates within *parents* during the period would show a 100 percent rate. An analysis of parent-level violation rates over time would show an increase over time (as more of its establishments were reviewed and found to violate).

¹⁸ Parents are defined by interrelated relationships (ownership, management, or operations). See <http://www.dol.gov/elaws/esa/ofccp/assessment.asp> for the criteria OFCCP uses to assess whether a business or organization is part of a single entity.

Table I.2. Illustration of Review, Establishment, and Parent Violation Rates

| | Across Years | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|------------------------|--------------|--------|--------|--------|--------|--------|
| Establishment | | | | | | |
| A | n.a. | 1 | 0 | 0 | 0 | 1 |
| B | n.a. | 0 | 1 | -- | -- | -- |
| C | n.a. | 0 | 0 | 1 | -- | 1 |
| D | n.a. | 0 | -- | 0 | 1 | -- |
| E | n.a. | -- | 0 | -- | 0 | 0 |
| Violation rates | | | | | | |
| Reviews | 35.3 | 25.0 | 25.0 | 33.3 | 33.3 | 66.7 |
| Establishments | 80.0 | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 |
| Parents | 100.0 | 20.0 | 40.0 | 60.0 | 80.0 | 100.0 |

-- = not reviewed; n.a. = not applicable.

3. Empirical Conceptualization

We used the following empirical conceptualization for each component of the framework when we constructed our empirical measures:

- **Contractor characteristics** are considered as contractor size and industry.
- **OFCCP investigative tools** are considered as selection system and non-selection system reviews.
- **Violations** are considered at a broad level using measures of technical and discrimination violations and at a more detailed level using measures of the basis of the violation (sex, color, veteran, disability status, national origin, or religion) and, for discrimination violations, the most common types of discrimination (hiring, systemic discrimination, salary, and selection/testing) and the number of victims compared to the number of workers a contractor employs.
- **Remedies and press releases** are constructed to be closely associated with discrimination violations because they are of greater consequence to the employees, applicants, and contractors involved. We consider three broad categories of remedies: employment remedies, financial remedies, and organizational change remedies.
- **External environment factors** are considered as the DOL region that conducted the review, local area economic activity (unemployment) when the review was initiated, and the year in which the review closed.

4. Data

We constructed the database for this study, the OFCCP Administrative Database, using information from four sources (see Appendix A for a technical description of how we combined the four sources to construct the database):

1. **OFCCP Information System (OFIS) records of reviews closed during fiscal years 2003 through 2012**¹⁹ provide information on the characteristics of contractors, types of reviews conducted, and nature of violations.
2. **CA and CD** documents describe the remedies for violations found in reviews closed during fiscal years 2003 through 2012. Appendix B describes the methods used to extract remedies.
3. **Press releases** provide information on press releases issued.
4. **Annual average unemployment in the county in which the contractor operated in the year the review closed** provides information on the local labor market in which the contractor operates and illustrates how OFIS data can be linked to external data.

Table I.3 lists data variables from the analysis files in terms of how they map to the logic model shown in Figure I.1.

Table I.3. Contractor Characteristics, Reviews, Violations, and Remedies Examined in the Study

| Contractor Characteristics | Investigative Tools | Initial Violation | Remedies | Outside Factors |
|----------------------------|------------------------------|--|--|------------------------------|
| Number of employees | Selection system reviews | Type Technical | Remedies Financial agreement | Region |
| Industry | Non-selection system reviews | Discrimination | Employment Organizational change | Local area unemployment rate |
| | | Basis Sex Color Veteran status Disability status National origin Religion | Press release | |
| | | Severity Victims per 1,000 employees | | |

Although the OFCCP Administrative Database constructed from these files contains the information needed to address each research question, data quality limits its ability to produce reliable results. Data integrity is one concern. The data *lack consistency* (for example, a review is categorized in OFIS as containing only technical violations, but discrimination violation codes are associated with it), perhaps because of a lack of standardized data entry instructions and inadequate internal controls (Government Accountability Office 2008), which might leave data inaccurate, incomplete, or erroneous. Indeed, we found many inconsistencies during analysis, some of which are noted in Chapter V and Appendix A. These issues lower the ability of our analysis to detect associations that might be uncovered if the data were more accurate. High levels of *missing data* (see Table A.7 in Appendix A) are another concern, because they could cause three problems:

1. Missing data lower our ability to make inferences to other contractors if those with missing data differ from those that have complete data and are excluded from analyses.

¹⁹ The files had been stripped of any reviews of Mathematica Policy Research.

2. Missing data lower the sample sizes, which increases the size of standard errors and makes it even more difficult to detect statistically significant ($p \leq 0.05$) associations. For example, identifiers are missing on 18 percent of establishments and nearly 40 percent of parents, and our samples would be larger if we had this information.
3. The assumptions made about missing data may not be correct, which would create inaccuracies in estimates produced. For example, because financial agreement information was blank for 87 percent of reviews, we assume blanks meant the review did not result in a financial penalty. If review blanks were actually missing data, our estimates using financial agreement data will be inaccurate.

5. Samples

Our analysis of contractors draws on two samples: establishment and parents. Both are defined in the OFIS database, although the rates of missing data are high (as discussed above). We include all reviews having a valid establishment identifier in the establishment-level sample. Each establishment record contains information on all its reviews. We identify parents using the parent identifier and create a parent-level sample from records with valid parent identifiers. Each parent record summarizes information for all its establishments in the database. The OFCCP Administrative Database allows us to identify violators and re-violators in the sample of establishments and parents. Violators are contractors identified as having at least one violation found in an OFCCP review. If a known violator has more than one review, with at least one violation in a review in which another review followed, it is classified as a re-violator. Unfortunately, the OFCCP Administrative Database does not contain any information on contractors that are not reviewed (the largest circle in Figure I.1). Therefore, our analysis might not represent behavior of all contractors, as discussed below in Section 7 below.

6. Analytic Methods

We use both descriptive and multivariate methods in our analysis of violators, re-violators, and remedies/press releases. (Appendix C provides details.) Descriptive statistics uncover patterns across the characteristics of contractors, investigative tools, violations, and remedies/press releases. We investigate differences in patterns by comparing (1) contractors that did and did not violate the EEO laws that OFCCP enforces, (2) violators who had technical and discrimination violations, and (3) violators who did and did not re-violate laws. We use chi-square tests to determine if statistically significant ($p \leq 0.05$) differences exist in the distribution of characteristics between groups and, if found, use two-tailed t -tests to test for statistically significant differences in individual categories between groups.

We compute violation and re-violation rates to assess how frequently contractors that are reviewed violate EEO laws, and how frequently known violators re-violate laws. We present violation rates in aggregate and separately for contractors (1) with different characteristics, and (2) reviewed using different investigative tools. Similarly, we present re-violation rates in aggregate and separately for violators (1) with different characteristics, (2) whose initial violations were discovered using different investigative tools, (3) whose violations differ in nature, and (4) for whom different initial remedies were imposed. We use t -tests to determine whether the aggregate violation or re-violation rate differed significantly with rates for subgroups of contractors.

We use multivariate analysis to assess whether violations are associated with contractor characteristics or investigative tools and whether re-violations are associated with contractor characteristics, initial violation characteristics, or the remedy/press release. We estimate linear models using ordinary least squares (OLS) to present intuitive results uniformly across all specifications.

Even when analyses show statistically significant relationships, the results do not allow for causal inferences. We cannot say, for example, that higher financial penalties lead to a lower probability of re-violating EEO laws. We can say they are associated with lower probabilities.

In addition, our analyses may have little power to detect statistically significant associations given inaccuracies in the data and small cell sizes. Because multivariate regression requires considerable quantities of reliable data to provide interpretable results, our small sample sizes might make it difficult to detect associations that might exist. For example, the limited information available in re-violation analysis for parents with discrimination violations leaves even descriptive computations of re-violation rates falling short of our criteria of providing analysis only when cell sizes exceed 50 (to ensure reliability in estimates).

7. Incidence of Violations

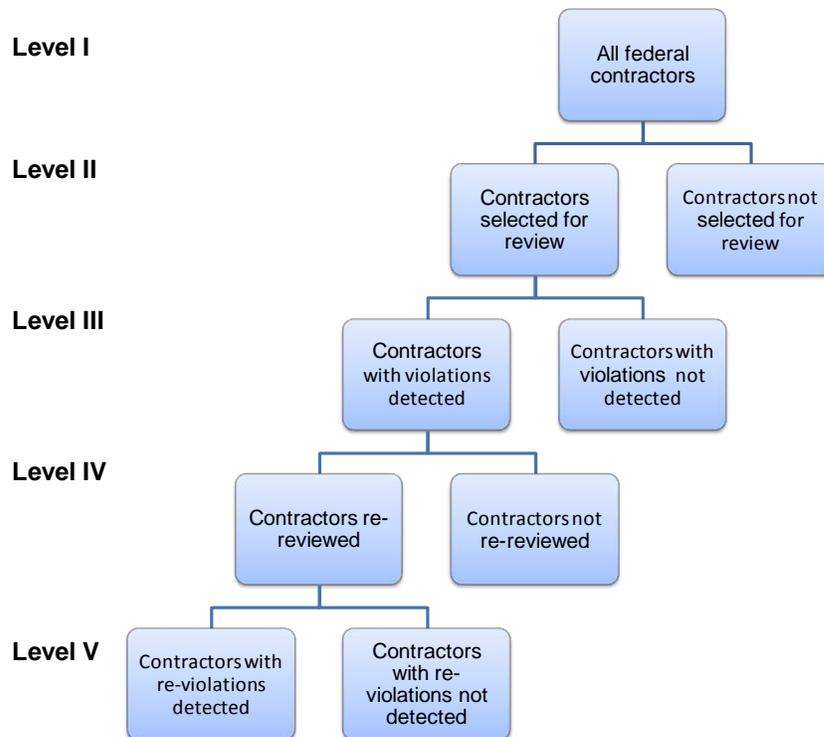
The extent to which the actual incidence of violations and re-violations among all federal contractors is captured in this study depends on three interrelated factors. The first is how well the contractors OFCCP selects for reviews represent all federal contractors with respect to their likelihood of violating EEO laws. If contractors selected for review have a different likelihood of violating EEO laws, an analysis such as ours that examines only contractors that have been selected for review will not be able to accurately estimate the rate at which contractors violate or re-violate without accounting for the differences in the likelihoods. For example, if establishments selected for review violate EEO laws at a higher rate than those not selected for review, calculations of violation rates will be higher than those that exist among all contractors, unless they are adjusted for their higher probability of being reviewed. Leonard (1985) supports these differences by showing that selection system reviews tend to target large or growing firms, rather than those with the lowest relative proportions of minority or female employment, and Konrad and Linnehan (1995) find that, among federal contractors, those with the poorest employment statistics are the most likely to be reviewed.

The second factor is how effectively OFCCP's methods identify violations. OFCCP might not identify all violations. Despite sophisticated procedures developed to identify violations, OFCCP cannot know contractors' true intentions, and contractors may be able to avoid the detection of discrimination (for example, by ensuring that disparities are below statistically significant levels). If OFCCP does not identify all violations, estimated violation and re-violation rates will understate the rate at which contractors violate EEO laws.

The final factor is the extent to which OFCCP is able to effectively enforce EEO laws using the remedies at its disposal. For example, some contractors may have litigators that effectively shield them from negotiating CA/CD or enable them to negotiate less strict remedies than contractors with fewer resources. Because our measures of remedies do not necessarily distinguish between level of harshness, our analyses may not accurately capture the association between remedies and re-violations.

Figure I.2 shows how these factors are interrelated. Level I identifies all contractors. If DOL or OFCCP is interested in the incidence of violations or re-violations among the population of federal contractors, it is the level at which rates should be captured. Level II identifies those contractors selected for OFCCP review and is the level of contractors used in this study. It represents a filter for identifying levels of EEO violations among federal contractors. Level III identifies violators of EEO laws that are detected by OFCCP. Whether a contractor that violates EEO laws is detected by OFCCP as having a violation depends on whether it is selected for a review and whether OFCCP finds the violation. Level IV identifies contractors that OFCCP has reviewed after a violation was found and presents the same type of filter as for re-violators that Level II presents for violators. Level V identifies contractors for whom OFCCP has found a second violation of EEO laws. To reach this level, a violator must have been selected for a review, found to have violated a law, reviewed a second time, and found to violate a law in the second review.

Figure I.2. Contractors, Contractors Reviewed, and Violators



C. Structure of the Report

The rest of this report is organized as follows. Chapter II provides a context for our analysis by describing trends in the reviews that OFCCP closed between fiscal years 2003 and 2012 and the characteristics of the contractors reviewed during that period. The next two chapters each address specific research questions. Chapter III focuses on violators and violations and addresses the first research question: *“What are the violation rates among federal contractors OFCCP investigates, and what are the characteristics of violators?”* Chapter IV focuses on re-violators and addresses the second and third research questions: *“What are the re-violation rates among federal contractors OFCCP investigates, and what are the characteristics of re-violators?”* and *“Is the remedy process associated with deterring re-violations?”* Chapter V provides a brief summary of analysis using currently available data and a discussion of what can be done with the data to allow them to better address the questions. Five appendices follow the body of the report and supplement the main text. Appendix A describes how we constructed the OFCCP Administrative Database and variables used in the analyses. Appendix B describes the processes used to extract information on remedies from the CAs and CDs. Appendix C defines terms used in the study, by OFCCP, and in EEO legislation. Appendix D provides a technical description of the analytic methods used in the study. Appendix E contains the tables of data descriptions and analyses that support the findings described in the body of this report. A list of studies referenced follows the appendices.

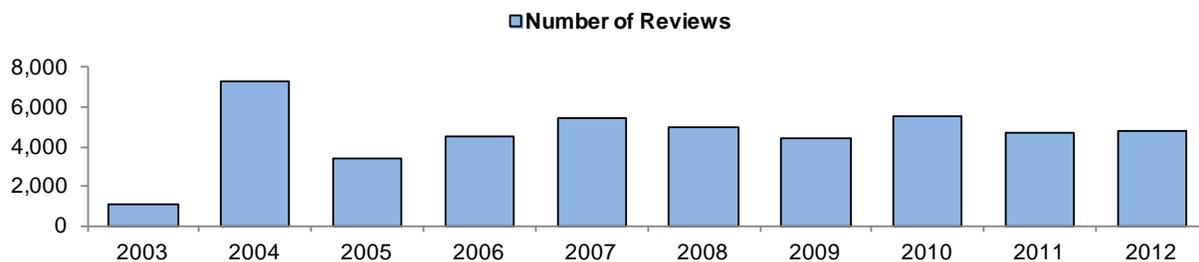
II. OFCCP REVIEWS AND CONTRACTORS: 2003 TO 2012

This chapter provides a context to observe violation and re-violation rates by providing an overview of the reviews that OFCCP closed between 2003 and 2012, the characteristics of contractors reviewed during the period, and the external environment in which the contractor and OFCCP operate.

A. Trends in Reviews, Violations, and Re-Violations

About 72 percent of the reviews that OFCCP closed in fiscal years 2003 to 2012 were initiated from the selection system process. Only 28 percent were non-selection system reviews.²⁰ On average, OFCCP closed 4,620 reviews each year between 2003 and 2012. This average is about the same as the per year average between 2005 and 2012 (4,624), despite 2003 having an extremely low number of reviews reportedly closed (1,094) and 2004 having an extremely high number (7,016) (Figure II.1). Restricting analysis to the more stable years—2005 to 2012—shows a high of 5,550 closed in 2010 and a low of 3,434 reviews closed in 2005. The number of reviews closed each year fluctuated only slightly between 2005 and 2012 (Figure II.1).²¹

Figure II.1. Number of Reviews, by Fiscal Year Closed



Source: OFCCP Administrative Database.

OFCCP regional offices showed different levels of review activity during the period. The Southeast office conducted about 22 percent of all reviews closed during fiscal years 2003 to 2012. The Pacific and Midwest offices conducted 17 to 18 percent, the Southwest office conducted about 15 percent, and the mid-Atlantic and Northeast offices conducted about 13 percent of the reviews. The National Office conducted less than 1 percent of all reviews.

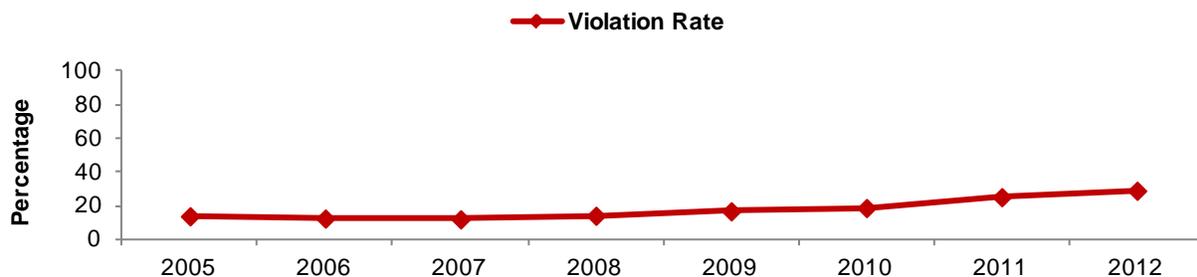
OFCCP found violations of EEO laws in about 18 percent of the reviews that closed between 2005 and 2012²². The rate of known violations was relatively steady from 2005 to 2008, at about 14 percent, and increased steadily, to 29 percent in 2012 (Figure II.2). The expansion in initiatives that occurred under the Obama Administration is one potential explanation (DCI Consulting, Inc. 2011).

²⁰ This percentage excludes the 2,646 (5.7 percent of the 46,198 reviews) in which information about the investigative tool was missing.

²¹ Figure II.1 shows the reviews closed in each year and not the reviews opened in each year. Because a wide variation exists in how quickly a review closes, the numbers cannot be interpreted as the number that open each year.

²² We do not present violation rates for 2003 and 2004 because data appear to be unstable for these years (Figure II.1). Nearly 100 percent (98.6) were violators in 2003 and only 8.8 percent were violators in 2004.

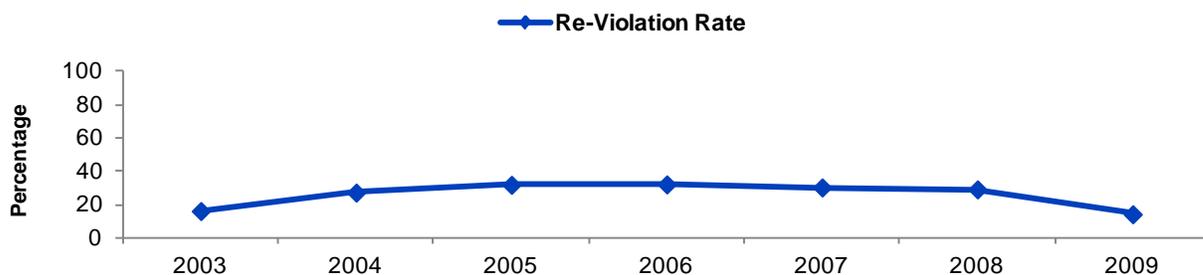
Figure II.2. Violation Rates in Reviews Closed in Each Fiscal Year



Source: OFCCP Administrative Database.

The OFCCP Administrative Database affords an opportunity to observe trends in re-violation rates among establishments found to violate EEO laws by examining their behavior in reviews after the one in which a violation was found. About 25 percent of establishment violators were found to re-violate EEO laws in another review that closed between 2005 and 2012.²³ As Figure II.3 shows, re-violation rates in establishments with first reviews that closed before 2009 show a relatively sharp increase between 2003 and 2004, from 16 to 27 percent, with a relatively flat rate thereafter (between 29 and 32 percent).²⁴

Figure II.3. Establishment Re-Violation Rates, by Year the First Review Closed



Source: OFCCP Administrative Database.

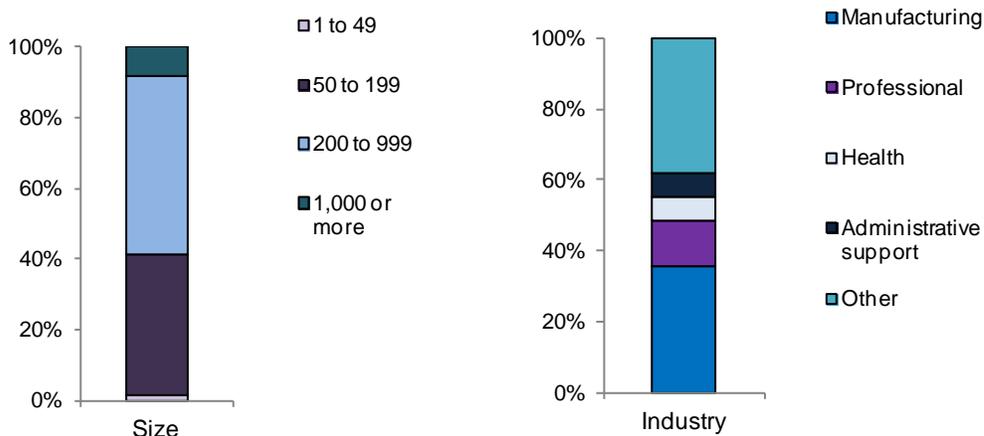
B. Characteristics of Contractors Reviewed

The OFCCP Administrative Database has a limited amount of information to describe contractors: number of employees and industry sector (2-digit NAICS code). Such descriptions provide a context for examining violation and re-violation rates in the following chapters. As one might expect, data suggest that reviews are clustered in mid-size contractors (Figure II.4). A majority (51 percent) of establishments that had a review close between 2003 and 2012 had 200 to 999 employees. Another 40 percent had between 50 and 199 employees. Only about 2 percent had fewer than 50 employees, most probably because only contractors with 50 more employees need to prepare EEO-1 forms. Only about 8 percent had more than 1,000 employees.

²³ Re-violation rates are only computed for first violations that occurred in 2008 or earlier to allow time for a second review. Examining re-violation rates after 2009 or later is problematic because the short period for time elapsed for subsequent review means that only 31 violators in reviews closing after 2009 were able to be assessed as a re-violator.

²⁴ The finding of an increase between 2003 and 2004 should be viewed with caution because the violation rates in these years are unstable (Figure II.1).

Figure II.4. Establishment Size and Sector, Reviews Closed 2003 to 2012



Source: Table E.1, Appendix E.

Data also suggest that reviews are clustered in four industrial sectors (Figure II.4). More than one-third (35 percent) of establishments with reviews closed between 2003 and 2012 were in manufacturing, and about 12 percent were in the professional/scientific/technical sectors. Another 9 percent were in health care and social assistance, and 7 percent were in administrative support. Together, these four sectors comprise 63 percent of the contractors with reviews closed.²⁵ In general, this distribution also describes the parent contractors, perhaps because OFIS does not contain information on industry for parents, and industry of first subsidiary establishment reviewed is used to describe the parent’s industry.

C. Discussion

OFCCP closed about 4,624 reviews per year between 2005 and 2012, with only a slight variation over the period. About 72 percent of the closed reviews were initiated under the selection review process, and 27 percent were outside that system. OFCCP regional offices had different levels of review activity. About 22 percent of the reviews closed between 2005 and 2012 were conducted by the Southeast regional office, with the other regional offices each conducting between 13 and 18 percent of the reviews. The National Office conducted less than 1 percent of all reviews.

Violations of EEO laws were found in about 18 percent of the reviews that closed between 2003 and 2009. The rate of known violations was about 14 percent from 2005 to 2008 and increased steadily thereafter, to 29 percent in 2012. About 25 percent of establishments found to violate EEO laws and that had another review during the period of observation were found to re-violate EEO laws. Re-violation rates exhibited a relatively sharp increase between 2003 and 2004, from 16 to 27 percent, and remained relatively flat rate through 2008.

In general, contractors that had reviews close between 2003 and 2012 had between 50 and 999 workers (90.0 percent) and were in the manufacturing (35.0 percent) or professional/scientific/technical sector (12.3 percent).

²⁵ For a complete listing of industry categories, see Appendix A.

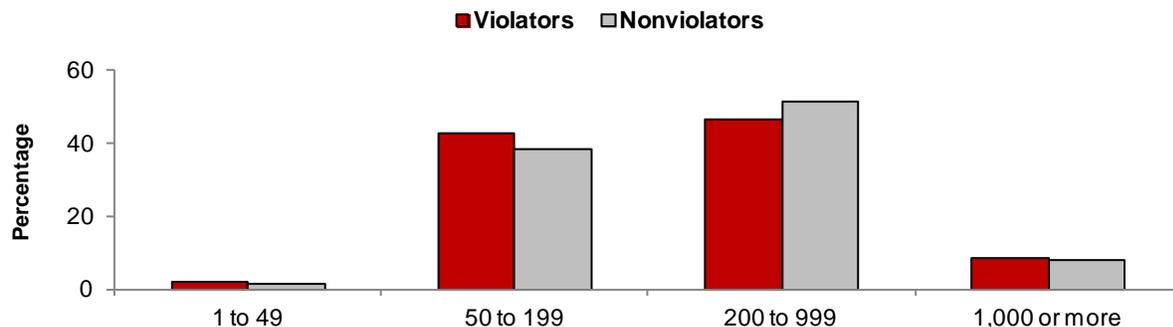
III. EEO VIOLATORS AND VIOLATIONS

The analysis presented in this chapter is structured to address the research question: “What are the violation rates among federal contractors OFCCP investigates, and what are the characteristics of violators?” It draws on the sample of 31,498 establishments (7,938 parents) with reviews that closed between 2003 and 2012 and focuses on the 6,431 establishments (2,311 parents) found to violate EEO laws. It pays particular attention to the 761 establishments (350 parents) found to have a discrimination violation. Section A describes contractors that violated EEO laws and uses nonviolators as a benchmark. Section B describes violations found in violating contractors, and Section C describes the remedies imposed on contractors found to violate EEO laws. Section D describes violation rates for contractors reviewed both in the aggregate for all contractors, and separately for different groups of contractors. It also describes the results of the multivariate analysis that associates each of these factors with the probability that a review finds any violation, a technical violation, or a discrimination violation. Section E summarizes and discusses the findings presented in this chapter.

A. Description of Violators

We use the OFCCP Administrative Database to describe contractors found to violate EEO laws (violators), and use those not found to violate the laws (nonviolators) as a benchmark for comparison. The database affords the opportunity to describe violators with respect to the number of employees in the establishment (size) found to violate EEO laws, the industrial sector in which it operates,²⁶ the types of investigative tools used to identify the violations, and the regional office conducting the review.²⁷

Figure III.1. Size of Violating and Nonviolating Establishments, Reviews Closed 2003 to 2012



Source: Table E.1, Appendix E.

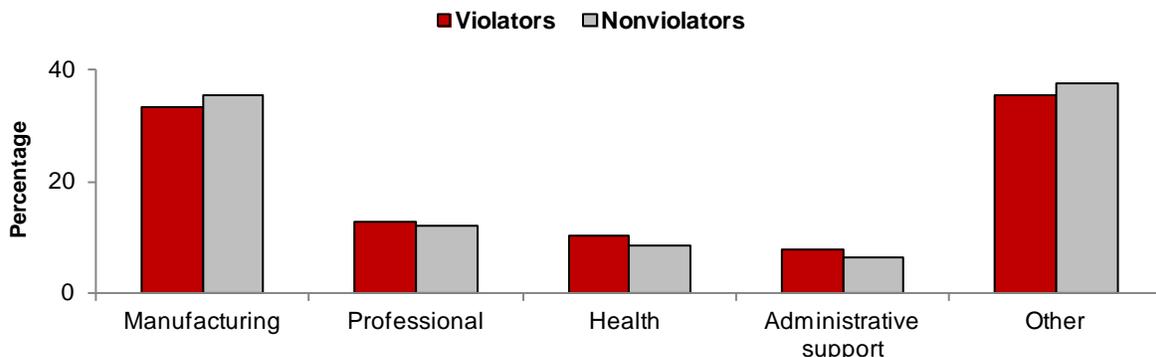
²⁶ OFCCP does not collect information on size and industry for parents. We approximate these characteristics using information on the establishment under the parent that was reviewed.

²⁷ Differences are also shown in the year in which the review closed and unemployment. A greater percentage of establishments had a review closed in 2008 or earlier. This trend is reversed for parents, however, and the reversal is likely related to the increasing probability that a parent had an establishment reviewed over time, as discussed in Chapter I and illustrated in Table I.2. Local area unemployment was greater among violating than nonviolating establishments, which might reflect the timing of review closures.

Descriptive analysis of OFCCP data suggests that size differences exist between establishments found to violate EEO laws and those not found to violate the laws. Establishments with 50 to 199 employees were significantly more likely to have a violation, and establishments with 200 to 999 employees were significantly less likely to have one (Figure III.1). About 43 percent of establishments found to violate EEO laws had 50 to 199 employees, compared to only 39 percent of the establishments found not to violate them. About 47 percent of violators, but 52 percent of nonviolators, had 200 to 999 employees. Trends differed slightly for parents, with parents with 50 to 200 employees having a relatively greater percentage of nonviolators and parents with 1,000 or more employees having a relatively greater percentage of violators (Table E.1, Appendix E).

Descriptive analysis also suggests that industry differences exist between violators and nonviolators. A slightly higher percentage (65 versus 63 percent) of violators than nonviolators were found in the four industrial sectors in which reviews were concentrated: manufacturing, professional/scientific/technical, health and social assistance, and administrative support. Within those four sectors, violators were disproportionately located in health care and social assistance and administrative support industries, and nonviolators were disproportionately located in manufacturing (Figure III.2). Fewer industrial differences exist in parent-level analysis (Table E.1, Appendix E).

Figure III.2. Sector of Violating and Nonviolating Establishments, Reviews Closed 2003 to 2012

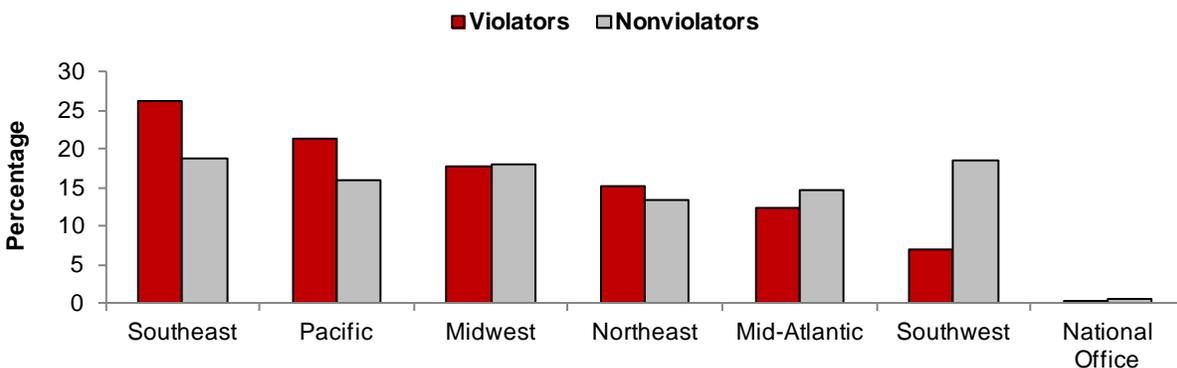


Source: Table E.1, Appendix E.

Note: Professional includes scientific and technical sectors. Health includes social assistance.

Descriptive statistics suggest that violators were slightly likely than nonviolators to have a selection system review (Table E.1, Appendix E). Although 84 percent of establishments had a selection system review, 86 percent of the violating establishments had one. The trend of increased selection system reviews among violators was more pronounced among parents. Parents with establishments found to violate EEO laws also had increased levels of non-selection system reviews.

The rate of finding a violation in a review appears to vary with the regional office conducting the review (Figure III.3). Regional offices in the Southeast, Pacific, and Northeast conducted about 51 percent of establishment reviews that closed between 2003 and 2012, but reviewed 64 percent of the establishments found to violate EEO laws. In contrast, the Southwest and mid-Atlantic offices reviewed 30 percent of all establishments, but only 19 percent of all violators.

Figure III.3. Regional Office Conducting Reviews, Establishments with Reviews Closed 2003 to 2012

Source: Table E.1, Appendix E.

B. Description of Violations

The OFCCP Administrative Database affords an opportunity to describe the violations that OFCCP found when it conducted its reviews, including (1) characteristic differences in contractors to have technical and discrimination violations, (2) the basis for the violations, and (3) the nature of discrimination violations (for contractors found to have discrimination violations).

1. Technical and Discrimination Violations

A violator found to have only technical violations is classified as a technical violator. A violator found to have at least one discrimination violation is classified as a discriminator. Most (88 percent) establishments found to have at least one violation across all available reviews had technical (only) violations (Table E.2, Appendix E). Only 12 percent were found to have a discrimination violation. Parent-level analysis shows a greater percentage of discrimination violators (about 15 percent).²⁸

Descriptive statistics suggest that whether an establishment was found to have a technical or discrimination violation varies with the contractor characteristics and the external environment when the review was initiated (Table E.2, Appendix E). Consider:

- A disproportionate percentage of larger establishments (200 to 999 and at least 1,000 employees) were found to have a discrimination violation, and a disproportionate percentage of establishments with 50 or fewer employees were found to have a technical (only) violation. Trends were similar for parents, accounting for their larger size.
- Sector differences existed between the type of violation found. Contractors (both establishment and parent level) in the manufacturing sector and industries other than the four most likely to be reviewed had a disproportionately high percentage of discrimination violations, and contractors in the professional/scientific/technical and

²⁸ There was a slight, but insignificant, increase in findings of discrimination violations (Table E.4, Appendix E) over the period. Between 57 (compliant reviews) and 66 percent (complaint investigations) of discrimination violations also contained at least one technical violation.

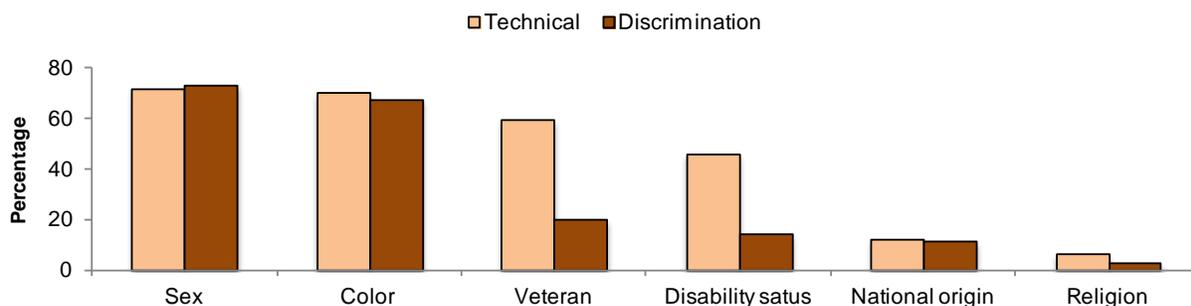
health care and social service sectors had a disproportionately high percentage of technical violations.

- Selection system reviews uncovered a disproportionate percentage of technical violations, and non-selection system reviews uncovered a disproportionate percentage of discrimination reviews. Although 86 percent of all establishments found to violate EEO laws had a selection system review, 87 percent of establishments found to have only technical violations and 81 percent of those with discrimination violations had selection system reviews. About 21 percent of violators had a non-selection system review, with 29 percent of establishments found to have discrimination violations having such a review. The same trends held for parents.
- A relatively low percentage of establishments reviewed in the Northeast and mid-Atlantic offices were found to have discrimination violations, and a relatively low percentage reviewed by the Southwest office were found to have technical violations.
- A relatively high percentage of discrimination violators had reviews closing in 2008 or earlier.

2. Basis for the Violation

The three EEO laws that OFCCP enforces prohibit contractors from discriminating against applicants and employees on the basis of race, color, religion, sex, national origin, disability, or protected veteran status. These bases for discriminating apply to technical and discrimination violations, and violations can be found to have more than one basis. More than two-thirds of the violations found in establishments had basis of sex and color (each), whether the violation was technical or discrimination (Figure III.4). More than half of the violations were based on veteran status, although technical violators were about three times more likely than discrimination violators to have a violation found with this basis. Only about 12 percent of violations found in establishments had a basis in national origin, and only about 6 percent had a basis in religion (about 3 percent for discrimination violators). Parent-level analysis shows the same trends.

Figure III.4. Violation Basis Among Violating Establishments, Reviews Closed 2003 to 2012



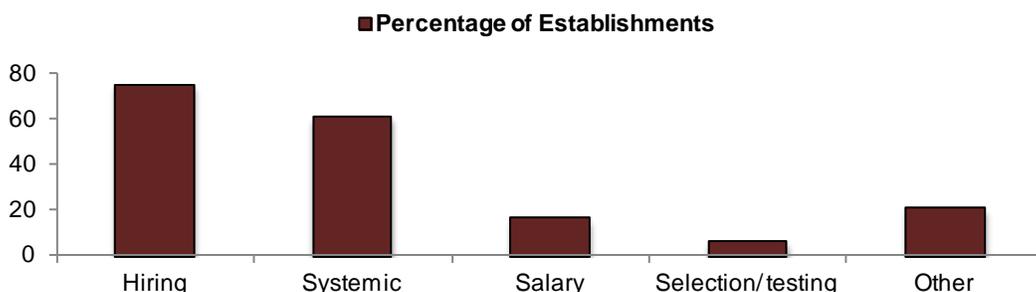
Source: Table E.2, Appendix E.

Note: Figure shows the percentage of violations that had each basis. For example, 72 percent of technical violations had sex as a basis. Violations can have more than one basis.

3. Discrimination Violations

The four most prevalent types of discrimination violations found were in hiring, systemic discrimination, salary, and selection and testing. Hiring and systemic discrimination were the most prevalent. About 75 percent of establishments with a discrimination violation were found to engage in hiring discrimination, and about 60 percent were found to engage in systemic discrimination (Figure III.5). Only about 16 percent were found to engage in salary discrimination, and only about 6 percent were found to engage in selection or testing discrimination. About 21 percent of establishments also had other types of discrimination violations. Trends and levels are similar for parents.

Figure III.5. Prevalence of Discrimination Violations Among Establishments, Reviews Closed 2003 to 2012



Source: Table E.1, Appendix E.

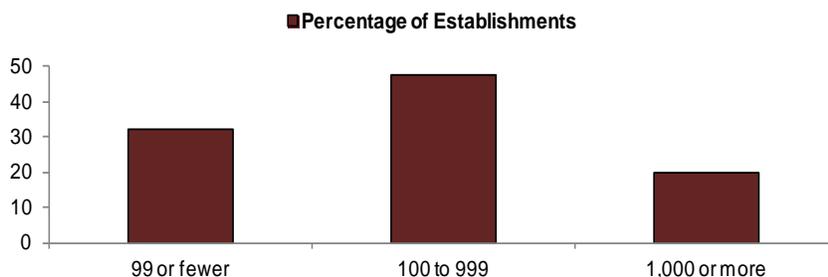
Note: Reviews may contain more than one of the above violations. Systemic discrimination, in particular, overlaps with other violation codes.

Discrimination violations, unlike technical violations, have victims. Therefore, one way of assessing the severity of a contractor’s violation(s) is by the number of victims, adjusted for the number of the contractor’s employees.²⁹ On average, establishments with discrimination violations had 719 victims per 1,000 employees across all cases (Table E.2 Appendix A).³⁰ This average is inflated by the 20 percent that had more than 1,000 total victims per 1,000 employees. The number of victims exceeds the number of employees for these contractors because people not hired can be victims of discrimination; therefore, a contractor can have more victims than employees. About 80 percent of establishments found to have a discrimination violation had fewer victims than employees, however. About 32 percent had between 1 and 99 victims per 1,000 employees, and about 48 percent had between 100 and 999 victims per 1,000 employees (Figure III.6). Parents averaged 514 victims per 1,000 employers, 205 victims per 1,000 employees fewer than establishments. The number of total victims is lower most likely because some establishments under a parent were not found to have discrimination violations and therefore had no victims.

²⁹ For example, having 100 victims might be viewed as a less severe violation for contractors with 20,000 employees than for contractors with 500 employees.

³⁰ We scaled victims by the number of employees in order to account for the fact that a 10-victim instance of discrimination at a firm with 50 employees is more widespread than a 10-victim instance of discrimination at a firm with 1,000 employees. For a detailed discussion, see Appendix A.

Figure III.6. Victims per 1,000 Employees, Reviews Closed 2003 to 2012

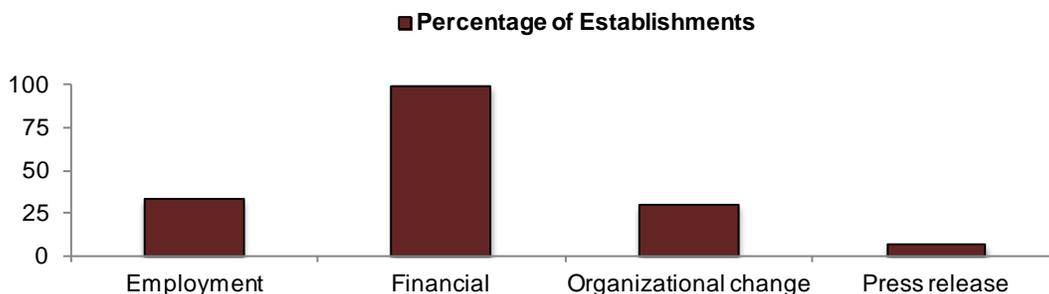


Source: Table E.2, Appendix E.

C. Description of Remedies/Press Releases Imposed

Our analysis of remedies and press releases focuses on the actions taken against discrimination violations: financial, employment, and organizational change remedies and press releases.³¹

Figure III.7. Remedies/Press Releases Issued to Discrimination Violators, 2003 to 2012



Source: Table E.2, Appendix E.

Figure III.7 shows the prevalence of remedies (and press releases) issued to establishments found to violate EEO laws. All discrimination violators were issued a financial remedy.³² About 34 percent of establishments found to have a discrimination violation were issued an employment remedy, about 30 percent were issued an organizational change remedy, and about 7 percent had a press release. About half of establishments with at least one discrimination violation have a CA/CD available in the OFCCP Administrative Database, suggesting that more establishments may have employment or organizational change remedies than we can identify using the OFCCP Administrative Database.

³¹ OFIS has information on the amount of financial remedy that was issued, which allows us to capture whether this remedy exists even without accompanying CA/CD documents. Employment and organizational change remedies can be identified only from CA/CD documents. We examine the potential for understating these remedies in descriptive analyses by examining whether a CA/CD was available.

³² Because OFCCP defines discrimination violation as one in which a financial remedy and victims are found, all discrimination violations carry financial remedies, by definition. The OFCCP Administrative Database has one discriminating violator for whom financial remedy and financial amount are missing because the OFIS data and CA/CD documents show no indication that the establishment was found to have a discrimination violation, but a press release was issued indicating that a discrimination violation was found.

D. Violations: Rates and Associations

The preceding descriptive analysis suggests that contractor characteristics and the region that undertook the review might differ between violators and nonviolators. We now examine whether the rate at which contractors were found to violate EEO laws differs by contractor characteristics, investigative tools, and external environment when the review was initiated and whether the probability that a contractor was found to violate an EEO law is associated with these factors.³³ We compute violation rates using the formula: $(\# \text{ violators} / \text{total} \# \text{ contractors}) * 100$. We identify associations using OLS regression analysis. This analysis allows us to estimate the relationship between the probability that an OFCCP review found a violation and the contractor's characteristics, investigative tools, and the external environment, holding all other factors constant.

On average, about 20 percent of reviews found a violation of EEO laws, with rates ranging from a high of 26.4 for reviews conducted in the Southeast region to 6.0 for reviews undertaken by the National Office (Table III.1). Indeed, large regional differences exist in violation rates. Reviews undertaken by the Southeast (27 percent), Pacific (26 percent), and Northeast (22 percent) regions had an above-average violation rate, and reviews undertaken by the mid-Atlantic (18 percent) and Southwest (9 percent) regions and the National Office (7 percent) had a below-average violation rate.³⁴ Violation rates also varied by industrial sector. The administrative support and health care and social assistance sectors had above-average violation rates, at 24 percent, and the manufacturing and sectors outside the four largest reviewed had below-average violation rates. Establishments with 200 to 999 employees were found to have lower than average rates (17 percent), as were reviews that closed in 2008 or earlier (18 percent).

Some of these same factors are associated with the probability that a violation was found in a review in our multivariate analysis, which, in contrast to the simple calculation of rates, examines the probability of finding a violation holding other factors constant. This analysis is undertaken for the probability that a review finds any violation, the probability it finds a technical violation, and the probability it finds a discrimination violation. We can therefore assess whether the factors associated with finding a technical violation might differ from the factors associated with finding a discrimination violation (Table E.4, Appendix E). Our measures of contractor characteristics, investigative tools, and external environments explain less than 10 percent of the variance among reviews in the probability of finding a technical violation and less than 1 percent of the probability of finding a discrimination violation.

³³ Both categories of investigative tools (for example) lie below the average and those with missing values lying above average (317 establishments do not have investigative tool information, and 57 percent were violators).

³⁴ The Northeast, mid-Atlantic, and Pacific regions had a dramatically growth in reviews between 2002 and 2012 from five to 40 percent, while the Pacific region grown was. from 10 to 30 percent. The Southeast, Midwest, and Southwest regions had little growth.

Table III.1. Violation Rates in Establishment

| | |
|--|-------------|
| Average | 20.4 |
| Investigative Tools | |
| Selection system review | 19.7* |
| Non-selection system review | 18.9* |
| Size | |
| 1 to 49 employees | 21.2 |
| 50 to 199 employees | 20.4 |
| 1,000 or more employees | 19.4* |
| 200 to 999 employees | 17.3* |
| Sector | |
| Administrative support sector | 24.1* |
| Health care and social assistance sector | 23.7* |
| Professional/scientific/technical sector | 21.6 |
| Manufacturing sector | 19.5* |
| Other industry sector | 19.5* |
| Region | |
| Southeast region | 26.4* |
| Pacific region | 25.5* |
| Northeast region | 22.4* |
| Midwest region | 20.2 |
| Mid-Atlantic region | 17.8* |
| Southwest region | 8.9* |
| National office region | 6.9* |
| External Environment | |
| First review closed FY 2008 or earlier | 17.5* |

Source: Table E.3, Appendix E.

* significantly ($p < 0.05$) different from average.

If we focus on factors associated with the probability of finding a technical violation and the probability of finding a discrimination violation, we see that (Table E.4, Appendix E):

- The nature of the association varied, depending on whether the violation found was technical or discrimination.
- Larger numbers of employees were associated with a lower probability of a review finding any violation, or only technical violations, but a higher probability of finding at least one discrimination violation.
- Having a non-selection system review, a review that closed in 2008 or earlier, or operating in an area with a lower unemployment rate lowered the probability of a review finding a technical violation but was not associated with having a discrimination violation found.
- The manufacturing industry had the lowest probability of a review finding a technical violation, and the professional/scientific/technical industry had the lowest probability of a review finding a discrimination violation.
- Reviews initiated in the Southeast office had a higher probability of finding a technical violation, and reviews initiated in the Pacific office had a higher probability of finding a discrimination violation (compared to the Southeast office)³⁵.

³⁵ Because the Southeast office had the most cases, it served as the reference group in our regressions.

E. Summary and Discussion

Once again, we must caution readers about the data limitations that could make our results unreliable. Nonetheless, the administrative data that OFCCP collects provide an opportunity to profile the characteristics of the violators and violations found and the remedies and press releases issued. Such profiling suggests avenues for future research when data limitations are less severe. Our analysis highlights the dispersion in violation rates that are particularly noticeable with respect to regional office initiating the review and the contractor's industrial sector and size (number of employees). The analysis largely reflects trends in the relatively high proportion of technical violations found.

- Reviews of establishments in the administrative support, health care, and social assistance sectors had above-average violation rates, and the manufacturing sector and sectors outside the four largest reviewed had below-average violation rates.
- Reviews of establishments with 200 to 999 employees were found to have below-average violation rates, as were reviews that closed in 2008 or earlier.
- Reviews undertaken by the Southeast, Pacific, and Northeast regions had above-average violation rates, and reviews undertaken by the mid-Atlantic and Southwest regions and the National Office had below-average violation rates.

Two key areas for exploration for future research emerge from our analysis of violators and violations, as we found that variation exists in the rate in which reviews uncover violations by:

1. **Type of violation.** Several differences exist in the probability a review will find a discrimination or technical violation: (1) larger establishments (that is, more employees) have a higher probability of having a review find a discrimination violation, but a lower probability of it finding a technical violation; (2) the manufacturing industry has the lowest probability of a review finding a technical violation, and the professional/scientific/technical industry has the lowest probability of a review finding a discrimination violation; and (3) reviews initiated in the Southeast office have a higher probability of finding a technical violation, and reviews initiated in the Pacific office have a higher probability of finding a discrimination violation (compared to the Southeast office).
2. **Type of review.** Non-selection system reviews do not find more violations than selection system reviews, even though their subjects are not selected through the natural selection system. This failure to find more violations largely stems from their failure to find more technical violations. Descriptive analysis suggests that non-selection system reviews might find more discrimination violations than selection system reviews, but this result is not statistically significant in multivariate analysis that controls for other factors. The lack of a statistically significant association in multivariate analysis suggests that other factors (such as contractor characteristics) are associated with having a non-selection system review and the probability of having a discrimination violation.

IV. EEO RE-VIOLATORS AND RE-VIOLATIONS

The analysis presented in this chapter was structured to address the following research questions: *What are the re-violation rates among federal contractors OFCCP investigates, and what are the characteristics of re-violators?* and *Is the remedy process associated with deterring re-violations?* It draws on the sample of 800 establishments (809 parents)³⁶ with more than one review that closed between fiscal years 2003 and 2012. All contractors must have a violation found in at least one review and had the chance to have a second violation found (that is, their first violation could not have been found on their last review). Analysis focuses on the subset of these violators in 600 establishments (399 parents) found to have at least two violations over at least two reviews (re-violators). These re-violators are sometimes compared to the 200 establishments found to have only one violation over at least two reviews, which we call single violators (410 parent organizations were single violators).³⁷ Because estimates become unstable with small counts, we present analysis only when cell sizes exceed 50. For example, in describing discrimination violations, we combine violations such as termination, seniority, and benefits because these types of discrimination were found in too few contractors. Small sample sizes were particularly problematic in analysis of re-violators, as we note throughout the chapter. Section A of this chapter describes re-violators and uses single violators as a benchmark. Section B describes the characteristics of the initial violation found and the remedies and press releases imposed in response. Section C describes re-violation rates for contractors reviewed more than once, both in the aggregate for all contractors and separately for different groups of contractors. It also presents results of the multivariate analysis that examines the association between remedies and press releases and the probability that a violator is found to re-violate EEO laws. Section D summarizes and discusses the findings presented in this chapter.

A. Description of Re-Violators

We use the OFCCP Administrative Database to describe re-violators and single violators of EEO laws with respect to the number of employees in an establishment (size) that was reviewed, the industrial sector in which it operates, and the external environment in which it operated when the review was initiated. Because contractor characteristics can change, we define them based on the characteristics recorded on the initial review.

Information in the OFCCP Administrative Database did not show statistically significant ($p \leq 0.05$) differences between re-violators and single violator establishments with respect to number of employees³⁸ (Table E.5, Appendix E) but did show statistically significant differences in industrial sector (Figure IV.1). Establishments found to violate EEO laws more than once were more likely to be in the manufacturing sector than those found to violate laws only once (43 versus 31 percent) and

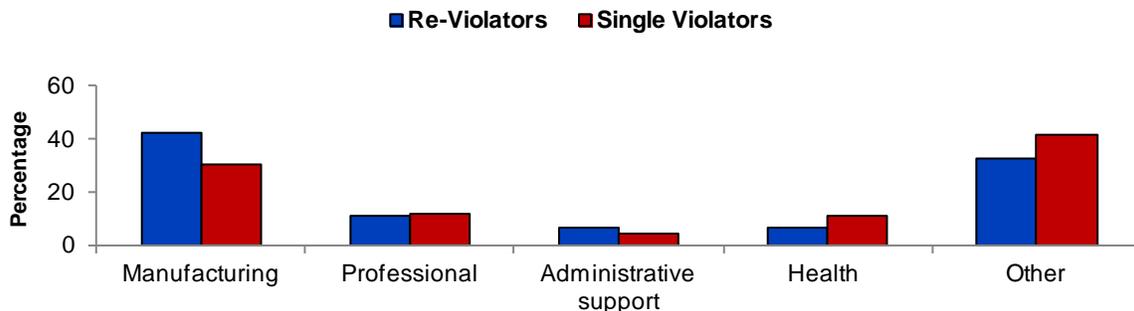
³⁶ If multiple establishments within a parent had violations, the parent was included in this analysis. If two establishments under a parent were found to violate EEO laws, the parent was considered a re-violator, even if neither establishment re-violated.

³⁷ Because parents may be reviewed twice without any of their establishments reviewed twice the number of single violator parents exceeds the number of single violator establishments. For example, if two establishments under a parent are each reviewed once, the parent was reviewed twice. The same logic applies to re-violations: if two establishments of a parent each violate once, we consider the parent a re-violator even though the establishments are not re-violators.

³⁸ Significant differences in size do exist for parents, as re-violators were more likely than single violators to have 200 to 999 employees.

less likely to be in the health care and social assistance sector and in an industry that was outside the four industries most likely to be reviewed. No industry differences existed between re-violating and single-violating parents.

Figure IV.1. Industry Sector of Re-Violators and Single Violators, Reviews Closed 2003 to 2012

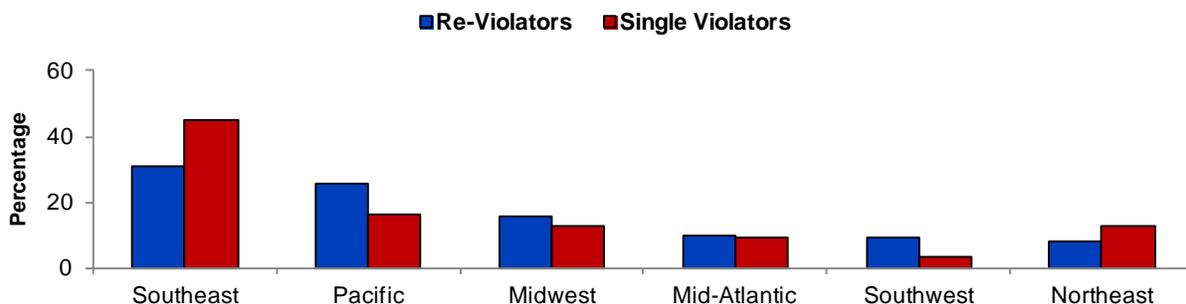


Source: Table E.6, Appendix E.

Note: Professional includes scientific and technical. Health care includes social assistance.

The OFCCP Administrative Database also suggests that the regional office conducting the initial review might be associated with whether a second violation was found (Figure IV.2) for establishments, but not for parents. Offices in the Northeast and Southeast found a significantly lower percentage of re-violations, and offices in the Southwest and Pacific found a significantly higher percentage.

Figure IV.2. Regional Office Reviewing the Violator, Establishment Reviews Closed 2003 to 2012



Source: Table E.5, Appendix E.

B. Description of Initial Violations and Initial Remedies/Press Releases Imposed

OFCCP administrative data show that about 84 percent of establishments reviewed more than once were found to have technical (only) violations in their first violation. Few (3 percent) establishments did not have a violation on their first review (meaning that they were reviewed at least three times, and had violations in later reviews), although about 34 percent of parents did not have a violation found on their first review.³⁹

³⁹ Because several establishments under a parent could be reviewed, with only some violating EEO laws, it might be expected that parents have a larger percentage of first reviews not having a violation.

Descriptive statistics do not show differences in the characteristics of the initial violation or the remedies and press releases imposed and whether establishment violators who were re-reviewed were found to re-violated EEO laws or remained a single violator. The only significant differences that were uncovered show that a higher proportion of single violators' than re-violators' parents had sex and color violations in their first review. Small sample size might underlie our inability to detect statistically significant differences between re-violators and single violators along these lines.⁴⁰

Low sample sizes also confined our descriptive analysis of remedies and press releases to whether a financial remedy was issued. A slightly lower (but not statistically significant) percentage of re-violators than single violators had financial remedies issued after their first violation was found (Table E.6, Appendix E).

C. Re-Violations: Rates and Associations

We use the OFCCP administrative data to examine re-violation rates among contractors and whether re-violation rates differ by contractor characteristics, initial violation characteristics, or external environment when the first review was initiated and whether the probability that a contractor was found to violate an EEO law is associated with these factors. We compute re-violation rates using the formula: $(\# \text{ re-violators} / \text{total } \# \text{ violators}) * 100$. We identify associations using OLS regression analysis, which allows us to estimate the relationship between the probability that a violator who was reviewed again was found to have a subsequent violation and the contractor's characteristics, initial violation characteristics, and the external environment, holding all other factors constant.

About 25 percent of establishments that violated EEO laws were found to re-violate those laws (Table IV.1). The rates range from a high of 46 percent for violators for whom a CA/CD was available to a low of 11 percent for establishments whose first reviews were conducted by the Southwest regional office. We see that:

- Smaller establishments (1 to 199 employees) also had higher-than-average re-violation rates (34 percent).
- Violators with reviews finding systemic discrimination (15 percent) had below-average re-violation rates.
- Re-violation rates were higher if the first violation was technical than if it was discrimination; however, neither rate was statistically significant from the average rate.
- Establishments with first reviews conducted by the Northeast (36 percent) and Southeast (33 percent) regional offices had above-average re-violation rates, and those with reviews conducted in the Pacific (18 percent) and Southwest (11 percent) regions had below-average re-violation rates.

Parents had a re-violation rate of 51 percent, which might reflect the probability that several establishments under a parent were found to violate, rather than a single establishment found violating in more than one review.

⁴⁰ Indeed, cell sizes below 50 precluded our analysis of most characteristics of discrimination violations, including salary or selection or testing discrimination and victims per 1,000 employees.

Table IV.1. Establishment Re-Violation Rates

| Average | 25.0 |
|--|-------|
| Size | |
| 1 to 199 employees | 34.0* |
| 200 to 999 sector | 28.8 |
| 1,000 or more employees | 22.6 |
| Sector | |
| Health care and social assistance sector | 36.7 |
| Other industry sector | 29.5 |
| Professional/scientific/technical sector | 25.8 |
| Manufacturing sector | 19.2* |
| Administrative support sector | 18.0 |
| First Violation Characteristics | |
| Disability status violation basis | 27.7 |
| Financial remedy | 25.5 |
| Veteran violation basis | 25.4 |
| Technical only (initial) violation | 24.8 |
| First review closed FY 2008 or earlier | 24.0 |
| Color violation basis | 23.8 |
| Sex violation basis | 23.4 |
| Discrimination (initial) violation | 23.0 |
| National origin violation basis | 22.0 |
| Religion violation basis | 19.7 |
| Hiring discrimination | 19.2 |
| Systemic discrimination | 15.3* |
| Region | |
| Northeast region | 35.6* |
| Southeast region | 32.6* |
| Mid-Atlantic region | 24.7 |
| Midwest region | 20.7 |
| Pacific region | 17.8* |
| Southwest region | 11.3* |

Source: Table E.6, Appendix E.

* significantly ($p \leq 0.05$) different from average.

Our multivariate estimations examine the associations between the remedies and press releases applied to violators in their first review, while controlling for the characteristics that might be associated with the rate at which a contractor known to violate EEO laws is found to violate them again in a subsequent review. Therefore, a negative and statistically significant ($p \leq 0.05$) coefficient (association) between a remedy or press release and the probability of re-violating suggests that the remedy or press release imposed in the first violation might be associated with deterring a second violation. If the coefficient on remedy or press release is negatively and significantly associated with re-violating EEO laws in establishment-level analysis but not parent-level analysis, it suggests that the remedy/press release might not have spillover effects to other establishments under the parent. That is, the remedy/press release is a deterrent only for the establishment that initially violated the EEO law. If the coefficient on remedy/press release is negative and significant in both the establishment- and parent-level analyses or only in parent-level analysis, this suggests that imposing a remedy/press release in one establishment under the parent might deter violations in other establishments under the parent.

Our analysis suggests that remedies and press releases might serve as deterrents to re-violating EEO laws (Table E.7, Appendix E). Results suggest that having a press release issued in the first violation is associated with a lower probability of having a re-violation for establishments (that is, the coefficient on the press release variable is negative and significant in establishment-level analysis). Because no such association is found in parent-level analysis, our results suggest that the issuance of a press release might not have spillover effects to other establishments under the same parent as the

violator. Results also suggest that having an employment remedy and financial award lowers the probability of having a re-violation for parent (that is, the coefficients on employment and financial award per capita variables are negative and significant in parent-level analysis). Although these associations are not shown in establishment-level analysis, their significance in parent-level analysis suggests that issuing employment and financial remedies in one establishment might serve as deterrents in other establishments under the same parent.

The multivariate results also support some of the differences in re-violation rates shown in the descriptive analysis. The probability of re-violating EEO laws is:

- Lower in establishments with a technical violation or systemic discrimination violation, and with a review conducted by the Southwest or National offices. It is higher in establishments in the health and social assistance sector.
- Higher in parents that are large and have sex as the basis for their first violation.

D. Summary and Discussion

The data limitations on the re-violation analysis are particularly severe because the small sample sizes in re-violation analysis lead to large standard errors. Still, our results suggest avenues that might be explored in future research when data limitations are less severe. Researchers might want to explore:

- Relatively high rates of re-violation with variations in the rates. The OFCCP Administrative Database suggests that about 25 percent of the establishments that are known violators are found to re-violate EEO laws, as are about 51 percent of known parent violators. Our analysis suggests that re-violations might vary with industry, regional office conducting the first review, and characteristics of the first violation.
- Effectiveness of remedies and press releases. Our multivariate analysis suggests that press releases reduced the probability that establishments re-violated. They also suggest the potential of spillover effects in the application of employment and financial remedies. That is, an employment or financial remedy issued to one establishment under a parent might deter violations by other establishments under the same parent.

V. DISCUSSION

Our research highlights three areas in which the OFIS data could be a powerful tool for monitoring violations and re-violations of EEO laws: (1) over time trends in violations and re-violations of the EEO laws that OFCCP enforces; (2) characteristics of contractors associated with the probability of violating and re-violating EEO laws; and (3) effectiveness of OFCCP tools in deterring violations (that is, the review process) or re-violations (that is, remedies and press releases).

1. Trends

The OFCCP Administrative Database suggests that OFCCP found violations of EEO laws in about 18 percent of the reviews that closed between 2003 and 2012, but that rate increased steadily between 2005 and 2012. Violations were found in only about 14 percent of the reviews that closed in 2005 but 29 percent of those that closed in 2012, a more than twofold increase. It also suggests that re-violations occurred for about 25 percent of establishments found to violate EEO laws. These re-violation rates showed a relatively sharp increase in rates between 2003 and 2004, from 16 to 27, with a relatively flat rate thereafter (between 29 and 32 percent).

2. Characteristics

Several differences exist in the probability that a review found a discrimination or technical violation: (1) larger establishments (that is, more employees) had a higher probability of having a review find a discrimination violation, but a lower probability of it finding a technical violation; (2) the manufacturing industry had the lowest probability of a review finding a technical violation, and the professional/scientific/technical industry has the lowest probability of a review finding a discrimination violation; and (3) reviews initiated in the Southeast office had a higher probability of finding a technical violation, and reviews initiated in the Pacific office had a higher probability of finding a discrimination violation (compared to the Southeast office). After an establishment or parent was found to violate an EEO law, our analysis suggests that the probability of it re-violating those laws might vary with industry, regional office conducting the first review, and characteristics of the first violation.

3. Tools

Our research suggests that the tools OFCCP uses to find violations and to correct them might be associated with the type of violation found initially and the probability of a re-violation occurring. Our analysis shows that the type of review OFCCP undertook—selection system or non-selection system—might uncover different types of violations. Non-selection system reviews might find a higher percentage of discrimination violations than selection system reviews, although this association might be driven by other factors, such as contractor characteristics, that could be associated both with the type of review and with the probability of violating EEO laws. Our analysis also suggests that the remedies and press releases that OFCCP uses to correct violations might be effective deterrents to re-violations. In particular, press releases appeared to reduce the probability of an establishment re-violating EEO laws and both employment and financial remedies showed some evidence of deterring violations of other establishments under the same parent as the violator.

Although data limitations severely restrict the reliability of these results, the methods developed in this research to extract and use the OFIS administrative data and the CA/CD documents to generate them provide valuable insights into the potential for using data after planned procedures and processes for enhanced data reliability are in place.

The rest of this chapter summarizes the potential strengths of the data (Section A) and suggests what can be done to the data so that they can be used to address important questions about violators and re-violators of EEO laws.

A. Potential of Data

OFCCP would like to use its administrative data to:

“demonstrate whether and to what extent its remedies, conciliation agreement terms, press exposure, and other tools work to alter the future behavior of federal contractors when OFCCP is not watching” and “determine which components of the remedy process are related to deterring repeat violators, resulting in positive and lasting change in the workplace” and

“determine (1) how frequently contractors re-violate OFCCP’s laws when subject to compliance evaluations subsequent to the first one” and if the frequency “...var(ies) by contractor size, location, industry or other descriptive factors” and

“examine behavior vertically from multiple compliance reviews of the same facility as well as behavior horizontally from multiple compliance reviews of different facilities within the same parent company” (scope of work)

This study developed a methodology to extract remedy information from the CA/CD documents (Appendix B) and from web postings of press releases and to link this information to the OFIS data that OFCCP collects. It also structured models to analyze the data in a manner that could address research questions in each of these areas for establishments and parents (Appendix A). As such, this study should be viewed as a demonstration of the potential of the data and a guide for areas that future research might explore when data limitations are lessened.

The OFIS data could go beyond the issues addressed in the scope of work for this project, however, as this study also demonstrates. They can be used to track violations and describe the types of contractors that violate EEO laws. Indeed, our analysis highlights the increasing trends in known violations rates between 2004 and 2012. Although we do not examine whether this change is associated with changes in the type of contractors that violate laws, the rate at which contractors violate, or some other reason,⁴¹ the OFIS data could be used to undertake such an analysis. The OFIS data also could describe contractors that have been reviewed and found to violate EEO laws, as well as those that have not been found to violate the laws. Chapter III demonstrates this potential by highlighting differences in rates in which violations were found that are associated with contractor characteristics and in regional office conducting the review and the potential for the associations to vary, depending upon whether the violation was technical or discrimination. Such

⁴¹ Such an analysis was beyond the scope of work of this project.

information can be used to assess whether the contractors chosen for a selection system review are those that have a higher probability of violating than other contractors.

The potential of the data to answer these, and other, questions of interest could be increased by linking OFIS to other databases. Data sources external to OFCCP, such as Dun & Bradstreet or the American Community Survey, could provide a richer source of information to describe contractors, violators, and re-violators. To illustrate this potential, we linked the local area unemployment rate from the Bureau of Labor Statistics local area unemployment statistics file to OFIS. Data sources internal to OFCCP could also be linked to OFIS data and could provide a more nuanced study of the types of tools or procedures associated with reduced violations or re-violations and might provide insight as to how such things as variations in procedures across regions undertaking reviews might be associated with the differences across regions found in this study.

B. Data Improvements

Data limitations hinder the ability to effectively use OFIS to answer the research questions posed in this study, achieve the research potential of the data, and monitor procedures OFCCP has set in place. In this section, we identify four key areas that could benefit from data improvements:

1. Improve tracking of violation information in each review
2. Ensure accuracy and completeness in identifying contractors across different reviews
3. Ensure accuracy and completeness of information on remedies
4. Standardize information across reviews types and between establishments and parents

Within each area, we examine why it is important that the action recommended be taken, the problems with the existing data, how we circumvented the problems in this research, and our suggested solutions. The reader should note that while this section is written at a high level, Appendices A and B provide details about the construction of the OFCCP Administrative Database and our efforts to extract information from CA/CD documents, respectively.

In addition to these recommendations, we note that if DOL or OFCCP is interested in knowing violation or re-violation rates among the population of federal contractors, analysis must be adjusted for differences between the sample of contractors reviewed and the population of all contractors. Two types of information could be used to make this adjustment. First, knowing how contractors were identified for review can be used to develop weights that would make analysis applicable to the general population. If, for example, FCSS uses probability weights when selecting contractors for review, these probability weights can be inverted and applied to OFIS data to adjust results to their values for the general population of contractors. For example, if a given contractor in the analysis sample were twice as likely to be selected as the average contractor in the population, that contractor could be assigned half as much weight as the average contractor in aggregate analysis results. Second, characteristics of contractors not reviewed could be used with a technique such as propensity score weighting to adjust results to reflect the general population of contractors. The procedure assigns a “propensity score” or weight to each contractor that reflects how likely that contractor’s characteristics were to appear in the sample of reviewed contractors. These weights then are inverted in each analysis so that results reflect the population of contractors (Rosenbaum and Rubin [1983] discuss the use of propensity score methods).

1. Improve tracking of violation information in each review

Why It Is Important

Accurate tracking of violation information in each review is critical in understanding whether and how a contractor is found to violate EEO laws. Understanding the behavior of violators and re-violators depends on accurate assessments of whether reviews found violations. Understanding how contractor characteristics are related to the nature of violations committed, or which types of violators are most prone to re-violate, depends on accurately coding violation types and bases.

Random error in information on violations not only produces inaccurate estimates of violation and re-violation rates, it also reduces the statistical power of analyses to uncover significant associations between characteristics of contractors (for example) and the probability of violating EEO laws or between remedies/press releases and the probability of re-violating those laws. Furthermore, any systematic errors in determining whether violations existed, or the types of violations that were committed, could cause bias in estimated violation and re-violation rates and in associations with the probability of violating or re-violating EEO laws.

Current Problems

Codes on discrimination violations are unreliable indicators of whether a violation actually occurred (see Appendix A). Without reliable codes, determining whether a review found violations is challenging and potentially inaccurate. Moreover, without reliable codes, information on the nature of discrimination violations cannot be ascertained, and any analysis of how different types of discrimination violations were associated with re-violation is therefore greatly limited. In addition, codes on technical violations are unreliable in that OFIS data show that 153 reviews with no technical violation code and no discrimination violation code had a financial agreement amount greater than 0, or had an associated CA/CD document, which suggests a technical violation was found.

What We Did

Because the violation codes in OFIS do not always accurately describe whether a review contained a discrimination violation, OFCCP designed a variable, *DISCRIM*, to capture whether OFCCP identified, during a review, at least one discrimination violation, technical violations only, or no violation. Mathematica discovered some discrepancies in the *DISCRIM* variable's coding and, in consultation with OFCCP, developed an algorithm to more accurately determine whether a review resulted in violations and, if it did, whether the violations were discriminatory or technical. The algorithm draws on information in six fields: (1) *DISCRIM*, (2) the financial agreement amount, (3) the number of victims, (4) the violations code, (5) whether a CA or CD exists, and (6) whether a press release exists. All information, except whether a CA or CD exists, originates with OFIS. Appendix A provides details of this process.

Suggested Solution

Because OFCCP has a system to enter violation codes, types, and bases, reporting violations does not seem to require a procedural change. Instead, the problem lies in the accuracy with which information is entered into the system. Monitoring data entry and validating violation types and codes must be undertaken to ensure that the OFIS contains accurate records of violation types, codes, and bases. The GAO report (Government Accountability Office 2008) states, "OFCCP

officials acknowledged a lack of standardized data entry instructions and adequate internal controls to screen for data problems.” Because the problems associated with measure of violations in OFIS are consistent with the conclusions drawn by the GAO report (and acknowledged by OFCCP), the adoption of standardized data entry instructions and processes to ensure independent verification and validation of data could alleviate the problem.

2. Ensure accuracy and completeness in identifying contractors across different reviews

Why It Is Important

Performing any analyses of re-violators, or of the effectiveness of remedies and press releases in preventing re-violation, requires the ability to identify the same contractor across multiple reviews. Inaccurate or incomplete identification of contractors not only limits the ability to conduct these analyses, but also reduces the ability to study contractor and violator characteristics more generally. If contractors missing identifiers are nonrandom (that is, if they are more or less likely than others to be violators, to have certain characteristics, or to be associated with certain remedies), the results of this study could be biased. Furthermore, describing contractors requires accurate information on such characteristics as size and industry.

Current Problems

Currently, contractors are identified by EEO-1 numbers (for establishments) and P-EEO-1 numbers (for parents), which are the identifiers associated with the required forms filed with OFCCP. However, EEO-1 numbers are missing in 18.2 percent of reviews. P-EEO-1 numbers are not present in 39.7 percent of reviews (although some might be valid skips of the files because the establishment has no parent). In addition, when EEO-1 and P-EEO-1 numbers are present, more than one number often is assigned to reviews that appear to be associated with the same contractor, based on name and address information. This causes estimates of the number of contractors to be higher than they should be and estimates of the number of re-violators to be lower than they should be. More rarely, the same EEO-1 or P-EEO-1 number is assigned to reviews that appear to be associated with different contractors. Finally, because OFIS does not contain a reliable variable that indicates whether a contractor has a parent company, it is not clear whether blanks in the parent information fields indicate missing data or the lack of a parent company.

Data quality appears to be an issue for contractor characteristics. Although such characteristics as size and industry might change within a contractor over time, the number of contractors for whom values differ is larger than one might expect. For example, industry differs between the first and second review for 902 (17 percent) of 5,283 contractors that have at least two reviews and a nonmissing industry code in both reviews. Size differs between the first and second review for almost all contractors with at least two reviews and a nonmissing size in both reviews (4,819 of 4,874, or 99 percent).

What We Did

We attempted to remedy this problem by using an alternate system to identify both establishment and parent contractors based on name and address information. However, names and addresses were not entered consistently across contractors, and our attempts to develop alternate identifications replaced the existing problems with alternate problems that were not clearly less severe. For this reason, we abandoned this approach and used EEO-1 and P-EEO-1 identifiers that were verified by a process to eliminate invalid numbers. Even though the verification process

eliminated some bad identifier data, it does not fundamentally resolve the problem, and missing identifiers and multiple numbers assigned to the same contractor still pose problems in analyses.

To address issues with characteristics that varied across reviews, we used characteristics from the first review (chronologically) that appeared in OFIS.

Suggested Solution

OFCCP also has a system to identify EEO-1 and P-EEO-1 numbers for establishments and parents, respectively, and to record number of employees and industry. The problem lies in the accuracy in which information is entered into the system, which is the same the problem associated with information on violations. The solution lies in better monitoring of data entry and implementing verification and validation procedures to ensure that OFIS contains complete and accurate information that can be used to identify establishments and parents. OFCCP could also identify whether a contractor has a parent by adding a field to OFIS that contains this information.

3. Ensure the accuracy and completeness of information on remedies

Why It Is Important

Analyses of how effective different remedies were at preventing re-violation depend on nonmissing and accurate remedy information. If violations missing remedy data are nonrandom (that is, if they differ from the violations that contain remedy data in any way), any analyses of remedy effectiveness could be biased.

Current Problems

Information on remedies is available from three sources: OFIS, CA/CD documents, and press releases. Each source has limitations. OFIS contains data on financial agreements, but if the field is blank it could mean that there was no financial component to the remedy or data are missing⁴² and do not adequately describe the nature of the remedies undertaken.

CA/CD documents provide a rich source of information on the nature of remedies and the violations they were meant to address. However, a complete set of CA/CD documents was not available to us, and extracting information from them requires a system that accurately and consistently identifies and codes remedies found in the documents (see Appendix B for discussion).

Information was only available for press releases for 52 reviews.⁴³ Although such information provides some information about the actions taken by OFCCP's responses to violations, the number of reviews covered is insufficient for a reliable quantitative assessment of how re-violations might be associated with press releases.

Given these issues, the number of reviews with reliable information on remedies was small. Because the number of reviews that found a second violation for an establishment (that is, identified

⁴² OFCCP personal correspondence November 29, 2012.

⁴³ As Table A.1 shows, there are only 33 press releases. Some press releases covered multiple records in OFIS (for example, if a contractor had numerous subsidiaries, and each had a review with its own control number).

a re-violator) was limited, the relatively low percentage of remedy data left only 41 percent (parents) to 45 percent (establishments) of re-violators with a CA/CD document for at least one violation.

What We Did

We drew information on remedies press releases from three sources: OFIS, CA/CD documents, and press releases. We built information on remedies from CA/CD documents. To extract information from these documents, we created an automated system to identify and code remedies, and to associate these remedies with reviews (see Appendix B for a detailed description). The results of the audits and consistency checks on our methods suggest that our methods were reasonably successful in identifying remedies within CA/CD documents; however, omissions and inaccurate codes likely exist. We augmented remedy information from (1) CA/CD documents with information on financial agreements and numbers of victims from OFIS under the assumption that blank fields indicated a lack of financial agreement or victims, and did not reflect missing data; and (2) whether a press release was present.

Suggested Solutions

To avoid as much of this error as possible, remedy information for each review should be entered into OFIS or another coded database when CAs/CDs are established. Such a process requires a change in current procedures and processes, however. As an alternative, and to accommodate historical documents, our method for automated CA/CD extraction may be implemented as a first pass to obtain data on remedies (only) from written documents. A manual process to extract data should follow the automated process to extract data from remaining documents for which the manual process failed or appeared to underreport or misreport remedies. For such a process to be effective, a complete set of documents must be available. Financial agreement amounts and numbers of victims should be recorded in OFIS via a validated form field that prevents any ambiguity between zero amounts and missing data. This solution is described in more detail in item 4, “Standardize information.”

Unfortunately, our analysis was not able to fully examine the association between sanctions and re-violation because information on sanctions was not available (to us). To obtain a more complete picture of how OFCCP enforcement tools might be associated with re-violations, such information must be integrated into the OFIS data.

4. Standardize information across review types and between establishments and parents

Why It Is Important

Unless the data collected for all entities—establishments and parents—are standardized, analyses for these entities can be compared only in limited ways. For example, our multivariate analysis of the association between re-violations and remedies/press releases (Table E.7, Appendix E) was structured to determine whether differences exist in the associations between establishments and parents. Should the size of the coefficient be larger for parents, this might indicate that spillovers occur between remedies/press releases imposed on one establishment under the parent and other establishments under the same parent. Coefficients cannot be compared with reliability, however, if models are estimated using differently defined variables (as they are in our estimations, because industry and number of employees is available only for establishments). Furthermore, if different data elements are available for selection system and non-selection system reviews, for example, results of analyses cannot be compared across review types, nor can analyses be aggregated

across different review types. Finally, if contractor characteristics that should be stable or relatively stable (such as industry and size) are not consistent across reviews of the same contractor, it is difficult to determine which characteristics accurately describe the contractor.

Current Problem

Currently, OFIS uses two data sources to store information from selection system reviews and non-selection system reviews (complaint investigations), and these data sources contain different fields for describing contractors and their violations (see Appendix A). For example, complaint investigations data do not track contractor industry, number of employees, or violation bases, and they contain a different set of violation codes that does not directly map to the set used for compliance reviews. Among selection system reviews, only establishments—and not parents—contain contractor industry or number of employees. OFIS also does not include data on parent size or industry, and this information may differ between parents and establishments (even if the information were complete and accurate at the establishment level).

What We Did

We combined information from compliance evaluations and complaint investigations data by mapping fields across the data sets. The mapping created some loss in data resolution, because multiple codes in one data set were sometimes mapped to a single code in the other. We also reshaped complaint investigations data to have one record per violation per review. Because these data did not describe how violation bases differed between different violations for the same review, all violation bases for the entire review were applied to each violation found. Appendix A describes these processes.

To include information on contractor size for parents in the analysis, we summed the number of employees for each establishment associated with a parent. Although this indicates the aggregate size of a parent company's subsidiaries, it is unlikely to be precise, because establishments not reviewed may also be subsidiaries of a given parent company. We imputed the industry of the parent by assigning it the industry of the first of its establishments reviewed.

Suggested Solution

We suggest that OFCCP standardize fields and codes across parents and establishments and across selection system and non-selection system reviews. Violation codes should be standardized between reviews, and violation bases should be provided for each violation found in a complaint investigation. Industry and number of employees should be entered for parents and establishments, as well as for all types of reviews.

C. Looking Forward: Future Research

If the data quality were improved, especially in the four areas recommended, the OFIS data could be a powerful tool for monitoring (1) overtime trends in violations and re-violations of the EEO laws that OFCCP enforces; (2) characteristics of contractors associated with the probability of violating and re-violating EEO laws; and (3) effectiveness of OFCCP tools in deterring violations (that is, the review process) or re-violations (that is, remedies and press releases). Until data improvements are made, however, caution must be taken in using the data or extrapolating any analysis—including ours—for use in decision making.

APPENDIX A

OFCCP ADMINISTRATIVE DATABASE AND VARIABLE CONSTRUCTION

This appendix describes the construction of the Office of Federal Contract Compliance Programs (OFCCP) Administrative Database, which serves as the basis for the analysis in this study. Section A describes the construction of the database. Section B describes how the data are organized and the steps needed to prepare it for analyses. Section C describes the analytic variables constructed from the database and used in the study's analysis, and Section D describes missing data. Appendix C provides definitions of terms frequently used in this appendix.

A. Construction of OFCCP Administrative Database

The OFCCP Administrative Database consists of data on contractors reviewed by OFCCP between fiscal years 2003 and 2012 for compliance with Equal Employment Opportunity (EEO) laws. Mathematica constructed it using information from four sources, the first three of which came from OFCCP:

1. **Data from the OFCCP Information System (OFIS)** serve as the basis for the OFCCP Administrative Database. OFIS is used to record the details of reviews of federal contractors and includes information about the contractor being reviewed and violations of EEO laws that were found during the review.
2. **Conciliation agreement and consent decree (CA/CD)** documents describe the terms of the remedies for violations found in OFIS reviews.
3. **Press releases (PR)** are issued by the U.S. Department of Labor (DOL) about contractors and the terms of violations against them. OFCCP provided the websites containing the press releases issued.⁴⁴
4. **Bureau of Labor Statistics (BLS)** unemployment rate data for each U.S. county during each year (U.S. Department of Labor 2012) capture the economic conditions in which contractors operated at the time the review was initiated. We link local unemployment rates from this data source to illustrate that linking OFIS to other databases could enhance its value in research.

OFIS, CA/CD documents, and PR information were provided to Mathematica by OFCCP between October 26, 2012 and December 21, 2012.⁴⁵ Appendix A, Table A.1 provides details of each data source, including content, format, and number of records.

⁴⁴ See <http://www.dol.gov/opa/media/press/opa/main.htm>, <http://www.dol.gov/opa/media/press/esa/archive>, and <http://www.dol.gov/opa/media/press/ofccp/>. These links were active at the time the releases were downloaded but may now be inactive. Some releases are available at <http://www.dol.gov/opa/media/press/ofccp/>. We presume these sources constitute all press releases issued on CAs and CDs between 2003 and 2012.

⁴⁵ Files were stripped of any information about Mathematica.

Table A.1. Overview of Data

| Source | Component | Contents | Format | Number of Records |
|-----------|--|--|---|----------------------------------|
| OFIS | Compliance Evaluation Reviews | Information for each review closed between fiscal years 2003 and 2012 that did not originate from a complaint | Excel file. Each record corresponds to a single review. | 40,502 reviews |
| OFIS | Complaint Investigations | Reviews and violation information for reviews closed during fiscal years 2003 to 2012 that originated from a complaint | Excel file. Each record corresponds to a single review. | 5,696 reviews |
| OFIS | Compliance Evaluation Violations | Information about the violations found in the Compliance Evaluation Reviews file | Excel file. Each record corresponds to a single violation (multiple violations are possible in a single review). | 17,293 violations |
| CA/ CD | Conciliation Agreement/ Consent Decrees | Documents containing remedies for violations found in Compliance Evaluation Reviews and Complaint Investigations | 15 compressed folders each of which was labeled with a fiscal year. Folders contained 2,650 documents, most corresponding to a single review with at least one violation. | 2,650 documents |
| PR | DOL Press Release | Press releases on alleged contractor violations | 33 HTML web pages, one for each press release about a contractor's violations (note: one press release may cover multiple reviews) | 33 releases |
| BLS | Unemployment Rates | Average annual unemployment rates in each U.S. county | Text file. Each record corresponds to a county in a particular year. | 3,218 records per year (average) |

BLS = Bureau of Labor Statistics; CA/CD = Conciliation Agreement/Consent Decree; DOL = U.S. Department of Labor; OFIS = OFCCP Information System; PR = press release.

The OFCCP Administrative Database contains 46,198 records, with a single record for each review (a review is equivalent to a case; establishments may have multiple reviews). Building the database was a two-step process that included merging the data components and stripping the data of personally identifiable information (PII). Prior to merging the files, however, information had to be extracted from the CA/CD documents so that it could be integrated into other files. Appendix B describes this process. Information in the remaining sources was in a format that allowed it to be easily merged.

1. Merge Data Components

OFIS data. The three OFIS data components described in Table A.1—Compliance Evaluation Reviews, Complaint Investigations, and Compliance Evaluation Violations—were merged into a single data file, which we call the OFIS file. This file provides information on contractor characteristics, investigative tools, and violations for each review closed between fiscal years 2003 and 2012.

The OFIS file was created by first merging all fields in the Compliance Evaluation Violations data set into the Compliance Evaluation Reviews data set. Records were matched between the data sets using the *CNTL_NO* variable, which uniquely identifies each review. We then appended all records in the Complaint Investigations file to the merged file in the following three steps:

1. Each field in the Complaint Investigation component that contained data identical to a field in the Compliance Evaluation component was mapped to the same name and format.
2. The Complaint Investigation component was temporarily reshaped to have one record per violation per review, which split records containing more than one violation for a single review into multiple records. This change simplified the process of mapping Complaint Investigation violation codes to those used in Compliance Evaluations, and we restored the one record per review format after mapping was complete.
3. Because the codes used to describe the nature of each violation differed between components, codes in the Complaint Investigations component were mapped to the codes in the Compliance Evaluation component (Table A.2). Because more than one code in one file could correspond to a single code in the other, the mapping created some loss in data resolution. For example, because the Compliance Evaluation component had no code for demotion, segregation, or harassment violations, flags indicating these violations in the Complaint Investigations component were mapped to the “Other” category before the components were appended.

Table A.2. Violation Code Mapping from Complaint Investigations to Compliance Evaluations

| Flag in Complaint Investigations | Violation Code in Compliance Evaluation | Violation Code Description |
|----------------------------------|---|----------------------------|
| VIOLATION_HIRING | 8 | Hiring |
| VIOLATION_JOB_ASSIGNMENT | 9 | Placement |
| VIOLATION_PROMOTION | 10 | Promotion |
| VIOLATION_TRAINING | 12 | Training |
| VIOLATION_SENIORITY | 13 | Seniority |
| VIOLATION_TERMINATION | 14 | Terminations |
| VIOLATION_LAYOFF | 15 | Layoff/Recall |
| VIOLATION_RECALL | 15 | Layoff/Recall |
| VIOLATION_WAGES | 17 | Salary |
| VIOLATION_JOB_BENEFITS | 18 | Benefits |
| VIOLATION_DEMOTION | 23 | Other |
| VIOLATION_DISABLED | 23 | Other |
| VIOLATION_HARASSMENT | 23 | Other |
| VIOLATION_PREGNANCY | 23 | Other |
| VIOLATION_RETALIATION | 23 | Other |
| VIOLATION_SEGREGATED | 23 | Other |
| VIOLATION_SABBATH | 23 | Other |
| VIOLATION_OTHER | 23 | Other |

Source: OFIS; personal correspondence from OFCCP, November 21, 2012.

CA/CD documents. CA/CD documents contain remedies associated with the violations described in OFIS. To associate violations in OFIS with the remedies in the CA/CD documents, Mathematica extracted remedy data from CA/CD documents to incorporate into the OFIS file. Appendix B details the extraction process. Here, we provide a brief summary of the extraction steps:

1. We used an optical character recognition (OCR) software program to convert each document file into a searchable text file.
2. We identified blocks of text that described remedies in each file.

3. We used a list of keywords associated with each remedy type to associate each text block with the types of remedies it described.
4. We extracted control numbers from the resulting text files, so that each file could be associated with a review in OFIS.

Press releases. We manually integrated press releases on contractor violations into the OFIS file, using the name and address of the contractor and the date of the press release.

Unemployment rates. To determine whether violation rates are sensitive to the local economic conditions in which contractors operate, we integrated into the OFIS file average county-level unemployment rate data from the Bureau of Labor Statistics' Local Area Unemployment Statistics (LAUS) file (U.S. Department of Labor, Bureau of Labor Statistics 2012). Because LAUS are county-level data, and contractor locations in the database are given by zip codes, we mapped LAUS county-level data to 2010 zip code boundaries. If a zip code was wholly contained within a county, we assigned the zip code the unemployment rate of the enveloping county. If a zip code overlapped more than one county, we assigned the zip code the average of the unemployment rates of all counties it overlapped, weighted by each county's population in 2010.

The resulting zip code-level unemployment rate data were matched to each review record in the database using the zip code of the contractor being reviewed and the date the review was initiated. To ensure that zip codes were successfully matched, zip codes in the OFCCP Administrative Database were first standardized to a five-digit format.

2. De-Identify Data

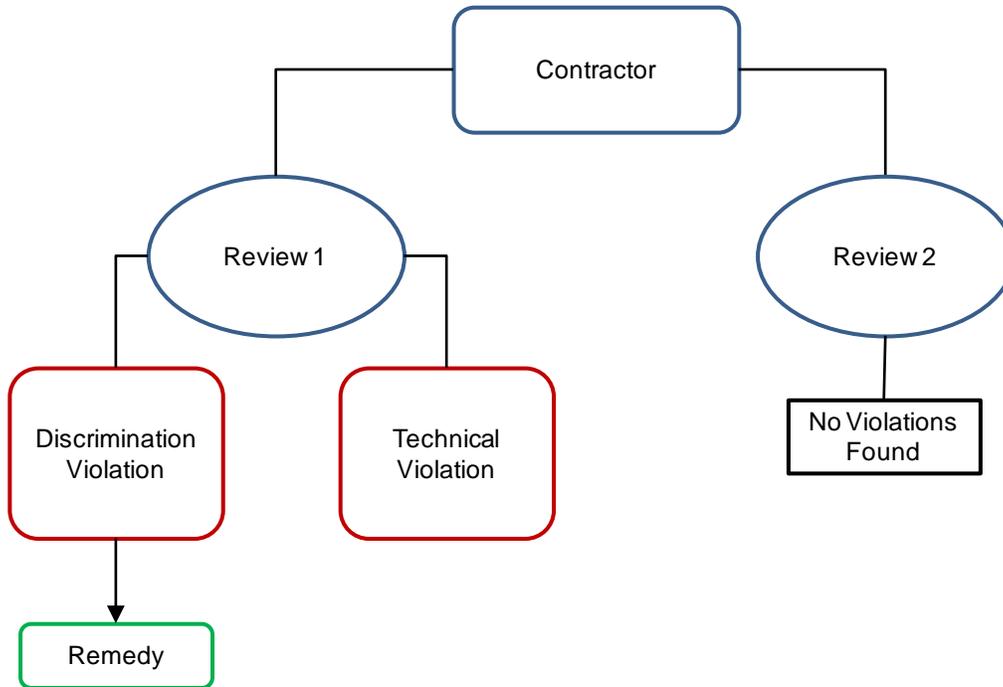
After information from the four data sources was integrated, we removed identifying information from the OFCCP Administrative Database for data security and to produce a public-use data file. In this process, we replaced names, addresses, contractor identification numbers assigned by OFCCP (EEO-1), and review control numbers with randomly generated identifiers for each contractors and reviews. We also rounded unemployment rates to the nearest percentage point to further obscure the geographic location of contractors. This process removed from the file geographic identifiers including state, city, and zip code.

B. Organization of OFCCP Administrative Database

The OFCCP Administrative Database contains several interrelated data entities: contractors, reviews, violations, remedies, and press releases. Figure A.1 illustrates how these entities are related using an example of a contractor that was reviewed twice. The first review found two violations: a discrimination violation and a technical violation. A remedy was applied for the discrimination violation. The second review found no violations.

More generally, a contractor in the database could be associated with one or more reviews; each review could find zero or more violations; and, each violation (discrimination or technical) could be associated with zero or more remedies/press releases.

Figure A.1. An Illustrative Example of the Relationships Between Data Entities



1. Contractors

Each record contains information for a single review at a contractor's establishment. This information allows contractors to be classified along several lines:

- **Nonviolators or violators.** Contractors are *violators* if they have at least one review in which a violation was found; they are *nonviolators* if a violation was never recorded in the OFCCP Administrative Database.
- **Re-violations.** Contractors are *re-violators* if they have at least two reviews in which a violation was found; they are *single violators* if they have at least two reviews and violations were only found in one.
- **Parent and Establishment.** A contractor's *establishment* is the unit identified for review. Some reviews also identified a *parent* associated with the establishment. The same parent may be associated with more than one contractor establishment in the database.

2. Reviews

As discussed in the text, OFCCP initiates reviews for a variety of reasons. The Federal Contractor Selection System (FCSS) initiates some reviews using a neutral process to select contractors for review. Other reviews target specific contractors. Non-selection system reviews can include pre-award investigations, complaint investigations, and investigations directed at contractors based on alleged violations of the laws that OFCCP enforces. The OFCCP Administrative Database identifies whether each review was a selection system (FCSS) or non-selection system review.

3. Violations

Because the violation codes in OFIS do not always accurately describe whether a review contained a discrimination violation, OFCCP designed a variable, *DISCRIM*, to capture whether OFCCP identified during a review at least one discrimination violation (coded S), technical violations only (coded T), or no violation (coded N).⁴⁶ During the course of this study, Mathematica discovered some discrepancies in the *DISCRIM* variable's coding. In consultation with OFCCP (personal communication, February 27, 2013), Mathematica developed an algorithm to more accurately determine whether a review resulted in violations and, if it did, whether the violations were discriminatory or technical. The algorithm draws on information in five fields (Table A.3): (1) *DISCRIM*, (2) the financial agreement amount, (3) the number of victims, (4) the violations code, and (5) whether a CA or CD exists. All information but whether a CA or CD exists originates with the OFIS.

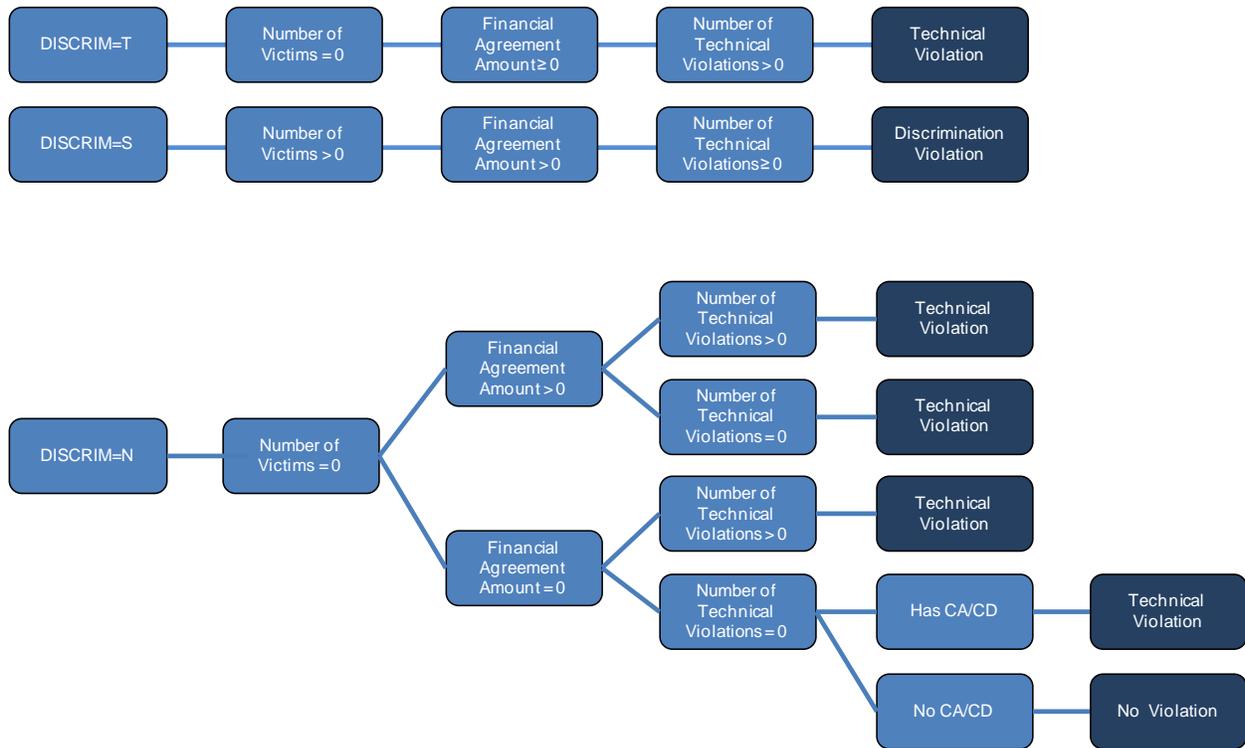
Table A.3. Defining a Violation Type

| Violation Type | <i>DISCRIM</i> Field | Financial Agreement Amount | Number of Victims | Violation Code | | Has CA or CD |
|--------------------------|----------------------|----------------------------|-------------------|---------------------------------|---|-----------------|
| | | | | Discrimination Violations Coded | Technical Violations Coded | |
| Discrimination Violation | S | More than 0 | More than 0 | Does not matter | Does not matter | Does not matter |
| Technical Violation | T or N (Usually T) | At least 0 (usually 0) | 0 | Does not matter | Does not matter, but usually greater than 0 | Does not matter |
| No Violation | N | 0 | 0 | Does not matter | 0 | No |

Information in the *DISCRIM* field forms the basis of the classification of a violation, as shown in Figure A.2. For *DISCRIM* fields coded S (discrimination violation) or T (technical violation), if Mathematica confirmed that the other fields were consistent, it applied no algorithm. Mathematica also found that all reviews with *DISCRIM* coded N had 0 victims. However, if information about financial agreements, the number of technical violations, and the presence of a CA or CD was not consistent, the review was coded to have a technical violation if (1) a financial agreement amount was included in OFIS; (2) the number of technical violations was more than 0, even if there was no listed financial agreement; or (3) a CA or CD revealed a technical violation, even if there was no listed financial agreement. Using this process, Mathematica recoded 1,704 reviews (or 4.3 percent of those originally coded as *DISCRIM* = N) from “no violation” to “technical violation.”

⁴⁶ OFCCP devised this variable to overcome inconsistencies in other variables in OFIS that indicated whether the case contained a discrimination violation, only technical violations, or no violation. The major correction the *DISCRIM* variable made was to code as a discrimination violation review any review that had a number of victims greater than zero and a financial agreement amount greater than zero, regardless of violation codes used. We worked with OFCCP to further define which cases should be coded as having technical violations only and which cases should be coded as having no violation.

Figure A.2. Flow Chart: Determining Violation Type, Beginning with the *DISCRIM* Field



OFIS describes the nature of each violation using violation codes and violation bases. Violation codes broadly describe the organizational processes of contractors within which a violation was detected (for example, hiring or salary). The violation basis specifies whether the violation was based on sex, color, religion, national origin, disability, or veteran status. A violation code can have more than one basis. Table A.4 contains a list of violation codes and bases.

Table A.4. List of Violation Codes and Bases

| Code or Basis in OFIS | Description |
|------------------------|------------------------------------|
| Violation Code | |
| 1–7, 25 | All technical violations |
| 8 | Hiring |
| 9 | Placement |
| 10 | Promotion |
| 11 | Transfer |
| 12 | Training |
| 13 | Seniority |
| 14 | Terminations |
| 15 | Layoff/recall |
| 16 | Selection/testing |
| 17 | Salary |
| 18 | Benefits |
| 19 | Leave policy |
| 20 | Medical screening |
| 21 | Accommodation |
| 22 | Systemic discrimination |
| 23, 24 | Other, written AAP: other |
| Violation Basis | |
| Sex | Violation based on sex |
| Color/Race | Violation based on color/race |
| Religion | Violation based on religion |
| National Origin | Violation based on national origin |
| Veteran | Violation based on veteran status |
| Disability | Violation based on disability |

Source: Personal correspondence from OFCCP, November 21, 2012.

4. Remedies/Press Releases

We linked remedies/press releases associated with each violation using information contained in CA/CD documents (remedies) and press releases themselves. Unfortunately, because we did not have a CA/CD for all reviews that resulted in violations (Table A.5), the information from these documents may understate the remedies applied.⁴⁷ However, we did have information in OFIS about whether a contractor was issued a financial agreement. We therefore augmented information on financial remedies with information in OFIS by coding all reviews with financial agreement amounts in OFIS as having financial remedies and coding those without financial agreement amounts as not having a financial remedy.⁴⁸ Unfortunately, OFIS does not include information

⁴⁷ Table A.5 illustrates the potential for understatement. OFIS data suggest that 8,464 reviews resulted in violations, but our extraction process (Appendix B) identified only 1,670 CAs/CDs. The process appears accurate in that 87.2 percent of the reviews with discrimination violations found in the CAs/CDs are also identified as having discrimination violations in OFIS. Further, all discrimination violations should carry a financial remedy outlined in a CA/CD, and we have only 355 CAs/CDs (41.1 percent) for the 863 reviews identified as having a discrimination violation. Although some of the missing CAs/CDs could be among the 311 documents we were provided but could not use, these documents cannot account for all of the missing CAs/CDs. Only 407 of the 863 discrimination violations have CAs/CDs, leaving 456 without CAs/CDs. These documents could account for only 311 of those, at most.

⁴⁸ Fourteen reviews had a financial remedy identified in the CA/CD documents but did not have a financial agreement amount in OFIS. These reviews were identified as having a financial agreement.

about employment and organizational change remedies. As a result, if OFIS data indicated a review had victims, but we could not identify remedies in a CA/CD,⁴⁹ we set employment and organizational change remedies to missing. Because employment and organizational change remedies can be identified from only one source of data (CA/CD documents), they are likely to be understated, both in absolute numbers and relative to financial remedies, for which we have more information.

Table A.5. Number and Percentage of Reviews with Financial Remedies in OFIS, CAs/CDs, and Both Sources

| | All Reviews | | Reviews Matched with CAs/CDs | | Reviews Only in OFIS (No CA/CD) | |
|---|-------------|------------|------------------------------|------------|---------------------------------|------------|
| | Number | Percentage | Number | Percentage | Number | Percentage |
| All Reviews with Violations | | | | | | |
| Sample Size | 8,464 | n.a. | 1,670 | n.a. | 6,794 | n.a. |
| Financial Agreement in OFIS | 956 | 11.3 | 466 | 27.9 | 490 | 7.2 |
| Financial Agreement in CAs/CDs | 369 | 4.4 | 369 | 2.1 | n.a. | n.a. |
| Financial Agreement in both sources | 355 | 4.2 | 355 | 1.3 | n.a. | n.a. |
| Reviews with Discrimination Violations | | | | | | |
| Sample Size | 863 | n.a. | 407 | | 456 | n.a. |
| Financial Agreement in CAs/CDs | 355 | 41.1 | 355 | 87.2 | n.a. | n.a. |
| Financial Agreement in Both Sources | 355 | 41.1 | 355 | 7.2 | n.a. | n.a. |

Source: OFCCP Administrative Database.

Note: Not all technical violation reviews have a financial remedy, so we expect less than 100 percent of all reviews with violations to have financial agreements. However, all discrimination violation reviews have a financial remedy by definition. See Appendix B for more details.

n.a. = not applicable.

C. Variable Construction

This section describes each of the variables constructed and used in our analyses. Table A.6 describes each variable, its source, and its definition. (Appendix C contains terms frequently used in the definitions.)

Table A.6. Definitions of Variables

| Variable | Source | Definition |
|-----------------------------------|------------------|---|
| Contractor Characteristics | | |
| Establishment ID Number | OFIS (EEO1_NO) | A number randomly generated by Mathematica that uniquely identifies each establishment. It replaces the EEO-1 number. |
| Parent ID Number | OFIS (P_EEO1_NO) | A number randomly generated by Mathematica that uniquely identifies each parent. It replaces the P-EEO1 number. |

⁴⁹ Other remedies could not be identified because there was no CA/CD, or one existed and remedies were not identified.

| Variable | Source | Definition |
|-------------------------------|--|---|
| Number of Employees | OFIS (<i>EMPL_TOTAL</i>) | The number of employees reported in the review that closed first. Variable is presented as both continuous and categorical in descriptive analyses with a series of four indicator variables, each capturing a range of values for the variable (1 = in designated range; 0 = not). Categories include: 1–49, 50–199, 200–999, and 1,000+. Variable is continuous in multivariate analyses. Note: Size is not available for complaint evaluations or for parents. It is approximated for parents by summing the number of employees reported for each establishment under it and capped at 108,605, the maximum number of employees in any single establishment. |
| Industry | OFIS (<i>NAICS_CD</i>) | A series of five indicator variables, each capturing the primary industrial sector (two-digit NAICS code) in which the establishment that was first reviewed operates (1 = sector; 0 = not). Categories include industries with at least 5 percent of the contractors: manufacturing; professional/scientific/technical; health care and social assistance; administrative support; and all other industries. Industries grouped into the “other” category are: agriculture, forestry, fishing, and hunting; mining, quarrying, and oil and gas extraction; utilities; construction; wholesale trade, retail trade; transportation and warehousing; information; finance and insurance; real estate and rental and leasing; management of companies and enterprises; educational services; arts, entertainment, and recreation; accommodation and food services; other services; and public administration. Note: Industry is not available for parents. It is approximated using the industry of the first of its establishments reviewed. |
| Investigative Tools | | |
| Selection System Review | OFIS (<i>F_SELECT</i>) | An indicator variable with 1 indicating that the review was a selection system review and 0 indicating it was not. |
| Non-Selection System Review | OFIS (<i>F_DIRECTE</i> for Compliance Evaluations and <i>F_PREAWARD</i> , in for Complaints) | An indicator variable with 1 indicating the review was not a selection system review and 0 indicating it was. In addition to observations from the compliance evaluations data marked as directed or pre-award reviews, this category includes all observations from the complaints database. |
| Violation and Re-Violation | | |
| Violator | OFIS (<i>EEO1_NO</i> , <i>CNTL_NO</i> and <i>DISCRIM</i>) | An indicator variable with 1 indicating the contractor (or review) had at least one review with a violation and 0 indicating it did not. Figure A.2 describes the process by which this status is determined. |
| Re-violator | OFIS (<i>EEO1_NO</i> , <i>CNTL_NO</i> and <i>DISCRIM</i>) | An indicator variable with 1 indicating the contractor had at least two reviews in which a violation was found and 0 indicating it did not. |
| Violation Characteristics | | |
| Violation Type | OFIS (<i>DISCRIM</i> , <i>VIOL_CD</i> for Compliance Evaluations and <i>VIOLATION_</i> for Complaints) | A set of three indicator variables, one for each violation type: none, technical only, and discrimination (1 = type; 0 = not). A “none” type has no violations. A “technical only” type has technical violations without any discrimination violations. A “discrimination” type has at least one discrimination violation. Table A.5 and Figure A.2 provide details. |
| Discrimination Violation Code | OFIS (<i>VIOL_CD</i> for Compliance Evaluations and <i>VIOLATION_</i> variables for Complaints) | A set of five indicator variables with 1 indicating at least one discrimination violation of each specific form, and 0 indicating no violation of the specific form. Categories include those observed in at least 5 percent of reviews with a discrimination violation and nonmissing violation codes: hiring, systemic discrimination, salary, selection/testing, and other. The “other” category includes violation codes 9 – 15, 18 – 21, 23, and 24 as listed in Table A.4. If a review contains no violations, all discrimination violation codes for that review are set to missing. |
| Violation Basis | OFIS (<i>B_</i> variables for Compliance Evaluations) | A set of six indicator variables, with 1 indicating the presence of a basis for violation and 0 indicating no violation. Categories include sex, color, veteran status, disability, religion, and national origin. Reviews may contain multiple violation bases. |

| Variable | Source | Definition |
|---|---|---|
| Victims per 1,000 Employees | OFIS (<i>EMPL_TOTAL</i> , <i>VICTIMS</i> for Compliance Evaluations and <i>TOTALNUMBER</i> <i>OFPEOPLE</i> for Complaints) | The number of victims identified in a review divided by the total number of employees and multiplied by 1,000. Variable is set to missing if the number of employees is missing. We assign a value of 0 if the review resulted in a technical violation only or had no violation. Number is greater than 1,000 if the violation involved more employees than a company currently employs. In descriptive analysis, the variable presented both as continuous and using four categories: 0, 1 to 99, 100 to 999, and 1,000 or greater. We construct two measures, one for the first review and one for total victims from all reviews. The latter variable includes the number of victims summed across all of a contractor's reviews, divided by the number of employees multiplied by 1,000. |
| Remedies/Press Releases | | |
| Employment | CA/CD | An indicator variable with 1 indicating that an employment remedy was issued, and 0 indicating it was not. Appendix B, Table B.4 describes the keywords used to construct the remedies. |
| Financial | OFIS | An indicator variable with 1 indicating a financial agreement was reached against the contractor, and 0 indicating it was not. Appendix B, Table B.4 describes the keywords used to construct the remedies. |
| Financial Award per Capita | OFIS (<i>EMPL_TOTAL</i> , <i>TOTALFINANCIAL</i> <i>AGREEMENTFA</i> for Compliance Evaluations and <i>TOTALAGREEMENT</i> <i>AMOUNT</i> for Complaints) | The financial agreement amount for a review divided by the total number of employees. Variable is set to missing if the number of employees is missing. We assign a value of 0 if the review resulted in a technical violation only with no positive financial amount reported, no victims, or a financial agreement amount of 0. A positive number is rounded to the hundredths. We construct two measures, one for the first review and one for the total financial amount from all reviews. The latter variable includes the financial amount summed across all of a contractor's reviews, divided by the number of employees. |
| Organizational Change | CA/CD | An indicator variable with 1 indicating that an organizational change remedy was issued, and 0 indicating it was not. Appendix B, Table B.4 describes the keywords used to construct the remedies. |
| Press Release | PR | An indicator variable with 1 indicating that a press release was issued against the contractor, and 0 indicating it was not. The number of establishments with press releases is greater than the number of press releases issued because press releases can refer to multiple establishments when multiple sites have the same parent. |
| External Environment | | |
| Region | OFIS (<i>REG_CD</i> , <i>REGION</i>) | A series of seven indicator variables, each capturing the regional office that handled the contractor's first review observed in OFIS (1 = in designated area; 0 = not). Categories are Mid-Atlantic, Midwest, Northeast, Pacific, Southeast, Southwest, and National Office. Because 96 percent of reviews were handled in the regional office that corresponds to the state in which the contractor is located, we defined a region for parent contractors with a valid state code but no region code. The list of regions and corresponding states is available at http://www.dol.gov/ofccp/contacts/regkey.htm . |
| First Review Closed in FY 2008 or Later | OFIS (<i>CLOSED_REVW_DT</i> , <i>CLOSED_CASE_DT</i> , <i>CLOSED_COMP_DT</i>) | An indicator variable with 1 indicating that the first review was closed in fiscal year 2008 or earlier, and 0 indicating it was not. |
| Local Area Unemployment Rate | LAUS (zip code) | Average annual unemployment rate in the county in which the contractor was located during the year the review was closed. Because data were available only through 2011 at the time of download, reviews that closed in 2012 use 2011 rates. |

CA/CD = Conciliation Agreement/Consent Decree; LAUS = Local Area Unemployment Statistics data; OFIS = OFCCP Information System documents; PR = press release.

D. Missing Data

Table A.7 provides the percentage of the key variables with missing information for our analysis. In most cases, when information from OFCCP is missing (Table A.8), the analytic value is set to missing. However, some information from OFCCP (for example violations) was not valid and is therefore missing from the analytic file but not from the OFIS file. Contractors are considered to have a field missing if, across all reviews linked to *EEO1_NO* or *P_EEO1_NO*, the field is always missing. If information is missing for some but not all reviews, we consider the contractor not to have missing data for that variable.

Table A.7. Contractors with Missing Data in the Analytic File (percentages unless otherwise stated)

| | Establishment | | Parent | |
|---|--------------------------|--------------------|--------------------------|--------------------|
| | Number with Valid Record | Percentage Missing | Number with Valid Record | Percentage Missing |
| Sample Size | | | | |
| Contractors | 31,498 | n.a. | 7,938 | n.a. |
| <i>(P_)EEO1_NO</i> (identifiers) ^a (out of number of reviews) | n.a. | 18.2 | n.a. | 39.7 |
| Violators | 6,432 | n.a. | 2,311 | n.a. |
| Violators reviewed again ^b | 800 | n.a. | 809 | n.a. |
| Re-violators | 200 | n.a. | 410 | n.a. |
| Violators with remedy information ^c | 5,185 | n.a. | 2,145 | n.a. |
| Contractor Characteristics | | | | |
| Number of employees | 29,509 | 6.3 | 7,606 | 4.2 |
| Industry code | 30,945 | 1.8 | 7,874 | 0.8 |
| Investigative Tools | 30,317 | 3.8 | 7,621 | 4.0 |
| Violation Characteristics (out of number of violators) | | | | |
| Violation type | 6,432 | 0.0 | 2,311 | 0.0 |
| Discrimination violation code | 6,409 | 0.4 | 2,309 | 0.1 |
| Violation basis | 6,413 | 0.3 | 2,309 | 0.1 |
| Victims per capita | 6,283 | 2.3 | 2,288 | 1.0 |
| Remedy/Press Release (out of violators with remedy information) | | | | |
| Has CA/CD ^d | 782 | 86.6 | 379 | 82.3 |
| Employment remedy information | 678 | 88.3 | 294 | 86.3 |
| Financial remedy information | 5,814 | 0.0 | 2,145 | 0.0 |
| Financial amount per capita (in OFIS) | 5,655 | 2.8 | 2,119 | 1.2 |
| Organizational change remedy information | 678 | 88.3 | 294 | 86.3 |
| Press release information | 52 | n.a. | 18 | n.a. |
| External Environment | | | | |
| Year First Review Closed | 31,498 | 0.0 | 7,938 | 0.0 |
| Region | 31,498 | 0.0 | 7,474 | 5.9 |
| Local Area Unemployment Rate | 26,865 | 14.7 | 6,124 | 22.9 |

^a We dropped reviews with a missing *EEO1_NO* (for establishment) or *P_EEO1_NO* (for parent) identifier. We excluded the following from analysis, assuming they were coding errors: 0, 111111, 222222, 888888, 999999, 123456, and XXXXXX. Names were not reported with a degree of consistency that allowed additional matching of reviews among those with missing *EEO1_NO* or *P_EEO1_NO* (for example, spacing irregularities and differences in spelling among character data). Because some reviews are missing a *P_EEO1_NO* identifier because they do not have a parent company, we calculate the percentage missing the identifier as the number of reviews with a parent name but no P-EEO-1 number divided by the total number of reviews. This percentage is a lower estimate that attempts to exclude reviews that legitimately have no parent record. The denominator is 46,198, the number of reviews in our data set.

^b Includes violators who had had a chance to re-violate. That is, they had two or more reviews but did not have their violation on their last review.

^c Includes violators with remedy data from CAs/CDs and those with no remedy data from CAs/CDs but with nonmissing financial agreement amounts in OFIS.

^d See Appendix B for discussion.

n.a. = not applicable.

Table A.8. Reviews with Missing Data in OFIS

| | Number with Valid Record | Percentage Missing |
|--|--------------------------|--------------------|
| Sample Size | | |
| Number of reviews | 46,198 | n.a. |
| Number of reviews with any violations | 6,760 | n.a. |
| Number of reviews with discrimination violations | 863 | n.a. |
| Contractor Characteristics | | |
| Number of employees | 8,230 | 6.3 |
| Industry code | 39,990 | 13.4 |
| Investigative Tools | | |
| Violation Characteristics (out of reviews with violations) | | |
| Violation type (<i>DISCRIM</i>) | 6,760 | 0.0 |
| Violation code | 6,692 | 1.0 |
| Violation basis | 6,634 | 1.9 |
| Victims ^a (out of reviews with discrimination violations) | 863 | 0.0 |
| Remedy/Press Release (out of reviews with violations) | | |
| Financial agreement amount ^b | 879 | 87.0 |
| External Environment | | |
| Date First Review Closed | 46,198 | 0.0 |
| Region (establishment) | 46,198 | 0.0 |
| Variables Used to Construct Local Area Unemployment Rate | | |
| Establishment zip code | 46,088 | 0.2 |
| Parent zip code | 44,372 | 4.0 |

Notes: See Table A.7 notes.

^a As previously detailed, reviews with technical violations (*DISCRIM* = T) do not have victims. However, reviews with technical violations are often coded in OFIS as having missing victims. Therefore, we provide a percentage of reviews with missing victims data using the number of reviews with discrimination as the denominator.

^b We assumed missing financial agreement amounts to be 0.

n.a. = not applicable.

APPENDIX B

EXTRACTING DATA FROM CONCILIATION AGREEMENT AND CONSENT DECREE DOCUMENTS

OFIS reports the types and basis of violations identified in each review but includes only limited information on remedies. We use information from conciliation agreements (CAs) and consent decrees (CDs) to capture information on remedies, as these documents detail the remedies OFCCP imposed in response to violations. We relied on technology to extract efficiently and effectively the large amount of information in the CAs/CDs. The extraction comprised three steps: (1) convert documents to searchable text files; (2) identify remedies and violations using keywords and verify accuracy of efforts; and (3) merge information into the OFCCP Information System (OFIS) data. This appendix describes the methods used to extract both violation and remedy information from CA/CD documents.

A. Convert Documents to Text Files

OFCCP provided to Mathematica 2,650 documents that included CAs and CDs, worksheets used to calculate items such as back pay amounts, and cover letters and summary sheets associated with CAs.⁵⁰ About 85 percent of these documents (2,264) were in a portable document format (PDF), although 169 were duplicates (leaving 2,095 files).⁵¹ Because such documents cannot be easily searched for information, we used optical character recognition (OCR) software to convert them to text files. This process duplicated 12 files, leaving 2,107 for extracting information.⁵²

Nearly all files that were not PDFs were in Microsoft Word (275 files) or Excel (84 files) format.⁵³ We examined a random sample of 30 Word files and 20 Excel files to determine whether they contained information that would be useful in our analysis. The Word files contained drafts of CAs or worksheets used to calculate financial remedies, and about half (14) appeared to contain the same information as a PDF CA. The Excel files contained financial worksheets (85 percent) or lists of class members or signed agreements (15 percent) that offered information more specific than necessary for our analysis. Because only half of the Word files and none of the remaining files examined contained information relevant to the evaluation, we decided not to extract information from files that were not PDFs. As a result, the 2,107 converted PDF documents served as the basis for the extraction process described in Section B.

B. Identify Remedies and Violations

We extracted information from the 2,107 text files in several steps. First, we identified “text blocks” within the files that discussed violations and remedies. Second, we used keywords to flag specific remedies or violations within the relevant text block. This second step was dependent on the first one. If remedy text blocks were not identified correctly, we could not correctly flag violations or remedies. Third, we extracted control numbers to merge review-level information with OFIS (discussed in Section C).

For maximum efficiency, we used automated text search methods (PERL and SAS programs) to identify information in CAs. The typical CA contains numerous pages, and manually coding

⁵⁰ More than 98 percent of the documents contained information for reviews closed between 2006 and 2012.

⁵¹ The 169 files had names and file paths that matched those of other PDFs.

⁵² These duplicate files were removed in the process of reshaping the CA/CD to match reviews.

⁵³ The few remaining files were not CAs or CDs. They were Microsoft Outlook email messages in which CAs or CDs had been sent to contractors.

documents would have been cost-prohibitive. We were able to use automated methods because CAs use standardized language (see FCCM, Sec. 8F01), and descriptions of remedies immediately follow the violations to which they refer, making it relatively easy to parse the text files into pairs of violation and remedy blocks. However, CDs do not follow the same format as CAs. In their case, manually performing the first and second steps for CDs was the most efficient method for searching, particularly given the relatively small number of documents.

1. Identifying Violation and Remedy Text Blocks

CAs enumerate violations and remedies in a section titled “Specific Provisions.” Each remedy is presented after the violation to which it corresponds. Violation descriptions are preceded by the word “Violation” or a close variant, and each description of a remedy is preceded by the word “Remedy” or a close variant. To identify the appropriate text, we first searched for the text “Part II: Specific Provisions” or a similar phrase at the beginning of a new line. Once our program located the section title, it searched for violations and remedies. The terms “Violation” or “Alleged Violation” at the beginning of a new line signaled the beginning of a violation description, and “Remedy,” “Remedies,” or “Corrective Action” at the beginning of a new line signaled the beginning of a remedy description. We refer to these phrases as control phrases. We considered a violation or remedy description to end when the next control phrase appeared. The last remedy description ended with the phrase “Future Conduct” or “Part III: Reporting”—either of which prefaces the beginning of a new section in a CA.

We extracted 5,293 text blocks of violation and remedy pairs from 85 percent of the 2,107 files (1,796 files). Of the remaining 311 files, 215 did not contain the terms “Consent Agreement,” “Violation,” “Remedy,” or “Specific Provisions” at the beginning or end of a line. Because these terms are part of the standard language of CAs referenced above, files wherein no violation and remedy pairs were identified may not have been CAs, may have been inaccurately converted to text files in the OCR process, or may have been structured in a highly nonstandard manner.

2. Extracting Remedies

We used an SAS program to search each remedy text block for keywords and phrases that signaled three broad types of remedies:

1. **Employment** remedies involve extending employment offers, reinstating former employees, or promoting employees.
2. **Financial** remedies involve back pay, front pay, salary adjustments, other financial compensation or penalties, or any other form of monetary relief.
3. **Organizational change** remedies require contractors to cease or change a harmful practice, or implement a policy not currently in existence, such as an AAP.

We focused on these remedies as they are commonly used for discrimination violations. However, we extracted remedies irrespective of the type of violation, for two reasons. First, remedies associated with discrimination violations are of greater policy interest, in part, because they are potentially more relevant in deterring re-violations. Second, remedies associated with technical violations are often administrative and highly specific to the nature of the violation. For example, the remedy for failing to submit an EEO report states that the contractor must submit the report, and the remedy for failing to keep adequate records is improving recordkeeping. Such specificity would lead to categories of remedies that would be too detailed for analysis.

We developed a program that searched for keywords corresponding to all three types of remedies in each remedy text block.⁵⁴ To categorize the type of remedy issued in CAs, we exploited the recurrence of specific keywords and phrases with a specific type of remedy in CAs. To identify these associations, we reviewed 40 randomly selected CAs and CDs and identified a list of keywords for each remedy type. We augmented this list with suggestions from OFCCP, DOL’s Chief Evaluation Office, our technical working group, and Mathematica’s human resources department. To quantify whether a review resulted in a particular type of remedy being issued, the SAS program scanned each text block and flagged blocks that contained a keyword associated with a remedy type. Table B.1 lists the keywords we associated with each remedy type and used to manually code the remedies in CDs.

3. Extracting Violations

Our intent was to also flag violations in the CAs and CDs using the process described for remedies. However, after several reviews of the program’s results following several iterations of a violation keyword list, it became clear that our list of keywords (in Table B.2) could not accurately distinguish between technical and discrimination violations. The difficulty lies in the fact that technical violations are often described using keywords that also apply to discrimination violations. For example, a description of a technical violation related to recordkeeping might note that a contractor failed to keep records of employee salaries. However, “salary” is a keyword needed to identify salary discrimination violations. Although a manual reviewer can distinguish easily between these two types of violations, a computer program cannot. As a result, our analysis uses the violation codes in OFIS and not the CAs/CDs.

⁵⁴ Because a single violation can include multiple remedies, we searched for remedies of each type in each CA.

Table B.1. Key Words and Phrases Used to Identify Types of Remedies Issued

| Employment |
|---|
| Job offer Employment offer Offer of employment Will reinstate Reinstatement Offer of reinstatement Reinstated Promote Promotion |
| Financial |
| Annualized salary Adjust the salary Adjusted the salary Adjust the hourly pay rate Adjusted the hourly pay rate Back pay Backpay Back wages Front pay Financial agreement Financial compensation Financial settlement Financial penalty Financial remedy Monetary relief Punitive damage |
| Organizational Change |
| Immediately cease Agrees to cease Agreed to cease Immediately discontinue Agrees to discontinue Agreed to discontinue Discontinue the use of Discontinue use of Discontinued the use of Immediately stop Agrees to stop Agreed to stop Evaluate and modify Conduct an adverse impact analysis Notice to class members Maintain a working environment Environment free of harassment Hostile work environment Disparate treatment Provide training to all personnel on harassment EEO training Diversity training Supervisor training Monitor and revise, as appropriate, any compensation practices and/or policies Organizational change Revise its compensation practices Revise its compensation policies Revise, as appropriate Revise, as needed Revise the practices, policies, and procedures Revised the practices, policies, and procedures Agrees not to reinstate Agrees that it will not implement Create and implement an affirmative action plan Created and implemented an affirmative action plan |

Table B.2. Keywords for Violation Codes and Bases

| OFIS Designation | Description | Type of Violation | Associated Keywords for CA/CD |
|------------------------|------------------------------------|-------------------|---|
| Violation Code | | | |
| 8 | Hiring | Discrimination | Hiring/discriminatory hiring Hiring rates Total selection process |
| 9 | Placement | Discrimination | Employee placement |
| 10 | Promotion | Discrimination | Promotion/promotion opportunity/opportunities |
| 11 | Transfer | Discrimination | Transfer |
| 12 | Training | Discrimination | Training |
| 13 | Seniority | Discrimination | Seniority |
| 14 | Terminations | Discrimination | Termination Terminated Discharge |
| 15 | Layoff/recall | Discrimination | Layoff Recall |
| 16 | Selection/testing | Discrimination | Employee selection Selection procedure Test/testing/screening test |
| 17, 18 | Compensation (salary, benefits) | Discrimination | Bonus Compensation Disparate pay practices Employee benefits Pay Salary Wage Fringe benefits |
| 19 | Leave policy | Discrimination | Employee leave Leave policy FMLA Family leave Medical leave |
| 20 | Medical screening | Discrimination | Medical screening |
| 21 | Accommodation | Discrimination | Accommodation/accommodate/ reasonable accommodation |
| 22 | Systemic discrimination | Discrimination | Systemic discrimination Adverse impact Disparate treatment |
| Violation Basis | | | |
| Sex | Violation based on sex | Discrimination | Female Gender Male Sex Woman/women |
| Color/ Race | Violation based on color/race | Discrimination | Race Color Black White Asian Indian Minority Native American Pacific Islander |
| Religion | Violation based on religion | Discrimination | Religion/religious |
| National Origin | Violation based on national origin | Discrimination | Hispanic |
| Veteran | Violation based on veteran status | Discrimination | Veteran |
| Disability | Violation based disability | Discrimination | Disabled/disability 503 Physically challenged |

Source: Personal correspondence from OFCCP, November 21, 2012.

Notes: Keywords were derived from scans of CA/CD documents, other relevant literature on OFCCP procedures, and input from OFCCP, CEO, and the technical working group members.

4. Verifying the Processes

Table B.3 summarizes the results of our processes for extracting information on remedies from 2,650 CA/CD documents received. We focused our efforts to extract remedies on the 2,264 PDF documents (85.4 percent of all reviews) and converted 93.1 percent of those documents to a searchable text file. We identified blocks of text for searching information about remedies in 79.3 of the PDF documents and found at least one remedy type in 34.8 percent.⁵⁵ The seemingly low percentage of documents in which we extracted a remedy does not necessarily reflect a failure of the process to identify remedies. Our keywords were developed to identify the remedies associated with discrimination violations, not technical violations. Of the 431 files in OFIS with a discrimination violation, 403 (93.0 percent) were among the files our process flagged with at least one remedy, suggesting our process was effective at identifying remedies associated with discrimination violations.⁵⁶

Table B.3. Number of Files at Each Stage in Extraction

| Description | Number of Files | Percentage of Files |
|---|-----------------|---------------------|
| 1. Total number documents received | 2,650 | n.a. |
| 2. Total number of PDF documents | 2,264 | 85.4 |
| 3. Converted to a text file (12 were duplicates) | 2,107 | 93.1 |
| 4. Identified text blocks of violation-remedy pairs | 1,796 | 79.3 |
| 5. Found at least one remedy type | 787 | 34.8 |
| 6. Extracted a control number to match with OFIS | 2,106 | 93.0 |

Notes: The base for computing the percentage for the second step is the total number of documents received. Because only PDF documents were subject to the process of extracting remedies and linking to them OFIS, the base for computing the remaining percentages was the number of PDF documents.

n.a. = not applicable.

We used a variety of audit procedures to ensure that our processes correctly captured information on remedies. Specifically, we verified our success in:

- **Identifying *all* of the text blocks containing violations and remedies.** This audit used the 1,473 files in which the violations are numbered (for example, “1. Violation” or “Violation #2”). The numbering provides a count of how many text blocks should be extracted. Of the 1,473 files containing numbered violations, 234 (15.9 percent) were missing an index number or include index numbers that are out of order, suggesting we identified text blocks correctly in about 84 percent of the cases.
- **Flagging remedies.** We conducted a manual audit of 210 of the 4,363 (5 percent) text blocks that corresponded to an uncoded remedy, to assess whether we assigned remedies to text blocks containing discrimination violations. We focused on discrimination violations, because our keywords were designed to capture remedies associated with discrimination violations and might fail to flag remedies in violations that were clearly

⁵⁵ Only 34 discrimination violation reviews had missing remedies. That is, we linked a CA/CD document to the review and extracted text from the document, but we did not flag any remedies.

⁵⁶ This high rate of success could understate the error rates, as the remedy type in some reviews may be incorrect or not all remedies in a review might have been flagged.

technical. The reviewer identified 174 violations (83 percent) as clearly technical and 4 violations (2 percent) as clearly discrimination violations. She could not determine the violation type of the remaining 32 (almost all of these violations resulted in a remedy that appeared technical in nature). Thus, we estimate that 83 to 98 percent of the text blocks without remedies were technical violations.

- **Flagging remedies correctly.** We conducted a manual audit of a random sample of 50 of the 930 (5 percent) remedy text blocks we had flagged as having a remedy, to assess the accuracy of the remedy types we assigned. We compared the remedy types flagged by our program with those flagged by a human reviewer who had descriptions of the remedies but not the list of keywords, and who did not know which remedy flags the program had assigned. Table B.4 shows the results of this audit. The program and the human reviewer identified the same remedy type close to 90 percent of the time.

Table B.4. Results of Audit of the Automated Remedy Flagging Process

| Remedy Type | Total Number of Remedies Audited | Number of Matches Between Human and Automated Processes | Percentage of Audited Remedies that are Matches |
|-----------------------|----------------------------------|---|---|
| Employment | 50 | 45 | 90 |
| Financial | 50 | 47 | 94 |
| Organizational Change | 50 | 41 | 82 |
| Total | 150 | 133 | 89 |

Note: A match occurs when the reviewer and program both flagged a remedy as a particular type or did not flag the remedy as that type.

C. Merging into OFIS

Once remedy information was extracted from the CA/CD documents, we merged it into OFIS data using a two-step process. In the first step, we extracted the control numbers from CA/CD documents. In the second, we used the control number to merge information into the OFIS at the review level.

1. Extracting Control Numbers

Control numbers are the unique identifiers that allowed review-level information in CA/CD documents to be matched with information in the OFIS. We used a two-step process for extracting control numbers from CA/CD documents: (1) a pattern-matching program that looked for control numbers in the files and within file path data and (2) a probabilistic inference process using comparison of information in the CA/CD documents and in OFIS.

We developed a pattern-matching program in PERL to search the file names, file paths (the lists of folders containing the file), and text of all 2,107 files for information that looked like control numbers. We determined the text patterns that control numbers followed by examining control numbers available in the OFIS (Table B.5). If we identified only one control number in a file—even if it occurred once or multiple times—we assigned that number as the control number. If we identified multiple strings that could have been the control number, we gave primary preference to the number from the file name, if available, and secondary preference to the number from the file path, if available.

Table B.5. Text Strings that Signaled Control Numbers

| Letter Beginning String | Letters/Numerals Following Initial Letter |
|-------------------------|--|
| B, C, D, E, F, I | Six numerals |
| B, C, D, E, F, I | Another letter and four numerals (FY199_, FY200_, and FY201_ were excluded) |
| I or R | Eight numerals |

Our pattern-matching program proved quite effective. It identified control numbers in 1,555 of the 2,107 files (74 percent) and identified a single, unique control number in 1,198 files, or 77 percent of the files for which it found a control number. When we merged data extracted from the CA/CD documents into OFIS, only 18 control numbers, slightly more than 1 percent of the matched files, did not match. Because of the perceived strength of the PERL pattern-matching process, we did not manually audit the control numbers matched by this process.

We used a probabilistic inference process to identify a unique control number in 551 files with an unidentified control number. This process used PERL programming to search OFIS for establishment and parent names, addresses, and review close dates, and a probabilistic match technique to use that information to assign a control number from the OFIS review with the most matching information. This process located information for 506 (91.8 percent) of the reviews. All but one of the 45 reviews without a unique control number had two control numbers tied for the best match of information and were arbitrarily assigned one of the two control numbers. We were left only one CA/CD document without a control number. Table B.6 shows the breakdown of how we located control numbers.

Table B.6. Sources of Control Numbers

| Source of Control Number | Number of Files Matched | Percentage of Total |
|--------------------------------|-------------------------|---------------------|
| Number of Files | 2,107 | 100.0 |
| <i>Pattern Matching</i> | 1,555 | 73.8 |
| File Name | 1,101 | 52.3 |
| File Path | 84 | 4.0 |
| File Text | 370 | 17.6 |
| <i>Probabilistic Inference</i> | 551 | 26.2 |
| No Control Number Matched | 1 | 0.0 |

To assess the accuracy of the probabilistic inference process, we conducted a manual audit of a random sample of 40 files (7 percent) to which we assigned control numbers in this manner. A reviewer who did not know the control number that the automated process had assigned to the file, opened each of the sampled files and identified the contractor name, city, and state, and the date on which parties signed the CA or CD. The auditor then searched our cleaned, review-level database of information from the OFIS for a record with the same establishment name (or parent company name, if the contractor name did not match an establishment name in the database); establishment city and state (or parent city and state, if the establishment city was not available); and close date. The auditor then noted the control number assigned to this review. As a final step, she compared the control numbers she had assigned with the control numbers assigned through the automated process. The manual auditor and the probabilistic matching process assigned the same control number to 32 out of 40 reviews (80 percent). The auditor could not identify a control number for one review, and assigned a different control number to seven reviews. Assuming that the automated process was incorrect in all reviews for which discrepancies existed, we estimate that approximately 101 files, or 5 percent of the total number of files matched, were matched incorrectly by the probabilistic inference process.

2. Merging

We combined data from files with duplicate control numbers,⁵⁷ which left 1,688 observations in the CA/CD data file and produced a file for the reviews that contained a control number and indicator variables for whether each remedy type had been flagged. When we merged these observations with OFIS data, we dropped 18 records with control numbers that did not match an OFIS record, leaving 1,670 reviews in the OFCCP Administrative Database with information extracted from CA/CD files.

⁵⁷ Duplicated control numbers could exist either because files were duplicated or referenced the same review or because of errors in the control number extraction process. In practice, duplicate records either contained no remedy data, or contained data that did not conflict with the remedy data in the original file, suggesting that few records with duplicate control numbers had been assigned to the wrong review.

APPENDIX C
DEFINITIONS OF TERMS

This report frequently uses the terminology described in this appendix. Table C.1 lists five categories of terms and their respective definitions: (1) contractors, (2) data, (3) investigative tools, (4) violations, and (5) remedies/press releases. Terms are listed alphabetically within each category.

Table C.1. Definitions of Terms

| Term | Definition |
|--|--|
| Contractors | |
| Affirmative Action Program (AAP) | A set of specific and results-oriented procedures to which contractors commit, promising to apply a good faith effort to adhere to the policies. Contractors develop AAPs to track their workforces and provide AAPs to the Office of Federal Contract Compliance Programs (OFCCP), as requested. http://www.dol.gov/ofccp/regs/compliance/aa.htm |
| Contractor | A firm that has contracted with or applied to contract with the federal government, or a firm that has received a federally assisted construction contract. "Contractor" may refer to a firm that has directly contracted with the federal government, or to the parent company of such a firm. |
| Establishment | A facility or unit that produces goods or services—in most instances, at a physically separate facility at a single location (FCCM 1998). |
| Parent | A corporation that owns all or the majority of stock of another corporation so that the latter stands in relation to it as a subsidiary. http://www.dol.gov/vets/contractor/main.htm#20 . |
| Data | |
| Control number | A unique numeric identifier assigned to an OFCCP compliance evaluation. |
| EEO-1 number | A unique numeric identifier assigned to contractors that file with the Equal Employment Opportunity Commission (EEOC) the federally mandated compliance surveys called EEO-1 reports. This identifier refers to both establishment (EEO-1) and parent (P-EEO-1) contractors. EEO-1 numbers track contractors (at the establishment and parent level) across compliance evaluations. |
| OFCCP Information System (OFIS) | An automated system OFCCP uses to collect data, track, plan, and report on compliance evaluations and complaint investigations that the agency conducts. http://www.dol.gov/oasam/ocio/programs/PIA/OFCCP/OFCCP-OFIS.htm |
| Investigative Tools | |
| Complaint investigation (CI) | A written charge filed with OFCCP by an employee, former employee, applicant for employment, or third party alleging specific violations of the Executive Order, Section 503 or 38 U.S.C. §4212. http://www.dol.gov/ofccp/regs/compliance/fccm/ofcpch1.htm#1B |
| Compliance evaluation (CE) | The investigation and review process the OFCCP uses to determine whether contractors are complying with nondiscriminatory and affirmative action obligations discussed in 41 CFR Chapter 60. A compliance evaluation may include any or all of the following: an on- or off-site review of the contractor's written AAP, hiring and/or employment practices, results of affirmative action efforts, records, or other aspects of the contractor's organization. http://www.dol.gov/ofccp/regs/compliance/directives/dir295.htm |
| Corporate management compliance evaluation | A selection system review of a contractor's corporate headquarters. |

| Term | Definition |
|--|---|
| Directed review | A compliance evaluation scheduled in response to a report alleging that a contractor has violated a law or regulation that OFCCP enforces. http://www.dol.gov/ofccp/regs/compliance/faqs/fcssfaqs.htm |
| Federal Contractor Selection System (FCSS) | A neutral selection system that OFCCP has used since 2010 to identify establishments for compliance evaluations. The FCSS uses many information sources and analytic procedures, including federal acquisition and procurement databases, EEO-1 employer information reports, Dun & Bradstreet data, and census data. OFCCP also uses information such as industry type and number of employees to select establishments for review. http://www.dol.gov/ofccp/regs/compliance/faqs/fcssfaqs.htm |
| Investigative tool | A procedure that OFCCP uses to identify violations, such as a compliance evaluation. |
| Pre-award compliance evaluation | A compliance evaluation conducted because an establishment has been awarded a federal supply and service contract of \$10 million or more. http://www.dol.gov/ofccp/regs/compliance/faqs/fcssfaqs.htm |
| Review | (Rather than “case”) refers to an OFCCP investigation of a contractor’s EEO practices. A review may yield a finding of a violation. Reviews include investigations using any of the investigative tools. Each review is identified by a unique contractor through a control number in the OFIS data. |
| Selection system review | A review conducted because a contractor was identified through natural selection process, currently the FCSS |
| Non-selection system review | A review, such as a complaint investigation, directed review, or pre-award compliance evaluation, conducted for a reason other than natural selection. |
| Violations | |
| Discrimination violation | Violations coded as hiring, placement, promotion, transfer, training, seniority, termination, layoff/recall, selection/testing, salary, benefits, leave policy, medical screening, accommodation, and systemic discrimination. |
| Technical violation | Nondiscriminatory violations, including recordkeeping deficiencies and issues related to contractors’ written AAPs—for example, failure to perform a work analysis or establish affirmative action goals. |
| Violation or in violation | A violation of a law or regulation that OFCCP enforces. Violations may be either technical or discriminatory. A review is considered to be in violation if OFCCP found at least one violation during the review. |
| Violation basis | The personal characteristic that defined the group against whom a violation was committed. Examples include sex and race. Appendix A, Table A.4 lists the violation bases that OFCCP tracks. |
| Violation code | A numeric code (1 through 25) assigned to a particular category of violation. As opposed to violation bases, violation codes concern a specific discriminatory (or technically offending) action, such as failure to hire. Appendix A, Table A.4 lists the violation codes that OFCCP tracks. |
| Remedies/Press Releases | |
| Conciliation agreement (CA) | A binding written agreement between a contractor and OFCCP that details specific contractor commitments to resolve the alleged violations set forth in the agreement. CAs are the result of the conciliation process, which OFCCP initiates with a contractor when a compliance evaluation reveals issues related to the laws and/or regulations that OFCCP enforces. http://www.dol.gov/ofccp/regs/compliance/fccm/ofcpch1.htm#1B |
| Consent decree (CD) | A written agreement between a contractor and OFCCP that details a contractor’s commitments to resolve alleged violations of the laws and/or regulations that OFCCP enforces, reached amicably by the two parties, after a formal complaint has been issued. |
| Employment remedy | Remedies that lead to employment, such as job offers (conditional or otherwise) and reinstatement. |

| Term | Definition |
|-----------------------|--|
| Financial remedy | Remedies including “make-whole” relief, such as back wages or benefits, training, or other financial settlements. |
| Organizational change | Remedies that involve the cessation of harmful practices, diversity training, or other changes to organizational practices or policies, or attempts to change organizational culture. |
| Press release (PR) | A DOL announcement that a contractor has violated at least one law or regulation that OFCCP enforces. A PR may enumerate a contractor’s specific violations, the remedies agreed to in response to the violations, or both. |
| Remedy | A specific action agreed upon by OFCCP and a contractor, and taken by the contractor, to resolve and avoid repeating a violation. An action taken by OFCCP or otherwise taken by DOL to punish a contractor for violating laws and/or regulations that OFCCP enforces. |

Sources: 41 CFR Sec. 60, Office of Federal Contract Compliance Programs 1998 (<http://www.dol.gov/ofccp/regs/compliance/fccm/fccmanul.htm>), and the following websites:

<http://www.dol.gov/vets/contractor/main.htm#20>
<http://www.eeoc.gov/employers/eeo1survey/faq.cfm>
<http://www.dol.gov/ofccp/regs/compliance/aa.htm>
<http://www.dol.gov/ofccp/regs/compliance/directives/dir295.htm>
<http://www.dol.gov/ofccp/regs/compliance/faqs/fcssfaqs.htm>
<http://www.eeoc.gov/employers/eeo1survey/faq.cfm>
<http://www.dol.gov/oasam/ocio/programs/PIA/OFCCP/OFCCP-OFIS.htm>

APPENDIX D
ANALYTIC METHODS

In this appendix, we describe the analytic methods used to produce the results presented in Appendix E. These methods were designed to address each of the three research questions posed for analysis, given the data available in the OFCCP Administrative Database. The appendix contains three sections: Section A describes the descriptive analyses; Section B describes the multivariate analysis; and Section C describes how we reshaped the OFCCP Administrative Database for establishment- and parent-level analyses. Appendix A, Table A.6 provides definitions of the variables used in all analyses.

A. Descriptive Analyses

We used descriptive statistical methods to uncover patterns in contractor characteristics, the investigative tools used to monitor contractor compliance, the characteristics of violations found, and the remedies/press releases applied to resolve violations. These analyses provide a snapshot of the data and a context to address the study's research questions. Many analyses present results separately for establishments and parents and for three relevant groups of contractors:

1. Contractors that did not violate the EEO laws that OFCCP enforces (nonviolators)
2. Contractors that violated these laws in at least one review (violators)
3. Contractors that violated these laws in more than one review (re-violators)

Because most variables examined in descriptive analysis are categorical, we typically report results as the percentage of the total group of contractors that fall into each possible category. For variables that are continuous, we present averages.

Descriptive analysis also includes computations of violation and re-violation rates. Violation rate is calculated as:

$$(1) \text{ violation rate} = (\text{number of violators} / \text{total number of contractors}) * 100.$$

The re-violation rate is computed only for violators that were subsequently reviewed (that is, had a second review after the violation was found). It therefore excludes violators who were only found to have violated in the last review conducted by OFCCP, because we cannot tell whether these contractors will re-violate in subsequent reviews. Re-violation rate is calculated as:

$$(2) \text{ re-violation rate} = (\text{number of re-violators} / \text{number of violators subsequently reviewed}) * 100.$$

We use statistical inference tests to assess whether systematic and statistically significant ($p \leq 0.05$) patterns exist in the data and whether differences in variables of interest exist between groups.⁵⁸ We used a two-step approach to infer systematic differences across categorical variables. We first used Pearson's chi-squared test to determine whether categorical variables are distributed differently across different groups. If the chi-squared test revealed statistically significant differences, we conducted two-tailed student's t -tests to determine whether individual categories were statistically significant differences across groups. We also used the student's t -tests on continuous variables.

⁵⁸ For a more detailed description of these inference methods, including a list of the assumptions that underlie chi-squared and t -test models, see Greene (2003).

B. Multivariate Analyses

Although basic inferential analyses allow us to examine rigorously the patterns between key variables, multivariate regression analyses increase the accuracy by allowing us to control for multiple influences. Our first multivariate regression examines whether a *review* results in a violation. It takes the general form:

$$(3) \quad Y_r = \alpha + \beta * X_r + \gamma * Z_r + \varepsilon_1$$

where

Y_r = whether review r resulted in a violation,

X_r = a vector of contractor characteristics and investigative tools for review r ,

Z_r = a vector of control variables (local area unemployment and year review closed) for review r , and

ε_1 = a residual term that incorporates all determinants of Y_r not included in the model.

The main parameters of interest are contained in the vector β , as they estimate the associations between contractor characteristics and OFCCP investigative tools and the outcome, Y , after controlling for factors that might bias estimate of the association (Z).

Our second multivariate regression examines whether a *violation* re-violated EEO laws. It uses the sample of violators who were subsequently reviewed and takes the general form:

$$(4) \quad Y'_i = \alpha_2 + \mu * C_i + \chi S_i + \gamma' * Z_i + \varepsilon_2,$$

where

Y'_i = whether violator i was found to have a second violation,

C_i = a vector of characteristics of the contractor and the initial violations of violator i ,

S_i = a vector of remedies/press releases placed against violator i ,

Z_i = a vector of control variables (local area unemployment and year) for violator i , and

ε_2 = the residual term that incorporates all determinants of Y'_i not included in the model.

The main parameters of interest are contained in the vector χ , as they estimate the associations between remedies/press releases and re-violations. We used a staged analysis to estimate Equation (2). In the first stage, we included only measures of remedies/press releases into the estimation (that is, $\mu, \gamma' = 0$), to focus on the associations between press releases and re-violations at a global level. In the second stage, we estimated the model as identified in Equation (4).

We estimated the linear model in both equations (1) and (2) using ordinary least squares (OLS)⁵⁹ and used the Huber-White method to ensure that reported standard errors were robust to

⁵⁹ The OLS estimates were qualitatively similar to the average marginal effects of a logistical regression model.

heteroskedasticity in ε (Huber 1967; White 1980). Standard errors in the estimation of Equation (1) were clustered at the contractor level.

Even though the multivariate analyses provide the most rigorous assessment possible to address the research questions, our results provide only associations between variables of interest and violations and re-violators. They are not evidence of causal relationships, because the model does not include unobserved factors.

C. Analysis File Creation

The OFCCP Administrative Database is structured with each record providing information for a single review (Appendix A) and must be reshaped for analyses undertaken at the establishment or parent level. The following paragraphs describe how the database was restructured for these analyses.

Analysis at the establishment level uses information from a file that reshapes the OFCCP Administrative Database into establishment-level records by aggregating information about all reviews for a given establishment. Because contractor characteristics could change between reviews, we define them as characteristics recorded at the time of the first review. Because violation types and bases and remedies/press releases could change between reviews, they are defined by the presence of at least one type, basis, or press release/remedy type across reviews, unless otherwise noted in the tables. The number of victims and financial agreements are summed across all reviews.

Analysis at the parent level uses information from a file that reshapes the OFCCP Administrative Database into parent-level records by aggregating information about all establishments associated with a given parent. One exception is region, which is captured using the parent contractor's zip code.⁶⁰ Because contractor size and industry are not available at the parent level, size is captured by summing the sizes of all establishments,⁶¹ and industry is captured as the industry of the establishment in the parent's first review. Because violation types and bases and remedies/press releases could change between reviews, they are defined by the presence of at least one type, basis, or press release/remedy type across all reviews from all establishments under the parent, unless otherwise noted in the tables. The number of victims and financial agreements are summed across all reviews. Unless otherwise noted, violation characteristics are defined by the presence of at least one violation of each type or basis among its establishments, and remedies/press releases applied to the parent are indicated by the presence of at least one press release/remedy of each type among its establishments, unless otherwise stated. Finally, if the parent had at least two reviews, across all establishments, in which violations were found, it is classified as a re-violator. If multiple establishments within a parent had a violation, the parent was classified as a re-violator, even if each establishment violated EEO laws only one time. As a result, a greater percentage of parents are re-violators than establishments.

⁶⁰ The definition of region differs between parents and establishments. In establishment-level analyses, the region is the regional office that processed the review.

⁶¹ Size is imperfectly computed, as the database does not include all establishments. Nonetheless, our measure provides a crude approximation of size and allows us to undertake the same analysis for establishment and parents.

APPENDIX E
DATA TABLES

This appendix contains the data tables that serve as the basis for our main analyses. All tables are based on the OFCCP Administrative Database and use reviews closed between fiscal years 2003 and 2012. All variables in the tables are defined in Table A.6 in Appendix A. This table also provides details of which subcategories are grouped into the “other” categories for industry and discrimination violation code.

We apply the following rules to the tables in this appendix:

- Categories used for the variables were developed using the criteria that they comprise at least five percent of the distribution.
- National office is not reported for parents in any table. A measure of whether the national office performed the review is not available for parents because the measure is developed by using the state in which the parent is located (see Table A.6 for explanation).
- We disaggregate analysis only when a sample has more than 50. For example, we do not present re-violation information for contractors with fewer than 50 employees, reviews undertaken by the national office, or individual categories of victims per 1,000 employees because fewer than 50 contractors fall into these categories. We also do not present re-violation information for contractors with initial violations for salary, selection/testing, or other discrimination or that faced an employment or organizational change remedy or had a press release about the violation(s).
- Measures of investigative tools (that is, type of review), taken together, can exceed 100 percent because a contractor that has been reviewed more than once can be subject to more than one investigative tool.
- All contractors, but one, that were found to discriminate have a financial award remedy because OFCCP defines reviews with financial awards and victims as having discrimination violations. The exception is the contractor with missing information on financial award.
- Item-specific nonresponse reduces the number of reviews in some cells, except in the regression tables (Tables E.4 and E.7). Table A.7 in Appendix A shows which cells are affected by missing data.
- All tables use an asterisk (*) to indicate significant differences ($p \leq 0.05$). The relevant comparison for the computation differs among the tables, however, with comparisons noted in the table notes.
- We use the following statistical tests in the descriptive tables that do not contain rates (Tables E.1, E.2, E.3, and E.5):⁶²
 - A two-tailed t -test for the difference of means of continuous variables: financial award per capita, local area unemployment rate, number of employees, and victims per 1,000 employees.

⁶² t -tests and chi-square tests were conducted using the assumption of equal variances.

- A chi-square test for differences in distributions for categorical variables: industry, initial investigative tool, region, violation type, year review closed, and categorical variables for number of employees and victims per 1,000 employees. If the chi-square test is significant, we use a two-tailed t -test to test for significant differences between each category in the distribution. Only results of the t -tests are reported in the tables.
- A two-tailed t -test for differences in categories that are not mutually exclusive: investigative tool (ever had), discrimination code, and violation basis.
- We use a t -test for differences between the overall rates of violation and re-violation and each specific category (Tables E.3 and E.6).
- In regression analyses (Tables E.4 and E.7):
 - Variables with missing values take the value of its mean. Indicator variables (1 = missing for a given variable and 0 = not missing value) are constructed for reviews with missing data and included in the analysis (not shown in tables).
 - The category with the highest frequency is made the comparison category and is noted in parentheses in the row heading for the category.
- We use the following abbreviations and symbol in the tables:
 - FY: fiscal year
 - n.a.: not applicable
 - NA: not available (cell size too small)
 - --: not reported in OFCCP Administrative Database

Table E.1. Description of Contractors (percentages unless otherwise stated)

| | Establishments | | | Parents | | |
|--|--------------------|--------------|---------------|--------------|--------------|--------------|
| | All Establishments | Violators | Nonviolators | All Parents | Violators | Nonviolators |
| Number of Contractors | 31,498 | 6,432 | 25,066 | 7,938 | 2,311 | 5,627 |
| Contractor Characteristics | | | | | | |
| Employees | | | | | | |
| Number of employees (average) | 469 | 469 | 469 | 1,058 | 1,991 | 698* |
| 1 – 49 | 1.6 | 1.8 | 1.5 | 1.1 | 0.7 | 1.2 |
| 50 – 199 | 39.5 | 43.0 | 38.7* | 28.5 | 25.0 | 29.8* |
| 200 – 999 | 50.6 | 46.6 | 51.5* | 51.1 | 43.2 | 54.2* |
| 1,000 + | 8.4 | 8.6 | 8.3 | 19.3 | 31.0 | 14.8* |
| Industry | | | | | | |
| Manufacturing | 35.0 | 33.4 | 35.4* | 37.2 | 36.4 | 37.6 |
| Professional/scientific/technical | 12.3 | 12.9 | 12.1 | 12.6 | 11.7 | 13.0 |
| Health care and social assistance | 9.0 | 10.4 | 8.6* | 8.4 | 8.8 | 8.2 |
| Administrative support | 6.7 | 7.9 | 6.4* | 6.4 | 8.0 | 5.7* |
| Other industry | 37.1 | 35.4 | 37.5* | 35.4 | 35.1 | 35.5 |
| Investigative Tools | | | | | | |
| Selection system review | 84.2 | 86.2 | 83.7* | 85.0 | 89.4 | 83.2* |
| Non-selection system review | 20.9 | 20.6 | 21.0 | 29.5 | 37.7 | 26.4* |
| Violation Characteristics | | | | | | |
| Violation type | | | | | | |
| None (no violation) | 79.6 | 0.0 | n.a. | 70.9 | 0.0 | n.a. |
| Technical only | 18.0 | 88.2 | n.a. | 24.7 | 84.9 | n.a. |
| Discrimination | 2.4 | 11.8 | n.a. | 4.4 | 15.1 | n.a. |
| Violation basis | | | | | | |
| Sex | 14.6 | 71.9 | n.a. | 21.7 | 74.4 | n.a. |
| Color | 14.2 | 69.7 | n.a. | 21.4 | 73.6 | n.a. |
| Veteran status | 11.2 | 54.8 | n.a. | 16.7 | 57.3 | n.a. |
| Disability status | 8.6 | 42.3 | n.a. | 12.5 | 43.1 | n.a. |
| National origin | 2.5 | 12.4 | n.a. | 4.0 | 13.9 | n.a. |
| Religion | 1.3 | 6.1 | n.a. | 2.2 | 7.7 | n.a. |
| Discrimination violation code | | | | | | |
| Hiring | 1.8 | 8.7 | n.a. | 3.4 | 11.6 | n.a. |
| Systemic discrimination | 1.4 | 7.1 | n.a. | 2.8 | 9.6 | n.a. |
| Salary | 0.4 | 1.9 | n.a. | 0.9 | 3.1 | n.a. |
| Selection/testing | 0.1 | 0.7 | n.a. | 0.3 | 1.2 | n.a. |
| Other discrimination | 0.5 | 2.4 | n.a. | 1.0 | 3.3 | n.a. |
| External Environment | | | | | | |
| Region | | | | | | |
| Northeast | 13.7 | 15.1 | 13.4* | 18.1 | 17.7 | 18.3 |
| Mid-Atlantic | 14.1 | 12.3 | 14.6* | 14.1 | 15.7 | 13.4* |
| Southeast | 20.3 | 26.2 | 18.8* | 16.9 | 18.4 | 16.3* |
| Midwest | 18.0 | 17.8 | 18.0 | 23.3 | 22.8 | 23.5 |
| Southwest | 16.2 | 7.0 | 18.6* | 14.5 | 11.1 | 15.9* |
| Pacific | 17.1 | 21.4 | 16.0* | 13.1 | 14.4 | 12.5* |
| National office | 0.5 | 0.2 | 0.6* | -- | -- | -- |
| First review closed FY 2008 or earlier | 65.4 | 56.0 | 67.8* | 64.0 | 67.1 | 62.8* |
| Local area unemployment rate (average) | 6.2 | 6.6 | 6.1* | 6.2 | 6.2 | 6.2 |

Source: OFCCP Administrative Database.

Note: Statistical tests examine difference(s) between violators and nonviolators or violators with remedy information. Average number of employees for all, violator, and nonviolator establishments appear identical due to rounding.

Table E.2. Description of Violators, by Violation Type (percentages unless otherwise stated)

| | Establishments | | | Parents | | |
|--|-----------------------------|----------------|--------------------|----------------------|----------------|--------------------|
| | All Establishment Violators | Violation Type | | All Parent Violators | Violation Type | |
| | | Technical Only | Any Discrimination | | Technical Only | Any Discrimination |
| Number of Violators | 6,432 | 5,670 | 762 | 2,311 | 1,961 | 350 |
| Contractor Characteristics | | | | | | |
| Employees | | | | | | |
| Number of employees (average) | 469 | 443 | 680* | 1,991 | 1,474 | 4,820* |
| 1 – 49 | 1.8 | 2.0 | 0.0* | 0.7 | 0.8 | 0.0 |
| 50 – 199 | 43.0 | 46.0 | 19.1* | 25.0 | 28.4 | 6.7* |
| 200 – 999 | 46.6 | 44.3 | 64.6* | 43.2 | 44.5 | 36.4* |
| 1,000 + | 8.6 | 7.7 | 16.3* | 31.0 | 26.3 | 56.9* |
| Industry | | | | | | |
| Manufacturing | 33.4 | 32.1 | 43.6* | 36.4 | 34.9 | 44.7* |
| Professional/scientific/technical | 12.9 | 14.3 | 2.6* | 11.7 | 13.3 | 3.2* |
| Health care and social assistance | 10.4 | 11.2 | 4.6* | 8.8 | 9.2 | 6.9 |
| Administrative support | 7.9 | 7.9 | 7.6 | 8.0 | 8.1 | 7.2 |
| Other industry | 35.4 | 34.6 | 41.5* | 35.1 | 34.6 | 38.1 |
| Investigative Tools | | | | | | |
| Selection system review | 86.2 | 86.9 | 80.6* | 89.4 | 88.8 | 92.9* |
| Non-selection system review | 20.6 | 19.5 | 28.6* | 37.7 | 33.9 | 58.9* |
| Violation Characteristics | | | | | | |
| Violation basis | | | | | | |
| Sex | 71.9 | 71.7 | 73.5 | 74.4 | 72.7 | 84.2* |
| Color | 69.7 | 70.0 | 67.7 | 73.6 | 72.0 | 82.5* |
| Veteran status | 54.8 | 59.4 | 20.2* | 57.3 | 59.9 | 42.4* |
| Disability status | 42.3 | 45.9 | 14.6* | 43.1 | 45.2 | 31.2* |
| National origin | 12.4 | 12.5 | 11.5 | 13.9 | 12.5 | 21.5* |
| Religion | 6.1 | 6.6 | 2.9* | 7.7 | 7.5 | 8.6 |
| Discrimination violation code | | | | | | |
| Hiring | n.a. | n.a. | 75.4 | n.a. | n.a. | 77.0 |
| Systemic discrimination | n.a. | n.a. | 61.3 | n.a. | n.a. | 63.8 |
| Salary | n.a. | n.a. | 16.4 | n.a. | n.a. | 20.4 |
| Selection/testing | n.a. | n.a. | 6.2 | n.a. | n.a. | 7.8 |
| Other discrimination | n.a. | n.a. | 21.0 | n.a. | n.a. | 21.8 |
| Victims per 1,000 employees | | | | | | |
| Number of victims (average) | n.a. | n.a. | 719 | n.a. | n.a. | 514 |
| 0 | n.a. | n.a. | 0.5 | n.a. | n.a. | 3.4 |
| 1 – 99 | n.a. | n.a. | 31.8 | n.a. | n.a. | 52.3 |
| 100 – 999 | n.a. | n.a. | 47.6 | n.a. | n.a. | 35.5 |
| 1,000 + | n.a. | n.a. | 20.1 | n.a. | n.a. | 8.9 |
| Remedy/Press Release | | | | | | |
| Has CA/CD | n.a. | n.a. | 50.0 | n.a. | n.a. | 55.7* |
| Employment | n.a. | n.a. | 33.9 | n.a. | n.a. | 36.9* |
| Financial | n.a. | n.a. | 99.9 | n.a. | n.a. | 100.0* |
| Financial award per capita | n.a. | n.a. | \$1,340 | n.a. | n.a. | \$865* |
| Organizational change | n.a. | n.a. | 30.4 | n.a. | n.a. | 36.6* |
| Press release | n.a. | n.a. | 6.8 | n.a. | n.a. | 5.1* |
| External Environment | | | | | | |
| Region | | | | | | |
| Northeast | 15.1 | 15.9 | 9.6* | 17.7 | 18.6 | 12.8* |
| Mid-Atlantic | 12.3 | 12.6 | 9.8* | 15.7 | 15.6 | 15.9 |
| Southeast | 26.2 | 26.6 | 23.8 | 18.4 | 18.1 | 19.7 |
| Midwest | 17.8 | 17.5 | 20.3 | 22.8 | 22.9 | 22.5 |
| Southwest | 7.0 | 6.1 | 14.0* | 11.1 | 10.1 | 16.6* |
| Pacific | 21.4 | 21.3 | 22.2 | 14.4 | 14.7 | 12.5 |
| National office | 0.2 | 0.2 | 0.3 | -- | -- | -- |
| First review closed FY 2008 or earlier | 56.0 | 54.8 | 64.7* | 67.1 | 64.2 | 83.4* |
| Local area unemployment rate (average) | 6.6 | 6.6 | 6.5 | 6.2 | 6.2 | 5.8* |

Source: OFCCP Administrative Database.

Note: Statistical tests examine differences between violators with a technical and any discrimination violation.

Table E.3. Violation Rates of Contractors (numbers unless otherwise stated)

| | Establishments | | | Parents | | |
|--|--------------------|---------------|----------------|--------------|---------------|----------------|
| | All Establishments | All Violators | Violation Rate | All Parents | All Violators | Violation Rate |
| Number of Contractors | 31,498 | 6,432 | 20.4 | 7,938 | 2,311 | 29.1 |
| Contractor Characteristics | | | | | | |
| Employees | | | | | | |
| 1 – 49 | 462 | 98 | 21.2 | 82 | 15 | 18.3* |
| 50 – 199 | 11,658 | 2,384 | 20.4 | 2,165 | 530 | 24.5* |
| 200 – 999 | 14,918 | 2,581 | 17.3* | 3,890 | 916 | 23.5* |
| 1,000 + | 2,471 | 479 | 19.4 | 1,469 | 657 | 44.7* |
| Industry | | | | | | |
| Manufacturing | 10,838 | 2,110 | 19.5* | 2,932 | 835 | 28.5 |
| Professional/scientific/technical | 3,793 | 818 | 21.6 | 993 | 269 | 27.1 |
| Health care and social assistance | 2,774 | 658 | 23.7* | 661 | 203 | 30.7 |
| Administrative support | 2,064 | 498 | 24.1* | 501 | 183 | 36.5* |
| Other industry | 11,476 | 2,236 | 19.5* | 2,787 | 806 | 28.9 |
| Investigative Tools | | | | | | |
| Selection system review | 25,518 | 5,023 | 19.7* | 6,476 | 1,905 | 29.4 |
| Non-selection system review | 6,334 | 1,199 | 18.9* | 2,252 | 804 | 35.7* |
| External Environment | | | | | | |
| Region | | | | | | |
| Northeast | 4,330 | 972 | 22.4* | 1,356 | 381 | 28.1 |
| Mid-Atlantic | 4,439 | 789 | 17.8* | 1,052 | 337 | 32.0 |
| Southeast | 6,398 | 1,687 | 26.4* | 1,264 | 395 | 31.3 |
| Midwest | 5,669 | 1,146 | 20.2 | 1,741 | 491 | 28.2 |
| Southwest | 5,102 | 452 | 8.9* | 1,085 | 238 | 21.9* |
| Pacific | 5,387 | 1,374 | 25.5* | 976 | 309 | 31.7 |
| National office | 173 | 12 | 6.9* | -- | -- | -- |
| First review closed FY 2008 or earlier | 20,597 | 3,601 | 17.5* | 5,083 | 1,551 | 30.5 |

Source: OFCCP Administrative Database.

Note: Statistical tests examine differences between the violation rate for all contractors and contractors in each category. Violation rate is computed as: (# violators / total # contractors)*100. Both categories of investigative tools (for example) lie below the average with missing values (317 establishments do not have investigative tool information, and 57 percent are violators).

Table E.4. Associations with Whether a Review Has a Violation (unstandardized coefficients unless otherwise stated)

| | Any Violation | Technical Violation Only | Any Discrimination Violation |
|---|---------------|--------------------------|------------------------------|
| Establishment Characteristics | | | |
| Number of employees ('000) | -0.003* | -0.005* | 0.001* |
| Industry (Manufacturing) | | | |
| Professional/scientific/technical | 0.019* | 0.039* | -0.020* |
| Health care and social assistance | 0.054* | 0.066* | -0.012* |
| Administrative support | -0.054* | -0.055* | -0.001 |
| Other industry | 0.057* | 0.063* | -0.005* |
| Investigative Tool (Selection system review) | | | |
| Non-selection system review | -0.033* | -0.037* | 0.003 |
| External Environment | | | |
| Region (Southeast) | | | |
| Northeast | -0.049* | -0.045* | -0.004 |
| Mid-Atlantic | -0.099* | -0.100* | 0.001 |
| Midwest | -0.049* | -0.052* | 0.003 |
| Southwest | -0.191* | -0.192* | 0.001 |
| Pacific | -0.019* | -0.025* | 0.006* |
| National office | -0.558* | -0.507* | -0.050* |
| Review closed FY 2008 or earlier | -0.074* | -0.073* | -0.001 |
| Local area unemployment rate | -0.002 | -0.002* | 0.001 |
| Mean Dependent Variable | | | |
| | 0.204 | 0.185 | 0.019 |
| R-Squared | | | |
| | 0.096 | 0.090 | 0.009 |
| Number of Reviews | | | |
| | 39,990 | 39,990 | 39,990 |

Source: OFCCP Administrative Database.

Note: Each column corresponds to a separate regression, with the column heading indicating the dependent variable. Statistical tests examine for coefficient differences from 0.

Table E.5. Characteristics of Violators Who Were Reviewed Again After Violating, by Whether They Re-Violated (percentages unless otherwise stated)

| | Establishments | | | Parents | | |
|---|----------------|-------------|-----------------|---------------|-------------|-----------------|
| | All Violators | Re-Violator | Single Violator | All Violators | Re-Violator | Single Violator |
| Number of Violators | 800 | 600 | 200 | 809 | 399 | 410 |
| Contractor Characteristics | | | | | | |
| Employees | | | | | | |
| Number of employees (average) | 596 | 604 | 578 | 4,259 | 2,263 | 6,172* |
| 1 – 199 | 26.8 | 25.1 | 30.8 | 4.3 | 5.4 | 3.2 |
| 200 – 999 | 62.6 | 63.3 | 61.0 | 34.6 | 45.0 | 24.8* |
| 1,000 + | 10.6 | 11.7 | 8.1 | 61.1 | 49.6 | 72.0* |
| Industry | | | | | | |
| Manufacturing | 39.8 | 42.7 | 30.8* | 41.3 | 40.9 | 41.6 |
| Professional/scientific/technical | 11.3 | 11.1 | 11.8 | 7.6 | 8.3 | 6.9 |
| Health care and social assistance | 7.6 | 6.4 | 11.3* | 7.2 | 6.6 | 7.9 |
| Administrative support | 6.4 | 6.9 | 4.6 | 7.0 | 5.3 | 8.6 |
| Other industry | 34.9 | 32.8 | 41.5* | 36.9 | 38.9 | 35.0 |
| Initial Violation Characteristics | | | | | | |
| First violation type | | | | | | |
| None | 3.4 | 2.8 | 5.0 | 34.2 | 36.1 | 32.4 |
| Technical only | 84.1 | 84.3 | 83.5 | 60.0 | 58.6 | 61.2 |
| Discrimination | 12.5 | 12.8 | 11.5 | 5.8 | 5.3 | 6.3 |
| Violation basis | | | | | | |
| Sex | 79.6 | 81.2 | 74.7 | 55.0 | 50.0 | 59.8* |
| Color | 76.8 | 78.0 | 73.2 | 54.8 | 51.0 | 58.5* |
| Veteran status | 34.8 | 34.6 | 35.4 | 27.4 | 26.1 | 28.5 |
| Disability status | 21.8 | 21.0 | 24.2 | 17.2 | 15.3 | 19.0 |
| National origin | 10.3 | 10.7 | 9.1 | 6.1 | 5.5 | 6.6 |
| Religion | 7.7 | 8.2 | 6.1 | 4.6 | 4.0 | 5.1 |
| Discrimination code | | | | | | |
| Hiring | 9.2 | 9.9 | 7.1 | 4.2 | 4.0 | 4.4 |
| Systemic discrimination | 7.4 | 8.4 | 4.5 | 2.3 | 2.8 | 2.0 |
| Initial Remedies/Press Releases | | | | | | |
| Financial | 14.4 | 14.0 | 16.0 | 10.6 | 10.1 | 11.0 |
| Financial award per capita | \$74 | \$79 | \$60 | \$177 | \$274 | \$87 |
| Has CA/CD | 7.9 | 5.7 | 14.5* | 4.6 | 4.0 | 5.1 |
| External Environment | | | | | | |
| Region | | | | | | |
| Northeast | 9.1 | 7.8 | 13.0* | 14.9 | 13.8 | 15.9 |
| Mid-Atlantic | 9.6 | 9.7 | 9.5 | 12.2 | 12.8 | 11.6 |
| Southeast | 34.5 | 31.0 | 45.0* | 22.5 | 22.1 | 22.9 |
| Midwest | 15.1 | 16.0 | 12.5 | 25.2 | 25.5 | 24.8 |
| Southwest | 7.8 | 9.2 | 3.5* | 12.4 | 12.5 | 12.4 |
| Pacific | 23.1 | 25.3 | 16.5* | 12.9 | 13.3 | 12.4 |
| First review with violation closed FY 2008 or earlier | 95.3 | 96.1 | 93.2 | 93.2 | 91.0 | 95.3* |
| Local area unemployment rate (average) | 5.6 | 5.7 | 5.3* | 5.6 | 5.6 | 5.6 |

Source: OFCCP Administrative Database.

Note: The table contains only contractors with a violation and a chance to re-violate (that is, they were subsequently re-reviewed). Statistical tests examine differences between contractors that re-violated and those that did not. Violators with fewer than 50 employees, who were reviewed by the national office, who had salary, selection/testing, or other discrimination violations in their initial review or who were issued employment, organizational change, or press releases are not shown due to small sample size. Victims per 1,000 employees are not shown for the same reason. First violation type and size categories failed chi-squared tests for establishments, and region code, industry, and first violation type failed them for parents.

Table E.6. Re-Violation Rates for Contractors with a Violation Who Were Reviewed Again After Violating (numbers unless otherwise stated)

| | Establishments | | | Parents | | |
|--|----------------|-----------------|-------------|-------------|-----------------|-------------|
| | Re-Violator | Single Violator | Rate | Re-Violator | Single Violator | Rate |
| Number of Violators | 600 | 200 | 25.0 | 399 | 410 | 50.6 |
| Contractor Characteristics | | | | | | |
| Employees | | | | | | |
| 1 – 199 | 103 | 53 | 34.0* | NA | NA | NA |
| 200 – 999 | 260 | 105 | 28.8 | 174 | 100 | 36.5* |
| 1,000 + | NA | NA | 22.6 | 192 | 291 | 60.2* |
| Industry | | | | | | |
| Manufacturing | 253 | 60 | 19.2* | 162 | 169 | 51.1 |
| Professional/scientific/technical | 66 | NA | 25.8 | NA | NA | 45.9 |
| Health care and social assistance | NA | NA | 36.7 | NA | NA | 55.2 |
| Administrative support | NA | NA | 18.0 | NA | NA | 62.5 |
| Other industry | 194 | 81 | 29.5 | 154 | 142 | 48.0 |
| Initial Violation Characteristics | | | | | | |
| Violation type | | | | | | |
| None | NA | NA | NA | 144 | 133 | 48.0 |
| Technical only | 506 | 167 | 24.8 | 234 | 251 | 51.8 |
| Discrimination | 77 | NA | 23.0 | NA | NA | NA |
| Discrimination code | | | | | | |
| Hiring | 59 | NA | 19.2 | NA | NA | NA |
| Systemic discrimination | 50 | NA | 15.3* | NA | NA | NA |
| Violation basis | | | | | | |
| Sex | 484 | 148 | 23.4 | 199 | 245 | 55.2 |
| Color | 465 | 145 | 23.8 | 203 | 240 | 54.2 |
| Veteran status | 206 | 70 | 25.4 | 104 | 117 | 52.9 |
| Disability status | 125 | 48 | 27.7 | 61 | 78 | 56.1 |
| National origin | 64 | NA | 22.0 | NA | NA | NA |
| Religion | NA | NA | 19.7 | NA | NA | NA |
| Initial Remedies/Press Releases | | | | | | |
| Financial | 79 | NA | 25.5 | NA | NA | 53.7 |
| Has CA/CD | NA | NA | 46.0* | NA | NA | NA |
| External Environment | | | | | | |
| Region | | | | | | |
| Northeast | NA | NA | 35.6* | 52 | 59 | 53.2 |
| Mid-Atlantic | 58 | NA | 24.7 | NA | NA | 47.3 |
| Southeast | 186 | 90 | 32.6* | 83 | 85 | 50.6 |
| Midwest | 96 | NA | 20.7 | 96 | 92 | 48.9 |
| Southwest | 55 | NA | 11.3* | NA | NA | 49.5 |
| Pacific | 152 | NA | 17.8* | 50 | NA | 47.9 |
| First review closed FY 2008 or earlier | 560 | 177 | 24.0 | 232 | 264 | 53.2 |

Source: OFCCP Administrative Database.

Note: The table includes contractors with at least one violation and at least one chance to re-violate (that is, they were subsequently re-reviewed). Statistical tests examine differences between the violation rate for all violators and violators in each category. Re-violation rate is computed as: (# re-violators / total # violators)*100. Violators with fewer than 50 employees, who were reviewed by the national office, who had salary, selection/testing, or other discrimination violations in their initial review or who were issued employment, organizational change, or press releases are not shown due to small sample sizes. Establishments with no violation in the initial review and victims per 1,000 employees are not shown for the same reason.

Table E.7. Associations with Whether a Discrimination Violator Re-Violated (unstandardized coefficients unless otherwise stated)

| | Establishments | Parents |
|--|----------------|------------|
| Initial Remedies/Press Releases Applied | | |
| Employment | -0.151 | -0.526* |
| Financial award per capita | -0.084 | -0.021* |
| Organizational change | 0.228 | 0.098 |
| Press release | -0.246* | 0.281 |
| Contractor Characteristics | | |
| Number of employees ('000) | -0.003 | 0.016* |
| Industry (Manufacturing) | | |
| Professional/scientific/technical | 0.095 | -0.038 |
| Health care and social assistance | 0.171* | -0.008 |
| Administrative support | -0.009 | -0.029 |
| Other industry | 0.108* | -0.053 |
| Initial Violation Characteristics | | |
| Technical violations only | -0.492* | -0.348 |
| Discrimination code | | |
| Hiring | -0.160 | -0.187 |
| Systemic discrimination | -0.247* | -0.194 |
| Salary | -0.184 | -0.336 |
| Selection/testing | 0.303 | 0.724* |
| Violation basis | | |
| Sex | 0.052 | 0.161* |
| Color | 0.025 | 0.035 |
| Veteran status | -0.039 | 0.036 |
| Disability status | 0.079 | 0.088 |
| National origin | 0.076 | -0.008 |
| Religion | -0.136 | 0.057 |
| External Environment | | |
| Region (Southeast) | | |
| Northeast | 0.044 | -0.010 |
| Mid-Atlantic | -0.102 | 0.009 |
| Midwest | -0.076 | 0.038 |
| Southwest | -0.227* | 0.044 |
| Pacific | -0.102* | -0.005 |
| National office | -0.295* | |
| First review closed FY 2008 or earlier | -0.136 | 0.218* |
| Local area unemployment rate | -0.024* | 0.020 |
| Mean Dependent Variable | 0.230 | 0.515 |
| R-Squared | 0.113 | 0.143 |
| Number of Violators | 735 | 511 |

Source: OFCCP Administrative Database.

Note: Each column corresponds to a separate regression. The table contains only contractors with a violation and a chance to re-violate (that is, they were subsequently re-reviewed) for whom information was available on at least one initial remedy. Statistical tests examine for coefficient differences from 0. Victims per 1,000 employees is not included in the estimation because valid cases are highly correlated with having a financial remedy, and the missing variable is correlated with missing information for number of employees, which is used to construct the variable.

REFERENCES

- Ahluwalia, Rohini, Robert E. Burnkrant, and H. Rao Unnava. "Consumer Response to Negative Publicity: The Moderating Role of Commitment." *Journal of Marketing Research*, vol. 37, May 2000, pp. 203–214.
- Balsler, Deborah, B. "Predictors of Workplace Accommodations for Employees with Mobility-Related Disabilities." *Administration and Society*, vol. 39, no. 5, 2007, pp. 656–683.
- Basuroy, Suman, Subimal Chatterjee, and S. Abriham Ravid. "How Critical Are Critical Reviews? The Box Office Effects of Film Critics, Star Power and Budgets." *Journal of Marketing*, vol. 67, no. 4, 2003, pp. 103–117.
- Bendick, Marc Jr., Mary Lou Egan, and Susanne M. Lofhjelm. "Workforce Diversity Training: From Anti-Discrimination Compliance to Organizational Development." *Human Resource Planning*, vol. 24, no. 2, 2001, pp. 10–25.
- Bertrand, Marianne, and Sendhil Mullainathan. "Are Emily and Greg More Employable than Lakisha and Jamal? A Field Experiment on Labor Market Discrimination." *American Economic Review*, vol. 94, no. 4, 2003 pp. 991–1013.
- Bielby, William T. "Minimizing Workplace Gender and Racial Bias." *Contemporary Sociology*, vol. 29, 2000, pp. 120–129.
- Busch, Harold, and Eric M. Dunleavy. *A Review of OFCCP Enforcement Statistics from FY 2009/2010*. 2011. Available at [<http://cceq.org/telecon/OFCCP2010.pdf>]. Accessed January 15, 2013.
- Cohen, David, and Eric M. Dunleavy. *A Review of OFCCP Enforcement Statistics: A Call for Transparency in OFCCP Reporting*. 2009. Available at [<http://cceq.org/PDFs/CCE%20Report%20on%20OFCCP%20FY%2007%20Settlements,%20March%2011,%202009.pdf>]. Accessed February 18, 2013.
- DCI Consulting Group, Inc. *An Update on OFCCP Enforcement and Regulatory Changes*. Available at [http://www.smilg.org/uploads/2/9/3/6/2936592/detroit_ilg_5-10-12.pdf]. Accessed May 3, 2013.
- Edelman, Lauren, B. "Legal Ambiguity and Symbolic Structures: Organizational Mediation of Civil Rights Law." *American Journal of Sociology*, vol. 97, no. 6, 1992, pp. 1531–1576.
- Elberse, Anita, and Jehoshua Eliashberg. "Demand and Supply Dynamics for Sequentially Released Products in International Markets: The Case of Motion Pictures." *Marketing Science*, vol. 22, no. 3, 2003, pp. 329–354.
- Eliashberg, Jehoshua, and Steven M. Shugan. "Film Critics: Influencers or Predictors?" *Journal of Marketing*, vol. 71, no. 2, 1997, pp. 68–79.
- Foy, Norman F. "Sexual Harassment can Threaten your Bottom Line." *Strategic Finance*, vol. 82, 2000, pp. 56-62.

- Government Accountability Office. *Federal Agencies Should Better Monitor Their Performance in Enforcing Anti-Discrimination Laws*. 2008. Available at [<http://www.gao.gov/new.items/d08799.pdf>]. Accessed January 15, 2013.
- Greene, William H. *Econometric Analysis*. New Jersey: Pearson Education, Inc., 2003.
- Hegewisch, A., C. Deitch, and E. Murphy. *Ending Sex and Race Discrimination in the Workplace: Legal Interventions That Push the Envelope*. Washington, DC: Institute for Women's Policy Research, 2011.
- Hersch, Joni. "Equal Employment Opportunity Law and Firm Profitability." *Journal of Human Resources*, vol. 26, no. 1, 1991, pp. 139–153.
- Hirsh, C. Elizabeth. "Settling for Less? Organizational Determinants of Discrimination-Charge Outcomes." *Law and Society Review*, vol. 42, no. 2, 2008, pp. 239–274.
- Hirsh, C.E., and Sabino Kornrich. "The Context of Discrimination: Workplace Conditions, Institutional Environments, and Sex and Race Discrimination Charges." *American Journal of Sociology*, vol. 113, no. 5, 2008, pp. 1394–1432.
- Huang, Jen Hung, and Yi-Fen Chen. "Herding in Online Product Choice." *Psychology and Marketing*, vol. 23, no. 5, 2006, pp. 413–428.
- Huber, Peter J. "The Behavior of Maximum Likelihood Estimation Under Nonstandard Conditions." In *Proceedings of the Fifth Berkeley Symposium on Mathematical Statistics and Probability 1*, edited by L.M. LeCam and J. Neyman. Berkeley, CA: University of California Press, 1967.
- Ichniowski, Casey. "Have Angels Done More? The Steel Industry Consent Decree." National Bureau of Economic Research Working Paper Number 674. May 1981. Available at [<http://www.nber.org/papers/w0674>]. Accessed February 18, 2013.
- James, Erika Hayes and Lynn Perry Wooten. "Diversity Crises: How Firms Manage Discrimination Lawsuits." *Academy of Management Journal*, vol. 49, no. 6, December 2006, pp. 1103–1118.
- Kaley, Alexandra, and Frank Dobbin. "Enforcement of Civil Rights Law in Private Workplaces: The Effects of Compliance Reviews and Lawsuits over Time." *Law and Social Inquiry*, vol. 31, no. 1, 2006, pp. 855–903.
- Kaley, Alexandra, Frank Dobbin, and Erin Kelly. "Best Practices or Best Guesses? Assessing the Efficacy of Affirmative Corporate Action and Diversity Policies." *American Sociological Review*, vol. 71, no. 1, 2006, pp. 589–617.
- Konrad, Alison M., and Frank Linnehan. "Formalized HRM Structures: Coordinating Equal Employment Opportunity or Concealing Organizational Practices?" *Academy of Management Journal*, vol. 38, no. 3, 1995, pp. 787–820.
- Leonard, Jonathon S. "The Effectiveness of Equal Employment Law and Affirmative Action Regulation." National Bureau of Economic Research Working Paper Number 1745. October 1985. Available at [<http://www.nber.org/papers/w1745>]. Accessed February 18, 2013.

- Lundberg, Shelly J. “The Enforcement of Equal Opportunity Laws Under Imperfect Information: Affirmative Action and Alternatives.” *Quarterly Journal of Economics*, vol. 106, no. 1, 1991, pp. 309–326.
- [FCCM] Office of Federal Contract Compliance Programs. *Federal Contract Compliance Manual*. 1998. Available at [<http://www.dol.gov/ofccp/regs/compliance/fccm/ofcpc1.htm>]. Accessed January 16, 2012.
- Floor, Pamela, Ely Leichtling, and Adrienne Mazura. “OFCCP’s Enforcement Priorities and New Compliance Evaluation Procedures.” Quarles & Brady, LLP, 2011. Available at [http://www.quarles.com/ofccp_enforcement_compliance_evaluation_2011/]. Accessed September 18, 2012.
- Rosenbaum, Paul R. and Donald B. Rubin. “The central role of the propensity score in observational studies for causal effects.” *Biometrika*, vol. 70, no. 1, 1983, pp. 41-55.
- Rynes, Sara, and Benson Rosen. “A Field Survey of Factors Affecting the Adoption and Perceived Success of Diversity Training.” *Personnel Psychology*, vol. 48, no. 2, 1995, pp. 247–270.
- Rynes, Sara, and Benson Rosen. “What Makes Diversity Programs Work?” *HR Magazine*, vol. 39, 1994, pp. 67–76.
- Smith, Allen. “OFCCP’s New Method for Calculating Settlements Leads to Sharp Drop in Awards.” Society for Human Resource Management (SHRM). 2010. Available at [<http://www.shrm.org/LegalIssues/FederalResources/Pages/OFCCPSettlementAwards.aspx>]. Accessed February 27, 2013.
- Tybout, Alice, Bobby J. Calder, and Brian Sternthal. “Using Information-Processing Theory to Design Marketing Strategies.” *Journal of Marketing Research*, vol. 28, February 1981, pp. 73–79.
- U.S. Department of Labor, Bureau of Labor Statistics. “Local Area Unemployment Statistics.” Washington, DC: DOL, BLS, 2012. Available at [<http://www.bls.gov/lau/data.htm>]. Accessed October 12, 2012.
- U.S. Department of Labor, Office of Federal Contract Compliance Program. “History of Executive Order 11246.” Available at [http://www.dol.gov/ofccp/about/History_EO11246.htm]. Accessed February 18, 2013.
- White, Halbert. “A Heteroskedasticity-Consistent Covariance Matrix Estimator and a Direct Test for Heteroskedasticity.” *Econometrica*, vol. 48, no. 4, May 1980, pp. 817–830.
- Wooten, Lynn P., and Erika H. James. “Challenges of Organization Learning: Perpetuation of Discrimination Against Employees with Disabilities.” *Behavioral Science and Law*, vol. 23, 2005, pp. 123–141.
- Wooten, Lynn P., and Erika H. James. “When Firms Fail to Learn: The Perpetuation of Discrimination in the Workplace.” *Journal of Management Inquiry*, vol. 13, 2004, pp. 23–33.
- Wyatt, Robert O., and David P. Badger. “How Reviews Affect Interest in and Evaluation of Film.” *Journalism Quarterly*, vol. 61, 1984, pp. 874–878.



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