**The Impact of a Ban on Sexual Orientation and Gender Identity Discrimination on Federal Contractors**[1]

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**Abstract**

This paper analyzes the impact of President Obama's 2014 executive order forbidding federal contractors to discriminate on the basis of sexual orientation and gender identity (SOGI). We use data from charges of SOGI discrimination filed with the U.S. Equal Employment Opportunity Commission or a state nondiscrimination agency from 2013-2016. The charge data for private sector employers are matched to the EEOC's EEO-1 of establishments to create a pooled cross-section dataset of establishments with and without charges. We estimate the probability that an employee files a SOGI discrimination charge against an establishment both before and after the executive order was signed or implemented. We find that from a baseline average charge rate of 2.0%, the probability of a charge rose for non-contractors by 0.4 percentage points after the executive order was signed (a 20% increase), and for federal contractors the probability rose by

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0.6 percentage points (a 30% increase), although the difference-in-differences is not statistically significant. We also analyze the probability that a SOGI discrimination charge results in a merit outcome before and after the executive order. We find that the firms with the biggest change in policy pressure, federal contractors in states without laws against SOGI discrimination, saw a lower probability of a charge having merit after the executive order, falling from 22.5% to 14.7%.

**Introduction**

This paper assesses the impact of President Obama's 2014 executive order forbidding federal contractors to discriminate on the basis of sexual orientation and gender identity (SOGI), an executive order enforced by the Office of Federal Contract Compliance Programs (OFCCP) in the U.S. Department of Labor.[2] Other than President Obama's executive order, federal law has no explicit bans on SOGI discrimination in employment in the private sector. However, in 2013 the U.S. Equal Employment Opportunity Commission (EEOC) began allowing anyone who believed that they experienced SOGI-based discrimination to file charges of sex discrimination under Title VII of the Civil Rights Act, arguing that discrimination against lesbian, gay, bisexual, and transgender (LGBT) employees is rooted in gender stereotypes and other sex-based considerations. This shift in interpretation and policy created an opportunity to analyze the charges filed against private employers before and after the executive order was signed in 2014.

Although federal SOGI protection is relatively recent, nondiscrimination laws at the state level have a longer history. However, very little research exists to assess the impact of statewide nondiscrimination laws related to sexual orientation (Gates, 2009; Klawitter, 2011; Baumle and Poston, 2011; Tilscik, 2011; Martell, 2013; Burn, 2018), and no known studies assess gender

[2] Exec. Order No. 13,672, 41 C.F.R. 60-1, 60-2, 60-4, 60-50 (2014).

identity nondiscrimination laws. The studies that exist related to sexual orientation laws use individual level survey data to see if wages or employment levels rose for LGB employees in states after the passage of nondiscrimination laws. In this paper, we use different policy outcomes related to discrimination—whether a charge alleging discrimination is filed against an employer and whether a charge results in a merit outcome. We also expand the existing literature by including discrimination based on gender identity.

Our analysis is guided by economic and sociological theory to predict the impact of policies and other factors on the likelihood of a charge being filed for a particular workplace, as well as the factors contributing toward a determination that a charge is meritorious. This research has both academic and policy implications. In addition to evaluating the impact of a policy, we shed light on how economic factors and legal consciousness shape disputing behavior in a new area for legal claims in federal antidiscrimination policy. Employees' decisions to file charges reflect their perceptions of unfair treatment. Those charges require employer responses that will shape the practical meaning of a policy in an individual situation and will guide employers in future decisions about broader workplace policies or settling lawsuits or charges, for example.

In this paper we assess the impact of the executive order on charges of SOGI discrimination. We have three main research questions: (a) Did the trend in charges filed change after the executive order? (b) Did the probability of an employer receiving a discrimination charge change after the executive order? (c) Did the probability that a charge will be determined to have merit change after the executive order? For these analyses, we create a new dataset by merging the data on charges filed with the EEOC or a state agency by individuals alleging SOGI discrimination ("charge data") with a separate database of information collected by the EEOC from private sector employers about their contractor status and industry as well as the race,

gender, and occupational composition of their workforce ("EEO-1 data"). Our econometric analysis uses a linear probability model to compare our outcome measure for federal contractors[3] before and after the executive order, and federal contractors to non-contractors. For the charge filing model and the charge outcome model, we also use a difference-in-differences test to see if the impact of the executive order was felt most by federal contractors, particularly in states without SOGI nondiscrimination laws.

We find evidence that the 2014 executive order achieved one key goal, empowering individuals to seek recourse for perceived discrimination by filing a charge against their employer. A time series analysis of all charges filed shows an upward trend in charge filings (statistically significant at the 15% level), a trend that was leveling off by mid-2014 but accelerated after the executive order signing. Furthermore, after controlling for many factors affecting the likelihood of an employee's filing of a charge with our matched sample, we find that the probability that an establishment received a charge rose by a statistically significant increase of 0.4 percentage points (for non-contractors) and 0.6 percentage points (for federal contractors) after the executive order was signed in states with and without SOGI nondiscrimination laws. However, the effect of the executive order was not statistically significantly different for federal contractors and non-contractors.

Overall, 18% of the charges filed after the executive order resulted in a merit outcome—

[3] In this paper "contractors" refers to federal contractors, defined as private employers with supply and service contracts or subcontracts with the Federal government, "and federally assisted construction contracts and subcontracts that exceed $10,000 or that will (or can reasonably be expected to) accumulate to more than $10,000 in any 12-month period." See OFCCP, https://webapps.dol.gov/elaws/elg/discrim.htm, last accessed March 11, 2019. As discussed below, our data are limited to a narrower subset of federal contracting firms that file an EEO-1 form because they have 50 or more employees and have a federal contract or first-tier subcontract of $50,000.

benefits for the charging party or a finding of discrimination by the EEOC. We find that federal contractors in non-SOGI law states saw a statistically significant drop in the probability of a merit outcome after the executive order of almost eight percentage points. Several measures of the strength of a subset of charges showed no obvious trends toward relative weakness for federal contractors' charges over time, so it is possible that the fall in the probability of merit reflects a lower probability of discrimination rather than the filing of weaker discrimination charges.

These findings may provide important guidance to policymakers about the value of executive orders in educating employees about their right to file discrimination charges and about their potential efficacy in reducing discrimination. Historically, executive orders have played an important role in the development of federal nondiscrimination law (Burstein, 1998). The three types of policies at work in this case—the federal contractor requirement, the EEOC's policy interpretation, and state SOGI nondiscrimination laws—may work together by filling in gaps in coverage, such as clarifying that SOGI discrimination by federal contractors is not legal in states without SOGI nondiscrimination laws. Also, the announcement of the executive order might have increased employees' knowledge about their right to file a charge of discrimination based on sexual orientation or gender identity. We also recommend additional research into compliance reviews to provide insight into employer actions that might have increased the likelihood that a charge is filed or that reduced the probability of discrimination.

## Literature review

We begin with a discussion of several literatures that structure this paper's approach to predicting whether charges are filed and are found to have merit. Our data do not permit us to

directly analyze where discrimination occurs; rather, we are only able to analyze cases where an employee chooses to pursue a claim against an employer for discrimination, as well as the outcome of that process. Given, however, that the experience of a perceived harm is the first step in triggering the dispute process (Felstiner et al. 1980-1981), we draw on sociological and economic theories and research described below about why discrimination occurs and on the employment discrimination experiences of LGBT individuals. Since our data also reflect the deployment of law as a response to perceived discrimination, we then discuss and cite theories and findings related to how a dispute arises and progresses from sociological studies of the mobilization of the law in response to discrimination. Finally, we situate the paper in its policy context, including a discussion of the expected impact of such the Obama executive order.

*SOGI-Based Discrimination:* Substantial evidence shows that LGBT individuals experience discrimination in the workplace in the United States: for example, in a 2013 survey of a random sample of LGBT people by the Pew Research Center, 21% of LGBT people reported that they have been "treated unfairly by an employer in hiring, pay, or promotion" at some point in their lives (Pew, 2013). A 2017 survey found that 22% of LGBT people have ever been discriminated against in pay or promotion, and 20% in applying for jobs (NPR, 2017). At the very least, these survey findings suggest that LGBT people perceive some workplace experiences as discriminatory, which might drive them to pursue a discrimination complaint when that option is available.

Other studies, noted below, look for evidence of discrimination in different wage and employment outcomes for LGBT people when compared with non-LGBT people. Audit studies and wage analyses in the United States document evidence of differential treatment of LGBT job applicants and differential wage outcomes by SOGI status, adding to the weight of evidence (on

sexual orientation discrimination see, e.g. Tilcsik, 2011; Badgett, 2001; Klawitter, 2015; and Valfort, 2017 for a review; on gender identity see Carpenter et al., 2017; Schilt & Wiswall, 2008).

Economic and sociological theories provide some insight into why discrimination might occur against LGBT people (e.g. Becker, 1971). First, consider economic theories. Surveys of attitudes toward LGBT people suggest that prejudice has lessened over the last few decades in the United States, but pockets of disapproval remain (Flores, 2014). Gary Becker's theory of discrimination would suggest that that form of prejudice generates employer or employee distaste for working with LGBT people, or an expectation that customers will express distaste (Becker, 1971), and, therefore, LGBT people will face discrimination in employment or pay. Whether an employer with such tastes will discriminate will be influenced by the expected cost of penalties from violating nondiscrimination laws (discussed further below) or by the competitive disadvantage in the labor market resulting from discrimination against well-qualified members of protected groups (e.g. Ashenfelter & Hannan, 1986; Black & Brainard, 2004; Weichselbaumer & Winter-Ebmer, 2007).

Sociological theories of the role that gender stereotypes play in shaping employment opportunities for men and women also apply to LGBT people. LGBT people may have limited opportunities in heavily male-dominated or female-dominated jobs where they might be seen as lacking important gender role related characteristics or skills. For example, Tilcsik's (2011) audit study found that fictional gay male job applicants in the U.S. experienced more discrimination when employers sought stereotypically masculine personality traits, like aggressiveness, assertiveness, or decisiveness, increasing the gap in job interview offers for gay men relative to heterosexual men from 2.5 percentage points less that heterosexual men to 8.7 percentage points

less (statistically significant at the 5% level). This argument is consistent with studies showing differences in occupational attainment by sexual orientation: Gay and bisexual men are in occupations with higher proportions of women than are heterosexual men, and lesbian and bisexual women are in occupations with higher proportions of men than are heterosexual women (e.g. Ueno et al, 2013; Tilcsik et al, 2015). Those findings are consistent with fewer opportunities in male-stereotyped jobs for gay men and in female-stereotyped jobs for lesbians.

The stereotype model is similar to economic theories of statistical discrimination (Arrow, 1973). In those models, employers screen potential hires using information from an applicant's group characteristics, like sexual orientation or gender identity, to predict whether the applicant has job-related qualifications. For example, an employer seeking some characteristic that is traditionally gendered as masculine—like aggressiveness or decisiveness—assesses a gay male applicant as likely to have less than is (or is thought to be) required for a job because of stereotypes about how sexual orientation maps onto gender. Or employers might apply stereotypes or group health disparities about the mental or physical health of transgender people that reduce the likelihood that a transgender person will be hired (VanBorm and Baert, 2018).

*Legal Consciousness and a New Category of Legal Claiming:* Not all experiences of discrimination result in the filing of a charge, though; rather, legal consciousness shapes whether individuals enter into the dispute process. Legal consciousness encompasses shared understandings of the law and its utility, including whether individuals view the law as fixed and immutable, flexible and something to be manipulated, or antagonistic and something to be resisted (Ewick & Silbey, 1998; Marshall & Barclay, 2003). This understanding of the law emphasizes that new categories of legal claiming, such as SOGI, are determined by how individual actors interact with law as part of the disputing process, particularly in the charge

filing decision and process. The actions and responses of employees, employers, enforcement agencies, and courts will create the practical meaning of a SOGI nondiscrimination law.

The dispute process has been described as a pyramid, with a broad base of grievances that only rarely progress fully toward disputes (Felstiner et al., 1980-1981; Michelson, 2007). Disputes can fail to emerge if an individual engages in self-blame (Coates & Penrod, 1980-1981; Hoffman, 2003), or fears repercussions including retaliation or being labeled as a troublemaker (Michelson, 2007; Miller & Sarat, 1980–81). Prior research reflects that employees with fewer resources and greater vulnerability are more likely to engage in self-blame or to fear repercussions from claims (Hoffman, 2003; Michelson, 2007; Morrill, et al. 2010). This means that even though individuals in some groups are more likely to experience or to perceive harms, they are less likely to make legal claims and, instead, choose to discard their grievances (Marshall, 2005; Morrill et al., 2010; Sandefur, 2007). In particular, studies on sex and race discrimination find that individuals' understandings of what constitutes discriminatory behavior do not always reflect legal definitions and vary by ascriptive status (Hirsh & Lyons, 2010; Marshall, 2005; Nielsen, 2004). In the case of SOGI claims, the degree of awareness of the right to file a claim is likely to be important as well. Thus race, sex, gender identity, social class, and sexual orientation all shape whether individuals view the law—in this case, the filing of a charge—as a useful tool for achieving redress (Baumle & Compton, 2015; Marshall, 2005; Nielsen, 2004; Sarat, 1990).

The employment context of acts perceived as discriminatory will also shape employees' decisions about filing charges. Prior research indicates that the legal consciousness of employees is shaped by a firm's organizational culture and location (see e.g. Larson, 2004; Hoffman, 2003; Marshall, 2005; Dellinger and Williams, 2002). For example, Dellinger and Williams (2002)

found that employees in highly sexualized workplaces called upon workplace norms to assess whether actions were consistent with organizational culture or constituted prohibited sexual harassment. Similarly, Hoffman (2003) found that organizations possess different grievance cultures: organizations that stress worker independence result in reduced use of formal grievance processes, whereas those that encourage worker and management cooperation result in greater use of these processes. In our empirical model below, firm characteristics such as industry, size, and federal contractor status will measure some of these influences on employer behavior (e.g. Hirsch & Kornrich, 2008; von Schrader & Nazarov, 2015).

Finally, prior research suggests that both legal consciousness and the dispute process are affected by geographic context (see e.g. Baumle & Compton, 2015; Larson, 2004). As discussed further in the next section, laws can vary across geographic boundaries, producing different understandings of whether and how the law can be activated to seek redress for harms (Baumle & Compton, 2015). Even in places with similar laws, variation in implementation or in the institutionalization of law can produce differences in legal consciousness (Larson, 2004). As noted by Baumle and Compton (2015), state-level differences in legal consciousness are not dependent solely on the laws on the books; residing in a state with a history of animus toward the LGBT population diminishes the willingness to engage with the law, irrespective of legal changes. Thus, although the presence or absence of laws could affect claims-making, the overall sociopolitical climate within a state could also affect the dispute process.

*SOGI Nondiscrimination Policy:* The legal situation for LGBT workers is complicated for the U.S. private sector workforce that is the focus of this paper. States began providing explicit protection to the private sector workforce with Wisconsin's 1982 ban on sexual orientation discrimination by private employers. As of 2018, 22 states ban sexual orientation

discrimination, and 21 of those also include bans on gender identity discrimination. A few other states ban SOGI discrimination against public employees. Some studies have analyzed the effect of those policies on hiring discrimination and on wage gaps. Employers in states with non-discrimination laws were less likely to discriminate against a gay male applicant (Tilcsik, 2011). Wages or earnings gaps are slightly lower for gay men in states with SOGI nondiscrimination laws (Gates, 2009; Baumle and Poston, 2011; Klawitter, 2011; Martell; Burns, 2018).[4]

Beyond the state policies, however, there is no federal statute that explicitly bans sexual orientation or gender identity discrimination. However, the EEOC considers SOGI discrimination to be a form of sex discrimination, which is banned by Title VII of the Civil Rights Act of 1964 (see *Macy v. Dept. of Justice,* 2012*;* for gender identity; *Baldwin v. Dept. of Transportation,* 2015, for sexual orientation). Since 2012 the EEOC has allowed individuals in any state to file sex discrimination charges that allege SOGI discrimination.

In the absence of Congressional action, the courts have been increasingly asked to rule on this interpretation. The 1st, 6th, 9th and 11th Circuits have affirmed the EEOC's interpretation of gender identity as sex discrimination.[5] Recent cases decided in the 2nd and 7th U.S. Circuit Courts of Appeal have also affirmed that interpretation of Title VII for sex discrimination with respect to sexual orientation, while the 11th Circuit recently rejected that interpretation. So far the U.S. Supreme Court has declined to weigh in on this issue, but three cases related to sexual orientation and gender identity discrimination are currently (as of February 2019) on appeal with

[4] As discussed below, the literature on discrimination rarely notes that the expected cost of noncompliance depends not only on the possible penalties, but also on the likelihood that employees will file a charge of discrimination and that the charge will be judged to have sufficient merit to be settled or go to court and win (Siegelman and Donohue, 1995). This broader perspective on the impact of policies could explain the rather small effect of state-level SOGI nondiscrimination laws, which might result either from modest financial penalties or from decisions and actions of employees, employers, attorneys, and enforcement agencies that diminish the probability of a charge being filed.

[5] For a list of cases, see Movement Advancement Project, http://www.lgbtmap.org/img/maps/citations-federal_courts_sogi_map.pdf, last accessed April 20, 2018. Almost all of the negative rulings by Circuit Courts occurred before the EEOC's 2012 decision in Macy v. U.S. Dept. of Justice that held that gender identity discrimination is sex discrimination.

the Supreme Court. In the meantime, the EEOC continues to allow people in all states and U.S. territories to file sex discrimination complaints for SOGI discrimination.

The most recent change in federal nondiscrimination policy that was designed to protect LGBT workers came on July 21, 2014, when President Barack Obama signed an Executive Order (EO) to amend EO 11246 to include sexual orientation and gender identity in the list of protected classes for private companies doing business with the federal government.[6] The Final Rule revising EO 11246 was published by the Office of Federal Contract Compliance Programs, which enforces EO 11246, on Dec. 9, 2014. The new rules were implemented for contracts and subcontracts signed on or after April 8, 2015. One study estimated that the order would result in an additional 11 million U.S. workers having legal protection against sexual orientation discrimination and 16.5 million more with protection against gender identity discrimination (Badgett, 2012).

Federal contractors have an incentive to comply with the requirements of EO 11246 so they do not risk being debarred from doing business with the federal government. The OFCCP also conducts compliance audits that assess the extent to which federal contractors are complying with the executive order, creating further pressure against SOGI discrimination. While there is a literature demonstrating the positive impact of Executive Order 11246 on reducing discrimination and improving employment outcomes for racial minorities and for women (e.g. Leonard 1984; Kurtulus, 2012; Hirsch and Kornrich, 2008), no studies have assessed the impact on discrimination based on sexual orientation or gender identity.

## Conceptual framework and hypotheses

[6] Executive Order 11246 was signed by Pres. Lyndon Johnson in 1964 and forbids race and sex discrimination by federal contractors. The order also requires contractors to take affirmative action to end discrimination in their firms.

We have two outcome variables that provide information about the effectiveness of the Obama executive order: the likelihood that a charge is filed against an establishment and, conditional on a charge being filed, the likelihood that a charge is found to have merit. Since the primary enforcement of non-discrimination laws comes through the charge process in the United States, the executive order is not likely to have any enforcement bite unless it generates more charges. Hence our first test below asks whether SOGI discrimination charges have risen since the executive order.

Our second test involves a change in the probability that an establishment will be charged. For an individual place of employment, the probability of a charge will be some function of the decisions and actions of employers and employees in response to a policy change. Two main dynamics are at work, although we cannot observe them separately, nor can we measure them directly--we observe only whether a charge has been filed. The first dynamic concerns employers' reaction to policy and whether they reduce the amount of discrimination. Economic theory suggests that nondiscrimination laws increase the expected cost of discrimination to employers, since they may face financial penalties for noncompliance with the law, thereby discouraging differential treatment of protected groups of employees (e.g. Becker, 1968; Freeman, 1973; Hirsch & Kornrich, 2008). All establishments face some baseline nondiscrimination requirements from the EEOC interpretation of Title VII, and establishments that are located in SOGI law states also face explicit laws forbidding discrimination, regardless of contractor status. In this context, the 2014 executive order increases the potential cost to federal contractors if they discriminate against LGBT employees or applicants, since contractors could be subject to costly legal sanctions for discrimination, including debarment. If employers react by reducing discrimination, then the probability of discrimination will fall, pulling down

the likelihood of a charge (holding all else equal).

The second dynamic concerns employees' reaction to the policy change. Will they be more likely to file a charge when they have experienced discrimination? Employees must be aware that they have a right to contest discrimination. In this case, both the visibility of the signing of the executive order and the requirement that contractors inform employees of their rights are likely to enhance workers' knowledge of their rights and how to seek recourse. The visibility effect could extend beyond federal contractors, increasing the likelihood of filing a charge by employees working for non-contractors because of an enhanced "civil-rights conscious environment" (Hirsch & Kornrich, 2008). Federal contractors must also inform employees of their rights under the executive order, though, and legal consciousness theory predicts that will increase the likelihood that contractors' employees will file charges (Hirsch & Kornrich, 2008; von Schrader & Nazarov, 2015). Another factor affecting employees' likelihood of filing a charge relates to their expectations of the costs (such as retaliation) and benefits (such as back pay) associated with the charge (Siegelman & Donohue, 1995). A Presidential endorsement of the rights of LGBT people might make employees more hopeful that the net benefits of filing would be positive and greater than the cost of any potential retaliation. Overall, these factors suggest that the probability of an employee filing a charge would increase after the executive order, holding all else equal.

Thus the executive order could have conflicting influences on the likelihood that a firm would be charged—employers' propensity to discriminate is likely to fall, while employees are more likely to file a charge.[7] The change in the likelihood of a charge will depend on the strength and speed of each effect. We argue that organizational inertia might slow any drop in

[7] It's also plausible that each dynamic is a function of the other: employers might discriminate less when they believe workers are more likely to report; workers might be more likely to report when employers discriminate more.

discrimination, while the decision of individuals to file charges could increase more rapidly, resulting in a net increase in the probability of a charge being filed against an establishment after the executive order was signed. Accordingly, our prediction in our empirical work is that the net effect of the executive order will be to increase the filing of charges, particularly among federal contractors in non-SOGI law states, since they have had the least past legal pressure. We will test that hypothesis with respect to simple trends over time in the number of SOGI charges filed and in the context of the probability of a charge net of other factors (discussed below) that might influence the probability of discrimination and of reporting a charge.

Our third test analyzes the probability that a charge will be found meritorious as an outcome variable, where merit is defined as a charge resulting in benefits for the charging party or a finding of discrimination by the EEOC. On one hand, broadening the firms covered by an explicit nondiscrimination policy could result in more meritorious charges being filed if discrimination was more common in the establishments that had faced less policy pressure in the past. On the other hand, the charge filing dynamics described above could result in stronger or weaker charges being filed, or better- or worse-documented charges being filed after the policy change because elements of employees' decision-making have changed (e.g. Hirsch, 2008) On top of that inconclusiveness, the state and federal enforcement agencies' processing and decision-making will also influence charge outcomes, and a new category could get additional resources and attention in the early period after a policy change. Also, since our merit measure includes charges that are settled to the charging party's advantage, employers' decisions about settling will be relevant. Since federal contractors will have more enforcement pressure than non-contractors after the executive order, as noted above, it seems unlikely that they will be less likely to settle. Given the unknown strength of these different influences on the merit of charges

being filed, it is not possible to have a firm hypothesis as to the direction of change in the probability that a charge will be seen as meritorious after the Obama executive order.

For the second and third sets of empirical models predicting probabilities for individual establishments (the second test) or charges (the third test), we also include other controls that are based on the research on legal consciousness and the dispute process discussed earlier, as well as the economic and sociological literature on discrimination also discussed earlier. As in those studies, we control for these other non-policy variables because that body of research shows that employees' experiences of discrimination are shaped by organizational culture, workplace composition, and location, and employer decisions may be influenced by product market competition and other policies.

Accordingly, in the models predicting the probability of a charge and the probability of a merit outcome, we control for the inclusion of sexual orientation and (in most of those states) gender identity in a state-wide nondiscrimination law. To capture other influences on discrimination, in this paper we follow Hirsch & Kornrich (2008) and use dummies for industries focusing on manual labor and those focusing on clients, which might be more likely to involve discriminatory tastes of coworkers or customers. Organizational context factors such as establishment size, firm size, multi-establishment firms, multi-state firms and headquarter status will serve as proxies for the formalization of work found in larger and more complex firms, which is likely to reduce perceptions of discrimination (Hirsch 2008; Hirsch and Kornrich, 2008). Finally, drawing on sociological theory on occupational segregation by sex, we hypothesize that we will see more charges and merit outcomes in establishments with stronger gender segregation of occupations, measured with the Duncan dissimilarity index. Segregation is likely to signal the use of gender stereotypes that might also disadvantage LGBT people (Tilcsik,

2011), and segregation is related to more perceived and actual unfairness in the workplace (Stainback and Tomaskovic-Devey, 2012; von Schrader & Nazarov, 2015).

## Data and Methods

*Data*: This study uses data from the Equal Employment Opportunity Commission, creating a novel dataset of discrimination charges based on sexual orientation and gender identity that are matched with EEO-1 data to measure establishment characteristics. These charges may be filed with the EEOC directly or with one of the state or local nondiscrimination agencies (FEPAs) that have agreements with the EEOC to share the processing of charges. As a result, we have data on charges dual-filed with the EEOC and a state or local agency in the 22 states (plus the District of Columbia) with sexual orientation and/or gender identity nondiscrimination laws ("SOGI states"),[8] as well as the charges filed with the EEOC or a FEPA in the other "non-SOGI states" that do not have an explicit state law.

*Charge data:* Data on each charge provided by the EEOC include the employer's name, address, industry, and establishment size; the charging party's age, race, national origin, and sex; the basis for the charge (that is, the protected class, such as sex, sexual orientation, gender identity, race, national origin); the issue charged (e.g. discrimination in promotion, harassment, discharge, etc.); the processing of the charge (e.g. whether it goes to mediation and/or is investigated); and disposition of the charge. We have data on more than 9,200 charges filed from FY2012-2016, but we focus here on 8,425 charges filed during the calendar years 2013-2016,

[8] A very preliminary comparison of data on charges from the 22 states with the EEOC database suggests that the numbers are fairly similar. The one exception is California, which reports many more cases in its own reports than are found in the EEOC charge database for the same years. An official at the California Dept. of Fair Employment Housing told one of the authors that there are two likely reasons for the difference. Charging parties often request a "right to sue" letter from their agency so that they can file in court without an EEOC investigation. Also, the California statute of limitations is one year, while the EEOC's is 300 days in this particular situation, so any cases filed after 300 days would not be dual-filed with the EEOC.

since the official date for allowing such charges to be filed with the EEOC was January 1, 2013.[9] In the time series analyses, we use both open and closed charges. In the multivariate analyses, we focus on charges that have been matched to EEO-1 records for the charge probability model, and we further limit the charges to those that have been closed by the EEOC or a FEPA when assessing the merit of a charge.

*Merit outcomes:* We use information on the disposition of the charge to create a measure of a merit outcome. We follow Hirsch (2008) and others to measure a merit outcome as either (i) an EEOC investigation explicitly finds that discrimination was likely to have occurred, or (ii) the charge results in some form of benefit for the employee in a settlement with the employer. We use this broader measure of a meritorious outcome because many charges go through an alternative dispute resolution process and are not investigated fully by the EEOC or FEPA. While a settlement during the charge investigation process or mediation process does not imply an admission of discrimination by an employer, charging parties have presumably presented some convincing evidence of discrimination that motivates a settlement. So this measure acts as a proxy for whether discrimination occurred at the establishment.

*EEO-1 Data:* The EEOC also collects annual data on the EEO-1 survey for private sector employers who are required to file, which includes federal contractors with 50 or more employees and a contract of at least $50,000, and noncontractor employers with 100 or more employees. The EEO-1 data include establishment-level records of the employer's name and address, industry, federal contractor status, and employment totals by race, sex, and occupation.

*Matching data:* Using employer name and address data in each source, we matched the charge data to the corresponding EEO-1 data for the responding party (i.e. the employer charged

[9] Almost all of the charges filed in 2012 were filed with state FEPAs in states with SOGI nondiscrimination laws.

with discrimination) for the year in which the charge was filed.[10] Since Title VII covers employers with 15 or more employees, some small employers who have been charged with SOGI discrimination will not be found in the EEO-1 data for larger firms. Likewise, public employers are sometimes charged with SOGI discrimination but are not covered by the EEO-1 data, so we remove them from our analyses. In addition to providing more data on firms charged with discrimination, the merged dataset will allow for comparisons of charged firms with other firms in its industry or geographic location.

Our matching process included three stages: (1) standardizing names and addresses, (2) fuzzy matching, and (3) hand-matching. Since the charge data rarely include the EEO-1 employer identifiers (unit number and headquarter number), researchers matching the charge data with the EEO-1 data have employed different methods to merge the two different datasets. Hirsch (2008) and Hirsch & Kornrich (2008) merged records by hand within the five-digit zip code via establishment name and address. The Von Schrader & Nazarov (2015) approach was similar, linking two datasets by zip-code first, then matching by hand using establishment names and addresses. Our method was similar to those studies, except that we used fuzzy matching technique to merge the EEO-1 reports and SOGI discrimination charges between 2013 and 2016. Fuzzy matching is based on a probabilistic record linkage technique and is described further in the appendix.

Our final sample size to model the probability of charge being filed was 3,474 charges that could be matched to an EEO-1 establishment. To estimate the probability of a charge, we combined those with a 5% random sample of non-charged establishments, or 145,208 establishments. Our total sample size for that model, therefore, is 148,682. The sample size to

[10] In a small number of cases, we were only able to match the employer listed on a charge to an establishment EEO-1 record for a different year.

model a meritorious outcome includes closed charges only, or 2,921 charges.

*Methods:*

*Research question 1:* Our first research question involves describing the time pattern for SOGI charges filed with the EEOC and asking whether any preexisting trend changed after the executive order. We use a simple OLS model of the number of 2013-2016 charges filed at the EEOC or a FEPA each week ($WeeklyCharges_t$) as the dependent variable. Our goal is to describe patterns over time, but we also test for (and do not find) evidence of serial correlation, discussed in the findings section. We regress the number of charges on several time variables: $WEEK_t$ (a continuous measure of the week), the square of $WEEK_t$ (to capture nonlinearities), EXECORDER (a dummy variable for the week that the executive order was signed or implemented as our policy variable), and the policy variable interacted with week:

$$(1)\ WeeklyCharges_t = \gamma + \beta^1\ WEEK_t + \beta^2\ (WEEK_t)^2 + \delta^1\ EXECORDER_t + \delta^2\ (EXECORDER_t * WEEK_t) + \varepsilon_t$$

Coefficient $\delta^1$ would capture a break in the series after the signing on July 21, 2014, and $\delta^2$ would capture a change in the slope of any trend after that date.

*Research question 2:* Our second research question asks whether the probability that an employee files a charge against an establishment is different after the executive order. In this model, we analyze data from all matched charges to model the probability of a charge being filed against an employer, controlling for other factors not related to the policy that might influence the probability. We use interaction terms for groups of establishments, allowing us to compare pre-post executive order changes in the probabilities for federal contractors compared with non-contractors. We can also use this model to implement a differences-in-differences test, asking

whether those changes are larger for federal contractors in states without SOGI nondiscrimination laws than for contractors in non-SOGI states. Because we are using interaction terms that are difficult to interpret with a probit or logit model, we use a linear probability model, using robust standard errors to adjust for heteroskedasticity.[11]

Accordingly, we model the probability of an establishment i facing a SOGI discrimination charge (a binary dependent variable) in year t:

$$\text{(2a) } Charge_{it} = \gamma + \beta X_{it} + \delta^1 FEDCON_{it} + \delta^2 SOGILAW_i + \delta^3 EXECORDER_t + \delta^4 (FEDCON_{it} * SOGILAW_i) + \delta^5 (FEDCON_{it} * EXECORDER_t) + \delta^6 (FEDCON_{it} * SOGILAW_i * EXECORDER_t) + \varepsilon_{it}$$

$FEDCON_{it}$ is one if an establishment is part of a firm that is a federal contractor in year t and will be subjected to the policy intervention analyzed here. $SOGILAW_i$ is one if the establishment is located in a state with a sexual orientation nondiscrimination law, and 20 out of 22 states also include gender identity.[12] The variables in X control for other characteristics of the establishment or parent firm discussed in an earlier section: (log) firm size,[13] (log) establishment size, a Duncan dissimilarity index for occupational segregation by race and by gender,[14] the proportion of establishment workforce that are managers, the proportion of managers who are women, and

[11] See Norton, Wang, and Ai (2004) for a discussion of interaction terms. We also estimated the same models presented here using probit with similar results for the coefficients.

[12] During the 2013-2016 period, only Utah added sexual orientation and gender identity to its nondiscrimination law (in 2015). Delaware added gender identity in 2013 and Maryland in 2014. New Hampshire, Wisconsin, and New York included only sexual orientation in their state nondiscrimination laws during the study period, although New York included gender identity by executive order.

[13] Firm and establishment size are logged to standardize the effect of a similar percentage change in the size of smaller and larger firms, since the size of firms and establishments is right skewed.

[14] The Duncan dissimilarity index of occupational segregation by sex calculates the percentage of women (or men) who would need to change jobs to equalize the distribution of women and men across occupations. (Duncan & Duncan, 1955). The index by race compares segregation of white workers and workers of color.

the proportion of nonmanagers who are women. (See Table A3 for a list of variables.) We also include dummy variables for being a multi-establishment firm, a multi-state firm, the company headquarters, and in a manual or client-oriented industry.

When expanded by Stata, the set of interaction terms generates eight different combinations, each of which specifies a set of establishments with the same contractor status (FedCon vs. NonCon), location in a SOGI or non-SOGI law state (NoLaw vs. StateLaw), and the time period before or after the executive order (Pre-EO vs. Post-EO). The results that are reported in the next section correspond to this more detailed specification with the eight combinations:

(2b) $\text{Charge}_{it} = \beta X_{it} + \delta^1 \text{NoLaw/NonCon/Pre-EO}_{it} + \delta^2 \text{NoLaw/NonCon/Post-EO}_{it} + \delta^3 \text{NoLaw/FedCon/Pre-EO}_{it} + \delta^4 \text{NoLaw/FedCon/Post-EO}_{it} + \delta^5 \text{StateLaw/NonCon/Pre-EO}_{it} + \delta^6 \text{StateLaw/NonCon/Post-EO}_{it} + \delta^7 \text{StateLaw/FedCon/Pre-EO}_{it} + \delta^8 \text{StateLaw/FedCon/Post-EO}_{it} + \varepsilon_{it}$

The linear model means that we can interpret regression coefficients as the impact of a change in an independent variable on the probability of a charge. The first δ term, $\delta_1$, is the baseline (omitted) category of noncontractors in non-SOGI law states before the executive order and is captured by the constant in the linear probability model. Each of the other δ terms measure the difference in probabilities for the establishment group compared with the baseline omitted category. As noted earlier, the establishments that are federal contractors in states without SOGI laws after the executive order was signed are subjected to the greatest change in policy treatment $(\delta^4)$. Accordingly, we will test for differences-in-differences by comparing the change in the charge probability for federal contractors in non-SOGI states $(\delta^4 - \delta^3)$ with the change in the charge probability for non-contractors in non-SOGI states $(\delta^2 - \delta^1)$.

We have two treatment variables for the executive order—one for the signing of the policy on July 21, 2014 (postEOSIGN), and one for the implementation of the policy (postIMPL), which began for contracts signed after April 8, 2015. We include the signing date as a policy variable because of the media coverage that might have influenced employees' legal consciousness and, therefore, their willingness to file a charge, even before the policy was implemented.

Our coding of the executive order treatment variables necessarily varies by whether the establishment was charged or not. For the establishments that were charged with discrimination, we know the exact date that the employer was charged, so we can categorize them as being filed before or after the signing and implementation dates. For the establishments that have not been charged, we only know the year that the EEO-1 was filed. However, in order to correctly analyze the probability of pre-EOSIGN charges in 2014, we also need data on the base from which those charged establishments are taken, otherwise we are artificially inflating the probability of a charge in the pre-signing period by only increasing the numerator without also changing the denominator. To create a more appropriate denominator for 2014, we also assign some of the establishments from 2014 into the pre-signing period. To do so, we randomly assign a month to the 2014 establishment data and code the establishments assigned to January-July 2014 as pre-EOSIGN and those assigned to August-December 2014 data as post-EOSIGN. The postIMPL variable is created in the same way other than using May 2015 as the starting month for the post-implementation period. In an appendix, we report estimates from models using a simpler classification that codes all 2013 and 2014 data as pre-EOSIGN and all 2015 and 2016 data as post-EOSIGN. Those findings are very similar to the ones presented below.

*Research question 3:* Our third step is to estimate a model for the probability of an

establishment receiving a charge that eventually has a merit outcome, conditional on having received a charge. That condition means that this model is estimated only for the 2,921 establishments in the matched file that have received a charge.

(3a) $Merit_{it} = \gamma + \beta X_{it} + \delta^1 FEDCON_{it} + \delta^2 SOGILAW_i + \delta^3 EXECORDER_t + \delta^4 (FEDCON_{it} * SOGILAW_i) + \delta^5 (FEDCON_{it} * EXECORDER_t) + \delta^6 (FEDCON_{it} * SOGILAW_i * EXECORDER_t) + \varepsilon_{it}$

As with the methods for research question 2, once the interaction terms are expanded we end up with model (3b):

(3b) $Merit_{it} = \beta X_{it} + \delta^1 NoLaw/NonCon/Pre\text{-}EO_{it} + \delta^2 NoLaw/NonCon/Post\text{-}EO_{it} + \delta^3 NoLaw/FedCon/Pre\text{-}EO_{it} + \delta^4 NoLaw/FedCon/Post\text{-}EO_{it} + \delta^5 StateLaw/NonCon/Pre\text{-}EO_{it} + \delta^6 StateLaw/NonCon/Post\text{-}EO_{it} + \delta^7 StateLaw/FedCon/Pre\text{-}EO_{it} + \delta^8 StateLaw/FedCon/Post\text{-}EO_{it} + \varepsilon_{it}$

Again, the first δ term, $\delta_1$, is the baseline (omitted) category of noncontractors in non-SOGI law states before the executive order (captured by the constant). Each of the other δ terms measure the difference in probabilities of a merit outcome for the establishment group compared with the baseline. The predictors in X of the merit outcome include the firm organizational characteristics and workforce characteristics used in model (2), as well as the same eight policy variables for the post-signing model and the post-implementation model. In addition, X includes four additional potentially relevant characteristics of whether a charge has a merit outcome: whether the charging party and employer have legal representation, whether the EEOC or FEPA processed the charge, and whether the charge includes some other basis, e.g. race or disability, in addition to the SOGI basis. The fully interacted policy group terms are the same as in model (2), and we use the same comparisons of coefficients to estimate differences-in-differences.

**Results**

*Research Question 1 Time-series results:* To address our first research question, we aggregate charges by week to assess whether the executive order was associated with a change in the pre-existing trends. The average number of charges a week was 40.4 (34.3 in 2013, 38.1 in 2014, 47.1 in 2015, and 41.9 in 2016). Our simple OLS time series model of 8,425 charges from 2013-2016 shows a positive trend upward at a declining rate until the week the Executive Order is signed, although neither coefficient is statistically significant.[15] Then there is a small downward jump in charges, but the positive interaction term for weeks after the executive order indicates a steeper increase in the trend in charges being filed after that date. The two policy timing variables are statistically significant at the 15% level; the coefficients on WEEK and WEEK-squared are not statistically significant.

$$\text{WeeklyCharges}_t = -5053.7 + 3.6 * \text{WEEK}_t - 0.0006 * (\text{WEEK}_t)^2 - 693.1 * \text{EXECORDER}_t + 0.244 * (\text{EXECORDER}_t * \text{WEEK}_t)$$

Figure 1a plots the fitted values. We also see similar separate patterns for federal contractors and non-contractors when looking at the smaller sample of charges we could match to the EEO-1 data.

The estimated model is different if we use the post-implementation date:

$$\text{WeeklyCharges}_t = 1652.1 - 1.2 * \text{WEEK}_t + .0002 * (\text{WEEK}_t)^2 - 6.4 * \text{EXECORDER}_t + 0.005 * (\text{EXECORDER}_t * \text{WEEK}_t)$$

[15] We tested this specification for autocorrelation. The Durbin-Watson statistic was 1.916, which is close to 2 (which indicates no autocorrelation). Breusch-Godfrey test score was 0.044 (chi-square) and p-value was 0.833. In neither test could we reject the null hypothesis that no autocorrelation was present.

Fig. 1b plots the fitted values for implementation. In this case, however, none of the coefficients are statistically significant at even the 15% level.

*Research question 2, Probability of a charge being filed*: Table 1 presents descriptive data for the 148,682 establishments in our sample from 2013-2016. Across all years, 2% of establishments in this sample (which includes 5% of non-charged establishments) have been charged with SOGI discrimination. Almost half (47%) of the establishments are federal contractors, and about 60% of the establishments are in non-SOGI law states. The average federal contractor establishment is about 14 – 17% larger, and the average firm size is about 50 – 82% larger than for non-contractors. Overall, 87% of federal contractors are part of multi-state firms whereas 76% of the non-contractors are. Compared with non-contractors, the proportion of female employees was about 5 percentage points lower for federal contractors (either managers or non-managers) and more establishments (11%) are operating in manufacturing, construction, transportation, mining, finance, real estate, or wholesale industries, as opposed to 6.6% for non-contractors. Within contractor status, the establishments are relatively similar in SOGI and non-SOGI states.

Table 2 presents the results from the multivariate models of the probability that a charge is filed against an establishment, with and without the covariates from Table 1 for both policy variables. The "Post EO Sign" model (1) measures the probability of a charge being filed without other controls for the eight fully interacted policy-contractor-SOGI law combinations. The omitted category (the constant in Table 2, model 1) includes establishments that are not federal contractors, are located in states without SOGI laws, and are in the pre-policy period. The constant shows that the probability of a charge being filed is 2.0% in those baseline establishments before the executive order. Because the policy findings are very similar in size

and sign to model (2) with the full set of covariates, here we will focus the discussion of the detailed findings from model (2).

The covariates control for organization-level factors related to legal consciousness and discrimination theories that are likely to affect an employee's probability of filing a charge. Several organizational variables are statistically significant (at the 5% level) predictors of the probability of a charge. The size of establishment and firms is positively associated with a higher probability of being charged: a 1% increase in the size of an establishment (a change of one in the log size) is associated with a 1.6 percentage point higher probability of a charge, and a 1% change in the size of the firm leads to a 0.1 percentage point higher charge probability. Other organizational features also increase the likelihood of a charge: a multi-establishment firm has a 2.9 percentage point increase, a multi-state firm has a 0.3 percentage point increase, and a headquarters establishment has a 3.2 percentage point increase over establishments without those characteristics. . Firms that are more segregated by race and gender are less likely to have a SOGI charge filed against them. Increasing the sex segregation index by 0.01 (a 1% increase in the index) would reduce the charge probability by 0.017 percentage points, and increasing the racial segregation index by 0.01 (a 1% increase) would decrease the charge probability by 0.005 percentage points. Firms with a 0.01 higher proportion of managerial employees (a 1% increase) are 0.025 percentage points more likely to have a charge filed, although when 0.01 more of the managers are female (a 1% increase), the probability of a charge falls by 0.005.

Turning to the policy variables in the model, we first report on model (2) using the signing date for the treatment timing. To make the findings clearer, we plot in Figure 2a the predicted probabilities derived from model (2) calculated at the means of the other variables and we also show the 95% confidence interval. The upper left quadrant compares the probabilities

before and after the executive order signing on July 21, 2014, for non-contractors in non-SOGI law states. The upper right quadrant compares probabilities for non-contractors in states with SOGI laws. The bottom quadrants show federal contractors in non-SOGI states (left) and SOGI states (right). We use pairwise comparisons of coefficients (not shown) to test for the statistical significance at the 5% level of differences in coefficients and differences-in-differences discussed below.

First, the probability of a charge being filed was statistically significantly higher at the 5% level after the signing of the executive order for both contractors and non-contractors, regardless of their state's SOGI law status. Figure 2a shows this increase: in each box the probability before the executive order (on the left side of each box) is lower than the probability after the order (the right side of each box). For non-contractors in non-SOGI law states (upper left) and SOGI law states (upper right), the probability of a charge increased from 1.9% to 2.3%, or a 0.4 percentage point increase. For federal contractors, the probabilities increase from 2.1% to 2.8% in non-SOGI states and from 2.2% to 2.8% in SOGI states, a 0.6 percentage point difference. Although the increase in the charge probability appears larger for federal contractors than for non-contractors (0.6 versus 0.4), that difference-in-differences is not statistically significant at the 5% level.

Second, after the executive order was signed, federal contractors were more likely to be charged than non-contractors in the same legal context (with or without SOGI laws). The predicted probability for non-contractors in non-SOGI states after the executive order (the top-left panel of Figure 2a) is 2.28%, compared to 2.78% for federal contractors in non-SOGI states (the bottom-left panel), a 0.5 percentage point difference that is significant at the 5% level. Also, the predicted probability for federal contractors in SOGI states after the signing was 2.76% (the

bottom-right panel), which is 0.44 percentage points higher than the predicted probability for non-contractors in the same states and time period (2.3%), which is statistically significant at the 5% level. The difference-in-differences across SOGI law status (0.5 percentage points versus 0.44 percentage points) is not statistically significant at the 5% level.

Third, the state SOGI law has no statistically significant effect on the relative probability of a charge for establishments, regardless of timing or contractor status. For example, compare the 2.97% probability in the bottom-left panel (federal contractors in non-SOGI states) to the 2.98% probability in the bottom-right panels for federal contractors in SOGI states. None of the pairwise comparisons across SOGI and non-SOGI states is statistically significant.

The other policy timing variable we use is the implementation date of the executive order—April 8, 2015—used in model (4) of Table 2. Again we graph the predicted probabilities in Fig. 2b,. Some similar patterns are apparent for this timing variable. (1) After April 2015, the probability of a charge rose by 0.7 percentage points for non-contractors and by 0.8 percentage points for federal contractors, and those differences are significant at the 5% level, . (2) Federal contractors are 0.4 percentage points more likely to be charged than are non-contractors (significant at the 5% level for all comparisons), regardless of SOGI state law or timing of executive order. (3) There is no measurable difference in charge probabilities between SOGI and non-SOGI states.

With either timing variable, these findings contradicted our hypothesis that the executive order would have a larger impact on the probability that federal contractors would be charged with SOGI discrimination. Instead, all establishments were more likely to receive a charge after the executive order signing (0.4-0.6 percentage points) and implementation (0.7-0.8 percentage points ). A variation on our hypothesis that is consistent with this finding is that the executive

order might have made the right to file a charge more visible to employees at all kinds of establishments, regardless of state or contractor status.

This finding of a broad increase in the probability of a charge raises the question of whether all types of discrimination charges were increasing over this period, Fig. 3a and 3b chart the frequency of weekly filings of Title VII sex discrimination charges (that do not include a SOGI charge) and of race discrimination charges over the same period. The red lines indicate the SOGI executive order signing date, rule-making date, and implementation dates. We see no evidence of a generalized increase in the filing of charges over this period that could explain the higher SOGI charge probability for all establishments. If anything, there appears to be a slight downward trend—not a positive one—over the whole 2013-16 period that is very different from the SOGI charge pattern seen in Figs. 1, 2a, and 2b.

*Probability of merit outcome:* Table 3 presents descriptive statistics on the 2,921 closed charges that we analyze, broken out by contractor and SOGI-law status. The probability of a merit outcome was 18% overall from 2013-2016 (Table 3). In this smaller sample of closed charges, we see many of the same differences across establishment groups as in the charge filing sample. However, federal contractors are part of smaller firms in this sample than are non-contractors, and the proportion of female employees is similar to that of non-contractors. The new variables capture whether the charging party has legal representation (28%), whether the employer has legal representation (72%), and whether another basis is included in the charge (88%).

To see the effect of policy, we estimate the likelihood of a charge having a merit outcome using the linear probability model in equation (3b). The results of the simple model in column (1) of Table 4 show that the baseline likelihood of a merit outcome for our omitted category of

non-contractors in non-SOGI states was 20.9% before the policy change using the policy signing variable and (in column 3) 20.6% using the implementation timing variable. The probability for all other establishment groups categories was either not statistically distinguishable or was lower than the baseline rate, as the negative coefficients show. For example, in the executive order signing model, the likelihood of a merit outcome for federal contractors in SOGI law states before the policy change was 6.3 percentage points lower the probability for non-contractors in non-SOGI states before the policy change (statistically significant at the 5% level).

Model (2) (and the parallel model with the implementation date policy variable in column 4) adds the covariates that are potentially related to the outcome of the charge. A 1% increase in establishment size reduces the probability of merit by is associated with a 0.82 percentage points (significant at the 10% level). Charges against establishments with a 1% higher proportion of female non-managers are 0.11 percentage points less likely to result in a merit outcome (significant at 5% level).

The charge processing variables turn up two statistically significant associations with merit outcomes. When charging parties have legal representation, they are 5.97 percentage points more likely to end up with benefits or a discrimination finding (significant at the 5% level). A merit outcome is about 3.2 percentage points less likely when the EEOC processes a charge (significant at the 10% level). This pattern could reflect differences in the type of charges filed with the EEOC and the FEPAs.

Next we use predicted probabilities of a charge having a merit outcome in Figure 4a to assess the effects of policy on merit outcomes for contractors and non-contractors. These are calculated at the means of the control variables (as we did with the charge probabilities in Figure 2a). We focus on the post-signing policy variable in this discussion since the patterns are the

same for the post-implementation policy variable (Fig. 4b).

The executive order signing is associated with a decrease in the probability of a merit outcome for federal contractors in non-SOGI law states, falling from 22.5% to 14.7% in Fig. 4a (significant at the 5% level). For federal contractors in SOGI law states, and for all non-contractors, however, there is no measurable difference in the probability of a merit outcome after the executive order. The change post-signing for federal contractors in non-SOGI states is not significantly different from that for non-contractors in the non-SOGI states, at the 5% level.

Testing statistical significance with pairwise comparisons, we see some effect of being a federal contractor or being in a SOGI state through two other significant differences. (1) Federal contractors in the non-SOGI states after the executive was signed have a 5.4 percentage point lower probability (14.7% versus 20.1%) of a merit outcome than non-contractors in non-SOGI states post-signing that is statistically significant at the 5% level. (2) Before the executive order, charges in SOGI law states were less likely to have a merit outcome than those in non-SOGI law states. Federal contractors in SOGI law states had a merit probability of 13.8% compared to 22.5% in non-SOGI law states (significant at the 5% level). Non-contractors in SOGI law states had a merit probability of 16.2% compared to 21.8% in non-SOGI law states (significant at the 10% level).

Overall, in the models predicting merit outcomes, we see confirmation of our prediction that the most change would occur for the group with the biggest change in policy pressure: federal contractors in non-SOGI states after the executive order. From the perspective of merit outcomes, the executive order is associated with a shift for federal contractors in non-SOGI states (the establishments with the least policy pressure) to look more like establishments in SOGI law states.

If we see a merit outcome as a proxy for discrimination, then one possible reason for this pattern is that establishments with less policy pressure against discrimination have a greater likelihood of discrimination. Establishments with neither kind of pressure (non-contractors in non-SOGI states) had the highest probability of a merit outcome—21.8% before and 20.1% after the executive order (Fig. 4a). Increased policy pressure would come from being located in a SOGI law state (before the executive order) or from being a federal contractor post-executive order. Establishments that had both kinds of pressure (federal contractors in SOGI law states after the executive order) had a merit probability of 15.1%, which was not significantly different from lower estimates in Fig. 4a. So the fall in the probability of a merit outcome seen in Figure 4a for federal contractors in non-SOGI states could have been the result of less discrimination as a result of greater policy pressure from the executive order.

However, other possible reasons for the finding are that the probability of a merit charge fell include (a) employers were less willing to settle charges after the executive order, and (b) charges filed after the executive order were weaker charges on average. While we have no direct evidence for the first possibility, it seems unlikely on its face. As noted earlier, after the executive order federal contractors faced stronger potential compliance enforcement and penalties and less uncertainty about whether their actions will be found to violate a policy, both of which should make them more likely to settle, not less.

The second possibility—that the post-order charges against federal contractors were weaker—remains, although no similar dynamic is evident for federal contractors in SOGI law states or for any non-contractors (the changes over time in merit probabilities seen in the lower right quadrant of Figure 4a are not statistically significant). To assess the possibility that charges might have become weaker over time, we turn to more detailed measures of the quality of

charges that come from our companion paper. One measure of quality comes from the EEOC's coding of each charge into one of three processing categories that reflect both an initial assessment of the strength of the charge and whether the charge is a strategic priority. The charge is assigned an A processing category if cause is likely to be found, and a B category if the charge may have merit but more information is necessary. The EEOC assigns a C category when "cause is unlikely" for a variety of reasons, ranging from lack of credibility of the allegation to being outside the EEOC's jurisdiction.

Fig. 5a presents histograms of the percent of closed charges in each processing category from 2013-2016, separated for non-contractors (left side) and federal contractors (right side). The dark blue bars represent the percentage in category A, the strongest claims. The percentage of A claims falls steadily for non-contractors from 35.0% to 22.3% but does not drop for contractors from 2013-2015, when the percentage hovers in the mid-20s before dropping to 16.4% in 2016. The percentage of B charges goes up from 51% to 57% in 2015 for non-contractors but stays fairly stable for contractors, falling slightly from 57% in 2013 to 54% in 2016. The proportion of the weakest charges rated as C (dark green bars) goes up from 14.0% to 23.1% over time for non-contractors but stays stable around 19% for federal contractors until a sharp rise in 2016 to 29.5%. Overall, then, there is some evidence that the quality of charges might have been falling for both federal contractors and non-contractors over time, which would not explain the drop in the probability of a merit charge for federal contractors only.

We also engaged in a qualitative analysis of a sample of 915 closed charges coded for several measures that might reflect the strength of a case for discrimination. In Fig. 5b we present histograms of the presence of two features of the narratives that might be seen as strengthening the likely merit of a charge: whether the charges include a mention of similarly

situated employees who were treated differently, and whether the charging party reported an instance of disclosure of SOGI status that was followed closely in time by an adverse employment outcome (our "nexus-disclosure" code). Federal contractors and non-contractors show similar trends over time for the nexus-disclosure code, with a rise from 6.8% in 2013 to 17.3% in 2014 (contractors) or from 6.6% in 2013 to 11.9% in 2015 (for non-contractors), followed by a large drop to 2.8% for contractors and 4.1% percent for non-contractors, in 2016. The mentions of "similarly situated employees" are also very similar across contractor status, with a big increase from 2013 to 2014, 22.6% to 39.0% for non-contractors and 26.2% to 37.0% for contractors, followed by a decline to 29.1% for non-contractors and 26.8% for contractors. Thus again we see no evidence in Fig. 5b that charges got weaker over time just for the federal contractors.

Overall, the trends over time in these potential measures of charge quality do not point to a clear relative decline in the quality of charges for federal contractors that could explain why the probability of a merit charge fell only for federal contractors in non-SOGI states after the Executive Order was signed or implemented. Since those firms saw the biggest change in policy at that time, going from no legal ban in their states to having a new obligation not to discriminate as federal contractors, the possibility of a decrease in discrimination as a result of policy pressure remains a plausible explanation for that pattern.

**Conclusions**

Overall, we find evidence that the Obama executive order forbidding discrimination based on sexual orientation and gender identity achieved at least one intended impact, increasing the use of the enforcement process, and possibly another—reducing discrimination by federal

contractors. The time series analysis found that the number of charges being filed rose faster after the executive order was signed. The timing of the executive order suggests that it was at least partly responsible for this upward surge in charge filings.

A more detailed analysis that held constant other influences on the likelihood of a charge being filed also showed that the probability of a charge rose for all employers after the executive order, regardless of contractor status or state SOGI law. From the baseline of an average charge rate of 2%, the probability rose by 0.4 percentage points for non-contractors after the executive order was signed, for a 20% increase in the probability, and for federal contractors the probability rose by 0.6 percentage points, or a 30% increase. The broad effect suggests the possibility of a spillover impact from the executive order. The media visibility of President Obama's signing the order might have heightened LGBT employees' knowledge that they had the right to file a charge of SOGI discrimination, no matter where they worked. Or the symbolic value of a presidential endorsement of the principle of nondiscrimination might have encouraged more challenges of discriminatory behavior generally.

The fact that one in five charges filed against these establishments resulted in a merit outcome suggests that some of those additional charges reflect discrimination that might not have been reported in the absence of the executive order. As a result, the order is likely to have led to some charging parties receiving benefits or a finding of discrimination that they would not have had in the absence of the executive order. Furthermore, the firms with the biggest change in policy pressure, federal contractors in non-SOGI law states, were the only ones who saw a lower probability of a charge having merit after the executive order, falling from 22.5% to 14.7%. Analyses of measures of the quality of charges suggest that charges filed were not weakening for federal contractors more than for non-contractors after the executive order,

implying that it is plausible that the probability of merit fell because federal contractors were less likely to discriminate after the executive order. The fact that the probability of a merit outcome decreased for those employers will require further analysis to disentangle potential explanations.

One policy consideration stemming from these findings is the need for continuation of the executive order. The findings in this study provide some evidence that the order has contributed to two goals of anti-discrimination policy. First, evidence suggests that the order may have reduced discrimination among federal contractors in non-SOGI states. Second, anti-discrimination policy also provides legal recourse for employees who believe they have experienced discrimination, and the executive order might have also served as an educational tool for informing employees of federal contractors and non-contractors of their rights.

One other consideration coming out of this study for the Office of Federal Contract Compliance Programs (OFCCP), the Chief Evaluation Office, and other agencies within the U.S. Department of Labor is to conduct additional research to better understand the dynamics found here for federal contractors. In particular, data on compliance reviews by OFCCP might shed light on steps employers took after the executive order was signed or implemented to comply with their new obligations. Matching data on compliance reviews with data on charges over the 2013-2016 period could shed light on employer actions that might have increased the probability that an employee would file a SOGI discrimination charge, such as notifying employees of the new policy or creating new internal grievance procedures. Similarly, a study of compliance reviews could reveal steps that employers took that might have reduced SOGI discrimination. Such research could aid in understanding why the probability of charges went up at the same time that some employees would be less likely to gain from filing a charge. Also, looking at the executive order more directly from the *employer* perspective than this study does could reveal

practices that can be encouraged more broadly for employers seeking to reduce discrimination based on sexual orientation and gender identity, thus contributing to the effectiveness of the executive order as a nondiscrimination policy.

**Appendix: Fuzzy Matching**

Fuzzy matching, a probabilistic record linkage, is different from a usual merge command that links two datasets based on common identifiers. Fuzzy matching works under circumstances where identifiers are not perfectly identical in two datasets. For example, the identifiers might be in different formats or some might be misspelled. In particular, fuzzy matching can work better than conventional merge commands when string identifiers, such as names and addresses, are partially identical between two datasets, when a unique numeric identifier is missing.

Our matching process has three stages: (1) standardizing names and addresses, (2) fuzzy matching, and (3) hand-matching. The first two stages heavily rely on user-written Stata commands for pre-processing and fuzzy matching written by Wasi and Aaron Flaaen (Wasi & Flaaen 2014). To maximize the rate of fuzzy matching, it is necessary to pre-standardize fields -- name and address – to remove inconsistencies and irregularities in formats from both datasets. Stata commands stnd_compname and stnd_address parse and standardize these specific fields using rule-based pattern files, which is also provided by the authors. These commands break down these fields into sub-parts for the name of the employer (official name, "doing business as"(DBA) name, "formerly-known-as" (FKA) name, entity type, and attention name) and for its address (street address, PO box, unit number, building, and floor information).

Next, we use Stata command reclink2, which is an extended command of reclink, originally written by Michael Blasnik (2010), for fuzzy matching. We find matches via standardized parent company name (in the case of a single establishment firm, a parent company name is the same as an establishment name), and standardized addresses within the first three-digit zip-code. We use parent company names of multi-establishment firms as a matching field for several reasons. First, establishment names of multi-establishment firms often abbreviate the

full company name. Second, they are likely to contain partial or extra information, such as branch numbers, that could lower the quality of the match.

Unlike previous research (Von Schrader & Nazarov 2015; Hirsch 2008; Hirsch & Kornrich 2008), we do not strictly limit matching to a five-digit zip code because this might cause confusion and because the person reporting the zip code might have made a typing error. To improve the quality of probabilistic matching, we repeated the following steps with the remaining records in the charge database: fuzzy matching within three-digit zip code and within the same state and city. Each step first uses provided addresses in a given order of address lines, then the step is repeated after switching the address lines.

The last stage is hand-matching within three-digit zip-code. We reviewed 5,831 records in the charge database that are unmatched or left uncertain from the prior stage. In this stage, to verify the exact location of the establishment, where the charging party had worked, we utilize the charging party's demographic and occupation information from the charge database as well as qualitative notes.

In the charge database, we have 9,262 charges between 2012 and 2016.[16] Only 168 charges already had valid EEO-1 unit numbers in the charge database, creating one set of matched charges. Next, we used the remaining 9,094 charges without EEO-1 unit numbers for fuzzy matching. We matched 3,498 records using fuzzy matching, and an additional 809 records by merge-by-hand. Therefore, the total number of matched charges was 4,475. Among 4,475 charges, 4,238 charges were matched uniquely to the EEO-1 record. However, we had to drop 57 matches with different zip codes (first two digits), indicating an unresolvable mismatch between the employer being charged and the apparent EEO-1 record. We then exclude 559 public

[16] Some charges filed in locations that are not states, such as Puerto Rico and Guam, were dropped for all analyses. Charges filed in calendar year 2017 are dropped for the time series analysis but are included in the multivariate analysis as a 2016 charge.

employers, since they do not meet our sample restrictions. After excluding observations from years 2011 and 2012, and observations that have missing values in any variable, our final sample size to model the probability of charge being filed was 3,474.

**Figure 1a: Fitted values of weekly charges—After Executive Order Signed**

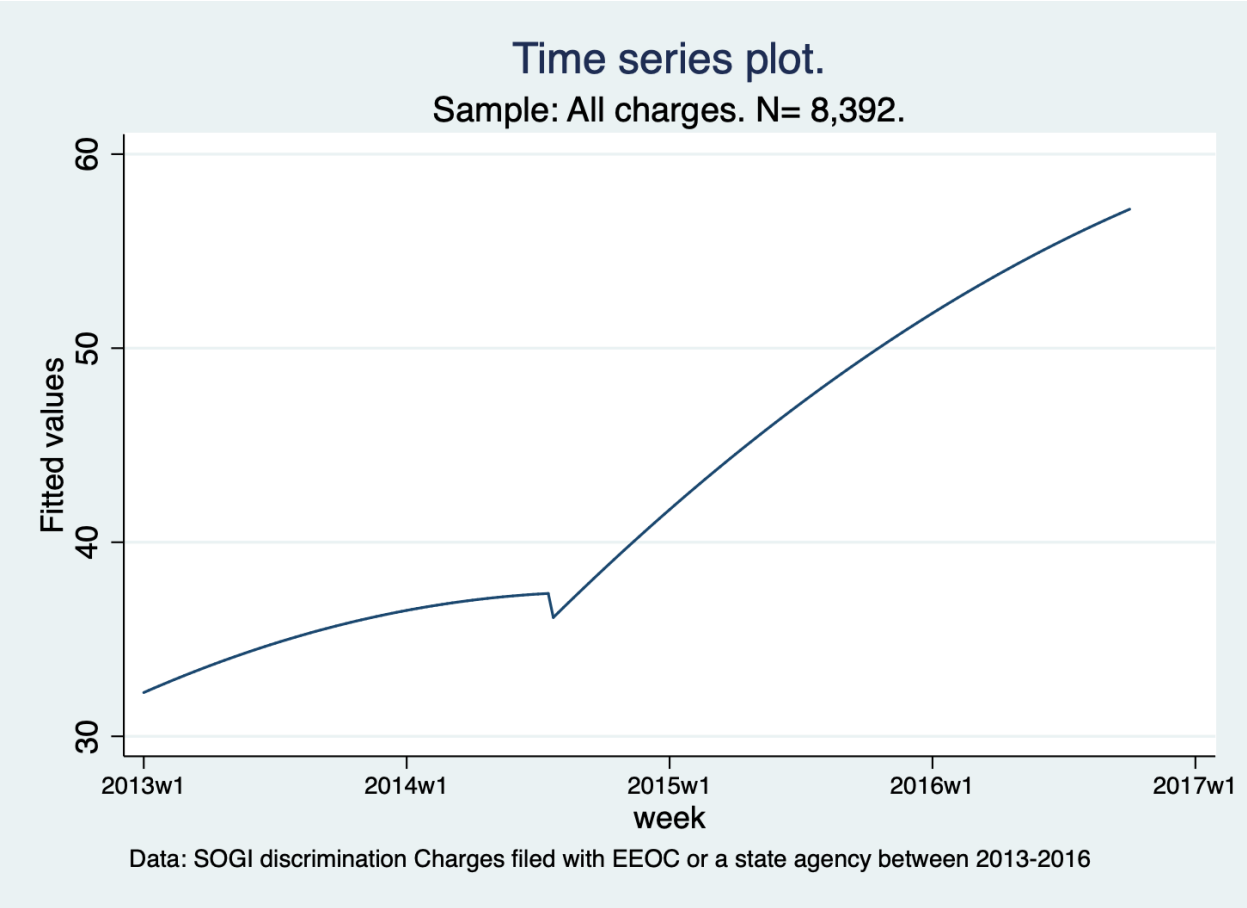
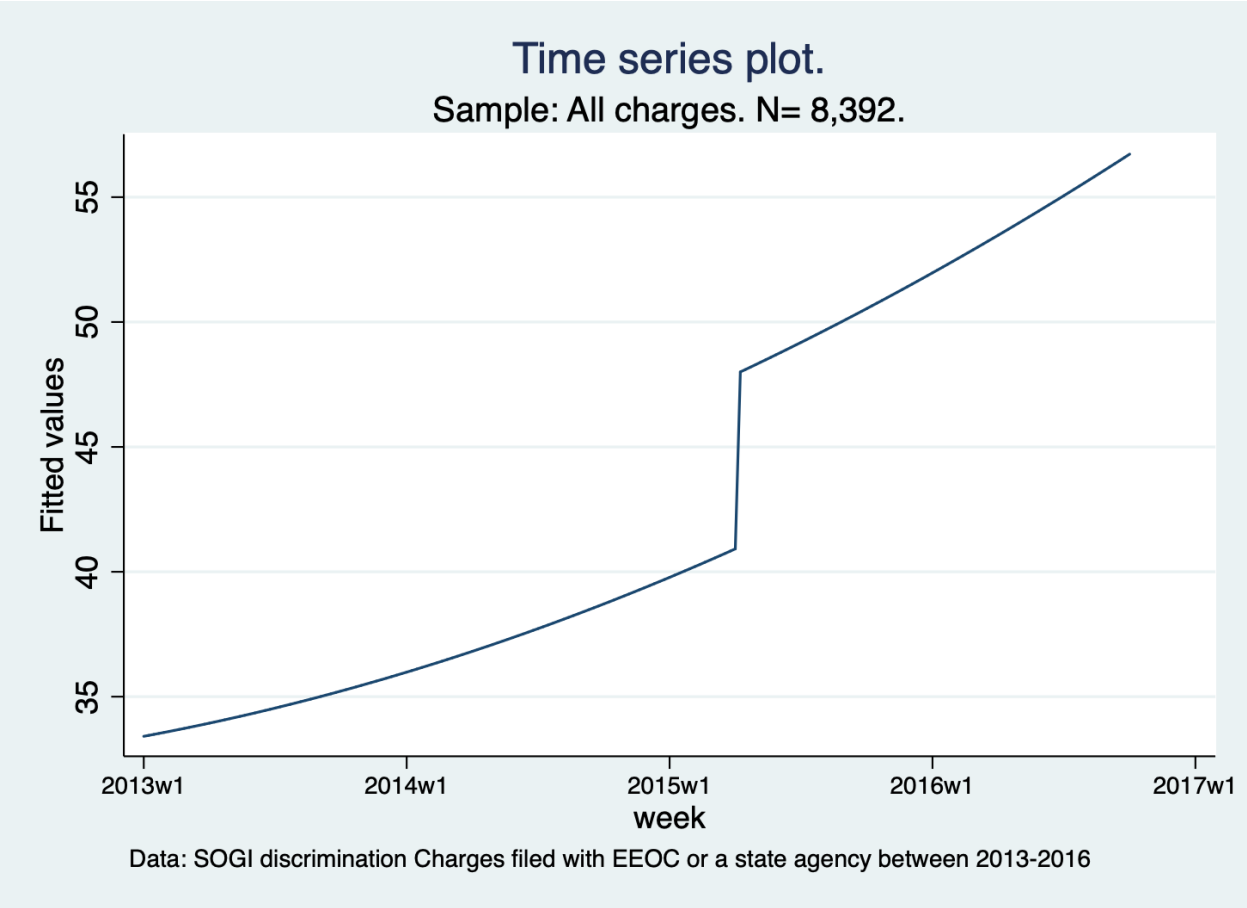
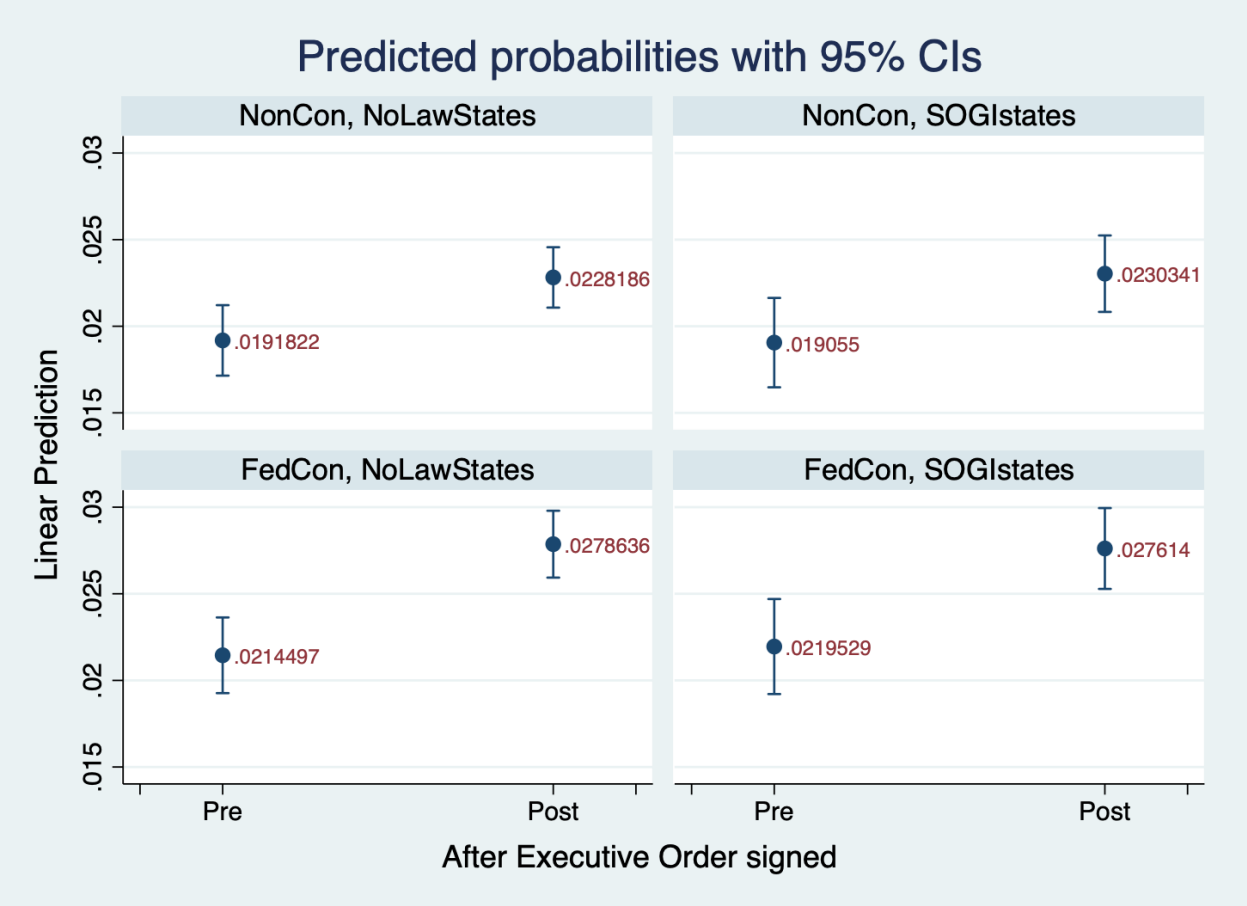


**Figure 1b: Fitted values of weekly charges—After Executive Order Implemented**



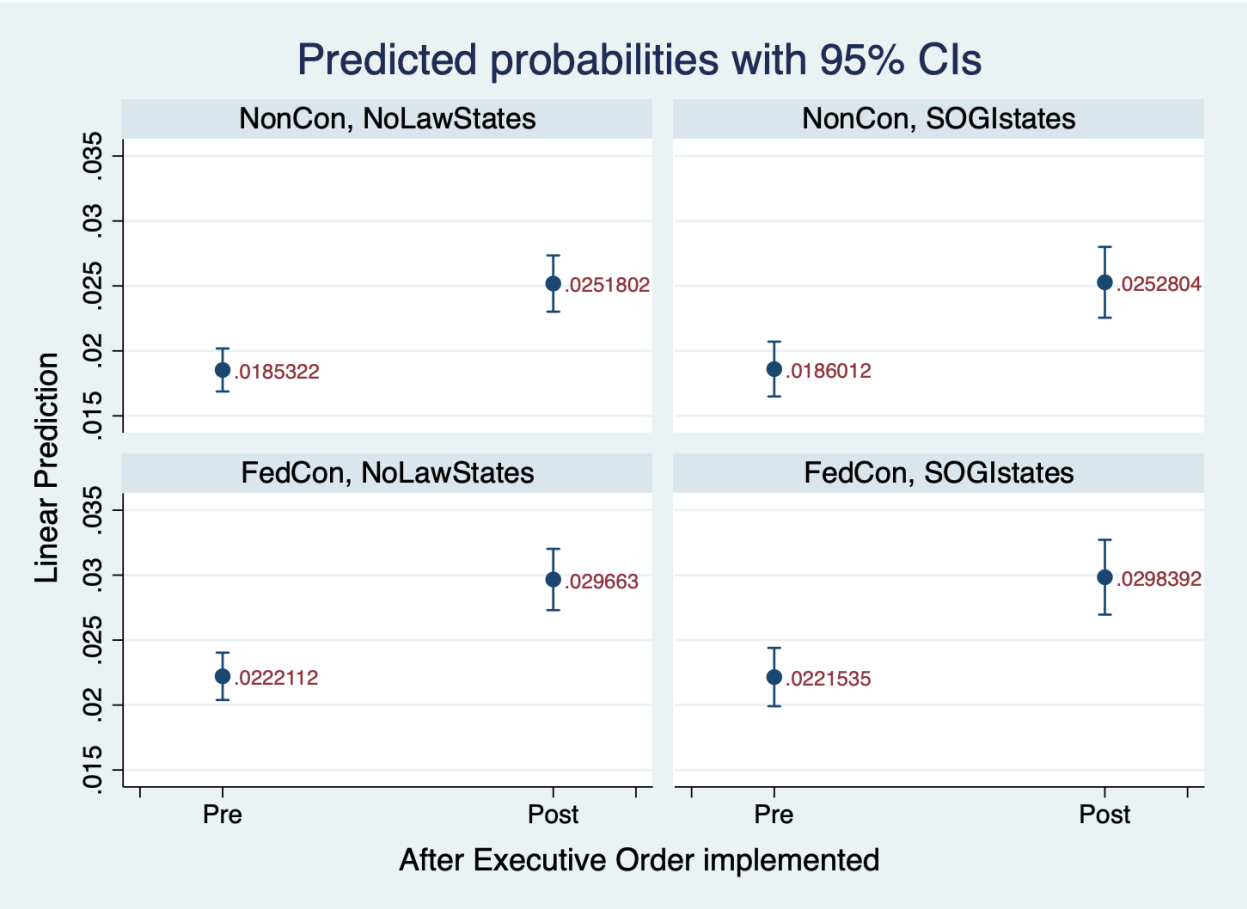

Source: Authors' calculations from EEOC charge data.

**Fig. 2a: Estimated probability of a charge before and after the order was signed, by policy group (n=148,682)**




Source: Calculated from EEOC establishment and charge date applied to model in Table 2.

**Fig. 2b: Estimated probability of a charge before and after the order was implemented, by policy group (n=148,682)**




Source: Calculated from EEOC establishment and charge date applied to model in Table 2.

**Fig. 3a: Frequency of Title VII sex discrimination charges filed, 2013-2016**

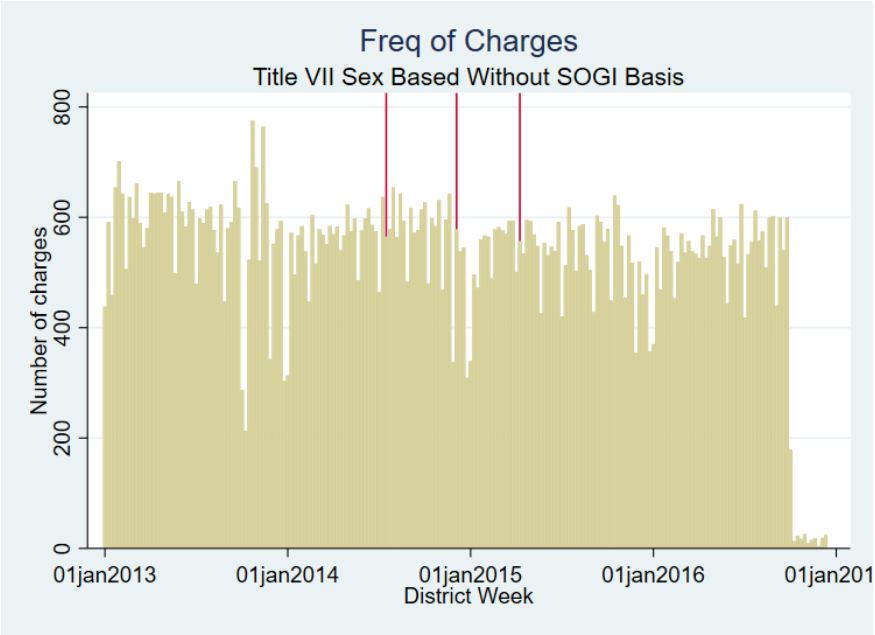
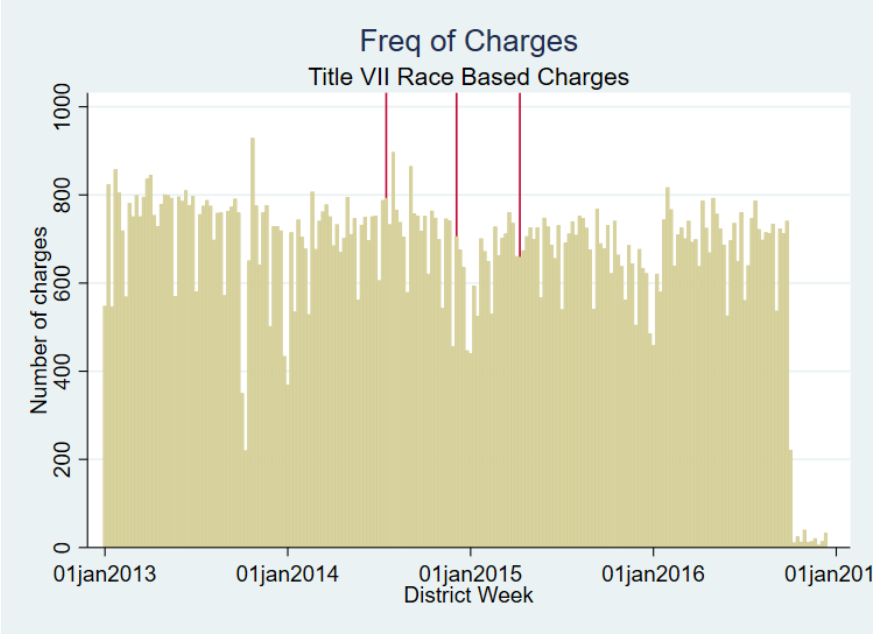
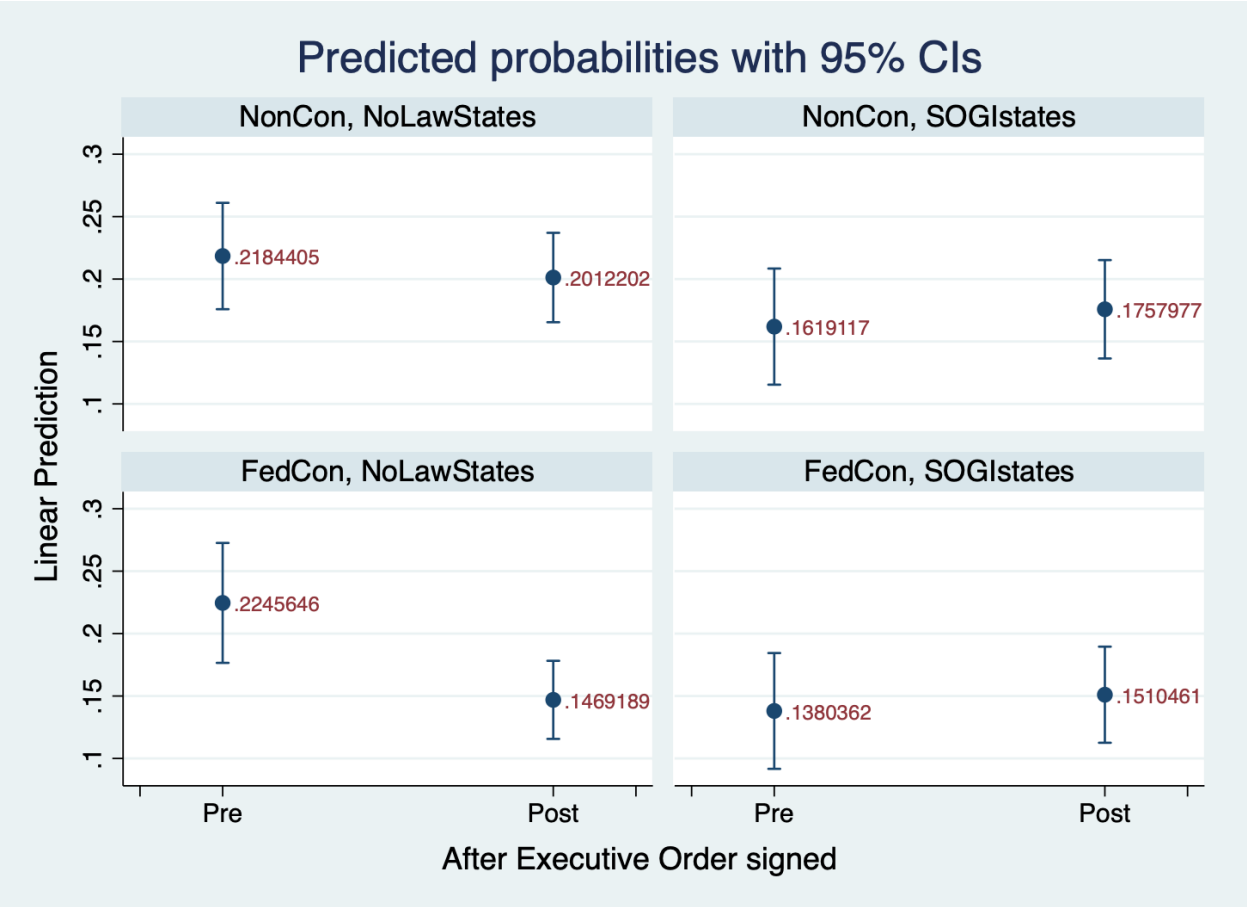



**Fig. 3b: Frequency of Title VII race discrimination charges filed, 2013-2016**



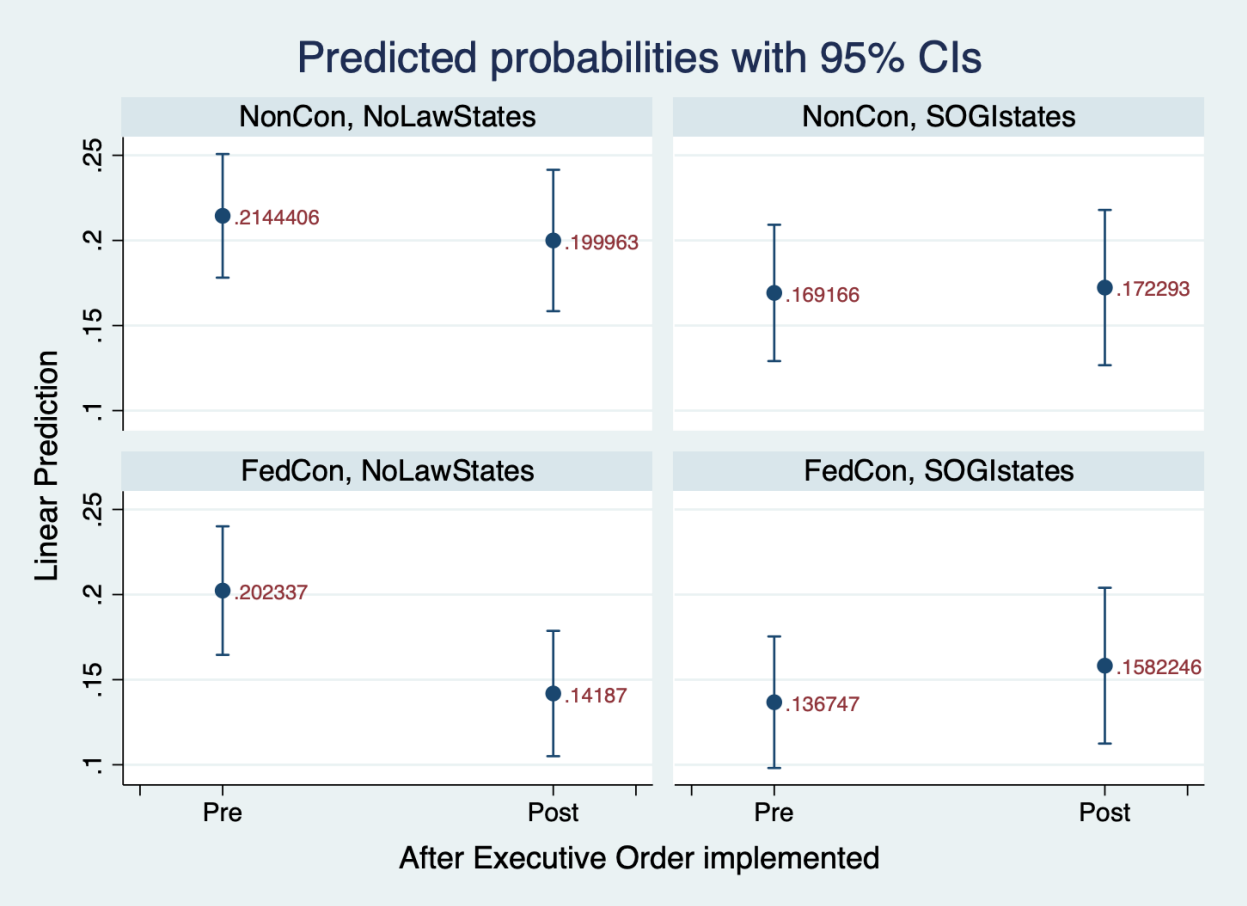

Note: Red lines denote date of signing of Executive Order (7/21/14), publication of final rules (12/9/14), and effective implementation date (4/8/15).
Source: Authors' tabulations from EEOC charge data.

**Fig. 4a: Estimated probability of a Merit Outcome before and after EO Signing, by policy group**




Source: Calculated from EEOC establishment and charge date applied to model in Table 4.

**Fig. 4b: Estimated probability of a Merit Outcome before and after Implementation, by policy group**




Source: Calculated from EEOC establishment and charge date applied to model in Table 4.

**Fig. 5a: Trends in Processing Categories for Charges Filed with EEOC, by contractor status**

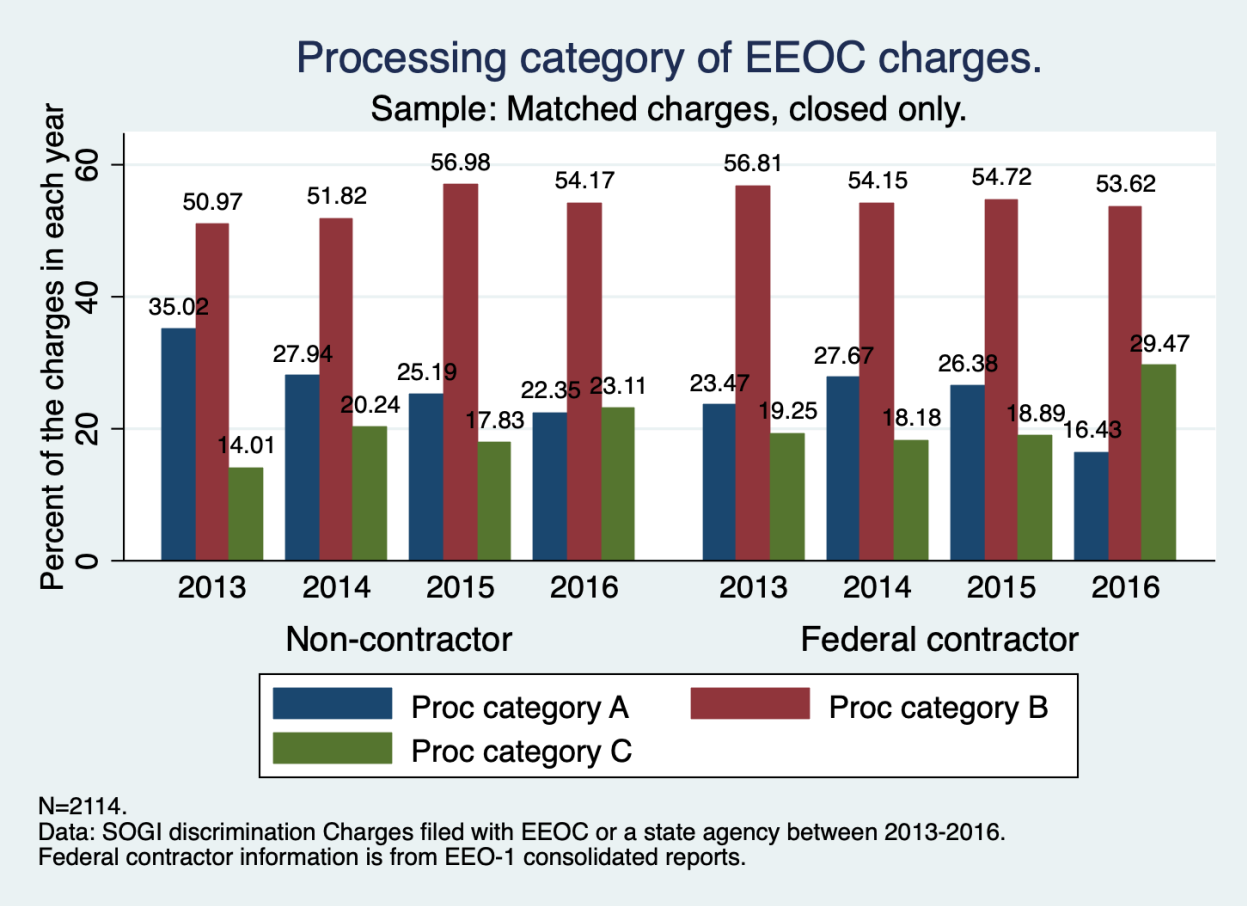


**Fig. 5b: Trends in Charge Quality from Qualitative Narrative Database, by contractor status**

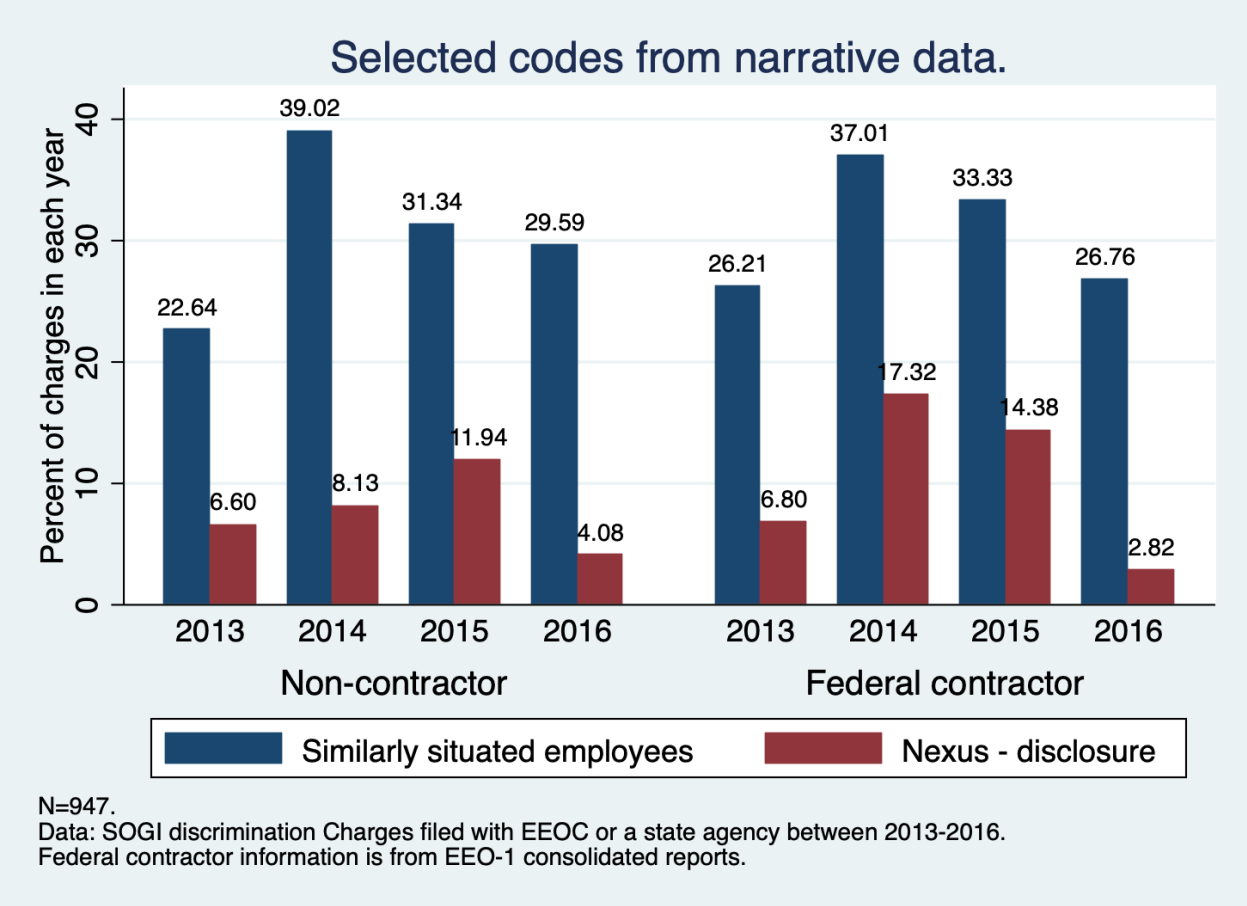


**Table 1. Means of variables for matched charges with 5% EEO-1 sample**

| | Non contractors | | Federal contractors | | All |
|---|---|---|---|---|---|
| | Non-SOGI state | SOGI state | Non-SOGI state | SOGI state | All |
| Had a charge filed | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 |
| | (.0007) | (.0009) | (.0007) | (.0009) | (.0004) |
| After Executive Order signed | 0.62 | 0.61 | 0.63 | 0.63 | 0.62 |
| | (.0022) | (.0028) | (.0024) | (.0028) | (.0013) |
| After Executive Order implemented | 0.44 | 0.43 | 0.44 | 0.44 | 0.44 |
| | (.0023) | (.0028) | (.0024) | (.0029) | (.0013) |
| Establishment size | 79.50 | 91.72 | 92.78 | 104.19 | 90.54 |
| | (1.021) | (1.7508) | (1.7815) | (3.1791) | (.9301) |
| Firm size | 38,768.08 | 29,957.33 | 58,237.81 | 54,400.63 | 45,357.25 |
| | (787.6497) | (725.8771) | (651.4796) | (645.4271) | (367.8651) |
| Multi establishment firm | 0.96 | 0.94 | 0.97 | 0.97 | 0.96 |
| | (.001) | (.0014) | (.0008) | (.001) | (.0005) |
| Multi state firm | 0.78 | 0.74 | 0.87 | 0.87 | 0.81 |
| | (.0019) | (.0025) | (.0016) | (.002) | (.001) |
| Gender dissimilarity index | 0.32 | 0.30 | 0.35 | 0.32 | 0.32 |
| | (.0014) | (.0017) | (.0016) | (.0018) | (.0008) |
| Minority dissimilarity index | 0.24 | 0.25 | 0.25 | 0.26 | 0.25 |
| | (.0012) | (.0014) | (.0013) | (.0015) | (.0007) |
| Proportion managers | 0.13 | 0.14 | 0.15 | 0.16 | 0.14 |
| | (.0008) | (.001) | (.0009) | (.0012) | (.0005) |
| Proportion female managers | 0.37 | 0.38 | 0.30 | 0.32 | 0.34 |
| | (.0018) | (.0021) | (.0018) | (.0021) | (.001) |
| Proportion female non-managers | 0.54 | 0.53 | 0.48 | 0.47 | 0.51 |
| | (.0014) | (.0017) | (.0017) | (.0019) | (.0008) |
| Manufacturing, Construction, Transportation, Mining | 0.07 | 0.06 | 0.11 | 0.11 | 0.09 |
| | (.0012) | (.0013) | (.0016) | (.0018) | (.0007) |
| Financial sales, Real estate sales, Wholesales | 0.13 | 0.14 | 0.23 | 0.22 | 0.18 |
| | (.0015) | (.002) | (.0021) | (.0025) | (.001) |
| Observations | 47,261 | 31,283 | 41,406 | 28,732 | 148,682 |

Source: Authors' calculations using SOGI discrimination charge data from EEOC or a state agency combined with establishment data from EEO-1.

**Table 2: Probability that a charge will be filed after 7/21/14 or 4/8/15**

| | Post EO Sign | | Post Implementation | |
|---|---|---|---|---|
| | Spec 1 | Spec2 | Spec 1 | Spec2 |
| No Law#Non Con#Pre EO | Base category | | | |
| No Law#Non Con#Post EO | 0.0036* | 0.0036* | 0.0066* | 0.0066* |
| | (0.0014) | (0.0014) | (0.0014) | (0.0014) |
| No Law#Fed Con#Pre EO | -0.0008 | 0.0023 | 0.0003 | 0.0037* |
| | (0.0015) | (0.0015) | (0.0012) | (0.0013) |
| No Law#Fed Con#Post EO | 0.0049* | 0.0087* | 0.0075* | 0.0111* |
| | (0.0014) | (0.0014) | (0.0015) | (0.0015) |
| State Law#Non Con#Pre EO | 0.0024 | -0.0001 | 0.0025+ | 0.0001 |
| | (0.0017) | (0.0017) | (0.0014) | (0.0014) |
| State Law#Non Con#Post EO | 0.0059* | 0.0039* | 0.0088* | 0.0067* |
| | (0.0015) | (0.0015) | (0.0017) | (0.0016) |
| State Law#Fed Con#Pre EO | 0.0019 | 0.0028 | 0.0027+ | 0.0036* |
| | (0.0018) | (0.0018) | (0.0014) | (0.0014) |
| State Law#Fed Con#Post EO | 0.0068* | 0.0084* | 0.0094* | 0.0113* |
| | (0.0016) | (0.0016) | (0.0017) | (0.0017) |
| Log size of establishment | | 0.0159* | | 0.0159* |
| | | (0.0004) | | (0.0004) |
| Log size of firm | | 0.0012* | | 0.0012* |
| | | (0.0002) | | (0.0002) |
| Multi establishment firm | | 0.0293* | | 0.0292* |
| | | (0.0038) | | (0.0038) |
| Multi state firm | | 0.0031* | | 0.0031* |
| | | (0.0013) | | (0.0013) |
| Gender dissimilarity index | | -0.0170* | | -0.0170* |
| | | (0.0011) | | (0.0011) |
| Minority dissimilarity index | | -0.0055* | | -0.0055* |
| | | (0.0012) | | (0.0012) |
| Proportion managers | | 0.0249* | | 0.0249* |
| | | (0.0020) | | (0.0020) |
| Proportion female managers | | -0.0053* | | -0.0053* |
| | | (0.0009) | | (0.0009) |
| Proportion female non-managers | | 0.0060* | | 0.0060* |
| | | (0.0011) | | (0.0011) |
| Headquarter | | 0.0317* | | 0.0317* |

| | | | | |
|---|---|---|---|---|
| | | (0.0029) | | (0.0029) |
| Manufacturing, Construction, | | -0.0084* | | -0.0084* |
| Transportation, Mining | | (0.0015) | | (0.0015) |
| Financial sales, Real estate sales, | | 0.0018+ | | 0.0018+ |
| Wholesales | | (0.0009) | | (0.0009) |
| Constant | 0.0200* | -0.0721* | 0.0193* | -0.0728* |
| | (0.0010) | (0.0045) | (0.0008) | (0.0045) |
| N | 148,682 | 148,682 | 148,682 | 148,682 |

Robust standard errors in parentheses. + $p < 0.10$, * $p < 0.05$

Spec 1: specification with policy interaction terms only. Spec2: full specification with policy interaction terms and firm characteristics.

Source: Authors' calculations using SOGI discrimination charge data from EEOC or a state agency combined with establishment data from EEO-1.

**Table 3. Mean of selected variables for sample of matched closed charges**

| | Non contractors | | Federal contractors | | All |
|---|---|---|---|---|---|
| | Non-SOGI state | SOGI state | Non-SOGI state | SOGI state | All |
| Meritorious outcome | 0.20 | 0.18 | 0.17 | 0.15 | 0.18 |
| | (.0136) | (.0151) | (.0133) | (.0147) | (.0071) |
| After Executive Order signed | 0.59 | 0.60 | 0.63 | 0.62 | 0.61 |
| | (.0166) | (.0191) | (.0171) | (.0198) | (.009) |
| After Executive Order implemented | 0.44 | 0.44 | 0.45 | 0.44 | 0.44 |
| | (.0168) | (.0194) | (.0177) | (.0203) | (.0092) |
| Establishment size | 344.52 | 364.75 | 696.08 | 750.35 | 527.88 |
| | (27.1917) | (26.9357) | (59.5659) | (94.8023) | (27.4701) |
| Firm size | 91,852.32 | 76,401.83 | 81,102.20 | 74,197.43 | 81,840.42 |
| | (10000.) | (11000.) | (7900.) | (8100.) | (4800.) |
| Multi establishment firm | 0.90 | 0.86 | 0.96 | 0.96 | 0.92 |
| | (.0101) | (.0136) | (.0072) | (.0082) | (.0051) |
| Multi state firm | 0.75 | 0.63 | 0.87 | 0.84 | 0.78 |
| | (.0146) | (.0188) | (.0118) | (.015) | (.0077) |
| Gender dissimilarity index | 0.28 | 0.28 | 0.29 | 0.27 | 0.28 |
| | (.0078) | (.0084) | (.0079) | (.0084) | (.0041) |
| Minority dissimilarity index | 0.24 | 0.26 | 0.26 | 0.25 | 0.25 |
| | (.0066) | (.0079) | (.0067) | (.0073) | (.0036) |
| Proportion managers | 0.13 | 0.14 | 0.13 | 0.15 | 0.14 |
| | (.0053) | (.0061) | (.0054) | (.0065) | (.0029) |
| Proportion female managers | 0.42 | 0.40 | 0.38 | 0.38 | 0.40 |
| | (.0106) | (.0114) | (.0102) | (.0116) | (.0055) |
| Proportion female non-managers | 0.55 | 0.54 | 0.50 | 0.50 | 0.53 |
| | (.0081) | (.009) | (.0092) | (.0102) | (.0046) |
| Headquarter | 0.07 | 0.05 | 0.11 | 0.11 | 0.09 |
| | (.0089) | (.0087) | (.0111) | (.0128) | (.0052) |
| Manufacturing, Construction, Transportation, Mining | 0.08 | 0.08 | 0.14 | 0.14 | 0.11 |
| | (.0091) | (.0106) | (.0123) | (.0142) | (.0057) |
| Financial sales, Real estate sales, Wholesales | 0.16 | 0.19 | 0.17 | 0.20 | 0.18 |
| | (.0125) | (.0153) | (.0133) | (.0165) | (.0071) |
| CP has legal representation | 0.30 | 0.27 | 0.28 | 0.25 | 0.28 |
| | (.0155) | (.0175) | (.0159) | (.0176) | (.0083) |

| | | | | | |
|---|---|---|---|---|---|
| Respondent has legal representation | 0.89 | 0.49 | 0.89 | 0.52 | 0.72 |
| | (.0105) | (.0195) | (.011) | (.0204) | (.0083) |
| Other basis | 0.85 | 0.90 | 0.87 | 0.93 | 0.88 |
| | (.0122) | (.0117) | (.0119) | (.0106) | (.006) |
| Observations | 873 | 655 | 792 | 601 | 2,921 |

Source: Authors' calculations from closed SOGI discrimination charges filed with EEOC or a state agency between 2013-2016, matched to establishment data from EEO-1 data.

**Table 4: Coefficients for model Predicting Merit Outcome for Closed Charges**

| | Post EO Sign | | Post Implementation | |
|---|---|---|---|---|
| | Spec 1 | Spec2 | Spec 1 | Spec2 |
| No Law#Non Con#Pre EO | Base category | | | |
| No Law#Non Con#Post EO | -0.0125 | -0.0172 | -0.0094 | -0.0145 |
| | (0.0278) | (0.0280) | (0.0273) | (0.0277) |
| No Law#Fed Con#Pre EO | 0.0048 | 0.0061 | -0.0130 | -0.0121 |
| | (0.0324) | (0.0325) | (0.0263) | (0.0265) |
| No Law#Fed Con#Post EO | -0.0676* | -0.0715* | -0.0681* | -0.0726* |
| | (0.0267) | (0.0266) | (0.0258) | (0.0260) |
| State Law#Non Con#Pre EO | -0.0366 | -0.0565+ | -0.0264 | -0.0453 |
| | (0.0319) | (0.0323) | (0.0271) | (0.0278) |
| State Law#Non Con#Post EO | -0.0212 | -0.0426 | -0.0210 | -0.0421 |
| | (0.0293) | (0.0298) | (0.0293) | (0.0300) |
| State Law#Fed Con#Pre EO | -0.0630* | -0.0804* | -0.0594* | -0.0777* |
| | (0.0320) | (0.0323) | (0.0266) | (0.0275) |
| State Law#Fed Con#Post EO | -0.0517+ | -0.0674* | -0.0440 | -0.0562+ |
| | (0.0287) | (0.0297) | (0.0291) | (0.0303) |
| Log size of establishment | | -0.0082+ | | -0.0081+ |
| | | (0.0047) | | (0.0047) |
| Log size of firm | | -0.0051 | | -0.0052 |
| | | (0.0038) | | (0.0038) |
| Multi establishment firm | | -0.0124 | | -0.0121 |
| | | (0.0345) | | (0.0346) |
| Multi state firm | | -0.0081 | | -0.0079 |
| | | (0.0240) | | (0.0241) |
| Gender dissimilarity index | | -0.0216 | | -0.0209 |
| | | (0.0363) | | (0.0363) |
| Minority dissimilarity index | | 0.0581 | | 0.0567 |
| | | (0.0432) | | (0.0432) |
| Proportion managers | | 0.0561 | | 0.0557 |
| | | (0.0561) | | (0.0559) |
| Proportion female managers | | -0.0199 | | -0.0216 |
| | | (0.0291) | | (0.0291) |
| Proportion female non-managers | | -0.1122* | | -0.1114* |
| | | (0.0365) | | (0.0364) |
| Headquarter | | -0.0142 | | -0.0151 |
| | | (0.0240) | | (0.0240) |

| | | | | |
|---|---|---|---|---|
| Manufacturing, Construction, Transportation, Mining | | -0.0056 | | -0.0045 |
| | | (0.0276) | | (0.0276) |
| Financial sales, Real estate sales, Wholesales | | 0.0172 | | 0.0177 |
| | | (0.0236) | | (0.0236) |
| CP has legal representation | | 0.0597* | | 0.0602* |
| | | (0.0201) | | (0.0201) |
| Respondent has legal representation | | -0.0001 | | -0.0015 |
| | | (0.0161) | | (0.0161) |
| EEOC | | -0.0329+ | | -0.0324+ |
| | | (0.0181) | | (0.0181) |
| Other basis | | -0.0031 | | -0.0051 |
| | | (0.0221) | | (0.0222) |
| Constant | 0.2090* | 0.3905* | 0.2057* | 0.3886* |
| | (0.0216) | (0.0610) | (0.0183) | (0.0597) |
| N | 2,921 | 2,921 | 2,921 | 2,921 |

Robust standard errors in parentheses. + $p < 0.10$, * $p < 0.05$

Spec 1: specification with policy interaction terms only. Spec2: full specification with policy interaction terms and firm characteristics.

Source: Authors' calculations from closed SOGI discrimination charges filed with EEOC or a state agency between 2013-2016, matched to establishment data from EEO-1 data.

**References**

Arrow, Kenneth. 1973. “The Theory of Discrimination.” In *Discrimination in Labor Markets,* ed. By Orley Ashenfelter and Albert Rees. Princeton, NJ: Princeton University Press, 3-33.

Ashenfelter, Orley, and Timothy Hannan. 1986. "Sex discrimination and product market competition: The case of the banking industry." The Quarterly Journal of Economics 101, no. 1: 149-173.

Badgett, M. V. Lee. 2001. Money, Myths, and Change: The Economic Lives of Lesbians and Gay Men. Chicago: University of Chicago Press.

Badgett, M. V. Lee. 2012. “The Impact of Extending Sexual Orientation and Gender Identity Non-Discrimination Requirements to Federal Contractors,” Williams Institute, UCLA, https://williamsinstitute.law.ucla.edu/wp-content/uploads/Badgett-EOImpact-Feb-201211.pdf, last accessed April 21, 2018.

Baumle, Amanda K. and D’Lane R. Compton. 2015. Legalizing LGBT Families: How the Law Shapes Parenthood. New York, NY: NYU Press.

Baumle, Amanda K. and Dudley L. Poston. 2011. “The Economic Cost of Homosexuality: Multilevel Analyses.” Social Forces 89: 1005-1031.

Becker, Gary. 1971. The Economics of Discrimination. Chicago: Univ. of Chicago Press.

Becker, Gary S. 1968. "Crime and Punishment: An Economic Approach." The Journal of Political Economy 76, no. 2: 169-217.

Black, Sandra E., and Elizabeth Brainerd. "Importing equality? The impact of globalization on gender discrimination." ILR Review 57, no. 4 (2004): 540-559.

Blasnik, Michael. 2010. RECLINK: Stata module to probabilistically match records, https://EconPapers.repec.org/RePEc:boc:bocode:s456876.

Burn, Ian. "Not All Laws are Created Equal: Legal Differences in State Non-Discrimination Laws and the Impact of LGBT Employment Protections." Journal of Labor Research (2018): 1-36.

Burstein, Paul. 1998. Discrimination, jobs, and politics: The struggle for equal employment opportunity in the United States since the New Deal. University of Chicago Press.

Connell, Catherine. 2015. School's out: Gay and Lesbian Teachers in the Classroom. Univ of California Press.

Duncan, Otis Dudley and Beverly Duncan. 1955. "Residential Distribution and Occupational Stratification." American Journal of Sociology. Vol. 60, No. 5, 493-503.

Ewick, Patricia and Susan S. Silbey. 1998. The Common Place of Law: Stories from Everyday Life. Chicago, IL: University of Chicago Press.

Felstiner, William L. F., Richard L. Abel, and Austin Sarat. 1980–81. "The Emergence and Transformation of Disputes: Naming, Blaming, Claiming . . ." Law & Society Review 15:631–54.

Flores, Andrew. 2014. "National Trends in Public Opinion on LGBT Rights in the United States," Williams Institute.

Freeman, Richard. 1973. "Changes in the Labor Market for Black Americans, 1948-1972," Brookings Papers on Economic Activity, Vol. 1, 67-120.

Hirsch, C. Elizabeth. 2008. "Settling for Less? Organizational Determinants of Discrimination Charge Outcomes." Law & Society Review, Vol. 42, No. 2, 239-274.

Hirsch, C. Elizabeth and Sabino Kornrich. 2008. "The Context of Discrimination: Workplace Conditions, Institutional Environments, and Sex and Race Discrimination Charges." American Journal of Sociology. 113: 1394-1432.

Hoffmann, Elizabeth A. 2003. “Legal Consciousness and Dispute Resolution: Different Disputing Behavior at Two Similar Taxicab Companies.” Law & Social Inquiry 28:691–716.

Klawitter, Marieka. 2011. “Multilevel analysis of the effects of antidiscrimination policies on earnings by sexual orientation,” Journal of Policy Analysis and Management, 30(2), 334-358.

Klawitter, Marieka. 2015. “Meta-Analysis of the Effects of Sexual Orientation on Earnings,” Industrial Relations. 54: 4-32.

Kurtulus, Fidan. 2012. “Affirmative Action and the Occupational Advancement of Minorities and Women During 1973-2003.” Industrial Relations. 51: 213-246.

Leonard, J.S., 1984. The impact of affirmative action on employment. Journal of Labor Economics, *2*(4), 439-463.

Martell, Michael E. "Do ENDAs end discrimination for behaviorally gay men?." Journal of Labor Research 34, no. 2 (2013): 147-169.

Miller, Richard E. and Austin Sarat. 1980–81. “Grievances, Claims, and Disputes: Assessing the Adversary Culture.” Law & Society Review 15:525–66.

Norton, Edward C., Hua Wang, and Chunrong Ai. 2004. The Stata Journal. Vol. 4, No. 2, 154-167.

NPR, Robert Wood Johnson Foundation, Harvard T.H. Chan School of Public Health. 2017. “Discrimination in America: Experiences and Views of LGBTQ Americans.” Survey of 489 U.S. adults conducted Jan. 26-April 9, 2017.

Pew Research Center. 2013. “A Survey of LGBT Americans: Attitudes, Experiences and Values in Changing Times,” Washington DC.

Schilt, Kristen. 2006. “Just One of the Guys? How Transmen Make Gender Visible at Work.” Gender & Society. 20: 465-490.

Siegelman, Peter, and John J. Donohue III. 1995. “The Selection of Employment Discrimination Disputes for Litigation: Using Business Cycle Effects to Test the Priest-Klein Hypothesis.” Journal of Legal Studies, 24: 427-462.

Tilcsik, Andras. 2011. “Pride and Prejudice: Employment Discrimination against Openly Gay Men in the United States,” American Journal of Sociology, 117: 586-626.

Tilcsik, András, Michel Anteby, and Carly R. Knight. 2015. “Concealable Stigma and Occupational Segregation: Toward a Theory of Gay and Lesbian Occupations.” Administrative Science Quarterly 60 (3): 446–81.

Valfort, Marie-Anne. 2017. “LGBTI in OECD Countries: A Review.” OECD Social, Employment and Migration Working Papers. Paris.

Ueno, Koji, Teresa Roach, and Abráham E Peña-Talamantes. 2013. “Sexual Orientation and Gender Typicality of the Occupation in Young Adulthood.” Social Forces 92 (1): 81–108.

Van Borm, and Stijn Baert. 2018. “What Drives Hiring Discrimination Against Transgenders?” International Journal of Manpower, 39: 581-599.

Weichselbaumer, Doris, and Rudolf Winter-Ebmer. "A meta-analysis of the international gender wage gap." Journal of Economic Surveys 19, no. 3 (2005): 479-511.

**Appendix A1. Probability that a charge will be filed comparing 2013-2014 to 2015-16**

| | Post EO (2015, 2016) | |
|---|---|---|
| | Spec 1 | Spec2 |
| No Law#Non Con#Pre EO (omitted) | | |
| No Law#Non Con#Post EO | 0.0044* | 0.0042* |
| | (0.0014) | (0.0013) |
| No Law#Fed Con#Pre EO | 0.0001 | 0.0031* |
| | (0.0014) | (0.0014) |
| No Law#Fed Con#Post EO | 0.0054* | 0.0091* |
| | (0.0014) | (0.0014) |
| State Law#Non Con#Pre EO | 0.0027+ | 0.0000 |
| | (0.0015) | (0.0015) |
| State Law#Non Con#Post EO | 0.0064* | 0.0043* |
| | (0.0016) | (0.0015) |
| State Law#Fed Con#Pre EO | 0.0025 | 0.0032* |
| | (0.0016) | (0.0016) |
| State Law#Fed Con#Post EO | 0.0074* | 0.0090* |
| | (0.0016) | (0.0016) |
| Log size of establishment | | 0.0159* |
| | | (0.0004) |
| Log size of firm | | 0.0012* |
| | | (0.0002) |
| Multi establishment firm | | 0.0293* |
| | | (0.0038) |
| Multi state firm | | 0.0031* |
| | | (0.0013) |
| Gender dissimilarity index | | -0.0170* |
| | | (0.0011) |
| Minority dissimilarity index | | -0.0055* |
| | | (0.0012) |
| Proportion managers | | 0.0248* |
| | | (0.0020) |
| Proportion female managers | | -0.0053* |
| | | (0.0009) |
| Proportion female non-managers | | 0.0060* |

| | | |
|---|---|---|
| | | (0.0011) |
| Headquarter | | 0.0317* |
| | | (0.0029) |
| Manufacturing, Construction, | | -0.0084* |
| Transportation, Mining | | (0.0015) |
| Financial sales, Real estate sales, | | 0.0018+ |
| Wholesales | | (0.0009) |
| Constant | 0.0199* | -0.0721* |
| | (0.0009) | (0.0045) |
| N | 148682 | 148682 |

Robust standard errors in parentheses. + p < 0.10, * p < 0.05
Spec 1: specification with policy interaction terms only. Spec2: full specification with policy interaction terms and establishment characteristics.
Source: Authors' calculations using SOGI discrimination charge data from EEOC or a state agency combined with establishment data from EEO-1.

**Appendix A2. Coefficients for model Predicting Merit Outcome for Closed Charges, comparing 2013-2014 to 2015-2016**

| | Post EO (2015, 2016) | |
|---|---|---|
| | Spec 1 | Spec2 |
| No Law#Non Con#Pre EO (omitted) | | |
| No Law#Non Con#Post EO | -0.0069 | -0.0109 |
| | (0.0272) | (0.0275) |
| No Law#Fed Con#Pre EO | -0.0092 | -0.0061 |
| | (0.0280) | (0.0282) |
| No Law#Fed Con#Post EO | -0.0632* | -0.0683* |
| | (0.0259) | (0.0260) |
| State Law#Non Con#Pre EO | -0.0105 | -0.0288 |
| | (0.0292) | (0.0297) |
| State Law#Non Con#Post EO | -0.0363 | -0.0577* |
| | (0.0283) | (0.0290) |
| State Law#Fed Con#Pre EO | -0.0607* | -0.0788* |
| | (0.0282) | (0.0289) |
| State Law#Fed Con#Post EO | -0.0437 | -0.0563+ |
| | (0.0285) | (0.0297) |
| Log size of establishment | | -0.0081+ |
| | | (0.0047) |
| Log size of firm | | -0.0053 |
| | | (0.0038) |
| Multi establishment firm | | -0.0118 |
| | | (0.0345) |
| Multi state firm | | -0.0077 |
| | | (0.0241) |
| Gender dissimilarity index | | -0.0206 |
| | | (0.0363) |
| Minority dissimilarity index | | 0.0576 |
| | | (0.0432) |
| Proportion managers | | 0.0562 |
| | | (0.0557) |
| Proportion female managers | | -0.0213 |
| | | (0.0290) |
| Proportion female non-managers | | -0.1126* |
| | | (0.0364) |
| Headquarter | | -0.0140 |

| | | |
|---|---|---|
| | | (0.0240) |
| Manufacturing, Construction, Transportation, Mining | | -0.0052 |
| | | (0.0275) |
| Financial sales, Real estate sales, Wholesales | | 0.0180 |
| | | (0.0236) |
| CP has legal representation | | 0.0596* |
| | | (0.0201) |
| Respondent has legal representation | | -0.0008 |
| | | (0.0161) |
| EEOC | | -0.0323+ |
| | | (0.0181) |
| Other basis | | -0.0040 |
| | | (0.0221) |
| Constant | 0.2050* | 0.3878* |
| | (0.0193) | (0.0600) |
| N | 2,921 | 2,921 |

Robust standard errors in parentheses. + $p < 0.10$, * $p < 0.05$
Spec 1: specification with policy interaction terms only. Spec2: full specification with policy interaction terms and firm characteristics.
Source: Authors' calculations from from closed SOGI discrimination charges filed with EEOC or a state agency between 2013-2016, matched to establishment data from EEO-1 data.

Appendix A3. **List of variables**

| Variable name | Definition | Classification types |
|---|---|---|
| chargeSOGIfiled | Has charge being filed | Binary |
| chargeSOGImerit2 | Merit charges based on gotbenefit and foundcause | Binary |
| postEOSIGN | After Executive Order signed | Binary |
| postIMPL | After Executive Order implemented | Binary |
| fedcon2 | Federal contractor from consolidated reports | Binary |
| size_est | Establishment size | Binary |
| size_firm | Firm size | Binary |
| multi_est | Multi-establishment firm | Binary |
| multi_state | Multi-state firm | Binary |
| D_gender | Index of dissimilarity (gender) | Continuous |
| D_minority | Index of dissimilarity (minority) | Continuous |
| ratio_mng | Proportion managers | Continuous |
| ratio_f_mng | Proportion female managers | Continuous |
| ratio_f_nonmng | Proportion female non-managers | Continuous |
| ind_manual | Manufacturing, Construction, Transportation, Mining | Binary |
| ind_client | Financial sales, Real estate sales, Wholesales | Binary |
| CPlegalrep | CP has legal representation | Binary |
| Rlegalrep | Respondent has legal representation | Binary |
| EEOCcharge2 | Charges filed with EEOC | Binary |
| anyotherbasis | Other basis | Binary |