# Cross-sector Female Representation and Firms' Social Policies*

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## Abstract

Despite calls for increased representation, women are broadly underrepresented in leadership roles in both government and business – two sectors that are increasingly asked to work together to address complex social problems. Research across a range of social science fields suggests that gender representation is an important determinant of coordination across parties. Our study exploits the early days of the COVID-19 pandemic to test whether cross-sector female representation has implications for the degree to which governmental priorities are reflected in firms' policies. Analyzing points of interest foot traffic data from SafeGraph, we find robust evidence that firms headquartered in or near cities with female mayors implemented more "stay-at-home"-focused responses, but only when there was sufficient female representation amongst firm leaders. Results from a complementary analysis of the effect of cross-sector female representation on corporate philanthropy in response to natural disasters corroborate our main findings. Overall, our results extend prior evidence on the gender dynamics of leadership efficacy to the cross-sector setting and suggest that female representation has important implications for both the decision-making processes of public companies and social policy more broadly.

**Keywords:** Corporate governance, female representation, political influence, corporate social responsibility, COVID-19

**JEL Classification** H70, D83, I18, M40, G40

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## 1. Introduction

Public policy experts often stress that so-called "cross-sector collaborations" between businesses and governments are crucial to addressing complex societal problems.[1] One factor that is thought to affect coordination across leadership teams is the gender of the people in power. Despite its potential importance, we have few opportunities to study how gender influences cross-sector collaboration in real-world settings. At the onset of the COVID-19 pandemic, local government leaders mobilized to provide up-to-date information to their constituents, while businesses were forced to quickly formulate their responses. In this paper, we examine the role of gender alignment in determining public-private coordination of pandemic mitigation strategies. Specifically, we ask whether the influence of female governmental leaders over firms' COVID-19 responses is enhanced when firms have more women in their leadership ranks.

Studies across a range of social science fields examine the influence of gender on coordination and leadership outcomes. The findings broadly indicate that the influence of women leaders varies with the gender composition of a group. In particular, women leaders appear to be more likely to have their ideas adopted by groups with more women. The findings support practitioner calls for a "critical mass" of representation within governmental, business, and other major institutions, which advocates believe is necessary for female leaders to effectively influence policy and business outcomes.

Our study exploits the onset of the COVID-19 pandemic in March 2020 to study whether these gender dynamics apply to cross-sector collaboration. The start of the pandemic in the U.S. led to a dramatic shift in the degree to which local government leaders sought cooperation from their private sector constituents, including their corporate constituents. In these early days, local

[1] See, for example, Stanford Social Innovation Review's supplement on cross-sector leadership, "The Need for Cross-sector Collaboration" at: https://ssir.org/articles/entry/the_need_for_cross_sector_collaboration.

government leaders moved quickly to compile up-to-date information about the state of virus transmission and communicate with stakeholders about the associated health risks. Meanwhile, at the onset of the pandemic, firms retained significant discretion in deciding whether or how to adjust operations to facilitate stay-at-home behavior for workers and customers. Operational decisions made at the headquarters level often dictated store- or branch-level policies across the country.[2] Thus, the degree of influence of government leaders over corporate decisions during this time potentially had far-reaching implications that extended beyond the immediate vicinity of their constituents.

We specifically consider the influence of mayors of large cities on leaders of firms headquartered nearby. We focus on mayors for several reasons. First, during March 2020, case outbreaks and perceived threats from future spread were most severe in urban environments. Not surprisingly, large-city mayors were at the forefront of mitigation measures, actively engaging with local community members and being among the first public officials to urge individuals to stay home.[3] Operationally, we observe significant variation in mayor gender in our sample: 30 percent of mayors in our 50-city sample are women. Last, focusing on large cities allows us to more easily control for variations in firm preferences related to the choice of where to headquarter. Our primary prediction is that, during this time, female mayors have a significantly greater influence over the operational responses of local firms that have more female leadership.

[2] For example, Apple made the decision to close all of its retail stores for two weeks on March 13, 2020 while simultaneously instituting remote work options for employees at its headquarters. (See: https://www.apple.com/newsroom/2020/03/apples-covid-19-response/).

[3] We are agnostic about the ex-post costs and benefits of stay-at-home orders. However, we argue that as of March 2020, there was consensus among health officials and politicians regarding 1) the desirability to mitigate the spread of COVID-19 and 2) that staying at home would reduce the spread of COVID-19. President Trump introduced his "15 Days to Slow the Spread" initiative on March 16, 2020, which encouraged Americans to (among other things) "work…from home whenever possible" (https://www.justice.gov/doj/page/file/1258516/dl).

Our sample period predates almost all formal stay-at-home regulations. Thus, we analyze a time when individual firms had discretion over policies aimed at limiting the spread of COVID-19.[4] We follow prior literature (e.g., de Vaan et al. 2021; Bizjak et al. 2022; Liu and Lu 2023) and use changes in foot traffic at firms' retail stores around the country to proxy for firm's COVID-19 policy responses. These data are from SafeGraph, which uses anonymized GPS data from user cell phones to collect foot traffic for roughly six million points of interest across the U.S. We measure changes in foot traffic over a short window, from the week before to the week following the World Health Organization's pandemic declaration on March 11, 2020 and the U.S. emergency declaration on March 13, 2020.[5] During this time, most firms' top (and arguably only) priority was to devise and implement a COVID-19 response. Our model includes industry and store-location county fixed effects to better isolate those firm-level policies.

We measure cross-sector female representation, our variable of interest, as the interaction between a) an indicator for whether the mayor of the firm's headquarters location is female and b) the degree of female representation at the firm. We quantify a firm's female representation at the board level using two measures: the percent of the board that is female and an indicator variable for firms in the top tercile of the percent female representation. While it is unlikely that, as of March 2020, board members were selected according to their anticipated pandemic responses, firms with more female representation may differ along other dimensions that are correlated with COVID-19 responses. Our primary specifications rely on the main effects of female representation

[4] These policies vary widely, but could include limiting the number of in-person customers, allowing only pick-up orders, or closing retail outlets completely.

[5] Specifically, we calculate the percent change in store visits as the number of unique store visits in the week starting March 16, 2020 less the number of unique store visits in the week starting March 2, 2020, divided by the number of unique store visits in the week starting March 2, 2020.

to control for potentially correlated firm-level factors. Our focus is instead on cross-sectional variation in mayoral influence that was exogenously amplified because of COVID-19.

We find consistent evidence that cross-sector female representation is a significant negative predictor of foot traffic changes. That is, consistent with our prediction, firms headquartered in cities with female mayors demonstrate a relatively greater reduction in store-level foot traffic around the country when there is more female leadership at the firm. These results are robust to using our two measures of female board representation. Our results are further robust to including corporate- and city-level controls, as well as mayor fixed effects. While our primary outcome measure is based on store foot traffic, we also test our predictions using firms' stated store closure policies as an alternative measure of a firm's operational response.[6] Consistent with our results using foot traffic, firms with more cross-sector female representation are more likely to publicly announce company-wide store closures during March 2020.[7] Robustness tests using executive-level measures of women leaders at the firm support our foot traffic and store policy findings. Overall, our findings suggest that the influence of female mayoral leadership on firms' COVID-19 policy decisions is at least partially determined by the level of female representation already present at the firm.

In supplemental analyses, we take several steps to account for internal and external validity concerns. We find mayors who score higher on measures of prominence are associated with greater COVID-19 responses from local firms. These results suggest that city mayors provide information that is pertinent to the COVID-19 responses of firms in their purview. We also confirm that our

[6] In untabulated results, we find a strong negative relation between the presence of a published firm-level store closure (e.g., carry-out-only) policy and the change in foot traffic. This relation is consistent with foot traffic capturing operational responses.

[7] We primarily focus on foot traffic as opposed to stated corporate policies to better capture variation in these policies. Additionally, not all firms publicized their policies, which makes it difficult to directly and reliably measure operational decisions.

results are not driven by alignment on other dimensions that may be correlated with gender, such as social or political preferences. To address generalizability concerns related to our COVID-19 setting, we examine whether corporate responses to natural disasters occurring in the firm's headquarters state are similarly associated with cross-sector female representation. Using natural disaster philanthropy data from Candid (formerly Foundation Center and Guidestar), we find that a firm's likelihood and amount of giving to a disaster in its home state increase with cross-sector representation of women. These results further underscore the implications of cross-sector female leadership in times when governments are most likely to seek influence over firms and suggest that the cross-sector gender dynamics we document are not merely a feature of the COVID-19 period.

Our paper is among the first to show that the influence of governments over private companies may vary with gender-diverse leadership. Many argue that joint decision-making processes between firms and local governments are vital to the function of both our political and economic systems. However, we know little about how these processes are affected by the individuals involved. Cross-sector collaborations between government and firm leaders often arise endogenously, but the start of the COVID-19 pandemic brought firm and political leaders together in a way that was not well-anticipated. The setting provides an opportunity to understand how female representation can affect this type of collaboration. While the bulk of research on dealings between firms and governments analyzes whether and how firms wield influence over the political process to extract benefits (e.g., Goldman et al. 2009; Tahoun 2014; Correia 2014; Brogaard et al. 2024), our study considers government leaders' influence over firm policies that may be cost-inducing for firms (Bizjak et al. 2022). Our findings also suggest that the policy preferences of city mayors may, through their local firms, reach areas well beyond their immediate jurisdictions.

Our study also adds to the literature examining gender differences in corporate decision-making, a stream of literature critical to our understanding of the drivers and consequences of female representation more generally. Many of the public calls for a "critical mass" of women in leadership are rooted in normative arguments that promote equality as a social good. We take a positive approach and examine the effects of female representation using a natural experiment. As such, we can provide causal evidence on the impact of cross-sector female representation on firm policies during the COVID-19 crisis, and our disaster-giving results suggest that these inferences likely generalize to other crisis settings. Our findings are consistent with studies that find females in leadership positions struggle to gain influence (Grossman et al. 2019), particularly over groups with low female representation (Gloor et al. 2020; Schopohl et al. 2021). Much of the work on females in leadership is focused on dynamics occurring *within* organizations or institutions. (e.g., Schwindt-Bayer and Michler 2005; Beaman et al. 2009; Matsa and Miller 2013; Carter et al. 2017; Schwartz-Ziv 2017; Van Peteghem et al. 2018; Hardies et al. 2021; Egan et al. 2022). Our findings extend this prior work to a cross-sector setting to suggest that similar dynamics may apply to interactions with influential parties and stakeholders who are external to the firm (Lee et al. 2019; Hao et al. 2022; Francis et al. 2021; Brogaard et al. 2024).

Finally, our findings contribute to our understanding of the drivers of business responses to public emergencies, specifically, the factors that influence corporate policies aimed at mitigating disease spread during the early days of the COVID-19 pandemic. Recent literature examines how other factors, including the firm's information environment (Liu and Lu 2022; de Vaan et al. 2021) or the political affiliation of its CEO (Bizjak et al. 2022) determined firms' pandemic responses. Our results suggest that firms were influenced by local politicians and that the level of influence was significantly affected by female representation. Pandemic preparedness advocates suggest that

pandemic events will increase in both frequency and severity in coming decades.[8] Understanding the social dynamics that may influence the timeliness or intensity of emergency responses by corporate constituents is likely to be relevant for preparedness efforts going forward.

## 2. Background and Hypothesis Development

According to statistics provided by the United Nations, women are underrepresented at all levels of government and political decision-making, and this is true worldwide. In local governments across Europe and North America, only 36 percent of representatives are women.[9] Women are similarly underrepresented in corporate leadership roles. According to Catalyst, as of 2020, women made up just 23 percent of executives on a worldwide basis and only 33 percent of senior managers in North America.[10] The initiatives of groups such as She Should Run and Emily's List aim to increase female representation in government, while Catalyst, Lean In, 50/50 Women on Boards, and others seek to do the same in the business world. Pressure from the so-called "Big Three" asset managers (State Street, Vanguard, and Blackrock) is believed to have driven a significant uptick in women on boards of directors over the period 2017 to 2019 (Gormley et al. 2023). Nasdaq's recent board diversity directive requires two women directors for boards of six or more members, and firms that do not meet the objective must provide an explanation.

Proponents of increased representation argue that a "critical mass" of females is necessary for women to effectively influence the organizations they serve. The idea was introduced by Kanter (1977), who posits that at "token" levels of representation, women's leadership potential may be

[8] See, for instance, the Center for Global Development's "The Next Pandemic Could Come Sooner and be Deadlier" (https://www.cgdev.org/blog/the-next-pandemic-could-come-soon-and-be-deadlier) or a Washington Post Live discussion entitled "Lessons of the coronavirus pandemic for the future of global health" (https://www.washingtonpost.com/washington-post-live/2022/11/17/lessons-coronavirus-pandemic-future-global-health/)

[9] See: https://www.unwomen.org/en/what-we-do/leadership-and-political-participation/facts-and-figures

[10] See Women in Management (Quick Take) as of March 1, 2022: https://www.catalyst.org/research/women-in-management/

hindered. Only when representation levels increase can the effects of female representation on policy outcomes be realized. Consistent with this argument, Konrad et al. (2008) provide qualitative evidence suggesting that the behavior and influence of female directors on corporate boards change when a critical mass is achieved. Schwartz-Ziv (2017) documents that women directors participate more in board discussions when there are at least three women on the board. Egan et al. (2022) find that women financial advisors are punished more harshly than male advisors for the same misconduct, but that this punishment gap dissipates when the firm has greater female leadership.

Studies also find that increasing female leadership leads to policy shifts. Firms with more female leadership are associated with enhanced monitoring (Adams and Ferreira 2009; Gul et al. 2011; Srinidhi et al. 2011; Lai et al. 2017; Schwartz-Ziv 2017), reduced risk (Huang and Kisgen 2013; Barua et al. 2010; Adhikari et al. 2019; Francis et al. 2015), and more corporate social responsibility initiatives (Fauver et al. 2024; Ibrahim and Angelidis 1994; Bear et al. 2010; Post et al. 2011; Jia and Zhang 2013; Hafsi and Turgut 2013). Similarly, when women are involved in the political process, evidence suggests that policy initiatives tend toward areas such as gender equality, childcare, the environment, and public health (Thomas 1991; Little et al. 2001; Chattopadhyay and Duflo 2004; Bratton 2005; Chaney 2006).

Most observational studies do little to establish a mechanism through which female representation may affect organizational decisions. In a counter to Kanter (1977), Dahlerup (1988) and others (e.g., Tremblay 2006; Childs and Krook 2006) argue that the effects of female representation are better explained by the addition of individuals with certain preferences rather than reaching a threshold proportion of women present. However, experimental research in fields such as psychology and economics suggests that preferences do not entirely explain the effects.

For instance, studies using coordination games find that all-female groups are better able to reach mutually-beneficial equilibriums than all-male groups (Cadsby and Maynes 1998; Eckel and Grossman 1998; Croson et al. 2008; Cason et al. 2022). Evaluations of leadership quality are also found to be more negative for female leaders (Grossman et al. 2019). One reason may be an incongruence between female leadership and stereotypes of gender roles (Rudman 1998; Beaman et al. 2009; Brescoll 2011). Gloor et al. (2020) and Schopohl et al. (2021) find that when follower groups have more female representation, perceptions of female leaders' positive qualities (e.g., trust) significantly improve. Similarly, Beaman et al. (2009) find that constituent evaluations of female political leaders appear to improve with past exposure to female leaders.

*2.1 Cross-sector collaboration at the onset of the COVID-19 pandemic*

In the U.S., the first confirmed case of the novel coronavirus that would later be named COVID-19 was verified in Snohomish County, Washington on January 20, 2020. Within two months, the World Health Organization declared COVID-19 a global pandemic, and the United States declared a nationwide state of emergency. Mitigation measures quickly accelerated. On March 16, President Trump's "15 Days to Slow the Spread" campaign was announced. The federal recommendations told individuals who were sick or at high risk to stay home, but did not require healthy Americans to do so. Instead, the campaign explicitly advised people to "listen to and follow the directions of your state and local authorities."

In the early days of the pandemic, the rate of spread was faster in cities than in areas where populations were more dispersed (Paul et al. 2020), and large city governments led the way with leadership and policy actions to encourage social distancing for all citizens. Urban counties were faster to adopt stay-at-home orders than rural ones, and their policies were instituted for longer

durations (Jiang et al. 2022).[11] Anecdotal evidence from public outreach in the days leading up to eventual city- and state-level shelter-in-place mandates suggests that mayors were actively engaging with private sector leaders to encourage them to take action to reduce in-person gathering. In an Op-Ed in the Washington Post on March 14, 2020, Seattle mayor Jenny Durkan urged her fellow mayors to be transparent with constituents and to encourage telecommuting policies for local employers.[12] When Nashville mayor John Cooper announced social distancing requirements for local restaurants on March 15, he indicated that his office would "spend the next 24 to 48 hours" reaching out to business owners to inform them of the changes, saying, "I expect them to comply."[13] On March 16, Louisville mayor Greg Fischer hosted a Facebook Live town hall with local business leaders to establish best practices, including work-from-home policies and other steps to mitigate spread.[14] Chicago mayor Lori Lightfoot, in an interview with CNN on March 17, stressed the role of communication strategies in encouraging individual and business constituents to take voluntary distancing measures:

> *Well, listen, we have been trying to do a lot to educate the public about why we are taking these steps, what the consequences of inaction are. And I'm pleased to say that people in Chicago are really standing tall and rallying. We have seen a number of businesses that are shutting down. People are engaging in teleworking. So, I think people are being responsive, and realizing this is like no other moment in our recent history.*[15]

Research on local policy and information effects suggests that mayors did have influence over constituent actions (i.e., Gupta et al. 2021). Meanwhile, on the corporate side, companies' decisions about what mitigation measures to institute varied. Apple Inc. closed all stores worldwide on March 13, 2020, while Tesla Inc.'s dealerships remained open without restrictions.

[11] Note that we do not argue that a formal stay-at-home policy is necessary for the mayor to influence firm behavior, rather that the mayor is urging businesses to adopt such policies early in the pandemic.
[12] See: https://www.washingtonpost.com/opinions/2020/03/14/seattle-mayor-jenny-durkan-coronavirus/
[13] See: https://www.bizjournals.com/nashville/news/2020/03/15/coronavirus-cooper-asks-to-close-bars-tighten.html
[14] See: https://www.bizjournals.com/louisville/news/2020/03/17/mayor-joins-humana-ge-appliances-leaders-to-offer.html
[15] See: http://www.cnn.com/TRANSCRIPTS/2003/17/cnr.07.html

For some companies, these policies were evolving over the early days of COVID-19. On March 12, 2020, Starbucks announced their intention to keep stores open while limiting seating and hours, but by March 20, 2020, they had limited nearly all their cafes to drive-thru service only. In addition to top executives, company boards seem to have played a key role in devising business strategies at this time. Directors met more frequently and regularly reviewed and advised on health and safety plans (Paine 2020). In a 2021 survey by McKinsey, board members claimed to have increased their time commitment by 20 percent from 2019 to 2020, and reported stronger levels of coordination with management due to the pandemic.[16]

*2.2 Research Question: Cross-sector Female Representation and Firms' COVID-19 Responses*

Policy experts argue that addressing issues such as climate change, income inequality, and public health crises will increasingly require collaboration between businesses and governments (Selsky and Parker 2005; Buffett and Eimicke 2018). Research in this area finds that effective communication between leaders and constituents can influence cooperation from both individual citizens (Peters et al. 1997; Slovic 1999; Lofstedt 2012) and other leaders (Crosby and Bryson 2005). Some studies suggest that, in the context of a public crisis, gender stereotypes can have implications for how individuals interpret information (Davidson-Schmich et al. 2023; Jung et al. 2014). However, few studies examine how female representation affects cross-sector communication and collaboration.[17]

We examine the extent to which cross-sector female representation affects how firms respond operationally in the beginning weeks of the COVID-19 pandemic. Prior evidence suggests

[16] See: https://www.mckinsey.com/capabilities/strategy-and-corporate-finance/our-insights/how-boards-have-risen-to-the-covid-19-challenge-and-whats-next

[17] Bauer et al. (2020) examine how collaborations between government and not-for-profit leaders in Lebanon vary with gender. They suggest that organizations with female leaders are more likely to use informal tools (e.g., verbal commitments) to collaborate than organizations with male leaders. Brogaard et al. (2024) find that female representatives in the US House of Representatives are more likely to award government contracts to female-owned firms, especially when the female politician has more political power.

that women in leadership positions have greater influence over decision-making when groups have more women. Therefore, we expect female mayors to be associated with a *greater* stay-at-home-focused response in firms with more female representation. That is, we expect the influence of female mayors on firms' stay-at-home responses to be increased when female representation at the firm is greater.

Of course, there are several reasons why our predictions may not hold. Gender dynamics are complicated and the effects of representation are often contextual (Joshi 2014; Bear and Woolley 2011; Triana et al. 2014; Wang and Kelan 2013; Tyrowicz et al. 2020; Havrylyshyn et al. 2022). The evidence suggesting that female leaders' influence varies with representation is likewise mixed (Craig and Sherif 1986). In addition, while we believe the unanticipated nature of the COVID-19 pandemic is an advantage to our design, the prior findings that underlie our hypotheses may not generalize to our setting, nor to the communications between businesses and governments more broadly. Finally, we would not expect to find results if mayors did not influence firm policies around this time, despite anecdotal evidence to the contrary. Ultimately, we believe these questions require further empirical analysis, which we provide with our study.

## 3. Data, Sample, and Research Design

We measure a firm's pandemic response according to the change in visits at the store level (i.e., retail locations) using point of interest (POI) foot traffic data from SafeGraph.[18] SafeGraph tracks consumer location data at roughly six million POIs across the United States and Canada. SafeGraph obtains raw GPS data from cell phone applications where users have consented to having their locations tracked. It then anonymizes and aggregates user data by location. We

[18] SafeGraph bases its business on the sale of consumer location data, but for a period of time the company made its aggregated location data available at no cost to encourage increased research on the spread and impacts of COVID-19.

specifically use SafeGraph Weekly Patterns data, which include the raw visit and visitor counts to individual locations across the United States, aggregated on a weekly basis. Raw visit counts include any visit to a POI of at least four minutes or more during the date range.

SafeGraph data indicate whether a store location is affiliated with a larger brand name and, therefore, other POIs. Starting with a list of available SafeGraph brands, we hand-collect the affiliated parent company for any brand with at least 100 stores.[19] For any parent company included in the sample, we include all relevant subsidiary brands (including those with fewer than 100 stores). After limiting to firms headquartered in the United States, we are left with 281 firms with data available in SafeGraph during March of 2020.

Although foot traffic data have been used in recent studies as a proxy for firm policies related to the pandemic (e.g., Bizjak et al. 2022; de Vaan et al. 2021), we also hand-collect corporate policies related to retail locations in March 2020 and we use this alternative measure in robust specifications. In an untabulated analysis, we find that store closure policies announced during March 2020 are significantly negatively associated with the observed change in foot traffic. This finding is consistent with foot traffic reflecting policies that limit customer traffic in retail locations.

We hand-collect demographic details for the mayors of the 100 largest cities in the United States (as measured by population) as of March 2020 (see Appendix A).[20] We further assess whether our sample firms are headquartered within any of these cities or their greater metropolitan areas. To do so, we first identify firms directly headquartered in one of the 100 largest cities. We then check any non-matches against the core-based statistical area (CBSA) for each of the 100

[19] For example, we tie all Banana Republic, Old Navy, Athleta, and GAP stores back to their parent, The Gap, Inc.
[20] Specifically, we assign gender based on pronouns used in biographical information available on official websites.

cities to match companies headquartered in the surrounding metropolitan areas to their nearest city, where appropriate.[21] This matching process leaves us with 228 firms.

We collect data on board members active during March of 2020, including information on age and gender, from BoardEx. For robustness tests, we collect information for executives active during March 2020 from Execucomp. Where data are unavailable or limited in BoardEx or Execucomp, we hand-collect the information directly from the most recent proxy statement filed before the beginning of the pandemic. Other firm-level controls are from Compustat and CRSP. Our final sample comprises 312,146 retail outlets for 203 parent firms headquartered in or near 50 major cities across the United States.[22] Table 1 provides a summary of our sample selection. Appendix A provides a sample breakdown by city.

*3.1 Empirical strategy*

The COVID-19 pandemic caused an unexpected time-series increase, from pre- to post-pandemic onset, in the communication, engagement, and influence of government leaders over local firms. While the increase in engagement arguably applies to all firms in our sample, only some firms (our "treated" firms) were exposed to cross-sector female representation. Thus, we use the COVID-19 setting to test whether cross-sector female gender representation affects the influence of female mayors over firms' COVID-19 responses.[23] As neither firm- nor government-leaders were chosen in anticipation of this increased engagement, we believe our design can

[21] CBSAs are defined by the U.S. Census as consisting of a county or counties "with at least one core (urban area) of at least 10,000 population, plus adjacent counties having a high degree of social and economic integration with the core as measured through commuting ties."

[22] For example, Ford Motor Company is headquartered in Dearborn, MI and therefore would not match to Detroit at the strict city level. Yet, Dearborn is within the Detroit CBSA and therefore Ford in our sample is matched to the city of Detroit. A company like Walmart is not included in our sample, as Bentonville is not included in our city list, nor is Fayetteville, the largest city attached to the CBSA where Walmart is headquartered.

[23] As we measure firm responses as the change in foot traffic over a single pre- to post-pandemic period, our time series variation is captured by our dependent variable, and we do not include a "post" indicator that a traditional differences-in-differences model would.

provide causal inferences with regard to the effects of cross-sector female representation in the context of the COVID-19 pandemic.[24]

To better isolate these effects, we focus our analysis on changes over a narrow window in March 2020 (see Figure 1). We do this for several reasons. First, as we outline in Section 2.1, during this time local mayors served an important informational role for their constituents, but decisions over whether and how to alter operations were largely left to individual firms. Focusing on a window that predates the majority of state and local stay-at-home orders allows us to exploit variations in firms' operational decisions. Further, during these early days, outbreaks were concentrated in metropolitan areas, where responses were focused on mitigating disease spread. Taken together, grassroots efforts to connect with local businesses to contain the disease were likely prevalent during this time. Finally, by focusing on these first weeks, we narrow our analysis to a time when firms' top (and arguably only) priority was to devise and implement their COVID-19 responses.

*3.2 Regression model*

To analyze whether store visit changes are associated with cross-sector female representation between the mayor and the firm, we estimate the following regression:

$$PCT\_CHG\_VISITS_{i,k} = \beta_1 MAYOR\_FEM_k + \beta_2 BOARD\_FEM_k + \beta_3 MAYOR\_FEM_k * BOARD\_FEM_k + \gamma_{ind} + \varphi_{county} + X_k + \varepsilon_{i,k} \quad (1)$$

We measure *PCT_CHG_VISITS* as the change in visits from the pre-period to the post-period, scaled by visits in the pre-period for store *i* of parent firm *k*. As shown in Figure 1, we center our

[24] The threat to our causal interpretation lies primarily in the existence of an omitted factor that simultaneously correlates with cross-sector gender alignment and drives our outcome variable. In Section 5.1, we take several steps to rule out ideological or political alignment as such a factor. In addition, a primary drawback of the COVID-19 setting is its potential lack of generalizability. In Section 5.2, we address generalizability concerns by showing that our inferences hold in an additional setting: post-disaster corporate giving.

pre- and post-periods around two key dates at the beginning of the pandemic: the date COVID-19 was declared a pandemic by the World Health Organization (March 11, 2020) and the date the United States declared a National Emergency (March 13, 2020). As SafeGraph aggregates data weekly from Monday through Sunday, we use the week beginning March 2, 2020 (ending March 8, 2020) as our pre-period and the week beginning March 16, 2020 (ending March 22, 2020) as our post-period.

*MAYOR_FEM* is an indicator equal to one if the mayor of the headquarters city of firm *k* is female, zero otherwise. We use two measures of *BOARD_FEM* to capture female leadership on the board of firm *k*: *BOARD_FEMALE_PCT* is the number of females on the board scaled by the total number of directors on the board and *BOARD_FEMALE_TOP3* is an indicator equal to one if *BOARD_FEMALE_PCT* is in the top tercile of the sample, zero otherwise.

In addition to industry-level fixed effects, our main specification includes a fixed effect for the store location's county. We observe significant variation in mean changes in store visits across counties in our sample (see Figure 2). Including store-location county fixed effects allows us to compare changes in foot traffic for establishments within the same county. As our sample is for a single time period, these fixed effects also account for differences in COVID-19 case rates, precautions, and preferences of residents within that county, as well as any local regulations. For a more detailed description of our research design, including our fixed effect structure, see Appendix B.

Our primary specifications include a vector of firm-level control variables ($X_k$) to account for differences across firms and headquarters locations. We follow Bizjak et al. (2022) and control for firm characteristics that may impact store visits. We control for performance using *TOBINSQ,* measured as the sum of the firm's market value of equity and book value of liabilities divided by

the book value of total assets as of the most recent fiscal year-end, *ROA*, measured as income before extraordinary items divided by the average of beginning- and end-of-year assets for the most recent fiscal year, and *LOGRET*, the annual buy-and-hold log return over the prior year (March 1, 2019 to February 29, 2020). We also control for size (*LSALES*), measured as the log of total sales in the prior fiscal year, leverage (*DEBT*), measured as the sum of short- and long-term debt divided by total assets as of the most recent fiscal year-end, and liquidity (*CASH*), measured as the total cash balance divided by total assets as of the end of the most recent fiscal year.

We follow Adams and Ferreira (2009) and control for additional factors that affect female board membership in a given year. In addition to performance and size, these include complexity, which we proxy for using the log of the number of segments (*LSEGMENTS*), volatility (*VOL60*), which we measure as the standard deviation of monthly price returns over the previous 60 months, and board size (*LBOARD_SIZE*) which is the log of the total number of board members. We also control for the percentage of board members who are independent directors (*PCT_INDEP*).

We expect messaging around COVID-19 at this time to be similar across mayors. However, to the extent that female mayorships correlate with areas of enhanced COVID-19 precautions, we control for the mayor city's state-level rank of COVID-19 precautions, as rated by Wallethub.com as of March 16, 2020. Finally, to control for the firm's COVID-19 context, we include the total number of confirmed COVID-19 cases per 1000 people in the headquarters zip code as of the end of March 2020.[25] Further definitions of our primary and control variables can be found in Appendix C.

[25] Liu and Lu (2023) analyze work-from-home (WFH) behavior during the early days of the pandemic. They find evidence that the firm's information network impacted the degree of WFH behavior in the area of the firm's headquarters. In untabulated analysis, we also control for Liu and Lu's (2023) WFH ratio and find our results are qualitatively similar. Because the measure does not cover our entire sample, we omit it from our primary analysis. We are grateful to the authors for sharing their measure with us.

## 4. Main Results

### *4.1 Descriptive Statistics*

Table 2 Panel A presents descriptive statistics for our full sample of store-level observations. Across the more than 312,000 stores we analyze, the mean number of visitors from the week before the pandemic declaration to the week following decreased by around one-third; thus our analysis focuses on variation in this decrease in visits. As of March 2020, over 31 percent of stores are associated with firms headquartered in or near major cities with female mayors.

Panel B presents descriptive statistics at the parent company level. The mean firm has 1,538 stores in our data, with a median of 549 stores, and 27.6 percent of firms in our sample are headquartered in or around a city with a female mayor. The firms in our sample have a mean (median) 5.3 (4.7) percent return-on-assets. The average board has 10.7 members with 2.9 (27 percent) female members. Eight percent of our parent company CEOs are female and the median firm has one female executive amongst its top five by compensation. At the headquarters location, the mean (median) COVID cases as of the end of March 2020 was 1.5 (0.74) per 1000 population, above the national rate of 0.70. In Panel C we separately estimate the mean values of our variables for firms headquartered in and around male- or female-mayor cities. T-tests of differences reveal that firms in female-led cities do not have greater female representation on their boards. Firms headquartered in and near cities with a female mayor do perform better on some operational metrics. Thus, we control for these factors in our multivariate analysis.

Panel D provides (Pearson) correlation coefficients for our primary variables. We observe a negative correlation between the number or percentage of female directors and the change in store visits. We also observe a negative correlation between the presence of a female CEO or the

number of women in the top management team and the change in store visits. While most of our variables are significantly correlated, relatively few are large in absolute magnitude.

*4.2 Cross-sector representation – female board representation*

In Table 3, we examine the effects of cross-sector female representation on firms' pandemic responses. Column 1 reports the main effect of having a female local leader on firms' pandemic response. The results suggest that the presence of a female mayor at the firm's headquarters city is associated with a greater reduction in foot traffic at the firm's stores around the country, on average. In Columns 2 and 4, we additionally model each of our *BOARD_FEM* measures (*BOARD_FEMALE_PCT* and *BOARD_FEMALE_TOP3*) as a determinant of changes in foot traffic. Likewise, we find some evidence that firms in the top third of female board representation are associated with greater decreases in foot traffic.

These main effects are consistent with prior research that suggests that female leaders at the firm and government level may have more pro-social policy preferences (e.g., Fauver et al. 2024; Jia and Jiang 2013; Thomas 1991; Little et al. 2001; Chattopadhyay and Duflo 2004; Bratton 2005; Chaney 2006) and that female leaders launched more aggressive pandemic responses (Bruce et al. 2022). However, we interpret these main effects with caution. In most cases, mayors in our setting do not directly affect foot traffic at firms' stores. Instead, the impact of the female mayor on foot traffic is through her influence on the policies of firms headquartered in her city. Therefore, it is difficult for us to distinguish whether a *MAYOR_FEM* effect is due to a difference in policy preferences or in how her influence is interpreted and implemented by the average board in our sample. Likewise, the *BOARD_FEM* main effect captures an on-average effect that, given the average firm is headquartered in a male mayor city, is similarly difficult for us to interpret.

Therefore, we focus on using these main effects to control for potentially correlated firm- or headquarters-level factors that can influence pandemic responses.

Our study aims to better understand the effects of cross-sector coordination that was exogenously amplified during the early days of the pandemic. Our primary results estimating *Equation 1* are presented in Columns 3 and 5. Consistent with our prediction, we find a negative and significant interactive effect between a female mayor and female representation on the board (*MAYOR_FEM*BOARD_FEM*) across both *BOARD_FEM* measures. The findings in these columns suggest that the most mitigation-focused responses (i.e., greater decreases in store visits) are concentrated in firms with more female board representation *and* a female mayor in the headquarters city. Specifically, cross-sector female representation results in an additional decrease in foot traffic of 1.7% above and beyond the effects of having a female mayor or being in the top tercile of female board representation. These results suggest that a female mayor has a more significant influence over a firm's COVID-19 policies when women are relatively more represented on the board.

In Panel B, we once again estimate the specifications from Panel A, but with additional firm- and headquarters location-level controls that may influence foot traffic or the degree of female board representation. Consistent with prior research (Bizjak et al. 2022; Liu and Lu 2023), our findings suggest that corporate-level characteristics were important determinants of store-level responses to the COVID-19 pandemic. For instance, we find that Tobin's q, accounting profitability, firm size, cash reserves, and lower levels of debt are associated with more reduced foot traffic. With these additional controls, we continue to find a negative and significant coefficient on the interaction between *MAYOR_FEM* and *BOARD_FEM*, consistent with cross-sector representation being an important driver of firms' pandemic responses.

In Panel C, we examine the effect of interacting *MAYOR_FEM* with *BOARD_FEM* while also controlling for differences in policy or communication strategies at the mayoral level using mayor fixed effects. Mayor fixed effects subsume city-level preferences that could be related to both the choice of where to headquarter and the firm's pandemic response. These specifications also include the complete set of controls, as in Panel B, although the main effect of *MAYOR_FEM* necessarily drops out.[26] In Columns 1 and 3, we continue to include industry and store-location county fixed effects, and in Columns 2 and 4, we introduce industry-by-store-location county fixed effects to more finely control for variation in COVID-19 policies and preferences at the store-location county level.[27] The results from this panel are consistent with those in Panels A and B. Specifically, comparing firms headquartered in or near the same female-headed city, we see larger decreases in foot traffic for those firms with more female board representation. This finding holds regardless of the measure of *BOARD_FEM* or the industry and store-location county (versus industry-by-store-location county) fixed effect structure. That is, cross-sector female representation is associated with a more stay-at-home-focused pandemic response.

*4.3 Firm Policies*

Our use of foot traffic as our proxy for firm policies stems from prior literature (e.g., Bijzak et al. 2022). However, to address concerns that foot traffic does not capture headquarters-level policies, we consider an alternative measure of a firm's pandemic response: firm-initiated store closures announced in March 2020. In an untabulated analysis, we confirm that these closure policies are negatively associated with foot traffic changes during our sample period. Additionally, in Table 4, we examine the effects of cross-sector female leadership on the likelihood of disclosing

[26] *HEADQUARTER_CASES* does not drop out of the specifications with mayor fixed effects because it is measured at the more granular zip code, rather than CBSA, level.

[27] For example, ahead of stay-at-home orders, some localities first placed restrictions on certain businesses like bars, restaurants, and gyms.

firm-wide store closures. The specification is a logistic regression where the outcome variable is *CLOSURE*, an indicator variable equal to one if the firm announced the closure of stores due to a company-wide policy, zero otherwise.[28] Overall, we find a positive association between cross-sector female representation and the propensity to issue a firm-wide store closure policy. This association is positive and significant for both *BOARD_FEMALE_PCT* and *BOARD_FEMALE_TOP3* (Columns 1 and 2, respectively), further suggesting that the most mitigation-focused responses are concentrated in firms headquartered in a city with a female mayor *and* proportionately more female board representation.

*4.4 Alternative measure of female representation: Executives*

We use the board of directors as our primary basis for measuring the level of representation among firm leaders for three reasons. First, the function of the board is to provide strategic advice to management, and as we note in Section 2, that role reportedly increased during the COVID-19 pandemic. Second, each member of the board of directors and their respective biographies are required disclosures, whereas research on top management teams tends to rely on compensation disclosures to identify team members. The functions and titles of these top management members vary across firms, and the disclosures may not capture the entire decision-making team. Finally, policies designed to increase gender representation at the corporate level have focused on minimum requirements for women board members rather than executives. However, for robustness, we also include executive-level measures of female representation at the firm (*EXEC_FEM*). *CEO_FEM* is an indicator equal to one if the firm's CEO as of March 2020 was

[28] For each of the 203 firms in our sample, we hand collect all firm-announced policy changes made in response to the pandemic during March 2020. We classify a policy as a *CLOSURE* if all or select locations were announced as closed to customer traffic by the firm. For example, Starbucks announced the closure of all locations other than those co-located in grocery stores and near medical facilities. Closures due to local regulations rather than a firm-level policy would not be classified as *CLOSURE,* as the decision was made at the location (not the corporate) level. We coded the firm as a "non-closure" if we could not find details about a company-wide policy.

female, zero otherwise. *TOP5_EXEC_FEMALE_N* is equal to the number of females represented in the firm's top five executives by compensation.

We re-estimate *Equation 1* using our measures of *EXEC_FEM* in place of board-level measures and report the results in Table 5. Similar to those in Table 3 Panel B, each specification includes our complete set of controls as well as industry and location county fixed effects. Consistent with our results using *BOARD_FEM*, the interaction between *MAYOR_FEM* and *EXEC_FEM* (*CEO_FEM* and *TOP5_EXEC_FEMALE_N* in Columns 1 and 2, respectively) is negative and significant.[29] These findings again suggest that larger decreases in store visits are observed for firms with more female representation amongst executives *and* a female mayor at the headquarters city. In Columns 3 and 4, we test whether store closures vary positively with the interaction of *MAYOR_FEM* and each of *CEO_FEM* and *TOP5_EXEC_FEMALE_N*, respectively. We find positive coefficients on both interaction terms, but only the interaction using *TOP5_EXEC_FEMALE_N* is significant. Overall, the results are consistent with cross-sector representation impacting the influence of female mayors.

## 5. Additional Analyses

Our primary analysis exploits variation in the degree of engagement between local mayors and firm leaders that resulted from the COVID-19 pandemic to examine the role of female representation in cross-sector influence. Our use of the pandemic as a natural experiment is potentially vulnerable to both internal and external validity concerns. Our remaining analyses address these concerns.

### *5.1 Internal validity*

[29] In untabulated analyses, we find these results hold using alternative fixed effects: industry, store-location county, and mayor, as well as industry-by-store-location county and mayor).

The internal validity of our research design rests on two main assumptions: 1) mayors provide information that firms use to devise their COVID-19 responses and 2) gender alignment does not proxy for another un-modeled construct that enhances the influence of the mayor on firm decisions. In the following subsection, we address these assumptions.

For these analyses, we use changes in foot traffic as our proxy for firm responses. Although store closure policies may capture firm responses more directly, the measure has limitations. First, it relies on public announcements of corporate policies, which may not be available for all firms. In addition, the measure requires researcher discretion in sorting policies into a hierarchy. We use *CLOSURE* as an outcome variable in part because this delineation is easy to identify. However, the measure necessarily ignores variation in how companies implemented their policies, and therefore adds noise to our outcome variable.[30] Thus, we focus these analyses on our primary outcome measure of interest, the change in foot traffic at the store level.

*5.1.1 Mayor influence as a mechanism*

Research from the political science field finds that mayors matter for policy-setting and citizen well-being (Wolman et al. 1996; Stren and Friendly 2018). Moreover, absent any mayoral influence, we would not expect the gender of the mayor to matter to firms' responses. To further validate that mayoral influence has a direct impact on firms' COVID-19 policies, we test whether firms' responses vary with mayor prominence. Specifically, we expect that more prominent mayors will have a stronger influence on firms' stay-at-home policies. We measure *MAYOR_PROMINENCE* in four ways: log of one plus the age of the mayor as of March 2020 (*LMAYOR_AGE*), log of one plus the tenure in years of the mayor as of March 2020

[30] Further complicating our interpretation of closure policies is the issue of variation across industries. For example, a restaurant may close to in-person dining, but a movie theater does not have the same flexibility in providing services to customers. We can control for this type of variation with industry fixed effects when using changes in foot traffic.

(*LMAYOR_TENURE*), log of the population of the mayor's city (*LMAYOR_CITYPOP*), and the decile ranking of the number of articles that mention the mayor and COVID-19 during our sample period (*ARTICLE_COUNT*).

In Table 6, we report the effects of mayor prominence on changes in store visits. Columns 1, 3, 5, and 7 examine the main effects of our *MAYOR_PROMINENCE* measures on changes in foot traffic. The results suggest that more prominent mayors are associated with an on-average greater reduction in foot traffic at firms' store locations. This result supports our assumption that mayors influence firm-level policies. In columns 2, 4, 6, and 8 we also include *MAYOR_FEM* to validate that female mayors are not simply more prominent (e.g., older, longer-tenured, etc.). The results suggest that the main effect of female mayors is incremental to measures of *MAYOR_PROMINENCE*.

*5.1.2 Alternative source of alignment: social preferences*

Our results thus far suggest that cross-sector female representation can increase female mayors' influence over corporate social policies. While this result is consistent with predictions from gender theory, a potential threat to our inferences is that cross-sector gender alignment could be a proxy for another factor, such as ideological (including political) alignment, that drives store foot traffic during this time. That is, when the preferences of the mayor and firm align, the mayor may likewise have greater influence over a firm's pandemic response. As we discuss in Section 2, prior literature has shown that female board representation is associated with a greater degree of corporate social responsibility and diversity, equity, and inclusion at the firm. Likewise, female politicians are found to promote pro-social policies. Thus, it is possible that alignment on pro-social preferences, rather than gender alignment, explains our findings.

We address these concerns by examining the role of ideological preferences in two stages. First, we focus on *firm*-level preferences that, when matched with a female mayor, may alternatively explain our results. Second, we consider the alignment between *mayor*-level preferences and female board representation.[31]

*Firm-level ideology*

We use several measures of firm-level ideological preferences (*FIRM_PREF*) in our analysis. First, we measure *RESPONSIBLE_COMPANY* as a binary variable that takes a value of one if the firm shows up on Newsweek's 2020 list of the 300 most responsible companies, zero otherwise.[32] Second, we use a text-based measure from Baker et al. (2024) (*BAKER_DEI)* that captures the number of DEI-based words across the firm's 10-K, 8-Ks, and DEF 14A filings in 2019.[33] Our third measure is from Truvalue Labs, provided by FactSet. *EMPLOYEE_FOCUS* is the percentage of articles about the firm tagged to the SASB categories of Employee Health & Safety and Labor Practices and published over the period March 2019 through February 2020.[34] Last, we follow Bizjak et al. (2022) and use political donation information from the Federal Elections Commission (FEC) to classify a firm as Democrat- or Republican-leaning based on the donations of its CEO. *CEO_DEM* is an indicator variable equal to one if the CEO makes relatively more donations to Democrat candidates, zero otherwise.

[31] While our robust specifications include mayor fixed effects to account for mayor- or city-level factors, it is possible that the effects differ across firms with high- and low-female board representation.

[32] See https://www.newsweek.com/americas-most-responsible-companies-2020 for the complete ranking and https://d.newsweek.com/en/file/459820/methodology-americas-most-responsible-companies.pdf for the ranking's methodology. Firms were scored on social, environmental and governance metrics. One key social performance metric included is female representation on the board of directors. To the extent that this causes a correlation with our board metrics, it would bias us against finding that female representation matters above and beyond this ranking.

[33] We thank the authors of Baker et al. (2024) for sharing these data with us.

[34] Truevalue labs also has a measure of the percentage of articles tagged to the SASB categories of Employee Engagement, Diversity & Inclusion, and Human Right & Community Relations. We use this measure (*DEI_HUMAN_RIGHTS*) in untabulated robustness as an alternative to the Baker et al. (2024) disclosure-based measure. Our inferences remain the same.

For each measure, we estimate *Equation 1* while controlling for the interaction between *MAYOR_FEM* and *FIRM_PREF*. If preference alignment drives our results, this interaction will be negative, while our main interaction of interest between *MAYOR_FEM* and *BOARD_FEM* will become insignificant. The results of this analysis are reported in Table 7 Panel A. For brevity we suppress the control variables. Across all firm ideological preference measures, our *MAYOR_FEM*BOARD_FEM* interactions remain negative and significant. While it does not affect our inferences with regard to gender alignment, the interaction between *CEO_DEM* and *MAYOR_FEM* is also negative and significant. This finding is consistent with political alignment impacting the influence of female mayors. Overall, these results suggest that cross-sector gender representation is not simply a proxy for ideological preference alignment, but that female representation itself affects the ability of a female mayor to influence a firm's social policies.

*Mayor-level ideology*

As an extension of our firm-level tests of political and ideological preferences, we next examine the role of the mayor's political preference (*MAYOR_POL*).[35] We capture the mayor's politics in two ways. First, we create an indicator (*MAYOR_DEM*) equal to one if the mayor is a Democrat (see Appendix A), zero otherwise. However, local government leaders' politics may not be well-measured by their party affiliation, as local leaders are believed to be less partisan than other politicians (Oliver et al. 2012). Thus, we also use a survey-based measure of city-level ideology from Tausanovitch and Warshaw (2013; 2022), which reflects the political ideology of the voters who elected the mayor. *DEM_LEAN_CITY* measures the Democratic lean of a city using

[35] Our analysis assumes that all mayors advocated for constituents to adopt stay-at-home measures during our window, regardless of political incentives or affiliation. Both Republican and Democrat mayors took early action in declaring states of emergency and pursued actions such as school and city closures. In our sample, 43% (49%) of Republican (Democrat) mayors declared a local stay-at-home order before a state-level stay-at-home order became effective (see Appendix D). Further, in untabulated analysis we find that our results are robust to excluding Republican mayors.

this measure. To mirror Table 7 Panel A, we re-estimate *Equation 1* while controlling for the main effect of our *MAYOR_POL* measures and an interactive effect with *BOARD_FEM.* We replace *MAYOR_FEM* with *MAYOR_POL* to explicitly test whether gender proxies for the political preferences of the mayor.

Table 7 Panel B reports the results of this analysis. We find that our main interaction between *MAYOR_FEM* and *BOARD_FEM* remains negative and significant after controlling for the interaction between *BOARD_FEM* and both *MAYOR_DEM* (Columns 1 and 3) and *DEM_LEAN_CITY* (Columns 3 and 4). As in Panel A, the interactive effect of party affiliation is also negative and significant, suggesting that while political alignment does play a role in shaping firm policies, gender alignment is a separate construct that impacts the ability of female mayors to coordinate with firms on social policy.

*5.1.3 Additional robustness*

*Falsification test*

Cities that elect female mayors may be fundamentally different along other dimensions that may bias our inferences. To address this concern, we conduct a falsification test wherein we replace *MAYOR_FEM* in *Equation 1* with *MAYOR_FALSE_FEM,* an indicator equal to one if the focal city had a female mayor (excluding the current mayor) at any time between 2000 and 2019, and zero otherwise. To distinguish from the effect of a current female mayor, we conduct this analysis only on our sample of firms with male mayors during our sample window. If the interaction between *MAYOR_FALSE_FEM* and *BOARD_FEM* is negative and significant, it would indicate that an underlying characteristic of a city that is open to electing a female mayor, rather than the gender of the current mayor, may be driving our results. The results in Table 8 find

that the interaction term is not negative and significant, suggesting that it is the gender of the *current* mayor that matters for alignment with the board of directors.

*Stay-at-home orders*

Our examination window of March 2, 2020 to March 22, 2020 predates the majority of state and local stay-at-home orders that would later be declared. Appendix D provides the full history of stay-at-home orders for each city in our sample. Stay-at-home orders were meaningfully in effect for only seven of our 50 sample cities during our "post" window.[36] The earliest were instituted by the cities of San Francisco and San Jose on March 17 (with a later order issued by the state of California on March 19). Mandatory stay-at-home orders at the headquarters level are unlikely to threaten the validity of our inferences, as they would still need to "trickle down" to stores outside the headquarters vicinity at the discretion of the firm. Indeed, our results are robust to excluding store locations within the firm's headquarters CBSA, and further robust to excluding the seven "early-mover" headquarters cities. Finally, to allay concerns that our results are driven by a single influential mayor, we also drop each city in the sample individually from our analyses; we find that our results on cross-sector female representation (untabulated) hold across all measures.

*Other factors*

It is further possible that our results capture potential seasonal trends that may be correlated with cross-sector female representation. In untabulated analysis, we confirm that our results are robust to including a measure of *PCT_CHG_VISITS* from the same week in 2019. Not surprisingly, we find a positive coefficient, indicating that some of the variation in our error term may be due

[36] New York state's stay-at-home order went into effect on March 22, 2020 at 8 pm ET. As this is the last day of our post-period, it is unlikely that this order meaningfully influenced New York firms' COVID-19 responses as measured by foot traffic.

to seasonal trends that are unique to the store. Finally, in untabulated analyses we find our results are robust to controlling for other potential drivers of store traffic including whether the firm has a significant number of franchises and whether the board has a health expert.

*5.2 External validity: additional setting*

While the COVID-19 pandemic provides many advantages for testing whether female representation matters to the degree of coordination between firms and their local governments, our inferences may not be generalizable to other settings. To address this concern, we analyze additional instances where governments desire private sector assistance – namely, in response to natural disasters.

Natural disasters have grown in frequency and cost in recent decades, and government funding has not kept pace.[37] Research on corporate disaster philanthropy suggests that such initiatives can be vital to relief and recovery, and aid from firms with local ties to disaster-afflicted areas is most effective (Ballesteros et al. 2017). Therefore, government leaders have an incentive to seek assistance from nearby companies in the wake of environmental disasters. In light of our main findings, we expect firms' philanthropic activity in response to these disasters to *increase* when cross-sector female representation is high.

The disaster setting complements our main analysis in several ways. While our main analysis takes advantage of a single shock that affects our sample firms at the same time (early March 2020), natural disasters are a recurring event. The resulting panel data allows us to incorporate firm fixed effects, whereas our cross-sectional (single time-period) main analysis did

[37] According to National Oceanic Atmospheric and Administration, the U.S. averaged 3.3 annual "billion dollar" or more (in 2023 dollars) weather and climate disaster events during the 1980s. In the 2010s, the figure was 13.1, and in 2023 there were 28 (See: https://www.climate.gov/news-features/blogs/beyond-data/2023-historic-year-us-billion-dollar-weather-and-climate-disasters). In terms of funding, the Federal Emergency Management Agency expects budget shortfalls in 2024, following similar 2023 shortfalls, as congressional funding increases have not been commensurate with rising costs (See: https://www.scientificamerican.com/article/tornadoes-floods-and-hurricanes-loom-but-the-government-is-running-out-of/).

not. Additionally, relying on Safe Graph POI data limits our analysis to primarily consumer-facing industries. The philanthropy data encompasses a different set of industries, increasing the generalizability of our findings.[38] Finally, arguments suggest that the COVID-19 setting may not provide a useful setting for a natural experiment because of the multitude of changes it brought to daily life (Clement 2024). To the extent that our findings hold during other periods of cross-sector communication and engagement, these concerns can be at least partially mitigated.

We obtain data on philanthropic giving in the wake of disasters from Candid (formerly Foundation Center and Guidestar), which maintains a database of domestic and international disaster donations since 2011. Candid's disaster-giving database includes information on grantmakers, receivers, amounts, and timing, as well as the type of disaster (e.g., earthquake) to which the grant is made in response. The data are also coded according to whether the grant-making organization is a corporate foundation. We use these data to create a sample of observations at the disaster-firm level.[39] See Appendix E for more information on our sample construction.

For each disaster-firm observation, we measure whether the firm gave to a particular disaster with the indicator *GRANT*, which is equal to one if the firm donated to the relief effort for that disaster, zero otherwise. We further measure the degree of giving with the log of one plus the total amount granted by the firm to that disaster (*LGRANT_AMOUNT*). Our firm-level measures of female representation are consistent with our main analysis. However, we measure female representation in the public sector at the state level, with an indicator (*GOVERNOR_FEM*) for whether the governor of the state is female. Unlike the COVID-19 pandemic, weather-related or

[38] Our main analysis encompasses 21 of the Fama-French 48 industry classifications. This additional analysis samples on 35 industry classifications, 16 of which are not included in the primary analysis.
[39] Individual disasters are identified by unique state-year-disaster type giving. See Appendix E for more detail.

other natural disasters are not necessarily concentrated in large cities. In addition, governors play a particularly prominent role in disaster response, as only they have the authority to declare a state of emergency that would result in federal assistance.

We first test whether firms with more cross-sector female representation are more likely to give to disasters occurring in their headquarter state. We regress *GRANT* and *LGRANT_AMOUNT* on our measures of female board representation, *GOVERNOR_FEM*, and the interaction between these terms. We include firm-level fixed effects to control for time-invariant firm characteristics that may affect board gender diversity. We also include year and disaster-type fixed effects. The results of these tests are reported in Table 9. Consistent with our inferences from our main analysis, we find that the likelihood of disaster giving and the amount of giving consistently increases with cross-sector female representation. The findings are further robust to including firm-level controls for female board representation.[40]

In our disaster-giving data, firms are not limited to donating in response to only disasters in their headquarter state. Many donate to disasters that occur across the country or the world. However, the communication channels between firms and governments outside of their home location are likely to be much weaker. As a falsification, we test for similar patterns around giving for disasters that occur in a state that neighbors the firm's headquarters state. In untabulated tests we find that, across all of our measures of cross-sector female representation, the results on cross-sector female representation no longer hold when we analyze neighbor-state giving.

## 6. Conclusion

[40] Our results also hold using *TOP5_EXEC_FEMALE_N* in place of our *BOARD_FEM* measures. There are too few instances of female CEOs heading firms while located in a state with a female governor over our sample period to test using *CEO_FEM*.

We exploit the exogenous nature of the early days of the COVID-19 pandemic as a shock to the degree of influence of local governments over firm decisions and find variation in cross-sector female representation to be an important determinant of that influence. Specifically, we find that firms headquartered in or near large cities with female mayors adopted more stay-at-home focused policies at their stores when there was more female board representation. The result is robust to alternative measures of female representation at the firm including the number of women among the top five executives and whether the CEO is female. We take several steps to rule out alternative explanations that may be correlated both with COVID-19 responses and the influence of female mayors on firm leadership. We extend the generalizability of our study beyond the COVID-19 crisis with supporting tests that find a greater degree of philanthropic giving in response to home-state natural disasters when there is more cross-sector female representation between firms and their state governors. Together, our results suggest that influence from female governmental leaders induces more aggressive social responses when there is sufficient female leadership at the firm.

Most of the prior research on the effects of diversity in corporate board settings suffer from endogeneity concerns related to the non-random assignment of directors, executives, and other stakeholders of the firm. In our primary setting, the relatively unforeseen nature of the COVID-19 pandemic introduced exogenous time-series variation in the influence of local elected officials on firm decisions. This temporary disequilibrium allows us to more accurately assess the causal impact of cross-sector female gender alignment on that influence. At this unique time in history, virtually all firms were grappling with similar sets of problems within a short time frame, which allows us to more confidently attribute differences in outcomes to the gender dynamics we test. Importantly, our research design allows us to hold constant other drivers of foot traffic, such as

local regulations and preferences, and instead examine within-county variation in store-level foot traffic that can be attributed to corporate-level decisions and policies.

Our findings highlight how the efficacy of these coordination efforts may vary according to the characteristics of the individual leaders involved. Specifically, a female mayor may be able to work with a firm more effectively to promote her policies when there are more women on the board or executive team. Our findings are consistent with prior theories about the importance of sufficient representation in assuring an individual's influence in group settings (Kanter 1977) and suggest that these prior inferences can be extended to interactions between the public and private sectors.

Our results have implications for recent policies aimed at addressing the under-representation of women on boards of directors. Both the state of California (later overturned in court) and the NASDAQ passed rules regarding minimum thresholds for the number of women board members, while other states are considering similar legislation. Prior findings suggest that board gender diversity requirements may be costly for shareholders (Ahern and Dittmar 2012). Our findings indicate that the effects of representation may impact a broader set of stakeholders; namely, local political leaders and the proponents of the policies they advocate for.

## Appendix A

| Mayor Name | City | State | Gender | Party | % of Sample |
|---|---|---|---|---|---|
| Lori Lightfoot | Chicago | IL | F | DEM | 8.85 |
| Bill de Blasio | New York | NY | M | DEM | 7.03 |
| Eric Johnson | Dallas | TX | M | DEM | 6.66 |
| Greg Fischer | Louisville | KY | M | DEM | 6.65 |
| John Cooper | Nashville | TN | M | DEM | 6.25 |
| London Breed | San Francisco | CA | F | DEM | 6.13 |
| Jenny Durkan | Seattle | WA | F | DEM | 5.43 |
| Richard West | Chesapeake | VA | M | REP | 4.79 |
| Rick Stopfer | Irving | TX | M | REP | 3.60 |
| Andrew J. Ginther | Columbus | OH | M | DEM | 3.50 |
| Keisha Bottoms | Atlanta | GA | F | DEM | 3.39 |
| Eric Garcetti | Los Angeles | CA | M | DEM | 3.34 |
| Vi Lyles | Charlotte | NC | F | DEM | 2.78 |
| Jacob Frey | Minneapolis | MN | M | DEM | 2.53 |
| Mike Duggan | Detroit | MI | M | DEM | 2.47 |
| Michael B. Hancock | Denver | CO | M | DEM | 2.33 |
| Jim Strickland | Memphis | TN | M | DEM | 2.26 |
| Sylvester Turner | Houston | TX | M | DEM | 2.13 |
| Mary-Ann Baldwin | Raleigh | NC | F | DEM | 1.97 |
| Ron Nirenberg | San Antonio | TX | M | IND | 1.81 |
| Martin Walsh | Boston | MA | M | DEM | 1.65 |
| Frank Jackson | Cleveland | OH | M | DEM | 1.63 |
| John Cranley | Cincinnati | OH | M | DEM | 1.15 |
| Bill Peduto | Pittsburgh | PA | M | DEM | 1.08 |
| Francis Suarez | Miami | FL | M | REP | 1.03 |
| James Kenney | Philadelphia | PA | M | DEM | 0.97 |
| Randall L. Woodfin | Birmingham | AL | M | DEM | 0.80 |
| Jane Castor | Tampa | FL | F | DEM | 0.76 |
| Kevin Faulconer | San Diego | CA | M | REP | 0.72 |
| Bernard C. "Jack" Young | Baltimore | MD | M | DEM | 0.71 |
| Quinton Lucas | Kansas City | MO | M | DEM | 0.70 |
| Buddy Dyer | Orlando | FL | M | DEM | 0.60 |
| Tom Barrett | Milwaukee | WI | M | DEM | 0.58 |
| Hillary Schieve | Reno | NV | F | N | 0.49 |
| Byron Brown | Buffalo | NY | M | DEM | 0.44 |
| Kate Gallego | Phoenix | AZ | F | DEM | 0.39 |
| Nancy B. Vaughan | Greensboro | NC | F | DEM | 0.38 |
| Harry LaRosiliere | Plano | TX | M | DEM | 0.32 |
| Stephen Adler | Austin | TX | M | DEM | 0.29 |
| Linda Gorton | Lexington | KY | F | REP | 0.29 |
| Levar Stoney | Richmond | VA | M | DEM | 0.22 |
| Lyda Krewson | St. Louis | MO | F | DEM | 0.22 |
| Carolyn Goodman | Las Vegas | NV | F | N | 0.15 |
| Ted Wheeler | Portland | OR | M | DEM | 0.13 |
| Christina Shea | Irvine | CA | F | REP | 0.10 |
| Betsy Price | Fort Worth | TX | F | REP | 0.09 |
| Miguel Pulido | Santa Ana | CA | M | DEM | 0.07 |
| Joseph Hogsett | Indianapolis | IN | M | DEM | 0.06 |
| Pete Saenz | Laredo | TX | M | IND | 0.04 |
| Sam Liccardo | San Jose | CA | M | DEM | 0.04 |

## Appendix B

Figure B1 illustrates our primary research design. In Panel A, two hypothetical companies, Company A and Company B (shown in blue) are headquartered near the city of Detroit, whose mayor in March 2020 was Mike Duggan, a male. Company A has store locations in New York County and Fulton County. Company B has store locations in Fulton County and Los Angeles County, but not in New York County. New York County, Fulton County, and Los Angeles County also are homes to stores of hypothetical Companies C and D (shown in red). Companies C and D are both headquartered in Chicago, whose female mayor in March 2020 was Lori Lightfoot. Thus, while store location counties may differ across all four companies, Companies A and B share a common trait: they are headquartered near a city with a male mayor. Meanwhile, Companies C and D are both headquartered near a city with a female mayor.

Panel B demonstrates that within the male-female mayor distinction, these companies differ on the degree of female representation of leaders at the firm level. Companies A and D, in green, have relatively low levels of female representation, while Companies B and C, in purple, have relatively higher levels. Therefore, while Companies C and D are both headquartered in cities with female mayors, only Company C is devising a COVID-19 response in an environment with a high degree of cross-sector female representation (see Panel C). That is, in addition to being headquartered in a city with a female mayor, the firm has a high degree of female representation among its leaders. Therefore, the female mayor may be more influential to these firms with significant female leadership. The policies made at the headquarters level are reflected at stores around the country.

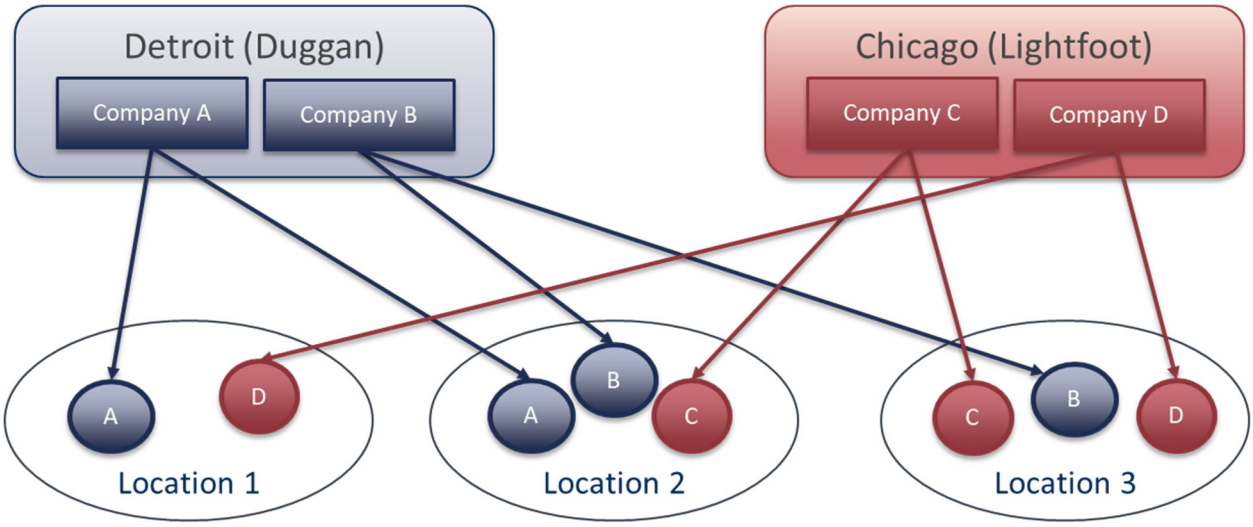
Our primary unit of analysis is changes in visits at individual store locations. As our focus is on the effects of cross-sector female representation at the firm level, our analysis controls for store location county (e.g., New York, Fulton, and Los Angeles County fixed effects), female mayoral representation (red-outlined stores), and female firm representation (green-shaded stores). Doing so allows us to assess whether the COVID-19 response of Company C may be greater due to the cross-sector female representation.

## Figure B1: Research Design Illustration

Figure B1 presents a visual of how we organize our sample and research design. Specifically, each headquarters city may have multiple firms, and each firm has store locations across multiple counties.

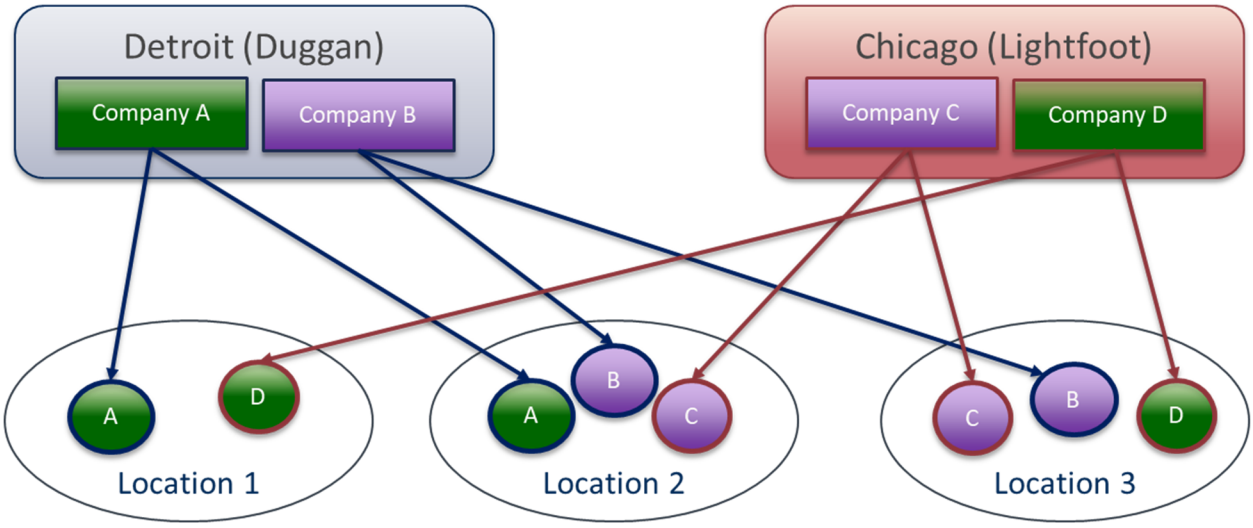
Panel A: Mayoral Female Representation

Companies A and B are headquartered near a city with a male mayor (in blue) while Companies C and D are headquartered near a city with a female mayor (in red).



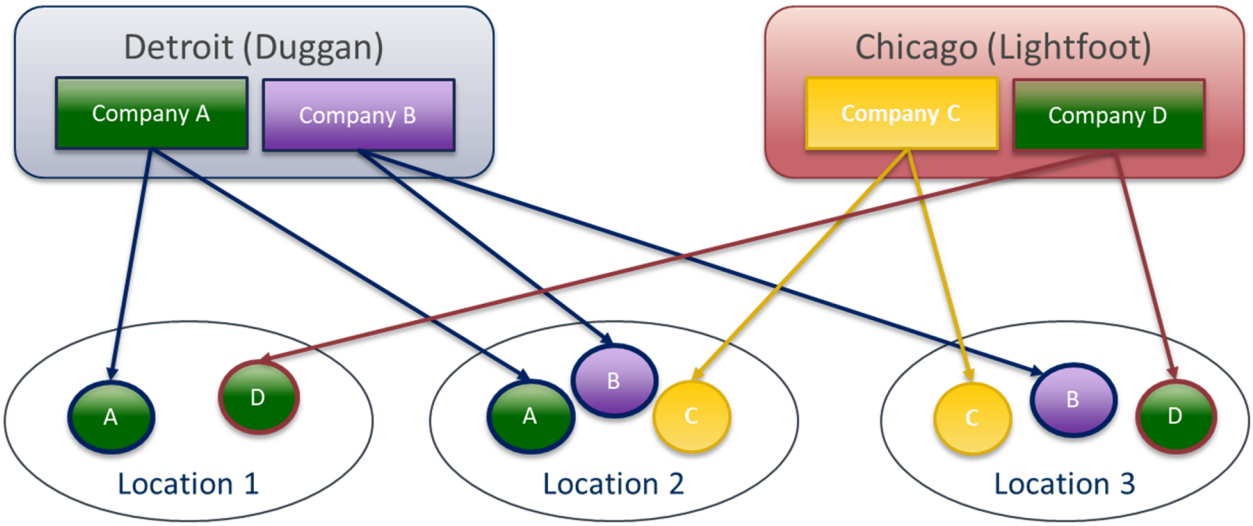

Panel B: Board Female Representation

Companies A and D have low board-level female representation (in green), while Companies B and C have relatively higher levels (in purple). Companies C and D may differ on firm gender representation, even though they both have a female mayor and have locations in some of the same areas.



Panel C: Cross-sector Female Representation

Only Company C is identified as having a high degree of cross-sector female representation.



**Appendix C**

| Variable | Definition |
|---|---|
| *PCT_CHG_VISITS* | Total number of store visits during the week beginning 3/16/2020 less the total number of store visits during the week beginning 3/2/2020, divided by the total number of store visits during the week beginning 3/2/2020. |
| *MAYOR_FEM* | Indicator equal to one if the mayor of the major city within the headquarter location's CBSA is female, zero otherwise. |
| *GOVERNOR_FEM* | Indicator equal to one if the governor of the firm's headquarter location in a natural disaster year is female, zero otherwise. |
| *LBOARD_FEMALE_N* | Log of one plus the number of female directors on the board. |
| *BOARD_FEMALE_PCT* | Number of female directors divided by the total number of directors on the board. |
| *BOARD_FEMALE_TOP3* | Indicator equal to one if *BOARD_FEMALE_PCT* is in the top tercile, zero otherwise. |
| *CEO_FEM* | Indicator equal to one if the Chief Executive Officer is female, zero otherwise. |
| *TOP5_EXEC_FEMALE_N* | Number of female executives in the top five executives. |
| *TOBINSQ* | The sum of market value of equity and book value of liabilities divided by the book value of total assets as of fiscal year-end. |
| *ROA* | Income before extraordinary items in a fiscal year, scaled by the average of total assets as of the beginning and the end of the fiscal year. |
| *LSALE* | Log of total sales in the prior fiscal year. |
| *DEBT* | The sum of short- and long-term debt divided by total assets as of fiscal year end. |
| *CASH* | Total cash divided by total assets as of fiscal year end. |
| *LOGRET* | The annual buy-and-hold log return over the prior year. |
| *LSEGMENTS* | Log of the number of operating segments from Compustat (or business segments if operating segments is missing). |
| *VOL60* | Standard deviation of monthly price returns over the previous 60 months. |
| *LBOARD_SIZE* | Log of the total number of directors on the board. |
| *PCT_INDEP* | Total number of independent directors on the board divided by the total number of directors. |
| *PRECAUTION_RANK* | The COVID-19 restriction rank of the CBSA mayor's state, provided by Wallethub, as of March 16, 2020 (reversed so that a rank of one represents the lowest precautions). |
| *HEADQUARTER_CASES* | The total number of reported COVID-19 cases per 1000 people in the headquarter location's zip code area, as of the end of March 2020. |

| | |
|---|---|
| *CLOSURE* | Indicator equal to one if the firm announced the closure of store locations due to a company-wide policy, zero otherwise. |
| *LMAYOR_AGE* | Log of one plus the age of the mayor as of March 2020. |
| *LMAYOR_TENURE* | Log of one plus the tenure in years of the mayor as of March 2020. |
| *LMAYOR_CITYPOP* | Log of the population of the mayor's city |
| *ARTICLE_COUNT* | Decile ranking of the number of articles that mention the mayor and COVID-19 during our sample period. |
| *RESPONSIBLE_COMPANY* | Indicator equal to one if the firm was included in Newsweek and Statista's 2020 list of "America's Most Responsible Companies", zero otherwise. |
| *BAKER_DEI* | Number of DEI-based words across 10-K, 8-K, and DEF 14A disclosures for the firm in 2019 per Baker et al (2024). |
| *EMPLOYEE_FOCUS* | Percentage of articles about the firm from March 2019 through February 2020 tagged to the SASB categories of Employee Health & Safety and Labor Practices. Provided by Truvalue Labs through FactSet. |
| *CEO_DEM* | Indicator equal to one if the CEO of the firm donated more to Democratic candidates than Republican candidates during the past three election cycles, zero otherwise. Data on political donations are taken from individual campaign contribution data provided by the Federal Election Commission. |
| *MAYOR_DEM* | Indicator equal to one if the mayor identifies as a Democrat, zero otherwise. |
| *DEM_LEAN_CITY* | The unweighted average ideology at the city level measured over the 2012-2016 period, from Tausanovitch and Warshaw (2022: 2022 Update to "Measuring Constituent Policy Preferences in Congress, State Legislatures, and Cities" *Journal of Politics,* 2013), and multiplied by negative one to be increasing in Democratic lean. |
| *PAST_MAYOR _FEM* | Indicator equal to one if the city had a female mayor during the time period 2000 through 2019, with the exception of the current mayor in 2020, zero otherwise. |
| *GRANT* | An indicator equal to one of the firm gave to a particular disaster according to Candid, zero otherwise. See Appendix E. |
| *LGRANT_AMOUNT* | The log of one plus the total amount given to a particular disaster, according to Candid. See Appendix E. |

## Appendix D

Appendix D includes announcement dates for stay-at-home orders for the major cities in our sample, most of which came after the end of our sample window. For 24 of the 50 cities in our sample, city governments announced restrictive orders before similar ones were instituted, if at all, at the state level. In fact, many of the mayoral efforts to promote mitigation measures were in conflict with governors' priorities at this time (Foster 2020). Prior to the New York state shut-down order announcement on March 20, 2020, Mayor Bill de Blasio advocated for a "shelter-in-place" order that Governor Andrew Cuomo resisted.

| City | State | City Stay-at-Home Order Effective Date | State Stay-at-Home Order Effective Date | Mayor First | Same Time | During "Post" Week |
|---|---|---|---|---|---|---|
| Chicago | IL | 3/21/2020 | 3/21/2020 | 0 | 1 | 1 |
| New York | NY | 3/22/2020 | 3/22/2020 | 0 | 1 | 1 |
| Dallas | TX | 3/24/2020 | 4/2/2020 | 1 | 0 | 0 |
| Louisville | KY | 3/26/2020 | 3/26/2020 | 0 | 1 | 0 |
| Nashville | TN | 3/23/2020 | 3/31/2020 | 1 | 0 | 0 |
| San Francisco | CA | 3/17/2020 | 3/19/2020 | 1 | 0 | 1 |
| Seattle | WA | 3/25/2020 | 3/25/2020 | 0 | 1 | 0 |
| Chesapeake | VA | 3/30/2020 | 3/30/2020 | 0 | 1 | 0 |
| Irving | TX | 3/23/2020 | 4/2/2020 | 1 | 0 | 0 |
| Columbus | OH | 3/23/2020 | 3/23/2020 | 0 | 1 | 0 |
| Atlanta | GA | 3/24/2020 | 4/3/2020 | 1 | 0 | 0 |
| Los Angeles | CA | 3/19/2020 | 3/19/2020 | 0 | 1 | 1 |
| Charlotte | NC | 3/26/2020 | 3/30/2020 | 1 | 0 | 0 |
| Minneapolis | MN | 3/27/2020 | 3/27/2020 | 0 | 1 | 0 |
| Detroit | MI | 3/24/2020 | 3/24/2020 | 0 | 1 | 0 |
| Denver | CO | 3/24/2020 | 3/26/2020 | 1 | 0 | 0 |
| Memphis | TN | 3/23/2020 | 3/31/2020 | 1 | 0 | 0 |
| Houston | TX | 3/24/2020 | 4/2/2020 | 1 | 0 | 0 |
| Raleigh | NC | 3/27/2020 | 3/30/2020 | 1 | 0 | 0 |
| San Antonio | TX | 3/24/2020 | 4/2/2020 | 1 | 0 | 0 |
| Boston | MA | 3/24/2020 | 3/24/2020 | 0 | 1 | 0 |
| Cleveland | OH | 3/23/2020 | 3/23/2020 | 0 | 1 | 0 |
| Cincinnati | OH | 3/23/2020 | 3/23/2020 | 0 | 1 | 0 |
| Pittsburgh | PA | 3/23/2020 | 3/23/2020 | 0 | 1 | 0 |
| Miami | FL | 3/24/2020 | 4/3/2020 | 1 | 0 | 0 |
| Philadelphia | PA | 3/23/2020 | 3/23/2020 | 1 | 0 | 0 |
| Birmingham | AL | 3/24/2020 | 4/4/2020 | 1 | 0 | 0 |
| Tampa | FL | 3/25/2020 | 4/3/2020 | 1 | 0 | 0 |
| San Diego | CA | 3/19/2020 | 3/19/2020 | 0 | 1 | 1 |
| Baltimore | MD | 3/30/2020 | 3/30/2020 | 0 | 1 | 0 |
| Kansas City | MO | 3/24/2020 | 4/6/2020 | 1 | 0 | 0 |
| Orlando | FL | 3/26/2020 | 4/3/2020 | 1 | 0 | 0 |
| Milwaukee | WI | 3/25/2020 | 3/25/2020 | 0 | 1 | 0 |
| Reno | NV | 4/1/2020 | 4/1/2020 | 0 | 1 | 0 |
| Buffalo | NY | 3/22/2020 | 3/22/2020 | 0 | 1 | 1 |
| Phoenix | AZ | 3/31/2020 | 3/31/2020 | 0 | 1 | 0 |
| Greensboro | NC | 3/27/2020 | 3/30/2020 | 1 | 0 | 0 |
| Plano | TX | 3/24/2020 | 4/2/2020 | 1 | 0 | 0 |
| Austin | TX | 3/24/2020 | 4/2/2020 | 1 | 0 | 0 |
| Lexington | KY | 3/26/2020 | 3/26/2020 | 0 | 1 | 0 |
| Richmond | VA | 3/30/2020 | 3/30/2020 | 0 | 1 | 0 |
| St. Louis | MO | 3/23/2020 | 4/6/2020 | 1 | 0 | 0 |
| Las Vegas | NV | 4/1/2020 | 4/1/2020 | 0 | 1 | 0 |
| Portland | OR | 3/23/2020 | 3/23/2020 | 0 | 1 | 0 |
| Irvine | CA | 3/19/2020 | 3/19/2020 | 0 | 1 | 1 |
| Fort Worth | TX | 3/24/2020 | 4/2/2020 | 1 | 0 | 0 |
| Santa Ana | CA | 3/19/2020 | 3/19/2020 | 0 | 1 | 1 |
| Indianapolis | IN | 3/24/2020 | 3/24/2020 | 0 | 1 | 0 |
| Laredo | TX | 3/28/2020 | 4/2/2020 | 1 | 0 | 0 |
| San Jose | CA | 3/17/2020 | 3/19/2020 | 1 | 0 | 1 |

## Appendix E

We begin with a sample of unique US disasters, which we identify based on whether a donation was made to a particular state, in a specific year, for a particular disaster type. Filtering for unique state-year-disaster type events yields a sample of 2,717 unique events from 2011 to 2022. Candid data include grant-making foundation names and whether the grant is from a corporate foundation. Using fuzzy matching techniques, we match to Compustat *GVKEY* based on foundation name, yielding a sample of 646 unique firms. We then create a firm-disaster dataset by matching every available *GVKEY* to every unique disaster. After removing disasters that occurred in years without a Compustat *GVKEY*-year, we have a sample of 1,609,670 firm-disaster pairings. Matching these firm-disasters to BoardEx data reduces the sample to 547 firms (1,278,304 firm-disaster pairings).

To better identify disasters where the firm is able or likely to give, we reduce the sample to firms that have given in more than one disaster year, and remove observations for the first year of giving. We do this in order to focus on firms that have an established corporate giving practice. This reduces our sample to 209 unique firms and 579,861 firm-disaster pairings. We further limit the sample to disasters that are naturally occurring. Specifically, we remove disasters coded as an "outbreak/epidemic", "manmade accident," and "complex humanitarian emergency" and keep disasters related to natural hazards such as drought, flood, or wildfires. See Table E-1. This reduces our sample to 462,811 disasters.

Our sample of firm-disaster pairings where the disaster occurs in the firm's own headquarters state consists of 199 unique firms and 12,316 firm-disaster pairings. See Table E-2 for a summary of our sample composition.

## Table E-1: Candidid Disaster Types and Descriptions

| Candid Disaster Type | Candid Disaster Description (where available) |
|---|---|
| *natural hazard* | *Multiple, specific natural hazards (described below) or general natural hazard* |
| drought | |
| earthquake/tsunami | |
| flood | |
| mass movement | avalanche, debris flow, land slide, landslide, mud slide, mudslide, rock fall, rockfall, subsidence |
| outbreak/epidemic | include ebola and zika outbreaks, infestation, stampede; exclude HIV/AIDS, malaria, dengue, polio, meningitis, heroin/opioid/substance addiction, obesity, smoking, etc. epidemics |
| storm | blizzard, cyclone, hurricane, monsoon, tornado, typhoon; exclude general stormwater regulations/solutions, unless there's a specific disaster focus |
| extreme temperature | cold wave, heat wave, extreme cold, extreme heat, extreme temperature; exclude extreme temperature or winterization for refugees, which would belong in C-complex emergency |
| volcano | |
| wildfire | forest fire or land fire; exclude generic fire support, fire safety, or support for fire department |
| *manmade accident* | chemical spill, oil spill, gas leak, chemical leak, nuclear leak, plane crash, building collapse, derailment, industrial accident, Flint water crisis |
| *complex humanitarian emergency (CHE)* | include famine, humanitarian aid for conflict-affected people, refugee crisis, conflict leading to a need for humanitarian aid, humanitarian demining; exclude general refugee resettlement, like helping refugees in the U.S. adjust to life/culture, unless it pertains to a current complex emergency (Syrian refugees, Afghan refugees) |
| *disaster - general* | no specific disaster type, or combination of natural hazards/man-made accidents/CHEs |

## Table E-2: Disaster Giving Sample Selection

| | Firms | Firm-Disaster Observations |
|---|---|---|
| Candid Foundations and Disasters Matched to Compustat Firms | 646 | 1,755,182 |
| Less firm-years unavailable in Compustat | (0) | (145,512) |
| Less firms unavailable in BoardEx | (99) | (331,366) |
| Less firm-years including and prior to the firm's first donation year | (338) | (698,443) |
| Less man-influenced disasters | (0) | (117,050) |
| Sample of U.S. Firm-Disasters | 209 | 462,811 |
| **Firm-Disasters occurring in HQ state** | **199** | **12,316** |

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**Figure 1: Sample Window Timeline**

Figure 1 presents a timeline of our sample window. Our "pre" period is the week that begins March 2, 2020 and ends March 8, 2020. Our "post" period is the week that begins March 16, 2020 and ends March 22, 2020. In the intervening week, the World Health Organization declared made a pandemic declaration (March 11, 2020) and the U.S. declared a National State of Emergency (March 13, 2020).

As of the end of our "post" period, nine sample cities and three U.S. states had issued a stay-at-home order. New York and Buffalo's mandates were effected by the state mandate, which began at 8 pm on the last day of our "post" period. Many more municipal and state governments had declared states of emergency and provided social distancing recommendations.

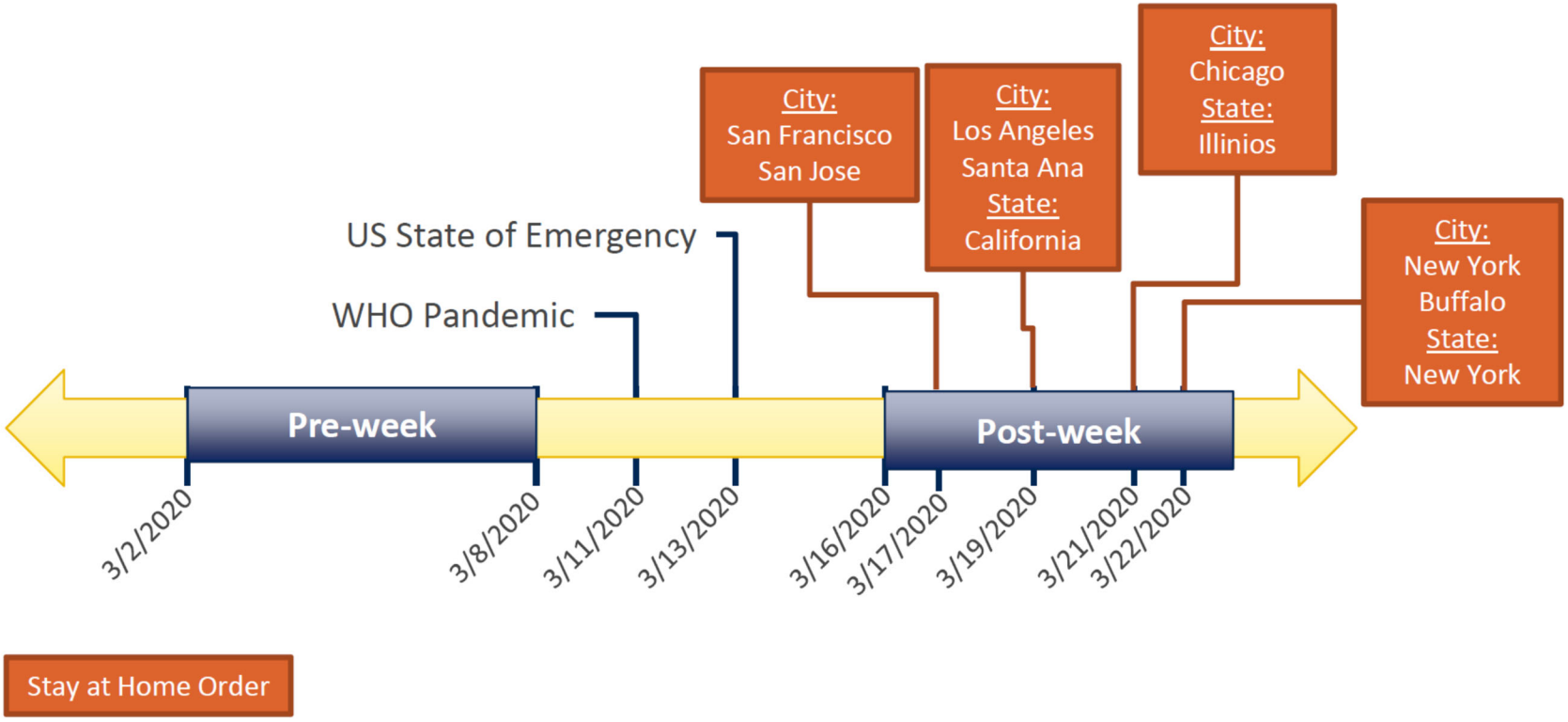
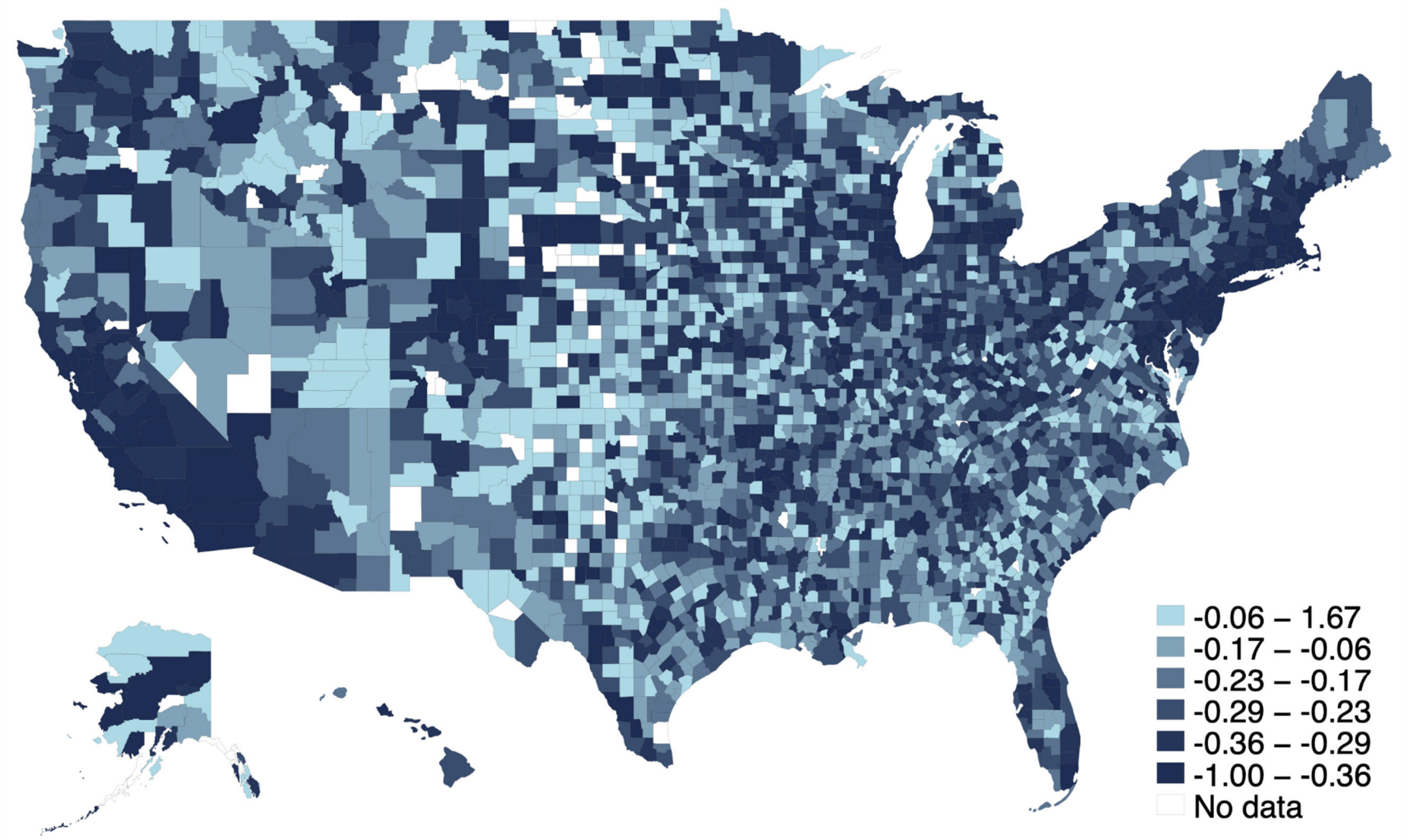


**Figure 2: County-level Changes in Foot Traffic**

Figure 2 is a heat map of mean changes in sample store visits over our sample window (week of March 2, 2020 to week of March 16, 2020) at the U.S. county level. The mean change of our sample location was roughly 33 percent.



## Table 1: Sample Description

| | Firms | Observations |
|---|---|---|
| Available in SafeGraph with hand-collected parent company | 351 | 505,015 |
| Less firms headquartered outside the US | (70) | (98,108) |
| Less firms headquartered outside the top 100 US cities | (53) | (82,774) |
| Less missing control variables | (25) | (11,987) |
| **Total** | **203** | **312,146** |

## Table 2: Descriptive Statistics

This table provides descriptive statistics. Panel A presents descriptive statistics for our sample of 312,146 store locations while Panel B presents descriptive statistics at the firm level. Panel C presents firm-level descriptive statistics split by whether the headquarters city has a female mayor, with corresponding t-tests of differences. Panel D reports Pearson correlations for variables measured at the store-level. Variables are as defined in Appendix D. Values in bold are significant at the 10 percent level.

Panel A: Descriptive Statistics, by store location

| **Variable** | **N** | **Mean** | **SD** | **p25** | **p50** | **p75** |
|---|---|---|---|---|---|---|
| *PCT_CHG_VISITS* | 312,146 | -0.325 | 0.431 | -0.600 | -0.371 | -0.115 |
| *MAYOR_FEM* | 312,146 | 0.314 | 0.464 | 0 | 0 | 1 |
| *BOARD_FEMALE_N* | 312,146 | 3.166 | 1.458 | 2 | 3 | 4 |
| *BOARD_FEMALE_PCT* | 312,146 | 0.280 | 0.106 | 0.231 | 0.273 | 0.333 |
| *CEO_FEM* | 312,146 | 0.054 | 0.225 | 0 | 0 | 0 |
| *TOP5_EXEC_FEMALE_N* | 312,146 | 0.766 | 0.824 | 0 | 1 | 1 |
| *TOBINSQ* | 312,146 | 2.597 | 2.049 | 1.286 | 1.733 | 3.260 |
| *ROA* | 312,146 | 0.075 | 0.077 | 0.030 | 0.050 | 0.110 |
| *LSALE* | 312,146 | 9.627 | 1.692 | 8.630 | 9.793 | 10.714 |
| *DEBT* | 312,146 | 0.559 | 0.469 | 0.253 | 0.487 | 0.613 |
| *CASH* | 312,146 | 0.054 | 0.059 | 0.015 | 0.028 | 0.079 |
| *LRET* | 312,146 | -0.062 | 0.261 | -0.195 | -0.040 | 0.128 |
| *LSEGMENTS* | 312,146 | 1.810 | 0.556 | 1.386 | 1.792 | 2.197 |
| *VOL60* | 312,146 | 0.263 | 0.099 | 0.199 | 0.247 | 0.289 |
| *PCT_INDEP* | 312,146 | 0.271 | 0.146 | 0.155 | 0.264 | 0.344 |
| *LBOARD_SIZE* | 312,146 | 2.472 | 0.205 | 2.398 | 2.485 | 2.565 |
| *PRECAUTION_RANK* | 312,146 | 22.562 | 15.249 | 7 | 26 | 33 |
| *HEADQUARTER_CASES* | 312,146 | 1.306 | 1.353 | 0.480 | 0.736 | 1.717 |

Panel B: Descriptive Statistics, by firm

| Variable | N | Mean | SD | p25 | p50 | p75 |
|---|---|---|---|---|---|---|
| *LOCATION_COUNT* | 203 | 1537.665 | 2664.094 | 235 | 549 | 1629 |
| *MAYOR_FEM* | 203 | 0.276 | 0.448 | 0 | 0 | 1 |
| *BOARD_FEMALE_N* | 203 | 2.901 | 1.580 | 2 | 3 | 4 |
| *BOARD_FEMALE_PCT* | 203 | 0.271 | 0.123 | 0.200 | 0.273 | 0.333 |
| *CEO_FEM* | 203 | 0.079 | 0.270 | 0 | 0 | 0 |
| *TOP5_EXEC_FEMALE_N* | 203 | 0.842 | 0.847 | 0 | 1 | 1 |
| *TOBINSQ* | 203 | 1.997 | 1.427 | 1.066 | 1.434 | 2.384 |
| *ROA* | 203 | 0.053 | 0.067 | 0.014 | 0.047 | 0.089 |
| *LSALE* | 203 | 8.594 | 1.727 | 7.316 | 8.580 | 9.594 |
| *DEBT* | 203 | 0.443 | 0.295 | 0.234 | 0.415 | 0.578 |
| *CASH* | 203 | 0.064 | 0.069 | 0.015 | 0.037 | 0.091 |
| *LRET* | 203 | -0.124 | 0.313 | -0.267 | -0.089 | 0.075 |
| *LSEGMENTS* | 203 | 1.697 | 0.522 | 1.386 | 1.792 | 2.079 |
| *VOL60* | 203 | 0.324 | 0.131 | 0.232 | 0.280 | 0.383 |
| *PCT_INDEP* | 203 | 0.304 | 0.133 | 0.218 | 0.294 | 0.371 |
| *LBOARD_SIZE* | 203 | 2.408 | 0.234 | 2.303 | 2.398 | 2.565 |
| *PRECAUTION_RANK* | 203 | 24.394 | 15.430 | 11 | 27 | 38 |
| *HEADQUARTER_CASES* | 203 | 1.479 | 1.670 | 0.519 | 0.744 | 1.717 |

Panel C: Descriptive Statistics by firm, split by female mayor

| | ***MAYOR_FEM* = 0** | | | ***MAYOR_FEM* = 1** | | | |
|---|---|---|---|---|---|---|---|
| **Variable** | **N** | **Mean** | **SD** | **N** | **Mean** | **SD** | **Diff** |
| *LOCATION_COUNT* | 147 | 1456.170 | 2619.222 | 56 | 1751.589 | 2791.310 | -295.419 |
| *BOARD_FEMALE_N* | 147 | 2.871 | 1.584 | 56 | 2.982 | 1.578 | -0.111 |
| *BOARD_FEMALE_PCT* | 147 | 0.270 | 0.125 | 56 | 0.274 | 0.120 | -0.004 |
| *BOARD_FEMALE_TOP3* | 147 | 0.340 | 0.475 | 56 | 0.321 | 0.471 | 0.019 |
| *CEO_FEMALE* | 147 | 0.068 | 0.253 | 56 | 0.107 | 0.312 | -0.039 |
| *TOP5_EXEC_FEMALE_N* | 147 | 0.844 | 0.874 | 56 | 0.839 | 0.781 | 0.004 |
| *TOBINSQ* | 147 | 1.960 | 1.424 | 56 | 2.093 | 1.442 | -0.133 |
| *ROA* | 147 | 0.048 | 0.069 | 56 | 0.065 | 0.057 | **-0.017** |
| *LSALE* | 147 | 8.458 | 1.717 | 56 | 8.950 | 1.717 | **-0.492** |
| *DEBT* | 147 | 0.462 | 0.321 | 56 | 0.393 | 0.206 | **0.069** |
| *CASH* | 147 | 0.065 | 0.073 | 56 | 0.063 | 0.058 | 0.002 |
| *LOGRET* | 147 | -0.141 | 0.332 | 56 | -0.081 | 0.256 | -0.059 |
| *LSEGMENTS* | 147 | 1.686 | 0.514 | 56 | 1.725 | 0.544 | -0.039 |
| *VOL60* | 147 | 0.334 | 0.133 | 56 | 0.298 | 0.124 | **0.036** |
| *PCT_INDEP* | 147 | 0.305 | 0.132 | 56 | 0.301 | 0.135 | 0.004 |
| *LBOARD_SIZE* | 147 | 2.400 | 0.238 | 56 | 2.431 | 0.224 | -0.031 |
| *PRECAUTION_RANK* | 147 | 24.612 | 16.392 | 56 | 23.821 | 12.677 | 0.791 |
| *HEADQUARTER_CASES* | 147 | 1.630 | 1.893 | 56 | 1.082 | 0.718 | **0.548** |

Panel D: Pearson Correlations, by store location

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) | (16) | (17) | (18) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) *PCT_CHG_VISITS* | 1 | | | | | | | | | | | | | | | | | |
| (2) *MAYOR_FEM* | **-0.023** | 1 | | | | | | | | | | | | | | | | |
| (3) *BOARD_FEMALE_PCT* | **-0.112** | **0.096** | 1 | | | | | | | | | | | | | | | |
| (4) *BOARD_FEMALE_TOP3* | **-0.130** | **0.152** | **0.755** | 1 | | | | | | | | | | | | | | |
| (5) *CEO_FEMALE* | **-0.103** | **0.027** | **0.428** | **0.326** | 1 | | | | | | | | | | | | | |
| (6) *TOP5EXEC_FEMALE_N* | **-0.063** | **-0.057** | **0.378** | **0.311** | **0.405** | 1 | | | | | | | | | | | | |
| (7) *TOBINSQ* | **-0.120** | **0.018** | **0.141** | **0.057** | **-0.045** | **0.196** | 1 | | | | | | | | | | | |
| (8) *ROA* | **-0.072** | **0.024** | **0.136** | **-0.010** | **0.018** | **0.162** | **0.861** | 1 | | | | | | | | | | |
| (9) *LSALE* | **0.154** | **0.203** | **0.154** | **0.026** | -0.001 | **-0.115** | **-0.228** | **-0.092** | 1 | | | | | | | | | |
| (10) *DEBT* | **-0.102** | **-0.189** | **0.006** | **-0.111** | **-0.008** | **0.080** | **0.758** | **0.655** | **-0.376** | 1 | | | | | | | | |
| (11) *CASH* | **-0.199** | **-0.075** | **0.245** | **0.285** | **0.136** | **0.229** | **0.479** | **0.339** | **-0.321** | **0.299** | 1 | | | | | | | |
| (12) *LRET* | **0.038** | **-0.022** | **-0.079** | **0.016** | **-0.068** | **0.093** | **0.334** | **0.373** | **-0.050** | **0.138** | **0.028** | 1 | | | | | | |
| (13) *LSEGMENTS* | **-0.011** | **0.029** | **0.169** | **0.032** | **-0.029** | **0.065** | **-0.073** | **-0.108** | **0.468** | **-0.142** | **-0.023** | **-0.202** | 1 | | | | | |
| (14) *VOL60* | **-0.077** | **-0.224** | -0.001 | **0.065** | **0.208** | **0.100** | **-0.330** | **-0.437** | **-0.452** | **-0.061** | **0.086** | **-0.341** | **-0.220** | 1 | | | | |
| (15) *PCT_INDEP* | **-0.036** | **-0.245** | **-0.402** | **-0.167** | **0.028** | **-0.217** | **-0.112** | **-0.084** | **-0.360** | **0.057** | **-0.009** | **-0.200** | **-0.188** | **0.324** | 1 | | | |
| (16) *LBOARD_SIZE* | **-0.014** | **0.143** | **0.223** | **0.137** | **0.035** | **0.040** | **0.181** | **0.133** | **0.331** | **0.118** | **0.079** | **-0.014** | **0.317** | **-0.252** | **-0.361** | 1 | | |
| (17) *PRECAUTION_RANK* | **-0.126** | **0.224** | **0.159** | **0.313** | **0.078** | **0.220** | **0.046** | **-0.047** | **-0.093** | **-0.097** | **0.133** | **0.207** | **-0.100** | **-0.006** | **-0.270** | **0.150** | 1 | |
| (18) *HEADQUARTER_CASES* | **-0.058** | **-0.043** | **0.094** | **0.074** | **0.065** | **0.392** | **-0.013** | **-0.045** | **0.015** | **-0.024** | **0.029** | **0.126** | 0.001 | **0.054** | **-0.288** | **0.016** | **0.462** | 1 |

## Table 3: Cross-Sector Female Representation and Store Visits

Table 3 presents results for our main analysis on the relation between cross-sector female representation and store visits. Panels A and B include as an explanatory variable only an indicator for female mayor. Panel A is our parsimonious model, excluding firm controls. Panel B reports results using our full set of controls. Panel C reports results that include fixed effects at the mayor level. In Panels A and B, Column 1 includes only the main effect of a female mayor, Columns 2 and 3 measure board female representation as the percent of the board seats held by females; Columns 4 and 5 measure board female representation as an indicator equal to one if the board is in the top tercile of percentage of female directors, zero otherwise. In Panel C, Columns 1 and 2 measure board female representation as the percent of the board seats held by females; Columns 3 and 4 measure board female representation as an indicator equal to one if the board is in the top tercile of percentage of female directors, zero otherwise. Standard errors are clustered at the store county level. In Panels A and B, all columns include industry and county fixed effects. In Panel C, Columns 1 and 3 include industry, county, and mayor fixed effects; Columns 2 and 4 include industry-county and mayor fixed effects. Variables are as defined in Appendix D $*p < 0.1$; $**p < 0.05$; $***p < 0.01$ (two-tailed).

Panel A: Cross-sector female representation store visits, with industry and county fixed effects

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| | OUTCOME = *PCT_CH_VISITS* | | | | |
| VARIABLES | | *BOARD_FEM = BOARD_FEMALE_PCT* | | *BOARD_FEM = BOARD_FEMALE_TOP3* | |
| *MAYOR_FEM* | -0.016*** | -0.016*** | 0.010 | -0.014*** | -0.009*** |
| | (0.002) | (0.002) | (0.007) | (0.002) | (0.003) |
| *BOARD_FEM* | | -0.004 | 0.017 | -0.015*** | -0.009*** |
| | | (0.010) | (0.011) | (0.003) | (0.003) |
| *MAYOR_FEM*BOARD_FEM* | | | -0.089*** | | -0.017*** |
| | | | (0.020) | | (0.004) |
| Observations | 310,019 | 310,019 | 310,019 | 310,019 | 310,019 |
| Adj R-squared | 0.220 | 0.220 | 0.220 | 0.220 | 0.220 |
| Fixed Effect | Industry & County | Industry & County | Industry & County | Industry & County | Industry & County |
| Std Error Clustering | County | County | County | County | County |

Panel B: Cross-sector female representation and store visits, with additional control variables

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| | OUTCOME = *PCT_CH_VISITS* | | | | |
| VARIABLES | | *BOARD_FEM = BOARD_FEMALE_PCT* | | *BOARD_FEM = BOARD_FEMALE_TOP3* | |
| *MAYOR_FEM* | -0.005 | -0.006* | 0.016** | -0.005* | 0.006* |
| | (0.003) | (0.003) | (0.007) | (0.003) | (0.004) |
| *BOARD_FEM* | | -0.031** | -0.012 | -0.008*** | 0.003 |
| | | (0.012) | (0.014) | (0.003) | (0.003) |
| *MAYOR_FEM*BOARD_FEM* | | | -0.074*** | | -0.032*** |
| | | | (0.021) | | (0.004) |
| *TOBINSQ* | -0.028*** | -0.027*** | -0.026*** | -0.027*** | -0.026*** |
| | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) |
| *ROA* | -0.392*** | -0.396*** | -0.414*** | -0.412*** | -0.442*** |
| | (0.031) | (0.030) | (0.031) | (0.030) | (0.030) |
| *LSALE* | -0.021*** | -0.021*** | -0.021*** | -0.021*** | -0.020*** |
| | (0.002) | (0.002) | (0.002) | (0.002) | (0.002) |
| *DEBT* | 0.147*** | 0.146*** | 0.147*** | 0.147*** | 0.150*** |
| | (0.004) | (0.004) | (0.004) | (0.004) | (0.004) |
| *CASH* | -0.242*** | -0.244*** | -0.245*** | -0.235*** | -0.228*** |
| | (0.032) | (0.032) | (0.032) | (0.032) | (0.032) |
| *LOGRET* | 0.138*** | 0.135*** | 0.136*** | 0.137*** | 0.139*** |
| | (0.006) | (0.006) | (0.006) | (0.006) | (0.006) |
| *LSEGMENTS* | -0.018*** | -0.019*** | -0.018*** | -0.019*** | -0.018*** |
| | (0.003) | (0.003) | (0.003) | (0.003) | (0.003) |
| *VOL60* | -0.232*** | -0.232*** | -0.231*** | -0.236*** | -0.228*** |
| | (0.019) | (0.018) | (0.019) | (0.019) | (0.019) |
| *PCT_INDEP* | -0.214*** | -0.226*** | -0.222*** | -0.218*** | -0.221*** |
| | (0.008) | (0.010) | (0.010) | (0.008) | (0.009) |
| *LBOARD_SIZE* | 0.048*** | 0.048*** | 0.045*** | 0.045*** | 0.040*** |
| | (0.009) | (0.009) | (0.009) | (0.009) | (0.009) |
| *PRECAUTION_RANK* | -0.003*** | -0.003*** | -0.003*** | -0.003*** | -0.003*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| *HEADQUARTER_CASES* | 0.003*** | 0.002** | 0.002** | 0.002** | 0.002 |
| | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) |
| Observations | 310,019 | 310,019 | 310,019 | 310,019 | 310,019 |
| Adj R-squared | 0.230 | 0.230 | 0.230 | 0.230 | 0.230 |
| Fixed Effect | Industry & County | Industry & County | Industry & County | Industry & County | Industry & County |
| Std Error Clustering | County | County | County | County | County |

Panel C: Cross-sector female representation and store visits, with additional fixed effects

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | OUTCOME = *PCT_CH_VISITS* | | | |
| VARIABLES | *BOARD_FEM = BOARD_FEMALE_PCT* | | *BOARD_FEM = BOARD_FEMALE_TOP3* | |
| *BOARD_FEM* | -0.035* | -0.010 | 0.013*** | 0.020*** |
| | (0.018) | (0.020) | (0.005) | (0.005) |
| *MAYOR_FEM*BOARD_FEM* | -0.334*** | -0.448*** | -0.089*** | -0.125*** |
| | (0.034) | (0.036) | (0.007) | (0.008) |
| *TOBINSQ* | -0.019*** | -0.021*** | -0.019*** | -0.021*** |
| | (0.002) | (0.002) | (0.002) | (0.002) |
| *ROA* | -0.741*** | -0.638*** | -0.745*** | -0.636*** |
| | (0.041) | (0.042) | (0.041) | (0.041) |
| *LSALE* | -0.007*** | -0.008*** | -0.007*** | -0.007*** |
| | (0.002) | (0.002) | (0.002) | (0.002) |
| *DEBT* | 0.167*** | 0.164*** | 0.175*** | 0.175*** |
| | (0.006) | (0.007) | (0.007) | (0.008) |
| *CASH* | -0.195*** | -0.209*** | -0.187*** | -0.204*** |
| | (0.043) | (0.046) | (0.044) | (0.048) |
| *LOGRET* | 0.124*** | 0.139*** | 0.133*** | 0.149*** |
| | (0.008) | (0.009) | (0.008) | (0.008) |
| *LSEGMENTS* | -0.012** | 0.000 | -0.008* | 0.006 |
| | (0.005) | (0.005) | (0.005) | (0.006) |
| *VOL60* | -0.312*** | -0.262*** | -0.314*** | -0.264*** |
| | (0.023) | (0.026) | (0.023) | (0.026) |
| *PCT_INDEP* | -0.253*** | -0.274*** | -0.251*** | -0.278*** |
| | (0.016) | (0.016) | (0.015) | (0.015) |
| *LBOARD_SIZE* | -0.102*** | -0.101*** | -0.114*** | -0.116*** |
| | (0.012) | (0.014) | (0.012) | (0.014) |
| *HEADQUARTER_CASES* | -0.043*** | -0.045*** | -0.038*** | -0.043*** |
| | (0.005) | (0.006) | (0.005) | (0.006) |
| Observations | 310,019 | 286,015 | 310,019 | 286,015 |
| Adj R-squared | 0.240 | 0.276 | 0.240 | 0.276 |
| Fixed Effect | Industry & County & Mayor City | Industry*County & Mayor City | Industry & County & Mayor City | Industry*County & Mayor City |
| Std Error Clustering | County | County | County | County |

## Table 4: Cross-Sector Female Representation and Firm Policies, Alternative Measure of Pandemic Response

Table 4 presents results analyzing the relation between cross-sector female representation and firms' store-level closure policies. *CLOSURE* is an indicator equal to one if the firm announced a store-closure policy in March 2020, zero otherwise. Column 1 measures board female representation as the percent of the board seats held by females; Column 2 measures board female representation as an indicator equal to one if the board is in the top tercile of percentage of female directors, zero otherwise. Specifications include additional firm and headquarter-level controls related to female firm representation. Standard errors are clustered at the two-digit NAICS industry level. Variables are as defined in Appendix D. $*p < 0.1$; $**p < 0.05$; $***p < 0.01$ (two-tailed).

| | (1) | (2) |
|---|---|---|
| | OUTCOME = *CLOSURE* | |
| VARIABLES | *BOARD_FEM = BOARD_FEMALE_PCT* | *BOARD_FEM = BOARD_FEMALE_TOP3* |
| *MAYOR_FEM* | -1.119** | -0.390* |
| | (0.491) | (0.200) |
| *BOARD_FEM* | 3.441*** | 0.663 |
| | (1.286) | (0.536) |
| *MAYOR_FEM*BOARD_FEM* | 3.873** | 1.038** |
| | (1.920) | (0.421) |
| Observations | 203 | 203 |
| Pseudo R-squared | 0.175 | 0.199 |
| Firm & HQ Controls | YES | YES |
| Fixed Effect | None | None |
| Std Error Clustering | Industry (2 digit) | Industry (2 digit) |

## Table 5: Alternative Measure of Firm Female Leadership

Table 5 presents results of analyses measuring firm female representation at the executive level. Columns 1 and 2 present results for our main analysis on the relation between cross-sector female representation and store visits. Columns 3 and 4 present results for the relation between cross-sector female representation and firms' store-level closure policies in response to the COVID-19 pandemic. Columns 1 and 3 measure executive female representation as an indicator equal to one if the CEO is female, zero if the CEO is male. Columns 2 and 4 measure executive female representation using the number of female top five executives. In Columns 1 and 2 standard errors are clustered at the store county level, and industry and county fixed effects are included. In Columns 3 and 4, standard errors are clustered at the two-digit NAICS industry level. Variables are as defined in Appendix D. $*p < 0.1$; $**p < 0.05$; $***p < 0.01$ (two-tailed).

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | OUTCOME = *PCT_CH_VISITS* | | OUTCOME = *CLOSURE* | |
| VARIABLES | *EXEC_FEM = CEO_FEM* | *EXEC_FEM = TOP5EXEC_FEMALE_N* | *EXEC_FEM = CEO_FEM* | *EXEC_FEM = TOP5EXEC_FEMALE_N* |
| *MAYOR_FEM* | 0.001 | 0.005 | -0.274 | -0.807 |
| | (0.003) | (0.004) | (0.273) | (0.603) |
| *EXEC_FEM* | -0.022*** | 0.005*** | 0.430 | 0.187 |
| | (0.005) | (0.001) | (0.743) | (0.256) |
| *MAYOR_FEM*EXEC_FEM* | -0.035*** | -0.077*** | 2.289 | 4.038* |
| | (0.007) | (0.012) | (1.703) | (2.430) |
| Observations | 310,019 | 310,019 | 203 | 203 |
| Adj R-squared | 0.230 | 0.230 | | |
| Pseudo R-squared | | | 0.171 | 0.221 |
| Firm & HQ Controls | YES | YES | YES | YES |
| Fixed Effect | Industry & County | Industry & County | None | None |
| Std Error Clustering | County | County | Industry (2 digit) | Industry (2 digit) |

## Table 6: Mayor Prominence and Store Visits

Table 6 presents results for the relation between mayor prominence and store visits. Columns 1 and 2 measure mayor prominence as the log of one plus mayor age. Columns 3 and 4 measure mayor prominence as the log of one plus mayor tenure in years. Columns 5 and 6 measure mayor prominence as the log of the population of the mayor's city. Columns 7 and 8 measure mayor prominence as the decile ranking of the number of articles that mention the mayor and COVID-19 during our sample period. Standard errors are clustered at the store county level. All panels include industry and county fixed effects. Variables are as defined in Appendix D. ∗p < 0.1; ∗∗p < 0.05; ∗∗∗p < 0.01 (two-tailed).

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|
| | OUTCOME = *PCT_CH_VISITS* | | | | | | | |
| VARIABLES | *MAYOR_PROMINENCE = LMAYOR_AGE* | | *MAYOR_PROMINENCE = LMAYOR_TENURE* | | *MAYOR_PROMINENCE = LMAYOR_CITYPOP* | | *MAYOR_PROMINENCE = ARTICLE_COUNT* | |
| *MAYOR_PROMINENCE* | -0.060*** | -0.061*** | -0.005*** | -0.017*** | -0.004*** | -0.003*** | -0.001*** | -0.001* |
| | (0.005) | (0.005) | (0.002) | (0.002) | (0.001) | (0.001) | (0.000) | (0.000) |
| *MAYOR_FEM* | | -0.016*** | | -0.028*** | | -0.016*** | | -0.014*** |
| | | (0.002) | | (0.003) | | (0.002) | | (0.002) |
| Observations | 310,019 | 310,019 | 310,019 | 310,019 | 310,019 | 310,019 | 310,019 | 310,019 |
| Adj R-squared | 0.220 | 0.220 | 0.220 | 0.220 | 0.220 | 0.220 | 0.220 | 0.220 |
| Fixed Effect | Industry & County | Industry & County | Industry & County | Industry & County | Industry & County | Industry & County | Industry & County | Industry & County |
| Std Error Clustering | County | County | County | County | County | County | County | County |

## Table 7: Cross-Sector Female Representation, Store Visits, and Social Preferences

Table 7 presents results for our analysis on the relation between female representation and store visits controlling for social preference alignment. Panel A presents results controlling for the interaction between female mayor and the firm's ideological preferences. Columns 1 and 5 measure a company's social responsibility as an indicator equal to one if the company was included in Newsweek and Statista's 2020 list of "America's Most Responsible Companies," zero otherwise; Columns 2 and 6 measure firm preferences using Number of DEI-based words across 10-K, 8-K, and DEF 14A disclosures for the firm in 2019 per Baker et al. (2024); Columns 3 and 7 measure firm preferences as the percentage of articles about the firm from March 2019 through February 2020 tagged to the SASB categories of Employee Health & Safety and Labor Practices; Columns 4 and 8 measure firm preference as the political preference of the current CEO. Panel B presents results controlling for the interaction between female representation on the board and mayor or city political affiliation. Columns 1 and 3 measure political affiliation as an indicator equal to one if the mayor is a Democrat, zero otherwise; Columns 2 and 4 measure political affiliation as the Democratic lean of the city, using a continuous, survey-based measure from Tausanovitch and Warshaw (2022). In Panel A (B), Columns 1 through 4 (1 and 2) measure board female representation as the percent of the board seats held by females; Column 5 through 8 (3 and 4) measure board female representation as an indicator equal to one if the board is in the top tercile of percentage of female directors, zero otherwise. Specifications in both panels include additional firm and headquarter-level controls from Table 3 Panel B. All columns in all panels include industry and county fixed effects. Standard errors are clustered at the store county level. Variables are as defined in Appendix D. $*p < 0.1$; $**p < 0.05$; $***p < 0.01$ (two-tailed).

Panel A: Cross-sector female representation and store visits controlling for firm social preferences

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|
| | OUTCOME = *PCT_CH_VISITS* | | | | | | | |
| | *BOARD_FEM = BOARD_FEMALE_PCT* | | | | *BOARD_FEM = BOARD_FEMALE_TOP3* | | | |
| VARIABLES | *FIRM_PREF = RESPONSIBLE_COMPANY* | *FIRM_PREF = BAKER_DEI* | *FIRM_PREF = EMPLOYEE_FOCUS* | *FIRM_PREF = CEO_DEM* | *FIRM_PREF = RESPONSIBLE_COMPANY* | *FIRM_PREF = BAKER_DEI* | *FIRM_PREF = EMPLOYEE_FOCUS* | *FIRM_PREF = CEO_DEM* |
| *MAYOR_FEM* | 0.008 | 0.028*** | 0.038*** | 0.049*** | -0.003 | 0.021*** | 0.009 | 0.036*** |
| | (0.008) | (0.009) | (0.010) | (0.007) | (0.004) | (0.005) | (0.006) | (0.004) |
| *BOARD_FEM* | 0.000 | -0.053*** | -0.004 | -0.038*** | 0.004 | -0.012*** | 0.007** | -0.002 |
| | (0.014) | (0.015) | (0.015) | (0.015) | (0.003) | (0.003) | (0.003) | (0.003) |
| *MAYOR_FEM*BOARD_FEM* | -0.068*** | -0.074*** | -0.147*** | -0.090*** | -0.041*** | -0.026*** | -0.043*** | -0.034*** |
| | (0.024) | (0.024) | (0.024) | (0.021) | (0.005) | (0.005) | (0.005) | (0.004) |
| *FIRM_PREF* | -0.021*** | 0.001*** | 0.036** | 0.096*** | -0.020*** | 0.001*** | 0.041** | 0.095*** |
| | (0.004) | (0.000) | (0.016) | (0.004) | (0.004) | (0.000) | (0.017) | (0.004) |
| *MAYOR_FEM*FIRM_PREF* | 0.013** | -0.001*** | -0.025 | -0.138*** | 0.032*** | -0.001*** | -0.022 | -0.138*** |
| | (0.005) | (0.000) | (0.021) | (0.006) | (0.005) | (0.000) | (0.021) | (0.005) |
| Observations | 310,019 | 296,719 | 305,146 | 310,019 | 310,019 | 296,719 | 305,146 | 310,019 |
| Adj R-squared | 0.230 | 0.237 | 0.229 | 0.232 | 0.230 | 0.237 | 0.229 | 0.232 |
| Firm & HQ Controls | YES | YES | YES | YES | YES | YES | YES | YES |
| Fixed Effect | Industry & County | Industry & County | Industry & County | Industry & County | Industry & County | Industry & County | Industry & County | Industry & County |
| Std Error Clustering | County | County | County | County | County | County | County | County |

Panel B: Cross-sector female representation and store visits controlling for mayor and city political lean

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | OUTCOME = *PCT_CH_VISITS* | | | |
| | *BOARD_FEM = BOARD_FEMALE_PCT* | | *BOARD_FEM = BOARD_FEMALE_TOP3* | |
| VARIABLES | *MAYOR_POL = MAYOR_DEM* | *MAYOR_POL = DEM_LEAN_CITY* | *MAYOR_POL = MAYOR_DEM* | *MAYOR_POL = DEM_LEAN_CITY* |
| *MAYOR_FEM* | 0.026*** | 0.005 | 0.004 | -0.006 |
| | (0.008) | (0.007) | (0.004) | (0.004) |
| *BOARD_FEM* | -0.266*** | -0.408** | -0.085*** | -0.323*** |
| | (0.048) | (0.172) | (0.013) | (0.038) |
| *MAYOR_FEM*BOARD_FEM* | -0.146*** | -0.060*** | -0.055*** | -0.022*** |
| | (0.022) | (0.021) | (0.005) | (0.004) |
| *MAYOR_POL* | -0.023** | 0.106*** | 0.027*** | 0.096*** |
| | (0.012) | (0.017) | (0.004) | (0.007) |
| *MAYOR_POL*BOARD_FEM* | 0.274*** | -0.138** | 0.104*** | -0.118*** |
| | (0.047) | (0.063) | (0.014) | (0.014) |
| Observations | 310,019 | 310,019 | 310,019 | 310,019 |
| Adj R-squared | 0.231 | 0.230 | 0.231 | 0.231 |
| Firm & HQ Controls | YES | YES | YES | YES |
| Fixed Effect | Industry & County | Industry & County | Industry & County | Industry & County |
| Std Error Clustering | County | County | County | County |

## Table 8: Falsification Test

Table 8 presents results for our falsification test using historical mayor gender. The sample is restricted to only cities with a current male mayor and presents results replacing *MAYOR_FEM* with an indicator of whether the city had a female mayor during the period 2000 to 2019, zero otherwise. In Columns 2 and 3, board female representation is the percent of the board seats held by female directors. In Columns 4 and 5, board female representation is an indicator equal to one if the board is in the top tercile of percentage of female directors, zero otherwise. Specifications include additional firm and headquarter-level controls from Table 3 Panel B. All columns include industry and county fixed effects. Standard errors are clustered at the store county level. Variables are as defined in Appendix D. ∗p < 0.1; ∗∗p < 0.05; ∗∗∗p < 0.01 (two-tailed).

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| | OUTCOME = *PCT_CH_VISITS* | | | | |
| VARIABLES | | *BOARD_FEM = BOARD_FEMALE_PCT* | | *BOARD_FEM = BOARD_FEMALE_TOP3* | |
| *PAST_MAYOR_FEM* | 0.064*** | 0.065*** | 0.072*** | 0.066*** | 0.058*** |
| | (0.005) | (0.005) | (0.010) | (0.005) | (0.006) |
| *BOARD_FEM* | | -0.059*** | -0.055*** | -0.016*** | -0.021*** |
| | | (0.015) | (0.016) | (0.003) | (0.004) |
| *PAST_MAYOR_FEM*BOARD_FEM* | | | -0.023 | | 0.021*** |
| | | | (0.030) | | (0.008) |
| Observations | 213,622 | 213,622 | 213,622 | 213,622 | 213,622 |
| Adj R-squared | 0.246 | 0.246 | 0.246 | 0.246 | 0.246 |
| Firm & HQ Controls | YES | YES | YES | YES | YES |
| Fixed Effect | Industry & County | Industry & County | Industry & County | Industry & County | Industry & County |
| Std Error Clustering | County | County | County | County | County |

## Table 9: Disaster Philanthropy Analysis

Table 9 presents results for analysis of cross sector female representation and post-disaster giving. Columns 1 through 4 measure post-disaster giving as an indicator variable equal to one if a firm donated to that specific disaster, zero otherwise. Columns 5 through 8 measure post-disaster giving as the log of one plus the grant amount for a specific disaster. Columns 1, 2, 5, and 6 measure firm female representation as the percent of female board members. Columns 3, 4, 7, and 8 measure firm female representation with an indicator equal to one if the percent of female board members is in the top tercile, zero otherwise. All specifications include firm, year, and disaster type fixed effects. Variables are as defined in Appendix D. Standard errors are clustered at the firm level. $*p < 0.1$; $**p < 0.05$; $***p < 0.01$ (two-tailed).

| VARIABLES | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|
| | OUTCOME = *GRANT (0/1)* | | | | OUTCOME = *LGRANT_AMOUNT* | | | |
| | *BOARD_FEM = BOARD_FEMALE_PCT* | | *BOARD_FEM = BOARD_FEMALE_TOP3* | | *BOARD_FEM = BOARD_FEMALE_PCT* | | *BOARD_FEM = BOARD_FEMALE_TOP3* | |
| *GOVERNOR_FEM* | -0.127** | -0.134** | -0.018 | -0.038 | -1.411** | -1.547*** | -0.218 | -0.427 |
| | (0.052) | (0.051) | (0.027) | (0.025) | (0.581) | (0.576) | (0.309) | (0.297) |
| *BOARD_FEM* | -0.037 | -0.044 | -0.008 | -0.005 | -0.329 | -0.435 | -0.108 | -0.085 |
| | (0.050) | (0.050) | (0.009) | (0.009) | (0.561) | (0.558) | (0.103) | (0.105) |
| *GOVERNOR_FEM*BOARD_FEM* | 0.634** | 0.589** | 0.084** | 0.101*** | 7.056*** | 6.859*** | 0.993*** | 1.160*** |
| | (0.245) | (0.238) | (0.035) | (0.025) | (2.625) | (2.531) | (0.378) | (0.277) |
| *TOBINSQ* | | 0.004 | | 0.004 | | 0.071 | | 0.066 |
| | | (0.005) | | (0.005) | | (0.056) | | (0.057) |
| *ROA* | | -0.194* | | -0.192* | | -2.298* | | -2.271* |
| | | (0.107) | | (0.107) | | (1.176) | | (1.177) |
| *LSALE* | | 0.036*** | | 0.035*** | | 0.393*** | | 0.386*** |
| | | (0.012) | | (0.013) | | (0.136) | | (0.137) |
| *DEBT* | | 0.042 | | 0.037 | | 0.404 | | 0.370 |
| | | (0.048) | | (0.048) | | (0.512) | | (0.511) |
| *CASH* | | 0.053 | | 0.054 | | 0.672 | | 0.686 |
| | | (0.052) | | (0.052) | | (0.572) | | (0.575) |
| *LOGRET* | | 0.004 | | 0.004 | | -0.001 | | 0.002 |
| | | (0.017) | | (0.017) | | (0.194) | | (0.193) |
| *LSEGMENTS* | | 0.012 | | 0.012 | | 0.203 | | 0.204 |
| | | (0.025) | | (0.024) | | (0.276) | | (0.268) |
| *VOL60* | | 0.047 | | 0.047 | | 0.774 | | 0.779 |
| | | (0.078) | | (0.078) | | (0.852) | | (0.853) |
| *PCT_INDEP* | | -0.070 | | -0.067 | | -0.879 | | -0.833 |
| | | (0.092) | | (0.092) | | (0.940) | | (0.946) |
| *LBOARD_SIZE* | | -0.106* | | -0.108* | | -1.114 | | -1.138 |
| | | (0.057) | | (0.057) | | (0.712) | | (0.701) |
| Observations | 12,315 | 11,493 | 12,315 | 11,493 | 12,314 | 11,492 | 12,314 | 11,492 |
| Adj R-squared | 0.102 | 0.097 | 0.101 | 0.097 | 0.100 | 0.096 | 0.100 | 0.096 |
| Fixed Effect | Firm, Year, & Disaster Type | Firm, Year, & Disaster Type | Firm, Year, & Disaster Type | Firm, Year, & Disaster Type | Firm, Year, & Disaster Type | Firm, Year, & Disaster Type | Firm, Year, & Disaster Type | Firm, Year, & Disaster Type |
| Std Error Clustering | Firm | Firm | Firm | Firm | Firm | Firm | Firm | Firm |