Self-segregation, Mortality Salience, and Labor Movement: the 9/11 Shock

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Abstract

We investigate the effect of mortality salience, a leading theory in social psychology, on self-segregation. We do this in the context of executive movements, a setting that allows us to control for many confounding effects. Using the 9/11 terrorist attacks as a shock, we establish that firms located in areas with a more visible Muslim presence experienced significantly higher executive turnovers afterward. These individuals were more likely to relocate to areas with a less visible Muslim population. Several cross-sectional partitions based on the American socioeconomic fabric further validate our theoretical approach and provide a useful starting point for policy making.

In contrast to many prior studies that focus on segregation (i.e., one group excluding another), ours focuses on self-segregation (i.e., one group distancing itself from another). The importance of self-segregation is currently being debated among scholars and practitioners and has broad economic and social implications. Our choice of the 9/11 shock allows us to identify the sources of self-segregation unequivocally, but we believe it is representative of broader phenomena that are generally hard to characterize empirically. Our results also contribute to behavioral economics research. While this field has gained popularity over the years, it has largely focused on standard heuristics. The breadth of psychological theories has not permeated economic research. We take steps to remediate this issue by using a well-established theory in social psychology to investigate an important economic and social question.

Key words: self-segregation, Islamophobia, mortality salience, emotion, religion,
JEL: J15

I. INTRODUCTION

Segregation has been integral to American society from the outset, with communities physically, culturally, and legally separated in many ways. Ethnicity influences, for example, where people school and where they live. Although many laws that actively supported this segregation were repealed after the period of the Civil Rights Movement, what was a *de jure* phenomenon morphed into a *de facto* one. One example is the nineteen sixties phenomenon which saw a substantial relocation of white Americans to suburban areas as black Americans moved into their spaces, neighborhoods that were previously off limits to blacks. This led to a divide between a predominantly black American inner city and predominantly white suburbs in many cities like Detroit. Attempts to further desegregate communities in subsequent decades have achieved mixed results (e.g., Orfield and Lee 2004).

However, former patterns of segregation have changed over time with changing demographics, becoming more complex in the recent past. While the U.S. was formerly almost exclusively Christian, divided between a white majority and a black minority, new ethnic communities of different religious backgrounds have recorded greater demographic weights over time.[1] Urban dynamics have also changed. For example, Lichter et al. (2015) show a large post-1990 decline in (within) metropolitan segregation but an increase in "macro" (between place) segregation.

Krysan et al. (2009) note that demographers and sociologists focus on three main explanations for segregation. The first suggests that segregation is caused by ethnic differences in economic status, however the researchers note (on page 3 of their article) that empirical studies provide a "modest role for economics (Massey and Fischer 1999; Darden and Kamel 2000; Alba et al. 2000; St. John and Clymer 2000; Krivo and Kaufman 1999; Charles 2006)."

[1] See https://www.prri.org/research/american-religious-landscape-christian-religiously-unaffiliated/.

The second explanation is that segregation is the outcome of discriminatory practices in the housing market (e.g., Munnell et al. 1996; Ross and Yinger 2002; Turner et al. 2002). A third key explanation emphasizes the idea of self-segregation, the notion that people live in segregated areas because they *choose to do so* (see Chang 2018 for a review of the literature on white American self-segregation).

Various social, psychological, and socioeconomic demographic characteristics have been proposed to explain the demand for self-segregation, particularly residential self-segregation. Previous studies (e.g., Krysan et al. 2009) suggest that the racial composition of neighborhoods is influenced by cultural similarities, fear of racial hostility, or economic efficiency. However, empirical evidence supporting these assumptions is generally limited (e.g., Farley et al. 1997). One of the biggest challenges to investigating the validity of these explanations is that racial makeup and economic characteristics often comingle and develop endogenously.

We consider a new channel explaining self-segregation that relies on the concept of mortality salience (hereafter, MS). MS is the awareness by an individual that his or her death is inevitable. The term derives from terror management theory (hereafter, TMT). MS is not a theory of risk or of miscalibration (e.g., perceived risk of death). In essence, TMT argues that people manage death anxiety by defending cultural in-groups (e.g., Greenberg et al. 1986; Solomon et al. 1991) and that MS leads people to prefer similar others over dissimilar others (e.g., Harmon-Jones et al. 1997) along dimensions such as nationality, religion, preferred sports team, and university (e.g., Burke et al. 2010). Prior literature (e.g., Pyszczynski et al. 2003) also indicates that terror management effects emerge when the problem of death is highly visible and mentally accessible but nonetheless outside focal consciousness. This theory is supported by hundreds of, nearly exclusively experimental, studies (e.g., Pyszczynski et al. [2003] in psychology and Quirin et al. [2019] in neuroscience).

Previous research (e.g., Hirschberger et al. 2009) shows that MS increases the level of negativity against out-groups, while Schimel et al. (1999) show that MS enhances stereotypical thinking and preferences. As such, MS is not an alternative to negative perceptions toward certain ethnic groups (e.g., Islamophobia), but rather a theory to explain its origins. Greenberg et al. (1990) find that MS increases Christians' positivity toward fellow Christians and negativity toward other religious groups. Greenberg et al. (2001) also show that MS can lead to racial polarization between black and white Americans. In Ochsmann and Matay (1994), MS exacerbates the effect of stereotypical thinking on seating preferences. Pyszczynski et al. (2003, p.74) conclude that "after thinking about their own death, people not only dislike those from another country or those who practice a different religion, but they also literally keep their distance from them."

We explore the relevance of TMT to self-segregation by examining the 9/11 terrorist attacks as an exogenous shock to MS, which leads to greater levels of Islamophobia. Research (e.g., Pyszczynski et al. 2003) has suggested that the 9/11 attacks disrupted normal means for managing individual natural terror because it made death more salient, transforming pre-existing negative perceptions of Muslims (i.e., the "out-group") into Islamophobia. Islamophobia is a sentiment characterized by exaggerated fear and ill-disposition toward Islam and Muslims that is perpetuated by negative stereotypes and biased perceptions of Muslims' negative impact on the social environment. The existing literature (e.g., Chang 2018) provides survey evidence that suggests that the least desired neighborhoods for black, Latino, and white respondents contain a high proportion of Arab residents. One particular common negative stereotype is the perception that Muslims are violent individuals who are supportive of terrorism. Survey evidence also suggests that close to 60% of respondents favored "requiring

Arabs, including those who are U.S. citizens, to undergo special, more intensive security checks before boarding airplanes in the U.S."[2]

On September 11, 2001, a series of coordinated terrorist attacks in the U.S. by the jihadist organization al-Qaeda killed close to 3,000 people, injuring 6,000 more, and causing $10 billion in damage. Given its unprecedented nature, 9/11 received extremely extensive media, political, and popular coverage. Even though Islamophobia and the tendency to conflate Muslims with terrorists had existed before 9/11, those sentiments intensified significantly afterward. The Federal Bureau of Investigation (FBI) reported that hate crimes targeting Muslims had increased by 1,600% from 2000 to 2001, and suggested that such an increase occurred because of the 9/11 terrorist attacks (e.g., Oswald 2005). Based on TMT, we expect that the 9/11 attacks increased Islamophobia, particularly in communities more prone to MS.

We test our key prediction by examining executives' job movements, a population for which we have extremely granular data indicating where and when people moved. We are also able to directly control for the effect of economic shocks on their personal situation and their employer's situation. Prior studies show that geography is an important determinant of executive employment. For example, Yonker (2017) shows that managers are more inclined to accept employment opportunities in locations that are more desirable to them. We therefore expect that individuals in general, and executives in particular, would move out of areas with a greater Muslim population when their sentiment toward Muslims deteriorates. The 9/11 shock is clearly unexpected, observable, and exogenous. This provides an ideal environment for testing this prediction, allowing us to distinguish the effect of structural economic factors on in-group/out-group dynamics. We use the visibility of Muslim populations across the U.S. counties as a "treatment" to exogenously capture variations in the relevance of the events for

[2] For more detail, see https://news.gallup.com/poll/1579/airlines.aspx. We acknowledge the lack of equivalency between Arabs and Muslims, but this may not be fully understood by the public at large.

self-segregation (as one needs an out-group to be able to segregate away from it). We conduct a difference-in-differences analysis of changes in executive movements conditional on the size of the local Muslim population.

Our empirical results are consistent with our predictions. Specifically, Muslim population density is uncorrelated with the propensity for executives to change employer before 9/11, but this is contrasted to a statistically and economically significant increase in executive turnover after 9/11 in counties with a high Muslim population density relative to counties with a low density. We obtain similar results if we focus on the presence of notable mosques in the neighborhood where the firm is located. Importantly, executives leaving employment in counties with a high Muslim population are more likely to move to counties with a lower Muslim population. Our results are robust to a host of specification checks that account for alternative explanations that could confound our results. In particular, safety concerns or change in the socioeconomic situation do not explain our results.

Aside from establishing baseline results, we examine whether certain characteristics of the local population affect the way executives react to MS. Our comparative statics are consistent with this idea in several ways. For example, the main effect is stronger if anti-Muslim organizations are more prevalent in the area where the firm is located but weaker if social capital and education levels are higher. We do not imply that executives in our sample belong to any anti-Muslim groups but rather that they are influenced by social interactions in the community. Prior research also shows that media exposure increases MS (e.g., Gillespie and Jessop 2007), which in turns leads to greater prejudice against Arabs after 9/11 (e.g., Persson and Musher-Eizenman 2005). Consistent with this view, we find that executive departures are more frequent when local newspaper readership is greater and when local news reporting is more conservative. We also find that the main effect is attenuated when the local population has a greater proportion of foreign-born Americans or a larger minority presence.

Finally, executives who financially contribute to the Democratic Party are less likely to relocate than other executives. Collectively, these comparative statics are those predicted by MS theory. The effect of the shock is stronger in communities that are expected to hold a less favorable view of Muslims prior to the attacks (i.e., communities with a stronger presence of hate groups, more conservative media, and fewer foreign-born Americans), where the shock is more salient (i.e., in communities with a stronger conservative media presence), and in communities with lower eunoia (e.g., communities with a lower level of education and lower social capital). These additional results serve as further empirical support for our proposed mechanisms and as a starting point for policy to address the negative impact of self-segregation.

Our study contributes to the literature in several ways. First, our study examines the drivers of ethnic seclusion. In contrast to many prior studies that focus on segregation (i.e., one group excluding another), ours focuses on self-segregation (i.e., one group distancing itself from another). This issue, self-segregation, has an important bearing on school choices (e.g., Shapiro 2019), health (e.g., Kershaw et al. 2017)[3] and economic development (e.g., Quillian 2012). Aside from characterizing the main effect of Muslim visibility on self-segregation, we are also able to identify factors that moderate or exacerbate this finding. We show, for example, the influence of the media's discourse on self-segregation. Although we investigate the issue in the American context, we believe our study speaks to other countries as well (e.g., Europe and South Africa). Our choice of the 9/11 shock allows us to identify the sources of self-segregation unequivocally, but we believe it is representative of broader phenomena that are hard to characterize empirically. Further, our study adds to the policy debate on Islamophobia (e.g., Esposito and Kalin 2011; Morgan 2016). Researchers have documented the negative consequences of Islamophobia in areas such as public health (e.g., Laird et al. 2007; Samari 2016), presidential elections (e.g., Giardina 2010; Abdelkader 2016), media coverage (e.g.,

[3] Also see https://qz.com/985596/racial-segregation-isnt-just-a-moral-issue-its-a-dire-health-concern/.

Ogan et al. 2014), and capital markets (Jung et al. 2019). Our study extends this literature by examining its impact on the allocation of talent and human capital.

Second, our results contribute to behavioral economics research. While this field has gained popularity over the years, it has largely focused on heuristics that have been identified in seminal work by researchers such as Kahneman and Tversky (e.g., Kahneman 2011). However, the breadth of psychological theories has not entirely permeated economic research, archival studies in particular. We take steps to remediate this issue by using a well-established theory in social psychology, TMT, to investigate an important economic and social question. As such, we investigate the validity and the relevance of two well-known psychological theories, MS and TMT, in an important economic setting. These theories have potential implications beyond the consequences of terrorism and racism. Indeed, MS and TMT have been linked to topics as diverse as heart disease, sexual activities, aesthetic preferences, and consumerism (e.g., Landau et al. 2007). While researchers in psychology have literally conducted hundreds of laboratory experiments using this framework, our study is one of the few that utilizes an archival setting.

The remainder of this paper proceeds as follows. We review the theoretical background for our research in Section II. We discuss our data and sample in Section III and explain our empirical design in Section IV. In Section V we present our baseline results. In Section VI we review the results from our comparative statistical analysis and in Section VII we provide additional analysis. Section VIII concludes the paper.

II. THEORETICAL FRAMEWORK

Terror management theory (TMT) is derived from Becker (1973) who argues that most human actions are undertaken to ignore or avoid the inevitability of death. The terror of

absolute annihilation creates such a profound but subconscious anxiety in people that they resort to various means to make sense of it. As a consequence, societies build belief systems ("cultural worldviews") to explain the significance of life and implement them through social systems.

Greenberg, Solomon and Pyszczynski (1986) build on these ideas to propose a psychological theory that is both social and evolutionary in nature. Their theory argues for the existence of a basic psychological conflict resulting from humans having a self-preservation instinct while realizing that death is inevitable and to some extent unpredictable. This conflict produces terror, which is then managed by embracing cultural beliefs. The development of these cultural worldviews and the acquisition of self-esteem by living according to these worldviews provide a buffer against the anxiety created by the thought of total annihilation.

By now, TMT has been extensively tested through experimental work (see Pyszczynski et al. [2003] for a review).[4] Its predictions hold for different cultures (both Western and non-Western), age groups, and genders. Quirin et al. (2019) review the neurological findings that illuminate the physiological underpinnings of TMT. Finch et al. (2016) report links between TMT and various clinical disorders. Indeed, Routledge and Vess (2019, p.19) consider that "TMT has become one of the most prominent theories in social psychology."

TMT has proposed several testable hypotheses (e.g., Schimel et al. 2019). One key application is the mortality salience (MS) theory, the notion that reminding people of death increases their motivation to uphold cultural worldview beliefs and pursue self-esteem to protect themselves. In other words, if cultural worldviews and self-esteem function to reduce concerns about death, reminding people of death should increase their need for these protective

[4] See https://tmt.missouri.edu/publications.html for a list of studies on TMT. The site lists 587 studies on the topic as of April 2019.

psychological structures. Another important prediction is the "anxiety-buffer hypothesis" which is, as the name suggests, the notion that self-esteem acts as a buffer for mitigating the effect of TMT.[5]

Among these hypotheses, MS is the most relevant element of TMT in our setting. It has been shown to entail several consequences, including the idea that individuals punish other people for deviating from their worldviews. For example, Rosenblatt et al. (1989) show that judges impose higher penalties after being reminded of their own death. Pyszczynski et al. (2006) also provide experimental evidence that MS increases support for martyrdom among Iranian students, and increases support among Americans for military interventions (e.g., use of nuclear weaponry and preemptive strikes) by U.S. forces.

Another consequence is that MS increases in-group/out-group polarization. As a result, levels of prejudice and negativity typically increase. Greenberg et al. (1990) find, for example, that reminding Christian participants of their own death increases their liking of a fellow Christian but decreases their liking of a Jewish student. They also find that American participants who are reminded of their own death report more liking of an interviewee who speaks positively about the U.S. political system, and report less liking for an interviewee who speaks negatively. Greenberg et al. (2001) assess white American participants' attitudes toward either a white man or a black man who expresses pride in his own racial group. Under baseline conditions, the participants like the black man more and judge him as less racist for expressing his views. However, the opposite is true under MS conditions. A follow-up experiment using a more complex setting (hypothetical discrimination lawsuit) reaches the same conclusion.

[5] Another significant but less relevant prediction is the death-thought accessibility theory, which is the converse of MS. Death-thought accessibility theory suggests that, if cultural worldviews and self-esteem function to buffer individuals from thoughts and concerns about death, then threatening or weakening these psychological structures should increase the accessibility of death-thoughts.

However, these effects have been found to be contextual (e.g., Schimel et al. 2019). In the Greenberg et al. (1992) study, MS causes American participants to show a strong pro-America bias, but priming the value of tolerance in combination with MS significantly reduces this tendency. In Jonas et al. (2008), MS leads to more (vs. less) willingness to help needy children when prosocial (vs. pro-self) values are primed. Similarly, priming the value of safety and security leads mortality salient participants to punish a prostitute more harshly, whereas priming the value of benevolence and universalism reduces this effect. Gailliot et al. (2008) find that non-black participants who are primed with death and the value of egalitarianism display a significant decrease in prejudice toward black people. Thus, the environment in which individuals operate is important for predicting the consequences of MS.

We consider the effect of the 9/11 shock in the context of MS. It is worth noting that, although terrorism is an important backdrop for contextualizing TMT and MS, these theories have broader applications. Terrorism capitalizes on the human capacity to experience terror. Terror, in turn, is response to the threat of annihilation. TMT is concerned with how humans cope, not with the imminent threat of extermination, but with the awareness that such threats are ubiquitous and will eventually succeed (e.g., Pyszczynski et al. 2003, and Becker [1962, 1973, 1975]). Nevertheless, traumas such as those related to terrorism have been shown to be related to TMT (e.g., Yetzer and Pyszczynski 2019). The 2006 study by Kosloff et al. finds, in a sample of New Yorkers, that death reminders increased reporting of peritraumatic dissociation[6] related to the 9/11 terrorist attacks, as well as an increased anxiety sensitivity. Finch et al. (2016) discover that when mortality is made more salient, socially anxious participants demonstrate greater initial bias toward socially threatening faces than non-socially anxious participants. These outcomes shape our hypothesis that the 9/11 attacks increased

[6] McDonald et al. (2013) note that peritraumatic dissociation is one of the most critical acute responses to a traumatic experience.

Islamophobia, particularly in communities expected to be more prone to MS, leading to a greater tendency among non-Muslims to self-segregate from Muslims.

III. DATA, SAMPLE, AND RESEARCH DESIGN

III.A. Data and Sample

We begin our sample construction by collecting data on county-level Muslim adherents from the Religious Congregations and Membership Study 2000 carried out by the Association of Statisticians of American Religious Bodies (ASARB).[7] Our key variable of interest is the population density of Muslims in the county where the firm is located. We calculate this density as the number of Muslim adherents to the total population in the county (as reported by the U.S. Census Bureau). Following prior literature, we define a firm's location based on its headquarters (e.g., Pirinsky and Wang 2006). This approach is appropriate in our context because we focus on where executives work and live.[8] Figure I plots the map of Muslim population density by county. We observe that Muslim density varies significantly across and within states. States with the highest density (i.e., with Muslims accounting for at least 2.5% of the population) include the District of Columbia, New Jersey, Connecticut, Massachusetts, New York, Maryland, and California. We also note that a number of counties in our sample

[7] Data can be accessed through the website of the Association of Religion Data Archives at http://www.thearda.com/Archive/Files/Descriptions/RCMSCY.asp. ASARB defines "adherents" based on the survey question: "Approximately how many Muslims are associated in any way with the religious life of your masjid? Please include adults and children, as well as both regular and irregular participants." There are two additional measures, congregation and attendance. Congregation is number of masjids. Masjid is defined as (1) a Muslim association/organization, that (2) holds Jum'ah Prayer and that (3) organizes other Islamic activities. Attendance is based on the survey question: "At a typical Jum'ah Prayer, what is the total attendance—including men, women and children?" Our results are not affected if we replace adherents with congregation or attendance to define Muslim population (untabulated).

[8] Compustat only provides information on the most recent location of firms' headquarters, which most likely creates mismatches and introduces measurement errors for our main variable of interest. To address this problem, we obtain information on firms' historical locations from Bill McDonald's website (https://sraf.nd.edu/data/augmented-10-x-header-data/) and use it for merging purposes. We manually check and drop the firms that changed the locations of their headquarters between 1998 and 2007 to ensure that we do not confound executive movements with the change of Muslim density associated with firm movements.

have a Muslim density equal to zero. Our results are not affected if we re-estimate our regressions only with counties having a non-zero value of Muslim density or if we delete observations from large metropolitan areas. We match the county-level demographic data as described above with Execucomp data that discloses the identities of highest paid executives (a review of their names indicates only 35 out of 9,915 executives appear to have an origin in a country with a Muslim majority [e.g., an Arabic name]).[9] We then merge the sample with Compustat and Center for Research on Security Prices (CRSP) databases. We remove observations with missing values of the variables related to firm specific characteristics. Our final sample consists of 5,544 firm-year observations during 1998-2004.

III.B. Research Design

Although Islamophobia has an arguably long history in American society (Maira 2011),[10] the 9/11 terrorist attacks intensified those feelings (e.g., Anderson 2002; Rubenstein 2003; Byers and Jones 2007). Figure II shows the number of anti-Muslim hate crime incidents compiled in FBI data. In 2000, the FBI reported 28 hate crime incidents against Muslims. By the end of 2001, the number of hate crimes had risen to 481.[11] While these numbers dropped in the following years, they never returned to pre-9/11 levels. By contrast, the number of other types of hate crime remained stable along the time while crimes against Jews, the most common type of hate crime against a religious community before 9/11, had in fact declined after the attacks. Further, Shen et al. (2018) depict terrorism replacing cancer and heart disease as the cause of death most mentioned in the *New York Times* after 2001, although in reality heart disease is the largest cause of mortality.

We treat these terrorist attacks as an unexpected and exogenous event that introduced cross-sectional variations of MS and Islamophobia across the U.S., depending on the visibility

[9] We identify whether an executive a Muslim based on a name-based nationality/ethnicity classifier, NamePrism, (http://www.name-prism.com/about). Our results do not change if we delete these observations (untabulated).
[10] See https://www.bbc.com/news/magazine-34385051.
[11] See http://www.fbi.gov/about-us/cjis/ucr/hate-crime/2001/hatecrime01.pdf.

of Muslim populations and other social aspects. We hypothesize the effect of heightened Islamophobia on executive movements to be stronger in counties with a relatively larger Muslim population. To test our prediction, we estimate various specifications of the following difference-in-differences model:

$$\begin{aligned} Turnover_{it} = \beta_0 + \beta_1 Density_{it} + \beta_2 Post_{it} + \beta_3 Density \times Post_{it} \\ + Controls_{it} + FixedEffects + \varepsilon_{it} \end{aligned} \quad (1)$$

where for each firm *i* in year *t*, *Turnover* is computed as the number of top executives who leave the firm, scaled by total number of executives reported of the firm (e.g., Coles, Daniel, and Naveen 2006). An executive is deemed to be leaving a firm if she appears in the dataset as an executive in year *t* but disappears in year *t*+1. We exclude cases when (1) the reason for departure stated in Execucomp is death or retirement, or (2) the firm disappears from the Compustat database in the same year. To mitigate the concern that the data item is not complete, we conduct a robustness check by further controlling for executive age and approach of retirement (age 64 and above) and our results are not affected. As discussed above, *Density* is the fraction of the Muslim population in the county.[12] *Post* is an indicator variable denoting the period after the 9/11 attacks. Specifically, *Post* equals one for years 2002 to 2004 and zero for years 1998 to 2000. We deliberately remove year 2001 from the investigation because it is unclear whether turnovers taking place that year were directly influenced by the attacks. The coefficient β_3 is our difference-in-differences estimate, which captures whether the effect of *Density* on *Turnover* significantly changes after the 9/11 terrorist attacks. If our hypothesis is correct, we expect β_3 to be significantly positive.

We control for a set of variables that are known to be antecedents of executive turnovers. Specifically, we control for basic firm characteristics such as firm size (*Size*), leverage ratio (*Leverage*), and market-to-book ratio (*MTB*). Moreover, since firm performance has been

[12] We use a continuous variable to measure Muslim density. Using an indicator variable for high versus low *Density* based on the median does not affect our conclusions (untabulated).

documented to affect executive turnovers (Rizzotti et al. 2017), we include two variables related to financial performance, namely return on assets (*ROA*) and an indicator variable tracking whether the firm is experiencing a loss in the current and prior year (*Loss*), as well as two variables related to stock market performance, namely stock return (*Return*) and stock return volatility (*Volatility*). We further add cash ratio (*Cash*) and capital expenditure ratio (*Capex*) to control for investments and investment potential faced by a firm (Weisbach 1995).

One might argue that after the 9/11 terrorist attacks, the social and economic environments of counties with high *Density* had changed, which in turn affected executive turnovers. We add three variables to proxy for local economic conditions, including state-level GDP (*GDP*), county-level median household income (*HouseIncome*), and unemployment rate (*Unemployment*).[13] In addition to variables pertaining to local economic conditions, we augment the model with two variables to account for the local social environment, including county-level crime rate (*Crime*) and the ratios of voters for the Republican Party relative to voters for the Democratic Party (*Vote*).[14]

We estimate this model using multiple specifications to ensure the robustness of our findings. For example, we add (1) firm fixed effects, or (2) firm and year fixed effects, or (3) firm and industry-year fixed effects.[15] In all cases, we cluster standard errors of the firm's location by county. Our results are robust using alternative methods such as bootstrapping or clustering at the firm level. All continuous control variables are winsorized at both the top and bottom one percent levels. The Appendix provides detailed definitions for the variables.

[13] We obtained data on GDP from the Bureau of Economic Analysis of the U.S. Department of Commerce, on county-level median household income from the U.S. Census Bureau, and on the unemployment rate from the U.S. Bureau of Labor Statistics.

[14] We obtained county-level crime ratios from the Inter-University Consortium for Political and Social Research and voting information from the U.S. Electoral College and Harvard Library Licensed Data Dataverse.

[15] We construct the industry fixed effects based on Fama and French (1997)'s 48 industries. When we add firm fixed effects, the coefficient associated with *Density* is dropped out, and when we add firm and year fixed effects (or industry-year fixed effects), both the coefficients associated with *Density* and *Post* are dropped out.

IV. BASELINE RESULTS

IV.A. Summary Statistics

We report summary statistics for the variables based on the full sample in Panel A of Table I. The mean value of *Turnover* is 0.094, implying that on average firms in our sample experience an approximately 10% change in top management every year. Next, we compare the mean values of various key firm characteristics for firms from high-*Density* counties and firms from low-*Density* counties before the 9/11 event year, where high- and low-*Density* counties are separated by the median value of *Density*. As shown in Panel B, observations from the two groups exhibit very similar *Turnover* ratio before the 9/11 terrorist attacks (around 0.1 in both cases). An untabulated review of the turnover rates across industries does not show a strong pattern of turnover with the exception of the financial sector.[16]

IV.B. Baseline Results

Figure III is a graph that contrasts trends of executive movements between firms in low- and high-*Density* counties across the two periods, one for before the 9/11 terrorist attacks and one for after. While the two lines representing executive turnover ratios display parallel trends with trivial differences in the period prior to 9/11, their differences significantly increase in the post-9/11 period, with firms from high-*Density* counties exhibiting a much higher ratio of executive turnovers. This figure suggests that changes in executive turnover ratios across high- and low-density counties indeed occurred after 9/11 and did not precede it, reinforcing the key parallel assumption underlying the difference-in-differences design.

Table II presents the results of baseline multivariate analysis. Columns 1 and 2 show the results of the specifications without fixed effects. The coefficient on *Density* is not statistically significant, indicating that the Muslim population density does not affect executive

[16] Our key results are stronger among firms in the financial sector for which the shock is more salient, but they hold if we exclude these firms (untabulated).

turnovers prior to 9/11. The coefficient on *Post* is significantly negative, suggesting an overall decreasing trend of executive turnovers from pre- to post-9/11. This effect is consistent with the deterioration of economic conditions (e.g., Garmaise 2011). More importantly for our study, the coefficient of our variable of interest, the interaction term *Density*×*Post*, is positive and statistically significant at the 5% level. This result indicates that executive turnover ratio increased with Muslim density after the 9/11 terrorist attacks. From a more dichotomous perspective, the result shows that, relative to firms located in counties with a low population density of Muslims, firms located in counties with a high density experienced significantly higher executive turnovers in the post-9/11 period. In Column 3, we augment the model with firm fixed effects and find similar results. In Column 4, we further add year fixed effects in addition to the firm fixed effects. In Column 5, we include both firm and industry-year fixed effects. Our finding remains unchanged. Additional analysis shows that our results are not affected if we interact all control variables with *Post* (Internet Appendix A1) or if we use an entropy balancing procedure to alleviate potential observable differences in firm characteristics across firms from high versus low *Density* counties. Our results continue to hold (Internet Appendix A1).

Turning to the economic significance of our results, the first noticeable observation is that the magnitude of the coefficients on *Density*×*Post* remains relatively stable across columns, further confirming that our results are not sensitive to different model specifications. Taking results shown in Column 5 of Table II as an example, the estimates reveal that executive turnover increases by about 12% relative to its mean in the post-9/11 period when *Density* increases by one standard deviation.[17]

[17] We multiply 0.759 (the standard deviation of *Density* in Panel A of Table I) by 0.015 (the coefficient on *Density* in Column 5 of Table II, divided by 0.094 (the mean value of *Turnover* in Panel A of Table I).

Lastly, we replace *Density* with *Mosque*, denoting the number of notable mosques in a 5-kilometer radius of the firm. Among other things, this test addresses the concern that counties may be too large to be an appropriate unit of analysis and further reduce the possibility that our baseline results are driven by an unspecified correlated omitted variable. Results in Column (6) show that our inferences remain unaffected.[18]

IV.C. Time Series Dynamic Tests

The applicability of the difference-in-differences design relies on the validity of the parallel trend assumption. In particular, we need to ensure that the change in executive movements observed in the post-9/11 period did not precede the 9/11 terrorist attacks. Although it is not obvious why this prior trend would exist, we investigate this possibility. Indeed, Figure III shows that the propensity for executive to change employer before 9/11 does not differ between high- and low-*Density* counties. Nevertheless, we perform more rigorous analyses in this subsection to address this concern.

Following the method adopted by Bertrand and Mullainathan (2003), we decompose our testing period into different time periods and re-estimate our model with firm and industry-year fixed effects, our most stringent specification. More specifically, we adopt two approaches. In the first, we treat year 1998 as the benchmark year and use two indicator variables (*Pre2* and *Pre1*) for years 1999 and 2000 respectively rather than treating years 1998, 1999, and 2000 as one pre-9/11 period. We then interact the different years with *Density*. We expect these interactions to be insignificant if the parallel trend assumption is valid. In the second approach, in addition to *Pre2* and *Pre1*, we further decompose *Post* into three indicator variables (*Post1*, *Post2*, and *Post3*) representing years 2002, 2003, and 2004, respectively. We then interact these year indicator variables with *Density*.

[18] We obtain similar results if we extend the radius to 15 or 25 kilometers. We obtain the list of notable mosques, their address information, and time of establishment from https://photos.state.gov/libraries/leipzig/14360/pdf/Mosque_Catalog_English.pdf and https://en.wikipedia.org/wiki/List_of_mosques_in_the_United_States, accessed in June 2019.

Table III presents the corresponding results with control variables included. Our dependent variable *Turnover* remains the same as for Table II. In Column 1, the coefficient on *Density*×*Post* remains positive and statistically significant, whereas the coefficients on *Density*×*Pre1* and *Density*×*Pre2* are not. This result indicates that relative to the benchmark year 1998, the influence of Muslim density on executive turnovers does not significantly change in years 1999 and 2000, however, this influence significantly increases in the post-9/11 period. Results in Column 2 of Table III convey a similar message. When we decompose the *Post* variable and add *Density*×*Post1*, *Density*×*Post2*, and *Density*×*Post3* into the model, the coefficients of the three interaction terms are all positive and statistically significant. Finally, results in Column 3 of Table III show that while the coefficients on *Density*×*Pre1* and *Density*×*Pre2* are not statistically significant, the coefficients on *Density*×*Post2* and *Density*×*Post3* appear significantly positive when all interaction terms are included into the model. In sum, results in Table III suggest that the influence of Muslim population density on executive movements was non-existent before 9/11, and hence the parallel assumption underlying the difference-in-differences design holds in our research setting.

IV.D. Where Did They Go?

We next investigate where executives relocate to after leaving their employers. If departure is motivated by Islamophobia, we expect executives to migrate to areas with a smaller Muslim population. To explore this prediction, we track the career paths of executives who leave their employers (i.e., leaving executives) in our investigation window. If our conjecture is correct, we expect executives leaving firms headquartered in high-*Density* counties to be more likely to move to new employers located in counties with lower *Density* in the post-9/11 period.

We define a new employer as the first company where a leaving executive finds an executive position after leaving the prior employer.[19, 20] To obtain data on the locations of leaving executives' new employers, we first track the movements of executives within the Execucomp database. This procedure presents 208 executives who leave their employers during our sample period (1998-2004, excluding 2001) and whose new employers are identifiable in Execucomp. For the remaining executives without entries on Execucomp, we search their biographies on Bloomberg. This yields 800 additional executives with valid information on the new employer's name and the year of the leaving executive's hire. We then manually search for the new employers' headquarters and delete 14 executives whose new employers' locations lie outside the U.S. or cannot be identified. We further drop 95 executives who left their employers in 2001, a year excluded from our analysis. Applying the above data screening procedures leaves us with 280 executives from the hand collected sample. We then combine these 280 observations with the 208 observations identified via Execucomp to form the full sample of 488 leaving executives. We further remove 45 observations with missing variables used in regression analysis, resulting in 443 executives in the final sample.

For each executive, we calculate the change in *Density* between the locations of the new and old employers, with a negative change indicating that the executive moves from high-*Density* to relatively lower *Density* counties. We examine whether the difference in the changes of *Density* (*ChgDensity*) between treated and control executives is significantly different in the post-9/11 period relative to the pre-9/11 period. Column 1, Table IV, presents the results of a difference-in-differences regression of *ChgDensity*.[21] The results show that the coefficient on

[19] If an executive left firm A in year 2002, landed another executive position in firm B in year 2004, and then moved to firm C in 2007, we consider firm B as the new employer in our analysis.

[20] To qualify as a relocation, the departing executive must hold an executive position in the new company (a position on the board is not sufficient). We exclude executives who left their employers pre-9/11 and found a new position post-9/11. To mitigate the potential effect of incomplete biographies, we exclude executives finding another position after 2008.

[21] Our sample size slightly decreases to 371 because we include industry-year fixed effects that leads to the deletion of isolated observations.

Density×*Post* is negative and statistically significant at the 1% level, consistent with our expectation that top executives are more likely to move from high- to low-*Density* counties after the 9/11 terrorist attacks. We obtain similar results if we use change in *Mosque*, *ChgMosque*, instead of *ChgDensity* (Internet Appendix A.5).

We conduct a second test by replacing the dependent variable *ChgDensity* with *ChgCrime*, the change in crime rate (*Crime*) between the location of the new employer and that of the old employer. If the 9/11 attacks made certain executives more risk averse or particularly sensitive to the risk of bodily harm, we would expect these executives to relocate to areas with lower crime rates. Results reported in Column 2 of Table IV do not support this view (the coefficient on *Density*×*Post* is statistically insignificant). Further, the correlation between *Crime* and *Density* is insignificant, suggesting that executives working in high *Density* areas do not have a particularly high aversion to violent crimes in general.

In a third test, we replace the dependent variable with *ChgLifeExp*, which captures the difference in life expectancy in years (*LifeExp*) between the location of the new employer and the old employer.[22] If executives are concerned about mortality in general instead of Islamophobia, we expect these executives to relocate to areas with higher life expectancy. Results reported in Column 3 of Table IV do not support this view either. We observe a similar lack of correlation if we consider unemployment rate (*Unemployment*), household income (*HouseIncome*), or local GDP (*GDP*), respectively, as dependent variables (Internet Appendix A.5). This suggests that executives who relocate do not systematically move to areas with significantly better local economic or social conditions.

V. CROSS-SECTIONAL ANALYSES

[22] We calculate life expectancy based on the data of Adult Life Expectancy by U.S. County 1987-2007 from the Global Health Data Exchange (http://ghdx.healthdata.org/us-data). Life expectancy (*LifeExp*) is the averaged value of life expectancy in years between males and females of a county.

Our results so far have shown robust evidence that after the 9/11 terrorist attacks, top executives were more likely to leave their employers located in areas with a relatively high population density of Muslims. In this section, we perform several cross-sectional analyses to link our main findings with the predictions of MS theory. More specifically, we examine several types of partitioning variables such as social fabric, media exposure, and socio-demographic characteristics that are linked to MS theory.

Importantly, we analyze these characteristics as community characteristics, and not belonging to individuals per se. In other words, we do not imply that individual executives in our sample belong to hate groups, are foreign-born or have limited formal education. Rather, we investigate whether social interactions (even the casual ones) with community members exhibiting these characteristics affect executives' decision-making process. In essence, we examine how community characteristics affect the definition of in-group (versus out-group) and executives' proclivity to react more to an MS-related stimulus.

Unless otherwise discussed, our empirical strategy is similar in each case. Specifically, we divide high-*Density* counties based on whether or not our variable of interest has a value greater than the median in the sample of high-*Density* counties.[23] We add back firms from low-*Density* counties to each subsample and re-estimate our main regression separately for the subsamples. We tabulate results in each pair of subsamples and test the equality of the relevant coefficients. [24] In all of our cross-sectional analyses, we use the most stringent model with firm and industry-year fixed effects as well as control variables.

V.A. Social Fabric

V.A.1. Social Capital

[23] We define a county to be a high-*Density* county if its value of *Density* is greater than the sample median, and a low-*Density* county otherwise.
[24] In all comparisons of coefficients, we use Fisher's Permutation test with bootstrapping.

Many scholars (e.g., Coleman 1988; Putnam 1993) argue that social capital reduces incidences of social problems. We expect Islamophobia to be less common in environments with greater social capital where trust and cooperation foster interactions (e.g., Putnam 1993; Lins et al. 2017), attenuate pre-existing prejudices (e.g., Fisher 2011), and raise self-esteem (e.g., Wahl et al. 2010).[25] In turns, self-esteem mitigates the effect of TMT. Thus, we expect that the frequency of executives' departures in a high-*Density* county should be lower if the county has a relatively high level of social capital. Our county-level social capital measure is originally derived from Rupasingha et al. (2006).[26] While the coefficient on *Density*×*Post* is positive and statistically significant in both cases, as shown in Columns 1 and 2, Panel A of Table V, the magnitude of the coefficient is significantly larger for the low social capital group. A comparison of the coefficients reveals that the difference across high and low social capital groups is statistically significant on conventional levels.

V.A.2. Anti-Muslim Organizations

Second, as noted above, the effect of TMT is affected by the benevolence of the environment. We test whether the influence of *Density* on turnovers is more pronounced when Islamophobia is exacerbated by the presence of hate groups in the community. In this case, we expect the partition between in- and out-group to be stronger. We partition our sample using the number of anti-Islamic organizations in a county to measure the extent to which social conflicts related to Islamophobia are likely to arise.[27] We expect the effect of *Density* on *Turnover* to be more pronounced in these counties. The results are presented in Columns 3 and 4, Panel A of Table V. While the coefficient of *Density*×*Post* remains positive and statistically significant in both regressions, a comparison of the magnitude of the coefficients reveals that

[25] Self-esteem has been shown to buffer the effects of MS (e.g., Greenberg et al. 1992).
[26] Rupasingha et al. (2006) estimate the stock of social capital of each U.S. county for the years 1990, 1997, 2005, 2009, and 2014. We use the values from years 1997, 2005, and 2009 and perform a linear projection to account for the missing years (1998-2004) based on data in other years, following Hilary and Hui (2009).
[27] Information on anti-Muslim organizations is obtained from the Southern Poverty Law Center which tracks and monitors extremist groups operating across the U.S. (https://www.splcenter.org/hate-map/by-ideology).

the effect is significantly larger for firms located in counties that have more anti-Muslim organizations than for firms located in counties that have less anti-Muslim organizations.

V.A.3. Education

Third, we explore the effect of education on our findings. MS and TMT suggest that self-esteem acts as a moderator for in-group polarization when death is made more salient, while prior literature (e.g., Wahl et al. 2010; Aryana 2010; Rahmani 2011) finds a positive correlation between education and self-esteem. In addition, previous studies show that the higher educated are less prejudiced against ethnic minorities than are the lower educated (Schuman et al. 1997; Vogt 1997). Hence, we use educational attainment to proxy for both self-esteem and the *ex ante* level of prejudice in the community.[28] We expect the influence of *Density* on executive turnovers to be more pronounced in counties with low educational attainment. We report the regression results in Columns 5 and 6, Panel A of Table V. We find that the coefficient of *Density*×*Post* is positive and statistically significant in both high and low educational attainment subsamples, but a comparison of the magnitude of the coefficients indicates that the effect is significantly larger in magnitude in the low-quality education subsample than in the high-quality education subsample.

V.B. Media

V.B.1. Degree of Exposure

We expect the effect of TMT to be stronger when the shock is more salient. Social conflicts related to Islamophobia are also more likely to emerge in an area where residents are exposed to anti-Muslim sentiment to a greater degree. The media is a key channel through which information and sentiment are disseminated to the public (e.g., Baron 2006; Gentzkow and Shapiro 2006; Tetlock 2007). In particular, prior research (e.g., Person and Musher-

[28] Specifically, we use the percentage of non-schooling completed population (age 15 or over) in a county, obtained from the U.S. Census Bureau, Census 2000.

Eizenman 2005; Ivanic et al. 2019) demonstrates that higher media exposure is associated with a higher level of prejudice toward Arabs following a terrorist attack. Thus, we expect counties with a greater newspapers circulation to be more likely to experience an increase in Islamophobia. Relying on daily newspaper circulation data from the Alliance for Audited Media, we calculate the average county-level newspaper circulation for the period 2001-2003 and use it as our partition variable. We partition our sample based on this value. We report the results in Columns 1 and 2 of Panel B, Table V. Again, the coefficient on *Density*×*Post* remains positive and statistically significant in both regressions. Comparing the two coefficients suggests that the coefficient difference across the subsamples of "high-circulation" versus "low-circulation" is statistically significant.

V.B.2. Reporting Bent

Sinclair Broadcast Group ("Sinclair") is commonly perceived as a conservative media organization that plays a significant role in the delivery of news (e.g., Kolhatatkar 2018). Its editorial line is recognized as consistent with its positioning.[29, 30] Sinclair's stations are also clustered predominantly in conservative areas.[31] We investigate the possibility that the impact of the 9/11 terrorist attacks on the arousal of local Islamophobia was stronger in counties covered by Sinclair. To test our prediction, we obtain the location information of Sinclair's stations.[32] The coefficient on *Density*×*Post* in Columns 3 and 4 of Panel B, Table V, remains positive and statistically significant in subsamples of counties covered by Sinclair or not. Comparison of the coefficient magnitude, however, suggests that the coefficient on *Density*×*Post* is significantly more positive for the subsample with high-*Density* counties covered by Sinclair than for the subsample with high-*Density* counties not covered by Sinclair.

[29] See https://www.newyorker.com/magazine/2018/10/22/the-growth-of-sinclairs-conservative-media-empire.
[30] See https://publicintegrity.org/business/sinclair-flap-proves-exception-to-the-rule/.
[31] See https://www.washingtonpost.com/news/style/wp/2018/04/02/get-to-know-sinclair-broadcast-group-the-conservative-local-news-giant-with-a-growing-reach/?utm_term=.9117b85fcd30.
[32] We obtained the data from https://en.wikipedia.org/wiki/List_of_stations_owned_or_operated_by_Sinclair_Broadcast_Group, accessed in December 2018.

V.C. Socio-Demographic Characteristics

V.C.1. Foreign-Born Americans

We next investigate whether the effect of *Density* on executive turnovers depends on self-categorization. Social psychology examining intergroup relations suggests that self-categorization fosters negative attitudes toward out-groups (e.g., Verkuyten et al. 1999). As the association between terrorists and Muslims has become more salient since the 9/11 attacks, the categorization of American versus Muslim has become more pronounced (e.g., Oswald 2005). We expect self-segregation to be more evident in communities where self-categorization arising from a strong, collective in-group American identity is more prevalent. We use the percentage of foreign-born population in each county, obtained from the U.S. Census Bureau to proxy for the strength of in-group American identity. We expect counties with a lower foreign-born population to have a stronger in-group American identity and hence a more negative view towards Muslims, leading to a more conspicuous effect of *Density* on executive turnovers. We report the regression results in Columns 1 and 2, Panel C of Table V. Consistent with our prediction, the coefficient of *Density*×*Post* is positive and statistically significant for the subsample of counties with a lower foreign-born population but insignificant for the subsample of counties with a higher foreign-born population. A test of the coefficient difference suggests that the difference is statistically significant. We also note that controlling for the percentage of foreign-born Americans does not affect our baseline results (Internet Appendix).

V.C.2. Presence of Minorities

We next use the size of the African American community as a proxy for social diversity. We hypothesize that a relatively large minority presence signals a greater acceptance of people from different ethnicities and hence record lower rates of Islamophobia than in communities

without this presence.[33] Results in Columns 3 and 4, Panel C of Table V, indicate that the coefficient of *Density*×*Post* is significantly positive for both subsamples, but the magnitude of the coefficient is significantly smaller for the subsample with a high percentage of African Americans than for the subsample with a low percentage of African Americans.

V.D. Executive Personal Political Contributions

Finally, we consider an individual characteristic, namely personal contribution to the Democratic Party. Surveys suggest that Democrats have a better opinion of Muslims than Republicans do.[34] We form three samples: (a) executives significantly contributing to Democrats, (b) those significantly contributing to Republicans, and (c) those any identified contribution.[35] Results in Panel D show that results are present in the last two groups but not in the first. The magnitude of the coefficient in the first column is also significantly smaller for than the other two.[36]

[33] We obtain county-level percentage of the African American population from the U.S. Census Bureau, and divide high *Density* counties into a group with a relatively high percentage of African Americans and another group with a relatively low percentage of African Americans.

[34] See https://www.pewforum.org/2017/07/26/how-the-u-s-general-public-views-muslims-and-islam/.

[35] We thank Ahmed Tahoun, Laurence van Lent, and Menghan Zhu for providing us this dataset (Tahoun et al. 2019). We merge their sample with ours, calculate each executive's average ratio of donation to the Democratic Party relative to his total donations (prior to the shock) and partition observations based on whether they are above or below the median value. Executives without contributions form the third group.

[36] In an untabulated test, we use a specification similar to the ones we use in other panels. We find that our main effect is more significant in counties with lower executive donations to the Democratic Party.

VI. ALTERNATIVE EXPLANATIONS

Having obtained supporting evidence for our hypothesis from the main analysis and multiple cross-sectional analyses, we conduct several sensitivity analyses to rule out further potential confounding factors to ensure the robustness of our results (Internet Appendix A.1-A.4).[37]

VI.A. Local Conditions

In our baseline analysis, we add various community level variables in our model to control for the influence of socioeconomic factors that might affect executives' incentives to leave their employers. One potential concern is that after the 9/11 attacks, the social and economic environments of counties with high *Density* may have deteriorated more than low *Density* counties, and that it is the worsened environment rather than Islamophobia that causes executives to leave. To shed light on this issue, we first test whether the quality of life was substantially reduced, post-9/11, in counties with high *Density* compared to those with low *Density*. To do so, we use the five macro-level control variables included in the baseline model (i.e., *GDP, HouseIncome, Unemployment, Crime,* and *Vote*) and four more variables developed by Morgan Quitno (e.g., Deng and Gao 2013) that are closely related to quality of living environment (i.e., bank deposit, weekly earnings of production workers, poverty rate, and percentage of population not covered by health insurance). Relying on a similar difference-in-differences design as our main model, untabulated results suggest that there is no systematic pattern indicating that the quality of social and economic environments deteriorated in counties with high *Density* relative to those with low *Density*.

We further include all the above-mentioned quality of living indicators as additional control variables into our main regressions. Results indicate that the effect of *Density* on executive turnovers remains positive and statistically significant. Furthermore, our results are

[37] We tabulate many numerous robustness check results to an Internet Appendix to conserve space.

not affected if we consider county-industry level economic performance. Specifically, we control for the several proxies of economic performance, including annual averaged value of *ROA*, *MTB*, and *Return* of each industry-county pair, respectively. Thus, it is unlikely that our results are driven by changes in local social and economic environments.

VI.B. Firm Conditions

Besides community-level factors, one may surmise that executives left firms located in high *Density* areas because of poorer firm performance after the 9/11 terrorist attacks relative to firm performance in other parts of the U.S. To address this potential concern, we add several proxies of future performance, including one- and two-year leading *ROA*, *MTB*, and stock returns, into our main regressions and re-estimate the effect of *Density* on executives' turnovers. Again, the coefficient on *Density*×*Post* stays positive and statistically significant. Replacing future performance measures with past performance measures does not affect our results.

A related concern is that in response to the 9/11 attacks, companies altered the structure of executive compensation that further affected executive turnovers (e.g., Dai et al. 2019). While we do not have strong reason to expect that changes in compensation structure should be systematically related to the size of the Muslim community or the presence of notable mosque, we nevertheless include executive total compensations (i.e., the average level compensation of the top executives in the same C-suite) and pay gap (i.e., the difference between the highest and the lowest paid executive in the same C-suite) as additional control variables. The coefficient on *Density*×*Post* remains significantly positive, suggesting that our results are unlikely to be affected by compensation effect. Similarly, our results are not affected if we include the interaction terms between the performance measures and *Post*. Further controlling for executive ownership (i.e., the average level of ownership of the top executives in the same C-suite) leads to a significant sample size reduction, but does not affect our conclusions.

VI.C. The Effect of Metropolitan Areas

New York City and the greater District of Columbia (DC) metropolitan area, where the brunt of the terrorist attacks occurred, have sizeable Muslim communities. To ensure that our results are not driven by the direct effect of the 9/11 attacks, we exclude firms headquartered in areas located within 50 miles of New York City and the DC area. Additionally, we exclude firms located within 50 miles of locations that were directly affected by any terrorist event between 1997 to 2004.[38] Our conclusions are not affected. We also note that Muslim communities tend to be larger in metropolitan areas. To ensure that this does not represent a correlated omitted variable, we either (1) exclude observations from firms listed in one of the 10 largest U.S. cities,[39] or (2) delete observations in the 100 most populated cities. Our conclusions are not affected. Furthermore, we include an indicator variable for the ten largest cities (*Big City*) into our regression and interact the big city indicator variable with *Post* (*Big City*×*Post*). Our results continue to hold. We also conduct a placebo test by re-estimating our baseline model by replacing *Density*×*Post* with *Big City*×*Post*. Our results show that the interaction terms of *Big City*×*Post* are not significant.

VI.D. Real Effects of Terrorism and Perceived Risk of Death

MS explains self-segregation through a negative perception on an "out-group" culture worldview (rather than an effect through the perceived death risk). We use the 1995 Oklahoma City bombing as a placebo to further refute the alternative explanation that our results are driven by any terrorism threat or a generally heightened perceived risk of death, regardless of the terrorist's origin. This Oklahoma event was a domestic terrorist attack that targeted the federal government, killing 168 people in a federal government building. Given the stronger presence of federal authorities in DC and state capital cities, we investigate whether executives

[38] Based on data from the Global Terrorism Database (GTD), we identify eight terrorist attacks during 1997-2004 that resulted in at least one human casualty and were reported in newspapers.
[39] The ten largest cities are New York City, Los Angeles, Chicago, Washington, San Francisco, Philadelphia, Boston, Detroit, Dallas, and Houston.

are more likely to leave their employers in these areas. If executives leave their employment out of fear of terrorism in general, we expect increased executive departures after the Oklahoma attack in these locations relative to the rest of the country. To examine the veracity of this conjecture, we use the same difference-in-differences design as described for our baseline model but focus on a sample from 1992 to 1998. We designate 1995 as the (excluded) event year, 1992-1994 as the pre-Oklahoma attack period (*Post_OK*=0), and 1996-1998 as the post-Oklahoma attack period (*Post_OK*=1). We code firms located in high government density environments (i.e., the District of Columbia and state capital cities) as the treated firms (*Treat*=1) and other firms as control firms (*Treat*=0). Results indicate that the coefficient on the interaction term *Treat*×*Post_OK* is not statistically significant.

VIII. CONCLUSION

We use the 9/11 terrorist attacks as a shock to mortality salience, resulting in increased Islamophobia. We examine whether the presence of a more visible Muslim community leads executives to self-segregate and leave their employers. Our study posits that this is the case both in the time series and the cross-section analyses. Using a difference-in-differences estimation approach, and after controlling for firm performance, executive compensation, and local economic and social conditions, we establish that firms located in areas with a greater density of Muslims or near a prominent mosque experienced significantly higher executive turnovers after 9/11. We also find that those executives are more likely to relocate to areas with a lower Muslim population. This effect of executive self-segregation is stronger in communities with characteristics such as the presence of anti-Muslim organizations and substantial conservative media newspaper coverage, while social capital, education and social diversity in the community mitigate this effect.

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Self-segregation, Mortality Salience, and Labor Movement: the 9/11 Shock: Internet Appendix, https://docdro.id/vi7Xuxo

APPENDIX
Variable Definitions

Variable	Definition
Turnover	Firm-level executive turnovers, calculated as the proportion of top executives that leave the firm;
Density	County-level population density of Muslim adherents, calculated as the number of Muslim adherents to the total population in the county (in %);
Post	An indicator variable equal to 1 for post-9/11 period (years 2002-2004), and 0 for pre-9/11 period (years 1998-2000);
Cash	Cash and short-term investments, scaled by total assets;
Capex	Capital expenditures, scaled by total assets;
Size	Firm size, calculated as natural logarithm of total assets;
ROA	Net income before extraordinary items and discontinued operations, scaled by total assets;
MTB	Market-to-book ratio, calculated as the sum of market value of equity and book value of debts divided by total assets;
Leverage	Leverage ratio, calculated as the sum of current liabilities and long-term debts divided by total assets;
Loss	An indicator variable equal to 1 if a firm's current year or prior year net income before extraordinary items are negative, and 0 otherwise;
Return	Stock return calculated as buy-and-hold return on a firm's stock over the prior 12 months of the fiscal year;
Volatility	Stock price volatility calculated as the standard deviation of monthly stock returns over the prior 60 months of the fiscal year;
Vote	County-level ratio of Republican voters to Democrat voters in the president elections. The missing ratio for a no voting year is filled by using the ratio of the closet election year;
Crime	County-level crime rate, calculated as the natural logarithm of 1 plus total number of Uniform Crime Reporting (UCR) Index crimes (INDEX) from Inter-university Consortium for Political and Social Research by Federal Bureau of Investigation;
HouseIncome	County-level median household income (in thousand $), obtained from the United States Census Bureau;
Unemployment	County-level unemployment rate, calculated as the unemployed civilian labor force, divided by total civilian labor force (in %) from Bureau of Labor Statistics;
GDP	Natural logarithm of state-level total GDP (in million $), obtained from the United States Census Bureau.

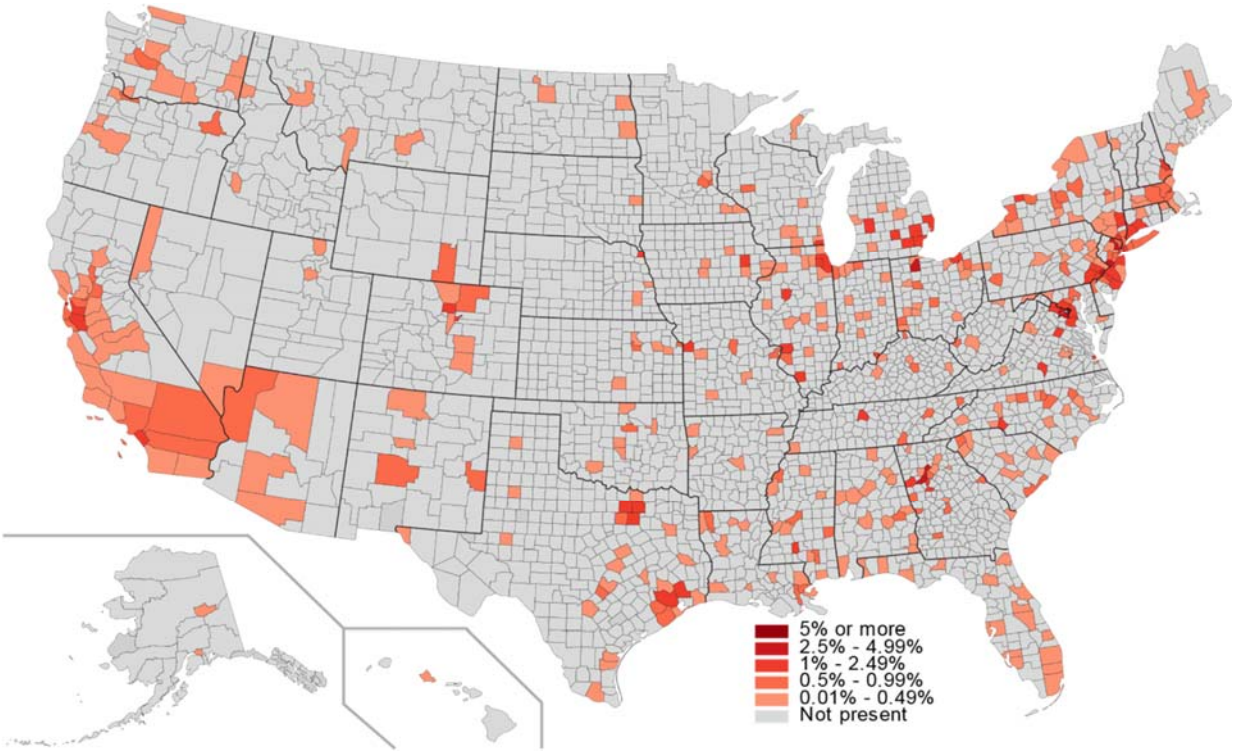

FIGURE I

Density of Muslim Adherents

This figure illustrates the density of Muslim adherents across the U.S., calculated as the as the number of Muslim adherents scaled by the total population in the county (data source: Religious Congregations and Membership Study 2000).

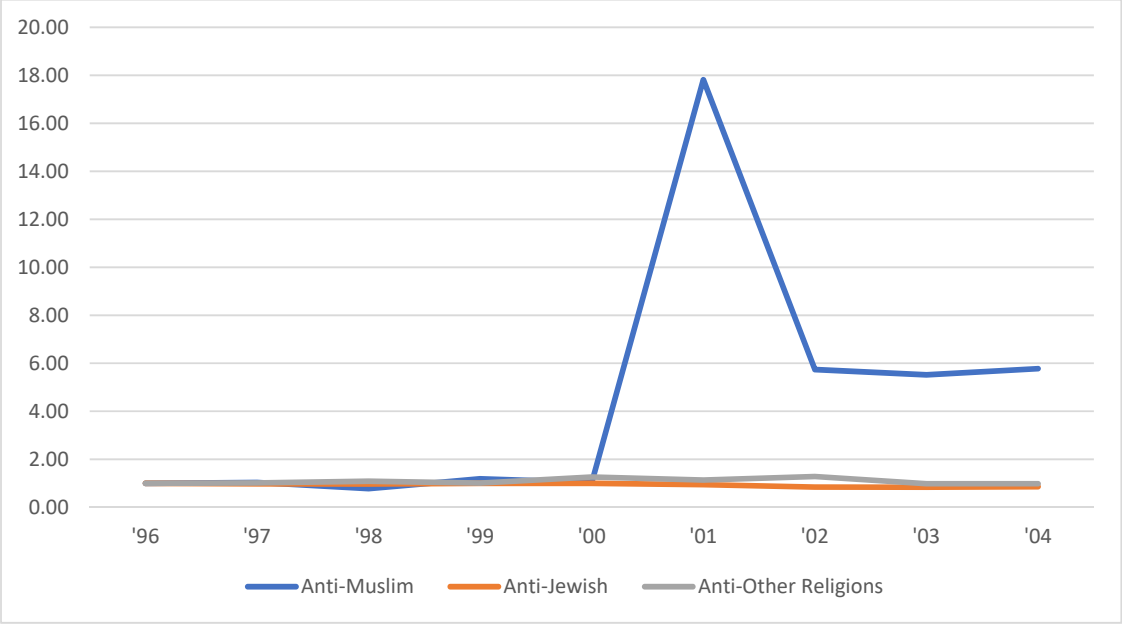

FIGURE II

Anti-Islamic Hate Crimes

This figure plots the time series of hate crimes motivated by the religion of the victim during 1996-2004. Data is from FBI UCR Program, available at https://www.fbi.gov/services/cjis/ucr/publications#Hate. The 1996 rate is normalized at 1 by construction.

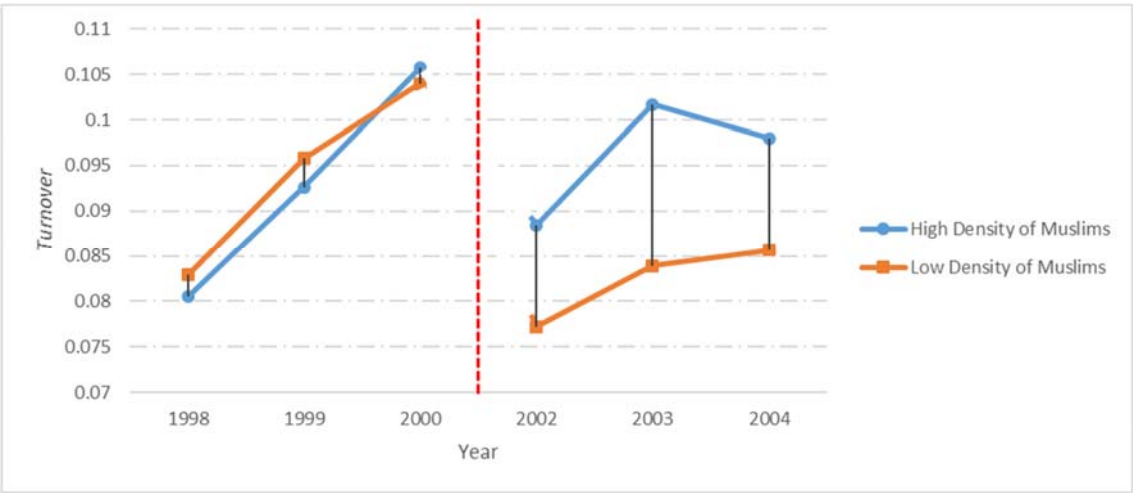

FIGURE III

Executive Movement Around 9/11

This figure plots the executive movements of firms in low-density counties and firms in high-density counties across the two periods, one before the 9/11 terrorist attacks (1998-2000) and the other one after the event (2002-2004). Density is the county-level population density of Muslim adherents, calculated as the as the number of Muslim adherents scaled by the total population in the county (in %). We define high (low) density counties based on the median value of density of Muslim adherents in a county.

TABLE I
DESCRIPTIVE STATISTICS

Panel A: Summary Statistics

Variable	N	Mean	SD	p25	Median	p75
Turnover	5,544	0.094	0.126	0.000	0.000	0.167
Density	5,544	0.898	0.759	0.280	0.732	1.391
Post	5,544	0.492	0.500	0.000	0.000	1.000
Cash	5,544	0.144	0.178	0.019	0.064	0.211
Capex	5,544	0.056	0.053	0.022	0.041	0.070
Size	5,544	7.186	1.604	6.046	6.974	8.210
ROA	5,544	0.042	0.098	0.018	0.048	0.089
MTB	5,544	2.198	1.694	1.191	1.577	2.479
Leverage	5,544	0.227	0.184	0.053	0.216	0.353
Loss	5,544	0.227	0.419	0.000	0.000	0.000
Return	5,544	0.233	0.696	-0.172	0.114	0.425
Volatility	5,544	0.137	0.066	0.090	0.118	0.168
Vote	5,544	0.807	0.436	0.504	0.722	1.024
Crime	5,544	8.529	4.191	8.375	10.309	10.988
HouseIncome	5,544	47.869	12.211	41.063	44.229	55.158
Unemployment	5,544	4.655	1.635	3.400	4.600	5.800
GDP	5,544	12.818	0.876	12.184	12.829	13.563

Panel B: Characteristics before the 9/11 Terrorist Attacks

	High *Density* Counties		Low *Density* Counties		Difference	
Variable	N	Mean	N	Mean	High – Low (Std. err.)	
Turnover	1,384	0.100	1,434	0.098	0.002	(0.004)
Density	1,384	0.296	1,434	1.496	-1.200	(0.018)
Cash	1,384	0.112	1,434	0.150	-0.037	(0.007)
Capex	1,384	0.065	1,434	0.067	-0.002	(0.002)
Size	1,384	6.968	1,434	7.140	-0.172	(0.060)
ROA	1,384	0.050	1,434	0.047	0.003	(0.003)
MTB	1,384	2.258	1,434	2.567	-0.309	(0.077)
Leverage	1,384	0.250	1,434	0.231	0.019	(0.007)
Loss	1,384	0.184	1,434	0.228	-0.045	(0.015)
Return	1,384	0.213	1,434	0.291	-0.078	(0.030)
Volatility	1,384	0.123	1,434	0.134	-0.011	(0.002)
Vote	1,384	0.902	1,434	0.607	0.295	(0.014)
Crime	1,384	9.393	1,434	10.913	-1.520	(0.073)
HouseIncome	1,384	44.972	1,434	48.379	-3.406	(0.391)
Unemployment	1,384	3.450	1,434	3.884	-0.434	(0.043)
GDP	1,384	12.319	1,434	13.118	-0.799	(0.029)

This table reports summary description of our testing sample. Panel A presents the summary statistics of the variables in the analysis. Panel B compare high-density counties with low-density counties prior to the 9/11 terrorist attacks. We define high (low) *Density* counties based on the median value of *Density*. Standard errors are reported in parentheses. Variable definitions are available in the Appendix.

TABLE II
BASELINE RESULTS

	(1)	(2)	(3)	(4)	(5)	(6)
	Turnover	*Turnover*	*Turnover*	*Turnover*	*Turnover*	*Turnover*
Density	-0.004	-0.007				
	(0.005)	(0.005)				
Post	-0.019	-0.024	-0.034			
	(0.005)	(0.006)	(0.009)			
Density×Post	0.011	0.011	0.011	0.012	0.015	
	(0.004)	(0.004)	(0.005)	(0.005)	(0.005)	
Mosque×Post						0.015
						(0.008)
Cash		-0.010	-0.001	-0.003	-0.004	-0.005
		(0.019)	(0.036)	(0.036)	(0.034)	(0.034)
Capex		-0.026	0.110	0.104	0.094	0.090
		(0.033)	(0.069)	(0.069)	(0.073)	(0.073)
Size		0.005	0.020	0.020	0.021	0.021
		(0.001)	(0.006)	(0.006)	(0.007)	(0.007)
ROA		-0.089	-0.111	-0.110	-0.112	-0.111
		(0.034)	(0.039)	(0.039)	(0.040)	(0.040)
MTB		0.002	0.001	0.001	-0.000	-0.001
		(0.002)	(0.003)	(0.003)	(0.003)	(0.003)
Leverage		-0.025	-0.021	-0.019	-0.017	-0.018
		(0.013)	(0.026)	(0.026)	(0.026)	(0.026)
Loss		0.025	0.016	0.016	0.015	0.016
		(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Return		-0.010	-0.001	-0.002	-0.002	-0.002
		(0.004)	(0.003)	(0.003)	(0.004)	(0.003)
Volatility		0.108	-0.049	-0.025	0.008	0.010
		(0.047)	(0.083)	(0.089)	(0.094)	(0.094)
Vote		-0.007	0.039	0.044	0.041	0.029
		(0.005)	(0.015)	(0.017)	(0.019)	(0.018)
Crime		0.001	-0.002	-0.002	-0.003	-0.004
		(0.001)	(0.003)	(0.003)	(0.003)	(0.003)
HouseIncome		0.000	-0.000	0.000	0.000	-0.000
		(0.000)	(0.001)	(0.002)	(0.001)	(0.001)
Unemployment		-0.001	0.001	0.000	0.001	0.002
		(0.002)	(0.004)	(0.004)	(0.004)	(0.004)
GDP		-0.002	0.060	0.046	0.079	0.072
		(0.003)	(0.042)	(0.089)	(0.098)	(0.096)
N	5,544	5,544	5,544	5,544	5,544	5,544
R^2	0.003	0.034	0.282	0.283	0.317	0.316
Fixed Effects	N/A	N/A	Firm	Firm, Year	Firm, Ind×Year	Firm, Ind×Year

This table reports the results on the effect of Muslim density on executive movements after the 9/11 terrorist attacks. *Mosque* is the number of notable mosques in a 5-kilometer radius of the firm. Other variable definitions are available in the Appendix. Constant terms and fixed effects are included but not reported. Robust standard errors corrected for heteroskedasticity and clustered at county-level are reported in parentheses.

TABLE III
TREND ANALYSIS

	(1) *Turnover*	(2) *Turnover*	(3) *Turnover*
Density×Pre2	0.007		0.007
	(0.009)		(0.009)
Density×Pre1	0.001		0.002
	(0.009)		(0.009)
Density×Post	0.017		
	(0.007)		
Density×Post1		0.011	0.014
		(0.006)	(0.009)
Density×Post2		0.017	0.020
		(0.007)	(0.008)
Density×Post3		0.016	0.020
		(0.007)	(0.009)
Controls	Yes	Yes	Yes
N	5,544	5,544	5,544
R^2	0.317	0.317	0.317
Fixed Effects	Firm, Ind×Year	Firm, Ind×Year	Firm, Ind×Year

This table reports the results of trend analysis. *Pre2*, *Pre1*, *Post1*, *Post2*, and *Post3*, are indicator variables equal to 1 for year 1999, 2000, 2002, 2003, and 2004, respectively, and 0 otherwise, respectively. Other variable definitions are available in the Appendix. Constant terms, control variables, and fixed effects are included but not reported. Robust standard errors corrected for heteroskedasticity and clustered at county-level are reported in parentheses.

TABLE IV
WHERE DID THEY GO?

	(1) *ChgDensity*	(2) *ChgCrime*	(3) *ChgLifeExp*
Density×Post	-0.383	-0.110	0.084
	(0.176)	(0.477)	(0.262)
Density	-0.422	0.259	-0.063
	(0.200)	(0.470)	(0.330)
Cash	0.805	-0.267	-0.096
	(0.450)	(0.673)	(1.135)
Capex	-0.838	0.334	-5.241
	(2.032)	(2.359)	(3.793)
Size	0.057	-0.027	0.197
	(0.044)	(0.060)	(0.086)
ROA	0.106	-0.895	-1.092
	(0.579)	(0.950)	(1.144)
MTB	-0.000	-0.020	0.068
	(0.045)	(0.052)	(0.069)
Leverage	0.374	0.342	-0.363
	(0.373)	(0.780)	(0.934)
Loss	0.003	0.158	-0.090
	(0.181)	(0.238)	(0.318)
Return	0.047	0.113	-0.085
	(0.110)	(0.144)	(0.188)
Volatility	0.251	0.451	1.003
	(0.979)	(1.686)	(2.405)
Vote	0.063	-0.005	-0.042
	(0.208)	(0.314)	(0.353)
Crime	0.009	-0.545	0.021
	(0.028)	(0.088)	(0.055)
HouseIncome	0.006	0.010	-0.055
	(0.005)	(0.010)	(0.012)
Unemployment	0.056	0.039	0.145
	(0.055)	(0.085)	(0.096)
GDP	-0.168	0.017	-0.141
	(0.110)	(0.142)	(0.166)
N	371	371	371
R^2	0.442	0.556	0.355
Fixed Effects	Ind×Year	Ind×Year	Ind×Year

This table reports the results of change in density (*Density*), crime rate (*Crime*), and life expectancy (*LifeExp*) of the counties for a leaving executive between the new and previous employer's locations. *LifeExp* is life expectancy, calculated as the averaged value of life expectancy in years between males and females of a county. Other variable definitions are available in the Appendix. Constant terms and fixed effects are included but not reported. Robust standard errors corrected for heteroskedasticity and clustered at county-level are reported in parentheses.

TABLE V
CROSS-SECTIONAL ANALYSES

Panel A: Social Fabric

	(1)	(2)	(3)	(4)	(5)	(6)
	Counties with Low Social Capital	Counties with High Social Capital	Counties with More Anti-Muslim Organizations	Counties with Fewer Anti-Muslim Organizations	Counties with Low Quality Education	Counties with High Quality Education
	Turnover	*Turnover*	*Turnover*	*Turnover*	*Turnover*	*Turnover*
Density×Post	0.024	0.014	0.019	0.010	0.023	0.014
	(0.008)	(0.005)	(0.006)	(0.007)	(0.008)	(0.005)
Diff (p-value)	0.011 (p=0.06)		0.010 (p=0.04)		0.009 (p=0.02)	
N	4,171	4,161	4,153	3,785	4,010	4,281
R^2	0.330	0.332	0.343	0.340	0.335	0.322

Panel B: Media

	(1)	(2)	(3)	(4)
	Counties with High Newspaper Circulations	Counties with Low Newspaper Circulations	Areas Covered by Sinclair	Areas Not Covered by Sinclair
	Turnover	*Turnover*	*Turnover*	*Turnover*
Density×Post	0.020	0.014	0.028	0.014
	(0.007)	(0.006)	(0.016)	(0.005)
Diff (p-value)	0.006 (p=0.06)		0.013 (p<0.01)	
N	4,069	4,225	2,830	5,450
R^2	0.336	0.323	0.348	0.317

TABLE V (CONT'D)

Panel C: Socio-demographic Characteristics

	(1) Counties with Less Foreign-Born Americans	(2) Counties with More Foreign-Born Americans	(3) Counties with Low Density of African-Americans	(4) Counties with High Density of African-Americans
	Turnover	*Turnover*	*Turnover*	*Turnover*
Density×Post	0.017	0.009	0.028	0.010
	(0.005)	(0.012)	(0.007)	(0.005)
Diff (p-value)	0.008 (p=0.04)		0.017 (p<0.01)	
N	4,579	3,764	4,117	4,148
R^2	0.321	0.333	0.334	0.324

Panel D: Political Contributions

	(1) High Donations to Democrats	(2) Low Donations to Democrats	(3) No Donations to Either Side
	Turnover	*Turnover*	*Turnover*
Density×Post	-0.008	0.030	0.017
	(0.016)	(0.014)	(0.007)
Diff between (1) and (2) (p-value)	-0.037 (p<0.01)		
Diff between (3) and (2) (p-value)		-0.013 (p<0.01)	
N	2,447	4,125	26,021
R^2	0.269	0.217	0.080

This table reports the results on the cross-sectional analyses. *Turnover* in Panel D, individual executive turnover, is equal to 1 if an executive leaves her firm in a given year, and 0 otherwise Variable definitions are available in the Appendix. Control variables, constant terms and firm and industry-year fixed effects are included but not reported. Robust standard errors corrected for heteroskedasticity and clustered at county-level are reported in parentheses.