Going the Extra Mile: The Cost of Complaint Filing, Accountability, and Law Enforcement Outcomes in Chicago

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November 9, 2020

Abstract

Elected leaders rely on “fire alarms” to promote good government: in the presence of bureaucratic malfeasance, citizens can cry foul, so appropriate remedies can be pursued. But what happens when bureaucrats tamper with fire alarms? I explore this in the context of police misconduct, leveraging the sudden relocation of a complaint center in Chicago to test how changing the cost of “pulling fire alarms” affects the supply of information on police wrongdoing. Using rare data on complaints against police, I use a difference-in-differences design to estimate civilians’ complaint valuation. I find opportunity cost deters civilians from reporting misconduct, especially for those seeking help from police. Using a structural model, I show this increased burden would decrease the rate of sustained allegations for failure to provide service but increase the rate for constitutional violations. These results shed light on the complicated interplay between the cost of civilian oversight and government performance.

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1 Introduction

As street-level bureaucrats, police are one of the most visible representatives of state power for many civilians (Lipsky [1980], Soss and Weaver [2017]), especially those entering the criminal justice system. Due to recent events, namely videos of police using violence against civilians that proliferate on social media, the public is increasingly concerned about police misconduct. Beyond scandals, this and other kinds of police behavior are costly in terms of taxpayer-funded settlements and reform efforts (Schwartz [2016], Rushin [2017b], Ouss and Rappaport [2020]). Decreased police legitimacy also threatens their efficacy which leads to adverse financial, health or educational outcomes (Geller et al. [2014], Geller and Fagan [2019], Mello [2018], Legewie and Fagan [2019], Harris et al. [2020], Ang [2020]).

One existing safeguard is a fire alarm oversight system which relies on civilians to “sound an alarm” by submitting a complaint to the police department’s respective oversight agency about observed misconduct (McCubbins and Schwartz [1984]). Conceptually, the principal (i.e., the investigator) decides whether to sanction the street-level bureaucrat (i.e., the police) based on the citizen’s (i.e., civilian’s) allegation.1 While civilian participation is critical in monitoring the police, there is little existing research that evaluates the efficacy of civilian complaints (Walker [2007]). This paper attempts to fill those gaps by empirically evaluating the role of civilians in reporting police misconduct and its oversight when bureaucrats “tampered with the alarm.”

My findings relate to the work of Weaver et al. [2019]: “Residents of highly policed communities have too much knowledge, too little power.” In short, a structural model suggests that individuals who benefit most from oversight are those with the lowest personal valuation of their complaints. For instance, for serious allegations the median Black complainant is willing to sacrifice at most four hours to sign the affidavit at a sustained rate of 2.7%, while the median white counterpart would sacrifice two hours at a sustained rate of 30.4%. Among other findings I will explain below, an increased cost of complaining deters civilians from providing feedback to the oversight agency. This effect is largest

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1Alternatively, Prendergast [2001, 2002] and Shi [2009] provide theoretical models of officer behavior when police departments want to minimize crime, minimize errors (misconduct), and minimize wage expenditures. One of the key elements of the officer utility function is oversight (when an officer receives a complaint), which is a function of the probability of investigation, the probability of a sustained complaint, and the penalty for the officer if found guilty. By estimating civilians’ willingness to complete their complaint, the proposed model provides an empirical estimate of civilian oversight.
for civilians who are potential victims of a crime and are seeking help from the police.²

Evaluating civilian initiated oversight required the clearance of several empirical difficulties. First, when this study began, there were no publicly available datasets that included information on officer misconduct. Often the “[d]ata collection is siloed and individual stakeholders do virtually nothing with the data they possess” (Police Accountability Task Force [2016], Ajilore and Shirey [2017]). Second, I needed to find a way to measure the cost of reporting misconduct that varied exogenously in order to make causal arguments. This effort was further complicated because officers interact with a broad cross-section of society that can potentially complain (i.e., both victims of a crime and offenders). Different types of complainants possess different motivations and valuation for submitting an allegation of misconduct against an officer.³ Third, public bureaucracies, such as the police force, easily fall victim to the principal-agent problem (McCubbins et al. [1987], Miller [2005], Prendergast [2003, 2016]).

I address these challenges in several steps. First, I collected data using public requests and lawsuits⁴ on officer misconduct from the Chicago Police Department (CPD). Second, I exploit the fact that complainants are required to complete the filing of a complaint by signing an affidavit in person at a single reporting location (also referred to in this paper as the “oversight agency”) for an investigation to occur. I also capitalize on the sudden location change of Chicago’s reporting center, which changed the cost of signing an affidavit due to travel time and related costs. Considering these circumstances, this provides a quasi-experimental setup that helps to understand civilian willingness in reporting police misconduct. I explain the analysis in more detail in the following paragraphs. Finally, to perform a counterfactual scenario and compute civilians’ complaint valuation, I estimate a model of civilian willingness to sign the affidavit and account for the investigator’s decision to sustain the complaint. The empirical model is an application of McCubbins and Schwartz [1984]’s fire alarm monitoring. The details of this model are also enumerated below.

Next, I consider alternative policies that would decrease or remove the cost of com-

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²Example of people seeking help from the police in highly policed neighborhoods, see Bell [2016, 2017].
³While studying the underreporting of certain crimes committed by civilians is important (Miller and Segal [2018], Harvey and Mattia [2019]), understanding officers alleged wrongdoing adds a relevant level of complexity (Chassang and Miquel [2018], Pei and Strulovici [2019]).
⁴I later distributed that data to purpose for data transparency and accessibility for researchers and the public. The goal of the project is to create a permanent record for every CPD police officer. See Rivera and Ba [2018] for details about the lawsuit.
Completing a complaint. Interestingly, a policy that would make it easier to complete a complaint would largely increase the number of investigations and sustained rates for complaints related to a failure to provide service in the city’s most violent police districts. On the other hand, this policy would only marginally increase the number of investigations and reduce sustained rates for complaints regarding constitutional violations.

I began the analysis by using a difference-in-difference (DID) design exploiting the sudden location change of Chicago’s oversight agency (See Figure 1). I show that civilians who live farther away from the oversight agency are much less likely to sign an affidavit. Hence, distance from the incident to the oversight agency directly impacts the probability of monitoring an officer.

Second, I perform an heterogeneity analysis that considers the two types of civilian complaints: those alleging a failure to provide service (FPS) and those alleging a violation of constitutional rights during an officer’s attempt to enforce the law, which I will refer to as “serious” complaints (e.g., unconstitutional search, verbal abuse, and excessive use of force). Classifying these complaints separately enables me to distinguish between two types of civilians: (1) those who filed a complaint because they desired help from the police (e.g., potential victim of a crime); and (2) those who are treated as potential suspects by the police and feel that their constitutional rights have been violated.5

The DID design indicates civilians are less sensitive to distance when the allegation is related to a serious offense from the officer: a standard deviation in traveling distance to the reporting center relates to a decrease in the likelihood of a signed affidavit by 6.17% for serious complaints and 14.3% for FPS allegations. When restricting the analysis to Black civilians seeking help from the police, the design indicates that they were 34.71% less likely to have their complaint investigated due to a missing signed affidavit. In contrast, signatures for serious complaints drop by 4.42%.

To tease out the valuation of civilian complaints, I perform a counterfactual scenario. I estimate a model of civilian willingness to sign the affidavit, while accounting for the investigator’s decision to sustain the complaint. My model provides insight into the effect of alternative policies which would reduce the cost of completing a complaint and

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5This classification appears to be analogous to nonfeasance and misfeasance. FPS corresponds to nonfeasance, a failure to act, protect, or service citizens who seek assistance or crime victims. A serious complaint is a misfeasance act, i.e., affirmative actions that violate the rights of persons accused of a crime or who are in police custody. For instance, both acts seem to be involved in the case of George Floyd death appears to involve both acts. Officer Chauvin had his knee on Mr. Floyd’s neck (misfeasance) while the other officer failed to stop him (nonfeasance). (Thanks to Regina Austin for pointing this to me).
makes out-of-sample predictions. Using maximum likelihood, the model estimates both the probability that a civilian signs an affidavit and the probability that the investigator sustains the complaint. The model assumes that the unobserved heterogeneity of the investigator and the beat where the allegation occurred affected both the civilians’ and investigator’s decision.

As mentioned previously, I find that median white and Hispanic complainants have a similar valuation of their allegations, while a Black complainant is willing to sacrifice twice as much time to complete their allegation relative to a non-Black counterpart. The results also indicate that the valuation for civilians seeking help from the police is much lower than for those who are potential suspects of a crime. Post-investigation, sustained rates are much lower for Black civilians compared to white or Hispanic civilians. For instance, the sustained rates for serious allegations are 2.7%, 11.1%, and 30.4% for Black, Hispanic, and white civilians, respectively. These results are striking because civilians with the highest valuation of their complaint are the ones who benefit the least. This result suggests that Black citizens face additional barriers when interacting with government officials (Butler and Broockman [2011], Giulietti et al. [2017], Chen et al. [Forthcoming]).

To interpret the above estimated parameters, I compute civilian willingness to pay to complete the complaint using Capps et al. [2003]. A closed form solution of the willingness to pay can be derived using the fact that the error term from the civilian’s utility function is type 1 extreme value (Small and Rosen [1981]).

Next I evaluate the effects of removing the affidavit requirement to complete a complaint, while holding everything else constant using a counterfactual scenario. Under this alternative scenario, the share of investigated complaints would increase by 5.11%.

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6 A police beat is a tract of land designated for police patrol. Currently, the CPD divides the city into 22 geographical police districts. Each of the 22 police districts currently has between 9 and 16 beats.

7 Numerous studies document the presence of police discrimination against Black civilians in instances of traffic stops (Knowles et al. [2001], Anwar and Fang [2006], Ritter and Bael [2009], Feigenberg and Miller [2020]), stop-and-frisk (Gelman et al. [2007], Ridgeway and MacDonald [2009], Goel et al. [2016]), traffic tickets (Anbarci and Lee [2014], West [2015], Goncalves and Mello [2017]), and use of force (Fryer [2019], Knox et al. [2020]). Moreover, residents of Hispanic neighborhoods might be more reluctant to complain, yet experience a higher level of police brutality (Ba et al. [2019]). Hispanic communities may fear exposing non-documented citizens in their network to immigration authorities when interacting with the police. Alsan and Yang [2018] provide evidence that Hispanic citizens are less likely to enroll in SNAP and ACA programs in areas where the fear of deportation is high.

8 This policy might be helpful in a world where one would want to minimize physical contact between investigators and complainants due to COVID19. For instance, the complainant could sign an affidavit electronically or make a sworn statement by video conference.
and 37.58% for serious complaints and FPS allegations, respectively. This alternative policy would significantly increase the number of investigated complaints filed by the alleged crime victim, especially in violent neighborhoods. On average, this alternative policy would raise the share of sustained FPS complaints by 8.1%, but lower the share of sustained serious complaints by 9.8%.

While the public debate focuses on police use of force and the racial disparities involved (Ajilore and Shirey [2017], Fryer [2018], Cunningham and Gillezeau [2019], Fryer [2019], Knox et al. [2020]), this paper adds helpful nuance to the conversation by documenting that an increased cost in reporting officers’ alleged wrongdoing mainly hurts civilians in the city’s most violent neighborhoods who request police assistance. However, there is a nontrivial relationship between addressing serious complaints and FPS complaints. A higher level of contact between officers and civilians (i.e., more aggressive policing) would intuitively lead to lower crime rates. A side effect of more aggressive policing, however, is an increase in the unjustified use of force. A greater rate of incidents of force leads to an increase in one type of complaint: those alleging violations of rights. Meanwhile, minimal levels of policing will only exacerbate the number of complaints alleging a failure to provide service. Thus, a single policy change cannot effectively minimize both types of complaints simultaneously.

Since Levitt [1997]’s seminal work on the impact of police on crime, empirical work has found evidence that crime rates generally respond to policing tactics and presence. However, as argued in Becker and Stigler [1974] and Benoit and Dubra [2004], officers may engage in undesirable behavior to enforce the law. Soliciting and then responding appropriately to civilian complaints is only one way to detect misconduct. So as a complement to this analysis, please review Rivera and Ba [2018] which studies the impact of both internal and external oversights on police behavior. This research found that officers are considerably more responsive to managerial directives (Mas [2006], Chandrasekher [2016, 2017], Mummolo [2018], Hausman and Kronick [2020]).

This work contributes to a growing body of literature examining police accountabil-

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10For other types of oversight see Rushin [2017b], Owens [2019], Devi and Fryer [2020], Premkumar [2020].
ity and its social-political implications. To evaluate interventions aimed at improving police behavior, researchers often focus on the officer. For instance, scholars have investigated the impact of unions (Rushin [2017a], Dharmapala et al. [Forthcoming], Goncalves [2020]), training (Owens et al. [2018], Wood et al. [2020]), or peers (Holz et al. [2019], Ouellet et al. [2019]) on police conduct. However, from the civilian perspective, I find that residents of highly policed areas exert a great deal of effort to report police misconduct for very little return in the way of desired accountability (Soss and Weaver [2017], Cheng [2019]). This finding provides a potential explanation for why people are more likely to disengage from political processes and other government institutions as discussed in Lerman and Weaver [2014], Bell [2017], Brayne [2014].

The paper is organized as follows. Section 2 provides background information on the complaint process in Chicago. Section 3 describes the administrative data used for the analysis. Section 4 presents the empirical methods and the results. In Section 5, I develop a model of civilian willingness to complete a complaint, accounting for the investigator’s decision to sustain the complaint if the affidavit is signed. Section 6 and 7 estimate civilians’ valuation of their complaint and present counterfactual scenarios. Section 8 concludes.

2 Background

2.1 Institutional context

Chicago’s oversight agency, the Independent Police Review Authority (IPRA), has collected all allegations of misconduct against members of the CPD since 2007. Allegations originate from the public or from other officers in the department. Complaints are classified into one of twenty main categories. The process of filing a complaint has two main stages:

1. The complainant initiates the complaint over the phone, in person at the oversight agency office, through the mail, with a CPD supervisor at any district station, or via the internet.

2. The State of Illinois requires complainants making an allegation of misconduct against

\[11 \text{See here for details about allegation categories.}\]
a CPD officer to sign a sworn affidavit to certify that their allegations are true and correct. Since the end of 2010, the oversight agency has required the complainant to physically appear at their office to sign the affidavit. At this point, the complaint is filed and investigated. In the event the complainant does not sign the affidavit, the investigation is terminated and the allegations are classified as “not sustained.”

The first stage to file a complaint is straightforward and easy for the complainant because of the number of alternatives available that include the option of not being physically present. However, the second stage requires the complainant to be physically available to sign the affidavit at the oversight agency location. This requirement may be difficult to meet for individuals who live far away from the oversight agency office or for those who work on weekdays. Hence, individuals might fail to meet the affidavit requirement because of a high opportunity cost of signing it (e.g., commuting time, commuting fees, and forgone wages).

This research focuses on the period between January 2011 and July 2014 for two reasons. First, complaints filed prior to 2011 are excluded from the analysis because the complainant was not required to be physically present at the oversight agency office and the investigator could travel to the complainant. For those cases, it is difficult to isolate civilian willingness to travel to sign the affidavit. Secondly, in late March 2014, lists of past complaints against CPD officers became available to the public as a result of the lawsuit Kalven vs. the City of Chicago & the Chicago Police Department, under the Freedom Of Information Act (FOIA). The data was made available to the Invisible Institute in July 2014. The Chicago police union and the Fraternal Order of Police (FOP) notified its members in August 2014. For more details, see Rivera and Ba [2018].

**Complaint types** I categorize civilian complaints into two categories: 1) serious complaints, i.e., constitutional violations, and 2) failure to provide service (FPS). Serious complaints are composed of allegations against an identified officer involving improper use of force, unlawful searches, arrest or lock up procedures, or verbal abuse. Allegations in this category tend to be filed by an individual suspected by the police of criminal activity. FPS complaints are those filed against an identified officer that involve a failure to

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12See Rapid Pilot Program, page 19: The oversight agency changed its intake procedure in order to make the investigative process more efficient.

13See Kalven Court Decision
provide service or conduct unbecoming of an officer. FPS allegations tend to be filed by potential victims of a crime or people who were seeking help from the police.

**Investigation process**  Once a complaint is received and the affidavit signed, an investigator is assigned to conduct a comprehensive investigation. When the investigation is completed the allegations are classified as sustained, not sustained, exonerated, or unfounded. For the remainder of this paper, I collapse the exonerated and unfounded classifications into the not sustained category. Additionally, if an accused officer could not be identified, I classify the complaint as not sustained.”The officer does not need to answer to investigators unless the affidavit requirement is met. In the event that no affidavit is received, the investigation is terminated, classified as not sustained, and no record of the complaint remains on the officer’s disciplinary history. A complaint with a signed affidavit remains on the officer’s disciplinary history for five years after the complaint is issued.

At the end of the investigation, the oversight agency sends a letter to both the complainant and the CPD officer or officers involved reflecting the findings and any recommended disciplinary actions. The police department is in charge of enforcing the discipline determined for each allegation. It is important to stress here that the complainant does not receive compensation at any point in process. If the complainant wants to pursue legal action against a member of the CPD, it has to be done independently from the complaint process done through the oversight agency.

### 2.2 Oversight agency location

On December 19, 2011, the CPD’s oversight agency moved from a rented space on the South Side of Chicago to the Near West Side of the city. The new site of the oversight agency is located in a building owned by the City of Chicago. To the best of my understanding, the oversight agency did not provide documentation or press releases announcing the move (See Figure 1). This administrative change was seemingly unknown and unannounced to the public.

The former South Side location was near the Chicago police headquarters and accessible by two subway lines and by car via expressway. The new location is accessible by bus but not by the subway. Hence, the change of location increased the travel time to
file a complaint for someone residing on the South Side and decreased the travel time for someone living on the Near West Side. The two locations are about 6.3 miles apart from each other using the Manhattan Distance metric.\(^{14}\)

Figures 2 and 3 depict the oversight agency before and after its location change with respect to the distribution of race, income, and complaints within the city. Figure 2a indicates that the oversight agency moved closer to neighborhoods with a high proportion of Hispanic and white residents, but farther away from the South Side where the majority of the population is Black. Figure 2b suggests that the North Side of Chicago tends to be wealthier than the South and West Sides. Thus, the oversight agency moved closer to more affluent neighborhoods. Finally, Figure 3 shows that the oversight agency moved away from neighborhoods with a high concentration of police misconduct allegations.

3 Data

3.1 Data sources

This section describes the datasets used for the empirical analysis. As mentioned previously, my primary analysis focuses on complaints and crime data spanning January 2011 to December 2014. I supplement those datasets with distance and travel times from each beat centroid to the oversight agency locations using data from Google Distance API. I merge complaints and crime data with demographics and socioeconomic indicators by census block obtained from the U.S. Census Bureau 2010-2014 American Community Survey’s five-estimates.

Complaints Data  As mentioned in Section 2, the misconduct complaints dataset was obtained via FOIA requests as part of Kalven v. the City of Chicago & the Chicago Police Department. The Invisible Institute, Roman Rivera, and I collaborated to collect, clean, and distribute the data. We built the Citizens Police Data Project that collects and publishes information about police misconduct in Chicago.

The complaint dataset we collected contains all recorded allegations of misconduct filed against an officer from 2001 to 2016. The allegations can come from another officer

\(^{14}\)The two locations are about 4.9 miles apart from each other using Euclidean distance.
(an internal complaint) or from a civilian (an external complaint). Each complaint contains information on involved police officers, complainant demographics, and incident location. The data does not account for appeals or subsequent hearings. I do not have information on the residence of the complainant, however, the location of the incident is a proxy indicator of the complainant’s residence.

The dataset also provides information about the final finding of the investigation. The outcome variable includes the following classifications: disciplined, sustained, not sustained, open-investigation, and unknown. The finding variable provides an explanation of the outcome and includes the following descriptions: exonerated, missing affidavit, not sustained, sustained, unfounded, and unknown. I also supplement the finding variable by identifying the complaints lacking officer information. For the purpose of this study, I restrict my attention to general conclusions from the investigation and not the corresponding recommendations. I restrict my attention to civilian complaints with identified officers and final outcomes, so I exclude complaints with unknown outcomes and/or unknown officers. Because I am interested in whether or not the complaint was investigated, I use the following classifications for the purpose of my research: no affidavit, not sustained (which includes not sustained, exonerated, or unfounded), and sustained (which includes sustained or disciplined). Additional information about these classifications are provided in Appendix B.1.

**Traveling cost** I use the proximity of the incident location to the oversight agency as a proxy for the opportunity cost of filing a complaint. I consider spherical distance, driving time, and travel time by public transportation. For each beat, I compute the travel times (car and public transit) centroid to the oversight agency locations using data from Google Distance API in December 2016.\(^\text{15}\)

**American Community Survey (ACS)** Using the 2010-2014 ACS data, I compute block level aggregates to characterize neighborhood demographics. The monetary amounts are adjusted for inflation to dollars (USD) in 2014 by Social Explorer. I average the block median income at the beat level. I also compute the proportion of Black civilians, Hispanic, and white civilians and civilians of other races at the beat level to identify whether or there is a Black majority.

\(^\text{15}\)I use the “sphdist” routine from Stata to compute the spherical distance.
3.2 Sample construction

The analysis focuses on incidents that occurred between January 2011 and July 2014. As discussed in Section 2.1, this period is appropriate for studying civilian willingness to complain against the police. Because misconduct records were not accessible to the public at this time and there were no major scandals, any behavior changes in police officers and/or civilians are less of a concern. I exclude incidents with missing locations from the sample and/or if they occurred outside of Chicago city limits. The resulting sample contains a total of 15,039 complaints for the analysis of the raw data provided in Appendix B. The raw complainants data is helpful in order to describe the type of misconduct for which the officers are accused. Among those complaints, 6,763 come from civilians. Table B provides details about the sample construction.

3.3 Descriptive analysis

3.3.1 Graphical Evidence

I start the analysis by documenting the relationship between the complainant and their distance to the oversight agency as shown in Figure 4. To explore the effects of distance and the location change on the probability of a completed complaint, Figure 4a plots the probability of a signed affidavit by distance to the oversight agency at both the old and new reporting centers. According to the graph, the share of signed affidavits was higher at the old location (50.7%) than at the new location (43.7%). Moreover, at the old location, complaints resulting from incidents that occurred twelve or more miles from the reporting center were less likely to be completed (i.e., to contain a signed affidavit) than those resulting from incidents that occurred less than twelve miles away. At the new location, complaints are on average less likely to have a signed affidavit the farther away the incident occurred from the oversight agency.

In order to provide additional evidence of the negative relationship between traveling cost and the number of completed complaints, I then analyzed how travel distance to the oversight agency affects an individual’s willingness to sign the affidavit. Figure 4b plots the probability of a signed affidavit and includes a histogram of the number of complaints by traveling distance. This graph displays the expected result: Incidents that occur farther away from the oversight agency are less likely to have a signed affidavit. The number of
complaints declined with distance for incidents that occurred more than three miles away from the oversight agency.

Figure 4c presents the distribution of the $\Delta Distance$ between the new and the old locations of the oversight agency. The plot indicates that more than 40% of incidents that generated a complaint occurred in beats that experienced an increase in distance of 4 miles or more ($\Delta Distance \geq 4$ miles) when the reporting center location changed. I denote this group “Farther” as these beats are farther away from the oversight agency. In contrast, about 18% of incidents that generated a complaint are located in places with a decrease in distance of more than 4 miles ($\Delta Distance < -4$ miles) when the reporting center location changed. Similarly, I define this group “Closer” as these beats are closer to the oversight agency after the location change.

3.3.2 Summary Statistics

Table 1 presents descriptive summaries of civilian complaints used in the analysis. The first column provides the mean occurrence of incidents by category type for all the complaints. The second column shows the characteristics of allegations that occurred in beats that experienced a change in distance ($\Delta Distance$) less than than 4 miles when the reporting location changed. The last columns present the characteristics of incidents occurring in beats that experienced a $\Delta Distance$ greater than 4 miles when the reporting location changed.

According to column (1), about 71% of the complaints are serious, and 29% are complaints related to FPS. More than half of the sample complainants are males and 40% are 39 years old or younger. Most of the sample is composed of Black complainants (68%). Whites and Hispanics respectively represent 15% and 12% of the complainants. Incidents involved two officers on average with a median age close to 41 years old. Finally, 62% of the allegations have at least one white officer, while 33% and 35%, respectively, involved at least one Black or Hispanic officer.

By comparing columns (2) and (3), I find that both groups of beats generate similar types of complaints, share similar complainant age and gender, and are made at similar times of the day/week. However, complainants in beats with a $\Delta Distance$ greater than 4 miles from the reporting location are 87% Black, versus 54% for locations where the distance change is less than 4 miles. These findings confirm the pattern found in Figure
2a, which depicts racial segregation in Chicago. Hispanic and white civilians are more likely to live closer to the oversight agency than Black civilians after the location change. Moreover, beats with a $\Delta Distance$ greater than 4 miles are policed by younger officers and with a higher share of Black officers. As documented in Ba et al. [2019], Black officers’ higher representation in Black neighborhoods might explain Black officers’ positive association in complaints and beats with a $\Delta Distance$ greater than 4 miles (i.e., Black beats). Overall, Table 1 suggests the need to condition for complainant demographics and incident characteristics, as distance to the oversight agency is clearly correlated with other complainant characteristics that may themselves affect an individual’s decision to sign the affidavit.

4 Empirical analysis

This section includes an analysis of the effects of traveling costs on the likelihood of having a full investigation. I use the distance from the incident’s location as recorded in the complaint to the oversight agency location as a proxy for the traveling cost of filing a complaint against a police officer. As I have explained previously, the oversight agency’s location change after December 2011 provides us a quasi-experimental design to study the opportunity cost of filing a complaint, and more specifically, to sign the affidavit. I exploit the fact that the cost of signing the affidavit varies by police beat, and that this cost exogenously changed when the oversight agency moved locations. Provided that the accused officers are identified, a complaint is fully investigated if the affidavit is signed. Thus, I restrict the analysis to complaints where the officer is identified by the complainant and closed allegations with known final outcomes with the following findings: sustained, non-sustained, and missing affidavit.

4.1 Setup

My analysis studies the impact of traveling costs (i.e., distance) on the probability to sign the affidavit. I estimate the following difference-in-difference model for individual $i$ in beat $b$ and in year-quarter $t$:

$$
Sign_{ibt} = C_{bt} + \beta X_i + \alpha_b + \gamma_t + \varepsilon_{ibt}
$$

(1)
The variable \( \text{Sign}_{ibt} \) is equal to 1 if the outcome is sustained or not sustained and equal to zero otherwise. The vector \( X_i \) contains a set of controls for complainant age, race, gender, and information about the incident (see Table 1). The time fixed effects and the beat fixed effects are given by \( \gamma_t \) and \( \alpha_{bt} \). The error term \( \varepsilon_{ibt} \) is assumed to have non-constant variance and standard errors are clustered at the beat and year-quarter level. The vector \( C_{bt} \) captures the distance from the beat centroid to the oversight agency locations. I use weights to account for the number of duplicated beats-quarter-year observations.

The coefficient of interest \( \beta \) captures the effect of distance on the probability of signing the affidavit. Due to the fact that distance varies at the beat level and because of the plausibly-exogenous location change of the oversight agency over time, I can identify the causal effect of \( \beta \) if there is no pre-existing trend between beats that are farther away versus closer to the oversight agency. In other words, the key assumption for identification is that the location change is exogenous conditional on the covariates.

In order to assess the presence of pre-existing trends rather than causal effects of the location change, I estimate an “event-study” specification of the following form:

\[
\text{Sign}_{ibt} = \sum_{t \neq 2011Q4} \text{Farther}_b \cdot D_t \cdot \beta_t + X_i' \delta + \alpha_b + \gamma_t + \varepsilon_{ibt}
\]  

(2)

where \( \text{Farther}_b = 1[\Delta \text{Distance}_b \geq 4] \) is an indicator for beats that experienced the largest change in distance to the oversight agency, i.e. 4 miles or more (see Figure 4c). I will often refer to beats in the \( \text{Farther}_b \) group as Treatment. The variable \( D_t \) is an indicator of quarter-year. The coefficients \( \beta_t = \{2011Q4, ..., 2014Q3\} \) capture the divergence in signature likelihood for beats that are farther away from the oversight agency compared to the other beats after controlling for beat FE, covariates, and trends. The parallel trend assumption implies that beats in the treatment and the comparison group would have followed similar trends in \( t > 2011Q4 \) if, counterfactually, no change of location had occurred. Since beats are observed in periods before the location change, I test this assumption’s plausibility by assessing whether outcomes follow parallel trends in the treatment and comparison group in the pre-period, i.e., \( \beta_{t<2012Q1} = 0 \).

Finally, to summarize the results, I pool the estimates in the pre- and post-event in the following fashion:

\[
\text{Sign}_{ibt} = \text{Farther}_b \cdot \text{New}_t \cdot \beta_F + \text{Closer}_b \cdot \text{New}_t \cdot \beta_C + X_i' \delta + \alpha_b + \gamma_t + \varepsilon_{ibt}
\]  

(3)
where \( \text{Closer}_b = 1[\Delta \text{Distance}_b < -4] \) is an indicator for beats with a decrease in distance of more than 4 miles (see Figure 4c). The variable \( \text{New}_t \) equals one after the location change, and zero otherwise. The coefficients of interest \( \beta_F \) and \( \beta_C \) capture the effect of the location change distance on the probability of signing the affidavit for beats farther and closer to the oversight relative to beats such that \(-4 \leq \Delta \text{Distance}_b < 4\). I also consider a specification where \( \beta_C = 0 \), i.e., I compare beats farther away from the oversight agency to the others.

### 4.2 Results

#### 4.2.1 Baseline

Table 2 presents the results from equations 1 and 3. Panel A displays the estimates for all complainants and Panel B present the results for Black complainants only. Restricting the results for Black complainants only enables me to account for the fact that they experienced a larger change in distance to the oversight agency. Recall that beats with \( \Delta \text{Distance} \geq 4 \) miles have 87% of Black complainants according to Table 1. Columns (1)-(3) present the impact of distance on the likelihood of signature, \( \beta \), results for all type of civilian complaints, columns (4)-(5) focus on the effect of being farther away, \( \beta_F \), on the outcomes of interest, and columns (6)-(7) show the effect of being farther away or closer, \( \beta_C \), to the agency on the likelihood of signature.

Panel A indicates the average probability that an individual will sign the affidavit is 50.8%. According to column 1, which does not control for beat-FE and covariates, a standard deviation (3.6 miles) increase in the distance reduces the probability of signed affidavit by 2.13%.\(^\text{16}\) However, after controlling for beats-FE and incident controls, columns (2) and (3) indicate that a standard deviation (SD) increase in distance significantly reduces the probability of signature by 3.96 percentage points (pp), i.e., 7.8% \( (p < 0.01) \). Not accounting for beat fixed effects potentially attenuates the effect of distance on the probability to sign the affidavit.

Columns (4)-(7) of Panel A indicate that incidents that occurred in beats that experienced the largest change in distance to the oversight agency, i.e., farther away, are 8.2 to 9pp \( (p < 0.01) \) less likely to be investigated because of missing affidavits. From\(^\text{16}\) The interpretation is given by \( \frac{\partial y}{\partial C} \cdot \frac{\text{SD}(C)}{\bar{y}} = \beta \cdot \frac{\text{SD}(C)}{\bar{y}} \), based of coefficient \( \beta \), standard deviation of the traveling cost (\( \text{SD}(C) \)), the dependent variable (\( y \)), and mean of the dependent variable (\( \bar{y} \)).
columns (6) and (7), there is no evidence that incidents that happened closer to the oversight agency are less likely to be investigated as the point estimates are small and non-significant statistically.

Panel B confirms the findings from the previous panel. For Black complainants, the average probability that an individual will sign the affidavit is about 49%. I find that distance to the oversight agency deters complainants from completing their complaint as a standard deviation increase in the distance reduces the probability of signature by 4.32pp, i.e., 8.89% (p < 0.01). Finally, columns (4)-(7) confirm that beats far away from the agency are 9-10pp less likely to have a signed affidavit.

Figure 5a shows that the signature probability for beats experiencing a large (△Distanceb ≥ 4) increase in distance decreases significantly after the location change relative to the other beats. The pre-period trends are flat for both samples of interest (black line for the whole sample vs. blue line for the Black complainants’ sample). There is a downward trend after 2012Q1, although the confidence intervals are large. The short-term impact of the location change indicates that beats in the treatment group experienced a drop of 0.065 (SE=0.055) and 0.125 (SE=0.066) in the likelihood of signature for the whole sample and Black sample for the year 2012, respectively.

Overall, this set of results strongly suggests that beats that are farther away from the oversight agency are more difficult to monitor. Civilians are on average less likely to complete their complaint if they are farther away from the reporting center.

4.2.2 Heterogeneity by types of complaints

Table 3 presents the results subsample results by complaint types. This margin is important because the police can treat civilians as either potential suspects of crime (Serious) versus potential victims of a crime (FPS). All the specifications control for both beat and quarter-year fixed effects. The odd columns provide the estimates for Serious complaints, while the even columns report the FPS allegations’ coefficients.

The first two columns of Panel A indicate that a standard deviation increase in the distance, respectively, reduces the likelihood of signature by 3.6pp (Mean=0.583) (p < 0.05) and 4.68pp (Mean=0.326) (p < 0.1) for Serious and FPS complaints. Relative to the control group, columns (3)-(6) indicate that beats in the Farther group experience a 9pp decrease for Serious complaints (p < 0.05). In contrast, the FPS complaints drop by about
6.6-7.2pp, but the estimates are not statistically significant. The coefficients for the Closer group are smaller and not statistically significant for both allegation types.

According to the sample restricting to Black complainants, Panel B indicates that civilians seeking help from the police were significantly less likely to sign the affidavit if the incidents occurred farther away from the oversight agency. For instance, a standard deviation increase in the distance reduces the likelihood of a signed complaint by 9.72pp (Mean=0.280). The Farther group experienced a drop in signatures by 13.1-15.8pp for FPS allegations. In contrast, for Serious allegations, the likelihood of signature dropped by 2.52pp with a standard deviation increase in distance (Mean=0.570). Column (3) and (4) indicate that beats in the Farther group experienced a drop in signatures by 7.9pp ($p < 0.1$) and 7.1pp.

Interestingly, beats in the Closer group experienced an increase in signatures by 0.074 (SE=0.078) for Serious complaints, while it drops by 0.301 (SE=0.175) for FPS allegations. These findings might indicate that beats where it is easier to monitor officers experience less service-related complaints but more complaints involving potential crime suspects. However, this might suggest that officers’ decisions to commit misconduct are strategic substitutes (FPS vs. Serious complaints) when it is easy to monitor them (Rivera and Ba [2018], Pei and Strulovici [2019]). However, the Serious allegations’ results are too imprecise to draw any firm conclusions about the mechanisms.

For FPS complaints, Figure 5c confirms that the signature probability for beats in the Farther group decreases significantly after the location change relative to the other beats. For Serious complaints presented in Figure 5b, the decreases are not as pronounced as for FPS and only decline during the last quarter of 2012. However, pre-period trends seem relatively flat. The FPS complaints mainly drive the declines in signatures. For instance, in 2012, the location change reduced the likelihood of signatures by 0.148 (SE=0.052) and 0.172 (SE=0.068) for the whole sample and Black sample.

### 4.2.3 Robustness

This section briefly discusses supplemental evidence that supports the assumptions underlying the results and robustness tests. Appendix C explores the robustness of the results across different specifications. I will also briefly summarize the main conclusions.

First, I show that the results are robust in response to a variety of travel cost measures
used in equation 1. The opportunity cost of time that is captured by driving distance in miles (Mean=9.07; SD=4.57), travel time by car in minutes (Mean=20.56; SD=7.11), and travel time by transit in minutes (Mean=49.27; SD=18.91) from the oversight agency to the incident location. The results using the alternative travel costs regressions can be found in Tables A.9 and A.10 for the whole sample and by complaint types. Overall, I find higher driving distance or time by car or public transportation reduces the likelihood of a signed affidavit.

Second, I confirm that results are not sensitive to the functional form of the dependent variable. Since the outcome of interest is a binary variable, I employ a logit specification to understand the distance’s impact on the signature’s probability. I report the results in Tables A.11 and A.12 for the whole sample and by types of allegations. I compute the average marginal effects from a logit specification to interpret the magnitude of the coefficients. I found that the estimates are almost identical to those found in Tables 2 and 3.

Finally, the police beat map changed at the end of 2012. I replicate my analysis using the same beat map as Rivera and Ba [2018], which used similar data but a beat map pre-location change. This approach ensures that events are spatially comparable across time. Figures A.1 provide the event-study estimates from the primary analysis using the old beat map. Overall, the results are similar to the previous section; the point estimates are more precise. The findings strongly suggest that the location yields a reduction in signed complaints.

5 Model: Effect of the cost of signing the affidavit

The difference-in-difference analysis emphasizes how the cost of completing a complaint by signing the affidavit affects the number of investigated allegations of misconduct. I build on the key lessons from this experiment to shed light on what the impact would be on the number of investigated complaints and sustained rates if policies that influence the cost of investigating officers were to be implemented.

To do so, I develop a model of civilian willingness to complete a complaint, accounting for the investigator’s decision to sustain the complaint if the affidavit is signed. I do not intend to model every feature of policing and I will later discuss how some of the simplifications I make might affect results. Rather, I show how a simple estimated model
can provide insight into the effect of reducing the cost of completing a complaint and make out-of-sample predictions.

I do not model police officers’ behavior because I do not have data on police-civilian encounters that did not result in a complaint. In other words, I do not have a risk set, or benchmark, against which to compare officers that receive complaints. For instance, I do not observe officers’ workloads and geographical assignments over time, and thus, it is difficult to clearly identify the impact of the oversight agency’s location change on the behavior of individual officers.

5.1 Setup

The model has the following timing structure. First, after filing a complaint, the civilian decides whether or not to travel to the oversight agency in order to sign the affidavit. If the affidavit is not signed, the complaint is dropped. Second, if the affidavit is signed, the investigator decides whether or not to sustain the complaint. Because the model requires information about the investigator, I drop complaints that are missing this needed information. Moreover, I keep complaints that have only one investigator assigned to the case.

This model is an analogous to the fire alarm oversight framework of McCubbins and Schwartz [1984]. The principal (i.e. the investigator) decides whether to sanction (i.e., sustain) the street-level bureaucrat (i.e., the police), based on the citizen (i.e., civilian) complaint.

I assume that the investigator is assigned when the complaint is filed. The model begins with the civilian filing a complaint about an interaction with the police.

Complainant’s preferences  Given investigator \( j \) in beat \( b \), and the severity of the allegation \( k \), I assume that complainant \( i \)’s utility to sign the affidavit is:

\[
U_{k, idt}^1(jb) = \eta_{k, idt}^1 + \mu_{k,jb}^D + \varepsilon_{k,it}^1
\]

(4)

where

\[
\eta_{k, idt}^1 = -Cost_{bt} \beta_{k,c} + X_{it} \beta_{k,x} + Z_{ibt} \beta_{k,z} + \alpha_{k,d} + \gamma_{k,t}
\]
where the disutility of signing the affidavit is a function of traveling cost $Cost_{it}$. The vector $X_{it}$ contains a set of controls for complainant age, race, and gender. Vector $Z_{ibt}$ is a set of controls related to the incident characteristics such as the number of officers, median age of the involved officers, and race of the officers. I assume that each complainant has varying levels of utility depending on the severity of the allegation, $k$, so that $k$ can be a serious complaint ($k = 1$) or a complaint related to the failure to provide service ($k = 2$). The time and district fixed effects are given by $\gamma_{k,t}$ and $\alpha_{k,d}$. I assume that $\varepsilon_{k,it}$ is an i.i.d. error term that is distributed as type 1 extreme value. For incidents that occurred in beat $b$, if the affidavit is signed, the unobserved characteristics of the investigator is given by $\mu_{k,jb}$. This parametrization of the unobserved heterogeneity allows the investigator’s unobserved characteristics to be correlated with the location of the incidents. The outside choice, denoted as choice 0, is not signing the affidavit. The utility from this option is given by $U_{0,k,idt}(jb) = \varepsilon_{0,k,it}$, where $\varepsilon_{0,k,it}$ is an i.i.d. error term that is distributed type 1 extreme value. I define $\eta_{0,k,idt} = Cost_{it} \beta_{k,c} + X_{it}' \beta_{k,x} + Z_{ibt}' \beta_{k,z} + \alpha_{k,d} + \gamma_{k,t}$ and $\eta_{0,k,idt} = 0$. These assumptions lend themselves to a logit regression:

$$
\Pr(D_{k,idt} = 1|\mu_{k,jb}) = \Pr(U_{1,k,idt}(jb) - U_{0,k,idt}(jb) > 0) = \Pr(\eta_{k,idt} + \mu_{k,jb} - \eta_{0,k,idt} > \varepsilon_{k,it} - \varepsilon_{1,k,it}) = q_{k,i}(\mu_{k,jb}) \tag{5}
$$

Where the variable $D_{k,idt}$ is equal to 1 if the complaint is signed and to 0 otherwise. To streamline notation in the last line of equation 5, I drop the $d$ and $t$ subscripts.

**Investigator’s preferences** If the affidavit is signed, investigator $j$ has the following utility to sustain the complaint of complainant $i$:

$$
V_{1,k,it}(jb) = W_{it}' \beta_{k,W} + \tilde{\alpha}_{k,d} + \tilde{\gamma}_{k,t} + \mu_{k,jb} + \xi_{1,k,jb} \tag{6}
$$

Vector $W_{it}$ is a set of controls related to the length of the investigation, the incident characteristics such as the number of officers, median age of the involved officers, and race of the officers. The time and district fixed effects are given by $\tilde{\gamma}_{k,t}$ and $\tilde{\alpha}_{k,d}$. I assume that $\xi_{1,k,jb}$ is an error term that is distributed as type 1 extreme value. If the affidavit is signed, the unobserved characteristics of the investigator is given by $\mu_{k,jb}^s$. The outside choice, denoted as choice 0, is not sustaining the complaint. The utility from this option is
given by $V_{k,it}(jb) = \xi_{k,jb}$, where $\xi_{k,jb}$ is an error term that is distributed as type 1 extreme value. Conditional on signing the affidavit, these assumptions lend themselves to a logit regression, where the probability to sustain the complaint is:

$$
\Pr(S_{jb,kit} = 1|D_{k,idt} = 1; \mu_{s,k,jb}) = \Pr(V_{k,it}(jb) - V_{k,it}(jb) > 0|D_{k,idt} = 1) = \Pr(W_{it}'\beta_{k,W} + \tilde{\alpha}_{k,d} + \tilde{\gamma}_{k,t} + \mu_{s,k,jb} > \xi_{k,jb} - \xi_{k,jb} - \xi_1|D_{k,idt} = 1) = p_{k,jb|D}(\mu_{s,k,jb})
$$

(7)

Where the variable $S_{jb,kdt}$ is equal to 1 if the complaint is sustained and to 0 otherwise. In other words, the investigator thinks that the benefit of having the complaint sustained is larger than the cost. To streamline notation in the last line of equation 7, I drop the $i$ and $t$ subscript. Recall that for a complaint to be sustained, the affidavit has to be signed (i.e., $D_{k,idt}$ equals 1).

5.2 Estimation strategy

The following model is estimated by maximum likelihood. The likelihood function of the full model will be derived. The parameter set of the full model consists of coefficients of covariates and parameters of unobserved heterogeneity. Unobserved heterogeneity of the investigator by beat enters into the model via the permanent components $\mu = (\mu_{1,jb}, \mu_{1,jb}, \mu_{2,jb}, \mu_{2,jb})$ which affect willingness to sign the affidavit and rates of sustained complaints in a similar manner to the covariates. This specification of the unobserved factors allows for the fact that the investigator might affect the complainant’s decision to sign the affidavit which eventually has an impact on the rates of sustained complaints. For the unobserved heterogeneity, I use the McCall [1996] multivariate generalization of the Heckman and Singer [1984] approach, where $\mu \sim G(\mu_{1,jb}, \mu_{1,jb}, \mu_{2,jb}, \mu_{2,jb})$ follows a discrete distribution with $G$ points of support. In the model, unobserved heterogeneity of investigator by beat takes the form of discrete types and the error terms are i.i.d. when conditioned on type. The panel structure of the data is sufficient to identify the parameters of unobserved heterogeneity. Exclusion restrictions are included to facilitate estimation.

The following expression is the likelihood of signing the affidavit for individual $i$ assigned to investigator $j$ in beat $b$ for allegation of type $k$:
\[
L_{k,i}^{D}(\mu) = q_{k,i}(\mu_{k,jb}^{D})^{D_{k,idt}}(1 - q_{k,i}(\mu_{k,jb}^{D}))^{1-D_{k,idt}}
\]

Conditional on signing the affidavit for individual \(i\), the likelihood contribution for sustaining the complaint for investigator \(j\) in beat \(b\) is:

\[
L_{k,jb}^{S|D}(\mu) = p_{k,jb|D}(\mu_{k,jb}^{g})^{S_{j,kdt}}(1 - p_{k,jb|D}(\mu_{k,jb}^{g}))^{1-S_{j,kdt}}
\]

The likelihood function is

\[
L = \prod_{jb} \sum_{g} \pi_{g} \prod_{i} \sum_{k} I_{k} \cdot L_{k,i}^{D}(\mu_{g}) \left[ L_{k,jb}^{S|D}(\mu_{g}) \right]^{D_{k,idt}}
\]

The log likelihood function is

\[
\log L = \sum_{jb} \log \sum_{g} \pi_{g} \prod_{i} \sum_{k} I_{k} \cdot L_{k,i}^{D}(\mu_{g}) \left[ L_{k,jb}^{S|D}(\mu_{g}) \right]^{D_{k,idt}}
\]

where \(I_{k}\) is equal to 1 for complaints of type \(k\) and 0 otherwise. The probabilities for the points of support are given by \(\pi_{g} = \exp(\kappa_{g})/(1 + \exp(\kappa_{1}) + \ldots + \exp(\kappa_{G-1}))\). I use a likelihood ratio test to determine the number of support points (Heckman and Singer [1984], Ham and LaLonde [1996], Eberwein et al. [1997]). As in Ba et al. [2017], I start by assuming no unobserved heterogeneity and then continue adding support points and keep the model with the fewest points of support that is not rejected by a standard likelihood ratio test.

### 5.3 Parameter estimates

First, I focus on parameter estimates from estimating equation 9 which are displayed in Tables 4 and 5. I separate the results into two tables for readability. For the interpretation, I report the average marginal effect for the coefficients of the observable variables. I also report the mean of the dependent variables for the whole sample based on the race of the complainant (Table A.14). The main takeaway from Table A.14 is that complaints made by Black complainants have a very low probability of being sustained compared to non-Black complainants. Provided that the affidavit is signed, the share of complaints that are sustained for serious allegations are 2.7\%, 11.1\%, and 30.4\% for Black, Hispanic, and white complainants, respectively. For FPS complaints that include a signed affidavit, the share of complaints that are sustained are 16.0\%, 36.9\%, and 46.5\% for Black, Hispanic,
and white complainants respectively.

Table 4 presents estimates on the probability that the civilians will sign the affidavit according to complaint type. Incidents that occurred farther away from the oversight agency are less likely to have a signed affidavit. The magnitude of the coefficients are similar to the DID estimation from Section 4.

A standard deviation in distance reduces the probability of the affidavit being signed by 2.9pp and 7.9pp for serious complaints and FPS complaints respectively. The coefficients are not statistically significant for serious allegations. Table 4 suggests that males are significantly less likely to complete their complaint if the allegation is serious, though the results are not significant for FPS allegations. For serious and FPS complaints, Black and Hispanic complainants are less likely to sign the affidavit relative to white complainants. Older complainants are also more likely to sign the affidavit. The race of the accused officer does not seem to significantly impact the complainants’ likelihood to sign the affidavit.

Table 5 presents the estimates on the probability that the investigators will sustain the complaint by allegation type. Conditional on signing the affidavit, complainant and incident characteristics do not have a statistically significant impact on the likelihood that the investigator sustains the complaint. On the other hand, the race of the complainant has a significant impact for serious allegations of misconduct: Non-white complainants are significantly less likely to have their complaint sustained. Incidents involving older officers or Black officers are more likely to be sustained for serious allegations.

I find three points of support when estimating specification 9. The probability distributions of the three types of investigator-beat are 42%, 39%, and 19%. The points of support are statistically significant for serious allegations. The standard errors are relatively big for the points of support of the FPS allegations.

5.4 Model fit

Figures 6a, 6b, 6c, and 6d present some results on the in-sample fit of the model. The predictions are based on the estimation of equation 9 and the results are reported in Tables 4 and 5.

To assess the fit, I generated 10,000 simulations for signed affidavits and sustained outcomes for each allegation based on the parameter estimates. I then compute the ag-
aggregate outcomes for the 22 police districts and report the predicted and actual frequency distributions of the outcome variables for the police district cells. The police districts are ordered from most to least violent according to reported violent crime per 1,000 capita. Overall, these figures show that the model fits very closely to the patterns observed in the data. Table A.16 and Figure A.2 provide additional information about the districts’ and beats’ characteristics from January 2011 to July 2014.

I also apply Chi-Squared goodness-of-fit tests (Heckman and Walker [1990]) to the estimated and actual frequency distributions. Recall that the predicted conditional distributions depend on estimated parameters from the model. I do not adjust the goodness-of-fit statistic to account for the parameters estimation error because the adjustments are usually slight (Heckman and Walker [1990]). The Chi-Squared tests fail to reject the null hypothesis that the predicted values from the model are statistically different from the data, in other words, the model seems to fit the data relatively well.

6 Using valuation of the complaint to understand the estimates

6.1 Willingness to pay

The parameters from the model can now be used to compute civilians’ willingness to pay to complete their complaint. Here, the willingness to pay is the maximum amount of money a civilian is willing to sacrifice to complete a complaint by signing the affidavit. This quantity has a useful interpretation from an economic standpoint that provides some insight on the distribution of the civilians’ valuation of their allegation by race-age groups.

I now use the parameter estimates from Section 5 to show how to compute the willingness to pay to complete a complaint by signing an affidavit. Under the logit assumptions from equation 5, the “surplus” associated with a set of alternatives (signed or not) takes a closed form that is easy to calculate. I drop the time and location (beat and district) subscripts for expositional ease. To exposit expected utility, following Capps et al. [2003] the ex-ante expected utility of individual $i$ related to the affidavit and complaint of type $k$
\[ E(CS_{k,i}|\mu_g) = \frac{1}{-\beta_{k,c}\theta_b} E \left[ \max(\eta_{1,k,i} + \mu_{k,jb,g} + \varepsilon_{1,k,i}, \eta_{0,k,i} + \varepsilon_{0,k,i}) \right] \] (10)

The ex-ante expected utility has to account for the beat-investigator’s unobserved heterogeneity \((\mu_{k,jb,g})\) of type \(g\). The division by \(\beta_{k,c}\theta_b\) \(^{17}\) translates utility into dollars. The opportunity cost of time in each beat is captured by \(\theta_b\). As shown in Small and Rosen [1981], because the error terms are type 1 extreme value and the utility is linear in traveling cost, the “complainant surplus” from equation 10 can be re-written as

\[ E(CS_{k,i}|\mu_g) = \frac{1}{-\beta_{k,c}\theta_b} \log(\exp(\eta_{1,k,i} + \mu_{k,jb,g}) + \exp(\eta_{0,k,i})) \] (11)

As in Capps et al. [2003], the expected utility gain of signing the affidavit or willingness to pay for signing the affidavit for individual \(i\) for complaint of type \(k\) is:

\[ WTP_{k,i}(\mu_g) = \frac{1}{-\beta_{k,c}\theta_b} \left[ \log(\exp(\eta_{1,k,i} + \mu_{k,jb,g}) + \exp(\eta_{0,k,i})) - \log(\exp(\eta_{0,k,i})) \right] \] (12)

\[ WTP_{k,i}(\mu_g) = \frac{1}{-\beta_{k,c}\theta_b} \left[ \frac{1}{1-\Pr(D_{k,i}=1|\mu_{k,jb,g})} \right] \] (13)

I assume that \(\theta_b\) is equal to the average hourly wage in each beat. \(^{18}\) The main concern of this assumption is that the opportunity cost of time (by car) may be different across civilians, i.e., the civilian’s opportunity cost of time (whether potential suspect of crime or victim of a crime) interacting with the police may be higher or lower than working individuals that do not have any interaction with law enforcement. Because I do not know the actual wages of civilians, I have to assume there is no selection with respect to wage. However, the transformation is fairly straightforward that one could use the results to get estimates that rely on alternative values of \(\theta_b\).

In order to calculate the overall willingness to pay, one needs to integrate over the unobserved heterogeneity, \(\mu_g\), that follows a discrete distribution with \(G\) points of support

---

\(^{17}\)\(\theta_b\) converts each unit of cost in dollar term.

\(^{18}\)I assume that the hourly average cost of time is captured by the average hourly wage = average annual income / (40 hours × 52 weeks)
such that

\[ WTP_{k,i} = \sum_{g=1}^{G} \pi_g \cdot WTP_{k,i} (\mu_g) \]  

(14)

Where the probabilities for the points of support are given by \( \pi_g = \exp(\kappa_g) / (1 + \exp(\kappa_1) + ... + \exp(\kappa_{G-1})) \).

Conditional on the parameter estimates from the model, the estimated empirical willingness to pay is given by

\[ \hat{WTP}_{k,i} = \sum_{g=1}^{G} \hat{\pi}_g \cdot \left( \frac{1}{-\hat{\beta}_{k,c} \hat{\theta}_b} \right) \left( \frac{1}{1-Pr(D_{k,i} = 1|\hat{\mu}_{k,jb,g}^D)} \right) \]  

(15)

Equation 15 can be calculated for each complainant, given each complainant’s explanatory variables. Moreover, this quantity can be used to trace back the estimated empirical distribution of the complaint’s valuation according to the complainant.

### 6.2 Results

Overall, the results suggest that people with the lowest valuation of complaining benefit the most from filing a complaint. Table 6 summarizes the costs and benefits of completing a complaint by signing the affidavit by complainants’ race for each type of complaint. Hispanic complainants seem to exhibit a willingness to pay to complete a complaint that is similar to that of white complainants. Given that Black complainants have high valuation and low returns on filing a complaint, pooling minorities (Black and Hispanic complainants) together or keeping those groups separate when studying discrimination might yield very different results.

Figure 7 reports civilian willingness to pay in dollars to complete their complaint by racial-ethnic group. Conditional on the age and the race of the complainant, I report both the kernel density using equation 15 and the average willingness to pay to sign the affidavit. To ease the interpretation, I also interpret the results in terms of work hours sacrificed to complete a complaint using the ratio between the willingness to pay and the hourly wages by the complainant race reported in Table A.15. This alternative measure helps account for the fact that complainants who are willing to pay the same price for a similar complaint might have to sacrifice different amounts of work hours.

The distributions of the willingness to pay for both types of complaints are not sym-
metrical (Figures 7a and 7b). The results suggest that civilians’ willingness to pay to complete a complaint for serious allegations ($68.10 or 3.5 hours of work on average) is higher than to complete a complaint for FPS allegations ($19.90 or an hour of work on average). The median willingness to pay is lower than the average willingness to pay. The median amount that complainants are willing to pay is $61.60 (3.1 hours of work) and $16.80 (55 minutes of work) for serious complaints and FPS complaints, respectively.

For both types of complaints, Hispanic complainants have a lower valuation of their complaint relative to their non-Hispanic counterparts. Black complainants have the highest average valuation of their complaint for serious allegations, whereas white complainants have the highest average valuation of their complaint for FPS allegations.

Finally, the kernel density plots suggest that the median valuations of complaints for Black complainants is far higher than for non-Black complainants. For instance, the median valuation for FPS complaints is $18.40 (an hour of work), $15.50 (36 minutes of work), and $11.50 (half an hour of work) for Black, white, and Hispanic complainants, respectively. The median valuation for serious allegations is $68.60 (3.9 hours of work), $49.50 (two hours of work), and $45.31 (almost two hours of work) for Black, white, and Hispanic complainants, respectively.

7 Counterfactuals

This section of the paper uses the parameter estimates from Section 5 to simulate the impacts of a policy that lowers the cost of completing a complaint. I consider a policy that requires a signed statement, but not a sworn affidavit signed at an oversight agency. Another policy would allow for the option of signing a sworn affidavit, getting it notarized and then mailing it to the oversight agency. For example, community organizations or local government agencies can be trained to assist with the filing of a complaint and notarizing the document.\footnote{\textsuperscript{19}For example, the Houston Police Department has adopted a similar system to file a complaint against Houston police officers.} These two alternatives are not legally equivalent, but both policies set the traveling cost to the oversight agency to zero (or close to zero).

I evaluate the effects of removing the travel requirement to the oversight agency to complete the complaint, holding everything else constant. I assume that the number of complaints would have stayed constant under one of the aforementioned alternative poli-
cies. Either alternative policy would impact: (i) The share of complaints with a signed affidavit and, therefore the share of investigations initiated; and (ii) the share of allegations of misconduct that yields to a sustained outcome, and therefore, the share of officers held accountable for their actions.

As presented in the previous section, let $Z$ denote the group of interest. Here, I consider that $Z$ is composed of each of the 22 Chicago police districts. In a given group $Z$, the expected share of complaints of type $k$ with signed affidavit is given by

$$E(D_{k,Z}) = \sum_{g=1}^{G} \pi_g \cdot \Pr(D_{k,idt} = 1|\mu_g, Z)$$

such that $\mu_g$, that follows a discrete distribution with $G$ points of support and the probabilities for the points of support are given by $\pi_g = \exp(\kappa_g)/(1 + \exp(\kappa_1) + \ldots + \exp(\kappa_{G-1}))$.

Conditional on the complaint being signed under the current policy, the expected share of complaints of type $k$ that are sustained in group $Z$ is given by

$$E(S_{k,Z}|D_{k,Z} = 1) = \sum_{g=1}^{G} \pi_g \cdot \Pr(S_{jb,kit} = 1|D_{k,idt} = 1; \mu_g, Z)$$

There are two possible counterfactuals for the sustained rates. Let $D_{A,k,idt}$ equal one if the complainant signed the affidavit under the alternative policy and zero otherwise. The first possible counterfactual is the sustained rates of complaint that are signed under the current policy and signed according to a counterfactual policy is given by

$$E(S_{k,Z}|D_{k,Z} = 1, D_{A,k,Z} = 1) = \sum_{g=1}^{G} \pi_g \cdot \Pr(S_{jb,kit} = 1|D_{k,idt} = 1, D_{A,k,idt} = 1; \mu_g, Z)$$

The second possible counterfactual is sustained rates for complaint that are not signed under the current policy, but signed according to a counterfactual policy, which is given by

$$E(S_{k,Z}|D_{k,Z} = 0, D_{A,k,Z} = 1) = \sum_{g=1}^{G} \pi_g \cdot \Pr(S_{jb,kit} = 1|D_{k,idt} = 0, D_{A,k,idt} = 1; \mu_g, Z)$$
Signed Affidavits  Figure 8 presents the effect of an alternative zero-cost policy on the share of investigated complaints (i.e., investigations with signed affidavits). Relative to the number of complaints that are predicted by the model, the share of investigated complaints increases for both types of complaints under an alternative policy. In other words, I compute

$$\Delta_{k,\text{Sign}} = \frac{E(D_{k,Z}^A) - E(D_{k,Z})}{E(D_{k,Z})}$$

such that $D_{k,Z}^A$ is the decision to sign the affidavit under an alternative policy and is $D_{k,Z}$ the decision to sign the affidavit under the current policy. Under the alternative scenario, the share of investigated complaints would increase by 5.11% and 37.58%, respectively for serious and FPS complaints. This alternative policy would significantly increase the number of investigated complaints that affect potential crime victims (FPS complainants). Complainants who are potential criminal suspects (serious complainants) would marginally respond to that policy. For FPS complaints, the response to the policy is larger for districts with the highest rate of violent crime per 1,000 capita and also have a majority of Black residents.

Sustained Complaints for Observed Signed Affidavits  Figure 9 presents the effect of a zero-cost alternative policy on the share of sustained complaints for complaints that were both: (i) signed under the current policy; and (ii) signed according to the counterfactual policy. In other words, I compute

$$\Delta_{\text{Sust},D_{k,Z}=1} = \frac{E(S_{k,Z} | D_{k,Z} = 1, D_{k,Z}^A = 1) - E(S_{k,Z} | D_{k,Z} = 1)}{E(S_{k,Z} | D_{k,Z} = 1)}$$

such that $D_{k,Z}^A$ is the decision to sign the affidavit under the alternative policy and is $D_{k,Z}$ the decision to sign the affidavit under the current policy. Overall, a zero-cost alternative policy would on average raise the share of sustained FPS complaints by 8.1%, but lower the share of sustained serious complaints by 9.77%. Only the Austin and Morgan Park police districts would see an increase in rates of sustained serious complaints (an increase of 6.31% and 1.47%, respectively) under an alternative policy. Five police districts (Albany Park, Morgan Park, Near West, South Chicago, and Town Hall) would have a decrease in their rates of sustained FPS complaints under an alternative policy. Out of five police districts for which the alternative policy would have the largest increases in the rates of sustained FPS complaints, three of them are the most violent police
districts in the city: Englewood, Harrison, and Grand Crossing.

**Sustained Complaints for Observed Not Signed Affidavits** This section attempts to assess the rates of sustained complaints that would have been signed under a zero-cost alternative policy, but are not complete (no signed affidavit) under the current policy. Recall that the rates of sustained complaints under the current environment is zero, since those complaints are classified as non-sustained because of the lack of an affidavit. Conditional on a signed affidavit, Figure 10 presents the effect of an alternative policy on the number of sustained complaints. This figure restricts the sample to complaints that were both: (i) not signed under the current policy; and (ii) signed according to the counterfactual policy. In other words, I compute

\[ \Delta_{Sust,D_{k,Z}=0} = E(S_{k,Z} | D_{k,Z} = 0, D_{k,Z}^A = 1) \]  

such that \( D_{k,Z}^A \) is the decision to sign the affidavit under the alternative policy and \( D_{k,Z} \) is the decision to sign the affidavit under the current policy. Out of the five police districts for which the alternative policy would have the largest increase in rates of sustained FPS complaints, three of them are the least violent police districts in the city (Jefferson Park, Albany Park, and Lincoln). Harrison and Austin districts, which are two of the five most violent districts, are among the districts that would experience the highest increase of rates of sustained FPS complaints under the alternative policy. The sustained rates for serious allegations would be at most 5.0% for districts with a majority of Black residents (except for the Wentworth district, which would have a 13% sustained rate) and two out of three districts with a majority of Hispanic residents. The remaining districts with sustained rates that would be higher than 10.0% for serious allegations either have no dominant racial-ethnic group or have predominantly white residents.

### 8 Conclusion

Fire alarm oversight relies on civilian-accessible monitoring systems in order to promote good government. So it follows that when accessibility decreases, the monitoring systems are not as functional, threatening bureaucratic malfeasance in a way that is dangerous and expensive to society. It leads to public scandals which can lead to decreased police
efficacy, taxpayer-funded payouts and reform efforts.

This paper explores the cost of “pulling a fire alarm” in the context of police misconduct, a topic that is receiving growing attention from the public. Using rare administrative data, I study the cost and accessibility of filing a complaint against the CPD. As described earlier, this paper exploits the sudden location change of Chicago’s reporting center where a complainant completes their complaint by signing an affidavit and the fact that complaints without signed affidavits are considered null.

I present evidence that complaints filed as a result of interactions between civilians and officers that occurred farther away from the oversight agency are more likely to be lacking an affidavit for both serious allegations and allegations of a failure to provide service. I estimate a model of civilian willingness to complete their complaint, accounting for the investigator’s decision to sustain the complaint. This model indicates that residents of highly policed areas exert a great deal of effort to report police misconduct for very little return in the way of desired accountability.

Finally, I simulate counterfactual scenarios under a policy that would remove the cost of signing the complaint. This policy would largely increase the number of investigations and sustained rates for FPS complaints in the city’s most violent police districts. On the other hand, for allegations of constitutional violations, this policy would reduce sustained rates overall and only marginally increase the number of investigations.

This paper departs from the traditional economics of crime literature that focuses on the efficacy of various state strategies for controlling crime (Chalfin and McCrary [2017]). Rather than centering my analysis on officers’ behavior or incentives, I focus on the civilian experience. I employ tools from the economics literature to quantitatively document qualitative findings from the political science and sociology literature on policing (Bell [2016, 2017], Cheng [2019], Weaver et al. [2019]). In sum, this research suggests that fair and effective police reform requires a nuanced understanding of the trade-offs involved in using the complaint process as a primary mechanism of civilian police oversight.

References


October 24, 2016

Via E-Mail
Bocar Abdoulaye Ba

Re: Freedom of Information Act
IPRA File No: 16-056-578

Dear Mr. Ba:

On behalf of the Independent Police Review Authority (IPRA), I am responding to your Freedom of Information Act (FOIA) request, received by this office on October 17, 2016, in which you are seeking any official document that was sent to the public to notifying them of IPRA’s move from the South side to the West side in December, 2011.

Please be advised that after conducting a reasonable search, IPRA has been unable to locate a document which announced IPRA’s move to the West side in 2011. I spoke to our public outreach coordinator, whose job it would have been to draft any press releases and several employees who were here at the time of the move, and I have been unable to confirm whether such a press release exists. Additionally, we conducted a search of the City’s website for archived press releases and the files of our current public information officer and public outreach coordinator. (It should be noted that IPRA did not employ a public outreach coordinator until the summer of 2012, and the public information officer position was created in 2016.) As such, if a press release was issued in 2011 related to IPRA’s move, release would have been handled by the Mayor’s office. You may wish to submit a request to the Mayor’s office for the document you seek.

To the extent that you consider this a denial of your FOIA request, you have a right of review by the Illinois Attorney General’s Public Access Counselor, who can be contacted at 500 South Second Street, Springfield, Illinois 62706, or by telephone at (217) 558-0486. You may also seek judicial review of a denial under 5 ILCS 140/11 of FOIA.

Sincerely,

Shannon I. Leonard
Paralegal II/FOIA Officer
Independent Police Review Authority

1615 West Chicago Avenue, 4th Floor, Chicago, Illinois 60622
312.746.3594 (Complaint line) | 312.746.3629 (Main Line) | 312.746.3933 (TDD) | www.iprachicago.org
Notes: Figure 2(a) depicts the residential Chicago population in terms of three demographic categories (Black, Hispanic, white) that cover all the city population at the block level using the 2010-2014 ACS data. The fourth demographic category displays blocks where no racial or ethnic group represents more than 50% of the block. Figure 2(b) presents the median income categories at the block level using the 2010-2014 American Community Survey (ACS) data. The oversight agency locations (shown by red stars) moved from the South Side of Chicago to the Near West Side of the city on December 19, 2011.
Figure 3: Allegations of misconduct from 2011 to 2014

Notes: Figure 3 depicts the quintile distribution of civilian complaints filed against identified CPD officers from January 2011 to December 2014 at the police beat level. I consider that civilian complaints are allegations of misconduct which are classified as failure to provide service, use of force, verbal abuse, arrest or lock up procedures, and unlawful searches. The oversight agency locations (shown by red stars) moved from the South Side of Chicago to the Near West Side of the city on December 19, 2011.
Figure 4: Relationship between complaints and distance to the oversight agency

(a) Probability to sign the affidavit by location

(b) Number of complaints and signed probability by distance

(c) Change in distance

Notes: This Figure plots the probability of signed affidavits for civilian complaints by traveling distance to the oversight agency in miles from January 2011 to July 2014. Figure 4a plots the probability of signed affidavits for civilian complaints by traveling distance to the oversight agency in miles from January 2011 to July 2014, at the old and new oversight agency location. Figure 4b plots the probability to sign the affidavit and a histogram of the number of complaints by traveling distance. Figure 4c plots the distribution of the change in distance. I report the Farther ($\Delta Distance_b \geq -4$) and Closer ($\Delta Distance_b < -4$) groups in red and green, respectively.
Figure 5: Effect of distance on the probability of signed affidavit

(a) All

(b) Serious

(c) Failure to provide service

Notes: The figure shows regression coefficients and associated confidence intervals for the difference between the treatment group (i.e., “Farther”) and comparison groups in a given quarter year relative to the oversight agency’s location change. I report the treatment effects (and standard errors in parentheses) for the year 2012 for both the whole sample and the sample restricting to Black complainants. I report the mean of the dependent variable pre-location change. The dashed vertical lines denote 95% confidence intervals based on standard errors and are clustered at the beat year-quarter level.
Figure 6: Model versus Data

(a) Signed affidavits for serious allegations
(b) Sustained complaints for serious allegations

(c) Signed affidavits for FPS allegations
(d) Sustained complaints for FPS allegations

Notes: These figures present the frequency distribution of the signed complaints and the sustained complaints (conditional on being signed) by police districts from both the model and the data. Predictions from the model are based on the results from Tables 4 and 5. The critical value from a Chi-Squared distribution with 21 degrees of freedom at the 10% level of confidence is 29.6. The police districts (x-axis) are ordered from the most to the least violent regarding reported crime per 1,000 capita. The majority racial-ethnic group for each district is reported in parenthesis (Black (B), Hispanic (H), white (W), no majority (M)).
Figure 7: Willingness to pay (WTP) by allegation type and race

(a) Kernel density for serious allegations

(b) Kernel density for FPS allegations

Notes: These figures present the estimated distribution of the willingness to pay and the average willingness to pay by allegation type and race of the complainants. Willingness to pay are computed using equation 13. Predictions from the model are based on the results from Tables 4 and 5. The dashed lines in Figures 7a and 7b represent the average willingness to pay by racial-ethnic group.
Notes: This figure presents the effect of a policy that does not require to travel to sign the affidavit at the oversight agency for both serious and failure to provide service (FPS) allegations. The y-axis presents the percentage change in sign affidavit when the alternative policy is implemented relative to the predictions from the model. Predictions from the model are based on the results from tables 4 and 5. The police districts (x-axis) are ordered from the most to the least violent regarding reported crime per 1,000 capita. The majority racial-ethnic group for each district is reported in parenthesis (Black (B), Hispanic (H), white (W), no majority (M)).
Notes: This figure presents the effect of a policy that does not require the complainant to travel to sign the affidavit at the oversight agency for both serious and failure to provide service (FPS) allegations. The y-axis presents the percentage change in sustained rates, conditional on signing the affidavit (observed and predicted), when the alternative policy is implemented relative to the predictions from the model. This figure restricts the sample to complaints that were both: (i) signed in the data, and (ii) signed according to the counterfactual policy. Predictions from the model are based on the results from Tables 4 and 5. The police districts (x-axis) are ordered from the most to the least violent regarding reported crime per 1,000 capita. The majority racial-ethnic group for each district is reported in parenthesis (Black (B), Hispanic (H), white (W), no majority (M)).
Figure 10: Counterfactuals for sustained complaints | Not signed in the data

Notes: This figure presents the effect of a policy that does not require the complainant to travel to sign the affidavit at the oversight agency for both serious and failure to provide service (FPS) allegations. The y-axis presents the probability of sustaining a complaint, conditional on signing the affidavit (counterfactual), when the alternative policy is implemented relative to the predictions from the model. This figure considers complaints that were not signed in the data, but with signed counterfactual. Predictions from the model are based on the results from tables 4 and 5. The police districts (x-axis) are ordered from the most to the least violent regarding reported crime per 1,000 capita. The majority racial-ethnic group for each district is reported in parenthesis (Black (B), Hispanic (H), White (W), no majority (M)).
Table 1: Summary statistics by distance

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<th></th>
<th>(3) ΔDistance ≥ 4mi.</th>
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<td>mean</td>
<td>mean</td>
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<tr>
<td>30-39yo</td>
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<td>0.26</td>
<td>0.27</td>
<td></td>
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</tr>
<tr>
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<td>Hispanic/Other</td>
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Table 2: Effect of distance on the probability of signed affidavit

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<th>(3)</th>
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<th>(5)</th>
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<td>(-0.003)</td>
<td>(-0.011***)</td>
<td>(-0.011***)</td>
<td>(-0.086***)</td>
<td>(-0.082***)</td>
<td>(-0.090***)</td>
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<td>(0.002)</td>
<td>(0.004)</td>
<td>(0.004)</td>
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<td></td>
<td>Farther X New</td>
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<td></td>
<td></td>
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<td></td>
<td>(-0.086***)</td>
<td>(-0.082***)</td>
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<tr>
<td></td>
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<td>(0.036)</td>
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B) Black complainants

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<td>(-0.002)</td>
<td>(-0.013***)</td>
<td>(-0.012**)</td>
<td>(-0.099***)</td>
<td>(-0.094***)</td>
<td>(-0.094***)</td>
<td>(-0.089**)</td>
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<td></td>
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<td>(0.003)</td>
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<td>(0.035)</td>
<td>(0.035)</td>
<td>(0.036)</td>
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</tr>
<tr>
<td>Farther X New</td>
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<td>(-0.099***)</td>
<td>(-0.094***)</td>
<td>(-0.094***)</td>
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<td></td>
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<td>Yes</td>
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<td>Yes</td>
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<td>Controls</td>
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<td>No</td>
<td>Yes</td>
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Notes: This Table presents the effect of distance on the probability of signed affidavit from January 2011 and July 2014. The group \(Farther_b = 1[\Delta Distance_b \geq 4]\) is an indicator for beats that experienced the largest change in distance to the oversight agency, i.e. 4 miles or more (see Figure 4c). The group \(Closer_b = 1[\Delta Distance_b < -4]\) is an indicator for beats with a decrease in distance of more than 4 miles (see Figure 4c). The variable \(New_t\) equals one after the location change, and zero otherwise. Standard errors are clustered at the beat and quarter-year level are reported in parentheses. *p-value < 0.10, **p-value < 0.05, *** p-value < 0.01.
Table 3: Effect of distance on the probability of signed affidavit by complaints type

<table>
<thead>
<tr>
<th>A) All complainants</th>
<th>Serious (1)</th>
<th>FPS (2)</th>
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<th>FPS (4)</th>
<th>Serious (5)</th>
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<td>Distance (mi.)</td>
<td>-0.010**</td>
<td>-0.013*</td>
<td>(0.005)</td>
<td>(0.007)</td>
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<tr>
<td>Farther X New</td>
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<td>(0.034)</td>
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<tr>
<td>Closer X New</td>
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<td>-0.090**</td>
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<td>Mean Baseline</td>
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<table>
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<th>B) Black complainants</th>
<th>Serious (1)</th>
<th>FPS (2)</th>
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<tbody>
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<td>Distance (mi.)</td>
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<td>-0.027**</td>
<td>(0.006)</td>
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<td>Mean Baseline</td>
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<td>1234</td>
<td>3382</td>
<td>1234</td>
</tr>
</tbody>
</table>

**Notes:** This Table presents the effect of distance on the probability of signed affidavit from January 2011 and July 2014 by complain types: FPS and Serious allegations. The group $Farther_{b} = 1[\Delta Distance_{b} \geq 4]$ is an indicator for beats that experienced the largest change in distance to the oversight agency, i.e. 4 miles or more (see Figure 4c). The group $Closer_{b} = 1[\Delta Distance_{b} < -4]$ is an indicator for beats with a decrease in distance of more than 4 miles (see Figure 4c). The variable $New_{t}$ equals one after the location change, and zero otherwise. Standard errors are clustered at the beat and quarter-year level and are reported in parentheses.*$p$-value $< 0.10$, **$p$-value $< 0.05$, ***$p$-value $< 0.01$. 
<table>
<thead>
<tr>
<th>Variables</th>
<th>Serious Allegations</th>
<th>Failure to Provide Service</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coeff (Std. Err)</td>
<td>AME</td>
</tr>
<tr>
<td>Observables</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distance (mi.)</td>
<td>-0.035 (0.036)</td>
<td>-0.008</td>
</tr>
<tr>
<td>Male</td>
<td>-0.231 (0.140)*</td>
<td>-0.054</td>
</tr>
<tr>
<td>Black</td>
<td>-0.648 (0.231)***</td>
<td>-0.151</td>
</tr>
<tr>
<td>Hispanic/Other</td>
<td>-0.219 (0.291)</td>
<td>-0.051</td>
</tr>
<tr>
<td>Unknown race</td>
<td>-2.716 (0.391)***</td>
<td>-0.635</td>
</tr>
<tr>
<td>30-39yo</td>
<td>0.252 (0.217)</td>
<td>0.059</td>
</tr>
<tr>
<td>40-49yo</td>
<td>0.640 (0.232)***</td>
<td>0.149</td>
</tr>
<tr>
<td>50-59yo</td>
<td>1.266 (0.252)***</td>
<td>0.296</td>
</tr>
<tr>
<td>60-74yo</td>
<td>1.006 (0.329)***</td>
<td>0.235</td>
</tr>
<tr>
<td>&gt;74yo/missing</td>
<td>-0.101 (0.276)</td>
<td>-0.024</td>
</tr>
<tr>
<td>Median age of the PO</td>
<td>0.026 (0.011)**</td>
<td>0.006</td>
</tr>
<tr>
<td>Any non PO</td>
<td>0.124 (0.159)</td>
<td>0.029</td>
</tr>
<tr>
<td>Any black PO</td>
<td>0.207 (0.227)</td>
<td>0.048</td>
</tr>
<tr>
<td>Any hispanic PO</td>
<td>-0.112 (0.182)</td>
<td>-0.026</td>
</tr>
<tr>
<td>Any white PO</td>
<td>0.003 (0.214)</td>
<td>0.001</td>
</tr>
<tr>
<td>Number of PO</td>
<td>0.109 (0.049)**</td>
<td>0.025</td>
</tr>
<tr>
<td>Public Location</td>
<td>-0.531 (0.269)**</td>
<td>-0.124</td>
</tr>
</tbody>
</table>

Unobserved Heterogeneity

<table>
<thead>
<tr>
<th></th>
<th>Coeff (Std. Err)</th>
<th>AME</th>
<th>Coeff (Std. Err)</th>
<th>AME</th>
</tr>
</thead>
<tbody>
<tr>
<td>κ₁</td>
<td>0.782 (0.341)**</td>
<td>---</td>
<td>0.782 (0.341)**</td>
<td>---</td>
</tr>
<tr>
<td>κ₂</td>
<td>0.694 (0.525)</td>
<td>---</td>
<td>0.694 (0.525)</td>
<td>---</td>
</tr>
<tr>
<td>Type 1: µ_D,k,jb</td>
<td>2.620 (0.799)***</td>
<td>---</td>
<td>0.826 (0.706)</td>
<td>---</td>
</tr>
<tr>
<td>Type 2: µ_D,k,jb</td>
<td>-2.421 (0.871)***</td>
<td>---</td>
<td>0.360 (0.720)</td>
<td>---</td>
</tr>
<tr>
<td>Type 3: µ_D,k,jb</td>
<td>-1.021 (1.013)</td>
<td>---</td>
<td>-1.253 (0.796)</td>
<td>---</td>
</tr>
</tbody>
</table>

N 4,303 1,986
llk -11845.118

Notes: This Table presents the set of estimates on the probability of signed affidavit. The sample considers complaint that were filed between January 2011 and July 2014, with non missing investigator, and only one investigator assigned. The parameter estimates are based on the specification depicted in equations 5 and 9 in the text. Civilian complaints are either failure to provide service or serious (use of force, verbal abuse, arrest, locked up procedures, and search). The specification controls for district and quarter fixed effects, but not reported. The probabilities for the points of support are given by \( \pi_g = \exp(\kappa_g)/(1+\exp(\kappa_1)+\exp(\kappa_2)) \) for \( g = \{1, 2\} \). For interpretation of the coefficients, I report the average marginal effect (AME). Standard errors are reported in parentheses.*p-value < 0.10, **p-value < 0.05, *** p-value < 0.01.
Table 5: Probability to sustain a complaint conditional on signing the affidavit parameter estimates

<table>
<thead>
<tr>
<th>Variables</th>
<th>Serious Allegations</th>
<th>Failure to Provide Service</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coeff (Std. Err)</td>
<td>AME</td>
</tr>
<tr>
<td>Observables</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Investigator Experience</td>
<td>-0.027 (0.019)</td>
<td>-0.006</td>
</tr>
<tr>
<td>log(duration of inv.)</td>
<td>2.846 (0.447)**</td>
<td>0.665</td>
</tr>
<tr>
<td>log(duration of inv.)^2/10</td>
<td>-3.976 (2.239)*</td>
<td>-0.929</td>
</tr>
<tr>
<td>log(duration of inv.)^3/100</td>
<td>-42.804 (15.642)**</td>
<td>-10.004</td>
</tr>
<tr>
<td>CPD Investigator</td>
<td>2.263 (0.547)**</td>
<td>0.529</td>
</tr>
<tr>
<td>Other Type of Investigator</td>
<td>1.779 (0.391)**</td>
<td>0.416</td>
</tr>
<tr>
<td>Male</td>
<td>0.381 (0.264)</td>
<td>0.089</td>
</tr>
<tr>
<td>Black</td>
<td>-3.201 (0.382)**</td>
<td>-0.748</td>
</tr>
<tr>
<td>Hispanic/Other</td>
<td>-1.239 (0.315)**</td>
<td>-0.29</td>
</tr>
<tr>
<td>Unknown race</td>
<td>-1.769 (1.328)</td>
<td>-0.413</td>
</tr>
<tr>
<td>Median age of the PO</td>
<td>0.040 (0.019)**</td>
<td>0.009</td>
</tr>
<tr>
<td>Any non PO</td>
<td>-0.277 (0.319)</td>
<td>-0.065</td>
</tr>
<tr>
<td>Any black PO</td>
<td>0.947 (0.469)**</td>
<td>0.221</td>
</tr>
<tr>
<td>Any hispanic PO</td>
<td>0.622 (0.432)</td>
<td>0.145</td>
</tr>
<tr>
<td>Any white PO</td>
<td>0.248 (0.420)</td>
<td>0.058</td>
</tr>
<tr>
<td>Number of PO</td>
<td>-0.512 (0.180)**</td>
<td>-0.12</td>
</tr>
<tr>
<td>Unobserved Heterogeneity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(\kappa_1)</td>
<td>0.782 (0.341)**</td>
<td>---</td>
</tr>
<tr>
<td>(\kappa_2)</td>
<td>0.694 (0.525)</td>
<td>---</td>
</tr>
<tr>
<td>Type 1: (\mu_{k, jb}^s)</td>
<td>-3.122 (1.142)**</td>
<td>---</td>
</tr>
<tr>
<td>Type 2: (\mu_{k, jb}^s)</td>
<td>-1.988 (1.932)</td>
<td>---</td>
</tr>
<tr>
<td>Type 3: (\mu_{k, jb}^s)</td>
<td>-2.639 (2.118)</td>
<td>---</td>
</tr>
<tr>
<td>N</td>
<td>2,123</td>
<td></td>
</tr>
<tr>
<td>Ilk</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: This Table presents the set of estimates on the probability that the investigator sustain the complaint Conditional on the complainant signed the affidavit. The sample considers complaint that were filed between January 2011 and July 2014, with non missing investigator, and only one investigator assigned. The parameter estimates are based on the specification depicted in equations 7 and 9 in the text. Civilian complaints are either failure to provide service or serious (use of force, verbal abuse, arrest, locked up procedures, and search). The specification controls for district and quarter fixed effects, but not reported. There are three types of investigator: police officer, investigator from the oversight agency (reference category), and other type of investigator (City of Chicago employees, FBI, ...).The probabilities for the points of support are given by \(\pi_g = \exp(\kappa_g)/(1 + \exp(\kappa_1) + \exp(\kappa_2))\) for \(g = \{1, 2\}\). For interpretation of the coefficients, I report the average marginal effect (AME). Standard errors are reported in parentheses.*p-value < 0.10, **p-value < 0.05, *** p-value < 0.01.
Table 6: Costs and benefits of signing the affidavit for the complainant

<table>
<thead>
<tr>
<th>Race</th>
<th>Serious WTP $</th>
<th>Time Hours</th>
<th>Sustained Rates</th>
<th>Failure to Provide Service WTP $</th>
<th>Time Min.</th>
<th>Sustained Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>68.6</td>
<td>3.9</td>
<td>2.7%</td>
<td>18.4</td>
<td>60</td>
<td>16.0%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>45.3</td>
<td>2.0</td>
<td>11.1%</td>
<td>11.5</td>
<td>30</td>
<td>36.9%</td>
</tr>
<tr>
<td>White</td>
<td>49.5</td>
<td>2.0</td>
<td>30.4%</td>
<td>15.5</td>
<td>36</td>
<td>46.5%</td>
</tr>
</tbody>
</table>

Notes: This table reports costs and benefits of signing the affidavit for the complainant: sustained rates, median willingness to pay (WTP) and time sacrificed to sign the affidavit by race of the complainant and type of complaints.
### Appendix

#### A Data Appendix

##### A.1 Sample Selection

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
<th>Number of observations</th>
<th>Number of complainants</th>
<th>Number of complaints</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Raw</td>
<td>48214</td>
<td>48214</td>
<td>47042</td>
</tr>
<tr>
<td>2</td>
<td>Keep if only one complainant</td>
<td>45956</td>
<td>45956</td>
<td>45956</td>
</tr>
<tr>
<td>3</td>
<td>Drop if missing location</td>
<td>43360</td>
<td>43360</td>
<td>43360</td>
</tr>
<tr>
<td>4</td>
<td>Keep if complaint/incident occurred after December 2010</td>
<td>18489</td>
<td>18489</td>
<td>18489</td>
</tr>
<tr>
<td>5</td>
<td>Keep if complaint/incident occurred before January 2015</td>
<td>16187</td>
<td>16187</td>
<td>16187</td>
</tr>
<tr>
<td>6</td>
<td>Keep if Investigated</td>
<td>9083</td>
<td>9083</td>
<td>9083</td>
</tr>
<tr>
<td>7</td>
<td>Keep if serious/FPS incident</td>
<td>7211</td>
<td>7211</td>
<td>7211</td>
</tr>
<tr>
<td>8</td>
<td>Sample if complaint/incident occurred before August 2014</td>
<td>6763</td>
<td>6763</td>
<td>6763</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
<th>Number of observations</th>
<th>Number of complainants</th>
<th>Number of complaints</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Data from the empirical analysis</td>
<td>6763</td>
<td>6763</td>
<td>6763</td>
</tr>
<tr>
<td>2</td>
<td>Keep if only one investigator</td>
<td>6760</td>
<td>6760</td>
<td>6760</td>
</tr>
<tr>
<td>3</td>
<td>Drop if missing investigator</td>
<td>6639</td>
<td>6639</td>
<td>6639</td>
</tr>
<tr>
<td>4</td>
<td>Drop if missing tenure of investigator</td>
<td>6296</td>
<td>6296</td>
<td>6296</td>
</tr>
<tr>
<td>5</td>
<td>Drop if missing investigation duration</td>
<td>6289</td>
<td>6289</td>
<td>6289</td>
</tr>
</tbody>
</table>
B Analysis of the Raw data

As complementary evidence to the analysis, this section studies the Raw data to understand the overall patterns behind officers’ internal (complaints made from within the police department) and external (complaints made by civilians) allegations of misconduct.

Table A.7 reports the annual frequency distribution of complaint outcomes for incidents that occurred between January 2011 and July 2014. Overall, about 5.8% of the complaints are sustained, and 5.7% of the complaints have an unknown outcome. About 67.4% of the complaints are not sustained because of administrative procedure (29.1% for missing affidavit and 38.3% for missing officer identifier). Hence, 21.6% of the complaints are not sustained after full investigation.

Table A.8 reports the frequency distribution of complaint categories by complainant race for incidents that occurred between January 2011 and July 2014. About 34.1% of the complaints are related to use of force, verbal abuse, arrest, locked up procedures, and search. Failure to provide service (FPS) and operation-personnel violation (OPV) respectively represent 14.3% and 9.39% of the complaints. The remaining complaints (42.2%) have unknown or miscellaneous categories. When the complaint category is known, Table A.8 suggests that Black and Hispanic civilians mainly complain about use of force and verbal abuse whereas white civilians mainly complain about failure to provide service.

I use a multinomial model to describe the risk factors associated with each observed outcome presented in observed outcome presented in Table A.7. This approach enables us to analyze the full sample where I consider both known outcomes (sustained, non-sustained, and missing affidavit) and unknown outcomes (unknown officer and unknown outcome). To conduct the analysis, I estimate a multinomial logit where I use the “not sustained” outcome as a reference category. For individual \( i \) in police district \( d \) during year \( t \), the probability that outcome \( y_{idt,j} \) occurs among alternative \( j \in \{ \text{sustained, non-sustained, no affidavit, unknown officer, unknown outcome} \} \) is

\[
P(y_{idt,j}|X) = \frac{\exp(X'_{idt,j}\beta_j)}{\sum_h \exp(X'_{idt,h}\beta_h)}
\]  

(23)
where the vector $X_{idt,h}$ is a set of characteristics for individual $i$ in police district $d$ during year $t$, who experienced outcome $j$. Table A.13 displays the relative risk ratios from equation 23. Overall, complaints attached to incidents that occur farther away from the oversight agency have a higher likelihood of missing affidavit or unknown officer. Male complainants are more likely to sign the affidavit (not statistically significant) and to have their complaint sustained. White and Hispanic complainants are about 7.3 and 4 times more likely, respectively, to have a sustained complaint compared to Black complainants. Overall, older complainants are more likely to sign the affidavit, know the officer’s identity, and have a sustained complaint. Beats with higher hourly wage are more likely to have a signed affidavit. Incidents that occurred in a police beat with a larger Black population are significantly more likely to have an unidentified officer.
B.1 Complaints classification
Table A.3: Allegation categories

<table>
<thead>
<tr>
<th>Classification</th>
<th>Allegation name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.Use of Force/Verbal Abuse (Civilian Complaints)</td>
<td>01A-USE OF PROFANITY</td>
</tr>
<tr>
<td></td>
<td>01B-RACIAL/ETHNIC, ETC.</td>
</tr>
<tr>
<td></td>
<td>01C-MISCELLANEOUS</td>
</tr>
<tr>
<td></td>
<td>03E-INJURY/DEATH (UNDER COLOR OF LAW)</td>
</tr>
<tr>
<td></td>
<td>04H-PROPER CARE, INJURY/DEATH</td>
</tr>
<tr>
<td></td>
<td>05A-ARRESTEE - DURING ARREST</td>
</tr>
<tr>
<td></td>
<td>05B-ARRESTEE - AFTER ARREST, PRIOR TO LOCKUP</td>
</tr>
<tr>
<td></td>
<td>05C-ARRESTEE - LOCKUP/DETENTION</td>
</tr>
<tr>
<td></td>
<td>05D-NO ARREST</td>
</tr>
<tr>
<td></td>
<td>05E-TRAFFIC</td>
</tr>
<tr>
<td></td>
<td>05F-DOMESTIC</td>
</tr>
<tr>
<td></td>
<td>05G-WEAPON, USE/DISPLAY OF</td>
</tr>
<tr>
<td></td>
<td>05H-MISCELLANEOUS</td>
</tr>
<tr>
<td></td>
<td>05J.&quot;&quot;&quot;U&quot;&quot;&quot;&quot; CONVERTED TO C.R. (RECORDS KEEPING ONLY, INITIAL)</td>
</tr>
<tr>
<td></td>
<td>05K-DOMESTIC ALTERCATION/INCIDENT - OFF DUTY</td>
</tr>
<tr>
<td></td>
<td>05L-UNNECESSARY PHYSICAL CONTACT - ON DUTY</td>
</tr>
<tr>
<td></td>
<td>05M-UNNECESSARY PHYSICAL CONTACT - OFF DUTY</td>
</tr>
<tr>
<td></td>
<td>05N-WEAPON - UNNECESSARY DISPLAY OF</td>
</tr>
<tr>
<td></td>
<td>05P-EXCESSIVE FORCE - OFF DUTY (INCLUDES NEIGHBOR, TRAFFIC, TAV)</td>
</tr>
<tr>
<td></td>
<td>05Q-CIVIL SUIT - THIRD PARTY</td>
</tr>
<tr>
<td></td>
<td>05T-EXCESSIVE FORCE - Taser - USE OF</td>
</tr>
<tr>
<td>2.Arrest/Locked up (Civilian Complaints)</td>
<td>04E-PRISONER'S PROPERTY - INVENTORY/RECEIPT</td>
</tr>
<tr>
<td></td>
<td>04B-ARREST/IMPROPER</td>
</tr>
<tr>
<td></td>
<td>04A-BONDING/BOOKING/PROCESSING</td>
</tr>
<tr>
<td></td>
<td>04D-SEARCH, PERSON/PROPERTY</td>
</tr>
<tr>
<td></td>
<td>04F-ESCAPE</td>
</tr>
<tr>
<td></td>
<td>04J-MISCELLANEOUS</td>
</tr>
<tr>
<td></td>
<td>04G-TELEPHONE - ATTORNEY/RELATIVE PRIVILEGES</td>
</tr>
<tr>
<td></td>
<td>04C-EXCESSIVE DETENTION</td>
</tr>
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<td>3.Search (Civilian Complaints)</td>
<td>03A-FIRST AMENDMENT</td>
</tr>
<tr>
<td></td>
<td>03B-SEARCH OF PERSON WITHOUT WARRANT</td>
</tr>
<tr>
<td></td>
<td>03C-SEARCH OF PREMISE/VEHICLE WITHOUT WARRANT</td>
</tr>
<tr>
<td></td>
<td>03D-ILLEGAL ARREST</td>
</tr>
<tr>
<td></td>
<td>03F-FAILURE TO INSURE</td>
</tr>
<tr>
<td></td>
<td>03G-MISCELLANEOUS</td>
</tr>
<tr>
<td></td>
<td>03P-RACIAL PROFILING (ADVOCATE USE ON CLOSING ONLY)</td>
</tr>
<tr>
<td>4.Failure to Provide Service (Civilian Complaints)</td>
<td>10J-NEGLECT OF DUTY/CONDUCT UNBECOMING - ON DUTY</td>
</tr>
<tr>
<td></td>
<td>10U-INADEQUATE/Failure to Provide Service</td>
</tr>
<tr>
<td>Classification</td>
<td>Allegation name</td>
</tr>
<tr>
<td>----------------------</td>
<td>---------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>5. Operation and</td>
<td>07A-MISCONDUCT DURING ISSUANCE OF CITATION</td>
</tr>
<tr>
<td>Personnel Violations</td>
<td>07B-IMPROPER PROCESSING/REPORTING/PROCEDURES</td>
</tr>
<tr>
<td></td>
<td>07C-VIOLATION (OTHER THAN D.U.I.) - ON DUTY</td>
</tr>
<tr>
<td></td>
<td>07D-PARKING COMPLAINTS</td>
</tr>
<tr>
<td></td>
<td>07E-FAIL TO ENFORCE TRAFFIC REGULATIONS</td>
</tr>
<tr>
<td></td>
<td>07F-MISCELLANEOUS</td>
</tr>
<tr>
<td></td>
<td>07T-PREVENTable TRAFFIC ACCIDENT</td>
</tr>
<tr>
<td>10A-ABSENT WITHOUT PERMISSION</td>
<td></td>
</tr>
<tr>
<td>10B-MEDICAL ROLL</td>
<td></td>
</tr>
<tr>
<td>10C-COMPENSATORY TIME</td>
<td></td>
</tr>
<tr>
<td>10D-COMMUNICATION OPERATIONS PROCEDURES</td>
<td></td>
</tr>
<tr>
<td>10E-SECONDARY/SPECIAL EMPLOYMENT</td>
<td></td>
</tr>
<tr>
<td>10F-COURT IRREGULARITIES</td>
<td></td>
</tr>
<tr>
<td>10G-UNFIT FOR DUTY</td>
<td></td>
</tr>
<tr>
<td>10H-LEAVING ASSIGNMENT (DISTRICT, BEAT, SECTOR, COURT)</td>
<td></td>
</tr>
<tr>
<td>10K-LATE - ROLL CALL/ASSIGNMENT/COURT</td>
<td></td>
</tr>
<tr>
<td>10L-WEAPON/AMMUNITION/UNIFORM DEVIATION</td>
<td></td>
</tr>
<tr>
<td>10M-INSUBORDINATION</td>
<td></td>
</tr>
<tr>
<td>10N-LUNCH/PERSONAL VIOLATIONS</td>
<td></td>
</tr>
<tr>
<td>10P-MISUSE OF DEPARTMENT EQUIPMENT/SUPPLIES</td>
<td></td>
</tr>
<tr>
<td>10Q-MISUSE DEPARTMENT RECORDS</td>
<td></td>
</tr>
<tr>
<td>10R-RESIDENCY</td>
<td></td>
</tr>
<tr>
<td>10S-SEXUAL HARASSMENT</td>
<td></td>
</tr>
<tr>
<td>10T-REPORTS - FAILED TO SUBMIT/IMPROPER</td>
<td></td>
</tr>
<tr>
<td>10V-INVENTORY PROCEDURES</td>
<td></td>
</tr>
<tr>
<td>10W-VEHICLE LICENSING - CITY</td>
<td></td>
</tr>
<tr>
<td>10X-VEHICLE LICENSING - STATE</td>
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</tr>
<tr>
<td>10Y-ACT TO CIRCUMVENT PROPER ADMINISTRATIVE ACTION</td>
<td></td>
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<tr>
<td>10Z-MISCELLANEOUS</td>
<td></td>
</tr>
<tr>
<td>12A-PROPER ACTION, INITIATE</td>
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<tr>
<td>12B-PROPER DIRECTION - SUBORDINATE</td>
<td></td>
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<tr>
<td>12C-PROPER ACTION REVIEW/INSPECT - SUBORDINATE</td>
<td></td>
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<tr>
<td>12D-FAIL TO OBTAIN A COMPLAINT REGISTER NUMBER</td>
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<tr>
<td>12E-IMPROPER/INADEQUATE INVESTIGATION</td>
<td></td>
</tr>
<tr>
<td>12F-MISCELLANEOUS</td>
<td></td>
</tr>
<tr>
<td>Classification</td>
<td>Allegation name</td>
</tr>
<tr>
<td>---------------</td>
<td>--------------------------------------------</td>
</tr>
<tr>
<td>6.Others</td>
<td>02A-INTOXICATED ON DUTY</td>
</tr>
<tr>
<td></td>
<td>02B-INTOXICATED OFF DUTY</td>
</tr>
<tr>
<td></td>
<td>02C-D.U.I. - ON DUTY</td>
</tr>
<tr>
<td></td>
<td>02D-D.U.I. - OFF DUTY</td>
</tr>
<tr>
<td></td>
<td>02E-POSSESSION/DRINKING ALCOHOL - ON DUTY</td>
</tr>
<tr>
<td></td>
<td>02G-MISCELLANEOUS</td>
</tr>
<tr>
<td></td>
<td>06A-SOLICIT/ACCEPT BRIBE (NON-TRAFFIC)</td>
</tr>
<tr>
<td></td>
<td>06B-SOLICIT/ACCEPT BRIBE (TRAFFIC)</td>
</tr>
<tr>
<td></td>
<td>06C-EXTORTION</td>
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<td></td>
<td>06D-BRIBE, FAILURE TO REPORT</td>
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<td></td>
<td>06E-GRATUITY</td>
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<td></td>
<td>06F-RECOMMEND PROFESSIONAL SERVICE</td>
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<td></td>
<td>06G-USE OFFICIAL POSITION</td>
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<tr>
<td></td>
<td>06H-AN ACT TO CIRCUMVENT CRIMINAL PROSECUTION</td>
</tr>
<tr>
<td></td>
<td>06J-MISCELLANEOUS</td>
</tr>
<tr>
<td></td>
<td>08A-MURDER/MANSLAUGHTER, ETC.</td>
</tr>
<tr>
<td></td>
<td>08B-ASSAULT/BATTERY, ETC.</td>
</tr>
<tr>
<td></td>
<td>08C-RAPE/SEX OFFENSES</td>
</tr>
<tr>
<td></td>
<td>08D-BURGLARY</td>
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<tr>
<td></td>
<td>08E-AUTO THEFT</td>
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<td></td>
<td>08F-THEFT</td>
</tr>
<tr>
<td></td>
<td>08G-SHOPLIFTING</td>
</tr>
<tr>
<td></td>
<td>08H-ROBBERY</td>
</tr>
<tr>
<td></td>
<td>08J-DRUGS/CONTR. SUB., POSSESSION OR SALE</td>
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<tr>
<td></td>
<td>08K-DAMAGE/TRESPASSING PROPERTY</td>
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<tr>
<td></td>
<td>08L-ARSON</td>
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<td></td>
<td>08M-OTHER FELONY</td>
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<td></td>
<td>08N-MISCELLANEOUS</td>
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<tr>
<td></td>
<td>08P-POLICE IMPERSONATOR - ADV SECTION USE ON CLOSING ONLY</td>
</tr>
<tr>
<td>Classification</td>
<td>Allegation name</td>
</tr>
<tr>
<td>----------------</td>
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<td>6.Others</td>
<td>09A-ALTERCATION/DISTURBANCE - DOMESTIC</td>
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<td></td>
<td>09B-ALTERCATION/DISTURBANCE - NEIGHBOR</td>
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<td>09C-ALTERCATION/DISTURBANCE - TRAFFIC</td>
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<td></td>
<td>09D-TRAFFIC VIOLATION (OTHER THAN D.U.I.)</td>
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<td></td>
<td>09E-MISDEMEANOR ARREST</td>
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<td></td>
<td>09F-SEXUAL MISCONDUCT</td>
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<td></td>
<td>09G-ABUSE OF AUTHORITY</td>
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<tr>
<td></td>
<td>09H-JUDICIAL PROCESS/DIRECTIVE - CONTEMPT</td>
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<tr>
<td></td>
<td>09J-MISCELLANEOUS</td>
</tr>
<tr>
<td></td>
<td>09K-INDEBTEDNESS TO CITY</td>
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<td></td>
<td>09L-DRIVER’S LICENSE REVOKED/SUSPENDED</td>
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<td></td>
<td>11A-FORWARDED TO O.E.C.</td>
</tr>
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<td></td>
<td>14A-STATE CIVIL SUIT</td>
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<td></td>
<td>14B-FEDERAL CIVIL SUIT</td>
</tr>
<tr>
<td></td>
<td>15A-USE/ABUSE DRUGS/CONTR. SUBSTANCE - ON DUTY</td>
</tr>
<tr>
<td></td>
<td>15B-USE/ABUSE DRUGS/CONTR. SUBSTANCE - OFF DUTY</td>
</tr>
<tr>
<td></td>
<td>15C-D.U.I., DRUGS/ CONTR. SUB. - ON DUTY</td>
</tr>
<tr>
<td></td>
<td>15D-D.U.I., DRUGS/ CONTR. SUB. - OFF DUTY</td>
</tr>
<tr>
<td></td>
<td>15E-POSITIVE DRUG SCREEN - ORIGINATED FROM COMPLAINT</td>
</tr>
<tr>
<td></td>
<td>15H-POSITIVE DRUG SCREEN - OTHER PHYSICAL EXAM</td>
</tr>
<tr>
<td></td>
<td>15J-REFUSAL OF DIRECT ORDER TO PROVIDE DRUG SCREEN SPECIMEN</td>
</tr>
<tr>
<td></td>
<td>15K-MISCELLANEOUS</td>
</tr>
<tr>
<td></td>
<td>NA</td>
</tr>
</tbody>
</table>
C Additional Tables and Figures
Figure A.1: Effect of distance on the probability of signed affidavit

(a) All

(b) Serious

(c) Failure to provide service

Notes: The figure shows regression coefficients and associated confidence intervals for the difference between treatment (i.e. Farther) and comparison groups in a given quarter-year relative to the oversight agency’s location change. I used an alternative beat map (See Rivera and Ba [2018]). I report the treatment effects (and standard errors in parenthesis) for the year 2012 for both the whole sample and the sample restricting to black complainants. I report the mean of the dependant variable pre-location change. The dashed vertical lines denote 95% confidence intervals based on standard errors are clustered at the beat year-quarter level.
Table A.7: Complaint outcomes

<table>
<thead>
<tr>
<th></th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Freq.</td>
<td>%</td>
<td>Freq.</td>
<td>%</td>
<td>Freq.</td>
</tr>
<tr>
<td>Unknown Officer</td>
<td>1584</td>
<td>36.0</td>
<td>1774</td>
<td>41.0</td>
<td>1544</td>
</tr>
<tr>
<td>Unknown Outcome</td>
<td>136</td>
<td>3.1</td>
<td>265</td>
<td>6.1</td>
<td>267</td>
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<tr>
<td>No Affidavit</td>
<td>1284</td>
<td>29.2</td>
<td>1186</td>
<td>27.4</td>
<td>1177</td>
</tr>
<tr>
<td>Not Sustained</td>
<td>1164</td>
<td>26.5</td>
<td>896</td>
<td>20.7</td>
<td>810</td>
</tr>
<tr>
<td>Sustained</td>
<td>228</td>
<td>5.2</td>
<td>205</td>
<td>4.7</td>
<td>308</td>
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<tr>
<td>Total</td>
<td>4396</td>
<td></td>
<td>4326</td>
<td></td>
<td>4106</td>
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Table A.8: Complaint categories by complainant’s race

<table>
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<tr>
<th>Complainant’s Race</th>
<th>Black</th>
<th>Hispanic</th>
<th>White</th>
<th>Unknown</th>
<th>Total</th>
</tr>
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<tr>
<td>Unknown</td>
<td>3767</td>
<td>731</td>
<td>1056</td>
<td>200</td>
<td>5754</td>
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<tr>
<td>Use of Force/Verbal Abuse</td>
<td>1707</td>
<td>364</td>
<td>380</td>
<td>127</td>
<td>2578</td>
</tr>
<tr>
<td>Arrest/Locked up Procedure</td>
<td>359</td>
<td>66</td>
<td>94</td>
<td>16</td>
<td>535</td>
</tr>
<tr>
<td>Search</td>
<td>1530</td>
<td>178</td>
<td>165</td>
<td>141</td>
<td>2014</td>
</tr>
<tr>
<td>Failure to Provide Service</td>
<td>1320</td>
<td>277</td>
<td>476</td>
<td>77</td>
<td>2150</td>
</tr>
<tr>
<td>Operation/Personnel Violations</td>
<td>697</td>
<td>190</td>
<td>478</td>
<td>47</td>
<td>1412</td>
</tr>
<tr>
<td>Others</td>
<td>234</td>
<td>63</td>
<td>274</td>
<td>25</td>
<td>596</td>
</tr>
<tr>
<td>Total</td>
<td>9614</td>
<td>1869</td>
<td>2923</td>
<td>633</td>
<td>15039</td>
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</tbody>
</table>
Table A.9: Effect of distance and traveling times on the probability of signed affidavit

<table>
<thead>
<tr>
<th></th>
<th>Mean Signed</th>
<th>Baseline</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
<th>(7)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A) All complainants</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Driving distance (mi.)</td>
<td>0.508</td>
<td>-0.002</td>
<td>-0.007**</td>
<td>-0.007**</td>
<td>(0.002)</td>
<td>(0.003)</td>
<td>(0.003)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Car (min.)</td>
<td>0.508</td>
<td></td>
<td>-0.006***</td>
<td>-0.005**</td>
<td>(0.002)</td>
<td>(0.002)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transit (min.)</td>
<td>0.508</td>
<td></td>
<td>-0.001*</td>
<td>-0.001*</td>
<td>(0.001)</td>
<td>(0.001)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No of obs.</td>
<td>6763</td>
<td>6763</td>
<td>6763</td>
<td>6763</td>
<td>6763</td>
<td>6763</td>
<td>6763</td>
<td>6763</td>
<td>6763</td>
</tr>
<tr>
<td><strong>B) Black complainants</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Driving distance (mi.)</td>
<td>0.490</td>
<td>-0.001</td>
<td>-0.008**</td>
<td>-0.007*</td>
<td>(0.002)</td>
<td>(0.004)</td>
<td>(0.004)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Car (min.)</td>
<td>0.490</td>
<td></td>
<td>-0.006**</td>
<td>-0.006**</td>
<td>(0.003)</td>
<td>(0.003)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transit (min.)</td>
<td>0.490</td>
<td></td>
<td>-0.001</td>
<td>-0.001</td>
<td>(0.001)</td>
<td>(0.001)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No of obs.</td>
<td>6763</td>
<td>4616</td>
<td>4616</td>
<td>4616</td>
<td>4616</td>
<td>4616</td>
<td>4616</td>
<td>4616</td>
<td>4616</td>
</tr>
<tr>
<td>Year-Quarter FE</td>
<td>–</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Beat FE</td>
<td>–</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Controls</td>
<td>–</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Notes: This Table presents the effect of driving distance (miles) and traveling time by car (minutes) and public transit (minutes) on the probability of signed affidavit from January 2011 and July 2014 by complain types: FPS and Serious allegations. Standard errors are clustered at the beat and quarter-year level are reported in parentheses. *p-value < 0.10, **p-value < 0.05, ***p-value < 0.01.
Table A.10: Effect of distance and traveling times on the probability of signed affidavit by complaints type

<table>
<thead>
<tr>
<th></th>
<th>Serious (1)</th>
<th>FPS (2)</th>
<th>Serious (3)</th>
<th>FPS (4)</th>
<th>Serious (5)</th>
<th>FPS (6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A) All complainants</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distance (mi.)</td>
<td>-0.010**</td>
<td>-0.013*</td>
<td>(0.005)</td>
<td>(0.007)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Farther X New</td>
<td>-0.089***</td>
<td>-0.066</td>
<td>(0.034)</td>
<td>(0.055)</td>
<td>-0.090**</td>
<td>-0.072</td>
</tr>
<tr>
<td>Closer X New</td>
<td>-0.004</td>
<td>-0.021</td>
<td>(0.046)</td>
<td>(0.073)</td>
<td></td>
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</tr>
<tr>
<td>Mean Baseline</td>
<td>0.583</td>
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<td>0.583</td>
<td>0.326</td>
<td>0.583</td>
<td>0.326</td>
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<td>No of obs.</td>
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<td>1993</td>
<td>4770</td>
<td>1993</td>
<td>4770</td>
<td>1993</td>
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<tr>
<td>B) Black complainants</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distance (mi.)</td>
<td>-0.007</td>
<td>-0.027**</td>
<td>(0.006)</td>
<td>(0.011)</td>
<td></td>
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</tr>
<tr>
<td>Farther X New</td>
<td>-0.079*</td>
<td>-0.131*</td>
<td>(0.042)</td>
<td>(0.074)</td>
<td>-0.071</td>
<td>-0.158**</td>
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<tr>
<td>Closer X New</td>
<td>0.074</td>
<td>-0.301*</td>
<td>(0.078)</td>
<td>(0.175)</td>
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<tr>
<td>Mean Baseline</td>
<td>0.570</td>
<td>0.280</td>
<td>0.570</td>
<td>0.280</td>
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<td>No of obs.</td>
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<td>1234</td>
<td>3382</td>
<td>1234</td>
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<td>1234</td>
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</tbody>
</table>

Notes: This Table presents the effect of driving distance (miles) and traveling time by car (minutes) and public transit (minutes) on the probability of signed affidavit from January 2011 and July 2014 by complain types: FPS and Serious allegations. Standard errors are clustered at the beat and quarter-year level are reported in parentheses. *p-value < 0.10, **p-value < 0.05, *** p-value < 0.01.
Table A.11: Effect of distance on the probability of signed affidavit

| Mean Signed |  |  |  |  |  |  |  |  |
|-------------|---|---|---|---|---|---|---|
|        | Baseline | (1) | (2) | (3) | (4) | (5) | (6) |

A) All complainants

<table>
<thead>
<tr>
<th>Distance (mi.)</th>
<th>0.508</th>
<th>-0.003</th>
<th>-0.011***</th>
<th>-0.010***</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>(0.002)</td>
<td>(0.004)</td>
<td>(0.004)</td>
</tr>
<tr>
<td>Farther X New</td>
<td>0.508</td>
<td>0.085***</td>
<td>-0.080***</td>
<td>-0.089***</td>
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<tr>
<td></td>
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<td>(0.028)</td>
<td>(0.028)</td>
<td>(0.030)</td>
</tr>
<tr>
<td>Closer X New</td>
<td>0.508</td>
<td>0.021</td>
<td>-0.014</td>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(0.034)</td>
<td>(0.038)</td>
</tr>
<tr>
<td>No of obs.</td>
<td>6763</td>
<td>6763</td>
<td>6763</td>
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</tr>
</tbody>
</table>

B) Black complainants

<table>
<thead>
<tr>
<th>Distance (mi.)</th>
<th>0.490</th>
<th>-0.002</th>
<th>-0.013***</th>
<th>-0.012**</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td>(0.003)</td>
<td>(0.005)</td>
<td>(0.005)</td>
</tr>
<tr>
<td>Farther X New</td>
<td>0.490</td>
<td>-0.100***</td>
<td>-0.094***</td>
<td>-0.094***</td>
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<tr>
<td></td>
<td></td>
<td>(0.033)</td>
<td>(0.034)</td>
<td>(0.034)</td>
</tr>
<tr>
<td>Closer X New</td>
<td>0.490</td>
<td>0.053</td>
<td>0.049</td>
<td>0.065</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>(0.063)</td>
<td>(0.065)</td>
</tr>
<tr>
<td>No of obs.</td>
<td>6763</td>
<td>4616</td>
<td>4616</td>
<td>4616</td>
</tr>
</tbody>
</table>

Year-Quarter FE – Yes Yes Yes Yes Yes Yes Yes

Beat FE – No Yes Yes Yes Yes Yes Yes

Controls – No No Yes No Yes No Yes

Notes: This Table presents the effect of distance on the probability of signed affidavit from January 2011 and July 2014. I report the marginal effects from a logit specification. The group \( \text{Farther}_b = 1[\Delta \text{Distance}_b \geq 4] \) is an indicator for beats that experienced the largest change in distance to the oversight agency, i.e. 4 miles or more (see Figure 4c). The group \( \text{Closer}_b = 1[\Delta \text{Distance}_b < -4] \) is an indicator for beats with a decrease in distance of more than 4 miles (see Figure 4c). The variable \( \text{New}_t \) equals one after the location change, and zero otherwise. Standard errors are clustered at the beat and quarter-year level are reported in parentheses.*p-value < 0.10, **p-value < 0.05, *** p-value < 0.01.
Table A.12: Effect of distance on the probability of signed affidavit by complaints type

<table>
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<tr>
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<th>Serious FPS</th>
<th>Serious FPS</th>
<th>Serious FPS</th>
<th>Serious FPS</th>
<th>Serious FPS</th>
<th>Serious FPS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
<td>(6)</td>
</tr>
<tr>
<td>A) All complainants</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distance (mi.)</td>
<td>-0.009**</td>
<td>-0.014**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.005)</td>
<td>(0.007)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Farther X New</td>
<td>-0.086***</td>
<td>-0.074</td>
<td>-0.087**</td>
<td>-0.084</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.033)</td>
<td>(0.054)</td>
<td>(0.034)</td>
<td>(0.061)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Closer X New</td>
<td>-0.006</td>
<td>-0.037</td>
<td>-0.006</td>
<td>-0.037</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.046)</td>
<td>(0.070)</td>
<td>(0.046)</td>
<td>(0.070)</td>
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<td></td>
</tr>
<tr>
<td>Mean Baseline</td>
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<td>0.326</td>
<td>0.583</td>
<td>0.326</td>
<td>0.583</td>
<td>0.326</td>
</tr>
<tr>
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<td>1993</td>
<td>4770</td>
<td>1993</td>
<td>4770</td>
<td>1993</td>
</tr>
<tr>
<td>B) Black complainants</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distance (mi.)</td>
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<td>-0.031**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.006)</td>
<td>(0.012)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Farther X New</td>
<td>-0.077*</td>
<td>-0.143*</td>
<td>-0.069*</td>
<td>-0.174**</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.040)</td>
<td>(0.074)</td>
<td>(0.042)</td>
<td>(0.077)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Closer X New</td>
<td>0.074</td>
<td>-0.292*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.078)</td>
<td>(0.155)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean Baseline</td>
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<td>0.280</td>
<td>0.570</td>
<td>0.280</td>
<td>0.570</td>
<td>0.280</td>
</tr>
<tr>
<td>No of obs.</td>
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<td>3382</td>
<td>1234</td>
<td>3382</td>
<td>1234</td>
</tr>
<tr>
<td>Year-Quarter FE</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Beat FE</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Controls</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: This Table presents the effect of distance on the probability of signed affidavit from January 2011 and July 2014 by complain types: FPS and Serious allegations. I report the marginal effects from a logit specification. The group $Farther_b = 1[\Delta Distance_b \geq 4]$ is an indicator for beats that experienced the largest change in distance to the oversight agency, i.e. 4 miles or more (see Figure 4c). The group $Closer_b = 1[\Delta Distance_b < -4]$ is an indicator for beats with a decrease in distance of more than 4 miles (see Figure 4c). The variable $New_t$ equals one after the location change, and zero otherwise. Standard errors are clustered at the beat and quarter-year level are reported in parentheses. *p-value < 0.10, **p-value < 0.05, *** p-value < 0.01.
Notes: This figure depicts police beats and districts from the Chicago Police Department. All the events in the analysis are geocoded according to that map in order to make events spatially comparable with each other maps across time. I do not include beats that are located outside of Chicago. Beats that do not have any residents, according to the 2010-2014 ACS data, are removed from the sample.
Table A.13: Risk factors associated with complaints’ outcome from January 2011 and July 2014

<table>
<thead>
<tr>
<th></th>
<th>Unknown Officer</th>
<th>Unknown Outcome</th>
<th>No Affidavit</th>
<th>Sustained</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distance (mi.)</td>
<td>1.025*</td>
<td>1.015</td>
<td>1.041***</td>
<td>1.044</td>
</tr>
<tr>
<td></td>
<td>(0.011)</td>
<td>(0.023)</td>
<td>(0.013)</td>
<td>(0.025)</td>
</tr>
<tr>
<td>Hourly wage</td>
<td>0.994</td>
<td>1.011</td>
<td>0.986*</td>
<td>0.995</td>
</tr>
<tr>
<td></td>
<td>(0.005)</td>
<td>(0.009)</td>
<td>(0.006)</td>
<td>(0.012)</td>
</tr>
<tr>
<td>Male complainant</td>
<td>0.985</td>
<td>0.962</td>
<td>0.943</td>
<td>1.252*</td>
</tr>
<tr>
<td></td>
<td>(0.037)</td>
<td>(0.091)</td>
<td>(0.042)</td>
<td>(0.131)</td>
</tr>
<tr>
<td>30-39yo</td>
<td>0.791***</td>
<td>0.724*</td>
<td>0.868</td>
<td>1.965*</td>
</tr>
<tr>
<td></td>
<td>(0.055)</td>
<td>(0.109)</td>
<td>(0.067)</td>
<td>(0.646)</td>
</tr>
<tr>
<td>40-49yo</td>
<td>0.688***</td>
<td>0.792</td>
<td>0.756***</td>
<td>5.583***</td>
</tr>
<tr>
<td></td>
<td>(0.059)</td>
<td>(0.113)</td>
<td>(0.055)</td>
<td>(1.649)</td>
</tr>
<tr>
<td>50-59yo</td>
<td>0.703***</td>
<td>0.853</td>
<td>0.627***</td>
<td>8.406***</td>
</tr>
<tr>
<td></td>
<td>(0.053)</td>
<td>(0.121)</td>
<td>(0.051)</td>
<td>(2.592)</td>
</tr>
<tr>
<td>60-74yo</td>
<td>0.689***</td>
<td>0.753</td>
<td>0.729**</td>
<td>5.892***</td>
</tr>
<tr>
<td></td>
<td>(0.058)</td>
<td>(0.125)</td>
<td>(0.077)</td>
<td>(1.863)</td>
</tr>
<tr>
<td>+74yo or missing</td>
<td>0.907</td>
<td>1.080</td>
<td>1.015</td>
<td>3.186***</td>
</tr>
<tr>
<td></td>
<td>(0.079)</td>
<td>(0.159)</td>
<td>(0.086)</td>
<td>(1.092)</td>
</tr>
<tr>
<td>White</td>
<td>1.317***</td>
<td>2.174***</td>
<td>0.983</td>
<td>7.336***</td>
</tr>
<tr>
<td></td>
<td>(0.097)</td>
<td>(0.278)</td>
<td>(0.094)</td>
<td>(1.539)</td>
</tr>
<tr>
<td>Hispanic/Other</td>
<td>1.091</td>
<td>1.540**</td>
<td>0.903</td>
<td>3.971***</td>
</tr>
<tr>
<td></td>
<td>(0.079)</td>
<td>(0.219)</td>
<td>(0.077)</td>
<td>(0.866)</td>
</tr>
<tr>
<td>Unknown race</td>
<td>1.140</td>
<td>2.092***</td>
<td>1.935***</td>
<td>1.732</td>
</tr>
<tr>
<td></td>
<td>(0.185)</td>
<td>(0.402)</td>
<td>(0.258)</td>
<td>(0.560)</td>
</tr>
<tr>
<td>Share of Black</td>
<td>1.863**</td>
<td>1.818*</td>
<td>1.037</td>
<td>1.325</td>
</tr>
<tr>
<td></td>
<td>(0.363)</td>
<td>(0.547)</td>
<td>(0.225)</td>
<td>(0.549)</td>
</tr>
<tr>
<td>Share of Hispanic</td>
<td>1.556</td>
<td>1.274</td>
<td>1.215</td>
<td>0.766</td>
</tr>
<tr>
<td></td>
<td>(0.368)</td>
<td>(0.383)</td>
<td>(0.326)</td>
<td>(0.342)</td>
</tr>
</tbody>
</table>

Notes: This Table presents the risk factors associated with complaints’ outcome from January 2011 and July 2014. The Table presents the relative risk ratios by running a multinomial logistic regression. Non-sustained outcome is the reference category. The specification controls for incident location, district fixed effects, and quarter fixed effects, but not reported. Standard errors are clustered at the police district and community area level are reported in parentheses. *p-value < 0.10, **p-value < 0.05, *** p-value < 0.01.
### Table A.14: Complaint outcomes by complainant’s race

| Race          | Serious $Pr(Signed)$ | Serious $Pr(\text{Sustained}|\text{Signed})$ | Failure to Provide Service $Pr(Signed)$ | Failure to Provide Service $Pr(\text{Sustained}|\text{Signed})$ |
|---------------|----------------------|-----------------------------------------------|----------------------------------------|-----------------------------------------------|
| All           | 49.3%                | 7.5%                                          | 31.1%                                  | 29.3%                                          |
| N             | 4303                 | 2123                                          | 1986                                   | 618                                           |
| Black         | 48.8%                | 2.7%                                          | 24.9%                                  | 16.0%                                          |
| N             | 3081                 | 1505                                          | 1231                                   | 307                                           |
| Hispanic      | 55.1%                | 11.1%                                         | 34.4%                                  | 36.9%                                          |
| N             | 508                  | 280                                           | 244                                    | 84                                            |
| White         | 57.4%                | 30.4%                                         | 48.3%                                  | 46.5%                                          |
| N             | 493                  | 283                                           | 441                                    | 213                                           |
| Unknown race  | 24.9%                | 5.5%                                          | 20.0%                                  | 14.3%                                          |
| N             | 221                  | 55                                            | 70                                     | 14                                            |

Notes: This table reports the probability to sign the affidavit and the probability that the complaint is sustained given that the affidavit is signed. The sample considers complaint that were filed between January 2011 and July 2014, with non missing investigator, and only one investigator assigned. Civilian complaints are either failure to provide service or serious (use of force, verbal abuse, arrest, locked up procedures, and search).

### Table A.15: Wage per hour

<table>
<thead>
<tr>
<th>Race</th>
<th>N</th>
<th>Mean ($)</th>
<th>Std. Dev</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>6,289</td>
<td>19.6</td>
<td>9.2</td>
</tr>
<tr>
<td>Black</td>
<td>4,312</td>
<td>17.7</td>
<td>8.1</td>
</tr>
<tr>
<td>Hispanic</td>
<td>752</td>
<td>22.4</td>
<td>8.4</td>
</tr>
<tr>
<td>White</td>
<td>934</td>
<td>25.6</td>
<td>10.6</td>
</tr>
<tr>
<td>Unknown race</td>
<td>291</td>
<td>21.4</td>
<td>10.2</td>
</tr>
</tbody>
</table>

Notes: This table reports the average wage per hour (average annual income/(40 hours ×52 weeks)) in the beat where the incident occurred. The income is computed by using the 2010-2014 American Community Survey (ACS) data.
Table A.16: Summary statistics for police district

<table>
<thead>
<tr>
<th>District #</th>
<th>Name</th>
<th>Distance (mi)</th>
<th>Time by Car (min.)</th>
<th>Time by Transit (min.)</th>
<th>Violent Crime Offense</th>
<th>Property Crime Offense</th>
<th>Non Index Crime Offense</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>Englewood</td>
<td>7.3</td>
<td>21.5</td>
<td>50.9</td>
<td>2.6</td>
<td>6.3</td>
<td>15.2</td>
</tr>
<tr>
<td>11</td>
<td>Harrison</td>
<td>3.7</td>
<td>13.7</td>
<td>35.1</td>
<td>2.5</td>
<td>5.1</td>
<td>19.0</td>
</tr>
<tr>
<td>3</td>
<td>Grand Crossing</td>
<td>8.0</td>
<td>21.9</td>
<td>52.5</td>
<td>2.2</td>
<td>5.6</td>
<td>12.5</td>
</tr>
<tr>
<td>15</td>
<td>Austin</td>
<td>5.7</td>
<td>19.2</td>
<td>41.1</td>
<td>1.9</td>
<td>4.1</td>
<td>14.6</td>
</tr>
<tr>
<td>6</td>
<td>Gresham</td>
<td>9.4</td>
<td>22.5</td>
<td>60.7</td>
<td>1.8</td>
<td>5.4</td>
<td>10.5</td>
</tr>
<tr>
<td>5</td>
<td>Calumet</td>
<td>13.6</td>
<td>26.5</td>
<td>77.4</td>
<td>1.8</td>
<td>4.7</td>
<td>11.5</td>
</tr>
<tr>
<td>4</td>
<td>South Chicago</td>
<td>10.9</td>
<td>26.4</td>
<td>67.6</td>
<td>1.7</td>
<td>5.1</td>
<td>9.9</td>
</tr>
<tr>
<td>2</td>
<td>Wentworth</td>
<td>5.4</td>
<td>17.4</td>
<td>41.7</td>
<td>1.7</td>
<td>4.9</td>
<td>10.2</td>
</tr>
<tr>
<td>1</td>
<td>Central</td>
<td>2.7</td>
<td>12.4</td>
<td>27.7</td>
<td>1.5</td>
<td>20.3</td>
<td>15.7</td>
</tr>
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<td>10</td>
<td>Ogden</td>
<td>4.1</td>
<td>17.8</td>
<td>44.9</td>
<td>1.4</td>
<td>3.3</td>
<td>8.7</td>
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<tr>
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<td>Deering</td>
<td>4.8</td>
<td>19.5</td>
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<td>1.0</td>
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<td>Morgan Park</td>
<td>11.8</td>
<td>26.3</td>
<td>71.5</td>
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<td>5.8</td>
</tr>
<tr>
<td>12</td>
<td>Near West</td>
<td>2.2</td>
<td>9.5</td>
<td>24.5</td>
<td>0.8</td>
<td>4.7</td>
<td>5.7</td>
</tr>
<tr>
<td>25</td>
<td>Grand Central</td>
<td>6.0</td>
<td>24.2</td>
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<td>0.7</td>
<td>2.7</td>
<td>5.0</td>
</tr>
<tr>
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<td>Chicago Lawn</td>
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<td>29.4</td>
<td>61.6</td>
<td>0.7</td>
<td>2.8</td>
<td>4.9</td>
</tr>
<tr>
<td>14</td>
<td>Shakespeare</td>
<td>3.5</td>
<td>13.2</td>
<td>30.6</td>
<td>0.6</td>
<td>3.9</td>
<td>3.8</td>
</tr>
<tr>
<td>18</td>
<td>Near North</td>
<td>2.8</td>
<td>13.7</td>
<td>26.7</td>
<td>0.5</td>
<td>6.3</td>
<td>5.2</td>
</tr>
<tr>
<td>24</td>
<td>Rogers Park</td>
<td>9.0</td>
<td>30.9</td>
<td>55.5</td>
<td>0.5</td>
<td>2.0</td>
<td>3.8</td>
</tr>
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<td>Town Hall</td>
<td>4.9</td>
<td>20.9</td>
<td>39.5</td>
<td>0.4</td>
<td>3.1</td>
<td>3.2</td>
</tr>
<tr>
<td>20</td>
<td>Lincoln</td>
<td>7.1</td>
<td>26.1</td>
<td>52.2</td>
<td>0.3</td>
<td>2.1</td>
<td>3.1</td>
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<td>Albany Park</td>
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<td>18.6</td>
<td>47.1</td>
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<td>2.3</td>
<td>2.7</td>
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<td>Jefferson Park</td>
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<td>22.0</td>
<td>52.5</td>
<td>0.2</td>
<td>1.5</td>
<td>2.2</td>
</tr>
</tbody>
</table>

Notes: This table reports the monthly average per police districts from January 2011 to July 2014. Offenses are calculated per 1,000 capita. The districts are sorted from the most to the least violent in terms of reported violent crime per 1,000 capita. The first three columns report the average distance, time by car, and time by transit to the oversight agency.