Elevated Police Turnover following the Summer of George Floyd Protests: A Synthetic Control Study[*]

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Several of the largest U.S. police departments reported a sharp increase in officer resignations following massive public protests directed at policing in the summer of 2020. Yet, to date, no study has rigorously assessed the impact of the George Floyd protests on police resignations. We fill this void using 60 months of employment data from a large police department in the western US. Bayesian structural time-series modeling shows that voluntary resignations increased by 279% relative to the synthetic control, and the model predicts that resignations will continue at an elevated level. However, retirements and involuntary separations were not significantly affected during the study period. A retention crisis may diminish police departments' operational capacity to carry out their expected responsibilities. Criminal justice stakeholders must be prepared to confront workforce decline and increased voluntary turnover. Proactive efforts to improve organizational justice for sworn personnel can moderate officer perceptions of public hostility.

Keywords: police turnover, Floyd protests, Bayesian structural time series, resignations

Introduction

Following George Floyd's death at Minneapolis police officer Derek Chauvin's knee on May 25, 2020, thousands of protests (and in some cases riots) occurred across the United States. As a result, the institution of policing found itself once again embroiled in demands for reform. Concurrently, a significant portion of the rhetoric surrounding policing during this period was exceptionally negative (e.g., "All Cops Are Bastards" or "ACAB" became a rallying cry among some critics of policing). Some allege that sustained public scrutiny of this sort sparked an increase in police resignations across the country. For example, over 100 officers left the Minneapolis Police Department – more than double the departures that occur in a typical year (Bailey, 2020). In Portland and San Francisco, it was reported that police officers were leaving in record numbers (Colton, 2020; Wallace, 2020). The Chicago Police Department experienced a fifteen percent increase in retirements in 2020 compared to 2019 (Main & Spielman, 2021). The monthly loss of officers from the New York City Police Department (NYPD) was approximately double the amount experienced in 2019, leaving the NYPD with its lowest headcount in ten years (DeStefano, 2020). Finally, the Seattle Police Department was reportedly on pace to lose 200 officers by the end of 2020 in what has been described as a "mass exodus," leaving the agency with its fewest police officers since 1990 (Rantz, 2020).

These initial reports are concerning. Fewer officers per capita has been linked to higher crime rates (Kovandzic & Sloan, 2002; Levitt, 1997; Marvell & Moody, 1996; Mello, 2019), and in 2020, many jurisdictions experienced a dramatic increase in homicides and shootings (Jackman, 2020). However, year-to-date comparisons regarding police turnover can be misleading. Resignations and retirements from police departments occur every year regardless of public criticism or civil unrest. In fact, a policing 'workforce crisis' was identified well before the events surrounding and following George Floyd's death (PERF, 2019). Policing has been dealing with decreased applicants, increased resignations, and a pending retirement bubble for at least a decade (PERF,

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2019; Wilson, 2012; Wilson et al., 2010). The challenge, then, is to estimate the counterfactual: how many officers would have retired or resigned in 2020 absent the George Floyd protests? In other words, is the observed increase in police resignations significantly larger than we would have otherwise expected? Or is it merely the continuation of an already existing trend?

This study examined the effect of the socio-political climate following George Floyd's death on police turnover in one large, capital city jurisdiction in the western US. Specifically, we considered three categories of police turnover – resignations, retirements, and involuntary separations – using Bayesian structural time-series (BSTS) modeling, a time-series quasi-experimental method (Brodersen et al., 2015). Findings indicate that while retirements and involuntary separations did not experience significant changes during the post-Floyd period, police resignations increased substantially. Further, probabilistic forecasting models indicate continued elevated rates of police resignations.

Police Turnover

Understanding trends in police turnover is essential. Studies indicate that more police per capita is associated with lower crime levels (Chalfin et al., 2020; Kovandzic & Sloan, 2002; Levitt, 1997; Marvell & Moody, 1996; Mello, 2019; Mourtgos & Adams, 2019a). Specific to police resignations, Hur (2014) found that increased rates of voluntary officer turnover are associated with increased rates of violent and property crime. The direct and indirect costs of police turnover extend beyond crime levels, however. For example, direct costs consist of expenses required to hire replacements: background checks, psychological assessments, medical assessments, and training expenses (Hilal & Litsey, 2020). It is estimated that the cost of losing an officer ranges from one to five times the salary of that officer (Orrick, 2008). Indeed, a police agency's return on investment in an employee is lost when that employee quits after receiving training and education at the agency's expense (Hur, 2014).

Indirectly, when officers leave, both the organization and the community lose accumulated institutional knowledge and specific professional knowledge and skills (Hilal & Litsey, 2020; Hur, 2014). Leavism can lead to decreased quality of service and productivity (Hilal & Litsey, 2020). Often termed a "brain drain," the reduction in performance levels and increased operational risks driven by high turnover are just as real as replacement costs, though they are difficult to quantify (Wilson et al., 2010). On a large enough scale, turnover can hinder a police agency's ability to engage in proactive problem-solving and respond to calls for service, which in turn could contribute to increased crime and further erosion of public trust (Bailey, 2020; MacLean, 2020; Ren et al., 2005).

In sum, high levels of police turnover have harmful effects at the organizational and community levels. Wilson (2012, p. 333) succinctly outlined this problem:

> Police employee success is a function of officer experience and ability to make sensible decisions with little supervision or oversight. By reducing the number of officers with experience, turnover inhibits effective decision making. It diminishes the strength and cohesion a department gains from experienced staff. Agencies with higher turnover and less-experienced officers suffer reduced productivity and more-frequent complaints. The cost of training sworn police officers is substantial, particularly in comparison to other fields. The high level of organizational and job-specific knowledge required of police officers also means that high turnover can impair organizational performance and service delivery while replacement personnel are selected and trained.

Police agencies often turn to increased monetary compensation to combat increased turnover (Wilson et al., 2010). Like other organizations, police agencies view increased salaries as a way to encourage employee retention. As Schuck and Rabe-Hemp (2018) found, there is merit to this strategy. Analyzing data from a national sample of over 2,000 law enforcement agencies, they found that agencies paying higher salaries were less likely to experience voluntary and involuntary turnover. As the authors note, investing in higher wages upfront

not only saves organizations from increased costs due to turnover in the long run, it also reduces involuntary turnover, which is typically driven by misconduct and can be extremely costly in terms of public trust and legitimacy.

However, monetary compensation is only one of several factors known to influence officer turnover. As Giblin and Galli (2017, p. 398) note, higher salaries may be used in an attempt to offset less favorable considerations: "[T]he supply of prospective officers fluctuates based on the perceived appeal of…law enforcement." For example, while Schuck and Rabe-Hemp (2018) found that higher salaries were associated with lower turnover rates, they also found that police agencies with a higher propensity for dangerous or strained police-citizen encounters were more likely to have elevated levels of turnover. This turnover can hamper organizational efforts to repair damaged relationships between agencies and the public they serve, as the "reality of strained budgets and long-standing issues in the hiring and retention of officers will likely pose significant barriers" to efforts such as community-oriented policing (Peyton et al., 2019, p. 19897).

Other key factors driving police turnover include loss of trust and confidence in leadership (Wilson et al., 2010; Wolfe & Lawson, 2020) and sustained negative attention (Mourtgos et al., 2020; Nix & Wolfe, 2017; PERF, 2019; Saunders et al., 2019). A given job's attractiveness depends significantly on anticipated outcomes (Steers et al., 2004). Suppose an officer's subjective beliefs regarding the non-mutuality of an exchange relationship with the public, political leaders, or organizational leaders are strongly negative. In that case, there is a feeling of loss of control and predictability, resulting in task avoidance (Paoline, 2003; Schott & Ritz, 2018), with the ultimate avoidance being quitting.

Increased turnover resulting from a perceived non-mutual relationship between officers and the public, political leaders, or organizational leaders aligns with the social psychology literature on exchange theory, equity, and reciprocity. Social exchange theory contends that individuals attempt to maximize the ratio of benefits to costs in their relationships (Thibaut & Kelley, 1959). An exchange-based model assumes individuals desire relationships in which equity is experienced. Hatfield and colleagues (1985) describe equity as a state of affairs in which the relationship's benefits and costs are proportional to the benefits and costs incurred by the other half of the relationship.

Suppose officers fail to obtain equity in their relationship with their leaders or the public. For example, officers are trained to a legal and professional standard regarding their use of force. There is often, however, a significant gap between the legal and professional standards officers operate under and how some members of the public, media, and political leaders evaluate their actions (Mourtgos & Adams, 2020). Individuals who become police officers tend to do so out of a desire to help others (Moon & Hwang, 2004; White et al., 2010). By doing so, they expose themselves to physical harm (Sierra-Arévalo & Nix, 2020; Tiesman et al., 2018). If an officer uses force to protect themselves or someone else, following the legal and professional standards they have been trained to, but then experience negative responses from their leaders or the public, a perception of inequity may result. In such a case, this may reduce an officer's motivation to remain a police officer (or at least remain a police officer in a specific jurisdiction), as it increases their chances of experiencing negative costs (Mourtgos et al., 2020). Indeed, a loss of perceived organizational support is linked to an officer's organizational commitment, job satisfaction, burnout, and turnover intention (Adams & Mastracci, 2019; Gillet et al., 2013).

Negative costs may include damage to one's reputation, family stress, criminal prosecution, and loss of livelihood, depending on the circumstances (Mourtgos et al., 2020). Indeed, Saunders, Kotzias, and Ramchand (2019) argue that researchers have not paid enough attention to how the socio-political climate affects police officers. As part of a National Institute of Justice funded study examining police suicide, Saunders and colleagues conducted interviews in over one hundred law enforcement agencies across the United States, representing a wide range of agency type and size. While the socio-political climate was not the most frequently identified police stressor, those interviewed identified the socio-political climate as the stressor that has increased the most in

recent years. Officers reported that excessive scrutiny has led to unfair expectations being placed on officers and the belief that policing is being set up for failure by the media. Many of those interviewed expressed an increasing climate of nonsupport from their communities. Further, interviewees expressed worry regarding how police actions caught on camera would be judged in the public eye without understanding police training and standards.

To be clear, the events following George Floyd's death in May 2020 are not unique in policing (e.g., the 1968 Chicago riots, the 1992 Rodney King riots, and the riots and protests following Michael Brown's death in Ferguson, Missouri in 2014). Further, officer perceptions that politicians, the media, and the public misunderstand, misrepresent, and dislike them are not new (Mourtgos & Adams, 2019b). Decades ago, Niederhoffer (1967) conducted his seminal work on police cynicism and found that a substantial portion of officers generally harbored negative feelings toward the public, media, and politicians. More contemporary research has continued to reveal that many officers feel they are disliked and not trusted by entities outside their profession (Moon & Zager, 2007; Nix et al., 2020; Yim & Schafer, 2009).

Claims for profoundly adverse outcomes following similar past crises have been empirically scrutinized, with studies often indicating such claims are overblown. For example, following the 2014 protests and unrest in Ferguson, Missouri, commentators claimed that excessive criticism of police had led to a so-called "war on cops" (MacDonald, 2016). However, there is no compelling evidence that officers' working environment became any more or less dangerous than it was before Ferguson (Maguire et al., 2017; Shjarback & Maguire, 2021; Sierra-Arévalo & Nix, 2020). Although, some evidence suggests that college students became more apprehensive about a career in law enforcement after Ferguson (Morrow et al., 2019; Todak, 2017). Historically, these crises have been relatively short-lived without documented substantial increases in police turnover (Rhodes & Tyler, 2019). Yet, it is certainly possible that the contemporary socio-political climate surrounding policing may have more staying power due to the salience of social media, the rapid spread of images online, and sustained negative media attention (Rhodes & Tyler, 2019).

Perhaps a tipping point has been reached, where a hostile socio-political climate has become powerful enough to drive a retreat from the police profession. Anecdotal reports from various cities indicate that this may be the case (Bailey, 2020; Colton, 2020; DeStefano, 2020; Main & Spielman, 2021; Wallace, 2020). However, as noted previously, a "workforce crisis" was identified in policing before the events surrounding George Floyd's death (PERF, 2019). For at least a decade, the policing profession has been concerned with staffing issues due to decreased applicants, increased resignations, and a pending retirement bubble (PERF, 2019; Wilson, 2012; Wilson et al., 2010). It remains to be seen whether 2020 was an atypical year in terms of officer retention.

The Current Study

Context

The current study analyzed police officer turnover from January 2016 through December 2020 in one large jurisdiction in the western US. The agency provides full-spectrum policing services to an estimated 200,000 residents and a metropolitan population of over one million, living in a mixed urban core and suburban service area environment. The department employs approximately 600 sworn officers.

George Floyd died on May 25, 2020, in Minneapolis, Minnesota. On May 30, thousands of individuals staged a protest in the studied jurisdiction based on the circumstances surrounding Floyd's death. The protest turned violent when a large crowd surrounded an occupied police vehicle in the downtown area, forcing the officer to abandon it. The vehicle was subsequently flipped and set on fire. The ensuing riot resulted in looting and hundreds of thousands of dollars in property damage (including the agency's public safety building). Several officers sustained serious injuries, and many more received minor injuries during the hours-long process

of quelling the riot. Officers from around the state were required to respond to resolve the civil disorder. Following May 30, the National Guard was activated for several weeks to assist in ongoing civil unrest. Between May 30, 2020, and November 2020, the jurisdiction experienced nearly 300 protests directed at police.

In addition to the socio-political climate surrounding George Floyd's death, body-worn camera footage from an officer-involved shooting in the jurisdiction was publicly released in June. The video upset some in the community and gained persistent local media attention, increasing the negative socio-political climate surrounding policing locally. After the video footage was released, a city council member publicly declared the shooting unlawful, despite the investigation not having been completed. The subsequent independent investigation located additional surveillance camera footage clearly showing the individual who was shot had a gun and pointed it at officers. The local district attorney ruled the shooting was justified, but this determination prompted yet another violent riot that resulted in additional property damage and officer injuries.

In early August, the jurisdiction's mayor announced that the agency would be required to revise its use-of-force policy within 30 days. Specifically, the agency's policy would be required to go beyond the Constitutionally defined requirements for using deadly force—an 'objectively reasonable' standard—and move to a 'necessary' standard. This announcement was not well received by the agency's officers, and no other surrounding agency moved to make similar adjustments to their use-of-force policies.

Data

We employed secondary data from the department for the analysis. The data consists of monthly counts of resignations, retirements, and involuntary separations (described in more detail below) from January 2016 through December 2020. This provides a total of 60 observations for each measure. With the local civil unrest beginning at the very end of May 2020, a natural inflection point for ascertaining any turnover change is June 2020 (month #54). This sharp inflection point is a critical aspect of the research design. It allows for leveraging a natural experiment's power to analyze trends during the pre- and post-Floyd periods. When a series of measures are broken up by introducing an intervention that occurs at a specific point in time, time-series analysis is appropriate (Shadish et al., 2002). The sharp change in socio-political climate experienced by the agency's officers provides an opportunity for a time-series quasi-experiment to ascertain the impact (or lack thereof) on turnover.

Measures

As Hur (2014) explains, one should differentiate between voluntary and involuntary turnover due to different etiologies. While voluntary turnover is a decision made by the employee (whether due to individual perceptions, organizational characteristics, labor market conditions, or otherwise), involuntary turnover is not. When an employee is involuntarily terminated, it is because of misconduct (layoffs may be considered another type of involuntary turnover, but no layoffs occurred during the study period). Recognizing this, and to allow for a more nuanced understanding of the socio-political climate's effect on officer turnover, three measures of turnover were constructed: resignations, retirements, and involuntary separations. All three measures were recorded from January 2016 through December 2020, providing 60 time-series data points for each measurement. Table 1 provides the annual counts for each of the three measures.

Resignations

Resignations consist of monthly counts of officers voluntarily leaving the police department before becoming eligible for retirement.

Retirements

Retirements consist of monthly counts of officers voluntarily leaving the police department after being eligible for retirement. Based solely on counts, it is impossible to ascertain the reason why an individual retired (i.e., low job satisfaction, age, or otherwise). Accordingly, retirements were analyzed separately from resignations.

Involunatary Separations

Involuntary resignations consist of monthly counts of officer terminations. While possible that a socio-political climate calling for additional accountability could lead to an increased level of officer terminations[1], the etiology of any change in this type of turnover is different from voluntary resignations or retirements. Accordingly, it was analyzed separately.

Table 1. 2016 – 2020 Turnover Measures.

Year	Resignations	Retirements	Involuntary Separations
2016	5	21	2
2017	9	22	3
2018	18	29	4
2019	19	21	5
2020	37	26	8

Figure 1: "Table One"

Method

Bayesian Structural Time Series (BSTS) modeling was used for the analysis. BSTS models are ideal because they are flexible and modular. They allow the investigator to determine whether short- or long-term predictions are more important, to account for seasonal effects, and whether to include regressors. Further, by working in a Bayesian framework, investigators can better acknowledge and incorporate uncertainty into statistical models and discuss outcomes in terms of probabilities. The analysis proceeds in three steps. First, BSTS models are estimated for each measure. Each model's time series is decomposed, and resulting plots are examined for any apparent change in turnover beginning in June 2020 for all three measures. Second, a causal impact analysis is performed (explained in more detail below) to assess the post-Floyd socio-political climate's effect on police turnover. Finally, probabilistic one- and two-year turnover forecasts are estimated.

Analysis

BSTS Models for Resignations, Retirements, and Involuntary Separations

BSTS models are best described as observation equations, linking observed data with an observed latent state and transition equation. The transition equation describes the development of the latent state over time. The observation equation is defined as

$$y_t = Z_t^T \alpha_t + \varepsilon_t$$

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[1]The agency reports there were no involuntary separations in 2020 related to allegations of police misconduct during the protests.

where y_t is a scalar observation, Z_t is an output vector, and α_t is the unobserved latent state. The transition equation is defined as

$$\alpha_{t+1} = T_t\alpha_t + R_t\eta_t$$

where α_t is the unobserved latent state, T_t is the transition matrix, and R_t is the control matrix. $R_t\eta_t$ allows the inclusion of seasonality in the analysis. The error terms (ε_t and η_t) are Gaussian and independent.

A BSTS model was estimated for each of the measures with a local linear trend state component and a seasonal state component, allowing for a monthly seasonal parameter. Ten thousand Markov chain Monte Carlo (MCMC) iterations were simulated to fit each model. Figure 1 shows the individual state components (i.e., trend and seasonal components) for each model. Decomposing and plotting trend and seasonal components separately allow one to see trends in time series data more clearly without seasonal noise. A regression line is added to each measure's trend plot. This addition allows for easy assessment of whether a significant increase occurred in any turnover measures beginning in June 2020 (the dashed vertical line).

A few observations can be made from Figure 1. First, all three measures show a positive trend over the entire period, lending credence to past concerns of a growing 'workforce crisis' in policing (PERF, 2019; Wilson, 2012; Wilson et al., 2010). Second, retirements and involuntary separations did not experience any noticeable change in trends in the post-Floyd period. Third, one can see a substantial jump in resignations above the regression line immediately in the post-Floyd period. Based on the above observations, causal impact analysis, as described below, is appropriate.

Causal Impact Analysis

BSTS models can be used to infer causal impact by predicting the counterfactual treatment response in a synthetic control that would have occurred if no intervention had taken place. The synthetic control is constructed using the experimental group's time-series behavior before and after the intervention and combining control variables predictive of the target series before the intervention (Brodersen et al., 2015).

A key component of utilizing BSTS models for causal impact analysis is the identification of predictors. Predictors are linearly regressed onto the observed values, creating the composite synthetic control series. Based on the analysis above, the retirement and involuntary separation measures are used for building the synthetic control for causal impact analysis. By placing a spike-and-slab prior over coefficients, the model can choose the proper variables to construct the synthetic control through Bayesian model averaging techniques. All predictors are weighted by Bayesian model averaging of marginal inclusion probabilities for each regression coefficient (Dablander, 2019; de Vocht et al., 2017).

The pre-intervention time series began in January 2016 and ended in May 2020. The post-Floyd time-series started in June of 2020 and continued through December of 2020. Accordingly, the pre-intervention series is 53 months in length, with a post-intervention span of 7 months. Ten thousand MCMC samples were drawn for the analysis, with 89% posterior distribution credible intervals generated. Results for the model assessing change in resignations are presented in Figure 2.

Figure 2 contains three panels. The panel labeled "original" shows the data and a counterfactual prediction for the post-treatment period. The counterfactual prediction is the horizontal dashed line, with a corresponding 89% credible interval surrounding it. The solid line represents the observed data. The panel labeled "pointwise" represents the pointwise causal effect, as estimated by the model. That is, it shows the difference between observed data and counterfactual predictions. The panel labeled "cumulative" visualizes the intervention post-treatments cumulative effect by summing the second panel's pointwise contributions. The dashed vertical line represents the intervention date (i.e., June 2020).

As indicated in Table 2, the post-Floyd socio-political climate is associated with an increase in police officer resignations at the studied police department. During the post-intervention period, the study had an average of
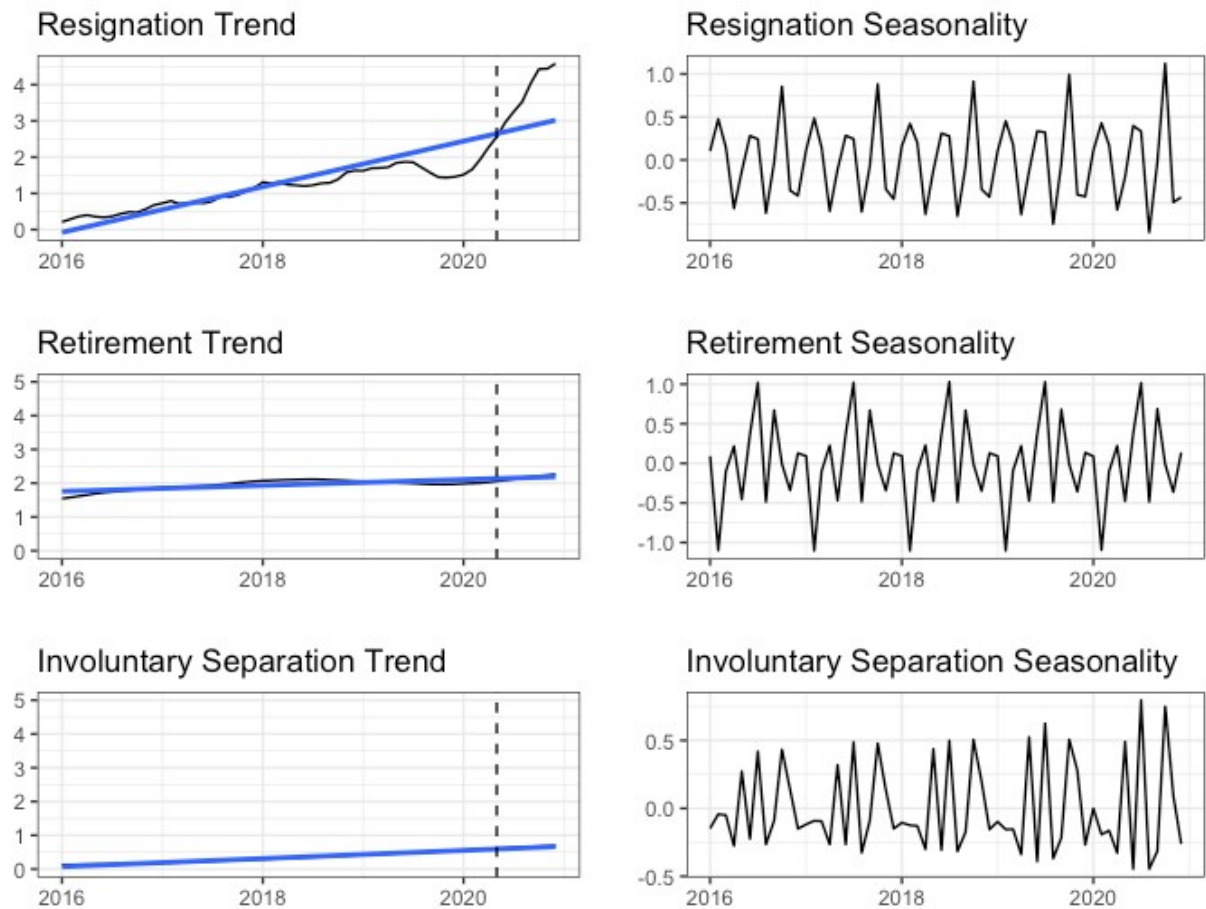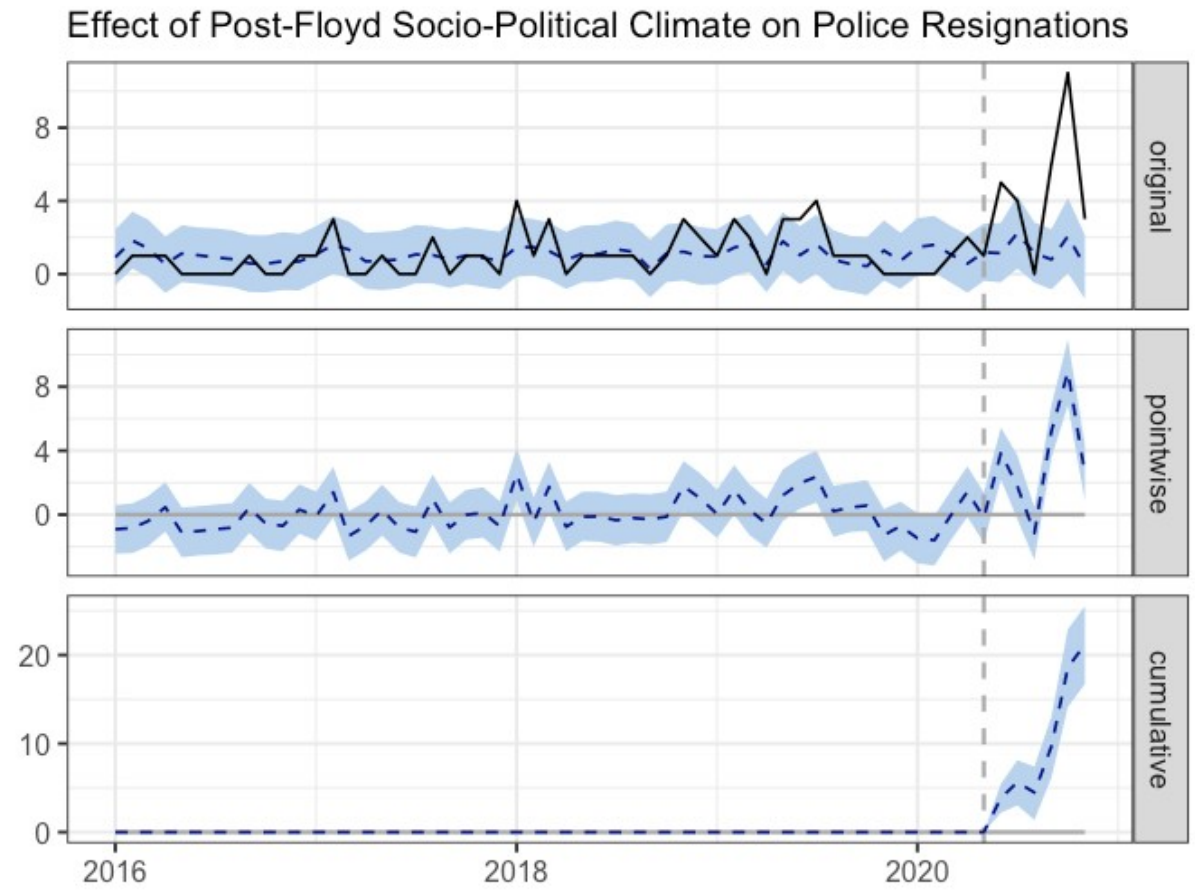
Figure 2: "Figure One"

Figure 3: "Figure 2"

Table 2. Causal Impact Posterior Inference.

	Average	SD	89% CI
Actual Resignations Post-Intervention	4.71		
Predicted Resignations Post-Intervention	1.24	0.41	[0.59, 1.90]
Absolute Effect	3.47	0.41	[2.81, 4.13]
Relative Effect	279%	33%	[226%, 332%]

Posterior probability of a causal effect > .99

Figure 4: "Table Two"

five (4.71) officers resigning per month. By contrast, in the absence of an intervention, a counterfactual average of one (1.24) officer resignations per month would be expected. Subtracting this prediction from the observed response yields an estimate of the absolute causal effect the intervention had on resignations (3.47), resulting in a 279% relative increase in officer resignations. The posterior probability of the observed effect is >.99. In other words, there is an extremely high probability that the post-Floyd socio-political environment exerted a positive effect on officer resignations at the studied police department.

Forecasting

Assessing the effect of past events is not the only interest of this study. Of practical consequence is forecasting continued officer resignations into the future. The BSTS model for resignations can be used to provide a probabilistic forecast for future resignations for varying periods. Figure 3 and Figure 4, respectively, plot resignation forecasts for one year and two years beyond December 2020.
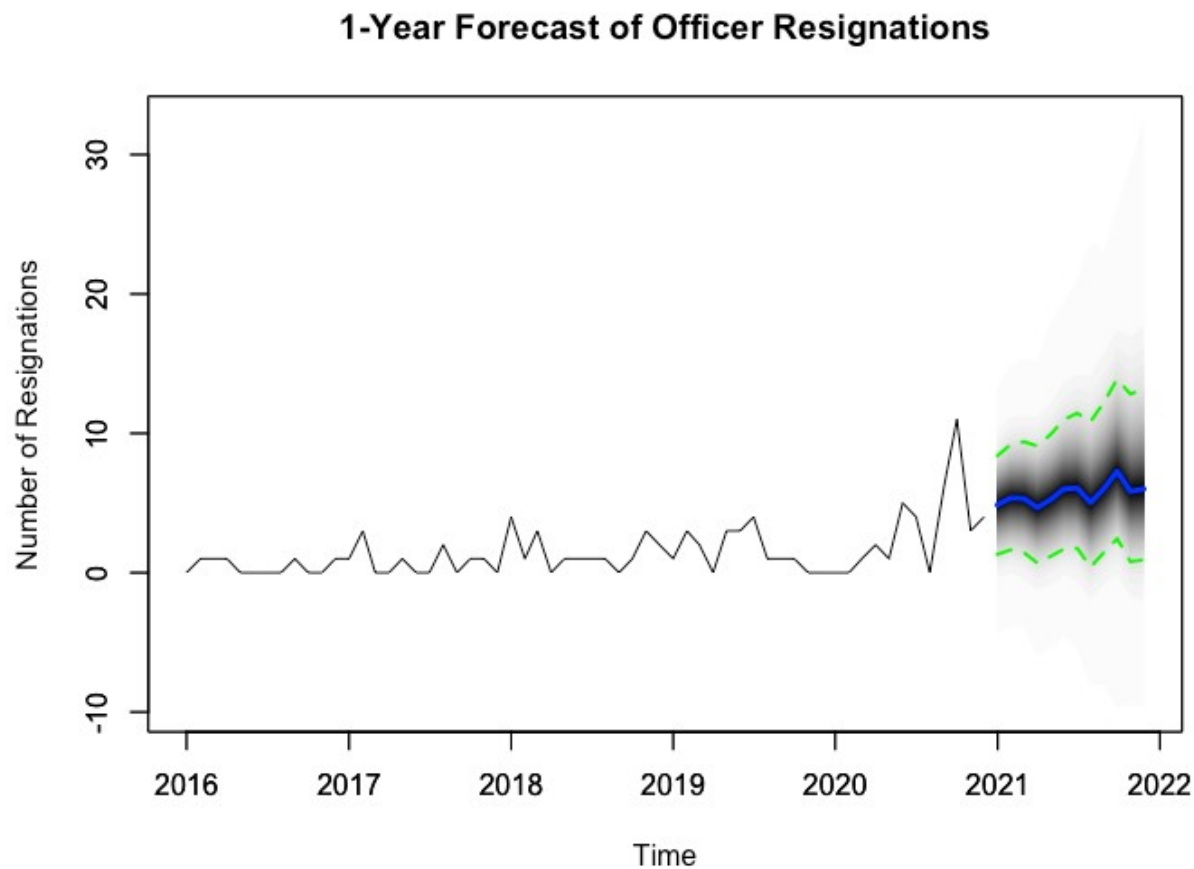

Figure 5: "Figure 3"

In Figures 3 and 4, the blue line represents the average number of resignations the forecast model predicts. The dashed lines represent 89% credible intervals. Both forecasts indicate continuing increases in resignations. The one-year forecast predicts an average of six (5.82) officer resignations per month. The two-year forecast predicts an average of seven (6.98) officer resignations per month. Noteworthy are the credible intervals in each
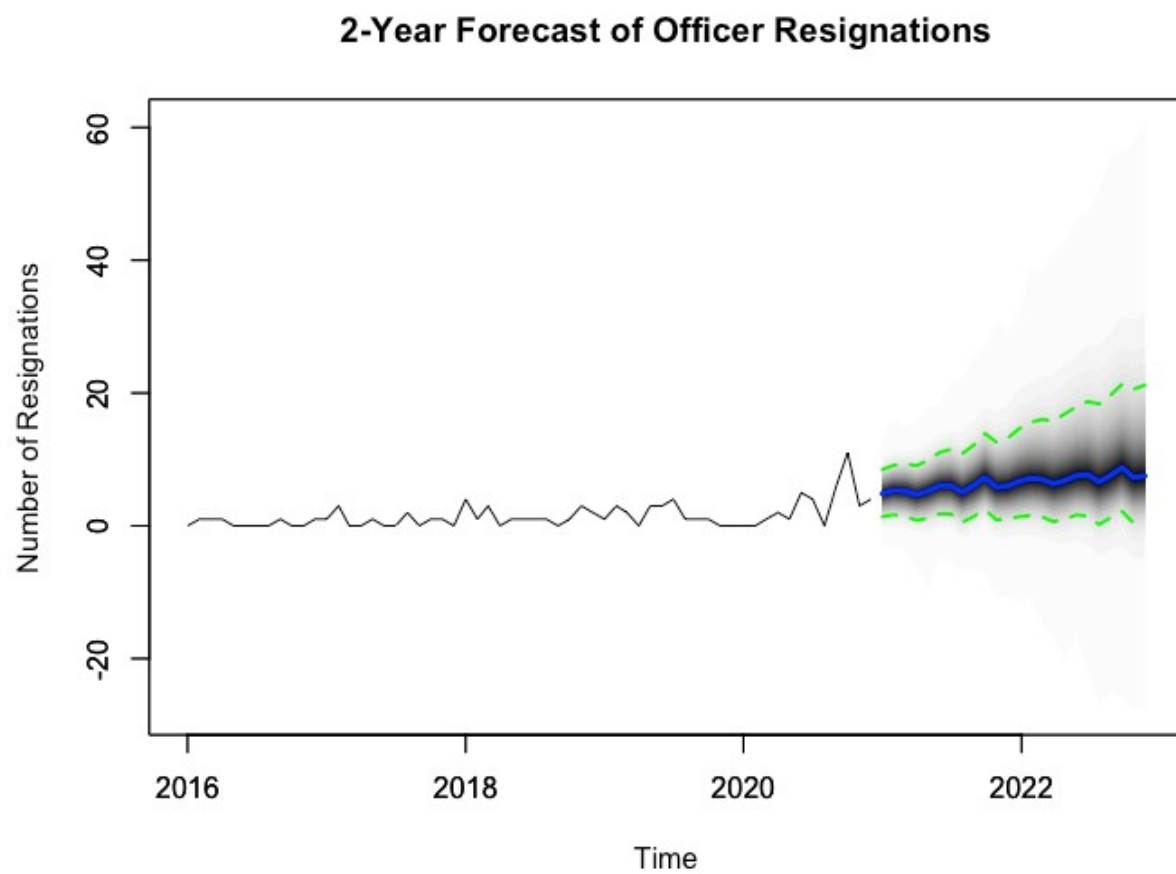
2-Year Forecast of Officer Resignations

Figure 6: "Figure 4"

forecast, allowing for a greater probability of increased resignations than a decrease in resignations. According to the forecasts, it is more probable that the studied department will experience increasing resignations over the next year(s) than decreasing resignations.

Discussion

For the past decade, there has been growing concern about a "workforce crisis" in policing, characterized by an increase in officers leaving the profession (through resignation or retirement), as well as fewer individuals applying to become police officers (PERF, 2019; Wilson, 2012; Wilson et al., 2010). Since the fallout from the fatal police shooting of Michael Brown in Ferguson, Missouri, in August 2014, these concerns have only grown. Yet, the impact of the socio-political climate on police recruitment remains unclear. While Morrow and colleagues (2019, 2020) provide evidence of college students being more reticent to become police officers post-Ferguson (see also Todak, 2017), Rhodes and Tyler (2019) found no evidence of a post-Ferguson decrease in police applicants in one major metropolitan police department.

While empirical research on police recruitment is scant, empirical research on police turnover is even more lacking. A better understanding of police turnover dynamics is crucial as it affects both police organizations and the communities they serve. In the present study, we examined the effect of a sharp change in the socio-political climate on officer turnover in a large metropolitan police department. We show the socio-political environment did not significantly affect retirements or involuntary separations (although both showed an increasing trend across the full period, lending credence to previous concerns about a shrinking police workforce). However, shortly after protests surrounding George Floyd's death began, there was a 279% increase in officer resignations compared to the synthetic counterfactual.

Empirical evidence of such a substantial increase in police resignations, paired with anecdotal accounts from other agencies country-wide (Bailey, 2020; DeStefano, 2020; Main & Spielman, 2021; Rantz, 2020; Wallace, 2020), is concerning for many reasons. A large exodus of experienced officers from a police department can result in a "brain drain," where institutional knowledge, along with job experience and skill, are lost from a department. This loss can reduce performance levels and increase operational risks as newer, less experienced officers replace veterans (Hilal & Litsey, 2020; Hur, 2014; Wilson, 2012). Prior research indicates that experience is associated with decreased verbal and physical force (Paoline & Terrill, 2007) and better performance (Sanders, 2008). That being said, prior research also points to experienced officers having lower levels of job satisfaction (Johnson, 2012) and higher levels of cynicism (Hickman et al., 2004). Future research must continue to study the correlates and consequences of police turnover, particularly in agencies where turnover is characterized by rapid replacement of veterans with rookie officers.

On a large scale, turnover can lead to a police agency's inability to respond to calls for service, increased crime, and erosion of public trust (Bailey, 2020; Oliveira et al., 2020). Indeed, past policing studies indicate that more police officers are associated with less crime (Kovandzic & Sloan, 2002; Levitt, 1997; Marvell & Moody, 1996). Recent research suggests a correlation between police force size and community violence, such that each additional ten officers abates approximately one homicide (Chalfin et al., 2020). The authors also note that "although the total reduction in homicide is roughly equal across Black and white victims, the decline in homicide is twice as large for Black victims in per capita terms" (p. 4). Thus, a rapid departure of police officers from a jurisdiction may have a disproportionately negative impact on communities of color (Nix & Wolfe, 2020).

More analogous to this study is a recent study published by Piza and Chillar (2020), who found that when the Newark Police Department laid off 13% of its officers in 2010, violent and property crime promptly increased. Further, overall crime and violent crime became progressively worse each year following the police layoffs. While the cause of the turnover examined by Piza and Chillar is different from the reason examined in

this study (i.e., layoffs versus resignations), the two studies inform each other as they are both concerned with sudden, substantial decreases in turnover, rather than gentle ebbs across time. It was beyond our study's scope to ascertain the causal effect of rapid resignations on crime in the jurisdiction. However, it should be noted that – similar to other cities across the United States – this jurisdiction experienced a 22% increase in violent crime and a 25% increase in property crime in 2020. This could be due at least in part to the agency abruptly becoming understaffed in the summer of 2020, but of course, it might also be a function of societal disruptions caused by the COVID-19 pandemic (Rosenfeld & Lopez, 2020).

Concerns regarding police turnover and crime are compounded by the realities of how police hiring works. For starters, a months-long hiring process is required to ensure high standards are met. The hiring process typically consists of a psychological exam, medical screening, interview, background check, and more. Once hired, though, police officers are not "road-ready." They must graduate from a police academy and then complete a field training phase. While the length of academy and field training varies from jurisdiction to jurisdiction, it takes approximately ten months to have an officer ready to function as a solo police officer in the agency we studied. Our forecasting analysis is instructive when considering the ability of the agency to recover resignations through increased hiring. Assuming that the police department could recruit and hire 33 officers (approximately 6% of its entire sworn staff) to replace those who resigned (i.e., not including the officers who retired or were terminated during the same period), it would take almost a year for those 33 new officers to fill the vacancies. In the meantime, during every month of the year it takes to train the new officers, the above forecasting model predicts an additional six officers will be resigning, equating to a continuing net loss. Accordingly, for this agency to adequately address their turnover, they will need to hire well ahead of their authorized size to experience substantial staffing improvements. Considering that retirements and involuntary separations will likely also continue to occur, it is clear that it will take some time until the agency can return to its full strength. While forecasting is not destiny, this agency, and others experiencing similar trends, have good cause for concern.

Further, there are significant financial costs associated with police turnover. These costs include the actual hiring process and new officers' equipment (Hilal & Litsey, 2020). It is estimated that the cost of losing an officer ranges from one to five times the salary of that employee (Orrick, 2008). The public monies required to replace officers might be better suited for other crime reduction efforts or community outreach programs, as proponents of the #DefundThePolice movement contend. Of course, there have been well-publicized calls to "defund" or even "abolish the police" since George Floyd's death (Kaba, 2020; Vitale, 2017). While such rhetoric may be relatively new, "defunding" was previously experienced during the Great Recession (Wilson et al., 2010). Many cities decreased police staffing out of financial necessity. Along with the decrease in officers working in the community, more crimes went unsolved, community outreach programs suffered, and response times increased. Moreover, officers were required to work more overtime, and use-of-force complaints rose (Weichselbaum & Lewis, 2020).

Similar problems may be compounded contemporarily with an exceptionally hostile socio-political climate surrounding policing, as officers experiencing an antagonistic relationship with the public more strongly endorse coercive tactics and use more physical force (Marier & Moule, 2019; Muir, 1977; Terrill et al., 2003). If violent crime continues to increase, we may enter a negative feedback cycle, as increased victimization is associated with decreased confidence in the police (Ren et al., 2005). While reasonable people can disagree on the merits of "reimagining policing," a socio-political climate that results in substantial increases in police turnover may be failing to remember what recent history taught us.

So, what can be done to reduce police resignations given the current socio-political climate? We offer several suggestions. First, politicians and journalists should resist going along with poorly framed narratives. The use of descriptors like "epidemic" to describe civilian deaths resulting from .0002% of all police-citizen encounters

(Harrell & Davis, 2020; Washington Post, 2021) is at best misleading, at worst dangerous. The framing of how often and why police-involved fatalities occur can have powerful effects on the way individuals think about police use-of-force specifically, and policing more generally. Labeling every police-involved death as the result of "police violence" wrongly suggests the officer is the sole cause of every police-involved fatality, diminishing the citizen's contribution to the outcome (Nix, 2020).

Poorly framed narratives foster a 'no-win' socio-political climate for police officers. For example, the initial video footage of the Jacob Blake shooting in Kenosha, Wisconsin, was inconclusive. While the local police union asked for the public to withhold judgment until the investigation was complete, the narrative of an unarmed Black man being shot in the back while entering his vehicle quickly spread across the nation (McLaughlin & Vera, 2020). Even after an independent investigation found that Jacob Blake was armed with a knife while actively resisting a lawful arrest—Jacob Blake also gave a public interview admitting to being armed with a knife (Winsor et al., 2021)—prominent news agencies continued to describe the incident as a police officer shooting an unarmed Black man (Wulfsohn, 2021). While this incident's effects on police retention and morale in Kenosha remain to be seen, the rushed and inaccurately framed narrative led to rioting in Kenosha, exacerbating an already hostile socio-political environment. This incident also serves as a reminder that police officers are not the only ones impacted by such poorly framed narratives: the damage to buildings and businesses from the Kenosha riots was estimated at $50 million (Flores, 2020).

To be clear, we are not advocating for indiscriminate defense of all police behavior. Police misconduct must be ardently opposed by all stakeholders. However, political and organizational leaders (if not news agencies) have an ethical responsibility to their employees and communities to lead with patience and reason. For politicians and police executives, this is accomplished by ensuring comprehensive and independent investigations and addressing any misconduct appropriately when and if it is found. For journalists, it means, at a minimum, doing their due diligence to speak with researchers who can situate incidents within the proper broader context. For their part, researchers who have subject matter expertise should pick up the phone – or click "reply" – when journalists contact them about stories. In this regard, entities like the Crime and Justice Research Alliance are an excellent resource – they can help connect journalists with researchers, and they can provide training for researchers interested in learning about how to communicate their knowledge to broader audiences.

Second, more police agencies should publish data (e.g., use-of-force, stops, arrests, staffing) promptly—either on their website or repositories like the Police Data Initiative. Such transparency is critical for policing in the 21st Century (President's Task Force on 21st Century Policing, 2015). Generally speaking, open access to police data can help nurture trust between the police and the community. When a controversial incident (like the killing of George Floyd or the shooting of Jacob Blake) occurs, journalists and citizens can quickly ascertain how the police in their community perform in regards to use-of-force, racial disparities, and other outcomes, rather than being left to assume issues in one city are representative of all cities.

Finally, police executives and their political sovereigns must carefully balance their responsibilities to investigate and discipline misconduct quickly, while doing so in a way that is likely to be perceived by officers as fair (Nix & Wolfe, 2017). There is a statistically significant and sizeable relationship between perceived organizational justice and desirable officer attitudes and behaviors (Wolfe & Lawson, 2020). Recent work suggests that officers who perceive greater organizational justice are less sensitive to the ill effects of heightened public scrutiny (Nix & Wolfe, 2016). Further, they are less likely to "de-police" in response to a legitimacy crisis (Mourtgos & Adams, 2019b) and instead appear to remain committed to working with residents to solve problems in their communities (Wolfe & Nix, 2016). More generally, research indicates that officers who believe their agencies treat them fairly are less cynical (Bradford & Quinton, 2014), and hold more favorable views toward the public (Myhill & Bradford, 2013; Tankebe, 2014; Trinkner et al., 2016). There are still more reasons to expect that organizational justice could help agencies retain officers during times of crisis. It is associated

with lower levels of depression (Wu et al., 2017), distress and maladaptive behaviors, (Trinkner et al., 2016), and work-related burnout among officers (Adams & Mastracci, 2019).

In other words, while agencies have little control over how nationalized stories of police misconduct affect public opinion, leaders can select and train their front-line supervisors to provide a buffer between community hostility and their sworn personnel (Wolfe et al., 2018). President Obama's Taskforce on 21st Century Policing recognized that organizational justice must precede enhanced trust between police and the communities that depend upon them (President's Task Force on 21st Century Policing, 2015). The organizational literature is vast (see Wolfe & Lawson, 2020, for a recent meta-analysis), but some general approaches to improving organizational justice include giving room for officers to express their feelings about current events affecting them; revisiting and revising policies with an eye towards clarity of procedure and expectations; enhancing due process for officers facing investigation; and ensuring that resulting discipline is consistent and fair. Executive leadership can model these behaviors, train their supervisors to follow suit, and work to ensure their officers carry those same behaviors out to their street-level behavior and decision making.

Limitations

This study has limitations that impact our ability to generalize its findings confidently, suggesting the need for further study in varying community contexts. Undoubtedly, there are differences among states, jurisdictions, and law enforcement modalities that were not addressable in the current study. Of considerable interest: did cities that experienced significant protesting suffer higher officer turnover rates than nearby/similar jurisdictions that did not experience such incidents? We cannot address this question due to the lack of timely and easily accessible police staffing data, but urge future scholars to consider a design capable of answering it.

We are also unable to point to the exact reasons individual officers chose to resign. As Paoline and Gao (2020) show, there is substantial variation in how satisfied and dissatisfied officers perceive various dimensions of their work. For example, satisfied officers appear to prioritize public perception and respect more than dissatisfied officers, while dissatisfied officers seem more attentive to factors such as pay and benefits. This variation could conceivably explain which officers are more likely to resign in the face of circumstances similar to the protests of 2020. We are left to speculate without investigation at the individual officer level, and we suggest future scholarship pursue related research questions to understand individual motivation better.

The single-agency nature of our study leaves at least one other outstanding question: Are officers permanently leaving the profession, or just relocating to other departments? It may be, for example, that officers in our study chose to leave a sizeable, capital city police jurisdiction that has been the focal point of local protests and riots for the perceived safety (professional and political, if not physical) of nearby suburban or rural departments. Locally, at least twenty geographically contiguous jurisdictions reported shortages in their hiring and retention efforts over the past several years. Our conversations with local chiefs in these agencies, who report hiring back officers who had previously left, provide anecdotal support that at least some of the studied agency's turnover may be attributable to this phenomenon.

More evidence is required to determine if the large effect detected here can be generalized to other jurisdictions. While the advent of social media and telecommunication technology allows an event in Minneapolis to be viewed by individuals from Portland, Oregon to Portland, Maine, local responses to these 'national' events varies. While George Floyd's death had a substantial effect on policing in Minneapolis (Bailey, 2020), it may have had less of an effect on police turnover in other areas of the country.

Conclusion

There have been many assertions from police leaders across the US that in the wake of sustained policing protests, their agencies have experienced a significant uptick in officer turnover throughout the latter half of 2020. There have also been claims that excessive criticism has hampered or even harmed police agencies and their sworn employees in previous police legitimacy crises. While previous analyses have usually shown those claims to be overblown or even non-existent (Maguire et al., 2017; Shjarback & Maguire, 2021; Sierra-Arévalo & Nix, 2020), the present study suggests that with respect to police officer retention, there is cause for legitimate concern. Our analysis of 60 months of data shows that while resignations and involuntary separations were not significantly altered in the post-Floyd period, voluntary resignations were. Officers resigned at a 279% increased rate relative to the synthetic control expectations, and this rise has a posterior probability greater than .99.

While significant questions remain about whether resigned officers are leaving this agency for law enforcement employment elsewhere, or are leaving the profession altogether, the forecast model for this particular agency is alarming. The greatly increased resignation rate is forecasted to continue for at least one to two more years. The increased loss of officers to resignation is not easily remedied through recruitment, and places significant budgetary pressure on the agency, with the costs of hiring a single officer estimated to be up to five times the annual salary for that position. Further, a deficit of officers may further contribute to an already increased violent crime rate in the studied agency, which has already become headline news. We hope researchers will rigorously evaluate the relationship between police staffing levels and community crime and disorder in the months and years ahead.

References

Adams, I. T., & Mastracci, S. H. (2019). Police Body-Worn Cameras: Effects on Officers' Burnout and Perceived Organizational Support. Police Quarterly, 22(1), 5–30. https://doi.org/10.1177/1098611118783987

Bailey, H. (2020, November 13). Minneapolis violence surges as police officers leave department in droves. Washington Post. https://www.washingtonpost.com/national/minneapolis-police-shortage-violence-floyd/2020/11/12/642f741a-1a1d-11eb-befb-8864259bd2d8_story.html

Bradford, B., & Quinton, P. (2014). Self-legitimacy, police culture and support for democratic policing in an English constabulary. British Journal of Criminology, 54(6), 1023–1046. https://doi.org/10.1093/bjc/azu053

Brodersen, K. H., Gallusser, F., Koehler, J., Remy, N., & Scott, S. L. (2015). Inferring causal impact using bayesian structural time-series models. Annals of Applied Statistics, 9(1), 247–274. https://doi.org/10.1214/14-AOAS788

Chalfin, A., Hansen, B., Weisburst, E. K., & Williams Jr., M. C. (2020). Police force size and civilian race [Working Paper].

Colton, E. (2020, August 19). "Just the beginning": San Francisco police officers leaving department in record numbers. Washington Examiner. https://www.washingtonexaminer.com/news/just-the-beginning-san-francisco-police-officers-leaving-department-in-record-numbers

Dablander, F. (2019). Spike-and-Slab. In Fabiandablander.com.

de Vocht, F., Tilling, K., Pliakas, T., Angus, C., Egan, M., Brennan, A., Campbell, R., & Hickman, M. (2017). The intervention effect of local alcohol licensing policies on hospital admission and crime: A natural experiment using a novel Bayesian synthetic time-series method. Journal of Epidemiology & Community Health, 71(9), 912–918. https://doi.org/10.1136/jech-2017-208931

DeStefano, A. M. (2020, October 8). NYPD: Head count lowest in 10 years. Newsday. https://www.newsday.com/long-island/nypd-retirements-shea-1.50031351

Flores, T. (2020, September 9). Damage due to rioting, unrest in Kenosha tops $50 million; 2,000 Guard assisted here. Kenosha News. https://www.kenoshanews.com/news/local/damage-due-to-rioting-unrest-in-kenosha-tops-50-million-2-000-guard-assisted-here/article_26473ec9-c08a-5490-9d09-cc2b840b65f1.html

Giblin, M. J., & Galli, P. M. (2017). Compensation as a police candidate attraction tool: An organizational-level analysis. Police Quarterly, 20(4), 397–419. https://doi.org/10.1177/1098611117713679

Gillet, N., Huart, I., Colombat, P., & Fouquereau, E. (2013). Perceived organizational support, motivation, and engagement among police officers. Professional Psychology: Research and Practice, 44(1), 46–55. https://doi.org/10.1037/a0030066

Harrell, E., & Davis, E. (2020). Contacts between police and the public, 2018—Statistical tables (NCJ 255730). https://www.bjs.gov/content/pub/pdf/cbpp18st.pdf

Hatfield, E., Traupmann, J., Sprecher, S., Utne, M., & Hay, J. (1985). Equity and intimate relationships: Recent research. In Compatible and incompatible relationships (pp. 1–27). Springer-Verlag.

Hickman, M. J., Piquero, N. L., & Piquero, A. R. (2004). The validity of Niederhoffer's cynicism scale. Journal of Criminal Justice, 32(1), 1–13. https://doi.org/10.1016/j.jcrimjus.2003.10.001

Hilal, S., & Litsey, B. (2020). Reducing police turnover: Recommendations for the law enforcement agency. International Journal of Police Science & Management, 22(1), 73–83. https://doi.org/10.1177/1461355719882443

Hur, Y. (2014). Turnover, voluntary turnover, and organizational performance: Evidence from municipal police departments. Public Administration Quarterly, 37(1), 3–35.

Jackman, T. (2020, November 21). Homicides skyrocket across U.S. during pandemic, while robberies and rapes plummet. Washington Post. https://www.washingtonpost.com/nation/2020/11/21/murder-rises-in-

pandemic/

Johnson, R. R. (2012). Police Officer Job Satisfaction: A Multidimensional Analysis. Police Quarterly, 15(2), 157–176. https://doi.org/10.1177/1098611112442809

Kaba, M. (2020, June 12). Yes, we mean literally abolish the police. The New York Times. https://www.nytimes.com/2020/06/12/opinion/sunday/floyd-abolish-defund-police.html

Kovandzic, T. V., & Sloan, J. J. (2002). Police levels and crime rates revisited: A county-level analysis from Florida (1980–1998). Journal of Criminal Justice, 30, 65–76.

Levitt, S. D. (1997). Using electoral cycles in police hiring to estimate the effect of police on crime. American Economic Review, 87, 270–290.

MacDonald, H. (2016). The war on cops: How the new attack on law and order makes everyone less safe. Encounter Books.

MacLean, C. E. (2020). Improving African American confidence in law enforcement: Recruit to optimize procedural justice, not racial quotas. International Journal of Police Science & Management, 146135572097469. https://doi.org/10.1177/1461355720974698

Maguire, E. R., Nix, J., & Campbell, B. A. (2017). A war on cops?: The effects of Ferguson on the number of U.S. police officers murdered in the line of duty. Justice Quarterly, 34(5), 739–758.

Main, F., & Spielman, F. (2021, January 15). Police retirements grow in Chicago, New York, Minneapolis amid anti-police backlash. Chicago Sun-Times. https://chicago.suntimes.com/2021/1/15/22229584/police-retirements-backlash-chicago-new-york-minneapolis-john-catanzara-fop-michael-lappe

Marier, C. J., & Moule, R. K. (2019). Feeling blue: Officer perceptions of public antipathy predict police occupational norms. American Journal of Criminal Justice, 44(5), 836–857. https://doi.org/10.1007/s12103-018-9459-1

Marvell, T. B., & Moody, C. E. (1996). Specification problems, police levels, and crime rates. Criminology, 34, 609–646.

McLaughlin, E. C., & Vera, A. (2020, August 24). Wisconsin police shoot Black man as children watch from a vehicle, attorney says. CNN. https://www.cnn.com/2020/08/24/us/kenosha-police-shooting-jacob-blake/index.html

Mello, S. (2019). More COPS, less crime. Journal of Public Economics, 172, 174–200. https://doi.org/10.1016/j.jpubeco.2018.12.003

Moon, B., & Hwang, E. (2004). The reasons for choosing a career in policing among South Korean cadets. Journal of Criminal Justice, 32, 223–229.

Moon, B., & Zager, L. J. (2007). Police officers' attitudes toward citizen support: Focus on individual, organizational and neighborhood characteristic factors. Policing: An International Journal of Police Stategies & Management, 30, 484–497. https://doi.org/10.1108/13639510710778859

Morrow, W. J., Vickovic, S. G., Dario, L. M., & Shjarback, J. A. (2019). Examining a Ferguson Effect on college students' motivation to become police officers. Journal of Criminal Justice Education, 30(4), 585–605. https://doi.org/10.1080/10511253.2019.1619793

Morrow, W. J., Vickovic, S. G., & Shjarback, J. A. (2020). Motivation to enter the police profession in the post-Ferguson era: An exploratory analysis of procedural justice. Criminal Justice Studies, 1–21. https://doi.org/10.1080/1478601X.2020.1802591

Mourtgos, S. M., & Adams, I. T. (2019a). The effect of prosecutorial actions on deterrence: A county-level analysis. Criminal Justice Policy Review. https://doi.org/10.1177/0887403419829201

Mourtgos, S. M., & Adams, I. T. (2019b). The rhetoric of de-policing: Evaluating open-ended survey responses from police officers with machine learning-based structural topic modeling. Journal of Criminal Justice. https://doi.org/10.1016/j.jcrimjus.2019.101627

Mourtgos, S. M., & Adams, I. T. (2020). Assessing public perceptions of police use-of-force: Legal reasonableness and community standards. Justice Quarterly, 37(5), 869–899. https://doi.org/10.1080/07418825.2019.1679864

Mourtgos, S. M., Mayer, R. C., Wise, R. A., & O'Rourke, H. (2020). The Overlooked Perspective of Police Trust in the Public: Measurement and Effects on Police Job Behaviors. Criminal Justice Policy Review, 31(5), 639–672. https://doi.org/10.1177/0887403419851850

Muir, W. K. (1977). Police: Streetcorner politicians. University of Chicago Press.

Myhill, A., & Bradford, B. (2013). Overcoming cop culture? Organizational justice and police officers' attitudes toward the public. Policing: An International Journal of Police Strategies & Management, 36(2), 338–356. https://doi.org/10.1108/13639511311329732

Niederhoffer, A. (1967). Behind the shield: The police in urban society. Doubleday.

Nix, J. (2020). On the challenges associated with the study of police use of deadly force in the United States: A response to Schwartz & Jahn. PLoS ONE, 15(7). https://doi.org/10.1371/journal.pone.0236158

Nix, J., Pickett, J. T., & Wolfe, S. E. (2020). Testing a theoretical model of perceived audience legitimacy: The neglected linkage in the dialogic model of police–community relations. Journal of Research in Crime and Delinquency, 57(2), 217–259. https://doi.org/10.1177/0022427819873957

Nix, J., & Wolfe, S. E. (2016). Sensitivity to the Ferguson Effect: The role of managerial organizational justice. Journal of Criminal Justice, 47, 12–20. https://doi.org/10.1016/j.jcrimjus.2016.06.002

Nix, J., & Wolfe, S. E. (2017). The impact of negative publicity on police self-legitimacy. Justice Quarterly, 34(1), 84–108. https://doi.org/10.1080/07418825.2015.1102954

Nix, J., & Wolfe, S. E. (2020, June 18). Defunding or disbanding the police is a dangerous idea if done hastily. Washington Post. https://www.washingtonpost.com/crime-law/2020/06/18/guest-post-defunding-or-disbanding-police-is-dangerous-idea-if-done-hastily/

Oliveira, T. R., Jackson, J., Murphy, K., & Bradford, B. (2020). Are Trustworthiness and Legitimacy 'Hard to Win, Easy to Lose'? A Longitudinal Test of the Asymmetry Thesis of Police-Citizen Contact. Journal of Quantitative Criminology. https://doi.org/10.1007/s10940-020-09478-2

Orrick, D. (2008). Recruitment, retention, and turnover of police personnel: Reliable, practical, and effective solutions. Charles C. Thomas Publisher, Ltd.

Paoline, E. A. (2003). Taking stock: Toward a richer understanding of police culture. Journal of Criminal Justice, 31(3), 199–214. https://doi.org/10.1016/S0047-2352(03)00002-3

Paoline, E. A., & Gau, J. M. (2020). An Empirical Assessment of the Sources of Police Job Satisfaction. Police Quarterly, 23(1), 55–81. https://doi.org/10.1177/1098611119875117

Paoline, E. A., & Terrill, W. (2007). Police education, experience, and the use of force. Criminal Justice and Behavior, 34(2), 179–196.

PERF. (2019). The workforce crisis, and what police agencies are doing about it. Police Executive Research Foundation. https://www.policeforum.org/assets/WorkforceCrisis.pdf

Peyton, K., Sierra-Arévalo, M., & Rand, D. G. (2019). A field experiment on community policing and police legitimacy. Proceedings of the National Academy of Sciences, 116(40), 19894–19898. https://doi.org/10.1073/pnas.1910157116

Piza, E. L., & Chillar, V. F. (2020). The effect of police layoffs on crime: A natural experiment involving New Jersey's two largest cities. Justice Evaluation Journal, 1–19. https://doi.org/10.1080/24751979.2020.1858697

President's Task Force on 21st Century Policing. (2015). Final Report of the President's Task Force on 21st Century Policing.

Rantz, J. (2020, December 28). Rantz: Seattle Police on pace to lose nearly 200 officers in mass exodus this year. MyNorthwest.Com. https://mynorthwest.com/2392075/rantz-seattle-police-lose-nearly-200-officers-

mass-exodus-2020/?

Ren, L., Cao, L., Lovrich, N., & Gaffney, M. (2005). Linking confidence in the police with the performance of the police: Community policing can make a difference. Journal of Criminal Justice, 33(1), 55–66. https://doi.org/10.1016/j.jcrimjus.2004.10.003

Rhodes, T. N., & Tyler, D. H. (2019). Is It cool to be a cop? Exploring the differential impact of Ferguson on police applicants. Policing: A Journal of Policy and Practice. https://doi.org/10.1093/police/paz013

Rosenfeld, R., & Lopez, E. (2020). Pandemic, social unrest, and crime in U.S. cities.

Sanders, B. A. (2008). Using personality traits to predict police officer performance. Policing: An International Journal of Police Strategies & Management, 31(1), 129–147. https://doi.org/10.1108/13639510810852611

Saunders, J., Kotzias, V., & Ramchand, R. (2019). Contemporary police stress: The impact of the evolving socio-political context. Criminology, Criminal Justice, Law & Society, 20(1), 35–52.

Schott, C., & Ritz, A. (2018). The dark sides of public service motivation: A multi-level theoretical framework. Perspectives on Public Management and Governance, 1(1), 29–42. https://doi.org/10.1093/ppmgov/gvx011

Schuck, A. M., & Rabe-Hemp, C. E. (2018). Investing in people: Salary and turnover in policing. Policing: An International Journal, 41(1), 113–128. https://doi.org/10.1108/PIJPSM-09-2016-0137

Shadish, W. R., Cook, T. D., & Campbell, D. T. (2002). Quasi-experiments: Interrupted time-series designs. Experimental and quasi-experimental designs for generalized causal inference.

Shjarback, J. A., & Maguire, E. R. (2021). Extending research on the "war on cops": The effects of Ferguson on nonfatal assaults against U.S. police officers. Crime & Delinquency, 67(1), 3–26. https://doi.org/10.1177/0011128719890266

Sierra-Arévalo, M., & Nix, J. (2020). Gun victimization in the line of duty: Fatal and non-fatal firearm assaults on police officers in the United States, 2014-2019. Criminology & Public Policy. https://jnix.netlify.app/files/pdfs/cpp_gva_assaults.pdf

Steers, R. M., Mowday, R. T., & Shapiro, D. L. (2004). The future of work motivation theory. The Academy of Management Review, 29(3), 379–387. https://doi.org/10.2307/20159049

Tankebe, J. (2014). Rightful authority: Exploring the structure of police self-legitimacy. In Crime, justice and social order: Essays in honour of A. E. Bottoms (pp. 1–30). Oxford University Press.

Terrill, W., Paoline, E. A., & Manning, P. K. (2003). Police culture and coercion. Criminology, 41(4), 1003–1034. https://doi.org/10.1111/j.1745-9125.2003.tb01012.x

Thibaut, J. W., & Kelley, H. H. (1959). The social psychology of groups. John Wiley & Sons, Inc.

Tiesman, H. M., Gwilliam, M., Konda, S., Rojek, J., & Marsh, S. (2018). Nonfatal injuries to law enforcement officers: A rise in assaults. American Journal of Preventive Medicine, 54(4), 503–509. https://doi.org/10.1016/j.amepre.2017.12.005

Todak, N. (2017). The decision to become a police officer in a legitimacy crisis. Women & Criminal Justice, 27(4), 250–270. https://doi.org/10.1080/08974454.2016.1256804

Trinkner, R., Tyler, T. R., & Goff, P. A. (2016). Justice from within: The relations between a procedurally just organizational climate and police organizational efficiency, endorsement of democratic policing, and officer well-being. Psychology, Public Policy, and Law, 22(2), 158–172. https://doi.org/10.1037/law0000085

Vitale, A. S. (2017). The end of policing. Verso Books.

Wallace, D. (2020, December 23). Portland cops resigning at "unprecedented" level midcareer to take low-paying jobs elsewhere: Report [Text.Article]. Fox News; Fox News. https://www.foxnews.com/us/portland-police-officers-resign-unprecedented-level-defund-police

Washington Post. (2021). Fatal force: Police shootings database. Fatal Force. https://www.washingtonpost

.com/graphics/investigations/police-shootings-database/

Weichselbaum, S., & Lewis, N. (2020, June 9). Support for defunding the police department is growing. Here's why it's not a silver bullet. The Marshall Project. https://www.themarshallproject.org/2020/06/09/support-for-defunding-the-police-department-is-growing-here-s-why-it-s-not-a-silver-bullet

White, M. D., Cooper, J. A., Saunders, J., & Raganella, A. J. (2010). Motivations for becoming a police officer: Re-assessing officer attitudes and job satisfaction after six years on the street. Journal of Criminal Justice, 38(4), 520–530. https://doi.org/10.1016/j.jcrimjus.2010.04.022

Wilson, J. M. (2012). Articulating the dynamic police staffing challenge: An examination of supply and demand. Policing: An International Journal of Police Strategies & Management, 35(2), 327–355. https://doi.org/10.1108/13639511211230084

Wilson, J. M., Dalton, E., Scheer, C., & Grammich, C. A. (2010). Police recruitment and retention for the new millennium (p. 150). RAND Corporation.

Winsor, M., Brady, E., & Wash, S. (2021, January 14). ABC News exclusive: Jacob Blake speaks out for 1st time since being shot by police. ABC News. https://abcnews.go.com/US/abc-news-exclusive-jacob-blake-speaks-1st-time/story?id=75244637

Wolfe, S. E., & Lawson, S. G. (2020). The organizational justice effect among criminal justice employees: A meta-analysis. Criminology, 58(4), 619–644. https://doi.org/10.1111/1745-9125.12251

Wolfe, S. E., & Nix, J. (2016). The alleged "Ferguson Effect" and police willingness to engage in community partnership. Law and Human Behavior, 40(1), 1–10. https://doi.org/10.1037/lhb0000164

Wolfe, S. E., Nix, J., & Campbell, B. A. (2018). Police managers' self-control and support for organizational justice. Law & Human Behavior, 42(1), 71–82.

Wu, Y., Sun, I. Y., Chang, C. K.-M., & Hsu, K. K.-L. (2017). Procedural justice received and given: Supervisory treatment, emotional states, and behavioral compliance among Taiwanese police officers. Criminal Justice and Behavior, 44(7), 963–982. https://doi.org/10.1177/0093854817702407

Wulfsohn, J. (2021, January 5). Washington Post slammed for claiming Jacob Blake was "unarmed" during altercation with Kenosha police [Text.Article]. Fox News; Fox News. https://www.foxnews.com/media/washington-post-jacob-blake-unarmed-kenosha

Yim, Y., & Schafer, B. D. (2009). Police and their perceived image: How community influence officers' job satisfaction. Police Practice and Research, 10, 17–29. https://doi.org/10.1080/15614260802128658