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## Police Contact and Mental Health

Amanda Geller  
abg2108@columbia.edu

Jeffrey Fagan  
*Columbia Law School*, jfagan@law.columbia.edu

Tom R. Tyler  
tom.tyler@nyu.edu

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## Police Contact and Mental Health

Amanda Geller<sup>\*</sup>

Jeffrey Fagan<sup>†</sup>

Tom R. Tyler<sup>‡</sup>

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<sup>\*</sup> Clinical Associate Professor of Sociology, New York University. This research was supported by Grant No. 2010-IJ-CX-0025 from the National Institute of Justice, Grant No. 69669 from the Public Health Law Research Program of the Robert Wood Johnson Foundation, and Award No. R24HD058486 to the Columbia Population Research Center from the National Institute of Child Health & Human Development. Thanks for helpful comments to participants at the 2014 Public Health Law Research Conference and 2016 International Meeting of the Association for Public Policy Analysis and Management. Fagan was expert witness for plaintiffs in *Floyd v. City of New York*, 959 F. Supp. 2d 540 (2013). All opinions and errors are ours alone.

<sup>†</sup> Isidor and Seville Sulzbacher Professor of Law and Professor of Epidemiology, Columbia University

<sup>‡</sup> Macklin Fleming Professor of Law and Professor of Psychology at Yale Law School

## ABSTRACT

*Although an effective police presence is widely regarded as critical to public safety, less is known about the effects of police practices on mental health and community well-being. Adolescents and young adults in specific neighborhoods of urban areas are likely to experience assertive contemporary police practices. This study goes beyond research on policing effects on legal socialization to assess the effects of police contact on the mental health of those stopped by the police. We collected and analyzed data in a two-wave survey of young men in New York City (N=717) clustered in the neighborhoods with the highest rates of involuntary person-police contact. We focus on two indicia of mental health, anxiety and post-traumatic stress disorder, and assess their association with two dimensions of experience with the police: the quantity and intensity of police contact. Panel regression models indicate that, controlling for past police contact and mental health, recent police contact – specifically the extent of police intrusion in a recent “critical” stop – is associated with increased levels of anxiety symptoms, and both quantity and intensity of recent stop experience are significantly associated with increased PTSD symptoms. Additional analyses suggest that particular types of intrusion respondents experience may be a stronger determinant of subsequent health than the quantity of stops reported.*

## I. INTRODUCTION

The twentieth-century expansion of the United States criminal justice system has motivated a far-reaching examination of the effects of criminal justice policies, practices and institutions (Rosenfeld, 2011; Skogan & Frydl, 2004; Travis, Western, & Redburn, 2014). The role of police both in supplying cases to criminal justice institutions as well as in the fabric of community life has been a prominent feature of this examination. In 2011, over 62.9 million U.S. residents, 26% of the population age 16 or older, reported contact with the police over the previous 12 months (Langton & Durose, 2013). Approximately half of those reporting police contact experienced police-initiated, or involuntary, contact, such as an investigative stop while driving or as a pedestrian (Langton & Durose, 2013), making the consequences of such contact critical to understand.

For adolescents and young adults, police contact and arrest has become an unfortunate and predictable feature of adolescence and young adulthood. Evidence from the National Longitudinal Survey of Youth shows that by age 18, the cumulative arrest prevalence rates<sup>1</sup> range from 30.2-41.4% (Brame, Turner, Paternoster, & Bushway, 2012). Police exposure and sanctions are racially skewed. The cumulative arrest rate for Black males by age 23 is 49% for Black males compared to 38% for White males (Brame, Bushway, Paternoster, & Turner, 2014).

Still, police are an important component of crime control (Braga, Welsh, & Schnell, 2015; Durlauf & Nagin, 2011). Levitt (2004) found that police were a key part of the crime decline in cities across the U.S. in the 1990s. Evans and Owens (2007) found investments in policing to be associated with lower crime rates. However, there is less consensus about *how* investments in policing may contribute to crime reductions (Skogan

& Frydl, 2004), or the relative contributions of specific policing tactics that may contribute to crime control (Groff et al., 2015).

This research has said little about the broader implications of police activity beyond crime control. In this article, we focus on the question of how policing tactics contribute to specific collateral consequences related to the emotional well-being of people who come into contact with the police. The increased attention to police violence against citizens has raised the prominence of police-community relations in public consciousness and discourse (Hagelskamp, Friedman, Rizzolo, Rinehart, & Schleifer, 2015), underscoring their salience as a public health issue (American Public Health Association, 2016; Cooper & Fullilove, 2016; Krieger, Chen, Waterman, Kiang, & Feldman, 2015).

This article estimates the potential health consequences of police contact for young men in New York City, where the influence of the police on community life has been celebrated as a national model (Cullen, 1997; Zimring, 2011), but also been challenged over the past 20 years on grounds ranging from efficacy (Fagan, 2012) to constitutionality (Fagan, 2010; Floyd et al. v. City of New York et al., 2013), to legitimacy (Tyler, Fagan, & Geller, 2014) to its potential implications for community health (DeVylder et al., 2017; Geller, Fagan, Tyler, & Link, 2014; Sewell & Jefferson, 2016; Sewell, Jefferson, & Lee, 2016). We analyze two waves of data from a population-based survey that provides detailed information about police encounters that respondents have experienced over a six-month period, as well as respondents' reports of mental health symptoms at the beginning and end of this period. This unique dataset permits the assessment of police-public interactions in the context of respondents' broader health

trajectories, improving our ability to identify potential mental health consequences of their experiences with the police.

#### **A. Proactive Policing and Public Life**

The prevalence of police-initiated encounters reflects a contemporary shift of many urban police departments to strategies known as “proactive policing” (Kubrin, Messner, Deanne, McGeever, & Stucky, 2010) and “*Broken Windows*” policing (Kelling & Coles, 1996; Wilson & Kelling, 1982), which have significantly increased youth exposure to the police in recent decades, particularly for young men of color (American Civil Liberties Union of Illinois, 2015; Meares, 2014; New York Civil Liberties Union, 2013; White & Fradella, 2016). Between 2004 and 2012, the New York City Police Department (NYPD) recorded more than 200,000 police-initiated stops of youth between the ages of 13 and 15 (City of New York, 2016). A survey of Chicago public school students found that approximately half had been stopped, questioned, and “told off or told to move on” by the time they were in ninth or tenth grade (Shedd, 2015).

A substantial empirical literature examines a wide array of potential consequences of personal contact with the police. Research under a variety of sampling and measurement conditions shows that personal experience with the police shapes community members’ perceptions of police legitimacy, with police conduct and procedural justice key mediators of the relationship (Fagan & Tyler, 2005; Tyler & Fagan, 2008; Tyler et al., 2014; Tyler & Huo, 2002). The efficacy of policing practices for detecting or preventing criminal activity is a separate dimension of policing that is orthogonal to, but may interact with, its health impacts or effects on legitimacy, net of criminal victimization experience (Fagan, 2016; Weisburd, Wooditch, Weisburd, &

Yang, 2016). Aggressive policing can aggravate racial disparities in arrests, detentions, convictions and sentences, blocking social mobility and compounding the social, psychological and physical health stresses of economic isolation (Fagan & Ash, 2017). Still other dimensions of these police practices include their constitutionality (Sweeten, 2016), and the dignity that police officers afford the people with whom they interact (Capers, 2011; Fagan, 2017a; Simon, 2017). Tactics that may be efficient in crime control can do harms to observable outcomes such as health, perceived legitimacy, and economic well-being.

### **B. Proactive Policing in New York City**

Debate over the effects of policing tactics on communities has been particularly prominent in New York City. The primary tactic used by the New York Police Department in the late 20<sup>th</sup> and early 21<sup>st</sup> century has been the use of widespread investigative stops, or *Terry* stops ("Terry v. Ohio," 1968). In New York City, these actions are known as "Stop and Frisk", "Stop, Question and Frisk", or "SQF" activity ("Daniels v. City of N.Y., Stipulation of Settlement," 2003; Floyd et al. v. City of New York et al., 2013). SQF is part of a proactive crime prevention posture that combines intensive use of investigative stops to interdict suspected criminal activity and detect the presence of contraband, the targeting of low-level violations and misdemeanors that disrupt social order such (Kubrin et al., 2010; Maple & Mitchell, 2000; Wilson & Kelling, 1982), and aggressive enforcement of misdemeanor and felony crimes (Kubrin et al., 2010). The logic to this strategy is disruption first of insipient criminal activity, and second, to disrupt low-level criminal activity from escalating to more serious crime. Combined with crime analytics to target specific places and strong management

accountability for crime reduction, these tactics form what at their outset was known as the New Policing (Fagan, Braga, Brunson, & Pattavina, 2016; Heymann, 2000).

SQF activity has been controversial for its heavy use in the policing of young black and Hispanic men (New York Civil Liberties Union, 2013), its limited efficacy in detecting illegal activity (Goel, Rao, & Shroff, 2016; MacDonald, Fagan, & Geller, 2016), and a pattern of practice that violated the Fourth and Fourteenth Amendments (prohibiting illegal search and seizure, and ensuring equal protection under the law, respectively) (Floyd et al. v. City of New York et al., 2013). Although SQF activity in New York City has declined considerably since 2012, in anticipation of the 2013 Federal court decision (*ibid.*)<sup>2</sup>, proactive policing practices remain common both in New York and elsewhere (American Civil Liberties Union of Illinois, 2015; Chauhan, Fera, Welsh, Balazon, & Misshula, 2014; Chauhan et al., 2015; Saul, 2016), making their consequences critical to understand.

Police contact has the potential to be stressful, and analyses from New York City find associations between invasive police stops and symptoms of anxiety and Post-Traumatic Stress Disorder (PTSD) (Geller et al., 2014), and in neighborhood policing context and multiple dimensions of poor health (Sewell & Jefferson, 2016; Sewell et al., 2016). Data from the Survey of Police-Public Encounters indicate a significant association between police abuse and suicide attempts (DeVylder et al., 2017). The prominence of the police in American life suggests that if these associations reflect a causal effect of police contact, police interactions could have profound implications for mental health, and for public health more broadly. Further, racial disparities in contemporary police practices suggest that harsh treatment during such encounters may

exacerbate long-standing racial disparities in health (Wakefield & Wildeman, 2014).

However, to date data limitations – particularly, a reliance on cross-sectional data – have precluded the analysis of how health conditions might change following contact with the police.

### **C. Potential Health Consequences of Police Contact**

#### ***1. Potential Mechanisms***

Police contact may threaten the physical and mental health of individuals stopped in several ways. The invasive manner in which many people are approached by the police (Brunson & Weitzer, 2009; Fagan, 2010; Levine & Small, 2008) carries the potential not only for physical injury (Ross, 2015; Sewell, 2017) but also for psychological stress and related health challenges (Thoits, 2010). In addition to any acute stress of the event itself, an encounter with the police has the potential to converge with pre-existing chronic strain to underscore individuals' relatively low social position, contributing to adverse outcomes. Further, if the “dosage” of police contact experienced is strong, if the police threaten future violence, or if individuals stopped believe they could be stopped again at any time, the anticipation of subsequent contact could cause or exacerbate stress and associated health problems (Brosschot, Gerin, & Thayer, 2006).

Police contact may be particularly damaging to racial and sexual minorities, populations at elevated risk of being stopped by the police (Alpert et al., 2006; Ayres & Borowsky, 2008; Bailey et al. v. City of Philadelphia et al., 2011; Fagan, 2010; Mallory, Hasenbush, & Sears, 2015). Qualitative research finds that many young people report the use of racial invective and homophobic harassment by police officers who stop them (Brunson, 2007; Brunson & Weitzer, 2009; Mallory et al., 2015), which have the

potential to trigger stigma and stress responses (Hatzenbuehler, Phelan, & Link, 2013; Link & Phelan, 2001). To the extent that individuals stopped believe that they were targeted because of their identity, the stresses they experience could be compounded (Freeman Anderson, 2013; Hatzenbuehler, McLaughlin, Keyes, & Hasin, 2010; Krieger, 1999; Phelan & Link, 2015; Sawyer, Major, Casad, Townsend, & Berry Mendes, 2012).

What happens during a stop potentially explains the mechanisms that can produce the psychological injuries that we observe in this project. In *Terry v. Ohio* (1968), the Court warned about the potential harms from investigative stops.<sup>3</sup> If a person stopped by the police feels that s/he had no ability to prevent the humiliation of a public stop, frisk and perhaps an intrusive search, either because she was targeted in the specific incident, or because of features such as race that would make her targeted over and over again, a sense of the loss of one's control over what happens with her own life, and the feeling of being treated as less worthy of respect than others, are likely to deepen the subjective feeling of powerlessness before legal authorities (Resnik & Suk, 2003). Even encounters involving only minor intrusion on privacy or liberty (such as being stopped on the street by a police officer and being asked to identify oneself), are likely to be experienced as subjectively and cumulatively humiliating if one feels that the stop was mistaken, that there is nothing s/he could have done to stop it from happening this time, and that there is nothing she can do to stop it from happening again and again.

Put another way, when stops so rarely result in either arrest or seizure of contraband (*Floyd v. City of New York*, 2013) one could ask "why me"? Why would a police officer use her discretion to single out me of all people absent a valid and proper evidentiary basis? Why would s/he have a "hunch" that I am a criminal? The fact of

*innocence* in most stops compounds the sense of being targeted.<sup>4</sup> An additional injury flows from the racial bias in the distribution of these incursions: the signaling of suspicion if not criminality on black citizens simply by virtue of being black or moving about in a black neighborhood (Brunson & Weitzer, 2009; Capers, 2011; Epp, Maynard-Moody, & Haider-Markel, 2014). To a lesser extent, the same harms accrue to Latino young men, as well as Latino and Black young adults (Fagan, 2017a). Capers (2011) identifies the subjective feelings of rage and humiliation from this form of public shaming. These emotions are perhaps multiplied by the threat or reality of the use of physical force that accompanies many stops (Brunson & Weitzer, 2009; Fryer Jr., 2016; Geller et al., 2014; Legewie, 2016; White & Fradella, 2016).

Bell (2017) suggests that these experiences of procedural injustice – violence, extra-legal stops, dismissal – combine with structural exclusion and marginalization leading to legal “estrangement” and a state of anomie in relationship to law. Epp et al. (2014) describe a different form of estrangement that is produced when one is treated simply illegally or unconstitutionally. The fact that legal authorities exercise their power in the form of a street stop that may be unconstitutional – lacking Fourth Amendment validity or race-based – signals that the person is not worthy of equality of treatment before the law, a form of democratic exclusion (Shedd, 2017). Berg, Stewart, Intravia, Warren, and Simons (2016) in turn link legal cynicism or estrangement to perceived injustices or adverse police encounters. Each of these perspectives speaks to the emotions that are activated in these everyday encounters: fear, anger, anxiety – that are internalized after each negative interaction. As negative interactions accrue over time, the weight of these internalized emotions in the context of powerlessness to remedy them or

ward them off creates a psychological burden that we hypothesize manifests itself in distinct forms of behavioral and emotional symptoms.

Yet, interactions may also be quite positive and supportive, leading to a sense of safety and well-being (Bell, 2017). Proactive policing tactics have the potential to improve individual and community health through improvements to public safety and by promoting a feeling of security (Powell, 2012). Tensions exist between safety demands and enforcement challenges (Rivera, 2012), suggesting that any adverse consequences of aggressive police contact may be offset by some health and safety benefits. However, this tradeoff is transferred between individuals: the safety benefit of proactive policing and aggressive stops may be harmful to the person stopped but comforting to a similarly situated person who may enjoy a marginal personal safety benefit. Moreover, the tradeoff argument assumes a median level of force in the encounter. Research has not yet identified a threshold where the type or amount of force in a police encounter reduces any secondary or transferred benefit to others in the area. Accordingly, the net effects of police contact on health are theoretically ambiguous.

## ***2. Selection into Police Contact***

Estimating the health risks and benefits associated with police contact is further complicated by the selection factors that may increase individuals' exposure to the police. Of particular importance for this study are police encounters with persons who may be displaying symptoms of mental health problems that may attract police attention from the symptoms themselves (Goode, 2016). Signs of mental illness may also moderate both selection of emotionally disturbed persons (EDP's, in police parlance) for police contact, and the treatment they receive during those encounters. In addition, people engaged in

illegal activities may face stresses and adverse health consequences as a result of these activities, while also engaging in related behaviors that attract police attention (Lamb, Weinberger, & Gross, 2004).

There is mixed evidence on whether EDP's are at greater risk for harsh police treatment than other persons in involuntary police encounters. One study in Canada suggested that mentally ill persons report fair treatment by the police (Livingston et al., 2014). But other studies suggest harsher treatment of EDP's. When both police and suspect behavior are covaried, police use of force is not explained by suspect resistance or use of force or even menacing behaviors toward police (Mulvey & White, 2014) Mulvey and White instead show that police are more likely to respond with violence to personal affronts by mentally ill persons compared to affronts from others. In addition, their study found that race, age and social standing moderate police responses. Accordingly, identifying the unique association between police contact and prior or subsequent health and the outcomes of police encounters net of confounding personal circumstances, presents strong empirical challenges.

### ***3. Weathering or Resilience: Consequences of Repeated Contacts***

The potential effects of police contact on emotional well-being raises questions of the dosage or exposure, duration and intensity of contact, and the norms and expectations of those stopped in relation to similarly situated persons with similar experiences. In other words, the internalization of stop experiences is moderated by contexts including family, peers and community. The concentration of police stops in New York by neighborhood (Fagan and Davies, 2014; White and Fradella, 2016; Fagan, Geller, Davies, & West, 2010) raises additional questions about the ongoing relationship between police

and the places where police are allocated and stops are concentrated (Fagan, 2017b, 2017c).

Many young people stopped by the police are stopped repeatedly (Brunson & Weitzer, 2009; Geller et al., 2014; Shedd, 2015). Repeated contacts of this nature, and the inherent suspicion they represent, have the potential to stigmatize those who are stopped (Link and Phelan 2001), undermining their wellbeing (Hatzenbuehler et al., 2013). Even if individual encounters with the police are not extraordinarily invasive, repeated police contact has the potential for a cumulative “weathering” effect that compromises the health of those facing stressors over an extended period of time (Geronimus, 1992).

On the other hand, qualitative interviews of young people experiencing police contact in New York City, including many stopped multiple times, find that most report feeling positively about their racial and ethnic identities, their abilities, and optimism for the future (Fratello, Rengifo, & Trone, 2013). Although the small interview sample is unlikely to represent the large population of young people stopped each year, their resilience suggests that their experiences may lead them to, as suggested by former NYPD commissioner Raymond Kelly, accept stop activity as a “fact of urban life” (Williams, Fromer, Fagbenle, & Stein, 2012). Young people may be resigned to a persistent police presence in their lives – which itself may mask adverse consequences of repeated contacts with the police, but lead to a resilience by which a high volume of stops has diminishing marginal consequences. The health implications of persistent police contact are as yet unknown.

#### **D. The Current Study**

This study makes both substantive and structural contributions to the literature on policing and its collateral consequences. Substantively, our study permits the assessment of respondents' mental health over a six-month period in relation to police contact. We assess changes in self-reported anxiety and PTSD symptoms following experiences with the police, improving our ability to make causal inferences and rule out alternative explanations for observed relationships. The study also assesses the extent to which repeated exposure to police contact, regardless of the intensity or intrusiveness of any particular incident, might be associated with mental health symptoms, testing the extent to which young people stopped repeatedly might suffer from a weathering effect of police contact, or conversely, might develop resilience as a result. These substantive contributions are enabled by innovations in the data available for assessing the relationship between police contact and health. Our survey provides new, longitudinal information on a population facing high levels of exposure to the police (young urban men) in a social context of saturated proactive policing tactics.

### *1. Assessing Effects of Police Contact*

As noted, police contact has the potential to be either health-conferring (through improvements to public safety or affirmation of one's democratic belonging) or a threat to health (due to the stresses and stigma associated with many encounters). Estimating these consequences is complicated by numerous selection factors that determine who is stopped and under what circumstances. Previous research (Geller et al., 2014; Sewell & Jefferson, 2016; Sewell et al., 2016) finds that individuals with greater exposure to the police report higher levels of mental health symptoms than their less-exposed counterparts; however, these findings have been based on cross-sectional data and unable

to distinguish causal effects of policing from the other factors associated with selection into police contact.

The current analysis builds on previous findings to measure changes in individuals' cumulative experiences with the police and changes in their health status over time, improving our ability to separate the changes caused by police contact from respondents' confounding characteristics that select them for police exposure. We also examine the extent to which different attributes of individuals' experiences with the police (specifically, both the intensity of a singular incident and the cumulative quantity of contact experienced), may be differentially associated with adverse health outcomes.

## ***2. Available Data on Police Contact and Health Consequences***

Understanding changes in respondents' mental health in response to police encounters is made possible by new information not collected in previous studies. Administrative data on police contact with the public are generally de-identified and recorded at the incident level rather than the individual level; as a result, information on police interactions cannot be interpreted in the context of the individuals stopped by the police, and these data are unable to assess their prior or subsequent wellbeing. The Police-Public Contact Survey provides a descriptive picture of police contact at the level of individuals, who may or may not have been stopped, (Langton & Durose, 2013), but does not ask about health. Surveys that are well-equipped to assess health, such as the National Health Interview Survey or the National Health and Nutrition Examination Survey (National Center for Health Statistics, 2016a, 2016b), contain little information on criminal justice contact. Data from the National Longitudinal Survey of Youth contain information about respondents' arrest history and health (Brame et al., 2012), but say

little about lower-level police contact. The National Longitudinal Study of Adolescent Health (AddHealth) asks a basic set of questions on police contact, along with questions on health (Carolina Population Center, 2016); however, the AddHealth cohort came of age before the rise in proactive policing, and the survey asks only about the quantity of police contact that respondents have experienced, rather than the details of what might have happened in the course of this contact.

Recent studies from New York City provide new information on police contact and health by merging data from a population-based health survey with administrative data on police contact in respondent neighborhoods (Sewell & Jefferson, 2016; Sewell et al., 2016). However, police exposure in these studies is inferred from neighborhood rates rather than respondents' personal experiences, creating the risk of associations based on an ecological fallacy (Gelman, Park, Shor, Bafumi, & Cortina, 2008). The health survey used by Sewell and Jefferson (2016) and Sewell et al. (2016) also collects data from a series of cross-sections of New York City residents, which provide a representative view of the city at an aggregate level, but are unable to track the wellbeing of individuals over time. Likewise, a prior analysis of survey data (Geller et al., 2014) that identifies significant associations between police contact and mental health does so in a single cross section of survey data. Data for the current study is based on repeated interviews with the same respondents, which are better equipped to assess the extent to which observed health symptoms follow police contact and might reflect causal effects of this contact, rather than long-standing conditions.

## **DATA AND METHODS**

### **A. Data**

Data were obtained from a population-based phone survey of young men (aged 18-26 at baseline) in New York City conducted from September 2012 through October 2103. Participants were selected from a stratified random sample of young men recruited from a neighborhood sample that combined the city's 295 neighborhoods (Community Studies of New York, 2007) into 146 "neighborhood clusters", and stratified these clusters based on the number of stops recorded in 2008 and 2009. Clusters were randomly selected for sampling within deciles of stop activity, systematically oversampling high-stop clusters, but including neighborhoods from all 10 deciles of stop activity<sup>5</sup>.

Subjects were recruited through a mix of random digit dialing and consumer telephone lists (including landline and cellphone numbers). Only males were recruited, as they represented nearly 90% of persons stopped by the NYPD (Fagan, 2010). When the person answering the telephone was a male resident of a sample neighborhood aged 18 to 26 years, interviewers invited him to participate—interviewers asked others answering the telephone to refer a male resident aged 18 to 26 years in the household. The American Association for Public Opinion Research (AAPOR) minimum response rate (the number of complete interviews divided by the total number of interviews, noninterviews, and cases of unknown eligibility) was 32%, with an AAPOR minimum cooperation rate (i.e., the proportion of eligible respondents completing the W1 survey) of 52% (American Association for Public Opinion Research, 2011). These rates are higher than average for contemporary phone surveys, reflecting the stark decline in phone survey response rates over the past 20 years (Dutwin & Lavrakas, 2016; Pew Research Center For the People and the Press, 2012), and the effectiveness of complementing RDD methods with

consumer lists that have the potential to identify potential respondents by sex, age and neighborhood.

Wave 1 (W1) interviews included 1261 participants from 37 neighborhood clusters; 722 were interviewed again approximately six months later (W2). Remaining W1 respondents were not heavily pursued due to cost constraints; a model predicting W2 retention is presented in Appendix 1. Retained respondents, who form the basis for this analysis, are significantly younger, more likely to be white, and more educated than their counterparts lost to attrition; however, retained respondents are not significantly different than those lost on self-reported measures of criminal history or stop experience at W1. Surveys lasted approximately 25 minutes, and participants received a \$25 incentive for their W1 interview, and \$50 for their W2 interview.

## **B. Measures**

In each survey wave, participants were asked about their experiences with the NYPD, their perceptions of police conduct during these encounters, and their mental health.

### **1. Health Outcomes**

We focus on two health outcomes: anxiety and PTSD symptom scales. Anxiety is measured using eight items from the Brief Symptom Inventory (Derogatis & Melisaratos, 1983), designed to identify mental health symptoms respondents experienced in the seven days leading up to their interviews ( $\alpha = .84$  at W1,  $.87$  at W2). PTSD is measured using a checklist of nine items from the Impact of Event Scale – Revised (Weiss, 2004), which identifies symptoms that respondents report associated with a particular “critical event” ( $\alpha = .78$  at W1 and W2). This method has been used to estimate PTSD among combat

veterans, survivors of natural disasters, first responders, and other potential trauma-exposed populations (Marmar et al., 2006). Respondents are asked to recall their encounter with the police that most stands out in their mind, and report whether they experienced particular reactions to this critical event. Notably, questions related to anxiety are asked of all respondents, while questions related to PTSD are asked only of respondents reporting that they had recently been stopped by the police. “Recent stops” referred at W1 to the previous year, and at W2 to the period since the prior survey.

Because the IES-R focuses specifically on responses to a critical event (in this case, the respondents’ most memorable recent stop), respondents not reporting police stops in the time period in question are coded to have a PTSD score of 0. The two measures are also structurally distinct in that each item of the BSI asks respondents to report if they “frequently”, “sometimes”, “seldom”, “almost never” or “never” experienced a symptom over the past week, while the IES-R asks only for binary indicators of whether respondents experienced each symptom. The IES-R has a minimum score of zero, and the BSI is transformed to have a minimum of zero. Specific items used in each measure are presented in Appendix 2.

## ***2. Police Contact***

We measure respondents’ experiences with the police based on whether they report being stopped, and the quantity and intensity of stops they have experienced. Quantity of police contact is measured by the number of stops respondents have experienced on the street and while driving, over the course of their lives, in the year before their Wave 1 (W1) survey, and in the W1-W2 interval. Stop intensity is based, in each wave, on respondents’ reports of the recent incident with the police that “stands out

most in their minds”; respondents identify up to 14 actions that officers might have taken in these critical encounters, ranging from routine inquiries such as asking their name or what they were doing, to more invasive tactics such as frisks, threats and use of force, or handcuffing. Intrusion is first measured as an additive scale ( $\alpha=.69$  at wave 1 .65 at wave 2), with alternative coding strategies explored in subsequent analyses that measure the severity of intrusion that respondents may experience, including, but not limited to, searches, frisks, and physical force. Coding for stop intensity is detailed in Appendix 2.

### 3. *Covariates*

We estimate the association between stop experience and mental health in the context of social, personal and behavioral characteristics that may be correlated with both. Demographic and socioeconomic background characteristics include race (coded as white, black, Hispanic, and “other”), nativity, age at each wave, education (whether the respondent completed less than high school, high school, “some college or technical training”, or graduated from college), and residence in public housing. We also control for respondents’ self-reported criminal behavior, using a variety score measuring engagement in a variety of illegal activities (Bendixen, Endresen, & Olweus, 2003). Criminal history items are detailed in Appendix 2.

In addition to respondents’ criminal histories, we control for their mental health histories, based on a self-report of whether they had ever sought or received treatment for a mental health condition. We also use an exposure to violence (ETV) scale to estimate specific sources of potential co-occurring trauma. The scale includes indicators of crime victimization, exposure to local violence, and having been in a serious accident (Earls, Brooks-Gunn, Raudenbush, & Sampson, 2005; Sampson, Morenoff, & Raudenbush,

2005). We also ask respondents to report whether they or members of their family were in the military, as a potential epistemic source of trauma. Finally, to control for other factors that might influence their perceptions of the police, respondents report whether they or members of their family worked in law enforcement.

### **C. Analysis Sample**

The analysis samples for our primary assessment of the relationship between stop experiences and subsequent health include respondents reporting each of the two mental health indicators at W2 (N=717 in each sample; 713 respondents are common to both samples, 4 respondents report anxiety but not PTSD, and 4 report PTSD but not anxiety). Missing data on measures of police contact and continuous and scalar covariates are imputed using the *mi* procedure in Stata 14.1, producing 50 “imputation” datasets that estimate values of missing data, by modeling the joint distribution of all variables in the model (Lee & Carlin, 2010; Royston, 2004; Rubin, 1987, 1996; University of Wisconsin Social Science Computing Cooperative, 2012; Young & Johnson, 2015). Limited missing data on binary covariates (personal or family military experience, law enforcement ties, and mental health treatment) are accounted for using a series of “status unknown” indicators. Analyses of the quantity and intensity of respondents’ stop experiences are based on a more limited sample (N=691), and include respondents who report their mental health outcomes, their lifetime count of stops experienced, and at least a partial report of the intrusion of their most memorable stop (or that they were not stopped).

Table 1 provides a description of the 50 imputed datasets comprising our analysis sample. Reflecting the oversample of high stop neighborhoods, our sample is nearly 60% black and Hispanic. Most respondents completed high school, but not a 4-year college,

and many face significant socioeconomic disadvantage: more than 10% live in public housing, and many report having witnessed significant violence. More than 20% self-report some criminal activity, and more than 12% report seeking or receiving mental health treatment. Few respondents report having served in the military, but more than 14% report having family members in the military. About one in seven (14%) report family members in law enforcement.

Both health outcomes have significantly right-skewed distributions, with the vast majority of the sample exhibiting few or no symptoms, and a very small portion exhibiting high symptom levels. The distribution of stop experience is similarly skewed, with only a small portion of the sample reporting high levels of stop intrusion.

[Table 1 about here]

#### **D. Analysis Strategy**

##### **1. Longitudinal Models**

Due to the overdispersion of both the BSI and IES-R distributions, we model the association between stop experience and subsequent mental health using negative binomial regression. All models are run in Stata 14.1. Vuong tests (Greene, 2003) using complete case datasets suggest that zero-inflated negative binomial (ZINB) models are preferable to standard negative binomial models when modeling anxiety symptoms, but indicate no significant difference between ZINB and standard models for PTSD symptoms. For the sake of parsimony, we use standard negative binomial models when predicting the IES-R, estimating ZINB models as a sensitivity analysis.

Taking advantage of the longitudinal nature of our data, all models have a lagged dependent variable structure; we assess the association between recent stops and

subsequent health measured at W2, with controls for W1 health status. Including lagged dependent variables improves our ability to control for personal characteristics and experiences, observed and unobserved, that might be associated with stop experience and health before the W1 survey. Since the lag period is limited to six months, concerns over time-varying covariates or intervening developmental processes are minimized. We thereby improve our ability to isolate the relationship between police contact and W2 health from alternate observable sources of variation in each.

Our first model, in which *HEALTH* alternately represents our measures of anxiety and PTSD, examines health differences between respondents who have and have not been stopped in the W1-W2 interval 2. In a standard negative binomial model, the probability that, for respondent  $i$ ,  $HEALTH_{2i}$  takes on a given value  $y_i$  is laid out in Model 1 (Equations 1a and 1b):

$$(1a) \quad Prob(HEALTH_{2i} = y_i | \mathbf{x}_i, u_i) = \frac{e^{-\lambda_i u_i} (\lambda_i u_i)^{y_i}}{y_i!}$$

and

$$(1b) \quad \ln \lambda_i + \ln u_i = \beta_0 + \beta_1 STOPPED_{1-2} + \beta_2 HEALTH_1 + \beta_3 STOPS_1 + \theta \mathbf{X} + \varepsilon_i$$

In this model,  $\lambda_i$  is a parameter representing the accumulation of symptoms or scale points, while  $u_i$  represents an individual, unobserved deviation from the conditional mean (Greene, 2003).  $STOPPED_{1-2}$  represents a binary indicator of whether a respondent was stopped between W1 and W2, while the vector  $STOPS_1$  represents the experiences with the police they reported at W1 survey: their quantity of stops and the level of intrusion they reported in the stop, from the year leading up to W1, that most stood out in their mind. The covariate vector  $\mathbf{X}$  includes respondent age, race, education, criminal

history (measured at W1), residence in public housing, having sought or received mental health treatment, having served in the military, having military family, having a personal or family law enforcement tie, and lifetime exposure to violence (all measured at W2).

ZINB models include a variation on Model 1; they posit that respondents may be in one of two discrete states: In the first, respondents always report zero symptoms (or in the case of anxiety, that they “never” experienced any of the listed symptoms over the past seven days). In the second state, their number of symptoms (or scale points) could be zero or a positive number. Our ZINB models specify the probability of being in state 1 (reporting zero symptoms) as a function of respondent race, age, education, lifetime exposure to violence and baseline criminal activity.

Our second model examines not only if respondents had been stopped in the W1-W2 interval, but the number of stops they report. Using the negative binomial functional form (standard or ZINB), Model 2 specifies:

$$\begin{aligned}
 (2) \ln \lambda_i + \ln u_i & \\
 &= \beta_0 + \beta_1 STOPPED_{1-2} + \beta_2 NUMSTOPS_{1-2} + \beta_3 HEALTH_1 \\
 &+ \beta_4 STOPS_1 + \theta X + \varepsilon
 \end{aligned}$$

Our third model examines, in addition to whether and how many times respondents report being stopped, the level of intrusion in their most memorable recent stop (i.e., in the intra-wave period).

$$\begin{aligned}
 (3) \ln \lambda_i + \ln u_i & \\
 &= \beta_0 + \beta_1 STOPPED_{1-2} + \beta_2 NUMSTOPS_{1-2} + \beta_3 INTRUSION_{1-2} \\
 &+ \beta_4 HEALTH_1 + \beta_5 STOPS_1 + \theta X + \varepsilon
 \end{aligned}$$

While the general functional form is similar in models predicting anxiety and PTSD, we make one important distinction in predictors due to the “critical stop” focus of the IES-R that the BSI does not have. Respondents reporting no stops in the W1-W2 interval are not asked about trauma symptoms, and their trauma scores are coded as zero. Due to the structural relationship between respondents’ *STOPPED*<sub>1-2</sub> status and their trauma scores, we exclude *STOPPED*<sub>1-2</sub> from models predicting PTSD.

## 2. *Quantity-Intensity Analysis*

Next, we assess which aspects of respondents’ experiences with the police might drive the observed effects. This work focuses on cross-sectional analyses, and is not intended to suggest causal relationships, but rather to identify areas for further investigation. The analysis sample for this analysis includes the 691 W2 respondents who report not only their lifetime stop experience and critical stop intensity, but also their levels of both anxiety and PTSD symptoms. We stratify the sample by quantity of stops reported (*NUMSTOPS*<sub>1-2</sub> above) and the intensity of respondents’ most memorable stop. Notably, this analysis expands upon the additive measure of stop intensity (*INTRUSION*<sub>1-2</sub> above) to distinguish the intensity of different types of contact that respondents might have experienced. Within each “cell” created by a quantity-intensity combination, we estimate the average number of symptoms reported for each outcome.

Respondents are stratified into six categories each for quantity and intensity. Those never stopped are in one stratum. Respondents reporting stops are stratified by quantity based on their reports of having been stopped once, 2-4 times, 5-8 times, 9-17 times, and 18 times or more. Respondents are stratified by the intensity of their critical stop into five groups: those reporting “major force” (having been handcuffed, reporting

that the officer “used physical force” or “took out a weapon”), “minor force” (that the respondent was frisked, or had their clothing or property searched), “harsh language” (a threat of force or other “harsh language”), some other intrusion (that the officer asked for identification, asked the respondent’s name, asked what the respondent was doing, took the respondent to the police station, arrested them, or gave them a Desk Appearance Ticket, summons, or written warning), and no intrusion in their most memorable stop. Stops involving multiple types of force are coded to reflect the most severe force experienced; for example, a stop involving a frisk and being handcuffed would be coded as “major force”. Respondents reporting W1 stop experience, but not W1-W2 experience, are coded to reflect the intrusion of their critical stop at W1. The distribution of respondents across the resulting quantity-intensity combinations is presented in Table 2.

[Table 2 about here.]

Examining anxiety and trauma across the cells formed by each combination of stop quantity and intensity, we hypothesize that symptom levels will be higher for respondents experiencing high-intensity critical stops, and that we will see more symptoms among respondents experiencing large quantities of lower-intensity stops. We expect this relationship to be stronger for our anxiety measure, which is a broader indicator of wellbeing than our PTSD measure, which relates to a particular critical incident. More broadly, we hypothesize that large quantities of stops may have a cumulative, corrosive effect on health, even if no stop stands out for excessive force.

## **RESULTS**

### **A. Longitudinal Analyses**

Results from regression models predicting anxiety with lagged dependent variables are presented in Table 3. Anxiety symptoms persist over time; W2 anxiety symptoms are consistently and significantly associated with W1 symptoms. Respondents reporting that they had, at some point in their lives, sought and received mental health treatment also reported more anxiety symptoms. Controlling for these factors, we find no significant differences in anxiety symptoms by the simple distinction of whether or not respondents had been stopped between waves (as shown in Model 1), or the quantity of stops they report (Model 2).

However, Model 3 shows that the level of intrusion of respondents' most memorable recent stops is a significant predictor of anxiety symptoms. The significance of stop intrusion, controlling for both W1 BSI scores and pre-W1 stop experience, suggests that differences observed at W2 are likely driven by respondents' recent stop experience, rather than unobserved personal characteristics (for which W1 stop experience and health serve as a proxy). Exposure to violence is also associated with anxiety; as indicated in the "inflation" portion of the analysis, respondents reporting greater exposure to violence are significantly more likely to report anxiety symptoms at W2 (as opposed to reporting the state of "never" experiencing symptoms).

[Table 3 about here.]

Results from models predicting PTSD are presented in Table 4. As with anxiety, IES-R scores reported at W1 were significantly associated with scores at W2. Controlling for those prior experiences, stop experience at W2 predicts PTSD. Both the number of stops experienced since W1 and stop intrusion of respondents' critical stops

are significantly associated with reported PTSD symptoms. These results are net of controls for prior symptoms.

The models in Table 3 identified a significant relationship between lifetime exposure to violence and W2 anxiety symptoms. Table 4 shows similar over-time associations with PTSD. However, respondents reporting greater exposure to violence over the course of their lives report more PTSD symptoms – a relationship that is statistically significant in model 2 ( $p < .05$ ), but loses significance in model 3 (falling to  $P < .10$ ).

Notably, both models in Table 4 indicate that the total number of stops respondents reported at W1 was negatively associated with PTSD symptoms at W2. We have no indicator of respondent mental health before W1, and do not interpret this association causally. However, the opposite directions of recent and lifetime stop quantity in their respective associations with W2 PTSD suggests a potential moderation of symptoms for respondents with long histories of contact with the police. Supplementary models examining interactions between the respondents' lifetime and recent stop quantities find no significant independent association between W1 stop quantity and W2 PTSD symptoms, but rather a significant interaction in which the estimated effect of W2 stop quantity is attenuated by the quantity of stops respondents reported at W1. This interaction also suggests a moderated relationship between the quantity of stops experienced and subsequent PTSD symptoms.

[Table 4 about here.]

### **B. Quantity-Intensity Analysis**

Tables 5 and 6 present results from analyses examining the joint association between lifetime stop quantity, critical stop intensity, and health are presented. Recall that these descriptive analyses are based only on the 691 respondents reporting stop quantity, intensity, and both symptom scales. Table 5, presenting anxiety results, indicates that respondents experiencing nearly all configurations of stop quantity and intensity, on average, report more anxiety symptoms than those never stopped (though a few exceptions can be seen). These findings should be interpreted cautiously, due to small sample sizes within several quantity-intensity combinations. (As noted in Table 2, only four respondents reported 18 or more stops with no intrusion in their critical stop, and another five respondents report 2-4 stops in which the critical stop involved harsh language. No respondents report a single stop involving major force, or a single stop involving harsh language.)

[Table 5 about here.]

Nonetheless, two results stand out: For respondents reporting no intrusion in their critical stop, there is little observable quantity gradient in their reported anxiety. Respondents tend to report more BSI symptoms than their counterparts with no stop experience; however, there is only slight variation across quantity strata, with no systematic relationship between quantity and anxiety. For respondents reporting major or minor force in their critical stops, we see more anxiety symptoms, on average, in the upper quantity strata.

For trauma, respondents reporting no intrusion in their critical stop report almost no symptoms on the IES-R; respondents reporting a single stop also report, on average, almost no symptoms, regardless of the intensity of that stop. On the other hand,

respondents reporting multiple stops with any intrusion also report, on average, multiple PTSD symptoms. It bears repeating that the IES-R, our measure of PTSD, is measured by asking respondents to recall a specific “critical” stop, rather than their overall wellbeing (as in the BSI); we therefore might expect these scores to be more closely tied to the intensity of the respondents’ critical stops than the anxiety measures.

That turns out to be true. For respondents in the upper quantity strata (reporting five or more stops), we find fairly consistent intensity gradients within each stratum: respondents reporting that officers used major force tend to report more symptoms than those reporting critical incidents with minor force, and more still than those reporting harsh language or other intrusion. We observe some exceptions to this pattern, such as the slightly higher symptom levels reported by those reporting 5-8 stops or fewer who also experienced harsh language as the most salient force in their stops. Again, the small sample sizes suggest caution in interpreting these results. Still, the results identify avenues for future research.

As with anxiety symptoms, we see few clear quantity gradients in trauma symptoms within a given intensity stratum. For individuals reporting that the most salient intrusion of their most memorable stop was harsh language, the average number of trauma symptoms reported rises monotonically with stop quantity. Similar increases with quantity are observed for those reporting major force, though no clear patterns exist for respondents reporting minor force or other intrusion.

[Table 6 about here.]

### **C. Sensitivity Analyses**

While our findings suggest adverse health consequences for young men experiencing extensive and intrusive contact with the police, the specific relationships are highly sensitive to the functional form selected for our models. Vuong tests indicate that hurdle models are preferable to standard negative binomial models for anxiety symptoms; however, the same test indicates no preference between the two functional forms for PTSD symptoms. We selected standard negative binomial models for the sake of parsimony, but estimated hurdle negative binomial models as a sensitivity analysis. Re-estimating Model 2 (examining PTSD as a function of stop quantity) finds quantity of recent stops to be a significant predictor of subsequent PTSD symptoms, as in the standard negative binomial model. A re-estimated Model 3 failed to converge; we therefore focus our interpretation on the more parsimonious models in Table 4.

We also estimated the sensitivity of our findings to our choice of missing data strategy; in addition to the multiple imputation results presented in Tables 3 and 4, we also estimated comparable models on a complete case sample. Complete case anxiety models, like the multiple imputation models, find that while stop intrusion is a significant predictor of subsequent anxiety, neither stop quantity nor the binary indicator of recent stops are. Complete case PTSD models, like the multiple imputation models, find statistically significant associations between stop quantity and intensity and PTSD that are of similar magnitude to the multiple imputation models. It is unlikely that our findings are driven by our strategy for dealing with missing data.

Finally, we re-estimated our analyses of stop quantity and intensity using wave 1 data, in order to determine whether their joint association with subsequent mental health would be similar with a larger sample (N=1,197 for anxiety, N=1,192 for PTSD). As in

Tables 5 and 6, we found some evidence of increased PTSD symptoms for respondents reporting more intrusive critical stops, but a less clear relationship for anxiety symptoms. For neither outcome did we observe a consistent quantity gradient.

## DISCUSSION

### **A. Summary**

Our findings are consistent with previous research that suggests adverse health outcomes associated with contact between the police and young people. Specifically, the associations in Tables 3 and 4 suggest that the intensity of recent stop quantity and intensity are associated with increases in mental health symptoms among young men.

Despite our regression findings, however, the cross-sectional analyses of quantity and intensity in Tables 5 and 6 show no clear quantity or intensity gradients, particularly when quantity and intensity are treated categorically rather than continuously. Of particular note, we do not see substantially elevated mental health symptoms among respondents reporting large numbers of low-intensity stops. This finding is of particular interest for the 34% of respondents who report their critical stop had “no intrusion”. Some of these respondents were stopped 18 times or more, however, results do not indicate systematic differences in average symptom levels between the highest and lowest stop quantity respondents. Although we cautiously interpret these results due to the small sample sizes in many of the quantity-intensity combination cells, we were able to replicate the stop quantity, intensity, and health measures among the more than 1,000 Wave 1 respondents.

The lack of a clear quantity gradient at most levels of stop intensity, coupled with the moderation of estimates of recent stop effects by prior stop experience, suggests,

rather than a cumulative, corrosive effect on respondent mental health, that respondents may develop a resilience to police encounters, or that stop experience may become somewhat normalized to those stopped regularly. Former NYPD chief Raymond Kelly, in 2012, suggested that individuals stopped and frisked by the police cooperate, and accept the intrusion on their privacy as “a fact of urban life” (Williams et al., 2012). The relatively minimal association between the quantity of low-intrusion stops and both anxiety and trauma in our respondents suggest that they may, to some extent, do so. However, our findings on anxiety and PTSD symptoms say little about the other dimensions on which police practices must be evaluated, such as their adherence to constitutional standards, their procedural fairness, their impact on perceived police legitimacy, their respect for the dignity of those stopped, and any collateral consequences for other domains of community life.

### **B. Limitations and Future Research**

First, we suggest caution due to the challenges inherent in causal inference from observational data. Police contact is determined by a variety of factors, observable and unobservable, many of which may also be correlated with respondents’ mental health. We therefore measure associations between police contact and mental health, and changes in mental health following respondents’ recent interactions with the police, but note that these relationships need not represent causal effects. We also lack data on experiences such as job loss, eviction, and other co-occurring stressors that might contribute to or moderate the mental health symptoms that respondents report.

Findings are also somewhat limited by the measurement of several covariates at W2 rather than W1. It is likely that for many respondents, reported lifetime experiences

took place, or at least began, prior to W1; however, to the extent that covariate measures were influenced by recent stop experience, the reported associations are potentially understated due to mediation by the W2 controls. Our findings examining interactions between quantity and intensity of stop experience are also limited by their look at only three variables at a time. More work is needed to isolate these relationships from potentially confounding covariates.

We also advise caution in attempting to generalize from the analysis sample to a broader population. Stop and Frisk activity has declined significantly in New York City since our data were collected, and other proactive policing tactics, such as low-level arrests, have become more prominent (Goldstein & Goodman, 2014; Zimroth, 2017). While findings related to Stop and Frisk may generalize to these other aggressive policing tactics in terms of their health implications, more work is needed to examine the evolving role of the police in community health, in New York and elsewhere.

In addition, our respondents report rates of police contact that are substantially higher than those citywide during the data collection period. Accordingly, these results reflect relationships between police contact and mental health among a population with above-average exposure to the police. The likely nonrandom nature of selection into our sample also leads us not to estimate race-specific models of police contact and mental health in our sample. The dramatic race differences in the experiences of young people with the police (New York Civil Liberties Union, 2013) suggest that future research should not only examine racial differences in exposure to the police, but also examine the extent to which the effects of police contact are moderated by race.

Finally, our findings are limited to two indicators of respondent mental health; we make no claims about the implications of various experiences with the police for other outcomes of interest, including, but not limited to, public safety, perceptions of police legitimacy or procedural justice or injustice, constitutionality, and the dignity of those stopped. Additional research is needed to examine these consequences. Nonetheless, our longitudinal findings are supportive of previous cross-sectional literature that identifies intrusive police contact as a potential determinant of adverse health outcomes. The extent to which such behaviors persist in contemporary policing is therefore of concern not only for police-community relations, but for community health more broadly.

Table 1: Analysis Sample Description

Variable	Mean or %	Std. Dev.
Health		
Anxiety (W2, BSI) (0-32)	8.82	7.01
PTSD(0-9)	1.24	2.31
Stop Experience, W1-W2 Interval		
% Stopped	35%	
Average # Stops	0.98	2.42
Intrusiveness of Critical Stop (0-10)	1.16	2.1
Race		
White	24.3%	
Black	28.5%	
Hispanic	29.0%	
Other or Unknown	18.3%	
Education		
<HS	9%	
HS Grad	28%	
Some College/Tech Training	41%	
College or More	22%	
Age (W2)	22.44	2.51
Exposure to Violence (0-12)	3.72	2.78
Criminal History (Variety Score) (0-5)	0.34	0.78
Other Background Characteristics		
Ever Sought or Received MH Treatment	12.8%	
Public Housing Resident at W2	11.3%	
Military Service (ever)	2.4%	
Military Family	14.8%	
Respondent or Family in Law Enforcement	14.2%	
N*	35,850	

\* N=717 per dataset x 50 imputations. PTSD sample differs from BSI analysis sample by 4 observations

Table 2: Respondents Lifetime Stop Totals and Intrusion of Critical Stop, Wave 2

	Lifetime Stop Frequency (N, %)						
	%	0 (13%)	1 (89%)	2-4 (29%)	5-8 (23%)	9-17 (17%)	18+ (10%)
Major Force	8	0	0	11	9	17	17
Minor Force	15	0	4	23	28	27	19
Harsh Language	5	0	0	5	7	12	10
Other Intrusion	26	0	11	48	59	38	22
Stopped, No Intrusion	34	0	42	116	54	20	4
Never Stopped	13	88	-	-	-	-	-

Note: N=691 respondents reporting stop quantity, intensity, BSI, and IES-R at W2. Percentages may not total 100% due to rounding.

Table 3: Zero-Inflated Negative Binomial of BSI Anxiety Symptoms (BSI) from Stop Intrusion and  
Frequency (b, SE, p)

Variable	Model 1		Model 2		Model 3	
Any Stop (W1-W2 Interval)	0.083	[0.06]	0.036	[0.06]	-0.085	[0.08]
# of Stops between W1-W2	-	-	0.020	[0.01]	0.014	[0.01]
Intrusion of Critical Stop (W2)	-	-	-	-	0.044*	[0.02]
BSI (W1)	0.043***	[0.00]	0.043***	[0.00]	0.043***	[0.00]
Black	-0.062	[0.08]	-0.070	[0.08]	-0.081	[0.08]
Hispanic	0.037	[0.07]	0.034	[0.07]	0.025	[0.07]
Other	0.114	[0.08]	0.111	[0.08]	0.108	[0.08]
Age (W2)	0.016	[0.01]	0.016	[0.01]	0.014	[0.01]
Exposure to Violence	0.003	[0.01]	0.002	[0.01]	0.001	[0.01]
Criminal History (Variety Score)	0.031	[0.03]	0.031	[0.03]	0.025	[0.03]
Highest Ed < HS	-0.066	[0.10]	-0.069	[0.10]	-0.070	[0.10]
Highest Ed Some College/Tech	-0.086	[0.06]	-0.089	[0.06]	-0.087	[0.06]

Highest Ed College or More	-0.111	[0.08]	-0.109	[0.08]	-0.102	[0.08]
Lifetime Stop Total (W1)	-0.003	[0.00]	-0.004+	[0.00]	-0.005*	[0.00]
Critical Stop Intrusion (W1)	0.017	[0.01]	0.017	[0.01]	0.014	[0.01]
Any MH Treatment (W2)	0.308***	[0.07]	0.294***	[0.07]	0.286***	[0.07]
Public Housing Residence (W2)	0.072	[0.08]	0.076	[0.08]	0.044	[0.08]
Respondent Ever in Military (W2)	0.201	[0.17]	0.198	[0.17]	0.232	[0.17]
Respondent Military Family (W2)	0.030	[0.07]	0.040	[0.07]	0.051	[0.07]
Respondent Law Enforcement (W2)	-0.055	[0.08]	-0.058	[0.08]	-0.041	[0.07]
<hr/>						
N (in each of 50 imputation datasets)	717		717		717	

Inflation Model in Appendix 3, Table A3.1.

Significance: +  $p < 0.1$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Table 4: Negative Binomial Regression Predicting PTSD Symptoms (b, SE, p)

Variable	Model 1 (N/A)		Model 2		Model 3	
# of Stops between W1-W2	-	-	0.801***	[0.09]	0.308***	[0.06]
Intrusion of Critical Stop (W2)	-	-	-	-	0.490***	[0.04]
PTSD (W1)	-	-	0.131**	[0.04]	0.164***	[0.04]
Black	-	-	-0.012	[0.25]	-0.219	[0.22]
Hispanic	-	-	0.062	[0.24]	0.009	[0.21]
Other	-	-	-0.134	[0.26]	0.013	[0.24]
Age (W2)	-	-	0.013	[0.04]	-0.010	[0.03]
Exposure to Violence	-	-	0.068	[0.03]	0.046	[0.03]
Criminal History (Variety Score)	-	-	-0.010	[0.12]	-0.077	[0.10]
< HS	-	-	-0.097	[0.31]	-0.163	[0.27]
Some College/Tech Training	-	-	0.039	[0.20]	-0.062	[0.18]
College or More	-	-	-0.236	[0.27]	-0.130	[0.23]
Lifetime Stop Total (W1)	-	-	-0.025**	[0.01]	-0.027***	[0.01]

Critical Stop Intrusion (W1)	-	-	-0.005	[0.05]	-0.046	[0.04]
Any MH Treatment (W2)	-	-	0.123	[0.24]	-0.172	[0.22]
Public Housing Residence (W2)	-	-	0.266	[0.26]	-0.159	[0.23]
Respondent Ever in Military (W2)	-	-	0.087	[0.55]	0.696	[0.45]
Respondent in Military Family (W2)	-	-	0.260	[0.23]	0.252	[0.20]
Respondent has Law Enforcement Tie (W2)	-	-	-0.024	[0.23]	0.126	[0.20]
<hr/>						
N (in each of 50 imputation datasets)	-		717		717	

Significance: +  $p < 0.1$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Table 5: Joint Associations between Lifetime Stop Quantity and Critical Stop Intensity and Anxiety Symptoms, W2

	Lifetime Stop Frequency (N, %)						
	%	0 (13%)	1 (8%)	2-4 (29%)	5-8 (23%)	9-17 (17%)	18+ (10%)
Major Force	8	-	-	10.82	11.00	12.64	11.58
Minor Force	15	-	9.00	11.35	7.5	12.00	10.42
Harsh Language	5	-	-	10.6	8.71	7.5	5.3
Other Intrusion	26	-	7.81	7.07	8.53	8.84	8.00
Stopped, No Intrusion	34	-	8.21	9.31	8.5	8.15	6.5
Never Stopped	13	7.30	-	-	-	-	-

Note: N=691 respondents reported stop quantity, intensity, and BSI at wave 2. BSI range is 0-32.

Table 6: Joint Associations between Lifetime Stop Quantity and Critical Stop Intensity and PTSD Symptoms, W1

	Lifetime Stop Frequency (N, %)						
	%	0 (13%)	1 (8%)	2-4 (29%)	5-8 (23%)	9-17 (17%)	18+ (10%)
Major Force	8	-	-	3.18	3.89	3.47	5.05
Minor Force	15	-	0.50	2.17	1.61	3.44	3.32
Harsh Language	5	-	-	1.6	2.0	2.5	2.8
Other Intrusion	26	-	0.82	1.19	1.78	2.34	1.64
Stopped, No Intrusion	34	-	0.05	0.09	0.17	0.50	0.00
Never Stopped	13	0.00	-	-	-	-	-

Note: N=691 respondents reported stop quantity, intensity, and PTSD at wave 1, or report no stops (and accordingly, zero values for intensity and PTSD symptoms). PTSD symptoms coded using additive index from the IES-R, range is 0-9.

**APPENDIX 1: ESTIMATES FROM MODEL PREDICTING SURVEY RETENTION****FROM W1-W2**

Table A1.1: Logistic Regression Model Predicting W2 Retention

(Odds Ratios and Standard Errors)

Predictor	OR	SE	p
<i>Respondent Race (Reference = White)</i>			
NH-Black	0.58	[0.10]	**
Hispanic	0.50	[0.87]	***
NH-Other Race	0.65	[0.13]	*
Unknown Race	0.34	[0.19]	
Respondent Age	0.90	[0.02]	
W1 Criminal History (Variety Score)	1.12	[0.09]	
W1 Criminal History Unknown	0.49	[0.29]	
<i>Respondent Education (Reference = HS Grad)</i>			
< HS*	0.64	[0.13]	
Some College/Tech Training**	1.56	[0.22]	
College or More***	1.83	[0.34]	
<i>Self-Reported Stop History (Reference = Never Stopped)</i>			
Ever Stopped	0.90	[0.15]	
Stop History Unknown	0.74	[0.26]	
Constant	17.75	10.51	

---

N	1,260
---	-------

---

Note: All predictors measured at W1

\*P<.05, \*\*P<.01, \*\*\*P<.001

**APPENDIX 2: SURVEY ITEMS FOR KEY MEASURES**

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Table A2.1: Survey Items Used to Measure Anxiety

---

“In the past seven days, how often have you...”

...been jumpy and easily upset?

...had trouble concentrating?

...felt watchful and on guard

...been bothered by nervousness?

...been suddenly scared for no reason?

...felt tense and wound up?

...had episodes of panic or terror?

...felt so restless that you could not sleep?

---

Note: All questions are asked on a 5-point scale from “Never” to “Frequently”.

$\alpha=0.84$  at W1,  $0.87$  at W2.

Table A2.2: Survey Items Used to Measure PTSD Symptoms

---

Remembering this experience brings back your feelings about the time you were stopped.

Other events in your life lead you to think about the time you were stopped.

You think about the time you were stopped even when you do not mean to.

Pictures of the time you were stopped sometimes pop into your mind.

You try not to remember and think about the time you were stopped.

Your feelings about the time you were stopped are kind of numb.

You have tried to remove the time you were stopped from your memory.

You try not to talk about the time you were stopped.

Reminders about the time you were stopped cause you to have physical reactions, such as sweating, trouble breathing, or a pounding heart.

---

Note: Respondents are asked whether they “Agree” or “Disagree” with each statement, referring to “the stop that stands out most in their minds”.  $\alpha=0.78$  at W1 and W2.

Table A2.3: Survey Items Used to Measure Stop Intrusion

---

“In the stop that stands out most in your mind, did the officer...”

---

...ask your name?

...ask for ID?

...ask you to explain what you were doing?

...frisk you/pat you down?

...search your bags or clothes?

...give you a Desk Appearance Ticket/written warning/summons?

...use harsh or insulting language?

...threaten physical force?

...use physical force?

...handcuff you?

...take out a weapon?

...threaten to use a weapon?

...take you to the police station?

...arrest you?

---

Note: Questions were answered “yes” or “no”, referring to “the stop that stands out the most in their minds”.  $\alpha=0.69$  at W1,  $=.65$  at W2.

Table A2.4: Survey Items Used to Measure Criminal History

---

“In the past 12 months how often have you...”

...injured someone in a fight?

...taken money or goods from someone by force or threat of force?

...carried a weapon such as a gun or knife?

...stolen something worth over \$50?

...sold marijuana or other drugs?

---

Note: Questions were answered in terms of frequency, on a 5-point scale from “never” to “frequently”, and then dichotomized so that every offense received a 0 if the respondent reported “never” engaging, and a 1 otherwise.  $\alpha=0.60$  at W1.

**APPENDIX 3: INFLATION MODEL FOR ZERO-INFLATED NEGATIVE BINOMIAL MODEL  
OF ANXIETY SYMPTOMS**

Table A3.1: Inflation Model for Table 3

	Model 1		Model 2		Model 3	
Black	-0.082	[0.41]	-0.091	[0.41]	-0.095	[0.40]
Hispanic	0.063	[0.38]	0.062	[0.38]	0.056	[0.38]
Other	-0.476	[0.48]	-0.475	[0.48]	-0.478	[0.47]
Age (W2)	0.079	[0.06]	0.079	[0.06]	0.079	[0.06]
Exposure to Violence	-0.231***	[0.07]	-0.0234***	[0.07]	-0.230***	[0.07]
Criminal History (Variety Score)	0.070	[0.19]	0.071	[0.19]	0.064	[0.18]
< HS	-1.162	[0.76]	-1.160	[0.76]	-1.100	[0.72]
Some College/Tech Training	-0.511	[0.34]	-0.507	[0.34]	-0.510	[0.34]
College or More	-.428	[0.42]	-0.430	[0.42]	-0.437	[0.41]

## NOTES

- 1) Excluding arrests for minor traffic violations.
- 2) SQF rates began to fall in 2012, following the certification of the *Floyd* plaintiffs as a class, and fell more precipitously following the 2013 decision.
- 3) “[I]t is simply fantastic to urge that [a stop and frisk] performed in public by a policeman while the citizen stands helpless, performed in public by a policeman while the citizen stands helpless, perhaps facing a wall with his hands raised, is a ‘petty indignity.’” *Terry v. Ohio* 392 U.S. 1, 17.
- 4) In practice, many *Terry* stops are based on very low levels of suspicion, and rarely result in arrest, summons, or seizure of contraband (Fagan, Conyers, & Ayres, 2014; Fagan, Geller, Davies, & West, 2010), suggesting that most individuals stopped have done nothing that warrants a legal sanction (Floyd et al. v. City of New York et al., 2013; Herbert, 2010).
- 5) See Tyler et al., 2014, and Geller et al., 2014, for additional details on the sampling plan.

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