Excessive Police Force and Mental Health: Examining the Relationship of Stop-and-Frisk and Psychological Distress in New York City

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Abstract

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From the early 1990's up to present day, New York City's (NYC) zero tolerance stop-and-frisk policy has permitted police to use reasonable suspicion as justification for approaching, questioning and physically searching any city resident as a suspect of a crime. The high rate of stops yet low rate of crimes identified through this practice suggested stop-and-frisk increased surveillance threat, procedural injustice and violence exposure, all of which have been associated with poor mental health outcomes, in communities disproportionately targeted by stop-and-frisk. Thus, the purpose of this study is to examine the relationship between stop-and-frisk and mental health in NYC communities at the neighborhood level. This cross-sectional, ecological study analyzes data from the 2013 NYC Community Health Survey (CHS) and New York City Police Department Stop Question and Frisk Database (NYPD SQF). Stop-and-frisk variables included in the study are overall stops, stops with no arrest and stops with a frisk. Outcomes of psychological distress and nervousness are measured with the Kessler 6 (K6) that was embedded into the CHS. Bivariate models were used to explore associations of stop-and-frisk variables with psychological distress and nervousness. Multivariable models incorporate one stop-and-frisk variable, an additional variable (mean age, percent of residents who were Black Non-Hispanic, Hispanic and female) and psychological distress or nervousness. By analyzing these data, these results suggest that there is no significant relationship between stop-and-frisk and psychological distress and there is a significant relationship between stop-and-frisk and nervousness. These results suggest that stop-and-frisk is more closely associated with mental well being rather than severe mental illness. In addition, findings from this study along with limitations faced offer several directions for research to further understanding this relationship.

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Chapter 1: Introduction

In 2009, an analysis of data from the Centers for Disease Control and Prevention (CDC) National Violent Death Reporting System (NVDRS) of 16 states found that legal intervention by police officers, military officers and other officers of the peace with legal authority to use deadly force accounted for 25% of violence-related deaths (excluding legal executions), making it the second highest cause of violent death exceeded only by suicide.[1] In more recent years, the use of police force has had increasing media visibility following a string of highly publicized deaths at the hands of the police.[2,3] However, a complex challenge in understanding police force and the harm it causes is that police are authorized and at times required to use force to maintain the law.[4] While police are called to balance the responsibility of maintaining law with the authority to use force, it is also important to capture the experiences of individuals when police excessively use force.

Specific communities are disproportionately affected by potential instances of excessive police force. Surveillance data demonstrates lethal police force disproportionately affects Blacks and Latinos.[5] In 2015 alone, 25% of Blacks and 19% of Latinos killed by the police were unarmed in comparison to 18% of Whites.[6] Among Blacks and Latinos, sex also plays a role in excessive police force. In 2015, 95% and 94% of unarmed Blacks and Latinos killed by the police, respectively, were male.[6]

Increasing concern among the public about excessive police force along with the high rates of deaths attributable to legal intervention bring to light a critical need to fill the gaps in research on excessive police force as a public health issue. One gap is excessive police force on a broader scope of people beyond those who die unarmed at the hands of the police, otherwise

known as non-lethal police force. Non-lethal police force has demonstrated detrimental effects on the physical health of its victims. The CDC Web-Based Injury Statistics Query and Reporting System (WISQARS) showed in 2013 just over 100,000 nonfatal injuries at hospitals were due to legal intervention.[7] Types of injuries included use of mace or pepper spray, injuries attained while being arrested or restrained and sprains.[7] The disparity in race presented in lethal police force persisted for non-lethal police force, with further analysis of WISQARS showed that from 2001-2012, Blacks had over five times more nonfatal injuries per capita than Whites due to legal intervention.[5] Current research shows a high rate of violence-related deaths and nonlethal injuries from police actions and this violence disproportionately falls on certain populations based on sociodemographic factors, suggesting that excessive police force may affect some populations more than others.

Beyond physical injuries sustained from police force, a small but growing body of research highlights the mental health impacts non-lethal police force has on its victims. When people undergo constant police suspicion when they are being lawful, they may feel increasingly stigmatized and stressed in their day-to-day lives. [8] Stigma may influence depressive symptoms.[8] Relatedly, surveys of 1,261 Black males in New York City (NYC) showed a significant relationship between the number of times they had been stopped by police and levels of anxiety.[8] In addition, a predictive model for developing post-traumatic stress disorder (PTSD) showed higher levels of trauma for those with more police stops over their lifetime and was a significant predictor of PTSD.[9] Traumatizing verbal treatment during police stops,[10] depressive symptoms from perceived stigma by the police[9] and significantly higher levels of anxiety and PTSD symptoms in relation to police stops [11] show the potential harm to the mental

health of those who experience excessive police force. While the body of literature on the health impacts of excessive police force is growing, more research is needed to further understand the association between excessive police force and mental health in communities.[9] When police actions cross the line to excessive police force, this causes undue physical and mental harm and thus can be conceptualized as a form of violence.

The World Health Organization (WHO) defines violence as "the intentional use of physical force or power, threatened or actual, against oneself, another person, or against a group or community that either results in or has a high likelihood of resulting in injury, death, psychological harm, mal-development or deprivation." [12] Violence can fall into four categories: physical, sexual, psychological and neglectful violence.[12] Physical violence may be considered as excessive use of force in any situation. Sexual violence involves sexual assault.[12] Psychological violence comes into play when actions are damaging to one's mental health.[12] Finally, neglect may be seen as a lack of response from others when calling for help.[12] In addition, witnesses of violence are subject to Community Violence Exposure (CVE).[13] CVE consists of intentional, harmful acts in the community and encompasses the person directly harmed, witnesses, people who know the victims and anyone who is anxious about violence occurring in their community following the event.[14] Experiencing or witnessing violence in one's community has been associated with several changes in mental health, including increased aggression, depression, post-traumatic stress disorder (PTSD) and depression.[15]

NYC's Stop-and-Frisk program, started in 1993, can be conceptualized as a potential example of excessive police force because of its disproportionate targeting of Black and Latino residents.[16] NYC Mayor Rudy Giuliani applied Broken Windows theory to promote zero

tolerance policing and stop-and-frisk, a cornerstone of his winning 1993 mayoral campaign.[17] In a stop-and-frisk, police officers have the power to stop a person based on suspicion that criminal activity is about to occur and they are additionally allowed to frisk, which is a pat down over the clothes, if they believe the person may be dangerous or armed.[16] Stop-and-frisk authorizes police officers to act on reasonable suspicion, which is when an officer may use one or more facts as justification for a stop without verifying the validity of the source to decide that a person is engaging in criminal activity.[18] While Mayor Giuliani proposed that this zero tolerance approach would reduce serious crime in NYC, evaluations of the program did not find a causal association between stop-and-frisk and reducing serious crime.[17] Under stop-and-frisk few people end up being arrested and even fewer arrests result in convictions[19], so most people stopped are acting lawfully. Being frequently approached, questioned and aggressively searched by police when lawfully going about one's daily life can be seen as a form of excessive police force and excessive police force has been suggested to influence negative mental health outcomes. However, gaps persist in specifically understanding the impact stop-and-frisk has on the mental health of communities overall.

Thus, in approaching stop-and-frisk as a form of excessive police force, excessive police force as a form of violence and in establishing that violence affects both the victim and the witness, the relationship between stop-and-frisk and mental health can be examined from an ecological approach to encompass the experiences of all involved. Therefore, this socio-ecological study proposes to look at the association between excessive police force and psychological distress at the neighborhood level.

The socio-ecological model examines the interrelationship among individual, relationship, community and societal factors.[20] It proposes that in order to understand a health behavior or outcome, the many relationships taking place in the socio-ecological system must be taken into account together.[20] The socio-ecological model is appropriate because it examines the neighborhood as a whole, thus incorporating victims and witnesses. In addition, leading public health institutions such as the CDC use the socio-ecological model to understand violence.[21 20] By applying the socio-ecological model to explore this data, it is possible to make a contribution toward understanding the association between police violence and psychological distress from an ecologic approach, ultimately adding to a growing and critical body of research on police violence as a public health issue.

Therefore, this study asks, "What is the relationship between rates of stop-and-frisk and (a) rates of psychological distress and (b) levels of nervousness, adjusting for variables outlined by the social-ecological model?" This study hypothesizes that increased rates of overall stops, stops with no arrest and stops with a frisk will be correlated with a higher percent of psychological distress and average nervousness at the United Hospital Fund (UHF) neighborhood level.

In the study that follows, existing research on the relationship between stop-and-frisk and psychological distress will be explored first. The methods section describes the study design, target population, data used in this study and analysis procedures. Results are then presented. Finally, results are contextualized and suggestions for future research are offered.

Chapter 2: **Literature Review**

Police Violence as a Public Health Issue. The World Health Organization (WHO) has identified four categories of violence: psychological, physical, sexual and neglect.[12] From these definitions, excessive police force as a form of violence can materialize in several different ways. Psychological violence comes into play when a suspect is repeatedly stopped, questioned and frisked without reason, raising their anxiety levels about their ability to go about daily business without being questioned by the police.[22] Physical violence may be unjust, excessive use of force against a suspect.[10] While stop-and-frisk may approach some frisks as physically violent, physical violence by police can happen outside a stop-and-frisk, such as when police must grab, hold, kick, or use batons and pepper stray to restrain or immobilize a suspect.[23] Sexual violence may involve being sexually assaulted during a stop and frisk or any other police interaction.[10] Finally, neglect may be seen as policing failing to respond to calls for help from civilians.[22] Another dimension to violence is community violence exposure (CVE), which applies to excessive police force when others in the community see or learn about a person experiencing excessive police force in psychological, physical, sexual or neglectful way and this in turn can increase distress about whether excessive police force could happen to others witnessing the violence as well.[13]

Police violence is an issue that public health practitioners have been aware of for several decades. In the United States, the American Public Health Association (APHA), the leading network of public health professionals within the country, declared in 1998 that police brutality and excessive police force are significantly associated with higher rates of morbidity and mortality.[24] From a global perspective, the World Health Organization (WHO) applied its

definition of violence, “the intentional use or withholding of physical force of power likely to result in harm” [10] to declare in 2002 that excessive police force is violence.[12] In addition, there have been several documented incidences of police violence causing negative health outcomes. Internationally, excessive police force is the leading cause of ear damage among a clinic sample from Kenya [25] and one of the leading causes of spinal cord injuries of wheelchair-bound individuals in Soweto, South Africa. [26] Excessive police force has also been shown to contribute towards preventing full social and emotional development among street children in Brazil.[27] To address excessive police force as a public health issue, recommendations have included collecting data on police violence and health outcomes at the local, state and federal levels, funding the National Institute of Justice to research the health outcomes of excessive police force and increasing training for health professionals when working with victims of excessive police force.[24] Looking towards the future of public health, the high rates of morbidity and mortality associated with excessive police force can be seen as a barrier to implementing Healthy People 2020, a decade-long government initiative to improve health for everyone in the United States so “all people live long, healthy lives.”[28] From a global perspective, police violence is a barrier to achieving the Sustainable Development Goals (SDG’s) objective of “eliminating discriminatory practices” and making “cities inclusive, safe, resilient and sustainable” by 2030.[29]

Thirteen years following the WHO’s declaration of police brutality as a form of violence and 17 years following APHA’s declaration of excessive police force as a public health issue, excessive police force is an issue that needs to continue being addressed, with deaths by law enforcement ranking as the one of the leading causes of violence-related deaths today in the

United States.[7] This is evident through surveillance by CDC's National Center for Injury Prevention Control, which examined the death certificates, coroner and law enforcement reports of 16 states in 2008. Of the 16,000 fatalities from violence that were recorded, death by legal intervention from police and other authorities authorized to use deathly force (excluding legal executions) was the second highest cause, accounting for nearly a quarter of violence-related fatalities (24.7%).[1]

Excessive policing practices in the United States have been the cause of controversy for several decades. In the 1968, President Lyndon B. Johnson created the National Advisory Commission on Civil Disorders (NACCD) to address race riots in Los Angeles, Chicago, Newark and Detroit.[30] A contributing factor that sparked these riots was tension between the police and the community.[30] The NACCD produced the Kerner report, named after the chair of NAACD's chair Governor of Illinois Otto Kerner, Jr., which emphasized police practices as one of the strongest demonstrations of inequality between Blacks and whites.[30] Almost 30 years later in 1992, Andrew Hacker published *Two Nations: Black & White, Separate, Hostile, Unequal*, which concluded that 25 years after the Kerner Report, living as a minority in the United States had not changed with minorities still experiencing increased surveillance by state and federal policing forces. [31]

In recent years, there has been increasing public and mainstream media interest in excessive police force following several controversial, highly publicized events involving the police and deaths of citizens seemingly going through their daily lives or committing a minor crime. [32] [33] [3] With increasing advocacy by public health officials and the general public to

explore the health impacts of excessive police force, an important step is to understand the pathways in which excessive police force may influence mental health.

Stop-and-frisk as a form of excessive police force. While stop-and-frisk has successfully identified criminal activity in New York City, this study approaches stop-and-frisk as a form of excessive police force for several reasons. From 2009 to 2012, there were 150,000 arrests among 2.4 million stops (about 6%), with only half of those arrests resulting in convictions. [19] Thus, just 3 percent of all stops resulted in conviction.[19] It can be suggested from these statistics that a majority of people interacting with the police through stop-and-frisk policies are subjected to questioning, searching and arresting that interrupts their daily lives when they are acting in a lawful manner.

In addition, about 20% of stops each year involve physical force by the police, such as putting the suspect against the ground or wall, pointing weapons, using a baton, handcuffing or using pepper spray, a number greatly exceeding the proportion of people stopped who were ticketed or arrested.[34] This suggests that lawful people are having physical force by the police used against them.

Stop-and-frisk disproportionately affects Blacks and Latinos, and can be experienced as a form of structuralized discrimination. [10] Latinos and Blacks are stopped by police at a much higher rate than Whites.[35] There are low conviction rates for stop-and-frisk [19], suggesting that Blacks and Latinos are being increasingly targeted by police even though they are acting lawfully, resulting in disproportionate excessive police force in Black and Latino communities. Excessive force by the police in Black and Latino communities is further supported by especially

Whites who are stopped using stop-and-frisk are more likely to be arrested than Blacks or Latinos.[10]

Pathways from Excessive Police Force to Mental Health Increased number of stops by the police in a community has demonstrated significant connection to higher levels of trauma and anxiety.[9] Characteristics such as race/ethnicity, age and neighborhood disorder and zero tolerance policies all play a role in increasing stop-and-frisks. [22, 36, 37, 38, 17] When individuals feel that they are at an increased chance of being targeted by the police due to socio-ecological factors that are outside of their control, they also fear being harassed, searched and arrested without cause by the police. This recognition of both actual police encounters and the increased chance and fear of further encounters with the police is called "surveillance threat." Surveillance threat consists of "(a) the actual, potential harms civilians face; (b) the threatening attitude and behavior of officers; and (c) the civilian perception of imminent harm."[34] Facing consistent surveillance threat due to frequent stop-and-frisk causes psychological distress to residents of the community, for both the direct suspect and bystanders.

Specific manifestations of surveillance threat in NYC from stop-and-frisk include first-hand accounts provided by the Center for Constitutional Rights.[22] The following quote highlights the way stop-and-frisk acts as a stressor for residents in a community with high rates of stop-and-frisk:

> "Walking my dog at night, I have always felt the need to carry my ID because if I didn't carry my ID in my own neighborhood, I would basically be putting myself [at risk] of being picked up and accused of doing sex work." [22]

Procedural justice outlines another pathway from excessive police force to mental health. Procedural justice proposes that the way people feel they have been treated during an interaction with police influences their subjective experience with police.[39] Some ways people have a positive subjective experience is when they feel the police officer has treated them with dignity and respect and has genuinely been concerned about the suspect's perspective of the situation.[40] On the other hand, when a person has negative subjective experience with police, this leads to higher levels of internalized stigma, which has been associated with increased psychological distress. [41]

An example of this distress, specifically to stop-and-frisk, is shown in the following quote where an individual was left in fear following an unjust police encounter:

> "My jeans were ripped. I had bruises on my face. My whole face was swollen. I was sent to the precinct for disorderly conduct. I got out two days later. The charges were dismissed. At central booking, they threw out the charge. No charge. I felt like I couldn't defend myself, didn't know what to do. No witnesses there to see what was going on. I just wish someone was there to witness it. I felt like no one would believe me. I couldn't tell anyone. I kept it in til now…I still am scared." [22]

In further understanding excessive police force and its relationship with mental health, the overarching lens of community violence exposure (CVE) offers a perspective of another pathway. As established from procedural justice, a witness of stop and frisk may perceive the police's actions as unjust. Building on this, witnesses may see unjust, excessive force against a community member even if they are not directly experiencing it and thus have been exposed to violence. Experiencing several dimensions of violence over one's lifetime (ex. being both a

victim and witness of excessive force) has been associated with increased severity in mental health episodes and are associated with mental illnesses including depression, anxiety and PTSD [42] [43] [44] [45] , suggesting a cumulative effect from varied violent experiences. Several concepts from these proposed pathways between excessive police force and mental health fall into the constructs proposed in the socio-ecological model.

The following quote shows how stop-and-frisk put stressors on the community as a whole by preventing social, fun and relaxing activities:

> "There's this constant fear that, like, police are going to intimidate and harass you. So stuff that you do in your community, like participate in it, like sitting on your porch or going to the store or like having something fun in your community – you don't really get to do that because you have police presence in the street all the time." [22]

Socio-ecological Model: Police Violence and Psychological Distress. Police violence and psychological distress may be understood with the socio-ecological model. The individual level encompasses personal and biological factors.[20] The relationship level addresses those in a person's social circle such as family, friends and peers. [20] At the community level, the model includes schools, workplaces, neighborhoods and other similar settings. [20] Finally, the societal level looks at broader factors that encourage or discourage a behavior or outcome, such as policies that reduce or maintain inequalities.[20] Current literature makes it evident that rates of excessive police force and psychological distress are influenced at the individual, interpersonal, community and societal level.

To fully understand the connection between violence and mental health, a socio-ecological approach that considers both victims and witnesses to violence is necessary as these

two forms of exposure to violence consistently interact and build upon each other.[13] This can be explored using the concept of community violence exposure (CVE). While there is currently a limited amount of research understanding the best way to measure and analyze CVE, Rosenthal has found CVE significantly related to psychological distress and stressed the importance of considering victimization and witnessing together to truly understand the influence of violence on psychological distress.[46]

The socio-ecological model's utility for understanding excessive police force is supported by its application as the guiding theory for studying violence as a public health issue by leading health agencies such as the CDC's Division of Violence Prevention.[20] The socio-ecological model has also been applied towards understanding mental health, thus making it an appropriate model to understand psychological distress. Through reviewing research on what increases the likelihood of being stopped unjustly by the police, it is evident that there are applicable factors at every level of the socio-ecological model.

At the individual level, a person's ethnicity, sex or history of substance abuse affects their likelihood of undergoing a stop, and therefore their susceptibility to being a victim of excessive police violence. Perhaps the strongest association that has been studied is that between stop-and-frisk are ethnicity and race, particularly being Latino or Black. In the 2000s, data have demonstrated that Blacks and Latinos were increasingly stopped at dramatically higher rates in comparison to Whites. In 2003, there were 2,801,267 Whites (35% of city population, 2,160,554 Latinos (27% of city population) and 1,962,154 Blacks (24.5% of city population) in NYC. [36] Based on the proportion of different races in the city, Latinos and Blacks were stopped by police at a much higher rate than Whites. 17,632 (0.6%) Whites were stopped

with stop-and-frisk, while 44,581 (2%) Latinos and 77,604 (4%) Blacks were stopped. [36] By 2010, more Whites were stopped (54,810 stops) but the numbers of minorities stopped dramatically increased as well, with 189,326 Latinos and 315,083 Blacks stopped. [36]

Young people of disproportionately stopped races/ethnicities are more likely to be target of stop-and-frisk. Over half of the stops in 2011 comprised of individuals under the age of 25, with nearly all these young people being of races that were disproportionately targeted by the police.[22] Along with race/ethnicity and being young, sex further compounds the likelihood of being stopped by the police. Shockingly, in 2011 the number of stops of young, Black men between the ages of 14 and 24 (168,126 stops) was higher than the total city population of Black men in the same age range (158,406 men).[37]

At the relationship level, the frequency and quality of interactions between the police officer and the suspect greatly affect the extent to which the suspect does or does not experience distress.[47] When individuals feel that a police has genuinely been concerned about their needs and treated them in a fair, humane and respectful way throughout any type of interaction, individuals feel more able to verbally cooperate with the police. [47] After the interaction, they also feel the outcome was better than predicted. [47] However, when an individual feels as if excessive police force was used during their interaction, they are more likely to have a stressful, negative perception of the police. [47]

At the community level, police build cognitive maps, which are mental representations of physical places to remember important details of each community they patrol, making assumptions about some places that may not hold in other neighborhoods.[48] A neighborhood with more visible disorder may have abandoned lots, trash and discarded drug and alcohol

paraphernalia, resulting in police cognitive maps believing there is more opportunity for crime in a visibly disordered neighborhood in comparison to a neighborhood with no visible disorder. [48] This leads police officers to be more inquisitive and suspicious of behaviors such as socializing with a "suspicious" or abnormal person on the street than they would be in communities that do not have visible signs of disorder. [49] [50]

Dr. Hannah Cooper's qualitative study of 40 injection drug users and 25 non-drug users in NYC's 46th precinct, which had notably high rates of drug crackdown during the time of the study in 2004, sheds light on how excessive police force affects everyone in a community with neighborhood disorder. [10] Drug users and non-drug users were victims of excessive police force, with two-thirds of non-drug users reporting they had been stop-and-frisked without reason by police.[10] Concerns about the effects of excessive police force were raised from the data in the study, noting that aggressive tactics by police revealed in qualitative data may lead to higher likelihood of developing physical and mental illnesses.[10]

At the societal level, zero tolerance policies increase the likelihood of excessive police force by encouraging police to stop individuals with only reasonable suspicion, resulting in many who are stopped being innocent.[16] Beyond understanding excessive police force and its association with psychological distress at the individual, interpersonal, community and societal levels, it is also important to explore more about police practices to understand how excessive police force may develop.

Criminology Theory: Broken Window Theory. A theory that specifically applies to this study is the Broken Windows Theory, published in 1982 by James Q. Wilson and George L. Kelling.[16] Wilson and Kelling argued that law enforcement should prioritize addressing "minor

disorders in order to prevent more serious crimes from happening." [51] Serious crimes include, but are not limited to acts such as homicide, rape, aggravated assault, car theft, fraud and embezzlement.[52] Minor disorders are considered petty crimes or small violations of the law. The name for the theory comes from an example given in the original publication:

> "Consider a building with few broken windows. If the windows are not repaired, the tendency is for vandals to break a few more windows. Eventually, they may even break into the building, and if it's unoccupied, perhaps become squatters or light fires inside. Or consider a sidewalk. Some litter accumulates. Soon, more litter accumulates. Eventually, people even start leaving bags of trash from take-out-restaurants."[53]

The Broken Window Theory posits that if serious crimes become more frequent, residents will see their community as dangerous, and therefore distance themselves from the law-abiding social norms enforced by the police.[54] Through police addressing minor disorders, this would improve relationships between police and the community they serve, making community members more likely to abide by the social norms and rules enforced by police. [51] The Broken Windows Theory draws upon several social norm theories that propose that social norms of a community are developed in shared spaces. [16] From the viewpoint of Broken Windows Theory, if minor crime is allowed to develop in community spaces then further, more serious crimes will continue to develop throughout the community; vice versa, if community spaces are peaceful and void of crime, people will not adopt crime committing behaviors and the community will be safe.

The Broken Windows Theory acted as the inspiration for zero tolerance policing, a policing strategy that was the cornerstone of 1993 New York City mayoral candidate Rudy

Giuliani's campaign, promising to reduce the presence of petty drug deals, prostitutes and "Squeegee Men" – people who asked drivers to let them wash their windshields for cash at traffic stops.[17] Zero tolerance policing is when law enforcement targets any aspect of crime, ranging from quality-of-life infractions to more serious infractions, resulting in a strict policing approach. [55] Some quality-of-life infractions targeted under stop-and-frisk include being in a kids park without kids, spitting, bicycling on a sidewalk, littering, loud music, standing at any "no standing sign" and being in a park after hours.[56]

Zero tolerance policing provided philosophical justification for stop-and-frisk programs. As established by the Fourth Amendment, police officers must first obtain a search warrant, presenting probable cause and specifying what the officers will be investigating the suspect for.[18] However, there was a legal shift away from the original meaning of the Fourth Amendment due to the U.S. Supreme Court's ruling on *Terry v. Ohio* in 1968. [18 2] The court concluded from this case that a police officer may stop someone "in light of his experience that criminal activity may be afoot" and a frisk may occur when "a reasonably prudent man in circumstances would be warranted in the belief that his safety or that of others was in danger." [18] With stop-and-frisk, police only need reasonable suspicion to stop someone. [18] The Court's ruling was vague, thus expanding police powers to search members of the general population when they determined was appropriate. [18]

Through stopping small community disorders, Giuliani assured the public this would prevent more serious crimes from occurring. [17] Upon being elected, the New York City Police Department (NYPD) and all other law enforcement officials adopted the theory of zero tolerance policing, with a goal of tackling small crimes and increasing patrols in neighborhoods

with visible physical disorder, such as those with abandoned cars, lots and buildings – often lower income, minority neighborhoods.[54]

However, while Broken Window Theory suggests that physical order predicts crime, there is no evidence that this theory holds true in reality. Certain statistics from the time period suggest zero tolerance policing and its related practices were successful in reducing serious crime in New York City. In 1993, when Mayor Giuliani was elected, NYC was ranked 87 out of 189 cities for its serious crime rate. [17] By 1997, NYC had reduced its serious crime rate and dropped to a ranking of 150 out of 189 cities. [17] However, several changes were happening nationally that suggest zero tolerance policing was not the cause of serious crime going down in NYC.

Youth attitudes were shifting away from drug use following the heavy drug use culture of the 1980's, community involvement such as citizen patrols were increasing and demographic shifts in high-crime urban communities were causing crime rates to decline across the country. American criminologists firmly stand behind the declaration that there is not one factor or strategy that can be credited towards reducing rates of serious crime in this time period.[17] Additionally, researchers noted that cities without stop-and-frisk practices experienced greater reductions in serious crime. From 2001 – 2010, NYC's violent crime rate declined by 29% while violent crime in Los Angeles, New Orleans, Dallas and Baltimore declined by 59%, 56%, 49% and 37% respectively and these cities did not follow zero tolerance police strategies.[36] Rather, declines were attributed to a shift away from the heavy use drug culture of the 1980's, increasing community involvement via citizen patrols and demographic shifts in high-crime urban communities. [36]

David Greenberg, a sociologist at New York University, found that crime had already been declining starting in 1988 in NYC, 5 years before stop-and-frisk began.[57] This suggests that NYC mayors and the NYPD were claiming false credit for crime decline, additionally challenging the affectivity and purpose of stop-and-frisk.[57] While examining the several reasons that suggested zero tolerance policing is likely not an effective method to reduce crime rates, there were also several sources suggesting zero tolerance policing was also causing undue harm to residents of NYC.

Stop-and Frisk: Rise and Decline. By 2013, stop-and-frisk numbers began to decline in New York City. At the height of stop-and-frisk, there were 658,724 stops during 2011.[36] In 2013, there were 191,500 stops and these stops were reduced by 71% to 55,000 in 2014. Mayor Bill de Blasio's switch from supporting stop-and-frisk to opposing it upon his election as mayor, Police Commissioner William Bratton subsequent move away from support of stop-and-frisk under de Blasio, public advocacy to stop this ineffective practice and findings of systematic racial discrimination in stop-and-frisk confirmed by the court in *Floyd v. City of New* York all contributed to the decline. [34] As the era of stop-and-frisk in NYC continues to be on the decline, comprehensive data of individuals affected by this policy lead to several valuable avenues of research.

Moving Forward. Ample sources have established police violence as a public health issue, stop-and-frisk as an ineffective policing practice and socio-ecological factors that increase the likelihood of being stopped by police and being a victim of excessive police force. Concepts of surveillance threat, procedural justice and community violence exposure propose pathways through which excessive police force may influence mental health. However, a gap in research

persists in applying stop-and-frisk as a specific form of excessive police force to understand its influence on mental health. The research question proposed here, “What is the relationship between rates of stop-and-frisk and (a) rates of psychological distress and (b) levels of nervousness, adjusting for variables outlined by the social-ecological model?” seeks to contribute to scientific understanding of how stop-and-frisk specifically as an example of excessive police force may influence mental health outcomes. The analysis that follows tests the hypothesis that increased rates of overall stops, stops with no arrest and stops with a frisk will be correlated with higher rates of psychological distress and mean nervousness at the neighborhood level.

Chapter 3: Methods

Design. This analysis used data from NYPD Stop, Question and Frisk Database from 2013 to capture different types of stops in New York City and data from the 2013 New York City Community Health Survey (CHS) to assess psychological distress. The unit of analysis was the United Hospital Fund (UHF) neighborhood. UHF neighborhoods are 42 neighborhoods made of adjacent zip code areas.[58] UHF neighborhoods were originally designed to determine Community Planning Districts.[58] They were restructured to 34 neighborhoods for the Community Health Survey (CHS) in order to increase the statistical power in the sample sizes.[58] This is a socio-ecologic study concerning relationships between excessive police force (stops overall, stops with no arrest and stops with a frisk) and mental health (non-specific psychological distress) at the UHF neighborhood level. It is cross-sectional, as it will analyze all data from 2013 as a specific point in time.

*Target Population***.** The target population for this study was NYC residents as of 2013. 2013 was chosen as it was the most recent year that included the Kessler 6, which is used to measure the outcomes of this study. According to the US Census Bureau, there were just over 8.1 million residents in New York City in 2010.[59] The census counts every resident in the United States every 10 years. [60] The most recent Census for the time frame of this study was in 2010 and represents population counts as of December 21, 2010.[60] The target population is represented by the 8,698 participants in the CHS in 2013.[61]

Outcomes. One outcome was the prevalence of non-specific psychological distress in NYC's UHFs, collected through the 2013 CHS. The CHS began in 2002 to calculate citywide

estimates on chronic diseases and their accompanying behavioral risk factors and has been administered annually to approximately 8,500 New Yorkers. [61] Results are used for health programming and to understand how health behaviors influence health status. [61] The CHS has been used for several areas of neighborhood level research including exercise habits, fruit and vegetable consumption. [62] obesity and ethnic composition of UHF neighborhoods, [63] asthma prevalence [64] and bed bug infestation.[65]

The CHS is a 125-item survey patterned after the CDC's Behavioral Risk Factor Surveillance Survey. [66] The CHS is administered through the New York City Department of Health and Mental Hygiene (NYCDOHMH). [66] It has similar questions asked every year and special question sets dependent on the year. General topics covered in the survey are health status, access to health insurance, cardiovascular health, diabetes, asthma, mental health, nutrition, physical activity, tobacco and second hand smoking, demographics, neighborhoods, immunizations, cancer screening, HIV, Hepatitis C, sexual behavior, alcohol and the environment. [66]

Participants are selected using stratified random sampling. [66] Eligible participants are non-institutionalized, over the age of 18 and have either a household with a landline telephone or cell phone in one of the five boroughs of NYC. [66] Adults that live in institutionalized group housing such as college dormitories along with households without a landline or cell phone are not considered eligible. [66] UHF neighborhoods act to define the strata used in the sampling. Participants are recruited and screened for eligibility via phone calls. [66]

Participants are administered surveys, which take about 25 minutes to complete. Surveys are conducted using computer-assisted telephone screening (CATI). [66] Interviews in

CATI are offered in a variety of languages to accommodate the diverse population of New York City, including English, Spanish, Mandarin, Cantonese, Arabic, Farsi and Haitian Creole. [66] While the survey started in 2002 only sampling households with landline phones, in 2009 a sample was added of households that use cellphones exclusively. [66] The cooperation rate, which is the number of those were found to be eligible and participated in the survey, was just below 90% from 2009 to 2011 (data was not yet available for 2013).[66] The response rate, which is the number of individuals participating divided by those who were eligible or had unknown eligibility, was about 40% from 2009-2011 (data not yet available for 2013).[66] Reasons for unknown eligibility included contact being prevented via call blocking technology, no answer when called, foreign language which could not be interpreted and non-working/out of service telephone numbers.[67] The results from the CHS are weighted using population and demographic characteristics from the 2010 Census. [66]

The CHS uses the Kessler 6 (K6) to measure non-specific psychological distress. The K6 is a tool built to screen for individuals with severe mental illness at the population level.[68] The K6 is an instrument that has been used in Western and non-Western countries to screen for non-specific psychological distress and serious mental illness. [69] It is frequently used in primary care as a screening and outcome measure.[69] Scores of 13 or higher (on a 24 point scale) has been associated with anxiety, depression and persistent depressive disorder.[70] Studies have additionally shown that 49% of those with K6 scores at or over 10 are estimated to suffer from mood and anxiety disorders including depression, dysthymia, panic disorder, generalized anxiety disorder and post-traumatic stress disorder.[71]

Sample items include, “During the past 30 days, how often did you feel nervous?” and “During the past 30 days, how often did you feel helpless?” [72] Participants choose from five answers on a numbered scale: all of the time (1), most of the time (2), some of the time (3), a little of the time (4) and none of the time (5). Each item is rated on a five-point scale, with “none of the time” as 1 points to “all of time” as 5 points, resulting in potential ranges in results from 6-30. [72] A score of 18-30 is considered to be at high risk for psychological distress.[72]

Scores at 18 and above were coded as “1” for high risk for psychological distress and “0” for not at high risk for psychological distress. In this study, psychological distress is represented as the proportion of CHS participants at high risk for psychological distress per UHF district based on total population from the 2010 Census.

CHS data and post-stratification weights for 2013 were procured from the NYCDOHMH. These data were aggregated to the UHF districts level with the post-stratification weights via proc surveymeans in SAS 9.4. This procedure produced population averaged estimates for each of the 34 UHF districts that were used in the ecologic analyses.

The second outcome was nervousness, measured by the K6 item, “During the past 30 days, how often did you feel nervous?” Nervousness is an emotion associated more closely to the emotions discussed in the pathways from excessive police force to psychological distress compared to other K6 items that were more focused on depression.

The data on nervousness was also aggregated to the UHF district level. An average score for nervousness based on the K6 five point scale was calculated for each UHF neighborhood. Scores were reverse coded to reflect K6 scoring where answer options are given to participants (eg. 5 = none of the time) are given reverse points in scoring (eg. None of time = 1 point).

Exposures. The primary exposure in this study was excessive police force measured by stop-and-frisk rates among residents per each UHF in 2013 using the NYPD Stop, Question and Frisk (NYPD SQF) database. The NYPD SQF database is a comprehensive database of information obtained from police reports in NYC, organized by year. The database includes time and location information of each stop including the precinct (out of 123), borough, date, month, day and time. It also specifies setting (e.g. indoors or outdoors, housing, public transportation).[56] Details about why the stop happened include a plethora options for suspected offenses ranging from aggravated assault and unlawful use of a credit card to eavesdropping, fortune telling and unlawfully using slugs. [72] Various other characteristics of the stop are recorded, such as if other people were stopped, if an arrest or summons was made and if a frisk or search occurred. [72] Results of actions taken during the stop are specified in the dataset as well, including if a stop occurred and if the stop resulted in finding weapons or in arrest. [72] Suspect demographics are also included such as race, weight, height and hair color. [72]

The NYPD SQF database was originally created to conduct the study "Analysis of Racial Disparities in the New York Police Department's Stop, Question and Frisk Practices" by the Rand Corporation Center on Quality Policing in a contract with the New York City Police Foundation.[56] When the study generated great interest, the data were made publicly available by the NYPD. [56] Police report stop-and-frisk data after a stop occurs. [56] Quarterly reports of these data are released by New York Civil Liberties Union (NYCLU) and yearly datasets for 2003 – 2014 are available electronically.[73]

To measure excessive police force, three variables from the NYPD SQF database were used: stops overall, stops with no arrest and stops with a frisk. Stops overall was picked as a

variable to understand how excessive police force in general may be related to the proportion of psychological distress in a community. Stops with no arrest was picked as a variable to focus on the perspective that being stopped without being arrested would indicate that the person was acting lawfully and thus has undergone a potentially stressful police interaction even though they were acting within the law. Finally, a stop with a frisk was a variable to measure psychological distress from physical harm, as frisking is a very physical act on the suspect. These variables are highly correlated highly with each and therefore they were analyzed separately.

Stops were calculated at rates per 10,000 residents. Individual stop, question and frisk incidents were geocoded in ArcGIS 10.3 using geographic stop location data. There were 5 shapefiles used: total stops, stops where an arrest was made, stops where no arrest was made, stops where frisking was reported and stops where frisking was not reported. UHF spatial joins were done to assign stops to UHF neighborhoods. There were 191,852 SQF incidents overall recorded. 76,408 stops did not result in an arrest and 111,639 stops included frisks. UHF identifiers were appended to each stop that was successfully geocoded. 2010 Census data was used to establish denominators for each UHF to compute per population stop, question and frisk variables.

However, 1,027 stops overall could not be geocoded and therefore were not included in the analysis. Of the 1,027, 919 were stops with no arrest and 157 were stops with frisks. These events could not be assigned a UHF neighborhood because there were no XY coordinates in the police report or minor spatial inaccuracies with the shapefiles.

Controls. Control variables were mean age and the percent of residents who were Black Non-Hispanic, Latino and female of UHF neighborhoods. All control variables were created

using the CHS dataset. Age was measured with the question, "What is your age?"[74] Age was calculated as a weighted mean of each UHF neighborhood.

Individual race/ethnicity was measured in CHS using the question, "Are you Hispanic or Latino?" [74] There was then a follow up question of, "Some people, aside from being Hispanic, also consider themselves to be a member of a racial group. Which one or more of the following would you say is your race?" [74] Answer options included, White Non-Hispanic, Black Non-Hispanic, Hispanic, Asian/Pacific Islander Non-Hispanic and Other Non-Hispanic. [74] These were chosen to control for the races of Black and Latino [a], as both have been shown to be influential factors of undergoing a stop and/or frisk. [74] Being female was measured with the question, "Because it is sometimes difficult to determine over the phone, I am asked to confirm with everyone. Are you male or female?" [74] Black Non-Hispanic, Latino and female were calculated in this study as the percent of those falling into the specified categories by UHF neighborhood.

Analysis Procedures. Statistical analysis was conducted in SPSS Statistics 23. Three bivariate correlations were conducted between each of the proposed exposure variables of stop-and-frisk (stops overall, stops with no arrest, and stops with a frisk) and the outcome of psychological distress. Simple linear regressions were also conducted for stop-and-frisk variables (overall stops, stops with no arrest, stops with a frisk) with psychological distress, creating a total of 3 simple linear regressions. Multiple linear regressions conducted included as an outcome psychological distress or nervousness and as predictors 1) stop-and-frisk variable 2)

[a] Latino and Hispanic are not interchangeable terms. Latino is a specific term for people of Latin American origin or descent.[79] Hispanic is a person of any Spanish or Portuguese-speaking people or culture. [79] Thus, while every Latino is Hispanic, not all Hispanics are Latino. The CHS did not measure specifically for people who consider themselves Latino, grouping them with all people that identify as Hispanic. In this paper, the term Latino is used for consistency with literature on stop-and-frisk. However, the data provided may include participants that were Hispanic but not Latino. The implications of this question in the CHS not distinguishing between Latino and Hispanic on the study are included in the limitations highlighted in the discussion.

one proposed control variable (age, Hispanic, Black non-Hispanic, female). Each model was done with 3 variables each due to the limited number of units in the analysis (just 34 UHF districts total). Thus, 24 multiple linear regressions were conducted in total.

Chapter 4: Results

All variables were aggregated to the UHF neighborhood level. The mean percent of residents reporting psychological distress in UHF neighborhoods was 5.30 (sd=2.7). Mean nervousness was 4.14 (sd=.149) which corresponds with “a little of the time” on the K6 five point scale. The mean age was 45.05 (sd=2.35). For exposure variables, the mean total of overall stops was 245.18 per 10,000 residents (sd=150.94). Stops with no arrest had a mean of 226.35 per 10,000 residents (sd = 143.29). Stops with a frisk had a mean of 131.12 per 10,000 residents (sd=77.54). The mean percent UHF neighborhood residents who were non-Hispanic Black was 23.50 (sd=23.49). The mean percentage of residents who were Latinos was 25.90 (sd = 17.70). The mean percentage of residents who were females was 54.60 (sd =2.27). The mean age was 45.05 (sd=2.35) (Table 1).

Histograms were produced for each exposure, outcome and control variable to check for normality. Stops with frisk, Latino and Black Non-Hispanic at the UHF level were not normally distributed, so log transformations were used to make the distribution of these variables more normal (Figure 1).

Relationships between predictors and outcomes were explored using scatter plots. All best fit lines in the scatterplots showed slight positive slopes. The R-values were low for all three scatterplots: stops overall and non-specific psychological distress (R=0.030), stops with a frisk and non-specific psychological distress (R=0.034) and stops with no arrest (R=0.028) (Fig. 2).

Psychological distress was not associated with overall stops (R=0.173, p=.327), stops with no arrest (R=0.167, p=.347) and stops with a frisk (R=0.259, p=.139) (Table 2). A simple linear regression showed that the relationship between the rate of total stops per 10,000 residents and percentage of residents at high risk for psychological distress was not significant (β=0.173, p=.327) (Table 2). Multiple linear regressions showed the rate of overall stops per 10,000 residents and percentage of residents at high risk for psychological distress remained non-significant when mean age (β=0.015, p=.935), Non-Hispanic Black (β=-0.009, p=.969), Latino (β=0.414 , p=.015) or female (β=-0.053 , p=.777) when the gender variable was included in the model (Table 3).

A simple linear regression showed that the relationship between the rate of stops with no arrests and percentage of residents at high risk for psychological distress was not significant (β=0.167, p=.347) (Table 2). Multiple linear regressions showed the rate of stops with no arrests per 10,000 residents and percentage of residents at high risk for psychological distress remained non-significant when mean age (β=0.011, p=.935), Non-Hispanic Black (β=-0.003, p=.989), Latino (β=0.41 , p=.015) or female (β=-0.052, p=.780) when the gender variable was included in the model (Table 3).

A simple linear regression showed that the relationship between the rate of stops with frisks per 10,000 residents and percentage of residents at high risk for psychological distress was not significant (β=0.259, p=.139) (Table 2). Multiple linear regressions showed the rate of stops with no arrests per 10,000 residents and percentage of residents at high risk for psychological distress remained non-significant when mean age (β=0.66, p=.725), Non-Hispanic

Black (β=-0.156, p=.518), Latino (β=0.388 , p=.024) or female (β=-0.079 , p=.665) when the gender variable was included in the model (Table 3).

Bivariate correlations showed overall stops per 10,000 residents and mean nervousness (R=-.364, p=.034), stops with no arrest per 10,000 residents and mean nervousness (R=-.411, p=.030) and stops with frisk per 10,000 residents and mean nervousness (R=-0.432, p=.011) were significantly correlated (Table 4).

A simple linear regression showed that the relationship between the rate of total stops per 10,000 residents and nervousness was significant (β=-0.364, p=.034) (Table 4). Multivariable linear regressions showed the rate of overall stops per 10,000 residents and mean nervousness was significant (β=-0.411 , p=.024) and mean age was not significant (β=-0.159, p=.363) when mean age was added to the model. The rate of overall stops per 10,000 residents and nervousness was not significant (β=-0.034, p=.853) and percent of Black Non-Hispanic residents was significant (B=-0.551, p=.005) when percent of Black Non-Hispanic residents was added into the model. The rate of overall stops per 10,000 residents and mean nervousness was significant (β=0.380, p=0.028) and percent of residents who were Latino was not significant (β=-0.181, p=0.280) when Latino was included in the model. The rate of overall stops per 10,000 residents and nervousness was not significant (β=-0.237, p=0.144) and the percent of residents who were women was significant (β=- 0.425, p=0.011) when the gender variable was included in the model (Table 5).

A simple linear regression showed that the relationship between the rate of stops with no arrest per 10,000 residents and nervousness was significant (β=-0.372, p=.030) (Table 4). Multiple variable regressions showed the rate of stops with no arrest per 10,000 residents and

mean nervousness was significant (β=-0.416, p=.021) and mean age was not significant (β=-.156, p=.369) when mean age was added to the model. The rate of stops with no arrest per 10,000 residents and nervousness was not significant (β=-0.045, p=.809) and percent of Black Non-Hispanic residents was significant (B=-0.545, p=.006) when percent of Black Non-Hispanic residents was added into the model. The rate of stops with no arrest per 10,000 residents and nervousness was significant (β=0.385, p=.026) and Latino was not significant (β=-0.176, p=.292) when Latino was included in the model. The rate of stops with no arrest per 10,000 residents and nervousness was not significant (β=-0.243, p=.134) and the percent of residents who were women was significant (β=-0.422, p=.012) when the gender variable was included in the model (Table 5).

A simple linear regression showed that the relationship between the rate of stops with a frisk per 10,000 residents and nervousness was significant (β=-0.432, p=.011) (Table 4). Multiple variable linear regressions showed the rate of stops with a frisk 10,000 residents and nervousness was significant (β=-0.514 , p=.005) and mean age was not significant (β=-0.226, p=.192) when mean age was added to the model. The rate of stops with a frisk per 10,000 residents and nervousness was not significant (β=-0.070, p=.734) and percent of Black Non-Hispanic residents was significant (β=-0.524, p=.015) when percent of Black Non-Hispanic residents was added into the model. The rate of stops with a frisk per 10,000 residents and mean nervousness was significant (β=-0.487, p=.005) and Latino was not significant (β=.252, p=.125) when Latino was included in the model. The rate of stops with a frisk per 10,000 residents and nervousness was significant (β=-0.314, p=.049) and the percent of residents who

were women was significant (β=-0.404, p=.013) when the gender variable was included in the model (Table 5).

Chapter 5: Discussion

Results. Overall, analyses in response to our research aims on psychological distress resulted in null findings and a lack of support for the hypothesis of this study. While the scatterplots showed a slight positive association between the stop-and-frisk variables and psychological distress, the results of models suggest that there is not a significant association between stop-and-frisk and psychological distress. The percent of neighborhood residents that were Latino was significantly associated with psychological distress, but the implications of this significance falls outside the scope of the research question in this study.

In regards to nervousness, the scatterplots showed a slight association between stop-and-frisk variables and nervousness, while bivariate correlations showed that there was a significant association between the stop-and-frisk variables and nervousness. However, the bivariate models did not support the study's hypothesis that increased rates of overall stops, stops with no arrest and stops with a frisk will be correlated with higher rates of nervousness at the neighborhood level because they results showed negative beta values, suggesting that as stop-and-frisk rates increase, nervousness decreases. The significance in these analyses suggests that stop-and-frisk may be more associated with general mental well being, with nervousness being a facet of well being, rather than severe mental illness as the K6 measures for.

For overall stops and stops with a frisk, age and percent of the neighborhood residents who were Latino were not significant which suggests that the percent of Latinos in the neighborhood should not be included in a model the relationship between overall stops or

stops with a frisk and nervousness. For overall stops, stops with a frisk and stops with no arrest the percent of residents who were Black Non-Hispanic resulted in the stop-and-frisk exposure being insignificant, suggesting that there may not be a real relationship between the stop-and-frisk exposures and nervousness, as this relationship may be explained through the percent of residents who are Black Non-Hispanic. For overall stops and stops with no arrest, when the percent of residents who were women was added to the model overall stops and stops with no arrest were insignificant, also suggesting that there may not be a real relationship between these exposures and nervousness as the relationship may be explained by the percent of residents who are women.

For stops with a frisk and nervousness, the relationship was significant even when controlling for percent of women in the neighborhood strengthening the argument that as stop-and-frisk increases nervousness decreases. This suggests that when controlling for gender in a neighborhood, stops with a frisk are still associated with nervousness. The relationship may be significant when controlling for gender because young people of both genders have been shown to build resilience to violent events if they have other protective events occurring such as strong parent and school support. [75]Thus, it may be that people are receiving enough support from their social network that it is protective against nervousness from stops with a frisk. The potential for social support was not captured in the variables used in this analysis.

These study results challenge the proposed pathways of stop-and-frisk and mental health that suggest stop-and-frisk increases surveillance threats[34], procedural injustice[40] and community violence exposure[13] to a degree that generates significant psychological distress. This study supports the argument that there is not a significant association between these two

concepts. There may be several reasons why the association between stop-and-frisk and psychological distress is not significant. Firstly, while this thesis proposed a pathway of stop-and-frisk as community violence exposure that influenced higher rates of depression, anxiety and PTSD, studies of students in inner-city middle schools with high rates of crime have not shown an association between community violence exposure and psychological distress.[76] This may be because there is a "ceiling effect" where violence exposure does distress witnesses, but eventually people become desensitized as the events become more normal to see. [76] Therefore, the proposed pathway of community violence exposure from excessive police force leading to psychological distress may not hold true. In addition, in a study of teenagers in high crime neighborhoods, those who frequently witnessed violence were less likely to internalize the impact violence had on them as time went on and thus experienced less psychological distress as violent events continued to occur.[77] Thus, it could be that after experiencing or witnessing stop-and-frisk over a period of years, residents become inured. In addition, a higher number of police officers in certain city areas has been shown on occasion to reduce some types of crime. [78] It may be that the reductions in distress residents feel from certain forms of crime is greater than the distress they feel from stop-and-frisk.

Limitations. These models may be insignificant due several limitations faced in the study design and available data. These limitations suggest future avenues of research for studies on the relationship between excessive police violence and psychological distress, ultimately contributing to better understanding the impact excessive police force may have on mental health.

Several limitations should be noted for this study. Firstly, this study was cross sectional, so the temporality of excessive police force and psychological distress could go either way. Thus, this study cannot assess how changes in the outcome of psychological distress may influence the changes in the outcome of the stop-and-frisk exposures.

Secondly, this study looked at measures of excessive police force from one type of policing practice in a specific place – New York City's Stop-and Frisk-program – and also the K6 as specific measure of psychological distress and nervousness. There may be other manifestations of psychological distress and mental illness that may be significantly related to the exposure of stop-and-frisk that may not appropriately captured by the K6 or any singular item included in the K6. In addition, stop-and-frisk data do not encompass all types and incidences of police interaction with residents of a community, so it is not a comprehensive measure of how a community may be experiencing and perceiving police interactions. Using different ways to measure these two phenomena may either support or challenge the results presented here. In addition, stop-and-frisk is an example of zero tolerance policing in a large metropolitan area that was for a long time strongly supported by its governing bodies. Thus, these results may not be generalizable to other cities or metro areas that did not adopt or support these policing practices.

A third limitation was statistical power. There were just 34 UHFs in this ecological study. As a result, only one stop-and-frisk variable and one additional variable could be included as predictors in the models.

In addition, as discussed in the literature, various personal traits compound together to make someone increasingly likely to be a suspect in stop-and-frisk. For example, a Black person

has an increased likelihood of being a suspect in a stop-and-frisk, but being a male increases this chance even more, and being young further increases the chance. As the units available for analysis were low, various combinations of additional variables could not be put into the same model to most accurately reflect some of the existing literature.

A final limitation was that not everything found in the literature could be appropriately captured in the data, as this study used a secondary data set. For example, while literature showing neighborhoods with high rates of drug use have more community disorder and thus experienced higher rates of excessive police force[10], the CHS does not ask about illicit drug use every year. Thus, drug use could not be included as a control variable in the proposed models of this study. In addition, while the literature mainly focused on Latinos disproportionately being targeted by stop-and-frisk, the CHS measures for being Hispanic overall and not Latino specifically. Therefore, the data used in this study includes people who are Hispanic but are not necessarily Latino, making this measure of being Latino not ideally accurate.

Implications for public health. The results from this study suggest there is not a significant relationship between stop-and-frisk as a form of excessive police violence and psychological distress at the ecological level. As the results are insignificant, they do not provide direction on the extent of which excessive police force influences psychological distress at the neighborhood level, and thus what efforts public health practitioners should take regarding this topic. While existing research was not found arguing that the relationship between excessive police force and psychological distress is insignificant, there has been some research finding that community violence exposure is not significantly associated to psychological distress. Further research on how surveillance procedural justice, community violence exposure can lead

to psychological distress may show interesting conclusions to what pathways, if any, exist linking excessive police force and psychological distress.

This study does suggest that there is potentially a significant relationship between stop-and-frisk and nervousness at the ecological level. In the bivariate analyses, all stop-and-frisk variables were significant with nervousness, suggesting that further research incorporating additional variables may shed light on the intricacies of this relationship. A particularly promising avenue of research may be stops with a frisk and further measures of mental well being, as the relationship between stops with a frisk and nervousness remained significant even with additional variable of percent of women in the neighborhood was added into a model. There may be other significant mental well-being measures associated particularly with stops that involve a frisk.

This study contributes to the calling by the WHO and APHA for public health practitioners to approach police violence as a public health problem by beginning to explore excessive police force and psychological distress from a social-ecological approach. This study draws from several areas of existing literature to reinforce the need to look at the psychological effects of police violence with a social-ecological approach in order to consider personal, relationship, community and societal factors that all play a role in excessive police force and potentially psychological distress. As police violence and mental health are rising issues, moving forward with the social-ecological model may one day lead to the creation of many strategies that encompass one or all levels of the model, offering communities a variety of ways to address the delicate matter of maintaining law through policing while also maintaining the mental health of city residents.

Moving forward from this study, recommendations focus on closer consideration to study design. The limitations faced emphasize that further research is needed on the relationship between excessive police force and the outcomes of psychological distress and nervousness. First, a longitudinal study focusing on the exposure of excessive police force and outcome of psychological distress may establish a link that suggests excessive police force influences psychological distress, as a cross-sectional study cannot establish temporality. Secondly, looking at other measures of excessive police force would be helpful in establishing generalizability. Stop-and-frisk and zero tolerance policies are not standard practice for all policing forces, and thus using stop-and-frisk as a measure of excessive police force cannot be generalizable to other policing forces. In addition, primary data collection specifically on these topics will allow all possible exposures found in the literature to be measured. Finally, future studies should consider other ways to measure excessive police force and psychological distress from an ecological perspective that have a larger number of units for analysis. Some ways to measure at the neighborhood level that would create a larger set of units may be by zip code or census tract. This will make statistical testing in a future study produce more informative results on the relationship between excessive police force and psychological distress from a social-ecological perspective.

Figures and Tables

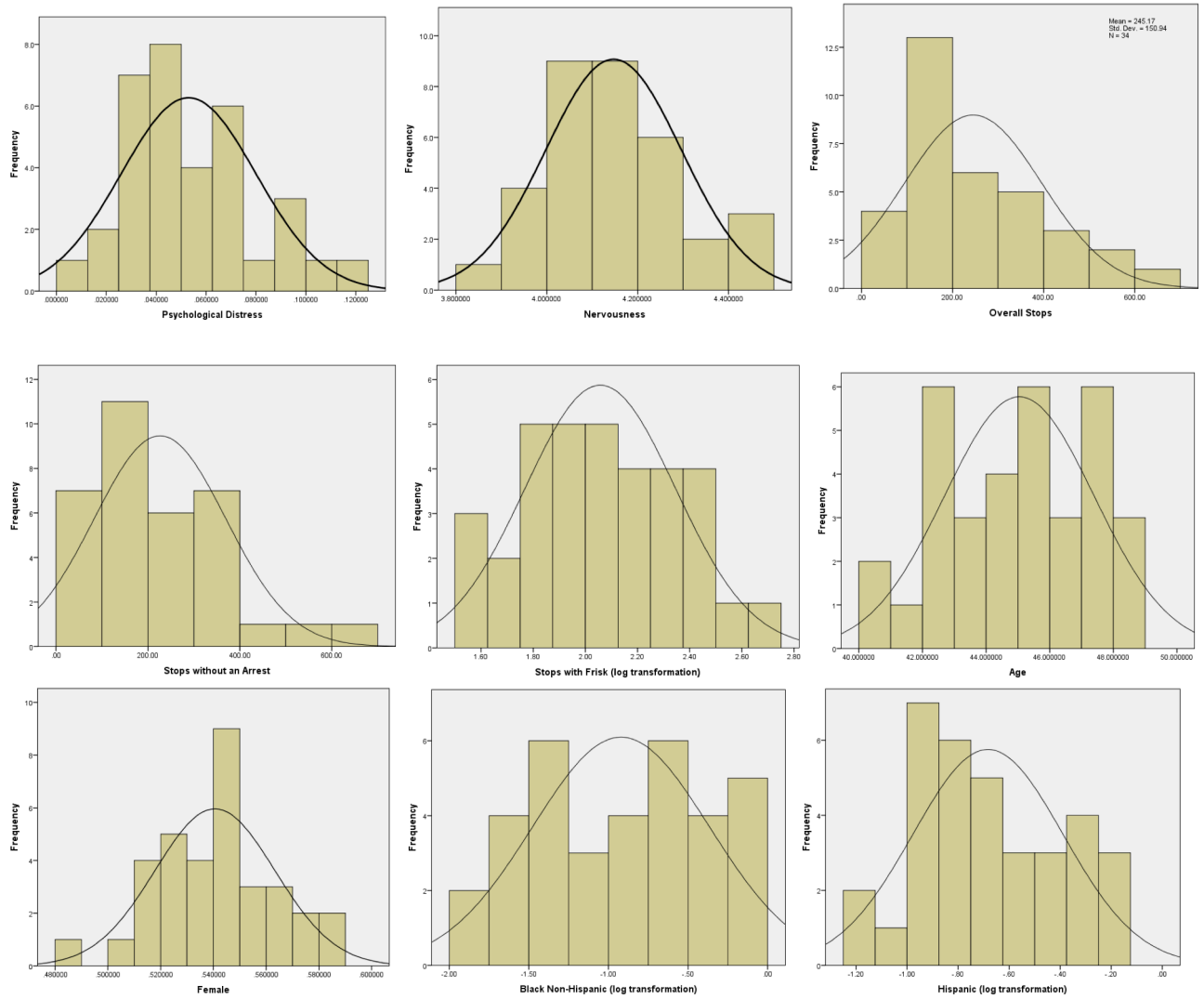

Figure 1. Histograms of Study Variables

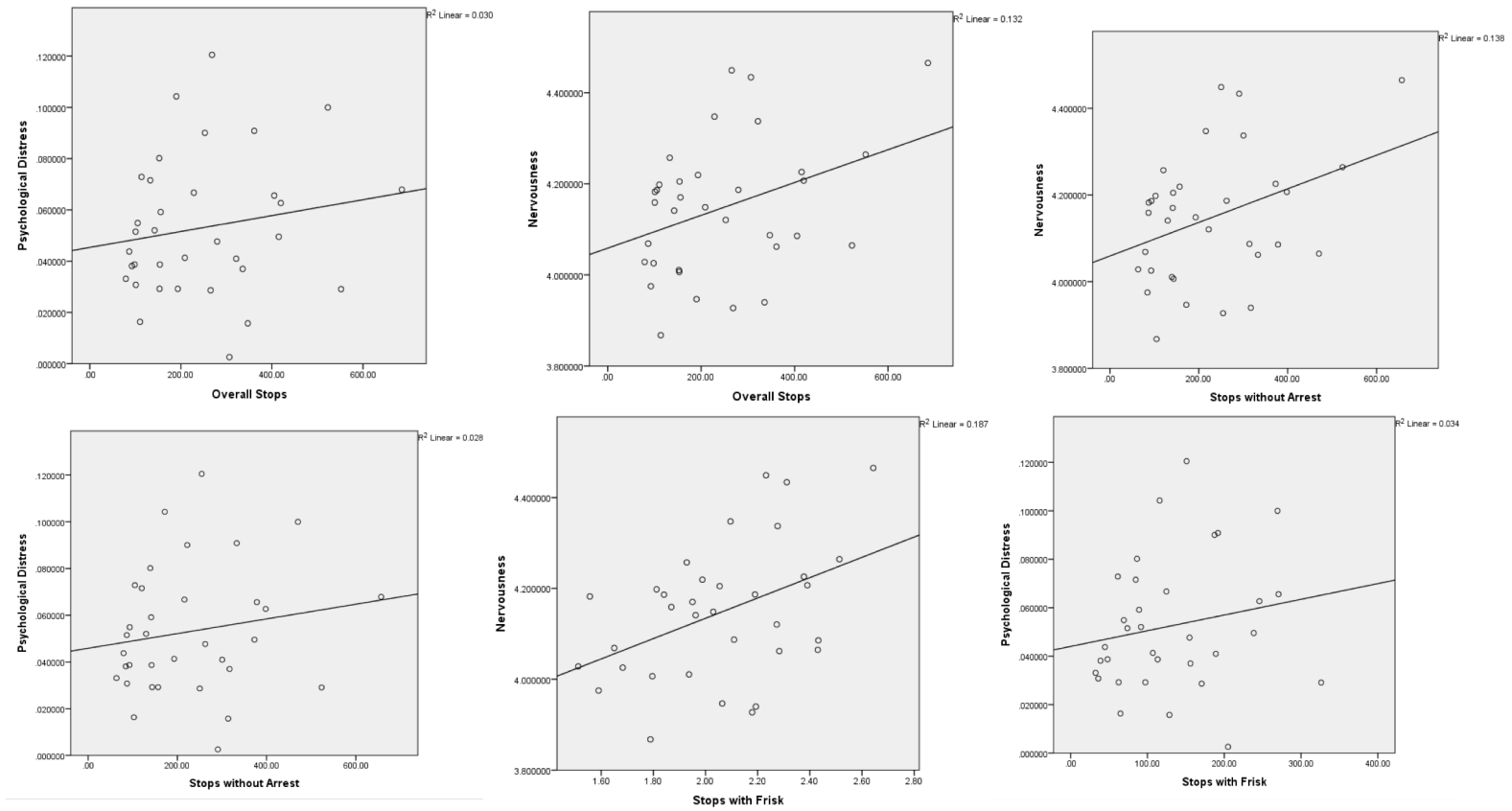

Figure 2. Scatterplots of Stop-and-Frisk Exposures and Outcomes

Table 1: Descriptive Statistics of Outcomes, Exposures and Possible Controls in 34 New York City United Hospital Fund Districts in 2013					
Variable	**Mean**	**Standard Deviation**	**Median**	**Minimum**	**Maximum**
Residents reporting psychological distress (%)	5.30	2.7	.05	.26	12.05
Nervousness	4.14	.149	4.15	3.87	4.47
Mean Age	45.05	2.35	45.07	40.64	48.95
Residents who were Black Non-Hispanic (%)	23.50	23.49	12.85	11.90	75.15
Residents who were Latino (%)	25.90	17.70	19.45	6.1	65.7
Residents who were female (%)	54.06	2.27	54.15	48.19	58.46
Overall Stops Rate per 10,000 residents	245.18	150.94	200.97	79.08	658.28
Stops with No Arrest Rate per 10,000 residents	226.35	143.29	182.32	63.49	656.74
Stops with frisk Rate per 10,000 residents	131.12	77.54	113.33	32.52	326.13

Table 2: Correlational and Bivariate Analyses of relationships between Stop-and-Frisk and Psychological Distress in 34 New York City United Hospital Fund Districts in 2013				
	Correlation		**Simple Linear Regression**	
Variables	**R**	**p**	**β**	**p**
Overall Stops Rate per 10,000 residents	.173	.327	0.173	.327
Stops with No Arrest Rate per 10,000 residents	.167	.347	0.167	.347
Stops with frisk Rate per 10,000 residents	.259	.139	0.259	.139

Table 3: Multivariable regression of Stop-and-frisk measures (Overall Stops, Stops with Frisk, Stops without Arrest) on Psychological Distress in 34 NYC United Hospital Fund Districts in 2013[b]

Variables	β	p
Overall Stops Rate per 10,000 residents	0.178	.344
Mean age	0.015	.935
Overall Stops Rate per 10,000 residents	0.135	.408
Residents who were Latino (%)	0.414	.015
Overall Stops Rate per 10,000 residents	0.178	.425
Residents who were Black Non-Hispanic (%)	-0.009	.969
Overall Stops Rate per 10,000 residents	0.189	.315
Residents who were female (%)	-0.053	.777
Stops with No Arrest Rate per 10,000 residents	0.170	.365
Mean Age	0.011	.953
Stops with No Arrest Rate per 10,000 residents Residents who were Latino (%)	0.135	.410
	0.416	.015
Stops with No Arrest Rate per 10,000 residents Residents who were Black Non-Hispanic (%)	0.168	.453
	-0.003	.989
Stops with No Arrest Rate per 10,000 residents	0.183	.334
Residents who were female (%)	-0.052	.780
Stops with frisk Rate per 10,000 residents	0.283	.138
Mean Age	.066	.725
Stops with frisk Rate per 10,000 residents	0.175	.292
Residents who were Latino (%)	0.388	.024
Stops with frisk Rate per 10,000 residents	0.367	.134
Residents who were Black Non-Hispanic (%)	-0.156	.518
Stops with frisk	.282	.129
Female	-0.079	.665

[b] Each line in the table represents a different model.

Table 4: Correlational and Bivariate Analyses of relationships between Stop-and-Frisk and Nervousness in 34 New York City United Hospital Fund Districts in 2013				
	Correlation		**Simple Linear Regression**	
Variables	**R**	**p-value**	**β**	**p-value**
Overall Stops Rate per 10,000 residents	.364	.034	0.364	.034
Stops with No Arrest Rate per 10,000 residents	.411	.024	0.411	.024
Stops with frisk Rate per 10,000 residents	.432	.011	.432	.011

Table 5: Multivariable regression of Stop and Frisk measures (Overall Stops, Stops with Frisk, Stops without Arrest) and Nervousness in 34 NYC United Hospital Fund Districts in 2013[b]

Variables	β	p-value
Overall Stops Rate per 10,000 residents	0.411	.024
Mean age	0.159	.363
Overall Stops Rate per 10,000 residents	0.380	.028
Residents who were Latino (%)	0.181	.280
Overall Stops Rate per 10,000 residents	0.034	.853
Residents who were Black Non-Hispanic (%)	0.551	.005
Overall Stops Rate per 10,000 residents	0.237	.144
Residents who were female (%)	0.425	.011
Stops with No Arrest Rate per 10,000 residents	0.416	.021
Mean Age	.156	.369
Stops with No Arrest Rate per 10,000 residents	0.385	.026
Residents who were Latino (%)	-0.176	.292
Stops with No Arrest Rate per 10,000 residents	0.045	.809
Residents who were Black Non-Hispanic (%)	0.545	.006
Stops with No Arrest Rate per 10,000 residents	.243	.134
Residents who were female (%)	.422	.012
Stops with frisk Rate per 10,000 residents	0.514	.011
Mean Age	.011	.192
Stops with frisk Rate per 10,000 residents	0.487	.005
Residents who were Latino (%)	.081	.125
Stops with frisk Rate per 10,000 residents	0.070	.734
Residents who were Black Non-Hispanic (%)	.524	.015
Stops with frisk	0.049	.314
Female	0.404	.013

[b] Each line in the table represents a different model.

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