Do Protests Change Policing? The Racial Gap in

Arrests Made by the NYPD Before, During, and After

the George Floyd Protests

Emily Briggs

Department of Statistics

University of Connecticut

April 27, 2023

 $_{6}$ Abstract

3

5

10

11

12

13

14

15

16

17

18

19

This paper seeks to explore the effect of Black Lives Matter (BLM) protests on the demographic of people arrested in a large, diverse city. Throughout history, mass protests have had a resounding effect on the social and political spheres of the United States. After the death of George Floyd in 2020, the nation was ignited into taking action against police brutality and discrimination - demonstrated by mass protests across the country. Although it was the police brutality and racial injustice of this event which catalyzed the BLM movement, few scholars have explored the actual policing that was done at the time of the protests. This paper examines the proportion of Black people arrested before, during, and after the peak of BLM protests in New York City. Applications of this research could have implications for policing policies, discussion about racial inequalities, and the American Criminal Justice System as a whole.

Keywords: Black Lives Matter, George Floyd, NYPD, police, protest.

1 Introduction

In America, mass protests have been a long-standing strategy to express discontent with
the societal and political structures in place in the country. The nation was formed out
of protest, dating back to the Boston Tea Party in 1773, when American colonists rebelled
against British taxation (Dudenhoefer, 2022). Since then, mass protests have been used to
bring awareness to issues such as women's rights, environmental protection, LGBT rights,
gun control, and labor rights. Racial injustice and inequality have been a major point of
unrest in the country, sparking the Civil Rights Movement in the 1950s and 1960s. This
struggle for social justice inspired drastic institutional change, and brought an end to Jim
Crow- which represented the legitimization of anti-black racism. It also enabled a mindset
shift in the way Americans thought of and approached racial differences, and stands as an
illustrative example of the transformative power of mass protest in relation to institutional
injustice.

It is clear that collective action propagates systemic change, and plenty of research has 33 been done to demonstrate this trend (Madestam et al., 2013). Some journalists argue that the U.S Civil Rights movements have an ongoing effect on political attitudes in the country, 35 with counties that have experienced protests being more highly associated with the Democratic Party and supporting affirmative action (Mazumder, 2018). There have also been studies which show that geographical closeness to civil rights activity can cultivate positive and supportive views towards the protest and its cause. According to Andrews et al. (2016), "Individuals living near centers of movement activity may become more favorable to protests because they become more sympathetic to the demands of activists". Although considerable work has been done as far as analyzing the political and even social outcomes of civil rights protests, there are many dimensions of the overall effect that are still unexplored at a scholarly level. Black Lives Matter specifically has been the focus of many journalistic pieces (Chan, 2020; Buchanan et al., 2020), and qualitative articles focused on the circulatory discourse at the time (Moody-Ramirez et al., 2021; Pryce and Gainey, 2022), but lacks 47 a higher level of academic analysis.

On social media, the first occurrence of #BlackLivesMatter was seen in 2013 after the 48 acquittal of George Zimmerman for the death of Treyvon Martin. A year later, the deaths of Michael Brown in Ferguson, Missouri and Eric Garner in New York City mobilized protesters 50 across the country, and catapulted BLM into a nation-wide movement. This correlates with 51 prior knowledge about how protests begin-studies show that collective memory of a tragedy is often a prime mobilizer for collective action, especially mass protests (Harris, 2006). Following the death of Michael Brown, the focus of the movement shifted to bringing attention to fatal interactions with the police, and police brutality towards Black people. This sparked discussion concerning the racial and policy discrimination of the criminal justice system. Again, in this area there are plenty of journalistic sources that argue that Black people are disproportionately and unfairly arrested at a higher rate than other races (Srikanth, 2020; Brown, 2020). On the other hand, there is a lack of scholarly research and statistical analyses on actual numbers of arrests. This type of evidence could be crucial for criminal justice policy, because it has been well-established in criminology that race and ethnicity do play a large role in whether or not an individual gets sent to prison. There is evidence that the chance of going to prison in one's lifetime is significantly higher for black males than for white males (Bonczar and Beck, 1997). However, one study uncovered that this overrepresentation of blacks occurs "because they commit a disproportionate number of frequently imprisoned (i.e., violent) crimes" (Harris et al., 2009). This ties back to the racially unequal social environment conditions which foster disproportionality in the likelihood of blacks to commit violent crimes. For the purposes of this paper I will not be going into detail on that aspect of systemic inequality, however it is important to note moving forward with any discussion of the racial gap in criminal offenses in America.

This paper seeks to explore the proportion of black people arrested before, during, and after notably the largest period of Black Lives Matter protests. The death of George Floyd - a 46 year old black man who was detained, abused, and ultimately murdered in police

custody- ignited a worldwide movement framed around police brutality and racial injustice. Since his death was captured on video, the injustice reached millions of people in a matter of days, sparking outrage. Protests erupted starting in Minneapolis where his death occurred, but quickly circulated around the country and then the world, starting in May of 2020. Months of mass protests followed, to an extreme not seen since the civil rights movements of the sixties. Although a lot of the movement was taking place online through social media, thousands flocked to major cities to share their voices and engage in protesting. In the United States, major hotspots for protest included Los Angeles, New York City, Boston, and Louisville. Reports estimated that between 15 million and 26 million people in the U.S said that they protested in the summer of 2020 (Buchanan et al., 2020).

Remarkably, studies have shown that the BLM protests throughout 2020 were over-84 whelmingly peaceful (Skoy, 2021). It is important to note here the global context of the 2020 protests - which was the unprecedented COVID-19 pandemic occurring at the time. Another interesting facet of this paper is that I will be analyzing crime in the context of BLM protests with the pandemic as a background setting, rather than having Covid be the main area of interest. There are plenty of studies that look at the change in crime rates throughout the pandemic (Rosenfeld and Lopez, 2020; Piquero et al., 2020; Mohler et al., 2020). Overall, the analyses show a decrease in crime due to people staying indoors at the time. Simultaneously, as the protests began to draw people into major cities, the distribution of type of crime was reportedly altered. Reports show that increased burglaries were notable at the time, as shops and storefronts had been left unattended by owners choosing to stay indoors. Compared to the crime rates before the protests began, there was a sharp increase in crime in major cities as the distribution of people in the area became more dense. However, Zhang et al. (2020) notes that it was only certain, nonviolent, crimes that spiked, specifically burglaries and vandalism. It is also reported that crime went back down to being relatively stable as before once the protests slowed down.

Despite the prior research on crime during the pandemic, the efficacy of protests in

100

America, and police brutality and racial injustice as a whole, no one has analyzed the demographics of who was getting arrested at the time of the protests. It has been shown 102 that a majority of Americans across all races supported the movement, but who got penalized 103 for the most crime at the time? Were black people still being targeted, or was the diversity in 104 arrests a reflection of who was protesting? Were police making less arrests because they were 105 under more scrutiny? This idea of police scrutiny has been deemed the "Ferguson Effect", 106 or the de-policing effect. In one report, Skoy (2021) notes that the United States may have 107 suffered from over-policing before BLM, and in that case, decreased proactive policing could 108 help balance the policing system. In any case, there is a lack of evidence to support the 109 Ferguson Effect as actually being detrimental to society and increasing crime. 110

In this paper I seek to analyze the demographics of arrests made before, during, and 111 after the peak of BLM protests. I chose to focus on New York City, because arrest data are 112 public and readily available online. New York City is an epicenter for mass protest, as it 113 is the most densely populated city in the U.S (Maciag, 2021), and one of the most diverse. 114 People flocked to the city during the George Floyd protests, where thousands crowded the 115 streets, marched across the Manhattan Bridge, and demonstrated protests in neighborhoods 116 across the city throughout 2020 (Walters, 2020). I will be extracting the proportion of black people arrested in each of the time periods I've chosen, and then comparing them to each other. My hope is that this paper can (1) help broaden the discussion about disparities in 119 the American criminal justice system, (2) provide information to ensure the capabilities of 120 policing and governing systems through a social justice crisis, and (3) inform discourse on 121 police brutality and police legitimacy in this country. 122

The rest of the paper is organized as follows. The data will be presented and discussed with a qualitative description and visualization in Section 2. Section 3 goes on to describe the methods for evaluation and comparison. The results are reported in Section 4. A final discussion about implications and suggestions for future academic research on the topic concludes in Section 5.

2 Data Description

128

Data were collected on arrests made in New York City dating back to 2006, and up until 129 the end of 2022. For the purposes of my research, I took into account all arrests made in 130 that time frame, with no random sampling. In essence, the frame of arrests made before the 131 George Floyd protests of 2020 is a sample of the entire population of arrests made before 132 those events, however I chose data starting in 2006 out of convenience and readily available 133 data. Similarly, I did not include arrests made so far this year, because my source of data 134 does not generate reports for arrests until the end of the calendar year. It follows that arrests 135 made in the time grouping after the protests could also be thought of as a sample of the entire population of arrests made by the NYPD, although this was again for purposes of convenience only. 138

The dataframes I used were sourced from NYPD Open Data, and I combined two of them to create a range of dates that included all time groupings of interest. First, I looked at NYPD Arrests Data (Historic), which detailed reports of every arrest made in New York City from the start of 2006 through the end of 2021. In order to get a more extensive sample of arrests made after the protests, I used NYPD Arrests Data (Year to Date), which included reports of arrests made throughout 2022.

I chose to focus only on arrests made in New York City because it is a location represen-145 tative of many hot spots for diversity, protest, and police enforcement in America. Because 146 of its size, and because it is such a melting pot of different races, economic statuses, and 147 cultures, I am inclined to hope the results of my analysis could be more generalizable to 148 other major U.S cities. New York City-dwellers and visitors played a highly active role at 149 the height of the George Floyd protests, with thousands flocking to different boroughs with 150 signs and organized marches throughout 2020. It is also one of the most diverse cities in 151 America, which was reflected in the demographics of protester activity. A report from Mobilewalla showed that in New York City, 76% of protesters were White, 14% were Black, 8% were Hispanic, and 1% were Asian (Keplan, 2020). The protests also had a profound

effect on the political and criminal justice structures in the city. In response to the death of George Floyd in June of 2020, activists occupied City Hall Park for a month, which in turn 156 led the City Council to pass a budget which called for \$1 billion in cuts to the NYPD (Mays 157 and Fitzsimmons, 2023). At the same time, NYC imposed a curfew for the first time since 158 1943, in days following a period of peak protest involving incidents of vandalism, looting, 159 and violent clashes between demonstrators and police (Pazmino, 2020). In retrospect, curfew 160 was most likely a confounding effect of the pandemic at the time as well as the atmosphere of 161 unrest. However, this development gave off the impression that policy makers were grasping 162 at some form of control in the earlier days of the Floyd protests. 163

The New York City Police Department received harsh criticism as encounters with demonstrators became violent and unruly through the summer of 2020. Aided by the political powers of the city, police reacted aggressively when confronting protesters, so much so that reparations were paid to those subjected to violence, as of March 2023 (Katersky, 2023). Clearly, New Yorkers were highly involved in the BLM protests of 2020, and the city itself faced contentious backlash for police enforcement at the time. For the purposes of this paper, these effects provide a compelling background in the context of studying the racial gap in police enforcement during times of protest.

After sourcing data on arrests made in the city, I created new data frames containing 172 only my variables of interest. Both the Historic NYPD Arrests data set and the Year-to-Date data set originally contained nineteen variables, with information tracking location of arrest, criminal offense, and perpetrator demographics. Each record in the data set was 175 representative of a single arrest, and dimensions were quite large. The historic data dating 176 back to 2006 contained a little over 5 million records of arrests, and the year-to-date data 177 from 2022 alone had approximately 190,000 records. Combined, there is a robust set of data 178 with plenty of information to analyze the nature of police enforcement activity. For my 179 exploration, I was interested in only two variables: 180

• Arrest Date: Which I used to separate into three different timeline groupings (before,

181

during, and after protests) - effectively making it into a categorical variable.

182

183

184

185

186

206

• Perpetrator Race: My main variable of interest - I used the counts of the eight different races recorded to extract the proportion of Black people arrested from the total arrests made in each time grouping. It should be noted that race is a nominal variable, as opposed to ordinal.

Most of the work in the exploratory analysis portion of my research was in subsetting the larger data frames into smaller ones based on the timeline I had set. Initial cleansing revealed a decent amount of null values both of the larger sets, so I conducted a removal before moving 189 on. I chose to include all records from the start of 2006 up to May 27, 2020 in the "before 190 protests" data set. Many online sources note that May 27th is when protests began popping 191 up in cities other than Minneapolis (Jazeera, 2020), therefore I considered this to be the 192 start of protest activity in New York City. Because there is no hard stop on record for BLM 193 protest activity, and because I wanted a large enough sample, I chose the end of the "during 194 protest" subset to be the end of the 2020 calendar year. 195

After removing null values and subsetting the data frames according to date, I was left with 5,068,259 records of arrests before protests began, 55,558 records during protest activity, and 344,608 records after the height of protests. In each of these new data frames, eight unique observations of suspect race were present, as seen in Tables 1 and 2.

Table 1 displays the extracted counts of arrests for each race, and table 2 displays proportions. Note here that I counted Black Hispanics as belonging to the number of Black people arrested, i.e

$$p_o = p_B + p_{BH},$$

where p_B is the proportion of Black people arrested, p_{BH} is the proportion of Black Hispanic people arrested, and p_o is the observed proportion of all Black people arrested. Table 3 displays this information, showing p_o for each time grouping.

Figure 1 shows plotted counts of arrests separated by race, in each of my time groupings

Table 1: Raw counts of arrests made by race in each time grouping.

Race	Before Protests	During Protests	After Protests
American Indian/Alaskan Native	11,210	154	960
Asian/Pacific Islander	208,331	3,037	18,799
Black	2,459,641	27,557	170,938
Black Hispanic	407,740	4,933	30,926
Other	1,363	0	0
Unknown	50,612	250	1,274
White	611,480	6,195	36,381
White Hispanic	1,317,882	13,432	85,330

Table 2: Proportions of arrests made by race in each time grouping.

Race	Before Protests	During Protests	After Protests
American Indian/Alaskan Native	0.0022	0.0028	0.0028
Asian/Pacific Islander	0.0411	0.0547	0.0546
Black	0.4845	0.4960	0.4960
Black Hispanic	0.0888	0.0896	0.0897
Other	0.0003	0	0
Unknown	.0.0100	0.0045	0.0037
White	0.1206	0.1115	0.1056
White Hispanic	0.2600	0.2418	0.2476

Table 3: Total proportion of all black people arrested in each time grouping.

Before Protests	During Protests	After Protests
0.5658	0.5848	0.5858

of interest. Notably, despite substantial difference in sample size for each time grouping, the plots closely resemble each other. The count of Black people arrested is visibly higher than other races in every plot, with the count for White Hispanic people following.

3 Methods

Two different approaches were used to analyze the proportion of black people arrested within
the different time groupings, to get an overall feel of the effect of mass protest on arrest
demographics. For initial examination, a one sample Z-test for comparing an observed

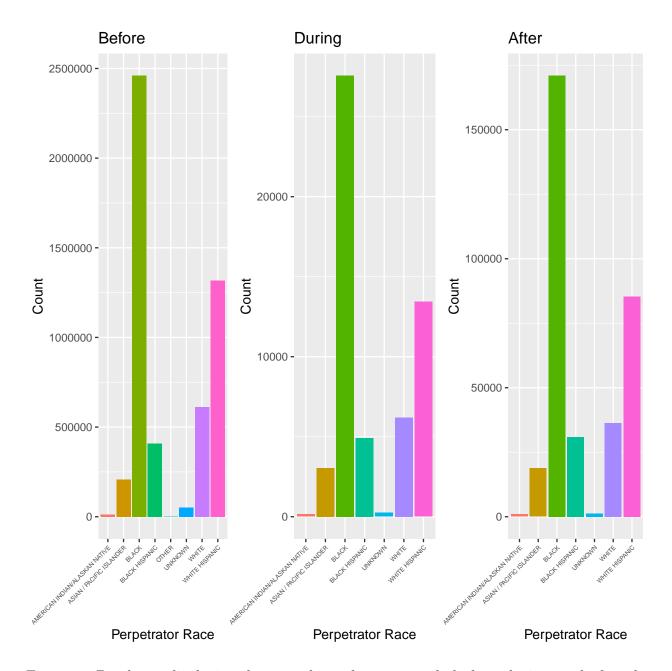


Figure 1: Barcharts displaying demographics of arrests made before, during, and after the George Floyd protests.

proportion to a theoretical, or expected one is used with a confidence level of 0.95. Following
the assumption of normal (Gaussian) distribution, first described by Carl Gauss in 1809, the
Z-test is one of the most popular techniques used for statistical inference and hypothesis
testing (Brereton, 2014).

218

The null hypothesis for the one proportion Z-test is that the observed proportion is equal

to the expected proportion, while the alternative hypothesis is that the two proportions are not equal. Notationally,

$$H_0: pi = pi_e \text{ vs. } H_a: pi \neq pi_e,$$

where pi is the population proportion of black arrests during a particular time period in New 221 York City and pi_e is 0.5. In my analysis, pi_e was set to 0.5 for each of my three Z-tests, in 222 order to evaluate whether the proportion of Black vs. non-Black arrests were equal. 223

The one proportion z-test uses the following test statistic:

224

238

$$Z = \frac{p_o - pi_e}{\sqrt{\frac{p_e(1 - pi_e)}{n}}},$$

where p_o and pi_e are the observed and expected proportions, and n is the sample size of all 225 arrests made in New York City in the time grouping of interest. Using our confidence level of 0.95, rejection criteria can be defined and a p-value can be estimated to help decide whether or not there is sufficient evidence to reject the null hypothesis. In addition, a 95% confidence 228 interval can be constructed for the true population population using the following formula:

$$p_o \pm z * \sqrt{\frac{p_o(1-p_o)}{n}}$$

where p_o is the observed population proportion, n is the sample size, and z is a multiplier

number that comes from the normal curve and determines the level of confidence (PennState, 231 2023). 232 Before proceeding with a Z-test, assumptions must be checked. The first assumption is 233 that the data are simple random variables from the population. As discussed in Section 2, 234 time groupings were dependent on availability of data, however the group sizes are so large 235 and robust that data should present as random. Next, the population must follow a binomial 236 distribution. This holds true as each trial- in this case, each individual perpetrator, can only 237 either be Black or non-Black. For each time grouping, it was verified using R that np_o and $n(1-p_o)$ were greater than 10, thus the normal distribution may be used to approximate the binomial distribution. The last assumption is that the probability of arrest (namely pi) is the same for each Black person in New York City during a given time period.

The second, and more demonstrative part of my analysis revolves around using two proportion Z-tests to compare proportion of Black people arrested between time groupings. That is, I seek to compare proportions before versus during protests, during versus after protests, and before versus after protests. The procedure for conducting a two proportion Z-test is similar to that of the one proportion tests, however the null hypothesis compares two proportions against each other as opposed to comparing a single proportion to a theoretical one. The new hypotheses are as followed:

$$H_0: p_1 = p_2 \text{ vs. } H_a: p_1 \neq p_2,$$

where p_1 and p_2 are associated with one of the three time groupings, depending on the test.

Assumptions are largely the same as the one proportion test, however the two proportion

tests requires that the samples be independent of each other. Since arrests in one period

of time do not reveal any information about arrests made in a different period of time, this

assumption should be valid.

The new test statistic for the two proportion Z-test is:

254

257

$$Z = \frac{\hat{p}_1 - \hat{p}_2}{\sqrt{\hat{p}(1-\hat{p})(\frac{1}{n_1} + \frac{1}{n_2})}},$$

where \hat{p}_1 and \hat{p}_2 are observed sample proportions, and n_1 and n_2 are sample sizes. The mean of both samples, \hat{p} , is given as:

$$\hat{p} = \frac{\hat{p}_1 n_1 + \hat{p}_2 n_2}{n_1 + n_2}.$$

For comparison purposes, I will also construct a 95% confidence interval for the difference

Table 4: Results from one proportion Z-tests.

Time Group	H_0	P-value	95% Confidence Interval
Before Floyd Protests During Floyd rotests After Floyd Protests	$p_o = 0.5$	$< 2.2 * 10^{-16}$ $< 2.2 * 10^{-16}$ $< 2.2 * 10^{-16}$	(0.5654, 1.0000) (0.5814, 1.0000) (0.5844, 1.0000)

in proportions using the following formula:

$$(\hat{p}_1 - \hat{p}_2) \pm z * \sqrt{\frac{\hat{p}_1(1-\hat{p}_1)}{n_1} + \frac{\hat{p}_2(1-\hat{p}_2)}{n_2}}$$

where z is the z-critical value, based on a 95% confidence level (Bobbitt, 2020).

Because I plan on running several independent statistical tests simultaneously on the same sets of data, an adjustment must be made to the critical P-value (α). This correction makes it so there are not too many spurious positives, by lowering the alpha-level (Weisstein, 2004). In each of the three two proportion Z-tests, instead of using $\alpha = 0.05$, I calculated alpha as follows using the Bonferroni correction:

$$\alpha * = \frac{\alpha}{n}.$$

where n is the number of tests.

$_{ ext{\tiny 266}}$ 4 Results

Working in R, I conducted three separate one proportion Z-tests, one for each time grouping.

The results are summarized in Table 4.

P-values are all extremely small, in the sense that they are much smaller than the alpha of 0.05, and none of the 95% confidence intervals contained pi_e , which was 0.5. Therefore, in each instance, the null hypothesis that the observed proportion of Black people arrested is equal to 0.5, or half, can be rejected. That being said, for each time grouping before, during

and after the George Floyd protests in 2020, there is sufficient evidence to suggest that the proportion of Black people arrested out of the total number of people arrested in New York City is different from 0.5. In every time grouping, the one proportion Z-test suggests that the actual proportion of Black people arrested in the city is higher than the proportion of non-Black people.

After making the Bonferroni correction for running several tests on the same data, I was left with an alpha of 0.01666667, and a corresponding confidence level of approximately 98.3%. Using this alpha, I went on to conduct three separate two proportion Z-tests, comparing proportions from each time grouping against each other. Results are reported in Table 5.

The only test in which results suggested no significant difference was between the proportion of Black people arrested during protests and proportion of Black people arrested after protests. The p-value for that comparison was greater than the alpha of 0.017, and the 98.3% confidence interval contained zero.

For the test comparing the proportion of Black people arrested before protests began versus the proportion during protests, results produced a p-value of $2.13 * 10^{-19}$, which is much lower than the alpha of 0.017. The 98.3% confidence interval also did not include zero.

These results suggest that the proportion of Black people arrested in New York City during the George Floyd protests was significantly different (higher) than the proportion arrested before the protests.

The test comparing proportions before versus after protests contained similar findings.

Results produced a p-value of $1.22*10^{-116}$, which is much lower than the alpha of 0.017. The

98.3% confidence interval did not include zero. These results suggest that the proportion of

Black people arrested in New York City after the George Floyd protests was significantly

different (higher) than the proportion arrested before the protests.

Table 5: Results from two proportion Z-tests.

Table 5. Results from two proportion 2 tests.		
H_0	P-value	98.3% Confidence Interval
$p_{before} = p_{during}$ $p_{during} = p_{after}$ $p_{before} = p_{after}$	$2.13 * 10^{-19}$ $6.62 * 10^{-1}$ $1.22 * 10^{-116}$	(-0.0241, -0.0140) (-0.0064, 0.0044) (-0.0221, -0.0179)

5 Discussion

Analysis on the proportions of Black people arrested in New York City before, during, 290 and after the height of George Floyd protest activity did yield significant results, which 300 represent fluctuation in arrest demographics between time groupings. These results open 301 the door to discussion and future research on racial prejudice and discrimination in the 302 American Criminal Justice System, concerning the disproportionate amount of Black arrests 303 made. They also broaden the discussion of the true transformative power of mass protest, as 304 statistical analysis suggests the proportion of Black people arrested was actually significantly 305 greater during George Floyd protests and in the years that followed, compared to before they 306 started. 307

Results from one proportion Z-tests coincide with previous studies on the disproportion-308 ate amount of Black people arrested in the entire population of Americans. In each time 309 grouping, the proportion of Black people arrested was more than half of the entire sample of 310 arrests made, suggesting that the proportion of Black versus non-Black arrests made in NYC 311 is not equal. Considering the demographics of the city itself- approximately 23.4% Black and 312 76.6\% non-Black (Bureau, 2021), proportions are even more highly skewed. There has been 313 substantial research on the racial gap in American prisons, and in the scope of American 314 crime. When it comes to racial discrimination in the American criminal justice system, there 315 are many conflicting opinions, however there is considerable research which suggests that 316 American drug and sentencing policies are biased against Black people, and require change 317 (Tonry and Melewski, 2008). Furthering research with valid statistical analysis is crucial 318 to implementing a plan of action and policy changes that could have a significant effect on 319

lowering the proportion of Black crime. As the Black Lives Matter movement has become more prevalent throughout the twenty-first century, there has been a growing recognition of the structural basis of racism, and the systemic inequalities perpetuated by long-standing institutionalized discrimination. Research suggests that confronting this inequality will involve examining residential segregation, mass incarceration and police violence, and unequal medical care (Bailey et al., 2021).

As BLM protests, specifically the George Floyd protests of 2020, actively confront racist 326 police confrontations, arrests, and brutality, results of an increased proportion of Black 327 people arrested during and after the protests are paradoxical. My analysis suggests that the 328 proportion of Black arrests made during and after the George Floyd protests was greater 329 than the proportion before. Although the protests were centered around police discrimination 330 and racially biased policing, results of the two proportion Z-tests suggest that Black people 331 were being penalized at an even higher proportion than before protests even began. The 332 racial gap that my evidence suggests is further compounded if we recall the demographics 333 of NYC protesters at the time - as it was reported that 76% of protesters were White and 334 approximately 14% were Black (Keplan, 2020). 335

This study is the tip of the iceberg when it comes to analyzing Black crime, and further 336 research is necessary to evaluate the true effect of protest activity in the broad context of racially biased policing. Different timelines of protest could certainly be a starting point for analysis, as the timeline used for my research was impacted by the Covid-19 pandemic, 339 which could have induced bias. Additionally, different predictors of crime could be useful to 340 include in future research - such as age of the offender, gender, and type of crime committed. 341 My analysis is limited in the sense that it only looks at one city that experienced mass 342 protest during the height of the Black Lives Matter Movement. To get a true feel of how 343 George Floyd protests in particular changed the racial gap in arrests made, cities other than 344 New York City should be analyzed. As previously mentioned in Section 1, Los Angeles, 345 Boston, and Louisville were all protest hotspots throughout 2020. Different political affiliations and demographic makeup of cities across America could have an interesting effect on the racial gap in policing during different times of protest activity. Also, looking at a larger sample size of arrests would give more conclusive results as to whether there truly is an increase in the proportion of Black arrests made due to protest activity.

It is also worth mentioning that the time frames I set - before, during, and after the protests, have no way of being absolutely exact, which could be another limitation. Although protest activity was certainly at its peak throughout the summer of 2020, it slowed down in later months of the year. BLM protests continued to pop up throughout 2021 and 2022, and up to present day, so considering the third time grouping to be "after protests" does not exactly imply that there were zero BLM protests during that time frame.

Black Lives Matter protests have been a central part of the social and political movement to unveil the racial inequalities and discrimination that continue to affect Black Americans.

Understanding the impacts of mass protests, specifically those which occurred throughout 2020 after the murder of George Floyd could contribute to our knowledge of the American criminal justice system, and the power of protests to create systemic change. This study paves the way for future research on policing policy, especially during protests, as well as research on arrest demographics during large social and political movements.

References

K. T. Andrews, K. Beyerlein and T. Tucker Farnum (2016). "The legitimacy of protest: explaining white southerners' attitudes toward the civil rights movement." Social Forces **94**, 1021–1044.

Z. D. Bailey, J. M. Feldman and M. T. Bassett (2021). "How structural racism works—racist
 policies as a root cause of us racial health inequities." New England Journal of Medicine
 384, 768–773.

371 Z. Bobbitt (2020). "Confidence interval for the differ-

- ence in proportions calculator." https://www.statology.org/
- 373 confidence-interval-difference-in-proportions-calculator/.
- T. P. Bonczar and A. J. Beck (1997). Lifetime likelihood of going to state or federal prison.
- US Department of Justice, Office of Justice Programs, Bureau of Justice
- R. Brereton (2014). "The normal distribution." https://analyticalsciencejournals.
- onlinelibrary.wiley.com/doi/10.1002/cem.2655.
- 378 K. Brown (2020). "Black people nearly twice as likely as whites to
- be arrested at portland protests." https://www.courthousenews.com/
- black-people-nearly-twice-as-likely-as-whites-to-be-arrested-at-portland-protests/.
- L. Buchanan, Q. Bui and J. K. Patel (2020). "Black lives matter may be the largest
- movement in u.s. history." https://www.nytimes.com/interactive/2020/07/03/us/
- george-floyd-protests-crowd-size.html.
- U. C. Bureau (2021). "U.s. census bureau quickfacts: New york city, new york." https:
- //www.census.gov/quickfacts/newyorkcitynewyork.
- 386 M. Chan (2020). "How arrests alter lives of black lives matter protesters." https://time.
- com/5880229/arrests-black-lives-matter-protests-impact/.
- N. Dudenhoefer (2022). "7 influential protests in american history, serving as acts of patri-
- otism." University of Central Florida News UCF Today.
- ³⁹⁰ C. T. Harris, D. Steffensmeier, J. T. Ulmer and N. Painter-Davis (2009). "Are blacks and
- hispanics disproportionately incarcerated relative to their arrests? racial and ethnic dis-
- proportionality between arrest and incarceration." Race and social problems 1, 187–199.
- F. C. Harris (2006). "It takes a tragedy to arouse them: Collective memory and collective
- action during the civil rights movement." Social movement studies 5, 19–43.

- (2020)."A Α. Jazeera timeline of the george floyd and anti-police 395 https://www.aljazeera.com/news/2020/6/11/ brutality protests." 396
- a-timeline-of-the-george-floyd-and-anti-police-brutality-protests.
- "New Α. Katersky (2023).york city to record settlement pay 398 'kettling' protesters." https://abcnews.go.com/US/ george floyd 399
- new-york-city-pay-record-settlement-kettling-george/story?id=97556607.
- Α. Keplan (2020)."New report reveals demographics of black lives 401 matter protesters shows majority white, marched within vast are 402 their cities." https://www.prnewswire.com/news-releases/ own 403
- new-report-reveals-demographics-of-black-lives-matter-protesters-shows-vast-majorityhtml.
- M. Maciag (2021). "Population density for u.s. cities statistics." https://www.governing.

 com/archive/population-density-land-area-cities-map.html.
- A. Madestam, D. Shoag, S. Veuger and D. Yanagizawa-Drott (2013). "Do political protests matter? evidence from the tea party movement." *The Quarterly Journal of Economics* 128, 1633–1685.
- J. C. Mays and E. G. Fitzsimmons (2023). "What does it mean to be a progressive in new york city?" https://www.nytimes.com/2023/02/17/nyregion/progressive-nyc.html.
- S. Mazumder (2018). "The persistent effect of us civil rights protests on political attitudes."

 American Journal of Political Science 62, 922–935.
- G. Mohler, A. L. Bertozzi, J. Carter, M. B. Short, D. Sledge, G. E. Tita, C. D. Uchida
 and P. J. Brantingham (2020). "Impact of social distancing during covid-19 pandemic on
 crime in los angeles and indianapolis." *Journal of criminal justice* 68, 101692.

- M. Moody-Ramirez, G. Tait and D. Bland (2021). "An analysis of george floyd-themed
- memes: A critical race theory approach to analyzing memes surrounding the 2020 george
- floyd protests." The Journal of Social Media in Society 10, 373–401.
- 421 G. Pazmino (2020). "Nyc officially under curfew; second set for tuesday
- night, de blasio says." https://www.ny1.com/nyc/all-boroughs/news/2020/06/01/
- new-york-city-curfew-protests.
- E. C. o. S. PennState (2023). "9.1 confidence intervals for a population proportion: Stat
- 100." https://online.stat.psu.edu/stat100/lesson/9/9.1.
- 426 A. R. Piquero, J. R. Riddell, S. A. Bishopp, C. Narvey, J. A. Reid and N. L. Piquero
- (2020). "Staying home, staying safe? a short-term analysis of covid-19 on dallas domestic
- violence." American journal of criminal justice 45, 601–635.
- D. K. Pryce and R. Gainey (2022). "Race differences in public satisfaction with and trust in
- the local police in the context of george floyd protests: An analysis of residents' experiences
- and attitudes." Criminal Justice Studies 35, 74–92.
- R. Rosenfeld and E. Lopez (2020). "Pandemic, social unrest, and crime in us cities." Council
- on $Criminal\ Justice\ .$
- E. Skoy (2021). "Black lives matter protests, fatal police interactions, and crime." Contem-
- porary Economic Policy **39**, 280–291.
- 436 A. Srikanth (2020). "Black people 5 times more likely to be arrested than whites, accord-
- ing to new analysis." https://thehill.com/changing-america/respect/equality/
- 438 502277-black-people-5-times-more-likely-to-be-arrested-than-whites/.
- 439 M. Tonry and M. Melewski (2008). "The malign effects of drug and crime control policies
- on black americans." Crime and justice 37, 1–44.

- J. Walters (2020). "George floyd protests: The us cities that became hotspots of unrest." https://www.theguardian.com/us-news/2020/may/31/
 george-floyd-protests-us-cities-hotspots-unrest.
- E. W. Weisstein (2004). "Bonferroni correction." https://mathworld.wolfram.com/.
- ⁴⁴⁵ Z. Zhang, D. Sha, B. Dong, S. Ruan, A. Qiu, Y. Li, J. Liu and C. Yang (2020). "Spatiotem-
- poral patterns and driving factors on crime changing during black lives matter protests."
- 447 ISPRS International Journal of Geo-Information 9, 640.