Racial Disparities in Crime Victimization during the COVID-19 Lockdown

Olga B. Semukhina[1]

Abstract

The study examines racial differences in crime victimization rates among Black, Hispanic and White individuals during the stay-at-home order in Dallas city, TX. The study is based on sample of 85,958 calls for service recorded by Dallas Police Department between February 13, 2019, and April 30, 2020, where victims have been identified and their race is known. The findings suggest that Blacks were less likely to experience unintended drop in crime rates during the lockdown and also less likely to see decline in crimes against property when compared to both White and Hispanic victims. At the same time Blacks were more likely to experience increase in crimes committed at the apartments during the lockdown with Black females experiencing higher increase than Black males. There were no differences in crime victimization for incidents occurred in public places and crimes against persons.

Keywords COVID-19 · Lockdown · Dallas Texas · Victimization · Race

Introduction

The COVID-19 pandemic has brought unprecedented and dramatic changes to every aspect of our society. With mounting numbers of infections and a rising death toll, the early response from many governments included a temporary lockdown of residents that aimed at slowing the spread of infection. In Dallas County, the stay-at-home order (SAHO) was implemented by Judge Clay Jenkins from March 24, 2020, to April 30, 2020. It required all individuals residing in Dallas County to shelter at their place of residence with the exception of people deemed to be essential workers (Jenkins, 2020). Similar lockdown orders were implemented in neighboring Tarrant County and other areas of Texas and throughout the United States.

Two major results of the SAHO were an unprecedented decline in individuals' mobility, which was replaced with more intra-family interactions, and the relocation

✉ Olga B. Semukhina
  semukhina@tarleton.edu

[1] Department of Criminal Justice, Tarleton State University, Fort Worth, TX, USA

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of populations from public to private spaces (Miller & Blumstein, 2020). For example, in Dallas, the walking, driving, and transit commuter rates dropped twofold during the lockdown compared with January 2020.[1]

A growing number of research studies document how the COVID-19 lockdown brought unintended changes in crime rates and their spatial and temporal distribution in the United States and worldwide (Abrams, 2021; Boman & Gallupe, 2020; Campedelli, Aziani, & Favarin, 2020a, b; Mawby, 2020; Mohler et al., 2020; Yang et al., 2021). Several studies reported that the lockdown caused a decline in residential burglaries (Abrams, 2021; de la Miyar et al., 2021), drug-related crimes (Abrams, 2021), and vehicle thefts (Campedelli, Aziani, & Favarin, 2020a; Hodgkinson & Andresen, 2020). Other researchers suggested that the lockdown policies increased the rates of domestic violent, digital stalking, and fraud crimes among the elderly (Bracewell et al., 2020; Bradbury Jones & Isham, 2020; Cross, 2020; Hsu & Henke, 2021; Leslie & Wilson, 2020; Sorenson et al., 2021). At the same time, the literature has remained inconsistent about reporting various trends for crimes such as homicides, assaults, and robberies (Abrams, 2021; de la Miyar et al., 2021; Halford et al., 2020). Evidence also indicates that SAHO policies created changes in the spatial and temporal distributions of crimes with the further concentration of crimes in downtown areas (Sun et al., 2021; Yang et al., 2021).

Most of these observed changes are explained through the lens of routine activity theory positing that people's decreased mobility changed both the criminal opportunities and suitable targets for motivated offenders. It has been suggested that crimes in residential areas may have increased due to the home-based concentration of the population, while crimes requiring co-offenders may have declined due to social distancing requirements (Campedelli, Favarin, et al., 2020b; Cohen & Felson, 1979; McDonald & Balkin, 2020). Changes in crime rates have been also explored through the framework of spatial displacement, rational choice theories, and theories of organized crime (Abrams, 2021; Boman & Gallupe, 2020; de la Miyar et al., 2021; Miller & Blumstein, 2020; Shen et al., 2021; Stickle & Felson, 2020).

What's missing in these related academic discussions is how these changes in crime rates have affected victims from different socio-economic groups and ethnic backgrounds. At this point, it is virtually unknown whether crime rate changes were equally experienced by all victims and, if not, whether the victims' race played a role in explaining these differences. The purpose of this study is to shed light on this question: Did changes in crime rates during the COVID-19 lockdown in 2020 apply equally to victims of different races, including White, Black, and Latinx individuals?

COVID-19 and Minority Communities

Mounting empirical evidence suggests that the COVID-19 pandemic is having a devastating effect on minority communities at various levels (Chapman, 2020; Gaynor & Wilson, 2020; Knight et al., 2021; Obinna, 2021). According to the latest data by the Centers for Disease Control (CDC), Blacks are three times more likely to

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[1] See Mobility Trends Report by Apple at https://covid19.apple.com/mobility.

be hospitalized and two times more likely to die from COVID-19 than Whites. Similar findings have been reported for Hispanic or Latinx persons.[2]

However, health disparities are only one of the most visible problems facing minorities during the pandemic. Related issues include unemployment and the loss of jobs by low-wage workers that disproportionately affected minority individuals working for businesses in higher-income communities (Chetty et al., 2020). Moreover, Black women appear to have suffered the greatest loss of jobs or wages during the lockdown, as they account for a significant proportion of the workers in hotel/health care and social service industries (Holder et al., 2021). The disproportionate loss of jobs among Black individuals is also linked to higher eviction rates, which, in return, increase their chances of infection and death from COVID-19 (Benfer et al., 2021).

Essential workers are another factor contributing to racial disparities during the pandemic. Whites represent only 55% of essential workers compared with 73% of Whites in the total population, which puts a disproportionate burden of stressful jobs at the height of infection on the shoulders of Blacks and Latinxs (Poydock & Margaret, 2020). The data show that Black women are also more likely to have co-morbidities, e.g., obesity, diabetes, and high blood pressure. These health issues, together with being essential workers, further increase Black women's risk of infection, hospitalization, and death from COVID-19 (Obinna, 2021; Rogers et al., 2020).

Minority individuals are also more likely to experience depressive symptoms and post-traumatic stress disorders (PTSD) after natural disasters and epidemics (Novacek et al., 2020). Early data from the COVID-19 pandemic support these findings. The stress of the lockdown, the loss of life, and economic hardships, coupled with barriers to accessing health care, had a major devastating effect on the mental health of minority communities (Ibrahimi et al., 2020).

The research also demonstrates that the challenges faced by Blacks and Latinxs during the pandemic have a systemic nature and have taken root in the collective and long-lasting discrimination of minority communities in U.S. society (Ibrahimi et al., 2020). The data show that minority communities with high social vulnerability and structural racial biases experienced the highest rates of infection, hospitalization, and death from COVID-19 (Gaynor & Wilson, 2020; Knight et al., 2021; Thomas et al., 2020).

Based on strong evidence, the pandemic continues to disproportionately affect minority communities through higher rates of infection, hospitalizations, deaths, unemployment, evictions, and mental health issues. Vast criminological literature suggests that stress, mental health, and economic hardships are strongly associated with criminal victimization. Therefore, it is reasonable to suggest that changes in crime rates observed during the early stages of the pandemic will also have different impacts on victims from different races and ethnic backgrounds.

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[2] See Risk for COVID-19 Infection, Hospitalization, and Death by Race/Ethnicity at https://www.cdc.gov/coronavirus/2019-ncov/covid-data/investigations-discovery/hospitalization-death-by-race-ethnicity.html.

Prior Racial Disparities in Victimization

Racial disparity in victimization rates is a well-documented subject in criminology. A solid body of research shows that Blacks and Latinxs already had a higher probability of victimization prior to COVID-19, especially their involvement in violent crimes (Dobrin et al., 2005; Logan et al., 2011). Homicides remain among the top-four causes of death for Black males ages 15 through 34 years (Lo et al., 2015). Black males are also more likely to suffer serious forms of nonlethal violence than their White counterparts due to armed victimization (Berg, 2014). Furthermore, offenders are particularly likely to use guns against young Black men, and this probability is even higher when the offender is also Black (Felson & Painter-Davis, 2012).

When it comes to intimate partner violence (IPV), research reports that Black females are more likely to experience physical assaults and stalking in their lifetimes (Tjaden & Thoennes, 2000). Education and income mediate the racial disproportion, which remained stable through the different time periods reviewed (Rennison & Planty, 2003). Though no empirical evidence has yet been released, scholars of IPV argue that previously marginalized groups, including racial minorities, are more likely to be the victims of IPV during lockdowns (Kaukinen, 2020). Research shows that victims' race also plays an important role in robbery and burglary victimization, though the relationships are often mitigated by location, levels of income, and time when the crime occurred (Cohen et al., 1981; Klein et al., 1997).

While a comprehensive discussion of the disproportionate racial victimization is outside the scope of this paper, even this cursory look at the literature suggests that racial minorities do experience crime victimization differently due to the White privilege brought by intersecting the inequalities of income, education, and established social structures and policies that implicitly favor the White majority (Heimer, 2019). Research also shows that the pandemic and lockdown had major specific negative effects on minority communities, with health, income, and educational inequalities exacerbating the issues (Gaynor & Wilson, 2020; Obinna, 2021; Wright & Merritt, 2020). Considering these two major factors together, this paper hypothesizes that the COVID-19 lockdown further magnified the issues of racial disproportion among the victims of crime and produced unequal changes in crimes rates among different ethnic and racial groups.

Current Study

To examine these potential racial disparities, this paper will first look at the overall calls for service (CFS) with known Black, Hispanic, and White victims prior to and during the lockdown period. Because the COVID-19 lockdown appears to have affected crime locations, this study will also look specifically at CFS for incidents at apartments and single homes with known Black, Hispanic, and White

victims. It would be reasonable to assume that higher crime rates for some crimes will be recorded in residential areas during the lockdown. Then, the paper will compare if potential changes within the crime rates in apartments and single-family homes equally affected the known Black, Hispanic, and White victims.

This study will also look at the crimes occurring in public places that should have been closed during the lockdown. The paper will hypothesize the reduction of crimes in public places during the lockdown and test whether such a potential reduction equally affected Black, White, and Hispanic victims. Finally, following the existing literature on crime rates during the lockdown, this paper will also distinguish between crimes against persons and property crime rates. Though the literature has not been entirely consistent, several studies suggest that the lockdown brought about a decline in property crimes, while crimes against persons remained unchanged (Abrams, 2021; Halford et al., 2020; Stickle & Felson, 2020). This paper will also test whether such potential changes applied equally to Black, White, and Hispanic victims.

Methodology

Data for this study came from the calls for service (CFS) database at the Dallas Police Department (DPD).[3] Even though the city of Dallas is not representative of the United States, it is a well-suited data sample for our study. When compared with the United States, Dallas has one of the highest percentages of minority population (with 24.3% Black and 41.8% Hispanic residents). It also has a higher percentage of foreign-born population (24.8%) and a lower owner-occupied housing percentage (40.9%). Higher percentages of its residents are without health insurance (26%) and are at the poverty level (18.9%). Overall, the Dallas city sample is over-representative of underprivileged minorities who are more likely to experience varying levels of the victimization examined by this study (Table 1).

Data for this study consist of 85,958 calls recorded by the DPD between February 13, 2019, and April 30, 2020, where the victims have been identified and their race is known. This time period was selected to have at least 12 months of data before the beginning of the COVID-19 pandemic.[4] Daily rates were estimated for the CFS for each race group and crime group and locations. Incidents that occurred in apartment/condominium complexes and buildings, parking lots, and residences, and crimes occurred in the condominium building, parking, or residence were classified as incidents occurring in the apartments. Incidents that occurred in banks, bars, night clubs, business offices, occupied and vacant commercial properties, daycare facilities, department stores, financial institutions, government facilities, restaurants,

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[3] See more at https://www.dallasopendata.com/.
[4] The exact starting date of the COVID-19 pandemic is still being debated. The first confirmed cases of COVID-19 infection and death occurred between February 6 and February 17, 2020. To ensure we have a full 12 months prior to the beginning, February 13 was chosen as a median date of these two cases. This date also allows us to create an equal time period for ANCOVA comparison.

Table 1 Comparative Census Demographics for Dallas City and United States

Statistics	Dallas, Texas	United States
Population, percent change: April 1, 2010	12.20%	6.30%
Persons under 5 years, %	7.50%	6.00%
Persons under 18 years, %	25.00%	22.30%
Persons 65 years and over, %	10.30%	16.50%
Female persons, %	50.60%	50.80%
White alone, %	62.70%	76.30%
Black or African American alone, %	24.30%	13.40%
American Indian and Alaska native alone, %	0.30%	1.30%
Asian alone, %	3.40%	5.90%
Native Hawaiian and other Pacific Islander alone, %	0.00%	0.20%
Two or more races, %	2.40%	2.80%
Hispanic or Latino, %	41.80%	18.50%
White alone, not Hispanic or Latino, %	29.00%	60.10%
Foreign-born persons, %, 2015–2019	24.80%	13.60%
Owner-occupied housing unit rate, 2015–2019	40.90%	64.00%
Language other than English spoken at home, percentage of persons age 5 years+, 2015–2019	43.60%	21.60%
Persons without health insurance, under age 65 years	26.00%	9.50%
Persons in poverty, %	18.90%	10.50%

See more at https://www.census.gov/quickfacts/fact/table/US/PST045219

retail stores, and schools were classified as public places. We excluded incidents that occurred in medical facilities, grocery stores, and gas stations, as these places remained open to the public during the SAHO period.

First, we conducted a time-series analysis for the entire period of time (February 13, 2019, through April 30, 2020) by fitting the best ARIMA or exponential smoothing models (ES) into each daily frequency of CFS. The treatment period is defined as the stay-at-home order (SAHO) for Dallas County (March 24, 2020 through April, 30, 2020). Forecasted frequencies for the treatment period (and their 95% lower and upper boundaries) are compared with observed daily frequency for each type of CFS. This allows us to analyze whether changes in CFS during SAHO were statistically significant considering potential seasonality and nonstationary trends that may exist in the data prior to the COVID-19 pandemic.

Second, we divided the data into four equal time periods (February 13, 2019, through March 23, 2019; March 24, 2019, through April 30, 2019; February 13, 2020, through March 23, 2020; and March 24, 2020, through April 30, 2020). Then we conducted an ANCOVA comparison of means to provide a more nuanced look at the time period immediately preceding SAHO (February 13, 2020–March 23, 2020) and periods that occurred exactly 12 months prior to the start of the COVID-19 pandemic (February 12, 2019–March 23, 2019) and 12 months before the SAHO period (March 24, 2019–April 30, 2019). Because the SAHO period lasted six weeks, we created equal time periods to avoid issues related to unequal group sizes. In the

ANCOVA models, we also controlled for the interactions between race and gender to allow for a better understanding of potential intersectionality. To do this, we calculated daily frequencies for female victims for each race group and the total sample.

Findings

Total Calls for Service

Figure 1 depicts four time-series models for all calls for service (CFS) from February 13, 2019 through April 30, 2020. Table 2 shows the acceptable fit for all time-series models, with Ljung-Box Q statistics indicating the absence of serial autocorrelation and positive values of R^2.

Figure 1 shows that three out four models have no trends, which allows us to continue with the cross-sectional comparison of selected periods by ANCOVA models. Augmented Dickey-Fuller tests were also performed prior to the analysis to ensure stationarity. Tables 3 and 4 depict the results of ANCOVA models for CFS for each race controlled by daily rates for female victims.

Longitudinal statistics from Fig. 1 and cross-sectional comparisons in Tables 3 and 4 indicate that the daily rates for total CFS declined during the SAHO period. Observed values for total CFS for the SAHO period were outside the 95% confidence interval of predicted values for the same period.[5] The decline was statistically significant for Whites and Hispanic victims ($p = .016$ for $F = 3.701$ and $p = .013$ for $F = 3.827$) but not for Blacks, whose DFS during SAHO remained virtually the same ($p = .109$ for $F = 2.104$). The CFS change was more pronounced for White victims ($\eta_p^2 = .147$ for Whites compared with $\eta_p^2 = .134$ for Hispanic victims). Daily rates of female victims had no statistically significant covariation in any of the models. According to Table 4, when compared with the Februaru13, 2020–March 23, 2020 period, there were 30.44 fewer daily calls during the SAHO period for all victims, including an average of 9.31 fewer daily calls for Whites and 8.87 fewer daily calls from Hispanic victims. However, the daily numbers of CFS increased by an average of .15 for Black victims during SAHO when compared with February 13, 2020–March 23, 2020.

Calls for Service for Residential Areas

Figures 2 and 3 depict eight time-series models for residential calls for service during February 13, 2019, through April 30, 2020. Model fit statistics from Table 5 indicate an acceptable fit for all models with the lack of serial autocorrelation and the positive values of stationary R^2.

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[5] Lower and upper boundaries of 95% were estimated for each time-series model, but they are not depicted on any figures to avoid a crowded data presentation.
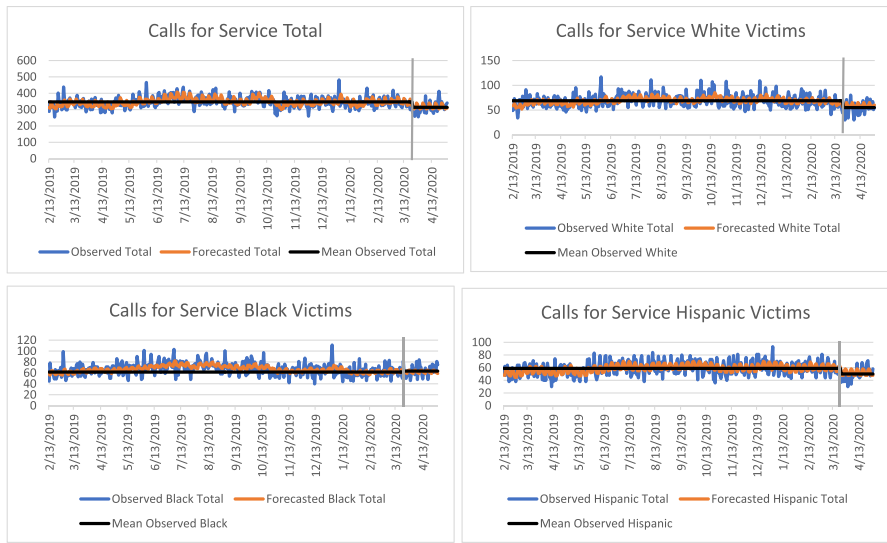
Fig. 1 Total Calls for Service between 2.13.2019–4.30.2020 per Victims' Race

Figures 2 and 3 show that seven out of eight models have no trends, which allows us to continue with the cross-sectional comparison of selected periods by ANCOVA models. Augmented Dickey-Fuller tests were also performed prior to an analysis to ensure stationarity. Table 6 depicts the results of ANCOVA models for the CFS for apartments and single-family homes for each race controlled by the daily rates for female victims. Table 7 shows the results of the post-hoc (Bonferroni) test to compare the means of CFS during the SAHO period with other periods in the sample for each race group.

Figure 2 and Tables 6 and 7 indicate a statistically significant increase in CFS received for incidents in the apartments ($p = .000$ for $F = 9.100$). On average, 19.13 more calls from apartments were received during the SAHO period compared with February 13, 2020–March 23, 2020. However, a closer look at Table 6 reveals that only the CFS from apartments for Black victims had a statistically significant increase ($p = .001$ for $F = 6.030$) during SAHO, while calls from White and Hispanic victims from apartments remained the same ($p = .293$ for $F = 1.266$ and $p = .709$ for $F = .463$, accordingly). The number of daily CFS

Table 2 Time-Series Model Fit Statistics for Total Calls for Service and Victims' Race

Variable	Type of Model	Stationary R^2	RMSE	Normalized BIC	Ljung-Box Q
Total calls for service	Simple seasonal ES	.671	28.405	6.723	.140
CFS, White	ARIMA (0,1,1)	.395	11.870	4.963	.109
CFS, Black	ARIMA (1,0,1)	.725	10.195	4.674	.231
CFS, Hispanic	Simple seasonal ES	.697	9.117	4.450	.297

Table 3 ANCOVA Model Statistics for Calls for Service per Race

Variables/models	df	F	Sig	η_p^2
Total CFS				
Time periods	3	3.666*	.016	.135
Daily female rates	46	1.156	.290	.442
CFS, White				
Time periods	3	3.701*	.016	.147
Daily female rates	29	1.397	.128	.362
CFS, Hispanic				
Time periods	3	3.827*	.013	.134
Daily female rates	29	1.092	.364	.415
CFS, Black				
Time periods	3	2.104	.109	.091
Daily female rates	30	1.003	.443	.315

from apartments for Black victims has a statistically significance covariation with the daily rate of female black victims during SAHO compared with other time periods ($p = .0117$ for $F = 1.333$).

Figure 3 and Tables 6 and 7 show no statistically significant changes in CFS during SAHO from single-family homes for all victims of all races ($p = .645$ for $F = .589$). This is true for White victims ($p = .821$ for $F = .306$) and Hispanic victims ($p = .820$ for $F = .308$). There is, however, a statistically significant increase for CFS from single-family homes for Black victims ($p = .049$ for $F = 2.723$). The explained variance in the calls for Black victims from single-family homes

Table 4 Bonferroni Statistics for Multiple Group Comparison for Calls for Service per Race for SAHO

| Time Periods	Mean Difference	Std. Error	Sig
Total CFS			
2.13.19–3.23.19	−.20.35*	6.896	.028
3.24.19–4.30.19	−14.36	6.824	.243
2.13.20–3.23.20	−30.44*	6.824	.000
CFS, White			
2.13.19–3.23.19	−8.89*	2.368	.002
3.24.19–4.30.19	−8.67*	2.352	.003
2.13.20–3.23.20	−9.31*	2.352	.001
CFS, Hispanic			
2.13.19–3.23.19	−4.00	.572	.512
3.24.19–4.30.19	−4.10	.512	.512
2.13.20–3.23.20	−8.87*	.002	.002
CFS, Black			
2.13.19–3.23.19	1.78	2.146	1.00
3.24.19–4.30.19	−1.62	2.132	1.00
2.13.20–3.23.20	.15	2.132	.706
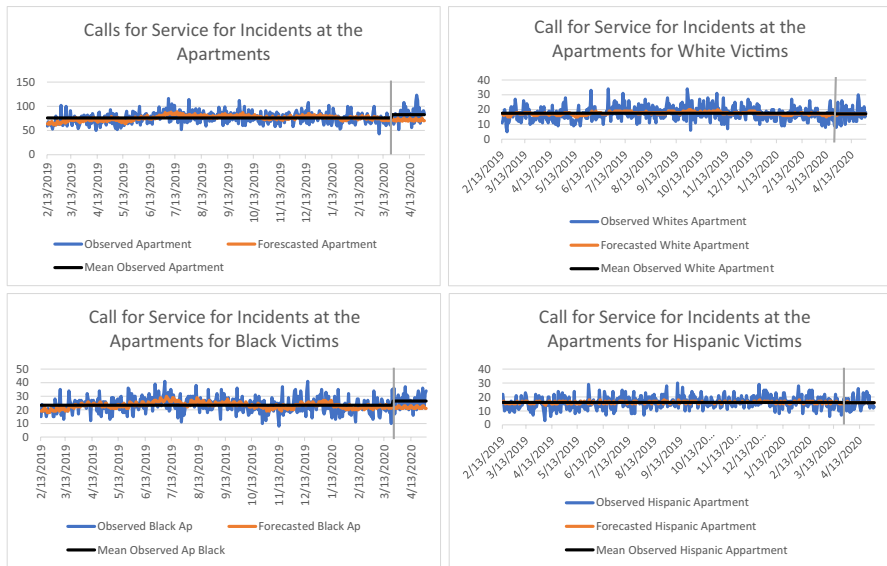
Fig. 2 Calls for Service for Apartment between 2.13.2019–4.30.2020 Per Victims' Race

is smaller ($\eta_p^2 = .122$) than the explained variance in CFS for Black victims from the apartments ($\eta_p^2 = .239$). No statistically significant covariation is found for daily female victimization in any race group for other models.

Calls for Service for Public Places

Figure 4 displays the model fit statistics for the time-series calculated for the daily rates of CFS for public places per each race of victim.[6] Table 8 indicates the acceptable fit of all models with no serial autocorrection and positive values of stationary R^2.

Visual examination of Fig. 4 shows that two of the four models have no trends. Augmented Dickey-Fuller tests were also performed prior to the analysis and indicated that CFS for White, Hispanic, and Black variables are stationary. Table 9 depicts the results of the ANCOVA models for CFS for public places for each race controlled by the daily rates for female victims. Table 10 reports a post-hoc (Bonferroni) test to compare the means of CFS for the SAHO period with other periods in the sample for each race group.

Tables 9 and 10 reveal a statically significant difference in CFS for public places during the SAHO period ($p = 00$ for $F = 21.468$). Per Fig. 4, the observed decline in daily CFS for public places is outside the 95% interval for forecasted daily rates

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[6] We used the term "public places" broadly to include all nonresidential areas to which access was limited during SAHO. The full list of places is outlined in the methodology section.
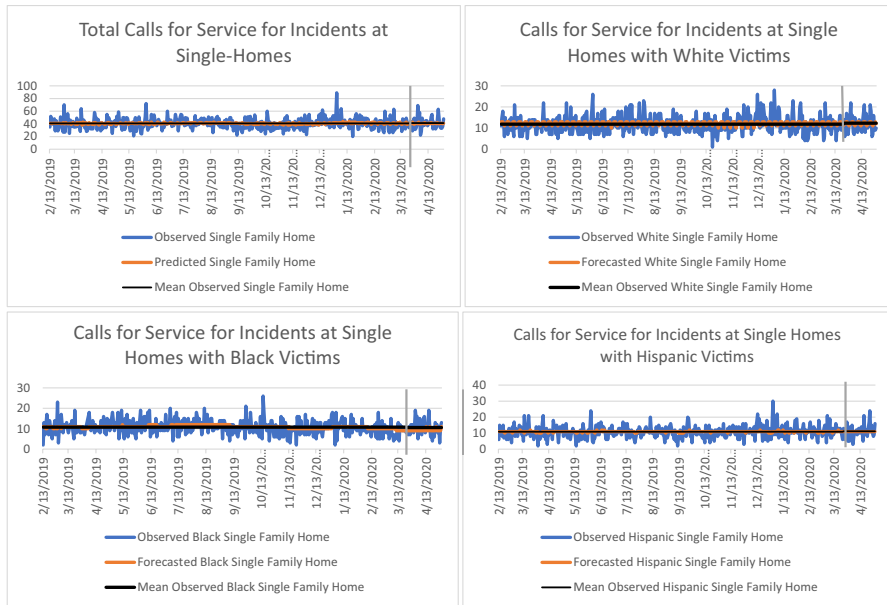
Fig. 3 Calls for Service for Single-Family Homes between 2.13.2019–4.30.2020 per victims' race

considering previous data for 12 months. The decline is statistically significant for White ($p = .001$ for $F = 6.249$), Hispanics ($p = .020$ for $F = 3.503$), and Blacks ($p = .001$ for $F = 5.800$). Whites and Blacks have almost equal variance explained for the differences in CFS during SAHO ($\eta_p^{2\ Whites} = 218$ and $\eta_p^{2\ Blacks} = .221$), while Hispanics had lower explained variance $\eta_p^{2\ Hispanic} = .134$) for the same period. No

Table 5 Time-Series Model Fit Statistics for Calls for Service for Apartments and Single-Family Home Residencies per Victims' Race

Variable	Type of Model	Stationary R^2	RMSE	Normalized BIC	Ljung-Box Q
Total CFS apartments	Simple seasonal ES	.737	10.994	4.824	.473
CFS apartments, White	Single ES	.442	4.691	3.106	.247
CFS apartments, Black	ARIMA (1,0,1)	.033	5.494	3.452	.136
CFS apartments, His-panic	Winter's additive	.754	4.304	2.964	.073
Total CFS single-family home	Single ES	.501	8.696	4.341	.788
CFS single-family, White	Simple seasonal ES	.757	4.097	2.850	.043
CFS single-family home, Black	Single ES	.528	3.685	2.622	.153
CFS single-family home, Hispanic	ARIMA (0,0,1)	.339	3.893	2.730	.847

Table 6 ANCOVA Model Statistics for Calls for Service for Apartments and Single-Family Homes per Race

Variables/Models	df	F	Sig	η_p^2
Total CFS for Apartments				
Pandemic periods	3	9.100*	.000	.294
Daily female rates	46	1.034	.445	.428
CFS, White for Apartments				
Pandemic periods	3	.463	.709	.021
Daily female rates	29	1.219	.247	.334
CFS, Hispanic for Apartments				
Pandemic periods	3	1.266	.293	.055
Daily female rates	29	1.150	.309	.312
CFS, Black for Apartments				
Pandemic periods	3	6.030*	.001	.239
Daily female rates	30	1.333*	.017	.396
Total CFS for Single-Family Homes				
Pandemic periods	3	.645	.589	.025
Daily female rates	46	1.238	.206	.444
CFS, White for Single-Family Homes				
Pandemic periods	3	.306	.821	.013
Daily female rates	29	.530	.971	.166
CFS, Hispanic for Single-Family Homes				
Pandemic periods	3	.308	.820	.014
Daily female rates	29	1.195	.268	.330
CFS, Black for Single-Family Homes				
Pandemic periods	3	2.723*	.049	.122
Daily female rates	30	1.359	.134	.402

statistically significant covariation is found when controlling for female victimization for any of the models. Table 10 also indicates that daily CFS for public places declined by an average of 18.28 calls compared with the previous period of February 13, 2020–March 23, 2020. Based on Table 10, there were 3.81 fewer calls for Whites, 2.62 fewer calls for Blacks, and 2.12 fewer calls for Hispanic victims coming from public places during the SAHO period compared with the previous six weeks.

Calls for Service for Crimes against Persons

Figure 5 depicts four time-series models for calls for crimes against persons during February 13, 2019–April 30, 2020. Table 11 displays the acceptable model fit statistics for time-series calculated for daily rates of CFS for crimes against persons per each victims' race group.[7]

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[7] We used the standard NIBRS definition for crimes against persons.

Table 7 Bonferroni Statistics for Multiple Group Comparison for Calls for Service for Apartments and Single-Family Homes per Race for SAHO

Time Periods Compared	Mean Difference	Std. Error	Sig
Total CFS for Apartments			
2.13.19–3.23.19	14.19*	2.375	.000
3.24.19–4.30.19	9.92*	2.359	.001
2.13.20–3.23.20	9.13*	2.359	.002
CFS, White for Apartments			
2.13.19–3.23.19	.71	1.045	1.00
3.24.19–4.30.19	.87	1.038	1.00
2.13.20–3.23.20	1.11	1.038	1.00
CFS, Hispanic for Apartments			
2.13.19–3.23.19	1.61	1.072	.830
3.24.19–4.30.19	.90	1.065	1.00
2.13.20–3.23.20	.38	1.065	1.00
CFS, Black for Apartments			
2.13.19–3.23.19	5.70*	1.058	.000
3.24.19–4.30.19	2.59	1.051	.096
2.13.20–3.23.20	4.36*	1.051	.001
Total CFS for Single-Family Homes			
2.13.19–3.23.19	.70	2.235	1.00
3.24.19–4.30.19	1.49	2.221	1.00
2.13.20–3.23.20	1.28	2.221	1.00
CFS, White for Single-Family Homes			
2.13.19–3.23.19	1.00	.946	1.00
3.24.19–4.30.19	.98	.940	1.00
2.13.20–3.23.20	.96	.940	1.00
CFS, Hispanic for Single-Family Homes			
2.13.19–3.23.19	.01	.893	1.00
3.24.19–4.30.19	.25	.888	1.00
2.13.20–3.23.20	−.57	.888	1.00
CFS, Black for Single-Family Homes			
2.13.19–3.23.19	.01	.762	1.00
3.24.19–4.30.19	1.58	.758	1.00
2.13.20–3.23.20	2.13*	.758	.037

Figure 5 shows that three out of four models have no trends, which allows us to continue with the cross-sectional comparison of selected periods by ANCOVA models. Augmented Dickey-Fuller tests were also performed prior to analysis and indicated that all the variables are stationary. Tables 12 and 13 depict the results of ANCOVA models for CFS for the crimes against persons for each race controlled by the daily rates of female victims.
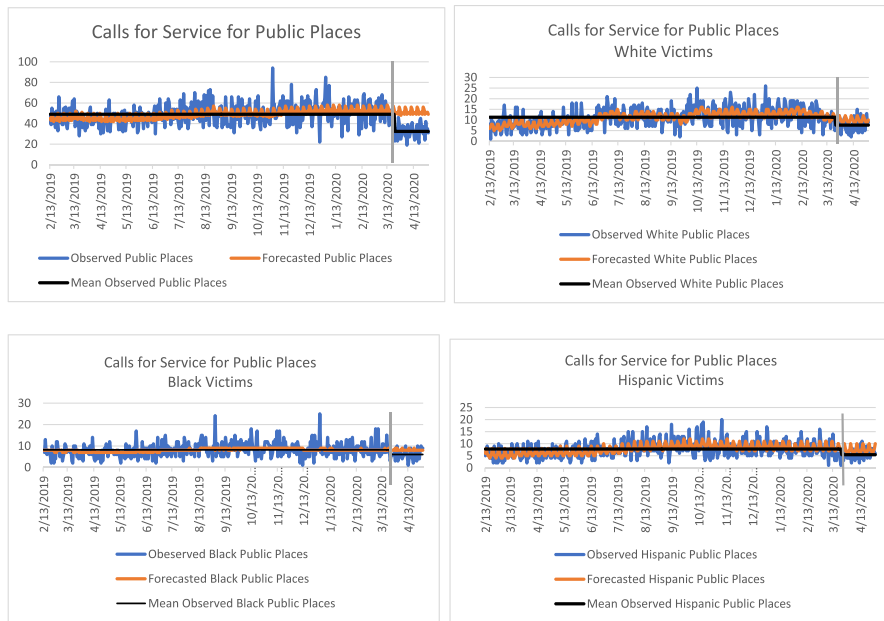
Fig. 4 Calls for Service for Public Places between 2.13.2019–4.30.2020 per Victims' Race

Table 8 Time-Series Model Fit Statistics for Calls for Service for Public Places per Victims' Race

Variable	Type of Model	Stationary R-squared	RMSE	Normalized BIC	Ljung-Box Q
Total CFS public places	Winter's additive	.708	9.596	4.567	.897
CFS public places, White	Simple seasonal	.730	4.018	2.811	.853
CFS public places, Black	Single ES	.488	3.274	2.387	.937
CFS public places, Hispanic	Winter's additive	.743	3.024	2.258	.460

Tables 12 and 13 indicate no statistically significant differences in the total CFS for crimes against persons ($p = 704$ for $F = .455$), including Whites ($p = .079$ for $F = 2.370$), Hispanics ($p = .053$ for $F = 3.840$), and Blacks ($p = .194$ for $F = 3.138$). The time-series models presented in Fig. 5 indicate that the forecasted daily rates for the SAHO period are within the 95% interval for observed SFS values of the same period. Table 13 shows that minor differences exist in CFS for crimes against persons when comparing the SAHO with other time periods. None of these mean differences are statistically significant. Further, no models produced a statistically significant covariation for the daily rates of female victims.

Table 9 ANCOVA Model Statistics for Calls for Service for Public Places per Race

Variables/models	df	F	Sig	η_p^2
Total CFS for Public Places				
Pandemic periods	3	21.468*	.000	.480
Daily female rates	46	1.021	.462	.413
CFS, White for Public Places				
Pandemic periods	3	6.249*	.001	.218
Daily female rates	29	.848	.684	.246
CFS, Hispanic for Public Places				
Pandemic periods	3	3.503*	.020	.134
Daily female rates	29	1.129	.339	.298
CFS, Black for Public Places				
Pandemic periods	3	5.800*	.001	.221
Daily female rates	30	1.371	.144	.386

Table 10 Bonferroni Statistics for Multiple Group Comparison for Calls for Service for Public Places per Race for SAHO

Time Periods Compared	Mean Difference	Std. error	Sig
Total CFS for Public Places			
2.13.19–3.23.19	−13.54*	1.996	.000
3.24.19–4.30.19	−10.74*	1.983	.000
2.13.20–3.23.20	−18.28*	1.983	.000
CFS, White for Public Places			
2.13.19–3.23.19	−.39	.853	1.00
3.24.19–4.30.19	−.40	.847	1.00
2.13.20–3.23.20	3.81*	.847	.000
CFS, Hispanic for Public Places			
2.13.19–3.23.19	−.29	.646	1.00
3.24.19–4.30.19	−.68	.642	1.00
2.13.20–3.23.20	−2.12*	.642	.009
CFS, Black for Public Places			
2.13.19–3.23.19	−1.13	.639	.483
3.24.19–4.30.19	−.59	.635	1.00
2.13.20–3.23.20	−2.62*	.635	.001

Calls for Service for Crimes against Property

Table 14 displays the model fit statistics for time-series calculated for the daily rates of CFS for crimes against property per each race of victim.[8] Fig. 6 depicts four time-series models for calls for crimes against property during February13, 2020–April 30, 2020.

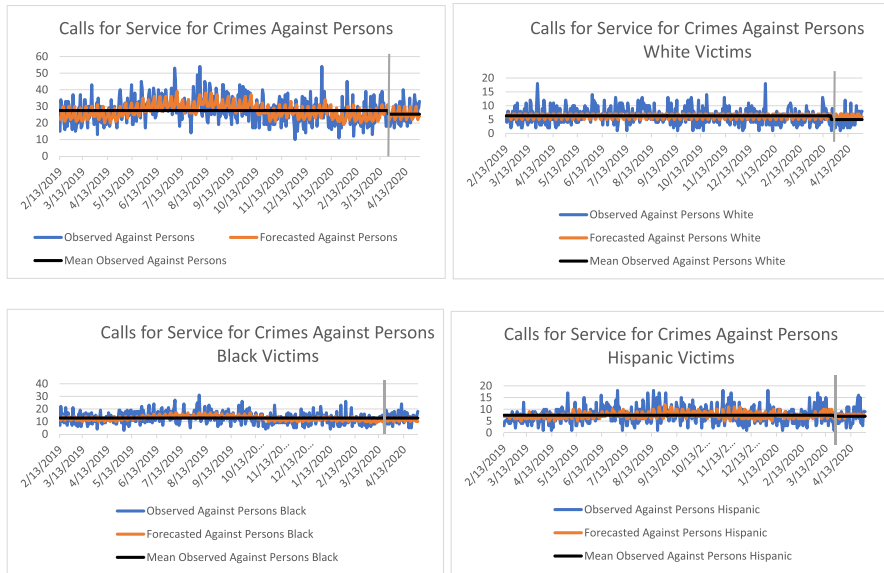[8] We used the standard NIBRS definition for crimes against property.

Fig. 5 Calls for Service for Crimes Against Persons between 2.13.2019–4.30.2020 per Victims' Race

Table 11 Time-Series Model Fit Statistics for Calls for Service for Crimes Against Persons and Victim's Race

Variable	Type of Model	Stationary R^2	RMSE	Normalized BIC	Ljung-Box Q
Total CFS persons	Simple seasonal ES	.703	6.769	3.854	.804
CFS persons, White	Simple seasonal ES	.738	2.839	2.117	.138
CFS persons, Black	Winters' additive	.746	4.394	3.005	.549
CFS persons, Hispanic	ARIMA (1,0,1)	.119	3.239	2.359	.417

Figure 6 shows that all four models have no trends, which allows us to continue with the cross-sectional comparison of selected periods by ANCOVA models. Augmented Dickey-Fuller tests were also performed prior to analysis and indicated that all the variables are stationary. Tables 15 and 16 depict the results of ANCOVA models for CFS for crimes against property for each race controlled by daily rates of female victims.

Tables 15 and 16 indicate a statistically significant difference in total CFS for crimes against property (p = .000 for F = 8.836), including White victims (p = .045 for F = 2.663) and Hispanic victims (p = .011 for F = 6.023). However, no statistically significant difference was detected in CFS for crimes against property for Black victims (p = .209 for F = 1.556). Time-series models presented in Fig. 6 indicate that the forecasted daily rates for the SAHO period for crimes against property are outside the 95% interval for observed CFS values of the same period. Table 16 shows that total daily CFS for crimes against property declined by an average of 14.13 calls during the SAHO period compared with February 13, 2020–March 23, 2020. The daily rates of CFS for crimes against property also declined by 5.88 and 5.18 for White and Hispanic victims for the same period. However, there was no

Table 12 ANCOVA Model Statistics for Calls for Service for Crimes against Persons per Race

Variables/Models	*Df*	*F*	*Sig*	η_p^2
Total CFS for Crimes against Persons				
Pandemic periods	3	.466	.707	.020
Daily female rates	46	1.006	.484	.413
CFS White for Crimes against Persons				
Pandemic periods	3	2.370	.079	.099
Daily female rates	29	.758	.763	.240
CFS Hispanic for Crimes against Persons				
Pandemic periods	3	3.840	.053	.141
Daily female rates	29	6.517	.868	.201
CFS Black for Crimes against Persons				
Pandemic periods	3	3.138	.194	.900
Daily female rates	29	.862	.665	.264

Table 13 Bonferroni Statistics for Multiple Group Comparison on Calls for Service for Crimes Against Persons per Race during SAHO

Time Periods Compared	Mean Difference	Std. Error	Sig
Total CFS for Crimes against Persons			
2.13.19–3.23.19	.65	1.416	1.00
3.24.19–4.30.19	−.15	1.407	1.00
2.13.20–3.23.20	−.21	1.407	1.00
CFS, White for Crimes against Persons			
2.13.19–3.23.19	−1.11	.684	.663
3.24.19–4.30.19	−1.15	.680	.173
2.13.20–3.23.20	−.80	.680	1.00
CFS, Hispanic for Crimes against Persons			
2.13.19–3.23.19	1.32	.779	.537
3.24.19–4.30.19	.36	.774	1.00
2.13.20–3.23.20	−.87	.774	1.00
CFS, Black for Crimes against Persons			
2.13.19–3.23.19	.68	.883	1.00
3.24.19–4.30.19	.68	.877	1.00
2.13.20–3.23.20	1.55	.877	.483

such decline for Black victims whose CFS increased by an average of .23 calls per day during SAHO compared with the previous six weeks. Further, no models produced a statistically significant covariation for daily rates of female victims.

Discussion

In sum, our findings suggest that calls for service (CFS) declined during the stay-at-home order (SAHO) when compared with the six previous week and 12-month periods. However, only White and Hispanic victims contributed to this change; calls

Table 14 Time-Series Model Fit Statistics for Calls for Service Crimes Against Property Per Victim's Race

Variable	Type of Model	Stationary R-squared	RMSE	Normalized BIC	Ljung-Box Q
Total CFS property	Simple seasonal	.712	16.310	5.613	.827
CFS property, White	Simple seasonal	.737	8.165	4.229	.101
CFS property, Black	Simple seasonal	.726	6.893	3.891	.797
CFS property, Hispanic	ARIMA (1.0.0)	.460	6.991	3.934	.774

for service remained the same for Black victims during the lockdown. These findings were controlled for victims' gender, suggesting that, in general, Black males and females experienced the same levels of crime during the SAHO.

At the same time, calls for incidents occurring at the apartments increased during the SAHO, but only for Black victims. White and Hispanic victims experienced the same level of incidents reported at the apartments. Similarly, the CFS from single-family homes increased during the SAHO for Black victims but not for Whites and Hispanics. The increase of daily rates of CFS in apartments for Black victims was higher than the increase of CFS for Black victims in single-family homes. Moreover, a statistically significant interaction with gender was detected when it comes to the increase of CFS from an apartment, hinting at potentially uneven victimization experiences by Black females at the apartments during the SAHO. There was also
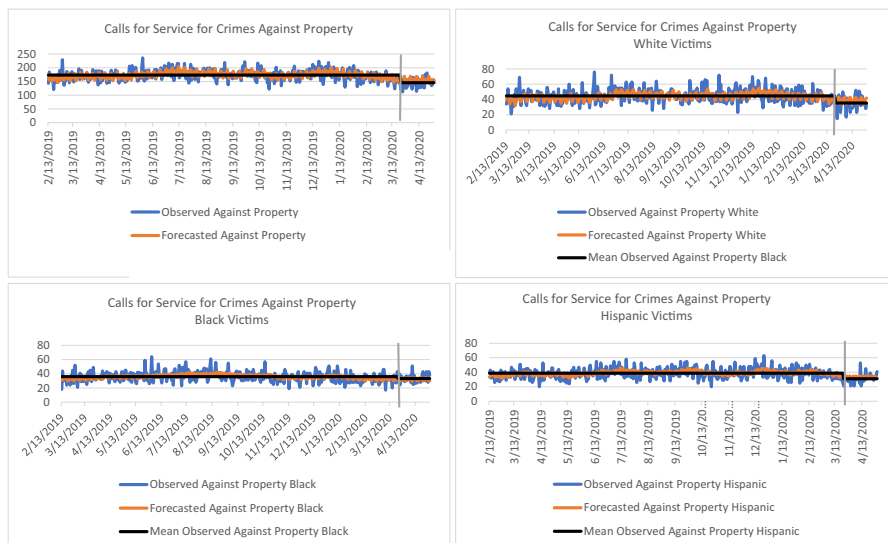

Fig. 6 Calls for Service for Crimes Against Property between 2.13.2019–4.30.2020 per Victims' Race

Table 15 ANCOVA Model Statistics for Calls for Service for Crimes against Property per Race

Variables/models	Df	F	Sig	η_p^2
Total CFS for Crimes against Property				
Pandemic periods	3	8.836*	.000	.257
Daily female rates	46	1.328	.138	.456
CFS White for Crimes against Property				
Pandemic periods	3	2.663*	.045	.098
Daily female rates	29	1.042	.427	.265
CFS Hispanic for Crimes against Property				
Pandemic periods	3	6.032*	.011	.230
Daily female rates	30	.688	.869	.243
CFS Black for Crimes against Property				
Pandemic periods	3	1.556	.209	.073
Daily female rates	30	.894	.623	.298

a decline in CFS for crimes against property during SAHO for White and Hispanic victims; however, CFS for Black victims remained the same.

In two instances, the experiences of victims from different race groups were the same: there was a decline of CFS from public places for all victims and no change in CFS for crimes against persons for all victims during the SAHO period.

Our findings are generally consistent with existing literature. As with many other studies reported, we found a significant drop in calls for service during lockdown in Dallas city data (Boman & Gallupe, 2020; Jackman, 2020; Kenny et al., 2020; Waldrop, 2020). However, in our study, only White and Hispanic victims experienced

Table 16 Bonferroni Statistics for Multiple Group Comparison on Calls for Service for Crimes Against Property per Race during SAHO

Time Periods Compared	Mean Difference	Std. Error	Sig
Total CFS for Crimes against Property			
2.13.19–3.23.19	−19.91*	4.148	.000
3.24.19–4.30.19	−22.21*	4.121	.000
2.13.20–3.23.20	−14.13*	4.121	.007
CFS White for Crimes against Property			
2.13.19–3.23.19	−6.82*	1.999	.006
3.24.19–4.30.19	−5.37*	1.986	.031
2.13.20–3.23.20	−5.86*	1.986	.025
CFS Hispanic for Crimes against Property			
2.13.19–3.23.19	−5.50*	1.448	.002
3.24.19–4.30.19	−5.72*	1.438	.001
2.13.20–3.23.20	−5.18*	1.438	.003
CFS Black for Crimes against Property			
2.13.19–3.23.19	−.43	1.420	1.00
3.24.19–4.30.19	−3.00	1.411	.220
2.13.20–3.23.20	.23	1.411	1.00

this unexpected benefit of the pandemic; calls for service remained the same for Blacks.

Criminological literature explains that crime drops during lockdowns as a result of changing social mobility, peer dynamics, and opportunities for crime (Boman & Gallupe, 2020; Mawby, 2020; Stickle & Felson, 2020). Similar to previous studies, we also found a dramatic decline in crimes against property during the lockdown; however, only White and Hispanic victims experienced such a change. Following the footsteps of routine activity theory, the decline in property crimes during the lockdown has been explained by reduced opportunities, lack of available targets, and the increased presence of capable guardians (Abrams, 2021; Campedelli, Aziani, & Favarin, 2020a; de la Miyar et al., 2021; Payne et al., 2021). Using this theoretical framework, findings from our study suggests that Black individuals were less likely to experience changes in their routine activities during the lockdown or that these changes translated into different victimization experiences for them.

One potential explanation of the differences is the fact that racial minorities are disproportionally present among essential workers and therefore less likely to experience changes of their daily mobility and routine activities. However, this explanation is contradicted by our findings. Hispanic and Black individuals are both over-represented among essential workers (Poydock & Margaret, 2020), yet only Black victims experienced no decline in calls for service and property crimes during the lockdown.

Another more complex but also more plausible explanation is rooted in the same problems that led to the disparate effect of the pandemic on Black individuals. That is the existing systematic inequalities of income, education, and concentrated disadvantage created by established structures and policies implicitly favor the White majority. It is likely that the COVID pandemic and lockdown specifically acted as a "force mutiplier" and put additional burdens on already disadvantaged Black individuals, making them victims of various crimes. Based on existing research, it is more likely that Blacks living in the apartments were low-income individuals who also suffered from dispropinate rates of unemployment, struggled from digital divide during long-distance education of their school children, and experienced high levels of stress due to infections, hospitalizations, and death from COVID-19 during the lockdown. This propostion can explain why Black individuals in the apartments in our study experienced the overal high levels of victimization during the lockdown. Using similar logic, one may also explain why CFS from single-family households for Black victims were not as high as those from the apartments. Black individuals residing in single-family homes are somewhat less likely to be low-income and thus the rise of their victimization rates during the lockdown has not been as dramatic as for those residing in the apartments. We admit that location of the residence (single-family home and apartments) is a very crude way of looking at concentrated disadvantage and this notion requires further examination to fully understand to what degree socio-economic status and a rise in rates of infections, deaths, and hospitalizations contributed to the increase in crime victimization among Black individuals during lockdown.

Our study also supports the concept of crime displacement, suggesting that the pandemic lockdown produced changes in the spatial concentration of crime. Recent

studies found an increase in certain residential crimes during the lockdown and decline in crime for locations that were restricted from public access. It has also been suggested that during the lockdown, the overall crime incidents were concentrated in downtown areas (Sun, 2021; Yang, 2021). Our findings clarify that such displacement and crime concentration are more likely to occur among Black victims residing in apartments. This is likely due to the fact that more Black individuals reside in low-income apartments that are located downtown. It is also likely that restricted residential mobility in small low-income apartments produced more strain and therefore caused increased victimization of Black individuals. Displacement of crime to downtown areas during the lockdown could also explain why property crimes rates did not decline for Black vicitms in our study. It is possible that restricted moblity prevented offenders from traveling to wealthy White and more remote suburban neighboorhoods to commit property crimes, forcing them to offend more frequently in downtown areas that disproptionately affected Blacks.

Even though Latinx and Black victims do share some systemic inqualities and concentrated disavantges by established structures and policies, their victimization experiences are often different. Criminological literature frequently attributes these differences to the broad category of cultural factors including, but not limited to, the differences in famly stucture and dynamics, residents' moblity, neighboorhood structures, and the role of religious insitutions (Biafora & Warheit, 2007; Holliday et al., 2020; Miller & Gibson, 2011; Mitchell & Tienda, 2006a, b; Peskin et al., 2006). This study supports the notion that Latinix and Black individuals experienced the victimization differently during the COVID-19 lockdown. The trends in victimization rates for Latinx were more consistent with White individuals than with Black. However, in many cases, the declines in rates were not as pronounced. It is plausible that such factors as large mutlti-generational households prevelant among Latinx could play a role into why, for example, these individuals did not experience an increase in property crimes. Further research is needed to fully explore which cutlural differences played a role in different victimization experiences of these two groups.

Overall, our study makes an important contribution to understanding crime rate changes during the lockdown. Black individuals are less likely to experience unintended crime drops and more likely to suffer higher levels of victimization in residential areas. Even though these findings are important, they come with limitations. First, the data sample for this study is not representative of the U.S. population; therefore, the findings cannot be generalized to the state or national levels. It is more likely that findings of this study can be generalized to the population of large urban cities. Further analysis is needed to confirm this.

Second, due to sample size limitations, we used broad categories of crimes against persons and crimes against property to examine the crime rate dynamics. It is likely that different crimes within each category had a different directionality during the lockdown (e.g., residential burglaries were down when commercial burglaries were up). More nuanced studies with larger data samples are needed to fully understand how the victimization rates for each of these crimes changed for each race group.

Third, the study is based only on calls for service when the victim's race was known. For that reason, we could not include crimes against society in our analysis because the victim's race was mostly unknown.

Fourth, the study is based on data from calls for service, which include only victimization reported to the police. In making the analysis, we assumed that crime reporting rate did not change dramatically during the SAHO period. If this was the case, the changes detected by the analysis could be reflecting changes in reporting dynamics and not victimization.

This study is only a first step in understanding the racial disparities of victimization during the pandemic. Further analysis is needed with larger data samples, longer time periods, and more nuanced data. However, what is already clear is the fact that crime rate changes during the lockdown were likely to produce different results for minority communities. Politicians and law enforcement leaders countrywide should realize that the total dynamics of crime rates during the lockdown are not likely to reflect the levels of victimization for their minority communities. Instead, Black communities are less likely to experience any crime drop during the lockdown and more likely to suffer additional crime victimization.

Data Availability (data available at https://www.dallasopendata.com/)

Declarations

Conflicts of Interest/Competing Interests none.

Ethics Approval IRB review waived, open source data.

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Dr. Semukhina is an Associate Professor at the School of Criminology and Criminal Justice and Public Administration and Director of Institute for Predictive and Analystical Policing Science at Tarleton State University. Dr. Semukhina received her MS and PhD degrees from University of Central Florida and her JD and LLM degrees from Tomsk State University, Russia. Prior to joining Tarleton, Dr. Semukhina worked for 10 years as an Assistant and Associate Professor of criminology and law studies at Marquette University. Before going into academia, Dr. Semukhina worked as a criminal defense attorney in Russia. Dr. Semukhina has over 15 years of experience working with various law enforcement agencies in Florida, Wisconsin, and Texas conducting evidence-based research on public views of police, intelligence and law enforcement data-sharing, spatial analysis for law enforcement crime-reduction strategies, and targeted community-policing efforts.