

What Has Happened to Crime Rates in California over the Course of the Pandemic?¹

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Over the past three decades, crime rates in California and throughout the United States have dropped dramatically. In 2019 (the last full year of available data for California and the nation and prior to the COVID-19 pandemic), California's violent crime rate was 40 percent of the state's peak rate recorded in 1992. Similarly, the 2019 property crime rate for California amounted to 33 percent of the peak rate for the state observed in 1980. In fact, the state's violent and property crime rates in 2019 were among the lowest rates recorded since the 1960s. California's 2019 homicide rate of 4.2 incidents per 100,000 marked the lowest recorded rate since 1966.² In the past, California's homicide rate exceeded the average rate for all other states in the nation. In 2014, California's homicide rate fell below the national average and has maintained this relatively low level since (Ben-Michael, Feller, and Raphael 2021).³

While full data for 2020 are not yet available, early reports from individual law enforcement agencies indicate that the social dislocations, stresses, and alterations to our collective daily routines due to the pandemic have impacted crime rates in California and across the country, sometimes in predictable and unpredictable ways. Throughout the nation, there have been widely cited media reports of increases in murder rates, aggravated assaults, and gun-related violence.⁴ There have also been reports of sizable increases in auto theft rates.⁵ At the same time, many law enforcement agencies reported declines in the types of offenses that tend to increase with the volume of social interactions, such as robbery and larceny theft.

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² For California annual crime rates from the late 1960s through 2019, see table 1 in Becerra, Javier (2020), [Crime in California: 2019](#), California Department of Justice.

³ See Ben-Michael, Eli; Feller, Avi and Steven Raphael (2021), "[The Effect of a Targeted Effort to Remove Firearms from Prohibited Persons on State Murder Rates](#)," UC Berkeley Working Paper.

⁴ For examples of recent media coverage, see Arango, Tim "[A Year After George Floyd: Pressure to Add Police Among Rising Crime](#)," New York Times, Mar 23, 2021; Davies, Emily; Mettler, Katie and Rachel Chason "[A County, Hit by the Pandemic, Grapples with Soaring Crime After Spending a Decade Lowering It](#)," *Washington Post*, May 30, 2021; Rector, Kevin "[A Year Like No Other for LA Crime: Homicides Surge, Robberies and Rapes Drop](#)," *Los Angeles Times* January 3, 2021.

⁵ See Maslin Nir, Sarah "[Here's Why Car Thefts Are Soaring \(Hint: Check Your Cupholder\)](#)," *New York Times*, January 6, 2021.

In this report, we review what is known about crime trends in California since the onset of the pandemic. Specifically, we analyze preliminary crime data published by the Federal Bureau of Investigation (FBI) for a subset of large cities in the United States as well as publicly available data posted on the webpages of several large cities. We assess the degree to which crime in 2020 changed relative to crime in 2019 for the 70 cities in California with at least 100,000 people that have reported 2020 crime figures to the FBI. These cities cover roughly half of the state's population. We also use the FBI data as well as data from police department webpages to assess the degree to which the trends observed in California's large cities are also observed in other large U.S. cities. We find the following:

Violent and property crime declined in California's large cities during the pandemic

- The overall violent crime rate (the sum of homicide, rape, robbery, and aggravated assault) in California's large cities fell slightly between 2019 and 2020. The overall property crime rate (the sum of burglary, larceny, and motor vehicle theft) declined by nearly 10 percent in these cities.
- Behind these overall crime rates, the composition of violent and property crimes changed in the state, with the rates of some offenses increasing between 2019 and 2020 and rates for others decreasing.
- For violent offenses, the homicide rate in these large cities increased by 28.6% percent while the aggravated assault rate increased by roughly 7.5 percent. Meanwhile, robbery declined by 16.7% percent and rape by almost 12 percent. The cumulative effect of these changes was a slight decline in overall violent crime.
- For property offenses, burglary declined slightly (approximately one percent) and larceny declined by approximately 19 percent between 2019 and 2020. At the same time, motor vehicle theft increased by 20.2% percent. The cumulative effect of these was a 10 percent decline in property offense in large California cities.

Large cities outside of California experienced overall increases in violent crime and smaller declines in property crime relative to California cities

- For large cities outside of California included in the FBI's preliminary data, we document larger increases in homicides and aggravated assaults per capita relative to California cities. Moreover, overall violent crime increased in these cities, in contrast to the slight decline for large California cities.
- Overall property crime rates declined by more in large California cities, though the increase in the motor vehicle theft rate was greater for large cities in California relative to the increase in other U.S. cities included in the FBI data.

In Los Angeles, the changes in specific offense types occurred following the stay-at-home order

- We analyze incident-level data for California's largest city (Los Angeles) to explore the timing of the changes in specific offense types. Sizable increases in motor vehicle theft are associated with the onset of the pandemic and the stay-at-home order, and sizable reductions in robbery and larceny theft coincide with the stay-at-home order. Daily murder counts initially decline with the stay-at-home order in mid-March 2020.

However, by summer 2020 daily murders increased and remained elevated throughout the pandemic.

1. Crime in California has Declined over the Past Three Decades

The results in this report draw heavily on open data published by the FBI in their quarterly report series (made public on March 15, 2021).⁶ In addition to providing preliminary estimates of the percent changes in crime rates for the nation overall, these reports include data on annual crimes reported for calendar years 2019 and 2020 for cities with over 100,000 residents where the local law enforcement agency has already provided 2020 data to the FBI. There are 70 California cities in the data set with complete crime data for 2019 and 2020, covering a cumulative population of approximately 19 million people (roughly 48 percent of the state's population). Complete data for California will be released this summer by the California Department of Justice, and data for the nation will be released by the FBI in September 2021. The analysis presented below is a first look at how crime changed in the more populous cities in the state.

We begin by comparing crime rates for the state overall and for the California cities included in the FBI data for 2019, to evaluate how representative these cities are of the state. Table 1 presents crime rates for 2019 for the state overall and the average crime rate for the 70 cities for which we have 2019 and 2020 data.⁷ Crime rates for these 70 California cities are higher than the state for overall crime and for each offense type. Violent crime rates among the 70 cities are roughly 1.19 times the overall state rate, while property crime rates among these cities are roughly 1.13 times the state rate. Hence, while the 70 cities account for a large share of the state's population, these cities represent areas in the state with relatively high crime rates.

Prior to the pandemic, California's crime rates were at among the lowest levels recorded over the past fifty years. Figure 1 provides long term trends for overall violent and property crime rates for the years 1969 through 2019. Both figures reveal pronounced declines in crime rates over the past three decades.

⁶ See [FBI Crime Data Explorer](#).

⁷ The averages for the 70 cities are weighted by population.

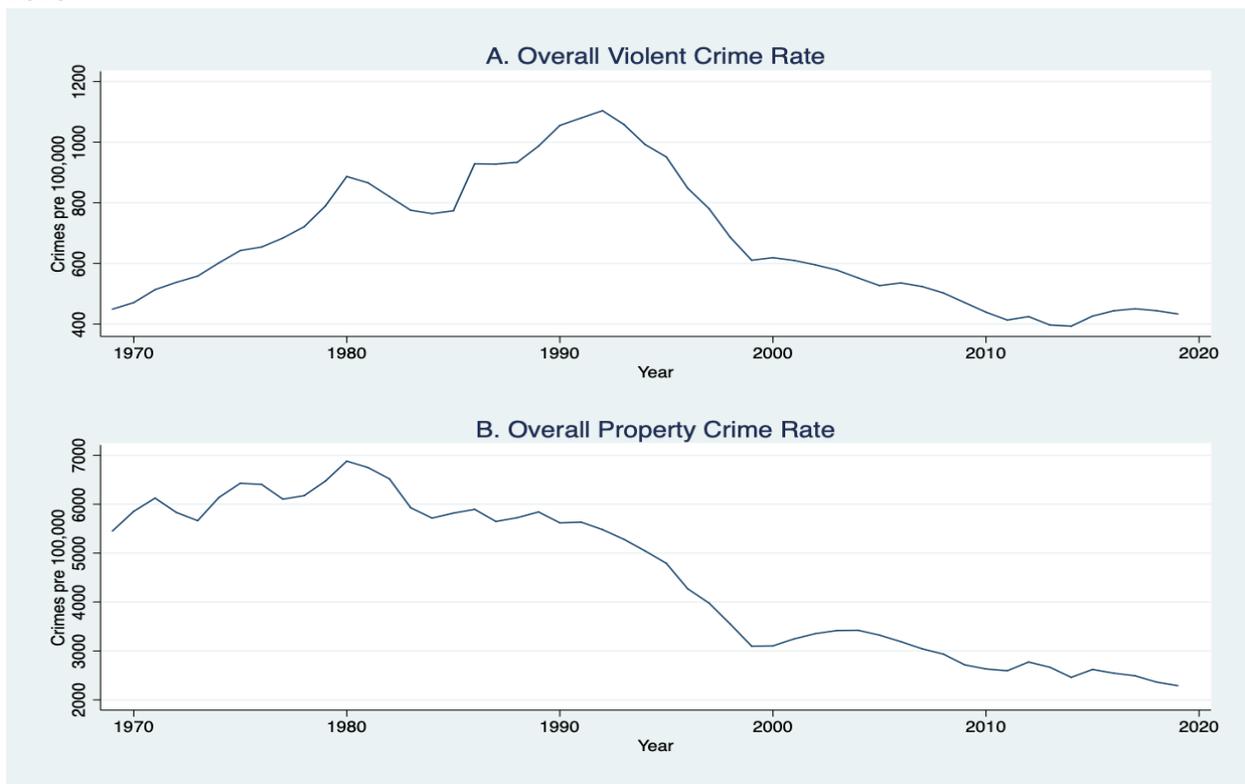
Table 1
Comparison of 2019 Crime Rates (Incidents per 100,000 Residents) for California Overall
and for the 70 Large Cities Included in the FBI Quarterly Crime Reports

	All of California ^a	70 Large California Cities
Total Violent	433.5	514.5
Murder	4.2	4.9
Rape	36.8	44.5
Robbery	130.3	175.2
Aggravated assault	262.2	290.0
Total Property	2,290.3	2,599.8
Burglary	379.4	387.3
Larceny	1,558.8	1,798.7
Motor vehicle theft	352.2	413.8

a. Figures come from *Crime in California, 2019, Table 1*

b. Figures tabulated from FBI Uniform Crime Reports Quarterly Report Files

Figure 1: Violent Crime and Property Crimes per 100,000 California Residents: 1969 through 2019



Source: *Crime in California, 2019*, California Department of Justice.

Table 2
Average Crime Rates in Cities with Over 100,000 People that have Reported Complete Data for 2019 and 2020

	California Large Cities			Other Large Cities		
	2019	2020	Change	2019	2020	Change
Violent	514.5	503.3	-11.2	629.2	695.6	66.4
Murder	4.9	6.3	1.5	8.8	11.9	3.1
Rape	44.5	39.3	-5.2	62.3	53.2	-9.1
Robbery	175.2	145.9	-29.2	156.6	146.6	-10.0
Assault	290.0	311.7	21.7	401.6	484.0	82.4
Property	2,599.8	2,342.9	-256.9	3,230.0	3,043.9	-186.1
Burglary	387.3	383.2	-4.1	516.3	481.2	-35.1
Larceny	1,798.7	1,462.5	-336.2	2,316.7	2,128.4	-188.3
MVT	413.8	497.3	83.5	397.1	434.3	37.2

Notes. Figures present weighted averages (using 2020 populations as weights) for all cities with complete crime data for 2019 and 2020 reported in the FBI UCR quarterly reports as of May 2021.

2. Overall Changes in Crime Rates: 2019 to 2020

Crime trends in California changed between 2019 and 2020, but the changes were generally smaller than those experienced by other U.S. cities. Table 2 presents an overall summary of crime rates in the 70 California cities relative to crime rates in the other large U.S. cities included in the FBI's preliminary data release. Overall violent crime rates in California declined by 11.2 incidents per 100,000 between 2019 and 2020. However, there was an increase in the murder rate (of 1.5 incidents per 100,000) and the aggravated assault rate (of 21.7 incidents per 100,000). Relative to 2019 levels, these changes constitute a 28.6 percent increase in murder and a 7.5 percent increase in aggravated assault.

For the other large cities included in the FBI data, overall violent crime rate increased by 66.4 incidents per 100,000 residents, with increases in the murder rate (of 3.1 incidents per 100,000) and the aggravated assault rate (of 82.4 incidents per 100,000). Relative to the baseline values in 2019, these changes constitute a 10.6 percent increase in overall violent crime, a 35.2 percent increase in murder, and a 21 percent increase in aggravated assault. Hence, we observe larger increases in homicide and aggravated assault in cities outside California relative to cities within California, both in terms of absolute changes in crime rates as well as the percent change relative to 2019 values.⁸

⁸ We prefer focusing on changes in the actual crime rate rather than percent changes, since the change in the actual crime rate better gauges the change in the risk of victimization experienced by the average resident. For example, an increase in murders per 100,000 of one represents an increase in the likelihood of someone being murdered of 1/100,000, regardless of whether the starting murder rate was 4 per 100,000, 5 per 100,000 or some other value. Note, two cities that experience an increase of one unit will have different percentage increases depending on their starting values, with the city with the lower value having a larger percentage increase. For an actual example, California cities experience an increase in murder of 1.5 per 100,000, while the non-California

We observe average declines in rape and robbery per 100,000. In both California cities as well as other cities. In the California cities, rape declined by 5.2 incidents per 100,000 (an 11.7 percent change relative to the 2019 baseline), while for other U.S. cities the decline was 9.1 (a 14.6 percent change relative to the 2019 baseline). Robberies declined by 29.2 per 100,000 in California cities (a 16.7 percent decline), while in non-California cities robbery declined by 10 per 100,000 (a 6.4 percent decline).

Both California cities and non-California cities experienced sizable declines in overall property crime rates between 2019 and 2020. For the California cities, overall property crime rates declined by 256.9 incidents, while for non-California cities the comparable decline was 186.1. These changes amount to a 10 percent decline for California cities and a 6 percent decline for non-California cities. These drops are driven by declines in burglary (with relatively larger declines in burglary in cities outside California) and large decreases in larceny theft (with larger declines in California).

The one property crime where we observe an increase is motor vehicle theft. Between 2019 and 2020, the 70 California cities experienced an increase in motor vehicle theft of 83.5 incidents per 100,000, compared with an increase in other cities of 37.2 per 100,000. These changes constitute a 20 percent increase in the California cities and a 9.4 percent increase in other cities.

One drawback of the FBI quarterly data release is the low coverage for cities outside of California. The FBI data include 141 cities outside of California with complete crime data for 2019 and 2020. Collectively, these cities account for only 13 percent of the U.S. population that does not reside in California. Several of the country's largest cities (Chicago, Dallas, New York, Philadelphia, San Antonio) are not included in the data. To address this issue, we perform a separate set of comparisons for the ten largest cities in the United States, three of which (Los Angeles, San Diego, and San Jose) are in California. For those cities not included in the FBI data, we collected crime data for 2019 and 2020 directly from their respective city police department webpages.⁹

Figures 2 through 4 present crime changes for the ten largest cities in the country. In Figure 2, we present the 2019 to 2020 changes in the overall violent crime rate (top panel) and the

cities experience an increase of 3.1 (nearly double). However, given the much lower 2019 murder rates in the California cities (4.9 per 100,000) relative to other cities in the U.S. (8.8 per 100,000), the percent increases are comparable (31 percent for California cities compared with 35 percent for other cities).

⁹ Among the 10 largest cities in the U.S., Houston, Los Angeles, Phoenix, San Diego, and San Jose were included in the FBI Crime Data. For Dallas, we draw data from the [City Council Weekly NIBRS Crime Briefing through the end of 2020](#). Annual crime data for New York through 2020 come from the [New York police department](#). For Philadelphia, we draw data from the [Philadelphia Citywide Crime Report Week 52 for 2020](#). Crime data for San Antonio comes from the [City of San Antonio webpage](#). Finally, for Chicago, we downloaded incident data from the [City of Chicago data portal](#) and tabulated part one felony offenses from the individual reports for 2019 and 2020.

overall property crime rate for each city. In both panels, the cities are ordered along the side from those with the largest crime increase to those with the smallest. Figure 3 presents comparable changes for individual violent offenses while figure 4 displays changes for individual property crimes. Note, the ordering along the side of each panel will differ depending on which cities experience the largest changes in the specific crime rate.

The trends present in the FBI data hold when we compare the ten largest cities – the changes in California cities are of smaller magnitude than the changes in the other cities. In figure 2, we observe pronounced increases in overall violent crime rates for Houston and Phoenix, smaller increases in Dallas and San Antonio, and relatively small increases or decreases in violent crime for the remaining cities. The three large cities in California either experienced a small increase (San Diego) or decreases (Los Angeles and San Jose) in violent crime rates. For property crime rates, all cities with the exception of New York experienced overall declines.

Looking at specific violent offenses in Figure 3, we observe increases in murder rates greater than 5 additional murders per 100,000 between 2019 and 2020 for Chicago, Philadelphia, and Houston. Dallas and Phoenix experienced increases greater than 3 per 100,000. Los Angeles is ranked six out of the 10, followed by New York City. San Jose and San Diego experienced the smallest increases in murder rates among the 10 largest cities.

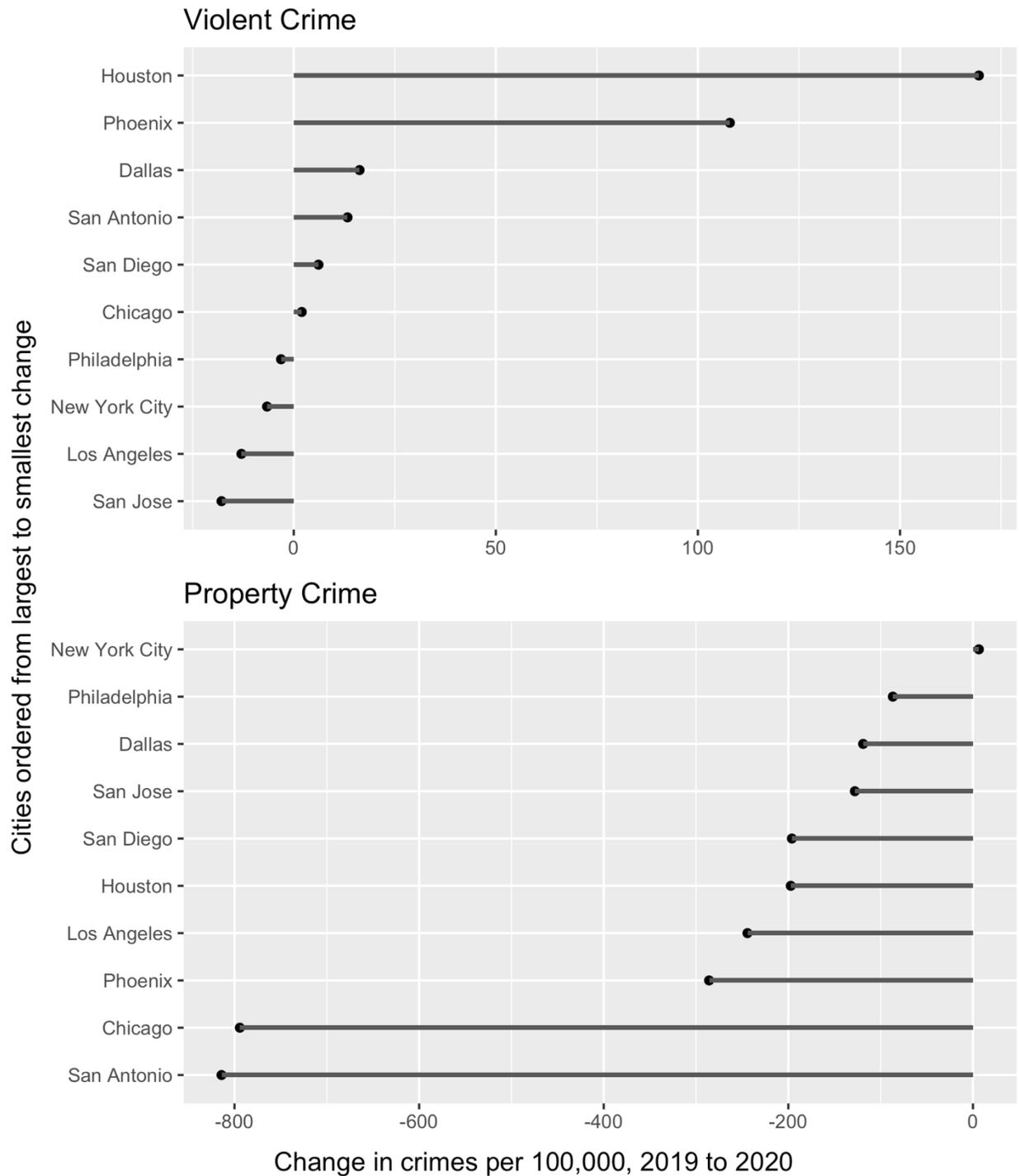
Rape also declined in all cities, while robbery declined in all cities with the exception of San Antonio and Phoenix. In contrast, aggravated assault increased in all large cities, with the largest increases occurring in the cities outside of California. In general, the patterns in Figure 3 suggest greater stability in crime rates between 2019 and 2020 for the three California cities relative to the largest cities outside the state.

Figure 4 presents comparable changes for property offenses by type. Between 2019 and 2020, burglary declined for all cities with the exception of New York and Philadelphia. The observed declines for Los Angeles, San Jose, and San Diego are somewhat smaller than in the other largest U.S. cities. Larceny declined in all cities, with the largest decreases occurring in Chicago, San Antonio, and Los Angeles.

Finally, motor vehicle theft increased in seven of the ten cities. While Philadelphia experienced the largest increase, the increases for Los Angeles and San Jose are second and third among the 10 largest cities in the country. San Diego actually experienced a small decline in motor vehicle theft and ranked seventh of 10.

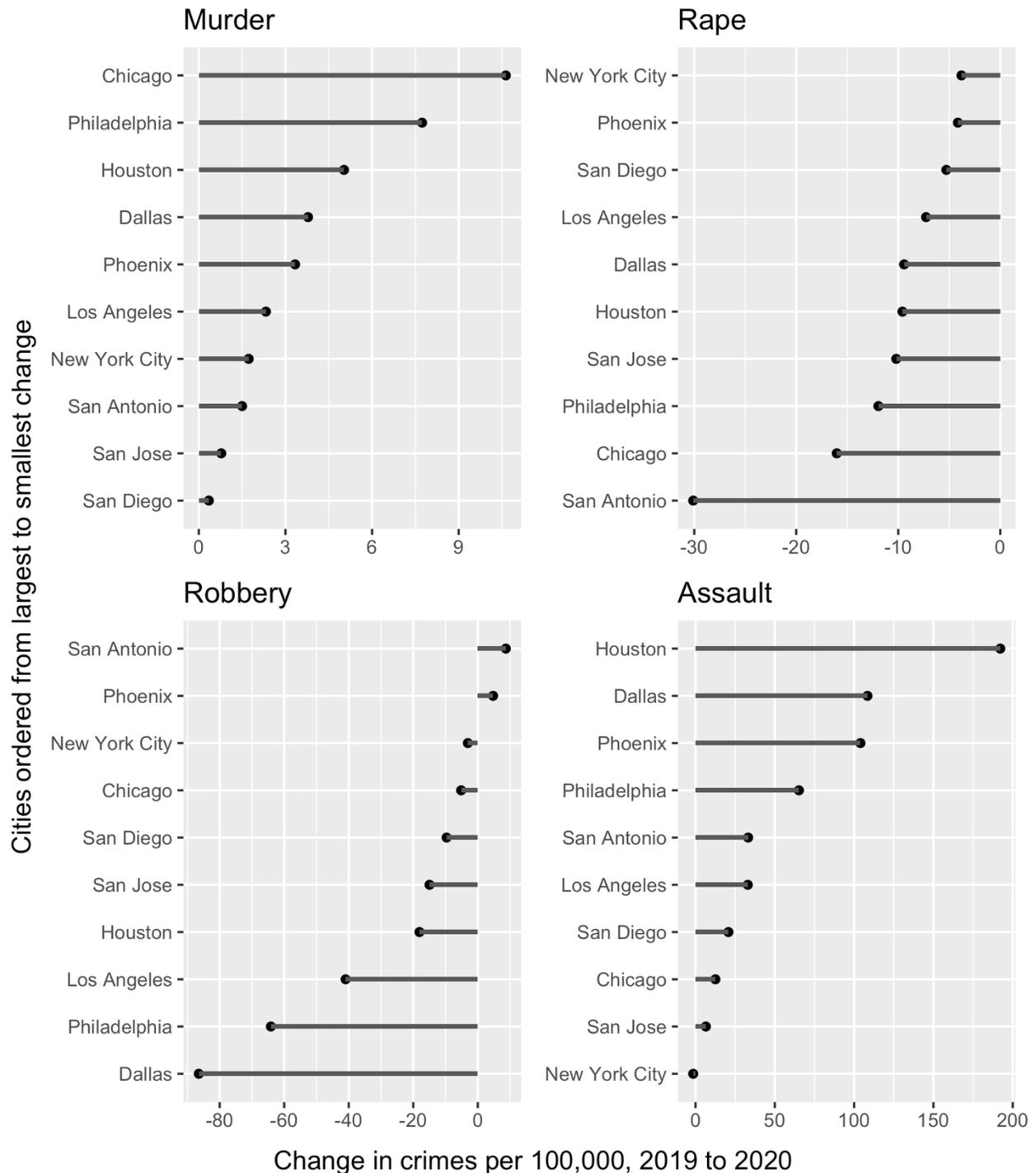
To summarize, preliminary data indicate that overall violent crime rates in large California cities declined slightly between 2019 and 2020 while property crime declined substantially. Behind these aggregates however, are important changes: homicide, aggravated assault, and motor vehicle theft increased, while rape, robbery, burglary, and larceny theft decreased. Comparisons to other large cities for which the FBI has released data, and to the ten largest cities in the country, reveal that the observed increases in murder and assault in California are relatively small while the increases in motor vehicle theft are relatively large.

Figure 2: Changes in Overall Violent and Property Crime Rates between 2019 and 2020 in the Ten Largest U.S. Cities



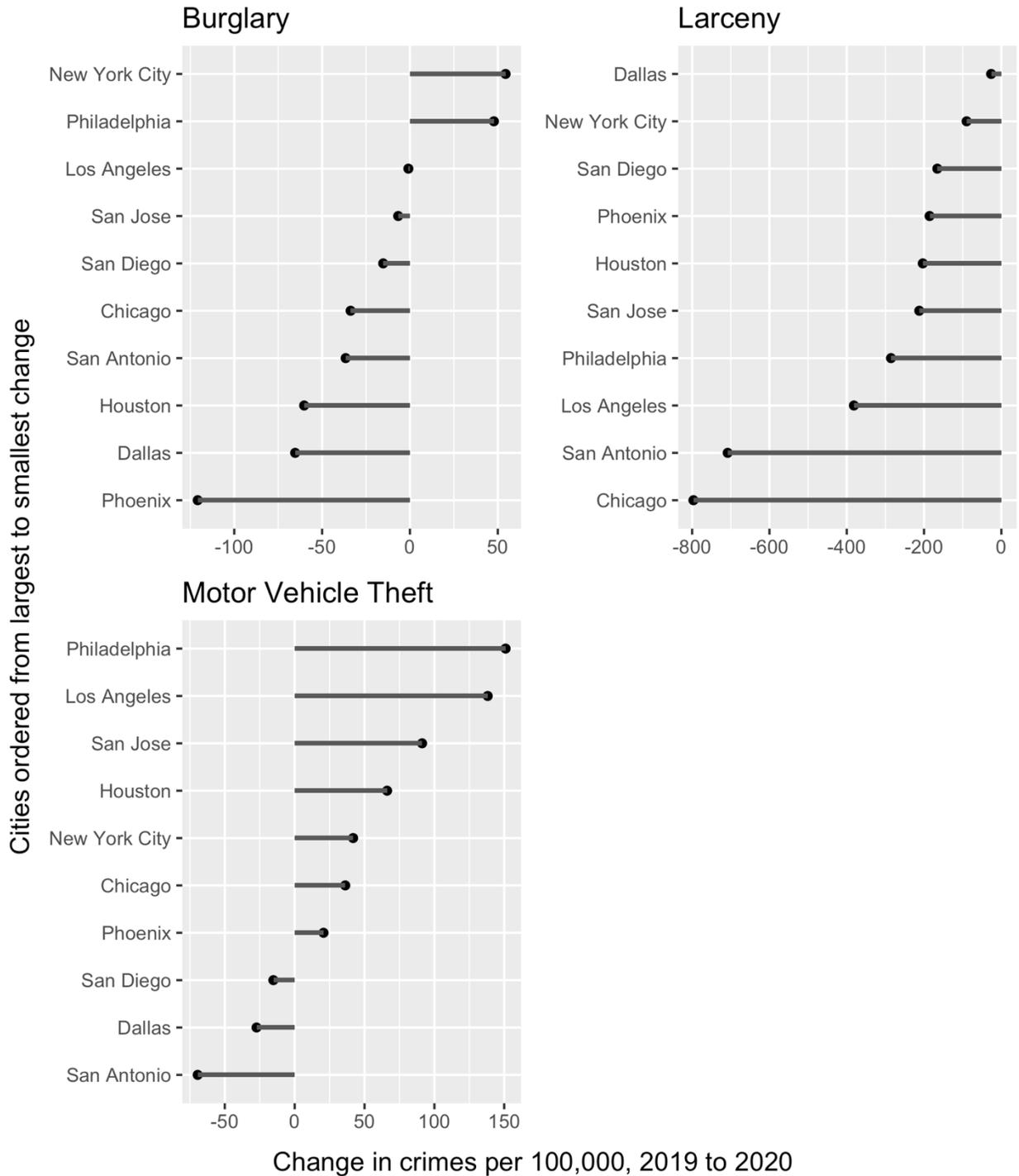
Source: FBI Uniform Crime Statistics data for 2019 and preliminary data for 2020 accessed through [FBI Data Explorer](#) for available cities, as well as local crime data for 2019 and 2020 collected directly from police department websites for cities not available in the FBI data (see footnote 9 for detailed source information).

Figure 3: Changes in Specific Violent Crime Rates between 2019 and 2020 in the Ten Largest U.S. Cities



Source: FBI Uniform Crime Statistics data for 2019 and preliminary data for 2020 accessed through [FBI Data Explorer](#) for available cities, as well as local crime data for 2019 and 2020 collected directly from police department websites for cities not available in the FBI data (see footnote 9 for detailed source information).

Figure 4: Changes in Specific Property Crime Rates between 2019 and 2020 in the Ten Largest U.S. Cities



Source: FBI Uniform Crime Statistics data for 2019 and preliminary data for 2020 accessed through [FBI Data Explorer](#) for available cities, as well as local crime data for 2019 and 2020 collected directly from police department websites for cities not available in the FBI data (see footnote 9 for detailed source information).

3. Analysis of Individual Cities in California

Is there variation in how crime rates changed between 2019 and 2020 among the 70 California cities? To explore whether there are any differences in cities within California, we present a series of data visualizations by city.

We begin in Figure 5 by plotting the 2020 overall crime rates against the 2019 crime rates for the 70 California cities included in the FBI data. Here, we describe the structure of the visualizations in Figure 5 in some detail to facilitate the interpretation of the remainder of the figures presented in this section. Focusing on the top visualization for violent crime, the 2020 crime rate is measured along the vertical axis and the 2019 crime rate is measured along the horizontal axis. Each red dot represents one California city (where we have labeled those cities where space permits), with the y and x coordinates for the dot giving us the 2020 and 2019 crime rate respectively. The diagonal black line shows the set of points where the 2020 crime rate equals the 2019 crime rate. A point above the line represents a city where the 2020 crime rate was higher than the 2019 crime, a point below the line represents a city where the 2020 crime rate was lower than 2019 crime rates, and points that lie on the line represent cities where there was no change between 2019 and 2020. Finally, the thick blue line fits a trend to the collection of data points. When the blue line lies above the black line, this suggests that crime was higher in 2020 relative to 2019, and the reverse when the blue line is below.

In general, violent crime was stable between 2019 and 2020. In Figure 5, the violent crime visualization reveals that the 70 California cities are evenly and tightly scattered around the line marking the points where 2020 crime rates equal 2019 crime rates (that is to say, the black diagonal line). In other words, while we see small increases and small decreases in violent crime rates, the overall pattern suggests that violent crime rates in 2020 are fairly similar to what we observe for these cities in 2019.¹⁰ Moreover, the fitted trend line (the thick blue line) basically lies on top of the black line.

Property crime rates fell the most among the cities with the highest property crime rates in 2019. For cities with property crime rates of roughly 2,500 incidents per 100,000 or less in 2019, the 2020 crime rates are fairly similar to 2019 crime rates (as can be seen by the co-occurrence of the fitted trend and the black diagonal line). On the other hand, cities with 2019 property crime rates greater than 2,500 incidents per 100,000 tend to lie below the black line (as does the fitted trend for these higher property crime cities), indicating a decline in property crime in 2020.

Figure 6 presents comparable visualizations for violent offenses by type. There are several notable patterns in these figures. First, for cities with relatively low murder rates (below 5 per 100,000) in 2019, the trend line suggests that 2020 murder rates are similar to 2019 murder rates. That being said, there are notable exceptions including Inglewood, Lancaster, and Los

¹⁰ Note, when averages for violent crime rates for 2019 and 2020 are calculated taking into account differences in population size across cities, we see small overall decline in violent crime rates (see Table 2).

Angeles (we will visualize ranked changes in murder rates with labels for all California cities shortly). Cities with relatively high murder rates in 2019 experienced more consistent increases, with the fitted trend line notably above the black diagonal line for cities with 2019 murder rates greater than 7.5 per 100,000. In other words, murder rates are most likely to have increased in cities with higher murder rates in 2019.

For rape and robbery, we observe fairly broad declines across California cities, with many of the dots marking individual cities lying below the diagonal black line indicating equal crime rates in 2019 and 2020. For aggravated assault, the small increase for the state overall appears to be driven by cities with relatively high aggravated assault rates in 2019 (for example, Vallejo, Oakland, Richmond, San Bernardino).

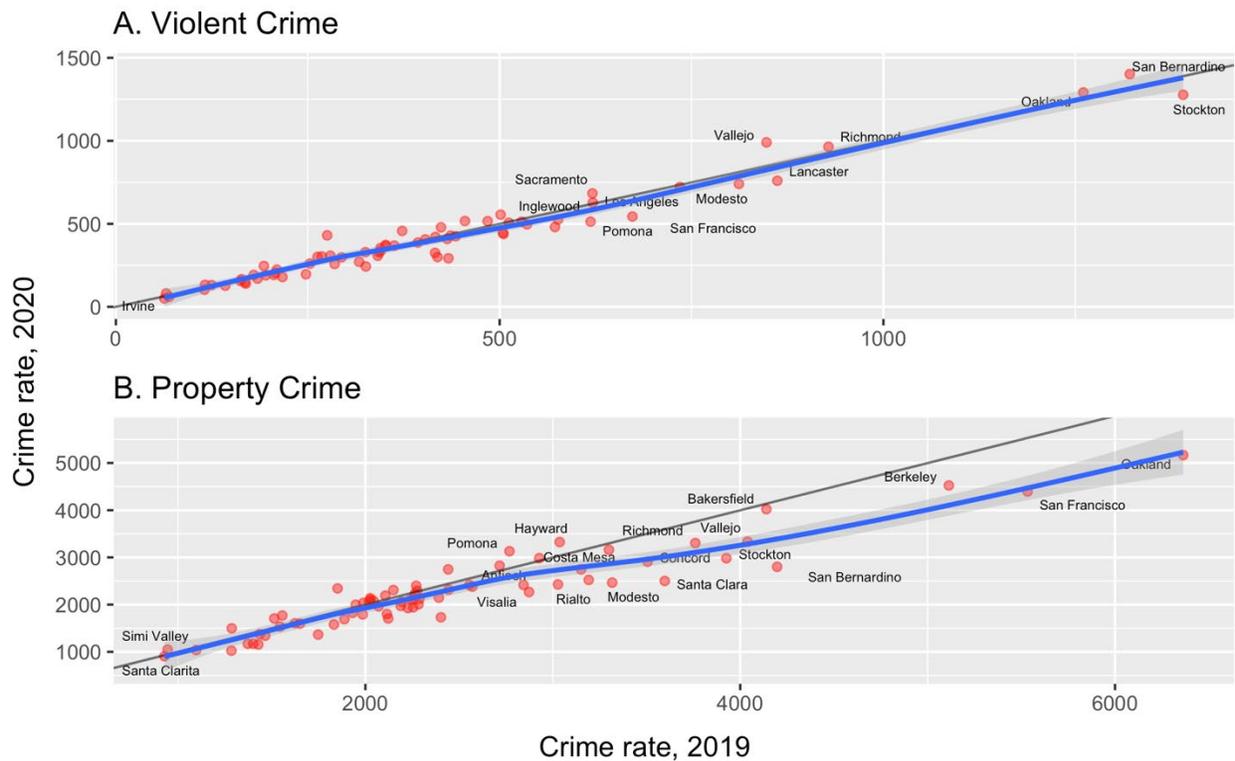
Figure 7 presents comparable visualizations for property offenses by type. For burglary and larceny, the data suggest stability in crime rates for cities with relatively low rates for these offenses in 2019, and large declines for cities with high levels of these offenses in 2019. Motor vehicle theft increased in most cities, with the largest increases occurring in Bay Area cities.

To explore these cross city differences further, Figures 8 through 11 present city-level changes for four specific offenses where we observe evidence of overall change: murder, robbery, larceny, and motor vehicle theft. For each of the 70 included California cities, the figures present the change in the crime rate between 2019 and 2020 after ordering cities from those with the largest increase to those with the smallest (and possibly negative) increase. Figure 8 reveals the largest increases in murder rates for Vallejo, Inglewood, and San Bernardino, and smaller yet sizable increase in cities such as Stockton, Oakland, and Lancaster. More cities experienced increases in murder rates than decreases. Note however that the largest cities in the state (Los Angeles, San Diego, San Jose, San Francisco) experienced much smaller changes in murder rates. Therefore the overall increase in the murder rate (accounting for differences in city population size) more closely reflects the changes for the larger cities rather than smaller cities with the largest observed increases.

Figures 9 and 10 reveal broad declines in robbery rates and larceny. While there are a few cities that experienced increases in these crimes, the overwhelming trends are declines in these two offenses. Bay Area cities (San Francisco, Oakland, Berkeley) experienced the largest declines.

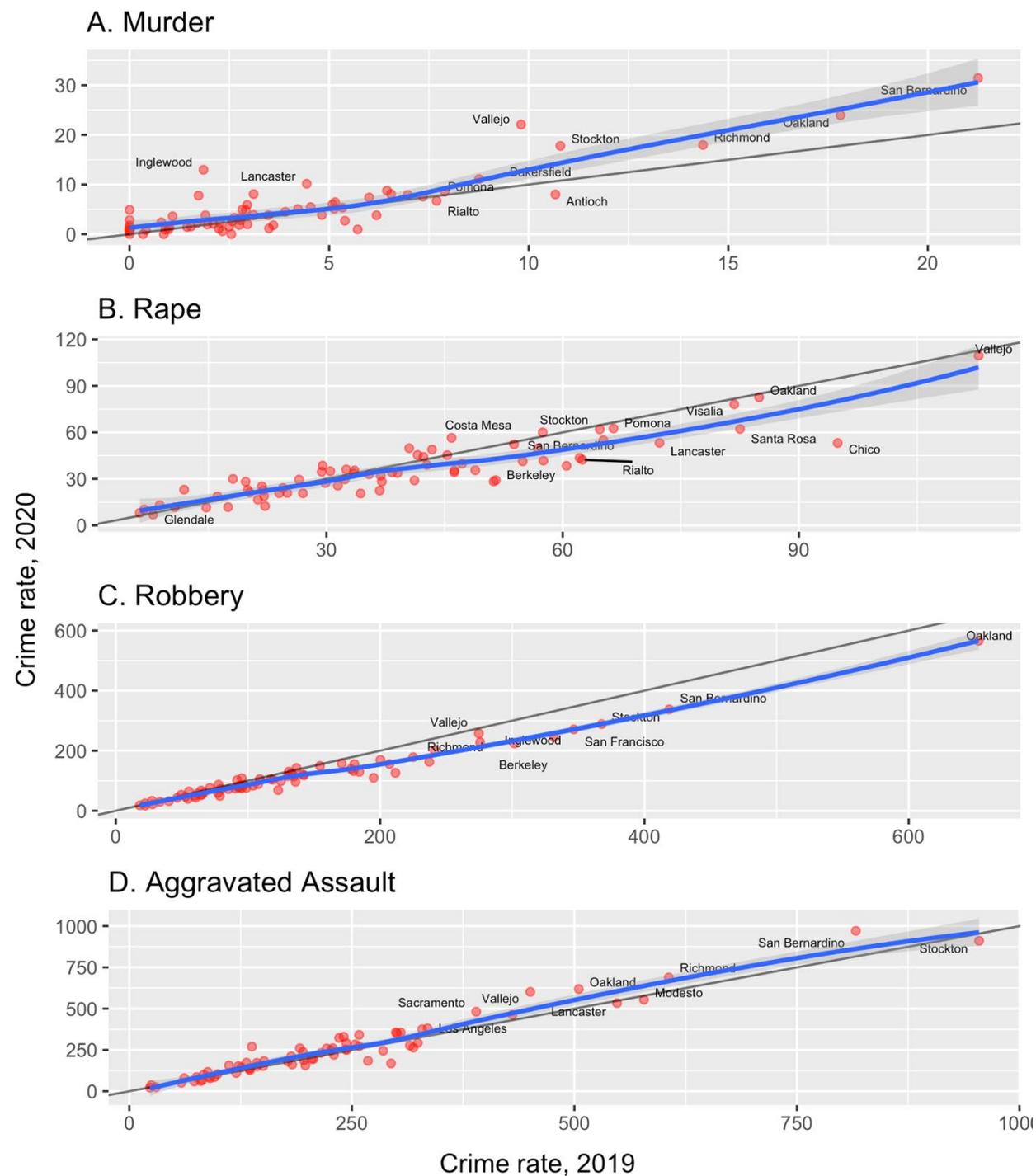
Finally, figure 11 displays city level changes in the motor vehicle theft rate. More cities experienced increases in motor vehicle theft than decreases. Bay Area cities, including Hayward, Oakland, Berkeley, Richmond, and San Francisco, were among the cities with the biggest increase in auto theft rates.

Figure 5: Scatter Plots of 2020 Crimes per 100,000 Against 2019 Crimes Per 100,000: California Cities with at least 100,000 Residents



Notes. The black line shows the 45-degree line (points where 2020 crime rates equal 2019 crime rates). The blue line shows the smoothed relationship between 2020 crime rates and 2019 crime rates.
 Source: FBI Uniform Crime Statistics data for 2019 and preliminary data for 2020 accessed through [FBI Data Explorer](#).

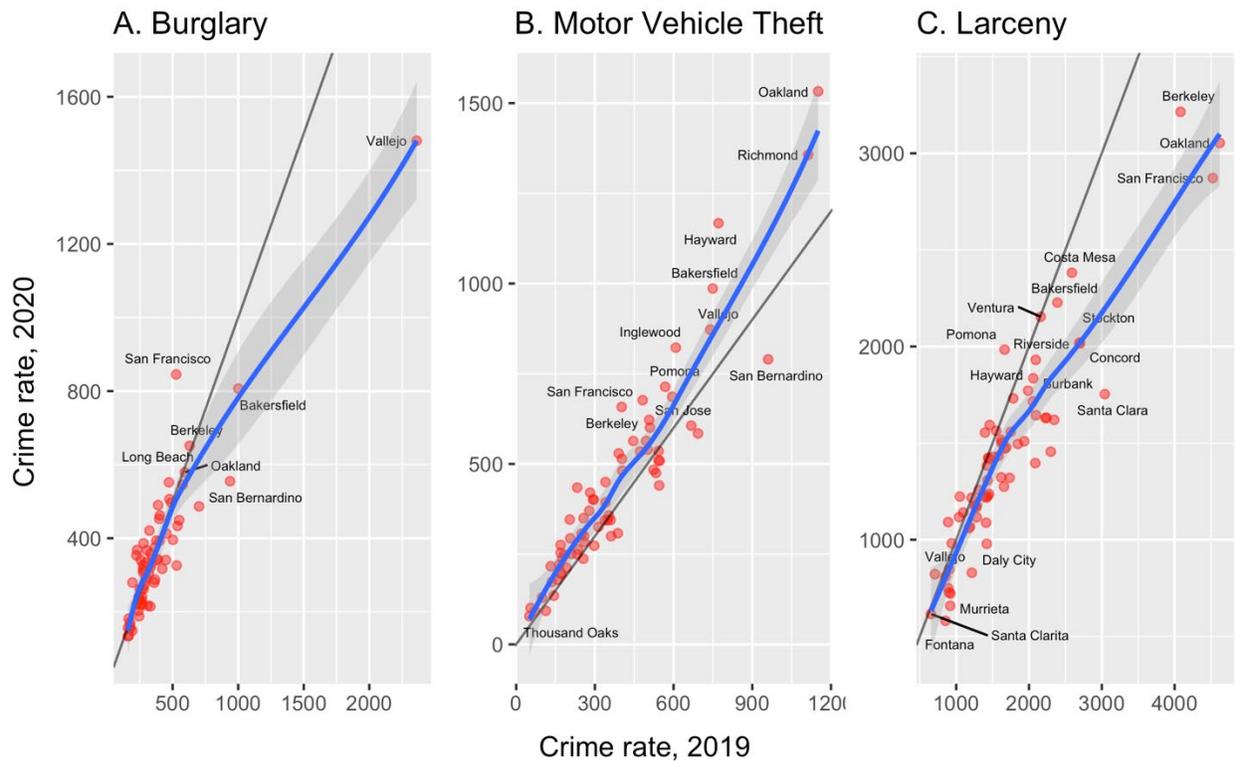
Figure 6: Scatter Plots of 2020 Crimes per 100,000 Against 2019 Crimes Per 100,000 for Individual Part 1 Violent Offenses: California Cities with at least 100,000 Residents



Notes. The black line shows the 45-degree line (points where 2020 crime rates equal 2019 crime rates). The blue line shows the smoothed relationship between 2020 crime rates and 2019 crime rates.

Source: FBI Uniform Crime Statistics data for 2019 and preliminary data for 2020 accessed through [FBI Data Explorer](#).

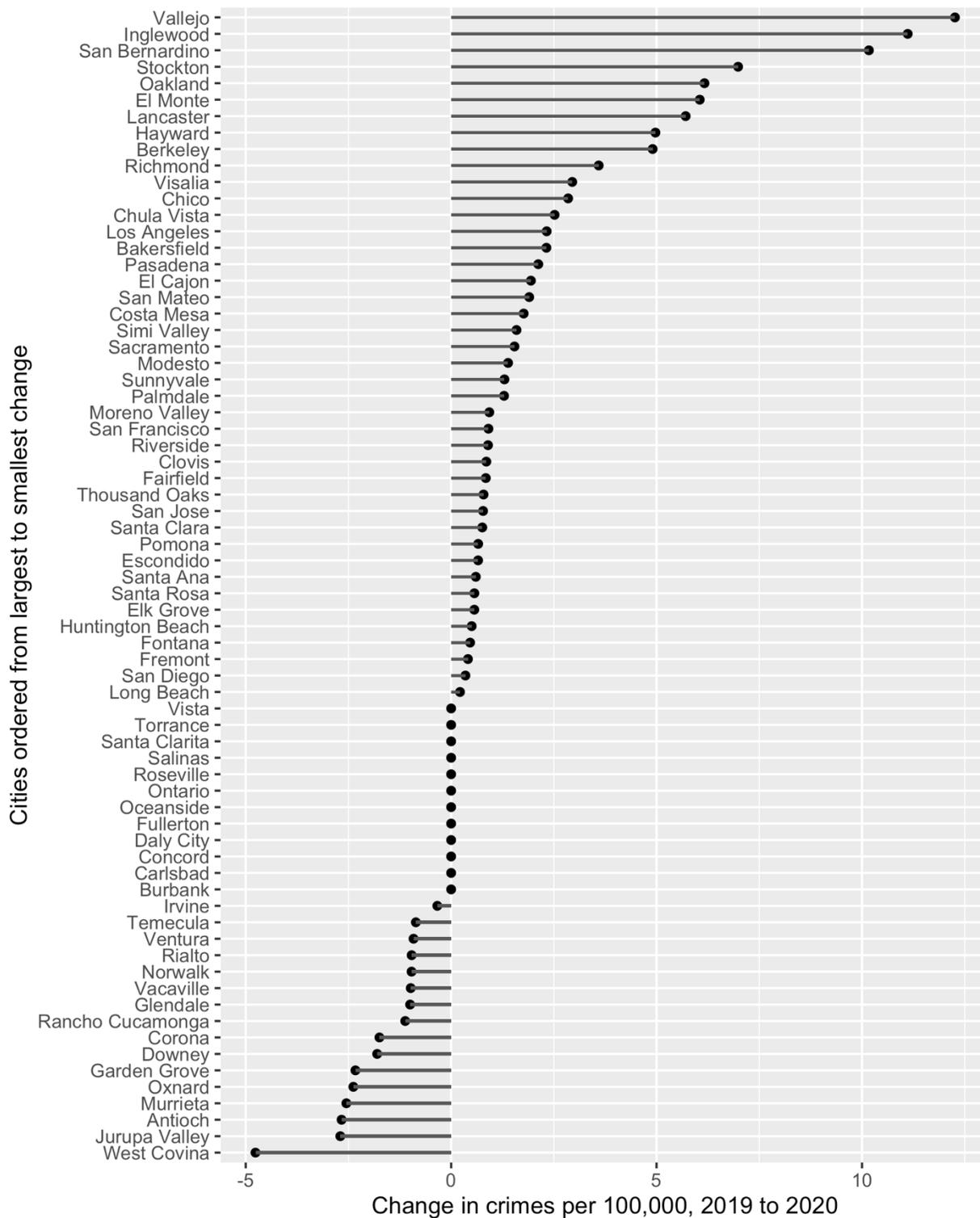
Figure 7: Scatter Plots of 2020 Crimes per 100,000 Against 2019 Crimes Per 100,000 for Individual Part 1 Property Offenses: California Cities with at least 100,000 Residents



Notes. The black line shows the 45-degree line (points where 2020 crime rates equal 2019 crime rates). The blue line shows the smoothed relationship between 2020 crime rates and 2019 crime rates.

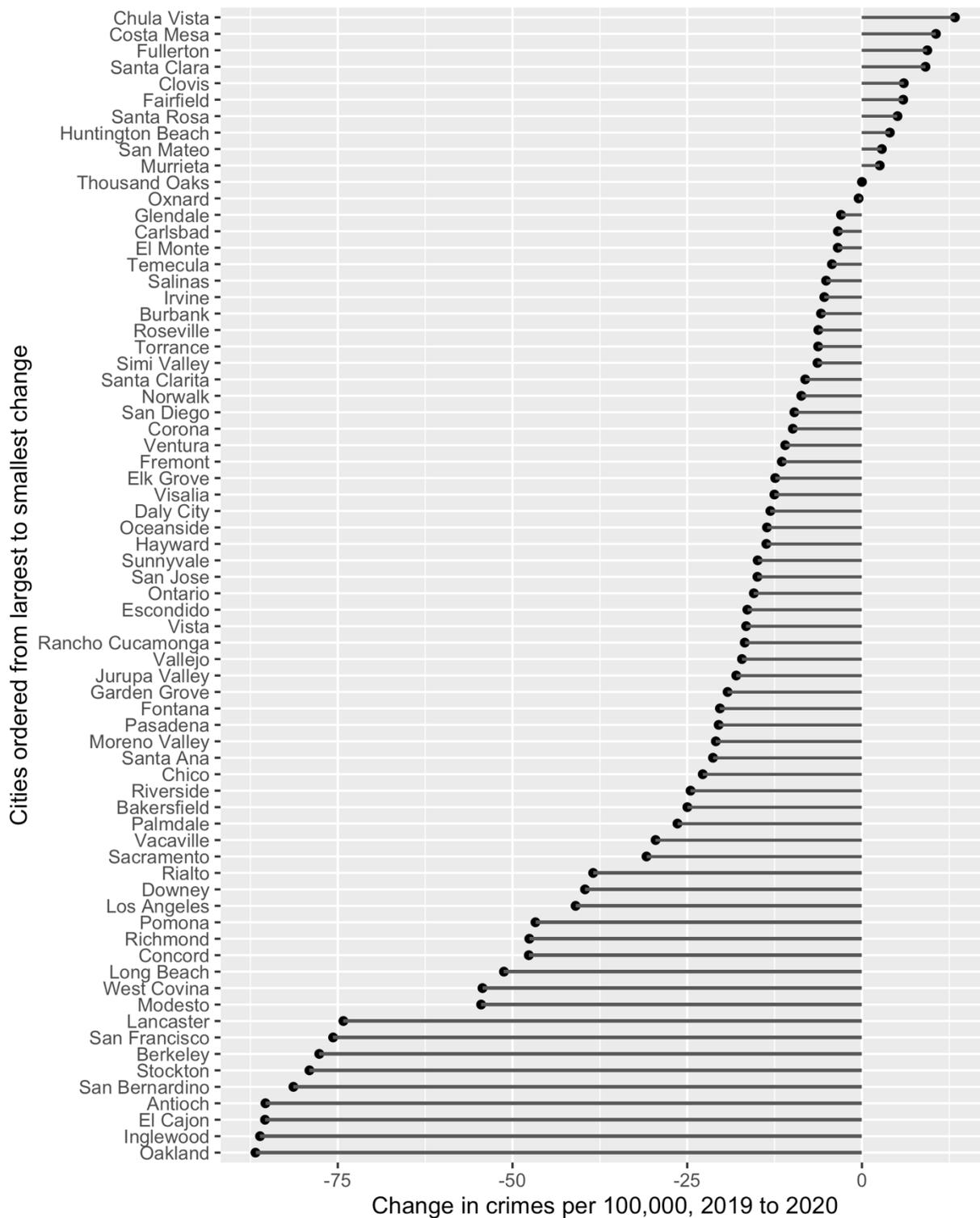
Source: FBI Uniform Crime Statistics data for 2019 and preliminary data for 2020 accessed through [FBI Data Explorer](#).

Figure 8: Change in Murders per 100,000 Residents by City, 2019 to 2020



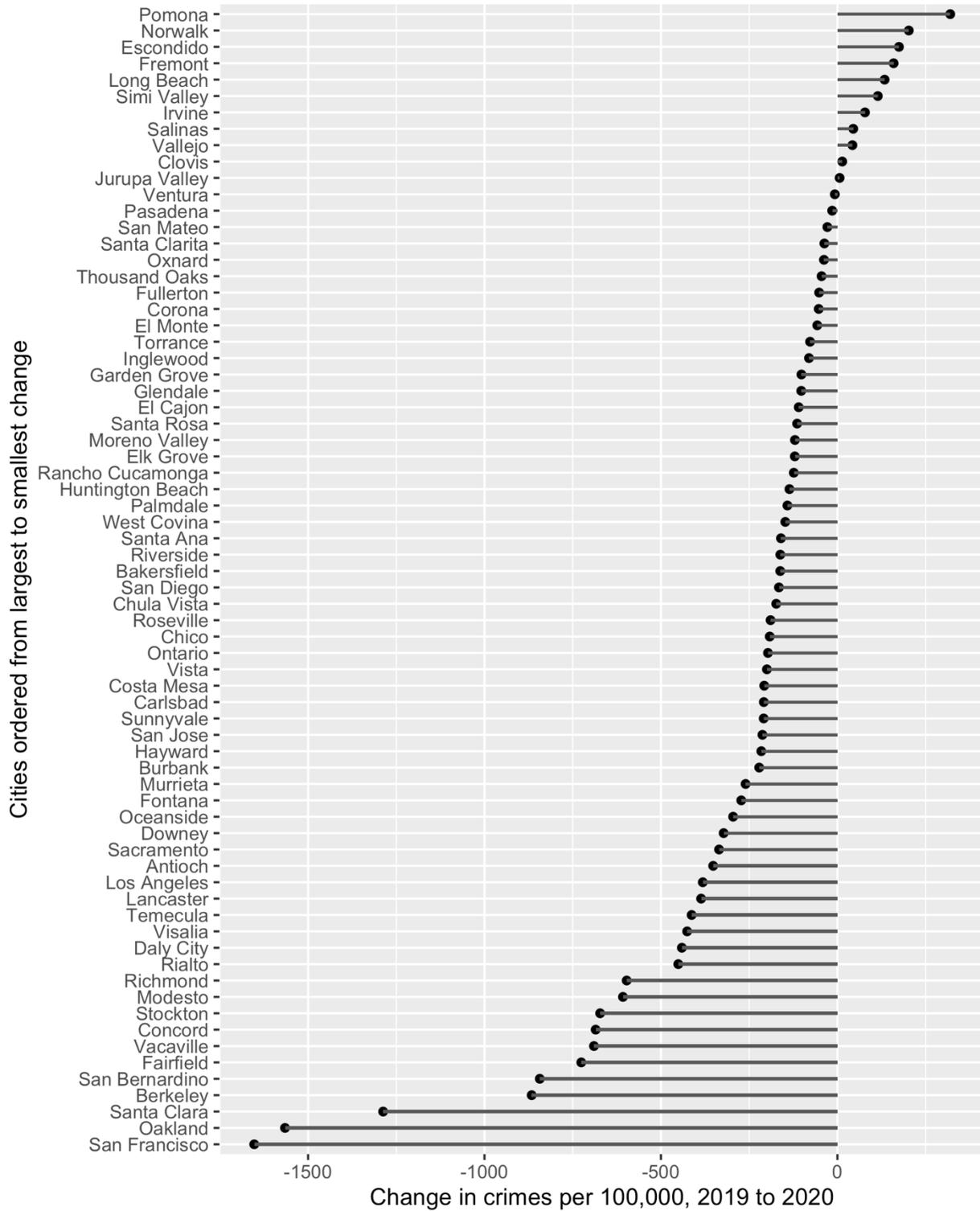
Source: FBI Uniform Crime Statistics data for 2019 and preliminary data for 2020 accessed through [FBI Data Explorer](#).

Figure 9: Change in Robberies per 100,000 Residents by City, 2019 to 2020



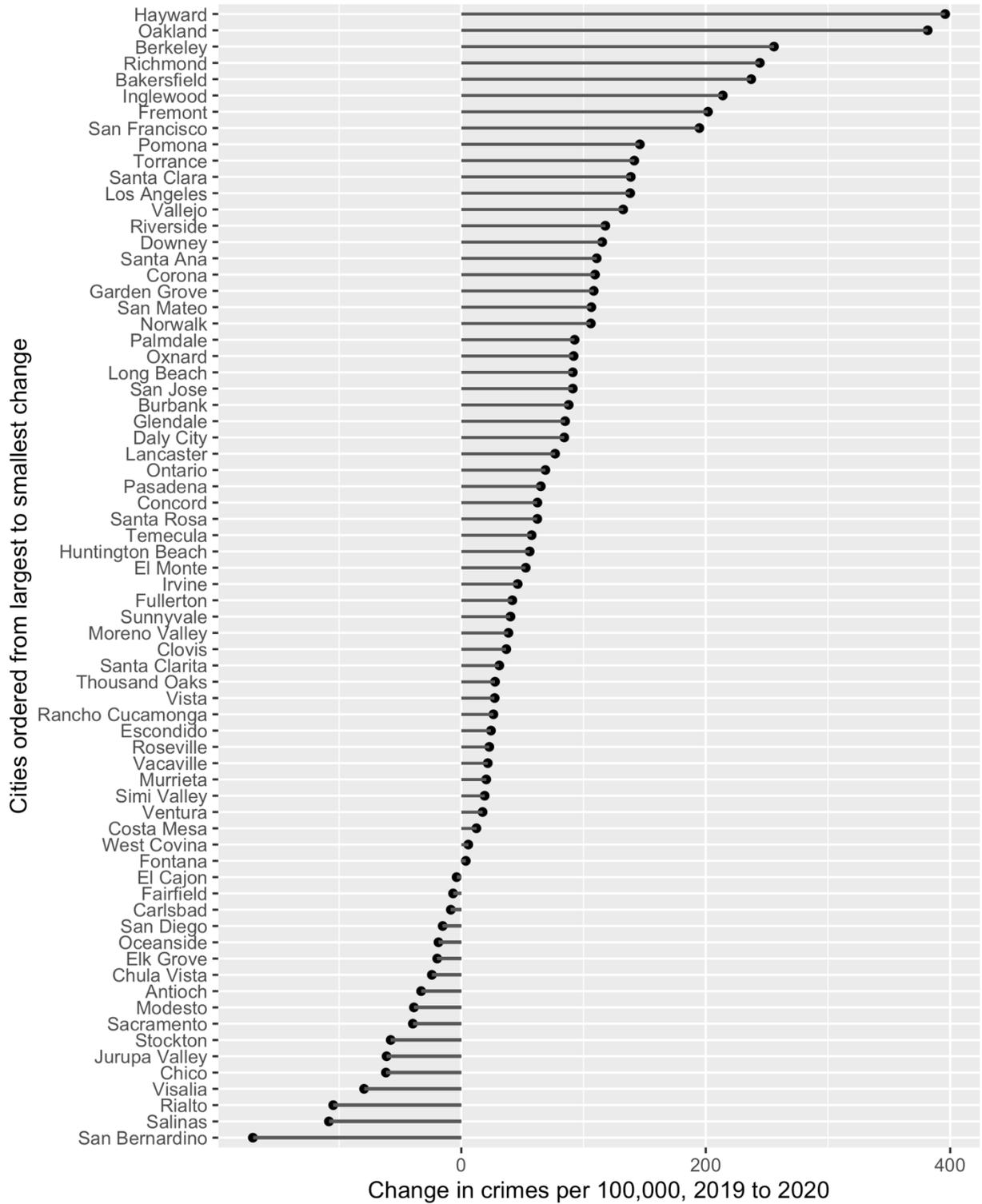
Source: FBI Uniform Crime Statistics data for 2019 and preliminary data for 2020 accessed through [FBI Data Explorer](#).

Figure 10: Change in Larceny per 100,000 Residents by City, 2019 to 2020



Source: FBI Uniform Crime Statistics data for 2019 and preliminary data for 2020 accessed through [FBI Data Explorer](#).

Figure 11: Change in Motor Vehicle Thefts per 100,000 Residents by City, 2019 to 2020



Source: FBI Uniform Crime Statistics data for 2019 and preliminary data for 2020 accessed through [FBI Data Explorer](#).

Comparable city-level analysis incorporating the remainder of the FBI data

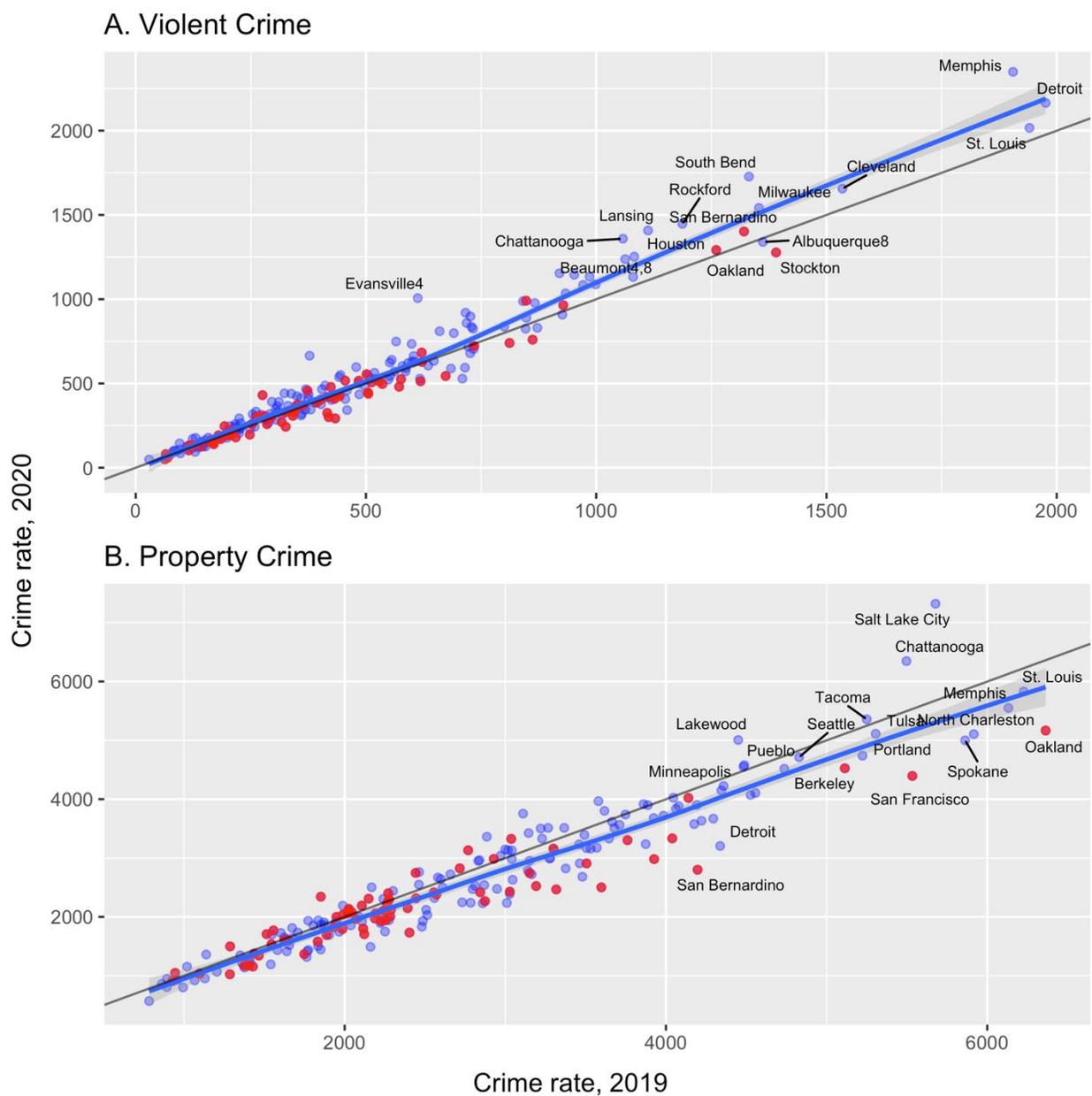
We began our analysis by comparing changes in overall crime for the included California cities to changes occurring for the cities in the FBI data from other states. We can extend our analysis to incorporate these other cities and visually depict the experience of California cities to the larger set included in the FBI report. To do so, we revisit our visualization that plots 2020 crime rates against 2019 crime rates, adding all other U.S. cities for which we have data from the FBI to the plots. Figure 12 provides these figures for overall violent and property crime. The California cities are marked with red circles while cities outside of California are marked with blue circles. Again, we include a diagonal black line showing coordinates where the 2020 crime rate equals the 2019 crime rate and also fit trends to the overall plot.

Consistent with the previous findings for violent crime, California cities are tightly distributed around the black diagonal line, indicating that while overall violent crime rates increase in some cities and decline in others, the general picture is that violent crime doesn't change that much. Still, several high-crime cities outside of California (for example, Milwaukee, South Bend, Chattanooga, St. Louis, Detroit) experienced overall increases in violent crime, with the trend line fit through these points rising above the diagonal. Interestingly, few California cities experienced the high violent crime rates observed for some midsize cities in the Midwest and South depicted in Figure 12. For property crime, the patterns for California cities and other cities are similar, with declines in property crime overall, with a few exceptions (see Salt Lake City).

Figure 13 reproduces the figures for specific violent crime offense types. Again, the red circles represent California cities while the blue circles represent cities outside of the state. The patterns in both sets of cities are similar, with some difference worth further discussion. We see increases in murder rates across most cities (as can be seen by the blue trend line that mostly lies above the black diagonal), and also in the cities with the highest murder rates in 2019, such as St. Louis, Memphis, and Detroit. Rape and robbery declined in both California cities and non-California cities. The increases in aggravated assault appear to be particularly large in cities outside of the state with high baseline assault rates in 2019.

Finally, figure 14 presents a comparable analysis for individual property crime offenses. The patterns observed for cities outside California generally look similar to the patterns observed in California cities. Burglary and larceny declined and motor vehicle theft increased across all cities. There are some California outliers for several of these offenses, with particularly large declines in larceny theft in some California cities (see Oakland, Berkeley, San Francisco and several others that lie well below the larceny-theft trend line), and increases in large increases in motor vehicle theft in Oakland, Richmond, and Hayward.

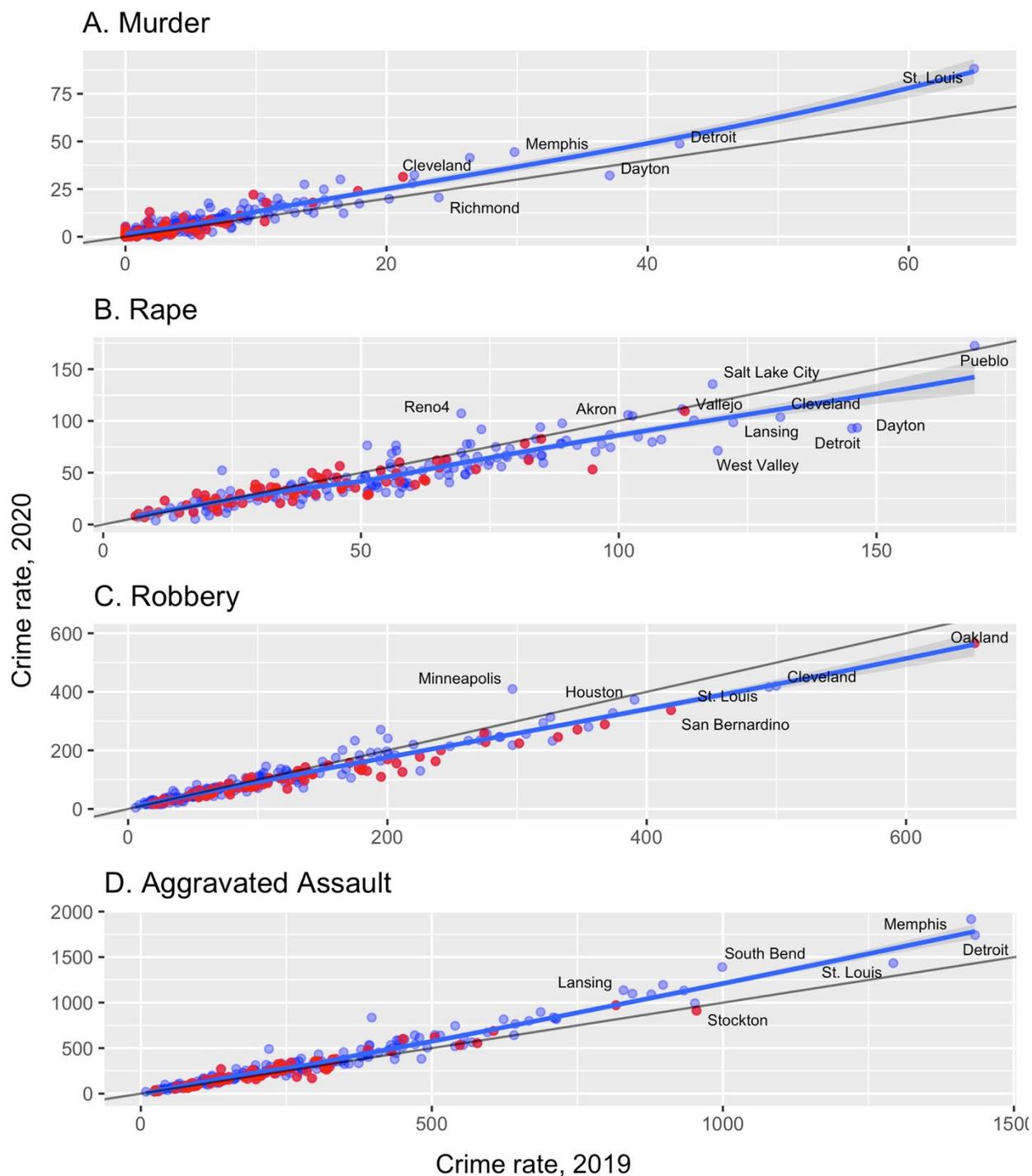
Figure 12: Scatter Plots of 2020 Crimes per 100,000 Against 2019 Crimes Per 100,000: California Cities with at least than 100,000 Residents (Red Dots) and Non-California Cities with at least than 100,000 Residents (Blue Dots)



Notes. The black line shows the 45-degree line (points where 2020 crime rates equal 2019 crime rates). The blue line shows the smoothed relationship between 2020 crime rates and 2019 crime rates.

Source: FBI Uniform Crime Statistics data for 2019 and preliminary data for 2020 accessed through [FBI Data Explorer](#).

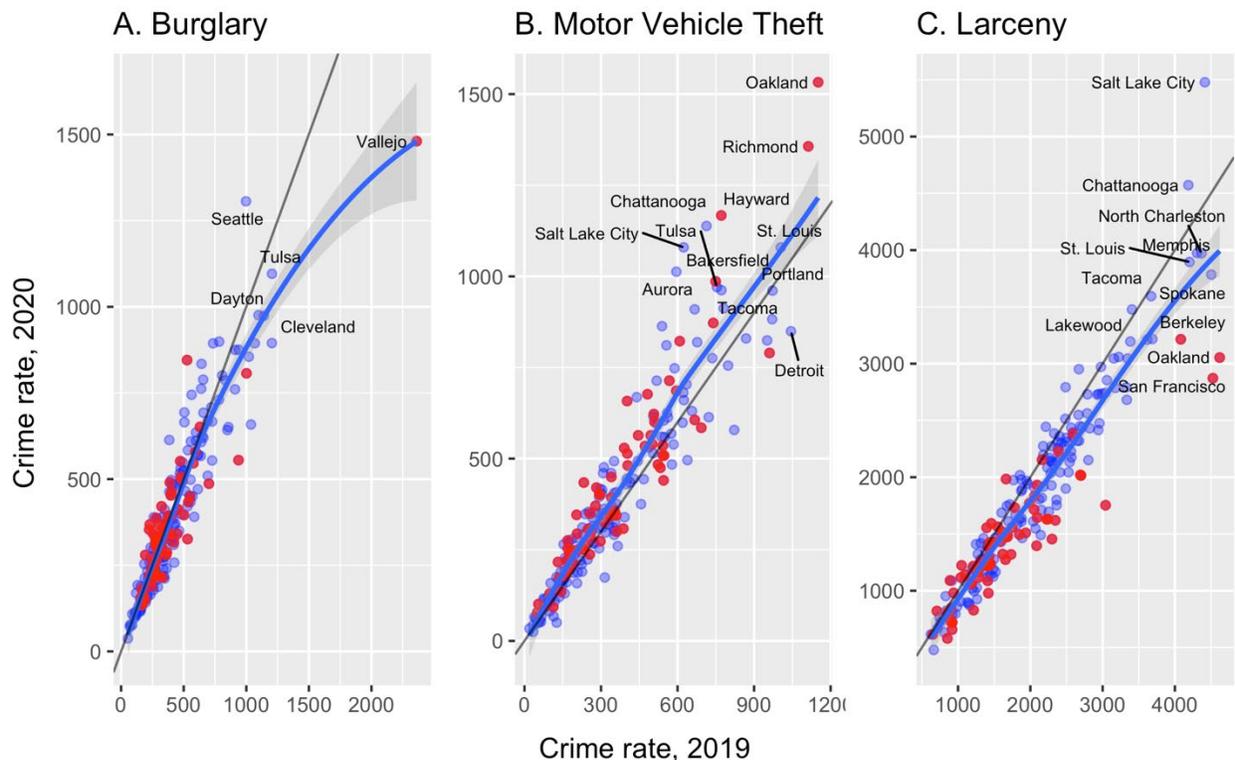
Figure 13: Scatter Plots of 2020 Crimes per 100,000 Against 2019 Crimes Per 100,000 for Individual Part 1 Violent Offenses: California Cities with at least 100,000 Residents (Red Dots) and Non-California Cities with at least 100,000 Residents (Blue Dots)



Notes. The black line shows the 45-degree line (points where 2020 crime rates equal 2019 crime rates). The blue line shows the smoothed relationship between 2020 crime rates and 2019 crime rates.

Source: FBI Uniform Crime Statistics data for 2019 and preliminary data for 2020 accessed through [FBI Data Explorer](#).

Figure 14: Scatter Plots of 2020 Crimes per 100,000 Against 2019 Crimes Per 100,000 for Individual Part 1 Property Offenses: California Cities with at least than 100,000 Residents (Red Dots) and Non-California Cities with at least than 100,000 Residents (Blue Dots)



Notes. The black line shows the 45-degree line (points where 2020 crime rates equal 2019 crime rates). The blue line shows the smoothed relationship between 2020 crime rates and 2019 crime rates.

Source: FBI Uniform Crime Statistics data for 2019 and preliminary data for 2020 accessed through [FBI Data Explorer](#).

4. Exploring the timing of the crime change with incident level data from Los Angeles

It is clear that the volume and composition of crime changed during the pandemic, but the reasons for these changes are less clear. Many have speculated that reduced social interactions associated with stay-at-home orders likely account for the declines in offenses such as robbery, rape, burglary, and larceny. The increase in motor vehicle theft is puzzling, given the decline in driving and traffic volume. It may be the case that people's cars are safer parked at work than at home, and thus the reduction in commuting increased the risk exposure of auto owners. It also may be that the reduction in driving has simply increased the time that a car is subjected to the risk of being stolen. Alternatively, as speculated by some in the press, the change in daily routines may have caused greater forgetfulness regarding locking car doors and removing key fobs from cars with keyless ignition systems. Similarly, increases in home deliveries and cars left idling outside and at higher risk of theft may contribute to the change.

Most troubling is the widespread increase in murder rates. The FBI's quarterly data include nationwide estimates and estimates for four broad regions of the change in crime rates between 2019 and 2020 (though state level estimates are not yet available). For the nation as a whole, murder rates increased by 24.7 percent. By broad region, murder rates increased by 25.2 percent in the Northeast, by 30.9 percent in the Midwest, by 20.8 percent in the South, and by 26.3 percent in Western states.¹¹ Prior analysis by Rosenfeld, Abt and Lopez (2021)¹² documents the widespread increases in murder rates across cities and explores the factors that correlated with the size of the murder rate increase. In a multivariate analysis of cross-city differences, the authors find that increases are smaller in cities where a greater proportion of the population increased time at home due to the pandemic, and larger in cities with proportionally larger socioeconomically disadvantaged resident populations. The authors also note the timing of the change in murder in the 30 cities they study. They find initial suppression of murder rates with the stay-at-home orders, but increases following the summer protests associated with the death at the hands of police officers of George Floyd; increases that have yet to recede.

The authors also note the increase in murder rates in 2016 following the killing of Michael Brown in Ferguson, Missouri in 2016. Social scientists as well as policy makers are currently actively debating and researching the effects of such high-profile incidents on violent crime, sometimes referred to as the "Ferguson effect". Rosenfeld and colleagues offer two avenues through which such an effect may operate. First, high profile incidents may lead to "de-policing," whereby police departments scale back proactive policing efforts due to public scrutiny. Second, high profile incidents may delegitimize police in some communities, reducing cooperation and increasing the likelihood that conflict is settled by interpersonal violence.

¹¹ See FBI quarterly reports Table 2.

¹² See Rosenfeld, Richard; Abt, Thomas and Ernesto Lopez (2021), "[Pandemic, Social Unrest and Crime in U.S. Cities](#)," Council on Criminal Justice, Washington, D.C.

Beyond policing, however, the pandemic interrupted so many aspects of our daily lives that may have contributed to increases in interpersonal violence. Youth who would normally be in school were not. Large declines in social activity likely reduced the numbers of potential witnesses and observers that may have otherwise deterred violence. Many people lost their jobs and experience financial hardship. Finally, local programs aimed at interrupting violence such as Oakland Unite’s gun-violence response strategy that often entail intensive interpersonal services and violence-interruption efforts must certainly have been impacted by pandemic-related restrictions on social interactions.

While it is likely too early to tell the precise reasons driving these recent changes, we can visibly explore the timing of the crime change using incident-level data for the largest city in California. Specifically, we use crime reports posted by the Los Angeles Police Department to tabulate daily crime totals¹³ and assess how crime totals behave around two key dates: the March 19, 2020 implementation of California’s stay-at-home order and May 25, 2020, the day that George Floyd was killed sparking massive protests in Los Angeles and across the country.

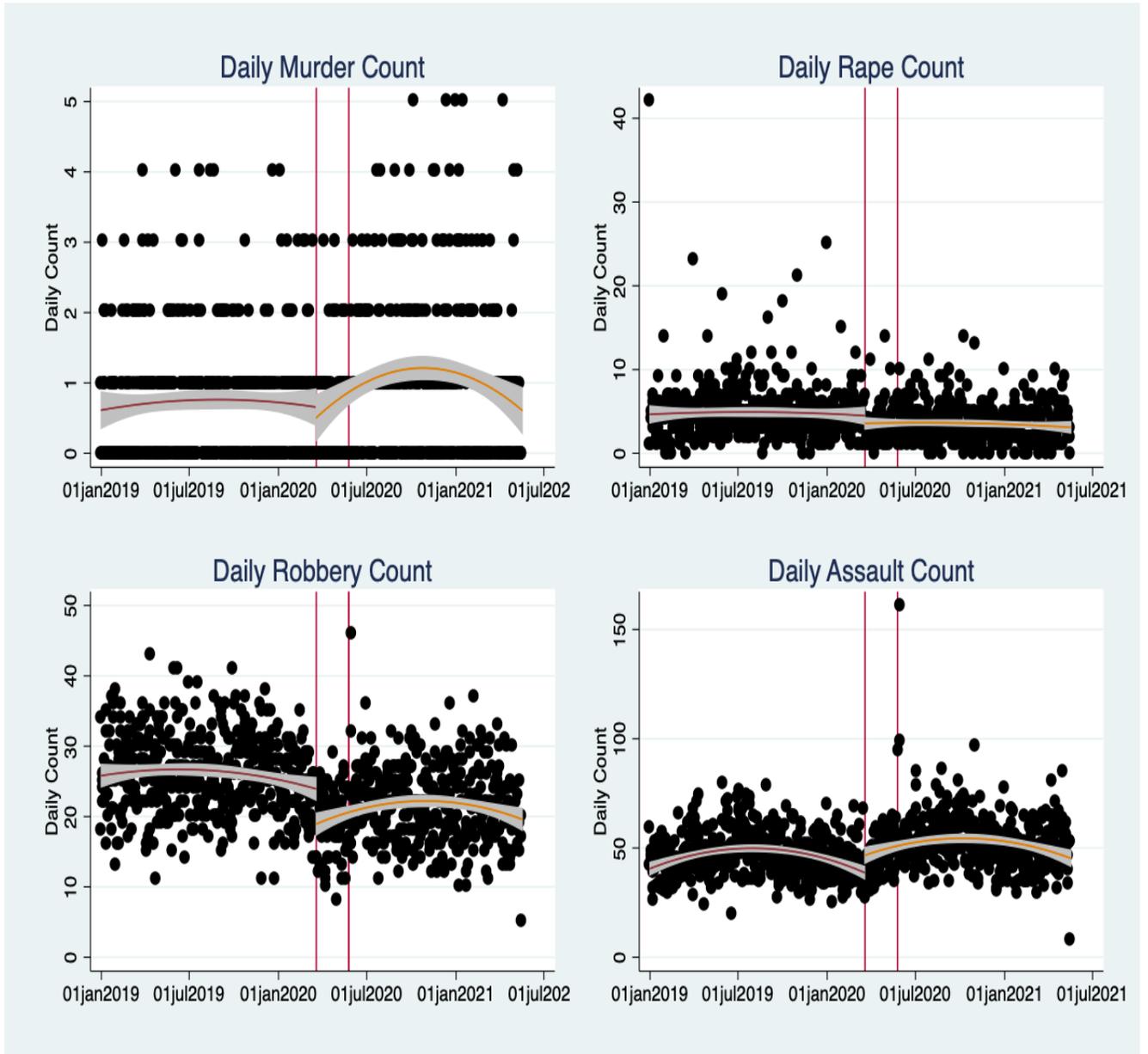
Figure 15 visibly displays daily crime incidents for individual violent offense categories for each day between January 1, 2019 and May 25, 2021. Each dot marks the crime total for a specific day. The two red lines indicate March 19, 2020 and May 25, 2020. The plots also include trend lines fit to each side of March 19, 2020 to assess whether there are visible breaks in trends associated with the stay-at-home order.¹⁴ Beginning with the plot for daily murder counts, we observe that the murder increase does not coincide with the stay-at-home order. In fact, daily murder incidents appear to be lower in the months immediately following the shutdown, but by summer 2020, daily murders appear to increase to a higher level that did not recede in the fall. For rape and robbery, there are visible breaks coinciding with the stay-at-home order, with lower daily counts after the shutdown than before. Daily assaults also appear to increase with this official marker of the onset of the pandemic.

Figure 16 presents similar visualization for individual property offenses in Los Angeles. There are no visible pre-post shutdown changes in daily burglary counts. In addition, while there are spikes in daily burglaries in the first few days after May 25, 2020, these increases are short-lived. There is a discrete decline in daily counts of larceny after March 19, 2020, while for motor vehicle theft there is a discrete increase after March 19th. For these two offenses there are no apparent long-term increases associated with May 25, 2020 and the aftermath.

¹³ Here we simply look at daily counts of crime and don’t normalize by population. Given that we look at a two-year window where population is roughly stable and make observations about changes occurring at high frequency, a focus on counts is justified.

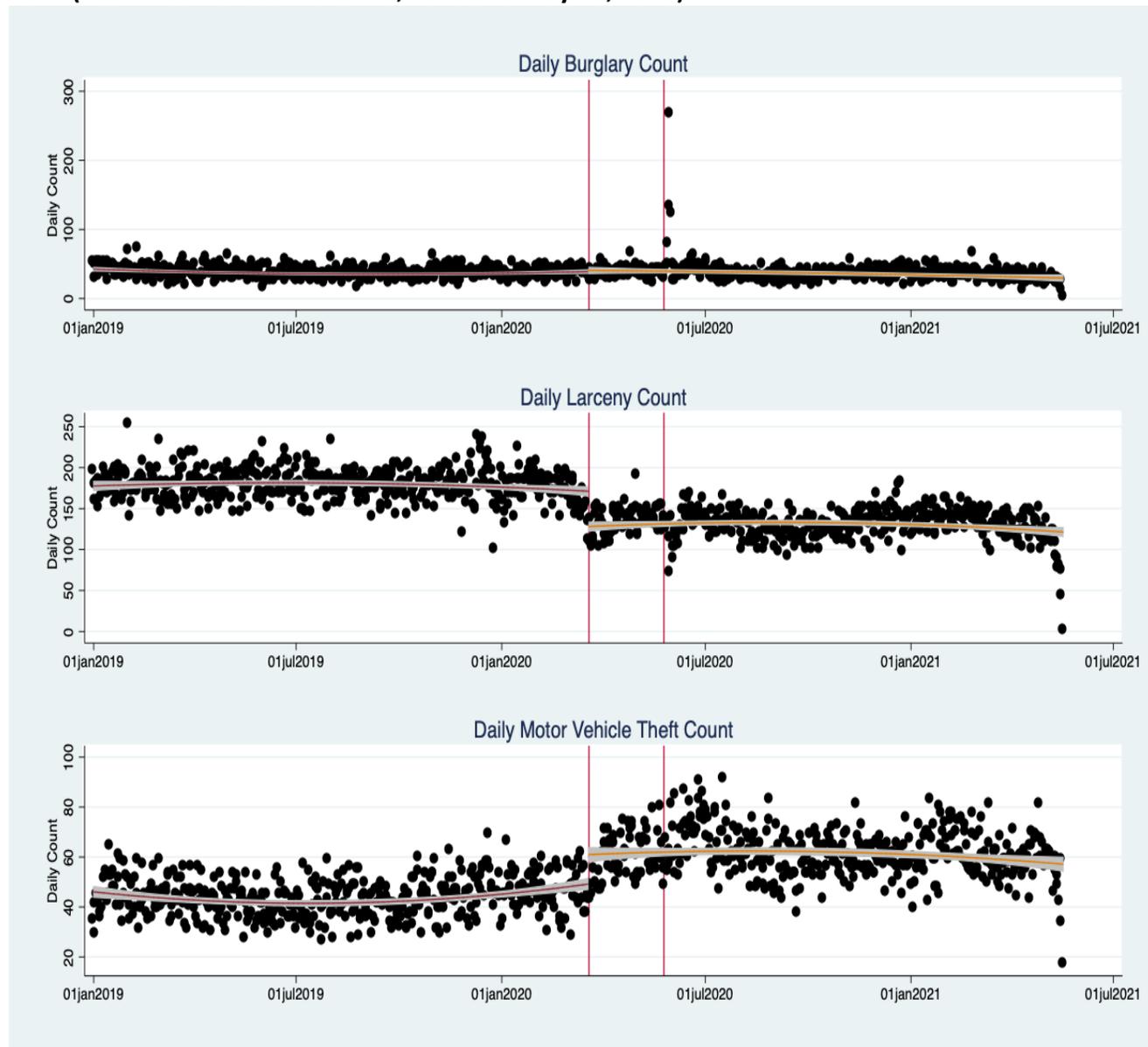
¹⁴ The trends are quadratic regressions that fit the scatter plots on either side of March, 19 2020. The grey bands show the confidence intervals.

Figure 15: Daily Violent Offense Count in Los Angeles from January 1, 2019 through May 17, 2021 (Red Lines Denote March 19, 2020 and May 25, 2020)



Source: Crime data for 2019 and 2020 accessed directly through the Los Angeles police department website.

Figure 16: Daily Property Offense Count in Los Angeles from January 1, 2019 through May 17, 2021 (Red Lines Denote March 19, 2020 and May 25, 2020)



Source: Crime data for 2019 and 2020 accessed directly through the Los Angeles police department website.