



PPIC

PUBLIC POLICY
INSTITUTE OF CALIFORNIA

Assessing the Impact of COVID-19 on Arrests in California

Technical Appendices

CONTENTS

Appendix A. Supplemental Tables and Figures

Appendix B. Data Details and Cleaning

Deepak Premkumar, Thomas Sloan, Magnus Lofstrom, and Joseph Hayes

Appendix A. Supplemental Tables and Figures

TABLE A1

Timeline of criminal justice events and COVID-19 in California, 2018-2021

Date	Event
January 25, 2018	San Francisco Superior Court implements ability-to-pay bail requirements
August 28, 2018	Governor Brown signs SB 10, reforming monetary bail in California
January 16, 2019	Proposition 25 qualifies for the 2020 ballot and the Judicial Council of California pauses the implementation of SB 10
February 10, 2020	San Francisco District Attorney implements non-monetary bail policy
February 2020	California jail population stands at 72,000
March 4, 2020	Governor Newsom declares state of emergency in California
March 16, 2020	Bay Area counties issue coordinated shelter-in-place order LA County Sheriff announces cite-and-release policy for lower-level offenses
March 19, 2020	Governor Newsom issues statewide shelter-in-place order Alameda County announces the release of 314 jail inmates
March 24, 2020	LA County announces the release of 1,700 jail inmates (NBC 2020)
March 25, 2020	Alameda County Superior Court issues cite-and-release authorization to local law enforcement for lower-level offenses
March 26, 2020	LA County Superior Court adopts temporary zero-bail order
March 31, 2020	CDCR announces the early release to parole of 3,500 prison inmates (CDCR 2020b) California jail population falls to 68,000
April 1, 2020	San Diego County approves the early release of 580 jail inmates Santa Clara County Superior Court issues cite-and-release authorization to local law enforcement for lower-level offenses
April 13, 2020	Judicial Council zero-bail rule takes effect
April 30, 2020	California jail population decrease continues, reaching 51,000
May 25, 2020	George Floyd murdered in Minneapolis
June 20, 2020	Judicial Council zero-bail rule expires, 31 counties keep zero bail in place
November 6, 2020	Voters reject Proposition 25, nullifying the bail reform passed under SB 10
November 30, 2020	LA County mandates residents to stay at home, following surge in COVID cases, hospitalizations, and deaths. A week later (12/6), five Bay Area counties follow suit.
March 25, 2021	California Supreme Court deems the state's monetary bail practices unconstitutional in <i>Humphrey</i> case
December 2021	Twenty-six counties continue using emergency zero-bail schedules*

SOURCE: See body text for citations of individual events if no citation is provided in timeline.

NOTE: *Technical Appendix Table A2 has the list of counties with the implementation and rescission date of the zero-bail order.

Bail and Pretrial Release in California

Under typical circumstances, California’s monetary bail system governs who is released from jail prior to their arraignment or trial. When someone is accused of a criminal offense, the county’s presumptive bail schedule suggests a bail amount for that offense. In California, the bail schedules are developed separately in each county by the superior court judges, and consequently, there is wide variation in bail amounts for the same offense across counties (Tafoya 2013). The accused person must pay this amount as a deposit to the court—or in other words, “post bail”—to be released from jail while their judicial proceedings continue. Because bail amounts regularly reach tens of thousands of dollars, accused people are often not able to afford the entire bail amount and instead engage the services of bail bond companies. In exchange for a non-refundable fee, typically about 10% of the

entire bail amount, these businesses pay the entire bail deposit on behalf of the detained person, which is refundable to the business assuming the defendant appears in court. Those who cannot afford to post bail, even with the use of a bail bond, will remain in jail (Back et al. 2017). Over 40% of individuals booked on misdemeanors or felonies are released pretrial in California (Tafoya et al. 2017).

San Francisco's pretrial release process differs notably from other California counties. In 2018, the California Court of Appeals' ruling in the *Humphrey* case forced the San Francisco County Superior Court to implement a new pretrial system that considered a defendant's ability to pay when setting bail amounts. This approach substantially decreased the county's reliance on cash bail, increased the use of pretrial supervision, and resulted in an overall decrease in pretrial detention (Lacoe, Skog, and Bird 2022). Additionally, on February 10, 2020, the newly elected San Francisco District Attorney Chesa Boudin implemented a non-monetary pretrial framework—no longer requesting cash bail as a condition for pretrial release in criminal cases (Bastian 2020). This policy persisted until at least the end of the sample frame (July 2021). Finally, along with the *Humphrey* decision, the federal judge presiding over the *Buffin* case ruled that the San Francisco Superior Court's bail schedule was unconstitutional. This forced the San Francisco Sheriff's Office to stop using the county's bail schedule on February 20, 2020, and instead increase releases on "own recognizance" (no conditions) as well as releases with pretrial supervision (San Francisco Sheriff's Department 2020). However, though these rulings and policies greatly shape what bail looks like in San Francisco, they do not imply that monetary bail does not exist in the county. Judges have not always adhered to the District Attorney's requests for non-monetary bail, instead occasionally imposing cash bail using the ability-to-pay standard, even after *Buffin* "prior to, during or after arraignment." Moreover, the pretrial release process in San Francisco involves significant monitoring and supervision rather than exclusively own-recognizance releases, heavily differentiating it with the zero-bail order issued by Judicial Council.

In 2021, the California Supreme Court reviewed the *Humphrey* case and deemed monetary bail unconstitutional statewide due to its discriminatory impact on low-income detainees (Cuéllar 2021). *Senate Bill 262* intended to implement that 2021 ruling, but the primary author tabled it late in 2021 due to concerns of public backlash toward zero bail and crime (Sheeler and Wiley 2021). While Judicial Council's zero-bail order was an emergency policy with a different design than the current legislative effort to reform bail, public discourse has blended the two.

While *zero bail is often discussed alongside bail reform policies*, it is quite different from recent attempts to reform bail and pretrial detention. For instance, Proposition 25, which Californian voters rejected in the November 2020 election, would have implemented *Senate Bill 10*, ending monetary bail and replacing it with risk assessments to determine whether defendants should be released prior to trial.¹ Proposition 25 would have additionally increased the number of people placed under supervision as a condition of their release from pretrial detention (Harris and Lofstrom 2020). *Senate Bill 262*, a bail-reform bill considered by the state legislature, would have modified the existing monetary bail system to adhere to the California Supreme Court ruling in *In re Humphrey* (2021) by requiring courts to consider a defendant's ability to post bail (Hertzberg and Skinner 2021).

¹ The California legislature passed SB 10 in 2018, which Governor Jerry Brown signed into law on August 28, 2018. In an effort to prevent the elimination of the bail bond industry that SB 10 entailed, representatives of the industry filed Proposition 25 as a veto referendum to overturn SB 10. Due to this filing, the Judicial Council of California suspended implementation of SB 10 until after the November 2020 election. California's monetary bail system continued uninterrupted during this time (California Courts, 2019).

Zero Bail and Arrests

Zero-bail policies could have put upward or downward pressure—or both—on crime and arrest levels. For instance, if zero bail led to fewer people held in pretrial detention than otherwise would have been, this arguably presented greater opportunity for the commission of crimes (Leslie and Pope 2017; Associated Press 2020). Prior to the pandemic, most individuals arrested on these lower-level, zero-bail offenses would likely have been held in pretrial detention until their arraignment (hearing in which a defendant is informed of the charges against them and enters their plea).² This detention physically prevents the commission of crimes that some individuals might have committed if not detained. Additionally, pretrial detention in some cases allowed for further incapacitation measures such as release conditions involving monitoring or stay away orders. Therefore, by not detaining individuals, zero bail could result in increased crime and arrest levels.

On the other hand, sending fewer people to jail for pretrial detention could put a downward pressure on offending—and consequently, arrests. This is because, as research suggests, pretrial detention may be criminogenic—or in other words, make detained individuals more likely to re-offend in the long term following release (Heaton, Mayson, and Stevenson 2017; Stevenson 2017; Dobbie, Goldin, and Yang 2018; Meitl and Morris 2019; Petrich et al. 2021). In addition to academic research supporting this possibility, there is evidence that these contrasting effects of pretrial detention may ultimately offset each other in the long run (Leslie and Pope 2017; Dobbie, Goldin, and Yang 2018; Lacoë, Skog, and Bird 2022). By removing both the immediate incapacitation effects and long-term criminogenic effects of detention, zero bail might exert contrasting pressures on crime and arrest rates, each of which are experienced over different time spans.

Zero bail's potential effect on arrests was also likely to have varied from county to county due to differences in implementation. As COVID-19 started spreading through the state, superior courts in Alameda, Los Angeles, Orange, Riverside, San Benito, and Yolo Counties heeded early policy suggestions by the Judicial Council and implemented zero-bail orders before the Judicial Council's statewide mandate. Additionally, unrelated to COVID-19, San Francisco's then-District Attorney Chesa Boudin implemented a non-monetary pretrial detention policy in February 2020, though the San Francisco Superior Court still could require cash bail until the statewide emergency zero-bail measure was issued in April (see above section for more information on California bail policies). While the statewide emergency zero-bail order represents a significant criminal justice measure taken during the pandemic era, local directives that modified bail schedules also likely affected arrests before and after the statewide mandate.³

² In California from 2011–2015, about two thirds of people booked into jail for lower-level felonies were detained pretrial, while about half of those booked on misdemeanors were detained (Tafuya et al. 2017). Therefore, offenses covered by zero bail more often than not result in pre-trial detention.

³ Twenty-seven counties allowed zero bail to end on June 20, 2020, when the emergency zero bail order expired, and 27 counties still had policies in place at the end of the sample frame on July 31, 2021 (Technical Appendix Table A2). Note that we are still trying to determine the end date for three counties. Also, because so many counties extended zero bail, we chose not to include a zero bail end date on the statewide figures. For more insights on zero bail's impact see Figure 5 for the percent of California's population and the number of counties affected at a given date after June 2020.

TABLE A2

Timing of Implementation and Rescission of Zero-bail Orders by County

County	Start Date	End date
Alameda	4/3/2020	12/31/2021
Alpine	4/13/2020	12/31/2021
Amador	4/13/2020	6/20/2020
Butte	4/13/2020	6/20/2020
Calaveras	4/13/2020	6/20/2020
Colusa	4/13/2020	6/20/2020
Contra Costa	4/13/2020	12/31/2021
Del Norte	4/13/2020	6/20/2020
El Dorado	4/13/2020	12/31/2021
Fresno	4/13/2020	12/31/2021
Glenn	4/13/2020	12/31/2021
Humboldt	4/13/2020	6/20/2020
Imperial	4/13/2020	12/31/2021
Inyo	4/13/2020	6/20/2020
Kern	4/13/2020	6/20/2020
Kings	4/13/2020	6/20/2020
Lake	4/13/2020	12/31/2021
Lassen	4/13/2020	6/20/2020
Los Angeles	3/26/2020	12/31/2021
Madera	4/13/2020	6/20/2020
Marin	4/13/2020	12/31/2021
Mariposa	4/13/2020	6/20/2020
Mendocino	4/13/2020	7/31/2021
Merced	4/13/2020	12/31/2021
Modoc	4/13/2020	6/20/2020
Mono	4/13/2020	6/8/2021
Monterey	4/13/2020	12/31/2021
Napa	4/13/2020	12/31/2021
Nevada	4/13/2020	6/20/2020
Orange	3/27/2020	12/31/2021
Placer	4/13/2020	6/20/2020
Plumas	4/13/2020	6/20/2020
Riverside	3/27/2020	6/15/2021
Sacramento	4/13/2020	12/31/2021
San Benito	3/24/2020	12/31/2021
San Bernardino	4/13/2020	12/31/2021
San Diego	4/13/2020	12/31/2021
San Francisco*	4/13/2020	6/20/2020
San Joaquin	4/13/2020	6/20/2020
San Luis Obispo	4/13/2020	7/31/2021
San Mateo	4/13/2020	12/31/2021
Santa Barbara	4/13/2020	12/31/2021
Santa Clara	4/13/2020	12/31/2021

Santa Cruz	4/13/2020	12/31/2021
Shasta	4/13/2020	6/20/2020
Sierra	4/13/2020	6/20/2020
Siskiyou	4/13/2020	12/31/2021
Solano	4/13/2020	6/20/2020
Sonoma	4/13/2020	12/31/2021
Stanislaus	4/13/2020	12/31/2021
Sutter	4/13/2020	6/20/2020
Tehama	4/13/2020	6/20/2020
Trinity	4/13/2020	6/20/2020
Tulare	4/13/2020	5/4/2021
Tuolumne	4/13/2020	6/20/2020
Ventura	4/13/2020	6/20/2020
Yolo	3/26/2020	6/1/2021
Yuba	4/13/2020	6/20/2020

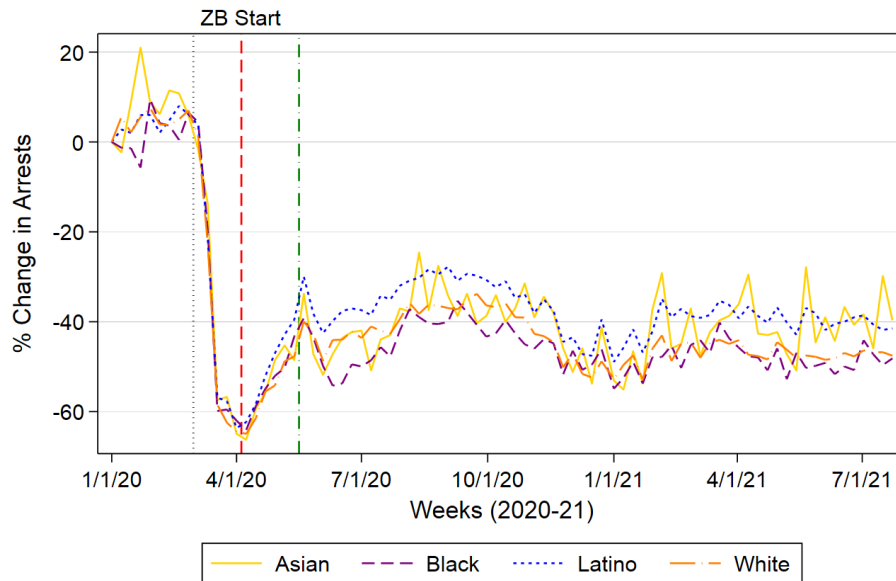
SOURCE: Authors' estimates of the beginning and ending of zero-bail orders derive from information provided by Judicial Council and requests to individual county superior courts and district attorneys.

NOTE: Counties whose end date is 12/31/21 means that their zero-bail order did not end before the end of the sample period, and could still be ongoing.

*Although San Francisco Superior Court only implemented Judicial Council zero-bail order for its mandatory period (4/13/20–6/20/20), it was more limited in the way it could issue monetary bail because of court cases and a district attorney policy in February 2020. See appendix section above for more details.

FIGURE A1

Misdemeanor arrests drop as much as 60%, including for Asian Californians

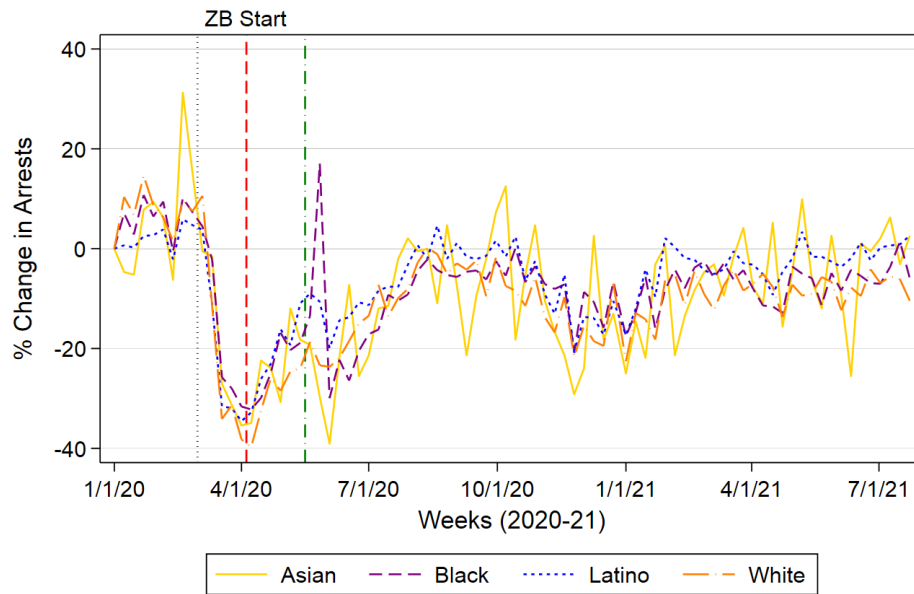


SOURCE: California Department of Justice: Automated Criminal History System (ACHS) data

NOTE: The figure presents misdemeanor arrest trends by race (January 2020–July 2021) in weekly percent changes relative to January 1, 2020. The dotted gray line is just before Gov. Newsom declared a state of emergency (3/4/20). On 3/16/20, Bay Area counties instituted shelter-in-place order. The red dashed line is just before Judicial Council instituted the statewide zero-bail policy (4/13/20). The green dashed-dotted line is just before the murder of George Floyd (5/25/20).

FIGURE A2

Felony arrests drop 40% but rebound quickly, with generally similar trends for Asians

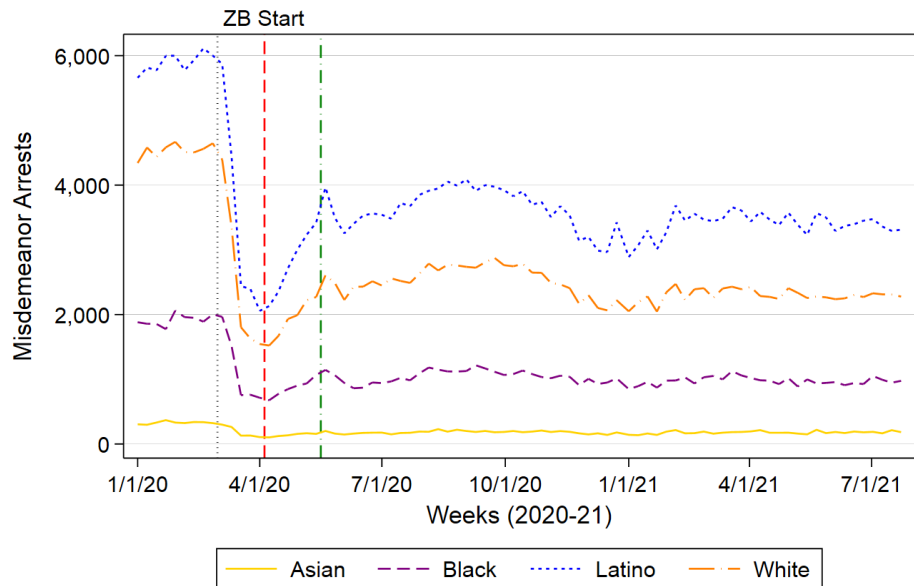


SOURCE: California Department of Justice: Automated Criminal History System (ACHS) data

NOTE: The figure presents felony arrest trends by race (January 2020–July 2021) in weekly percent changes relative to January 1, 2020. The dotted gray line is just before Gov. Newsom declared a state of emergency (3/4/20). On 3/16/20, Bay Area counties instituted shelter-in-place order. The red dashed line is just before Judicial Council instituted the statewide zero-bail policy (4/13/20). The green dashed-dotted line is just before the murder of George Floyd (5/25/20).

FIGURE A3

Small bump in misdemeanor arrests across race after murder of George Floyd

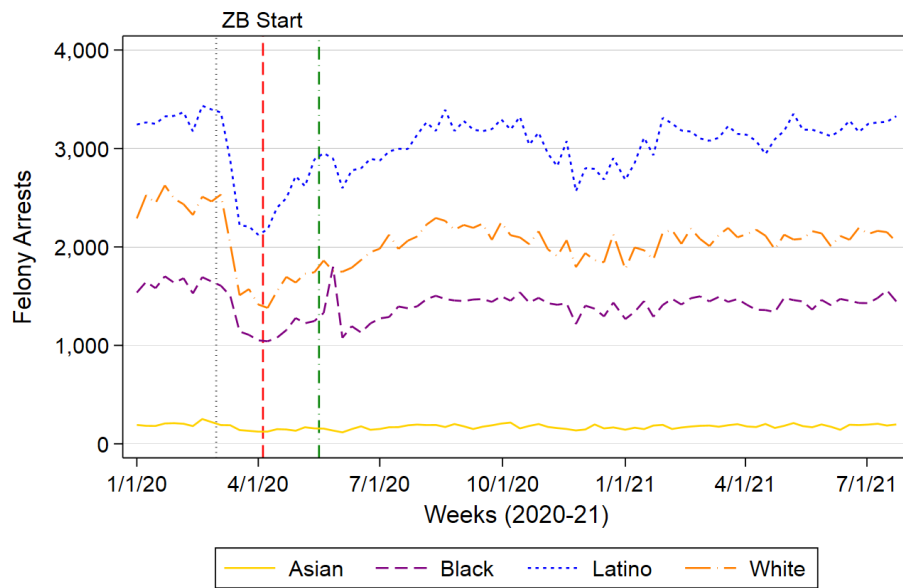


SOURCE: California Department of Justice: Automated Criminal History System (ACHS) data

NOTE: The figure presents misdemeanor arrest trends by race (January 2020–July 2021) in weekly counts. The dotted gray line is just before Gov. Newsom declared a state of emergency (3/4/20). On 3/16/20, Bay Area counties instituted shelter-in-place order. The red dashed line is just before Judicial Council instituted the statewide zero-bail policy (4/13/20). The green dashed-dotted line is just before the murder of George Floyd (5/25/20).

FIGURE A4

Black felony arrests reach levels of white felony arrests after murder of George Floyd

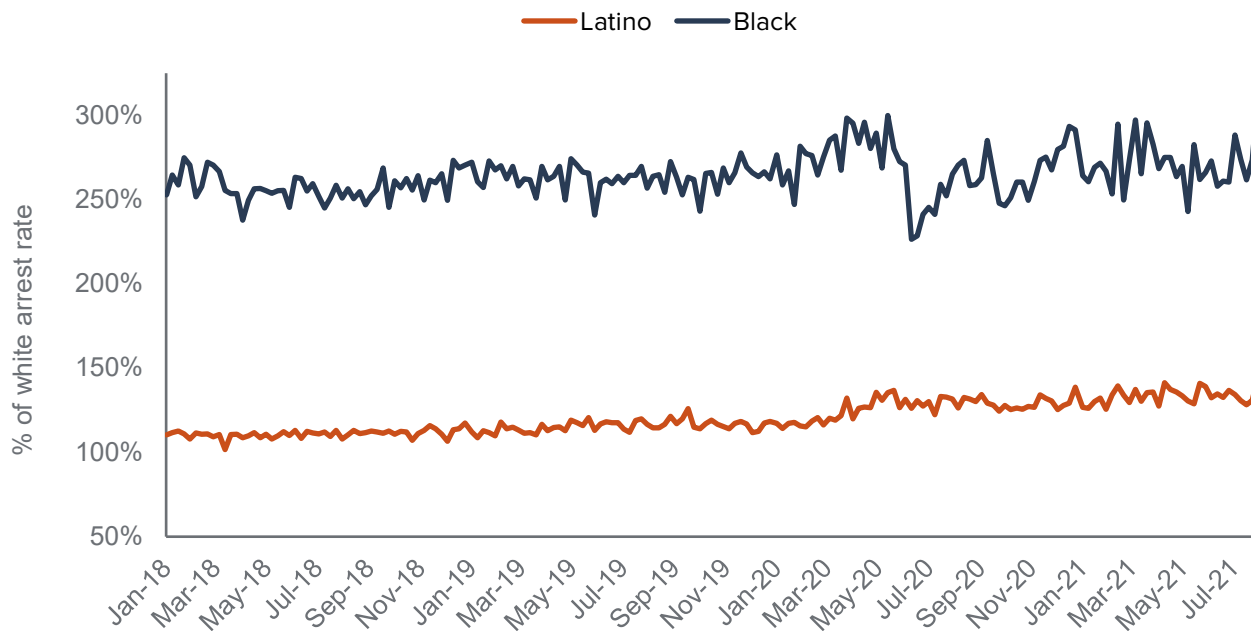


SOURCE: California Department of Justice: Automated Criminal History System (ACHS) data

NOTE: The figure presents felony arrest trends by race (January 2020–July 2021) in weekly counts. The dotted gray line is just before Gov. Newsom declared a state of emergency (3/4/20). On 3/16/20, Bay Area counties instituted shelter-in-place order. The red dashed line is just before Judicial Council instituted the statewide zero-bail policy (4/13/20). The green dashed-dotted line is just before the murder of George Floyd (5/25/20).

FIGURE A5

Racial disparities in misdemeanor arrest rates, 2018-2021

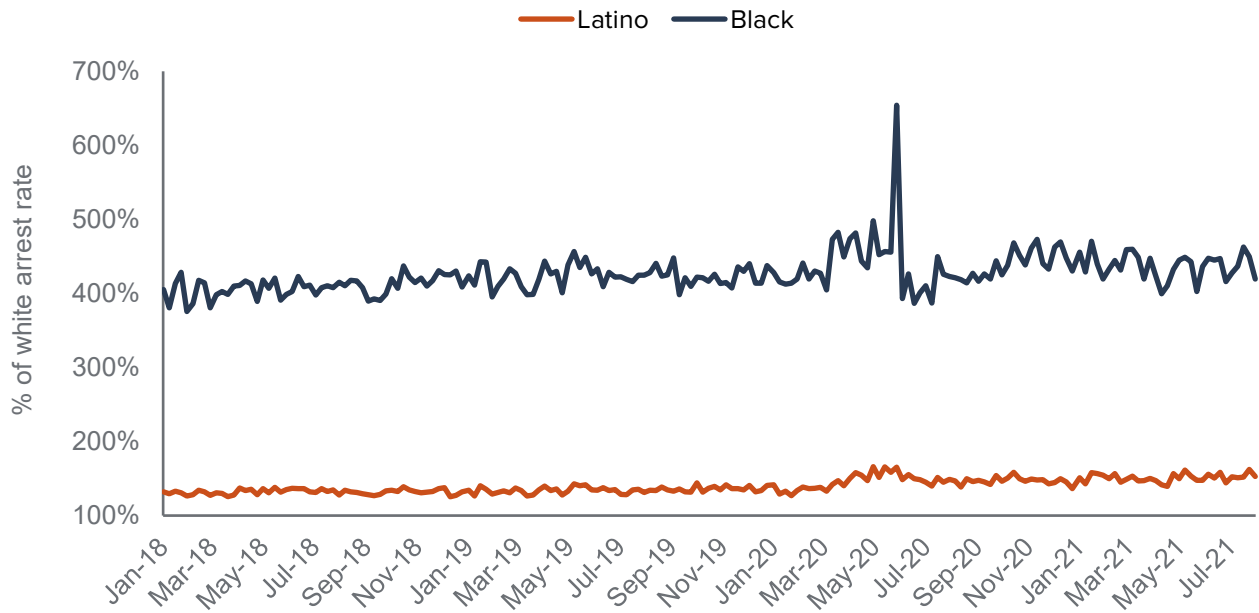


SOURCE: California Department of Justice: Automated Criminal History System (ACHS) data, US Census population data

NOTE: The figure presents Black and Latino misdemeanor arrest rates as a percent of white misdemeanor arrest rates. Arrest rates per 100,000 people for each race were first calculated by respective racial group, as measured by US Census population data for the year 2020.

FIGURE A6

Racial disparities in felony arrest rates, 2018-2022

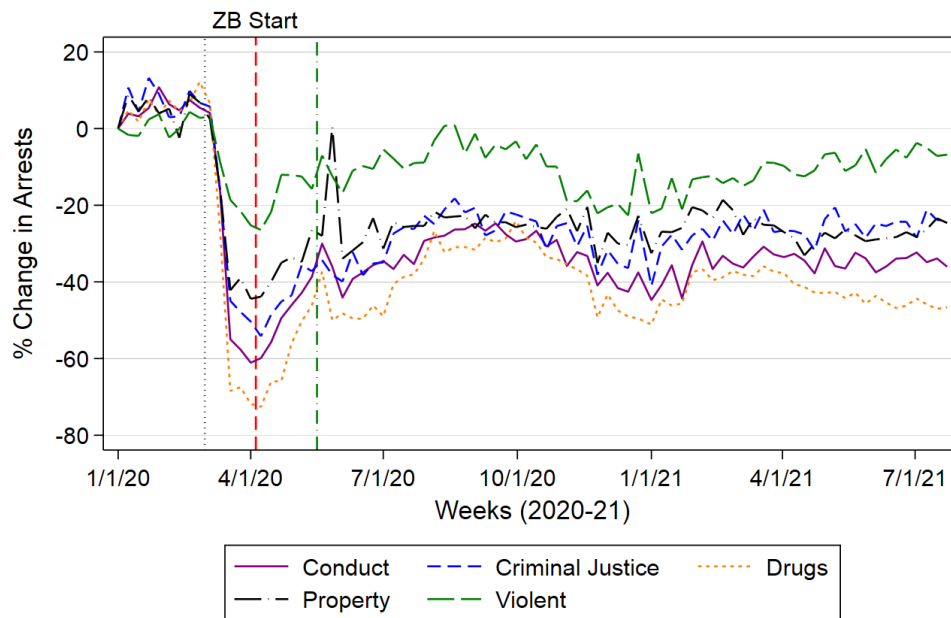


SOURCE: California Department of Justice: Automated Criminal History System (ACHS) data, US Census population data

NOTE: The figure presents Black and Latino felony arrest rates as a percent of white felony arrest rates. Arrest rates per 100,000 people for each race were first calculated by respective racial group, as measured by US Census race population data for the year 2020.

FIGURE A7

Arrests for conduct and drug offenses seem to be the most sensitive, while property crime arrests spike after the murder of George Floyd

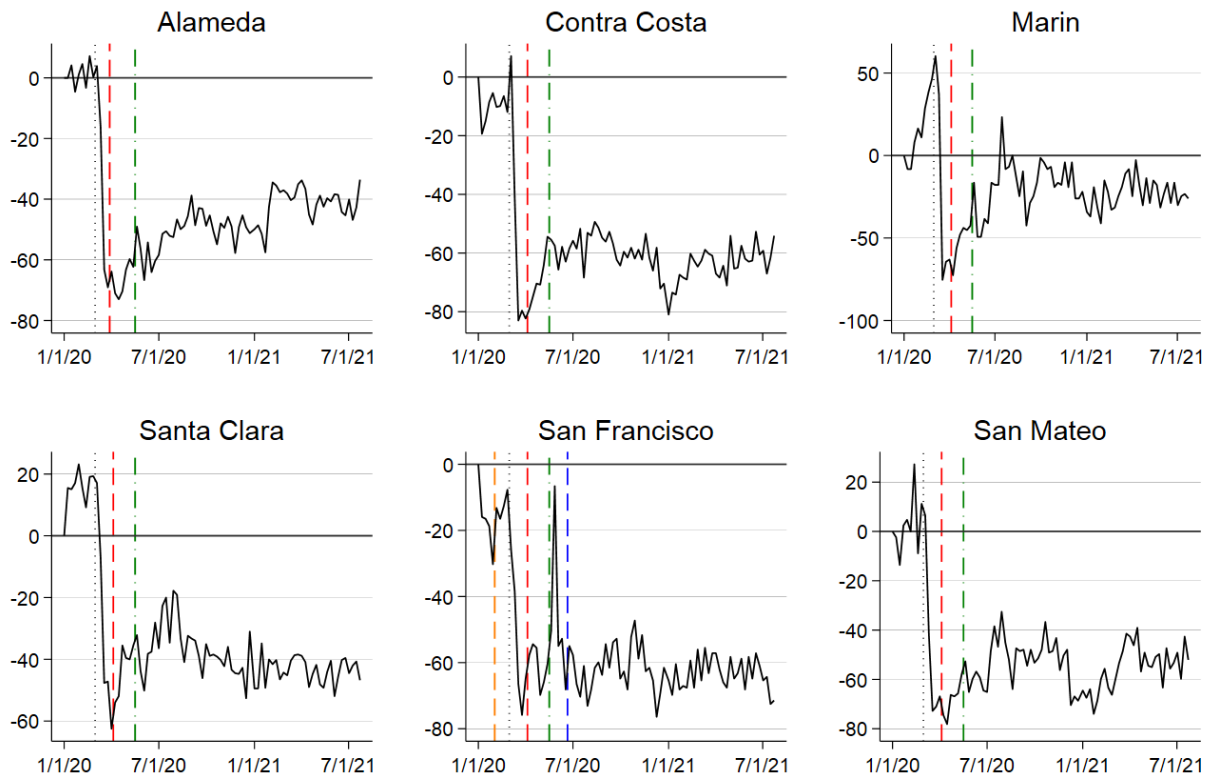


SOURCE: California Department of Justice: Automated Criminal History System (ACHS) data

NOTE: The figure presents arrest trends by offense type in weekly counts from January 2020–July 2021. The dotted gray line is just before Gov. Newsom declared a state of emergency (3/4/20). On 3/16/20, Bay Area counties instituted shelter-in-place order. The red dashed line is just before Judicial Council instituted the statewide zero-bail policy (4/13/20). The green dashed-dotted line is just before the murder of George Floyd (5/25/20).

FIGURE A8

Bay Area counties all face large, initial drops in misdemeanor arrests with various degrees of rebound

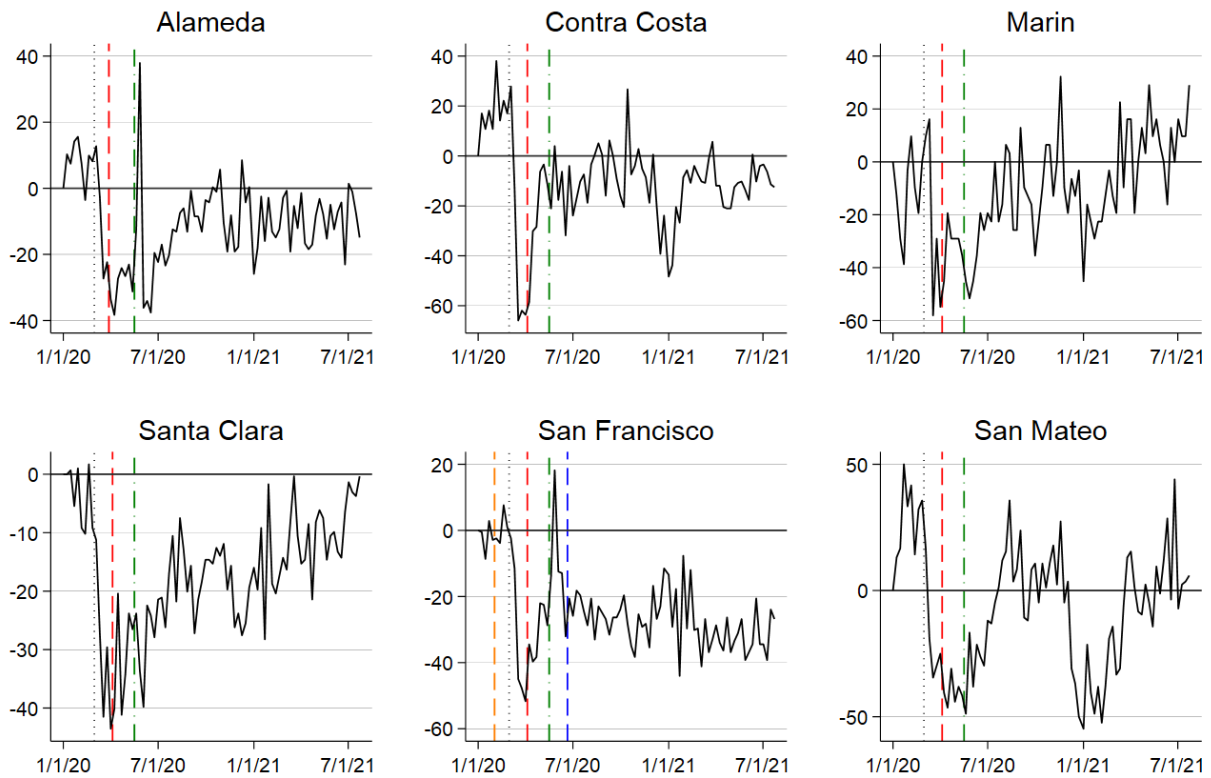


SOURCE: California Department of Justice: Automated Criminal History System (ACHS) data

NOTE: The figure presents misdemeanor arrest trends by county (January 2020–July 2021) in weekly percent changes relative to January 1, 2020. The orange line is just before San Francisco District Attorney implemented a non-monetary pretrial release policy (2/10/20). The dotted gray line is just before Gov. Newsom declared a state of emergency (3/4/20). On 3/16/20, Bay Area counties instituted shelter-in-place order. The red dashed line is just before Judicial Council instituted the statewide zero-bail policy (4/13/20). The green dashed-dotted line is just before the murder of George Floyd (5/25/20). All Bay Area county superior courts continued zero bail, except San Francisco, which ended it on 6/20/20, shown with the dotted blue line.

FIGURE A9

Bay Area counties experience different patterns in felony arrests, with San Francisco having largest decline

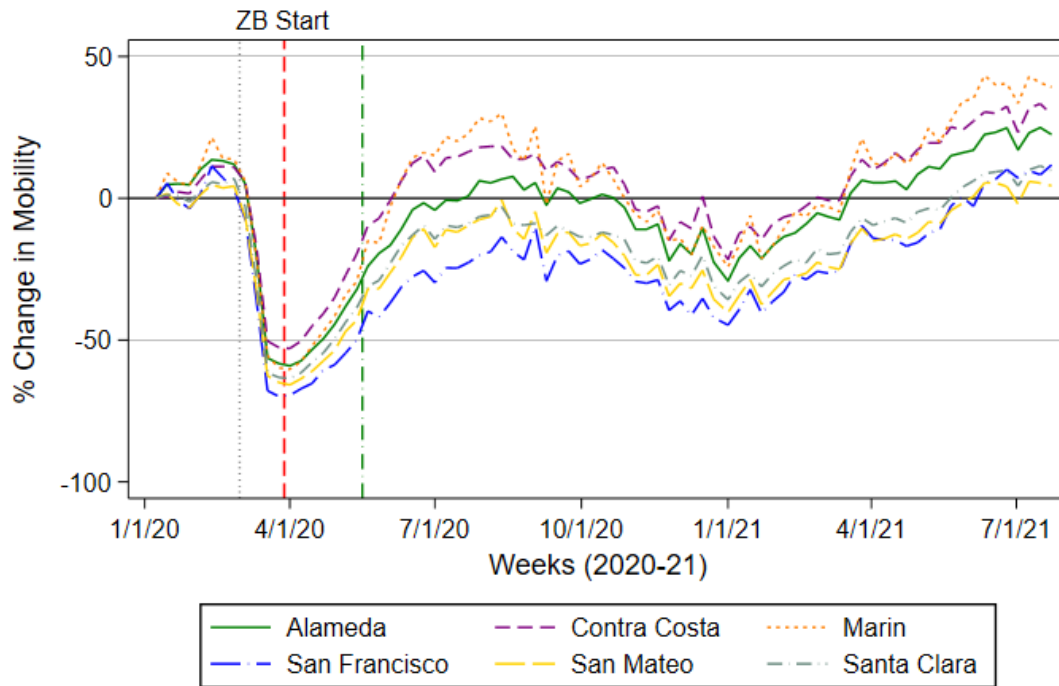


SOURCE: California Department of Justice: Automated Criminal History System (ACHS) data

NOTE: The figure presents felony arrest trends by county (January 2020–July 2021) in weekly percent changes relative to January 1, 2020. The orange line is just before San Francisco District Attorney implemented a non-monetary pretrial release policy (2/10/20). The dotted gray line is just before Gov. Newsom declared a state of emergency (3/4/20). On 3/16/20, Bay Area counties instituted shelter-in-place order. The red dashed line is just before Judicial Council instituted the statewide zero-bail policy (4/13/20). The green dashed-dotted line is just before the murder of George Floyd (5/25/20). All Bay Area county superior courts continued zero bail, except San Francisco, which ended it on 6/20/20, shown with the dotted blue line.

FIGURE A10

San Francisco County has largest reductions in driving activity, but overall similar patterns across Bay Area counties

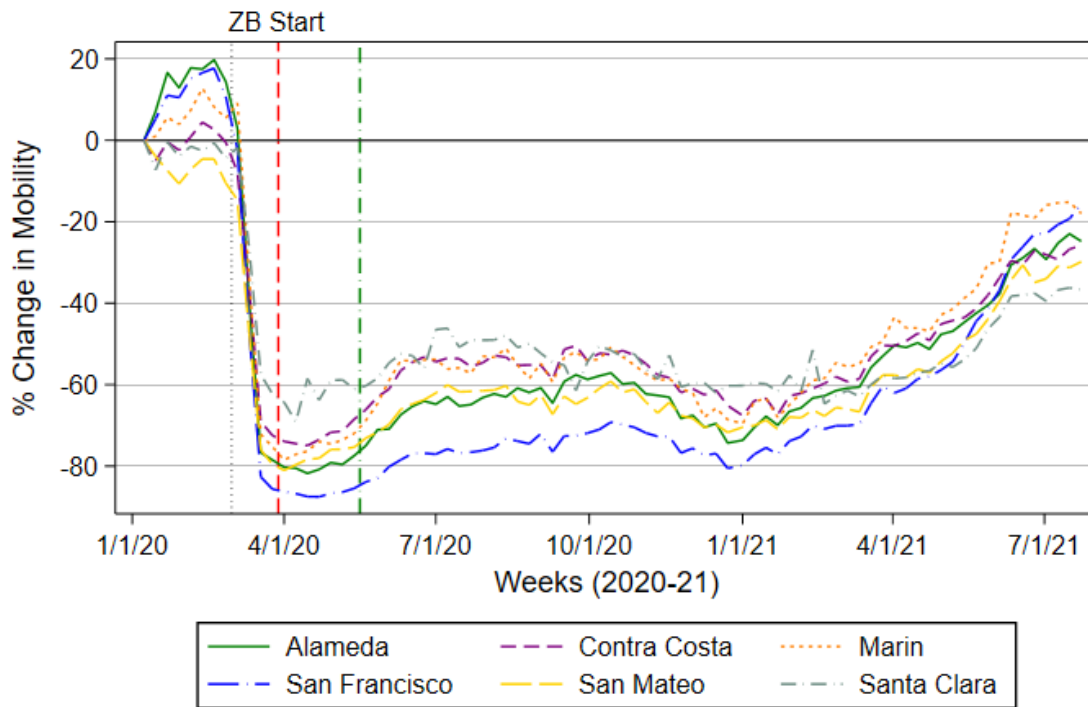


SOURCE: Apple Maps location data

NOTE: The figure presents driving mobility trends by county (January 2020–July 2021) in weekly percent changes relative to the 2nd week of January (started on January 13, 2020). Figure shows the start of the statewide zero-bail order, although it may be notable that San Francisco’s District Attorney had a non-monetary pretrial release policy in place before the statewide order (2/10/20). The dotted gray line is just before Gov. Newsom declared a state of emergency (3/4/20). On 3/16/20, Bay Area counties instituted shelter-in-place order. The red dashed line is just before Judicial Council instituted the statewide zero-bail policy (4/13/20). The green dashed-dotted line is just before the murder of George Floyd (5/25/20). All Bay Area county superior courts continued zero bail, except San Francisco, which ended it on 6/20/20.

FIGURE A11

San Francisco County has steeper reductions in transit activity, but generally similar patterns across Bay Area counties



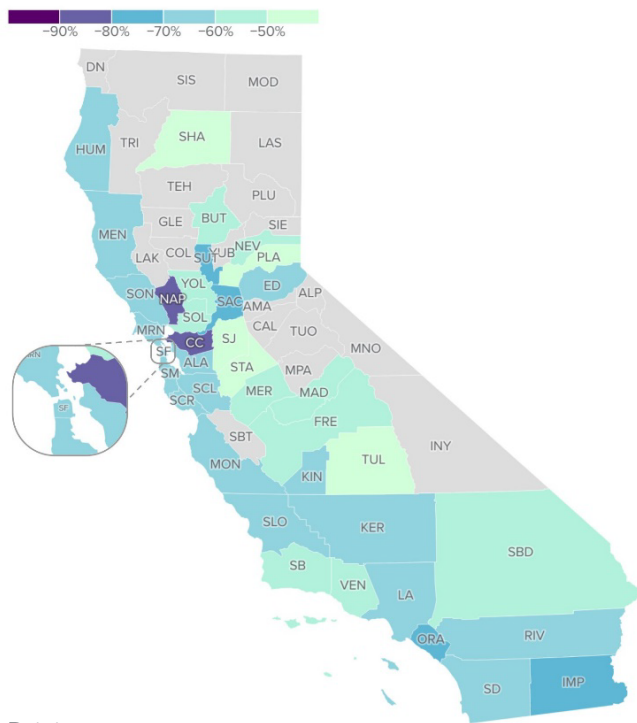
SOURCE: Apple Maps location data

NOTE: The figure presents transit mobility trends by county (January 2020–July 2021) in weekly percent changes relative to the 2nd week of January (started on January 13, 2020). Figure shows the start of the statewide zero-bail order, although it may be notable that San Francisco’s District Attorney had a non-monetary pretrial release policy in place before the statewide order (2/10/20). The dotted gray line is just before Gov. Newsom declared a state of emergency (3/4/20). On 3/16/20, Bay Area counties instituted shelter-in-place order. The red dashed line is just before Judicial Council instituted the statewide zero-bail policy (4/13/20). The green dashed-dotted line is just before the murder of George Floyd (5/25/20). All Bay Area county superior courts continued zero bail, except San Francisco, which ended it on 6/20/20.

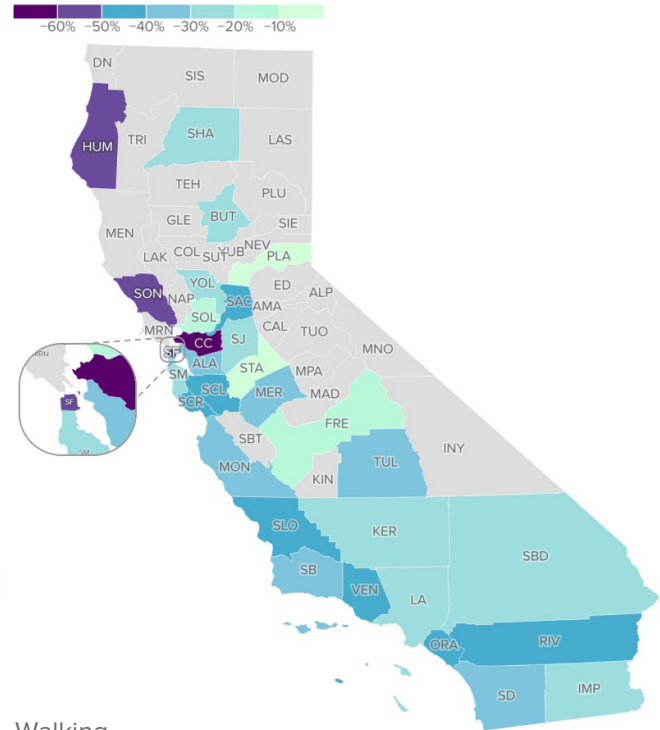
FIGURE A12

% Change in weekly arrests and mobility, January-April 2020

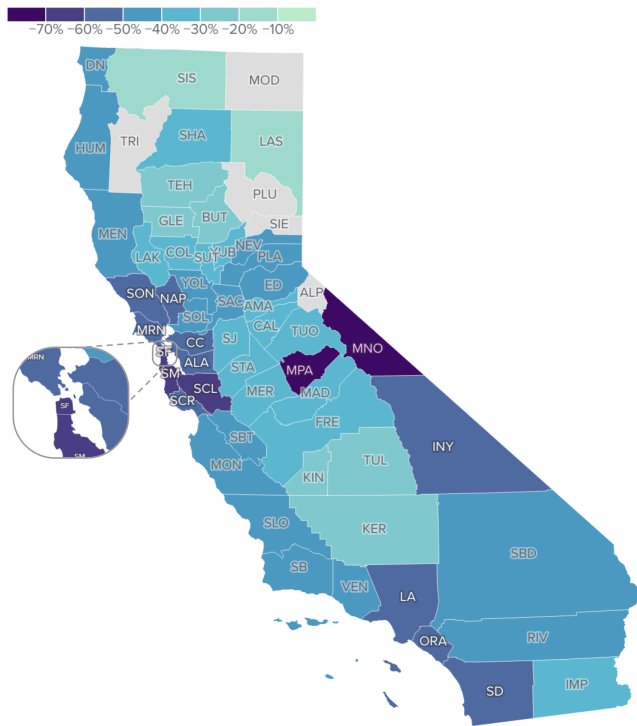
Misdemeanors



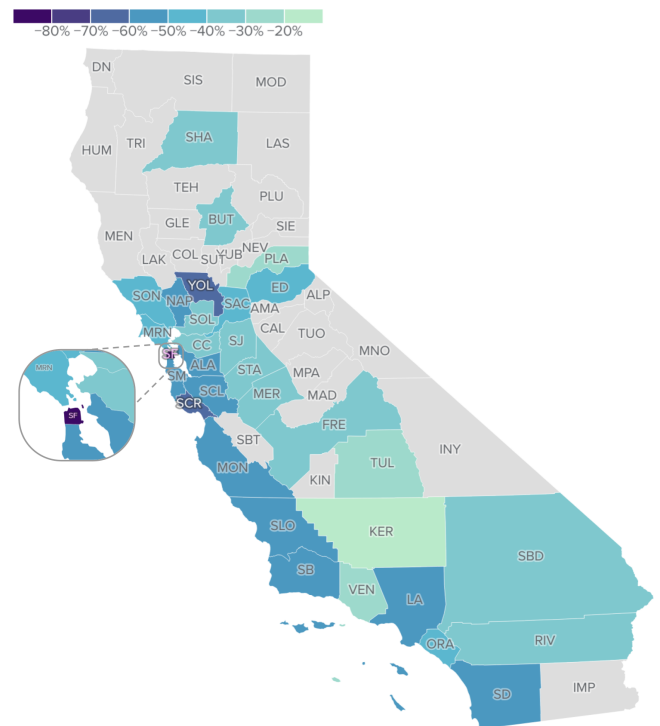
Felonies



Driving



Walking



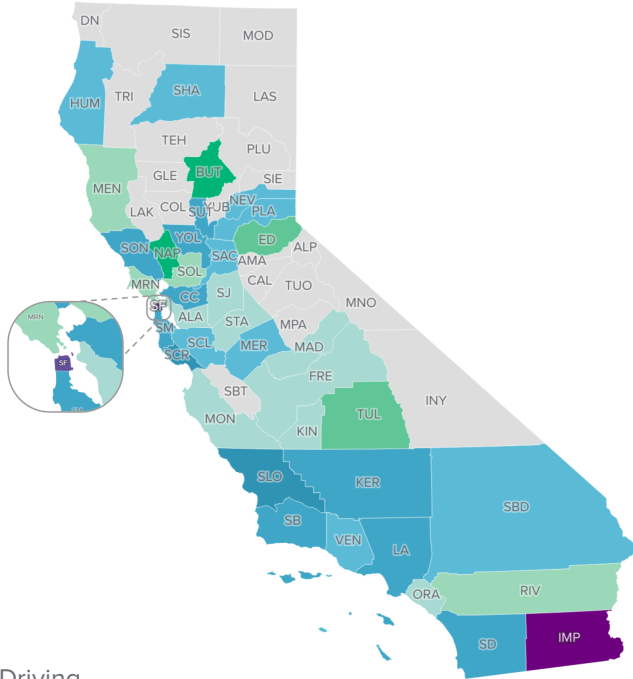
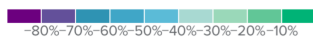
SOURCE: California Department of Justice Automated Criminal History System (ACHS) data, Apple Maps data

NOTE: Counties in grey excluded due to too few weekly arrests for analysis, or due to the unavailability of mobility data for the specified time periods. Transit is not shown due to a small number of counties with available data.

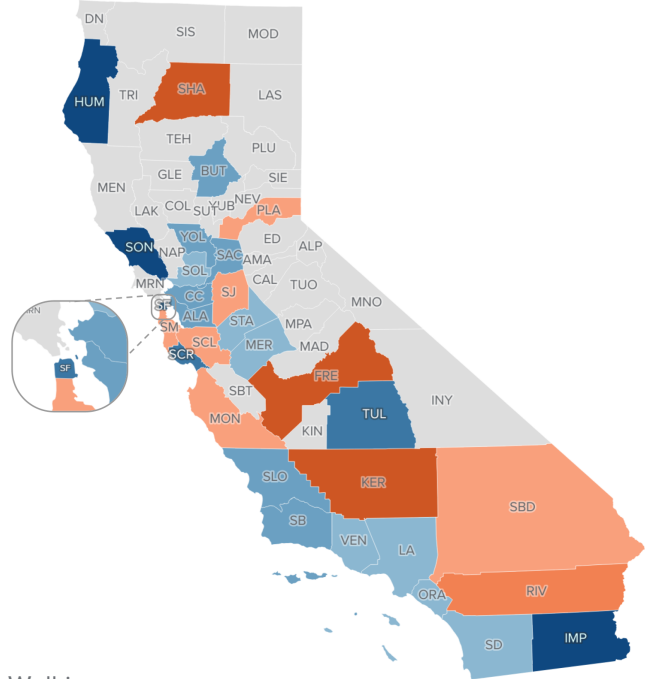
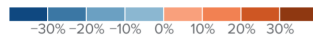
FIGURE A13

% Change in weekly arrests and mobility, January 2020 - July 2021

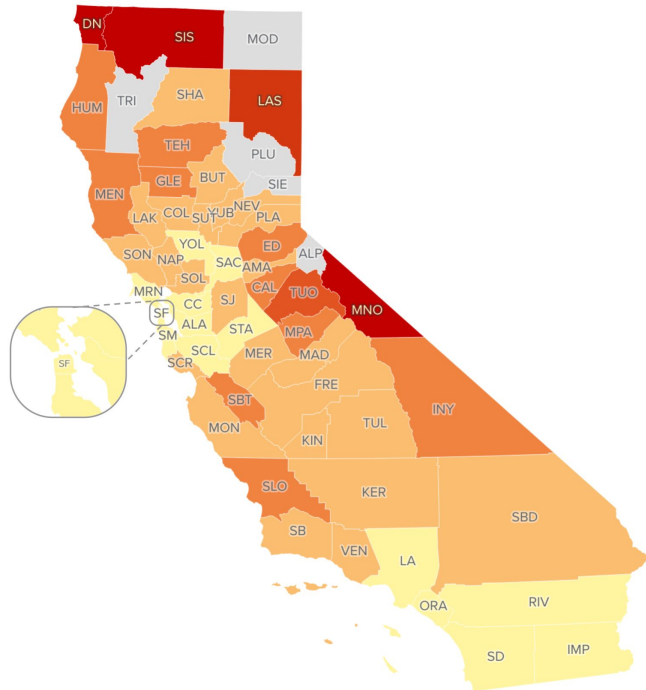
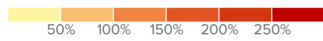
Misdemeanors



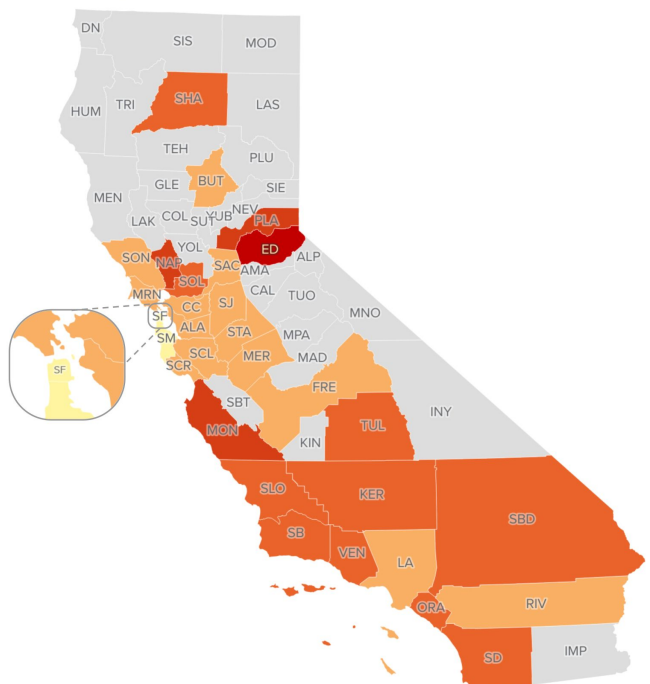
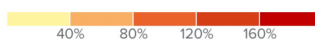
Felonies



Driving



Walking

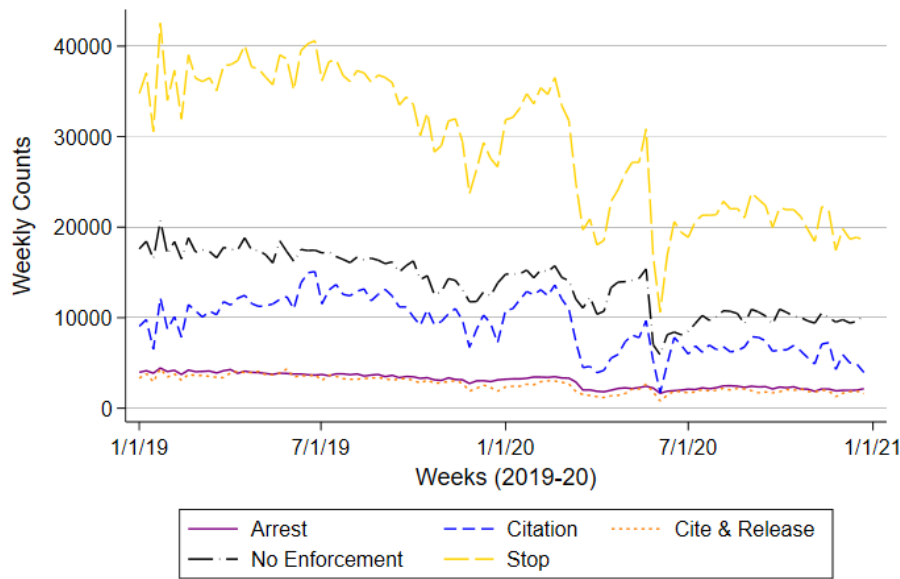


SOURCE: California Department of Justice Automated Criminal History System (ACHS) data, Apple Maps data

NOTE: Counties in grey excluded due to too few weekly arrests for analysis, or due to the unavailability of mobility data for the specified time periods. Transit is not shown due to a small number of counties with available data.

FIGURE A14

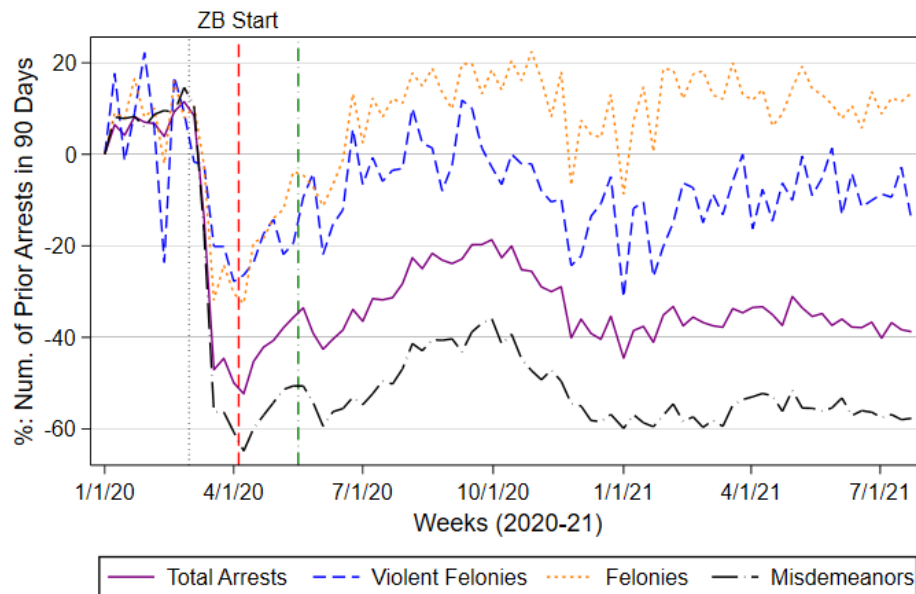
Stops descend dramatically during the pandemic



SOURCE: California Department of Justice Racial and Identity Profiling Act data from 14 largest local law enforcement agencies in 2020
NOTE: The figure presents police enforcement patterns for 2020 in weekly counts. The dotted gray line is just before Gov. Newsom declared a state of emergency (3/4/20). On 3/16/20, Bay Area counties instituted shelter-in-place order. The red dashed line is just before Judicial Council instituted the statewide zero-bail policy (4/13/20). The green dashed-dotted line is just before the murder of George Floyd (5/25/20).

FIGURE A15

Misdemeanor re-arrests face the steepest decline with limited rebound afterward



SOURCE: California Department of Justice: Automated Criminal History System (ACHS) data
NOTE: The figure presents percent changes in weekly counts of re-arrest within 90 days by severity of offense relative to the first week of January (January 2020–July 2021). Violent felony re-arrests mean that the initial and subsequent offense was a violent felony. The same is true for felony and misdemeanor re-arrests. The dotted gray line is just before Gov. Newsom declared a state of emergency (3/4/20). On 3/16/20, Bay Area counties instituted shelter-in-place order. The red dashed line is just before Judicial Council instituted the statewide zero-bail policy (4/13/20). The green dashed-dotted line is just before the murder of George Floyd (5/25/20).

Appendix B. Data Details and Cleaning

Arrest Data

As discussed in the main text, the arrest information is provided by the Department of Justice’s Automated Criminal History System (ACHS). We should interpret this dataset as comprised of arrests that are accompanied by at least a fingerprinting, often paired with being booked into jail or a holding cell for some period of time. We should not equate changes in arrests with fluctuations in the commission of crime for many reasons, but especially during this period when policies determining whether to arrest an individual shifted dramatically. Moreover, we include arrests for warrants, parole, and probation violations, which make comparisons to patterns of new offending potentially incongruent.

We do, however, exclude arrests for crimes that take place in custodial settings (e.g., prisons and jail), because the focus of this study is on arrests that occur in non-carceral settings. We also limit the sample to arrests for felonies or misdemeanors, excluding infractions. It is unclear the full extent to which the data contain citations, but there are case dispositions that suggest a suspect was cited and released. Because the ACHS contains information on every offense/charge, we focus on the most serious offense per arrest.

However, because of the way the ACHS data is processed, there are some duplicate records for the same arrest event. For example, an individual may have numerous arrest records for murder within a day, but with different law enforcement agencies, which we would interpret as potentially reflective of a transfer of custody and a duplicate record between two agencies. After speaking with staff at the California Department of Justice about these concerns, we created procedures to drop observations that we identified as likely duplicate arrests:

1. Drop all same-day re-arrests, regardless of offense.
2. For re-arrests that happen within 1-2 days of another arrest and contain disposition codes that indicate matching records of the same arrest or a transfer of custody:
 - a. Drop those with the same offense category (i.e., Criminal Justice Information Services (CJIS) categories such as “homicide/manslaughter” or “stolen vehicle”).
 - b. Drop those with offense qualifiers for a warrant, bench warrant, or re-booking.
 - c. These rules still apply if there are a few re-arrests spaced out 1-2 days in a row for many days.
3. Drop re-arrests within 1-2 days if they have the same CJIS category and different law enforcement agencies between the first and second arrest.

The procedures are imperfect, but they alleviate implausible counts of short-term re-arrests that appear in the raw administrative data. One issue with identifying duplicates, especially with Rule (3), is that the arresting agency variable is not reported accurately, with far more observations being associated with a booking agency (i.e., typically a county sheriff). Thus, in our report, geographic comparisons focus on differences at the county level.

Mobility Data

While these mobility data are informative and valuable they also have limitations, most importantly because mobility is measured relative to January 13, 2020, the first date available in the dataset. Because mobility is seasonal and typically increases over the course of an average year, especially during warmer months, it is normal to expect that this value will naturally increase. For this reason, mobility data is usually reported relative to the same date during the prior year (e.g., January 1, 2020 might experience 102% mobility compared to January 1, 2019). Unfortunately, the datasets shared to researchers from Apple, Google, and Meta begin in January 2020 at

the earliest. On the other hand, the mobility trends caused by COVID-19 vastly outstrip typical seasonal trends, so this measure of mobility is still useful for understanding trends in 2020. To see typical mobility trends in a non-pandemic year, as measured relative to mobility the year prior, see Massenkoff and Chalfin (2022).

Additionally, this dataset may not perfectly reflect the mobility of the entire population during the sample period. Because the use of Apple Maps requires owning a smartphone, the movement of those who do not own smartphones will not be reflected in this data. Lower-income individuals are less likely to own mobile phones, so their mobility patterns could be partially omitted in these data (Pew Research 2021). This population's mobility patterns could have varied from the rest of the population during the pandemic, especially given that workers deemed "essential" during the pandemic held overwhelmingly low-paying jobs. By definition, essential workers' mobility patterns did not change as much as others' during the pandemic, so their full inclusion in the data would cause changes in mobility to appear more muted. However, it is plausible that this concern is limited as the rate of smartphone ownership amongst the lowest-income individuals, while lower than those with higher incomes, is still quite high: the rates of smartphone ownership are 85% for individuals earning \$50,000 to \$75,000 per year; 83% for individuals earning \$30,000 to \$50,000 per year; and 76% for individuals earning less than \$30,000 per year (Pew Research 2021). The overwhelming majority of low-income individuals are therefore represented in this mobility data, nearly on par with the representation of higher-income individuals.

While the population of smartphone users mostly represents the state's population as a whole, it is unclear what cross-section of the population is captured by Apple Maps users. While some research has been conducted on the demographic differences between iOS and Android users (Apple Maps only being available on iOS), iOS users do not necessarily use Apple Maps. Other navigation options such as Waze and Google Maps are popular amongst iOS users, and it is unclear what demographic differences there may be between those who choose to use Apple Maps and these other options.



PPIC

PUBLIC POLICY
INSTITUTE OF CALIFORNIA

The Public Policy Institute of California is dedicated to informing and improving public policy in California through independent, objective, nonpartisan research.

Public Policy Institute of California
500 Washington Street, Suite 600
San Francisco, CA 94111
T: 415.291.4400
F: 415.291.4401
PPIC.ORG

PPIC Sacramento Center
Senator Office Building
1121 L Street, Suite 801
Sacramento, CA 95814
T: 916.440.1120
F: 916.440.1121