CRIME IN IDAHO DURING COVID-19

TIME SERIES ANALYSIS OF DATA FROM THE IDAHO INCIDENT-BASED REPORTING SYSTEM

Idaho Statistical Analysis Center
Planning, Grants, & Research
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Authors
Kourtnie Rodgers, MA
Thomas Strauss, MPA

Idaho Statistical Analysis Center
Planning, Grants & Research
Idaho State Police

For More Information
Email: pgr@isp.idaho.gov
Website: www.isp.idaho.gov/pgr/sac/

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EXECUTIVE SUMMARY

The global COVID-19 pandemic found its way to Idaho in the middle of March 2020, bringing with it disruptions to daily life that most, if not all, Idahoans had never experienced before. The purpose of this study was to determine what, if any, changes in crime patterns emerged while Idaho citizens were experiencing the most acute and disruptive effects of the pandemic, specifically the statewide stay-at-home order that was in effect for about six weeks during the second half of March and most of April 2020. To that end, the Idaho Statistical Analysis Center (ISAC) analyzed data from the Idaho Incident-Based Reporting System on crimes reported to law enforcement between 2018 and 2021. In general, ISAC found evidence that reported crime did decrease while the stay-at-home order was in effect. However, patterns differed based on crime type and county population density.

Key Findings

On an annual basis, total reported crime is trending down.

❖ The total number of offenses reported to law enforcement decreased every year between 2018 and 2021.

❖ While offense counts for most crime types did not show the same steady decrease as total crime, counts for most offense types were also lower in 2021 than 2018.

The total offense count during the six-week stay-at-home order was significantly lower than during the same period in other years.

❖ The total number of offenses during the stay-at-home order in 2020 was 28% lower than during the same period in 2019. However, that number rebounded to a normal level in 2021, increasing 34% from the 2020 count. Drug/alcohol offenses showed a similar pattern.

❖ Counts of four other crime types (robbery, burglary, sexual violence, and intimate partner violence) did not experience significant changes during the stay-at-home order.

Total offense counts in mostly urban counties and mostly rural counties were significantly lower during the stay-at-home order than during the same period in other years.

❖ Mostly urban counties experienced a 28% drop in total offenses during the stay-at-home order, while mostly rural counties saw a 34% drop.

❖ Completely rural counties also saw a 28% drop in offenses during the stay-at-home order, but this trend was not statistically significant.

❖ Combinations of specific crime types and county rurality classifications could not be tested for significance due to the low numbers of offenses in some categories.

COVID-19

On January 20th, 2020, the Centers for Disease Control and Prevention (CDC) announced the first laboratory-confirmed case of COVID-19 in the U.S. Barely over a month later on March 11th, 2020, COVID-19 was declared a pandemic by the World Health Organization (CDC, 2022). Around the world, governments began to respond with various public health orders and lockdowns, such as stay-at-home orders and encouragement of social distancing, to limit the spread of COVID-19. In the U.S., jurisdictions responded in their own way with different orders. These orders varied across states, counties, and localities in both timeline and conditions. The first state to issue a statewide stay-at-home order was California on March 19th, 2020. This order required residents to stay home with the exception of going to an essential job or shopping for essential needs (Katella, 2021). In the weeks that followed, many other states enacted similar statewide orders in an attempt to slow the spread of COVID-19. As implied in the name, these orders usually involved restriction of movement, requiring individuals to quarantine in their homes. These orders also usually included some exceptions, allowing for individuals to leave the home for some outdoor activities and essential business such as working at an essential job, grocery shopping or medical care.

COVID-19 and Crime

Since the beginning of the COVID-19 pandemic, there have been multiple inquiries into how this pandemic and government responses to this pandemic may impact crime. Stay-at-home orders altered daily activities of most of the country as people began to work from home, schools were limited to online instruction, and outings were restricted to essential activities in most states. The stay-at-home orders were beneficial in limiting contact for spread of the virus, but it is assumed that this drastic and sudden change in daily lives had other impacts, including an impact on crime. In the months and years that followed, several studies began to approach this subject and provide a base of information and observations of the effects in different areas.

Routine activities theory is one key criminological theory that has been utilized to explain why crime may increase or decrease in response to the COVID-19 pandemic. This theory was proposed by Lawrence Cohen and Marcus Felson in 1979 as an approach for analyzing crime rate trends and cycles (Cohen & Felson, 1979). The theory suggests that most crimes occur due to three things converging in time and space. These include likely offenders, suitable targets, and the lack of capable guardians against crime (Cohen & Felson, 1979). These three things are given opportunity to converge through "routine activities" of everyday life (Cohen & Felson, 1979). When routine activities are impacted, opportunities for crime are also impacted.

The drastic and sudden shift in individual routine activities that occurred with the COVID-19 pandemic and stay-at-home orders had the potential to change the opportunity for crime, and thus change crime and victimization numbers or rates. The expected direction of the change depends on the type of crime and the types of measures put in place. For example, during stay-at-home orders, many researchers expected an increase in crimes in the home as victims (targets) and offenders may be confined to a single space without capable guardians to intervene. Other crimes that usually occur outside the home, such as assault or robbery, were expected to decrease due to the fact that these crimes require suitable targets

to converge with likely offenders in more public spaces. With movement limited, the chances of all of the elements of routine activity theory to converge at the same time in public were much lower.

A second theory, general strain theory, was also expected to explain changes in crime during COVID-19, particularly family violence. General strain theory posits that strain occurs with the anticipated or actual failure to reach positively valued stimuli, the anticipated or actual removal of negatively valued stimuli, or the anticipated or actual introductions of negatively valued stimuli (Agnew, 1992). The introduction of negative stimuli or removal or positive stimuli may lead to negative emotions which, in turn, may lead to adapting by delinquent means (Agnew, 1992). It is suspected that COVID-19 may have increased the presence of negative stimuli in the form of job loss, unemployment, crowded housing, or other stress related to the pandemic as a whole. COVID-19 may have also removed positive stimuli in the form of personal connections that suffered, routines that were drastically changed, and other personal positive experiences that had to be cut off in light of the pandemic. These adjustments may have led individuals to adapt by committing crimes they would not normally commit. Due to the majority of close contacts during this time being between family members, the delinquent behavior may have been aimed at each other, thus increasing family violence.

Using these criminological theories, researchers moved forward examining crime data as the pandemic progressed. Early studies tended to select a few specific areas, usually large cities, to focus their analysis. This was likely due to better availability of data and to provide timely analysis and results. Research that has been conducted up to this point generally focuses both on the impact of the pandemic itself, but also on the impact of social distancing or stay-at-home orders that were put in place to combat the pandemic. While different studies focus on different cities, many of the same crime types were examined across cities or neighborhoods.

Impact on Specific Crime Types

To further understand the impact of the pandemic, a few common violent crime types were examined in multiple studies, including burglary, homicide, assault, and robbery. Findings from U.S. studies indicate that differences in burglary rates during stay home orders seemed to depend on the type of burglary that was measured (if types were distinguished by the study). Burglary, in general, in Los Angeles and Indianapolis remained unchanged during the pandemic and in Tempe, burglary was observed having a short-term (1 week) decline (Mohler et al., 2020; White et al., 2022). Breaking burglary down further, residential burglary was found to decrease in four Michigan cities, decrease and then rise in 30 large U.S. cities, and decrease in New York City (Carter & Turner, 2021; Koppel et al., 2022; Lopez & Rosenfeld, 2021). Commercial burglary was observed to have a significant decrease in four Michigan cities (Carter & Turner, 2021). Other studies reported on nonresidential burglaries finding that in New York City there was an increase associated with stay-at-home orders, but in a larger review of 30 U.S. cities (including New York City), there was no significant change in the level or slope of nonresidential burglary (Koppel et al., 2022; Lopez & Rosenfeld, 2021).

Homicide or murder rates were also examined by a few studies, with overall findings of no change during COVID-19 stay-at-home-orders. In a review of 25 large U.S. cities, homicides saw no decline during stay-at-home orders (Abrams, 2021). Similarly, in an overview of 30 large U.S. cities, homicide trends were found to reflect seasonal fluctuations and not experience a significant difference during the orders (Lopez

& Rosenfeld, 2021). In a study specific to New York City, no changes were found in murder or shooting incidents (Koppel et al., 2022).

Assault, specifically aggravated or felony assault, was found to remain largely unchanged with one exception. During stay-at-home orders aggravated assault remained unchanged in Los Angeles, Chicago, and Tempe (Mohler et al., 2020; White et al., 2022), as well as in the 30 large U.S. cities examined by Lopez and Rosenfeld (2021). On the other hand, in New York City, felony assault decreased during stay-at-home orders, but then increased during protests related to the murder of George Floyd (Koppel et al., 2022). These protests introduce another potential influence on crime, particularly in large cities where protests were more prevalent. Generally, researchers recognized this second potential influence and either controlled for it or analyzed the second time period (time during protests) for different effects.

Robbery in general was found to decrease during stay-at-home orders. Robbery was statistically lower in Los Angeles and New York City and saw a significant decrease in 30 large U.S. cities immediately but then recovered quickly (Koppel et al., 2022; Lopez & Rosenfeld, 2021; Mohler et al., 2020). Robbery did not see a significant change in Indianapolis or Tempe (Mohler et al., 2020; White et al., 2022). Interestingly, in examining Chicago neighborhoods, it was found that higher rates of assaults in 2019 were associated with a significant reduction of assault during stay-at-home orders (Campedelli et al., 2020).

Property crimes in general saw a decrease during COVID-19, with a few exceptions. In an examination of 25 large U.S. cities, property crime rates were observed to drop by 19.3% (Abrams, 2021). The only property crime found to increase in a review of 30 large U.S. cities was motor vehicle theft, which only trended upward. But while the slope increase was significant, the level did not change significantly (Lopez & Rosenfeld, 2021). Vehicle thefts were also found to be significantly higher in Los Angeles (Mohler et al., 2020). In Tempe, property crime experienced a significant but short-term decline, lasting about two weeks (White et al., 2022).

Data on crimes involving drugs was much less readily available but was still observed for some cities. Reviewing 12 large cities, drug crimes were found to decrease 65% during the stay-at-home orders (Abrams, 2021). In a larger review of 20 cities, drug offense rates also fell significantly to levels even lower than any point since 2018 (Lopez & Rosenfeld, 2021). There were also some socioeconomic factors that interact with the impact COVID-19 orders had specifically on drug crime changes that will be discussed later in the socioeconomic predictors section.

A couple of studies chose to focus on a different form of data to assess the impact on crime. In Tempe, there was an immediate and significant decline in calls for police services starting in March 2020 and extending through the end of the year (White et al., 2022). A separate study found that in Dallas, calls for service in public places during stay-at-home orders significantly decreased during the stay-at-home order and calls for service for property crimes also significantly decreased (Semukhina, 2021). These measures are interesting and indicate a slightly different impact that the pandemic had through a better understanding of requests for service rather than the crime that was committed or arrests that were made.

Family Violence

Measurement of family violence during COVID-19 was particularly difficult, not only due to the potential lack of reporting but also because of the complexities of using administrative data as a measurement of family violence. Looking specifically at intimate partner violence (IPV) or domestic violence (DV) and COVID-19 impacts, an early review (through October 2020) examined findings from 19 studies from various areas and found that 11 of the 19 reported an upsurge in IPV, four reported no change, and three reported a decrease during the pandemic (McNeil et al., 2022). These results seem to suggest that IPV may have increased yet there are still conflicting findings of the magnitude of the impact.

A second review of literature conducted a few months later, ending in January of 2021, also examined literature mentioning IPV/DV and COVID-19 and identified 18 articles matching these key words (Piquero et al., 2021). Twenty-nine study estimates reported an increase in IPV/DV during COVID-19 ranging from 0.6% to 75% (Piquero et al., 2021). Eight study estimates reported a decrease in DV/IPV ranging from -0.28% to -77% (Piquero et al., 2021). In the U.S. studies only, there was an overall finding of an 8.1% increase in IPV/DV during COVID-19 with an effect size of 0.87 (Piquero et al., 2021). These findings all lay on a large range leaving the question of how much this pandemic may have impacted IPV largely unanswered.

In a slightly different approach, a survey of victim service providers found that women reported an increase in the frequency of family violence (Drotning et al., 2022). The survey also found that sexual minorities, particularly bisexual individuals, and those with household income decreases experienced higher rates of family violence during COVID-19 (Drotning et al., 2022). These results suggest that there is a large gap in knowledge due to the potential that reporting of crime was down in general, and reporting of family violence in particular was also down while victims may have actually experienced an increase that was not captured.

Socioeconomic Predictors

There are also multiple socioeconomic variables that may also be interacting with COVID-19's impact on crime trends. Socioeconomic variables differ in the types of crime they may have impacted during COVID-19. Looking specifically at Chicago neighborhoods, more populated areas were more prone to experience significant reductions in burglary, robbery assault, and narcotic crimes (Campedelli et al., 2020). Income diversity was positively associated with a reduction in drug crimes but negatively with a decline in burglaries (Campedelli et al., 2020). Poverty was negatively associated with reductions in burglaries and the number of elderly inhabitants in a neighborhood was negatively associated with the odds of reduction in burglary (Campedelli et al., 2020). The prevalence of COVID-19 cases was only related to drug crimes with an increase in cases negatively associated with a decline in drug-related crimes (Campedelli et al., 2020).

Turning to unemployment, crime data and Bureau of Labor Statistics data from 16 large U.S. cities indicated a slight association between unemployment and firearm violence and homicide but confidence intervals only slightly crossed the null (Schleimer et al., 2022). The previously discussed review of IPV and COVID-19 studies examined vulnerability factors for IPV that were indicated by various studies and found that 7 studies indicated a relationship between job loss, unemployment, or low socioeconomic status and an increase in IPV (McNeil et al., 2022). Other factors indicated to increase vulnerability for IPV during

COVID-19 included pre-existing mental health difficulties, a personal COVID-19 diagnosis, and overcrowding or lack of personal space (Iob et al., 2020; Sabri et al., 2020; Sediri et al., 2020).

COVID-19 in Idaho

Idaho was one of the last states in the U.S. with a confirmed case of COVID-19, with the first Idaho case being confirmed on March 13th, 2020. Governor Brad Little then issued an emergency declaration activating the State of Idaho Emergency Operations Plan and releasing funds in the state's Emergency Disaster Fund on the same day. Twelve days later, on March 25th, 2020, the Director of Idaho Department of Health and Welfare (IDHW) issued a statewide order to self-isolate, (i.e., a stay-at-home order). Idaho's order applied to all Idahoans with the exception of essential workers and individuals experiencing homelessness. The order demanded all businesses and governmental agencies "cease non-essential operations at physical locations" and prohibited non-essential gatherings of any number of individuals and all non-essential travel. Idaho's order originally was slated to last through April 15th, 2020, but was extended through April 30th, 2020, lasting for a total of 36 days.

After the stay-at-home order, Idaho went back and forth through several "rebound" phases. The first rebound phase allowed businesses and governmental agencies to resume operations while adhering to social distancing and sanitation requirements. Certain businesses such as bars, restaurants (on-site dining), gyms, close contact service (beauty salons, massage parlors, etc.) and large venues (movie theatres, concert/sports venues, etc.) were not able to reopen during this phase. It was also suggested that vulnerable individuals stay home, gatherings be avoided, and non-essential travel be avoided or minimized. Rebound phase 1 lasted from May 1st through May 16th, 2020. Phase 2 allowed for gatherings of up to 9 people and allowed restaurants, gyms, and close contact services to open with social distancing restrictions. Phase 3 allowed for gatherings of 50 people and allowed bars to open along with lifting recommendations against non-essential travel. This phase lasted from May 30th until June 13th. The final phase, phase 4, allowed gatherings of any size with social distancing requirements and allowed nightclubs and large venues to open. This phase lasted until October 27th, 2020, when Idaho reverted back to a modified version of phase 3. At this point, Idaho moved back and forth between modified versions of phases 2, 3, and 4 until the spring of 2022. The emergency declaration was allowed to officially expire on April 15th, 2022, ending all formal guidelines and restrictions. It should also be noted that while these were the official state orders, adherence and further orders may have differed based on area or municipality. For example, the City of Boise released their own Public Health Emergency Orders during the pandemic that were more restrictive than the state orders and outlined further measures such as when face masks were required[1].

Impact on Idaho's Justice System

The COVID-19 pandemic clearly impacted every aspect of daily life, and certainly did not lack impact to the justice system across the country and in Idaho specifically. All parts of the justice system adjusted practices and operations to limit in-person contact and protect those who work in these professions along with the individuals coming into contact with any parts of this system. Law enforcement took extra precautions in their interactions with the public. Courts adjusted their operations and proceedings to online formats, holding video hearings and putting jury trials on hold. Prisons and jails faced pressure with social distancing being particularly difficult as efforts were made to decrease population and visiting was

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[1] City of Boise Public Health Emergency Orders 20-12, 20-13, 20-14

put on hold. Victim service agencies limited as much in-person contact as possible and moved many services online.

Methodology of Previous Studies

Prior studies have used multiple definitions and methods to measure crime, including those measuring crime during the COVID-19 stay-at-home orders. Some studies used multiple levels of data to measure crime such as examining both the incidents that occurred as well as the calls for service that were made. To understand the possible methods that could be used, it is helpful to examine what these prior studies have done.

Many studies measured crimes based on "incidents". Data usually came directly from the law enforcement agencies working in the area of interest, but some did rely on other public sources (Abrams, 2021; Carter & Turner, 2021; Massenkoff & Chalfin, 2022; Piquero et al., 2020; Schleimer et al., 2022). A few of these studies were less clear on whether they were counting at an incident level or the offense level. Some studies did specify that they examined offense-level data, meaning one incident is broken down into various offenses for analysis and could be represented multiple times in the data set (Campedelli et al., 2020; Lopez & Rosenfeld, 2021; White et al., 2022). A few studies used arrest level data from law enforcement records (Abrams, 2021; Lopez & Rosenfeld, 2021; Moise & Piquero, 2021; White et al., 2022). The smallest group used complaints or calls for service data that was gathered from law enforcement agencies directly (Koppel et al., 2022; Mohler et al., 2020; White et al., 2022).

DATA COLLECTION AND ANALYSIS METHODS

Data Collection

The Idaho Statistical Analysis Center (ISAC) chose to use data gathered from the Idaho Incident-Based Reporting System (IIBRS) for the years 2018-2021. This data is the most complete and consistent criminal incident data available for the state of Idaho. Law enforcement agencies in Idaho have been reporting under the National Incident-Based Reporting System (NIBRS) since 1991. [2] These data are reported and published yearly in the *Crime in Idaho* report series and are available for quick, custom visualizations on a dashboard maintained by ISAC. This study uses IIBRS data, including the number of offenses and offense types, from the years 2018-2021.

Analysis

This study utilizes interrupted time series analysis in order to understand the impact of the COVID-19 stay-at-home order in Idaho on overall crime as well as some crime types. COVID -19 stay-at-home orders provided an immediate and drastic interruption to daily lives. While the COVID -19 pandemic itself impacted lives, the most concrete and abrupt changes occurred during stay-at-home orders. Stay-at-home orders provide a clear intervention with exact dates, lending themselves to be an ideal subject for an interrupted time series analysis.

Data was analyzed at the offense level to measure the number of offenses overall as well as the number of each type of criminal offense. Based on the prior research outlined above, as well as topics of interest in Idaho, a few categories were chosen to examine further in this study. While changes may have occurred in the total frequency of crime, further breaking down and investigating individual crime types allows for deeper understanding of how circumstances may impact distinct crime types differently. The offense categories chosen for deeper investigation in this report include drug/alcohol offenses, robbery, burglary, sexual violence, and domestic/intimate partner violence. For the purposes of this study, drug/alcohol offenses include NIBRS offenses coded as Drug/Narcotic Violations (35A), Drug Equipment Violations (35B), Driving Under the Influence (90D), Drunkenness (90E), and Liquor Law Violations (90G). Both Robbery (120) and Burglary/Breaking & Entering (220) only include one offense code. Sexual violence includes the codes for Rape (11A), Sodomy (11B), Sexual Assault with an Object (11C), Fondling (11D), Incest (36A), and Statutory Rape (36B). Domestic violence is not defined by a code but rather by the relationship coded for the offense. Domestic violence is identified in this study as a "person crime" offense with the following victim-offender relationship codes: spouse (SE), common-law spouse (CS), ex-spouse (XS), homosexual relationship (HR), and ex-relationship (XR). Due to recent revisions in relationship codes, some codes that are no longer in use were still included in this study in order to capture all instances of intimate partner violence when those codes were still valid.

Idaho's stay-at-home order lasted for a little less than six weeks (March 25th, 2020, through April 30th, 2020) Thus, a six-week intervention period was coded in the data as running from March 24th, 2020, through May 4th, 2020. While the final week includes four days that fall outside the official stay-at-home

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[2] Although Idaho has been a NIBRS-only state since the 1990s, two local agencies did not report data to IIBRS in 2020. These agencies represent about 3% of Idaho's population. Seven did not report in 2021, representing about 5% of Idaho's population. All agencies reported data in 2018 and 2019. Because reporting agencies covered at least 95% of the population every year during the study and there was geographic diversity among non-reporting agencies (e.g., non-reporting agencies were not contained to one part of the state), imputation of missing data was not attempted.

order, it is not expected that this significantly impacted the analysis. Although the order had an exact end date, it is expected that most people did not resume a completely normal routine immediately after the end of the order. A total of 116 weeks before and 86 weeks after the stay-at-home order were available for analysis, rounding out the full four-year period from 2018 to 2021.

County Rurality Level Classification Method

County-level data was also grouped and examined based on their 2010 Census County Rurality Level. This was the most up-to-date version available at the time of the analysis and it is not expected that many counties in Idaho would have shifted classification due to the large breadth of these classification groups. The Census Bureau identifies three groups. Counties with less than 50% of the population living in rural areas are classified as mostly urban, those with 50% to 99.9% of the population living in rural areas are classified as mostly rural, and those with 100% of the population living in rural areas are classified as completely rural.[3]

While the stay-at-home order was in place at the state level, there is reason to believe that the stay-at-home order may have had a different impact depending on the population of a county due to additional actions taken by local governments around the state. For example, more populous jurisdictions like the City of Boise (located in Ada County) and Blaine County, both of which fall into this study's "mostly urban" classification but are in different geographic regions, enacted their own public health orders throughout the duration of the pandemic that were stricter than the state orders, while jurisdictions that fall within the "mostly rural" and "completely rural" categories did not take similar action.

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[3] See Appendix A for the full list of county-level rural population percentages and groupings that were utilized for analysis.

RESULTS

Multiple analyses were conducted to understand the impact of the stay-at-home order on reported crime in Idaho. To begin, descriptive analysis was conducted to evaluate any changes in the number of offenses before, during, and after the statewide COVID-19 stay-at-home order. This included comparing annual offense counts for the years 2018 – 2021, as well as year-over-year analyses of offense counts during the six-week period in March and April of each year that correspond to the statewide stay-at-home order in 2020.

Additionally, statistical tests, including the construction of autoregressive integrated moving average (ARIMA) models, were utilized to determine whether the frequencies of offenses observed during the stay-at-home order were statistically different from frequencies that would be expected had the order not been put in place (i.e., did levels of reported crime change during the stay-at-home order in such a way that would not be likely to happen had the order never existed). ARIMA models were constructed for statewide data on five offense types, as well as the total offense counts for each of the three county rurality groupings.

Results of this analysis are presented in three sections. First, total statewide data for calendar years 2018 through 2021 is provided for context. Next, year-over-year analyses and weekly offense counts by crime type at the state level are presented, with statistically significant changes during the stay-at-home order as determined by the ARIMA models indicated where applicable.[4] This section closes with some similar analyses of data disaggregated by county rurality classification, and statistically significant changes during the stay-at-home order again noted where applicable.

Statewide Annual Offense Counts

In examining annual trends, the number of offenses overall, as well as robberies and burglaries, declined from 2018 to 2021 (see Figure 1). Drug/alcohol offenses also declined overall but experienced a slight increase from 2020 to 2021. Sexual violence, on the other hand, increased statewide from 2018 to 2021, and intimate partner violence (IPV) decreased from 2018 to 2019 and then remained fairly stable.

Figure 1. Total offense counts for select crime types, 2018 – 2021.

All Offenses

117,324 | 108,901 | 100,915 | 98,627
2018 | 2019 | 2020 | 2021

Drug/Alcohol Offenses

30,160 | 29,299 | 26,362 | 27,824
2018 | 2019 | 2020 | 2021

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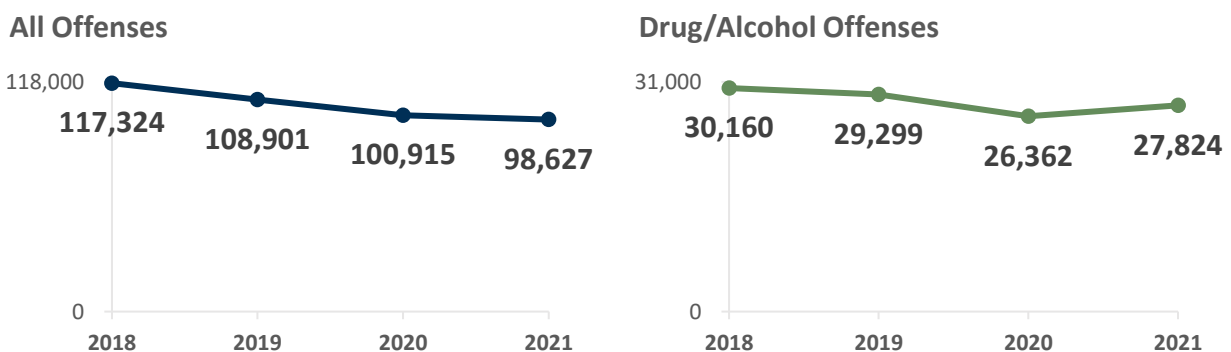
[4] Further discussion and full results of the ARIMA models can be found in Appendix B.

Figure 1 (continued).

Robbery

Burglary

Sexual Violence

Intimate Partner Violence
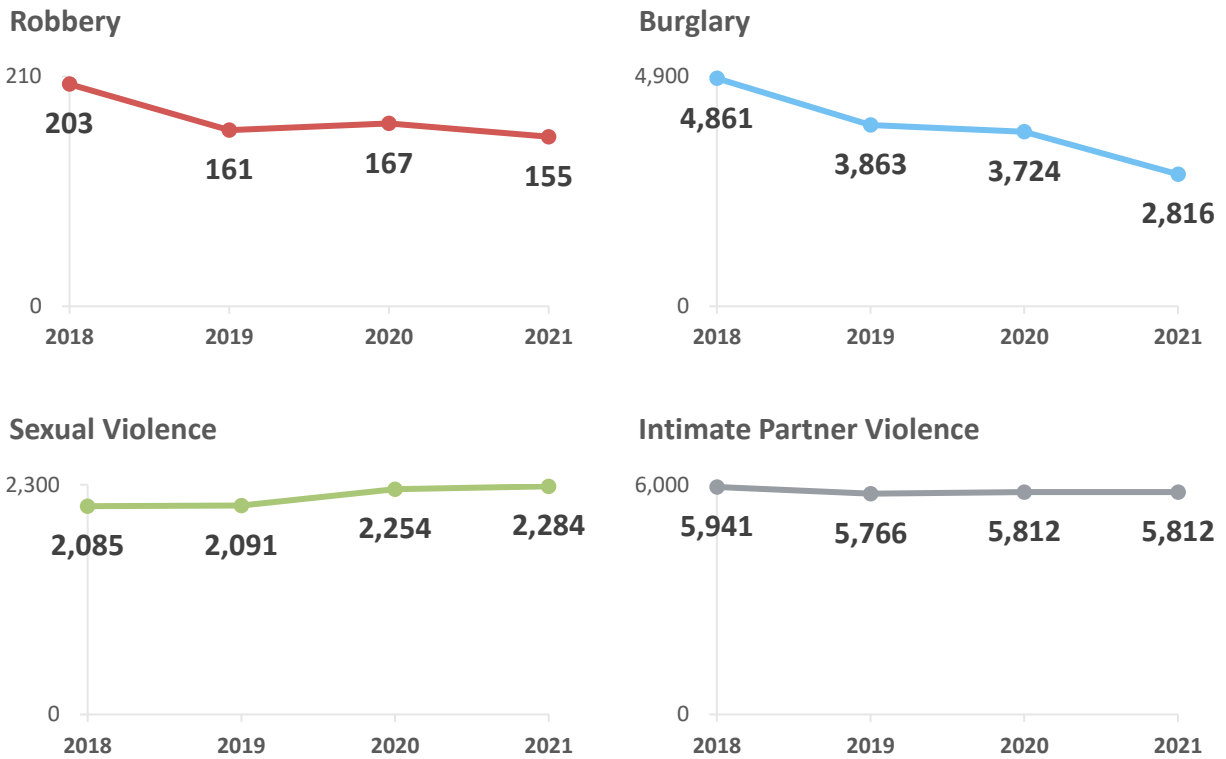
Statewide Year-Over-Year Analyses

Although the preceding overview shows sustained declines in most crime types, there are underlying trends that become apparent when limiting analysis to the six-week period of the stay-at-home order in 2020 and comparing that window to the same period of time in 2018, 2019, and 2021 in a year-over-year analysis. Year-over-year analysis allows for minimization of potential seasonal effects or cycles. It is well-known that certain crimes are impacted by seasonal cycles, and if the six-week stay-at-home order was compared to the periods immediately before and after the order was in place, it is likely there would be skewed results. In this analysis, the same six-week periods are compared over four years (Weeks 13 – 18 of 2018 through 2021; see Figure 2).

This analysis yields vastly different trends than the full-year analysis shown in Figure 1. Total offenses decreased 9% during Weeks 13 – 18 of 2019 compared to the same period in 2018, then experienced a sharp decrease (28%) during the stay-at-home order. Yet in 2021 there was an increase from 2020 (34%), bringing the number back up for a net decrease between 2019 and 2021 of only about 4%. There was a 13% drop in the number of sexual violence offenses during the stay-at-home order that is not observed when looking at 2020 as a whole. Burglary saw a slight increase during the stay-at-home order as compared to the same 6-week period in 2019 (6.6%) but that was after a large decrease in 2019 (34%).

ARIMA models indicate that the drops in total offenses and drug/alcohol offenses during the six weeks of the stay-at-home order in 2020 were statistically significant and given the trend during the rest of the study period, would likely not have occurred had the stay-at-home order not been issued. The changes in the other four crime types during the stay-at-home order were not statistically significant.

Figure 2. Year-over-year offense counts and percentage change for Weeks 13 – 18, 2018 – 2021.[5]

All Offenses*

13,721 | 12,460 | 8,922 | 11,987
-9.2% | -28.4% | 34.4%
2018 | 2019 | 2020 | 2021

Drug/Alcohol Offenses*

3,477 | 3,399 | 1,871 | 3,680
-2.2% | -45.0% | 96.7%
2018 | 2019 | 2020 | 2021

Robbery

17 | 17 | 17 | 22
0.0% | 0.0% | 29.4%
2018 | 2019 | 2020 | 2021

Burglary

579 | 381 | 406 | 265
-34.2% | 6.6% | -34.7%
2018 | 2019 | 2020 | 2021

Sexual Violence

236 | 241 | 210 | 291
2.1% | -12.9% | 38.6%
2018 | 2019 | 2020 | 2021

Intimate Partner Violence

725 | 633 | 649 | 648
-12.7% | 2.5% | -0.2%
2018 | 2019 | 2020 | 2021

Observation of these same numbers visually week-by-week reinforces the trends observed above. The charts in Figures 3 - 8 begin with January 2018 (Week1) and continue through December 2021 (Week 208). The six weeks when Idaho's stay-at-home order was active is indicated in red; the beginning is marked with the solid line and the end is marked with the dotted line.

At the state level, there is a clear and immediate decrease in the number of total offenses and drug/alcohol offenses that occurred during the stay-at-home order (Figures 3 and 4). Note that the same

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[5] Three asterisks (***) in the chart header indicates there was a statistically significant change in offense counts during the stay-at-home order in 2020, according to ARIMA models.

findings of statistical significance noted above also apply here. ARIMA models showed the drop in both offense types during the order to be statistically significant.

Figure 3. Weekly offense counts for all offenses, 2018 – 2021.
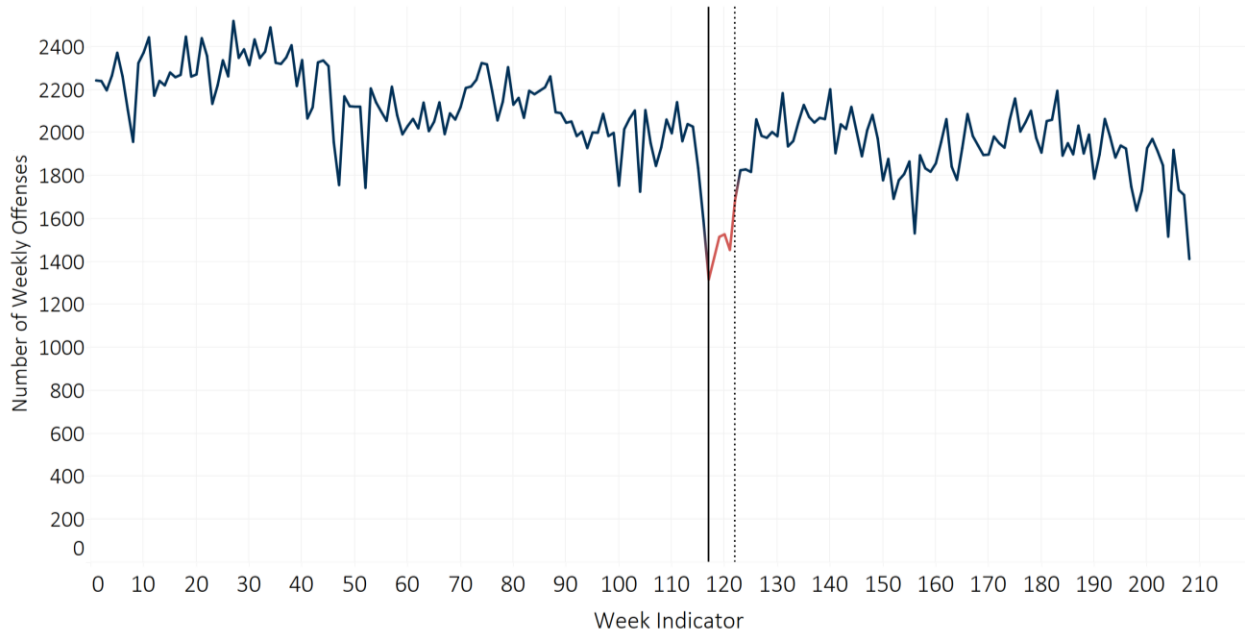
NOTE: Drop in offense counts during the stay-at-home order is statistically significant, according to ARIMA models.

Figure 4. Weekly offense counts for drug/alcohol offenses, 2018 – 2021.
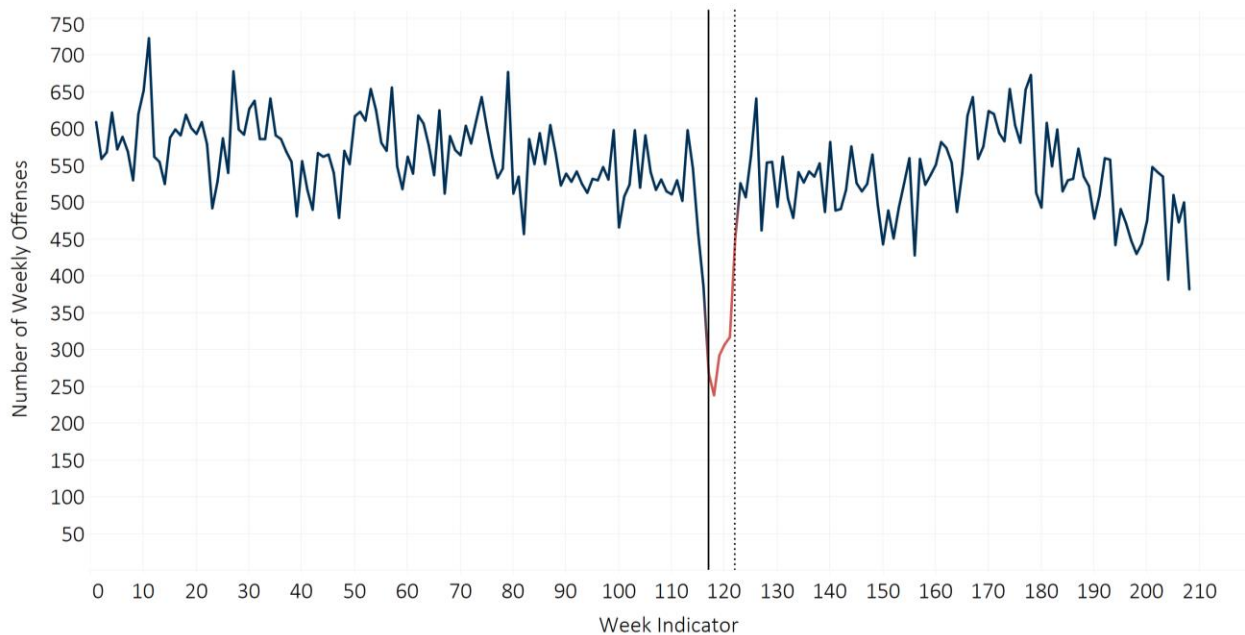
NOTE: Drop in offense counts during the stay-at-home order is statistically significant, according to ARIMA models.

Robbery, burglary, sexual violence, and IPV did not exhibit such clear changes during to the stay-at-home order (Figures 5 – 8). In fact, these offense types continued along their existing trend without any apparent disruption. Furthermore, ARIMA models did not detect statistically significant changes during the stay-at-home order for these four crime types. This further reinforces the observations from the six-week year-over-year analysis above.

Figure 5. Weekly offense counts for robbery, 2018 – 2021.
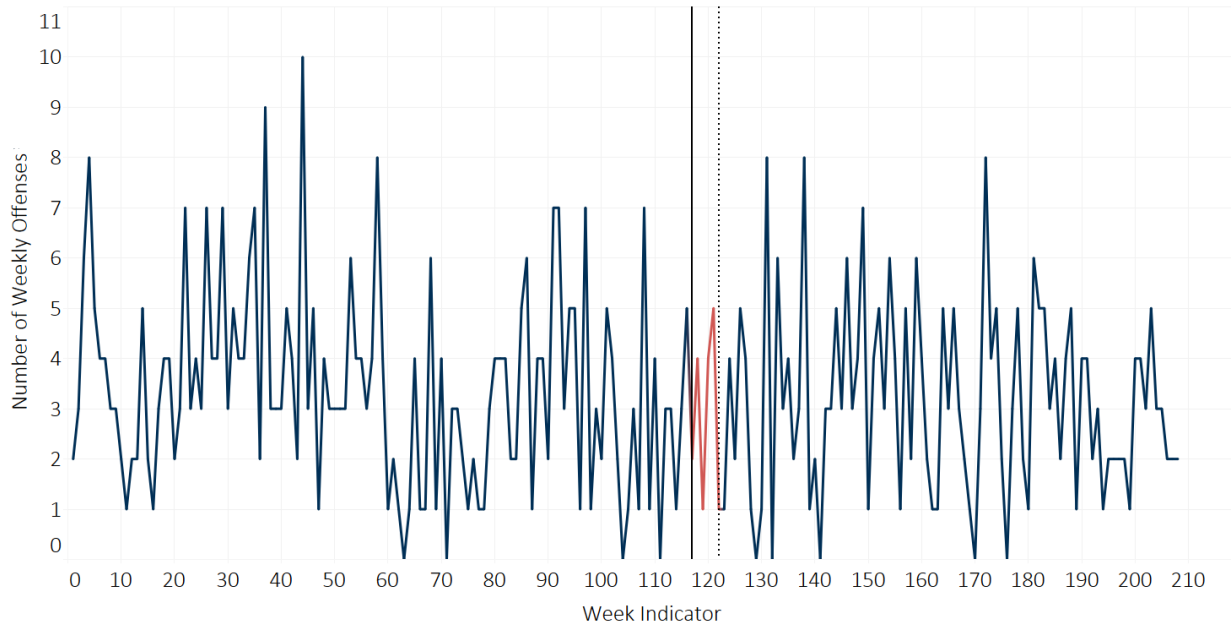
Figure 6. Weekly offense counts for burglary, 2018 – 2021.
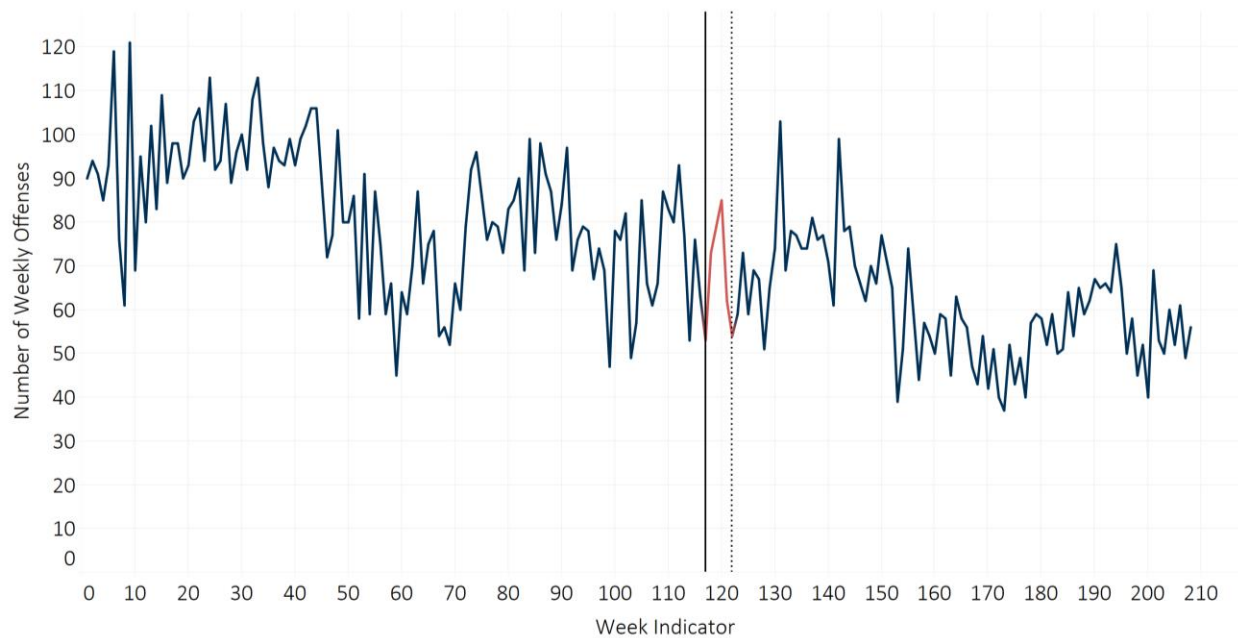
Figure 7. Weekly offense counts for sexual violence, 2018 – 2021.
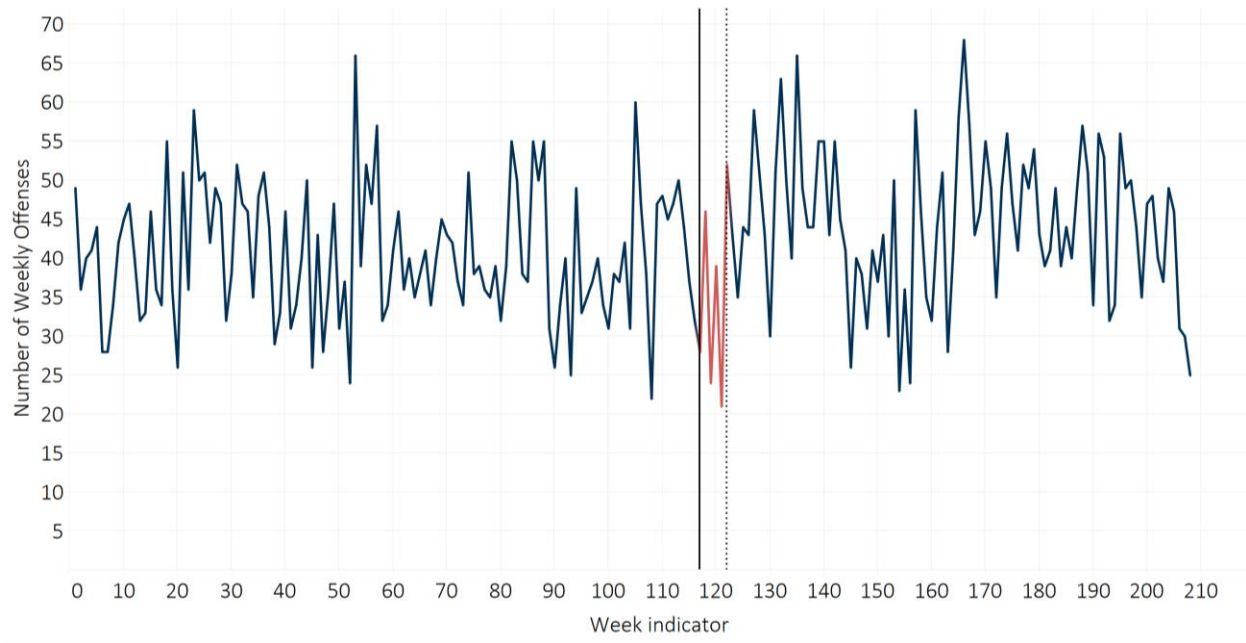
Figure 8. Weekly offense counts for intimate partner violence, 2018 – 2021.
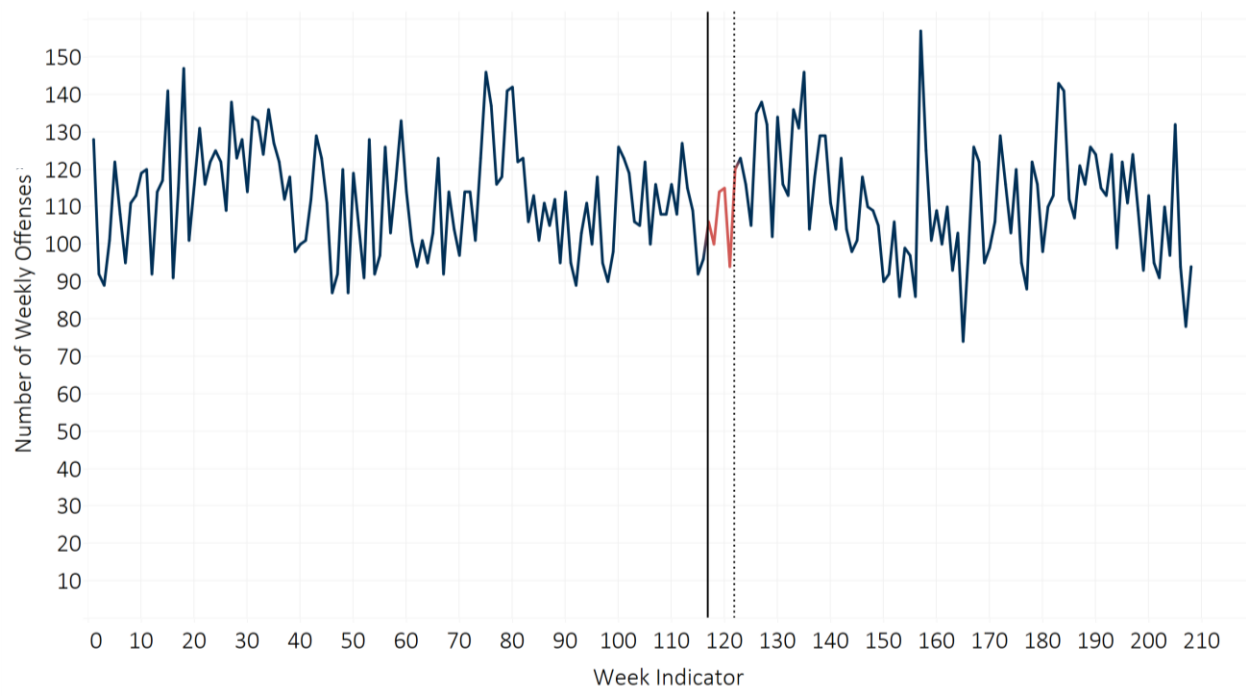
Year-Over-Year Analyses by County Rurality Level

Applying the same year-over-year analysis to groups of counties broken down by the Census Bureau's urban and rural classifications reveals slightly different trends depending on county rurality level. In observing all offenses, completely rural counties experienced a similar decrease to the mostly urban counties (28% each) during the stay-at-home period but then experienced a greater percentage increase in 2021 (60% increase for completely rural counties, compared to a 29% increase in mostly urban and a 43.5% increase in mostly rural counties). All counties experienced a large percentage increase in the number of drug/alcohol offenses, with mostly urban counties having an 89% increase, mostly rural counties seeing a 136% increase and completely rural counties having an 80% increase. See Figures 9 – 11 for the complete breakdown of crime types by county rurality levels.

ARIMA models were only constructed for total offenses by county rurality level due to the low offense counts for some crime types even in the mostly urban counties, such as robbery and sexual violence. Statistically significant differences were observed for the mostly urban and mostly rural groups, but not for the completely rural group despite a similar percentage drop during the stay-at-home order as the mostly urban group. The relatively low number of total offenses observed in the completely rural group could be responsible for this finding.

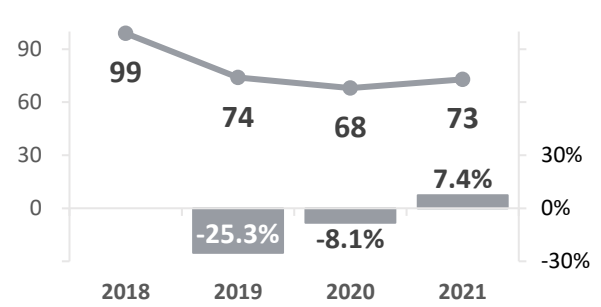*Figure 9. Year-over-year offense counts and percentage change for Weeks 13 – 18 in mostly urban counties, 2018 – 2021.[6]*

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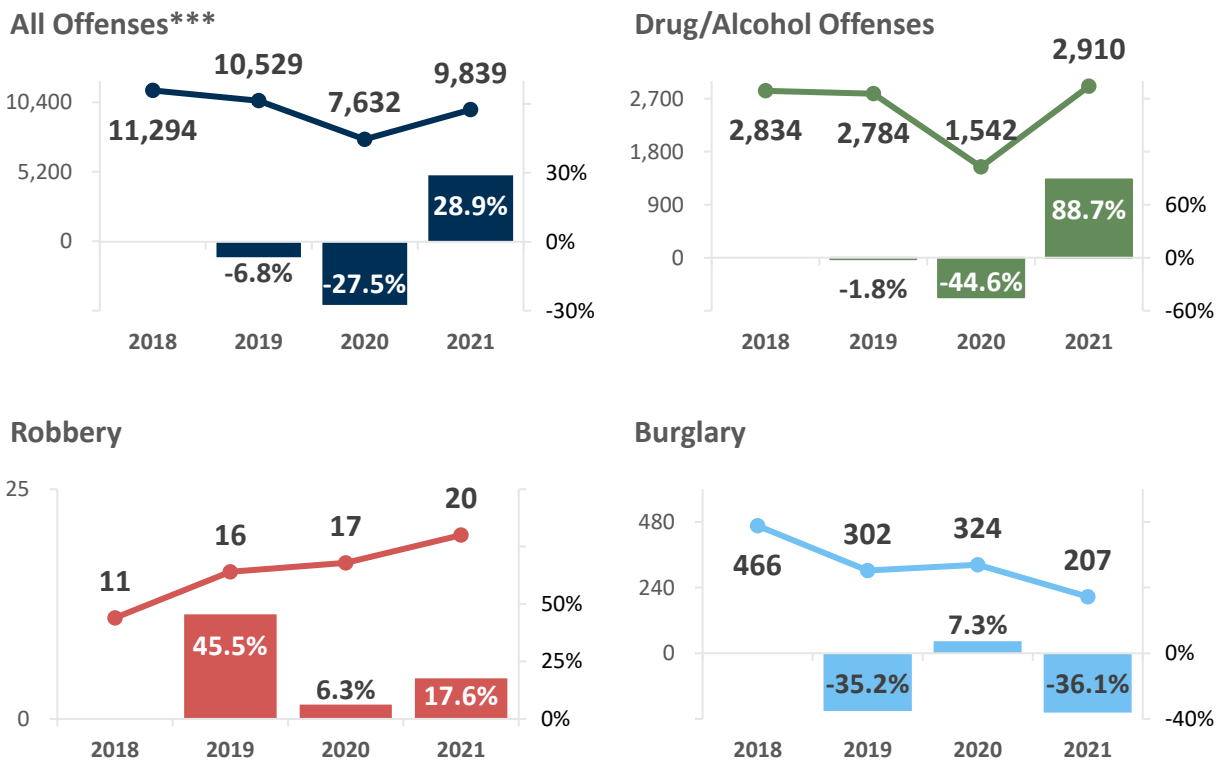
[6] Three asterisks (***) in the chart header indicates there was a statistically significant change in offense counts during the stay-at-home order in 2020, according to ARIMA models.

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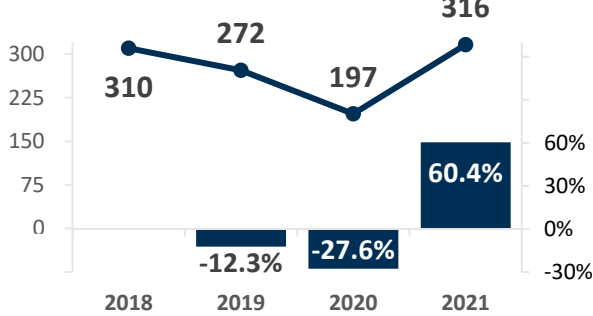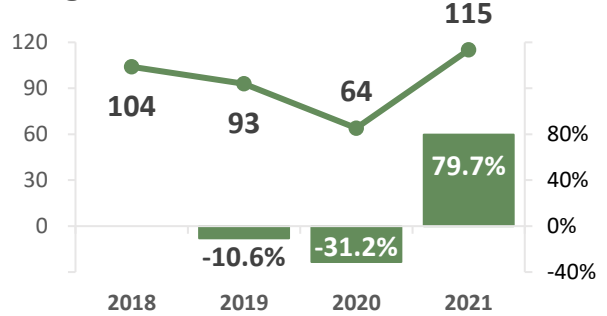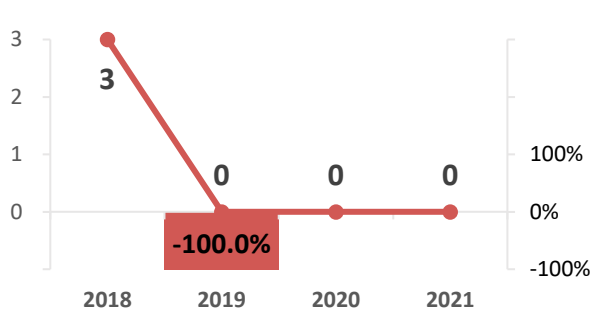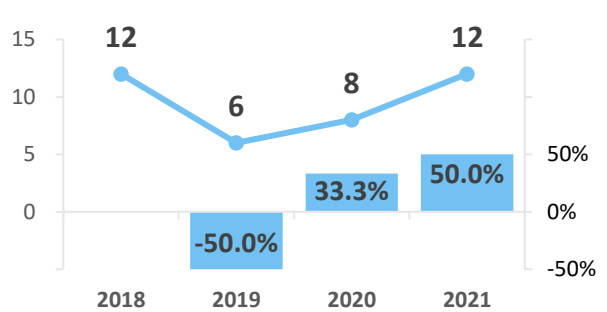*Figure 9 (continued).*

Sexual Violence
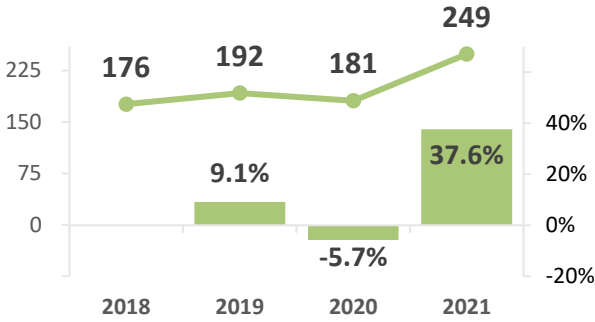
Intimate Partner Violence
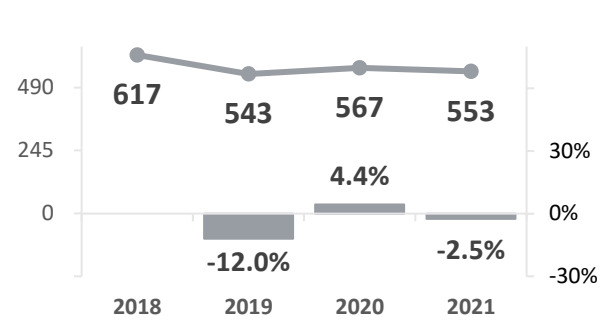
Figure 10. Year-over-year offense counts and percentage change for Weeks 13 – 18 in mostly rural counties, 2018 – 2021.[7]
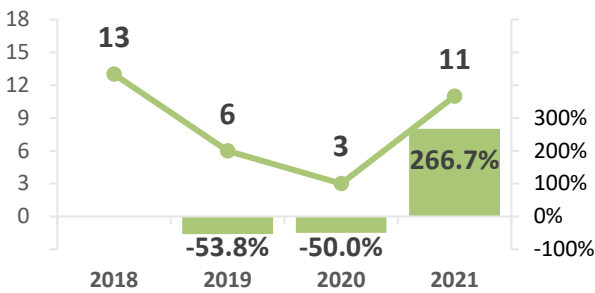
All Offenses***
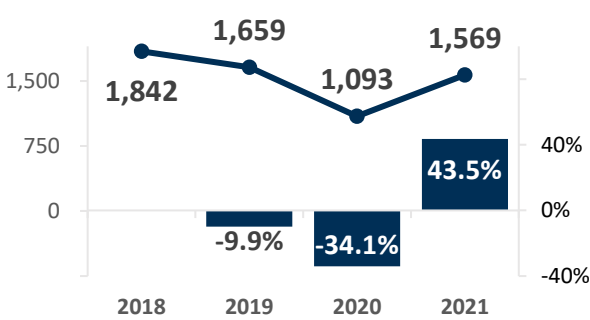
Drug/Alcohol Offenses
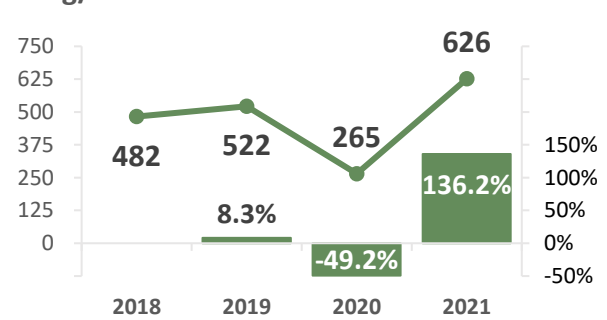
Robbery
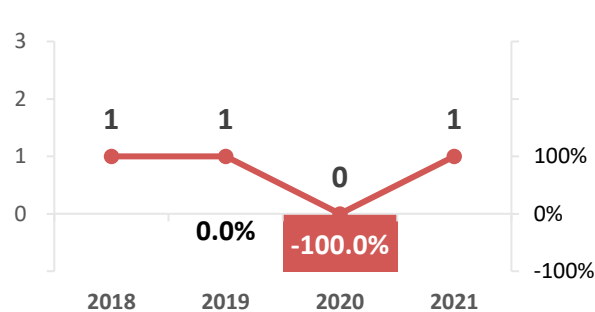

Burglary

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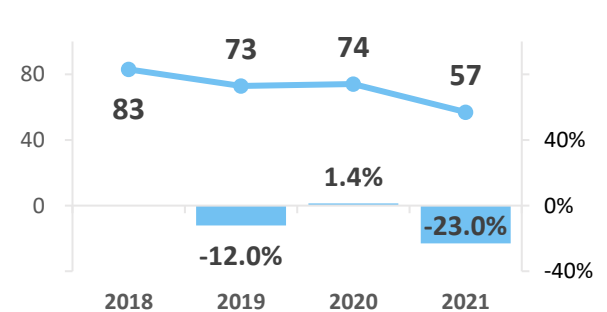
[7] Three asterisks (***) in the chart header indicates there was a statistically significant change in offense counts during the stay-at-home order in 2020, according to ARIMA models.

Figure 10 (continued).

Sexual Violence
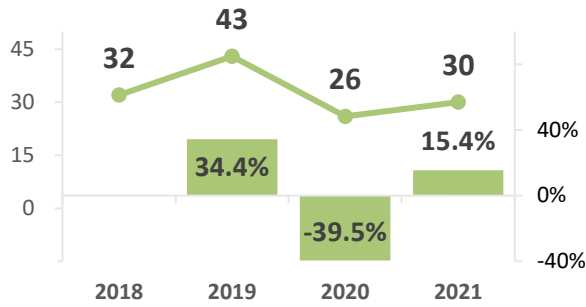
Intimate Partner Violence

Figure 11. Year-over-year offense counts and percentage change for Weeks 13 – 18 in completely rural counties, 2018 – 2021.

All Offenses

Drug/Alcohol Offenses

Robbery

Burglary

Figure 11 (continued).

Sexual Violence

Intimate Partner Violence
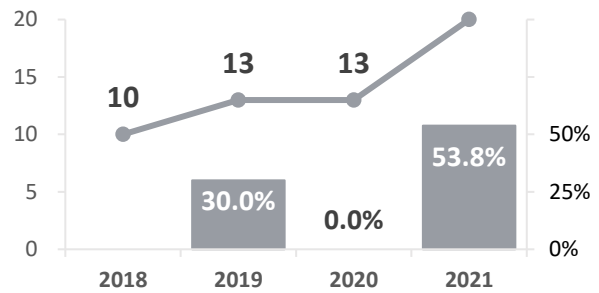
In an effort to better understand how county population may have contributed to the stay-at-home order's impact on crime, Figures 12 – 14 present the number of total offenses by week, disaggregated by the three county rurality levels. It appears that the stay-at-home home order had a larger disruptive effect in mostly urban counties compared to the two other groups. A similar drop to what was seen in the overall state data can be observed in Figure 12, but the effect is less pronounced in mostly rural counties (Figure 13) and there seems to be almost no change in completely rural counties (Figure 14). Recall that the ARIMA models found statistically significant drops in crime for the mostly urban and mostly rural groups during the stay-at-home order, but not for the completely rural group.

*Figure 12. Weekly offense counts for all offenses in mostly urban counties, 2018 – 2021.*
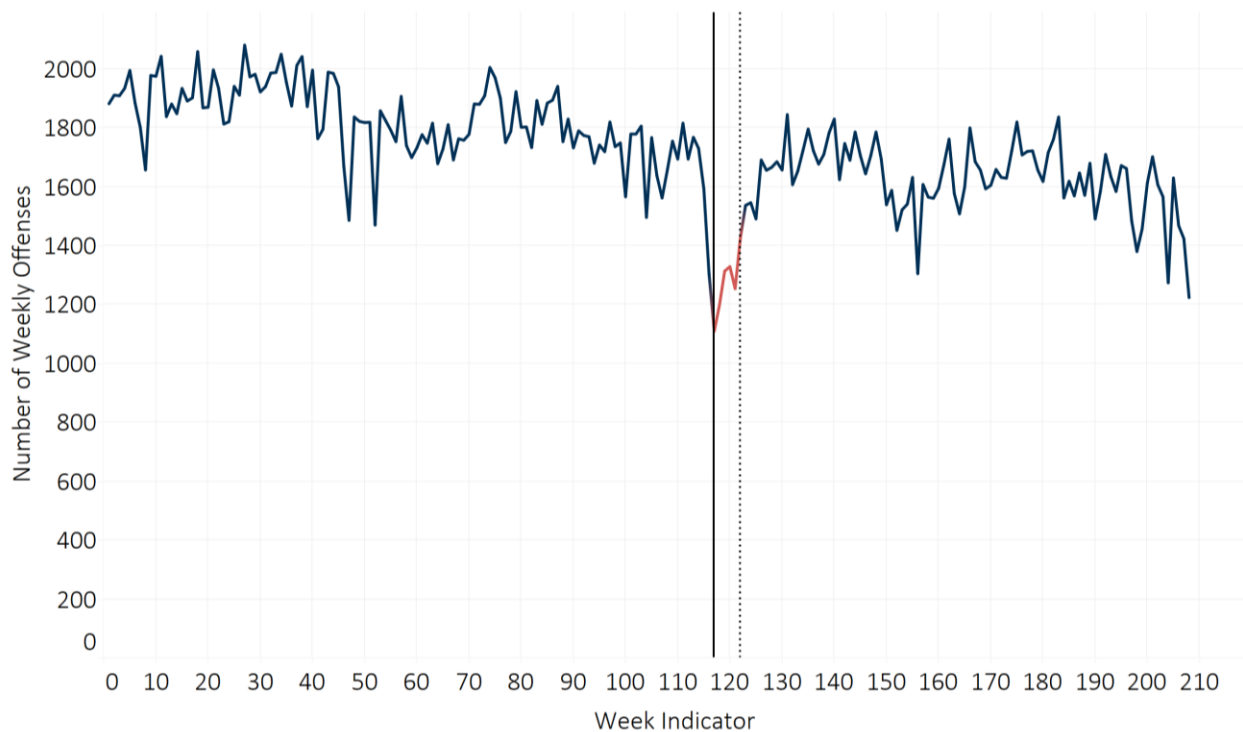
NOTE: Drop in offense counts during the stay-at-home order is statistically significant, according to ARIMA models.

Figure 13. Weekly offense counts for all offenses in mostly rural counties, 2018 – 2021.
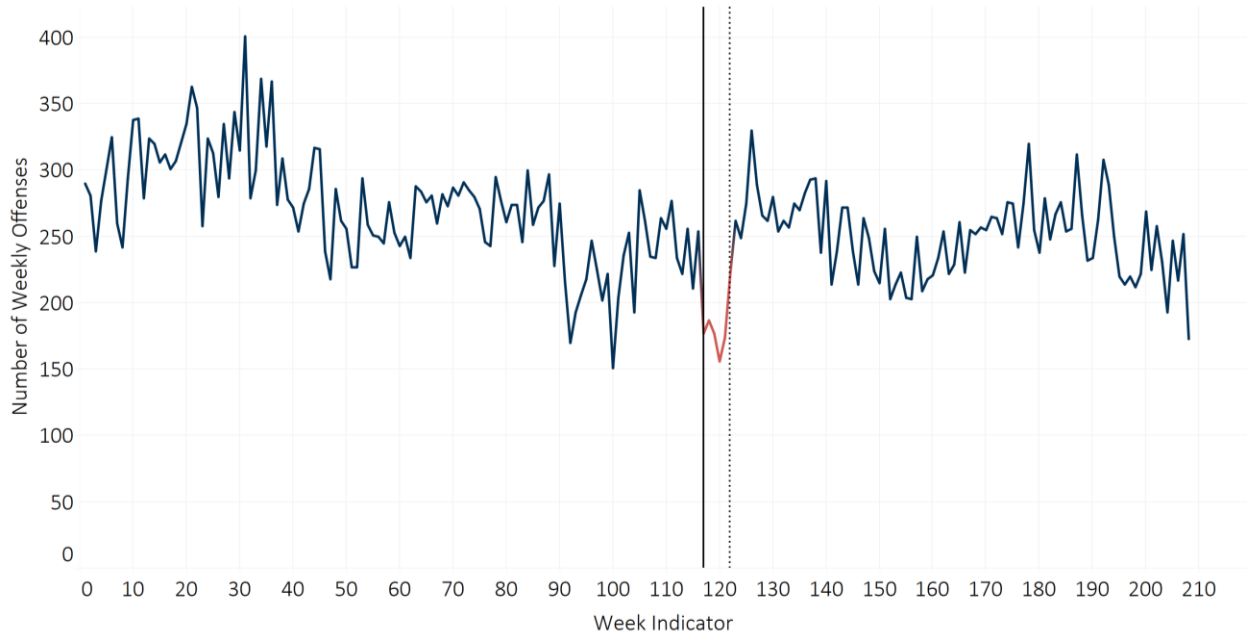
NOTE: Drop in offense counts during the stay-at-home order is statistically significant, according to ARIMA models.

Figure 14. Weekly offense counts all offenses in completely rural counties, 2018 – 2021.
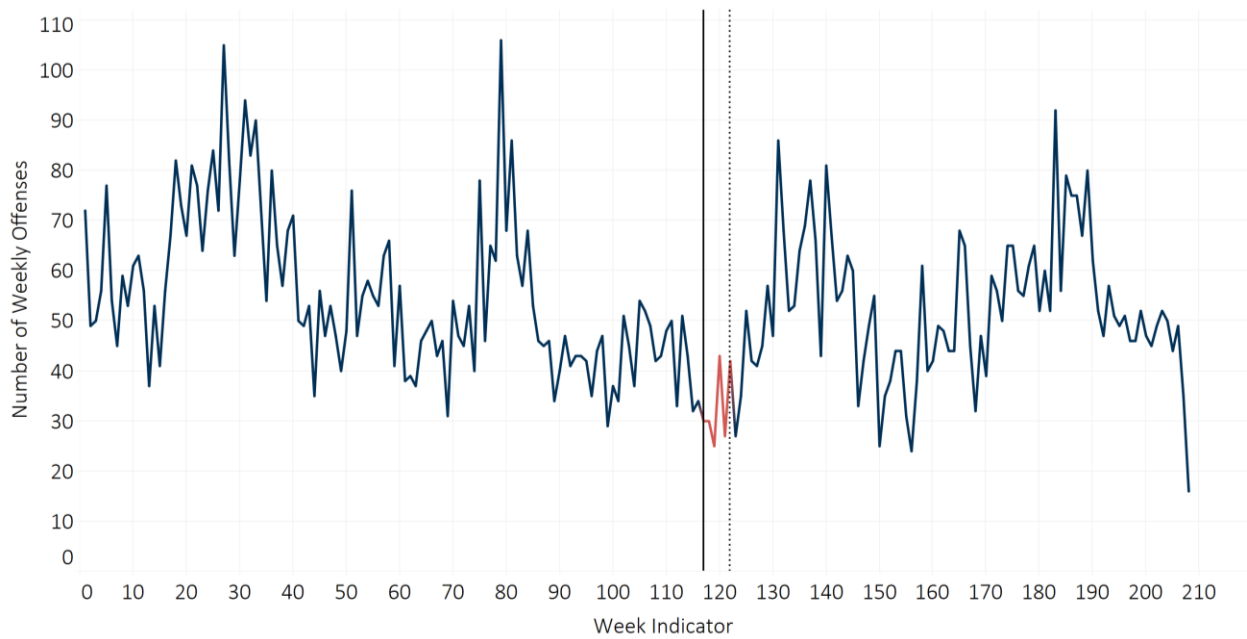
CONCLUSION

Overall, the number of offenses in Idaho during the statewide stay-at-home order dropped off drastically and then returned to the trend that was observed before this time period. However, the magnitude of the effect differs among crime types and geographic areas. The largest differences were observed in total offenses and drug/alcohol offenses. The other crime types tested here saw a marginal impact, but not at a statistically significant level that could lead us to conclude that the difference reflects anything but normal fluctuations in the timing of offenses. This could be due to the low number of these types of offenses or due to the nature of the offenses themselves. Offenses such as drug/alcohol offenses may require a more public setting to be detected and may require more movement than was occurring at the time. Some offenses also could have been enforced slightly differently during the pandemic when officer safety and exposure to COVID-19 was considered. Differences were also observed in counties of different population levels. This analysis suggests that in more rural counties, offense numbers were less impacted by the stay-at-home order.

The immediacy of the stay-at-home order as an intervention is useful because it eliminates the potential for a lag effect at the beginning of the intervention period. However, there are a few other potential issues that need to be considered during the analysis. In this case because the intervention was so short, there are only six weeks included in the time period during the stay-at-home order. The year-over-year analysis allowed for this shorter time period to be compared across four years, illuminating some changes that occurred as compared to the years before and the year following the stay-at-home order. Based on that analysis and visual inspection of the graphs presented above, it seems that COVID-19 stay-at-home order did have an effect on crime in Idaho, depending on the crime type and the population density of the county.

This study represents a starting point for understanding the true impact of the stay-at-home order in Idaho. There are many other ways the data could have been disaggregated or stratified, and there are other factors that could be taken into consideration that were not included in these models. For example, there are socioeconomic factors that may have also contributed to the differences observed by interacting with the impact of the stay-at-home order. There are also other crime types that may be of interest that were not examined here. There are also ways to examine the impact based on geographic differences, such as comparing individual cities or counties (such an analysis was outside the scope of this project). Finally, because IIBRS only includes crime reported to law enforcement, it represents just a portion of our understanding of crime that occurs in the community and there could be other data sources that complete the picture of the impact of COVID-19 stay-at-home order on the justice system in Idaho. One example would be data that could be captured in a statewide victimization survey, which could better represent what was actually happening in communities as there may be incidents that were not reported to police, especially during the pandemic. Idaho currently has no such statewide victimization survey, but examinations of administrative data from other parts of the justice system (such as local victim service agencies) could begin to fill the gaps in knowledge that still exist.

APPENDIX A: COUNTY RURALITY LEVELS

Mostly Urban Counties	2010 Population	% Rural	
Ada	392,365	5.5%	
Bannock	82,839	15.7%	
Blaine	21,376	32.8%	
Bonneville	104,304	12.9%	
Canyon	188,923	19.9%	
Elmore	27,038	26.9%	
Gem	16,719	45.0%	
Kootenai	138,494	24.2%	
Latah	37,244	35.0%	
Madison	37,536	28.5%	
Minidoka	20,069	44.2%	
Nez Perce	39,265	19.2%	
Payette	22,623	42.7%	
Power	7,817	42.6%	
Twin Falls	77,230	28.0%	
Washington	10,198	45.6%	

Mostly Rural Counties	2010 Population	% Rural	
Benewah	9,285	71.9%	
Bingham	45,607	56.0%	
Bonner	40,877	72.4%	
Boundary	10,972	76.2%	
Caribou	6,963	59.9%	
Cassia	22,952	51.5%	
Clearwater	8,761	58.6%	
Franklin	12,786	66.2%	
Fremont	13,242	72.0%	
Gooding	15,464	58.1%	
Idaho	16,267	80.6%	
Jefferson	26,140	66.6%	
Jerome	22,374	51.3%	
Lemhi	7,936	61.1%	
Owyhee	11,526	77.3%	
Shoshone	12,765	56.0%	

Completely Rural Counties	2010 Population	% Rural	
Adams	3,976	100.0%	
Bear Lake	5,986	100.0%	
Boise	7,028	100.0%	
Butte	2,891	100.0%	
Camas	1,117	100.0%	
Clark	982	100.0%	
Custer	4,368	100.0%	
Lewis	3,821	100.0%	
Lincoln	5,208	100.0%	
Oneida	4,286	100.0%	
Teton	10,170	100.0%	
Valley	9,862	100.0%	

APPENDIX B: ARIMA MODELS

To understand the impact of Idaho's stay-at-home order on crime, autoregressive integrated moving average (ARIMA) models were constructed. Seasonality and trend were considered to assure that this analysis captures the impact without interference of seasonality and trends that were already occurring separate from the stay home orders. Results of Dickey-Fuller tests indicate that all of the data series are stationary.[8] Autocorrelation plots indicate that there may be some autocorrelation between weeks, which is expected in a time series (previous counts of offenses are likely to influence future counts). ARIMA models help to overcome threats to internal validity including this serial correlation. The ARIMA results are consistent with what was observed in the graphs presented in the main text. Total offenses and drug/alcohol offenses experienced an immediate and significant decline during the stay-at-home order. Burglary, sexual violence, and intimate partner violence did not change significantly during the stay-at-home order. Due to the low number of robberies statewide, an ARIMA model was not constructed for that crime type.

Crime Type	r squared	B	SE	T	p value
All Offenses (1,0,0)	0.598	-277.719	102.648	-2.706	0.007
Drug/Alcohol Offenses (2,0,0)	0.417	-204.916	28.715	-7.136	0.000
Burglary (1,0,0)	0.428	-6.884	9.818	-0.701	0.484
Sexual Violence (0,0,0)	0.016	-7.099	3.857	-1.840	0.067
Intimate Partner Violence (0,0,0)	0.002	-3.567	6.231	-0.573	0.568

Turning to the county population groups, as was observed in the graphs in the main text, completely rural counties did not experience as much disruption as the more populated ones in Idaho. The mostly urban and mostly rural groups of counties did experience a significant decrease in total offenses during the stay-at-home order. Completely rural counties did not experience a significant decrease in total offenses.

County Rurality Level	r squared	B	SE	T	p value
Mostly Urban (2,0,0)	0.484	-298.378	71.216	-4.190	0.000
Mostly Rural (2,0,0)	0.339	-64.722	18.063	-3.583	0.000
Completely Rural (2,0,0)	0.293	-7.895	7.172	-1.101	0.272

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[8] Dickey Fuller tests were conducted using STATA 14.

APPENDIX C: REFERENCES

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