Impact of COVID-19 on U.S. Correctional Systems
Danielle Amonica, Kenna Ebert, Jakob Orel & Jonathan Shilyanksy

The United States leads the world in incarceration, which is the confinement of

individuals in jails or prisons. This phenomenon of mass incarceration began in the

1970s where state and federal lawmakers passed measures that increased the length

of prison sentences for a myriad of crimes, from drugs to murder. At any one time, 2

million individuals are incarcerated and 10 million are in jail. Correctional facilities are

therefore highly populated and often lack funding and/or resources, making them

breeding grounds for infectious diseases. With that, there is a key connection between

correctional medicine and public/community health that can be used to analyze the

mechanisms of an infectious disease and improve both the lives of the general

population along with jail and prison populations simultaneously. This study aims to

analyze the impact of COVID-19 on U.S. correctional facilities using data collected by

the UCLA Law COVID Behind Bars Project.

The COVID-19 pandemic provides a fascinating and unique opportunity to

explore the impact of infectious disease on U.S. correctional facilities. Despite this being

a relatively new global event, there is a wide array of data available in order to learn

about COVID's impact on U.S. correctional systems. In our group's exploration and

analysis of this relationship, we primarily utilized UCLA's COVID Behind Bars Data

Project. This includes data often sourced from correctional facilities across the United

States and is periodically updated. Because the UCLA database includes a large

number of datasets, we narrowed our focus to the Prison and Jail Confirmed Cases and

Deaths dataset. Furthermore, we decided not to update our dataset and instead used

the information from December 2nd. Because COVID cases and rates are always changing, it is possible that our analyses and conclusions are outdated or inaccurate.

As we dug deeper into the project, we discovered that we needed to find more information from other sources. While performing analyses and creating visualizations, we realized we did not have enough data to answer all of our questions. Specifically, we needed to find data about whether each prison was public or private, the total correctional facility population, the cases and deaths by state in the general population, and what region of the U.S. each state belongs to. The UCLA dataset did not include data detailing whether each prison was public or private, so we needed to research each individual prison. We lacked sufficient time to gather the data for every prison in every state, so we narrowed our data collection to select states based on the total number of prisons and the percentage of inmates in private prisons in the state. We selected four states to analyze: California, Texas, Florida, and Arizona. These states were used for additional analyses due to their correctional facility composition. Furthermore, although the dataset included a column for the total number of residents in each correctional facility, this value was missing for many institutions. This was an important value because some differences in cases we identified in our initial analyses were likely due to differences in prison population. In order to create a rate of COVID cases, we needed the facility population. To supplement this information, we decided to obtain data on state prison population by state. Although this is not the exact same measurement and only includes statewide population totals for state prisons, it enabled a similar comparison when analyzing on a state or regional level. We were not able to calculate case rates for federal prisons or county jails because their populations were

not included in the statewide totals we collected. We gathered this additional information from multiple sources, including the U.S. Census Bureau, The COVID Tracking Project (Atlantic Monthly), the Bureau of Justice Statistics, the Texas Department of Criminal Justice, and the California Department of Corrections. With the addition of this information, we were able to answer our questions more effectively.

We also identified problems that required cleaning. There were basic errors in the dataset, including column names not suited for R. We needed to rename the columns before proceeding with the analyses. Additionally, there were many missing values. This led to mostly incomplete columns that were difficult to use. In response, we supplemented the dataset with the information described above. A more subtle problem was the distinction between the three jurisdictions of correctional facilities. The jurisdictions are county, state, and federal. For certain analyses, we were only interested in comparing state and federal prisons. In these situations, we removed the county jails. Jails are used to hold people awaiting trial or who have been sentenced for less than a year while prisons are meant to hold people for much longer periods of time. We decided to focus our analysis on prisons because the jail data was very incomplete. However, we included jails in the overall dataset for analyses and visualizations involving correctional facilities in general. Another issue we needed to address was the presence of a statewide total row for eighteen states. Initially, we were unsure what these rows contained. By referencing the data dictionary for this dataset, we learned that the statewide rows may have been the result of a combination of multiple COVID cases from unknown or unspecified facilities. We decided to remove these rows for analyses and visualizations involving individual institutions because we did not want to

include rows that may contain information from multiple facilities. We retained the statewide rows for visualizations comparing COVID case rates by state and or region because these rows provided additional information about cases in unknown or missing facilities in these areas. The statewide rows contributed important information about case rates statewide and regionally but not for individual facilities. The final cleaning issue we encountered was that one prison in Texas had more COVID cases than residents. This is impossible, so we removed the prison from our dataset.

Our data analysis goals involved the identification of differences and trends with COVID in correctional facilities. Specifically, we investigated differences in COVID cases between federal and state prisons and between public and private correctional facilities. Additionally, we identified differences in COVID cases and rates on a state and regional level. Finally, we compared COVID cases and rates in correctional facilities with cases and rates in the general population.

The first goal we addressed was the identification of differences in COVID cases between federal and state prisons. To identify these differences, we made boxplots of cases by jurisdiction for Arizona, California, Texas, and Florida. This goal was more difficult to achieve than we anticipated. There were substantially more state prisons than federal prisons, making drawing conclusions challenging. However, this difference in numbers is representative of the U.S. prison system. Specifically, there are 1719 state prisons in the U.S. and only 122 federal prisons.[1] We determined that there were conflicting results for this analysis. Comparing every state together to the entire federal prison system, we found that state prisons tend to have more cases than federal prisons. State prisons have a median of 52 inmate cases and an average of 164 inmate

cases while federal prisons have a median of 34 inmate cases and an average of 123 inmate cases. Each state runs its state prisons separately so we also compared the cases between the four states we had decided on to analyze more closely and the federal prisons in each state. Texas and Arizona appear to have higher levels of cases in federal facilities, while California and Florida demonstrate the opposite. While we obtained conflicting results, there are a few key differences that can begin to explain what we observed. Generally, the funding and management of federal prisons originates from the Federal Bureau of Prisons. On the other hand, state prisons are managed by the individual state they exist in. Since federal guidelines remain consistent throughout any particular state, Texas and Arizona's state prison policies may be better at managing outbreaks than California and Florida's. For example, according to information from the UCLA dataset, Texas' governor has suspended all healthcare fees related to COVID for inmates in all state prisons system-wide. This could potentially make inmates more willing to seek healthcare when necessary with cost no longer being a concern. In general when analyzing data on correctional facilities, it is important to acknowledge there are a multitude of confounding variables that exist, especially during an uncontrolled pandemic.

The next analysis we performed was the comparison of COVID cases in public versus private prisons. To address this goal, we created boxplots of cases based on whether the prisons were public or private. Using the public versus private information we collected earlier for California, Texas, Florida, and Arizona, we compared COVID rates between public and private prisons in each state. Similar to the previous analysis, we found that there were substantially more public than private prisons, making this

comparison difficult. Again, this is consistent with the composition of the U.S. prison system. Nationally, private prisons contain only 8% of U.S. inmates.[1] We found that in Texas and Arizona, private prisons have fewer cases than public prisons. Additionally, we found Florida maintains around the same average amount of cases in private and public prisons. The results from the boxplot of California were not particularly informative, due to the fact California has only one private prison.

There are distinct differences when it comes to private and public prisons, mostly when money is involved. Private prisons are run by third-party companies rather than the government and receive funding based on the number of inmates they house. Due to the fact that public prisons use U.S. citizen tax collections for funding, they are often required to have information available about prison populations. Dissimilarly, private prisons are not always required to report budget spending, inmate population, staffing, etc. Therefore, we encountered an additional problem where many prisons were missing resident population data, so our case rates per 1,000 people was not useful for most states. More specifically, private prisons in Arizona and all prisons in Florida did not list their resident population, making it impossible to compare COVID case rates, rather than counts, in public and private prisons. These differences in functionality and accountability can begin to explain why Texas and Arizona have fewer cases in private prisons, as these facilities more than public ones rely on having their inmate population be healthy and less problematic which will be less costly to the third-party organizer to house and care for them. Simultaneously, private prisons in some states have also tested fewer of their inmates for COVID than public prisons. For example, 0.68% of prisoners in private prisons in Arizona had been tested while 4.63% of prisoners in

Arizona public prisons had been tested as of June 3rd.[2] Private prison tests had a positivity rate of 21% vs 12% in public prisons.[2] This means that many cases in private prisons may have gone undetected due to a lack of testing which can further explain the results we observed.

Our final data analysis step was to compare COVID cases and deaths regionally in correctional facility populations to the general population. The primary visualization we created was a heatmap comparing state prisons to the general population. We were limited to state prisons because the statewide prison population totals we found did not include federal prisons in each state. We created four different heatmaps of state prisons: resident cases, staff cases, resident deaths, and staff deaths and two heatmaps for the general population: cases and deaths.

Within these heatmaps, we found that the COVID case rates in prisons do not necessarily match the trends in the general population and instead appear to be somewhat independent from the community. One example of the inconsistencies between prison cases and general population cases is Michigan. In Michigan, there are many more cases in prisons than in its general population. This may be attributable to crowded facilities. In an interview, one prisoner in Michigan reported that the prisoners feel like they are "piled up" on top of each other and unable to social distance.[3] Similarly, Arkansas and Kansas have high rates of COVID cases in prisons, leading the nation in per 100,000 cases, while their general population cases are average. This could be for a variety of reasons, however there are some interesting perspectives when correctional staff is involved. From the data, we can see that both states have high numbers of staff cases along with resident cases. Kansas prisons have been

known to have staff shortages for many years, with prison guards having a turnover rate of 46% in 2017.[4] Additionally, Kansas prisoners have reported that there is little social distancing and that hand sanitizer is banned. Kansas has also barely released any prisoners for COVID reasons. Arkansas, on the other hand, has had reports of poor staff adherement to COVID protocols such as sanitation and mask-wearing. These are plausible explanations as to why the prison outbreaks are severe in these states when compared to their surrounding communities.

On the contrary, New York's general population rate is high while their prison rate is much lower than many other states. Their relatively low prison rate may possibly be attributable to the release of prisoners in order to prevent overcrowding. In fact, New York's state prison population is as low as it has been since 1986. However, there has also been a lack of widespread testing in New York prisons, so cases may have been undercounted. Another trend is that Texas and Florida appear to have the highest number of cases in prisons, but when their prison population is accounted for, their rates are no longer among the highest in the nation. Instead, their rates in prisons are similar to those in their general population.

Overall, we identified several trends in COVID cases within correctional facilities. We found that there were differences in cases based on jurisdiction, with state prisons having more cases than federal prisons, and private versus public status, with public prisons having more cases than private. These findings suggest the importance of focusing COVID relief efforts on state prisons and public prisons. Necessary relief aid and prevention efforts include proper sanitation, sufficient personal protective equipment for staff, strict visitation policies, and vaccinations. Although it is important for

all correctional facilities to receive proper support as a result of the virus, it is especially important for state and public prisons to receive this aid and enforce guidelines. As the order of priority for vaccination is established, consideration should be given to prisoners, especially those residing in highly populated public or state prisons. By applying the deeper understanding of COVID in correctional facilities gained by our project, U.S. correctional facilities can establish appropriate preventative and remedial measures, creating an effective system of COVID containment and elimination in correctional facilities.

Another trend we identified was that correctional facilities were somewhat independent from their community with regard to COVID cases. This is significant because although some correctional facilities may follow the trends of their community, many facilities do not. This means that it is important to know the COVID cases and rates for correctional facilities. Conclusions about the status of COVID in correctional facilities cannot be made based on the general community. Instead, each correctional facility must closely monitor and report COVID cases and deaths to better understand how the virus is spreading within their facility. This information is essential to inform their COVID efforts and prevent the spread of the virus both from the community into the correctional facility and vice versa.

We have multiple ideas for further work on this project. Our analysis of COVID in public versus private prisons was limited to just four states. We would need to look at every state with private prisons to determine if our observed trend of private prisons having fewer cases than public prisons is consistent nationwide. Additionally, we analyzed the differences between state and federal prisons nationwide and then

narrowed it to only the same four states. If we were to break down differences in every state, we could see how well each state performed compared to the federal prison system. Another possibility would be to analyze whether releasing inmates was effective in reducing COVID cases in prisons. The UCLA COVID Behind Bars Project includes data from prisoner releases, but we would need more data to properly perform this analysis. For instance, we would need data over time for prisoner releases, COVID cases, and inmate populations. Additionally, we could find comprehensive data for the number of residents and staff of each prison. With that data, we could find the per person rate of infections and deaths for every prison which would be incredibly helpful for making comparisons.

There is an essential connection between correctional medicine and public/community health that impacts both the general population along with the incarcerated populations simultaneously. The COVID-19 pandemic has provided a fascinating opportunity to analyze the extent of an infectious disease's impact, especially with regards to correctional facilities. In this study, we were able to identify a myriad of differences on a variety of correctional and regional levels with the hopes of drawing attention to the people in prisons who are so often forgotten about. We hope that this study contributes to the ongoing research on the COVID-19 pandemic as well as the relationship between public/community health and correctional medicine.

Works Cited

1. Nellis, Ashley. "Private Prisons in the United States." *The Sentencing Project*, 24 Oct. 2019, www.sentencingproject.org/publications/private-prisons-united-states/.

2. Lemasters, Kate. "Private Prisons Archives." *COVID Prison Project*, 10 June 2020, covidprisonproject.com/tag/private-prisons/.

3. Jackson, Angie. "New COVID-19 Virus Cases in Michigan's Prisons Hit All-Time High." *Detroit Free Press*, Detroit Free Press, 21 Nov. 2020, www.freep.com/story/news/local/michigan/2020/11/20/michigan-prison-covid-cases-record-high/6340387002/.

4. KansasCity, and Hunter. "As Prison Staff Shortage Worsens, Kansas Lawmakers Question Corrections Chief." *Kansascity*, The Kansas City Star, 3 Aug. 2017, www.kansascity.com/news/politics-government/article165341822.html.