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Racial, Ethnic, Sex, and Age Differences in COVID-19 Cases, Hospitalizations, and Deaths Among Incarcerated People and Staff in Correctional Facilities in Six Jurisdictions, United States, March-July 2020

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Abstract

Objectives—To examine disparities by sex, age group, and race and ethnicity in COVID-19 confirmed cases, hospitalizations, and deaths among incarcerated people and staff in correctional facilities.

Methods—Six U.S. jurisdictions reported data on COVID-19 confirmed cases, hospitalizations, and deaths stratified by sex, age group, and race and ethnicity for incarcerated people and staff in correctional facilities during March 1 - July 31, 2020. We calculated incidence rates and rate ratios (RR) and absolute rate differences (RD) by sex, age group, and race and ethnicity, and made comparisons to the U.S. general population.

Results—Compared with the U.S. general population, incarcerated people and staff had higher COVID-19 case incidence (RR = 14.1, 95% CI = 13.9–14.3; RD = 6,692.2, CI = 6,598.8–6,785.5; RR = 6.0, CI = 5.7–6.3; RD = 2523.0, CI = 2368.1–2677.9, respectively); incarcerated people also had higher rates of COVID-19-related deaths (RR = 1.6, CI = 1.4–1.9; RD = 23.6, CI = 14.9–32.2). Rates of COVID-19 cases, hospitalizations, and deaths among incarcerated people and corrections staff differed by sex, age group, and race and ethnicity. The COVID-19 hospitalization (RR = 0.9, CI = 0.8–1.0; RD = –48.0, CI = –79.1– –16.8) and death rates (RR = 0.8, CI = 0.6–1.0; RD = –11.8, CI = –23.5– –0.1) for Black incarcerated people were lower than those for Black people in the general population. COVID-19 case incidence, hospitalizations, and deaths were higher among older incarcerated people, but not among staff.

Conclusions—With a few exceptions, living or working in a correctional setting was associated with higher risk of COVID-19 infection and resulted in worse health outcomes compared with the general population; however, Black incarcerated people fared better than their U.S. general population counterparts.

Keywords

COVID-19; Disparities; Correctional Facilities; Incarceration

Introduction

In congregate settings such as jails and prisons, infectious diseases have the potential to spread rapidly due to close living quarters and limited space for isolation and quarantine. Staff members, visitors, and incoming incarcerated people may introduce SARS-CoV-2¹

infection into correctional facilities, especially in communities where transmission is high [1–3].

COVID-19 in Correctional Facilities²

Incidence rates of COVID-19 cases and deaths have been considerably higher among people experiencing incarceration than in the nonincarcerated U.S. population; outbreaks have also escalated more rapidly in prisons than in the general population [4–11]. Outcomes related to COVID-19 are also reported to be worse for people experiencing incarceration [4, 7, 11]. In a cohort of patients hospitalized with COVID-19, incarcerated people experienced more severe clinical presentation and higher rates of intensive care unit admissions, intubation, and mortality compared with patients from the community [4]. Incarceration was associated with nearly double the mortality risk due to COVID-19 compared with patients from the general population [4]. From February through September 2020, the Federal Bureau of Prisons (BOP) reported COVID-19 case rates and mortality ratios in federal facilities approximately 5 and 2.5 times higher, respectively, than adults in the U.S. general population [7].

Few data are available on COVID-19 cases among staff³ working in correctional facilities because many facilities did not systematically test staff and used varying reporting methods [8, 12, 13]. Previous studies found that the prevalence of COVID-19 cases among correctional staff was higher than the U.S. population [13, 14] and more closely resembled the COVID-19 case rate in the prison population [13].

COVID-19 Racial, Ethnic, and Age Disparities

COVID-19 disproportionately impacts groups that have been economically or socially marginalized and is evident in the disparities by race and ethnicity. A health disparity is a particular type of health difference that is closely linked with economic, social, or environmental disadvantage (<https://bit.ly/45j39jN>). Hispanic/Latino, Black, and other non-White people are more likely to become infected with SARS-CoV-2, experience more severe COVID-19 associated illness, have a greater risk of hospitalization and experience a higher risk of death from COVID-19 [15–17]. Weekly reports conducted by the National Commission on Correctional Health Care and researchers from Harvard University showed higher COVID-19 case incidence among Black incarcerated people compared with White incarcerated people from May 18^h, the first week race and ethnicity data were collected and reported, to June 1, 2020 (<https://bit.ly/2V2jJFJ>). Furthermore, people from racial and ethnic minority groups are over-represented in correctional facilities [18–21]; thus, it is important to examine how correctional settings impact the risk of contracting SARS-CoV-2, and associated hospitalization and mortality outcomes, for specific racial and ethnic groups

¹SARS-CoV-2 refers to the virus that causes the disease COVID-19.

²Correctional facilities refer to state and federal prisons that incarcerate persons who have been tried for a crime, convicted, and sentenced for a duration of 1 year. Those convicted of federal crimes are incarcerated in federal prisons; those convicted of state crimes are incarcerated in state prisons. Detention facilities refer to jails or detention centers (including immigration and juvenile detention centers) that temporarily detain persons awaiting trial, sentencing, or deportation, or those with a sentence of < 1 year (Hagan, 2020).

³Staff refers to people who work in correctional facilities including, but not limited to, correctional officers, correctional healthcare workers, and administrative or clerical staff.

[22]. Lastly, the proportion of older adults among the incarcerated population has greatly increased in recent decades [23–27]. The number of incarcerated individuals aged 55 years has increased by approximately 26-fold from 2009 to 2019, which is concerning because older age is a risk factor for poor COVID-19-related health outcomes and mortality [17, 28, 29].

Gaps remain in the understanding of racial and ethnic disparities of COVID-19 cases, hospitalizations, and deaths among incarcerated persons and correctional staff. Few data sources report COVID-19 cases, hospitalizations, and deaths in correctional facilities, and importantly, rarely are the data stratified by race and ethnicity [12, 22]. Examining data by race, ethnicity, sex, and age in correctional settings can help identify health disparities related to COVID-19 and inform public health decision-making. Comparing COVID-19 data in correctional facilities to COVID-19 in the community will allow for a better understanding of the impact that incarceration plays in contributing to health disparities in the correctional setting [12, 22].

Present Study

This study aims to determine what COVID-19 disparities exist in correctional settings. We hypothesized that among people experiencing incarceration,⁴ Hispanic, Black, Asian, American Indian or Alaska Native, and Native Hawaiian or Other Pacific Islander individuals would have higher COVID-19 case incidence, hospitalizations, and deaths than non-Hispanic White incarcerated people. We also expected that advanced age would be strongly associated with severe COVID-19 outcomes (e.g., hospitalization and/or death) among incarcerated persons and staff.

Methods

In September 2020, we invited all US state and local public health departments to provide data for this analysis via a webinar hosted by the Council of State and Territorial Epidemiologists and two follow-up email invitations sent one day and two weeks after the webinar. The email follow-ups asked jurisdictions about data availability and whether they were interested and able to engage further in a data call. Additionally, the BOP and Immigration and Customs Enforcement were invited to participate via email. All jurisdictions⁵ that responded to the request were invited to submit data on COVID-19 confirmed cases, hospitalizations, and deaths stratified by sex, race, ethnicity, and age group for incarcerated persons and staff in correctional facilities during March 1, 2020—July 31, 2020. We requested census information from each jurisdiction for both incarcerated persons and staff at three time points in 2020: March 1, May 15, and July 31. These census data points were averaged and used as the denominator for rate calculations. This study was exempt from IRB as data are deidentified and presented in aggregate.

⁴In this manuscript, people experiencing incarceration or people who are in prison refer to individuals incarcerated in a state or federal prison (hereafter referred to as “incarcerated people”). The sample in this study comes from prisons, with the exception of Vermont, which is a unified system in which jail detainees are housed in the same facility as convicted, sentenced prisoners. In the case of Vermont, we chose to include the data in our analysis because the housing for the two populations is nearly identical, as reported by the Vermont Department of Public Health (P. Meddaugh, D. Kall, PhD, & J. King-Mohr, oral communication, September 9, 2021).

⁵Jurisdiction refers to the state or entity (e.g., Federal Bureau of Prisons, Vermont Department of Health, etc.) that submitted data for this study.

Nine jurisdictions provided COVID-19 data. However, three jurisdictions (North Carolina, Mississippi, and Los Angeles County Jail) were unable to report complete census data; these data were not included in the analysis. Therefore, six jurisdictions, the Federal Bureau of Prisons and five states, were included in this analysis: California, Indiana, Minnesota, North Carolina, and Vermont. All data reported in the present analysis are from prison facilities.

Analysis

Rates per 100,000 persons were calculated using the jurisdictions' averaged census estimates as the denominator and COVID-19 cases, hospitalizations, and deaths as the numerator. To examine health disparities by race, ethnicity, age, and sex, both absolute (rate difference; RD) and relative (rate ratio; RR) measures of disparity were calculated, as well as 95% confidence intervals (CIs). Disparities were measured in both absolute and relative terms in order to more completely understand their magnitude which can be obscured by only reporting a relative measure, especially when making comparisons over time or across geographic areas, populations, or indicators [30]. RR with 95% CIs excluding 1.0 and RD with 95% CIs excluding 0 were considered statistically significant. Due to wide variations across race, ethnicity, and age for COVID-19 cases, hospitalizations, and deaths, the group that represented the largest proportion of the population (i.e., the denominator) was selected as the reference point, as the rate for the largest group is often the most stable [30]. If a cell was suppressed, we used the group with the next largest numerator as the reference point. Cells were suppressed when the count was less than 10 or the denominator was less than 20.

Results

Table 1 provides descriptive demographic information on the sample incarcerated population and U.S. general population in which comparisons are made.⁶

Incarcerated People

Overall, 7.2% of incarcerated people in six jurisdictions were classified as a COVID-19 case, with a case rate of 7,202 per 100,000 persons (Table 2). Less than one percent (0.4%) of incarcerated persons were hospitalized due to COVID-19 (hospitalization rate of 361 per 100,000 persons), and 0.1% of the total incarcerated population in our study died of COVID-19 while incarcerated (mortality rate of 62 per 100,000 persons).

Comparisons to the U.S. General Population—Comparisons of incarcerated people to the U.S. general population are reported in Table 2. Overall, incarcerated people had 14.1 times (RR) the COVID-19 case rate compared with the U.S. general population, and an absolute RD⁷ of 6,692.2 (see total category in Table 2). Incarcerated people had 2.1 times (RR) the COVID-19 hospitalization rate and 1.6 times (RR) the COVID-19 death rate compared with the U.S. general population (RDs = 191.8, 23.6, respectively).

Incarcerated people in all age categories had higher COVID-19 case rates than their respective age categories in the U.S. general population. The largest difference was among

⁶Descriptive demographic information on correctional staff is located in the Appendix.

⁷Rate differences are per 100,000 persons.

persons aged ≥ 65 year where incarcerated people had 26 times (RR) the case rate compared to similarly aged people in the U.S. general population (RD = 15,584.6). Incarcerated people aged 45–54 years, 55–64 years, and ≥ 65 years had higher hospitalization rates than those within the same age categories in the U.S. general population (RRs = 2.1, 4.5, 8.2 and RDs = 192.0, 789.3, 2,825.5, respectively). However, incarcerated people aged 18–29 years had a 40% lower rate of COVID-19-related hospitalization compared with this age group in U.S. general population (RR = 0.6, RD = -25.6). In the age categories where COVID-19 deaths were reported, incarcerated people had higher death rates than people in corresponding age categories in the U.S. general population (30–44 years, RR = 2.0, RD = 4.7; 45–54 years, RR = 1.9, RD = 14.0; 55–64 years, RR = 6.2, RD = 185.2; ≥ 65 years, RR = 4.1, RD = 572.7).

Incarcerated people in all racial and ethnic categories had higher COVID-19 case rates than the same racial and ethnic categories in the U.S. general population, with the largest RR and RD in the Asian and White categories (Asian RR = 27.8, RD = 8,309.7; White RR = 24.8, RD = 8,129.6). White and Asian incarcerated people also had higher COVID-19 hospitalization rates than people in these racial groups in the U.S. general population, with Asians showing the largest disparity (RR = 7.7, RD = 604.0). In contrast, Black incarcerated people had a slightly lower hospitalization rate compared with Black people in the U.S. general population, although this RR was not statistically significant (RR = 0.9, CI = 0.8–1.0), but the RD of -48.0 (CI = -79.1- -16.8) was significant (Table 2). For reported deaths, White incarcerated people had a higher COVID-19 death rate than White people in the U.S. general population (RR = 3.5, RD = 69.3). Conversely, Black incarcerated people had a slightly lower COVID-19 death rate compared with Black people in the U.S. general population (RR = 0.8, CI = 0.6–1.0; RD = -11.8, CI = -23.5- -0.1). There was no significant difference between the death rates for Hispanic incarcerated people and Hispanic people in the U.S. general population (RR = 1.4, CI = 1.0–1.9; RD = 12.1, CI = -1.4–25.6).

Table 3 shows the percentage of COVID-19-associated hospitalizations and deaths among COVID-19 cases. Among the total confirmed COVID-19 cases in incarcerated people, 5.0% resulted in hospitalization and 0.9% resulted in death. By comparison, in the U.S. general population 2.7% of the total confirmed COVID-19 cases resulted in hospitalization and 7.5% of cases resulted in death.

Comparisons among people who were incarcerated—COVID-19 cases, hospitalizations, and deaths by age, sex, race, and ethnicity among incarcerated people the 6 participating jurisdictions aggregated are reported in Table 4. This information for each of the 6 participating jurisdictions can be found in Appendix Table 5. Overall, comparisons showed female incarcerated people had a slightly higher case rate compared with male incarcerated people (RR = 1.0, RD = 229.7), but this difference was not significant. Male incarcerated people had a 30% higher rate of hospitalization (RR = 0.7, RD = -127.3) compared with female incarcerated people. When stratified by age group, 18–29 year olds had the lowest rate of COVID-19 cases, hospitalizations, and deaths; as the age category increased, the rates of cases, hospitalizations, and deaths also rose accordingly. Compared with the reference group (persons 30–44 years old), incarcerated people aged ≥ 65 years showed higher rates of COVID-19, cases, hospitalizations, and deaths (RRs = 2.6, 27.5,

80.3 and RDs = 10,061.8, 3099.7, 750.8, respectively). Race and ethnicity comparisons showed that Asian and White incarcerated people had 1.7 times (RR) the COVID-19 case rate compared with Black incarcerated people (RDs = 3,564.1 and 3,415.3, respectively). Asian incarcerated people had 2.5 times (RR) the hospitalization rate compared with Black incarcerated people, a RD of 412.8. White incarcerated people had 2.4 times (RR) the COVID-19-related death rate compared with Black incarcerated people (RD = 56.0).

Correctional Staff

Three jurisdictions reported staff data. Overall, 3.0% of staff in these jurisdictions had COVID-19 during the study period, corresponding to a rate of 3,033 per 100,000 people (Appendix Table 6). Data on COVID-19-related hospitalizations were not available for staff, and the number of deaths among staff was too low to include in analysis due to suppression of small cell sizes (i.e., cell counts < 10 or denominator is < 20). Correctional staff also showed higher rates of COVID-19 across all race, ethnicity, sex, and age stratifications compared with their peers in the general population who do not work in correctional settings. Compared to the U.S. general population, male and female staff combined had 6.0 times (RR) the case rate (RD = 2,523.0). Race and ethnicity comparisons among staff revealed that Hispanic and Black staff had 2.1 and 1.3 times (RR) respectively the case rate compared with White staff (RD = 2,612.3, RD = 783.4, respectively). White staff had the lowest case rate, followed by Asian staff (Appendix Table 7). Additional comparisons between correctional staff and the U.S. general population and comparisons among staff by jurisdiction and age, sex, race, and ethnicity are located in Appendix Tables 6 and 7.

Discussion

During the study period (March-July 2020), incarcerated people and staff in correctional settings experienced higher rates of COVID-19 cases compared with their counterparts in the U.S. general population. When data were stratified by race, ethnicity, age, and sex, there were notable disparities in COVID-19 among incarcerated people and among staff, as well as between incarcerated people and the U.S. general population. All subgroups of incarcerated people included in this study experienced higher COVID-19-related hospitalizations and deaths compared with the same groups in the U.S. general population, with three exceptions: incarcerated people aged 18–29 years experienced significantly lower COVID-19 hospitalization rates than their U.S. general population counterparts; Black incarcerated people had a 10% lower COVID-19 hospitalization rate (significant RD, non-significant RR), and experienced slightly fewer COVID-19 deaths (significant RD, non-significant RR) than Black people in the U.S. general population.

The three unexpected results above are worth examining further and considering how the correctional setting may have played a role. Regarding the findings for incarcerated people aged 18–29, it is important to note that prison staff, healthcare professionals, and administrators determine when an incarcerated person needs to be hospitalized, whereas people in the general population have freedom to choose when to seek medical care and may have gone to the hospital at an earlier point in their illness. Alternatively, many correctional facilities have onsite clinics that may adequately address minor COVID-19 symptoms

before they worsen, thereby reducing the need for hospitalization. This difference may be especially pronounced in younger age groups, since COVID-19 symptoms have been less severe in younger persons and have less frequently required hospitalization. Local variation in access to testing, mask wearing, COVID-19 transmission rates, hospital capacity and criteria to accept new patients, and other factors may have impacted the findings comparing incarcerated people to the U.S. general population.

The marginally significant finding regarding fewer hospitalizations among Black incarcerated people compared to Black people in the general population might be reflective of court-affirmed mandates to provide healthcare in prisons [31], compared to the wide variations of access to care in the community. While this is true for all incarcerated people, it might be particularly salient for Black men who on average, have lower access to healthcare in the community than white men [32]. For some people, incarceration offers stability of services not always available in certain communities such as consistent meal structure and access to healthcare. Furthermore, incarcerated people overall experienced a greater percentage of hospitalizations than the general U.S. population, but fewer positive COVID-19 cases progressed to death than the general population.

Compared with the general population, incarcerated people aged > 65 years, Whites, and Asians (all ages combined), experienced the greatest disparities in rates of COVID-19 cases and hospitalizations when compared with their counterparts in the general U.S. population. The rate of COVID-19 cases for incarcerated people > 65 years was 26 times the rate of their general population counterparts. Studies have demonstrated higher rates of COVID-19 infection among older adults [17, 28, 29], but the magnitude was much larger in the incarcerated population than in the community. Research shows the stress and healthcare limitations experienced in incarceration accelerates aging [24, 27]. The correctional setting itself poses challenges to providing high-quality healthcare due to reasons such as patients not feeling comfortable fully reporting their medical concerns either because it is not properly communicated by correctional staff or there is a general distrust in medical and/or correctional staff [24, 27]. Ensuring there is adequate correctional staff to accompany a patient to appointments also poses a challenge for some correctional facilities, as does continuity of care (e.g., consistency in medical staff, medication management) when incarcerated individuals are transferred to different housing areas or another facility [24, 27]. Finally, geriatric and chronic conditions are also present at higher rates among incarcerated adults than nonincarcerated people [23].

While the findings regarding disease severity in White and Asian incarcerated people differ from previous community studies that examined racial differences [15–17], they might be attributable to differences in healthcare seeking behavior. A previous study found that compared with Black men, White men in prisons reported slightly lower use of healthcare for several conditions including flu-like symptoms [31]; these same factors may have also prevented incarcerated White men from seeking care for COVID-19 symptoms, resulting in more severe outcomes. Similarly, incarcerated Asian people may be less likely to report symptoms due to the stigma associated with COVID-19 and the increase in discrimination and violence toward Asian people during the pandemic [33, 34]. Some reports also suggest that COVID-19 rates and outcomes for Asians are underreported in the general population

due to issues like language barriers, transportation problems, or lack of insurance [35, 36]. Within-group findings also showed that White incarcerated individuals had the highest rates of COVID-19 case incidence, hospitalizations, and deaths compared to incarcerated individuals of other race and ethnicity categories, contrary to prior research in community settings [15–17] and some existing evidence of higher rates of COVID-19 in Black incarcerated individuals compared to White incarcerated individuals (<https://bit.ly/2V2jFJ>). However, given the limitations of the COVID-19 data by race and ethnicity in the general population and the large amount of missing data (only 63% of case reports have race and ethnicity; <https://bit.ly/3OHsSLL>), it is difficult to draw conclusions about these findings. Future studies should obtain larger samples of racial minorities and data related to potential differences in housing or other features that could impact transmission (e.g., dorm versus cell-style housing units), to better understand the full scope and impact of COVID-19 on certain groups.

Correctional staff also showed increased rates of COVID-19 across all race, ethnicity, sex, and age stratifications compared to their peers in the general population who work outside of the correctional setting. The largest disparities were again among staff in the 65-year-old age category, Asian staff, and White staff. Among correctional staff, significant within-group analyses showed that Hispanic and Black staff experienced 2.1 and 1.3 times respectively, the rate of COVID-19 cases compared to White staff. Data on correctional staff were limited, so the findings should be interpreted cautiously; more research is needed to understand the risks and outcomes associated with COVID-19 for correctional staff. Black and Hispanic people in the general population have higher rates of COVID-19 than White people, so is possible that these differences are merely a representation of the broader population of people who also work in other settings. Previous research has suggested that working in dorm-style housing increases the risk of COVID-19 transmission [37], so staffing differences by race and ethnicity and dorm versus cell-style housing units may be worth examining in future studies.

Limitations

This study has several limitations. First, a convenience sample of jurisdictions was used for this study and is not representative of the entire U.S. correctional population. The present study focused on prisons, and findings may not generalize to jails or other detention facilities. Frequent broad-based COVID-19 testing of incarcerated individuals and staff by several participating jurisdictions may partially account for the elevated COVID-19 case incidences in some correctional settings compared with the general population. Testing and mitigation practices, which may have been highly variable across jurisdictions, are not reflected in this analysis. A lack of standardization of how information is collected and defined may have also impacted variables included in analysis (e.g., what is included in the 'Other' racial category or differences in the way a COVID-19-related death was defined). Additionally, the time period examined does not include the full scope of the COVID-19 pandemic or all of the outbreaks that occurred in correctional facilities; it also does not encompass a time period when vaccinations were available, which may alter the differences detected between incarcerated people and the U.S. general population. Moreover, data were aggregated, and line-listed data were not collected. As a result, the standard error (of a rate

difference or rate ratio) calculations were not adjusted for intra-class correlation, and there may be some over-estimation of statistical significance. Similarly, multiple comparisons were made and a correction such as Bonferroni's correction was not applied to adjust the significance level and account for the number of comparisons performed. The analysis did not adjust for age or any other variables which may result in under- or over-estimating disparities. Information about underlying medical conditions, which contribute to increased risk of hospitalization or death, was not collected. Similarly, data from the U.S. general population was at the national-level; thus, comparisons were not state-specific. Data related to COVID-19 in correctional staff was lacking. Understanding the relationship or impact of community transmission and the correctional setting would have been valuable. Lastly, this analysis and the interpretation of the results lacks the perspective of lived experience, which is needed in more work examining health outcomes in correctional settings.

Public Health Implications

This study improves our understanding of COVID-19-related racial and ethnic disparities which may be used to guide strategies and better protect disproportionately affected populations. Correctional and detention facilities are connected with the wider community through staff, visitors, and intake and release of incarcerated people; therefore, COVID-19 outbreaks in congregate settings also have implications for the wider community. Nonetheless, the present findings could have implications for not only those living and working in correctional facilities, but also for people who are being released from incarceration and the households and communities to which they return.

The present study also highlights the need for a national surveillance system that monitors infectious diseases in correctional settings. A centralized system would allow for standardized data that could be used to measure infection, hospitalization, and death rates. The data should be reported in a timely manner and used real-time to measure outbreaks, properly allocate resources, and inform and implement data-driven prevention and mitigation strategies. A national surveillance system could also capture demographic and health information to provide information about disparities in health outcomes. Understanding public health in correctional settings is vital to the health of our communities.

Conclusion

This study adds to the understanding of COVID-19-related racial and ethnic disparities within a population that has been disproportionately affected by COVID-19. The findings can inform strategies used to protect such populations, particularly those in congregate settings who may be restricted from COVID-19 mitigation approaches used in the general population. The findings also highlight critical gaps in community healthcare access, particularly for Black individuals who have been historically marginalized, that contribute to the excess morbidity and mortality from COVID-19 in these groups. Data transparency and standardization are necessary to understand and respond to the health risks of incarcerated people. Timely, accurate data disaggregated by key demographics can inform and optimize resource allocation when responding to an outbreak [13]. While the federal COVID-19 Public Health Emergency ended on May 11, 2023, people are still being exposed to SARS-

CoV-2 and infected by COVID-19. It is important to consider the long-term impact of COVID-19 on individuals who live and work in correctional facilities, particularly any groups who are disproportionately affected. The lessons learned during the COVID-19 pandemic can be leveraged and applied to future disease outbreaks to mitigate disparities in outcomes by race and ethnicity.

Methods

Variables

We categorized race and ethnicity using mutually exclusive categories from the Office of Management and Budget (OMB) standards for the Classification of Federal Data on Race and Ethnicity [38]. Because these categories were mutually exclusive, we do not know the race of the Hispanic persons; for non-Hispanic persons, we only refer to their reported race throughout. Race and ethnicity census data were stratified using the same categories.

National COVID-19 cases and deaths in the general population were obtained from the Centers for Disease Control and Prevention's (CDC) Data Collation and Integration for Public Health Event Response (DCIPHER) platform.⁸ Data on national hospitalizations in the general population were obtained from the CDC's Coronavirus Disease 2019 (COVID-19)-Associated Hospitalization Surveillance Network (COVID-NET).⁹

Participating jurisdictions were asked to use the current CDC confirmed case definition [39]. For staff, jurisdictions could include COVID-19 cases confirmed outside of the facility as reported by the staff member. COVID-19-associated hospitalizations could include internal state- or contractor-operated medical facilities or clinics, or external community medical facilities or clinics.

Jurisdictions included deaths for cases in which COVID-19 was confirmed or probable according to the CDC case definition at that point in the pandemic [39]. For staff, jurisdictions were asked to include deaths as reported by the staff person's family if they indicated the person died from COVID-19.

Results

Correctional Staff Results

Among the average census of correctional staff, 68% were male. Nearly half (49%) of the staff were in the 30–44-year-old group, followed by the 45–54 year-old group (29%), then the 18–29 year-old group (13%). Eight percent were aged 55–64 years old and less than one percent (0.8%) were aged 65 years or older. Fifty-nine percent of the staff census were White, 28% were Black, 10% were Hispanic, 1.8% were American Indian or Alaska Native, and 1.8% were Asian. The remaining race and ethnicity groups comprised less than

⁸CDC implemented a data integration and management platform, Data Collation and Integration for Public Health Event Response (DCIPHER), for use in outbreak responses (<https://data.cdc.gov/browse?tags=covid-19>). This platform enables jurisdictions to directly enter or import and view their data.

⁹COVID-NET is a population-based surveillance system that collects data on laboratory-confirmed COVID-19-associated hospitalizations among children and adults through a network of over 250 acute-care hospitals in 14 states (<https://www.cdc.gov/coronavirus/2019-ncov/covid-data/covid-net/purpose-methods.html>). Data for this analysis were restricted to people aged 18 and over.

one percent of the corrections staff census: 0.01% were Native Hawaiian or Other Pacific Islander, and 0.4% were part of the ‘Other’ category.

Overall, 3.0% of staff in the three jurisdictions that provided staff data reported a positive COVID-19 case with a rate of 3,033 per 100,000 people (Appendix Table 6). Data on COVID-19-related hospitalizations were not available for staff and data on deaths among staff were too few to include in analysis.

Comparisons to the U.S. General Population

Staff comparisons to the U.S. general population are reported in Appendix Table 6. Male and female staff combined had 6.0 times (RR) the case rate compared with the U.S. general population (RD = 2,523.0). Staff in all age categories had higher case rates than the U.S. general population. The largest difference was in the 65-year-old category where staff had 4.8 times (RR) the case rate compared with those aged 65-years in the U.S. general population (RD = 2,343.9). Asian staff had 9.1 times (RR) the case rate compared with Asian people in the general population, a RD of 2,514.6. White staff had 7.2 times (RR) the case rate compared with White people in the general population, a RD of 2123.8.

Comparisons among correctional staff

COVID-19 cases among staff by jurisdiction and age, sex, race, and ethnicity are reported in Appendix Table 7. Overall, comparisons (see bottom of Appendix Table 7) showed that male staff had a slightly higher rate of COVID-19 cases compared to female staff (RR = 0.9; RD = -474.7); however, this difference was not statistically significant. Staff in the 30–44 year age group had the highest COVID-19 case rate, followed by 45–54-year-old staff, but there was no significant difference (RR = 1.0; RD = -78.4) between the two age groups. Race and ethnicity comparisons revealed that Hispanic staff had 2.1 times (RR) the case rate compared with white staff, a RD of 2,612.3. White staff had the lowest case rate, followed by Asian staff.

Acknowledgements

We would like to acknowledge our colleagues serving on the COVID-19 response for their assistance with this project. Specifically, Dr. Jonathan Wortham and Michael Whitaker who provided COVID-19-related hospitalization data for the U.S. general population through COVID-NET, as well as Jessica King and Linda Mattocks who provided DCIPHER COVID-19 incidence and death rates for the U.S. general population. We would also like to acknowledge state, local, and jurisdictional health departments and correctional and detention facilities that provided their COVID-19 data. Finally, we appreciate the individuals in several jurisdictions who were interested in participating and provided us with COVID-19 data, but could not obtain census data, which meant we were unable to use their data in the present study. These include Brittney Rust at Mississippi State Department of Health, Lello Tesema and Emmanuel Mendoza at the County of Los Angeles Department of Public Health, and Captain Martin Sanders at Immigration and Customs Enforcement (ICE).

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Data Availability

The data that support the findings of this study are available from the corresponding author, Ashley S. D’Inverno, upon reasonable request.

Appendix

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Table 5

Rates of COVID-19 cases, hospitalizations, and deaths in people who are incarcerated in six jurisdictions and within-group comparisons, United States, March 1–July 31, 2020

| | Incarcerated People | | | | | | Comparisons [§] | | | | | | | | |
|-----------------------|-------------------------|-------------------|---------------------------|--------|----------|-------|--------------------------|----------------------------------|------------------------|--------------------------------|------------------------|--------------------------------|------------------------------|--------------------------------|--|
| | Positive COVID-19 cases | | | Deaths | | | Positive COVID-19 cases | | | Hospitalizations | | | Deaths | | |
| | N (%) | Rate ^a | Hospitalizations N (%) | Rate | N (%) | Rate | Rate Ratio (95% CI) | Rate Difference (95% CI) | Rate Ratio (95% CI) | Rate Difference (95% CI) | Rate Ratio (95% CI) | Rate Difference (95% CI) | Rate Ratio (95% CI) | Rate Difference (95% CI) | |
| California | | | | | | | | | | | | | | | |
| Sex | | | | | | | | | | | | | | | |
| Male | 7978 (7.3) | 7280.7 | 399 (0.4) | 364.1 | 47 (0.0) | 42.9 | ref | ref | ref | ref | ref | ref | ref | ref | |
| Female | 336 (7.7) | 7711.1 | —* | —* | —* | —* | 1.1 (0.95, 1.18) | 430.5 (-409.4, 1270.3) | —* | —* | —* | —* | —* | —* | |
| Total | 8314 (7.3) | 7297.1 | 407 (0.4) | 357.2 | 48 (0.0) | 42.1 | | | | | | | | | |
| Age | | | | | | | | | | | | | | | |
| 29 years | 1124 (4.4) | 4352.5 | —* | —* | 0 (0.0) | 0.0 | 0.7 (0.6, 0.7) | -1950.3 (-2290.0, -1610.7) | —* | —* | —* | —* | —* | —* | |
| 30–44 years | 3015 (6.3) | 6302.9 | 53 (0.1) | 110.8 | —* | —* | ref | ref | ref | ref | ref | ref | ref | ref | |
| 45–54 years | 1818 (8.9) | 8868.0 | 78 (0.4) | 380.5 | —* | —* | 1.4 (1.3, 1.5) | 2565.2 (2099.5, 3030.8) | 3.4 (2.4, 4.9) | 269.7 (180.1, 359.2) | —* | —* | —* | —* | |
| 55–64 years | 1531 (10.8) | 10,764.8 | 114 (0.8) | 801.6 | 20 (0.0) | 140.6 | 1.7 (1.6, 1.8) | 4461.9 (3877.6, 5046.2) | 7.2 (5.2, 10.0) | 690.8 (540.6, 840.9) | 0.3 (0.2, 0.6) | —* | -273.6 (-453.8, -93.5) | | |
| 65 years | 826 (14.9) | 14,876.6 | 158 (2.8) | 2845.7 | 23 (0.0) | 414.2 | 2.4 (2.2, 2.5) | 8573.8 (7534.6, 9613.0) | 25.7 (18.8, 35.1) | 2734.9 (2290.1, 3179.6) | ref | ref | ref | ref | |
| Race and Ethnicity | | | | | | | | | | | | | | | |
| Hispanic | 3650 (7.2) | 7201.7 | 173 (0.3) | 341.3 | 20 (0.0) | 39.5 | ref | ref | ref | ref | ref | ref | ref | ref | |
| Non-Hispanic | | | | | | | | | | | | | | | |

| | Incarcerated People | | | | | | Comparisons [§] | | | | | |
|---|-------------------------|-------------------|-----------|--------|----------|-------|--------------------------|----------------------------|---------------------|--------------------------|---------------------|--------------------------|
| | Positive COVID-19 cases | | | Deaths | | | Hospitalizations | | | Deaths | | |
| | N (%) | Rate ^d | N (%) | Rate | N (%) | Rate | Rate Ratio (95% CI) | Rate Difference (95% CI) | Rate Ratio (95% CI) | Rate Difference (95% CI) | Rate Ratio (95% CI) | Rate Difference (95% CI) |
| American Indian or Alaska Native | 109 (8.4) | 8424.6 | —* | —* | —* | —* | 1.2 (1.0, 1.3) | 1222.9 (-375.9, 2821.6) | —* | —* | —* | —* |
| Asian | 105 (8.4) | 8281.8 | —* | —* | —* | —* | 1.1 (1.0, 1.3) | 1080.1 (-521.1, 2681.4) | —* | —* | —* | —* |
| Black | 1816 (5.5) | 5543.1 | 88 (0.3) | 268.6 | —* | —* | 0.8 (0.7, 0.8) | -1658.7 (-2004.5, -1312.8) | 0.8 (0.6, 1.0) | -72.7 (-148.5, 3.0) | —* | —* |
| Native Hawaiian or Other Pacific Islander | 19 (5.5) | 5531.3 | —* | —* | —* | —* | 0.8 (0.5, 1.0) | -1670.4 (-4168.5, 827.7) | —* | —* | —* | —* |
| White | 2248 (9.8) | 9769.0 | 108 (0.5) | 469.3 | 14 (0.1) | 60.8 | 1.4 (1.3, 1.4) | 2567.3 (2100.8, 3033.9) | 1.4 (1.1, 1.7) | 128.0 (25.9, 230.1) | 1.5 (1.1, 1.7) | 21.4 (-67.7, 346.9) |
| Other | 367 (8.0) | 8023.0 | 22 (0.5) | 480.9 | —* | —* | 1.1 (1.0, 1.2) | 821.3 (-32.1, 1674.8) | 1.4 (0.9, 2.2) | 139.6 (-67.7, 346.9) | —* | —* |
| Indiana | | | | | | | | | | | | |
| Sex | | | | | | | | | | | | |
| Male | 1332 (5.5) | 5479.3 | 87 (0.4) | 357.9 | 28 (0.1) | 115.2 | ref | ref | ref | ref | ref | ref |
| Female | 63 (2.5) | 2464.1 | —* | —* | 0 (0.0) | 0.0 | 0.4 (0.3, 0.6) | -3015.2 (-3699.4, -2330.9) | —* | —* | —* | —* |
| Total | 1395 (5.2) | 5192.4 | 94 (0.3) | 349.9 | 28 (0.1) | 104.2 | | | | | | |
| Age | | | | | | | | | | | | |
| 13–20 years | 23 (5.9) | 5867.3 | 0 (0.0) | 0.0 | 0 (0.0) | 0.0 | 1.5 (1.0, 2.3) | 1990.9 (-431.7, 4413.5) | — | — | — | — |
| 29 years | 225 (3.6) | 3585.8 | —* | —* | 0 (0.0) | 0.0 | 0.9 (0.8, 1.1) | -290.5 (-872.4, 291.3) | —* | —* | —* | —* |
| 30–44 years | 485 (3.9) | 3876.4 | 13 (0.1) | 103.9 | —* | —* | ref | ref | ref | ref | ref | ref |

| | Incarcerated People | | | | | | Comparisons [§] | | | | | | | | | | | |
|---|-------------------------|-------------------|----------|--------|----------|--------|--------------------------|-------------------------------|-------------------------|--------------------------|---------------------|--------------------------|---------------------|--------------------------|---------------------|--------------------------|-----|--|
| | Positive COVID-19 cases | | | Deaths | | | Hospitalizations | | | Positive COVID-19 cases | | | Hospitalizations | | | Deaths | | |
| | N (%) | Rate ^d | N (%) | Rate | N (%) | Rate | N (%) | Rate | Rate Ratio (95% CI) | Rate Difference (95% CI) | Rate Ratio (95% CI) | Rate Difference (95% CI) | Rate Ratio (95% CI) | Rate Difference (95% CI) | Rate Ratio (95% CI) | Rate Difference (95% CI) | | |
| 45–54 years | 265 (5.7) | 5726.8 | 18 (0.4) | 389.0 | —* | —* | —* | 1.5 (1.3, 1.7) | 1850.5 (1079.4, 2621.5) | 3.7 (1.8, 7.6) | 285.1 (96.7, 473.5) | —* | —* | —* | —* | —* | | |
| 55–64 years | 234 (10.1) | 10,060.2 | 30 (1.3) | 1289.8 | 11 (0.5) | 472.9 | 2.6 (2.2, 3.0) | 6183.8 (4849.4, 7518.2) | 12.4 (6.5, 23.8) | 1185.9 (720.9, 1650.8) | 0.3 (0.1, 0.6) | — | — | — | — | — | | |
| 65 years | 163 (22.3) | 22,308.4 | 29 (4.0) | 3969.0 | 13 (1.8) | 1779.2 | 5.8 (4.8, 6.9) | 18,432.0 (14,989.9, 21,874.1) | 38.2 (19.9, 73.5) | 3865.1 (2419.4, 5310.7) | ref | ref | ref | ref | ref | ref | | |
| Race and Ethnicity | | | | | | | | | | | | | | | | | | |
| <i>Hispanic</i> | 73 (6.6) | 6576.6 | —* | —* | —* | —* | —* | 1.2 (0.9, 1.5) | 1119.5 (–431.5, 2670.5) | —* | —* | —* | —* | —* | —* | —* | —* | |
| <i>Non-Hispanic</i> | —* | —* | 0 (0.0) | 0.0 | 0 (0.0) | 0.0 | —* | —* | —* | —* | —* | —* | —* | —* | —* | —* | —* | |
| American Indian or Alaska Native | —* | —* | 0 (0.0) | 0.0 | 0 (0.0) | 0.0 | —* | —* | —* | —* | —* | —* | —* | —* | —* | —* | —* | |
| Asian | —* | —* | 0 (0.0) | 0.0 | 0 (0.0) | 0.0 | —* | —* | —* | —* | —* | —* | —* | —* | —* | —* | —* | |
| Black | 384 (4.4) | 4355.9 | 33 (0.4) | 374.3 | 13 (0.1) | 147.5 | 0.8 (0.7, 0.9) | –1101.2 (–1671.1, –531.2) | 1.3 (0.8, 2.0) | 78.5 (–75.7, 232.8) | 2.2 (1.0, 5.0) | — | — | — | — | — | | |
| Native Hawaiian or Other Pacific Islander | 0 (0.0) | 0.0 | 0 (0.0) | 0.0 | 0 (0.0) | 0.0 | — | — | — | — | — | — | — | — | — | — | — | |
| White | 904 (5.5) | 5457.1 | 49 (0.3) | 295.8 | 11 (0.1) | 66.4 | ref | ref | ref | ref | ref | ref | ref | ref | ref | ref | ref | |
| Other | 29 (11.9) | 11,934.2 | —* | —* | —* | —* | 2.2 (1.5, 3.2) | 6477.1 (341.8, 12,612.4) | —* | —* | —* | —* | —* | —* | —* | —* | —* | |
| Minnesota | | | | | | | | | | | | | | | | | | |
| Sex | | | | | | | | | | | | | | | | | | |
| Male | 474 (6.1) | 6060.4 | —* | —* | —* | —* | ref | ref | —* | —* | —* | —* | —* | —* | —* | —* | —* | |
| Female | —* | —* | 0 (0.0) | 0.0 | —* | —* | —* | —* | —* | —* | —* | —* | —* | —* | —* | —* | —* | |

| | Incarcerated People | | | | Comparisons [§] | | | | | |
|--|-------------------------|-------------------|-----------------|-----------------|--------------------------|--------------------------|---------------------|--------------------------|---------------------|--------------------------|
| | Positive COVID-19 cases | | Deaths | | Positive COVID-19 cases | | Hospitalizations | | Deaths | |
| | N (%) | Rate ^d | N (%) | Rate | Rate Ratio (95% CI) | Rate Difference (95% CI) | Rate Ratio (95% CI) | Rate Difference (95% CI) | Rate Ratio (95% CI) | Rate Difference (95% CI) |
| Total | 475 (5.7) | 5701.9 | —* ^e | —* ^e | — | — | — | — | — | — |
| Age | | | | | | | | | | |
| 29 years | 114 (5.4) | 5449.3 | 0 (0.0) | 0.0 | 0.9 (0.7, 1.1) | -551.0 (-1801.2, 699.1) | — | — | — | — |
| 30-44 years | 246 (6.0) | 6000.4 | —* ^e | —* ^e | ref | ref | —* | —* | —* | —* |
| 45-54 years | 72 (5.6) | 5616.2 | —* ^e | —* ^e | 0.9 (0.7, 1.2) | -384.1 (-1882.5, 1114.3) | —* | —* | — | — |
| 55-64 years | 32 (4.9) | 4883.6 | —* ^e | —* ^e | 0.8 (0.6, 1.2) | -1116.7 (-2967.5, 734.1) | —* | —* | — | — |
| 65 years | —* ^e | —* ^e | —* ^e | —* ^e | —* ^e | —* ^e | —* | —* | —* | —* |
| Missing | 5 | | | | | | | | | |
| Race and Ethnicity | | | | | | | | | | |
| Hispanic | 31 (6.8) | 6761.2 | —* ^e | —* ^e | 1.1 (0.8, 1.6) | 701.0 (-1803.6, 3205.6) | —* | —* | — | — |
| Non-Hispanic | | | | | | | | | | |
| American Indian or Alaska Native | 41 (5.8) | 5813.5 | 0 (0.0) | 0.0 | 1.0 (0.7, 1.3) | -246.7 (-2189.6, 1696.2) | — | — | — | — |
| Asian [†] | — [†] | — [†] | — [†] | — [†] | — [†] | — [†] | — [†] | — [†] | — [†] | — [†] |
| Black | 152 (4.9) | 4887.9 | —* ^e | —* ^e | 0.8 (0.7, 1.3) | -1172.4 (-2273.2, -71.5) | — [†] | — [†] | — [†] | — [†] |
| Native Hawaiian or Other Pacific Islander [†] | — [†] | — [†] | — [†] | — [†] | — [†] | — [†] | — [†] | — [†] | — [†] | — [†] |
| White | 232 (6.1) | 6060.2 | —* ^e | —* ^e | Ref | ref | —* | —* | —* | —* |

| | Incarcerated People | | | | | | Comparisons [§] | | | | | | | | | | | |
|--------------------|-------------------------|-------------------|----------|--------|----------|------|--------------------------|----------------------------|-------|-------------------------|---------------------|--------------------------|---------------------|--------------------------|---------------------|--------------------------|---------------------|--------------------------|
| | Positive COVID-19 cases | | | Deaths | | | Hospitalizations | | | Positive COVID-19 cases | | | Hospitalizations | | | Deaths | | |
| | N (%) | Rate ^d | N (%) | Rate | N (%) | Rate | N (%) | Rate | N (%) | Rate | Rate Ratio (95% CI) | Rate Difference (95% CI) | Rate Ratio (95% CI) | Rate Difference (95% CI) | Rate Ratio (95% CI) | Rate Difference (95% CI) | Rate Ratio (95% CI) | Rate Difference (95% CI) |
| Other | 19 (8.3) | 8306.0 | 0 (0.0) | 0.0 | 0 (0.0) | 0.0 | 1.4 (0.9, 2.2) | 2245.8 (-1569.6, 6061.2) | — | — | — | — | — | — | — | — | — | — |
| North Carolina | | | | | | | | | | | | | | | | | | |
| Sex | | | | | | | | | | | | | | | | | | |
| Male | 1161 (3.9) | 3852.5 | 25 (0.1) | 83.0 | 10 (0.0) | 33.2 | ref | ref | ref | ref | ref | ref | ref | ref | ref | ref | ref | ref |
| Female | 247 (9.7) | 9746.2 | —* | —* | —* | —* | 2.5 (2.2, 2.9) | 5893.7 (4658.2, 7129.2) | —* | —* | —* | —* | —* | —* | —* | —* | —* | —* |
| Total | 1408 (4.3) | 4309.7 | 33 (0.1) | 101.0 | 11 (0.0) | 33.7 | | | | | | | | | | | | |
| Age | | | | | | | | | | | | | | | | | | |
| 29 years | 151 (2.1) | 2093.2 | 0 (0.0) | 0.0 | 0 (0.0) | 0.0 | 0.5 (0.4, 0.6) | -1798.8 (-2264.3, -1333.3) | — | — | — | — | — | — | — | — | — | — |
| 30–44 years | 553 (3.9) | 3892.0 | —* | —* | 0 (0.0) | 0.0 | Ref | ref | —* | —* | —* | —* | —* | —* | —* | —* | —* | —* |
| 45–54 years | 360 (5.5) | 5526.8 | —* | —* | 0 (0.0) | 0.0 | 1.4 (1.2, 1.6) | 1634.9 (978.2, 2291.5) | —* | —* | —* | —* | —* | —* | —* | —* | —* | —* |
| 55–64 years | 228 (6.4) | 6441.3 | 12 (0.3) | 339.0 | —* | —* | 1.7 (1.4, 1.9) | 2549.3 (1652.5, 3446.1) | ref | ref | ref | ref | ref | ref | ref | ref | ref | ref |
| 65 years | 96 (9.5) | 9486.2 | —* | —* | —* | —* | 2.4 (2.0, 3.0) | 5594.2 (3669.0, 7519.3) | —* | —* | —* | —* | —* | —* | —* | —* | —* | —* |
| Missing | 20 | | | | | | | | | | | | | | | | | |
| Race and Ethnicity | | | | | | | | | | | | | | | | | | |
| Hispanic | 16 (0.9) | 873.0 | —* | —* | 0 (0.0) | 0.0 | 0.5 (0.3, 0.8) | -852.8 (-1324.2, -381.5) | —* | —* | —* | —* | —* | —* | —* | —* | —* | —* |
| Non-Hispanic | | | | | | | | | | | | | | | | | | |

| | Incarcerated People | | | | | | Comparisons [§] | | | | | | | | | | | |
|---|-------------------------|-------------------|----------------|----------------|----------------|----------------|--------------------------|----------------|----------------|-------------------------|------------------------------|--------------------------|---------------------|--------------------------|---------------------|--------------------------|---------------------|--------------------------|
| | Positive COVID-19 cases | | | Deaths | | | Hospitalizations | | | Positive COVID-19 cases | | | Hospitalizations | | | Deaths | | |
| | N (%) | Rate ^d | N (%) | Rate | N (%) | Rate | N (%) | Rate | N (%) | Rate | Rate Ratio (95% CI) | Rate Difference (95% CI) | Rate Ratio (95% CI) | Rate Difference (95% CI) | Rate Ratio (95% CI) | Rate Difference (95% CI) | Rate Ratio (95% CI) | Rate Difference (95% CI) |
| American Indian or Alaska Native | 12 (1.9) | 1854.7 | 0 (0.0) | 0.0 | 0 (0.0) | 0.0 | 0.0 | 0 (0.0) | 0.0 | 1.1 (0.6, 1.9) | 128.8 (-939.1, 1196.8) | — | — | — | — | — | — | — |
| Asian | — [*] | — [*] | 0 (0.0) | 0.0 | 0 (0.0) | 0.0 | 0.0 | 0 (0.0) | 0.0 | — [*] | — [*] | — | — | — | — | — | — | — |
| Black | 292 (1.7) | 1725.9 | 13 (0.1) | 76.8 | — [*] | — [*] | 76.8 | — [*] | — [*] | ref | ref | ref | ref | — | ref | — | — | — |
| Native Hawaiian or Other Pacific Islander | 0 (0.0) | 0.0 | 0 (0.0) | 0.0 | 0 (0.0) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | — | — | — | — | — | — | — |
| White | 248 (1.9) | 1913.4 | 10 (0.1) | 77.2 | — [*] | — [*] | 77.2 | — [*] | — [*] | 1.1 (0.9, 1.3) | 187.6 (-122.1, 497.2) | 1.0 (0.4, 2.3) | 0.3 (-63.2, 63.8) | — [*] | — [*] | — [*] | — [*] | — [*] |
| Other | 17 (10.5) | 10,537.2 | — [*] | — [*] | 0 (0.0) | 0.0 | — [*] | — [*] | 0.0 | 6.1 (3.7, 10.0) | 8811.3 (3798.3, 13,824.3) | — [*] | — [*] | — | — | — | — | — |
| Missing | 819 | — | 8 | — | 1 | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Vermont | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Sex | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Male | 54 (4.8) | 4757.7 | 0 (0.0) | 0.0 | — [*] | — [*] | 0.0 | — [*] | — [*] | ref | ref | — | — | — | — | — | — | — |
| Female | — [*] | — [*] | 0 (0.0) | 0.0 | 0 (0.0) | 0.0 | 0.0 | 0.0 | 0.0 | — [*] | — [*] | — | — | — | — | — | — | — |
| Total | 55 (4.5) | 4471.5 | 0 (0.0) | 0.0 | — [*] | — [*] | 0.0 | — [*] | — [*] | — | — | — | — | — | — | — | — | — |
| Age | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 29 years | 11 (3.5) | 3466.4 | 0 (0.0) | 0.0 | 0 (0.0) | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 (0.2, 0.6) | -7950.9 (-12,583.9, -3318.0) | — | — | — | — | — | — | — |
| 30–44 years | 29 (11.4) | 11,417.3 | 0 (0.0) | 0.0 | — [*] | — [*] | 0.0 | — [*] | — [*] | ref | ref | — | — | — | — | — | — | — |
| 45–54 years | — [*] | — [*] | 0 (0.0) | 0.0 | 0 (0.0) | 0.0 | 0.0 | 0.0 | 0.0 | — [*] | — [*] | — | — | — | — | — | — | — |
| 55–64 years | — [*] | — [*] | 0 (0.0) | 0.0 | 0 (0.0) | 0.0 | 0.0 | 0.0 | 0.0 | — [*] | — [*] | — | — | — | — | — | — | — |
| 65 years | — [*] | — [*] | 0 (0.0) | 0.0 | 0 (0.0) | 0.0 | 0.0 | 0.0 | 0.0 | — [*] | — [*] | — | — | — | — | — | — | — |
| Race and Ethnicity | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

| | Incarcerated People | | | | | | Comparisons [§] | | | | | | | | | | | |
|---|-------------------------|-------------------|-----------|----------------|-------|----------------|--------------------------|----------------|----------------|---------------------------|--------------------------|------------------------|--------------------------|---------------------------|--------------------------|---------------------------|--------------------------|--|
| | Positive COVID-19 cases | | | Deaths | | | Hospitalizations | | | Positive COVID-19 cases | | | Hospitalizations | | | Deaths | | |
| | N (%) | Rate ^d | Rate | N (%) | Rate | Rate | N (%) | Rate | Rate | Rate Ratio (95% CI) | Rate Difference (95% CI) | Rate Ratio (95% CI) | Rate Difference (95% CI) | Rate Ratio (95% CI) | Rate Difference (95% CI) | Rate Ratio (95% CI) | Rate Difference (95% CI) | |
| <i>Hispanic</i> | 0 (0.0) | 0.0 | 0.0 | 0 (0.0) | 0.0 | 0.0 | 0 (0.0) | 0.0 | 0.0 | — | — | — | — | — | — | — | — | |
| <i>Non-Hispanic</i> | | | | | | | | | | | | | | | | | | |
| American Indian or Alaska Native | 0 (0.0) | 0.0 | 0.0 | 0 (0.0) | 0.0 | 0.0 | 0 (0.0) | 0.0 | 0.0 | — | — | — | — | — | — | — | — | |
| Asian | 0 (0.0) | 0.0 | 0.0 | 0 (0.0) | 0.0 | 0.0 | 0 (0.0) | 0.0 | 0.0 | — | — | — | — | — | — | — | — | |
| Black | — [*] | — [*] | 0.0 | 0 (0.0) | 0.0 | 0.0 | 0 (0.0) | 0.0 | 0.0 | — [*] | — [*] | — | — | — | — | — | — | |
| Native Hawaiian or Other Pacific Islander | 0 (0.0) | 0.0 | 0.0 | 0 (0.0) | 0.0 | 0.0 | 0 (0.0) | 0.0 | 0.0 | — | — | — | — | — | — | — | — | |
| White | 44 (4.2) | 4165.4 | 0.0 | 0 (0.0) | 0.0 | 0.0 | — [*] | — [*] | ref | ref | ref | — [*] | — [*] | — [*] | — [*] | — [*] | — [*] | |
| Other | — [*] | — [*] | 0.0 | 0 (0.0) | 0.0 | 0.0 | 0 (0.0) | 0.0 | 0.0 | — [*] | — [*] | — | — | — | — | — | — | |
| Bureau of Prisons | | | | | | | | | | | | | | | | | | |
| Sex | | | | | | | | | | | | | | | | | | |
| Male | 10,476 (8.3) | 8325.9 | 582 (0.5) | 104 (0.1) | 462.5 | 82.7 | 104 (0.1) | 82.7 | ref | ref | ref | ref | ref | ref | ref | ref | ref | |
| Female | 768 (8.5) | 8470.6 | 23 (0.3) | — [*] | 253.7 | — [*] | — [*] | — [*] | 1.0 (0.9, 1.1) | 144.7 (−475.2, 764.6) | 0.5 (0.4, 0.8) | −208.8 (−319.1, −98.5) | — [*] | — [*] | — [*] | — [*] | — [*] | |
| Total | 11,244 (8.3) | 8335.6 | 605 (0.4) | 107 (0.1) | 448.5 | 79.3 | 107 (0.1) | 79.3 | | | | | | | | | | |
| Age | | | | | | | | | | | | | | | | | | |
| 29 years | 1199 (5.8) | 5780.0 | 15 (0.1) | 0 (0.0) | 72.3 | 0.0 | 0 (0.0) | 0.0 | 0.8 (0.8, 0.9) | −1122.8 (−1504.2, −741.4) | 0.5 (0.3, 0.8) | −75.4 (−121.9, −28.9) | — | — | — | — | — | |
| 30–44 years | 4766 (6.9) | 6902.8 | 102 (0.1) | — [*] | 147.7 | — [*] | — [*] | — [*] | Ref | Ref | Ref | Ref | Ref | Ref | Ref | Ref | Ref | |
| 45–54 years | 2679 (9.5) | 9524.4 | 119 (0.4) | 13 (0.0) | 423.1 | 46.2 | 13 (0.0) | 46.2 | 1.4 (1.3, 1.4) | 2621.6 (2211.1, 3032.1) | 2.9 (2.2, 3.7) | 275.4 (194.2, 356.6) | 0.0 (0.0, 0.1) | −1048.2 (−1358.8, −737.6) | 0.0 (0.0, 0.1) | −1048.2 (−1358.8, −737.6) | | |

| | Incarcerated People | | | | Comparisons [§] | | | | | |
|--|-------------------------|-------------------|----------------|----------------|--------------------------|-------------------------------|---------------------|--------------------------|----------------|--------------------------|
| | Positive COVID-19 cases | | Deaths | | Positive COVID-19 cases | | Deaths | | | |
| | N (%) | Rate ^d | N (%) | Rate | Rate Ratio (95% CI) | Rate Difference (95% CI) | Rate Ratio (95% CI) | Rate Difference (95% CI) | | |
| 55–64 years | 1752 (13.9) | 13,916.5 | 183 (1.5) | 1453.6 | 2.0 (1.9, 2.1) | 7013.7 (6333.2, 7694.2) | 9.8 (7.7, 12.5) | 1305.9 (1093.3, 1518.5) | 0.3 (0.2, 0.4) | -792.6 (-1116.7, -468.5) |
| 65 years | 848 (19.3) | 19,334.2 | 186 (4.2) | 4240.8 | 2.8 (2.6, 3.0) | 12,431.4 (11,115.4, 13,747.4) | 28.7 (22.6, 36.6) | 4093.1 (3483.0, 4703.2) | ref | ref |
| Race and Ethnicity | | | | | | | | | | |
| <i>Hispanic</i> | 2952 (8.6) | 8579.0 | 122 (0.4) | 354.6 | 1.4 (1.4, 1.5) | 2634.1 (2261.6, 3006.6) | 1.0 (0.8, 1.3) | 2.9 (-77.7, 83.5) | 1.2 (0.6, 2.3) | 7.0 (-21.4, 35.4) |
| <i>Non-Hispanic</i> | | | | | | | | | | |
| American Indian or Alaska Native | 224 (6.4) | 6433.7 | 17 (0.5) | 488.3 | 1.1 (0.9, 1.2) | 488.8 (-378.9, 1356.5) | 1.4 (0.8, 2.3) | 136.6 (-100.9, 374.1) | * | * |
| Asian | 187 (9.2) | 9208.8 | 18 (0.9) | 886.4 | 1.5 (1.3, 1.8) | 3263.9 (1927.8, 4600.0) | 2.5 (1.6, 4.1) | 534.7 (122.1, 947.3) | * | * |
| Black | 3161 (5.9) | 5944.9 | 187 (0.4) | 351.7 | Ref | Ref | Ref | ref | ref | ref |
| Native Hawaiian or Other Pacific Islander [†] | — [†] | — [†] | — [†] | — [†] | — [†] | — [†] | — [†] | — [†] | — [†] | — [†] |
| White | 4720 (11.3) | 11,292.6 | 261 (0.6) | 624.4 | 1.9 (1.8, 2.0) | 5347.7 (4964.6, 5730.8) | 1.8 (1.5, 2.1) | 272.7 (181.7, 363.7) | 3.9 (2.4, 6.3) | 113.6 (72.5, 154.7) |
| Other [†] | — [†] | — [†] | — [†] | — [†] | — [†] | — [†] | — [†] | — [†] | — [†] | — [†] |

^a Per 100,000 persons

* Not reported; cell counts < 10 or denominator is < 20

[†] Not available; data or category not collected by state/jurisdiction

— Count or denominator zero.

[§] The largest denominator was used as the reference point.

Table 6 COVID-19 case rates in correctional staff across three jurisdictions aggregated and comparisons to the U.S. general population, United States, March 1–July 31, 2020

| | Correctional Staff | | U.S. General Population | | Comparisons [§] | |
|---|--------------------------------------|-------------------|--------------------------------------|--------|--------------------------|--------------------------|
| | Positive COVID-19 cases ^a | | Positive COVID-19 cases ^c | | Positive COVID-19 cases | |
| | N (%) | Rate ^b | N (%) | Rate | Rate Ratio (95% CI) | Rate Difference (95% CI) |
| Sex | | | | | | |
| Male | 1049 (3.2) | 3185.5 | 787,923 (0.5) | 487.4 | 6.5 (6.2, 6.9) | 2698.1 (2505.3, 2890.9) |
| Female | 424 (2.7) | 2710.8 | 884,905 (0.5) | 531.2 | 5.1 (4.6, 5.6) | 2179.6 (1921.5, 2437.6) |
| Total | 1473 (3.0) | 3032.6 | 1,672,828(0.5) | 509.6 | 6.0 (5.7, 6.3) | 2523.0 (2368.1, 2677.9) |
| Age | | | | | | |
| 29 years | 175 (2.8) | 2752.6 | 371,833 ⁵ (0.7) | 692.1 | 4.0 (3.4, 4.6) | 2065.5 (1634.5, 2450.3) |
| 30–44 years | 757 (3.2) | 3214.7 | 436,610 (0.7) | 681.2 | 4.7 (4.4, 5.1) | 2533.4 (2304.4, 2762.4) |
| 45–54 years | 445 (3.1) | 3136.2 | 278,524 (0.7) | 681.4 | 4.6 (4.2, 5.1) | 2454.8 (2163.4, 2746.2) |
| 55–64 years | 84 (2.1) | 2083.9 | 248,695 (0.6) | 585.9 | 3.6 (2.9, 4.4) | 1498.0 (1052.3, 1943.6) |
| 65 years | 11 (3.0) | 2967.6 | 337,166 (0.6) | 623.7 | 4.8 (2.6, 8.6) | 2343.9 (590.2, 4097.7) |
| Missing Age | 1 | | | | | |
| Race and Ethnicity | | | | | | |
| <i>Hispanic</i> | 235 (5.1) | 5077.4 | 512,929 (0.9) | 846.8 | 6.0 (5.3, 6.8) | 4230.6 (3581.4, 4879.8) |
| <i>Non-Hispanic</i> | | | | | | |
| American Indian or Alaska Native | 29 (3.2) | 3239.0 | 22,069 (0.9) | 906.4 | 3.6 (2.5, 5.1) | 2332.7 (1153.7, 3511.6) |
| Asian | 24 (2.8) | 2824.6 | 58,619 (0.3) | 310.1 | 9.1 (6.1, 13.6) | 2514.6 (1384.5, 3644.7) |
| Black | 439 (3.2) | 3248.5 | 327,152 (0.8) | 795.1 | 4.1 (3.7, 4.5) | 2453.4 (2149.5, 2757.3) |
| Native Hawaiian or Other Pacific Islander | 0 (0.0) | 0.0 | 7,099 (1.2) | 1191.3 | — | — |
| White | 702 (2.5) | 2465.1 | 673,460 (0.3) | 341.3 | 7.2 (6.7, 7.8) | 2123.8 (1941.4, 2306.1) |
| Other | — [*] | — [*] | 71,500 (1.0) | 983.1 | — [*] | — [*] |
| Missing Race | 35 | | | | | |

^a 3 states/jurisdictions reported data for positive COVID-19 cases

^b Per 100,000 persons

^c Data obtained from the Data Collation and Integration for Public Health Event Response (DCIPHER) platform (<https://data.cdc.gov/browse?tags=covid-19>)

Not reported; cell counts < 10 or denominator is < 20

— Count or denominator zero

§ The U.S. Population is the referent category

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Table 7
 COVID-19 case rates in correctional staff in three jurisdictions and within-group comparisons, United States, March 1–July 31, 2020

| | Correctional Staff | | Comparisons [§] | |
|---|--------------------|-------------------|--------------------------|------------------------------|
| | COVID-19 cases | | COVID-19 cases | |
| | N (%) | Rate ^d | Rate Ratio (95% CI) | Rate Difference (95% CI) |
| North Carolina | | | | |
| Sex | | | | |
| Male | 111 (1.5) | 1481.1 | ref | ref |
| Female | 95 (1.4) | 1448.0 | 1.0 (0.7, 1.3) | 33.1 (–367.8, 434.0) |
| Total | 206 (1.5) | 1465.6 | | |
| Age | | | | |
| 29 years | 34 (1.2) | 1245.4 | 0.7 (0.5, 1.0) | –542.1 (–1110.5, 26.4) |
| 30–44 years | 83 (1.8) | 1787.5 | Ref | Ref |
| 45–54 years | 51 (1.4) | 1384.9 | 0.8 (0.5, 1.1) | –402.6 (–943.3, 138.1) |
| 55–64 years | 30 (1.1) | 1107.4 | 0.6 (0.4, 0.9) | –680.1 (–90,142.3, 88,782.1) |
| 65 years | — [†] | — [†] | — [†] | — [†] |
| Missing | 1 | | | |
| Race and Ethnicity | | | | |
| <i>Hispanic</i> | — [†] | — [†] | — [†] | — [†] |
| <i>Non-Hispanic</i> | | | | |
| American Indian or Alaska Native | — [†] | — [†] | — [†] | — [†] |
| Asian | — [†] | — [†] | — [†] | — [†] |
| Black | 81 (1.2) | 1244.3 | 1.2 (0.8, 1.6) | 171.2 (–198.5, 540.8) |
| Native Hawaiian or Other Pacific Islander | 0 (0.0) | 0.0 | — | — |
| White | 70 (1.1) | 1073.1 | ref | ref |
| Other | — [†] | — [†] | — [†] | — [†] |
| Missing | 35 | | | |
| Vermont | | | | |
| Sex | | | | |
| Male | 17 (3.5) | 3460.0 | — [†] | — [†] |

| | Correctional Staff | | Comparisons [§] | |
|---|--------------------|-------------------|--------------------------|--------------------------|
| | COVID-19 cases | | COVID-19 cases | |
| | N (%) | Rate ^a | Rate Ratio (95% CI) | Rate Difference (95% CI) |
| Female | — [†] | — [†] | — [†] | — [†] |
| Total | 19 (3.1) | 3081.1 | | |
| Age | | | | |
| 29 years | — [†] | — [†] | — [†] | — [†] |
| 30–44 years | 11 (4.8) | 4838.7 | | |
| 45–54 years | — [†] | — [†] | — [†] | — [†] |
| 55–64 years | — [†] | — [†] | — [†] | — [†] |
| 65 years | 0 (0.0) | 0.0 | — | — |
| Race and Ethnicity | | | | |
| Hispanic | 0 (0.0) | 0.0 | — | — |
| Non-Hispanic | | | | |
| American Indian or Alaska Native | 0 (0.0) | 0.0 | — | — |
| Asian | 0 (0.0) | 0.0 | — | — |
| Black | 0 (0.0) | 0.0 | — | — |
| Native Hawaiian or Other Pacific Islander | 0 (0.0) | 0.0 | — | — |
| White | 19 (3.4) | 3388.8 | Ref | ref |
| Other | 0 (0.0) | 0.0 | — | — |
| Bureau of Prisons | | | | |
| Sex | | | | |
| Male | 921 (3.7) | 3692.2 | Ref | Ref |
| Female | 327 (3.7) | 3651.6 | 1.0 (0.9, 1.1) | -40.6 (-502.7, 421.4) |
| Total | 1248 (3.7) | 3681.5 | | |
| Age | | | | |
| 29 years | 136 (3.9) | 3939.0 | 1.1 (0.9, 1.3) | 389.3 (-325.7, 1104.3) |
| 30–44 years | 663 (3.5) | 3549.7 | Ref | ref |
| 45–54 years | 392 (3.8) | 3780.7 | 1.1 (0.9, 1.2) | 231.0 (-230.6, 692.7) |
| 55–64 years | 53 (4.2) | 4232.1 | 1.2 (0.9, 1.6) | 682.4 (-488.6, 1853.4) |
| 65 years | — [†] | — [†] | — [†] | — [†] |

| | Correctional Staff | | Comparisons [§] | |
|--|--------------------|-------------------|--------------------------|--------------------------|
| | COVID-19 cases | | COVID-19 cases | |
| | N (%) | Rate ^d | Rate Ratio (95% CI) | Rate Difference (95% CI) |
| Race and Ethnicity | | | | |
| <i>Hispanic</i> | 232 (5.3) | 5329.2 | 1.9 (1.6, 2.2) | 2464.0 (1741.7, 3186.3) |
| <i>Non-Hispanic</i> | | | | |
| American Indian or Alaska Native | 22 (5.0) | 4966.1 | 1.7 (1.1, 2.7) | 2100.9 (13.3, 4188.4) |
| Asian | 23 (3.2) | 3159.3 | 1.1 (0.7, 1.7) | 294.1 (-1016.9, 1605.0) |
| Black | 358 (5.1) | 5128.2 | 1.8 (1.6, 2.0) | 2262.9 (1685.3, 2840.5) |
| Native Hawaiian or Other Pacific Islander [*] | — [*] | — [*] | — [*] | — [*] |
| White | 613 (2.9) | 2865.3 | ref | Ref |
| Other [*] | — [*] | — [*] | — [*] | — [*] |
| All Jurisdictions Combined | | | | |
| Sex | | | | |
| Male | 1049 (3.2) | 3185.5 | ref | ref |
| Female | 424 (2.7) | 2710.8 | 0.9 (0.8, 1.0) | -474.7 (-796.8, -152.7) |
| Total | 1473 (3.0) | 3032.6 | | |
| Age | | | | |
| 29 years | 175 (2.8) | 2752.6 | 0.9 (0.7, 1.0) | -462.1 (-929.8, 5.6) |
| 30–44 years | 757 (3.2) | 3214.7 | Ref | Ref |
| 45–54 years | 445 (3.1) | 3136.2 | 1.0 (0.9, 1.1) | -78.4 (-449.0, 292.2) |
| 55–64 years | 84 (2.1) | 2083.9 | 0.6 (0.5, 0.8) | -1130.8 (1631.9, -629.8) |
| 65 years | 11 (3.0) | 2967.6 | 0.9 (0.5, 1.7) | -247.0 (2015.7, 1521.6) |
| Missing Age | 1 | | | |
| Race and Ethnicity | | | | |
| <i>Hispanic</i> | 235 (5.1) | 5077.4 | 2.1 (1.8, 2.4) | 2612.3 (1938.0, 3286.6) |
| <i>Non-Hispanic</i> | | | | |
| American Indian or Alaska Native | 29 (3.2) | 3239.0 | 1.3 (0.9, 1.9) | 773.9 (-419.0, 1966.8) |
| Asian | 24 (2.8) | 2824.6 | 1.1 (0.8, 1.7) | 359.5 (-785.2, 1504.3) |
| Black | 439 (3.2) | 3248.5 | 1.3 (1.2, 1.5) | 783.4 (429.0, 1137.8) |
| Native Hawaiian or Other Pacific Islander | 0 (0.0) | 0.0 | | |

| | Correctional Staff | | Comparisons [§] | |
|--------------|--------------------|-------------------|--------------------------|--------------------------|
| | COVID-19 cases | Rate ^d | COVID-19 cases | Rate Difference (95% CI) |
| N (%) | 702 (2.5) | 2465.1 | ref | ref |
| White | — [†] | — [†] | — [†] | — [†] |
| Other | — [†] | — [†] | — [†] | — [†] |
| Missing Race | 35 | | | |

^aCases per 100,000 persons

^{*}Not reported; cell counts < 10 or denominator is < 20

[†]Not available; data or category not collected by state/jurisdiction

— Count or denominator is zero

[§]The largest denominator was used as the reference point.

References

- Hagan LM, Williams SP, Spaulding AC, et al. Mass Testing for SARS-CoV-2 in 16 Prisons and Jails - Six Jurisdictions, United States, April-May 2020. *MMWR Morb Mortal Wkly Rep.* 2020;69(33):1139–43. 10.15585/mmwr.mm6933a3. [PubMed: 32817597]
- Lewis NM, Salmanson AP, Price A, et al. Community-Associated Outbreak of COVID-19 in a Correctional Facility — Utah, September 2020–January 2021. *MMWR Morb Mortal Wkly Rep.* 2021;70(13):467–72. [PubMed: 33793464]
- Wallace M, Hagan L, Curran KG, et al. COVID-19 in Correctional and Detention Facilities - United States, February-April 2020. *MMWR Morb Mortal Wkly Rep.* 2020;69(19):587–90. 10.15585/mmwr.mm6919e1. [PubMed: 32407300]
- Altibi AM, Pallavi B, Liaqat H, et al. Characteristics and comparative clinical outcomes of prisoner versus non-prisoner populations hospitalized with COVID-19. *Sci Rep.* 2021;11(1):6488. 10.1038/s41598-021-85916-w. [PubMed: 33753786]

5. Aspinwall C, Neff J. These prisons are doing mass testing for COVID-19—And finding mass infections. The Marshall Project <https://www.themarshallproject.org/2020/04/24/these-prisons-are-doing-mass-testing-for-covid-19-and-finding-mass-infections>. Accessed 30 Aug 2021.
6. Saloner B, Parish K, Ward JA, DiLaura G, Dolovich S. COVID-19 Cases and Deaths in Federal and State Prisons. *JAMA*. 2020;324(6):602–3. 10.1001/jama.2020.12528. [PubMed: 32639537]
7. Toblin R, Hagan L. COVID-19 Case and Mortality Rates in the Federal Bureau of Prisons. *Am J Prev Med* 2021;10.1016/j.amepre.2021.01.019
8. Park K, Meagher T. A State-By-State Look at 15 Months of Coronavirus in Prisons. The Marshall Project Updated 7/1/2021. <https://www.themarshallproject.org/2020/05/01/a-state-by-state-look-at-coronavirus-in-prisons>
9. Hawks L, Woolhandler S, McCormick D. COVID-19 in Prisons and Jails in the United States. *JAMA Intern Med*. 2020;180(8):1041–2. 10.1001/jamainternmed.2020.1856. [PubMed: 32343355]
10. Montoya-Barthelemy AG, Lee CD, Cundiff DR, Smith EB. COVID-19 and the Correctional Environment: The American Prison as a Focal Point for Public Health. *Am J Prev Med*. 2020;58(6):888–91. 10.1016/j.amepre.2020.04.001. [PubMed: 32387174]
11. Schnepel KT. COVID-19 in U.S. State and Federal Prisons: December 2020 Update. 2020. December 2020. <https://build.neoninspire.com/counciloncj/wp-content/uploads/sites/96/2021/07/COVID-19-in-State-and-Federal-Prisons-December-Update-2.pdf>
12. Deitch M, Bucknall W. Hidden figures: rating the COVID data transparency of prisons, jails, and juvenile agencies. 2021. https://repositories.lib.utexas.edu/bitstream/handle/2152/85094/Hidden%20Figures-%20Rating%20the%20COVID%20data%20transparency%20of%20prisons%2C%20jails%2C%20and%20juvenile%20agencies_FINAL.pdf?sequence=3. Accessed 10 Aug 2021.
13. Nowotny KM, Seide K, Brinkley-Rubinstein L. Risk of COVID-19 infection among prison staff in the United States. *BMC Public Health*. 2021;21(1):1036. 10.1186/s12889-021-11077-0. [PubMed: 34078350]
14. Ward JA, Parish K, DiLaura G, Dolovich S, Saloner B. COVID-19 Cases Among Employees of U.S. Federal and State Prisons. *Am J Prev Med*. 2021;60(6):840–4. 10.1016/j.amepre.2021.01.018. [PubMed: 33750599]
15. Adhikari S, Pantaleo NP, Feldman JM, Ogedegbe O, Thorpe L, Troxel AB. Assessment of Community-Level Disparities in Coronavirus Disease 2019 (COVID-19) Infections and Deaths in Large US Metropolitan Areas. *JAMA Netw Open*. 2020;3(7):e2016938–e2016938. 10.1001/jamanetworkopen.2020.16938. [PubMed: 32721027]
16. Moore JT, Ricaldi JN, Rose CE, et al. Disparities in Incidence of COVID-19 Among Underrepresented Racial/Ethnic Groups in Counties Identified as Hotspots During June 5–18, 2020–22 States, February–June 2020. *MMWR Morb Mortal Wkly Rep*. 2020;69(33):1122–6. [PubMed: 32817602]
17. Siegel M, Critchfield-Jain I, Boykin M, Owens A. Actual Racial/Ethnic Disparities in COVID-19 Mortality for the Non-Hispanic Black Compared to Non-Hispanic White Population in 35 US States and Their Association with Structural Racism. *J Racial Ethnic Health Disparities* 2021. 10.1007/s40615-021-01028-1
18. Balko R. There's overwhelming evidence that the criminal justice system is racist. Here's the proof. *The Washington Post*. June 10, 2020. <https://www.washingtonpost.com/graphics/2020/opinions/systemic-racism-police-evidence-criminal-justice-system/>
19. Carson EA. Prisoners In 2019 2020. Prisoners NCJ 255115. October 2020. <https://bjs.ojp.gov/content/pub/pdf/p19.pdf>
20. Li W. The Growing Racial Disparity in Prison Time. 12/3/2019. <https://www.themarshallproject.org/2019/12/03/the-growing-racial-disparity-in-prison-time>
21. Sawyer W, Wagner P. Mass Incarceration: The Whole Pie 2020 Prison Policy Initiative. Updated March 24, 2020. <https://www.prisonpolicy.org/reports/pie2020.html>
22. Nowotny KM, Bailey Z, Brinkley-Rubinstein L. The Contribution of Prisons and Jails to US Racial Disparities During COVID-19. *Am J Public Health*. 2021;111(2):197–9. 10.2105/AJPH.2020.306040. [PubMed: 33439699]

23. Williams BA, Goodwin JS, Baillargeon J, Ahalt C, Walter LC. Addressing the aging crisis in U.S. criminal justice health care. *J Am Geriatr Soc.* Jun2012;60(6):1150–6. 10.1111/j.1532-5415.2012.03962.x. [PubMed: 22642489]
24. Skarupski KA, Gross A, Schrack JA, Deal JA, Eber GB. The Health of America's Aging Prison Population. *Epidemiol Rev.* 2018;40(1):157–65. 10.1093/epirev/mxx020. [PubMed: 29584869]
25. Carson EA, Sabol WJ. Aging of the state prison population. 2016. NCJ 248766. May 2016. <https://bjs.ojp.gov/content/pub/pdf/aspp9313.pdf>
26. Munday D, Leaman J, O'Moore É, Plugge E. The prevalence of non-communicable disease in older people in prison: a systematic review and meta-analysis. *Age Ageing.* 2019;48(2):204–12. 10.1093/ageing/afy186. [PubMed: 30590404]
27. Prost SG, Novisky MA, Rorvig L, Zaller N, Williams B. Prisons and COVID-19: A Desperate Call for Gerontological Expertise in Correctional Health Care. *Gerontologist.* 2021;61(1):3–7. 10.1093/geront/gnaa088. [PubMed: 32706885]
28. Gold JAW, Rossen LM, Ahmad FB, et al. Race, Ethnicity, and Age Trends in Persons Who Died from COVID-19 - United States, May-August 2020. *MMWR Morb Mortal Wkly Rep.* 2020;69(42):1517–21. 10.15585/mmwr.mm6942e1. [PubMed: 33090984]
29. Lithander FE, Neumann S, Tenison E, et al. COVID-19 in older people: a rapid clinical review. *Age Ageing.* 2020;49(4):501–15. 10.1093/ageing/afaa093. [PubMed: 32377677]
30. Keppel K, Pamuk E, Lynch J, et al. Methodological issues in measuring health disparities. *Vital Health Stat.* 2005;2(141):1–16.
31. Rosen DL, Hammond WP, Wohl DA, Golin CE. Disease prevalence and use of health care among a national sample of black and white male state prisoners. *J Health Care Poor Underserved.* 2012;23(1):254–72. 10.1353/hpu.2012.0033. [PubMed: 22643475]
32. Rich JD, Dumont D, Allen S. Incarceration and health. In *Incarceration and Health: A Workshop Summary(2012)*
33. Chen JA, Zhang E, Liu CH. Potential Impact of COVID-19-Related Racial Discrimination on the Health of Asian Americans. *Am J Public Health.* 2020;110(11):1624–7. 10.2105/AJPH.2020.305858. [PubMed: 32941063]
34. Le TK, Cha L, Han HR, Tseng W. Anti-Asian Xenophobia and Asian American COVID-19 Disparities. *Am J Public Health.* 2020;110(9):1371–3. 10.2105/AJPH.2020.305846. [PubMed: 32783714]
35. Marcello RK, Dolle J, Tariq A, et al. Disaggregating Asian Race Reveals COVID-19 Disparities among Asian Americans at New York City's Public Hospital System. *medRxiv.* 2020:2020.11.23.20233155. 10.1101/2020.11.23.20233155
36. Rubin-Miller L, Alban C, Artiga S, Sullivan S. COVID-19 Racial Disparities in Testing, Infection, Hospitalization, and Death: Analysis of Epic Patient Data. 2020. 9/16/2020. <https://www.kff.org/report-section/covid-19-racial-disparities-in-testing-infection-hospitalization-and-death-analysis-of-epic-patient-data-issue-brief/>
37. Toblin RL, Cohen SI, Hagan LM. SARS-CoV-2 Infection Among Correctional Staff in the Federal Bureau of Prisons. *Am J Public Health.* 2021;111(6):1164–7. 10.2105/AJPH.2021.306237. [PubMed: 33856883]
38. Revisions to the Standards for the Classification of Federal Data on Race and Ethnicity. Office of Management and Budget (OMB). https://obamawhitehouse.archives.gov/omb/fedreg_1997standards
39. Coronavirus Disease 2019 (COVID-19) 2020 Interim Case Definition, Approved April 5, 2020. National Notifiable Diseases Surveillance System (NNDSS). <https://ndc.services.cdc.gov/case-definitions/coronavirus-disease-2019-2020/>. Accessed 30 Aug 2021.

Descriptive demographic information on the averaged census estimates for incarcerated people in six jurisdictions and population estimates for the U.S. general population, March 1–July 31, 2020

Table 1

| | Incarcerated People Percentage (%) ^b | U.S. General Population ^a Percentage (%) ^b |
|---|---|--|
| Sex | | |
| Male | 94.0 | 48.7 |
| Female | 6.0 | 51.3 |
| Age | | |
| 18–29 years | 19.7 | 21.1 |
| 30–44 years | 46.6 | 25.1 |
| 45–54 years | 19.3 | 16.0 |
| 55–64 years | 10.5 | 16.6 |
| 65 years | 3.8 | 21.2 |
| Race and Ethnicity | | |
| <i>Hispanic</i> | | 16.4 |
| <i>Non-Hispanic</i> | 27.9 | |
| American Indian or Alaska Native | 2.0 | 0.7 |
| Asian | 1.1 | 6.0 |
| Black | 36.1 | 12.2 |
| Native Hawaiian or Other Pacific Islander | 0.12 | 0.2 |
| White | 31.2 | 62.9 |
| Other ^c | 1.6 | 1.6 |

^aData Collation and Integration for Public Health Event Response (DECIPHER) data were used for population estimates during the study period (see <https://data.cdc.gov/browse?tags=covid-19>). Percentages reported include persons eighteen years and older

^bPercentages may not total 100 due to rounding

^cOther^c includes multiple races

Table 2 Rates of COVID-19 cases, hospitalizations, and deaths in people who are incarcerated across six jurisdictions aggregated and comparisons to the U.S. general population, United States, March 1–July 31, 2020

| | Incarcerated People | | | | U.S. General Population | | | | Comparisons [§] | | | | | | | |
|--------------------|--------------------------------------|-------------------|-------------------------------|--------|-------------------------|-------|--------------------------------------|-------|--------------------------|--------------------------|---------------------|-------------------------------|----------------|-------------------------|----------------|----------------------|
| | Positive COVID-19 cases ^d | | Hospitalizations ^a | | Deaths ^a | | Positive COVID-19 cases ^e | | Hospitalizations | | Deaths | | | | | |
| | N (%) | Rate ^b | N (%) | Rate | N (%) | Rate | N (%) | Rate | Rate Ratio (95% CI) | Rate Difference (95% CI) | Rate Ratio (95% CI) | Rate Difference (95% CI) | | | | |
| Sex | | | | | | | | | | | | | | | | |
| Male | 21,452 (7.2) | 7188.0 | 1099 (0.4) | 368.2 | 192 (0.1) | 64.3 | 787,923 (0.5) | 487.4 | 23,393 (0.2) | 177.9 (0.04) | 14.7 (14.5, 14.9) | 6700.0 (6604.4, 6796.8) | 2.1 (1.9, 2.2) | 190.3 (168.5, 212.2) | 1.5 (1.3, 1.8) | 22.6 (13.5, 31.7) |
| Female | 1416 (7.4) | 7417.7 | 46 (0.2) | 241.0 | —* | —* | 884,905 (0.5) | 531.2 | 22,266 (0.2) | 160.1 (0.04) | 14.0 (13.3, 14.7) | 6886.4 (6500.1, 7272.8) | 1.5 (1.1, 2.0) | 80.9 (11.2, 150.5) | —* | —* |
| Total | 22868 (7.2) | 7201.8 | 1145 (0.4) | 360.6 | 197 (0.1) | 62.0 | 1,672,828 (0.5) | 509.6 | 45,659 (0.2) | 168.8 (0.04) | 14.1 (13.9, 14.3) | 6692.2 (6598.8, 6785.5) | 2.1 (2.0, 2.3) | 191.8 (170.9, 212.7) | 1.6 (1.4, 1.9) | 23.6 (14.9, 32.2) |
| Age | | | | | | | | | | | | | | | | |
| 18–29 years | 2824 (4.5) | 4520.8 | 23 (0.0) | 36.8 | 0 (0.0) | 0.0 | 371,833 ^c (0.7) | 692.1 | 2,607 (0.1) | 62.4 (0.0) | 6.5 (6.3, 6.8) | 3828.8 (3662.0, 3995.6) | 0.6 (0.4, 0.9) | –25.6 (–40.8, –10.8) | — | — |
| 30–44 years | 9094 (6.1) | 6146.5 | 173 (0.1) | 116.9 | 14 (0.0) | 9.5 | 436,610 (0.7) | 681.2 | 7,053 (0.1) | 102.3 (0.0) | 9.0 (8.8, 9.2) | 5465.3 (5338.9, 5591.6) | 1.1 (1.0, 1.3) | 14.6 (–3.0, 32.3) | 2.0 (1.2, 3.4) | 4.7 (–0.2, 9.7) |
| 45–54 years | 5201 (8.5) | 8460.1 | 224 (0.4) | 364.4 | 18 (0.0) | 29.3 | 278,524 (0.7) | 681.4 | 7,207 (0.2) | 172.4 (0.0) | 12.4 (12.1, 12.8) | 7778.7 (7548.7, 8008.6) | 2.1 (1.9, 2.4) | 192.0 (144.1, 239.8) | 1.9 (1.2, 3.1) | 14.0 (0.5, 27.6) |
| 55–64 years | 3784 (11.3) | 11,302.6 | 340 (1.0) | 1015.6 | 74 (0.2) | 221.0 | 248,695 (0.6) | 585.9 | 9,297 (0.2) | 226.3 (0.0) | 19.3 (18.7, 19.9) | 10,716.8 (10,356.6, 11,076.9) | 4.5 (4.0, 5.0) | 789.3 (681.2, 897.3) | 6.2 (4.9, 7.8) | 185.2 (134.9, 235.6) |
| 65 years | 1940 (16.2) | 16,208.3 | 385 (3.2) | 3216.6 | 91 (0.8) | 760.3 | 337,166 (0.6) | 623.7 | 18,847 (0.4) | 391.1 (0.2) | 26.0 (24.9, 27.2) | 15,584.6 (14,863.3, 16,305.9) | 8.2 (7.4, 9.1) | 2825.5 (2504.1, 3146.9) | 4.1 (3.3, 5.0) | 572.7 (416.5, 728.9) |
| Missing or Unknown | 25 | | | | | | | | | 6 | | | | | | |
| Race and Ethnicity | | | | | | | | | | | | | | | | |
| Hispanic | 6721 (7.6) | 7594.9 | 305 (0.3) | 344.7 | 37 (0.0) | 41.8 | 512,929 (0.9) | 846.8 | 10,631 (0.3) | 309.1 (0.0) | 9.0 (8.8, 9.2) | 6748.0 (6566.5, 6929.6) | 1.1 (1.0, 1.2) | 35.6 (–3.6, 74.7) | 1.4 (1.0, 1.9) | 12.1 (–1.4, 25.6) |

| | Incarcerated People | | | | U.S. General Population | | | | Comparisons [§] | | | | | | | | | |
|---|--------------------------------------|-------------------|---------------------|-------|--------------------------------------|------|---------------------|--------|--------------------------|--------------------------|---------------------|--------------------------|-------------------|-------------------------|-----------------|----------------------|----------------|---------------------|
| | Positive COVID-19 cases ^a | | Deaths ^a | | Positive COVID-19 cases ^e | | Deaths ^e | | Positive COVID-19 cases | | Deaths | | | | | | | |
| | N (%) | Rate ^b | N (%) | Rate | N (%) | Rate | N (%) | Rate | Rate Ratio (95% CI) | Rate Difference (95% CI) | Rate Ratio (95% CI) | Rate Difference (95% CI) | | | | | | |
| <i>Non-Hispanic</i> | | | | | | | | | | | | | | | | | | |
| American Indian or Alaska Native | 389 (6.3) | 6275.5 | 25 (0.4) | 403.3 | —* | —* | 22,069 (0.9) | 906.4 | 669 (0.4) | 381.3 | 1,230 (0.1) | 50.52 | 6.9 (6.3, 7.7) | 5369.1 (4745.4, 5992.8) | 1.1 (0.7, 1.6) | 22.0 (138.7, 182.7) | —* | —* |
| Asian | 298 (8.6) | 8619.8 | 24 (0.7) | 694.2 | —* | —* | 58,619 (0.3) | 310.1 | 2,204 (0.1) ^d | 90.2 ^d | 3,802 (0.0) | 20.11 | 27.8 (24.8, 31.2) | 8309.7 (7331.0, 9288.4) | 7.7 (5.1, 11.5) | 604.0 (326.2, 881.8) | —* | —* |
| Black | 5802 (5.1) | 5055.6 | 323 (0.3) | 281.4 | 47 (0.0) | 41.0 | 327,152 (0.8) | 795.1 | 15,381 (0.3) | 329.4 | 21,714 (0.1) | 52.77 | 6.4 (6.2, 6.5) | 4260.6 (4130.4, 4390.7) | 0.9 (0.8, 1.0) | -48.0 (-79.1, -16.8) | 0.8 (0.6, 1.0) | -11.8 (-23.5, -0.1) |
| Native Hawaiian or Other Pacific Islander | 19 (5.0) | 5037.6 | —* | —* | —* | —* | 7,099 (1.2) | 1191.3 | — [†] | — [†] | — [†] | — [†] | 4.2 (2.7, 6.6) | 3846.3 (1580.9, 6111.6) | — [†] | — [†] | — [†] | — [†] |
| White | 8388 (8.5) | 8470.9 | 431 (0.4) | 435.3 | 96 (0.1) | 96.9 | 673,460 (0.3) | 341.3 | 14,591 (0.1) | 89.4 | 54,498 (0.0) | 27.62 | 24.8 (24.3, 25.4) | 8129.6 (7948.3, 8310.9) | 4.9 (4.4-5.4) | 345.9 (304.7, 387.0) | 3.5 (2.9, 4.3) | 69.3 (49.9, 88.7) |
| Other | 432 (8.3) | 8331.6 | 27 (0.5) | 520.7 | —* | —* | 71,500 (1.0) | 983.1 | 1941 | — [†] | 3,876 (0.1) | 53.29 | 8.5 (7.7, 9.3) | 7348.5 (6562.8, 8134.2) | — [†] | — [†] | —* | —* |
| Missing or Unknown | 819 | | | | | | | | | | 23,138 | | | | | | | |

^a 6 jurisdictions reported data for positive COVID-19 cases, hospitalizations, and deaths

^b Cases per 100,000 persons

^c Data reported for ages 22–29 years

^d Data reported for Asian and Pacific Islander

^e DCIPHER

Author Manuscript

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^f COVID-NET

^g Among the identified 22,868 persons with COVID-19 in the 6 jurisdictions, 819 were missing information on race and ethnicity, and 25 were missing information on age

* Not reported; cell counts < 10 or denominator is < 20

^h Data not available; data not collected or categorized differently by surveillance system

ⁱ Quantity or denominator zero

^j The U.S. Population is the referent category

Table 3

Percentage of COVID-19-associated hospitalization and deaths among aggregate COVID-19 cases for people who are incarcerated in six jurisdictions and in the U.S. general population, United States, March 1–July 31, 2020

| | Incarcerated People | | U.S. General Population | |
|---|--|--|--|--|
| | % of COVID-19-associated hospitalizations among COVID-19 cases | % of COVID-19-associated deaths among COVID-19 cases | % of COVID-19-associated hospitalizations among COVID-19 cases | % of COVID-19-associated deaths among COVID-19 cases |
| Sex | | | | |
| Male | 5.1 | 0.9 | 3.0 | 8.6 |
| Female | 3.2 | 0.4 | 2.5 | 6.6 |
| Total | 5.0 | 0.9 | 2.7 | 7.5 |
| Age | | | | |
| 18–29 years | 0.8 | 0.0 | 0.7 | 0.2 |
| 30–44 years | 1.9 | 0.2 | 1.6 | 0.7 |
| 45–54 years | 4.3 | 0.3 | 2.6 | 2.2 |
| 55–64 years | 9.0 | 2.0 | 3.7 | 6.1 |
| 65 years | 19.8 | 4.7 | 5.6 | 30.1 |
| Race and Ethnicity | | | | |
| <i>Hispanic</i> | 4.5 | 0.6 | 2.1 | 3.5 |
| <i>Non-Hispanic</i> | | | | |
| American Indian or Alaska Native | 6.4 | 1.0 | 3.0 | 5.6 |
| Asian | 8.1 | 1.7 | 3.8 | 6.5 |
| Black | 5.6 | 0.8 | 4.7 | 6.6 |
| Native Hawaiian or Other Pacific Islander | 10.5 | 5.3 | — [†] | — [†] |
| White | 5.1 | 1.1 | 2.2 | 8.1 |
| Other | 6.3 | 1.4 | 2.7 | 5.4 |

[†]Data not available; data not collected or categorized differently by surveillance system

—Quantity or denominator zero

Table 4

Rates of COVID-19 cases, hospitalizations, and deaths in people who are incarcerated across six jurisdictions aggregated and within-group comparisons, United States, March 1–July 31, 2020

| | Incarcerated People | | | | Comparisons [§] | | | | | | | |
|----------------------------|---------------------------|-------------------|------------------|--------|--------------------------|-------|-------------------------|-----------------------------|---------------------|--------------------------|---------------------|--------------------------|
| | Positive COVID-19 cases | | Hospitalizations | | Deaths | | Positive COVID-19 cases | | Hospitalizations | | Deaths | |
| | N (%) | Rate ^a | N (%) | Rate | N (%) | Rate | Rate Ratio (95% CI) | Rate Difference (95% CI) | Rate Ratio (95% CI) | Rate Difference (95% CI) | Rate Ratio (95% CI) | Rate Difference (95% CI) |
| All Jurisdictions Combined | | | | | | | | | | | | |
| Sex | | | | | | | | | | | | |
| Male | 21,452 (7.2) | 7188.0 | 1099 (0.4) | 368.2 | 192 (0.1) | 64.3 | ref | ref | ref | ref | ref | ref |
| Female | 1416 (7.4) | 7417.7 | 46 (0.2) | 241.0 | —* | —* | 1.0 (1.0, 1.1) | 229.7 (−168.5, 627.8) | 0.7 (0.5, 0.9) | −127.3 (−200.2, 54.3) | —* | —* |
| Total | 22868 ^{aa} (7.2) | 7201.8 | 1145 (0.4) | 360.6 | 197 (0.1) | 62.0 | | | | | | |
| Age | | | | | | | | | | | | |
| 29 years | 2824 (4.5) | 4520.8 | 23 (0.0) | 36.8 | 0 (0.0) | 0.0 | 0.7 (0.7, 0.8) | −1625.7 (−1834.9, −1416.5) | 0.3 (0.2, 0.5) | −80.1 (−103.1, −57.1) | — | — |
| 30–44 years | 9094 (6.1) | 6146.5 | 173 (0.1) | 116.9 | 14 (0.0) | 9.5 | Ref | ref | Ref | Ref | ref | ref |
| 45–54 years | 5201 (8.5) | 8460.1 | 224 (0.4) | 364.4 | 18 (0.0) | 29.3 | 1.4 (1.3, 1.4) | 2313.6 (2051.2, 2575.9) | 3.1 (2.6, 3.1) | 247.4 (196.6, 298.2) | 3.1 (1.5, 6.2) | 19.8 (5.4, 34.2) |
| 55–64 years | 3784 (11.3) | 11,302.6 | 340 (1.0) | 1015.6 | 74 (0.2) | 221.0 | 1.8 (1.8, 1.9) | 5156.1 (4774.5, 5537.8) | 8.7 (7.2, 10.4) | 898.6 (789.3, 1008.0) | 23.4 (13.2, 41.4) | 211.6 (161.0, 262.2) |
| 65 years | 1940 (16.2) | 16,208.3 | 385 (3.2) | 3216.6 | 91 (0.8) | 760.3 | 2.6 (2.5, 2.0.8) | 10,061.8 (9329.5, 10,794.0) | 27.5 (23.0, 32.9) | 3099.7 (2777.9, 3421.5) | 80.3 (45.8, 141.0) | 750.8 (594.5, 907.1) |
| Missing or Unknown | | | 25 | | | | | | | | | |
| Race and Ethnicity | | | | | | | | | | | | |

| | Incarcerated People | | | | | | Comparisons [§] | | | | | | | | | | | |
|---|-------------------------|-------------------|-----------|--------|----------|------|--------------------------|-------------------------|----------------|-------------------------|---------------------|--------------------------|---------------------|--------------------------|---------------------|--------------------------|---------------------|--------------------------|
| | Positive COVID-19 cases | | | Deaths | | | Hospitalizations | | | Positive COVID-19 cases | | | Hospitalizations | | | Deaths | | |
| | N (%) | Rate ^a | N (%) | Rate | N (%) | Rate | N (%) | Rate | N (%) | Rate | Rate Ratio (95% CI) | Rate Difference (95% CI) | Rate Ratio (95% CI) | Rate Difference (95% CI) | Rate Ratio (95% CI) | Rate Difference (95% CI) | Rate Ratio (95% CI) | Rate Difference (95% CI) |
| <i>Hispanic</i> | 6721 (7.6) | 7594.9 | 305 (0.3) | 344.7 | 37 (0.0) | 41.8 | 1.5 (1.5, 1.6) | 2539.2 (2315.9, 2762.6) | 1.2 (1.0, 1.4) | 63.2 (13.8, 112.6) | 1.0 (0.7, 1.6) | 0.9 (-17.0, 18.7) | | | | | | |
| <i>Non-Hispanic</i> | | | | | | | | | | | | | | | | | | |
| American Indian or Alaska Native | 389 (6.3) | 6275.5 | 25 (0.4) | 403.3 | —* | —* | 1.2 (1.1, 1.4) | 1219.8 (582.8, 1856.9) | 1.4 (1.0, 2.2) | 121.9 (-39.2, 282.9) | —* | —* | | | | | | |
| Asian | 298 (8.6) | 8619.8 | 24 (0.7) | 694.2 | —* | —* | 1.7 (1.5, 1.9) | 3564.1 (2576.8, 4551.4) | 2.5 (1.6, 3.7) | 412.8 (133.3, 692.2) | —* | —* | | | | | | |
| Black | 5802 (5.1) | 5055.6 | 323 (0.3) | 281.4 | 47 (0.0) | 41.0 | ref | Ref | Ref | ref | ref | ref | | | | | | |
| Native Hawaiian or Other Pacific Islander | 19 (5.0) | 5037.6 | —* | —* | —* | —* | 1.0 (0.6, 1.9) | -18.1 (-2287.0, 2250.8) | —* | —* | —* | —* | | | | | | |
| White | 8388 (8.5) | 8470.9 | 431 (0.4) | 435.3 | 96 (0.1) | 96.9 | 1.7 (1.6, 1.7) | 3415.3 (3192.1, 3638.4) | 1.5 (1.3, 1.8) | 153.8 (102.5, 205.1) | 2.4 (1.7, 3.4) | 56.0 (33.3, 78.6) | | | | | | |
| Other | 432 (8.3) | 8331.6 | 27 (0.5) | 520.7 | —* | —* | 1.6 (1.5, 1.8) | 3276.0 (2479.6, 4072.3) | 1.9 (1.2, 2.7) | 239.3 (40.5, 438.1) | —* | —* | | | | | | |
| Missing or Unknown | | 819 | | | | | | | | | | | | | | | | |

^aPer 100,000 persons

* Not reported; cell counts < 10 or denominator is < 20

—Count or denominator zero state/jurisdiction

[§]The largest denominator was used as the reference point