Health disparities among racial/ethnic minority groups in the United States are closely related to structural inequities in social determinants of health. Some racial/ethnic minority groups have disproportionate rates of underlying conditions that increase the risk for severe illness from coronavirus disease (COVID-19) (1,2). Certain groups are overrepresented in occupations that require public contact, have crowded conditions, or are unamenable to telework, increasing the risk for exposure to severe acute respiratory infection coronavirus 2 (SARS-CoV-2), the virus that causes COVID-19 (3,4). Structural inequities in housing, education, wealth, and healthcare access also increase disparities in infection and COVID-related illness and death (5–8).

We conducted an intersectional analysis by race/ethnicity, age, and sex to identify disparities in SARS-CoV-2 incidence using data from multiple US jurisdictions. Monitoring these disparities is critical for guiding action to reduce health inequities.

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DOI: https://doi.org/10.3201/eid2705.204523
accordance with applicable federal law and Centers for Disease Control and Prevention policy [45 Code of Federal Regulations part 46.102(l)(2)].

We found that most racial/ethnic minority groups had significantly higher cumulative incidence of SARS-CoV-2 than did White persons (Table). Cumulative incidence ranged from 874 (95% CI 865–884)/100,000 population in Asian persons to 2,860 (95% CI 2,850–2,869)/100,000 population in Hispanic persons. CIRs were significantly higher among Black (2.11), AIAN (2.43), NHOPI (2.88), and Hispanic persons (3.06) compared with White persons; the CIR was nominally but significantly higher among most racial/ethnic minority groups compared with White persons, within various racial/ethnic and age groups (CIRs 0.85–0.97), with an exception among Asian men (CIR 1.02–1.05). Men who were Black and >65 years of age, multiple race and 65–74 years of age, and Hispanic or other Pacific Islander had higher cumulative incidence than White persons. Among NHOPI and AIAN persons, cumulative incidence was significantly lower than among women. Among Asian persons >45 or >75 years of age, CIRs were lower (0.53–0.97) than among White persons. Among multiple race persons, results varied by age: CIRs were significantly lower among those <19 years of age (CIR 0.54, 95% CI 0.52–0.56) and 20–34 years of age (CIR 0.88, 95% CI 0.86–0.90) but 4–6 times higher among those ≥75 years of age. Black, AIAN, NHOPI (except for persons aged ≥85), and Hispanic persons had CIRs of 1.45–3.83 by age group.

We found differences in infection rates by sex within various racial/ethnic and age groups (CIRs 0.64–1.30) (Figure 2; Appendix Table 2). Overall, cumulative incidence among men in all racial/ethnic groups was significantly lower than among women (CIRs 0.85–0.97), with an exception among Asian men (CIR 1.05). Men who were Black and >65 years of age, multiple race and 65–74 years of age, and Hispanic or White and 55–84 years of age had a higher cumulative incidence than women. Among NHOPI and AIAN persons, cumulative incidence was significantly lower than for White persons only for men 20–44 years of age.

Conclusions
Among >1.75 million persons with SARS-CoV-2 in 23 US jurisdictions during January 1–October 1, 2020, persons from most racial/ethnic minority groups had higher cumulative incidence than White persons. Hispanic persons had a 3.1-fold higher incidence and Black, AIAN, and NHOPI persons a >2-fold higher
incidence of SARS-CoV-2 than did White persons. Racial/ethnic disparities varied by age group. Sex differences in cumulative incidence within racial/ethnic groups were less pronounced than disparities between racial/ethnic groups.

We found the highest incidence of infection among Hispanic persons, similar to findings of studies examining SARS-CoV-2 positivity rates in more limited US geographic areas (6,10–12). We also found high incidence among NHOPI persons. Previous analyses

**Figure 1.** CIRs of severe acute respiratory syndrome coronavirus 2 among persons of different racial/ethnic groups compared with non-Hispanic White persons, 22 US states and the District of Columbia, January 1–October 1, 2020. Ratios are displayed on binary logarithmic scale; error bars indicate 95% CIs (Appendix Table 1, https://wwwnc.cdc.gov/EID/article/27/5/20-4523-App1.pdf). CIRs with error bars not crossing the origin (1:1) are significant (p<0.05). AIAN, American Indian or Alaska Native; CIR, cumulative incidence ratio; NHOPI, Native Hawaiian or other Pacific Islander.

**Figure 2.** CIRs of severe acute respiratory syndrome coronavirus 2 for male sex, compared with female sex, 22 US states and District of Columbia, January 1–October 1, 2020. Ratios are displayed on binary logarithmic scale; error bars indicate 95% CIs (Appendix Table 2, https://wwwnc.cdc.gov/EID/article/27/5/20-4523-App1.pdf). CIRs with error bars not crossing the origin (1:1) are significant (p<0.05). AIAN, American Indian or Alaska Native; CIR, cumulative incidence ratio; NHOPI, Native Hawaiian or other Pacific Islander.
have rarely disaggregated NHOPi persons, preventing detection of disparities. Although previous studies have shown higher rates of severe COVID-19 illness among men, we observed lower infection rates among men overall (1,13).

Social determinants of health drive racial/ethnic disparities in disease incidence (3–8). For example, members of some racial/ethnic groups are overrepresented in the essential workforce and more likely to live in multigenerational or high-density housing, increasing the risk for SARS-CoV-2 exposure (https://www.cdc.gov/coronavirus/2019-ncov/community/health-equity/racial-ethnic-disparities/index.html). Outbreaks in some occupational settings have had racial/ethnic disparities in infection (3,8). Employers, community organizations, healthcare systems, public health agencies, and governments can act to reduce racial/ethnic disparities in COVID-19 incidence by implementing flexible, nonpunitive leave policies (e.g., paid sick leave); equitable access to testing and screening programs, personal protective equipment, and vaccines; and policies that encourage physical distancing (14). In addition, public health officials can tailor COVID-19 prevention messaging to the languages and cultures of various racial/ethnic groups. Multisectoral partnerships could support COVID-19 mitigation strategies through initiatives that provide spaces for isolation or self-quarantine, safe transportation, free or reduced-cost broadband internet, and housing resources (14).

One limitation of this study is that underreporting to the Centers for Disease Control and Prevention database, which documented 78% of cases in selected jurisdictions, probably caused underestimates in calculated incidence. Second, selected jurisdictions comprise 31% of the US population; in these jurisdictions, NHOPi, White, AIAN, and multiple race persons are overrepresented and Asian, Hispanic, and Black persons underrepresented (Appendix Table 3). As a result, our findings are not nationally representative or generalizable. Third, we excluded persons of unknown race/ethnicity (24%) from incidence calculations. Among persons of unknown race/ethnicity, 33% specified race but not ethnicity; minority-race groups were overrepresented (Appendix Table 4). Fourth, cases among racial/ethnic minority groups might be underreported because of disparities in testing access (15). The third and fourth issues probably resulted in underestimation of racial/ethnic disparities. Finally, aggregation of NHOPi and Asian persons in ≥2 jurisdictions probably resulted in underestimating incidence among NHOPi persons and overestimating among Asian persons.

In summary, documenting population-based racial/ethnic disparities in SARS-CoV-2 infection rates and how disparities vary by age and sex informs the development and implementation of equitable policies and intervention strategies. Strategies should prioritize collection and analysis of data relating to health equity and focus on mitigating disproportionate risks of exposure related to social determinants of health.

Acknowledgments
We thank Jayme Coyle for providing technical assistance and data visualization support. We also thank all COVID-19 response personnel at the Centers for Disease Control and Prevention for data collection, reporting, and guidance during the COVID-19 pandemic.

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EID Podcast: Two Ways of Tracking C. difficile in Switzerland

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