

COVID-19-Related Hospitalizations in Nine States, by Race/Ethnicity, 2020

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Introduction

This Healthcare Cost and Utilization Project (HCUP) Statistical Brief presents statistics on COVID-19-related hospital stays using 2019 State Inpatient Databases (SID) and 2020 quarterly inpatient data from nine States. Differences in hospitalizations by race/ethnicity in April, May, and June 2020 are compared with the same months in the prior year. Variation in utilization, average length of stay, and in-hospital mortality are illustrated. Because of the large sample size of the HCUP data, small differences can be statistically significant but not meaningful. Thus, only differences greater than or equal to 10 percent are discussed in the text.

This analysis is limited to patients treated in community, nonrehabilitation hospitals in nine States (Arizona, Georgia, Iowa, Maryland, Michigan, Minnesota, New Jersey, Ohio, and Wisconsin) for which HCUP data were available for April–June 2019 and April–June 2020. These States account for 21.1 percent of the resident U.S. population in 2019.^{1,2} All information contained in this Statistical Brief can be found in the [HCUP Summary Trend Tables](#).³ The Summary Trend Tables, accessed as downloadable tables, provide State-specific monthly trends in hospital utilization for the most recent HCUP data available. These tables will be updated as more quarterly data become available.

Highlights

- Across the nine States as a reference, non-Hispanic Black and Hispanic patients combined accounted for a larger share of COVID-19-related hospitalizations than non-Hispanic White patients in April, May, and June 2020.
- In April 2020, the average length of COVID-19-related hospitalizations across the nine States varied by the race/ethnicity of the patient (6.6 to 7.4 days). In June 2020, the average length of COVID-19 hospitalizations was about 8 days for all race/ethnicity groups.
- Nearly 18 percent of patients with COVID-19 across the nine States died in the hospital in April 2020 and almost 11 percent died in June 2020.
- In-hospital mortality rates declined between April 2020 and June 2020 for all patients, regardless of their race/ethnicity.
- In-hospital mortality rates varied by patient race/ethnicity and by the State in which the patient was hospitalized.

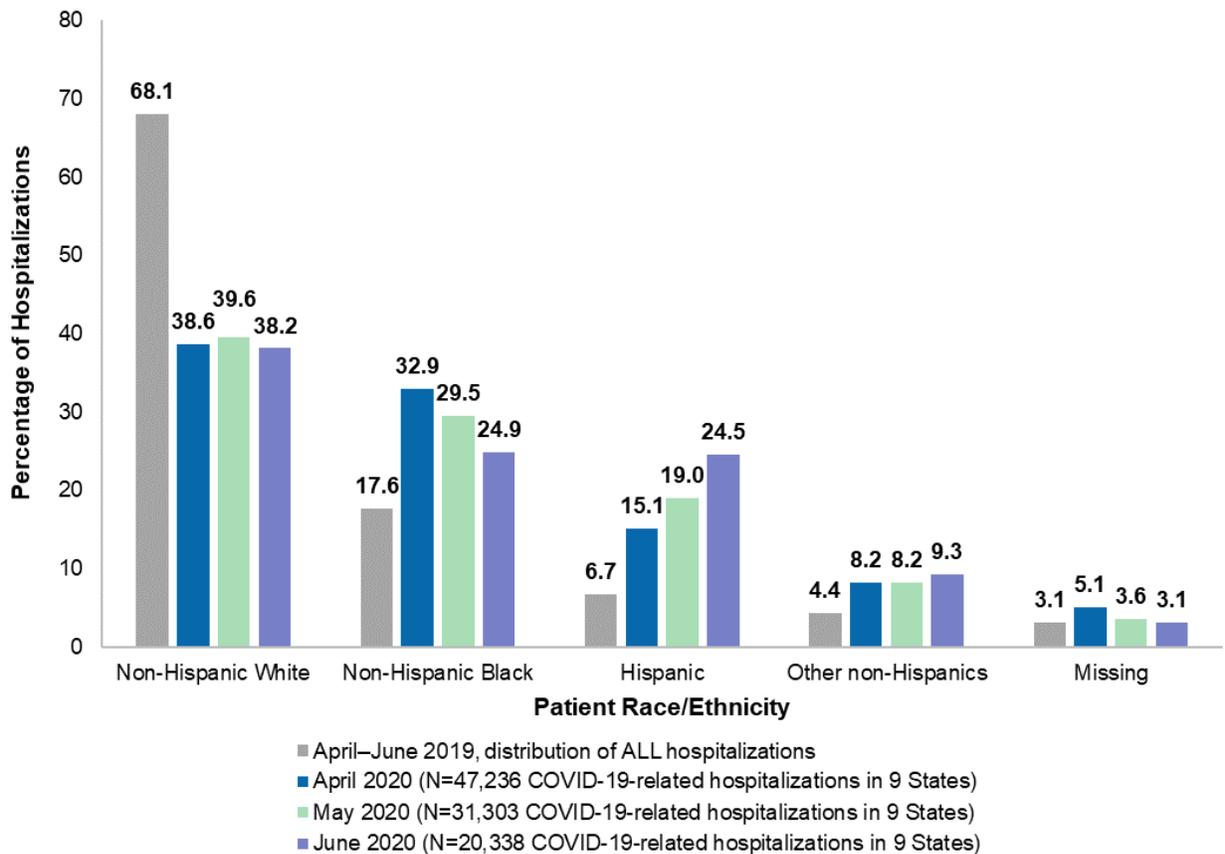
Findings

Differences in COVID-19-related hospitalizations, by race/ethnicity, April–June 2020

Figure 1 displays the race/ethnicity distribution of COVID-19-related hospitalizations in nine States in each of three months: April, May, and June 2020. As a reference, the race/ethnicity distribution of all hospitalizations in the same States during April–June 2019 is also shown.

- Using all hospitalizations in April–June 2019 as a reference, non-Hispanic Black, Hispanic, and other non-Hispanic patients accounted for a larger share of COVID-19-related hospitalizations in April, May, and June 2020 than non-Hispanic White patients.

Figure 1. Race/ethnicity distribution of COVID-19-related hospitalizations in April–June 2020 compared with all hospitalizations in April–June 2019, nine States



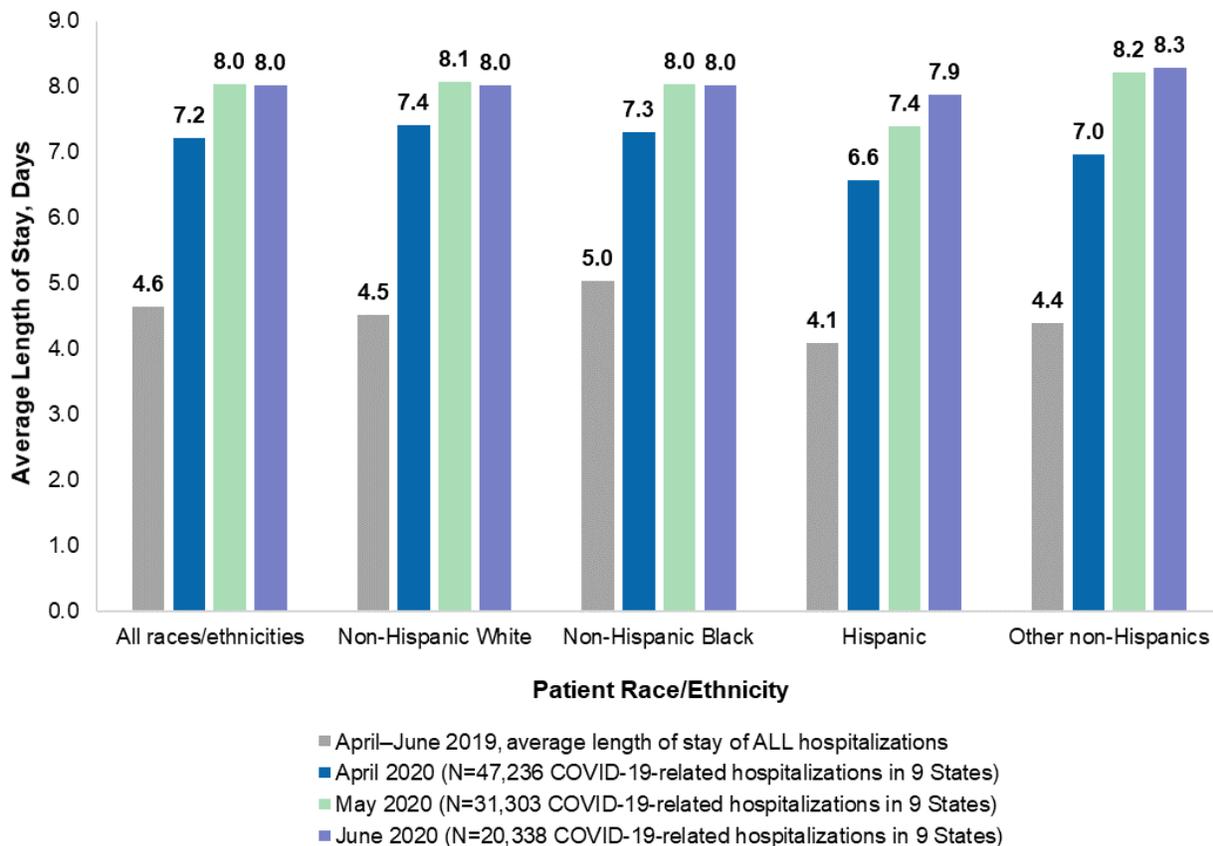
Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), 2019 State Inpatient Databases (SID) and 2020 quarterly data from nine States (AZ, GA, IA, MD, MI, MN, NJ, OH, and WI)

Differences in average length of COVID-19-related hospitalizations, by race/ethnicity, April–June 2020

Figure 2 presents the average length of COVID-19-related hospitalizations in April, May, and June 2020 across nine States, by race/ethnicity of the patient. As a reference, the average length of all hospitalizations during April–June 2019 across the nine States is also shown.

- The average length of COVID-19-related hospitalizations across nine States increased from 7.2 days in April 2020 to 8.0 days in May and June 2020.
- In April 2020, COVID-19-related hospitalizations for Hispanic patients were shorter than those for non-Hispanic Black and non-Hispanic White patients (6.6 vs. 7.3 and 7.4 days, respectively). By June 2020, the average length of COVID-19-related hospitalizations was about 8 days for all race/ethnicity groups.

Figure 2. Average length of stay for COVID-19-related hospitalizations in April–June 2020 compared with all hospitalizations in April–June 2019, by race/ethnicity, nine States



Note: If there were fewer than 100 discharges in a State-specific race/ethnicity category, the corresponding length-of-stay is omitted from the calculation of the average length of stay across the nine States.

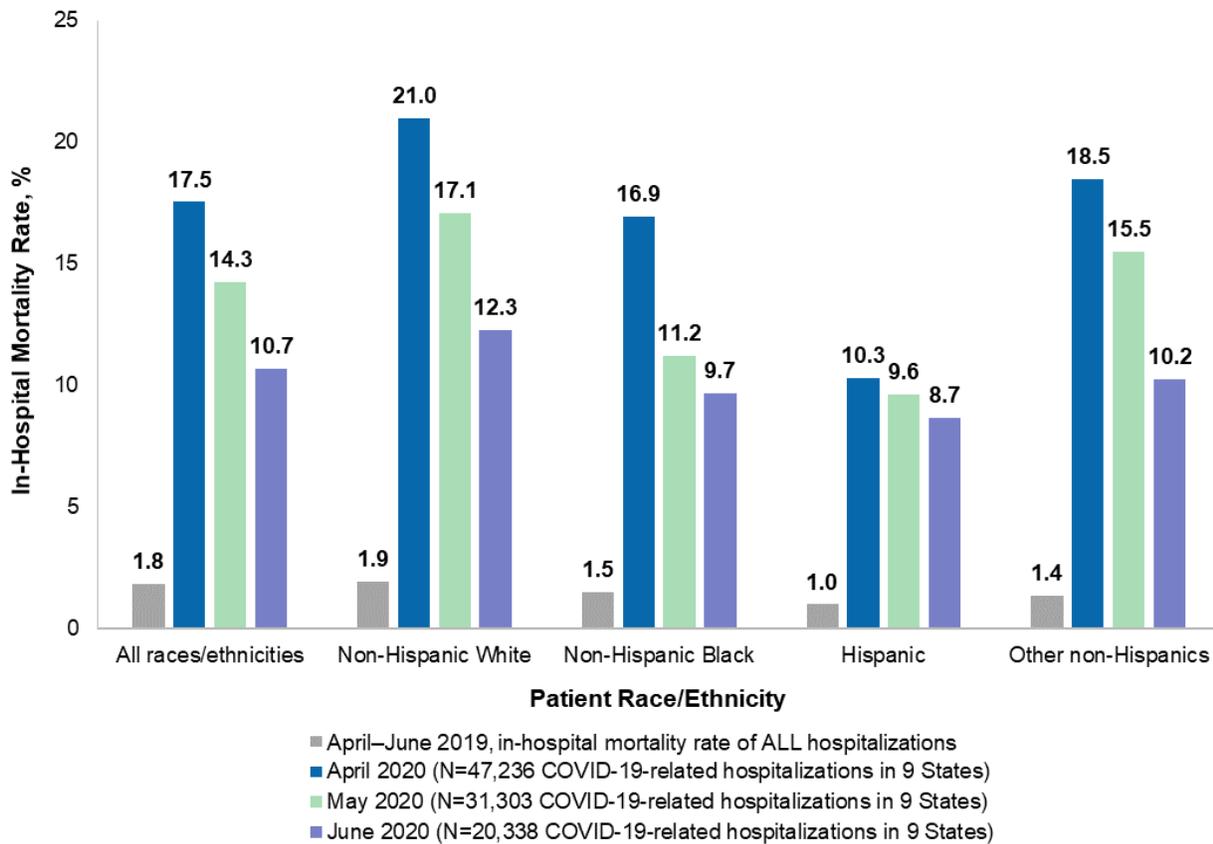
Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), 2019 State Inpatient Databases (SID) and 2020 quarterly data from nine States (AZ, GA, IA, MD, MI, MN, NJ, OH, and WI)

Differences in in-hospital mortality for COVID-related hospitalizations, by race/ethnicity, April–June 2020

Figure 3 displays the in-hospital mortality rate for COVID-19-related hospitalizations in April, May, and June 2020 across nine States, by race/ethnicity of the patient. As a reference, the all-cause in-hospital mortality rates across the nine States during April–June 2019 are also shown. In-hospital mortality rates are not adjusted for age.

- Among all patients with COVID-19 in the nine states, more than 1 in 6 patients died in the hospital in April 2020 and 1 in 10 died in June 2020. In-hospital mortality rates declined between April 2020 and June 2020 for all patients, regardless of their race/ethnicity.
- In the aggregate across the nine States, without adjusting for age, non-Hispanic White patients with COVID-19 had a higher in-hospital mortality rate than all other patients in April, May, and June 2020.

Figure 3. COVID-19-related in-hospital mortality rate in April–June 2020 compared with the all-cause in-hospital mortality rate in April–June 2019, by race/ethnicity, nine States



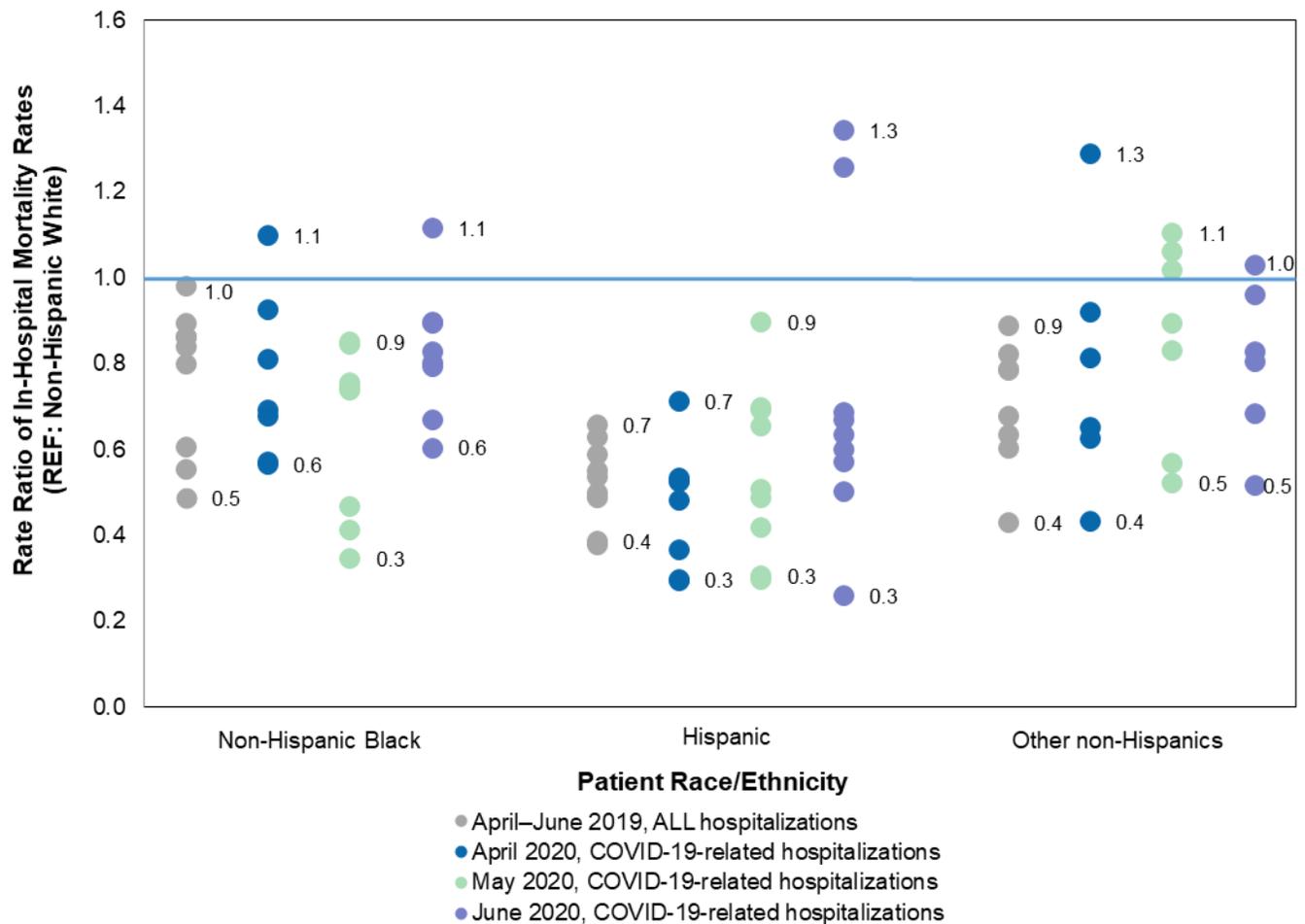
Note: If there were fewer than 100 discharges in a State-specific race/ethnicity category, the corresponding in-hospital mortality rate is omitted from the calculation of the average in-hospital mortality rate across the nine States. In-hospital mortality rates were not adjusted for age.

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), 2019 State Inpatient Databases (SID) and 2020 quarterly data from nine States (AZ, GA, IA, MD, MI, MN, NJ, OH, and WI)

Figure 4 displays the State variation in the rate ratio (RR) of COVID-19-related in-hospital mortality rates in April, May, and June 2020, by patient race/ethnicity. In-hospital mortality rates are not adjusted for age. As a reference, in-hospital mortality rate ratios for all hospitalizations during April–June 2019 in each State are shown. Each dot in the figure represents one State’s in-hospital mortality RR for a specific race/ethnic group (i.e., in-hospital mortality rate for a specific race/ethnic group in a State divided by the in-hospital mortality rate for non-Hispanic White patients in the same State). Variation in the in-hospital mortality RR is consistent with the variation observed in the state-specific in-hospital mortality rates (data not shown).

- In-hospital mortality rates varied across States, by the patient’s race/ethnicity, ranging from 2.9 percent to 29.1 percent in April, May, and June 2020 (data not shown).
- In-hospital mortality rates for all hospitalizations during April–June 2019 were less for non-Hispanic Black, Hispanic, and other non-Hispanic patients (i.e., $RR < 1.0$) compared with non-Hispanic White patients, regardless of the State in which the hospitalization occurred.
- Between April and June 2020, in some States, non-Hispanic Black, Hispanic, and other non-Hispanic patients had higher in-hospital mortality rates for COVID-19-related hospitalizations (i.e., $RR > 1.0$) than non-Hispanic White patients.

Figure 4. State-specific COVID-19-related in-hospital mortality rate ratios in April–June 2020 compared with the State-specific all-cause in-hospital mortality rate ratios in April–June 2019, nine States



Abbreviation: REF, reference group

Note: If there were fewer than 100 discharges in a State-specific race/ethnicity category, the corresponding State-specific in-hospital mortality rate ratio is suppressed.

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), 2019 State Inpatient Databases (SID) and 2020 quarterly data from nine States (AZ, GA, IA, MD, MI, MN, NJ, OH, and WI)

References

¹ Annual Estimates of the Resident Population by Sex, Race, and Hispanic Origin for the United States: April 1, 2010 to July 1, 2019 (NC-EST2019-SR11H). U.S. Census Bureau, Population Division. Release Date: June 2020. <https://www.census.gov/newsroom/press-kits/2020/population-estimates-detailed.html>. Accessed March 1, 2021.

² Annual Estimates of the Resident Population by Sex, Race, and Hispanic Origin for Arizona, Georgia, Iowa, Maryland, Michigan, Minnesota, New Jersey, Ohio, and Wisconsin: April 1, 2010 to July 1, 2019 (NC-EST2019-SR11H-nn). U.S. Census Bureau, Population Division. Release Date: June 2020. <https://www.census.gov/data/tables/time-series/demo/popest/2010s-state-detail.html>. Accessed March 1, 2021.

³ Agency for Healthcare Research and Quality. HCUP Summary Trend Tables. Healthcare Cost and Utilization Project (HCUP). Agency for Healthcare Research and Quality. Updated December 2020. www.hcup-us.ahrq.gov/reports/trendtables/summarytrendtables.jsp. Accessed February 10, 2021.

About Statistical Briefs

Healthcare Cost and Utilization Project (HCUP) Statistical Briefs provide basic descriptive statistics on a variety of topics using HCUP administrative healthcare data. Topics include hospital inpatient, ambulatory surgery, and emergency department use and costs, quality of care, access to care, medical conditions, procedures, and patient populations, among other topics. The reports are intended to generate hypotheses that can be further explored in other research; the reports are not designed to answer in-depth research questions using multivariate methods.

Data Source

The estimates in this Statistical Brief are based upon data from the HCUP 2019 State Inpatient Databases (SID) and 2020 quarterly inpatient data. Information based on quarterly data should be considered preliminary, as additional quarterly data may become available over time. This analysis is limited to patients treated in community, nonrehabilitation hospitals in nine States (Arizona, Georgia, Iowa, Maryland, Michigan, Minnesota, New Jersey, Ohio, and Wisconsin) for which HCUP data were available for April–June 2019 and April–June 2020. These States account for the following percentages of the resident U.S. population: 21.1 percent of the total population, 23.2 percent of the non-Hispanic White population, 25.2 percent of the non-Hispanic Black population, 12.9 percent of the Hispanic population, and 17.6 percent of the other non-Hispanic population including but not limited to American Indian, Alaska Native, Asian, Native Hawaiian, and other Pacific Islander).^{1,2} All of the information contained in this Statistical Brief can be found in the HCUP Summary Trend Tables at <https://hcup-us.ahrq.gov/reports/trendtables/summarytrendtables.jsp>.

The HCUP inpatient data contain the universe of the inpatient discharge abstracts in the participating HCUP States, translated into a uniform format to facilitate multistate comparisons and analyses. In the aggregate, the inpatient data encompass more than 95 percent of all U.S. community hospital discharges. The inpatient data can be used to investigate questions unique to one State, to compare data from two or more States, to conduct market-area variation analyses, and to identify State-specific trends in inpatient care utilization, access, charges, and outcomes.

Types of hospitals included in HCUP State Inpatient Databases (and quarterly inpatient data)

This analysis used SID and quarterly inpatient data limited to information from community hospitals, which are defined as short-term, non-Federal, general, and other hospitals, excluding hospital units of other institutions (e.g., prisons). Community hospitals include obstetrics and gynecology, otolaryngology, orthopedic, cancer, pediatric, public, and academic medical center hospitals. Excluded for this analysis are long-term care facilities such as rehabilitation, psychiatric, and alcoholism and chemical dependency hospitals. However, if a patient received long-term care, rehabilitation, or treatment for a psychiatric or chemical dependency condition in a community hospital, the discharge record for that stay was included in the analysis.

Definitions

Diagnoses and ICD-10-CM/PCS

The *principal diagnosis* is that condition established after study to be chiefly responsible for the patient's admission to the hospital. *Secondary diagnoses* are conditions that coexist at the time of admission that require or affect patient care treatment received or management, or that develop during the inpatient stay. *All-listed diagnoses* include the principal diagnosis plus the secondary conditions.

ICD-10-CM/PCS is the International Classification of Diseases, Tenth Revision, Clinical Modification/Procedure Coding System. There are over 70,000 ICD-10-CM diagnosis codes and over 75,000 ICD-10-PCS procedure codes.

Case definition

COVID-19-related hospitalizations are identified by any-listed ICD-10-CM code of U07.1 (2019 novel coronavirus disease) on the discharge record. Per coding guidelines,^a the use of U07.1 is based on documentation by the provider or documentation of a positive COVID-19 test result. The ICD-10-CM code for COVID-19 was implemented beginning April 1, 2020. As such, there may be some measurement error in the identification of cases.

Unit of analysis

The unit of analysis is the hospital discharge (i.e., the hospital stay), not a person or patient. This means that a person who is admitted to the hospital multiple times in 1 year will be counted each time as a separate discharge from the hospital.

Reporting of race and ethnicity

Data on Hispanic ethnicity are collected differently among the States and also can differ from the census methodology of collecting information on race (White, Black, Asian/Pacific Islander, American Indian/Alaska Native, Other [including mixed race]) separately from ethnicity (Hispanic, non-Hispanic). State data organizations often collect Hispanic ethnicity as one of several categories that include race. Therefore, for multistate analyses, HCUP creates the combined categorization of race and ethnicity for data from States that report ethnicity separately. When a State data organization collects Hispanic ethnicity separately from race, HCUP uses Hispanic ethnicity to override any other race category to create a Hispanic category for the uniformly coded race/ethnicity data element, while also retaining the original race and ethnicity data. This Statistical Brief reports race/ethnicity for the following categories: Hispanic, non-Hispanic White, non-Hispanic Black, and other non-Hispanics (Asian/Pacific Islander, American Indian/Alaska Native, Other).

In-hospital mortality rate ratio

The in-hospital mortality rate is the proportion of patients who died while in the hospital. The in-hospital mortality rate ratio is the in-hospital mortality rate of one group divided by the in-hospital mortality rate of the comparison, or reference, group. State-specific in-hospital mortality rates are suppressed for groups with fewer than 100 discharges.

About HCUP

The Healthcare Cost and Utilization Project (HCUP, pronounced "H-Cup") is a family of healthcare databases and related software tools and products developed through a Federal-State-Industry partnership and sponsored by the Agency for Healthcare Research and Quality (AHRQ). HCUP databases bring together the data collection efforts of State data organizations, hospital associations, and private data organizations (HCUP Partners) and the Federal government to create a national information resource of encounter-level healthcare data. HCUP includes the largest collection of longitudinal hospital care data in the United States, with all-payer, encounter-level information beginning in 1988. These databases enable research on a broad range of health policy issues, including cost and quality of health

^a Centers for Disease Control and Prevention, National Center for Health Statistics. ICD-10-CM Official Guidelines for Coding and Reporting FY 2021 (October 1, 2020 - September 30, 2021). www.cdc.gov/nchs/data/icd/10cmguidelines-FY2021.pdf. Accessed February 10, 2021.

services, medical practice patterns, access to healthcare programs, and outcomes of treatments at the national, State, and local market levels.

HCUP would not be possible without the contributions of the following data collection Partners from across the United States:

Alaska Department of Health and Social Services	Nevada Department of Health and Human Services
Alaska State Hospital and Nursing Home Association	New Hampshire Department of Health & Human Services
Arizona Department of Health Services	New Jersey Department of Health
Arkansas Department of Health	New Mexico Department of Health
California Office of Statewide Health Planning and Development	New York State Department of Health
Colorado Hospital Association	North Carolina Department of Health and Human Services
Connecticut Hospital Association	North Dakota (data provided by the Minnesota Hospital Association)
Delaware Division of Public Health	Ohio Hospital Association
District of Columbia Hospital Association	Oklahoma State Department of Health
Florida Agency for Health Care Administration	Oregon Association of Hospitals and Health Systems
Georgia Hospital Association	Oregon Office of Health Analytics
Hawaii Lauima Data Alliance	Pennsylvania Health Care Cost Containment Council
Hawaii University of Hawai'i at Hilo	Rhode Island Department of Health
Illinois Department of Public Health	South Carolina Revenue and Fiscal Affairs Office
Indiana Hospital Association	South Dakota Association of Healthcare Organizations
Iowa Hospital Association	Tennessee Hospital Association
Kansas Hospital Association	Texas Department of State Health Services
Kentucky Cabinet for Health and Family Services	Utah Department of Health
Louisiana Department of Health	Vermont Association of Hospitals and Health Systems
Maine Health Data Organization	Virginia Health Information
Maryland Health Services Cost Review Commission	Washington State Department of Health
Massachusetts Center for Health Information and Analysis	West Virginia Department of Health and Human Resources, West Virginia Health Care Authority
Michigan Health & Hospital Association	Wisconsin Department of Health Services
Minnesota Hospital Association	Wyoming Hospital Association
Mississippi State Department of Health	
Missouri Hospital Industry Data Institute	
Montana Hospital Association	
Nebraska Hospital Association	

For More Information

For information on COVID-19 resources at AHRQ, refer to the AHRQ COVID-19 Resources page at www.ahrq.gov/coronavirus/index.html. For other information on COVID-19 healthcare utilization, refer to the HCUP Statistical Briefs located at www.hcup-us.ahrq.gov/reports/statbriefs/sb_covid.jsp.

For additional HCUP statistics, visit:

- HCUP Fast Stats at www.hcup-us.ahrq.gov/faststats/landing.jsp for easy access to the latest HCUP-based statistics for healthcare information topics
- HCUPnet, HCUP's interactive query system, at www.hcupnet.ahrq.gov/

For more information about HCUP, visit www.hcup-us.ahrq.gov/.

For a detailed description of HCUP and more information on the design of the State Inpatient Databases (SID), please refer to the following database documentation:

Agency for Healthcare Research and Quality. Overview of the State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). Rockville, MD: Agency for Healthcare Research and Quality. Updated October 2020. www.hcup-us.ahrq.gov/sidoverview.jsp. Accessed January 22, 2021.

Suggested Citation

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AHRQ welcomes questions and comments from readers of this publication who are interested in obtaining more information about access, cost, use, financing, and quality of healthcare in the United States. We also invite you to tell us how you are using this Statistical Brief and other HCUP data and tools, and to share suggestions on how HCUP products might be enhanced to further meet your needs. Please email us at hcup@ahrq.gov or send a letter to the address below:

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