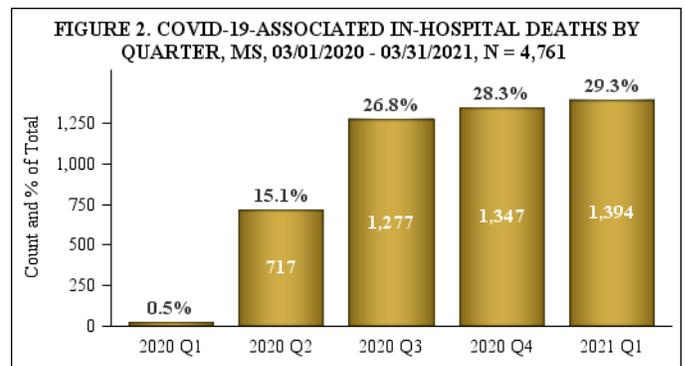
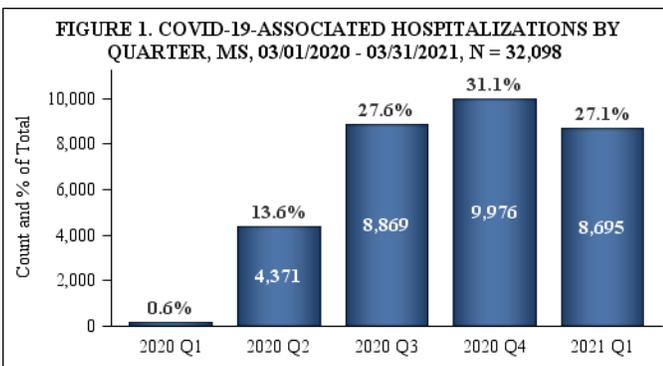
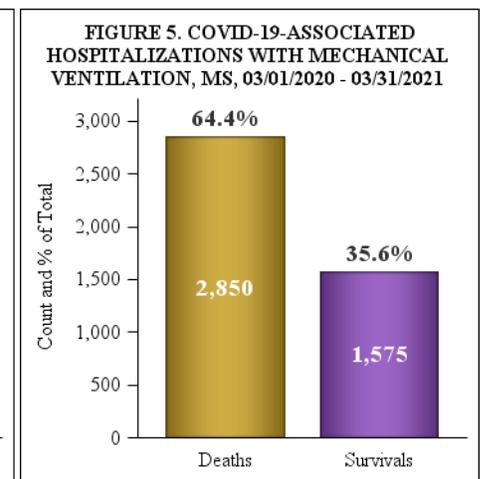
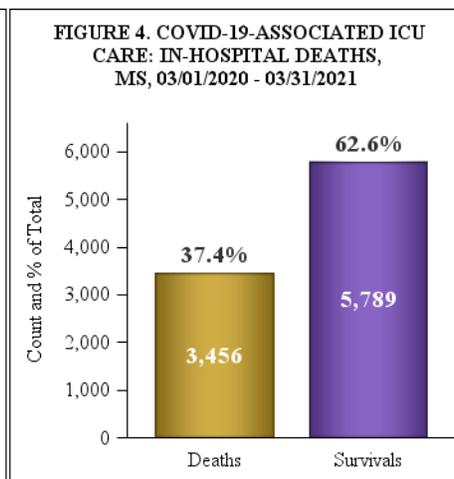
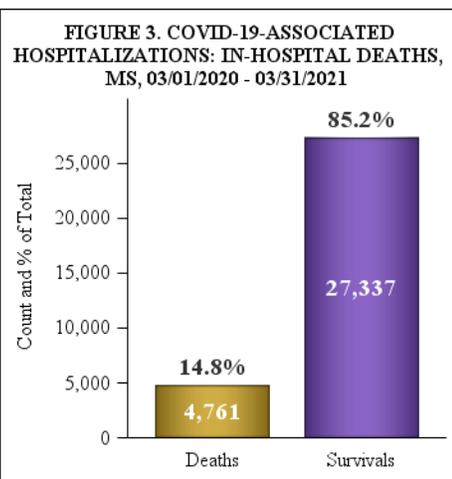


**Data:** All Mississippi hospitals, except for federal facilities, are required to report their hospital discharge data to the Inpatient Outpatient Data System. For ten years, the Mississippi State Department of Health has used this population data source to build surveillance systems. In addition to clinical diagnoses and procedures performed, these data contain information on patient demographics, expected payers, hospital charges, and length of stay. We analyzed hospital discharge data to evaluate trends in COVID-19 associated hospitalizations in Mississippi between 03/01/2020 and 03/31/2021. This analysis included primary and secondary diagnostic codes for COVID-19 among residents and non-residents.

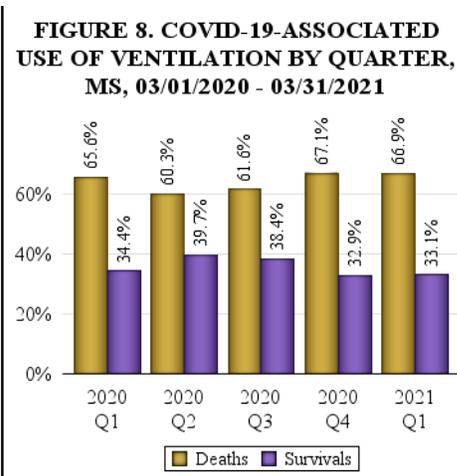
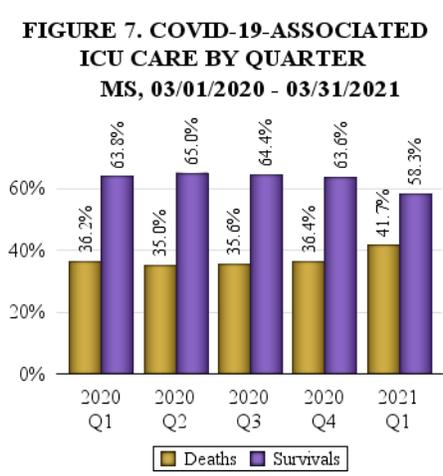
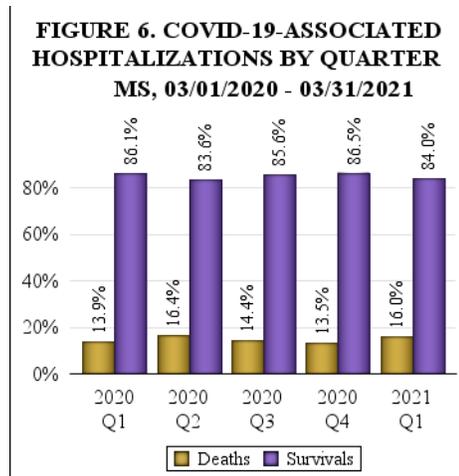
**Overview:** Between 03/01/2020 and 03/31/2021, there were 32,098 COVID-19-associated hospital discharges in Mississippi. Of these, 30,349 (94.6%) were among Mississippi residents. The number of in-hospital deaths with a COVID-19 diagnostic code was 4,761. This represented 14.8% of all COVID-19-associated hospitalizations and 31.7% of all in-hospital deaths during the studied period. The highest number of COVID-19-associated hospitalizations occurred during the last quarter of 2020 (Figure 1). By contrast, the highest number of in-hospital deaths was reported during the first quarter of 2021. Since deaths lag infections, this temporal mismatch between peak hospitalizations and peak fatalities is not surprising (Figure 2).



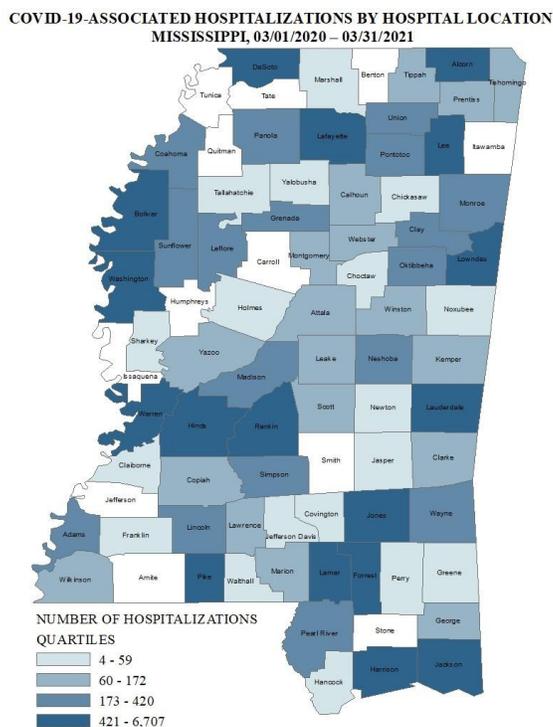
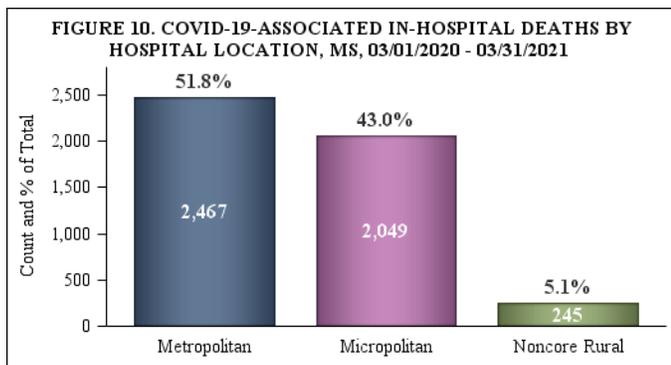
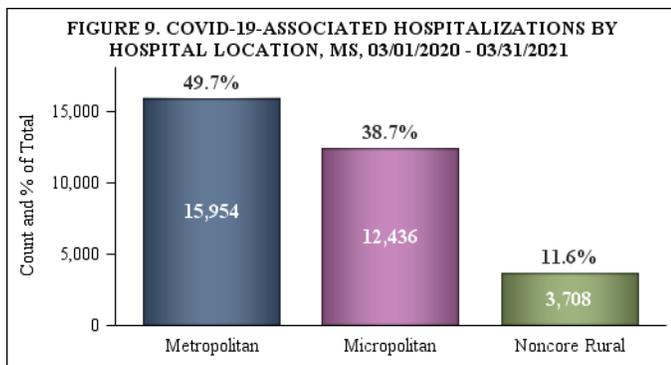
**In-Hospital Mortality:** Overall, 28.8% (9,245) of all COVID-19 hospitalizations were admitted to intensive care units (ICUs) and 13.8% (4,425) of such patients were put on ventilators during the studied period. While the overall in-hospital mortality was 14.8%, the in-hospital ICU mortality was 37.4% and 64.4% among patients who were put on ventilators (Figures 3, 4, and 5).



**In-Hospital Deaths by Quarter:** Mississippi’s overall in-hospital mortality was highest at the beginning of the pandemic. Then, in-hospital deaths showed an overall slight downtrend but remained disturbingly high, spiking during periods of high transmission and strained hospital capacity. These findings were particularly pronounced for severely ill patients in need of critical care. In-hospital mortality among patients in ICUs was highest during the first quarter of 2021. Similarly, in-hospital mortality among patients on ventilators increased at the end of 2020 and the beginning of 2021 (Figures 6, 7, and 8).



**Hospital Location:** Hospitals in metropolitan areas had the highest burden of COVID-19-associated hospitalizations. The highest in-hospital mortality, however, was reported by midsize facilities located in micropolitan areas. Most likely, this finding reflects a high burden of COVID-19 cases in these regions and insufficient resources to deal with an influx of critically ill patients. Rural hospitals lack critical care capacity and accounted only for 11.6 % of COVID-19-associated admissions and for 5.1% of all in-hospital deaths (Figures 9 and 10).



**Notes:** To select COVID-19 cases, we used the following International Classification of Diseases (ICD-10-CM) diagnosis codes: B97.29 and B34.2 before 1 April 2020 and U07.1 from 1 April 2020 onward. To categorize residence status, we applied the Urban-Rural Classification Scheme for Counties developed by the National Center for Health Statistics.<sup>1</sup>

**Reference:** NCHS Urban-Rural Classification Scheme for Counties. National Center for Health Statistics. Vital Health Stat 2(166). 2014.

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