In-Hospital Mortality Among Hospitalized COVID-19 Patients in the United States: How Did it Change in 2022 and 2023?

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BACKGROUND

- We previously reported an increase in in-hospital mortality between August and October of 2021 among patients hospitalized with coronavirus disease 2019 (COVID-19), at the time of widespread coronavirus delta variant.

- We aimed to assess potential changes in in-hospital mortality among hospitalized COVID-19 patients in the United States between January 1, 2022, and September 30, 2023, after most countries lifted pandemic restrictions.

METHODS

Study Design

| Design	Retrospective cross-sectional study
Data source	PINC AI™ Healthcare Database (PHD) (geographically diverse US hospital discharge database that represents 25% of all US inpatient discharges)
Study Period	Jan 1, 2022 – Sep 30, 2023
Main Cohort	All adult (aged ≥18 years) patients with an inpatient admission with a primary or secondary discharge diagnosis of COVID-19 (ICD-10-CM: U07.1)
Subgroup	Adult patients with an inpatient admission with a primary discharge diagnosis of COVID-19

- If a patient had multiple COVID-19-related admissions, first admission during the study period was considered as 'index' admission.

- Only visits from hospitals with continuous data submission during the study period were included.

Statistical Analysis

- In-hospital mortality rate was calculated as proportion of COVID-19 patients who died during index hospitalization for each month.

- Continuous variables were compared using Student's T-test, and categorical variables were compared using Chi-square test.

RESULTS

In the main cohort, average age was 66 years and demographics were:
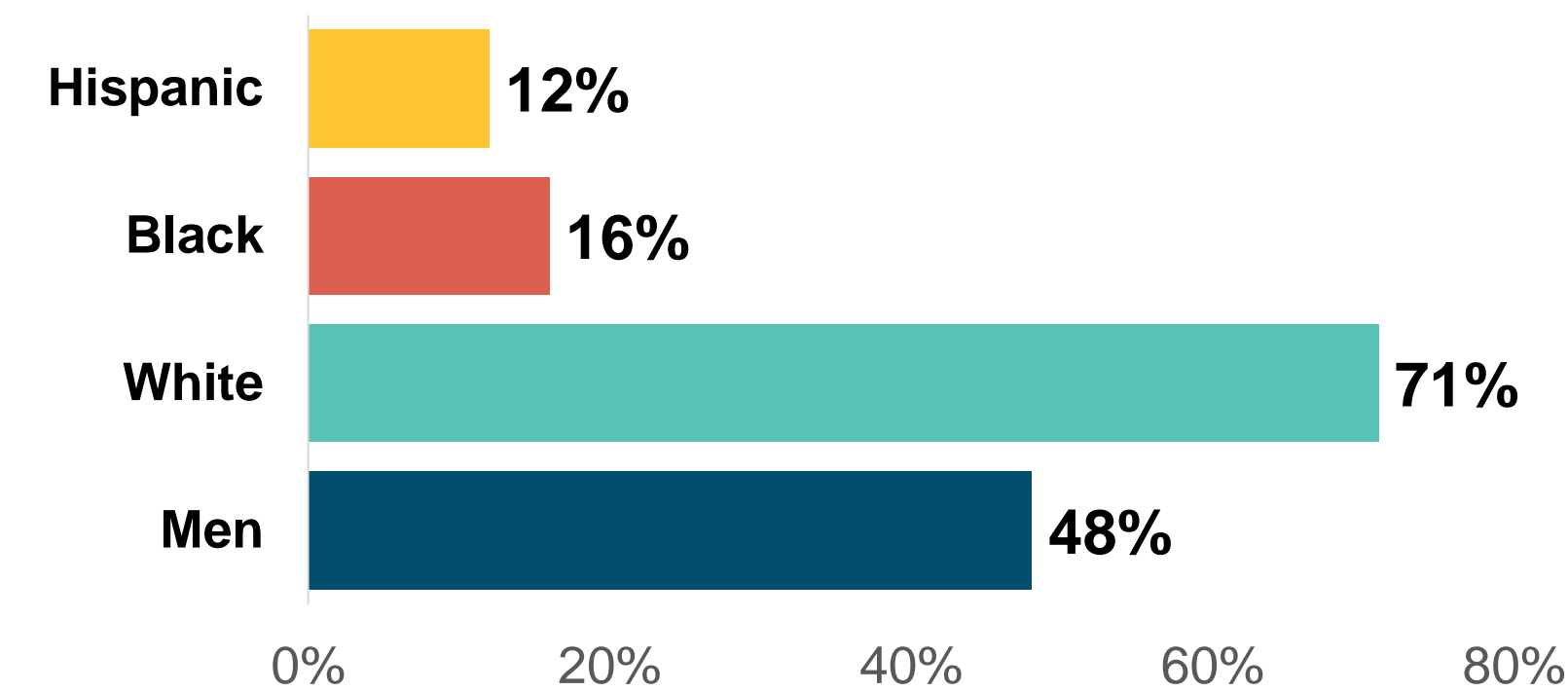
Key findings among patients hospitalized with COVID-19:

78% of the patients with COVID-19 had ≥1 comorbidity:
- Diabetes (38%)
- Hypertension (29%)
- Chronic Pulmonary Disease (29%)
- Congestive Heart Failure (26%)

Figure. Monthly trends of in-hospital mortality during index admission among adult COVID-19 patients discharged in 2022-2023
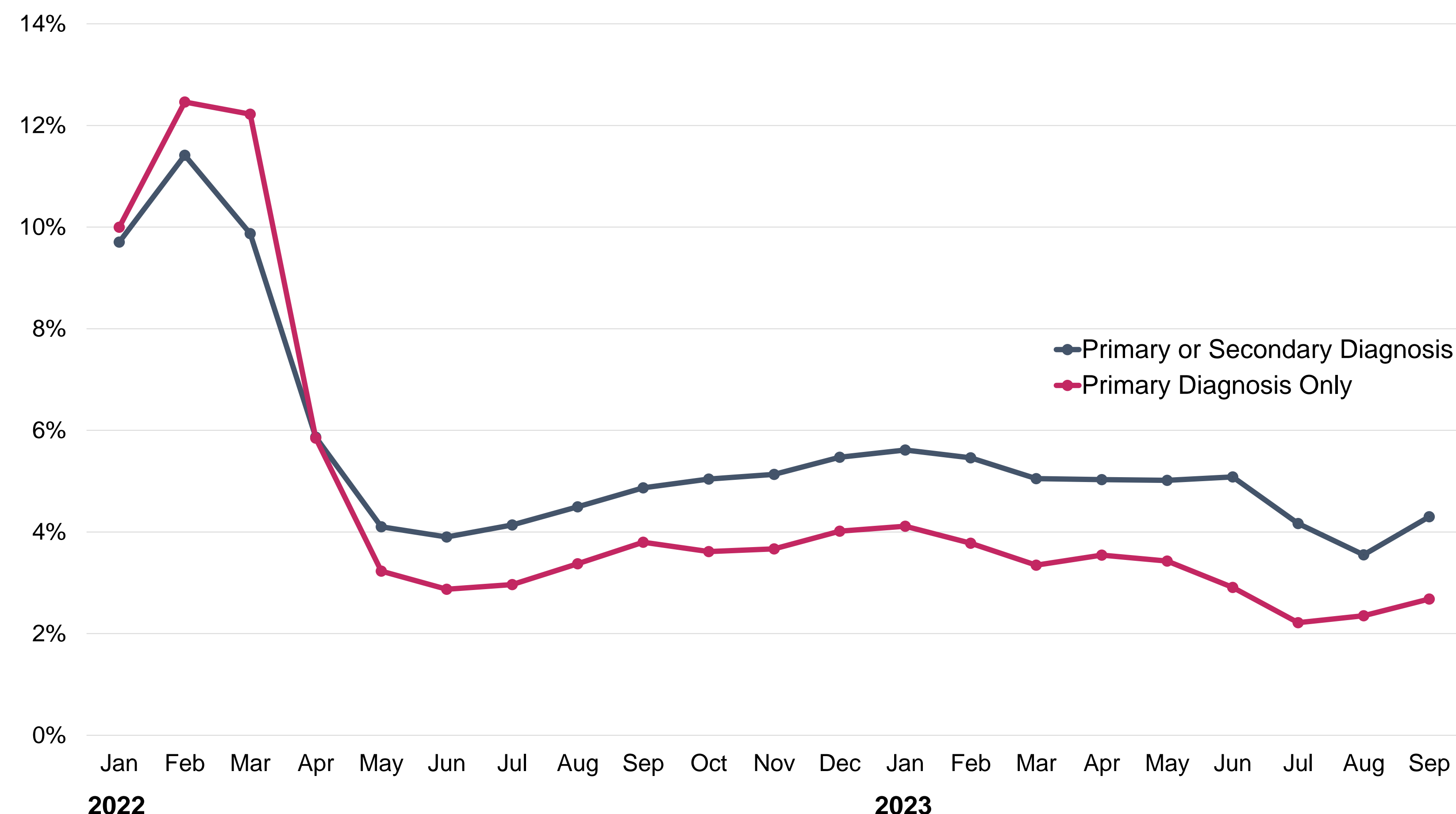
- Among 651,287 eligible patients, 40% (n=262,422) were hospitalized with primary diagnosis of COVID-19 (subgroup).

- Average monthly number of hospitalized COVID-19 patients in the main cohort dropped from 41,700 to 16,766 from January 2022 to September 2023.

- Compared to 2022, 2023 patients in the main cohort were older (mean age 70 vs. 65 years old) and had a higher prevalence of baseline comorbidities (mean Charlson-Deyo Comorbidity Index score 2.8 vs. 2.5) (both p<0.01). Distributions of race, ethnicity, and sex were similar between 2022 and 2023 patients.

- In-hospital mortality rate was higher in winter months than summer months for the main cohort and subgroup (Figure).

- In-hospital mortality rate was higher among patients with primary diagnosis of COVID-19 between January and March of 2022, but lower throughout the rest of study period than patients with primary or secondary diagnosis of COVID-19.

CONCLUSIONS

- In-hospital morality rate among COVID-19 inpatients remained high (≥10%) in January−March 2022.

- However, in-hospital mortality rate decreased substantially in April of 2022 and stayed under 6% through September of 2023.

- Patients hospitalized in winter months experienced higher in-hospital mortality rate than those in summer months.

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DISCLOSURES