

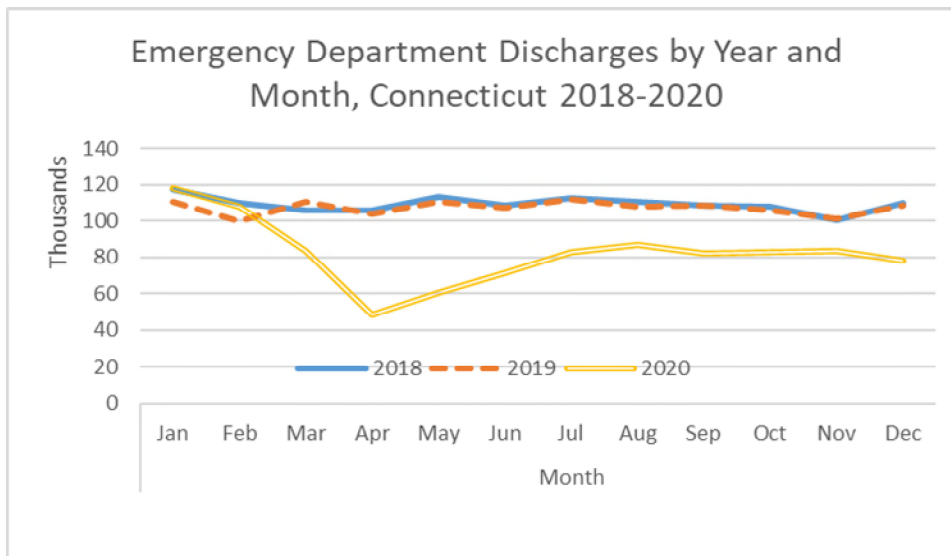
Revised Calendar Year 2020 Connecticut Hospitalization Tables

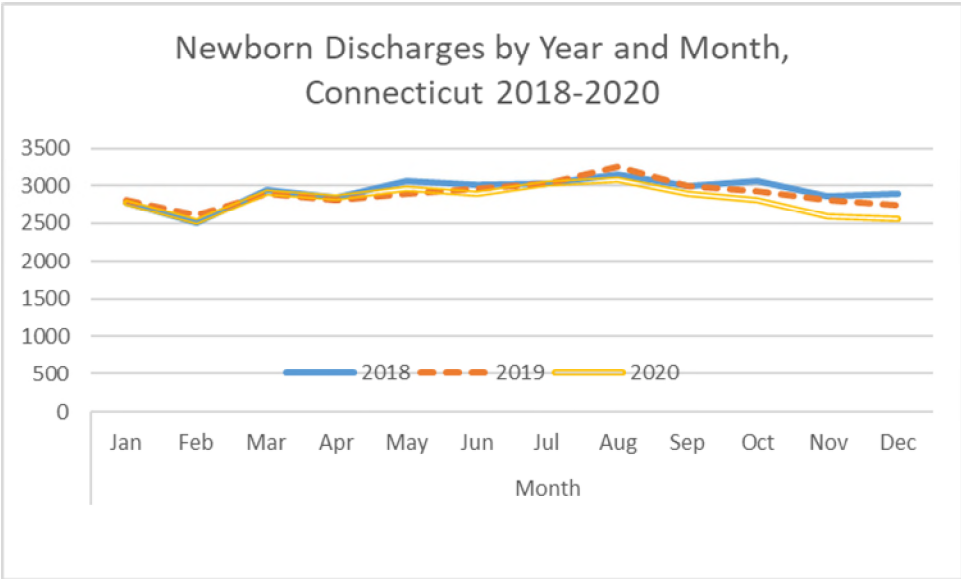
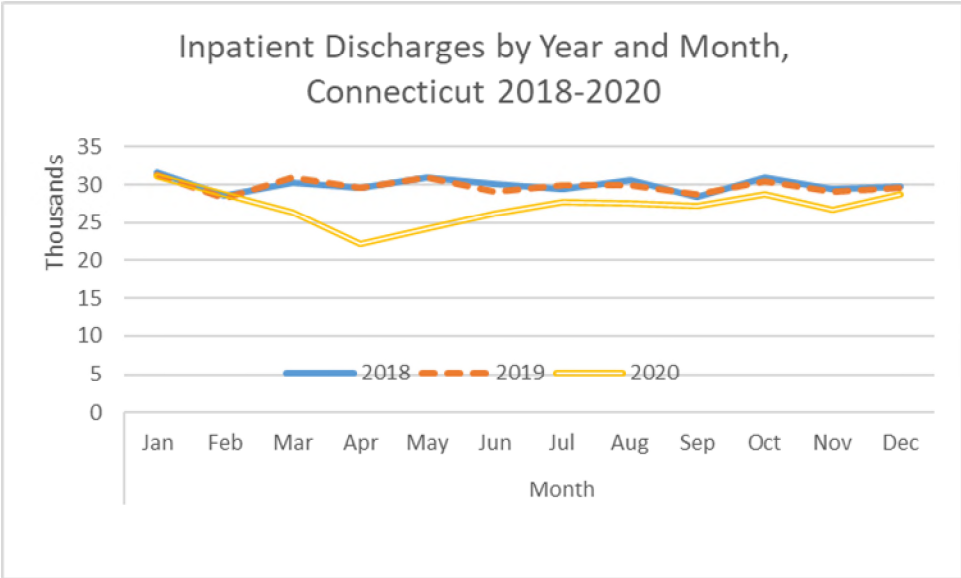
Inpatient hospitalizations represent the instances where a person’s illness or injury required care at a hospital. As such, counts and rates of hospitalizations are one way to measure morbidity (injury and illness) in Connecticut. The Connecticut Hospitalization Tables provide a series of counts, rates, lengths of stay, charges, rankings, rate ratios and rate differences for select indicators. Diagnosis codes are presented for selected conditions which are either among the most common or for which there exists a particular public health interest (e.g. lead poisoning). These tables provide metrics that can be used to monitor hospitalizations over time and help inform the planning and allocation of resources for treatment.

Methodology

The 2020 Hospitalization Tables continue the methodology and structure first adopted in the 2016 Hospitalization Tables. In October of 2015, all hospitals began reporting diagnostic codes and hospital claims billing data using the ICD-10-CM classification system. The ICD-10 is more than an expansion of the ICD-9; it is a restructuring of the classification system. As a result, some disease categories in ICD-9 have equivalents in ICD-10 and some do not; furthermore, some diseases have come to new prominence. The 2016-2020 Tables will not align with tables from 2015 and earlier. See the 2016 hospitalization narrative for more details.

The COVID-19 virus caused substantial mortality and morbidity and disrupted routines of face-to-face interactions including medical care. Emergency Department and Inpatient monthly discharges diverged from previous years beginning in March 2020, reached a low in April, and rebounded to levels that were nevertheless lower than those in 2018 or 2019. Newborn discharges did not exhibit this pattern, although they lagged previous years at 2020’s end.





The Healthcare Cost and Utilization Project (HCUP) is a Federal-State-Industry partnership sponsored by the Agency for Healthcare Research and Quality. In HCUP reports, the number of hospitalizations in rural areas of Connecticut during April-December 2020 was 12,600 compared to 13,800 for the average of the same months during 2016-2019, with 5.0% related to COVID-19. The number of rural in-hospital deaths was 500 in April-December 2020, versus an average of 400 in the earlier period, and 17.3% were related to COVID-19.¹ In urban areas of the state, hospitalizations were 252,200 for Apr-Dec 2020 compared with 280,800 during 2016-2019, with 7.5% COVID-related, and urban area in-hospital deaths for the corresponding

¹ Reid LD (AHRQ), Roemer M (AHRQ). Changes in Hospitalizations and In-Hospital Deaths for Patients From Rural Areas in the Initial Period of the COVID-19 Pandemic (April–December 2020), 29 States. HCUP Statistical Brief #295. April 2022. Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/reports/statbriefs/sb295-COVID-19-RuralHosptl.pdf.

months rose from 6,500 to 9,100 in 2020 with 30.9% related to COVID-19.² Regardless of geography in Connecticut, among people age 65 and older during Apr-Dec 2020, 10.5% of hospitalizations and 32.1% of in-hospital deaths were related to COVID-19.³

COVID-19 delayed release of the 2020 Census data products. Rate columns for the previously released *Provisional* 2020 tables were blank as the population data for 2020 were not available for rate calculations in early 2022. Population estimates and rates were added to tables H-1 and H-12 in summer 2023 using the vintage 2020 state population of 3,557,006.

In 2020, DPH transitioned to using single and multiple race categories in statistical reports (cite Hannah's fact sheet) which includes the addition of the "two or more races" (TOM) category.⁴ However, hospitalization data do not include a "two or more races" category creating challenges with calculating rates by race. Persons of two or more races comprised 2.2% of all non-Hispanic residents of Connecticut in 2020. A portion of the 2.2% non-Hispanic, TOM population were likely reported as a single race in hospitalization data (see Limitations section), which would result in slightly elevated rates among the non-TOM race groups. Hospitalization rates among Hispanics are not impacted by the introduction of the TOM races category as ethnicity is collected separately from race.

The previous 2020 provisional tables included tables H-1, H-5, and H-9 through H-12 with COVID-19 added to the list of diagnostic categories, but race-ethnicity data were not reported in the provisional file in 2022. Tables H-2, H-6, and H-7 added in summer 2023 include race-ethnicity data.

To align hospitalization tables with DPH agency protocols for protecting personal health information, data which were both sex-specific and age-specific were censored for counts <11 rather than the previous standard of counts <7. The Department of Public Health's Surveillance, Reporting, and Statistics unit revised the provisional tables to include rates, add absent tables, and expanded this narrative. Tables which do not normally include rates (H-5 and H-9 through H-11), however, did not change in the final tables.

Table Structure

² Liang L (AHRQ), Reid LD (AHRQ). Changes in Hospitalizations and In-Hospital Deaths for Patients From Urban Areas in the Initial Period of the COVID-19 Pandemic (April–December 2020), 29 States. HCUP Statistical Brief #294. April 2022. Agency for Healthcare Research and Quality, Rockville, MD. www.hcupus.ahrq.gov/reports/statbriefs/sb294-COVID-19-UrbanHosptl.pdf.

³ Fang Z (AHRQ), Owens PL (AHRQ). Changes in Hospitalizations and In-Hospital Deaths for Adults Aged 65 Years and Older in the Initial Period of the COVID-19 Pandemic (April–December 2020), 29 States. HCUP Statistical Brief #293. April 2022. Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/reports/statbriefs/sb293-COVID-19-OverAge64Hosptl.pdf.

⁴ Perry H, Backus K, Hayes LE. Connecticut DPH Vital Statistics: Single and Two or More (TOM) Race-Ethnicity Classification. 2023 Hartford, CT: H. S. S. U. Connecticut Department of Public Health.

Table H-1 presents number of discharges, discharge rate, median stay, median charge, and total charge for selected primary diagnoses for Connecticut residents of both sexes, males and females, for all ages, and selected age groups. Table H-2 presents the same categories as H-1, except that race and ethnicity (white non-Hispanic, black non-Hispanic, Hispanic) are shown instead of sex.

The ranking of leading causes of hospitalization by age and sex appears in table H-5 and by race-ethnicity in H-6.

As in past reports of hospitalizations, the major disease categories in tables H-1 and H-2 were used for ranking, except that diseases of the heart and cerebrovascular disease were used in place of diseases of the circulatory system (I00-I99). Hospitalizations related to the major categories for pregnancy and childbirth (O00-O99), for signs and symptoms not elsewhere classified (R00-R99), and for factors influencing health status (Z00-Z99) were not used in rankings (Tables H-5, H-6) as they do not represent diseases.

Appendices appear with inpatient and emergency department counts of visits. These are organized in three ways: by the order of the ICD-10-CM codes (H-9), the ISHMT (H-11), and the Clinical Classifications Software (H-10). The CCS is a tool for grouping together diagnoses which are similar in clinical management.

Appendix table H-12 compares discharge counts for the diagnostic codes presented in tables H-1 and H-2 across the years since ICD-10 came into use for hospital discharges. Due to apparent data incompleteness in secondary injury coding, tables H-3, H-4, and H-8 no longer appear and data from tables H-3 and H-4 are not included in appendix H-12.

Summary of 2020 data

Prior to October 2015, hospitals used ICD-9-CM diagnostic codes. The substantial differences between ICD-9 and currently used ICD-10 coding systems preclude finding one-to-one correspondence for most conditions in the current report compared to previous time periods, and it creates a large discontinuity in reporting.

During 2020 there were 343,716 hospitalizations of Connecticut residents in Connecticut hospitals (Table H-1) with total charges of 17.6 billion dollars. Between 2019 and 2020 hospitalizations decreased by 8.4% overall but the changes differed according to the diagnosis. Septicemia levels remained stable, and so infectious and parasitic diseases as a whole declined only 4% and consequently became the leading cause of hospitalization (Table H-5). By contrast, respiratory diseases other than COVID-19 declined by 30%, as did musculoskeletal diseases. COVID-19 was assigned a provisional ICD code of U07.1 as a newly identified disease and appears near the bottom of the diagnostic list in tables. COVID-19 was grouped with respiratory diseases for purposes of ranking leading causes of hospitalization. Respiratory

disease hospitalizations when including COVID-19 were 8.7% higher in 2020 than 2019. Considered alone, in 2020 COVID-19 was the 10th leading cause of hospitalization among males ages 45-64, the 9th leading cause among males and both sexes ages 65+, and the 8th leading cause among females ages 65+. Among those aged <15, counts of respiratory diseases, even including COVID-19, declined markedly in 2020 compared to 2019.

Overall, the median charge per hospital stay (excluding pregnancy and childbirth) increased 8.9% to \$36,664 (unadjusted for inflation) from the prior year, and the median length of stay increased from three days to four. Among listed conditions, the longest median stays were for psychoses, Alzheimer's disease, and spinal cord injury (nine days), and the highest median charge was for spinal cord injury (\$132,592). Among major disease categories, the longest median length of stay was for mental and behavioral disorders (seven days). The highest median charges were for congenital deformations & chromosomal abnormalities (\$74,746). The largest total charges were for infectious & parasitic diseases (2.2 billion dollars).

Infectious & parasitic diseases was the leading diagnosis in all residents, heart disease led among males and non-Hispanic Whites, respiratory diseases among non-Hispanic Blacks and Hispanics, and digestive diseases among females (Tables H-5, H-6). As leading causes are based on counts rather than rates, leading causes for all ages combined are influenced by age distributions.

During ages 0-4 perinatal diseases was the leading cause of hospitalization overall and among all race-ethnicity and sex categories. During ages 5-14, 15-24, and 25-44, mental and behavior disorders was the leading cause of hospitalization overall and among all groups. In ages 45-64, digestive diseases was the leading cause of hospitalization overall, in non-Hispanic Whites, and in females, while mental and behavioral disorders led in males. In ages 65 and older, heart disease was the leading cause of hospitalization in all sex groups and non-Hispanic Whites. Respiratory diseases led among non-Hispanic Blacks and Hispanics in ages 45-64 and 65+.

Appendix H-12 shows changes in the number of discharges and rates between 2019 and 2020 in diagnostic categories used in tables H-1 and H-2. The largest increases for a condition with at least 100 discharges, as a 2020/2019 discharges ratio, were for appendicitis (1.20), alcoholic liver disease (1.19), and toxic effects of chiefly non-medicinal substances (1.15). The largest decreases as a 2020/2019 ratio were for arthrosis of the knee (0.50), arthropathies (0.58), arthrosis of the hip (0.59), asthma (0.59), chronic lower respiratory diseases (0.61), intestinal infectious diseases (0.65), and HIV/AIDS (0.69).

The largest increase for a condition as the count difference between 2020 and 2019 discharges was for COVID-19 (+10,600), which was a new diagnostic category in 2020. The largest decreases for a diagnostic category were for diseases of the respiratory system, not including COVID-19 (-8,245), diseases of the circulatory system (-7,234), and diseases of the musculoskeletal system (-7,137).

Other Sources of Connecticut Hospitalization Data

The Connecticut State Innovation Model Dashboard tracks ambulatory care sensitive hospitalizations.⁵ The Office of Health Strategy releases a biennial healthcare facilities and services plan,⁶ and makes available facility level charge, charity care, and bed utilization data.⁷ The DPH Environmental Public Health Tracking program Data Explorer makes available hospitalization and ED visit counts and rates by year, county, age, sex, race and ethnicity for selected conditions,⁸ as well as non-hospitalization data (e.g. suspected and confirmed Lyme disease). The DPH Healthcare Associated Infections and Antimicrobial Resistance (HAI-AR) program publishes data from hospitals and other facilities.⁹ The DPH syndromic surveillance for influenza ED visits is also on the DPH website.¹⁰ The DPH Office of Injury Prevention publishes statistics that include injury hospitalizations and ED visits.¹¹ COVID-19 public data reporting appear as part of the CT DPH respiratory diseases surveillance during winter months.¹² The Healthcare Cost and Utilization Project periodically releases data briefs using in-patient, ED, and ambulatory surgery data from many states, including Connecticut.¹³ A portion of these data are presented on state-specific level.

Limitations of Hospitalization Data

Hospitalization refers to any discharge from a non-federal, short-stay, acute-care general hospital in Connecticut. Hospitalizations are expressed as numbers of discharges, not as unduplicated patients; a single patient with multiple hospitalizations can thus be counted more than once. These data do not capture conditions treated on an outpatient basis or that result in death prior to transport to the hospital, nor can they reflect the movement of some treatments from an in-patient to an outpatient setting. As used in this report, race and ethnicity categories are mutually exclusive. Determination of race and ethnicity in billing data may vary from hospital to hospital, sometimes based on self-report and other times on attribution by hospital staff from appearance or surname. Counts of race other than white or black were too small in Connecticut to yield stable rates, nor do hospital race attributions for Asian, Pacific Islander, and Native American (used in rate numerators) match exactly with those from the US census (used in rate denominators). Charge data are easily collected but are not

⁵ <https://health.uconn.edu/population-health/hospital-admissions-overall/>

⁶ <https://portal.ct.gov/OHS/Press-Room/Press-Releases/2019-Press-Releases/Facilities-and-Services-Plan>

⁷ <https://portal.ct.gov/OHS/Health-Systems-Planning/Hospital-Financial-Data/Annual-and-12-Month-Filing-Reports>

⁸ <https://stateofhealth.ct.gov/HealthEffects>. The conditions are asthma, 16 cancers, COPD, carbon monoxide poisoning, and heart attack.

⁹ <https://portal.ct.gov/DPH/HAI/Healthcare-Associated-Infections-and-Antimicrobial-Resistance>

¹⁰ <https://portal.ct.gov/DPH/Epidemiology-and-Emerging-Infections/Influenza-Surveillance-and-Statistics>

¹¹ <https://portal.ct.gov/DPH/Health-Education-Management--Surveillance/The-Office-of-Injury-Prevention/Office-of-Injury-Prevention>

¹² <https://portal.ct.gov/DPH/Communications/Health-Topics/COVID-19-2023-Update---Ending-of-the-Public-Health-Emergency>

¹³ <https://www.hcup-us.ahrq.gov/reports/statbriefs/statbriefs.jsp>

the same as costs or payments. They include facility charges but do not include physician charges.

Medical practices may vary across the United States, so caution should be used if comparing Connecticut with other states. The H-CUP has documented large geographic variation of hospitalization rates for leading conditions.¹⁴ It has been proposed that aspiration pneumonia and pneumonitis form a spectrum of diseases of the lung,¹⁵ implying that in a locality where infection is ruled out more thoroughly than elsewhere, diagnoses would be relatively shifted from pneumonia to pneumonitis. For some conditions, hospitalization rates are also associated with bed availability. The number of hospital beds per 100,000 population varies by geography: country, state, and urban versus rural area.¹⁶

For the most accurate record of Connecticut resident births and related risk factors and outcomes, see the Registration Reports in the “Vital Statistics” section of the DPH website.¹⁷ For the most accurate record of Connecticut resident cancer risk factors and outcomes, see the Data and Statistics page in the “Tumor Registry” (CTR) section of the DPH website.¹⁸ Reportable infectious disease counts, including those not requiring hospitalization, are found at the DPH web page for Epidemiology and Emerging Infections.¹⁹

¹⁴ For example, Fingar KR (IBM), Roemer M (AHRQ). Geographic Variation in Inpatient Stays for Five Leading Mental Disorders, 2016–2018. HCUP Statistical Brief #288. February 2022. Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/reports/statbriefs/sb288-Mental-Disorder-Hospitalizationsby-Region-2016-2018.pdf.

¹⁵ Neill S, Dean N. Aspiration pneumonia and pneumonitis: a spectrum of infectious/noninfectious diseases affecting the lung. *Current Opinion in Infectious Disease* 2019; 32: 152-57.

¹⁶ <https://www.dartmouthatlas.org/faq/>

¹⁷ <https://portal.ct.gov/DPH/Health-Information-Systems--Reporting/Hisrhome/Vital-Statistics-Registration-Reports>

¹⁸ <https://authoring.ct.gov//DPH/Tumor-Registry/Data--Statistics>

¹⁹ <https://portal.ct.gov/DPH/Epidemiology-and-Emerging-Infections/Infectious-Diseases-Statistics>