

Calendar Year 2021 Connecticut Hospitalization Tables

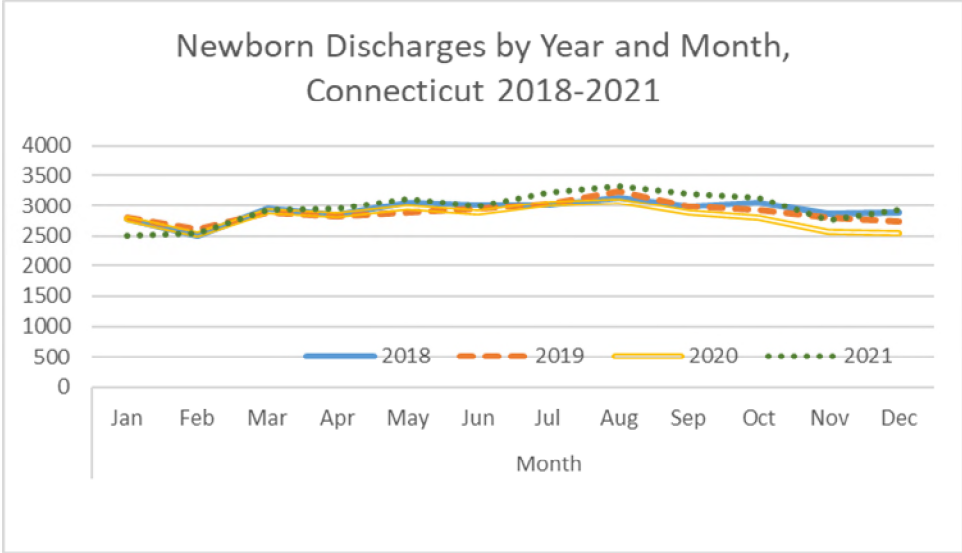
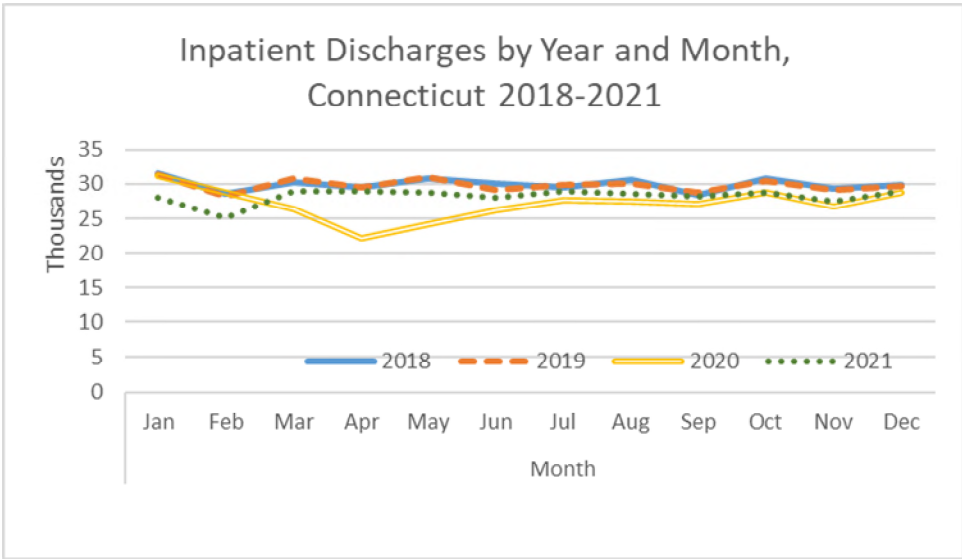
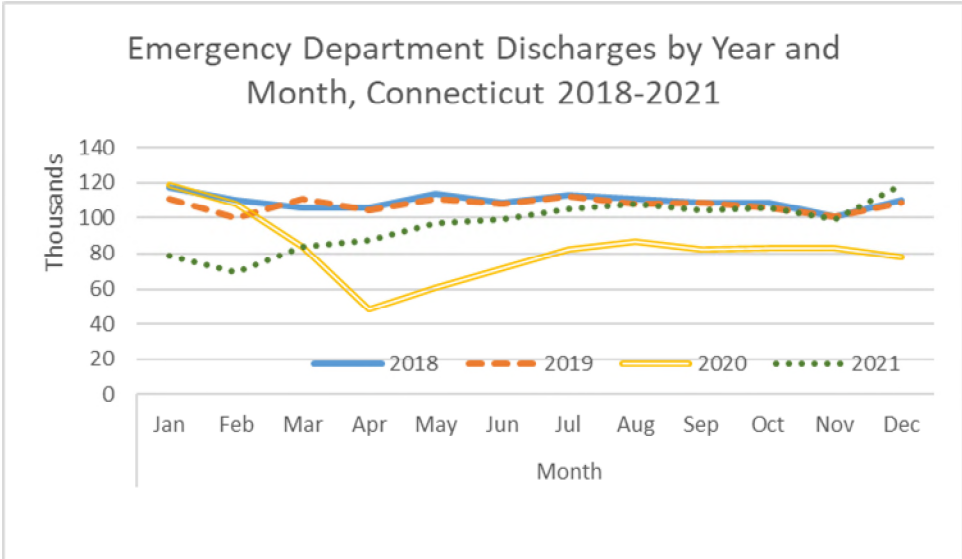
Inpatient hospitalizations represent the instances where a person's illness or injury required care at a hospital. As such, counts and rates of hospitalizations are one way to measure morbidity (injury and illness) in Connecticut. The Connecticut Hospitalization Tables provide a series of counts, rates, 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 and COVID-19 Effects

The 2021 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 2016-2021 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 (ED) and Inpatient (IP) 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.

January 2021 ED discharges resembled the ED counts in December 2020 and were lower than counts for January 2018 or 2019. Gradually during February-August 2021 ED discharges rose to equal the counts for the corresponding months of 2018 and 2019. ED levels for 2021 continued in step with 2018 and 2019 from September-November, and even exceeded those years in December 2021 (shown below). Inpatient discharge counts during 2021 were slightly below 2018 and 2019 throughout all months but were the same or very slightly above 2020 counts for months July through December. January 2021 newborn discharge counts were lower than any of the corresponding January's for 2018, 2019, or 2020. Conversely, 2021 newborn counts were higher than 2018, 2019, or 2020 during July-September. In other months the 2021 newborn discharge counts were virtually indistinguishable from 2018 or 2019.



In 2020, DPH transitioned to using single and multiple race categories in statistical reports which includes the addition of the “two or more races” (TOM) category.¹ 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 2.3% of all non-Hispanic residents of Connecticut in 2021. A portion of the 2.3% 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.

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.

Table Structure

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 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

¹ 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.

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 2021 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 2021 there were there were 356,043 hospitalizations of Connecticut residents in Connecticut hospitals (Table H-1) with total charges of 19.5 billion dollars. Between 2020 and 2021 overall hospitalizations increased by 3.6% and charges by 10.4%. COVID-19 was assigned a provisional ICD code of U07.1 in 2020 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. Considered apart from other respiratory diseases, in 2021 COVID-19 *would have been* the 6th leading cause of hospitalization in ages 25-44, the 10th leading cause among ages 45-64, but not among the leading causes among other age groups. Rates of respiratory disease declined in 2021 compared to 2020. This pattern was extreme for influenza (Table H-12), with a 2021/2020 ratio of 0.05. Nationally an extreme decline was seen for influenza *death* rates (US hospitalization data not being as easily available), which dropped from 1.8 in 2020 to 0.2 per 100,000 in 2021, before rebounding to 1.8 in provisional 2022 data. For Connecticut, the CDC suppressed influenza *death* rates in 2021, due to small numbers.²

In Connecticut, the median charge per hospital stay (excluding pregnancy and childbirth) increased 7.3% to \$39,330 (unadjusted for inflation) from the prior year, and the median length of stay remained four days. Among listed conditions, the longest median stays were for psychoses (ten days), and the highest median charge was for spinal cord injury (\$149,140). 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 (\$76,333). The largest total charges were for diseases of the heart (2.56 billion dollars).

Diseases of the heart was the leading diagnosis in all residents, males, and non-Hispanic Whites, digestive diseases led among females and Hispanics, and mental disorders among non-Hispanic

² Centers for Disease Control and Prevention, National Center for Health Statistics. National Vital Statistics System, Provisional Mortality on CDC WONDER Online Database. Data are from the final Multiple Cause of Death Files, 2018-2021, and from provisional data for years 2022-2023, as compiled from data provided by the 57 vital statistics jurisdictions through the Vital Statistics Cooperative Program. Accessed at <http://wonder.cdc.gov/mcd-icd10-provisional.html> on Aug 22, 2023 10:05:35 AM

Blacks (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 females and non-Hispanic Whites, while respiratory diseases led among males, non-Hispanic Blacks, and Hispanics. 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 and among each sex and race-ethnicity group except non-Hispanic Blacks, where respiratory diseases led. In ages 65 and older, heart disease was the leading cause of hospitalization overall and in all groups.

Appendix H-12 shows changes in the number of discharges and rates between 2020 and 2021 in diagnostic categories used in tables H-1 and H-2. The largest increases for a condition with at least 100 discharges, as a 2021/2020 discharges ratio, were for obesity and hyperalimentation (1.41), Alzheimer's disease (1.32), and hyperplasia of prostate (1.22). The largest decreases as a 2021/2020 ratio (excluding influenza noted above) were for arthrosis of the hip (0.64), arthrosis of the knee (0.67), and toxic effects of chiefly non-medicinal substances (0.80); the latter category had in 2020 registered the largest relative *increase* compared to the previous year.

The largest increase for a condition as the count difference between 2021 and 2020 discharges was for diseases of the circulatory system (+5,164), which the previous year had seen the largest decrease (-7,234). The largest decreases in discharges in 2021 were seen among arthropathies (-2,623), and septicemia (-2,116).

Other Sources of Connecticut Hospitalization Data

The Connecticut State Innovation Model Dashboard tracks ambulatory care sensitive hospitalizations.³ The Office of Health Strategy releases a biennial healthcare facilities and services plan,⁴ and makes available facility level charge, charity care, and bed utilization data.⁵ 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,⁶ 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.⁷ The DPH syndromic surveillance for influenza ED visits is also on the DPH website.⁸ The DPH Office of Injury Prevention publishes

³ <https://health.uconn.edu/population-health/hospital-admissions-overall/>

⁴ <https://portal.ct.gov/OHS/Press-Room/Press-Releases/2019-Press-Releases/Facilities-and-Services-Plan>

⁵ <https://portal.ct.gov/OHS/Health-Systems-Planning/Hospital-Financial-Data/Annual-and-12-Month-Filing-Reports>

⁶ <https://stateofhealth.ct.gov/HealthEffects>. The conditions are asthma, 16 cancers, COPD, carbon monoxide poisoning, and heart attack.

⁷ <https://portal.ct.gov/DPH/HAI/Healthcare-Associated-Infections-and-Antimicrobial-Resistance>

⁸ <https://portal.ct.gov/DPH/Epidemiology-and-Emerging-Infections/Influenza-Surveillance-and-Statistics>

statistics that include injury hospitalizations and ED visits.⁹ COVID-19 public data reporting appears as part of the CT DPH respiratory diseases surveillance during winter months.¹⁰ The Healthcare Cost and Utilization Project periodically releases data briefs using in-patient, ED, and ambulatory surgery data from many states, including Connecticut.¹¹ 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 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.¹² It has been proposed that aspiration pneumonia and pneumonitis form a spectrum of diseases of the lung,¹³ 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.¹⁴

⁹ <https://portal.ct.gov/DPH/Health-Education-Management--Surveillance/The-Office-of-Injury-Prevention/Office-of-Injury-Prevention>

¹⁰ <https://portal.ct.gov/DPH/Communications/Health-Topics/COVID-19-2023-Update---Ending-of-the-Public-Health-Emergency>

¹¹ <https://www.hcup-us.ahrq.gov/reports/statbriefs/statbriefs.jsp>

¹² 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.

¹³ 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.

¹⁴ <https://www.dartmouthatlas.org/faq/>

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.¹⁵ 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.¹⁶ Reportable infectious disease counts, including those not requiring hospitalization, are found at the DPH web page for Epidemiology and Emerging Infections.¹⁷

¹⁵ <https://portal.ct.gov/DPH/Health-Information-Systems--Reporting/Hisrhome/Vital-Statistics-Registration-Reports>

¹⁶ <https://authoring.ct.gov//DPH/Tumor-Registry/Data--Statistics>

¹⁷ <https://portal.ct.gov/DPH/Epidemiology-and-Emerging-Infections/Infectious-Diseases-Statistics>