



**CHAPTER 7:**

Health Systems

---

## INTRODUCTION

---

Connecticut's health systems encompass the work of healthcare, public health, and human and social services agencies, including large and small stakeholders in the public and private sectors. Connecticut seeks to strengthen the coordination between these sectors and promote the synergies among the economic, environmental, and social factors that contribute to better health. The health of individuals and communities is a product of factors beyond healthcare and even beyond the scope of the public health field. A central goal of the health system is to promote and maintain healthy habits, minimize environmental exposures, and reduce the risk of illness and injury. Such aims can only be attained by both addressing known social, behavioral and medical determinants of health, and by building an integrated system of quality care with emphasis on prevention and equity in health resource distribution.

The United States spends more money as a share of its gross domestic product per capita on health care than any other "Organization for Economic Co-Operation and Development" country.<sup>1</sup> Such imbalance is a result of a multi-layered health care system that generally focuses more on addressing health problems as they arise rather than looking at ways to prevent poor health outcomes. Although current health systems are for the most part incentivized to treat people as patients or clients and not as participants, some states have begun taking the lead in addressing such a model of care within their jurisdictions. Connecticut recognizes that in order to better assist our residents attain their highest health status, it is vital to collaborate and share available resources to improve the scope and quality of our public health and health care services, reduce disparities at the community level, produce efficiencies in service delivery to lower health care costs to consumers and the State, and address social and environmental determinants that negatively impact health.

As part of the State Health Assessment, the CT Department of Public Health reviewed Community Health Needs Assessments (CHNAs) filed by hospital health systems across the State and developed in partnership with local health directors and human service agencies from each jurisdiction. Those reports serve as a long term strategic reference for institutional decision making and local coordination between stakeholder entities. They also document priority health issues identified through qualitative and quantitative data gathering from local partners and other State and federal sources. As a result, a broad overview of community-based activity to address health concerns and solve barriers to access medical and preventive care is available.

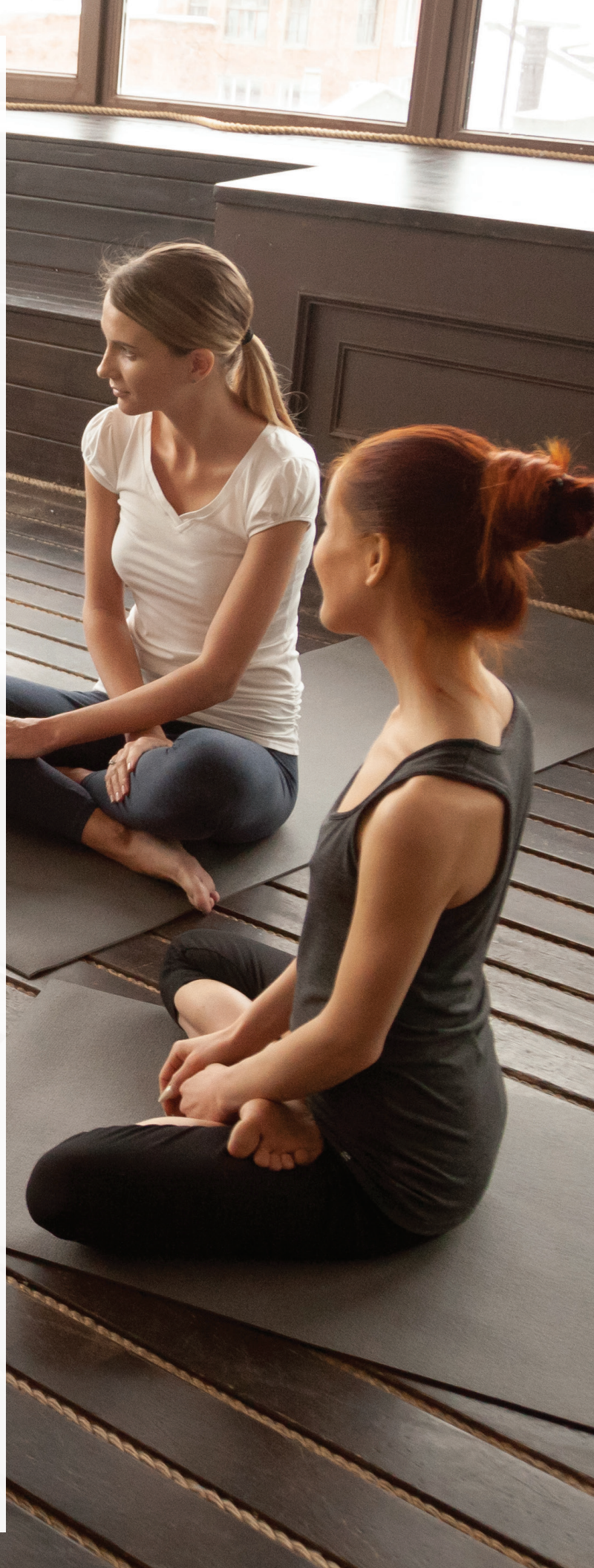
As our residents progress through life, their health is influenced by environmental exposures, individual behaviors, and personal genetic makeup. While not all health outcomes are avoidable, Connecticut can identify strategic areas in our health systems to eliminate health inequities, reduce health care costs, and improve

quality of life. We are already seeing this as municipalities have banded together to provide better coverage of essential public health service and the number of part-time health departments have been reduced by half since 2013. To improve the health outcomes of our Medicaid consumers, the PCMH+ program improves the process of through added care coordination, behavioral health integration, and shared savings. More than 85% of our State's primary care community of providers is organized as an Accountable Care Organization to facilitate integrated and cost saving services to reduce the disease burden to our vulnerable populations and reduce the State's health care costs. The Connecticut Prescription Monitoring Reporting System, a centralized database to collect prescription information of Schedule II through V from Connecticut's medical providers in possession of a Connecticut Controlled Substance Registration, was established in 2014 to reduce the disturbing number of opioid-related injury and death; the data indicates from 2013 through 2017, the opioid prescribing rate has reduced about 45%.

Even with these accomplishments that improve how our health systems are addressing, we must not lose sight that there is still work to be done to reduce the disparities that exist. The utilization of a person-centered Medical Home, a model developed by the American Academy of Pediatrics to provide multidisciplinary high-quality integrated care from birth through adulthood, is about 30% less by children of color than it is for non-Hispanic White children.<sup>2</sup> With an aging and diverse population, our nursing healthcare workforce remains 85% non-Hispanic White even though a racially and ethnically diverse healthcare workforce is essential for the provision of culturally competent care. Medicaid coverage is about 2.5 times higher for persons of color than for non-Hispanic Whites, indicative that these populations are more dependent of social resources and have less social mobility.

To understand the extent to which our healthcare systems are serving all residents, this chapter highlights gaps in coverage through data about local health infrastructure, health insurance coverage, access to primary care and other health services, the quality of healthcare services, and our healthcare workforce needs. Connecticut has a robust health system that could better serve all people through further collaboration and increased communication. With a solid multi-sectored commitment to aligning efforts, Connecticut would be equipped to reach optimal healthcare coverage, ensure essential public health services, improve data sharing, reduce costs, and ultimately remove all obstacles that keep the public from fully engaging in their health and health care decisions.

Throughout this chapter data provided by the Connecticut Office of Health Strategy (CT OHS) is presented by Fiscal Year (FY).



# HEALTHCARE SYSTEMS

## Local Health

There are currently 65 local public health departments and districts serving our residents (**Table 7.1**). Though the overall total number of Local Health Departments and Districts (LHDs) has decreased since 2013, the percentage of residents covered by full-time local health services has increased; these 53 full-time LHDs serve 3,464,206 people, or 96.5% of our State's population.

As a result of part-time local health departments joining a health district or moving to full-time status, the number of part-time Local Health Departments decreased by half, from 24 in 2013 to 12 in 2019 (**Table 7.1**). These changes align with trends in other decentralized states across the US that are pursuing cross-jurisdictional sharing of resources, including regionalization or districting.

Resource sharing like the formation of health districts can be an intensive process that requires financial and political strategic planning, funding, state legislative action, and change management. To facilitate this, DPH provides grant funding to support the joining or formation of health districts. DPH also conducts local health assessments to review the delivery of the 10 Essential Public Health Services and compliance with statutory and regulatory requirements via its annual local health survey (CGS Section 19a-200).

## GEOGRAPHICAL DISTRIBUTION OF LOCAL PUBLIC HEALTH INFRASTRUCTURE

The majority of the 12 part-time health departments are mostly in the western half of the State (**Figure 7.1**). Since health districts and full-time municipal Local Health Departments (LHD) provide more of the 10 Essential Public Health Services compared to part-time municipal LHDs, the geographical concentration of part-time health departments may indicate potential gaps in services for some Connecticut residents. In these jurisdictions, assessments are an important approach to help identify community health and wellbeing issues and the capacity of local systems to conduct these essential services.

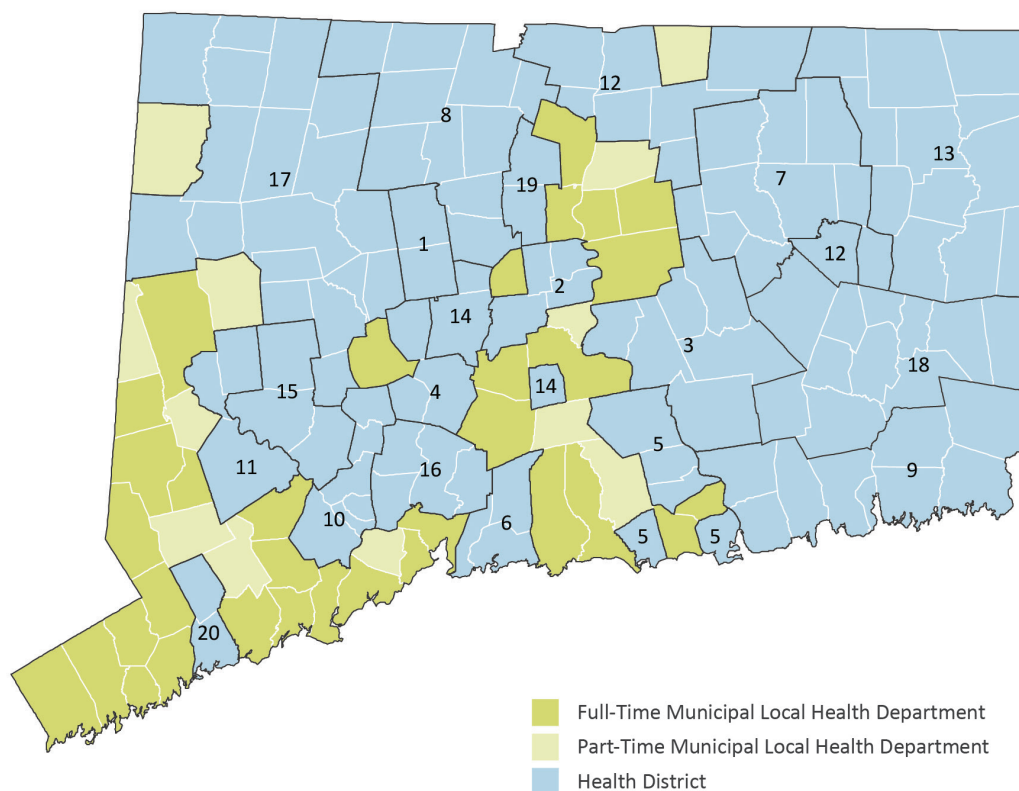
In addition to the 65 local public health departments, Connecticut is home to two sovereign nations — Mashantucket Pequot Tribal Nation and the Mohegan Tribe — that provide public health services to their communities through the federal Indian Health Services and a self-organized LHD, respectively. Both nations are in Southeastern Connecticut.

**TABLE 7.1: Number and type of Local Public Health Departments and Districts (LHDs), CT, 2013 and 2019**

	FULL-TIME LHDs	PART-TIME LHDs	TOTAL LHDs
<b>2013</b>	<b>50 Agencies</b> <ul style="list-style-type: none"> <li>• 29 independent municipal health departments</li> <li>• 21 districts covering 2–18 towns</li> </ul>	<b>24 Agencies</b>	<b>74 Agencies</b>
<b>2019</b>	<b>53 Agencies</b> <ul style="list-style-type: none"> <li>• 33 independent municipal health departments</li> <li>• 20 health districts covering 2–20 towns</li> </ul>	<b>12 Agencies</b>	<b>65 Agencies</b>

*Source: CT DPH Local Health Administration.*

**FIGURE 7.1: Geographic distribution of LHDs, CT, 2019**



*Source: CT DPH Local Health Administration.*

## ACCREDITATION

Like state departments of health, LHDs can pursue voluntary accreditation through the Public Health Accreditation Board (PHAB). Accredited agencies have demonstrated and proven that they provide the 10 Essential Public Health Services in alignment with evidence-based practice standards.

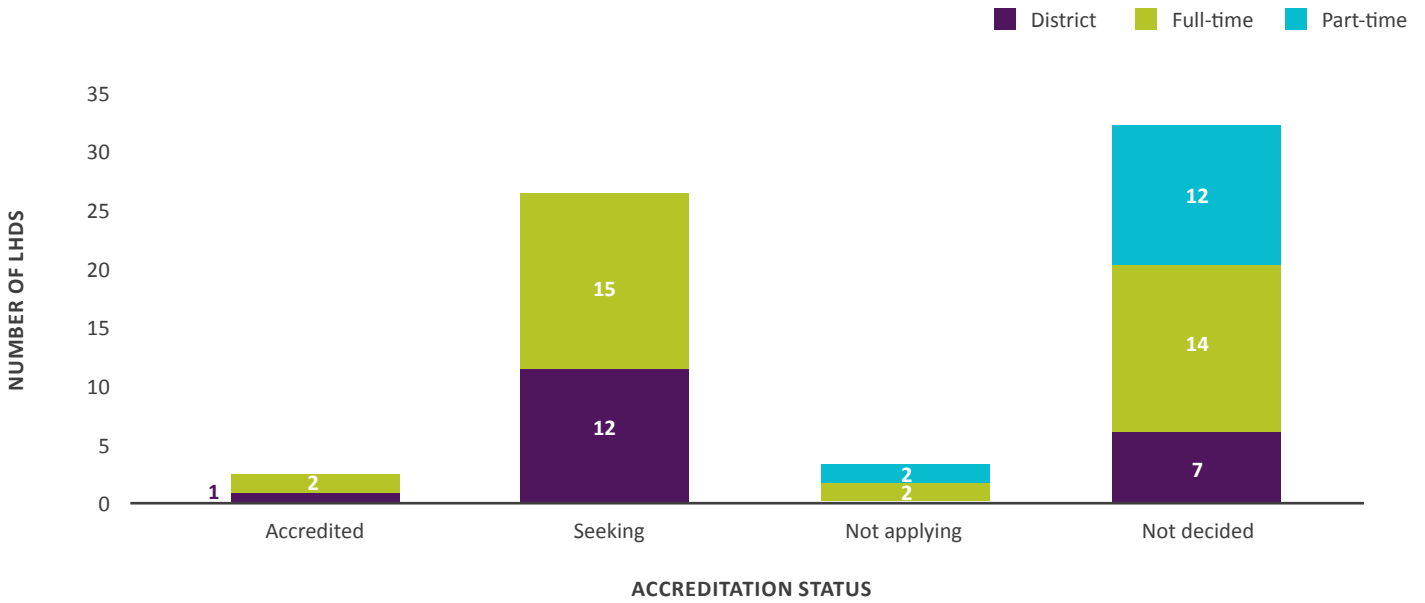
In 2013, none of Connecticut's LHDs were accredited or met National PHAB standards. As of 2018, three of the 65 LHDs received accreditation and 27 have indicated that they have or plan to apply for accreditation (**Figure 7.2**). Because preparing an accreditation application requires dedicated staff and long-term resources, there are financial incentives through funding agencies, grants, and training and technical assistance through national associations and public health training centers. Additionally, staff support through student internships can better enable LHDs to pursue accreditation. Continued efforts to support and encourage LHD accreditation will lead to a reduction in geographic inequities in accessing to the 10 Essential Public Health Services.

## NATIONAL CULTURALLY AND LINGUISTICALLY APPROPRIATE SERVICES (CLAS) STANDARDS

To promote health equity, public health and healthcare entities must provide culturally and linguistically appropriate services to:

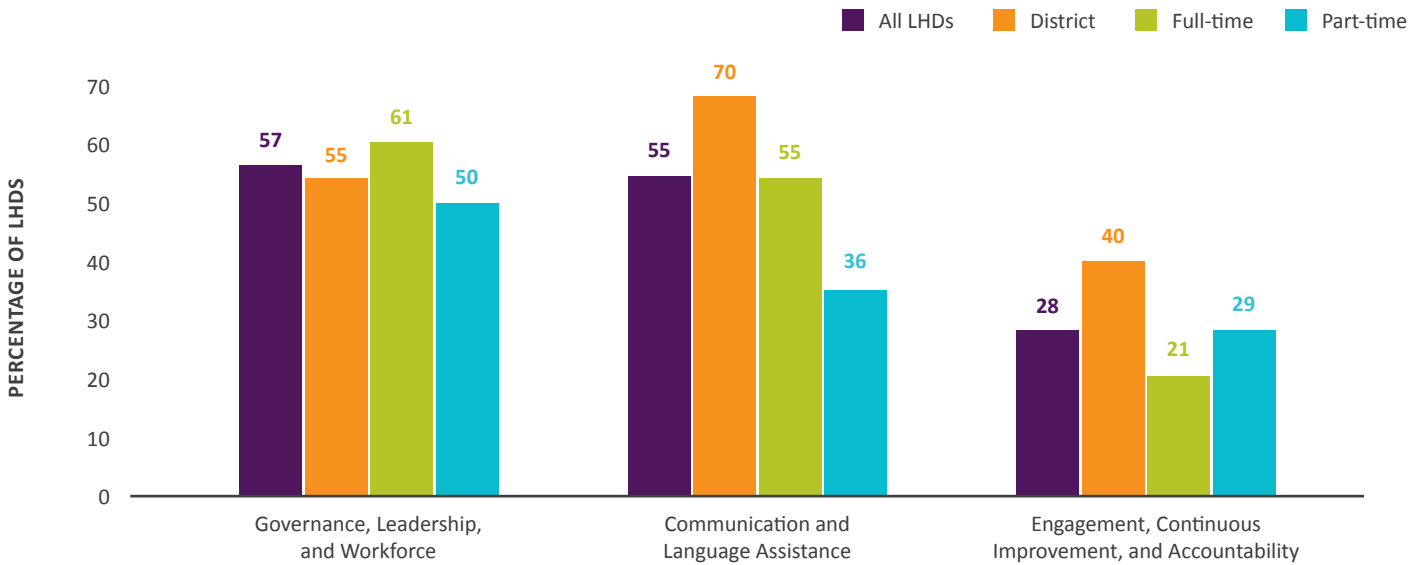
- Respond to current and projected demographic changes in the US;
- Eliminate long-standing disparities in the health status of people of diverse racial, ethnic, and cultural backgrounds;
- Improve the quality of services and primary care outcomes;
- Meet legislative, regulatory, and accreditation mandates;
- Gain a competitive edge in the market place;
- Decrease the likelihood of liability/malpractice claims.<sup>3</sup>

**FIGURE 7.2: Number of LHDs participating in accreditation by LHD type, CT, 2018**



Source: CT DPH Local Health Administration, Local Health Annual Report.

**FIGURE 7.3: Percentage of LHDs satisfying Enhanced National Culturally and Linguistically Appropriate Services (CLAS) Standards by theme and by LHD type, CT, 2018**



Source: CT DPH Local Health Administration, Local Health Annual Report.

# NATIONAL CLAS STANDARDS

## Principal Standard

- Provide effective, equitable, understandable and respectful quality care and services that are responsive to diverse cultural health beliefs and practices, preferred languages, health literacy and other communication needs.

## Governance, Leadership and Workforce

- Advance and sustain organizational governance and leadership that promotes CLAS and health equity through policy, practices and allocated resources.
- Recruit, promote and support a culturally and linguistically diverse governance, leadership and workforce that are responsive to the population in the service area.
- Educate and train governance, leadership and workforce in culturally and linguistically appropriate policies and practices on an ongoing basis.

## Communication and Language Assistance

- Offer language assistance to individuals who have limited English proficiency and/or other communication needs, at no cost to them, to facilitate timely access to all health care and services.
- Inform all individuals of the availability of language assistance services clearly and in their preferred language, verbally and in writing.
- Ensure the competence of individuals providing language assistance, recognizing that the use of untrained individuals and/or minors as interpreters should be avoided.

- Provide easy-to-understand print and multimedia materials and signage in the languages commonly used by the populations in the service area.

## Engagement, Continuous Improvement and Accountability

- Establish culturally and linguistically appropriate goals, policies and management accountability, and infuse them throughout the organizations' planning and operations.
- Conduct ongoing assessments of the organization's CLAS-related activities and integrate CLAS-related measures into assessment measurement and continuous quality improvement activities.
- Collect and maintain accurate and reliable demographic data to monitor and evaluate the impact of CLAS on health equity and outcomes and to inform service delivery.
- Conduct regular assessments of community health assets and needs and use the results to plan and implement services that respond to the cultural and linguistic diversity of populations in the service area.
- Partner with the community to design, implement and evaluate policies, practices and services to ensure cultural and linguistic appropriateness.
- Create conflict- and grievance-resolution processes that are culturally and linguistically appropriate to identify, prevent and resolve conflicts or complaints.
- Communicate the organization's progress in implementing and sustaining CLAS to all stakeholders, constituents and the general public.

The National Culturally and Linguistically Appropriate Services (CLAS) Standards outline 15 action steps, organized under three enhanced themes, to advance health equity, improve quality, and help eliminate healthcare disparities through the provision of culturally and linguistically appropriate services (Figure 7.3). Satisfying the CLAS Standards indicate that LHDs are actively considering the cultural and linguistic barriers of all residents served by our community public health entities. As they are typically on the front lines of public health, they are better poised to assist non-English speaking service seekers and serve as a resource to guide community-based organizations and other local partners, when needed.

Our State Health Improvement Plan (Healthy Connecticut 2020 and the upcoming Healthy Connecticut 2025) has identified health equity as a public health priority; removing cultural and linguistic barriers is a part of achieving health equity. As such, Connecticut’s State Department of Public Health strives to support all LHDs to achieve 100% satisfaction of all 15 CLAS Standards. Currently, while more than half of all LHDs are meeting National CLAS Standards for each of the enhanced themes of “Governance, Leadership, and Workforce,” and “Communication and Language Assistance,” only one in four meet standards for the enhanced theme of “Engagement, Continuous Improvement, and Accountability,” regardless of LHD type.

Interestingly, while part-time health departments did not report the same level of success in satisfying the standards within the first two enhanced themes, a greater percentage of part-time LHDs reported satisfying the standards within the third theme of “Engagement, Continuous Improvement, and Accountability” than full-time LHDs. Identifying those LHDs that satisfactorily meet National CLAS Standards is useful, as they can provide leadership in transforming change for LHDs that have not. The cost of professionally translated documents and interpretation is a large financial burden to LHDs. Therefore, prioritizing funding for LHDs to meet the cultural and linguistic needs of their communities is critical. Assessment of the CLAS Standards began in 2018 and will be conducted biannually via the local health survey.

“Medical language is very tough to understand even in Arabic. Also, we have different diseases in Sudan. We have malaria there but we don’t have it here. So when you come here and look for a treatment, it’s very tough to find it because they don’t understand malaria we have there in our country.”

— STATE HEALTH ASSESSMENT FOCUS GROUP,  
IMMIGRANTS AND REFUGEES

## Community Health Collaboratives

In a non-randomized inquiry of nearly 170 representatives of several community organizations networks throughout Connecticut, most respondents indicated that their agency/organization is currently part of an existing community health collaborative. While collaboratives are generally formed to address a variety of topics, common components of a community health collaborative include developing partnerships, identifying health priorities, developing a vision and scope to address health issues, identifying common community assets, implementing intervention and evaluation plans, and planning for sustainability.

According to our analysis, community health collaboratives in Connecticut were formed to address a wide range of issues, including access to healthcare, priority areas in community health needs assessments, and social determinants of health (SDOH). Other areas that respondents specified include substance use, promotion of healthy behaviors, and the coordination of care. While the health collaboratives have representation from several different sectors in the communities they serve, healthcare providers, governmental agencies, and community, human and social service providers were the most frequently present. Other sectors included academic institutions, private and community foundations, and advocacy groups.

About half of respondents to the inquiry indicated that their organization was an active member of the health collaborative, and almost a quarter of respondents defined the role of their organization as a lead or backbone entity. Furthermore, most of the collaboratives represented in the analysis had at least 11–20 agencies participating, and more than half of the respondents indicated that their organization is “very engaged” in the collaborative. More than half of the health collaboratives meet regularly, either monthly or quarterly. Most collaboratives



participate in committees, subcommittees, or task forces and have written strategic or action plans, including a written vision or mission statement.

## COMMUNITY HEALTH NEEDS ASSESSMENTS

Overall, CHNAs provide a comprehensive perspective of how communities uniquely perceive their priorities and provide the State an opportunity to validate statewide findings. This important effort to identify local health needs creates a platform for community residents and cross-sector leaders to participate in the design of local solutions and policy making. To the extent that SDOH are different from one community to another, the CHNAs and CHIPs provide valuable specificity for the design of policy of the implementation of programs.

### High Burden Conditions

The highest burden conditions identified in the analysis were related to chronic disease including diabetes, cancer, obesity, asthma, and mental health. Other conditions commonly mentioned included heart disease, high blood pressure, cardiovascular disease, substance abuse, addiction, aging, anxiety, depression, hypertension, stroke, and cancer.

### Frequency of Priorities

Many priority health issues identified in the CHNAs were similar across local reports. Some of the most frequently identified priorities were to improve access to mental health, medical care and substance abuse. Because the concerns raised by the prevalence of obesity and other chronic disease, the need to promote healthy lifestyles (exercising, smoking, etc.) was clearly mentioned as an important priority. Various communities focused on opportunities to support the elderly and put a stop to the conditions that cause violence and injury in their communities.

### Identified Community Assets

The types of assets identified varied between the various communities. Hospital systems have strong institutional presence along local municipal agencies and many non-profit groups. Several assessments utilized input from directly from providers, health departments, community-based organizations, advocacy groups and coalitions, schools, social services, state agencies, payers and businesses within their communities. Many local assessments recognized DataHaven, a nonprofit organization with expertise in data collection and analysis, as an important asset to analyze their data while developing their improvement plans. Some other notable community assets include community coalitions, first responders, municipal leaders, and social service agencies. Communities are now frequently relying on their community gardens, farm to school programs, school food programs, public parks, and mobile markets.

## Efforts to address Social Determinants of Health

As a general rule, CHIPs are providing specific yet aspirational opportunities to meaningfully address the SDOH that drive the highest burden of disease. Typically, efforts to intervene on structural or normative conditions require long term commitment and community investments not requiring immediate return or change in outcomes. Examples of efforts to address lacking access to care include modifying the insurance redetermination process to decrease the number of individuals negatively impacted by a gap in coverage and seek solutions for patients limited by the absence of non-emergency transportation. Another example is the change driven by local advocates for improved access to healthy food through farmer markets, school nutrition programs, meals on wheels, and cooking programs. In a few communities, nonprofits help navigate uninsured patients and arranges pro-bono specialty care. Commonly, partnerships would work to increase affordable housing, address issues related to employment for youth, address cultural and logistical barriers to healthcare access and provide care for those who do not qualify for health insurance assistance. Other efforts include to increase the number of bilingual providers and increase the number of after school programs and education classes.

## CONNECTICUT TO DEVELOP A STATEWIDE HEALTH INFORMATION EXCHANGE

In September 2018, Governor Daniel Malloy announced a \$12.2 million award by the Centers for Medicare and Medicaid Services to our State.

This award would be used to streamline our health data exchange across facilities, hospitals, and health systems.

The State obtained the articles of incorporation of the Health Information Alliance, Inc., a non-profit, non-governmental entity to house the Health Information Exchange services.

## Health Insurance Coverage

Due to the passage of the Patient Protection and Affordable Care Act (PPACA) in 2010, health insurance providers must ensure that their health insurance plan options provide more comprehensive preventive medical coverage to include pre-existing conditions, chronic diseases, and preventive services. These services, known as the essential health benefits, are critical to maintaining health and protecting individuals from the unexpected, high medical costs that result from illness or accidents. When compared to uninsured residents, those with health insurance coverage are better able to access timely, appropriate, and financially accessible health care — including clinical preventive services and screenings, treatment for illness and injury, and supports to manage chronic conditions. As a result, residents with health care coverage are likely to have better health outcomes overall since people who lack access to health insurance are more likely to postpone or forego health care altogether, face difficulty obtaining care when they ultimately seek it, and are more likely to experience financial hardship due to healthcare costs. Connecticut was the first state to expand Medicaid through PPACA and further expanded eligibility criteria in 2014 to include nearly all residents with household incomes up to 133% of the Federal Poverty Level. Additional information on insurance for children can be found in the Maternal, Infant and Child Health Chapter.

### TYPES OF HEALTH INSURANCE

Health insurance coverage includes insurance purchased from a private, commercial company either as an individual or through group plans such as Health Maintenance Organizations (HMOs), and government plans such as Medicaid and Medicare. Medicaid is a public health insurance program administered by the State with partial federal funding for low-income Americans, children up to age 21, pregnant women and disabled persons. In 2018, Medicaid covered over 800,000 Connecticut residents, or 22% of the State's population.<sup>4</sup> **Figure 7.4** provides the latest data available for insurance coverage by the primary payer and by our most populous racial/ ethnic groups among Connecticut adults 18–64 years old. Non-Hispanic White adults in CT have the greatest percentage of commercial insurance coverage (74.6%) and the least percentage of people with no insurance (4.1%); the prevalence of commercial insurance coverage among non-Hispanic White adults are 65% and 116% higher than NH Black and Hispanic adults, respectively. As most commercial insurance in the U.S. is obtained via employment, this measure is also indicative of poverty, one of the most impactful determinants of health.<sup>5</sup> Since Medicaid is the option available to low-income adults then it should be no surprise that NH Black and Hispanic adults have high percentage of Medicaid coverage at 20.3% and 16.4% of their respective population-rates that are respectively

2.2 and 1.8 times higher than for non-Hispanic Whites who receive Medicaid coverage. Additionally, this is highly alarming to see what over 1 in 4 of our Hispanic residents live entirely without health insurance. In order to better capture populations without insurance coverage, the term primary payer is used when analyzing insurance data to account for the lack of insurance. As previously mentioned, this disparity in health insurance coverage translates to poor health outcomes and can adversely impact a person's ability to attain or maintain resources related to the other determinants of health.

---

**“There's a lot of things not covered by insurance, music therapy isn't, neuro feedback isn't, and then like behavioral therapy, PTSD so trauma therapy, the 3,000 psych evaluation unless you get the school to pay for it.”**

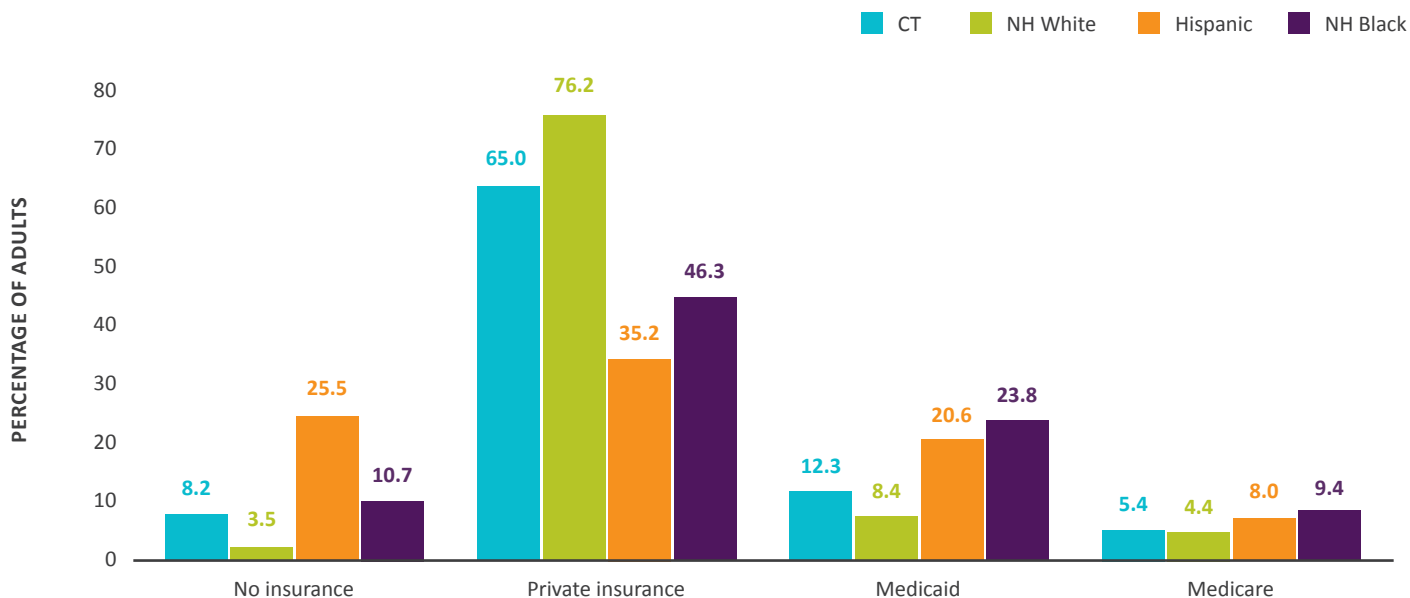
**“...for me personally dealing with insurance companies is the biggest issue and not being able to find people because they don't take your insurance, or they do one day and the next they don't so you have to find a new place and go through the loops again so that's the biggest thing.”**

**— STATE HEALTH ASSESSMENT FOCUS GROUP,  
FAMILIES AFFECTED BY AUTISM**

---

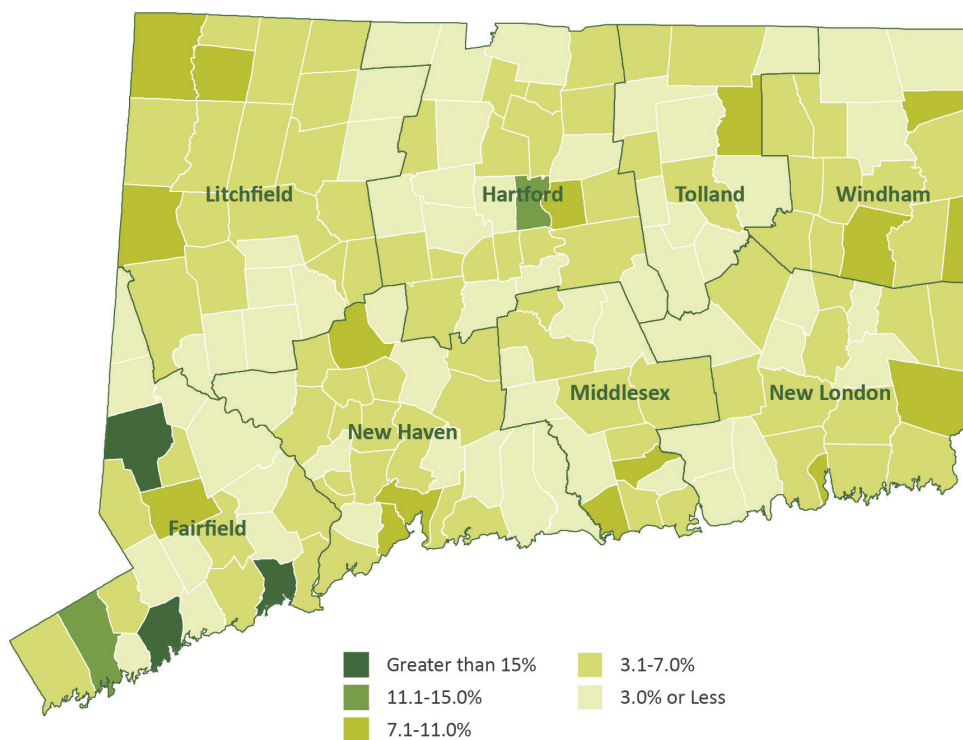
**Figure 7.5** also examines coverage rates by primary payer but by municipality. The highest proportion of uninsured people reside in Fairfield County (specifically in Danbury, Norwalk, Bridgeport, and Stamford) and the city of Hartford, the State's capital. Unsurprisingly, these are also some of our most racial and ethnically diverse communities and areas where people experience a greater burden of poor health. It is imperative that we not forget that our urban environments are hubs for employment, entertainment, and resources advancing the health of our urban neighbors is a boost for the entire State.

**FIGURE 7.4: Percentage of health insurance coverage among adults by race/ethnicity and primary payer, CT, 2018**



Source: CT DPH Health Statistics & Surveillance Section, Behavioral Risk Factor Surveillance System. Data analyzed February 26, 2019.

**FIGURE 7.5: Percentage of adults without health insurance coverage by town, CT, 2017**



Source: US Census Bureau/American FactFinder. "S2701: Selected Characteristics of Health Insurance Coverage in the United States." 2013–2017 American Community Survey. US Census Bureau's American Community Survey Office, 2019.

## Access to Primary Care

Health insurance coverage does not necessarily guarantee quality care, as provider shortages, long appointment wait times, inadequate transportation options, the lack of availability of services or culturally competent care, and high healthcare costs can also limit one’s access. People with “limited” healthcare coverage include adults who do not have a primary care provider (i.e., a personal doctor or health care provider), or who needed to see a doctor in the past year but could not because of cost.

“There’s a lot of discrimination in many of the places that we go to. Sometimes, workers at these places we go to speak Spanish but will not speak to us in Spanish. They’re prohibited to speak to us in Spanish even though they know how to speak it. Sometimes they know it and they just choose not to. Sometimes I even get discriminated against based on how I’m dressed.”

— STATE HEALTH ASSESSMENT FOCUS GROUP, HISPANIC COMMUNITY

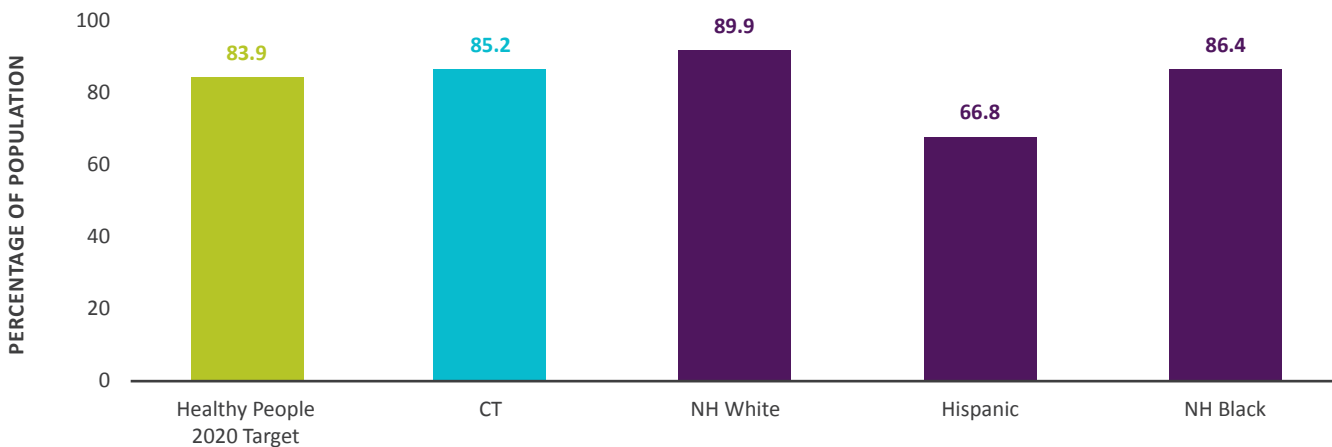
Having limited healthcare coverage can lead to unmet health needs, delays in receiving appropriate care, the inability to get preventive services, financial burdens, and preventable hospitalizations. This leads to increased healthcare costs overall statewide as emergency room care costs overall as emergency room care costs at least four times as much as other outpatient care.<sup>6</sup>

Healthy People 2020 set a national goal to increase the proportion of individuals with a usual primary care provider to 83.9%. In Connecticut, we have surpassed this benchmark, as 85.2% of adults overall have at least one primary care provider (**Figure 7.6**) but disparities exist among the Hispanic population. While the percentages of non-Hispanic White and non-Hispanic Black adults exceed the Healthy People 2020 benchmark, only two out of three Hispanic adults report having at least one primary care provider. Overall, the high number of uninsured and those with “limited” healthcare coverage among Connecticut’s Hispanic population indicate that they are disproportionately affected when it comes to healthcare access.

## Healthcare Quality

Our State is attentive to ensuring healthcare access to our residents through expanding insurance coverage, reducing access barriers, implementing innovative models for payment and service delivery reform, increasing the availability of facilities, and building the healthcare provider workforce. In support of monitoring the health of the State and informing

**FIGURE 7.6: Percentage of adults with at least one primary healthcare provider by race/ethnicity, CT, 2016**



Source: CT DPH Health Statistics & Surveillance Section, Behavioral Risk Factor Surveillance System. Data analyzed March 8, 2019.

## PROGRAM SPOTLIGHT: THE DR. KATHERINE A. KELLEY STATE PUBLIC HEALTH LABORATORY

The State Public Health Laboratory (SPHL) serves all communities in the state through the analysis of clinical specimens and environmental samples submitted by federal and state agencies, local health departments, clinical laboratories, health care providers, and water utilities. Analytical data are used to monitor for agents harmful to the public health, identify the cause of outbreaks, and assure that control measures (e.g., vaccines, antibiotics, environmental remediation) are effective. The SPHL is composed of the following sections:

- **Administrative and Scientific Support**

**Services:** provides essential support for the pre-analytical and post-analytical testing for the SPHL. This section also manages the maintenance of all of the supportive lab equipment such as refrigerators, freezers, and biological safety cabinets. The section provides daily deliveries between the SPHL in Rocky Hill to the DPH headquarters in Hartford, as well as other Hartford locations.

- **Newborn Screening:** screening of all Connecticut newborns for the presence of 64 genetic, endocrine, and metabolic inherited disorders that cause severe mental and/or physical illness or death. Through early detection and treatment, the adverse effects of these disorders can be mitigated.

- **Infectious Diseases:** tests for infectious agents in humans, animals, food and water, and provides reference testing in support of

epidemiological surveillance and outbreak investigations. Services provided include testing for infectious diseases (e.g., flu, tuberculosis, and hepatitis); emerging infectious diseases (e.g., Zika and drug-resistant pathogens); surveillance and outbreak investigations; rabies in animals when there is potential human exposure; DNA fingerprinting of foodborne and healthcare associated pathogens; and the identification of BioResponse agents.

- **Environmental Chemistry:** tests for over 100 toxic chemical agents in public drinking water supplies, private wells, rivers, lakes and streams, wastewater, spills, and soils. Other analytical testing services include testing consumer products and other materials where there is a potential for exposure to hazardous materials such as lead-based paint, monitoring of the nuclear power industry, serving on the state's nuclear response team, and maintaining preparedness and capabilities to respond to chemical and radiological events. The SPHL is designated as the State's Chemical Emergency Preparedness and Response Laboratory in the event of an accidental or intentional hazardous chemical exposure. This section also provides testing services for Connecticut's uninsured for the presence of elevated lead from exposure to lead-based paint, folk remedies, or other sources.

better healthcare, CT DPH also has the State Public Health Laboratory to identify agents that could negatively impact the public’s health and assure that control measures are effective. Many of our residents, however, still experience unmet health care needs and delays in receiving care, resulting in preventable hospitalizations and hospital readmissions and healthcare-associated infections.

### PREVENTABLE HOSPITALIZATIONS

Preventable hospitalizations are hospital stays that may have been prevented with timely, appropriate primary or preventive care.

Health conditions with high rates of preventable hospitalizations signal areas for improvement in the healthcare system.<sup>7</sup> Reducing preventable hospitalizations both reflects improvement in access to primary care and is an indicator for increased healthcare quality and hospital cost containment.<sup>8,9</sup> In 2017, preventable hospitalizations were one of ten hospital stays and generated about \$1.5 billion in charges in Connecticut.<sup>10</sup>

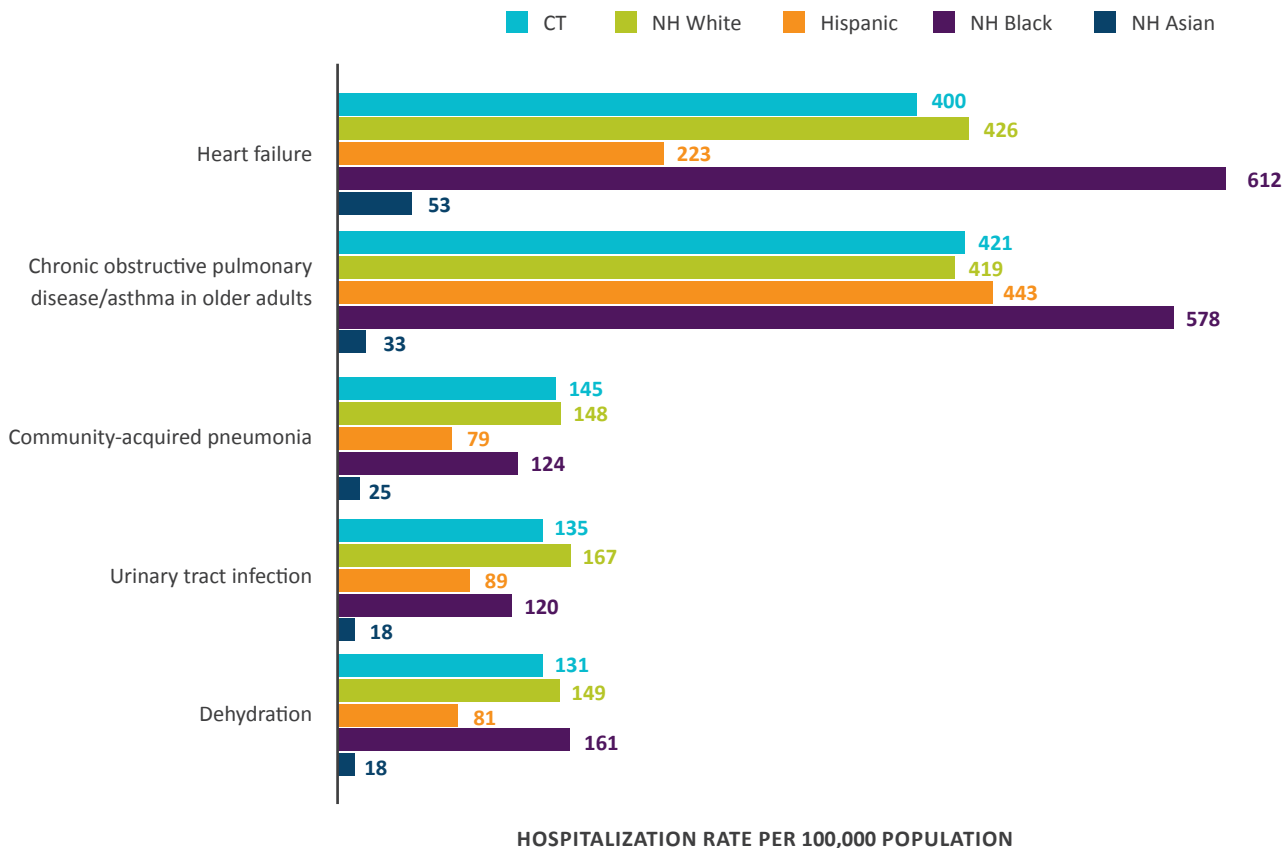
### Adults

In 2017, the top five health conditions for Connecticut adults whose hospital stay may have been prevented with timely outpatient care were:

- Heart failure,
- Chronic obstructive pulmonary disease (COPD)/asthma in older persons,
- Urinary tract infection,
- Dehydration, and
- Community acquired pneumonia.

Heart failure had the highest hospitalization rate at 421 per 100,000 adults and dehydration had the lowest rate, at 131 per 100,000 adults (**Figure 7.7**).

**FIGURE 7.7: Adult preventable hospitalization rates of the top five health conditions by race/ethnicity, CT, FY 2017**



Source: CT OHS, Hospital Inpatient Discharge Database. Data analyzed March 8, 2019.

Non-Hispanic Black adults were more likely than any racial or ethnic group in the State to experience a preventable hospitalization for heart failure, COPD/asthma in older adults and dehydration non-Hispanic White adults were most likely to experience a preventable hospitalization for pneumonia and urinary tract infection. With the exception for COPD/asthma in older persons, non-Hispanic Asian adults and Hispanic adults were least likely to experience a preventable hospitalization for any of the five conditions.

Insurance status is often a barrier to accessing primary care. Therefore, it is notable that at least 80% of the preventable hospitalizations for each of the top five conditions for adults were covered by public payers (i.e., Medicare and Medicaid) (Figure 7.8).

Still, even for the insured, high copayment and high deductibles may reduce or delay access to primary care. These reasons may explain why commercial payers covered 8% to 16% of preventable hospital stays depending on the condition.

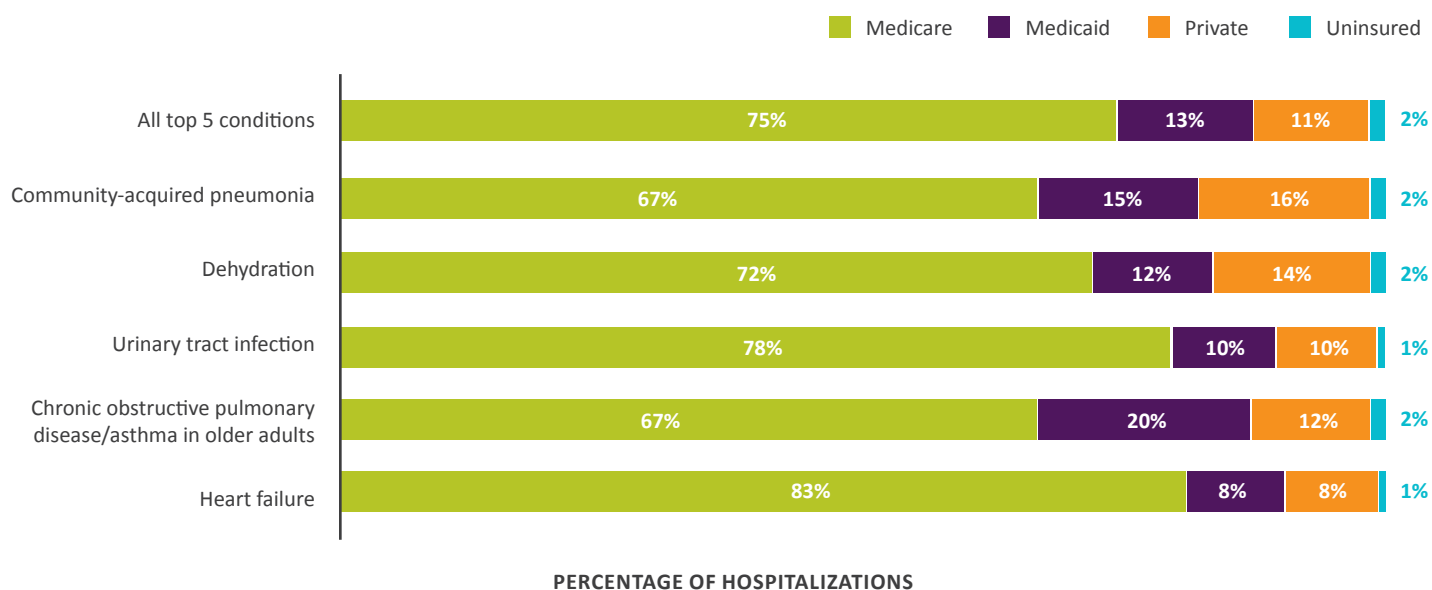
## Children

In 2017, the top five conditions leading to a preventable hospital stay for Connecticut youth under age 18 were:

- Asthma,
- Gastroenteritis,
- Perforated appendicitis,
- Urinary tract infection, and
- Diabetes with short-term complications.

Asthma had the highest hospitalization rate at 89 per 100,000 children and diabetes with short-term complications had the lowest rate, at 10 per 100,000 children (Figure 7.9). When compared to all other racial/ethnic groups, a non-Hispanic Black child was the most likely to experience a preventable hospitalization for asthma, a condition that is known to be exacerbated by insufficient quality housing and other environmental factors. A Hispanic child was more likely than a child of any other racial/ethnic group to experience a preventable hospitalization for gastroenteritis, perforated appendix, urinary tract infection, or diabetes with short-term complications.

**FIGURE 7.8: Percentage of adult preventable hospitalization of the top five health conditions by primary payer, CT, FY 2017**



**Source:** CT OHS, Hospital Inpatient Discharge Database. Data analyzed March 8, 2019.

For more data regarding asthma in Connecticut, see the Asthma section within the Chronic Disease chapter of this State Health Assessment.

As with adults, insurance status is often a barrier to children to access primary care. Therefore, it is notable that 55% to 72% of preventable hospitalizations for each of the top five conditions for children were covered by Medicaid (Figure 7.10). Still, even for children covered by commercial insurance, high copayment and high deductibles may reduce or delay access to primary care. These reasons may explain why commercial payers covered 26% to 43% of preventable hospital stays for children depending on the condition.

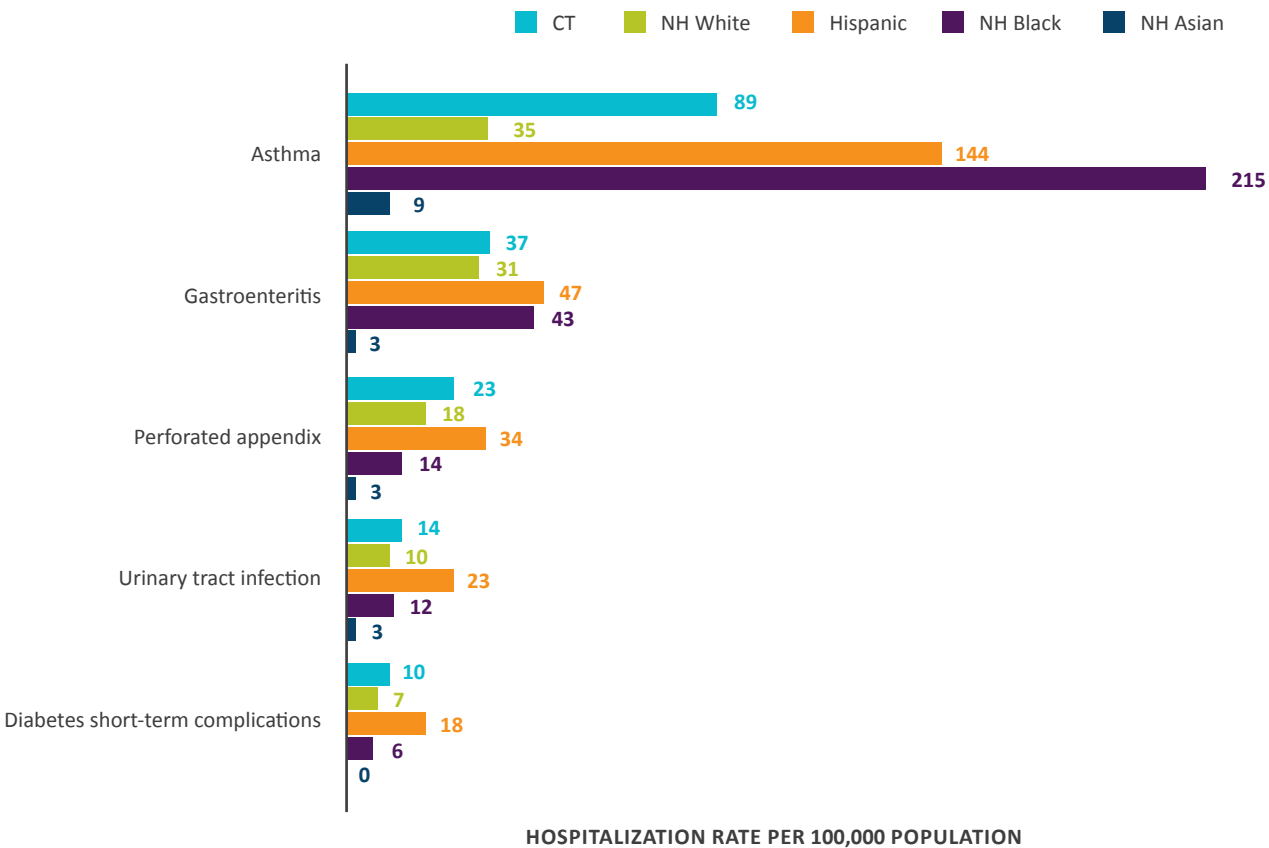
### PREVENTABLE HOSPITAL READMISSIONS

Unplanned hospital readmissions are an indicator of the quality of a healthcare system. Many unplanned readmissions are preventable and attributable to differences in hospital discharge planning, coordination between post-acute care providers and primary care physicians, as well as patients' access to primary care.<sup>9</sup>

In recent years, an average of 16% of adult discharges were readmitted to inpatient care within 30 days of the initial discharge (Figure 7.11).

While 70% of readmissions are of non-Hispanic White residents, non-Hispanic Black adults are more likely than their peers in other racial/ethnic groups to experience readmission within 30 days of a discharge (Figure 7.12).<sup>10</sup> Non-Hispanic Asian adults are least likely to be readmitted within 30 days for discharge for any health condition.

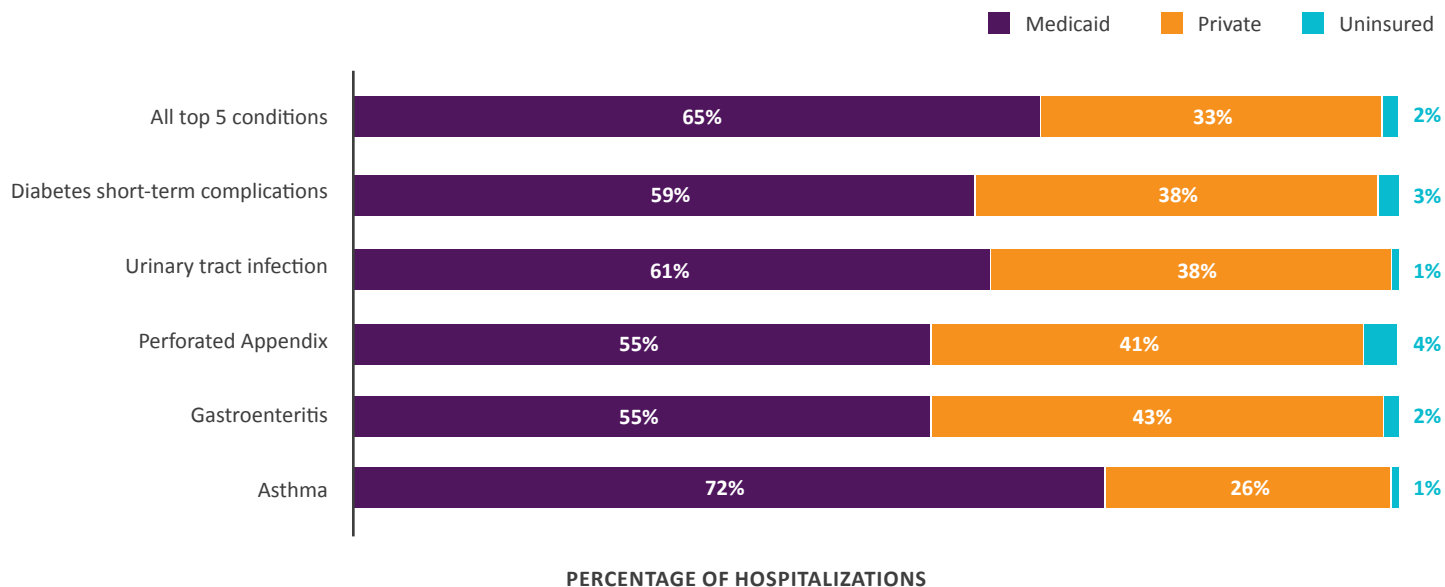
FIGURE 7.9: Pediatric preventable hospitalization rates of the top five health conditions by race/ethnicity, CT, FY 2017



Source: CT OHS, Hospital Inpatient Discharge Database. Data analyzed March 21, 2019.

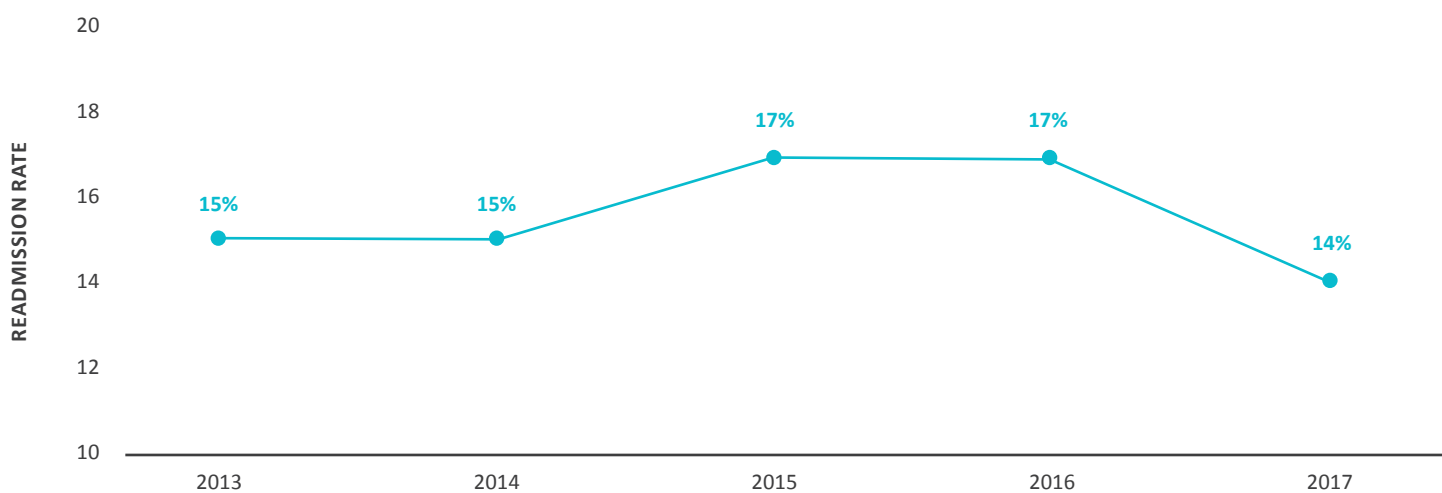


**FIGURE 7.10: Percentage of pediatric preventable hospitalizations of the top five health conditions by primary payer, CT, FY 2017**



*Source: CT OHS, Hospital Inpatient Discharge Database. Data analyzed March 21, 2019.*

**FIGURE 7.11: 30-day hospital readmission rates, CT, FY 2013–2017**



*Source: CT OHS Hospital Inpatient Discharge Database. Data analyzed March 21, 2019.*



## DATA ARE NEEDED TO DESIGN INTERVENTIONS TO REDUCE PREVENTABLE HOSPITALIZATIONS AND READMISSIONS

- Most preventable hospitalizations or hospital readmissions are experienced by Medicaid or Medicare recipients. Availability of Medicaid and Medicare claims data will facilitate designing targeted interventions to reduce these hospitalizations.
- More than one-half of private employers in Connecticut offer health insurance and two-thirds of their employees are enrolled in a self-insured health plan. Based on the 2016 US Supreme Court decision affirming the decision of the US Second Circuit Court of Appeals in *Gobeille v. Liberty Mutual Insurance Co.* (577 US 14-181), self-insured health plans covered by federal ERISA statute cannot be required to report claims data to State's APCD database. This has resulted in information gaps in the Connecticut APCD database.
- Availability of patient socioeconomic data, such as employment, housing, and English language proficiency will further assist with designing and implementing effective interventions.

**FIGURE 7.12: 30-day hospital adult readmission rate by race/ethnicity, CT, FY 2017**



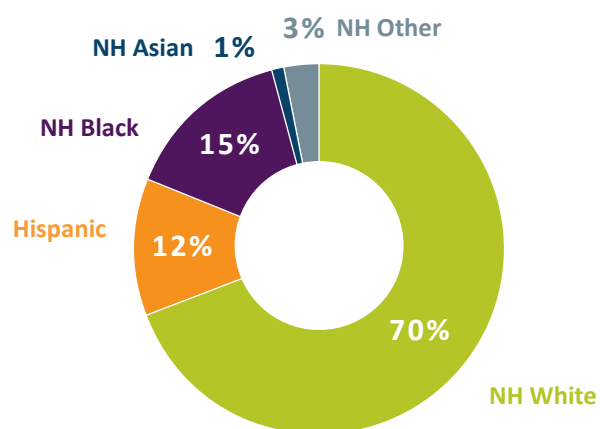
*Source: CT OHS, Hospital Inpatient Discharge Database. Data analyzed March 21, 2019.*

As with preventable hospitalizations, over three-quarters of hospital stays for adults readmitted to inpatient care were covered by a public payer (i.e., Medicare or Medicaid) (Figure 7.13). One in five readmission related hospital stays were covered by commercial insurance.

## Hospitalization and Emergency Room Visits

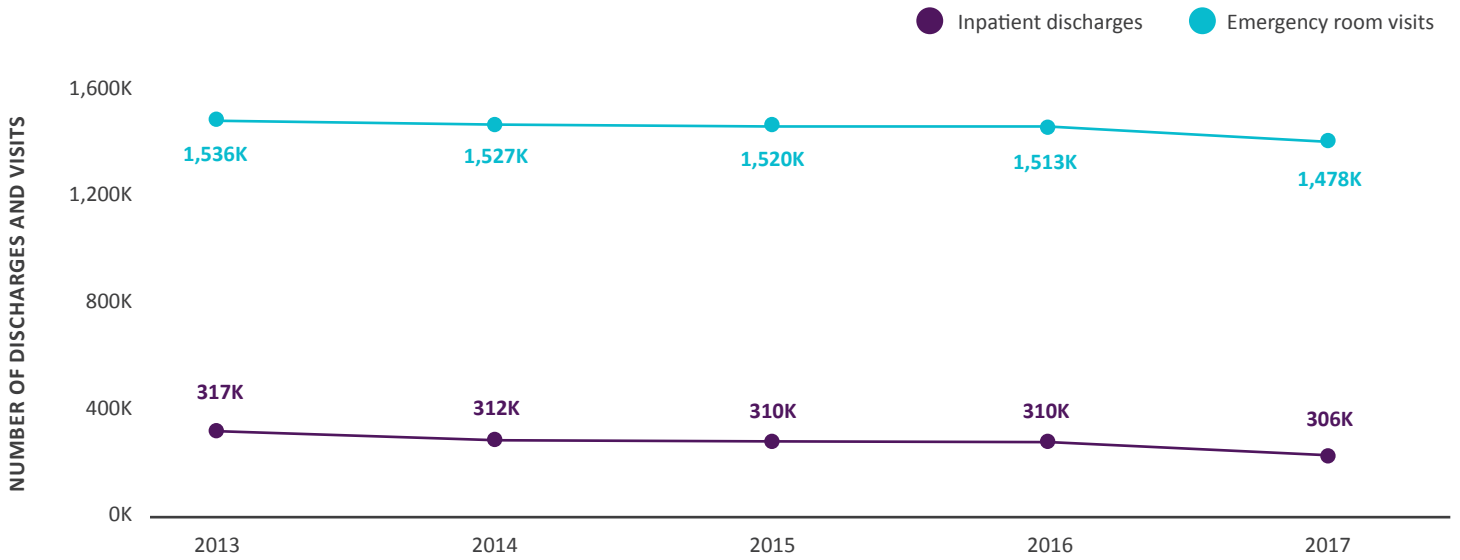
In recent years, inpatient discharges not related to pregnancy or birth have remained relatively steady, decreasing by 3.5% from 2013 through 2017 (Figure 7.14). Emergency room visits also remained steady in recent years as well; however, from 2016 to 2017, visits dropped by over 2%. When analyzed by sex, females comprise just over half of the inpatient discharges and emergency room visits.<sup>10; 11</sup>

**FIGURE 7.13: Percentage of 30-day hospital adult readmission by race/ethnicity, CT, FY 2017**



*Source: CT OHS, Hospital Inpatient Discharge Database. Data analyzed March 21, 2019.*

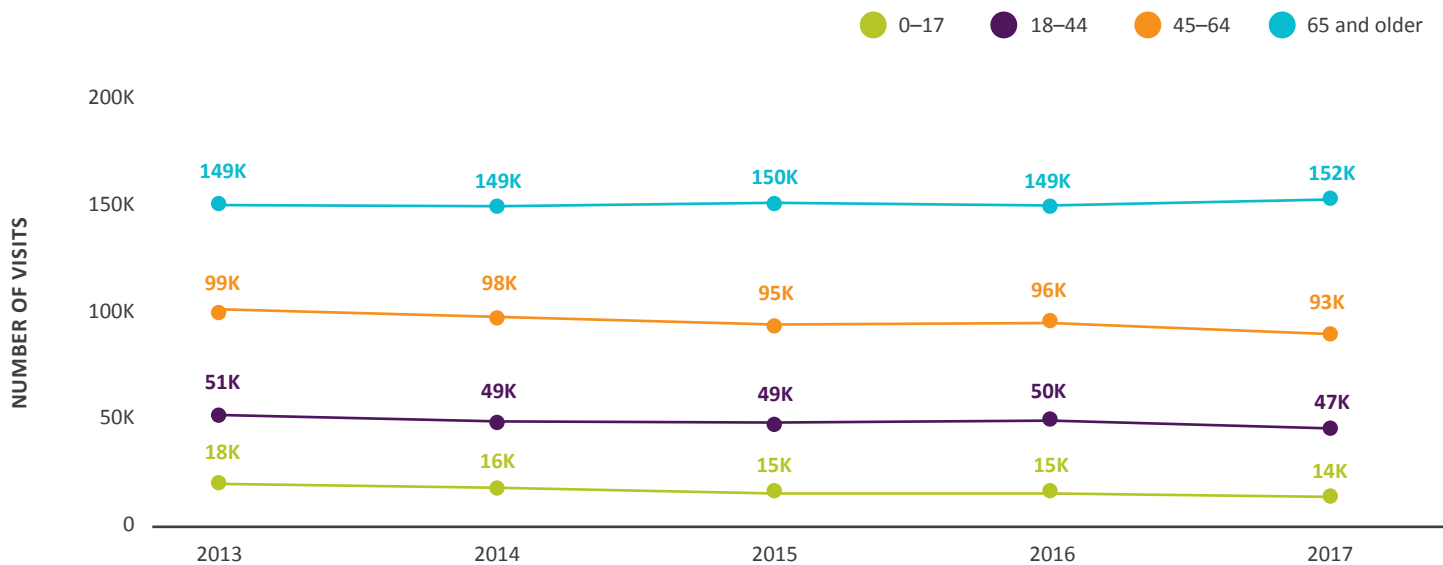
**FIGURE 7.14: Number of hospitalizations and emergency room visits for all services other than pregnancy and birth, CT, FY 2013–2017**



*Source: CT OHS Hospital Inpatient Discharge Database. Data analyzed March 21, 2019.*



**FIGURE 7.15: Number of hospitalizations and emergency room visits for all services other than pregnancy and birth, CT, FY 2013–2017**



*Source: CT OHS Hospital Inpatient Discharge Database. Data analyzed March 21, 2019.*

**TABLE 7.2: Top five causes of inpatient hospitalization for all services and discharges by age group, CT, FY 2017**

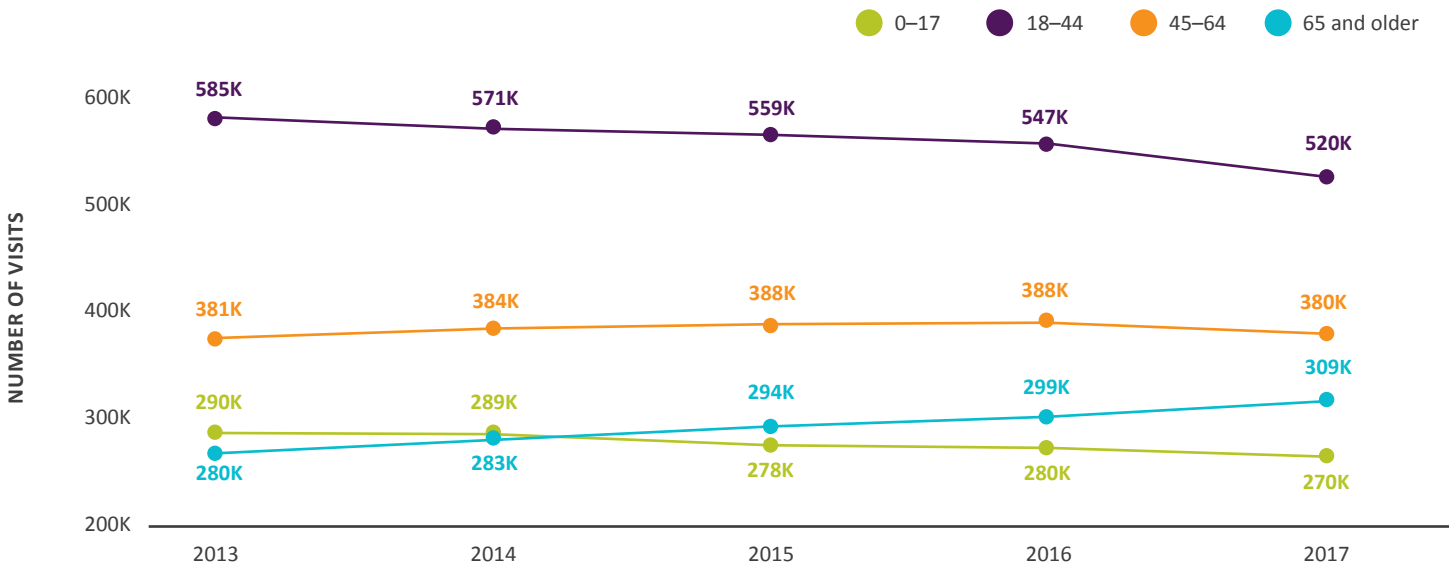
RANK	AGES 45-64	AGES 65+
1	Sepsis (Unspecified Organism)	Sepsis, Unspecified Organism
2	Alcohol Dependence with Withdrawal	Hypertensive Heart and Chronic Kidney Disease With Heart Failure and Stage 1-4 Chronic Kidney Disease, or Unspecified Chronic Kidney Disease
3	Chronic Obstructive Pulmonary Disease With Acute Exacerbation	Acute Kidney Failure, Unspecified
4	Unilateral Primary Osteoarthritis, Right Knee	Hypertensive Heart Disease With Heart Failure
5	Myocardial Infarction	Urinary Tract Infection, Site Not Specified

*Source: CT OHS, Hospital Inpatient Discharge Database. Data analyzed March 21, 2019.*

The likelihood of hospitalization increases with age, with residents ages 45 and over comprising almost four out of five hospitalizations (Figure 7.15). Residents 65+ comprise almost half of all inpatient hospitalizations, overall. Table 7.2 lists the top five causes of inpatient hospitalization for these high utilization age groups.

By contrast, residents ages 18–44 make up almost 40% of emergency room visits. Residents aged 18–64 comprise three out of five emergency room visits, with residents ages 0–17 and ages 65 and older each comprising one out of five visits (Figure 7.16). Table 7.3 lists the top five causes of emergency room visits for these high utilization age groups.

**FIGURE 7.16: Emergency room visits for all services other than pregnancy and birth by age group, CT, FY 2013–2017**



Source: CT OHS; Hospital Inpatient Discharge Database System, Emergency Department Database. Data analyzed March 21, 2019.

**TABLE 7.3: Top five leading causes of emergency room visits by age group, CT, FY 2017**

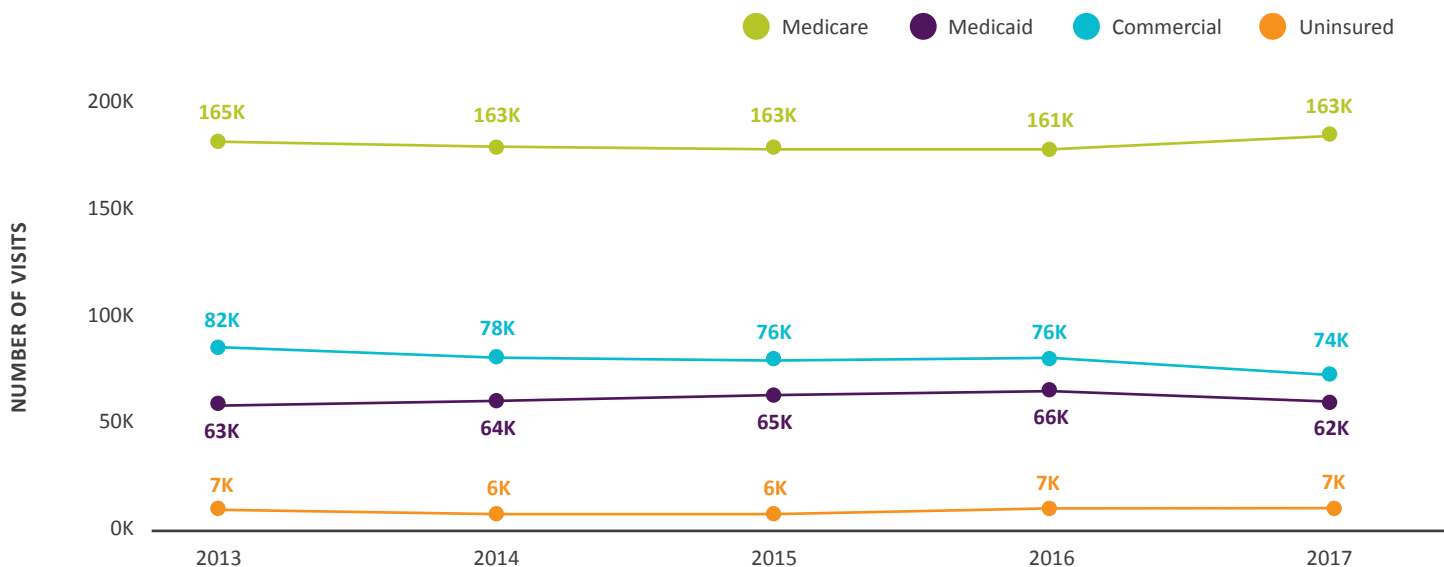
RANK	AGES 45–64	AGES 65+
1	Headache	Other Chest Pain
2	Other Chest Pain	Low Back Pain
3	Low Back Pain	Chest Pain, Unspecified
4	Acute Upper Respiratory Infection, Unspecified	Headache
5	Unspecified Abdominal Pain	Alcohol Abuse With Intoxication, Unspecified

Source: CT OHS; Hospital Inpatient Discharge Database System, Emergency Department Database. Data analyzed March 21, 2019.

Medicare recipients comprised of just over half of inpatient hospitalizations not related to pregnancy or birth (**Figure 7.17**). Residents covered by commercial insurance comprised about one quarter of all inpatient hospitalizations. Uninsured residents were the least likely to be hospitalized, comprising approximately 2% of the inpatient hospitalizations. **Table 7.4**

lists the top five causes of inpatient hospitalization for these high utilization age groups. The top five causes for Medicare recipients nearly mirror the top five causes among residents ages 65 and over (**Table 7.2**), while the top five causes for residents with commercial insurance mainly focused around birth-related hospitalizations.

**FIGURE 7.17: Hospitalizations for all services other than pregnancy and birth by primary payer, CT, FY 2013–2017**



*Source: CT OHS, Hospital Inpatient Discharge Database System. Data analyzed March 21, 2019.*

**TABLE 7.4: Top five leading causes of inpatient hospitalizations by primary payer, CT, FY 2013–2017**

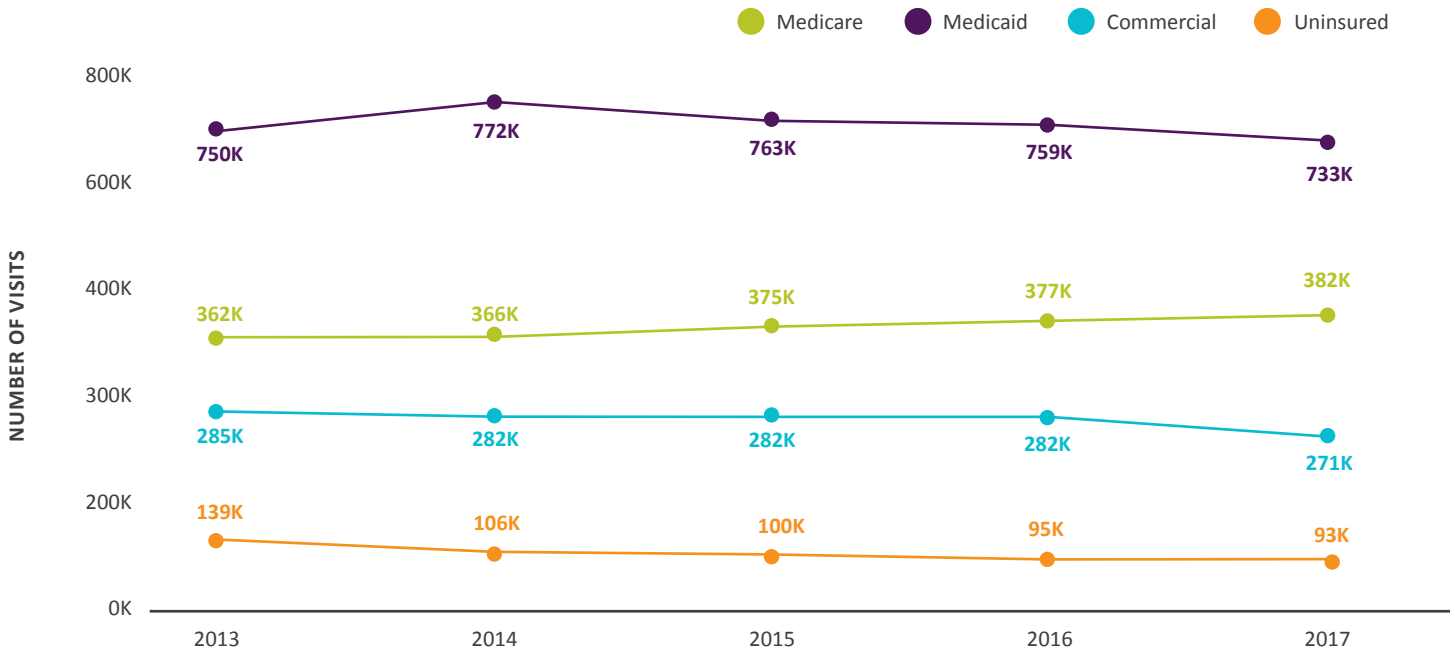
RANK	MEDICARE PAYER	COMMERCIAL PAYER
1	Sepsis, Unspecified Organism	Single Liveborn Infant, Delivered Vaginally
2	Hypertensive Heart And Chronic Kidney Disease With Heart Failure And Stage 1–4 Chronic Kidney Disease, Or Unspecified Chronic Kidney Disease	Single Liveborn Infant, Delivered By Cesarean
3	Acute Kidney Failure	Sepsis, Unspecified Organism
4	Hypertensive Heart Disease With Heart Failure	Post-Term Pregnancy
5	Chronic Obstructive Pulmonary Disease With (Acute) Exacerbation	Maternal Care For Low Transverse Scar From Previous Cesarean Delivery

*Source: CT OHS, Hospital Inpatient Discharge Database. Data analyzed March 21, 2019.*

In contrast to inpatient hospitalizations, Medicaid patients comprise approximately one in two emergency room visits (**Figure 7.18**). Medicare recipients comprise about one in four visits followed by residents with commercial insurance who comprise almost 20% of visits. Uninsured residents are again the least likely group to utilize the emergency room; however,

in comparison to inpatient hospitalizations, uninsured residents utilize the emergency room more frequently, accounting for about 10% of visits. **Table 7.5** lists the top five causes of inpatient hospitalization for these high utilization payer groups. Within the top five causes, residents with Medicaid and Medicare coverage had other chest pain in common.

**FIGURE 7.18: Emergency room visits for all services other than pregnancy and birth by primary payer, Connecticut, FY 2013–2017**



**Source:** CT OHS; Hospital Inpatient Discharge Database System, Emergency Department Database. Data analyzed March 21, 2019.

**TABLE 7.5: Top five leading causes of emergency room visits by primary payer, CT, FY 2017**

RANK	MEDICAID PAYER	MEDICARE PAYER
1	Acute Upper Respiratory Infection, Unspecified	Sepsis, Unspecified Organism
2	Headache	Urinary Tract Infection, Unspecified Site
3	Other Chest Pain	Chronic Obstructive Pulmonary Disease with Acute Exacerbation
4	Low Back Pain	Other Chest Pain
5	Acute Pharyngitis, Unspecified	Acute Kidney Failure, Unspecified

**Source:** CT OHS; Hospital Inpatient Discharge Database System, Emergency Department Database. Data analyzed March 21, 2019.



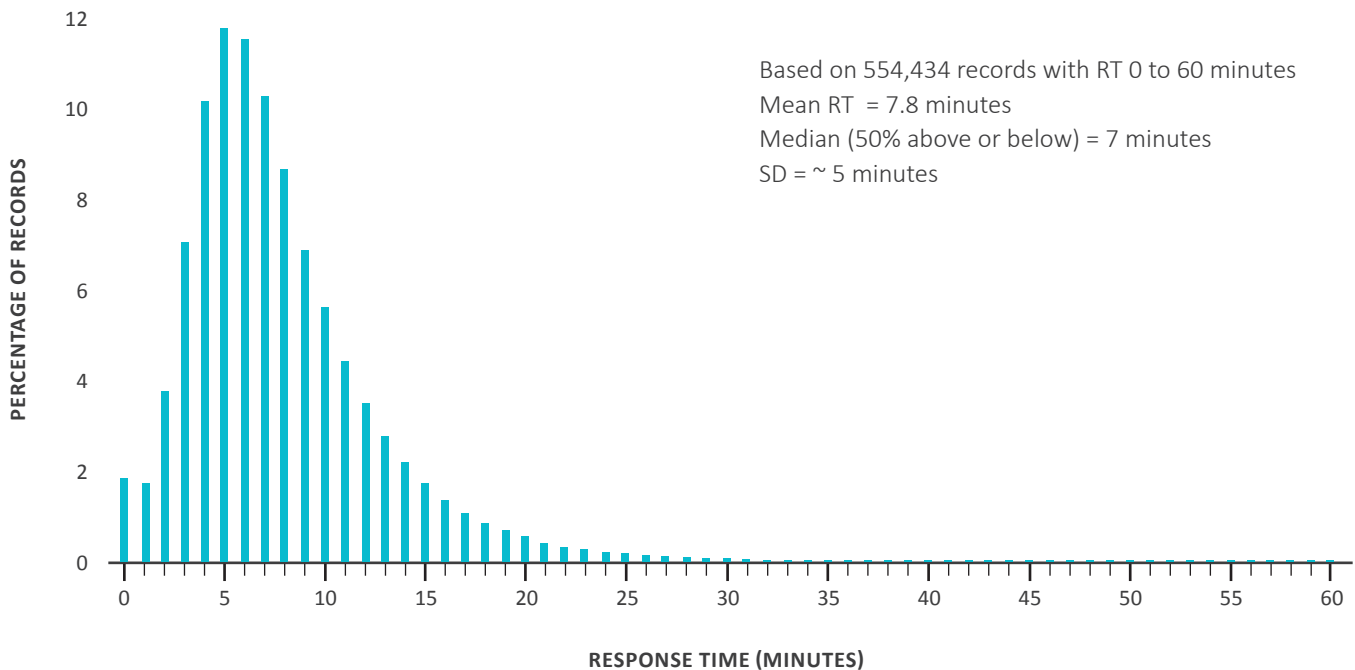
## PROGRAM SPOTLIGHT: EMERGENCY MEDICAL SERVICES

Emergency Medical Services (EMS) is a system that provides medical care when dispatched through the 911 system when an individual believes that an incident of injury or illness constitutes a medical emergency. EMS is an integral component of the healthcare system and is comprised of multiple components that support public health and safety. Successful delivery of EMS is predicated in part, on relationships with both public and private organizations that provide services, communication and transportation systems, pre-established connections with acute health care systems to

provide specialty care for trauma, stroke, heart attack and other potentially life-threatening and time sensitive medical concerns. Connecticut's acute care hospitals, known as sponsor hospitals within the EMS system, provide medical oversight for the highly trained professionals and community members who respond in emergency situations.

The following figure demonstrates the distribution of EMS response times in 2016. Response times are variable and based on what the local municipality has approved through their EMS plan.

**FIGURE 7.19: Percent distribution of EMS response times, CT, 2016**



**Source:** CT DPH Healthcare Quality and Safety Branch



## INTELLECTUAL DISABILITIES AND THE HEALTHCARE SYSTEM

While historically not the population of focus for the person-centered medical home under Healthy People 2020, adults with intellectual disabilities could potentially benefit from such a model, since:

- 52% of medical school deans and students report that graduates are “not competent” to treat people with intellectual disabilities.
- People with intellectual disabilities are 2x more likely to die before 50 than the general population.
- People with intellectual disabilities have lower rates of preventative health practices, such as dental hygiene, physical activity, preventive screening, and management of chronic conditions. Moreover, people with intellectual disabilities often struggle to find a doctor that knows how and is willing to treat them, and once they get to a doctor’s office, challenges with communication and provider knowledge about intellectual disabilities can create additional barriers.

**Source:** Special Olympics International Research and Evaluation Department. Health & Intellectual Disability. <https://media.specialolympics.org/resources/health/healthy-communities/Healthy-Communities-One-Page-Health-and-Intellectual-Disability.pdf>

## Healthcare Payment and Service Delivery Reforms

Connecticut's Office of Health Strategy (OHS) was established in 2018 with the mission to "implement comprehensive, data driven strategies that promote equal access to high quality health care, control costs, and ensure better health outcomes for the people of Connecticut." As a part of this mission, OHS is leading health systems planning for healthcare payment and service delivery reforms. These initiatives promote health insurance and coverage innovations that introduce rewards for healthy behavior and remove financial barriers to preventive care, medication adherence, chronic disease management, and use of high-value services and providers.

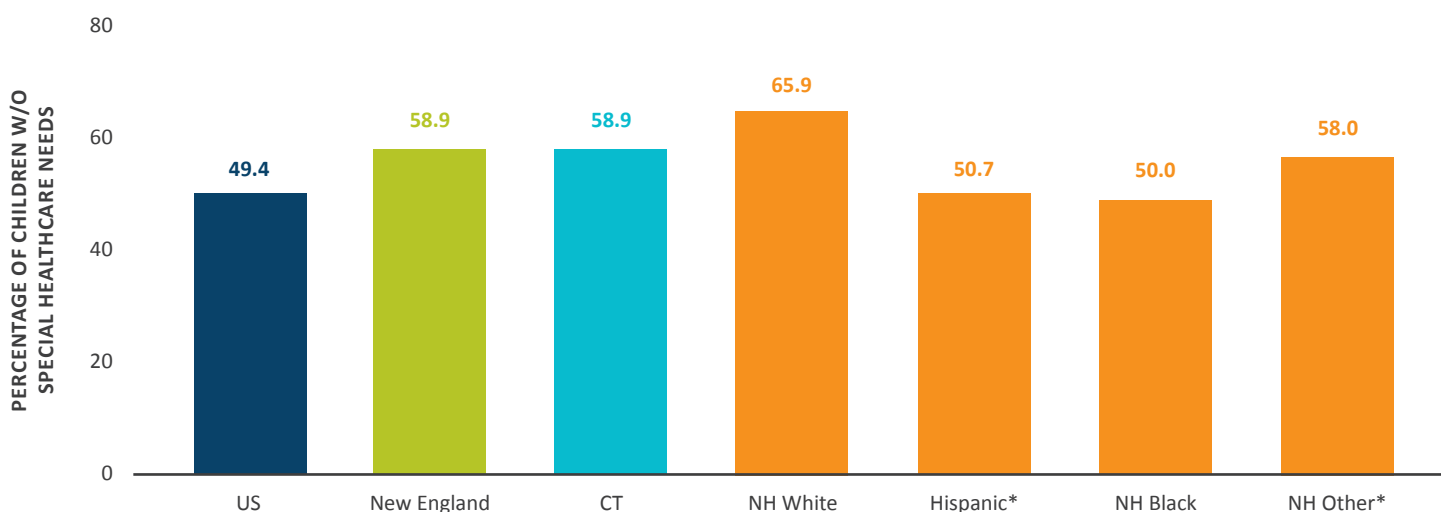
### MEDICAL HOMES

The medical home model for children and adults is a proven approach to provide comprehensive and high-quality primary care. The Patient Protection and Affordable Care Act (PPACA) emphasized the implementation and promotion of the medical home model for children and adults to improve the experience

of care, improve population health, and reduce per capita costs of healthcare. Coordinated standards of care for children and youth are associated with increased access and utilization of pediatric medical homes; as a result, health outcomes are improved, patient satisfaction is increased, and the overall cost of care is decreased over time.

According to the most recent data, Connecticut has a poignantly higher percentage of children without special healthcare needs receiving medical care within a medical home when compared to the national rate and is only slightly higher than all 6 New England states in aggregate (**Figure 7.20**). Connecticut also exhibits disparities across race and ethnicity for children receiving care within a medical home. Non-Hispanic White children receive care within a medical home 32% more than non-Hispanic Black children, 30% more than Hispanic children, and 14% more than non-Hispanic children of any race.\* Strategies to ensure equitable access to medical homes are important to identify because without interventions, children of color (i.e., Hispanic and any non-Hispanic race except White) will bear the burden of long-term negative health outcomes.

**FIGURE 7.20: Percentage of children under 18 years old without special healthcare needs receiving care within a medical home by race/ethnicity; US, New England States (HRSA Region 1) and CT; 2017–2018**



\*While each estimate is based on sample size calculations, these are flagged because of wide absolute or relative confidence intervals.

Source: US Census Bureau National Survey of Children's Health. NSCH Data. Data analyzed October 12, 2019. Retrieved from [www.census.gov/programs-surveys/nsch/data.html](http://www.census.gov/programs-surveys/nsch/data.html).

There is also evidence that these racial/ethnic disparities in medical home care may be even worse for children with special healthcare needs (CSHCN); while 39.8% of Connecticut’s CSHCN population receives care in a medical home, a medical home has been identified for 42.7% and 44.9% of CSHCN population nationally and in New England, respectively. It should be noted that before 2016, this medical home indicator was produced for all children regardless of special healthcare needs. See the Maternal Infant and Child Health chapter for more information.

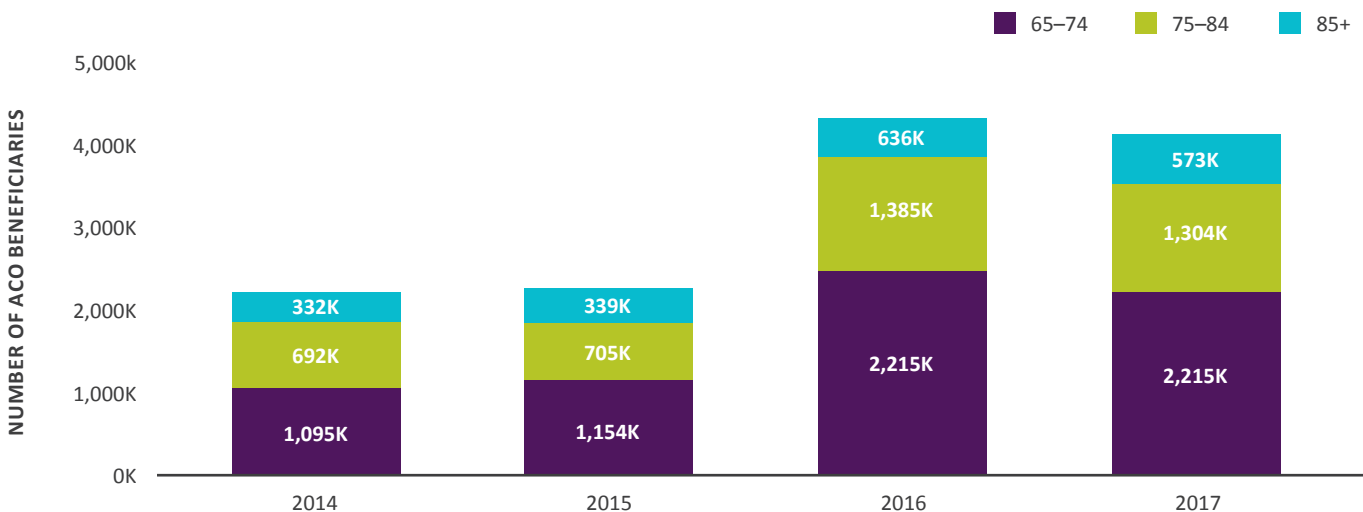
To address the underutilization of medical homes by children of color, it is important to consider whether services provided are culturally and linguistically appropriate. Connecticut households that are comprised of non-English speakers are less likely to have children that receive care within a medical home (43.2% versus 62.8% of children in English-speaking households). In addition, the proportion of Hispanic children from non-English speaking households receiving care within a medical home is lower than Hispanic children from English-speaking households (approximately 32.9% and 62.3%, respectively); considering that the rate for Hispanic children where English is the primary household language is basically the same as for non-Hispanic children, there is a case that language services are being underutilized.

Other than English, Spanish is one of the top three most spoken languages in Connecticut, which follows that ensuring adequate Spanish-speaking outreach is an important service improvement to address these disparities in attaining a medical home for children.

### ACCOUNTABLE CARE ORGANIZATIONS

Accountable Care Organizations (ACOs) are voluntary networks of health care provider organizations coordinating care for patients attributed by public or commercial payers. These networks manage the full range of health services and acquire responsibility for the overall costs and quality of care of specific populations. This form of service delivery increases coordination and quality of care, and reduces healthcare costs. ACOs exist in many forms, including large integrated delivery systems, physician-hospital organizations, primary care groups, multi-specialty practice groups, independent practice associations, and interdependent virtual networks of physician practices. ACOs use a shared savings contract arrangement that help better manage the increased burden of chronic conditions through the integration of health services. The increased utilization of ACOs reduces costs to patients and health systems by monetizing prevention efforts and increasing coordination.

**FIGURE 7.21: Accountable Care Organization (ACO) beneficiaries by age group, CT, 2014–2017**



**Source:** Centers for Medicare and Medicaid Services. Shared Savings Program Accountable Care Organization. Data analyzed March 8, 2019. Retrieved from [www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/sharedsavingsprogram/program-data](http://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/sharedsavingsprogram/program-data).



## PROGRAM SPOTLIGHT: MEDICAL HOME INITIATIVES

There are currently 3 Medical Home initiatives partnering with CT DPH throughout the State to improve health outcomes of our most vulnerable children — those who live with physical, developmental or behavioral conditions.

- Connecticut Medical Home Initiative for Children & Youth with Special Health Care Needs
- Connecticut Medical Home Initiative at FAVOR, Inc.
- Connecticut Collaborative to Improve Autism Services

ACOs are a promising approach to advance health equity in Connecticut to the extent that they serve low-income and older populations. The continued use of integrated and cost saving services can reduce the disease burden to these populations and reduce our State's health care costs. Adoption of the ACO model has extended from Medicare to Medicaid and Commercial health plans, expanding the opportunity to better serve beneficiaries across payers and regions of the State.

Based on the Medical Home Model, the Connecticut Department of Social Services (DSS) began implementing the PCMH+ program in January 2017. PCMH+ aims to improve Medicaid members overall health experience through added care coordination, behavioral health integration, and shared savings. Examples of program activities include assisting with access to healthy food, transportation to appointments, and assistance in finding community agencies that support housing or employment.<sup>12</sup>

More than 85% of our State's primary care community of providers is organized as an ACO. With the increase of Connecticut-based ACOs from four to six between 2015 and 2016, the healthcare utilization by ACO beneficiaries nearly doubled (**Figure 7.21**) and dropped only by 6% in 2017.

## PROGRAM SPOTLIGHT: STATE INNOVATION MODEL

- Vision: Establish a whole-person-centered healthcare system that improves community health and eliminates health inequities; ensures superior access, quality, and care experience; empowers individuals to actively participate in their health and health care; and improves affordability by reducing healthcare costs.
- The State Innovation Model (SIM) program supports the development and implementation of a state-led, multi-payer healthcare payment and service delivery model to promote healthier people, better care, and smarter spending.
- SIM is advanced through Connecticut's Office of Health Strategy.

## PROGRAM SPOTLIGHT: PRIMARY CARE MODERNIZATION INITIATIVE

- Vision: Combine new practice capabilities with flexible payment methods and build on a strong foundation of patient-centered, relationships-based medicine.
- The Primary Care Modernization Initiative (PCMI) convenes multiple payers, increases primary care spending to enable sustainable change, and maximizes flexibility to support innovation.
- PCMI is advanced through Connecticut's Office of Health Strategy.

## PROGRAM SPOTLIGHT: HEALTH ENHANCEMENT COMMUNITIES (HECS)

- Vision: HECs will be collaborative entities that include community members and partners from multiple sectors, such as community-based organizations, health care providers, Local Health Departments, local government, social services agencies, schools, housing agencies, and others.
- The HEC Initiative has four ambitious but achievable goals: a) make Connecticut the healthiest state in the country, b) achieve health equity for all, c) make Connecticut the best state for children to grow up, d) slow the growth of Connecticut's health care spending
- All HECs will focus on the following two health priorities; a) To improve child well-being in Connecticut pre-birth to age eight years and b) to improve healthy weight and physical fitness for all Connecticut residents.

Data on attributed population to individual ACOs is not readily available from across the spectrum of health plans. And because ACOs service areas may go beyond state boundaries, it is also difficult to determine in which states beneficiaries reside, as well to discern the number of Connecticut beneficiaries served by the various ACOs. Recognizing these limitations can inform future data systems improvements.

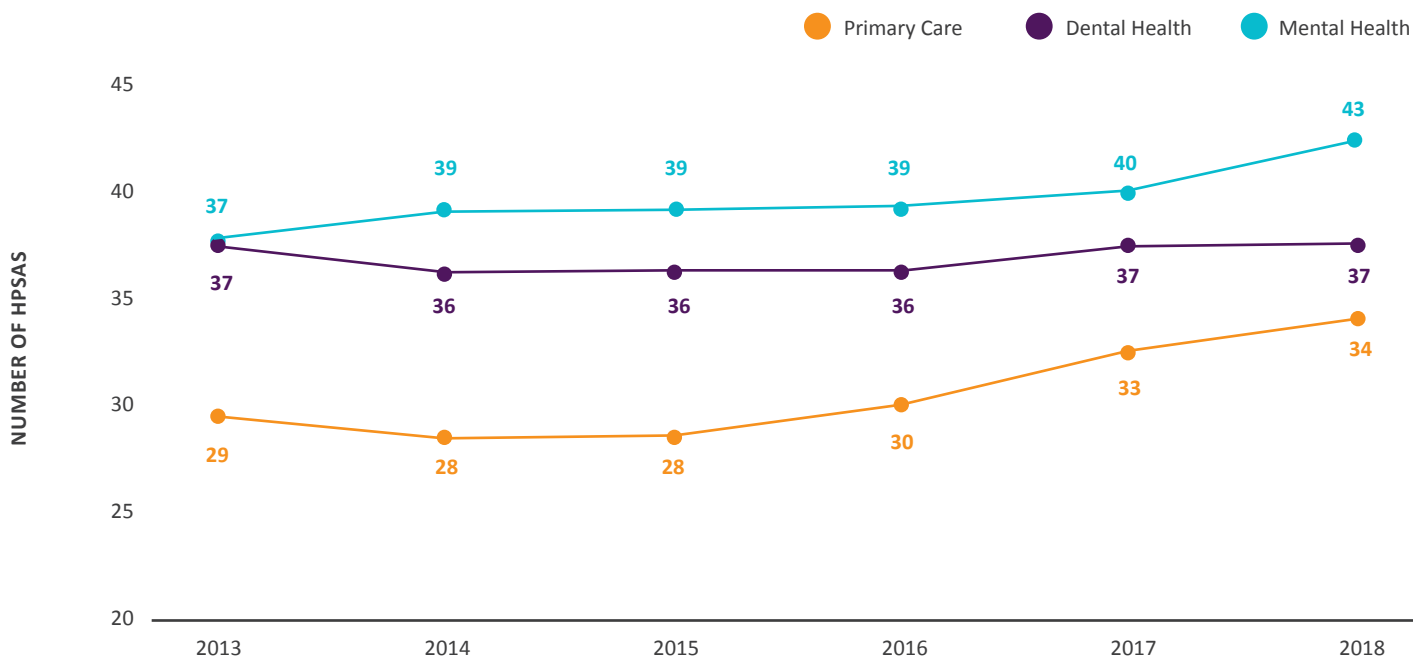
## Health Professional Shortage Areas

Despite our State's strong healthcare system, there are also federally designated geographic areas that meet the criteria for a primary care health professional shortage area (HPSA). HPSAs indicate a lack of access in specific geographic areas. HPSAs include urban and rural geographic areas, population groups, and facilities with shortages of health professionals. Every three years, HPSAs are reviewed and re-designated. The degree of shortage in a community is determined by a scoring system that utilizes data such as the patient to provider ratio, average distance to a primary care provider, low birth weight, and other socioeconomic determinants of health.

“There’s the lack of competency that medical providers have and you can’t be surprised by it. I have like a heterosexual primary care physician who did not know what PrEP was [...] It makes me less likely to want to seek out another provider that isn’t LGBT because otherwise they won’t know what I’m talking about or what I’m going through.”

— STATE HEALTH ASSESSMENT FOCUS GROUP,  
LGBTQ YOUNGER ADULTS

FIGURE 7.22: Health Professional Shortage Areas by medical discipline, CT, FY 2013–2018



**Source:** Health Resources and Services Administration. HRSA Fact Sheets. Data retrieved on September 9, 2019 from <https://data.hrsa.gov/data/fact-sheets>.

## HPSAS IN CONNECTICUT

Over the past five years, HPSA designations have increased for primary care and mental health professionals and remained stable for dental health professionals (**Figure 7.22**).

## RESOURCES TO ADDRESS HEALTH PROFESSIONAL SHORTAGE AREAS

It is critical to identify HPSAs to advance health equity; by doing so, funding and resources can be better allocated based on the need for services (e.g., prioritizing populations experiencing acute healthcare shortages, addressing cultural and linguistic barriers, transportation barriers, etc.). Over 30 federal programs use the HPSA designation to identify areas, populations, or facilities eligible to receive federal aid and assistance related to medical underservice. Categories of aid and assistance include:

- Grants to support primary care services;
- Support for the training and recruitment of health professionals;
- Enhanced payment through Medicare and Medicaid; and
- Immigration policies for health professionals.

Many entities are working to reduce primary care shortages, including Connecticut's Primary Care Association, Connecticut Hospital Association, and the Office of Rural Health.

As resources are allocated to address the needs of HSPAs, it will be important to monitor and evaluate the impact to these areas to identify which health initiatives effectively reduce barriers to care.

## NATIONAL HEALTH SERVICE CORPS (NHSC)

The National Health Service Corps (NHSC), founded in 1972, is designed to bring primary care, dental, and mental health workers to HPSAs. This program is managed by the Bureau of Health Workforce, Health Resources and Services Administration at the Department of Health and Human Services. In exchange for their medical expertise, the Corps helps these professionals alleviate the financial burden accumulated during their education. The NHSC effectively addresses the needs of HPSAs by ensuring access to health care for everyone, regardless of their ability to pay, and caring for the most vulnerable people who may otherwise go without care. Therefore, ensuring the strength of the NHSC is an important strategy to advance health equity.

In our State, the Connecticut Primary Care Office at DPH directly oversees the designation of HPSAs and ensures their accurate and timely designation to inform the placement of NHSC participants to locations and communities of highest need. Currently, there are 217 NHSC participants across 101 sites in our State (**Figure 7.23**).

### Of these participants:

- 204 are enrolled in its Service Loan Repayment Program, where licensed primary care clinicians can receive loan repayment assistance in exchange for serving at least 2 years of service at a designated HPSA;
- Eight are enrolled in its Scholarship Program, which supports students pursuing eligible primary care health profession training in return for committing at least two years of full-time service at a designated HPSA; and
- Five are enrolled in its Students to Service Program, which provides loan repayment assistance for students in their last year of medical or dental school in return for at least three years of service at a designated HPSA.

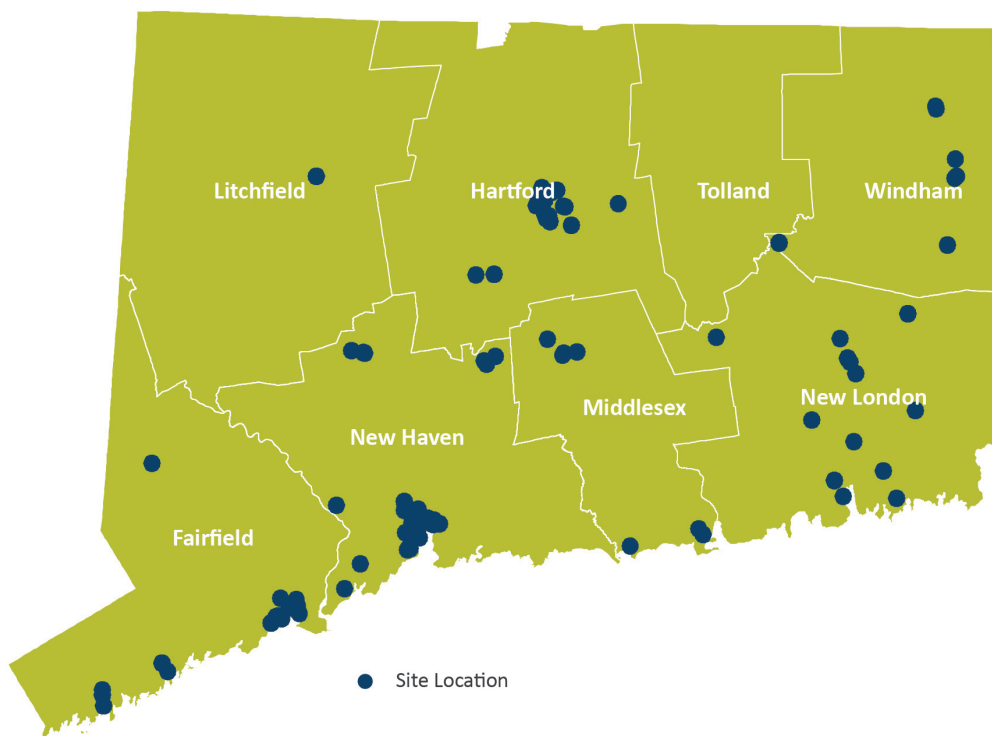
To combat the nation's opioid crisis, the Health Resources and Services Administration (HRSA) launched the NHSC Substance Use Disorder Workforce Loan Repayment Program (SUD Workforce LRP) to support the recruitment and retention of health professionals needed in underserved areas to expand access to substance use disorder treatment and prevent overdose deaths. Finally, NHSC also invests in providing rural areas with telehealth access.

Market forces often drive salary incentives for clinicians to work in non-HPSA settings. Yet, over the last decade, the overall number of NHSC clinicians increased by 5.5-fold, which translates to increased care options for the populations served (**Figure 7.24**). Connecticut's increase in NHSC participants exceeded that of the US, where NHSC clinicians tripled over the same period.

In Connecticut, NHSC and Nurses Corps members also serve areas designated as Mental Health HPSAs to provide critical supports to address the opioid epidemic. Overall, total Nurse Corps participants in Connecticut has increased steadily over the past three years (**Table 7.6**).

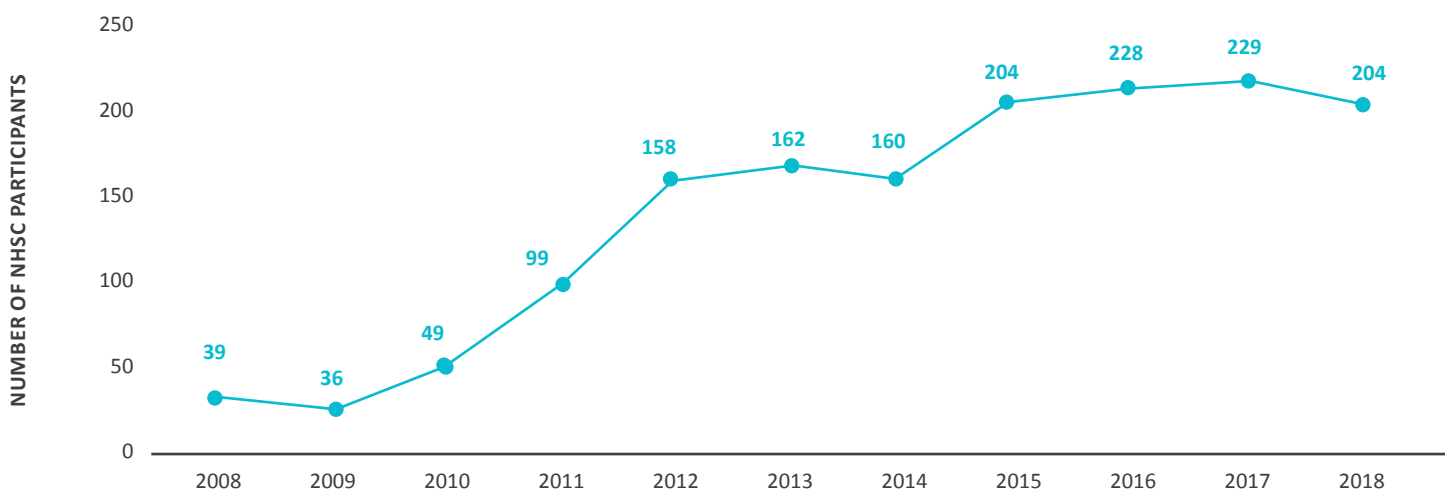


**FIGURE 7.23: National Health Service Corps (NHSC) participant sites, CT, 2018**



*Source: HRSA Bureau of Health Workforce Portal, NHSC Field Strength Report. Data retrieved on March 11, 2019.*

**FIGURE 7.24: Number of clinicians in NHSC, CT, FY 2008–2018**



*Source: HRSA Bureau of Health Workforce Portal, NHSC Field Strength Report. Data retrieved on March 11, 2019.*

## WORKFORCE SPOTLIGHT: CONNECTICUT'S NURSING WORKFORCE AND PIPELINE

### Our State's nursing pipeline, by the numbers:

- In 2017, 1,038 nursing faculty educated 10,962 students.
- In 2016, 3,120 total nursing graduates across all educational levels in 2016.
- In 2016, 90% of 250 Nurse Practitioner (NP) Graduates were prepared to provide primary care across the State.
  - + 128 Family NPs
  - + 46 Adult Gerontology: Primary Care NPs
  - + 22 Adult Gerontology: Acute Care NPs
  - + 21 Pediatric Primary Care NPs
  - + 27 Psychiatric Mental Health Across Lifespan NPs

**Source:** Connecticut Nursing Collaborative-Action Coalition. *Educating Connecticut Nurses — Pipeline to Practice 2017.* [www.ctleaguefornursing.org/upload/1827099517597a379f28e06.pdf](http://www.ctleaguefornursing.org/upload/1827099517597a379f28e06.pdf)

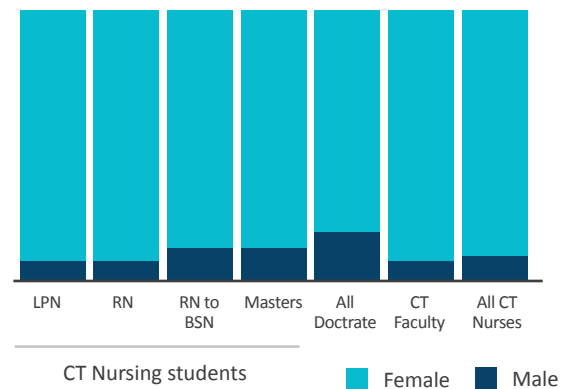
### Our State's nursing workforce:

- 57% of our registered nurses (RNs) are ages 50+ and 86% are White.
- The majority of nursing students and faculty are female.

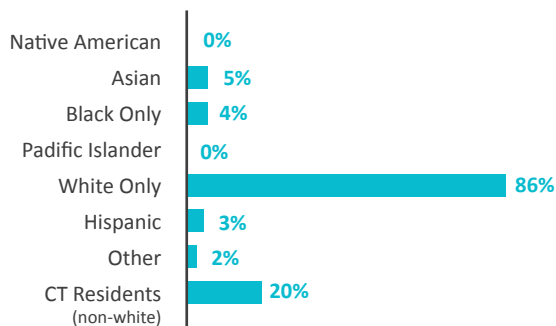
### Key Takeaway:

It is important to diversify and fill our nursing pipeline.

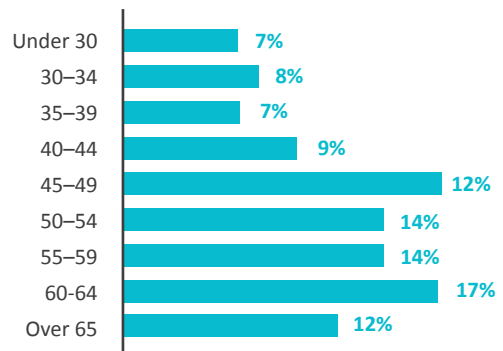
GENDER OF STUDENTS & FACULTY



RACE/ETHNICITY OF CT RNS



57% OF CT RNS ARE AGES 50+



**TABLE 7.6: Number of Nurse Corps participants and award amounts, CT, FY 2016–2018**

FISCAL YEAR	NUMBER OF NURSE CORPS STUDENTS IN CONNECTICUT	TOTAL AWARD AMOUNT FOR STUDENTS
2016	8	\$ 745,594.89
2017	15	\$ 1,408,572.56
2018	21	\$ 1,536,879.39

**Source:** US Department of Health and Human Services, and HRSA. (2016–2018) Report to Congress: Nurse Corps Loan Repayment and Scholarship Programs Annual Report. [www.hrsa.gov/sites/default/files/hrsa/about/organization/bureaus/bhw/reportstocongress/2016-nurse-corps-rtc.pdf](http://www.hrsa.gov/sites/default/files/hrsa/about/organization/bureaus/bhw/reportstocongress/2016-nurse-corps-rtc.pdf)

## DISTRIBUTION OF HEALTHCARE FACILITIES

Our State has a robust system of health care facilities with distinct structures to meet the varied needs of the population.

- A Hospital or Medical Center is an institution that is built, staffed, and equipped to provide a broad range of services: the diagnosis of disease; for the treatment, both medical and surgical of the sick and injured and for the housing of patients during this process. Some hospitals also provide maternity and newborn care, behavioral health and rehabilitation services. Hospitals may serve as centers of research, biotechnology and teaching of medical staff.
- A Hospital Outpatient Center (or Clinic) provides clinically-integrated observation, diagnostic and treatment services for patients who do not need to be admitted to the hospital. Surgical Outpatient Clinics provide minor surgical procedures.
- Urgent Care Centers provide access to care for an urgent illness or injury that requires care within 24 hours but is not life-threatening and does not require an emergency department visit. These centers are open for extended hours such as evenings, weekends and some holidays.
- School-based Health Centers (SBHC) provide an interdisciplinary model of co-located medical and behavioral health services to students in elementary, middle and high schools.
- Community Health Centers (CHC), also known as Federally Qualified Health Centers (FQHCs) provide coordinated medical, dental, behavioral health and lab services to people of all ages regardless of ability to pay. All Connecticut CHCs have multiple sites.

In terms of geographic distribution, Northwest Connecticut — and its mostly rural communities — has the least number and smallest concentration of healthcare facilities, as highlighted in **Figure 7.25**.

---

“Appropriate mental health care is a big issue, especially [in places] [where you] can drive an hour to see a therapist for 45 minutes so that’s an issue.”

---

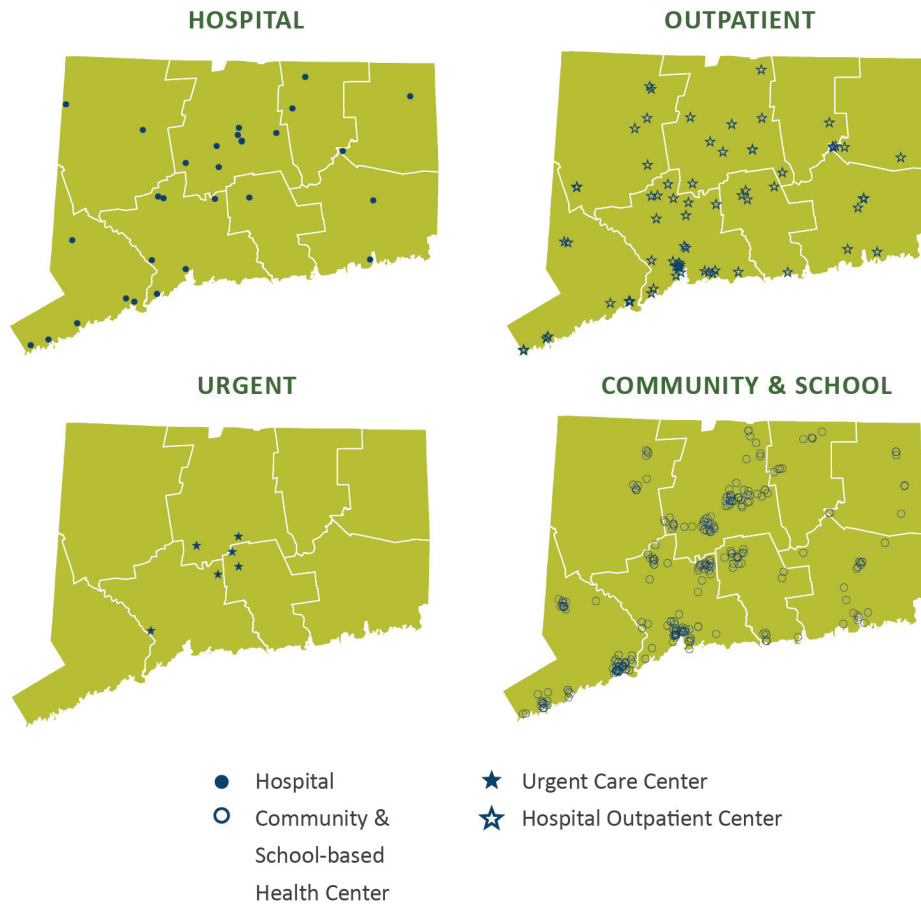
— STATE HEALTH ASSESSMENT FOCUS GROUP,  
FAMILIES AFFECTED BY AUTISM

---

## Pharmacy Workforce and Systems

People are living longer with multiple co-morbidities that require increased access to and use of medicines both nationally and in Connecticut. As the primary dispensers of medications, pharmacists serve an important role in our healthcare system. Pharmacists dispense medication, counsel patients on the use of prescription and over-the-counter medication, advise patients about general health topics, and often complete third-party insurance forms and other paperwork, serving as an important liaison between the patient and a complex insurance regulatory system. The pharmacy workforce directly impacts individual behavior (medication adherence), medical literacy (drug effects and interactions), access to health care (increased role in vaccination and clinical duties), and the built environment (pharmacy staff operating in a variety of settings).

FIGURE 7.25: Geographic distribution of healthcare facilities, CT, 2017



Source: CT OHS, Health Systems Planning. Data analyzed March 5, 2019.

## WORKFORCE DEMAND AND CAPACITY

The need to expand the pharmacy workforce is increasing. Retailers are expanding their pharmaceutical services, scientific advancements continue to develop new medications and therapies, and as more people in the US are insured, prescription requests will likely also increase.

In addition, both pharmacy technicians and aides (e.g., clerks or cashiers) are also needed for direct patient care and support. While pharmacy aides typically answer telephones, handle money, stock shelves, and perform clerical duties, they increasingly work and collaborate with technicians to refer questions related to prescriptions, drug information, or health matters to a pharmacist.<sup>13</sup>

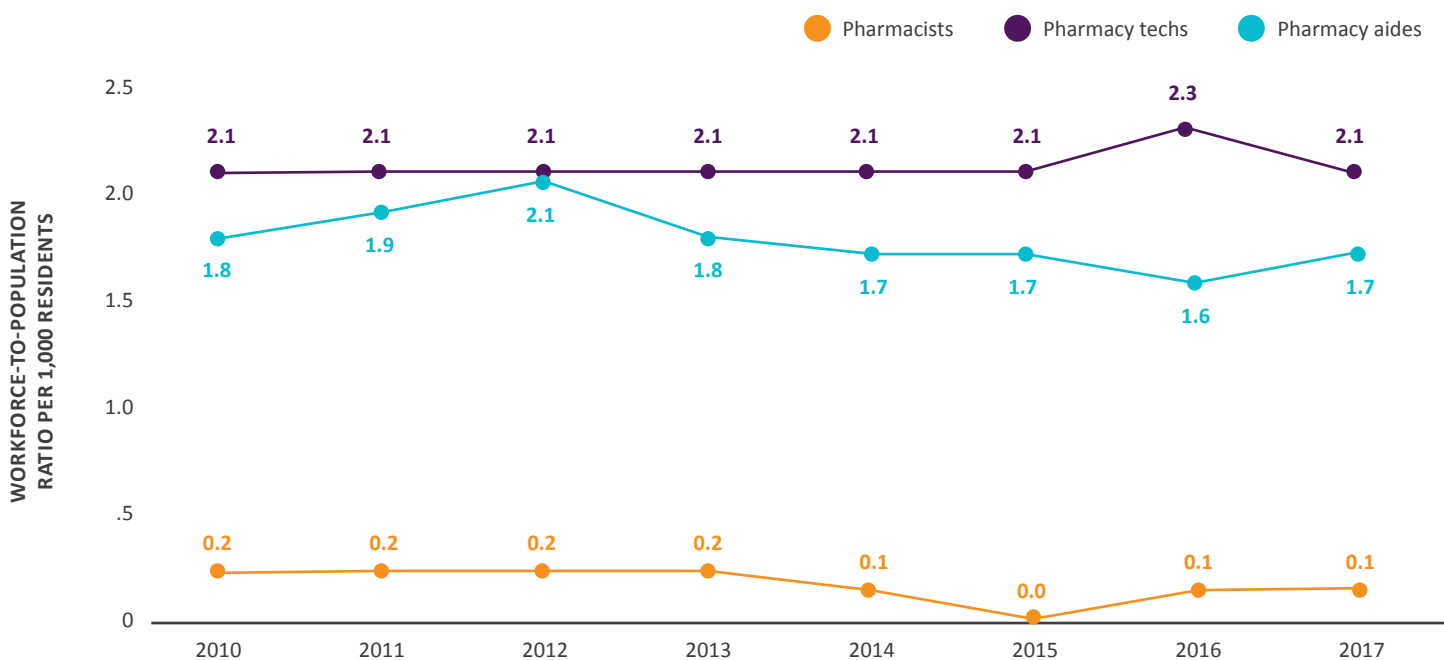
In our State, there is a relative workforce capacity shortage of the pharmacy workforce. For pharmacists, reasons for this include the cost of schooling, training, and accreditation, and high education requirements for non-US pharmacists. For pharmacy technicians and aides, non-standardized training and schooling limits their ability to be confidently delegated complex duties.

Currently, Connecticut has approximately 2,810 full-time equivalent (FTE) pharmacists, comprising less than 1% of the

national pharmacist workforce. For all pharmacy occupations (i.e., pharmacists, pharmacy technicians, and pharmacy aides), Connecticut has a smaller percentage of employment when compared to the rest of the US. Connecticut has approximately 1.7 pharmacists for 1,000 residents, compared to the national average of 2.21 (Figure 7.26). Connecticut's pharmacy workforce has remained relatively steady across the last decade, despite our steadily increasing population and changes in total number within our workforce.

Increasing and strengthening this workforce, specifically for pharmacists and pharmacy technicians, could provide opportunities to advance health equity. Nationally, the estimated annual cost of drug-related morbidity and mortality resulting from non-optimized medication therapy was \$528.4 billion, equivalent to 16% of total US healthcare expenditures in 2016.<sup>14</sup> In addition, the national opioid epidemic and other drug-related adverse health outcomes underscore the necessity of the pharmacy workforce, as they control access to medicines and medical expertise. It is also important to consider where the pharmacy workforce is concentrated in order to ensure equity in access to medications as residents who live in the more rural parts of our State are more dependent on transportation and local public transportation options in Connecticut are primarily designed for use within and around our urban centers.<sup>15</sup>

FIGURE 7.26: Active pharmacy workforce-to-population ratio, CT, 2010-2017



Source: United States Department of Labor Bureau of Statistics, Occupational Employment Statistics. Data analyzed March 18, 2019.

## CONNECTICUT PRESCRIPTION MONITORING REPORTING SYSTEM

The national opioid epidemic highlights the importance of our pharmacy workforce and the systems that support them. Beginning in the 1990s, increased opioid prescriptions have led to the misuse of prescription and non-prescriptive opioids among Americans. This trend accelerated in 2013 with the surge of fentanyl (a powerful synthetic opioid) use, culminating in the declaration of a national public health emergency in October 2017. In response to the opioid crisis, Connecticut's Department of Consumer Protection (CT DCP) established the Connecticut Prescription Monitoring Reporting System (CPMRS), a centralized database to collect prescription information for schedules II, III, IV, and V controlled substances that are legally dispensed. The CPMRS aims to provide a complete picture of a patient's controlled substance use, allowing prescribers to review drug histories and prescriptions by other providers. The CPMRS ultimately intends to improve patient care, reduce prescription abuse, addiction, and overdose, and allow providers to properly manage a patient's treatment, including the referral of a patient to drug abuse or addiction services, when appropriate.

### Prescriber Registration and Utilization

Prescriber registration into and utilization of the CPMRS system provides a gauge for how well our State is responding to the opioid crisis. Increased prescriber utilization of the CPMRS would reduce overprescribing of opioids and other habit-forming prescription medications, and therefore, reduce conditions that lead to addiction and death, as well as the resultant social and economic stresses that many of our communities endure.

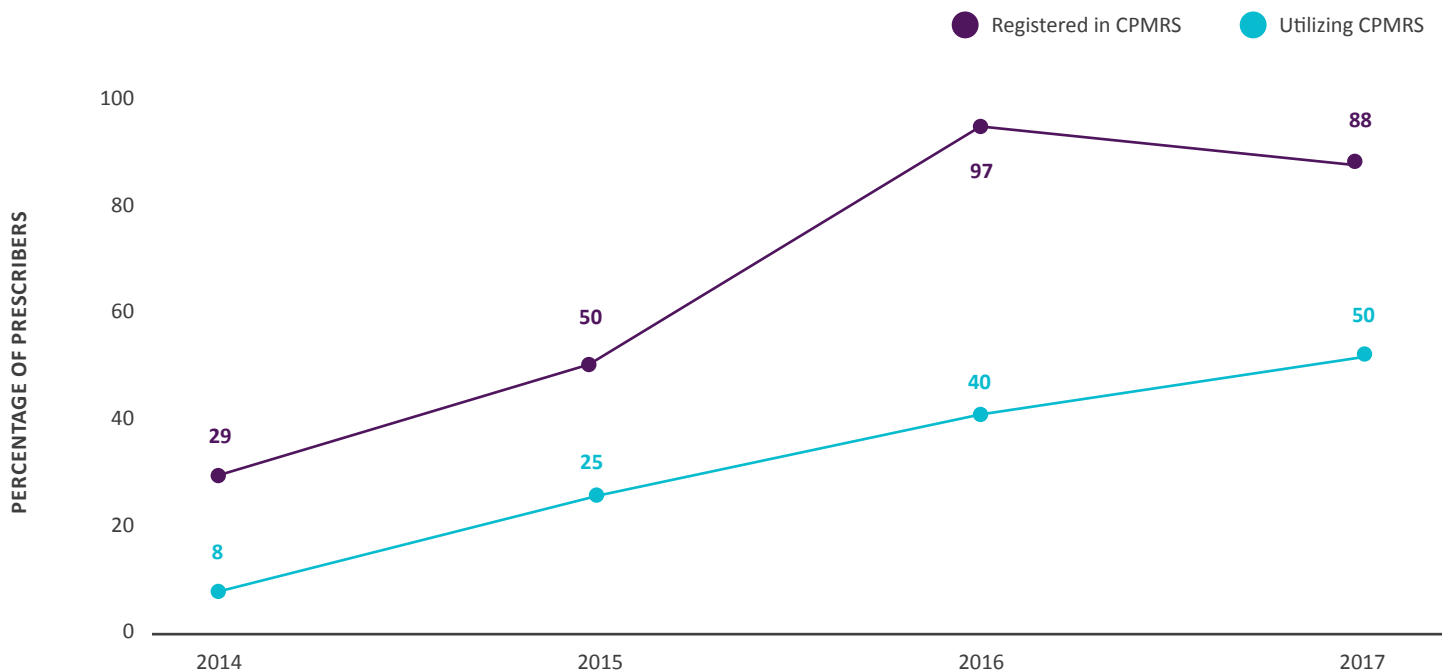
Prescribers in possession of a Connecticut Controlled Substance Registration are required to register in the CPMRS. Since the system's inception in 2014, registration and utilization by prescribing practitioners have increased more than 3- and 6-fold, respectively (**Figure 7.27**). It should be noted that not all prescribers with a Controlled Substance Registration prescribe controlled substances. Also, prescribers may have multiple Controlled Substances Registrations, but only one log-in to the system is required. As such, the proportion of registered CPMRS users will never reach 100%.

## THE PHARMACY WORKFORCE PROVIDES CRITICAL SERVICES TO PROMOTE HEALTH

- Medication adherence can have a more direct impact on patient outcomes than the specific treatment itself; it is estimated that adherence to chronic medications is about 50%.
- Pharmacists can build trust with patients by maintaining a blame-free environment and providing patients with praise for goal achievement.
- Effective interventions include face-to-face counseling, mobile text messaging, simplifying medication regimens, using adherence packaging, minimizing adverse effects, helping with access, and engaging team members.
- Improving adherence can ultimately generate substantial clinical and financial rewards.

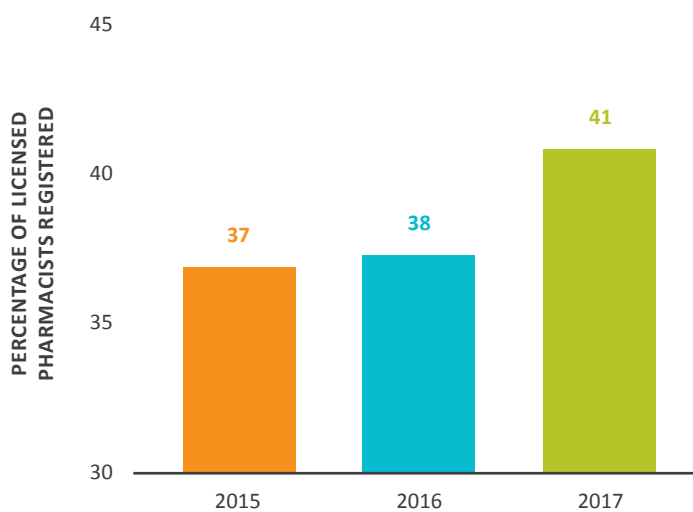
**Source:** Kim, J. (January 19, 2018). *Medication Adherence: The Elephant in the Room. Pain Management, 43(1), 30–34.*

**FIGURE 7.27: Percentage of prescribers registered and utilizing the Connecticut Prescription Monitoring and Reporting System (CPMRS), CT, 2014–2017**



**Source:** CT DCP Prescription Monitoring Program, CPRMS Data. Data analyzed September 9, 2019. Retrieved from <https://portal.ct.gov/DCP/Prescription-Monitoring-Program/CTPMP-Statistics>.

**FIGURE 7.28: Percentage of licensed pharmacists registered in the CPMRS, CT, 2015–2017**



**Source:** CT DCP Prescription Monitoring Program. (2016). Snapshot of Legal Controlled Substance Prescription Usage throughout Connecticut. Retrieved from [https://portal.ct.gov/-/media/DCP/drug\\_control/PMP/Statistics/2016-CPMRS-Statistics.pdf?la=en](https://portal.ct.gov/-/media/DCP/drug_control/PMP/Statistics/2016-CPMRS-Statistics.pdf?la=en). 2017 data obtained by request.

### Pharmacist Registration

As with prescribers, pharmacists registering in the CPMRS increase the likelihood that a patient's prescription dispensing history is reviewed, therefore averting systemic conditions that enable opioid misuse and abuse. From 2015 to 2017, pharmacist registration has increased marginally; ultimately, the goal is to have all of Connecticut's licensed pharmacists registered in the system (**Figure 7.28**).



## PROGRAM SPOTLIGHT: CHANGE THE SCRIPT AND CHANGE THE SCRxIPT

Change the Script is a statewide public awareness campaign to help communities deal with the opioid epidemic and change cultural norms.

- The campaign connects town leaders, healthcare professionals, treatment professionals, and community members with resources to face prescription opioid misuses.
- **Types of resources include:**
  - + **Prevention:** To raise awareness of the risks of addiction to prescription opioids.
  - + **Treatment:** To highlight the proven ways of treating prescription opioid problems.

- + **Recovery:** To highlight resources in the community to help people establish and sustain lifelong recovery.

Change the SCRxIPT aims to raise awareness among prescribers of the CPRMS and increase registration and usage.

- Information provided includes: new CPMRS tools and features, information on legislative mandates, and resources to inform and guide clinical practices to prescribe and dispense controlled substances.

CHANGE  
the **SCRIPT**

CHANGE  
the **SCRxIPT**



## REFERENCES

- <sup>1</sup> Organization for Economic Co-Operation and Development. (2019). Health expenditure and financing. Retrieved from <https://stats.oecd.org/viewhtml.aspx?datasetcode=SHA&lang=en>
- <sup>2</sup> American Academy of Pediatrics, Medical Home Initiatives for Children With Special Needs Project Advisory Committee. (2002). The medical home. *Pediatrics*, *110*(1 Pt 1), 184–186.
- <sup>3</sup> US Department of Health and Human Services. (2013). *National Standards for Culturally and Linguistically Appropriate Services in Health and Health Care: A Blueprint for Advancing and Sustaining CLAS Policy and Practice*. Retrieved from <https://thinkculturalhealth.hhs.gov/assets/pdfs/EnhancedCLASStandardsBlueprint.pdf>
- <sup>4</sup> Park, E. (2018). Medicaid's Role in Connecticut's Economy, Health System, and Budget. Retrieved from [www.cthealth.org/publication/medicaids-role-in-connecticuts-economy-health-system-and-budget/](http://www.cthealth.org/publication/medicaids-role-in-connecticuts-economy-health-system-and-budget/)
- <sup>5</sup> U.S. Census Bureau. (2018). *Health Insurance Coverage in the United States: 2017*. Retrieved from [www.census.gov/library/publications/2018/demo/p60-264.html](http://www.census.gov/library/publications/2018/demo/p60-264.html)
- <sup>6</sup> Cox, E. (2015). Why Do We Continue Using the ER for Care? *US News & World Report*(December 14).
- <sup>7</sup> Agency for Healthcare Research and Quality. (2019). *Prevention Quality Indicators Overview*. Retrieved from [www.qualityindicators.ahrq.gov/Modules/pqi\\_resources.aspx](http://www.qualityindicators.ahrq.gov/Modules/pqi_resources.aspx)
- <sup>8</sup> Fingar, K. R., Barrett, M. L., Elixhauser, A., Stocks, C., & Steiner, C. A. (2015). *Trends in Potentially Preventable Inpatient Hospital Admissions and Emergency Department Visits (1995)*. Retrieved from [www.hcup-us.ahrq.gov/reports/statbriefs/sb195-Potentially-Preventable-Hospitalizations.pdf](http://www.hcup-us.ahrq.gov/reports/statbriefs/sb195-Potentially-Preventable-Hospitalizations.pdf)
- <sup>9</sup> National Quality Forum. (2017). *All-Cause Admissions and Readmissions 2017 Technical Report*. Retrieved from [www.qualityforum.org/Publications/2017/09/All-Cause\\_Admissions\\_and\\_Readmissions\\_2017\\_Technical\\_Report.aspx](http://www.qualityforum.org/Publications/2017/09/All-Cause_Admissions_and_Readmissions_2017_Technical_Report.aspx).
- <sup>10</sup> Connecticut Office of Health Strategy. (2013–2017). Hospital Inpatient Discharge Database.
- <sup>11</sup> Connecticut Office of Health Strategy. (2017). Hospital Inpatient Discharge Database, FY 2017.
- <sup>12</sup> Connecticut Department of Social Services. (2011). *PCMH+ Information Session for Members*. Retrieved from [https://portal.ct.gov/-/media/Departments-and-Agencies/DSS/Health-and-Home-Care/PCMH-Plus/PCMHplus\\_MEMBER\\_Information\\_2016.pdf?la=en](https://portal.ct.gov/-/media/Departments-and-Agencies/DSS/Health-and-Home-Care/PCMH-Plus/PCMHplus_MEMBER_Information_2016.pdf?la=en)
- <sup>13</sup> Bates, I., John, C., Bruno, A., Fu, P., & Aliabadi, S. (2016). An analysis of the global pharmacy workforce capacity. *Human Resources for Health*, *14*(1), 1. doi:10.1186/s12960-016-0158-z
- <sup>14</sup> Watanabe, J. H., McInnis, T., & Hirsch, J. D. (2018). Cost of Prescription Drug-Related Morbidity and Mortality. *Ann Pharmacother*, *52*(9), 829–837. doi:10.1177/1060028018765159
- <sup>15</sup> CT Transit. Local Service. Retrieved from [www.cttransit.com/services/local-service](http://www.cttransit.com/services/local-service)