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Methods

- Overview

CHAPTER 6. METHODS

OVERVIEW

The following section provides an overview of the methods and data sources discussed throughout this document, including secondary data, bed need projections, a new unmet health care need index, a review of hospital community health needs assessments and strategic implementation plans and the inventory of health care facilities.

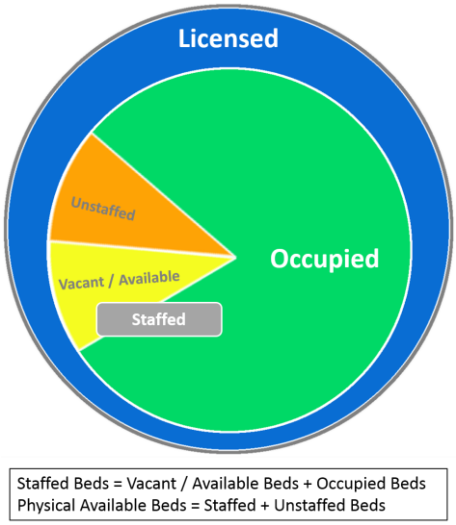
Secondary Data

Secondary social, economic and health data for this report were obtained from a variety of sources. Due to data availability, in some instances, health and health care data are presented for fiscal years (FY), while in other instances, calendar year (CY) data are provided. Data presented by fiscal year are noted with an FY prior to the year. Demographic, social and economic indicators were derived from the U.S. Census American Community Survey and Current Population Survey. Data regarding mortality, birth outcomes, emergency department use and hospitalizations were from databases managed by the Connecticut Department of Public Health. Indicators of chronic disease were from the Behavioral Risk Factor Surveillance System (BRFSS) and most of the data from these surveys were analyzed by the Connecticut Department of Public Health in preparation for the *Healthy Connecticut 2020 State Health Assessment*. Estimates of health care experiences and health insurance coverage were drawn from the Connecticut Health Care Survey, a telephone survey. This survey was sponsored by six health care foundations and administered by the Office of Survey Research at the University of Massachusetts Medical School between June 2012 and February 2013. Fully 5,447 surveys were completed, with 4,608 surveys pertaining to Connecticut adults and 839 surveys regarding children in their households. The sample was stratified by geographic location. Particular geographic strata were oversampled to ensure sufficient sample sizes for populations that experience health inequities.

Bed Need Projections

The Agency for Healthcare Research and Quality (AHRQ) defines licensed beds as the maximum number of beds that a hospital is licensed to operate, though not all licensed beds need to be available or staffed (**Figure 32**). Hospitals have the flexibility to staff all or a portion of their licensed beds according to the demand for services and the availability of appropriate health care practitioners. Thus, staffed beds relate to efficiency measures while licensed beds represent overall inpatient capacity. The bed need methodology focuses on licensed beds due to the factors mentioned above to estimate inpatient bed demand throughout the state.

Figure 32. Conceptual Model of Licensed Hospital Beds, as Defined by AHRQ



Source: Agency for Health Care Research and Quality. Replicated on September 17, 2014 from http://archive.ahrq.gov/research/havbed/definitions.htm.

The bed need methodology used for the 2012 Plan was repeated for the 2014 Plan, with one significant change. The 2012 Plan presented data by the five Department of Emergency Management and Homeland Security (DEMHS) planning regions. Because of the wide variation within each of these regions, the 2014 analysis examined bed need at a more granular level. This report presents these findings by county and by hospital.

The bed need model is designed to project need for licensed inpatient beds (excludes bassinets) and relates inpatient bed utilization to licensed bed need. Bed utilization is calculated using patient days (excluding newborn service category) from three consecutive federal fiscal years. Patient days are broken down by county, hospital, service category and age group. Patient days are then divided by the number of days in the year to calculate an average daily census for each year, which is weighted with the greatest weight given to the most current year. The weighted average daily census is multiplied by a factor representing projected population growth or attrition of the county. The resulting figure is divided by the target occupancy factors provided by the Acute Care/Ambulatory Surgery Subcommittee to determine the number of beds needed. The beds needed column is summed and then deducted from a hospital's licensed bed total to determine the number of excess or additional beds that are required.

It should be noted that this model does not include other types of beds, such as ED beds or incorporate patient days used for observation stays.

Observation stays are outpatient services furnished by a hospital on the hospital's premises, including use of a bed and periodic monitoring by the hospital's nursing or other staff.[114] Such services may be necessary to evaluate an outpatient's condition or determine the need for a possible admission to the hospital. These services are covered only when provided by the order of a physician or another individual authorized by State licensure law and hospital staff bylaws to admit patients to the hospital or to order outpatient tests. The reason for observation must be stated in the orders for observation.

Observation stays are generally considered as an outpatient service and can occur in different parts of the hospital. If the observation is occurring in an inpatient ward, inpatient bed resources are being used, but may

not be accurately reflected in the model. If the patient is being observed in the ED (outpatient setting), these beds are not included in the overall licensed bed count and are appropriately excluded from the model.

Recently, there has been an increase in patients considered under "observation." Older patients are more likely to be considered in "observational" status because Medicare reimburses better for observations. These patterns contribute to concern in the field regarding how to collect information about and incorporate observation stays into bed need models.

Unmet Health Care Index

Three indices were created to assess unmet need in each town in Connecticut relative to the state overall. The Socioeconomic Status (SES) Index comprises measures that are important determinants of health; the Health Outcomes Index includes indicators that are proxies for a community's health; and the Unmet Need Index is a combination of the SES and Outcomes indices. These indices were developed using town-level U.S. Census and DPH hospitalization and mortality data. Data are for the most recent multiple-year period for which data are available to ensure the most reliable and precise estimates, particularly for smaller towns in Connecticut. Each indicator within the index was estimated for each town or city in Connecticut.

Using a simplified hybrid of the Oregon[115] and the Middling[116] approaches, these indices were created using several steps. First, for each indicator within the index, the town or city prevalence rate was divided by the rate for the state of Connecticut. Second, results for each indicator were summed to obtain the index for the town or city. Third, the index for the town or city was then compared to the CT index value. A value greater than the CT overall index value implies that the health or health care profile of the town or city is worse than the profile for the state and therefore has a higher probability of unmet health care need. A value that is lower than the overall value for Connecticut implies that the town or city has a better profile than the state and is less likely to have unmet health care need. Each indicator for Connecticut was assigned a value of one and the Connecticut index is equal to the number of indicators included in the index.

Socioeconomic Status (SES) Index

The SES index consists of social, demographic and economic factors that have been established in the literature as having a significant impact on population health. This index includes the following measures: poverty status, educational attainment, employment status, transportation, language proficiency, health insurance status, disability status, age, racial or ethnic minority status and Medicaid coverage.

Health Outcomes Index

The health outcomes index includes several indicators of population health and access to health care services: the infant mortality rate (rate of infant deaths within the first year per 1,000 live births; 2007-2009); the crude mortality rate per 100,000 population (2006-2010), the hospitalization rate for ambulatory care sensitive conditions per 100,000 population (2010-2012), the avoidable emergency department use rate per 100,000 population (2011-2013) and the all-cause 30-day readmission rates per 100 discharges (2011-2013). These are key measures that are routinely used to indicate the health of a community and may represent differential access to health care for prevention and treatment as well as the socioeconomic factors that have an impact on health.

A more detailed description on these indicators is discussed in the At-Risk and Vulnerable Population section of this report. The overall unmet need composite index is the sum of the socioeconomic status and health outcomes indices and is interpreted as an indicator of which towns may have unmet health care needs.

Review of Community Health Needs Assessment and Strategic Implementation Plans

For this report, the community health needs assessments (CHNAs) and strategic implementation plans (SIPs) were reviewed thematically to identify consistent findings across Connecticut hospitals and their service areas as well as unique issues to specific geographic regions. Of the 27 Connecticut hospitals, 21 reports were reviewed, as several hospitals combined the planning processes with each other and community partners (e.g., health departments, federally qualified health centers) in a collaborative effort. Thus, several hospitals submitted the same reports. Only one of these collaborative reports was included in the review process.

OHCA Community Needs Assessment Survey

OHCA administered a Community Needs Assessment Survey to Connecticut hospitals to enhance understanding of the CHNA and CHIP decision-making processes. OHCA fielded the survey to fulfill part of the requirements of Connecticut General Statutes Section 19a-649(c) and to obtain information for the Plan. Information solicited included how each hospital had defined and covered health disparity, unmet health need and/or vulnerable/at-risk populations and primary service area and to determine if each Connecticut town or city was covered by a Community Health Needs Assessment (CHNA). The Connecticut Hospital Association assisted OHCA in refining the questionnaire by testing it on members of a standing workgroup consisting of hospital planners. Also, CHA administered the final survey on Survey Monkey to all its 28 member hospitals in June. To date, only ten hospitals have responded. Some had difficulty in responding because they did not have the information requested. Other hospitals worked with affiliated hospitals. CHA offered to forward hospitals' Community Health Improvement Plans (CHIPs) to supplement survey responses.

Health Care Facilities and Services Inventory – Surveyed Information

OHCA administered the 2014 Facilities and Services Survey during 2014. The survey aimed to capture data and information for the purpose of maintaining an inventory of all health care facilities, services and imaging equipment in the State of Connecticut. OHCA contracted with Health Resources in Action (HRiA), to provide assistance in the administration of the facility survey. The 2014 survey instrument consisted of four questionnaires to collect information from facilities or practitioners that provide the following services:

1. Acute-care hospital-based service lines
2. Hospital-based primary care services
3. Imaging services
4. Surgical services

Health Care Facilities and Services Inventory – Non-Surveyed Information

The majority of the Inventory Tables facilities are sourced by OHCA, primarily using the DPH licensure files and information provided by the Department of Children and Families (DCF). The tables that rely on the licensure files provide basic information, such as facility name, address and the number of beds by the DPH or DCF license categories. OHCA has determined that the DPH and DCF licensure files are the most accessible and reliable sources for the information on non-surveyed facilities for purposes of this publication.

The full Inventory of Health Care Facilities, Services and Equipment for 2014 can be found at http://www.ct.gov/dph/cwp/view.asp?a=3902&q=557564