

# CHAPTER 4

## HEALTH SERVICES DELIVERY and UTILIZATION

### INTRODUCTION

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This chapter gives an overview of Connecticut's health services delivery system. The section on hospitalizations provides information on hospital use and resource consumption from which an insight can be gained regarding utilization patterns and morbidity.

Other chapter sections provide an assessment of current health care services and facilities in Connecticut and projections of future needs, in the context of the dynamic health care environment and the shifting demographic and health characteristics of the population. The assessment is focused primarily on the areas of acute care, long-term care, and home health care because data were available in these areas. Lack of available data precluded detailed analyses of outpatient, hospice, subacute, rehabilitative, and emergency medical services, all of which are necessary to understand Connecticut's health care delivery system comprehensively. However, some of these topics are briefly discussed in this chapter along with school-based health centers and community health centers which provide primary care at the local level. Included also is a brief discussion about the workforce who deliver the health care services.

The sections of this chapter pertaining to service capacity resulted from an agreement between the Department of Public Health (DPH) and the Office of Health Care Access (OHCA) for DPH to complete a statewide health facilities plan as part of the state health plan.

### TRENDS AFFECTING USE OF FACILITIES

Several major "environmental" trends are gradually changing the use of health care facilities. These trends are discussed in more detail in the chapter sections.

1. The penetration of managed care is a major factor in the declining use of acute care facilities.
2. Hospital consolidation is occurring whereby either hospitals are closing or their services are becoming more limited. Not only are hospitals consolidating but mergers and affiliations of a variety of health care institutions are occurring. Therefore, not all hospitals will continue to provide a full range of acute care services.
3. Utilization of ambulatory surgical facilities will continue to increase in importance as more procedures become safe to be performed on an outpatient basis, further reducing the use of acute care facilities. In addition, ambulatory surgical facilities are increasing their hours of operation to accommodate the growing demand for their services.
4. In an effort to reduce costs, home health care services will continue to grow as a means of reducing the utilization of hospitals and nursing homes.

## HEALTH CARE SERVICE TRENDS

Trends affecting health care service delivery include the following:

1. Increasing emphasis will be placed on preventive services and access to primary care:
  - a) to reduce the risk of people developing diseases such as heart disease and cancer;
  - b) to enable people to control chronic conditions such as asthma and diabetes;
  - c) to provide more comprehensive prenatal care leading to healthier babies;
  - d) to immunize more completely against infectious diseases; or
  - e) to provide health education and wellness programs.
2. Home nursing care is becoming more desirable for the chronically sick, disabled, and elderly.
3. With the aging population, there is an increasing need for geriatric medicine and services to meet the growing health needs of seniors.
4. There is an increasing demand for an integrated service approach for more effective case management, whether to manage a chronic disease like diabetes or to enhance the quality of end-of-life care.
5. Consumers' choices in terms of health care practitioners, services, or institutions are limited based on the health care benefit system within which the consumer is enrolled.
6. The use of technicians to perform functions previously performed by licensed health care professionals is growing.

## REGULATION OF HEALTH CARE SERVICES

### Certificate of Need

Connecticut established a Certificate of Need (CON) program in 1973 to limit the expansion and duplication of unnecessary technology and health care services and programs, and to preserve or increase access to health care by preventing the elimination of needed facilities and services. A CON is a formal statement by a state agency that a health care facility, medical equipment purchase, or new or expanded service is needed, or that a decrease in or termination of a service will not have an adverse effect on access. The CON program is based on the premise that the marketplace for these facilities, equipment, or services is imperfect, and that inefficient supply may result in the absence of appropriate regulatory control. The purpose of the CON program is to limit inefficient supply and unnecessary expenditures. However, this purpose has fallen largely out of favor in the current market-driven managed care environment. Already CON has been abolished in thirteen states.<sup>1</sup> The impact of the changing health care environment on Connecticut's health care facilities is discussed later in this chapter.

Connecticut's CON program is regulated by two state agencies. The Department of Social Services (DSS) operates the program for nursing homes, homes for the aged, and rest homes. OHCA administers the CON program for all other health care facilities. Health Maintenance Organizations providing outpatient services and home health agencies are exempt from CON review for capital expenditures or the introduction of new services. Community health centers proposing new or additional services or functions are also exempt from CON review if at least one-third of the project cost is State financed or they receive funds from DPH and are located in medically underserved areas, health professional shortage areas, or in areas with medically underserved populations.

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<sup>1</sup> Moore, DJ. Certificate of need: gone in many states but not dead yet. *Modern Healthcare* 1997 Aug; 27(32): 32-36.

## Licensure & Certification

The DPH Bureau of Regulatory Services provides licensure and certification for health care facilities and health and health-related professions to promote the delivery of high quality health care and services. The Division of Health Systems Regulation is responsible for the regulation of health care facilities, including the certification of facilities as being eligible for Medicare and Medicaid reimbursement. They are also responsible for the licensure, certification, and registration of health care professionals and of emergency medical personnel and providers.

## GEOGRAPHIC UNITS OF ANALYSIS

Discussion of the health of Connecticut's residents implies that the measure of health will be population based. The basis of the population, however, can be one of many types of geographic regions. Examples of geographic areas include, but are not limited to, the state as a whole, counties, towns, and "service regions," which can be defined in a variety of ways.

One type of service region was developed by Connecticut's Office of Policy and Management (OPM). They developed "Uniform Service Regions" (USRs) based upon criteria such as size, population distribution, facility locations, transportation accessibility, federal requirements, and existing regional cooperative efforts. USRs were created for planning the distribution of funds and services related to health and human services. Originally (1992) OPM developed six Uniform Service Regions, but by early 1994 the service regions were redefined to include only five areas. The five areas are designated as follows: USR 1 is Southwest; USR 2 is South Central; USR 3 is Eastern; USR 4 in North Central; and USR 5 is Northwest. These planning areas are used for analysis purposes in this chapter when discussing service capacity for acute care, long term care, and home health care services.

## "YEARS" OF ANALYSIS

Although many data are collected on an annual basis, the twelve-month period covered by the data is not always a calendar year. Such is the case with the data used in this chapter. A fiscal year period beginning October 1 and ending September 30 of the following year is the "year of analysis" used for the acute care and long term care sections of this chapter. This is sometimes referred to as a federal fiscal year (FFY). For the home health care section, the fiscal year period begins on July 1 and ends on the following June 30. This is sometimes referred to as a state fiscal year (SFY). The population data used in the rate calculations were adjusted to the midpoints of the respective years of analysis.

## HOSPITALIZATIONS<sup>2</sup>

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Measurements of hospital use and resource consumption convey information relating to the general health of and health service delivery to the state's residents. Hospitalization statistics reveal the demographic, clinical, and financial characteristics of Connecticut's residents receiving inpatient services. Although there has been a dramatic shift in patient care to outpatient, home health, and alternative care settings as a result of technological advances and changes in the management of health care, inpatient data still provide a picture of health at the more severe end of the continuum of care.

### OVERVIEW

During fiscal year 1995, which encompasses October 1, 1994 through September 30, 1995, hereinafter referred to as 1995, there were 368,758 resident hospitalizations in Connecticut. These hospitalizations accounted for approximately 2 million patient days and charges in excess of \$3.8 billion. The most common reasons for hospitalization were mother and infant birth-related conditions. The leading illness-related causes included heart disease, digestive system disorders, mental health treatment, and cancer. Of those hospitalized for non-birth related conditions, adults 65 and over composed the largest portion. Consequently Medicare paid for the largest portion of hospitalizations of any primary payer.

### TRENDS

From 1991 to 1995 hospitalizations declined 2.2% as did the rate of hospitalization from 114.7 per 1,000 population to 112.1 per 1,000 (Table 4-1). The number of patient days decreased 21%. The trend is toward shorter lengths of stay whereby the median<sup>3</sup> length of stay dropped by one day and the percentage of one-day stays almost doubled in only four years. This trend is expected to continue as the pressure under a managed care environment to keep people out of the hospital continues to grow with a greater emphasis on care in alternative settings.

The percentage of hospitalizations for adults aged 65 and over has increased by 3% and is expected to continue to rise further as the population ages.

Although the median charge per hospitalization appears to have increased from \$4,743 to \$6,012, there has actually been a slight decrease in the median charge to \$4,530 when adjusted for inflation of 32.7%.<sup>4</sup>

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<sup>2</sup> Hospitalization refers to any discharge from a non-federal, short-stay, acute care general hospital in Connecticut as recorded in the state's hospital discharge abstract and billing data base maintained by the Office of Health Care Access. It is possible for a patient to have multiple hospitalizations. "Cause of hospitalization" refers to that condition that is chiefly responsible for occasioning the admission of a patient for care.

<sup>3</sup> Median was used instead of average because it is statistically more robust and less susceptible to outliers.

<sup>4</sup> Based upon DRI/McGraw Hill's hospital and related services Consumer Price Index.

**Table 4 - 1**  
**Selected Measures of Hospital Use for Connecticut Residents**

Measure of hospital use	FY 1991a	FY 1995
Hospitalization rate per 1,000 population	114.7	112.1
Number of days of patient care	2,544,476	2,010,318
Number of hospitalizations	377,062	368,758
Median length of stay in days	4.0	3.0
Percentage of one-day lengths of stay	12%	21%
Percentage age 65 and over	31%	34%
Unadjusted median charge per hospitalization	\$4,743	\$6,012

<sup>a</sup> John Dempsey Hospital data not available  
Source: OHCA, Hospital Discharge Abstract and Billing Data Base

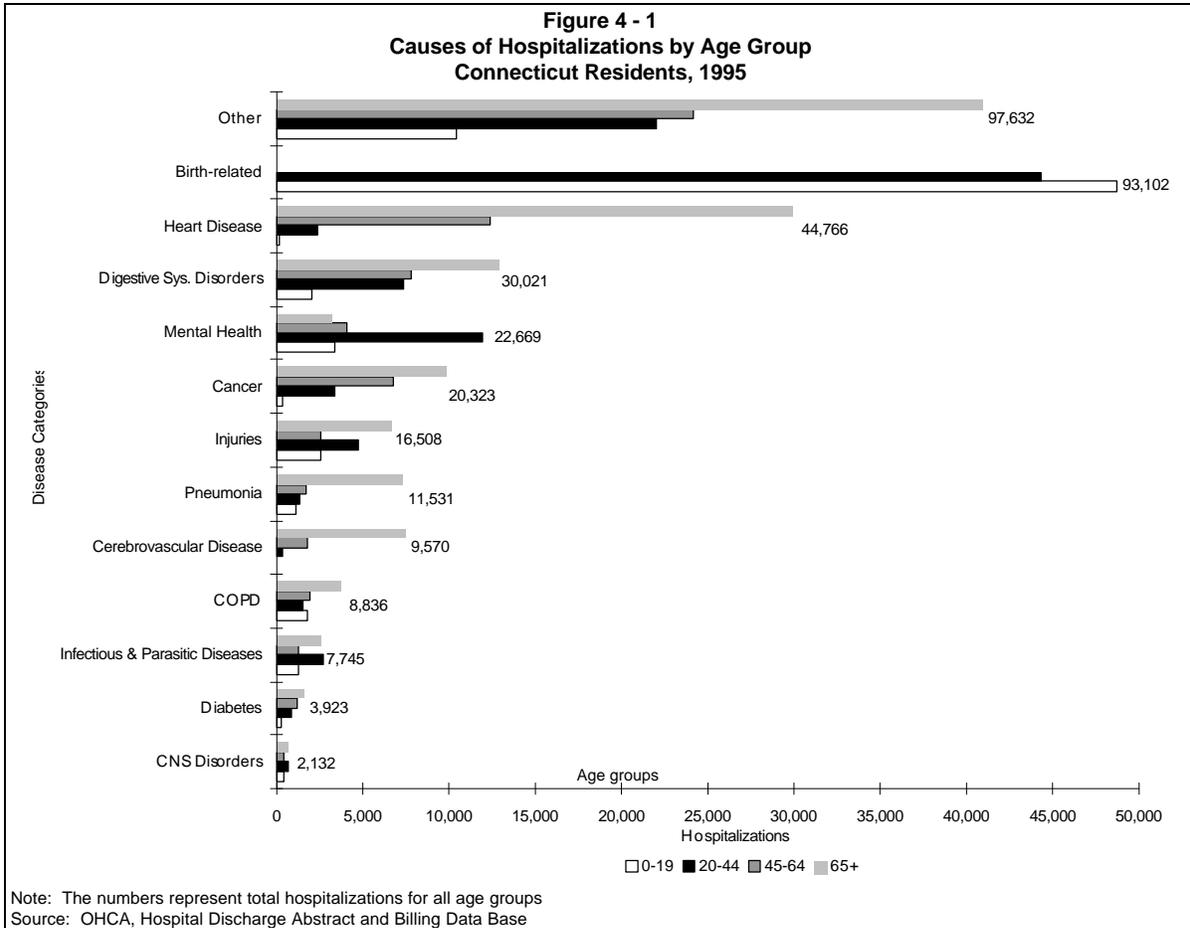
## LEADING CAUSES

Figure 4-1 displays the major causes of hospitalization of Connecticut residents during 1995. The leading cause of hospitalization was births and birth-related conditions. In 1995, birth-related hospitalizations accounted for 25% of Connecticut residents' hospitalizations but only 9% of the charges. Other leading causes include (in order of decreasing hospitalizations): heart disease, digestive system disorders, mental health treatment, cancer, injuries, pneumonia, cerebrovascular disease, chronic obstructive pulmonary disease (COPD), infectious and parasitic diseases, diabetes, and central nervous system (CNS) disorders. It should be noted that five of these causes (heart disease, cancer, cerebrovascular disease, COPD, and pneumonia) were also leading causes of death in the population. In 1995, these eleven other leading causes accounted for 48% of all hospitalizations and 62% of the total charges. "All Other Causes" encompasses numerous other causes accounting for 27% of all hospitalizations and 28% of the charges.

## GENDER AND AGE FACTORS

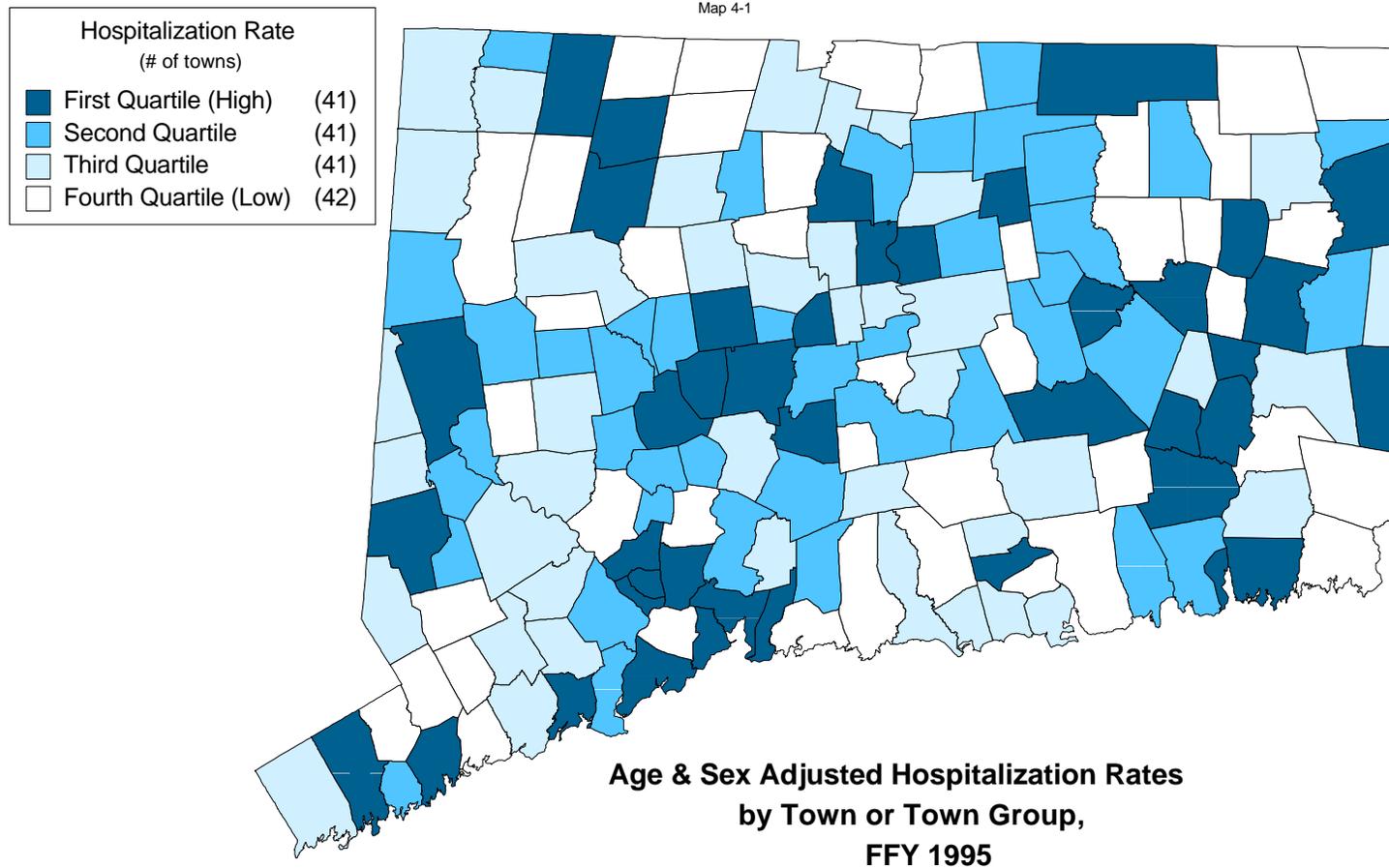
During 1995 females were hospitalized more often than males because of maternity-related conditions as well as female longevity and its associated illnesses. Females accounted for 59% of the hospitalizations, 53% of the charges, and 55% of the patient days. If maternity-related conditions are excluded, females accounted for 52% of the hospitalizations, 50% of the charges, and 52% of the patient days. Females were hospitalized at least 40% more often than males for cancer and COPD, and at least 20% more often for CNS disorders and digestive system disorders. Males were hospitalized 20% more often than females for heart disease, 90% more often for alcohol and drug abuse or dependence, and 2.5 times more often for HIV/AIDS.

Adults aged 65 and over accounted for 34% of all hospitalizations in 1995. If birth-related conditions were excluded, this age group composed 46% of the hospitalizations. They prevailed in nearly all the leading causes except birth-related conditions, mental health treatment, HIV/AIDS, and asthma. Over 60% of the patients hospitalized for heart disease, cerebrovascular disease, and pneumonia were in this age category. The hospitalization rate for injuries was four times greater for this age group than those under age 65. Nearly 70% of the HIV/AIDS hospitalizations were in the 30-44 age group with a median age of 37. Similarly over 50% of the hospitalizations for alcohol and drug abuse and dependence fell into the 25-44 age category, again with a median age of 37. Asthma hospitalizations peaked dramatically in children under five. The hospitalization rate for children under five was triple that of all other patients aged five and over.



Some of the variation in hospitalization rates among communities can be linked to the age and gender characteristics of their populations as explained above. By age-adjusting the hospitalization rates for each community, differences in the age composition of individual communities can be accounted for so that variation in the number of individuals being hospitalized cannot be attributed to one community having a larger elderly population than another. Likewise, gender affects an individual's risk of hospitalization for specific diseases. Adjusting the hospitalization rates for gender accounts for the differences in the rates which could otherwise be associated with differences in the gender composition among communities. Therefore, statistical adjustments for age and gender provide standardized rates that can be used to compare populations across geographic areas.

Map 4-1 is a map depicting the age-and-sex adjusted hospitalization rates by town of patient residence in Connecticut. Rates vary as much as seven-fold from highest (182 per 1,000 in Voluntown) to lowest (26 per 1,000 in Bethany). The statewide rate was 112 per 1,000 population. The lower rates in the towns bordering other states could be attributable to those residents receiving treatment in facilities outside of Connecticut. The cities of Hartford (161 per 1,000), New Haven (144 per 1,000), and Bridgeport (131 per 1,000), all had high hospitalization rates, which might indicate barriers to primary and preventive care. Because of the use of unlinked hospital discharge data, these rates reflect the total number of hospitalizations rather than the number of individuals, which could confound the results if the same patient had multiple hospitalizations for the same disease.



Note: The hospitalization rate is calculated per 1,000 population.  
Source: OHCA, FFY 1995 Connecticut Acute Care Hospital Discharge Data.

## CHARGES

While the number of hospitalizations provides a measure of the extent of disease in the state, other measures help to explain the economic scope of hospitalizations. Although hospital charges do not capture the true costs of hospitalizations nor the payments for those hospitalizations, they do indicate the magnitude of the economic burden to the state, keeping in mind that acute care is only one component of the health care delivery system. In 1995 hospitalization charges exceeded \$3.85 billion. The leading causes discussed previously accounted for \$2.75 billion. Of the leading causes, heart disease charges amounted to \$722 million, or 19% of the total charges in 1995. Second were digestive system disorders with 10% of the charges. The next most expensive conditions were birth-related conditions (9%), cancer (8%), and injuries (6%).

The financial burden can also be viewed as charges per hospitalization. This adjusts for the situation whereby a large number of hospitalizations accounts for a large proportion of the total charges, e.g., births. The median charge per birth-related hospitalization in 1995 was only \$2,302 whereas the median charge per heart disease hospitalization was \$10,313, over four times as much. Other illnesses with high charges per hospitalization were HIV/AIDS at \$12,717, septicemia at \$11,679, and cancer at \$10,032.

## PAYER

More than 50% of Connecticut's hospitalizations and 60% of the charges were publicly funded in 1995. Medicare was the payer with the largest percentage of hospitalizations (36%) and led in most of the leading causes. Medicare's hospitalizations accounted for 51% of the total charges. These proportions climb to 49% of hospitalizations and 56% of charges when birth-related hospitalizations are excluded. Medicare was the expected payer for more than 65% of hospitalizations for cerebrovascular disease, COPD excluding asthma, septicemia, heart disease, and pneumonia. The second largest payers were HMOs/PPOs with 18% of the hospitalizations and 13% of the charges. This indicates that managed care is definitely penetrating the marketplace. Medicaid, the third largest payer, accounted for 16% of the hospitalizations and 13% of the charges. Medicaid was the expected payer for 63% of HIV/AIDS hospitalizations, 53% of alcohol/drug abuse or dependence hospitalizations, and 37% of asthma hospitalizations.

## AMBULATORY-CARE-SENSITIVE HOSPITALIZATIONS

Ambulatory-care-sensitive (ACS) hospitalizations are those hospitalizations that might have been avoided if timely and effective disease management had been received previously in an outpatient setting such as primary care. ACS hospitalizations can be used to identify possible problems with the delivery of primary care services and also to identify areas for controlling costs.

Hospitalizations for *acute* conditions may be prevented with timely diagnosis and appropriate treatment. Bacterial pneumonia can be used as an example. If a symptomatic patient consults a physician in a timely fashion and follows an appropriate antibiotics regimen, the risk of hospitalization will be minimized; whereas failure to see a doctor or failure to take prescribed medications may result in a hospitalization for this condition.

Although *chronic* conditions such as asthma may not in themselves be prevented, they can be managed through periodic check-ups and proper use of medications or medical devices. However, problems gaining access to primary care or failure to understand the management of a chronic condition may lead to hospitalization.

Hospitalizations for those conditions listed in Table 4-2<sup>5</sup> were reviewed for adults aged 15-64 during 1995. Those over age 64 were excluded because it is assumed that greater access barriers exist for those younger than 65 who are less likely to have comprehensive insurance coverage than the elderly population who are covered by Medicare<sup>6</sup>. In addition, avoidance of hospitalization becomes increasingly difficult with aging and the progression of diseases.

**Table 4 - 2**  
**Ambulatory-care-sensitive Conditions**

Acute Conditions	Chronic Conditions
Bacterial pneumonia	Angina
Cellulitis	Asthma
Dehydration	Chronic Obstructive Pulmonary Disease
Gastroenteritis	Congestive heart failure
Kidney/Urinary Infections	Diabetes
	Hypertension

During 1995 ACS adult hospitalizations accounted for 8% of all hospitalizations including readmissions (Table 4-3). They accounted for 10% of total patient days and 9% of the total charges in the amount of \$153 million, which is not a trivial amount.

Because inadequate or inaccessible primary care is usually associated with low income communities, ACS hospitalization rates of those patients whose primary payer is Medicaid was compared to those whose payer is other than Medicaid. The rates for Medicaid patients were on average five times greater than those for other patients. Figure 4-2 compares the rates for Medicaid and non-Medicaid hospitalizations by type of ACS condition.<sup>7</sup> The condition with the highest rate was bacterial pneumonia; the rate was six times greater for Medicaid than non-Medicaid patients. Medicaid ACS hospitalizations accounted for approximately \$37 million or 25% of all ACS hospitalization charges.

**Table 4 - 3**  
**Summary Statistics for Ambulatory-Care-Sensitive Adult Hospitalizations**  
**Connecticut, 1995**

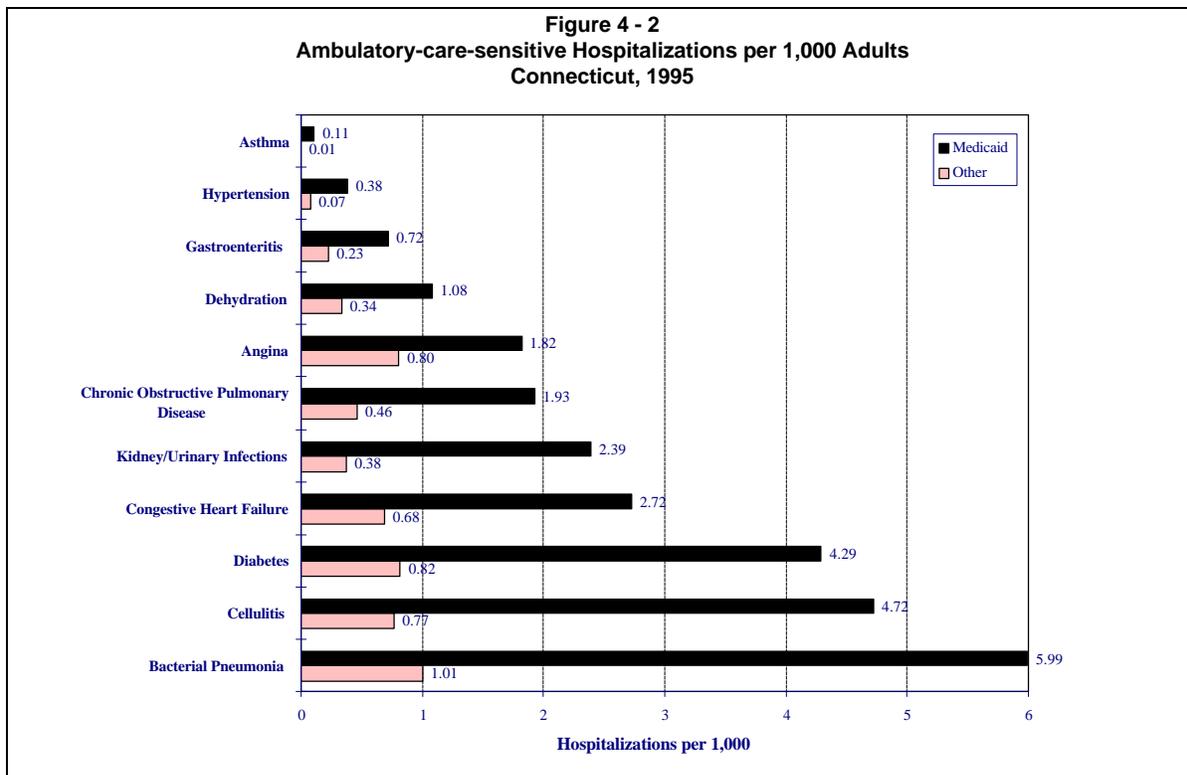
	Total Adult Hospitalizations	Ambulatory-care-sensitive Adult Hospitalizations	Percent of Total
Number of Hospitalizations	186,631	14,335	7.7
Patient Days	868,568	83,831	9.7
Charges	\$1,780,371,384	\$152,757,875	8.6

Source: OHCA, Hospital Discharge Abstract and Billing Data Base

<sup>5</sup> Massachusetts Rate Setting Commission. Preventable hospitalization in Massachusetts. 1994 Jan. Publication No.: 17497-81-2000-2-94.

<sup>6</sup> Billings, J. Consideration of the use of small area analysis as a tool to evaluate barriers to access. Proceedings of the Consensus Conference on Small Area Analysis; 1990 Oct 17-19; Columbia (MD). DHHS Publication No. HRS-A-PE-91-1 (A): 67-83.

<sup>7</sup> The Medicaid population data come from the Family Health Care Access Survey conducted by the Office of Health Care Access, 1995.



The statewide ACS hospitalization rate for adults aged 15-64 was 6.70 per 1,000 population. Table 4-4 displays the top ten rates by the town of patient's residence. Connecticut's three largest cities (Bridgeport, Hartford, and New Haven) had high rates. The reasons for this could be lack of insurance coverage, language or transportation barriers, or a lack of understanding and/or compliance on the management of chronic illnesses by patients and their families.<sup>8</sup>

**Table 4 - 4**  
**Top Ten Ambulatory-Care-Sensitive Hospitalization Rates by Town**  
**Connecticut, 1995**

Rank	Town	ACS Hospitalization Rates per 1,000	Rank	Town	ACS Hospitalization Rates per 1,000
1	Hartford	13.31	6	Killingly	10.50
2	New Haven	11.91	7	Sprague	10.45
3	Waterbury	11.33	8	Norwich	10.42
4	Voluntown	11.30	9	Bridgeport	10.31
5	Derby	10.87	10	Windham	9.83

<sup>8</sup> Massachusetts Rate Setting Commission, 4.

## CONCLUSION

Information about hospital use and resource consumption can be used to help identify populations who could benefit from education, lifestyle changes, prevention, intervention, and increased access to health care. Barriers to access can take on many forms such as inadequate insurance, lack of transportation, limited office hours, restricted provider acceptance, as well as educational, cultural, and lifestyle barriers.

The large number of births and birth-related conditions indicates the important need for education, prenatal care, postnatal care, newborn care, and subsequent childhood immunizations. On the other end of the spectrum, the increasing use of hospital care by the elderly signifies the need for expanding geriatric services. Already discussed were the specific diseases dominated by Medicare and Medicaid patients, by women versus men, and by various age groups. Discussion of ambulatory-care-sensitive hospitalizations points out the dramatic differences in utilization patterns between Medicaid and non-Medicaid patients. Towns with high hospitalization rates were also those with high ambulatory-care-sensitive hospitalization rates. Although there appear to be emerging patterns of utilization, it is not clear how barriers to access affect decisions to seek care, whether there is a breakdown in the delivery of primary care, or whether practice patterns are affecting utilization.

## ACUTE CARE SERVICES

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Fiscal year (FY)(October 1 through September 30) data were used to develop this section related to health care services provided by Connecticut's non-federal, short-stay acute care hospitals. This section was done in response to DPH's Memorandum of Agreement with OHCA to develop a statewide health facilities plan.

### CHANGES FROM FY1991 TO FY1995

FY 1991 data were previously analyzed by Arthur D. Little.<sup>9</sup> However, the data were reanalyzed so as to be more consistent with the methodology used to analyze the FY 1995 data. There were two significant methodological changes. First, the number of Uniform Service Regions (USRs) was reduced from six to five. Second, the mapping of Connecticut zip codes to towns was updated to incorporate newer zip codes. This significantly reduced the number of discharges allocated to the "unknown-Connecticut" town-of-residence category by assigning discharges to their appropriate towns of residence. The towns, in turn, compose the USRs.

Consolidation of providers arose during the four years between FY 1991 and FY 1995. The following mergers occurred in Connecticut: World War II Veterans Memorial Medical Center in Meriden with The Meriden-Wallingford Hospital; Park City Hospital in Bridgeport with Bridgeport Hospital; and Hartford Hospital with The Institute of Living in Hartford. Data from the Institute of Living were not previously collected because this was not an acute care facility, rather it was a psychiatric facility.

Since FY 1995 Hartford's Mount Sinai Hospital merged with St. Francis Hospital and Medical Center also in Hartford. In addition, Winsted Memorial Hospital in Winsted closed and the Connecticut Children's Medical Center in Hartford replaced the Newington Children's Hospital. Map 4-2 depicts the locations of the acute care facilities by USR as of 1995.

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<sup>9</sup> Arthur D. Little, Inc. Assessment of Current Health Care Facilities and Future Requirements, June 1993.

Despite the forgoing horizontal integration, the data indicate that between FY 1991 and FY 1995, the reduction in capacity did not keep pace with the reduction in utilization (Table 4-5). Staffed beds decreased by 16% from 9,525 in FY 1991 to 8,030 in FY 1995. But this is less than the 24% decrease that occurred in the number of days that patients spent in the hospitals, i.e., from 2,647,785 to 2,025,683 days. It should be noted that John Dempsey Hospital data were not available for FY 1991. For comparison purposes, the data were also excluded for FY 1995. John Dempsey Hospital accounts for 162 staffed beds and 58,930 patient days in FY 1995.

Much of the seemingly dramatic increase in the number of discharges receiving psychiatric service is attributable to the merger of the Institute of Living with Hartford Hospital.

Utilization, defined as patient days, decreased for all medical services. The medical services for which the largest utilization decreases occurred were maternity (-32%), newborn (-31%), and adult medical and surgical (-26%). The decreases for newborn and maternity were due to a decrease in the number of discharges as well as in the average length of stay whereas the decrease for adult medical and surgical was due predominantly to a decrease in the average length of stay from 7.2 to 5.6 days.

Utilization systematically decreased among the residents of the five USRs (Table 4-6). The largest decrease (-28%) occurred in the Northwest USR. The number of staffed beds in this USR decreased by only 20% from 1,518 to 1,212.

These downward trends in utilization are expected to continue as managed care continues to penetrate the market place, as hospitals continue to consolidate, and as alternative treatment settings such as outpatient, subacute, and home health reduce the need for acute care hospitalizations.

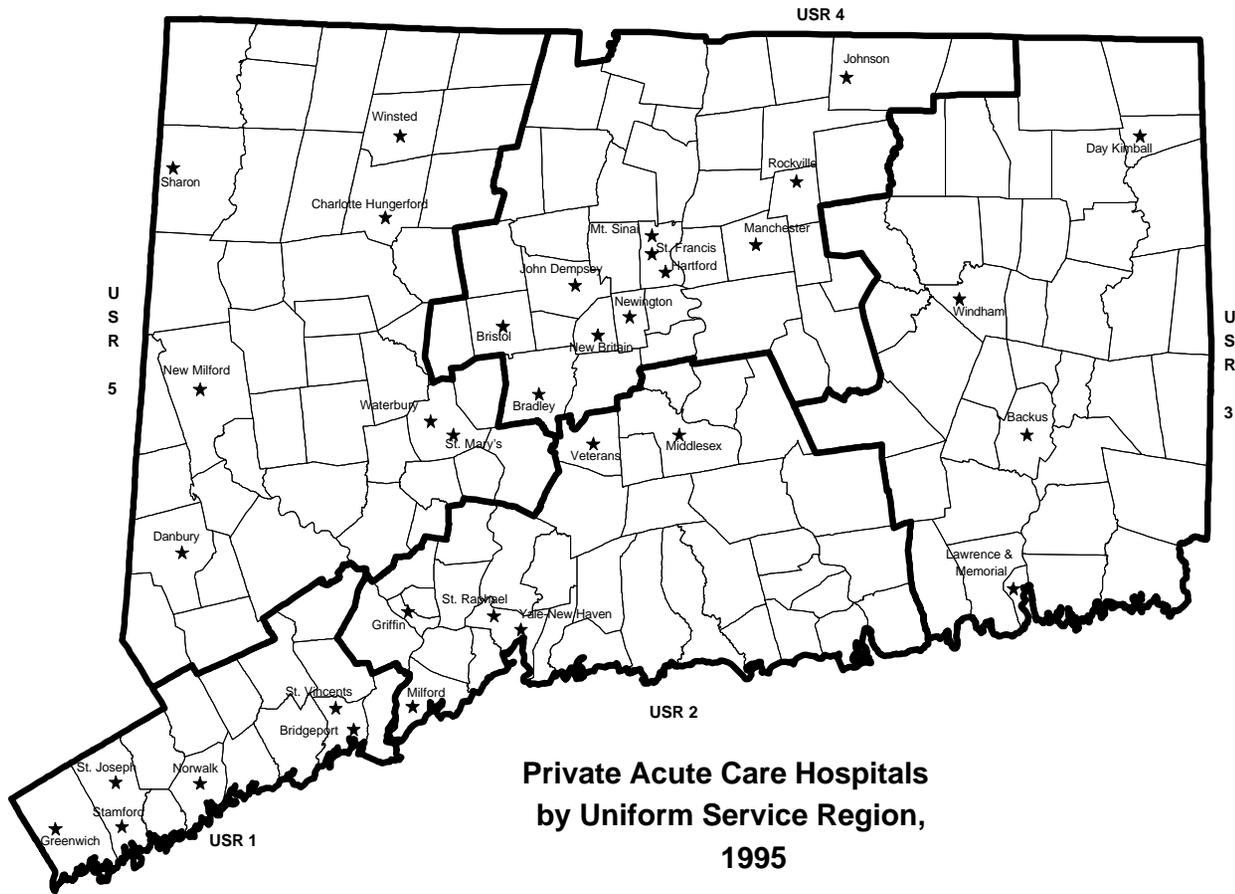
## FY 1995 INVENTORY, OCCUPANCY, AND UTILIZATION

In total, the 34 hospitals in Connecticut reported 10,919 licensed beds for the fiscal year 1995 (Table 4-7). However, only 8,192 (75%) were staffed and available for occupancy. The ratio of staffed to licensed beds was lowest for the pediatric services (71%) and highest for ICU/CCU (85%), psychiatric (86%), and NICU services(100%).

Average staffed bed occupancy varied by service from 42% for the newborn service to 72% for adult medical/surgical. ICU/CCU services also had a high occupancy (77%), as did NICU services (75%). Note that these occupancy rates were for Connecticut residents only. Actual occupancy rates are higher because of out-of-state and unknown-residence patient usage.

For FY 1995, utilization of acute care services was 611 days per 1,000 population. The adult medical/surgical utilization rate of 392 per 1,000 accounted for 64% of the days. Table 4-9 shows bed inventory and utilization data summarized by USR. The largest USRs (South Central and North Central) have the largest populations and number of hospitals. Utilization rates varied from 498 days per 1,000 population in the Eastern USR to 671 days per 1,000 population in the Southwest USR. If some residents of the Eastern USR received their services out-of-state, this would partially explain their lower utilization rate.

Map 4-2



Source: DPH, OPPE, 1997

## FY 1995 ACUTE CARE UTILIZATION RATES BY AGE/GENDER

Table 4-8 shows the FY 1995 Connecticut-resident utilization rates of the state's hospitals, grouped by type of medical service and age-gender cohort.

Utilization of the medical/surgical service increased dramatically with age. For example, utilization for the 20-44 age group was about 162 days per 1,000 population compared to about 1,657 patient days per 1,000 population for the over-65 age cohort. Caution must be taken when looking at the 0-4 and 5-19 age cohort utilization rates, because patients in these age groups were expected to use predominantly newborn and pediatric services. The over-65 population accounted for about 60% of medical/surgical patient days. Although total patient days were about 35% higher for females than males in the over-65 cohort, utilization per 1,000 population in the cohort was 14% greater for males than females, reflecting a higher survival rate for females in the age group. In fact, males utilized hospital services to a greater extent than females in all age cohorts except maternity and psychiatric services.

The difference between male and female utilization of ICU/CCU services was even more dramatic. Male utilization rates were about 58% greater than those of females in the age cohorts 20-44, 45-64, and 65+. However, total ICU/CCU patient days were about equal for males and females in the 65+ cohort, due to the greater number of females in the cohort.

The 65+ population was the primary user of rehabilitation services (72% of total patient days). Utilization per 1,000 for the 65+ cohort population was 36% higher for males than females.

Females used psychiatric services to a greater extent than males. Total patient days for females were 40% greater than for males.

## ACUTE CARE REQUIREMENTS FOR YEARS 2000 AND 2005

Projected patient days and average daily census by service for Connecticut residents for the years 2000 and 2005 are presented in Tables 4-9 and 4-10, respectively. The projections are presented for the total state and for each of the USRs. These projections should be considered a "base case," driven primarily by demographic changes.

The adjustment for the out-of-state patients, which included the unknown-Connecticut-town-of-residence patients, accounted for an additional 3.7% of patient days for the state, ranging from 2.0% for psychiatric patient days to 6.4% for the rehabilitation service. The adjustment varied from 2.0% for the Eastern USR to 7.3% for the Northwest USR. There was a large adjustment (17%) for rehabilitative services in USR 5 which was attributable mainly to patients receiving these services at Danbury Hospital.

Assuming utilization rates remain the same, the number of acute care patient days and the average daily census for Connecticut residents is projected to increase by 1.2% in 2000 compared to 1995. This is slightly larger than the anticipated overall increase in total population of 0.8%. The increases are greater than the overall average for ICU/CCU (2.9%), rehabilitation (3.3%), and medical/surgical service (2.8%), due to the increasing elderly population. The average census of maternity patients is expected to decrease by 6.0%, reflecting the 5.4% decrease in the female age cohort 15-44.

For the year 2005, the number of patient days is projected to increase by 3.0% over 1995, which again is somewhat larger than the projected increase in population of 2.2%.

Target occupancy factors are applied to the total projected average census to arrive at the number of "base case" beds required for 2000 and 2005, respectively. Target occupancy adjustments varied from 84% for medical/surgical services to about 60% for newborn, maternity, and pediatric services. The target occupancy for rehabilitation and psychiatric services, which tend to have longer lengths of stay than the other

acute care services and thus smaller percent census fluctuations, was set at 80%. The target occupancies for ICU/CCU and NICU, which are expensive to maintain and for which step-down and medical/surgical alternative services exist, were also set at 80%, close to current occupancy levels.

The “base case” projections show no need for additional *licensed* beds in the state through the year 2005. It may, however, be necessary to *staff* currently non-staffed beds in ICU/CCU in the future.

Regionally, the Eastern USR appears to need additional staffed beds. This result is somewhat misleading. It does indicate that the residents of the Eastern USR do require the various medical services. However, because the residents must be receiving some of these services at hospitals located outside of the Eastern USR, it may not be necessary to staff additional beds within the USR if its residents continue to obtain these services elsewhere.

### Adjusted Projections

A number of developments could affect the utilization rates used to develop the “base case” projections and, therefore, affect the need for acute care services. These developments can be grouped into three categories: technological, health care delivery, and health care management.

Technological developments such as surgical techniques that are less invasive (e.g. laparoscopy), cardiovascular techniques that reduce the need for open-heart surgery, more effective drugs, and faster diagnostic techniques will reduce hospital lengths of stay.

Health care delivery changes such as increased emphasis on prevention and primary care, increasing use of ambulatory and outpatient services, and more effective integration of hospital services will reduce the need for acute care hospitalizations.

The shift toward managed care as well as the development of outcomes research and treatment protocols and guidelines will also affect acute care utilization by encouraging use of primary care and other outpatient services.

The expected result of these trends and developments is a reduction in the need for acute care services, particularly for medical/surgical services. An additional result will be that those patients who are admitted, on average, will be in greater need of intensive services, such as provided in the ICU, CCU, and NICU. Other specialized services such as step down and intermediate care units (e.g., intermediate between ICU/CCU and conventional medical/surgical beds) should also experience increased usage.

To account for the trend in decreasing utilization of medical/surgical services, an average rate of about 5% reduction per year is projected through 2000. The adjustment factor is therefore estimated to be a 25% reduction in medical/surgical service utilization by the year 2000. An additional 10% reduction is projected from 2000 to 2005. These factors were extrapolated from trends that have been occurring since 1991.

Tables 4-9 and 4-10 present the adjusted projections for the years 2000 and 2005. Even with these downward adjustments, the projections indicate that in total there is already an adequate number of licensed beds for all services.

The greatest surplus of beds will occur in medical/surgical services, where it is expected that by 2005 there will be a need for only about 3,000 beds in the state, or 3,800 fewer licensed and 1,900 fewer staffed beds than exist in 1995.

**Table 4 - 5(a)**  
**Change in Utilization (Days) by Medical Services<sup>a</sup>**  
**Connecticut, FY 1991 and 1995**

Service	FY 1991		FY 1995		91-95 % Change of Days
	Discharges	Patient Days	Discharges	Patient Days	
Newborn	44,347	137,803	39,587	95,400	-30.8
Maternity	56,345	161,390	49,577	110,300	-31.7
Psychiatric	15,937	187,596	19,006	160,196	-14.6
Rehab	1,702	36,452	2,376	36,294	-0.4
Pediatric	20,290	105,179	18,221	87,536	-16.8
Med/Surg	245,481	1,777,954	235,347	1,318,873	-25.8
NICU	6,263	36,101	5,855	27,782	-23.0
ICU/CCU	54,862	205,310	54,645	189,302	-7.8
Total	445,227	2,647,785	424,614	2,025,683	-23.5

**Table 4 - 5(b)**  
**Change in Staffed Beds<sup>a</sup>**

FY 1991	FY 1995	91-95 % Change
9,525	8,030	-15.7

<sup>a</sup>Excludes John Dempsey Hospital Data

**Table 4 - 6**  
**Change in Utilization (Days) by USR<sup>a</sup>**  
**Connecticut, FY 1991 and 1995**

USR	FY 1991		FY 1995		91-95 % Change in Days
	Discharges	Patient Days	Discharges	Patient Days	
Southwest	85,020	541,381	80,642	419,888	-22.4
South Central	100,268	587,815	98,944	480,520	-18.3
Eastern	45,516	249,093	43,917	186,842	-25.0
North Central	121,539	722,541	114,305	544,486	-24.6
Northwest	75,346	443,644	71,460	320,768	-27.7
Out of State	17,538	103,311	15,346	73,179	-29.2
Total	445,227	2,647,785	424,614	2,025,683	-23.5

<sup>a</sup>Excludes John Dempsey Hospital Data

**Table 4 - 7**  
**Acute Care Inventory and Occupancy**  
**Connecticut, 1995**

Service	Staffed Beds	Licensed Beds	% Occupancy Staffed Beds	Ratio Staffed to Licensed (%)	Utilization Rate Days/1,000 Pop.
Newborn	619	784	42	79	29
Maternity	560	737	54	76	33
Psychiatric	706	822	65	86	51
Rehab	144	185	65	78	10
Pediatric	444	627	55	71	27
Med/Surg	4908	6838	72	72	392
NICU	152	152	75	100	13
ICU/CCU	659	774	77	85	56
Total	8,192	10,919	67	75	611

**Table 4 - 8**  
**Acute Care Utilization Rates**  
**Connecticut Residents, 1995**

Age	Patient Days		Cohort Population		Patient Days/Cohort Population x 1000	
	Male	Female	Male	Female	Male	Female
<b>Newborn Services</b>						
0-4	50,125	43,791	122,524	116,911	409.1	374.6
<b>Maternity Services</b>						
5-19		10,079		307,662		32.8
20-44		99,805		630,998		158.2
45-64		99		354,126		0.3
<b>Psychiatric Services</b>						
5-19	37,887	44,571	322,669	307,662	9.0	11.7
20-44	14,439	20,956	632,521	630,998	59.9	70.6
45-64	14,301	27,887	334,208	354,126	43.2	59.2
65+			183,942	283,442	77.7	98.4
<b>Rehabilitation Services</b>						
5-19	30	16	322,669	307,662	0.1	0.1
20-44	1,347	1,021	632,521	630,998	2.1	1.6
45-64	4,168	3,050	334,208	354,126	12.5	8.6
65+	11,486	13,000	183,942	283,442	62.4	45.9
<b>Pediatric Services</b>						
0-4	18,409	12,598	122,524	116,911	150.2	107.8
5-19	33,533	24,130	322,669	307,662	103.9	78.4
20-44	47	104	632,521	630,998	0.1	0.2
<b>Medical/Surgical Services</b>						
0-4	1053	532	122,524	116,911	8.6	4.6
5-19	4,876	3,991	322,669	307,662	15.1	13.0
20-44	103,991	100,745	632,521	630,998	164.4	159.7
45-64	151,790	148,205	334,208	354,126	454.2	418.5
65+	329,666	444,812	183,942	283,442	1792.2	1569.3
<b>NICU Services</b>						
0-4	22,816	18,651	122,524	116,911	186.2	159.5
<b>ICU/CCU Services</b>						
0-4	6,090	4,927	122,524	116,911	49.7	42.1
5-19	2,679	2,344	322,669	307,662	8.3	7.6
20-44	11,762	7,379	632,521	630,998	18.6	11.7
45-64	28,340	18,140	334,208	354,126	84.8	51.2
65+	52,420	51,668	183,942	283,442	285.0	182.3

**Table 4 - 9**  
**Acute Care Projected Beds**  
**Connecticut, 1995 to 2000**

Area/Item	Newborn	Maternity	Psychiatric	Rehab	Pediatric	Med/Surg	NICU	ICU/CCU	Total
Total State of Connecticut (Population 3,289,003)									
Staffed Beds (1995)	619	560	706	144	444	4,908	152	659	8,192
Licensed Beds (1995)	784	737	822	185	627	6,838	152	774	10,919
Patient Days (CT Residents)	93,938	109,983	166,536	34,118	88,821	1,289,661	41,512	185,749	2,010,318
Occupancy Rate (%) (Staffed)	41.58	53.81	64.63	64.91	54.81	71.99	74.82	77.22	67.23
Occupancy Rate (%) (Licensed)	32.83	40.89	55.51	50.53	38.81	51.67	74.82	65.75	50.44
Utilization (Days/1000 Pop)	28.6	33.4	50.6	10.4	27.0	392.1	12.6	56.5	611.2
Projected Patient Days (2000)	84,686	103,373	166,182	35,257	90,143	1,325,640	37,428	191,109	2,033,818
Average Daily Census	232	283	455	97	247	3,632	103	524	5,572
Out of State Adjustment (%)	2.54	2.71	2.03	6.38	2.74	3.86	2.90	5.32	3.69
Target Daily Census	238	291	465	103	254	3,772	106	551	5,778
Hospitals in the USR	31	31	27	10	27	33	8	33	
Target Occupancy Adjustment	0.58	0.60	0.80	0.80	0.61	0.84	0.80	0.80	
Beds Needed (2000)	410	481	581	128	419	4,478	132	689	7,318
Proj. Surplus/Deficit (Staffed)	209	79	125	16	25	430	20	-30	874
Proj. Surplus/Deficit (Licensed)	374	256	241	57	208	2,360	20	85	3,601
Trends Adjustment (%)	0	0	0	0	0	-25	0	0	
Adjusted Bed Projections	410	481	581	128	419	3,358	132	689	6,198
Proj. Surplus/Deficit (Staffed)	209	79	125	16	25	1,550	20	-30	1,994
Proj. Surplus/Deficit (Licensed)	374	256	241	57	208	3,480	20	85	4,721

AN ASSESSMENT OF HEALTH STATUS AND HEALTH SERVICES

Area/Item	Newborn	Maternity	Psychiatric	Rehab	Pediatric	Med/Surg	NICU	ICU/CCU	Total
Southwest USR (Population 627,454)									
Staffed Beds (1995)	138	120	120	69	78	1,016	28	124	1,693
Licensed Beds (1995)	181	170	123	93	132	1,547	28	135	2,409
Patient Days (CT Residents)	20,045	23,367	30,736	13,847	14,596	273,240	7,637	37,239	420,707
Occupancy Rate (%) (Staffed)	39.80	53.35	70.17	54.98	51.27	73.68	74.73	82.28	68.08
Occupancy Rate (%) (Licensed)	30.34	37.66	68.46	40.79	30.29	48.39	74.73	75.57	47.85
Utilization (Days/1000 Pop)	31.9	37.2	49.0	22.1	23.3	435.5	12.2	59.3	670.5
Projected Patient Days (2000)	17,313	19,364	31,443	6,837	17,378	255,868	7,653	37,022	392,878
Average Daily Census	47	53	86	19	48	701	21	101	1,076
Out of State Adjustment (%)	4.83	5.12	2.71	5.39	2.06	4.29	4.65	5.67	4.34
Target Daily Census	49	56	88	20	49	731	22	107	1,123
Hospitals in the USR	6	6	5	3	6	6	2	6	
Target Occupancy Adjustment	0.59	0.60	0.80	0.80	0.59	0.85	0.80	0.80	
Beds Needed (2000)	84	92	110	25	83	864	27	133	1,419
Proj. Surplus/Deficit (Staffed)	54	28	10	44	-5	152	1	-9	274
Proj. Surplus/Deficit (Licensed)	97	78	13	68	49	683	1	2	990
Trends Adjustment (%)	0	0	0	0	0	-25	0	0	
Adjusted Bed Projections	84	92	110	25	83	648	27	133	1,203
Proj. Surplus/Deficit (Staffed)	54	28	10	44	-5	368	1	-9	490
Proj. Surplus/Deficit (Licensed)	97	78	13	68	49	899	1	2	1,206

**Table 4 - 9 (continued)**  
**Acute Care Projected Beds**  
**Connecticut, 1995 to 2000**

Area/Item	Newborn	Maternity	Psychiatric	Rehab	Pediatric	Med/Surg	NICU	ICU/CCU	Total
<b>South Central USR (Population 767,774)</b>									
Staffed Beds (1995)	104	114	108	24	100	1,190	46	209	1,895
Licensed Beds (1995)	129	132	156	24	106	1,397	46	215	2,205
Patient Days (CT Residents)	13,215	26,173	33,002	6,401	22,297	324,128	14,089	46,465	485,770
Occupancy Rate (%) (Staffed)	34.81	62.90	83.72	73.07	61.09	74.62	83.91	60.91	70.23
Occupancy Rate (%) (Licensed)	28.07	54.32	57.96	73.07	57.63	63.57	83.91	59.21	60.36
Utilization (Days/1000 Pop)	17.2	34.1	43.0	8.3	29.0	422.2	18.4	60.5	632.7
Projected Patient Days (2000)	19,007	24,296	39,089	8,401	20,584	314,884	8,400	45,148	479,809
Average Daily Census	52	67	107	23	56	863	23	124	1,315
Out of State Adjustment (%)	0.32	0.69	1.56	5.51	3.90	3.29	0.79	6.26	3.22
Target Daily Census	52	67	109	24	59	891	23	131	1,357
Hospitals in the USR	6	6	6	2	3	6	1	6	
Target Occupancy Adjustment	0.60	0.63	0.80	0.80	0.69	0.86	0.80	0.80	
Beds Needed (2000)	88	107	136	30	85	1,037	29	164	1,677
Proj. Surplus/Deficit (Staffed)	16	7	-28	-6	15	153	17	45	218
Proj. Surplus/Deficit (Licensed)	41	25	20	-6	21	360	17	51	528
Trends Adjustment (%)	0	0	0	0	0	-25	0	0	
Adjusted Bed Projections	88	107	136	30	85	778	29	164	1,417
Proj. Surplus/Deficit (Staffed)	16	7	-28	-6	15	412	17	45	478
Proj. Surplus/Deficit (Licensed)	41	25	20	-6	21	619	17	51	788
<b>Eastern USR (Population 390,744)</b>									
Staffed Beds (1995)	77	56	59	14	24	383		44	657
Licensed Beds (1995)	86	77	60	14	38	591		49	915
Patient Days (CT Residents)	11,156	10,793	13,367	2,958	8,234	126,352	4,663	16,868	194,391
Occupancy Rate (%) (Staffed)	39.69	52.80	62.07	57.89	94.00	90.38		105.03	81.06
Occupancy Rate (%) (Licensed)	35.54	38.40	61.04	57.89	59.37	58.57		94.31	58.21
Utilization (Days/1000 Pop)	28.6	27.6	34.2	7.6	21.1	323.4	11.9	43.2	497.5
Projected Patient Days (2000)	9,650	12,659	19,466	3,807	10,983	145,584	4,265	21,032	227,446
Average Daily Census	26	35	53	10	30	399	12	58	623
Out of State Adjustment (%)	1.32	1.08	1.97	6.63	1.37	2.03	0.47	2.80	2.01
Target Daily Census	27	35	54	11	31	407	12	59	636
Hospitals in the USR	4	4	3	1	2	4		4	
Target Occupancy Adjustment	0.56	0.60	0.80	0.80	0.66	0.83	0.80	0.80	
Beds Needed (2000)	47	59	68	14	46	488	15	74	811
Proj. Surplus/Deficit (Staffed)	30	-3	-9	0	-22	-105	-15	-30	-154
Proj. Surplus/Deficit (Licensed)	39	18	-8	0	-8	103	-15	-25	104
Trends Adjustment (%)	0	0	0	0	0	-25	0	0	
Adjusted Bed Projections	47	59	68	14	46	366	15	74	689
Proj. Surplus/Deficit (Staffed)	30	-3	-9	0	-22	17	-15	-30	-32
Proj. Surplus/Deficit (Licensed)	39	18	-8	0	-8	225	-15	-25	226

**Table 4 - 9 (continued)**  
**Acute Care Projected Beds**  
**Connecticut, 1995 to 2000**

Area/Item	Newborn	Maternity	Psychiatric	Rehab	Pediatric	Med/Surg	NICU	ICU/CCU	Total
<b>North Central USR (Population 942,574)</b>									
Staffed Beds (1995)	193	188	314	25	180	1,595	68	172	2,735
Licensed Beds (1995)	258	242	349	40	270	2,259	68	229	3,715
Patient Days (CT Residents)	36,274	32,829	61,056	6,731	29,967	361,426	6,249	47,357	581,889
Occupancy Rate (%) (Staffed)	51.49	47.84	53.27	73.76	45.61	62.08	25.18	75.43	58.29
Occupancy Rate (%) (Licensed)	38.52	37.17	47.93	46.10	30.41	43.83	25.18	56.66	42.91
Utilization (Days/1000 Pop)	38.5	34.8	64.8	7.1	31.8	383.4	6.6	50.2	617.3
Projected Patient Days (2000)	23,696	29,560	47,816	10,295	25,005	385,763	10,471	55,424	588,030
Average Daily Census	65	81	131	28	69	1,057	29	152	1,611
Out of State Adjustment (%)	0.70	0.96	1.84	2.73	2.17	2.23	4.24	3.52	2.15
Target Daily Census	65	82	133	29	70	1,080	30	157	1,646
Hospitals in the USR	9	9	8	3	10	10	4	10	
Target Occupancy Adjustment	0.57	0.60	0.80	0.80	0.57	0.84	0.80	0.80	
Beds Needed (2000)	114	136	167	36	123	1,288	37	196	2,098
Proj. Surplus/Deficit (Staffed)	79	52	147	-11	57	307	31	-24	637
Proj. Surplus/Deficit (Licensed)	144	106	182	4	147	971	31	33	1,617
Trends Adjustment (%)	0	0	0	0	0	-25	0	0	
Adjusted Bed Projections	114	136	167	36	123	966	37	196	1,776
Proj. Surplus/Deficit (Staffed)	79	52	147	-11	57	629	31	-24	959
Proj. Surplus/Deficit (Licensed)	144	106	182	4	147	1,293	31	33	1,939
<b>Northwest USR (Population 560,457)</b>									
Staffed Beds (1995)	107	82	105	12	62	724	10	110	1,212
Licensed Beds (1995)	130	116	134	14	81	1,044	10	146	1,675
Patient Days (CT Residents)	13,248	16,821	28,375	4,181	13,727	204,515	8,874	37,820	327,561
Occupancy Rate (%) (Staffed)	33.92	56.20	74.04	95.46	60.66	77.39	243.12	94.20	74.05
Occupancy Rate (%) (Licensed)	27.92	39.73	58.01	81.82	46.43	53.67	243.12	70.97	53.58
Utilization (Days/1000 Pop)	23.6	30.0	50.6	7.5	24.5	364.9	15.8	67.5	584.5
Projected Patient Days (2000)	15,021	17,494	28,367	5,918	16,193	223,541	6,639	32,483	345,656
Average Daily Census	41	48	78	16	44	612	18	89	947
Out of State Adjustment (%)	7.38	6.98	2.29	16.67	3.67	8.22	5.08	7.20	7.32
Target Daily Census	44	51	79	19	46	663	19	95	1,016
Hospitals in the USR	6	6	5	1	6	7	1	7	
Target Occupancy Adjustment	0.58	0.59	0.80	0.80	0.58	0.83	0.80	0.80	
Beds Needed (2000)	77	86	99	24	79	799	24	119	1,307
Proj. Surplus/Deficit (Staffed)	30	-4	6	-12	-17	-75	-14	-9	-95
Proj. Surplus/Deficit (Licensed)	53	30	35	-10	2	245	-14	27	368
Trends Adjustment (%)	0	0	0	0	0	-25	0	0	
Adjusted Bed Projections	77	86	99	24	79	599	24	119	1,108
Proj. Surplus/Deficit (Staffed)	30	-4	6	-12	-17	125	-14	-9	104
Proj. Surplus/Deficit (Licensed)	53	30	35	-10	2	445	-14	27	567

**Table 4 - 10**  
**Acute Care Projected Beds**  
**Connecticut, 1995 to 2005**

Area/Item	Newborn	Maternity	Psychiatric	Rehab	Pediatric	Med/Surg	NICU	ICU/CCU	Total
<b>Total State of Connecticut (Population 3,289,003)</b>									
Staffed Beds (1995)	619	560	706	144	444	4,908	152	659	8,192
Licensed Beds (1995)	784	737	822	185	627	6,838	152	774	10,919
Patient Days (CT Residents)	93,938	109,983	166,536	34,118	88,821	1,289,661	41,512	185,749	2,010,318
Occupancy Rate (%) (Staffed)	41.58	53.81	64.63	64.91	54.81	71.99	74.82	77.22	67.23
Occupancy Rate (%) (Licensed)	32.83	40.89	55.51	50.53	38.81	51.67	74.82	65.75	50.44
Utilization (Days/1000 Pop)	28.6	33.4	50.6	10.4	27.0	392.1	12.6	56.5	611.2
Projected Patient Days (2005)	78,703	97,726	167,750	36,461	89,832	1,368,185	34,787	197,712	2,071,156
Average Daily Census	216	268	460	100	246	3,748	95	542	5,674
Out of State Adjustment (%)	2.54	2.71	2.03	6.38	2.74	3.86	2.90	5.32	3.69
Target Daily Census	221	275	469	106	253	3,893	98	570	5,884
Hospitals in the USR	31	31	27	10	27	33	8	33	
Target Occupancy Adjustment	0.57	0.60	0.80	0.80	0.60	0.84	0.80	0.80	
Beds Needed (2005)	387	460	586	133	418	4,610	123	713	7,429
Proj. Surplus/Deficit (Staffed)	232	100	120	11	26	298	29	-54	763
Proj. Surplus/Deficit (Licensed)	397	277	236	52	209	2,228	29	61	3,490
Trends Adjustment (%)	0	0	0	0	0	-35	0	0	
Adjusted Bed Projections	387	460	586	133	418	2,997	123	713	5,816
Proj. Surplus/Deficit (Staffed)	232	100	120	11	26	1,911	29	-54	2,376
Proj. Surplus/Deficit (Licensed)	397	277	236	52	209	3,841	29	61	5,103
<b>Southwest USR (Population 627,454)</b>									
Staffed Beds (1995)	138	120	120	69	78	1,016	28	124	1,693
Licensed Beds (1995)	181	170	123	93	132	1,547	28	135	2,409
Patient Days (CT Residents)	20,045	23,367	30,736	13,847	14,596	273,240	7,637	37,239	420,707
Occupancy Rate (%) (Staffed)	39.80	53.35	70.17	54.98	51.27	73.68	74.73	82.28	68.08
Occupancy Rate (%) (Licensed)	30.34	37.66	68.46	40.79	30.29	48.39	74.73	75.57	47.85
Utilization (Days/1000 Pop)	31.9	37.2	49.0	22.1	23.3	435.5	12.2	59.3	670.5
Projected Patient Days (2005)	16,097	18,177	31,316	6,924	17,732	259,037	7,117	37,617	394,017
Average Daily Census	47	53	86	19	48	701	21	101	1,079
Out of State Adjustment (%)	4.83	5.12	2.71	5.39	2.06	4.29	4.65	5.67	4.34
Target Daily Census	49	56	88	20	49	731	22	107	1,126
Hospitals in the USR	6	6	5	3	6	6	2	6	
Target Occupancy Adjustment	0.59	0.60	0.80	0.80	0.59	0.85	0.80	0.80	
Beds Needed (2005)	84	92	110	25	83	864	27	133	1,419
Proj. Surplus/Deficit (Staffed)	54	28	10	44	-5	152	1	-9	274
Proj. Surplus/Deficit (Licensed)	97	78	13	68	49	683	1	2	990
Trends Adjustment (%)	0	0	0	0	0	-35	0	0	
Adjusted Bed Projections	84	92	110	25	83	561	27	133	1,117
Proj. Surplus/Deficit (Staffed)	54	28	10	44	-5	455	1	-9	576
Proj. Surplus/Deficit (Licensed)	97	78	13	68	49	986	1	2	1,292

**Table 4 - 10 (continued)**  
**Acute Care Projected Beds**  
**Connecticut, 1995 to 2005**

Area/Item	Newborn	Maternity	Psychiatric	Rehab	Pediatric	Med/Surg	NICU	ICU/CCU	Total
<b>South Central USR (Population 767,774)</b>									
Staffed Beds (1995)	104	114	108	24	100	1,190	46	209	1,895
Licensed Beds (1995)	129	132	156	24	106	1,397	46	215	2,205
Patient Days (CT Residents)	13,215	26,173	33,002	6,401	22,297	324,128	14,089	46,465	485,770
Occupancy Rate (%) (Staffed)	34.81	62.90	83.72	73.07	61.09	74.62	83.91	60.91	70.23
Occupancy Rate (%) (Licensed)	28.07	54.32	57.96	73.07	57.63	63.57	83.91	59.21	60.36
Utilization (Days/1000 Pop)	17.2	34.1	43.0	8.3	29.0	422.2	18.4	60.5	632.7
Projected Patient Days (2005)	17,499	22,955	39,449	8,679	20,444	324,789	7,735	46,675	488,225
Average Daily Census	48	63	108	24	56	890	21	128	1,338
Out of State Adjustment (%)	0.32	0.69	1.56	5.51	3.90	3.29	0.79	6.26	3.22
Target Daily Census	48	63	110	25	58	919	21	136	1,381
Hospitals in the USR	6	6	6	2	3	6	1	6	
Target Occupancy Adjustment	0.59	0.62	0.80	0.80	0.69	0.86	0.80	0.80	
Beds Needed (2005)	82	102	137	31	85	1,068	27	170	1,702
Proj. Surplus/Deficit (Staffed)	22	12	-29	-7	15	122	19	39	193
Proj. Surplus/Deficit (Licensed)	47	30	19	-7	21	329	19	45	503
Trends Adjustment (%)	0	0	0	0	0	-35	0	0	
Adjusted Bed Projections	82	102	137	31	85	694	27	170	1,328
Proj. Surplus/Deficit (Staffed)	22	12	-29	-7	15	496	19	39	567
Proj. Surplus/Deficit (Licensed)	47	30	19	-7	21	703	19	45	877
<b>Eastern USR (Population 390,744)</b>									
Staffed Beds (1995)	77	56	59	14	24	383		44	657
Licensed Beds (1995)	86	77	60	14	38	591		49	915
Patient Days (CT Residents)	11,156	10,793	13,367	2,958	8,234	126,352	4,663	16,868	194,391
Occupancy Rate (%) (Staffed)	39.69	52.80	62.07	57.89	94.00	90.38		105.03	81.06
Occupancy Rate (%) (Licensed)	35.54	38.40	61.04	57.89	59.37	58.57		94.31	58.21
Utilization (Days/1000 Pop)	28.6	27.6	34.2	7.6	21.1	323.4	11.9	43.2	497.5
Projected Patient Days (2005)	9,093	12,195	19,996	4,047	10,886	154,035	4,019	22,288	236,559
Average Daily Census	25	33	55	11	30	422	11	61	648
Out of State Adjustment (%)	1.32	1.08	1.97	6.63	1.37	2.03	0.47	2.80	2.01
Target Daily Census	25	34	56	12	30	431	11	63	661
Hospitals in the USR	4	4	3	1	2	4		4	
Target Occupancy Adjustment	0.56	0.59	0.80	0.80	0.66	0.84	0.80	0.80	
Beds Needed (2005)	45	57	70	15	46	514	14	78	839
Proj. Surplus/Deficit (Staffed)	32	-1	-11	-1	-22	-131	-14	-34	-182
Proj. Surplus/Deficit (Licensed)	41	20	-10	-1	-8	77	-14	-29	76
Trends Adjustment (%)	0	0	0	0	0	-35	0	0	
Adjusted Bed Projections	45	57	70	15	46	334	14	78	659
Proj. Surplus/Deficit (Staffed)	32	-1	-11	-1	-22	49	-14	-34	-2
Proj. Surplus/Deficit (Licensed)	41	20	-10	-1	-8	257	-14	-29	256

**Table 4 - 10 (continued)**  
**Acute Care Projected Beds**  
**Connecticut, 1995 to 2005**

Area/Item	Newborn	Maternity	Psychiatric	Rehab	Pediatric	Med/Surg	NICU	ICU/CCU	Total
<b>North Central USR (Population 942,574)</b>									
Staffed Beds (1995)	193	188	314	25	180	1,595	68	172	2,735
Licensed Beds (1995)	258	242	349	40	270	2,259	68	229	3,715
Patient Days (CT Residents)	36,274	32,829	61,056	6,731	29,967	361,426	6,249	47,357	581,889
Occupancy Rate (%) (Staffed)	51.49	47.84	53.27	73.76	45.61	62.08	25.18	75.43	58.29
Occupancy Rate (%) (Licensed)	38.52	37.17	47.93	46.10	30.41	43.83	25.18	56.66	42.91
Utilization (Days/1000 Pop)	38.5	34.8	64.8	7.1	31.8	383.4	6.6	50.2	617.3
Projected Patient Days (2005)	22,107	27,981	48,277	10,646	24,549	398,182	9,770	57,287	598,799
Average Daily Census	61	77	132	29	67	1,091	27	157	1,641
Out of State Adjustment (%)	0.70	0.96	1.84	2.73	2.17	2.23	4.24	3.52	2.15
Target Daily Census	61	77	135	30	69	1,115	28	162	1,676
Hospitals in the USR	9	9	8	3	10	10	4	10	
Target Occupancy Adjustment	0.57	0.59	0.80	0.80	0.57	0.84	0.80	0.80	
Beds Needed (2005)	108	130	168	37	121	1,326	35	203	2,129
Proj. Surplus/Deficit (Staffed)	85	58	146	-12	59	269	33	-31	606
Proj. Surplus/Deficit (Licensed)	150	112	181	3	149	933	33	26	1,586
Trends Adjustment (%)	0	0	0	0	0	-35	0	0	
Adjusted Bed Projections	108	130	168	37	121	862	35	203	1,665
Proj. Surplus/Deficit (Staffed)	85	58	146	-12	59	733	33	-31	1,070
Proj. Surplus/Deficit (Licensed)	150	112	181	3	149	1,397	33	26	2,050
<b>Northwest USR (Population 560,457)</b>									
Staffed Beds (1995)	107	82	105	12	62	724	10	110	1,212
Licensed Beds (1995)	130	116	134	14	81	1,044	10	146	1,675
Patient Days (CT Residents)	13,248	16,821	28,375	4,181	13,727	204,515	8,874	37,820	327,561
Occupancy Rate (%) (Staffed)	33.92	56.20	74.04	95.46	60.66	77.39	243.12	94.20	74.05
Occupancy Rate (%) (Licensed)	27.92	39.73	58.01	81.82	46.43	53.67	243.12	70.97	53.58
Utilization (Days/1000 Pop)	23.6	30.0	50.6	7.5	24.5	364.9	15.8	67.5	584.5
Projected Patient Days (2005)	13,907	16,419	28,712	6,165	16,221	232,144	6,147	33,845	353,560
Average Daily Census	38	45	79	17	44	636	17	93	969
Out of State Adjustment (%)	7.38	6.98	2.29	16.67	3.67	8.22	5.08	7.20	7.32
Target Daily Census	41	48	80	20	46	688	18	99	1,040
Hospitals in the USR	6	6	5	1	6	7	1	7	
Target Occupancy Adjustment	0.57	0.59	0.80	0.80	0.58	0.83	0.80	0.80	
Beds Needed (2005)	72	82	101	25	79	827	22	124	1,332
Proj. Surplus/Deficit (Staffed)	35	0	4	-13	-17	-103	-12	-14	-120
Proj. Surplus/Deficit (Licensed)	58	34	33	-11	2	217	-12	22	343
Trends Adjustment (%)	0	0	0	0	0	-35	0	0	
Adjusted Bed Projections	72	82	101	25	79	538	22	124	1,043
Proj. Surplus/Deficit (Staffed)	35	0	4	-13	-17	186	-12	-14	169
Proj. Surplus/Deficit (Licensed)	58	34	33	-11	2	506	-12	22	632

## AMBULATORY SURGERY FACILITIES

Ambulatory surgery (same-day surgery) is currently performed in hospital owned or operated outpatient facilities, in free-standing ambulatory surgical centers, or in physicians' offices.

A recent Strategic Marketing Group (SMG) newsletter projects that hospitals will capture 73.4% of the surgical market in 1997, down from the 79.3% of the market hospitals experienced in 1994. SMG expects that hospitals will perform over 14 million outpatient surgical procedures during 1997, or 57% of all surgical procedures performed in hospitals.<sup>10</sup>

Nationally, free-standing surgical center utilization increased by 11% (2.9 million to 3.2 million procedures) between 1992 and 1994, compared with a 29% increase between 1989 and 1991. The total number of free-standing centers operating nationwide, grew from 1,690 to 1,720 centers (2%) between 1992 and 1994, representing a dramatic slowing from the 14% growth in new centers between 1990 and 1991.<sup>11</sup>

During 1995, the five most common surgical procedures performed on an outpatient basis were: ophthalmological (28.1%), gastroenterological (11.2%), gynecological (14.1%), orthopedic (9.2%), and ear/nose/throat (8.8%).<sup>12</sup> As additional, less invasive surgical techniques are developed, more hospital inpatient surgeries will be shifted into the ambulatory/outpatient surgery market. Managed care and reimbursement pressures will shift some of these procedures into free-standing centers.

As of September, 1997, a total of 16 licensed and/or certified free-standing ambulatory surgical centers were providing services in Connecticut as listed in Table 4-11.

**Table 4 - 11**  
**Free-Standing Ambulatory Surgical Centers**  
**Connecticut, September 1997**

Name	Location	Licensed - Certified
Bridgeport Surgical Center	Bridgeport	L, C
CT Surgery Center	Hartford	L, C
Danbury Surgical Center	Danbury	L, C
Hartford Surgical Center	Hartford	L, C
Johnson Surgery Center	Enfield	L, C
Middlesex Surgical Center	Middletown	L, C
Naugatuck Valley Surgical Center. Ltd.	Waterbury	L, C
Stamford Surgical Center	Stamford	L, C
Waterbury Outpatient Surgical Center	Waterbury	L
YNHASC Women's Surgical Center	New Haven	L, C
YNHASC Temple Surgical Center	New Haven	L, C
Eye Surgery Center	Bloomfield	C
Opticare	Bridgeport	C
Opticare	Norwalk	C
Opticare	Waterbury	C
Connecticut Foot Surgery Center	Milford	C

Source: DPH, Bureau of Regulatory Services, License and Certification Division

## DATA COLLECTION

The State of Connecticut does not collect patient-level outpatient data. Currently, there are insufficient data available to truly understand how outpatient surgical care is being delivered in Connecticut.

<sup>10</sup> Tracking Trends: Hospitals, SMG Marketing Group, Inc., <http://www2.interaccess.com/smg/hosp.htm>. (4 April 97):1-3.

<sup>11</sup> AHA News (Graphic). Growth of freestanding ambulatory surgical centers and procedures performed, 1984-1994, (5 Aug 96):6.

<sup>12</sup> Trends in outpatient surgery. *Medical Interface*, (Aug 95):76, 79.

Efforts were made to analyze hospital outpatient data from the Connecticut Hospital Association (CHA) Cost Reports collected by OHCA. However, these data were found to be too inconsistent to perform meaningful comparisons either among hospitals within one year or within a hospital across several years.

Based upon annual-reporting hospital data filed with OHCA, a total of 186,239 ambulatory and outpatient surgical procedures were provided by the state's 34 acute care hospitals during the period October 1, 1994 to September 30, 1995. These procedures consisted of 130,809 ambulatory surgery procedures and 55,430 outpatient surgery procedures.

## LONG TERM CARE

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### INTRODUCTION

The long term care delivery system is in a state of flux. Traditional definitions and boundaries of community and institutional care, and the personnel who deliver chronic care services in these settings are blurring. New mechanisms for the delivery of care are emerging. People with functional limitations who once might have gone to a nursing facility now have alternatives such as home care, assisted living, and adult day care.

### HOME AND COMMUNITY-BASED SERVICES

Home health care has emerged as a multifaceted source of services ranging from intravenous infusion of medications to physical therapy. Between 1979 and 1990, the number of home health agencies providing Medicare services doubled. The number of agencies that cater to private payers also increased.<sup>13</sup>

Home and community-based services are provided in non-institutional settings. They may be provided through informal or formal support. Informal care is provided by family and friends. Formal care is given by paid providers. The level of formal support increases with age, functional impairment, and income. People who live alone use more formal support. More women than men use formal support partly because of their longer life expectancy.

The geographic dispersion of families and smaller family sizes adversely affect the availability of informal caregivers. In addition, the role of women as traditional providers of home care to relatives has decreased since many women are now in the work force. Workplace support (elder care) in the form of leave policies, alternative work schedules, and referral services may help employed caregivers.

### CONNECTICUT HOME CARE PROGRAM (CHCP)

The CHCP is an alternative for individuals at risk of nursing facility placement. The program is housed in the DSS Alternate Care Unit. The program provides services to assist in sustaining elders, aged 65 and older, in the community. However, funds are limited so not all elderly who are eligible for services receive them. For example, in 1995 the DSS Alternate Care Unit screened 13,044 applicants of whom 38% were referred for assessment, but only 25% were accepted into the program.

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<sup>13</sup> The Robert Wood Johnson Foundation. Chronic care in America: a 21st century challenge. Princeton (NJ): The Foundation, 1996.

The informal services provided most frequently to CHCP clients include financial management, household management, supervision, shopping, personal care, and safety checks.

## SUPPORTIVE HOUSING ARRANGEMENTS

Supportive housing arrangements, such as congregate housing, serve individuals who do not need intensive nursing services. They serve frail elderly who can live independently but need help performing certain daily living activities such as housekeeping and personal care. Congregate housing projects usually consist of private living quarters and common dining areas with at least one meal a day and some personal care services being provided. The State's 21 congregate housing projects have about 870 units housing 900 people.

Individuals are eligible to live in State-assisted congregate housing projects if they are 62 years of age or older, meet certain income limits, and meet other criteria related to physical and functional abilities and daily living needs.

## NURSING FACILITIES

Nursing facilities provide personal and skilled nursing care 24 hours per day. Nursing facility care is needed when an individual has a condition that requires 24-hour supervision, substantial needs based on activities of daily living (ADL) or cognitive status, inadequate informal support, or insufficient financial resources to pay for home and community-based services.

The DSS conducts two types of screening for individuals seeking admission to a nursing facility—screening for evidence of mental retardation or mental illness, and screening for Medicaid eligibility. Private-pay residents enter a nursing facility based on a physician's documentation of need.

The DPH licenses two categories of nursing facilities in Connecticut -- (1) chronic and convalescent nursing homes (CCNH) for skilled or rehabilitative care, and (2) rest homes with nursing supervision (RHNS) for custodial care.

Connecticut's nursing facility residents are predominantly female (74%) and their average length of stay in a nursing facility is 824 days (2.2 years).

### Nursing Facility Projection Methodology

In order to project the number of beds required by Connecticut's nursing facilities (CCNH and RHNS) in the future, the following methodology was used:

- 1) Develop an inventory of 1995 CCNH and RHNS licensed beds within each USR.
- 2) Determine 1995 utilization rates by facility level of care, gender, and age group, where utilization is defined as patient days per 1,000 population.
- 3) Project bed requirements for the years 2000 and 2005 within each USR by first determining the average daily census of Connecticut residents and then adjusting for out-of-state residents and environmental trends that are expected to affect utilization. In addition, a target occupancy of 97.5% is assumed, as cited in Public Act 95-160 amending Connecticut General Statutes, Section 17b-355.

The data sources used to perform the analyses consisted of DPH's Long Term Care data base and OPM's population projections.

### Nursing Facility Bed Inventory (1995)

In 1995, Connecticut had a total of 32,054 licensed nursing facility beds (Table 4-12), of which the majority (88%) were CCNH beds. The North Central USR had the largest number of beds (32%) and the Eastern USR had the fewest number of beds (10%). Map 4-3 displays the distribution of nursing facility beds in the state.

Since 1991, efforts have been made to reduce the number of residents in Connecticut's nursing facilities by placing a moratorium on additional beds. Nevertheless, from 1991 to 1994, the total number of licensed beds actually increased from 29,391 to 32,149. This was due to the addition of beds that had been approved before the moratorium went into effect. From 1994 to 1995, however, the total number of licensed beds decreased slightly from 32,149 to 32,054.

While the total number of licensed beds was increasing, the mix of CCNH and RHNS beds was also changing. In 1991, the proportion of RHNS beds was 21% of total licensed beds, but by 1995 the proportion had decreased to 12%. This general pattern occurred uniformly among USRs.

**Table 4 - 12**  
**Nursing Facility Bed Inventory**  
**Connecticut, 1995**

USR	Licensed CCNH Beds	Licensed RHNS Beds	Total Beds Licensed
Southwest	4,590	615	5,205
South Central	6,900	1,366	8,266
Eastern	3,083	241	3,324
North Central	9,255	913	10,168
Northwest	4,523	568	5,091
Total State	28,351	3,703	32,054

### Nursing Facility Utilization (1995)

Table 4-13 provides a summary of 1995 nursing facility utilization rates for Connecticut residents. Utilization rates are defined as patient days per 1,000 population. The data are provided by facility level of care (CCNH and RHNS), gender, and age group.

There were a total of 10,262,397 patient days in 1995. This translates to an overall utilization rate of 3,120 days per 1,000 population. As expected, utilization of nursing facilities increases markedly with age. For example, while women under the age of 65 generated 245 patient days per 1,000 population, women aged 85 years and older used 104,865 days per 1,000 population. This suggests that 28.7% of women aged 85 years and older were in nursing facilities.

The same pattern holds true for men. Men under the age of 65 used 244 patient days per 1,000 population, whereas men aged 85 years and older used 68,056 days per 1,000, suggesting that 18.6% of men aged 85 years and older were in nursing facilities. Women are greater users of nursing facilities than men in all age categories. This is most likely due to the fact that women tend to live longer than men and are less likely to have a spouse as a support system.

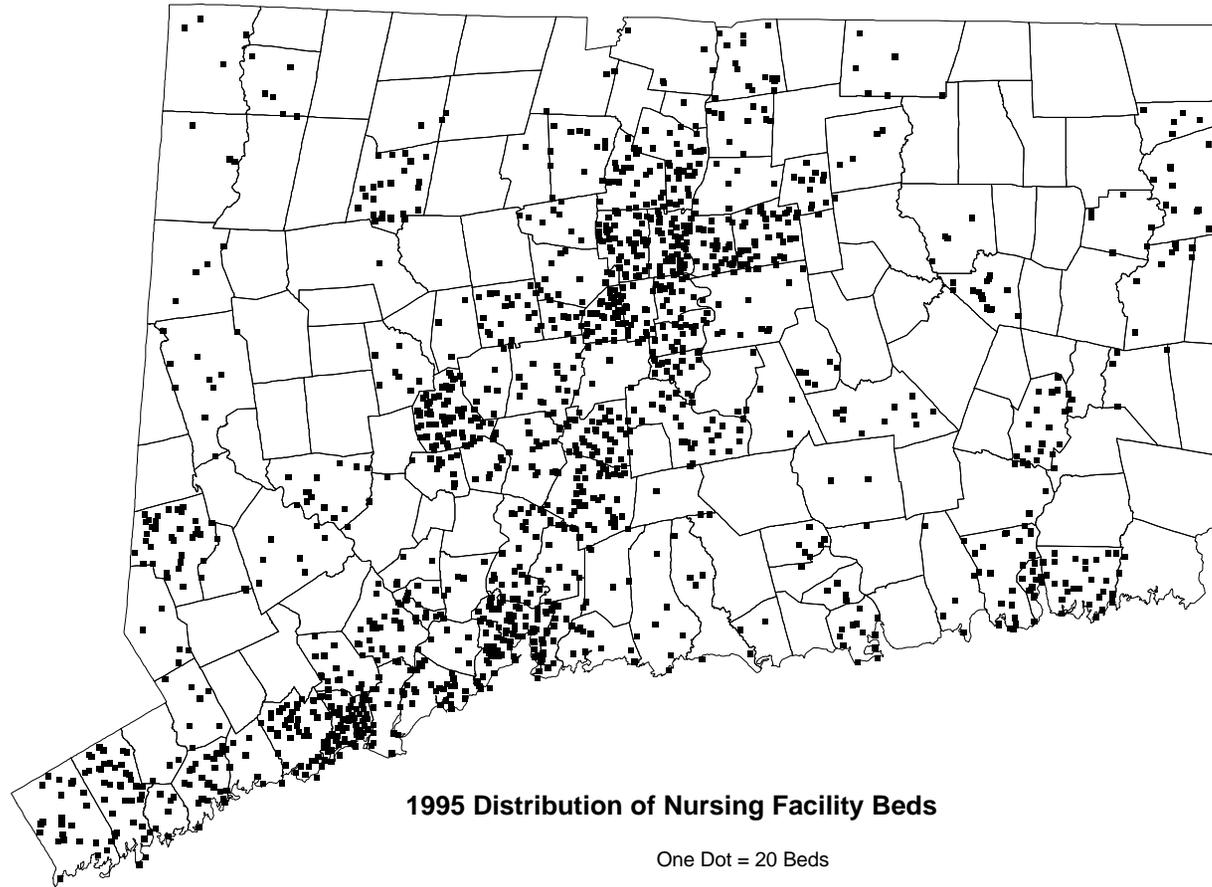
**Table 4 - 13**  
**Nursing Facility Utilization Rates**  
**Connecticut, 1995**

Gender/Age Cohort	Patient Days	Population	Utilization Rate
<b>Chronic and Convalescent Nursing Homes</b>			
Total State	9,031,693	3,288,997	2,746.0
Female	6,668,662	1,693,136	3,938.6
<65	294,369	1,409,690	208.8
65-74	597,512	141,807	4,213.6
75-84	2,020,808	101,211	19,966.3
85+	3,755,973	40,428	92,905.2
Male	2,363,031	1,595,861	1,480.7
<65	297,471	1,411,922	210.7
65-74	402,153	111,418	3,609.4
75-84	865,937	59,403	14,577.3
85+	797,470	13,118	60,792.0
<b>Rest Homes with Nursing Supervision</b>			
Total State	1,230,704	3,288,997	374.2
Female	930,323	1,693,136	549.5
<65	51,331	1,409,690	36.4
65-74	122,003	141,807	860.3
75-84	273,500	101,211	2,702.3
85+	483,489	40,428	11,959.3
Male	300,381	1,595,861	188.2
<65	47,156	1,411,922	33.4
65-74	58,084	111,418	521.3
75-84	99,852	59,403	1,680.9
85+	95,289	13,118	7,264.0
<b>CCNH &amp; RHNS</b>			
Total State	10,262,397	3,288,997	3,120.2
Female	7,598,985	1,693,136	4,488.1
<65	345,700	1,409,690	245.2
65-74	719,515	141,807	5,073.9
75-84	2,294,308	101,211	22,668.6
85+	4,239,462	40,428	104,864.5
Male	2,663,412	1,595,861	1,668.9
<65	344,627	1,411,922	244.1
65-74	460,237	111,418	4,130.7
75-84	965,789	59,403	16,258.3
85+	892,759	13,118	68,056.0

#### Projected Beds (2000 and 2005)

Tables 4-14 and 4-15 show the projected requirements for CCNH and RHNS beds by USR in the years 2000 and 2005, respectively. The projection indicates that by the year 2000, a total of 31,642 nursing facility beds will be required in the state, i.e., 412 fewer beds than are available in 1995, if treatment patterns remain the same. However, there will be a deficit of 174 RHNS beds. There will be an RHNS bed deficit in all regions except the South Central USR. There will also be a deficit of CCNH beds in the Southwest, Eastern, and Northwest USRs. By 2005, there is projected to be a deficit of 36 beds statewide, with an RHNS bed deficit of 229 beds.

Map 4-3



Note: The dots are randomly distributed within or at the town boundary and do not represent a long term care facility.

Source: DPH, OPPE, July 1997

Note that even if the target occupancy rate had been 100% rather than 97.5%, the same patterns would hold true. Although efforts have been made to reduce the number of residents in nursing facilities by limiting additional beds, by offering home and community-based services, and by developing supportive housing arrangements, there are no data available to quantify the impact of these approaches.

**Table 4 - 14**  
**Nursing Facility Projected Beds**  
**Connecticut, 2000**

Area/Item	CCNH	RHNS	Total
<b>Total State</b>			
Licensed Beds (1995)	28,351	3,703	32,054
Projected Average Census (CT Residents)	24,938	3,398	28,336
Out-of-state/Unknown Adjustment	8.6%	11.3%	8.9%
Total Projected Average Census	27,088	3,783	30,870
Target Occupancy Adjustment	0.975	0.975	0.975
Beds Required (2000)	27,765	3,877	31,642
Projected Surplus/Deficit (Licensed)	586	-174	412
<b>Southwest USR</b>			
Licensed Beds (1995)	4,590	615	5,205
Projected Average Census (CT Residents)	4,729	644	5,373
Out-of-state/Unknown Adjustment	13.7%	28.7%	15.5%
Total Projected Average Census	5,379	829	6,208
Target Occupancy Adjustment	0.975	0.975	0.975
Beds Required (2000)	5,511	850	6,361
Projected Surplus/Deficit (Licensed)	-921	-235	-1,156
<b>South Central USR</b>			
Licensed Beds (1995)	6,900	1,366	8,266
Projected Average Census (CT Residents)	5,809	792	6,600
Out-of-state/Unknown Adjustment	6.0%	4.4%	5.7%
Total Projected Average Census	6,158	826	6,978
Target Occupancy Adjustment	0.975	0.975	0.975
Beds Required (2000)	6,312	847	7,153
Projected Surplus/Deficit (Licensed)	588	519	1,113
<b>Eastern USR</b>			
Licensed Beds (1995)	3,083	241	3,324
Projected Average Census (CT Residents)	2,970	405	3,375
Out-of-state/Unknown Adjustment	7.2%	7.1%	7.2%
Total Projected Average Census	3,185	434	3,619
Target Occupancy Adjustment	0.975	0.975	0.975
Beds Required (2000)	3,265	444	3,710
Projected Surplus/Deficit (Licensed)	-182	-203	-386
<b>North Central USR</b>			
Licensed Beds (1995)	9,255	913	10,168
Projected Average Census (CT Residents)	7,097	967	8,064
Out-of-state/Unknown Adjustment	4.9%	12.4%	5.6%
Total Projected Average Census	7,444	1,087	8,511
Target Occupancy Adjustment	0.975	0.975	0.975
Beds Required (2000)	7,630	1,114	8,724
Projected Surplus/Deficit (Licensed)	1,625	-201	1,444
<b>Northwest USR</b>			
Licensed Beds (1995)	4,523	568	5,091
Projected Average Census (CT Residents)	4,333	591	4,924
Out-of-state/Unknown Adjustment	17.1%	11.1%	16.3%
Total Projected Average Census	5,074	656	5,727
Target Occupancy Adjustment	0.975	0.975	0.975
Beds Required (2000)	5,201	673	5,870
Projected Surplus/Deficit (Licensed)	-678	-105	-779

**Table 4 - 15**  
**Nursing Facility Projected Beds**  
**Connecticut, 2005**

Area/Item	CCNH	RHNS	Total
<b>Total State</b>			
Licensed Beds (1995)	28,351	3,703	32,054
Projected Average Census (CT Residents)	25,291	3,446	28,737
Out-of-state/Unknown Adjustment	8.6%	11.3%	8.9%
Total Projected Average Census	27,471	3,836	31,307
Target Occupancy Adjustment	0.975	0.975	0.975
Beds Required (2005)	28,158	3,932	32,090
Projected Surplus/Deficit (Licensed)	193	-229	-36
<b>Southwest USR</b>			
Licensed Beds (1995)	4,590	615	5,205
Projected Average Census (CT Residents)	4,777	651	5,428
Out-of-state/Unknown Adjustment	13.7%	28.7%	15.5%
Total Projected Average Census	5,434	838	6,272
Target Occupancy Adjustment	0.975	0.975	0.975
Beds Required (2005)	5,570	859	6,428
Projected Surplus/Deficit (Licensed)	-980	-244	-1,223
<b>South Central USR</b>			
Licensed Beds (1995)	6,900	1,366	8,266
Projected Average Census (CT Residents)	5,888	802	6,690
Out-of-state/Unknown Adjustment	6.0%	4.4%	5.7%
Total Projected Average Census	6,242	837	7,073
Target Occupancy Adjustment	0.975	0.975	0.975
Beds Required (2005)	6,398	858	7,250
Projected Surplus/Deficit (Licensed)	502	508	1,016
<b>Eastern USR</b>			
Licensed Beds (1995)	3,083	241	3,324
Projected Average Census (CT Residents)	3,045	415	3,460
Out-of-state/Unknown Adjustment	7.2%	7.1%	7.2%
Total Projected Average Census	3,266	444	3,710
Target Occupancy Adjustment	0.975	0.975	0.975
Beds Required (2005)	3,347	456	3,803
Projected Surplus/Deficit (Licensed)	-264	-215	-479
<b>North Central USR</b>			
Licensed Beds (1995)	9,255	913	10,168
Projected Average Census (CT Residents)	7,169	977	8,146
Out-of-state/Unknown Adjustment	4.9%	12.4%	5.6%
Total Projected Average Census	7,519	1,098	8,598
Target Occupancy Adjustment	0.975	0.975	0.975
Beds Required (2005)	7,707	1,126	8,813
Projected Surplus/Deficit (Licensed)	1,548	-213	1,355
<b>Northwest USR</b>			
Licensed Beds (1995)	4,523	568	5,091
Projected Average Census (CT Residents)	4,412	601	5,014
Out-of-state/Unknown Adjustment	17.1%	11.1%	16.3%
Total Projected Average Census	5,166	668	5,831
Target Occupancy Adjustment	0.975	0.975	0.975
Beds Required (2005)	5,295	685	5,977
Projected Surplus/Deficit (Licensed)	-772	-117	-886

## HOME HEALTH CARE SERVICES

During State Fiscal Year 1995 (July 1, 1994 - June 30, 1995), 119 licensed agencies provided home health care services in Connecticut. All the agencies offered nursing, physical therapy, speech therapy and homemaker/home health aide services, while 116 agencies (98%) also offered occupational therapy and medical social services. Sixty-four percent of the state's licensed agencies operated as non-profit facilities and

86% classified themselves as “free standing” facilities. A total of 6,249,425 client visits were provided during FY 1995, almost 24% more than in FY 1994.<sup>14</sup>

Agencies that only provide homemaker/companion services are not licensed in Connecticut, and subsequently, are not required to file annual service data. Currently, the agency annual filings are the best available data source of Connecticut home health care utilization and full-time equivalent (FTE) information, and are used as the primary source of data for this section.

## HOME HEALTH CARE PROJECTION METHODOLOGY

The service capacity of Connecticut’s licensed home health care agencies cannot be measured solely on the basis of the number of operating agencies. Instead, the total number of FTE direct care staff, as reported in the agencies’ annual filings was used as the basis for determining home health care service capacity. To project the FTE requirements for FY’s 2000 and 2005, FY 1995 utilization rates were calculated by age and gender cohorts, and then applied to the projected cohort populations in FY’s 2000 and 2005. Projections were calculated for the state and for each of Connecticut’s five USRs.

## FTE INVENTORY FY 1995

Table 4-16 presents the agency-reported, full-time equivalent, direct care staff for FY 1995, by service type (registered nurses, licensed practical nurses, registered physical therapists, registered occupational therapists, speech pathologists, social workers and homemaker/home health aides) and USR designation. Direct care staff is defined as persons hired directly by an agency and persons employed through individual or agency contractual arrangements.

During FY 1995, nearly 8,039 FTEs provided home care services through Connecticut’s licensed agencies. This is twice the number of FTEs (3,955) reported for FY 1991.<sup>15</sup> Seventy percent of the staff (5,625 FTEs) were homemaker/home health aides. The second largest FTE category was registered nurses (1,835 FTEs). Together, these two categories represent 93% of FY 1995’s home care agencies’ FTE complement, approximating the annual reporting percentages for FY 1991.

Table 4-17 also provides a calculation of the FTEs per 1,000 clients, by staff type and USR. An average of almost 84 FTEs per 1,000 clients provided services for the state during FY 1995. In comparison, an average of 61 FTEs per 1,000 clients existed statewide in FY 1991. Regionally, the number of FTEs ranged from a high of 108 FTEs per 1,000 clients in the Southwest USR to a low of 68 FTEs per 1,000 clients in the North Central USR.

Statewide, there was an average of 59 homemaker/home health aide FTEs and 19 registered nurse FTEs per 1,000 clients. Assuming 2,000 available hours per FTE per year, the average client received almost 168 hours in direct care home health care services, compared with 120 hours of direct care services per client reported in FY 1991.<sup>16</sup>

Although some agencies may have used a different definition of “FTE” when completing their service reports, it remains clear that the number of FTEs and overall service capacity of licensed home health care providers has grown rapidly in Connecticut between FYs 1991 and 1995.

## CLIENT CHARACTERISTICS

<sup>14</sup> Connecticut Department of Public Health. Service Data Report , Licensed Home Health Care Agencies, 1995 (unpublished).

<sup>15</sup> Arthur D. Little, Inc., Assessment of current health care facilities and future requirements, Cambridge, Ma: (11 June 93).

<sup>16</sup> Arthur D. Little, Inc., Assessment of current health care facilities and future requirements, Cambridge, Ma: (11 June 93).

There were 95,898 non-duplicated clients served during FY 1995 (Table 4-18). This is 2.3 times more clients than were served during FY 1991. Sixty-four percent (61,330) of the clients were female, and 68% were aged 65 and over. The largest number of clients were served by agencies located in the North Central USR.

## UTILIZATION RATES

Tables 4-19, 4-20, and 4-21 present home health care utilization rates for FY 1995 and projections for 2000 and 2005.<sup>17</sup> A 9,079 (9.5%) client increase is projected for Connecticut by the year 2005.<sup>18</sup>

During FY 1995, approximately 3% of the state's population utilized home health care services (2.2% of males and 3.6% of females). Approximately one percent of the population under age 65 utilized home health care services, whereas 32% of the population over age 84 utilized services. Female utilization rates exceeded male rates until age 85. After that, males used home health care services at a higher rate than females.

Utilization rates by USR varied considerably from a low of 13.5 per 1,000 population in the Northwest USR to a high of 37.5 per 1,000 in the North Central USR. These rates, however, may merely be a function of the number of agencies in each USR.

### Unadjusted Home Health Care Staff Projections

The projected number of direct care home health FTEs that will be required in FYs 2000 and 2005, are given in Tables 4-20 and 4-21, respectively. The projections assume that utilization rates will remain unchanged and that only the population will change. Applying the FY 1995 FTE rate per 1,000 clients to the projected number of clients indicates that 8,459 FTEs will be needed by FY 2000, increasing to 8,800 FTEs by FY 2005.

Tables 4-22 and 4-23 show the projected FTE shortfalls in all service categories, statewide and by USR, for FYs 2000 and 2005. To meet the projected requirements for 2000, an increase of 420 (5.2%) FTEs will be needed. By 2005, an additional 341 FTEs will be needed, or a 9.5% increase over FY 1995. The distribution of projected home health care staff parallels the FY 1995 staff distribution, (e.g., 70% of the needed staff for FY 2000 should be homemaker/home health aides).

### Adjusted Staff Projections

Tables 4-20 and 4-21 show the unadjusted number of FTEs that will be needed to provide home health care services by 2000 and 2005. The calculations assume FY 1995 utilization rates remain unchanged and reflect only the projected population changes in 2000 and 2005.

The home health care market has grown significantly during the 90's and shows no signs of slowing. At the same time, there are a number of federal and state issues under legislative consideration that could positively or negatively influence the expansion of home health care services in Connecticut. This market volatility and the uncertainty over reimbursement increases the difficulty of predicting demand in 2000 and 2005.

Reimbursement availability influences the total number of provider agencies in Connecticut, and ultimately the number of visits provided to clients. If public funding is reduced, expansion of service capacity will be affected. Although the total number of licensed home health care agencies in the State has remained relatively static in FYs 94 and 95, the total number of visits increased dramatically between those

<sup>17</sup> The rates by USR are not necessarily representative of the location of the clients being served because they are based upon location of the home health agencies. The clients may or may not live in the same USR as the agency from whom they receive their services.

<sup>18</sup> The projected number of clients are based upon the projected population by age and gender cohorts. The projected population reflects projected growth in the elderly population, who are the largest users of home health care services.

years, from 5,049,603 visits in FY 94 to 6,249,425 visits in FY 95. The total number of FTEs also increased relative to the number of visits provided.

In the short term, pressure to increase the service capacity of Connecticut's home health care system will likely come from the continued reduction of the state's rest home beds. These bed reductions will necessarily increase the demand for home health care and other long term care services.

Considerable care is provided to the elderly by informal caregivers, usually consisting of family and friends. The population projections make it clear that the older population cohorts are expanding. Unfortunately though, the pool of informal caregivers is simultaneously shrinking. According to a recent study on chronic care, the ratio of informal caregivers to older Americans was 11 to 1 in 1990. By 2030, the number of potential informal caregivers is expected to drop to 6 to 1.<sup>19</sup> This implies that additional formal health care services will be needed in the future.

Home health care utilization is also likely to be affected in the future as on-line computer links between physicians and their patients are developed and become available as well as in-home robotics, advances in pharmacology, and new telephonic monitoring devices. However, some of these advances may actually reduce the need for some home health care staff.

In consideration of the above, the home health care service capacity requirements for FYs 2000 and 2005 are expected to increase by 7% per year over the unadjusted projections. The results based upon these estimates are displayed in Tables 4-24 and 4-25. They indicate that 3,825 additional FTEs will be needed by 2000 and that an additional 9,272 FTEs over 1995 levels will be needed by 2005. This will more than double the FY 1995 staff levels.

## DISCUSSION

Medicare funds pay for the vast majority of home health care services. If sufficient public funding is available, increasing home health direct care staffing to meet future needs should not be an obstacle. Approximately two-thirds of the state's home health care services are provided by homemakers, health care aides, and registered nurses. Training requirements for the homemaker and health care aide job classifications can be completed in about six weeks and educational programs are readily available in Connecticut. Registered nurses account for over one-quarter of home health care's staffing, and degree nursing programs are also available in the state. Recent declines in hospital-based nursing jobs have increased the pool of nurses available for employment in the home health care industry.

People are living longer because of improved living conditions, modern health care services, and decreased mortality from infectious diseases. While national studies to determine whether home health care has the ability to reduce hospitalization have largely been inconclusive, it has been shown that home health care services can substitute or reduce a patient's need for nursing home care. It is possible that many "frail" elderly, including some who currently reside in nursing homes, could be cared for in the community, if appropriate resources were available.

The state needs to develop a continuum of care plan which encompasses all components of the publicly-funded long term care system. However, to make the best decisions regarding the appropriate distribution of limited funds, the state needs timely and accurate utilization statistics, reimbursement information and outcome data. Early in the twenty-first century, increasing costs for home health care resulting from the influx of "baby boomers" will make cost monitoring and data analysis essential, for both enabling our elderly to receive necessary health care services and for maintaining Connecticut's financial health.

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<sup>19</sup>. The Robert Wood Johnson Foundation. Chronic care in America: a 21st century challenge. Princeton (NJ): The Foundation, 1996.

**Table 4 - 16**  
**Home Health Care Inventory, FTEs**  
**Connecticut, 1995**

USR	Registered Nurses	Practical Nurses	Registered Physical Therapists	Registered Occupational Therapists	Speech Pathologists	Social Workers	Homemaker/Home Health Aides	Total FTEs
Southwest	401.6	30.1	63.5	12.8	9.5	34.7	1,404.0	1956.2
South Central	472.4	52.2	59.1	10.1	3.9	26.9	1,816.5	2441.0
Eastern	184.1	18.2	22.8	5.2	3.7	7.2	410.3	651.5
North Central	654.4	54.7	78.9	15.1	7.2	26.0	1,557.6	2393.9
Northwest	122.4	8.1	18.5	2.4	1.5	7.2	436.1	596.3
Total State	1,834.9	163.2	242.9	45.6	25.7	102.1	5,624.6	8,038.9
Percent of Total FTEs	22.8%	2.0%	3.0%	0.6%	0.3%	1.3%	70.0%	100.0%

**Table 4 - 17**  
**Home Health Care FTEs per 1,000 Clients**  
**Connecticut, 1995**

USR	Number of Clients	Registered Nurses	Licensed Practical Nurses	Registered Physical Therapists	Registered Occupational Therapists	Speech Pathologists	Social Workers	Homemaker/Home Health Aides	Total FTEs per 1,000 Clients
Southwest	18,109	22.2	1.7	3.5	0.7	0.5	1.9	77.5	108.0
South Central	25,445	18.6	2.1	2.3	0.4	0.2	1.1	71.4	95.9
Eastern	9,480	19.4	1.9	2.4	0.6	0.4	0.8	43.3	68.7
North Central	35,329	18.5	1.6	2.2	0.4	0.2	0.7	44.1	67.8
Northwest	7,535	16.3	1.1	2.5	0.3	0.2	1.0	57.9	79.1
Total State	95,898	19.1	1.7	2.5	0.5	0.3	1.1	58.7	83.8

**Table 4 - 18**  
**Home Health Care Clients<sup>a</sup>**  
**Connecticut, 1995**

USR	Male Age (Years)					Female Age (Years)					Total Clients
	< 65	65-74	75-84	85 +	Total	< 65	65-74	75-84	85 +	Total	
Southwest	1,945	1,346	1,924	1,079	6,294	3,003	2,172	3,777	2,863	11,815	18,109
South Central	3,227	2,192	2,676	1,341	9,436	4,503	3,240	5,041	3,225	16,009	25,445
Eastern	1,219	749	909	459	3,336	2,146	1,108	1,830	1,060	6,144	9,480
North Central	5,115	2,750	3,385	1,586	12,836	8,230	4,141	6,096	4,026	22,493	35,329
Northwest	683	651	869	463	2,666	1,005	1,019	1,662	1,183	4,869	7,535
Total State	12,189	7,688	9,763	4,928	34,568	18,887	11,680	18,406	12,357	61,330	95,898
Percent of Total	35.3%	22.2%	28.2%	14.3%	100.0%	30.8%	19.0%	30.0%	20.1%	100.0%	

<sup>a</sup>Counts are non-duplicated

**Table 4 - 19**  
**Client Utilization Rate and Projected Clients for the Year 2000 and 2005**  
**Connecticut, 1995**

Age/Sex Cohort	1995 Population	1995 Number of Clients	1995 Utilization per 1,000	Projected 2000 Population	Projected 2000 Number of Clients	Projected 2005 Population	Projected 2005 Number of Clients
State of Connecticut							
Total	3,288,904	95,898	29.2	3,313,417	100,905	3,359,284	104,977
Male	1,595,713	34,568	21.7	1,609,835	36,208	1,635,114	37,535
<65	1,412,153	12,189	8.6	1,424,037	12,292	1,448,850	12,506
65-74	111,436	7,688	69.0	105,812	7,300	101,616	7,011
75-84	59,058	9,763	165.3	63,966	10,574	65,650	10,853
85+	13,065	4,928	377.2	16,019	6,042	18,998	7,166
Female	1,693,191	61,330	36.2	1,703,582	64,697	1,724,170	67,442
<65	1,410,439	18,887	13.4	1,413,562	18,929	1,430,774	19,159
65-74	141,940	11,680	82.3	132,337	10,890	125,014	10,287
75-84	100,659	18,406	182.9	109,281	19,983	110,678	20,238
85+	40,153	12,357	307.7	48,403	14,896	57,703	17,758
Southwest USR							
Total	627,560	18,109	28.9	628,501	19,037	634,642	19,704

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Male	300,679	6,294	20.9	302,046	6,568	306,040	6,756
<65	264,237	1,945	7.4	265,830	1,957	270,763	1,993
65-74	22,484	1,346	59.9	20,999	1,257	19,366	1,159
75-84	11,436	1,924	168.2	12,160	2,046	12,342	2,076
85+	2,522	1,079	427.8	3,057	1,308	3,570	1,527
Female	326,881	11,815	36.1	326,455	12,469	328,602	12,947
<65	270,809	3,003	11.1	269,841	2,992	272,337	3,020
65-74	28,651	2,172	75.8	26,369	1,999	24,384	1,849
75-84	19,804	3,777	190.7	21,011	4,007	21,088	4,022
85+	7,617	2,863	375.9	9,234	3,471	10,794	4,057

**Table 4 - 19 (continued)**  
**Client Utilization Rate and Projected Clients for the Year 2000 and 2005**

Age/Sex Cohort	1995 Population	1995 Number of Clients	1995 Utilization per 1,000	Projected 2000 Population	Projected 2000 Number of Clients	Projected 2005 Population	Projected 2005 Number of Clients
<b>South Central USR</b>							
Total	767,828	25,445	33.1	771,869	26,743	782,050	27,864
Male	369,609	9,436	25.5	371,714	9,865	376,989	10,228
<65	325,477	3,227	9.9	327,275	3,245	332,567	3,297
65-74	26,548	2,192	82.6	24,846	2,051	23,718	1,958
75-84	14,408	2,676	185.7	15,663	2,909	15,937	2,960
85+	3,176	1,341	422.2	3,931	1,660	4,766	2,012
Female	398,219	16,009	40.2	400,155	16,878	405,061	17,636
<65	329,152	4,503	13.7	329,570	4,509	333,754	4,566
65-74	34,205	3,240	94.7	31,408	2,975	29,420	2,787
75-84	25,008	5,041	201.6	27,266	5,496	27,246	5,492
85+	9,854	3,225	327.3	11,911	3,898	14,640	4,791
<b>Eastern USR</b>							
Total	391,360	9,480	24.2	394,610	10,027	404,222	10,625
Male	195,916	3,336	17.0	197,426	3,527	202,280	3,741
<65	176,723	1,219	6.9	177,545	1,225	181,637	1,253
65-74	11,987	749	62.5	11,778	736	11,743	734
75-84	5,972	909	152.2	6,591	1,003	7,082	1,078
85+	1,233	459	372.3	1,512	563	1,818	677
Female	195,444	6,144	31.4	197,184	6,500	201,942	6,883
<65	166,532	2,146	12.9	167,062	2,153	170,715	2,200
65-74	14,870	1,108	74.5	14,261	1,063	13,812	1,029
75-84	10,082	1,830	181.5	11,149	2,024	11,692	2,122
85+	3,960	1,060	267.7	4,712	1,261	5,723	1,532
<b>North Central USR</b>							
Total	942,272	35,329	37.5	943,216	37,089	952,381	38,588
Male	454,956	12,836	28.2	455,199	13,403	459,610	13,867
<65	401,020	5,115	12.8	400,606	5,110	404,983	5,166
65-74	32,703	2,750	84.1	30,662	2,578	29,105	2,447
75-84	17,436	3,385	194.1	19,147	3,717	19,708	3,826
85+	3,798	1,586	417.6	4,784	1,998	5,814	2,428
Female	487,316	22,493	46.2	488,017	23,686	492,771	24,721
<65	404,695	8,230	20.3	402,525	8,186	405,711	8,251
65-74	41,789	4,141	99.1	38,926	3,857	36,557	3,623
75-84	28,972	6,096	210.4	32,274	6,791	33,291	7,005
85+	11,859	4,026	339.5	14,292	4,852	17,212	5,843
<b>Northwest USR</b>							
Total	559,884	7,535	13.5	575,221	7,975	585,989	8,228
Male	274,555	2,666	9.7	283,450	2,814	290,194	2,910
<65	244,696	683	2.8	252,781	706	258,900	723
65-74	17,715	651	36.7	17,527	644	17,684	650
75-84	9,806	869	88.6	10,406	922	10,581	938
85+	2,337	463	198.1	2,736	542	3,030	600
Female	285,329	4,869	17.1	291,771	5,161	295,795	5,318
<65	239,251	1,005	4.2	244,564	1,027	248,258	1,043
65-74	22,425	1,019	45.4	21,373	971	20,841	947
75-84	16,792	1,662	99.0	17,581	1,740	17,361	1,718
85+	6,862	1,183	172.4	8,254	1,423	9,335	1,609

**Table 4 - 20**  
**Home Health Care Projected FTEs**  
**Connecticut, 2000**

Area/ Item	Registered Nurses	Licensed Practical Nurses	Registered Physical Therapists	Registered Occupational Therapists	Speech Therapists	Social Workers	Homemaker/ Home Health Aides	Total Projected FTEs
<b>Total State</b>								
1995 FTEs per 1,000 Clients	19.134	1.702	2.533	0.475	0.268	1.064	58.652	
Projected Clients	100,905	100,905	100,905	100,905	100,905	100,905	100,905	
Projected FTEs	1930.7	171.7	255.6	47.9	27.0	107.4	5918.3	8,459
<b>Southwest USR</b>								
1995 FTEs per 1,000 Clients	22.176	1.662	3.506	0.704	0.526	1.915	77.532	
Projected Clients	19,037	19,037	19,037	19,037	19,037	19,037	19,037	
Projected FTEs	422.2	31.6	66.7	13.4	10.0	36.5	1476.0	2,056
<b>South Central USR</b>								
1995 FTEs per 1,000 Clients	18.565	2.050	2.324	0.395	0.152	1.056	71.390	
Projected Clients	26,743	26,743	26,743	26,743	26,743	26,743	26,743	
Projected FTEs	496.5	54.8	62.2	10.6	4.1	28.2	1909.2	2,566
<b>Eastern USR</b>								
1995 FTEs per 1,000 Clients	19.420	1.917	2.405	0.552	0.386	0.763	43.283	
Projected Clients	10,028	10,028	10,028	10,028	10,028	10,028	10,028	
Projected FTEs	194.7	19.2	24.1	5.5	3.9	7.6	434.0	689
<b>North Central USR</b>								
1995 FTEs per 1,000 Clients	18.524	1.548	2.234	0.428	0.203	0.737	44.088	
Projected Clients	37,089	37,089	37,089	37,089	37,089	37,089	37,089	
Projected FTEs	687.0	57.4	82.9	15.9	7.5	27.3	1635.2	2,513
<b>Northwest USR</b>								
1995 FTEs per 1,000 Clients	16.248	1.075	2.460	0.319	0.198	0.959	57.881	
Projected Clients	7,975	7,975	7,975	7,975	7,975	7,975	7,975	
Projected FTEs	129.6	8.6	19.6	2.5	1.6	7.6	461.6	631

**Table 4 - 21**  
**Home Health Care Projected FTEs**  
**Connecticut, 2005**

Area/ Item	Registered Nurses	Licensed Practical Nurses	Registered Physical Therapists	Registered Occupational Therapists	Speech Pathologists	Social Workers	Homemaker/ Home Health Aides	Total Projected FTEs
<b>Total State</b>								
1995 FTEs per 1,000 Clients	19.134	1.702	2.533	0.475	0.268	1.064	58.652	
Projected Clients	104,977	104,977	104,977	104,977	104,977	104,977	104,977	
Projected FTEs	2008.6	178.7	265.9	49.9	28.1	111.7	6157.1	8,800
<b>Southwest USR</b>								
1995 FTEs per 1,000 Clients	22.176	1.662	3.506	0.704	0.526	1.915	77.532	
Projected Clients	19,704	19,704	19,704	19,704	19,704	19,704	19,704	
Projected FTEs	436.9	32.7	69.1	13.9	10.4	37.7	1527.7	2,128
<b>South Central USR</b>								
1995 FTEs per 1,000 Clients	18.565	2.050	2.324	0.395	0.152	1.056	71.390	
Projected Clients	27,864	27,864	27,864	27,864	27,864	27,864	27,864	
Projected FTEs	517.3	57.1	64.8	11.0	4.2	29.4	1989.2	2,673
<b>Eastern USR</b>								
1995 FTEs per 1,000 Clients	19.420	1.917	2.405	0.552	0.386	0.763	43.283	
Projected Clients	10,625	10,625	10,625	10,625	10,625	10,625	10,625	
Projected FTEs	206.3	20.4	25.6	5.9	4.1	8.1	459.9	730
<b>North Central USR</b>								
1995 FTEs per 1,000 Clients	18.524	1.548	2.234	0.428	0.203	0.737	44.088	
Projected Clients	38,588	38,588	38,588	38,588	38,588	38,588	38,588	
Projected FTEs	714.8	59.7	86.2	16.5	7.8	28.4	1701.3	2,615
<b>Northwest USR</b>								
1995 FTEs per 1,000 Clients	16.248	1.075	2.460	0.319	0.198	0.959	57.881	
Projected Clients	8,228	8,228	8,228	8,228	8,228	8,228	8,228	
Projected FTEs	133.7	8.8	20.2	2.6	1.6	7.9	476.2	651

**Table 4 - 22**  
**FTE Surplus/Deficit**  
**Connecticut, 2000**

Area/Item	Registered Nurses	Licensed Practical Nurses	Registered Physical Therapists	Registered Occupational Therapists	Speech Pathologists	Social Workers	Homemaker/ Home Health Aides	FTE Totals
Total State								
FTEs Available, 1995	1834.9	163.2	242.9	45.6	25.7	102.0	5624.6	8038.9
Projected FTEs Required	1930.7	171.7	255.6	47.9	27.0	107.4	5918.3	8458.6
Projected FTE Surplus/Deficit	-95.8	-8.5	-12.7	-2.3	-1.3	-5.4	-293.7	-419.7
Southwest USR								
FTEs Available, 1995	401.6	30.1	63.5	12.8	9.5	34.7	1404.0	1956.2
Projected FTEs Required	422.2	31.6	66.7	13.4	10.0	36.5	1476.0	2056.4
Projected FTE Surplus/Deficit	-20.6	-1.5	-3.2	-0.6	-0.5	-1.8	-72.0	-100.2
South Central USR								
FTEs Available, 1995	472.4	52.2	59.1	10.1	3.9	26.9	1816.5	2441.0
Projected FTEs Required	496.5	54.8	62.2	10.6	4.1	28.2	1909.2	2565.6
Projected FTE Surplus/Deficit	-24.1	-2.6	-3.1	-0.5	-0.2	-1.3	-92.7	-124.6
Eastern USR								
FTEs Available	184.1	18.2	22.8	5.2	3.7	7.2	410.3	651.5
Projected FTEs Required	194.7	19.2	24.1	5.5	3.9	7.6	434.0	689.0
Projected FTE Surplus/Deficit	-10.6	-1.0	-1.3	-0.3	-0.2	-0.4	-23.7	-37.5
North Central USR								
FTEs Available, 1995	654.4	54.7	78.9	15.1	7.2	26.0	1557.6	2393.9
Projected FTEs Required	687.0	57.4	82.9	15.9	7.5	27.3	1635.2	2513.2
Projected FTE Surplus/Deficit	-32.6	-2.7	-4.0	-0.8	-0.3	-1.3	-77.6	-119.3
Northwest USR								
FTEs Available, 1995	122.4	8.1	18.5	2.4	1.5	7.2	436.1	596.3
Projected FTEs Required	129.6	8.6	19.6	2.5	1.6	7.7	461.6	631.2
Projected FTE Surplus/Deficit	-7.2	-0.5	-1.1	-0.1	-0.1	-0.5	-25.5	-34.9

**Table 4 - 23  
FTE Surplus/Deficit  
Connecticut, 2005**

Area/Item	Registered Nurses	Licensed Practical Nurses	Registered Physical Therapists	Registered Occupational Therapists	Speech Pathologists	Social Workers	Homemaker/ Home Health Aides	FTE Totals
<b>Total State</b>								
FTEs Available, 1995	1834.9	163.2	242.9	45.6	25.7	102.0	5624.6	8038.9
Projected FTEs Required	2008.6	178.7	265.9	49.9	28.1	111.7	6157.1	8800.0
Projected FTE Surplus/Deficit	-173.7	-15.5	-23.0	-4.3	-2.4	-9.7	-532.5	-761.1
<b>Southwest USR</b>								
FTEs Available, 1995	401.6	30.1	63.5	12.8	9.5	34.7	1404.0	1956.2
Projected FTEs Required	436.9	32.7	69.1	13.9	10.4	37.7	1527.7	2128.4
Projected FTE Surplus/Deficit	-35.3	-2.6	-5.6	-1.1	-0.9	-3.0	-123.7	-172.2
<b>South Central USR</b>								
FTEs Available, 1995	472.4	52.2	59.1	10.1	3.9	26.9	1816.5	2441.0
Projected FTEs Required	517.3	57.1	64.8	11.0	4.2	29.4	1989.2	2673.0
Projected FTE Surplus/Deficit	-44.9	-4.9	-5.7	-0.9	-0.3	-2.5	-172.7	-232.0
<b>Eastern USR</b>								
FTEs Available, 1995	184.1	18.2	22.8	5.2	3.7	7.2	410.3	651.5
Projected FTEs Required	206.3	20.4	25.6	5.9	4.1	8.1	459.9	730.3
Projected FTE Surplus/Deficit	-22.2	-2.2	-2.8	-0.7	-0.4	-0.9	-49.6	-78.8
<b>North Central USR</b>								
FTEs Available, 1995	654.4	54.7	78.9	15.1	7.2	26.0	1557.6	2393.9
Projected FTEs Required	714.8	59.7	86.2	16.5	7.8	28.4	1701.3	2614.7
Projected FTE Surplus/Deficit	-60.4	-5.0	-7.3	-1.4	-0.6	-2.4	-143.7	-220.8
<b>Northwest USR</b>								
FTEs Available, 1995	122.4	8.1	18.5	2.4	1.5	7.2	436.1	596.3
Projected FTEs Required	133.7	8.8	20.2	2.6	1.6	7.9	476.2	651.0
Projected FTE Surplus/Deficit	-11.3	-0.7	-1.7	-0.2	-0.1	-0.7	-40.1	-54.7

**Table 4 - 24**  
**Adjusted FTE Projections**  
**Connecticut, 2000**

Area/ Item	Registered Nurses	Licensed Practical Nurses	Registered Physical Therapists	Registered Occupational Therapists	Speech Pathologists	Social Workers	Homemaker/ Home Health Aides	Total FTEs
Total State								
FTEs Available, 1995	1,834.9	163.2	242.9	45.6	3.6	102.0	5,624.6	8,038.9
Projected FTEs (Base Case)	1,930.7	171.7	255.6	47.9	27.0	107.4	5,918.3	8,458.6
Projected FTEs Surplus/Deficit	-95.8	-8.5	-12.7	-2.3	-23.4	-5.4	-293.7	-419.7
Predicted Trends Adj. (7%/yr.)	1.4026	1.4026	1.4026	1.4026	1.4026	1.4026	1.4026	1.4026
Adjusted Projections	2,707.9	240.8	358.5	67.2	37.9	150.6	8,300.7	11,863.6
Projected FTE Surplus/Deficit	-873.0	-77.6	-115.6	-21.6	-34.3	-48.6	-2,676.1	-3,824.7
Southwest USR								
FTEs Available, 1995	401.6	30.1	63.5	12.8	9.5	34.7	1,404.0	1,956.2
Projected FTEs (Base Case)	422.2	31.6	66.7	13.4	10.0	36.5	1,476.0	2,056.4
Projected FTEs Surplus/Deficit	-20.6	-1.5	-3.2	-0.6	-0.5	-1.8	-72.0	-100.2
Predicted Trends Adj. (7%/yr.)	1.4026	1.4026	1.4026	1.4026	1.4026	1.4026	1.4026	1.4026
Adjusted Projections	592.2	44.3	93.6	18.8	14.0	51.2	2,070.2	2,884.2
Projected FTE Surplus/Deficit	-190.6	-14.2	-30.1	-6.0	-4.5	-16.5	-666.1	-928.1
South Central USR								
FTEs Available, 1995	472.4	52.2	59.1	10.1	3.9	26.9	1,816.5	2,441.0
Projected FTEs (Base Case)	496.5	54.8	62.2	10.6	4.1	28.2	1,909.2	2,565.6
Projected FTEs Surplus/Deficit	-24.1	-2.6	-3.1	-0.5	-0.2	-1.3	-92.7	-124.6
Predicted Trends Adj. (7%/yr.)	1.4026	1.4026	1.4026	1.4026	1.4026	1.4026	1.4026	1.4026
Adjusted Projections	696.4	76.9	87.2	14.9	5.8	39.6	2,677.8	3,598.4
Projected FTE Surplus/Deficit	-224.0	-24.7	-28.1	-4.8	-1.9	-12.7	-861.2	-1,157.4
Eastern USR								
FTEs Available, 1995	184.1	18.2	22.8	5.2	3.7	7.2	410.3	651.5
Projected FTEs (Base Case) 2000	194.7	19.2	24.1	5.5	3.9	7.6	434.0	689.2
Projected FTEs Surplus/Deficit	-10.6	-1.0	-1.3	-0.3	-0.2	-0.4	-23.7	-37.7
Predicted Trends Adj. (7%/yr.)	1.4026	1.4026	1.4026	1.4026	1.4026	1.4026	1.4026	1.4026
Adjusted Projections	273.1	26.9	33.8	7.7	5.5	10.7	608.7	966.6
Projected FTE Surplus/Deficit	-89.0	-8.8	-11.0	-2.5	-1.8	-3.4	-198.4	-315.1
North Central USR								
FTEs Available, 1995	654.4	54.7	78.9	15.1	7.2	26.0	1,557.6	2,393.9
Projected FTEs (Base Case)	687.0	57.4	82.9	15.9	7.5	27.3	1,635.2	2,513.2
Projected FTEs Surplus/Deficit	-32.6	-2.7	-4.0	-0.8	-0.3	-1.3	-77.6	-119.3
Predicted Trends Adj. (7%/yr.)	1.4026	1.4026	1.4026	1.4026	1.4026	1.4026	1.4026	1.4026
Adjusted Projections	963.6	80.5	116.3	22.3	10.5	38.3	2,293.5	3,524.9
Projected FTE Surplus/Deficit	-309.1	-25.8	-37.4	-7.2	-3.4	-12.3	-735.9	-1,131.0
Northwest USR								
FTEs Available, 1995	122.4	8.1	18.5	2.4	1.5	7.2	436.1	596.3
Projected FTEs (Base Case)	129.6	8.6	19.6	2.5	1.6	7.6	461.6	631.2
Projected FTEs Surplus/Deficit	-7.2	-0.5	-1.1	-0.1	-0.1	-0.4	-25.5	-34.9
Predicted Trends Adj. (7%/yr.)	1.4026	1.4026	1.4026	1.4026	1.4026	1.4026	1.4026	1.4026
Adjusted Projections	181.8	12.1	27.5	3.5	2.2	10.7	647.4	885.3
Projected FTE Surplus/Deficit	-59.3	-4.0	-9.0	-1.1	-0.8	-3.4	-211.3	-289.0

**Table 4 - 25**  
**Adjusted FTE Projections**  
**Connecticut, 2005**

Area / Item	Registered Nurses	Licensed Practical Nurses	Registered Physical Therapists	Registered Occupational Therapists	Speech Pathologists	Social Workers	Homemaker/ Home Health Aides	Total FTEs
<b>Total State</b>								
FTEs Available 1995	1,834.9	163.2	242.9	45.6	3.6	102.0	5,624.6	8,038.9
Projected FTEs (Base Case)	2,008.6	178.7	265.9	49.9	28.1	111.7	6,157.1	8,800.0
Projected FTEs Surplus/Deficit	-173.7	-15.5	-23.0	-4.3	-24.5	-9.7	-532.5	-761.1
Predicted Trends Adj. (7%/yr.)	1.9672	1.9672	1.9672	1.9672	1.9672	1.9672	1.9672	1.9672
Adjusted Projections	3,951.2	351.5	523.1	98.2	55.3	219.7	12,111.9	17,310.9
Projected FTE Surplus/Deficit	-2,116.3	-188.3	-280.2	-52.6	-51.7	-117.7	-6,487.3	-9,272.0
<b>Southwest USR</b>								
FTEs Available 1995	401.6	30.1	63.5	12.8	9.5	34.7	1,404.0	1,956.2
Projected FTEs (Base Case)	436.9	32.7	69.1	13.9	10.4	37.7	1,527.7	2,128.4
Projected FTEs Surplus/Deficit	-35.3	-2.6	-5.6	-1.1	-0.9	-3.0	-123.7	-172.2
Predicted Trends Adj. (7%/yr.)	1.9672	1.9672	1.9672	1.9672	1.9672	1.9672	1.9672	1.9672
Adjusted Projections	859.4	64.3	135.9	27.3	20.5	74.2	3,005.2	4,186.9
Projected FTE Surplus/Deficit	-457.9	-34.2	-72.4	-14.6	-10.9	-39.5	-1601.2	-2230.7
<b>South Central USR</b>								
FTEs Available 1995	472.4	52.2	59.1	10.1	3.9	26.9	1,816.5	2,441.0
Projected FTEs (Base Case)	517.3	57.1	64.8	11.0	4.2	29.4	1,989.2	2,673.0
Projected FTEs Surplus/Deficit	-44.9	-4.9	-5.7	-0.9	-0.3	-2.5	-172.7	-232.0
Predicted Trends Adj. (7%/yr.)	1.9672	1.9672	1.9672	1.9672	1.9672	1.9672	1.9672	1.9672
Adjusted Projections	1,017.6	112.3	127.5	21.6	8.3	57.8	3,913.1	5,258.2
Projected FTE Surplus/Deficit	-545.2	-60.2	-68.3	-11.6	-4.4	-31.0	-2,096.5	-2,817.2
<b>Eastern USR</b>								
FTEs Available 1995	184.1	18.2	22.8	5.2	3.7	7.2	410.3	651.5
Projected FTEs (Base Case)	206.3	20.4	25.6	5.9	4.1	8.1	459.9	730.3
Projected FTEs Surplus/Deficit	-22.2	-2.2	-2.8	-0.7	-0.4	-0.9	-49.6	-78.8
Predicted Trends Adj. (7%/yr.)	1.9672	1.9672	1.9672	1.9672	1.9672	1.9672	1.9672	1.9672
Adjusted Projections	405.8	40.1	50.4	11.6	8.1	15.9	904.7	1,436.6
Projected FTE Surplus/Deficit	-221.7	-22.0	-27.6	-6.4	-4.4	-8.7	-494.4	-785.1
<b>North Central USR</b>								
FTEs Available 1995	654.4	54.7	78.9	15.1	7.2	26.0	1,557.6	2,393.9
Projected FTEs (Base Case)	714.8	59.7	86.2	16.5	7.8	28.4	1,701.3	2,614.7
Projected FTEs Surplus/Deficit	-60.4	-5.0	-7.3	-1.4	-0.6	-2.4	-143.7	-220.8
Predicted Trends Adj. (7%/yr.)	1.9672	1.9672	1.9672	1.9672	1.9672	1.9672	1.9672	1.9672
Adjusted Projections	1,406.1	117.4	169.6	32.5	15.3	55.9	3,346.7	5,143.5
Projected FTE Surplus/Deficit	-751.7	-62.8	-90.6	-17.4	-8.2	-29.8	-1,789.1	-2,749.6
<b>Northwest USR</b>								
FTEs Available 1995	122.4	8.1	18.5	2.4	1.5	7.2	436.1	596.3
Projected FTEs (Base Case)	133.7	8.8	20.2	2.6	1.6	7.9	476.2	651.0
Projected FTEs Surplus/Deficit	-11.3	-0.7	-1.7	-0.2	-0.1	-0.7	-40.1	-54.7
Predicted Trends Adj. (7%/yr.)	1.9672	1.9672	1.9672	1.9672	1.9672	1.9672	1.9672	1.9672
Adjusted Projections	263.0	17.3	39.7	5.1	3.1	15.5	936.8	1,280.6
Projected FTE Surplus/Deficit	-140.6	-9.2	-21.2	-2.7	-1.7	-8.3	-500.6	-684.3

## EMERGENCY MEDICAL SERVICES

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### INTRODUCTION

Emergency medical services (EMS) are critical components of the overall health care delivery system. The availability of these services to the public at large is often the only difference between life and death in a medical emergency. EMS directly affect the public's health by providing immediate intervention for victims of traumatic events, heart attacks, strokes, and motor vehicle accidents.

An estimated one in four Americans is injured annually and accounts for one in three emergency department visits.<sup>20</sup> Unintentional injuries kill 1,000 Connecticut residents<sup>21</sup> and cause 36,000 hospital admissions in the state each year<sup>22</sup>. Motor-vehicle-related injuries account for nearly 4,000 hospitalizations in Connecticut each year<sup>23</sup> and represent 5% of emergency department visits<sup>24</sup>. Chapter 3 contains a more extensive discussion of injuries and their impact on Connecticut's health care system.

The essential purpose of an EMS system is to reduce death and disability due to injuries and other emergent medical events. For EMS to accomplish its purpose, the system must provide for the personnel, facilities, and equipment for the efficient, effective, and coordinated delivery of health care services to handle emergencies. Typically, EMS systems incorporate 15 components -- manpower, training, communications, transportation, facilities, critical care units, public safety agencies, consumer participation, access to care, transfer of patients, standardized patient record keeping, public information and education, evaluation, disaster linkages, and mutual aid agreements<sup>25</sup>.

### EMS RELATIONSHIP WITH *HEALTHY CONNECTICUT 2000*

Emergency medical services contribute towards the state's achievement of year 2000 goals. Objective 1.1 of *Healthy Connecticut 2000* is to reduce coronary heart disease deaths to no more than 84/100,000 people. The presence and expertise of EMS personnel who are trained in cardiopulmonary resuscitation and advanced cardiac care can provide direct intervention for reducing coronary heart disease deaths. Chapter 7 of *Healthy Connecticut 2000* identifies objectives for reducing violence that results in death and disability, and Chapter 9 of *Healthy Connecticut 2000* relates to unintentional injury objectives such as reducing deaths from motor vehicle crashes, falls, drownings, and residential fires. Emergency medical services are often the first medical care provided to victims of violence and injuries. Thus, the service is critical for reducing death and disability outcomes as identified in *Healthy Connecticut 2000*.

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<sup>20</sup> McCaig LF. *National Hospital Ambulatory Medical Care Survey: 1992*. Washington: National Center for Health Statistics, 1994.

<sup>21</sup> Connecticut Department of Public Health, Office of Policy, Planning, and Evaluation, Vital Records, 1994.

<sup>22</sup> Connecticut Office of Health Care Access. Hospital Discharge Data Base, 1995.

<sup>23</sup> Connecticut Department of Public Health, Office of Policy, Planning, and Evaluation, 1995.

<sup>24</sup> McCaig LF.

<sup>25</sup> U.S. Department of Health, Education and Welfare. Emergency Medical Services System Act of 1973.

## CONNECTICUT'S EMERGENCY MEDICAL SERVICE SYSTEM

The emergency medical services system in Connecticut is organized on three levels consisting of state, regional, and local levels. Chapter 368d of the Connecticut General Statutes identifies the responsibilities of the system to assure that each resident in the State has access to emergency medical services. Regulation of the system covers all emergency medical care providers, all personnel training requirements and authorized levels of services, all vehicle specifications and equipment standards, and the setting of rates for service delivery.<sup>26</sup> Regulations are promulgated by DPH which is also responsible for the planning, development and administration of the statewide EMS system. DPH establishes minimum standards, provides technical and consulting assistance, adopts and enforces regulations, coordinates education and training programs, prepares plans and programs, and certifies EMS personnel and equipment.

The regional level of EMS infrastructure acts as liaison between state and local efforts. Five defined EMS regions, identical to the Uniform Service Regions in Connecticut, are represented by EMS councils. These councils serve as authorized extensions of the State in performing delegated state functions and in implementing state policy and programs at the regional and local level. The councils develop regional implementation plans that complement the state plan<sup>27</sup>, provide technical assistance and serve as a voice for the local communities concerning all EMS issues.

The local EMS infrastructure is responsible for providing services or contracting for the needed emergency medical services in the community. The EMS delivery system includes prehospital care providers, hospital emergency departments, and specialized hospital facilities. In Connecticut, 276 commercial, municipal, or volunteer providers served the public's need for prehospital emergency medical services in 1997. Over 40% of these providers are volunteer fire departments and one-quarter are volunteer ambulance companies (Table 4-26).

**Table 4 - 26**  
**Prehospital Emergency Medical Service Providers**  
**Connecticut, 1997**

Type of Provider	Number	Percent
Volunteer Fire Departments	117	42.4%
Volunteer Ambulance Company	71	25.7%
Private	35	12.7%
Local Fire Department	21	7.6%
Police Department	16	5.8%
Hospital Based	9	3.3%
State Institution	6	2.2%
Municipal	1	0.3%
Total	276	100.0%

Source: DPH, OEMS, data compiled as of 6/30/97

The hospital emergency departments in Connecticut are dedicated to offering emergency medical evaluation and initial treatment to patients. When an injury requires advanced patient care as a result of a serious injury or illness, the victim may best be served in a facility that offers specialized emergency care 24 hours a day such as a trauma center, burn center, neonatal or pediatric center. There are nine Connecticut hospitals that are designated as trauma facilities and serve as participants in the EMS trauma delivery system (Table 4 - 27).

The EMS delivery system involves both the public and private sector working together to provide the necessary services to meet the emergency medical needs of our residents. The variety of stakeholders

<sup>26</sup> Regulations of Connecticut State Agencies, Emergency Medical Services, Sections 19a-177, 19a-179 through 19a-180.

<sup>27</sup> Connecticut Department of Public Health. *Emergency Medical Services Plan*. Hartford: Office of Emergency Medical Services, 1997.

range from a small local fire department to the large city hospital, but each is involved in this critical component of the overall health care delivery system in Connecticut.

**Table 4 - 27**  
**Designated Trauma Facilities**  
**Connecticut, 1997**

Trauma Level and Hospital	
Level I <sup>a</sup>	Bridgeport Hospital Hartford Hospital St. Francis Hospital and Medical Center Yale New Haven Hospital
Level II <sup>b</sup>	Hospital of Saint Raphael St. Mary's Hospital St. Vincent's Hospital Stamford Hospital Waterbury Hospital

Source: DPH, OEMS, data compiled as of 4/23/97

<sup>a</sup> Level I indicates comprehensive emergency services offering complete and advanced patient care for all emergencies including those requiring complex and specialized emergency care 24 hours a day.

<sup>b</sup> Level II offers advanced patient care in all medical and surgical specialties to render resuscitation and life-support 24 hours a day.

## CONNECTICUT EMS PLAN

In January of 1997, the DPH published the latest statewide EMS plan. The plan identifies the need for a uniform funding mechanism, the lack of a statewide prehospital data collection system, and the need to designate primary service area responders for all levels of service (i.e. first responder, basic ambulance, and paramedic). Public health professionals need adequate information to develop, implement, and evaluate prevention programs, and decision makers need timely information to develop policies to prevent injuries and unintentional deaths. Baseline and follow-up studies of trauma incidence and outcomes are instrumental in planning, implementing, and evaluating a trauma care system. Among the most useful data sources are trauma registries, hospital discharge data, vital statistics, EMS run reports, and surveys that assess hospital trauma care capabilities.

DPH, in collaboration with the Connecticut Hospital Association, developed a trauma registry that identifies traumatic injuries; however, there is no mechanism to evaluate the overall EMS system, its effectiveness of services, and the appropriateness of care provided to victims of medical and trauma related emergencies. DPH has revised an EMS "run form" to collect information about emergency medical services and is available to all providers free of charge. The form has not been widely used and there is no requirement for providers to submit the information to the State. Each EMS service, in cooperation with its sponsoring hospital, determines which "run form" it will use and what additional data beyond the minimum is to be included. Therefore, there are multiple forms that are not compatible between regions, municipalities, or hospital service areas.

There is an effort underway to develop a prehospital data base that can link to the trauma registry and the hospital discharge data base to assess and evaluate the continuity of care for medical emergency victims. DPH has drafted a scope of work and is in the process of developing a data management system to collect and analyze data when contributed. This is in response to the goals and objectives outlined in the EMS plan.

The objectives in the state EMS Plan are considered ambitious but necessary to be prepared for an increasing demand for emergency medical resources. The conditions that are present now will be present in the future and increase with a rapidly aging population. The increasing incidence of violent crime in the urban areas and the spread of diverse infectious diseases inspires the EMS system to respond appropriately. It is one of the few health care services that is relied upon so heavily by the entire population. Current and proposed efforts to improve the system may require budget assessments and reallocations and redefined priorities at the local, regional, state, and federal levels.

## SCHOOL-BASED HEALTH CENTERS

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An estimated 9.8 million children (14%) under the age of 18 were uninsured in the United States at any time during 1995.<sup>28</sup> An estimated 80,000 of these children were residents of Connecticut.<sup>29,30</sup> Children who are uninsured, underinsured, or living at or below poverty level are often faced with numerous obstacles to appropriate and timely primary health and mental health care. Adolescents aged 12 to 17 are especially vulnerable, as nearly 15% of this age group are uninsured. Cost is the primary barrier to health care access for children, but insufficient transportation, medical practices that limit access to Medicaid enrolled children, cultural barriers, an unfamiliarity regarding the availability of services or the importance of preventive health care can also conspire to hamper a child's chances of receiving necessary health care. A major barrier to health care for adolescents is the issue of confidentiality.

Barriers to health care exist even when a child has medical insurance, as many single- or two-working-parent families find it difficult to get their children to medical appointments during working hours. In some geographical areas, accessibility problems are further exacerbated by an overall shortage of health care professionals.

For more than twenty years, Connecticut schools have tried to bring health care services to their students in need. This has resulted in the establishment of school-based health clinics and centers (SBHC). In 1985, the first DPH funded SBHC opened at the Bassick High School in Bridgeport. Since then, over forty new clinics have opened in the state. During SFY 1995-96, DPH provided \$4.3 million in funding to 42 comprehensive SBHC sites with over \$3.6 million allocated by the state legislature (Figure 4-3).<sup>31</sup>

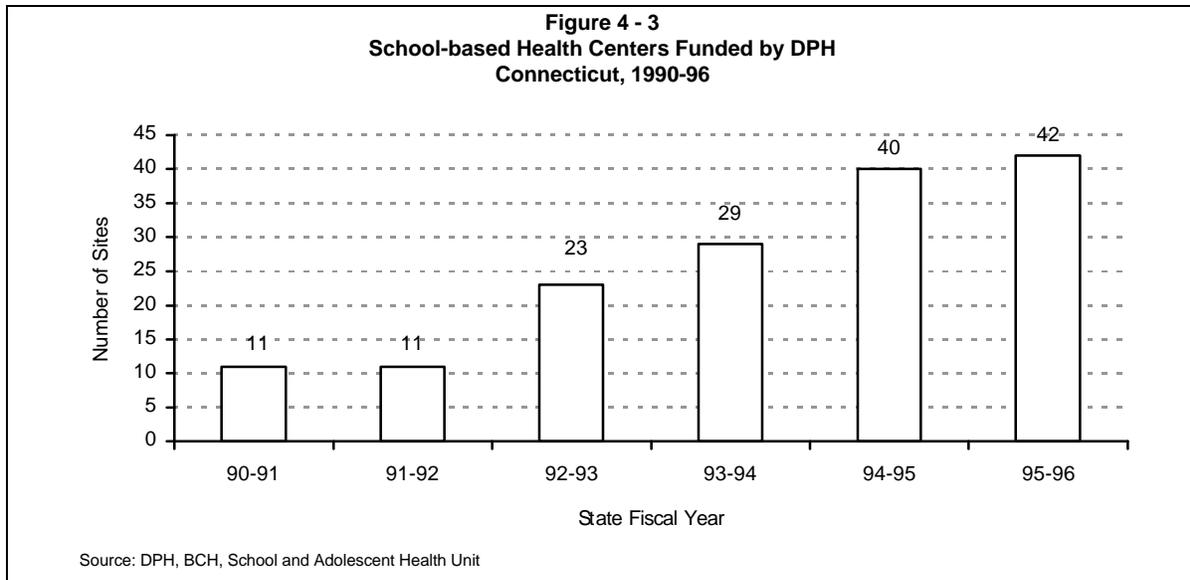
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<sup>28</sup> U.S. Bureau of the Census. *Current Population Study*, Washington, D.C., 1996.

<sup>29</sup> Tash, Jean, Census Bureau, Housing and Household Economic Statistics Division, Income Statistics Branch, Health Insurance Coverage Status by State, Number and Percent of Persons under 18 Years Old by Type of Coverage: 1987-1995, p2.

<sup>30</sup> The problem of uninsured children was previously discussed in Chapter 2.

<sup>31</sup> Making the Grade-Connecticut. School-based Health Clinics in Connecticut 1995-96, The George Washington University, Washington, D.C. 1997, <http://www.gwu.edu/~mtg/grant/ct/ctfs.html>.

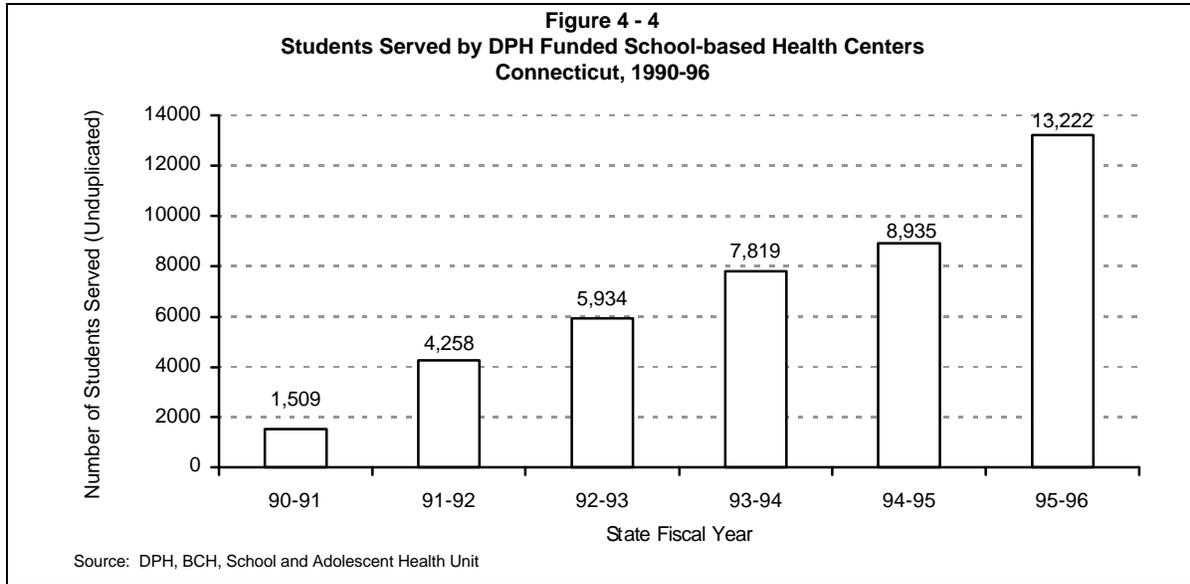


Services are provided by multidisciplinary teams of professionals with expertise in pediatric and adolescent health care including nurse practitioners, physician assistants, social workers, doctors, dentists and/or dental hygienists. Although services are targeted toward uninsured or underinsured students or those without a family doctor, any child enrolled at a site school may utilize the services with parental permission.

During SFY 1995-96, Connecticut ranked fourth in the nation in total number of SBHC sites. All of Connecticut's SBHCs are located within or on school grounds, and are licensed as outpatient clinics or hospital satellites by the DPH. Eleven sites were in elementary schools, 18 were located at high schools, and 12 at middle schools. Each site provided comprehensive primary health and mental health care services. In addition, five sites (three in Bridgeport and two in Stamford) offered dental services.

DPH-funded SBHCs annually submit utilization and demographic data to the DPH. Based on preliminary information<sup>32</sup>, 13,222 students received health services in Connecticut's SBHCs during SFY 1995-96, an increase of almost 50% over those served in SFY 1994-95 (Figure 4-4).

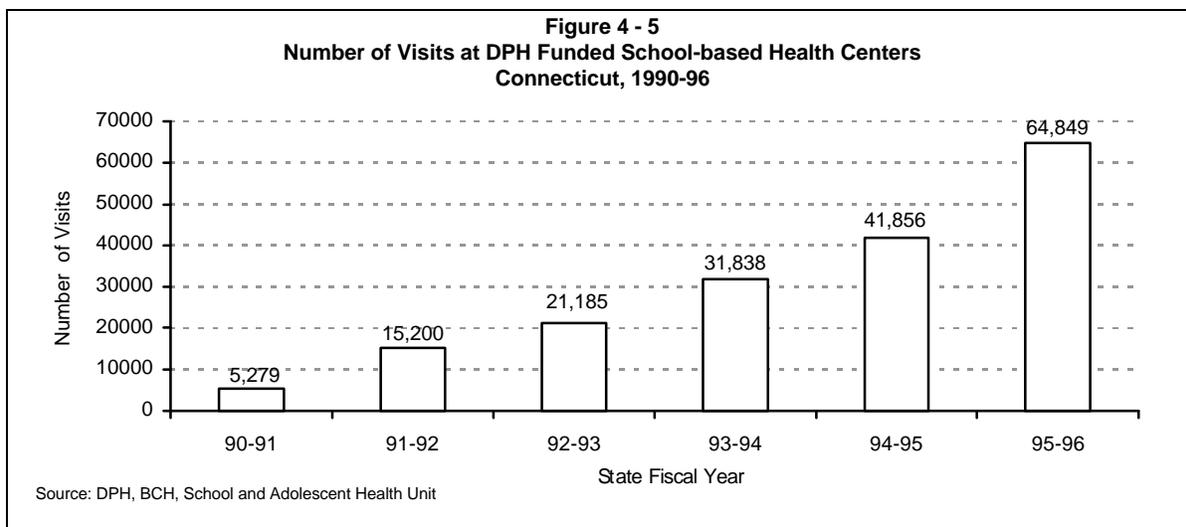
<sup>32</sup> Preliminary data for 7/1/95-6/30/96 - 39 SBHCs reporting, 4 reports incomplete. Final data will be higher.



Almost 60% of the students utilizing services during SFY 1995-96 were female. Nearly 40% were black, 30% were Hispanic, and 26% were white. Over 15,000 students participated in SBHC health promotion and illness prevention education activities provided through a variety of health fairs, classroom instruction, and after-school programs.

SBHC visits increased more than 12-fold between SFYs 1990-91 and 1995-96 (Figure 4-5). The average number of visits for students using the services increased from 3.5 visits per student in SFY 1990-91 to 4.9 visits in SFY 1995-96 and the number of visits per center actually increased 3-fold from 480 to 1544. The most frequent medical reasons for SBHC visits during SFY 1995-96 were physical exams, health education, reproductive health, dispensing medications and prescriptions, outreach/follow up, lab testing, screenings, dental care, HIV/AIDS counseling, education and immunizations. The behavioral/psychosocial reasons for SBHC visits were psychological support/advocacy, family problem/counseling, school problems, peer problems, stress management, depression, anxiety, loss/grief, violence and adjustment disorders.

When students were asked at the time of their first visit to the SBHC whether they had a regular source of medical care, nearly a third responded that they had a private physician (Table 4-28). It is important to note, however, that 19% of responding students reported “do not know,” while another 8% indicated that they had no regular source of care. A little over 4% of the students said that they utilized an emergency room or an urgent care clinic when they needed health care services. Thus nearly 32% of the SBHC users had no regular source of primary care.



**Table 4 - 28**  
**Student Reported Regular Source of Medical Care**  
**Connecticut, 1995-96**

Regular Source Of Medical Care <sup>a</sup>	% of Responses
Private Physician	32.4%
Did Not Know	18.8%
Hospital Clinic	15.2%
Community Health Center	11.3%
No Regular Source of Medical Care	8.3%
Hospital Emergency Room	3.1%
HMO	1.7%
Military Clinic	1.5%
Local Health Department	1.5%
Urgent Care Clinic	1.3%
Other	.06%

<sup>a</sup> Preliminary data for 7/1/95-6/30/96. 39 DPH- funded SBHCs reporting.

Source: DPH, BCH, School and Adolescent Health Unit, Annual SBHC Report, 1995-1996.

SBHCs have experienced continued growth in recent years, fueled by an increase in popularity and acceptance by students, parents, schools, communities and state governments, and increases in grant dollars and state appropriations. Map 4-4 illustrates the locations of the 64 licensed clinics providing school health services in Connecticut during SFY 1996-97. Appendix G presents a discussion of school-based health centers in the Safety Net Providers report.



## COMMUNITY HEALTH CENTERS

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Community health centers (CHCs) are public or private non-profit medical care facilities that offer comprehensive, community-based, primary health care services to low-income, uninsured or underinsured persons and are primarily located in medically underserved areas. Map 4-5 identifies the 30 Connecticut towns that were federally designated as having medically underserved areas, medically underserved populations, or both in 1997.

CHCs offer residents of all ages access to a wide range of services including medical, dental, and mental health care, as well as substance abuse, social and outreach services. There were 14 community health center corporations in Connecticut in state fiscal year 1996-97. The locations of the community health center corporations and clinic sites in Connecticut are shown on Map 4-6. Additional services are also provided at other sites such as senior centers, substance abuse or homeless health services centers, school-based centers, college infirmaries and perinatal and child guidance clinics.

Beyond providing “traditional” health care services, centers also serve as a central meeting place for the community and may provide recreational, hobby or handicraft programs, counseling, parenting, exercise classes, or literacy programs. Outreach efforts may include transportation to health care services or a mobile van to reach home-bound persons.

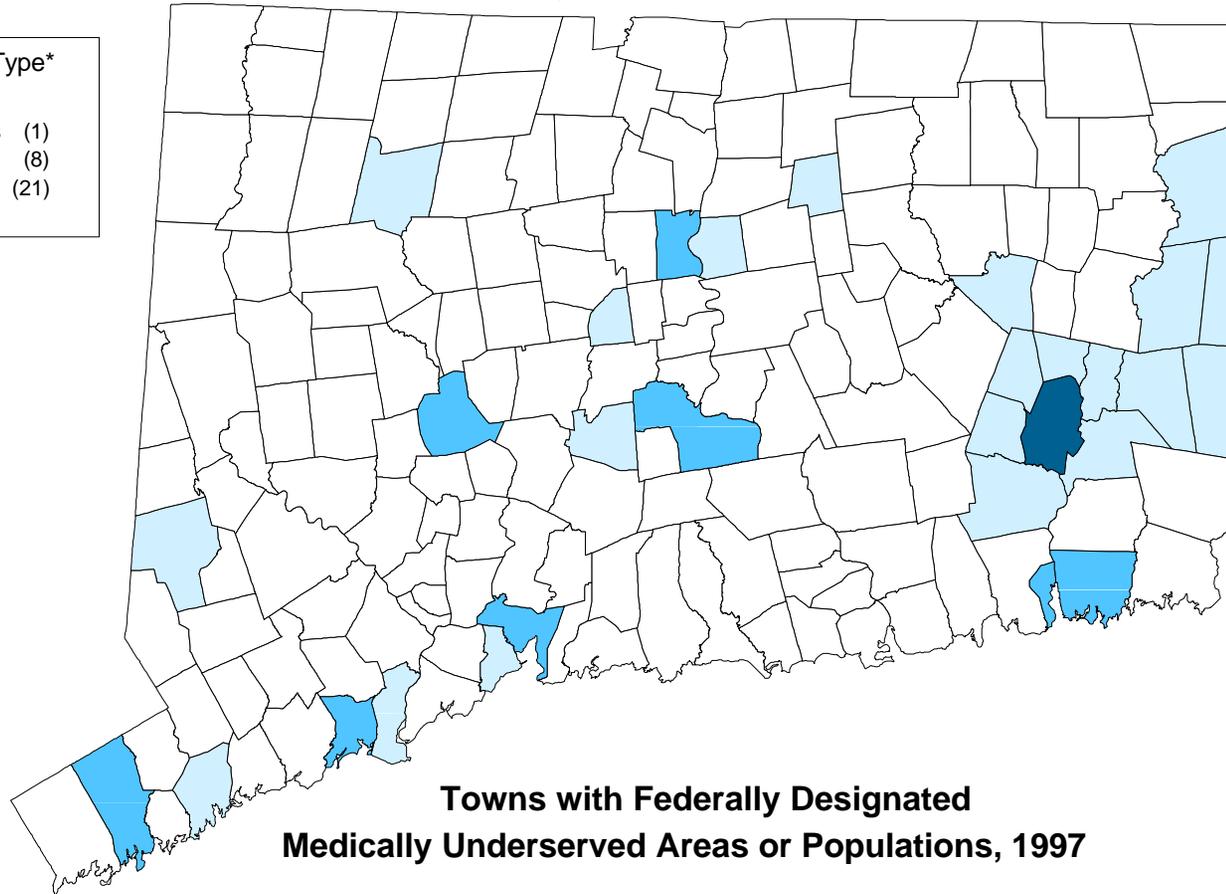
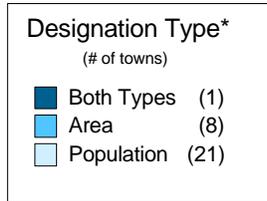
The composition and disciplines represented on each center’s full-time medical staff, and the services offered are primarily determined by the needs of the community. At least one-half of each center’s full-time equivalent primary care providers must be full-time, paid members of the staff. Center staffing may also be supplemented through resources from the National Health Services Corps<sup>33</sup> or through other collaborative efforts and support from state and local providers. An important element of the full-time staffing requirement is that it provides continuity of care and treatment to CHC patients

Since 1990, CHCs have submitted utilization, payer mix, and demographic information by state fiscal year (July 1- June 30) to the DPH. Utilization of CHC services has more than doubled during the last six years, from 224,250 visits in SFY 1990 to 484,408 visits in SFY 1996 (Figure 4-6). Similarly, the number of unduplicated clients nearly doubled during the same period, increasing from approximately 80,000 unduplicated clients in SFY 1990, to almost 160,000 in SFY 1996. The annual number of visits per unduplicated client has remained relatively stable at three (Figure 4 - 7).

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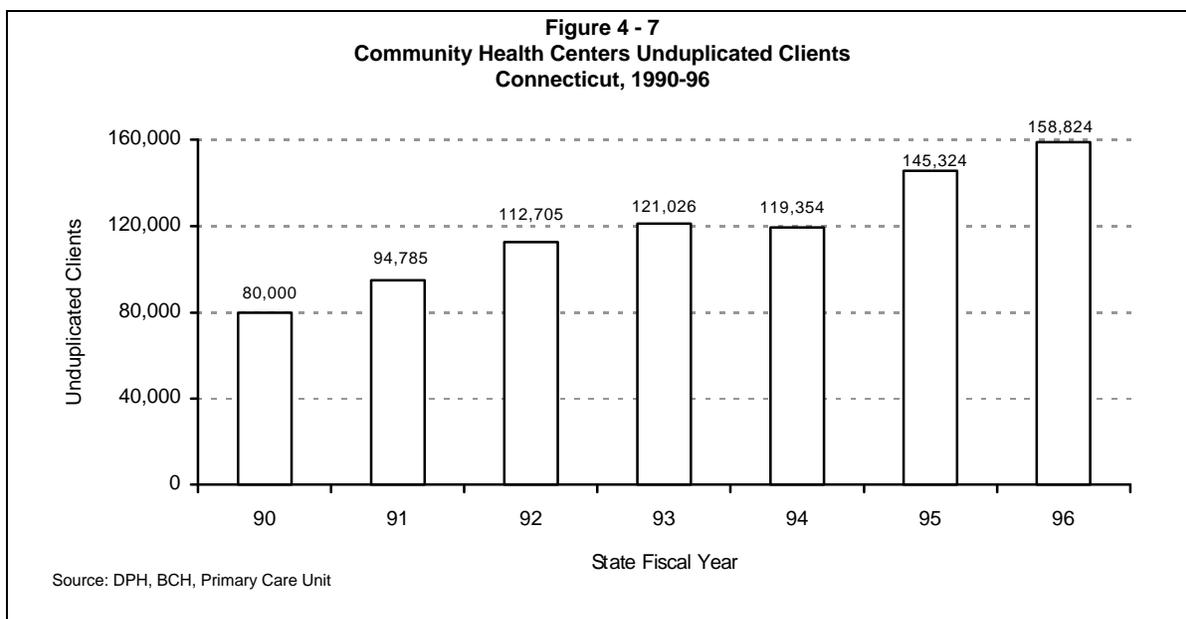
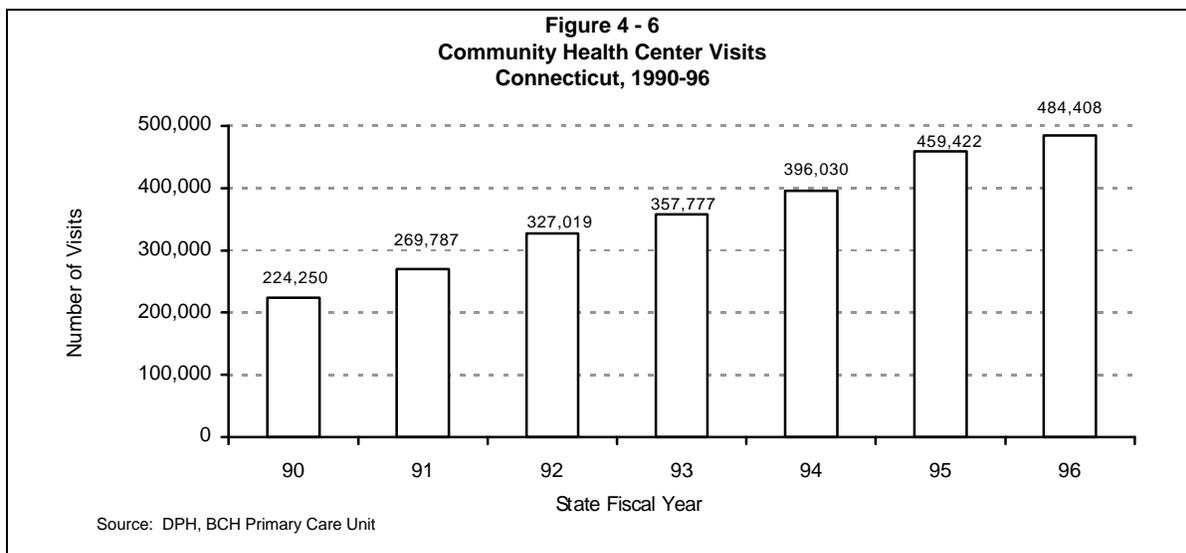
<sup>33</sup> National Health Services Corps is a federal scholarship program established in 1970 to recruit and place health professionals in health professional shortage areas.

Map 4-5

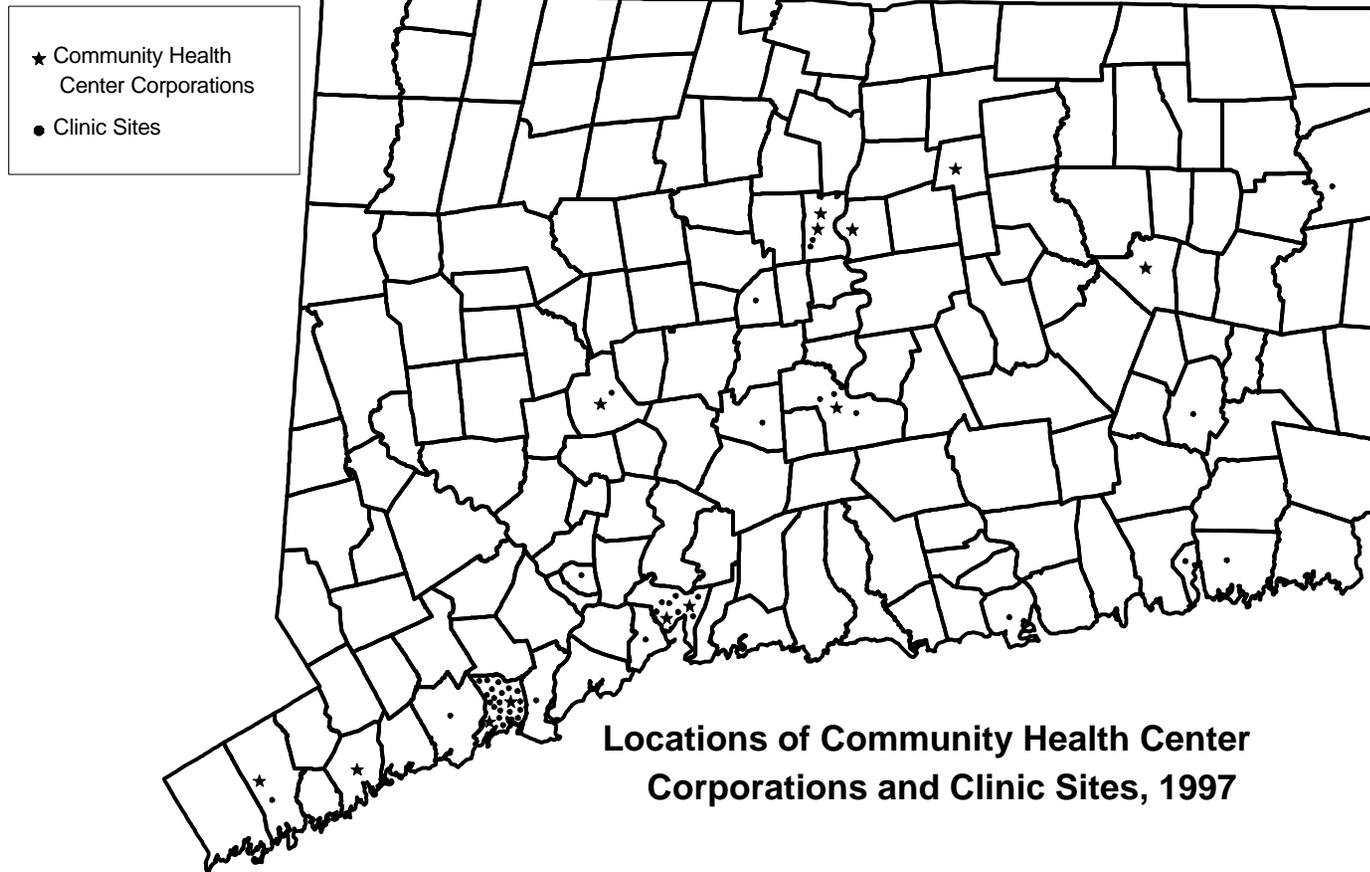


\* The indicated areas or populations typically do not encompass an entire town.  
Source: USDHHS, HRSA, BPHC, BHCDANet Federal database, 5-97

CHCs are mostly used by infants and children, women of child-bearing years, and minorities. For instance, during SFY 1996, 46% of the clients were aged 0 to 19 years. Forty-eight percent of the female clients were of child-bearing age (15-44 years old). Fifty-two percent of the clients were Hispanic and 30% were black. No clinical data are available to identify the kinds of health conditions that were treated, or the outcomes of the treatments.



Map 4-6



Note: The stars and dots denoting the center corporations and clinics fall randomly within a town's border and are not actual site locations.  
Source: DPH, BCH & HSRD, 1998

After remaining relatively stable for five years, Connecticut's CHCs shifted in payer mix from SFY 1995 to SFY 1996 (Table 4-29). The percentage of charges paid by Medicaid dropped from a high of 50% in SFY 1995 to 42% in SFY 1996, whereas payments by private insurance companies increased from 11% to 16%, and self-pay increased to 25%.

**Table 4 - 29**  
**Community Health Centers Payer Mix<sup>a</sup>**  
**Connecticut, 1993-96**

Payer	1993	1994	1995	1996
Medicaid	47.7%	45.4%	49.5%	42.1%
Self-Pay	22.9%	23.8%	21.0%	24.9%
Private Insurance & Other	10.3%	9.8%	10.8%	15.9%
City Welfare	14.9%	17.1%	14.5%	13.5%
Medicare	4.3%	3.9%	4.2%	3.5%

<sup>a</sup>Does not include Community Health Center, Inc. data.  
Source: DPH, BCH, Primary Care Unit

As CHCs are the major source of primary health care for the uninsured and underinsured, and have historically provided low cost or free health care to all persons in need, adequate reimbursement continues to be an issue. While services and treatments may be "free" to the patient, CHCs incur costs to render their services. Unless the CHCs receive adequate reimbursement from patients or third party payers, or funding from grants, they may be forced out of business, ultimately reducing access to medical care for those with the greatest needs.

An updated discussion of community health centers appears in Appendix G, the Safety Net Providers report.

## HEALTH WORKFORCE

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### CONNECTICUT'S MEDICAL PROFESSIONS INVENTORY

The information in this section was obtained from the medical professions licensure data base, maintained by the DPH Division of Health Systems Regulation (HSR). The HSR division licenses 55 medical and health-related professions. Licensed individuals are not necessarily actively practicing professionals, rather they are individuals who hold a valid license to practice, and the potential to practice.

Other health care professionals, such as physical therapy assistants, are required to register with the DPH, but are not licensed and do not undergo a renewal process. Table 4-30 presents the total number of licenses issued in Connecticut during 1990 and 1995 for selected medical professions.

## Physicians

In 1995, there were 368 licensed physicians per 100,000 population in Connecticut which is much greater than the national average of 252 nonfederal physicians per 100,000 civilians.<sup>34</sup> This supports the results of other studies which found that physicians appear to be maldistributed across the country.<sup>35</sup>

**Table 4 - 30**  
**Licensed Persons in Selected Medical Professions**  
**Connecticut, 1990 and 1995**

Medical Professions	1990 <sup>a</sup>	1995 <sup>a</sup>	1995 Licensed Professionals per 100,000 Population <sup>b</sup>
Physician/Surgeon	10,964	12,100	368
Registered Nurse	47,815	48,322	1,469
Licensed Practical Nurse	11,659	11,465	349
Advanced Practice R.N.	51	1,155	35
Nurse Midwife	86	119	4
Physician Assistant	0	513	16
Physician Asst. Supervisor	0	411	13

<sup>a</sup> Total FTE values are unavailable. Source: DPH, BRS, Division of Health Systems Regulation.

<sup>b</sup> Based on 1995 total population of 3,289,090 persons.

Source: *Connecticut Population Projections, Series 95-1*, Office of Policy and Management, September, 1995.

## Nurses

Traditionally, the majority of nurses worked in hospital-based settings. In recent years, however, the continued growth of managed care, shrinking inpatient admissions, and shorter lengths of stay have led to hospital downsizings and closings. In Connecticut, one hospital, the Winsted Memorial Hospital in Winchester, closed in 1996.

These service delivery changes precipitated a decline in the number of available hospital jobs, and shifted all levels of nurses toward employment in other non-hospital based settings. Increasingly nurses are employed in community-based services, ambulatory care environments, home health care, or in the long term care industry.

The total number of registered nurses and licensed practical nurses remained relatively static from 1990 to 1995. On the other hand, there appears to have been an explosive growth in the number of licensed advanced practice nurses (APNs) from 51 to 1,155, which may be due partially to the fact that the licensure program didn't start until November 1990. The number of nurse midwives grew by 38% during this period.

Under Connecticut's General Statutes, advanced practice nurses are licensed under a separate licensing category that allows the licensee to provide care and dispense prescriptions under the direct supervision of a state licensed physician. During the 1997 legislative session, statute revisions were proposed that would remove the physician supervision clause from the statutes for advanced practice nurses. The bill died in committee. However, it is likely that similar legislative bills designed to force reconsideration of the scope of practice among physicians, physician assistants and nurse practitioners will appear in future years, driven by a growing managed care enrollment and a tightening job market for health care professionals.

## Physician Assistants

Physician Assistants (PAs) represent another rapidly growing segment of the health professional workforce that directly affect the provision of primary care services. Respondents to a recent American Academy of Physician Assistants (AAPA) survey described their employment settings as follows: slightly

<sup>34</sup> Moore Jr., J. Duncan. Ranks of physicians continue to swell. *Modern Healthcare*, (4 Mar 96): p 2-3.

<sup>35</sup> Council on Graduate Medical Education Third Report. *Improving Access to Health Care Through Physician Workforce Reform: Directions for the 21st Century*. U.S. Department of Health and Human Services, (Oct 92).

over 36% are hospital-based, 32% work in a group or single practice office, while a little over 10% provide services in a rural or urban city health clinic.<sup>36</sup>

## OVERSUPPLY AND SHORTAGES

In 1986, Congress authorized the Council on Graduate Medical Education (COGME) to provide ongoing assessments and recommendations regarding the nation's physician workforce. Since that time, COGME's reports have repeatedly expressed concern that our medical schools are graduating more physicians than are needed.

In 1995, COGME published its physician surplus estimates for the years 2000 and 2010. By the turn of the century, COGME expects there will be a 125,000 specialist surplus and a 20,000 generalist shortage. Ten years later, the specialist physician surplus is expected to reach 170,000, while the generalist shortage will shrink to only 8,000. These conclusions were based on COGME's "reasonable projected requirements" range of 85 to 105 specialists per 100,000 population, and 60 to 80 generalists per 100,000 population.<sup>37</sup>

These dire predictions of physician oversupply are echoed in a number of studies including a 1995 study by the Pew Health Professions Commission.<sup>38</sup> While the degree of oversupply, methods of determination, and proposed remedial actions are a matter of contention, most studies project a surplus of physicians by the year 2000. Recently, increases in the number of medical school graduates electing primary care residencies, coupled with the potential for increased roles for advanced practice nurses and physician assistants have led to some speculation that the primary care physician shortage could disappear sooner than originally expected.

## HEALTH PROFESSIONAL SHORTAGE AREAS

Although Connecticut has a reported high physician per capita total, it has a number of regions that are designated as Health Professional Shortage Areas (HPSA) for primary medical care. A HPSA is an area designated by the federal Secretary of Health and Human Services, under authority of Section 332 of the Public Health Service Act as having an inadequate supply of health care providers. HPSA designations for primary medical care may be made if it can be demonstrated that (1) the area meets the HPSA criteria as a rational service area for the delivery of primary medical care services; (2) access barriers exist that prevent population groups from using the area's primary medical care providers; and (3) the ratio of the number of persons in a population group to the number of primary care physicians practicing in the area and serving the population groups is at least 3,000 to 1. During 1997, various portions of 28 Connecticut towns were federally designated as primary medical care HPSAs as shown in Map 4-7.

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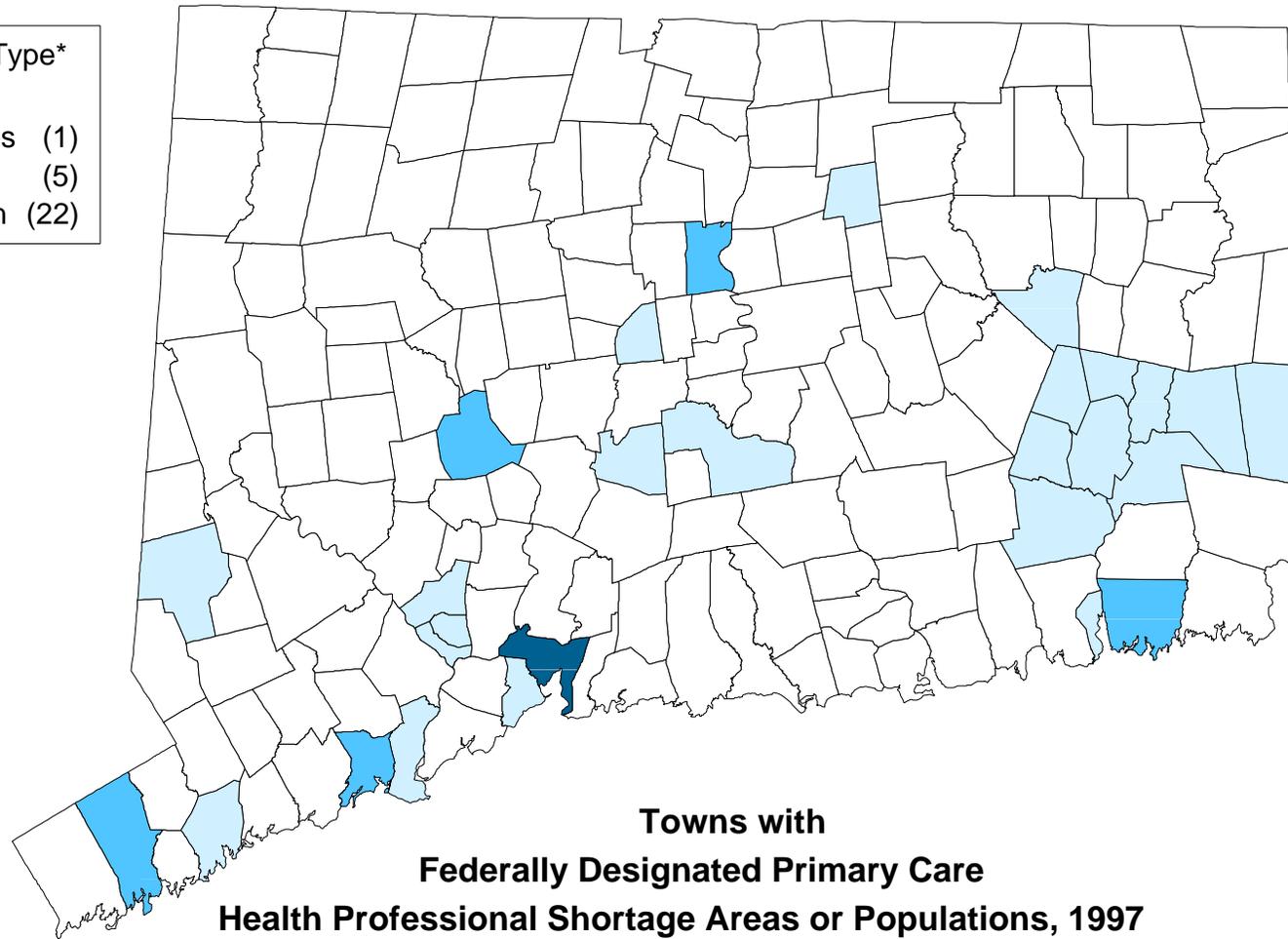
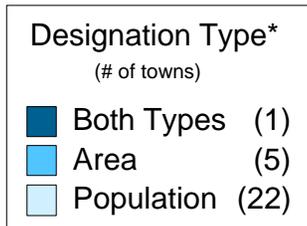
<sup>36</sup> 1996 AAPA Physician Assistant Census Report: American Academy of Physician Assistants, Alexandria, VA, <http://www.aapa.org/research/censusa.htm>.

<sup>37</sup> Council on Graduate Medical Education Sixth Report. *Managed Health Care: Implications for the Physician Workforce and Medical Education*. Rockville, MD: DHHS, (Sept 95).

<sup>38</sup> Pew Health Professions Commission. *Critical Challenges: Revitalizing the Health Professions for the Twenty-first Century*. San Francisco: University of California, Center for the Health Professions; 1995.



Map 4-7



\* The indicated areas or populations typically do not encompass an entire town.  
Source: Federal Register 5-30-97

## MANAGED CARE AND THE WORKFORCE

Increases in managed care enrollments are influencing the health care workforce supply and demand. For example, the increasing demand for primary care physicians is largely the response to managed care's use of a "gatekeeper" function, and the reduction in employment opportunities for certain hospital-based specialists. The continuing inpatient to outpatient shift has already manifested itself in fewer job opportunities for newly graduated physicians in some hospital-based services such as anesthesiology, radiology and pathology.<sup>39</sup>

Managed care's emphasis on illness prevention, earlier discharges, ambulatory versus inpatient care, cost containment, service volume, and reimbursement controls have already altered the way physicians deliver services and in some cases have reduced their incomes.

By collecting and monitoring data elements pertaining to outpatient services and managed care staffing, Connecticut would have the necessary information to address health care planning, workforce, and cost issues more effectively.

## MEDICAL EDUCATION

Despite the influence of managed care, predictions of physician oversupply, and lowered physician incomes, the total number of annual physician graduates has actually increased in recent years. Some of this growth is attributed to increases in the numbers of female and minority graduates. Another factor is the increasing number of international medical students, who study in the United States and remain to practice after graduation.

Over the years, medical teaching institutions have had little incentive to downsize their training programs, change their mix of specialists and generalists, or update their curricula to address the managed care environment because Medicare has heavily subsidized residency training programs. In the nation's 1997 budget agreement, the federal government has agreed to pay hospitals millions of dollars not to train doctors in an effort to alleviate the oversupply of physicians.<sup>40</sup>

## NEED FOR DATA

An appropriate supply of health care professionals will be a key factor in governing the provision of cost effective health care services to Connecticut's citizens in the future. Knowing the number of actively practicing primary and specialty care providers in Connecticut, their areas of expertise, and their distribution across the State is a vital part of this process. Currently, insufficient information exists in the public sector's data base to create even the most rudimentary state and regional health workforce inventory, or to determine the existence or extent of any workforce maldistribution. A cooperative data collection effort is needed, across public and private sectors, to assure that adequate health care personnel demographics are readily available. This basic information is essential to support state and regional planning efforts and the state's federal block grant and surveillance responsibilities.

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<sup>39</sup> Moore, Jr., J. Duncan. First job hard to find for some specialists: *Modern Healthcare*, (18 Mar 96), p 28.

<sup>40</sup> Goldstein, Amy. U.S. will pay teaching hospitals to train fewer doctors. *Washington Post*, (25 Aug 97) Sec A, p 8.