

CHAPTER 3

HEALTH STATUS AND RISK REDUCTION

INTRODUCTION

Chapter 3 profiles key aspects of the health status of Connecticut residents and associated indicators of risk for disease and injury. Those indicators that are central to improving the health of the Connecticut population over the next five to ten years are emphasized.

Because public health seeks to prevent the occurrence of disease and injury, it inherently involves planning. Risk reduction efforts are intimately connected to health outcomes. For example, immunizations of two year olds have a direct effect on measles outbreaks; and the reduction of risk behaviors, such as excessive drinking and smoking, affects the rates of cardiovascular disease and lung cancer. Over time, successful prevention activities have reduced disease incidence in certain areas and shifted the focus of public health monitoring to risk reduction efforts. Vaccine-preventable diseases clearly illustrate this trend. In 1960, more than 11,000 cases of measles were reported in Connecticut, but after the licensing of vaccines and the requirement that children be vaccinated prior to school enrollment, rates dropped dramatically; the 1994-95 rate was only two cases per year. Both components - health status and risk reduction monitoring - exemplify essential, complementary, public health activities.

This chapter focuses on population-based health assessments. This perspective differs from the individual or clinical perspective in several ways. Populations are typically discussed in terms of events or cases per unit population, rather than event or case counts alone (e.g., cases per 100,000 population rather than number of cases without reference to the population base). This allows comparisons to be made among towns or states of different sizes. Most of the statistics in this chapter are presented as rates or percentages based on the size of the population of interest. A population-based approach also considers how common or prevalent a risk exposure is in a population, in addition to the severity of a risk exposure. Efforts to prevent a highly fatal, but rare condition may have less impact on the population than prevention of a less severe, but more common condition. In addition, the existence and efficacy of preventive measures is a critical component of planning effective interventions. In some cases, scientific knowledge may be insufficient to keep the disease from developing (primary prevention), whereas the disease might be treatable if it is diagnosed early (secondary prevention). Although the causes of breast cancer, for example, are too poorly understood to enable prevention activities, screening to detect the disease early in its development can reduce morbidity and mortality significantly.

The health indicators used in this chapter represent currently important population risks, significant challenges to existing public health prevention efforts, key emerging issues presenting current or anticipated challenges to the public health system, and major gaps in the public health surveillance infrastructure.

The arrangement of topics in this chapter generally follows the organizational structure of the Department of Public Health (DPH). The data are presented in nine sections: *Sociodemographic Profile*; *Consensus Health Indicators*; *Mortality Overview*; *Maternal and Infant Health*; *Behavioral Risks*; *Chronic Diseases*; *Injuries*; *Infectious Diseases*; and *Environmental and Occupational Health*. The information presented in all but the first two sections is discussed with regard to incidence or prevalence, time trends, high-risk populations, geographic variation, modifiable risk factors, and potential for intervention.

Sociodemographic Profile concerns the social and demographic factors that contribute to morbidity and mortality risks. The aging of the population has profound implications for public health, because the prevalence of chronic conditions and disabilities increases with age. Social class, for example, is strongly related to health insurance coverage, which influences access to and the quality of medical care. Educational level is strongly associated with income. The degree of inequality in income distribution is a predictor of mortality rates in infants, children, and adults. In addition, much of the disparity in various health indicators between those of black and white race can be explained by social class differences.

Consensus Health Indicators concerns the health status of Connecticut relative to other states. A consensus set of 18 health indicators were developed in 1991 by the U.S. Public Health Service to help communities assess their general health status and track progress toward their year 2000 objectives. The 18 indicators are those measures for which data are readily available, commonly collected for public health, and available at a local level. The latter is a particularly important consideration in a state such as Connecticut, where there are substantial local differences in health status.

Mortality Overview is a discussion of leading causes of death in Connecticut, viewed in terms of percentage of total deaths, age-adjusted mortality rates, and premature death (years of potential life lost up to age 65).

Maternal and Infant Health contains information about the key indicators of poor pregnancy outcomes (infant mortality, fetal deaths, low birthweight deliveries) and indicators of risk for poor outcomes (prenatal care, births to teenage mothers).

Behavioral Risks presents data from the Connecticut Behavioral Risk Factor Surveillance Survey on risk factors that are directly related to many chronic disease conditions. The risk factors include tobacco use, alcohol use and abuse, physical inactivity, blood pressure, blood cholesterol, diet, and overweight.

Chronic Diseases highlights non-communicable illnesses that are notable causes of morbidity and mortality in Connecticut, including diseases of the heart, cancer, chronic obstructive pulmonary disease, diabetes, dental caries, and osteoporosis.

Injuries considers both unintentional injuries (drownings, residential fires, falls, motor vehicle crashes) and intentional injuries (suicide, homicide, domestic violence, and injuries due to firearms).

Infectious Diseases presents data on selected communicable diseases of importance to public health in Connecticut. The diseases covered in this section are HIV/AIDS, primary and secondary syphilis, gonorrhea, chlamydia, measles, tuberculosis, Lyme disease, varicella, and certain foodborne diseases. Childhood immunizations, pneumococcal and influenza vaccines for adults, and drug-resistant *Streptococcus pneumoniae* also are considered.

Finally, *Environmental and Occupational Health* focuses on environmental risks (air pollution, hazardous wastes, contaminated drinking water) and disease (lead poisoning in children); job-related deaths, injuries, and diseases; and surveillance for birth defects.

SOCIODEMOGRAPHIC PROFILE

POPULATION

The estimated July 1, 1995 population of Connecticut was 3,274,662, which was 12,454 (0.4%) lower than the July 1, 1990 census count of 3,287,116. The 1990 population distribution is shown in Map 3-1. Connecticut has lost population every year since 1991; the net level of out-migration has fallen each year since it peaked in 1992, however, and reached its five-year low in 1995; Nevertheless, there is still reason for concern, as more people continue to leave Connecticut than relocate to the state each year.¹

Age and Sex

Of the total population in 1995, 1,588,141 (48.5%) were males and 1,686,521 (51.5%) were females. In the age groups from <1 year through 20-24 years, the number of males exceeded that of females. In all subsequent 5-year age cohorts, however, females exceeded males. By ages 75-79, 80-84, and 85+ years, females outnumbered males by ratios of nearly 3:2, 2:1, and 3:1, respectively (Table 3-1). These ratios have been about the same since 1989.

Table 3-1
Estimated Population by Age and Sex
Connecticut, 1995

Age(Years)	Males	Females	Total
All Ages	1,588,141	1,686,521	3,274,662
<1 ^a	22,722	21,666	44,388
0-4	116,725	110,867	227,592
5-9	120,306	114,395	234,701
10-14	109,647	105,366	215,013
15-19	100,034	94,657	194,691
20-24	98,794	96,062	194,856
25-29	116,500	116,515	233,015
30-34	141,547	142,780	284,327
35-39	143,858	146,264	290,122
40-44	124,980	130,992	255,972
45-49	110,879	115,904	226,783
50-54	89,095	94,271	183,366
55-59	67,709	72,370	140,079
60-64	60,546	66,373	126,919
65-69	59,117	71,085	130,202
70-74	51,600	68,351	119,951
75-79	39,266	58,514	97,780
80-84	23,089	41,723	64,812
85+	14,449	40,032	54,481

^a The <1 year age group represents 1995 Connecticut resident births of known sex.
Source: DPH, OPPE

¹ State of Connecticut, Office of the State Comptroller. The Comptroller's Report: Connecticut's Economic Health, 1997.
<http://www.state.ct.us/otc/97cmprpt/crptsum.htm>.

An important demographic trend in Connecticut and the U.S. is the overall “aging” of the population. This trend has many implications for public health. The greatest impact will occur after the “baby-boom” generation reaches age 65 years and older (beginning around 2010). However, large increases in the “very old” (age 85 years and older) will occur prior to 2010, and continue thereafter. According to projections for Connecticut,² the number of Connecticut residents 85 years of age or older will increase from 54,000 in 1995 to 65,000 in 2000 (20% increase), 77,000 in 2005 (43% increase), 88,000 in 2010 (63% increase), and 96,000 in 2020 (78% increase). While the total Connecticut population is projected to increase by only 9.3% from 1995 to 2020, the segment of the population aged 65 and older will increase by 34.8%.³ The distribution by town of the 1995 population aged 65 and older is provided in Map 3-2. In 2020, 17.5% of the total Connecticut population will be aged 65 and older, 7.8% age 75 and older, and 2.7% age 85 and older.

Race and Ethnicity

In 1990, the most recent year for which data are available by race and ethnicity, the Connecticut population of about 3.3 million included 2.8 million whites, 274,000 blacks, 204,000 Hispanics, 7,000 American Indians and 49,000 Asian-Pacific Islanders. The population was predominantly urban (2.6 million). While the total Connecticut population changed little after 1990, the composition of the population has changed in recent decades and is projected to continue to change. The proportions of minorities in the population have been increasing, especially Hispanics and Asians/Pacific Islanders.

ECONOMIC AND SOCIAL INDICATORS

Sociodemographic indicators are crucial to understanding factors contributing to morbidity and mortality risks. Socioeconomic status (SES) is strongly related to health insurance coverage, which influences access to and quality of medical care. SES is also related to health behavior, the quality of the living environment, and health status.

Despite job growth in recent years, many areas of high unemployment still exist in the state, including the largest urban areas. For example, in November of 1996, unemployment in Hartford was just under 10%, or more than twice the state value.⁴ Despite poor growth in median income and hourly wages, Connecticut still ranks first in the nation in per capita income, but also exceeds most other states in cost of living.⁵

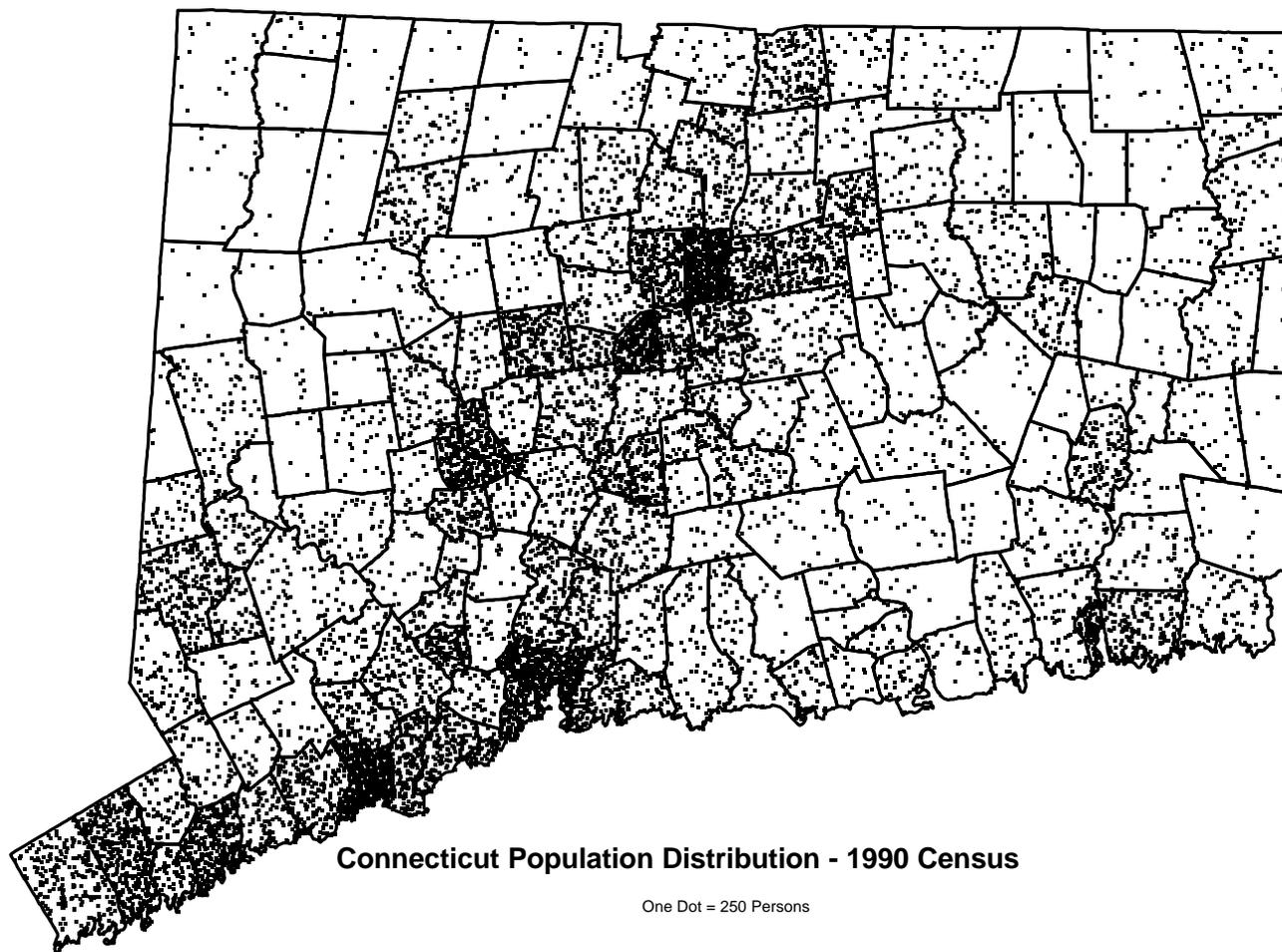
² Campbell PR. U. S. Department of Commerce, Economics and Statistics Administration, Bureau of the Census. *Current Population Reports - Population Projections for States, by Age, Sex, Race, and Hispanic Origin: 1993 to 2020*. Washington DC: Bureau of the Census. 1994 March.

³ Campbell PR. *Current Population Reports - Population Projections for States, by Age, Sex, Race, and Hispanic Origin: 1993 to 2020*.

⁴ Connecticut Department of Labor, Office of Research. *Connecticut Labor Force Data for Labor Market Areas & Towns*, November, 1996.

⁵ State of Connecticut, Office of the Secretary of State, “State of Connecticut. Economic Condition and Outlook.” <http://www.state.ct.us/oc/97cmpprt/crptecon.htm>.

Map 3-1



Connecticut Population Distribution - 1990 Census

One Dot = 250 Persons

Note: Dots are randomly distributed within or at a town boundary.
Source: U.S. Census Bureau, 1990

Educational level is widely used as an indicator of socioeconomic status and is associated with infant and adult mortality. Educational level is strongly associated with income, although disparities in income of blacks and whites persist within educational level. Striking racial-ethnic disparities in educational and income level are evident in Connecticut (Table 3 - 2), as in the entire U.S. Much of the black-white disparity in various health indicators can be explained by social class differences, but residual disparities often exist that may reflect other factors such as discrimination. Social epidemiology and medical sociology studies of different countries have shown that the degree of inequality in income distribution in a country is a predictor of mortality rates in infants and adults.⁶ For many developed countries including the U.S., and for Connecticut, the inequality in income distribution has been increasing; that is, a decreasing proportion of the population holds a growing proportion of the country's wealth. This trend is due in part to the increase in the number of single-parent families and greater growth of salaries among college graduates than persons with little education.

Table 3-2
Sociodemographic Data
Connecticut, 1990

Indicator	Race/Ethnicity			
	White	Black	Hispanic ^a	All Races
<i>Education level of persons aged 25+:</i>				
High school graduate (%)	80.9%	67.0%	53.5%	79.2%
College graduate or higher (%)	28.5%	12.3%	12.1%	27.2%
Median household income (\$)	\$43,407	\$28,011	\$29,310	\$41,721
Persons with income below federal poverty level (%)	4.6%	19.8%	15.5%	6.8%
<i>Housing indicators:</i>				
More than 1 person per room (%)	1.3%	8.1%	15.0%	2.3%
Built in 1993 or earlier (%)	24.6%	27.4%	32.8%	25.5%

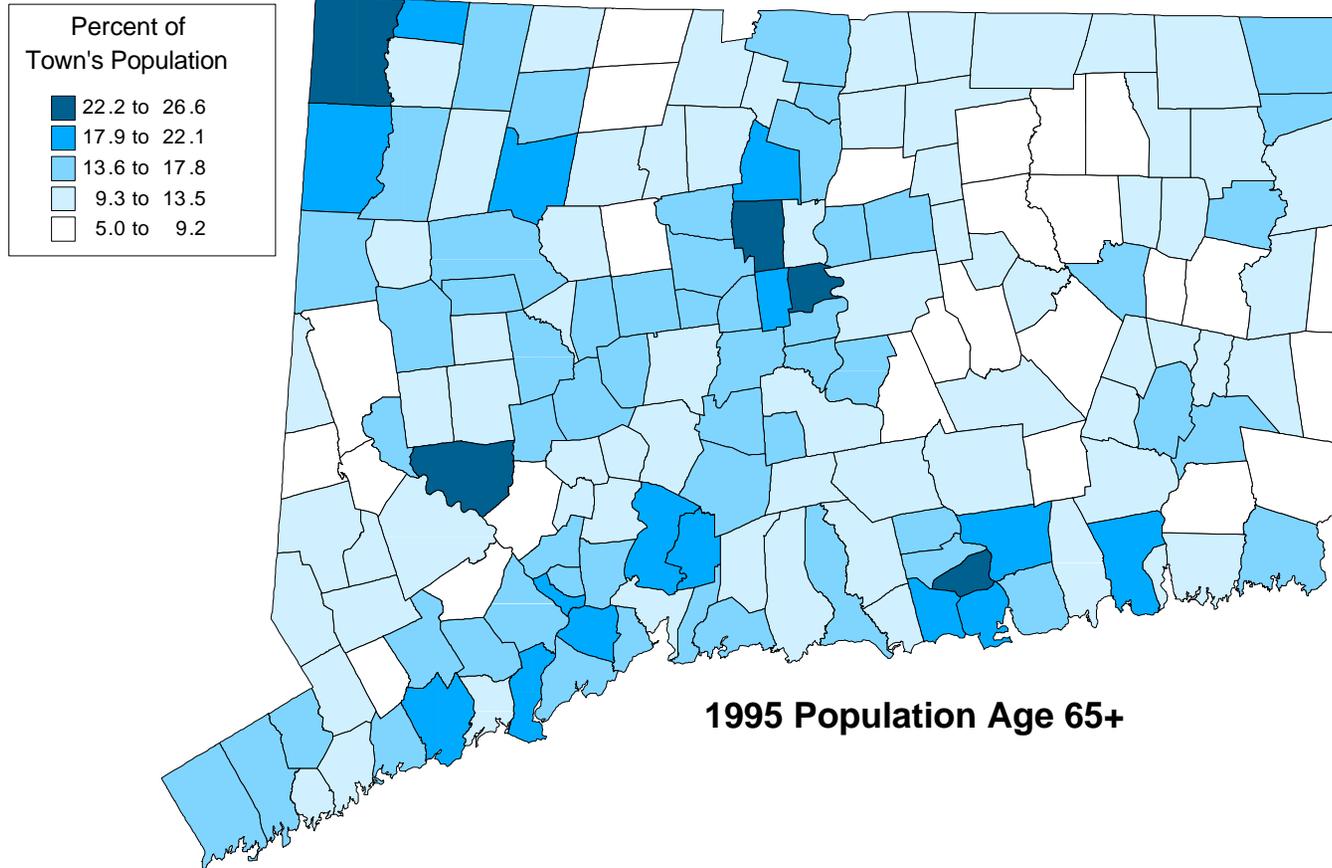
a The "Hispanic" category overlaps with the other two categories, because Hispanics can be of any "race" (white, black or other); some Hispanics consider their "race" to be Hispanic. Source: 1990 Census data.

The "poverty rate" or proportion of persons with income below the federal poverty level (Table 3-2) is especially useful, because this indicator takes into account the size of the household. The term "two Connecticut" is sometimes used in a broad sense to indicate the disparities in income and quality of life in Connecticut. Many strata could be defined by various sociodemographic criteria. Some examples are urban vs. rural, poor vs. non-poor persons (or residents of "affluent" vs. "non-affluent" towns), homeless vs. non-homeless persons, black vs. white persons and "mixed race" persons, Hispanic vs. non-Hispanic, American Indian vs. other, and Asian vs. non-Asian. All of these strata have significance for quality of life and health, though poorly documented and understood. Minorities and poor persons (especially women with young children) are disproportionately represented among the homeless. Medical risk factors also increase the risk of homelessness. There is growing interest in the social, medical and public health challenges presented by homeless persons.⁷

⁶ Najman, J.M. Health and poverty. *Soc. Sci. Med.* 1993; 36: 157-166.

⁷ Plumb J.D. Homelessness: Care, prevention, and public policy. *Annals of Internal Medicine* 1997;126:973-975.

Map 3-2



Note: Population represents data interpolated to 4/95
Source: OPM Population Projections, 9/95

For historical reasons, the black-white distinction is especially important. Minorities with extremely high poverty rates are concentrated in many inner cities. This is also true for Connecticut, despite the smaller population size of the largest cities relative to many other urban areas (e.g., New York City). In 1990, the poverty rate for persons in the “central places” of urban areas (i.e., inner cities) of Connecticut was 13.1%, compared with the statewide figure of 6.8%.⁸

Among Connecticut’s eight counties, the lowest levels of education and income are for Windham County, for each racial-ethnic group. However, counties cover large geographic areas and are not useful for most public health studies or projects. For example, Fairfield County includes many affluent areas; whereas, Bridgeport has a high poverty rate. The 169 towns of Connecticut vary widely in income measures from the 1990 Census, with residents of Weston (in Fairfield County) having a median household income almost five times higher than that for residents of Hartford (Map 3-3).

The quality of housing is another aspect of the social-physical environment relevant to quality of life and health. In Connecticut, indicators of substandard housing are more common in minorities than in whites, reflecting differences in social class and other factors. (Table 3-2).

The “age” of housing is only a crude indicator of the “quality” of housing. It reflects, in part, population movement from urban to suburban or rural areas with the building of new homes. Old housing exists in relatively affluent areas, including “historic” areas outside of urban areas. Nevertheless, age of housing is directly related to risk of childhood exposure to lead paint, with major implications for health and mental development. Housing built before 1950 is a significant predictor of the rate of childhood lead poisoning in a community, independent of other predictors such as income.⁹ In 1990, more minorities than whites lived in older housing (Table 3-2). The proportion of older housing for black householders in Middlesex and Tolland Counties was low, but small numbers of blacks live in these counties. The relatively high occurrence of substandard housing in inner city areas, with predominantly minority populations, is well documented.

More than one person per room is the most commonly used crude criterion for crowding. Degree of crowding is related to the risk of both infectious and chronic diseases (including certain cancers) in complex ways that are poorly understood. In 1990, 2.3% of Connecticut housing units had two or more persons per room. Compared to whites, crowding was more than six times higher among blacks and 11.5 times greater among Hispanics (Table 3-2), and crowding was also higher than the state percent in the large urban centers (Bridgeport, 6.7%; Hartford, 9.2%; New Haven, 5.0%)¹⁰.

⁸ U. S. Department of Commerce, Economics and Statistics Administration, Bureau of the Census. *1990 Census of Population - Social and Economic Characteristics Connecticut*. Washington DC: Bureau of the Census. 1993 September:81.

⁹ Sargent J.D. et al. Childhood lead poisoning in Massachusetts communities: Its association with sociodemographic and housing characteristics. *American Journal of Public Health* 1995;85:528-534.

¹⁰ U.S. Bureau of the Census. *Connecticut Housing Characteristics - 1990 Census Complete Count Data - Part*, 1991.

CONSENSUS HEALTH INDICATORS

In response to Objective 22.1 of *Healthy People 2000*,¹¹ a consensus set of 18 health indicators¹² was developed in 1991 by a committee of policy and technical experts representing the various levels of public health organizations in the U.S. The indicators were created to help communities assess their general health status. They were intended to ensure comparability of data and to encourage use by various levels of public health agencies, without superseding any of the *Healthy People 2000* indicators. The consensus set of indicators has the practical advantage of employing measures for which data are available at the state and local levels throughout the United States.

Comparisons of the 18 consensus indicators for Connecticut and the U.S. for 1992,¹³ the latest year for which such comparisons are available, and Connecticut figures for 1995, are in Table 3-3.

Table 3-3
Consensus Set of Health Status Indicators
United States (1992) and Connecticut (1992 and 1995)

No.	Indicator (ICD-9 Code number)	1992		1995	
		US	CT	Rank ^a	CT
Indicators of health status outcome					
1	Race/ethnicity-specific infant mortality as measured by the rate, (per 1,000 live births) of deaths among infants <1 year of age				
	All races	8.5	7.6	34	7.2
	White	6.9	6.2	42	6.7
	Black	16.8	17.2	16	13.6
	Hispanics ^{b,c}	7.6	7.9	18	10.8
<i>Death rates (per 100,000 population) for:</i>					
2	Motor vehicle crashes ^d (E810-E825)	15.8	10.0	47	10.8
3	Work-related injury ^{e,f}	3.2	1.2	47	2.1
4	Suicide ^d (E950-E959)	11.1	8.3	46	9.2
5	Lung cancer ^d (162)	39.3	34.9	39	33.1
6	Female breast cancer ^d (174)	21.9	21.0	32	21.4
7	Cardiovascular disease ^d (390-448)	180.4	160.8	37	152
	Heart disease ^d (390-398, 402, 404-429)	144.3	131.9	30	123.4
	Stroke ^d (430-438)	26.2	20.8	49	20.7
8	Homicide ^d (E960-E978)	10.5	6.1	31	5.4
9	All causes ^d (0-E999)	504.5	447.3	42	444.5
<i>Reported incidence (per 100,000 population) of:</i>					
10	Acquired immunodeficiency syndrome ^{e,g}	31.2	43.3	6	32.9

(Table 3-3 continues)

¹¹ U.S. Department of Health and Human Services, Public Health Service. *Healthy People 2000: National Health Promotion and Disease Prevention Objectives*. Washington, DC: DHHS publication number (PHS) 91-50212. 1990.

¹² U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control. Consensus set of health status indicators for the general assessment of community health status - United States. *Morbidity and Mortality Weekly Report*. 1991 July 12;40(27):449.

¹³ U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control, National Center for Health Statistics, Division of Health Promotion Statistics. *Health Status Statistics: Each State, 1992* is available in Lotus worksheet format (hsi-st92.wk1) via the Internet site: <http://www.cdc.gov/nchswww/datawh/ftpserver/hstatus/hstatus.html>.

Table 3 - 3 (Continued)

No.	Indicator (ICD-9 Code number)	1992		1995	
		US	CT	Rank ^a	CT
Indicators of health status outcome					
<i>Reported incidence (per 100,000 population) of: (continued)</i>					
11	Measles ^e				
	Rate	0.1	0.3	5	0.1
	No. cases	237	9	7	2
12	Tuberculosis ^e	9.8	4.7	32	4.2
13	Primary and secondary syphilis ^e	10.4	4.8	26	2.6
Indicators of risk factors					
14	Incidence of low birthweight, as measured by the percentage of total number of live born-infants weighing <2,500 grams at birth	7.1	6.9	28	7.1
15	Births to adolescents (females aged 10-17 years) as a percentage of total live births	4.9	3.3	43	8.6
16	Prenatal care, as measured by percentage of mothers delivering live infants who did not receive prenatal care during the first trimester of pregnancy	22.3	12.5	50	12.3
17	Childhood poverty, as measured by the proportion of children <15 years of age living in families at or below the poverty level (Standard error)	20.8 (0.20)	14.9 (1.75)	32	--
18	Proportion of persons living in counties exceeding U.S. Environmental Protection Agency standards for air quality during the previous year ⁱ	23.5	96.9	1	100%

a Rank among the 50 states. Worst = 1.

b U.S. figures are based on the 1989-91 linked birth and infant death data. Connecticut 1992 figures are based on linked birth files from 1992. Connecticut 1995 figure is based on linked birth files from 1994.

c Hispanic ethnicity can be of any race.

d Age adjusted to the 1940 U.S. standard million population.

e CDC used U.S. 1993 data for these indicators in their 1992 report.

f Data are for people 16 years of age and older.

g By date of diagnosis. Adjusted for delays in reporting; not adjusted for underreporting.

h Related children in families.

i 1993 data based on 1990 census county populations.

Sources: U.S. figures: U.S. Centers for Disease Control and Prevention; CT 1992 and 1995 figures for Nos. 1-17: DPH, OPPE; CT 1992 and 1995 figures for No. 18: CT Department of Environmental Protection

Based on the consensus set of indicators, the overall health status in Connecticut is comparatively good. Connecticut ranked among the worst ten states for only three of 18 indicators: measles incidence (fifth worst in the nation); AIDS incidence (sixth worst); and sub-standard air quality (worst). In contrast, the state ranked among the ten best (ranks 41-50) for eight indicators: infant mortality (white), total death rate, motor vehicle crash death rate, work-related injury death rate, suicide rate, stroke death rate, births to adolescents, and prenatal care. These, and the remaining consensus indicators, are discussed in greater detail later in Chapter 3.

For the indicator "total deaths per 100,000 population," Connecticut ranked forty-second in the nation. There was, however, substantial variation by town. Mortality rates by town for "all causes" combined in 1989-91, the most recent years for which town-level, age-adjusted mortality rates (AAMR) are available, are shown in Map 3-4. Fourteen of the state's 169 towns had significantly elevated mortality rates ($p < .05$) when compared to the state rate. Towns with elevated rates were found in both urban and rural areas of the state. For example, the five towns with the worst AAMRs were, starting with the highest rate, Voluntown, Hartford, New Haven, Bridgeport, and Hebron.

MORTALITY

OVERVIEW

Eight of the 18 consensus indicators discussed above are mortality-based measures. Although death is the most severe outcome of disease or injury, it represents only a fraction of the disease burden for Connecticut. Nevertheless, focusing on mortality data helps to identify opportunities for interventions to improve the health of Connecticut's residents, particularly when deaths are premature or preventable. To maximize the utility of the mortality information we have considered a variety of summary statistics, ranging from simple counts to rates adjusted for age and weighted for premature deaths of younger persons. We have also considered new ways of grouping causes of deaths (e.g., "firearms deaths," which draws from "suicides" and "homicides") to allow the data to be viewed from a public health perspective focused on prevention opportunities aimed at maximizing the health of a community.

LEADING CAUSES OF DEATH

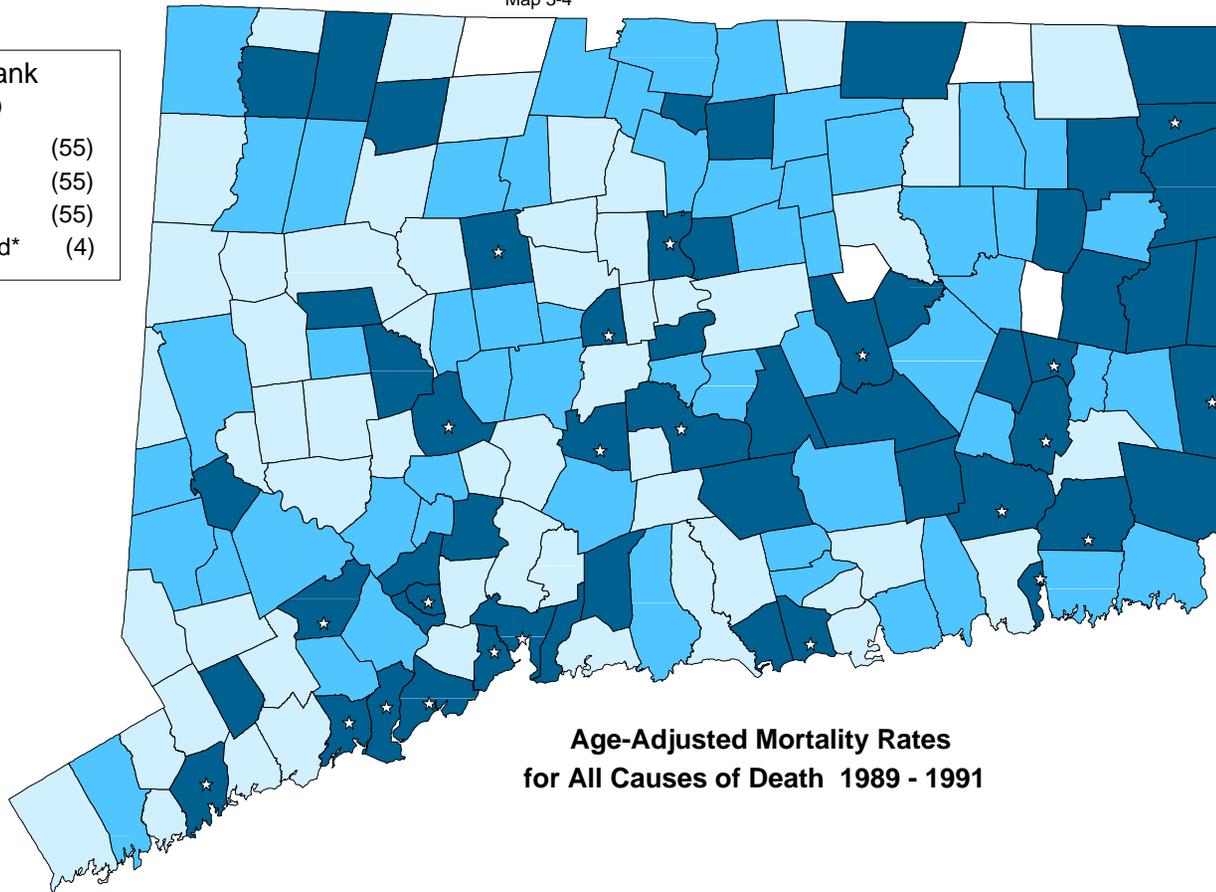
Leading causes of death vary by the age and sex of the decedent. The top five causes of death by age are shown in Table 3-4. Standard "leading cause of death" rankings, (such as those shown in Table 3-4), are based on the simple number of deaths. Eleven clusters of top-ranked causes which span adjacent age strata are highlighted. Note that the ranks reflect vastly different numbers of deaths, in each age stratum. Ranks based on counts, crude rates and age-adjusted rates will make use of death for persons of all ages.

Another mortality measure, "years of potential life lost to age 65," is weighted to reflect premature mortality, and is emphasized here because it focuses attention on diseases and injuries that occur early in life. Table 3-4 also divides deaths according to those under age 65, and those 65 and over. Rates based on years of potential life lost (YPLL) only include deaths in the "under 65" section of the display. The YPLL figures will only be based on partial death counts for some clusters that span the age 65 threshold, such as cancer and diseases of the heart, but most of the unintentional injury deaths will be included. The degree to which a death is "premature" is defined as the years between the decedent's age at death and age 65. The YPLL statistic provides a simple measure of time lost due to premature death. The loss of time is correlated with both human and economic losses to society. YPLL rates are age-adjusted to allow valid comparisons across communities with different age distributions.

The same causes of death shown in Table 3-4 were also ranked by the YPLL rate to age 65. Using these YPLLs, the rankings of unintentional injuries, suicide, homicide and HIV infection increased substantially, compared to rankings based on numbers of deaths, alone. Conversely, diseases of the heart, cerebrovascular disease, and pneumonia and influenza received lower ranks by YPLLs than by numbers of deaths (Figure 3-1). Mortality data from 1989-1991 has been used so that town and state-level figures would use the same base years. The rankings reflected in Figure 3-1 changed only slightly by 1995. There was no change in the causes of death ranked among the top five. Based on YPLL rankings, there was one change. By 1995 homicide had been replaced by HIV-infection as one of the top five causes of premature mortality.

Map 3-4

Town Rank	
(# of towns)	
Top third	(55)
Middle third	(55)
Bottom third	(55)
Not calculated*	(4)

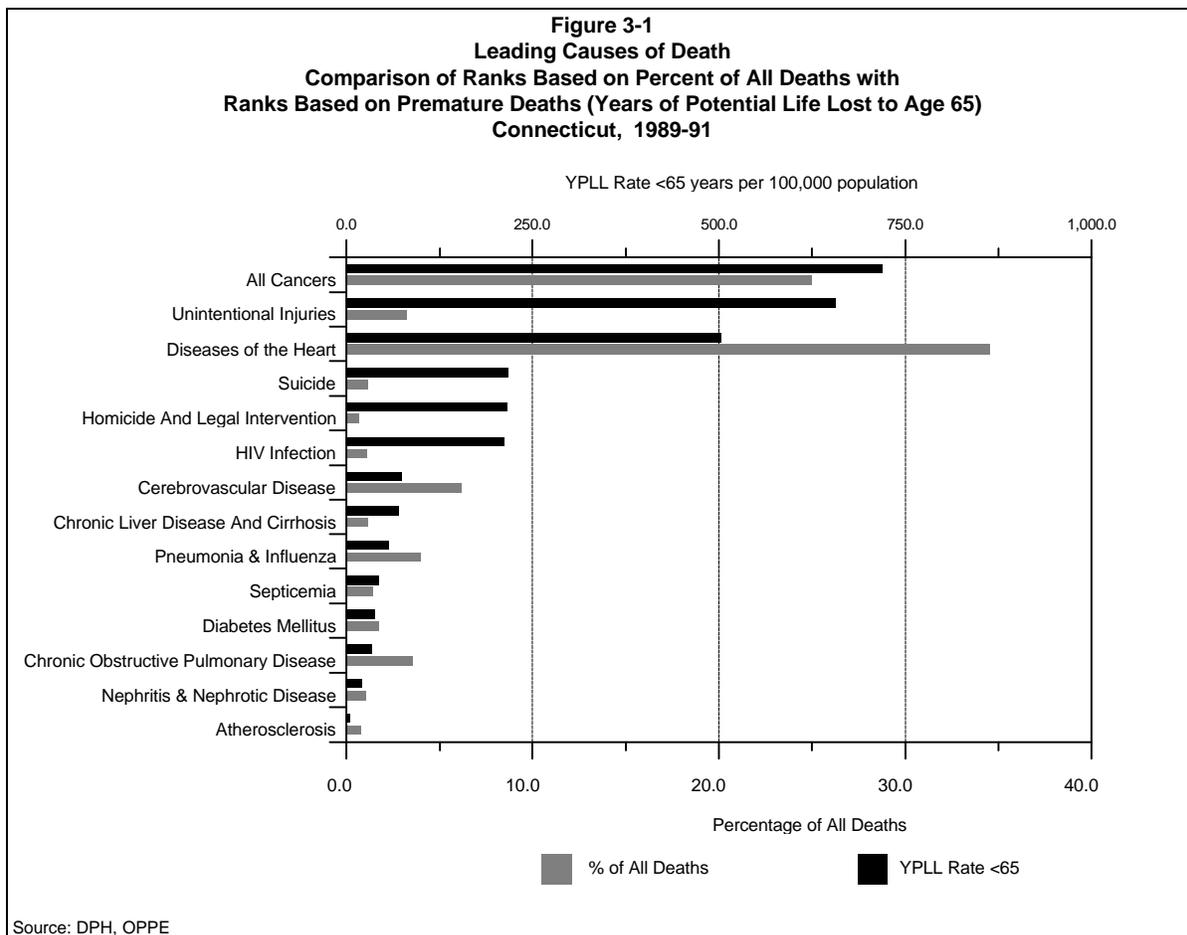


☆ The town age-adjusted mortality rate is significantly higher than the state rate of 631.1 ($p < 0.05$), using the 1970 Standard Million Reference Population.
* Rates are not calculated for less than 25 events.
Note: Rates are expressed as deaths per 100,000, adjusted to the U.S. 1970 Standard Million Population.
Source: DPH, OPPE, 1998

Table 3-4
Top Five ^a Leading Causes of Deaths
by Age for Both Sexes Combined
Connecticut, 1995

Cause of Death	Age in Years											
	Premature Deaths											85+
	<1 (n=322)	1-4 (n=53)	5-9 (n=25)	10-14 (n=47)	15-19 (n=125)	20-24 (n=170)	25-34 (n=653)	35-44 (n=1,188)	45-54 (n=1,628)	55-64 (n=2,622)	65-74 (n=5,742)	
Congenital Anomalies	1	2	2		5	-	-	-	-	-	-	-
Short Gestation, Low Birthweight	2	-	-	-	-	-	-	-	-	-	-	-
SIDS	3	-	-	-	-	-	-	-	-	-	-	-
Maternal Complications of Pregnancy	4	-	-	-	-	-	-	-	-	-	-	-
Complications of Placenta	4	-	-	-	-	-	-	-	-	-	-	-
Unintentional Injuries	-	1	1	1	1	1	1	3	4	-	-	-
Homicide	-	2	5		2	2	5	-	-	-	-	-
Cancer	-	4	2	3	4	4	4	2	1	1	1	2
Septicemia	-	5	-	-	-	-	-	-	-	-	-	-
HIV	-	5	5	4	-	-	2	1	3	-	-	-
Diseases of the Heart	-	5	4	5	-	5	-	4	2	2	2	1
Cerebrovascular Disease	-	-	5	-	-	-	-	-	-	4	3	3
Suicide	-	-	-	2	3	3	3	5	-	-	-	-
Other Infections	-	-	5	5	-	-	-	-	-	-	-	-
Chronic Liver Disease	-	-	-	-	-	-	-	-	5	-	-	-
COPD	-	-	-	-	-	-	-	-	-	3	4	4
Diabetes	-	-	-	-	-	-	5	-	-	5	5	-
Pneumonia and Influenza	-	-	-	-	-	-	-	-	-	-	-	5
												4

^a Ranked by number of deaths.
Source: DPH, OPPE



EXPANDED CAUSE OF DEATH CATEGORIES

The “cause of death” recorded on a death certificate typically indicates the primary disease condition or injury noted at the time of death (e.g., liver disease or drowning). Such conditions usually result, however, from one or more external contributing factors. These factors have been termed, *actual causes of death*, and the major “actual” causes have been identified: tobacco, diet and activity patterns, alcohol, microbial agents, toxic agents, firearms, sexual behavior, motor vehicles, and illicit use of drugs.¹⁴

YPLL rates were calculated for three of these “actual” causes of death (tobacco, alcohol, and firearms), for diabetes (including all “diabetes-related” deaths), and for infant mortality, an age-specific classification that is a key aggregate indicator for a single program area (maternal and child health). A comparison of ranks for these expanded cause of death categories was made by contrasting the percentage of all deaths and the YPLL rates with those displayed for the leading causes of death in Figure 3-1. Two of these expanded classifications had ranks based on counts and YPLLs that were equal, “tobacco-related deaths” ranked 3rd, and “diabetes-related deaths” ranked 7th. The count-based ranks were higher (i.e. counts were lower) than the YPLL-based ranks for : “infant mortality” (15,1), “alcohol-attributable

¹⁴ McGinnis, JM, Foege, WH. Actual causes of death in the United States. *Journal of the American Medical Association* 1993;2207-2212.

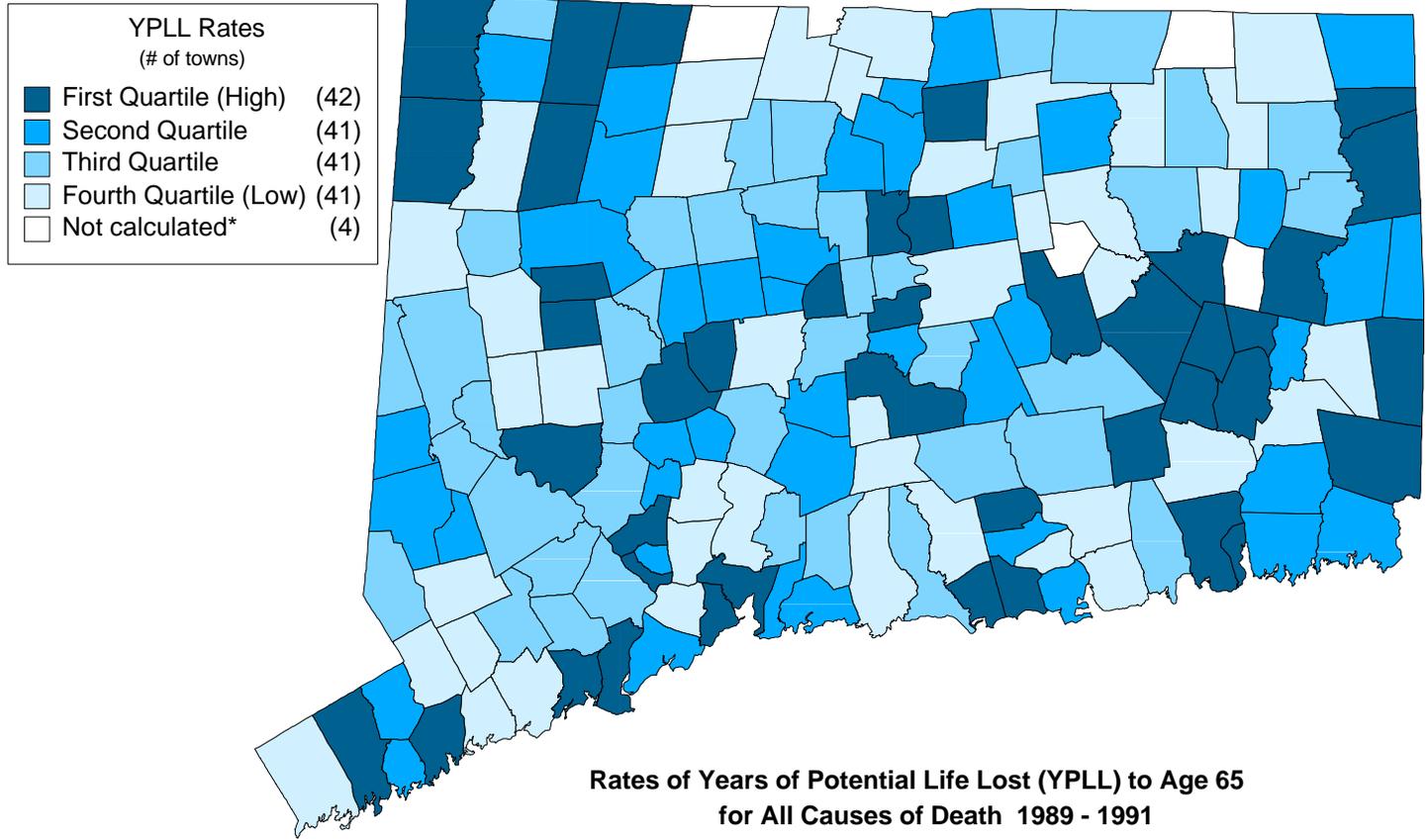
deaths”(8,4) , and “firearm-related deaths”(4,8). The use of a YPLL standard most dramatically affected the ranking of infant mortality. While infant deaths numbered only 398 in 1990 (or less than 2% of all deaths), the YPLL rate was greater than for any other causes.

A comprehensive ranking of causes of death by YPLL rates, including the expanded causes discussed above, is shown in Figure 3-2. YPLL-based rankings provide a valuable perspective from which to examine mortality data, but it is certainly not the only reasonable one. It does not reflect the impairment and/or disability associated with some non-fatal conditions, nor the availability of cost-effective interventions. However, despite the limitations of this measure, YPLL rates are clearly consistent with an orientation toward disease prevention. The benefit of prevention efforts which succeed in averting disease will be roughly proportional to the years of life saved as a result. Therefore, the greatest potential benefit may lie in addressing areas where YPLL rates are highest. To the extent that these YPLL statistics suggest practical targets for intervention, they may be more useful for public health programs and more intuitive to the general public than other measures of mortality.

Depending on town of residence, there was substantial variation in mortality from “all causes” of death, in terms of both AAMRs (Map 3-4) and YPLLs (Map 3-5) in 1989-91. The highest rates of premature mortality were in Bridgeport, Hartford, New Haven, and New London. The YPLL rate for Westbrook was also high, but the number of deaths was too small to be considered a stable rate estimate.

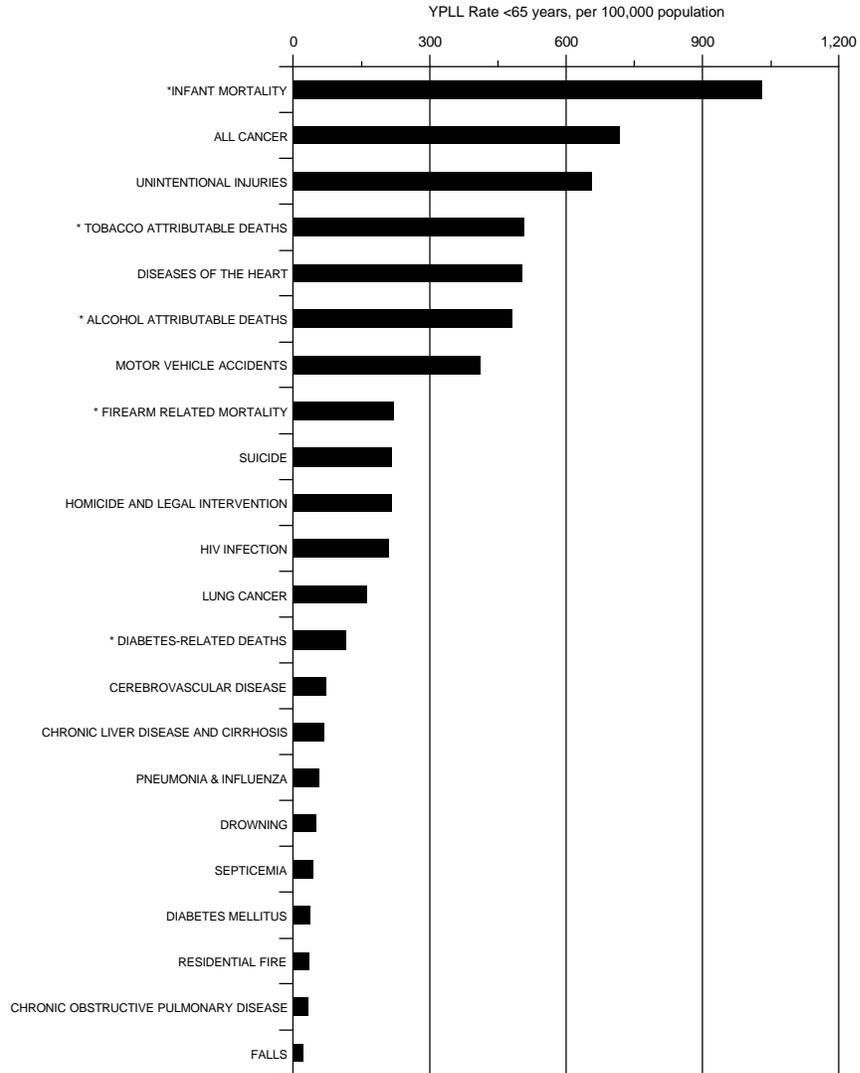
Leading causes of death can be viewed from different perspectives, including percentage of total deaths, age-adjusted mortality rates, and premature deaths (as years of potential life lost to age 65), each of which has both advantages and limitations. For the purposes of public health planning and priority setting, it will be particularly important to consider mortality from all three perspectives.

Map 3-5



* Rates are not calculated for less than 20 events.
Note: Rates are expressed as deaths per 100,000, adjusted to the U.S. 1970 Standard Million Population.
Source: DPH, OPPE, 1997

Figure 3-2
Leading Causes of Death with Component Subgroups and Expanded Categories*
Years of Potential Life Lost to Age 65 (YPLL)
Connecticut, 1989-91



* Includes "expanded" death categories as noted in the text.
 Note: Rates were age-adjusted to the 1970 U.S. standard million population.
 Source: DPH, OPPE

MATERNAL AND INFANT HEALTH

HIGHLIGHTS

- From 1986 to 1995, Connecticut's infant death rate fell from 9.0 to 7.3 deaths per 1,000 births, almost reaching the year 2000 objective of 7.0.
- From 1986 to 1995, the neonatal death rate dropped from 6.8 per 1,000 live births to 5.4 per 1,000 live births.
- Black infant mortality continues to be much worse than both the state's and whites' rates, by a ratio of more than 2:1.
- During the last ten years, the birth rate for teenage mothers was at its lowest in 1986 (31.1 per 1,000 live births) and at its highest in 1994 (41.4).
- In 1995 only about 12.3% of Connecticut women did not initiate prenatal care during the first trimester (about half the U.S. rate).
- Connecticut's low birthweight percentages have remained constant. Whites had consistently lower rates than Hispanics and blacks.

INTRODUCTION

Six key maternal and infant health (MIH) indicators were evaluated, including indicators of poor pregnancy outcomes (infant mortality, low birthweight deliveries, and very low birthweight deliveries) and indicators of risk for poor outcomes (lack of adequate prenatal care, late or no prenatal care, and births to teenage mothers). Based on these indicators the overall condition of maternal and infant health is relatively good in Connecticut, with the exception of some notable areas that need improvement. Infant mortality rates were low (7.3/1,000 in 1995) compared to other states or to the year 2000 target objective (7.0/1,000). U.S. rates have been consistently higher than those of other developed countries, however, suggesting that Connecticut, along with other states, could do better.

In 1995 only 12.3% of Connecticut women did not receive early prenatal care in accordance with the recommended guidelines of the American College of Obstetricians and Gynecologists¹⁵(about half the U.S. rate). The CDC ranked Connecticut as one of the two best states on this indicator in 1992. In contrast, the percentage of low birthweight deliveries, which is an important birth outcome and a predictor of infant mortality, has not improved for ten years and remains a major challenge for maternal and child health programs in Connecticut.

Significant health status disparities exist within Connecticut. Towns with statistically significant elevations for any of the indicators discussed in this section are noted in Table 3-5; regional and town-level differences in indicator values often differed by factors of 2 to 3. Disparities by race and ethnicity were also considerable; minorities with higher rates of poverty tend to have poorer health status on a variety of MIH outcomes. Town level presentations for each of the indicators displayed in Table 3-5 are provided in Maps 3-6 to 3-10. Rates or percents were calculated in towns with at least 5 events reported. Towns with rates or percents that are significantly higher than the state figure are identified with a star.

¹⁵ American College of Obstetricians and Gynecologists. *Standards for Obstetric-gynecologic Services*, 7th Edition. Washington, D.C.: Author. 1989.

**Table 3-5
Towns with Significant ($p < 0.05$) Elevations in One or More MIH Indicators^a
Connecticut 1994-95**

Town	Number of Births	Infant Mortality Rate ^b	Percent Low-birthweight ^c Deliveries	Percent Late/ No Prenatal Care ^d	Percent Non-Adequate ^e Prenatal Care	% Repeated Births to Teens ^f
Connecticut	90,183	7.6	7.0	11.9	16.1	20.8
Number of Events		(686)	(6,269)	(9,996)	(12,875)	(1,441)
Ansonia	531			16.3		
Bloomfield	415		11.3			
Bridgeport	4,655	11.1	9.2	17.4	26.1	26.4
East Hartford	1,392		9.3			
Enfield	1,122	15.2				
Groton	1,573			16.2	19.4	
Hartford	4,877	17.6	13.0	17.5	23.5	28.9
Meriden	1,842		(H) 8.1	19.0	30.5	
Middletown	1,269			15.5	23.3	
Naugatuck	816			15.8		
New Britain	2,066		(H) 8.2	17.3	27.3	
New Haven	3,841	13.3	10.4	22.3	29.5	
New London	864			24.9	30.0	
Norwalk	2,610			18.9	21.0	
Norwich	1,113			20.1	21.7	
Stamford	3,666		(BNH) 11.1	18.6	21.9	
Vernon	799				21.2	
Waterbury	3,659		9.8	31.3	34.4	28.0
Windsor	713		(BNH) 13.6			

^a Figures are for all races, unless otherwise specified (BNH = Black-non-Hispanic; H=Hispanic). Composite two-year aggregated data were used to provide a more reliable assessment of differences among small- and medium-sized towns. The reported elevations are based on comparisons between race/ethnicity-specific town figures and a state figure for all races. This strategy was adopted to flag the elevated rates for minorities that would be missed in a formal, stratified analysis of the data.

^b Infant mortality = deaths of children less than 1 year of age, per 1,000 live births.

^c Low birthweight = births of infants weighing less than 2,500 grams.

^d Late or no prenatal care = Mothers began prenatal care after the first trimester of pregnancy or received no care.

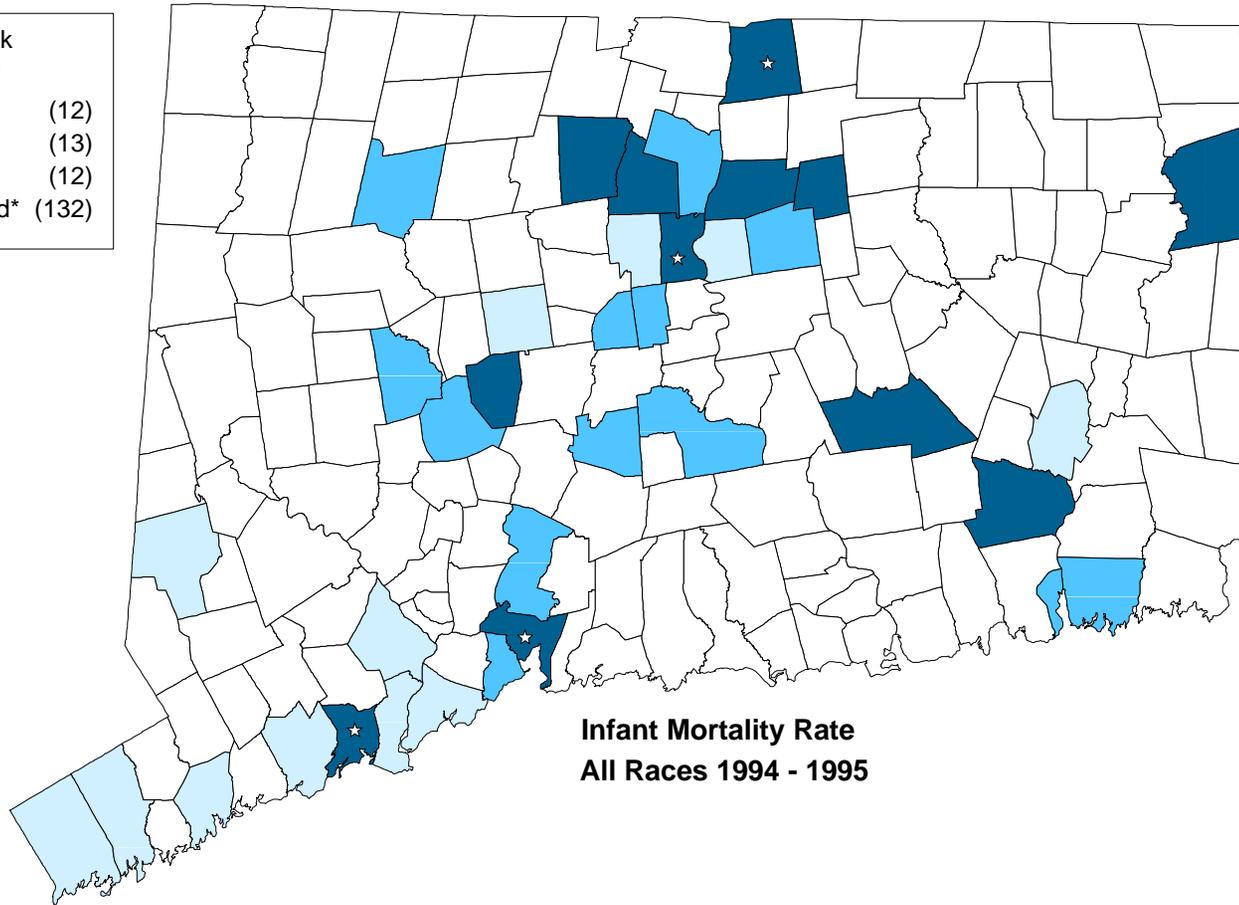
^e Non-adequate prenatal care = Mothers received 'inadequate' and 'intermediate' levels of care as defined by a modified Kessner Index .

^f Percent of repeated births to teenage mothers = Second or later-order child to mothers 15-19 years of age, per 100 birth to women 15-19.

Source: DPH, OPPE

Map 3-6

Town Rank (# of towns)	
Top third	(12)
Middle third	(13)
Bottom third	(12)
Not calculated*	(132)

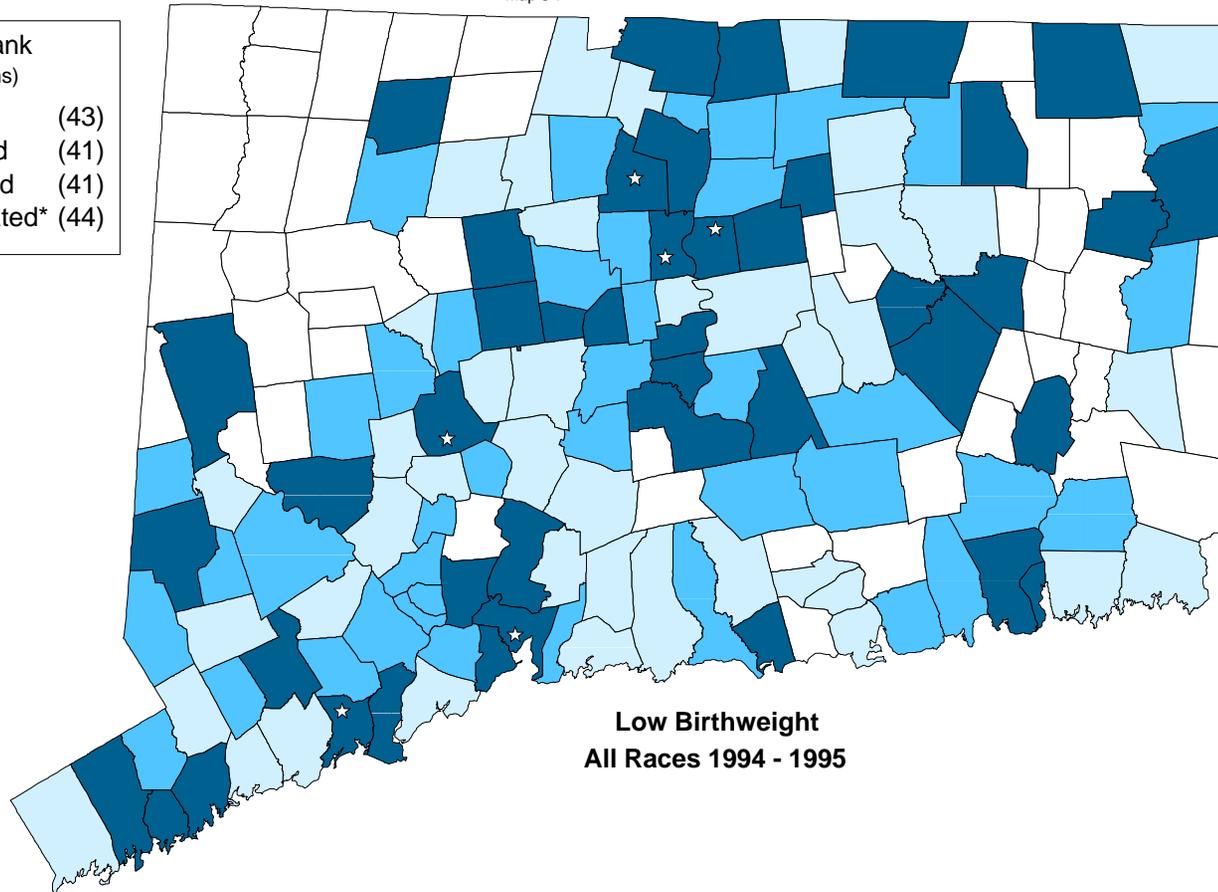
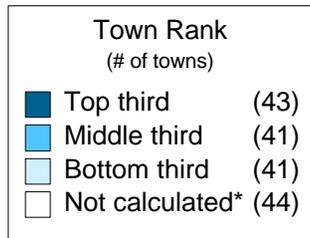


☆ The town infant mortality rate is significantly higher than state rate of 7.6/1,000 births ($p < 0.0125$).

* Rates are not calculated for less than 5 events.

Source: DPH, OPPE, 1997

Map 3-7



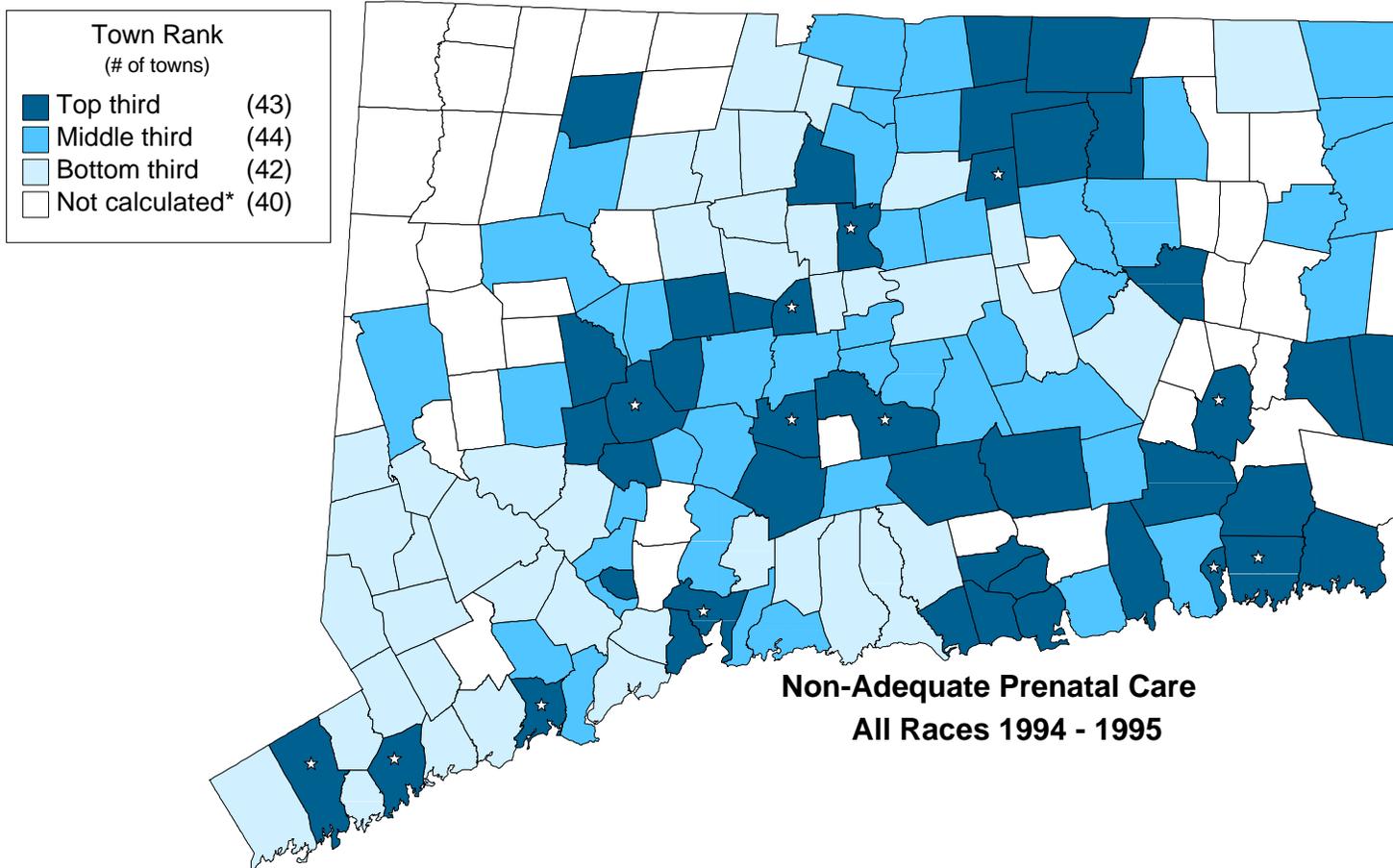
**Low Birthweight
All Races 1994 - 1995**

☆ The town low birthweight percentage is significantly higher than the state percentage of 7.0 ($p < 0.01$).

* Percentages are not calculated when the number of events is less than 5.

Source: DPH, OPPE, 1997

Map 3-9

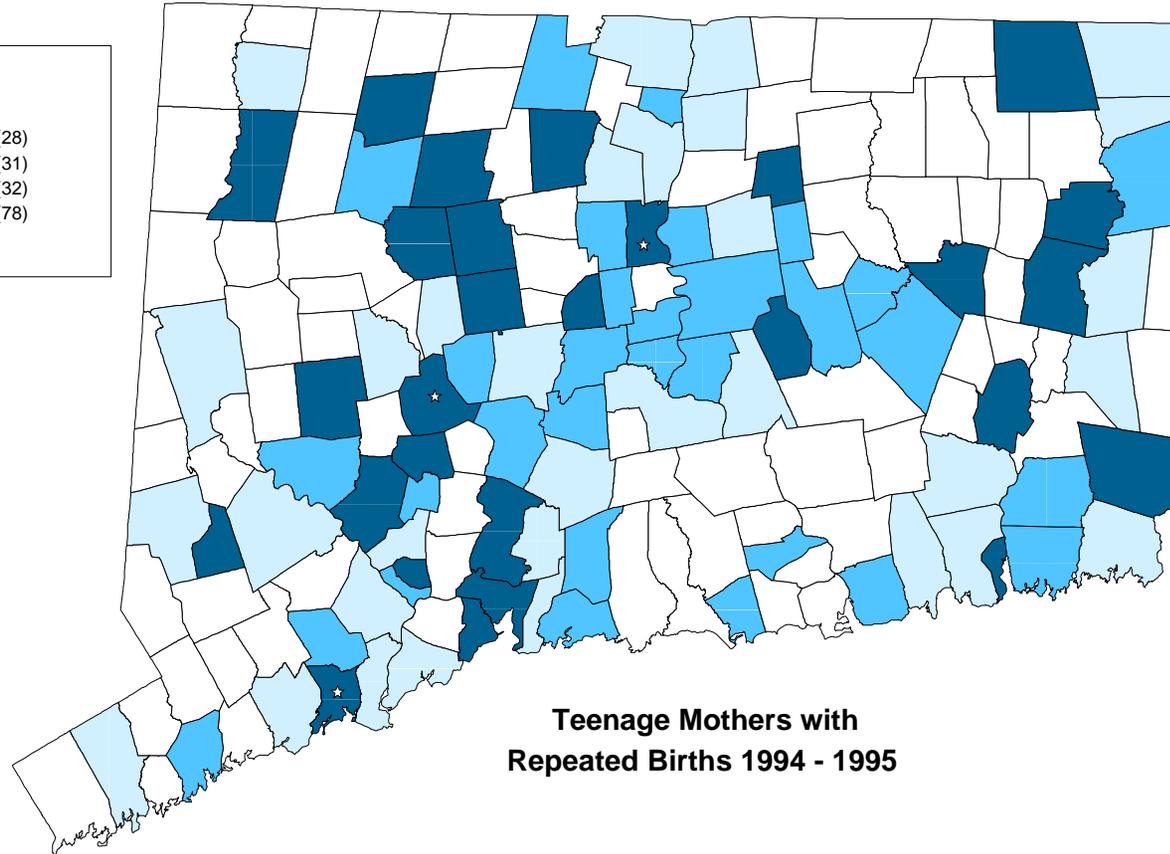


☆ The town non-adequate prenatal care percentage is significantly higher than the state percentage of 16.1 ($p < 0.01$).

* Percentages are not calculated when the number of events is less than 5.

Source: DPH, OPPE, 1997

Map 3-10



Teenage Mothers with Repeated Births 1994 - 1995

☆ The town percentage of teenage mothers with repeated births is significantly higher than the state percentage of 20.8 ($p < 0.01$).
* Percentages are not calculated when the number of events is less than 5.
Source: DPH, OPPE, 1997

INFANT MORTALITY AND FETAL DEATHS

In 1993, the U.S. infant mortality rate¹⁶ ranked behind 22 other nations, including Hong Kong, Singapore, and Norway, and was nearly twice as high as the top-ranked country, Japan.¹⁷ Within some cities the infant mortality rate was significantly worse than for the country as a whole. Although the overall rate in Connecticut was low compared to other states, the 1994 rates in certain Connecticut cities, such as Hartford, New Haven, and Bridgeport, were comparable to infant mortality figures in the cities of Chicago, Philadelphia, Memphis, and Baltimore for the same year.¹⁸ Of these seven cities, Hartford had the highest rate with 19.5 deaths per 1000 live births, and Chicago had the lowest with 12.5.

From 1986 to 1995, Connecticut's infant death rate fell from 9.0 to 7.3 deaths per 1,000 live births (Figure 3-3), almost reaching the year 2000 objective of 7.0. Infant mortality includes neonatal (less than 28 days old) and postneonatal (29 to 365 days old) mortality figures. Neonatal deaths are frequently associated with circumstances related to conditions of the pregnancy and delivery, whereas postneonatal deaths are associated with environmental conditions, risk exposures, and access to health care during the first year of life. The decline in Connecticut's infant mortality rate was due largely to decreasing neonatal mortality rates. In contrast, neither the postneonatal nor the fetal death rates dropped during the same period. Fetal deaths, like neonatal deaths, may be prevented through the use of appropriate pre-conception and prenatal care. Fetal deaths outnumbered neonatal deaths in Connecticut from 1987-1995.

High Risk Groups

The infant mortality experience of whites remained relatively stable from 1986-1995, while there was an unsteady declining trend for blacks (Figure 3-4). The infant mortality rates for blacks exceeded the rates for whites in all years from 1986 to 1995. This gap reflects the consistently higher prevalence among blacks for other risk factors, such as birth rates among teenage women, lack of adequate prenatal care, and low birthweight. Each of these indicators are described further later in this section.

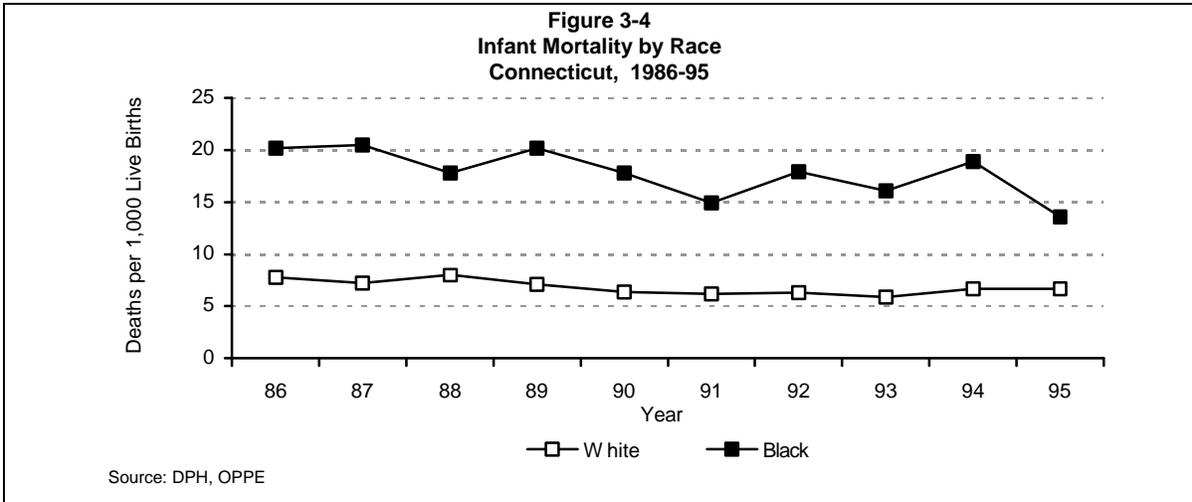
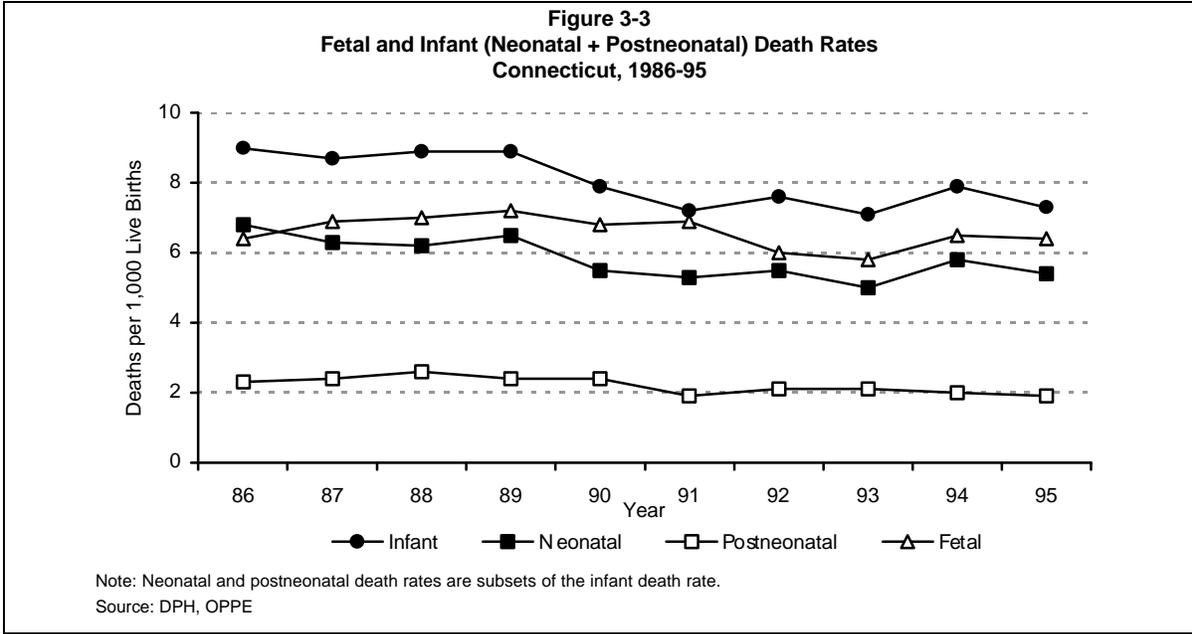
Modifiable Risk Factors and Potential for Intervention

Improvements in the infant mortality rate are believed to be due to the efficacy of newborn intensive care units, with improved survival mainly for infants of moderately low birthweight. Further reductions in infant mortality and morbidity will require new strategies to modify the behaviors and lifestyles that affect birth outcomes, such as smoking, drinking, drug use, and utilization of prenatal care services. Efforts such as improved prenatal care by means of comprehensive programs to improve pregnancy outcomes can reduce neonatal mortality. Targeting prevention programs to groups showing a high rate of low and very low birthweight infants (such as the urban centers or the state's black population) can produce the greatest effect on reducing the overall neonatal mortality rate in the state.

¹⁶ Deaths to infants less than one year old.

¹⁷ U. S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Center for Health Statistics. *Health, United States, 1996-97 and Injury Chartbook*. Hyattsville, MD: DHHS publication (PHS)97-1232. 1997 July.

¹⁸ Annie E. Casey Foundation. *City Kids Count Report*. 1997.



Leading causes of postneonatal death include birth defects, sudden infant death syndrome, infections, and injuries. Interventions aimed at linking newborns with accessible, on-going, and culturally-sensitive primary care can provide effective education and services to avoid or minimize the effects of these threats to the postneonate.

A large percentage of fetal deaths is attributed to lethal malformations. Better medical evaluation of fetal deaths with genetic screening and counseling may help to prevent fetal deaths. Interventions to address known causes of fetal death include improved prenatal diagnosis and treatments of maternal morbidities, such as hypertension and maternal-fetal infections, and efforts to reduce maternal cigarette smoking and the use of illegal drugs.

Programming within the Bureau of Community Health's Maternal and Child Health (MCH) area to prevent infant mortality is aimed at the period before conception, along with the prenatal and postnatal periods. Pre-conception interventions aimed at school-aged audiences and women of childbearing age include: primary care services; targeted health education programs; and outreach and case-finding to link individuals and families to primary and preventive services. Prenatal efforts are focused on getting mothers into regular care early in the pregnancy and keeping both regular and specialty care appointments as directed by their physician. Postnatal efforts include medical testing for genetic disorders and maintaining good health for normal infants and their mothers. The WIC program (Special Supplemental Food Program for Women, Infants and Children), for example, promotes breast feeding of infants for at least the first three months of life.

BIRTHS TO TEENS AND WOMEN AGED 40-44 YEARS

Women at both extremes of the age distribution are more likely to have poor pregnancy outcomes than women in their middle years. Births to teenage mothers are important for a variety of reasons. Teen mothers are more likely to have unplanned, unwanted pregnancies, and to become single parents. Being a young single parent imposes extra demands on the mother, which may result in her being less likely to complete high school, to find adequate employment and to have enough time to interact with her child. Teen mothers are at an increased risk of having a low birthweight baby, and the risk of infant mortality may also be elevated, particularly for young teenage mothers. In 1995, women aged 15-19 had the greatest risk of delivering a low birthweight baby (Table 3-6). The risk diminished as women aged, until ages 35-39 years, when it gradually began increasing.

For Connecticut teens under the age of seventeen, neonatal mortality and postneonatal mortality were also higher, relative to older women by factors of about 2 and 3, respectively, for the period 1981 to 1985.¹⁹ In 1995, ten years later, the infant mortality rate for women under age 18 is still about two to three times higher than for women in their middle years (under 18 years, 15.2 per 1,000 births; 25-29 years, 6.8 per 1,000 births; 30-34 years, 4.6 per 1,000 births).²⁰

Between 1986 and 1995, birth rates among 15-19 year olds increased slightly (Figure 3-5). The birth rate for teenage mothers was at its lowest in 1983 (29.7 per 1,000 population, not shown) and at its highest in 1994 (41.4 per 1,000). Over the same period birth rates also increased slightly among the 40-44 year old group. The greatest increase occurred among women in the 30 to 34 age group, one of the groups with the lowest risk.

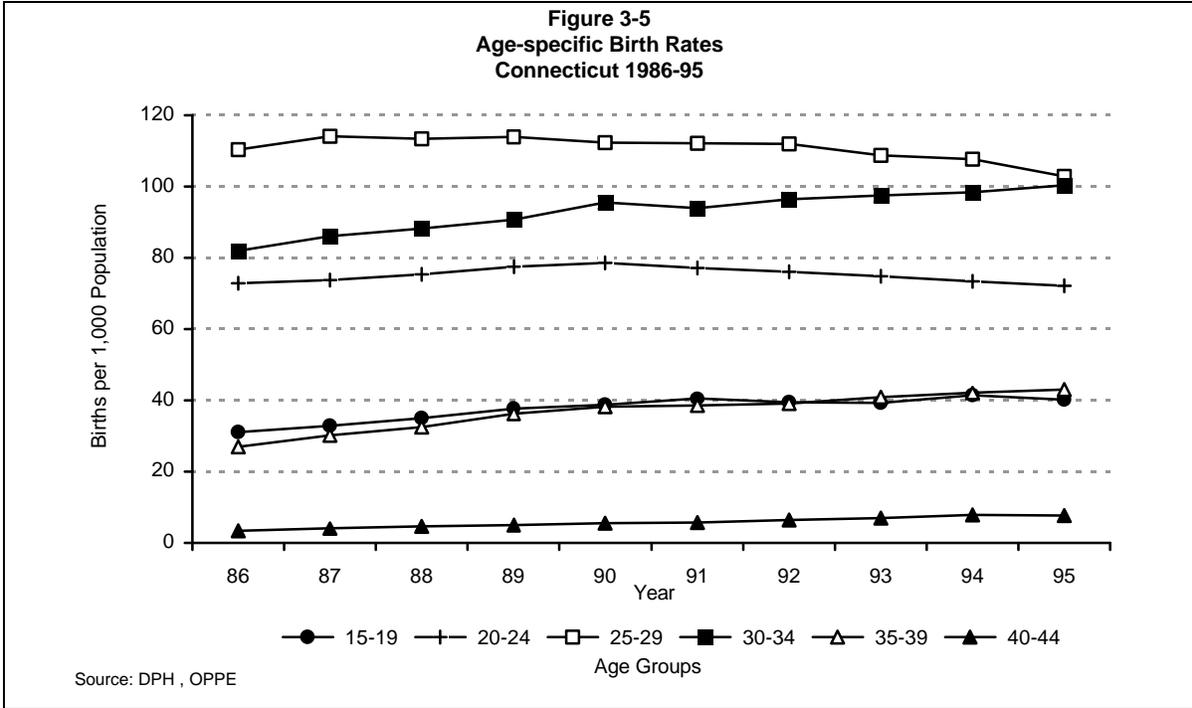
Table 3-6
Relationship of Mother's Age to Low Birthweight
Connecticut, 1995

Age Groups	Percent Low Birthweight	Relative Risk
15-19	10.8	1.70
20-24	7.0	1.10
25-29	6.5	1.00
30-34 ^a	6.4	1.00
35-39	7.5	1.20
40-44	7.9	1.22

^aThis group had the lowest percent low birthweight, and was thus the reference group for estimating relative risk.

¹⁹ Mueller L, Weintraub L. *Draft: Cumulative risk factor assessment based on the 1981-85 birth-infant death cohort*. Hartford, CT: Connecticut Department of Health Services, Division of Health Surveillance and Planning. 1988 November. (1981-85 are the most recent years for which linked birth and death data are available.)

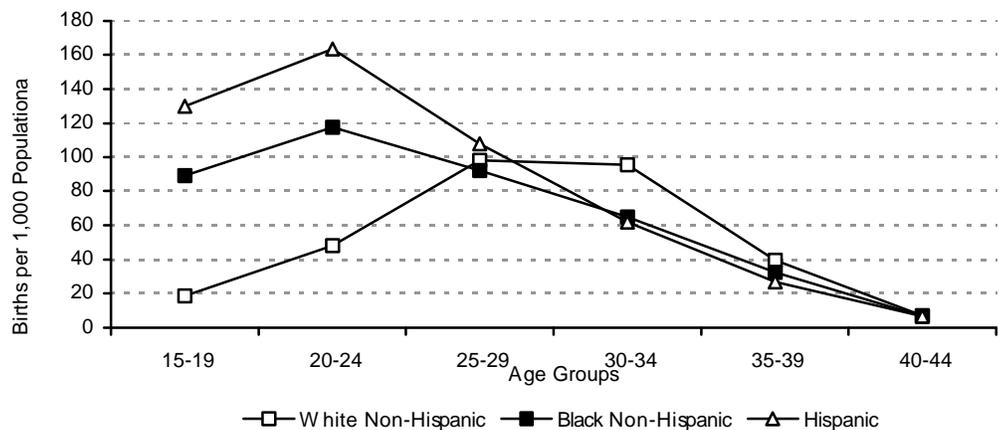
²⁰ Connecticut Department of Public Health. Unpublished data from the Connecticut 1995 birth-infant death cohort.



Birth rates among teens also varied substantially by town. Women between the ages of 15 and 17 are the focus of the Year 2000²¹ adolescent pregnancy objective #5.1. One component of pregnancy statistics is abortion counts, which Connecticut does not record at the town level. Consequently *births* to women 15-17 years is often employed as a town-level surrogate measure. The birth rate for females aged 15-17 was four times higher in Hartford than the statewide rate of 2.7% in 1990. Eight towns had rates that were 1.6 times or more above the state rate (Table 3-7).

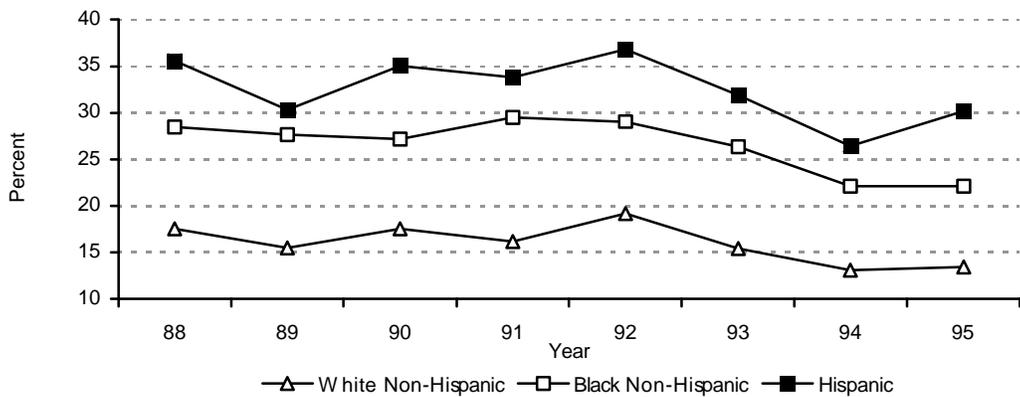
²¹ U. S. Department of Health and Human Services, Public Health Service. *Healthy People 2000: National Health Promotion and Disease Prevention Objectives*. Washington DC: Public Health Service. 1990.

Figure 3-6
Age-specific Birth Rates by Race and Ethnicity
Connecticut, 1994



* Age specific population estimates by race and ethnicity for Connecticut were not available for 1995.
 Source: DPH, OPPE

Figure 3-7
Percentage of Repeated Births to Mothers
Aged 15-19 by Race and Ethnicity
Connecticut, 1988-95



Source: DPH, OPPE

Table 3-7
Birth Rates among Females Aged 15-17 Years
Connecticut, 1990^a

Town of Residence	Rate per 100 Population	Town/State Ratio
Hartford	10.7	4.0
Bridgeport	8.6	3.2
New Haven	7.9	2.9
New London	7.5	2.8
Waterbury	6.1	2.3
New Britain	5.7	2.1
Windham	4.7	1.7
Meriden	4.2	1.6
All Connecticut Towns	2.7	1.0

^a 1990 is the most recent year for which detailed age-sex population figures were available based on the U.S. Census. Source: DPH, OPPE

Modifiable Risk Factors and Potential for Intervention

Teen pregnancy is considered a public health problem for several reasons related to the health of both mother and newborn. Early sexual activity can result in a higher risk for sexually transmitted diseases, which could harm the fetus and impair the future fertility and health of the mother. Preventive interventions to address teen pregnancy include programs to delay the onset of sexual activity, promote abstinence as the social norm, reduce the number of adolescents who have sex at young ages, and increase the numbers of sexually active adolescents who use contraceptives effectively.

State-sponsored programs provide both contraceptive services and prenatal care for teens in specialized programs such as the APP/YPP (Adolescent Pregnancy Prevention/Young Parents' Program) programs. Teen planning grants, a new initiative in 1997, targeted teen pregnancy prevention in the ten communities in the state with the highest teen birth rates.

State programs are also directed towards preventing repeat births among teenage mothers. One of the goals of the programs is to maximize the health of its participants, while trying to promote a healthy social/economic future for the teens. One way this is accomplished is by joining forces with the educational system to encourage teen mothers to finish high school.

PRENATAL CARE

If late care were eliminated and all women also received the appropriate minimum number of prenatal visits, then low birthweight deliveries would decrease by about 15%.²² Prenatal care utilization is assessed using two risk indicators. The first indicator, "late or no care," identifies mothers who did not receive care during the first trimester (i.e., within the first 13 weeks) of pregnancy. The second indicator, "non-adequate care," is a composite index (a modified Kessner Index), reflecting both the time of the first visit and the number of visits. In Connecticut, the elimination of non-adequate care could reduce infant mortality by an estimated 15% overall. Among black infants, non-adequate care is more common, and its elimination could result in a estimated 24% infant mortality reduction.²³

Table 3-8
Relationship of Prenatal Care to Low Birthweight

²²Institute of Medicine, National Academy of Sciences. *Preventing Low Birthweight*. Washington, DC: National Academy Press. 1985.

²³Mueller LM, "Estimated impact of eliminating non-adequate prenatal care toward lowering infant mortality in Connecticut," Connecticut Department of Public Health, March 1990.

Connecticut, 1995

Prenatal Care Risk Factor	Percent Low Birthweight	Relative Risk
<i>Trimester Prenatal Care Began</i>		
None	26.6	4.0
First Trimester ^a	6.6	1.0
Second Trimester	8.2	1.2
Third Trimester	8.0	1.2
<i>Adequacy of Prenatal Care</i>		
Adequate ^a	6.0	1.0
Intermediate	8.2	1.4
Inadequate	18.3	3.1

^aThis group had the lowest percent low birthweight, and was thus the reference group for estimating relative risk.
Source: DPH, OPPE

Prenatal care should be initiated during the first trimester of pregnancy. Prenatal care utilization has been quite good in Connecticut. In 1995 only about 12.3% of Connecticut women did not receive early care (about half the U.S. percentage). The CDC ranked Connecticut as one of the two best states for this indicator in 1992.

Late prenatal care is defined as care initiated in the second or third trimester of pregnancy. Connecticut's experience over the ten years since 1986 showed some worsening followed by improvement starting in 1989. While blacks and Hispanics experienced much higher percentages than whites or the state as a whole, their rate of improvement over time has been much better than the rate for whites (Figure 3-8).

Non-adequate prenatal care is a summary measure of prenatal care initiation and the number of prenatal visits. The "non-adequate" grouping includes both "inadequate" and "intermediate" care as defined in the Kessner Index of prenatal care.²⁴ The 1986-1995 trends for non-adequate care, and the differences by race, parallel those provided for late or no prenatal care (Figure 3-9).

Modifiable Risk Factors and Potential for Intervention

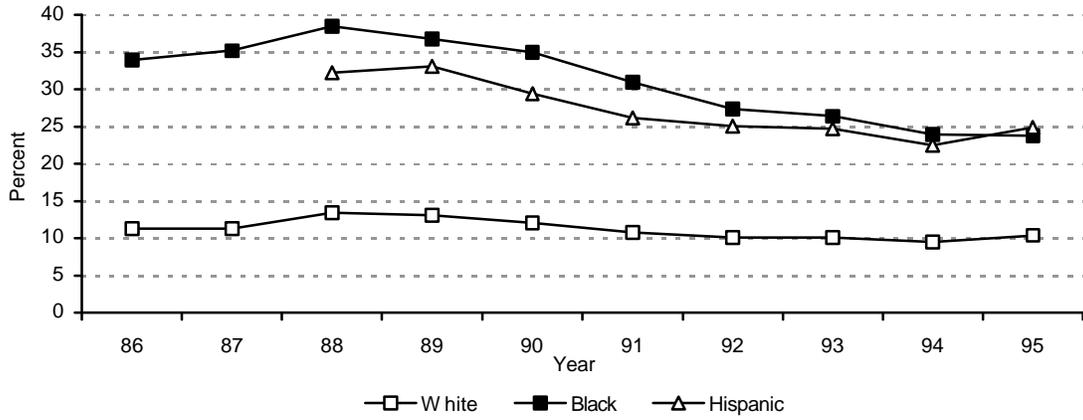
Good prenatal care is a cornerstone of prevention for both infant mortality and morbidity. An expectant mother with no prenatal care is three times more likely than mothers with appropriate care to have a low birthweight baby. Low birthweight is associated with a variety of medical problems and increased risk of mortality, especially for the pre-term infant. Ensured access to care, together with comprehensive approaches to prenatal care that include "flexible combinations of education, psychosocial and nutritional services, and certain clinical interventions such as a low threshold for hospitalization, careful screening for medical risks, and rapid response to signs of early labor,"²⁵ hold the promise of considerable improvement in birth outcomes and the health of both mother and child.

DPH has tried to improve access to prenatal care through several strategies, such as supporting sites for primary care and free pregnancy testing at family planning clinics. At these sites, patients are appropriately referred for early prenatal care, in keeping with established protocols. Further work is needed to address prenatal care, however. Involvement of minority representatives with local state-supported groups, and the concentration of primary care services in high-need areas, are part of an overall strategy to improve prenatal care and birth outcomes for Connecticut women.

²⁴ Kessner, D.M., J. Singer, C.E. Kalk, and E.R. Schlesinger. Infant death: An analysis by maternal risk and Health care. *Contrasts in Health Status, Vol. 1.* Washington, D.C: Institute of Medicine, National Academy of Sciences. 1973.

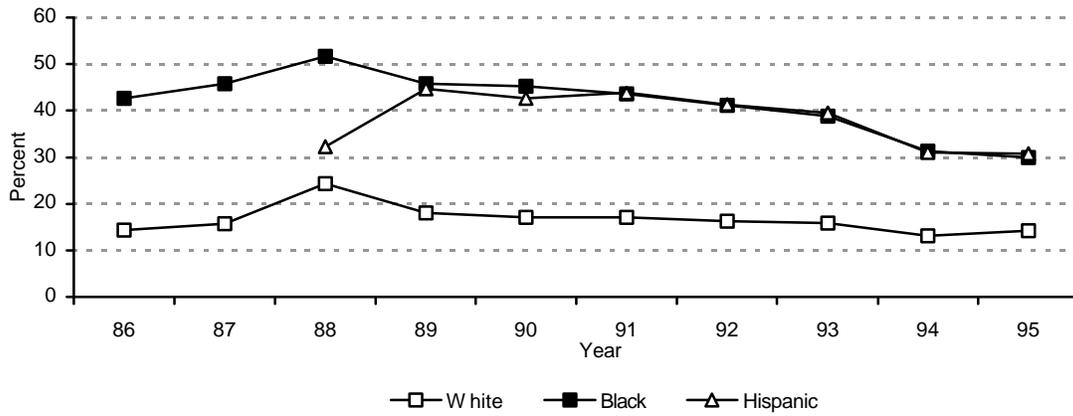
²⁵ Institute of Medicine, National Academy of Sciences, *Preventing Low Birthweight.* Washington, DC: National Academy Press. 1985.

Figure 3-8
Births to Women Who Received Late or No Prenatal Care
Percentage by Race & Ethnicity
Connecticut, 1986-95



Note: Ethnicity data first became available on Connecticut birth certificates in 1988.
 Source: DPH, OPPE

Figure 3-9
Births to Women Who Received Non-adequate Prenatal Care
Percentage by Race and Ethnicity
Connecticut, 1986-95



Note: Ethnicity data first became available on Connecticut birth certificates in 1988.
 Source: DPH, OPPE

LOW BIRTHWEIGHT

Low birthweight refers to infants weighing less than 2,500 grams (about 5.5 pounds) at delivery. Birthweight in general is a measure of the adequacy of fetal growth during pregnancy, and low birthweight can result from prematurity (gestational age <37 weeks), intrauterine growth retardation, or other factors. Low birthweight is a major cause of infant mortality and long-term health problems, and decreasing birthweights under 2,500 grams are associated with increasing risk of death within the first year of life. Low birthweight infants account for less than 7% of all live births in the United States, but they account for nearly 60% of all infant deaths.²⁶ The impact of low birthweight on infant mortality occurs primarily during the first 28 days of life (the neonatal period), when low birthweight infants are about 40 times more likely than normal-weight infants to die. For very low birthweight infants (less than 1,500 grams or 3 lbs. 3 oz.) the risk of death is 200 times higher than among normal-weight newborns.

The 1995 Connecticut figures are even more pronounced, with low birthweight accounting for about 7% of births and 69% of infant deaths. Relative to normal weight babies in Connecticut, low weight increased the risk of neonatal death over 50 times (from 1.2 to 59.8 deaths per 1,000 births), and over 203 times among very low birthweight deliveries.

In addition to increased risk of mortality, low and very low birthweight are associated with increased risk of disability, such as mental retardation, cerebral palsy, and vision and hearing disabilities. Advances in neonatal medicine have increased the survival of low and very low birthweight infants. While many of these low birthweight survivors will lead normal lives, it is clear that “serious questions remain about how these infants will develop and whether they will have normal productive lives. Given the increasing number of survivors of extreme prematurity and the high health care and educational costs involved, it is crucial that we appreciate the full extent of any adverse outcomes.”²⁷ Low birthweight is, however, a preventable condition. By improving maternal health before conception using appropriate family planning and prenatal care services, many of the conditions that lead to the slow growth and/or prematurity of a low-birthweight infant can either be eliminated or ameliorated.

Percentages of low birthweight in Connecticut remained fairly constant between 1986 and 1995, with whites having lower percentages than Hispanics and blacks (Figure 3-10).

²⁶ U.S. Public Health Service, *Health United States (1989)*, (PHS #90 - 1232), Hyattsville, MD, p 12.

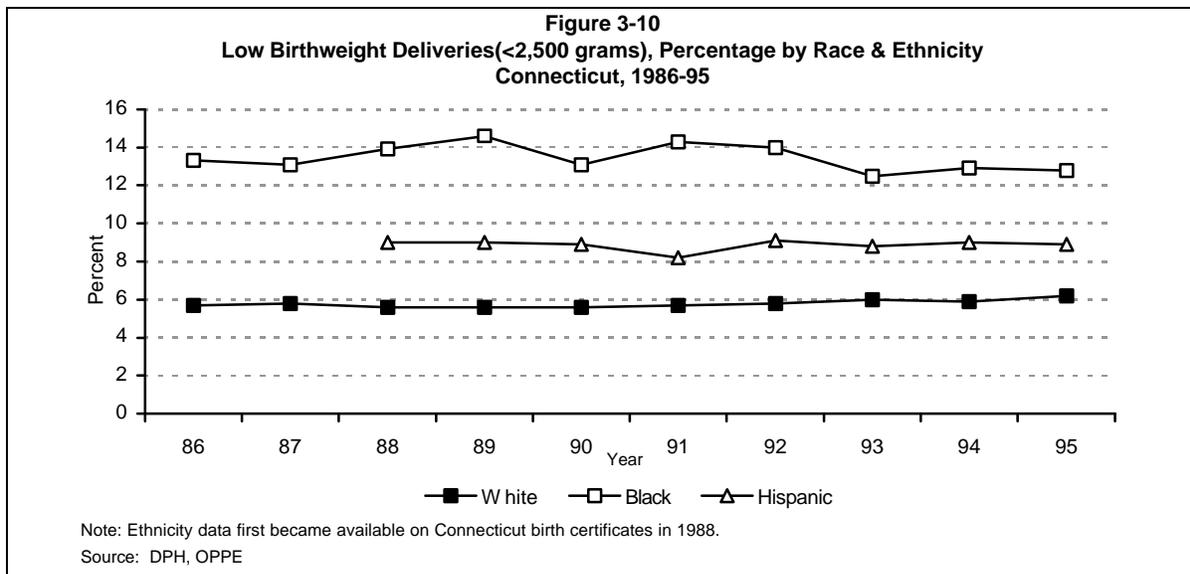
²⁷ Hack M, Klein N, Taylor HG. Long term developmental outcomes of low birthweight infants. *The Future of Children* 1995 Spring;5(1):176-193.

Modifiable Risk Factors and Potential for Intervention

Prevention of low birthweight is considered to be the major objective of public health and medical interventions whose goal is to reduce infant mortality. Six risk factors for low birthweight birth are:

1. Demographic characteristics, such as low socioeconomic status, low level of education, nonwhite race (particularly black), childbearing at extremes of the reproductive age span, and being unmarried;
2. Medical risks that can be identified before pregnancy, such as a poor obstetric history, certain diseases and conditions, and poor nutritional status;
3. Problems that are detected during pregnancy, such as poor weight gain, bacteriuria, toxemia/pre-eclampsia, short inter-pregnancy interval, and multiple pregnancy;
4. Behavioral and environmental risks, such as smoking, alcohol and other substance abuse, and exposure to various toxic substances;
5. Health care risks of absent or inadequate prenatal care; and
6. Evolving concepts of risk, such as stress, uterine irritability, certain cervical changes detected before the onset of labor, some infections, inadequate plasma volume expansion, and progesterone deficiency.²⁸

Increasing access to prenatal care and improving the content of care remain key concerns. Improvements in these factors should affect other modifiable risk factors favorably. For example, cigarette smoking is the single largest modifiable risk factor for low birthweight and infant mortality. Interventions to diminish cigarette smoking in pregnant women could have far-reaching benefits for both mother and child.



²⁸ Institute of Medicine, National Academy of Sciences. *Preventing Low Birthweight*. Washington, DC: National Academy Press. 1985.

BEHAVIORAL RISKS

HIGHLIGHTS

- Nearly one-fifth of all deaths in the U.S. and in Connecticut are estimated to be related to tobacco smoking.
- About 3 in 10 high school students currently smoke.
- Of all respondents aged 18+, 2.5% reported that they drink and drive. Between 1990 and 1995, the rate of binge drinking among 18-24 year olds decreased in Connecticut.
- More than 20% of Connecticut adults do not engage in any leisure time physical activity.
- One-quarter of Connecticut's adult population is overweight. About 1 in 5 women and nearly 3 in 10 men were considered overweight, based on their self-reported height and weight.
- Nearly 1 in 5 adults has been told by a health professional that his or her blood pressure is high.
- Two-thirds of Connecticut adults do not eat the recommended total of five fruits and vegetables daily.

INTRODUCTION

The Behavioral Risk Factor Surveillance System (BRFSS) is a statewide telephone survey of non-institutionalized adults aged 18 and older that provides prevalence estimates for key behavioral risk factors. Many of the risk factors assessed are directly related to several of the chronic disease conditions described in the *Chronic Diseases* section of this chapter. Table 3-9 provides a concise overview of the relationship between several modifiable risk factors (including behavioral factors) and various chronic diseases.

Table 3-9
Interrelationships between Various Chronic Diseases and Modifiable Risk Factors
 (+ = Established risk factor, ? = Possible risk factor)

Risk Factor	CVD ^b	Cancer	Chronic Lung Disease	Diabetes	Cirrhosis	Musculo-skeletal Disease	Neuro-logic Disorder
Tobacco Use	+	+	+			+	?
Alcohol Use	?	+			+	+	+
High Cholesterol	+						
High Blood Pressure	+						
Diet	+	+	?	?		+	?
Physical Inactivity	+	+		+		+	
Obesity	+	+		+		+	+
Stress	?	?					
ETS ^c	?	+	+				
Occupation		+	+		?	+	?
Pollution		+	+				+
Low SES ^d	+	+	+	+	+	+	

^b CVD = Cardiovascular disease, ^c Environmental Tobacco Smoke, ^d SES = Socioeconomic Status
 Source: Chronic Disease Epidemiology and Control, R.C. Brownson, P. L. Remington, J. R. Davis, (Eds.) American Public Health Association, 1993.

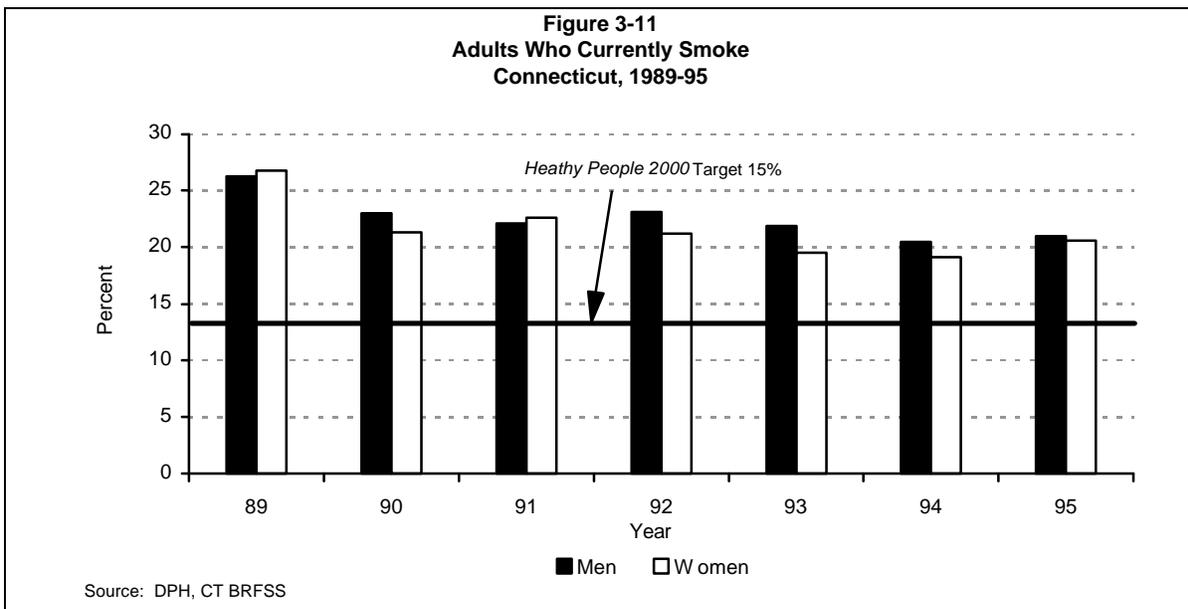
TOBACCO

Summary

Cigarette smoking is the single most important avoidable cause of death in the United States, estimated to cause over 400,000 deaths each year²⁹. For 1989 it was estimated that 19% of all deaths in Connecticut (5,446 of 28,130) were related to smoking. Cardiovascular disease and cancer, especially lung cancer, accounted for the largest number of deaths, but other causes of death attributed in part to smoking included cervical and bladder cancer, pneumonia, influenza, chronic obstructive pulmonary disease, burns, and diseases of newborns including sudden infant death syndrome and respiratory diseases³⁰.

Time Trends

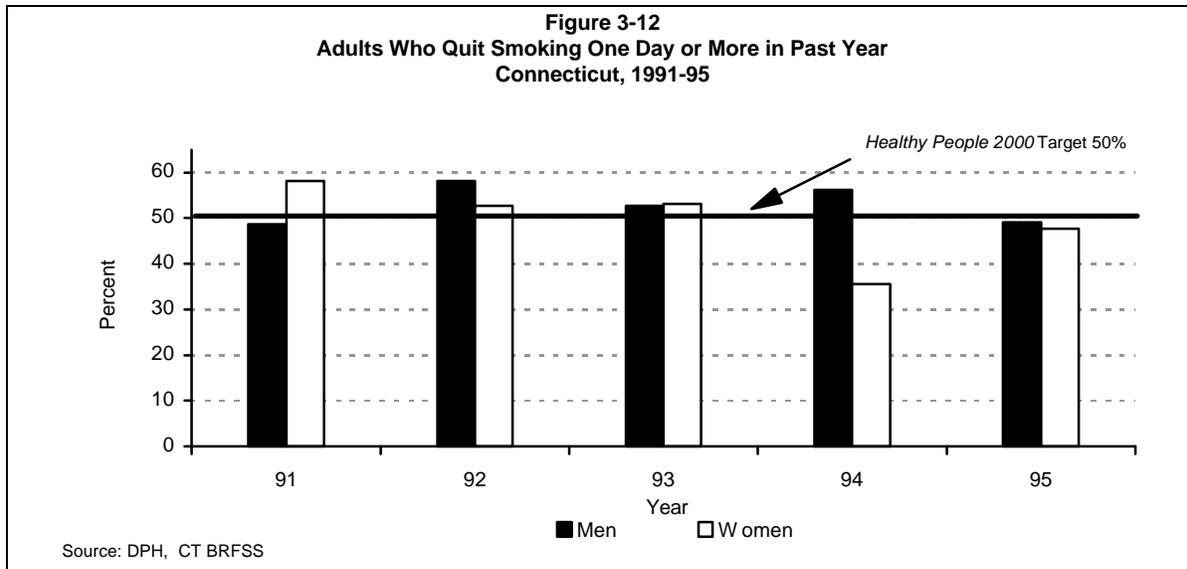
All BRFSS respondents were asked if they had smoked 100 cigarettes in their lifetime, and if so, did they currently smoke. From the responses, the proportion of people who had never smoked, former smokers, and current smokers could be determined. Current smokers were asked if they had quit smoking for a day or more in the past year. Additional questions have been asked in recent years to determine the prevalence of irregular smoking, or smoking on less than 30 of the past 30 days.



About 1 in 5 adults (20.8%) in the state reported current smoking in 1995, down from 1 in 4 in 1989 (Figure 3-11). While the rate was still above the *Healthy People 2000* and *Healthy Connecticut 2000* target of 15%, the overall trend is improvement. Compared with other states that participate in the BRFSS, the prevalence of smoking in Connecticut is below the median 22.4%. The prevalence of irregular smoking (2% of all respondents or about 10% of all smokers in 1995), which is included in the prevalence rate, appears to be low but increasing.

²⁹ McGinnis JM, Foege WH. Actual causes of death in the United States. *Journal of the American Medical Association*. 1993;270:2207-2212.

³⁰ Adams ML. The public health impact and economic cost of smoking in Connecticut- 1989. *Connecticut Medicine*, 1994;58:195-198.



Each year between 1991 and 1993, over half of current smokers reported quitting for at least one day in the past year. This measure meets the national *Healthy People 2000* objective of 50%, but not Connecticut's target of 60%. In 1994 and 1995, this rate dropped below 50% so neither objective was met (Figure 3-12). As the prevalence of smoking declines and the group of smokers consists of those who find it hardest to quit, this rate may decrease further.

High Risk Populations

Persons who are out of work and high school dropouts have a higher prevalence of current smoking than others. Because of the addictive nature of tobacco and the fact that most smokers begin before the age of 20, teens are a high-risk group. The prevalence in 1995 of weekly or daily smoking was 18% among 9th graders and 25% for 11th graders³¹. Similarly, 30.6% of males and 29.0% of females in grades 9-12 reported using cigarettes in the past 30 days, with suburban students reporting higher rates than urban youth³². Women of childbearing age are particularly important because low birthweight and increased infant mortality are associated with cigarette smoking by pregnant women. The smoking prevalence among Connecticut women aged 18-44 in 1995 was 23.5%, which is higher than that for all adults.

Potential for Intervention

Smokers who quit can reap immediate and significant health benefits. Even reducing the number of cigarettes smoked can add to life expectancy³³. Smoking cessation programs for adults who smoke should be offered and should be viewed as a substance abuse cessation program. Efforts should be made to encourage or mandate managed care organizations to cover costs for smoking cessation programs, nicotine patches, and other medications, as they now cover drug or alcohol abuse rehabilitation programs.

As most smokers begin smoking before age 20 and it is so difficult to quit, reducing the use of cigarettes by youth may be a more effective intervention than smoking cessation efforts targeting adults. Other interventions might focus on cutting back on smoking and reducing the exposure of non-smokers to environmental tobacco smoke. Policy and environmental changes can also be effective in many instances.

³¹ Beuhring T, Saewyc EM, Billian Stern C, and Resnick MD. *Voice of Connecticut Youth: A Statewide Survey of Adolescent Health*. Hartford, CT: Connecticut Department of Public Health. 1996.

³² Connecticut Department of Mental Health and Addiction Services. *Adolescent Substance Abuse Treatment Needs Assessment: The 1995 Adolescent Alcohol and Drug Use School Survey*. Hartford, CT: Connecticut DMHAS. 1996.

³³ Tsevat J, et al. Expected gains in life expectancy from various coronary heart disease risk factor modifications. *Circulation*. 1991;83:1194-1201.

For example, increasing the cigarette tax tends to reduce smoking, especially among younger smokers. Workplace and other smoking restrictions may also be effective in encouraging quitting.

The Federal Drug Administration recently amended regulations pertaining to cigarette distribution and advertising in an effort to combat tobacco use, especially among youth. The recent settlement between tobacco companies and state Attorneys General is another attempt to reduce smoking and discourage young people from starting. This historic agreement, which is not yet in its final form, has the potential to greatly affect tobacco use in this country.

Intervention Strategies

- Implement the policy changes in the proposed settlement between the tobacco companies and the state Attorneys General.
- Discourage lawmakers from accepting political contributions from tobacco companies.
- Ensure medical coverage by Medicaid, Blue Cross and other third party payers for clinically proven cessation programs.
- Provide tobacco education as part of comprehensive school health education aimed at preventing initiation of tobacco use and avoiding exposure to environmental tobacco smoke.
- Promote affordable, accessible, and culturally appropriate smoking cessation programs.
- Encourage the adoption of policies in work sites, public places, and even households that reduce exposure to environmental tobacco smoke, especially for children.
- Assure adequate enforcement of all smoking policies and environmental restrictions.

ALCOHOL

Summary

Abuse of alcohol has been linked to a variety of diseases including heart disease, liver, oral and esophageal cancer, hepatitis, gastrointestinal disorders, cirrhosis of the liver, and mental illness³⁴. Alcohol is estimated to be a factor in half of all motor vehicle fatalities. In addition, alcohol use by pregnant women can adversely affect birth outcomes, resulting in low birthweight or babies born with fetal alcohol syndrome.

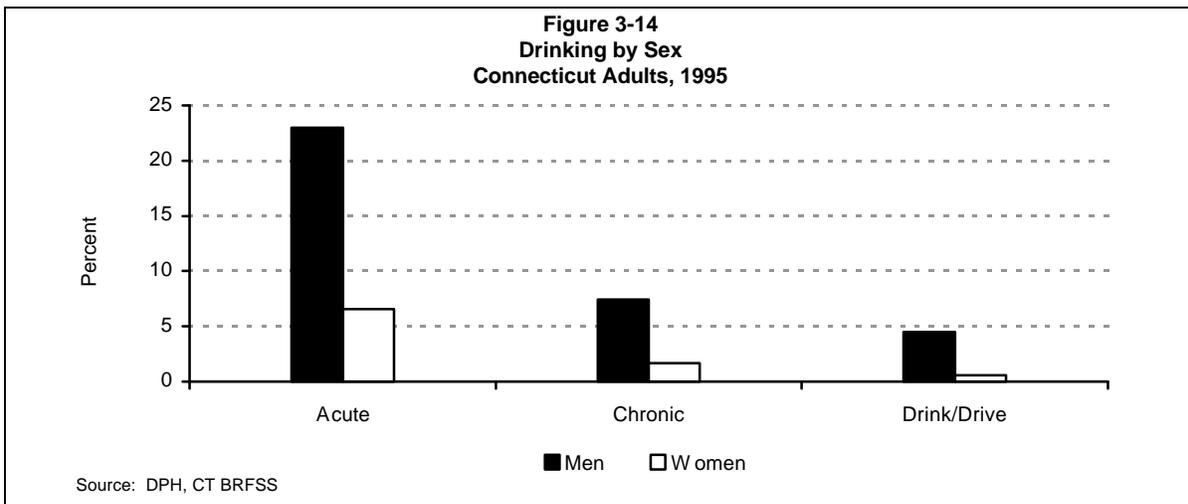
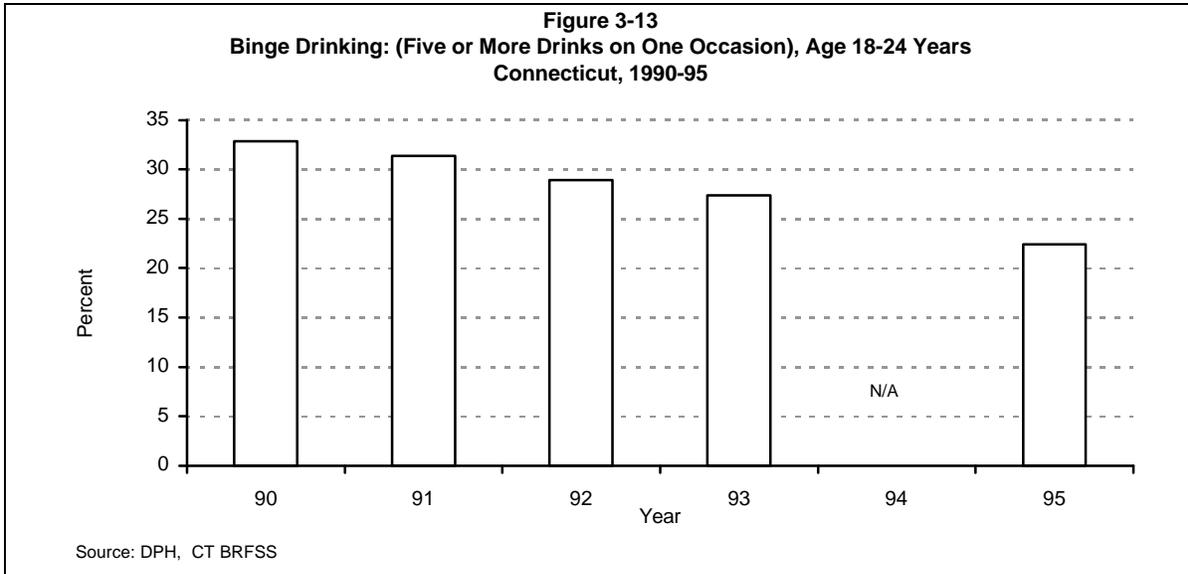
Time Trends

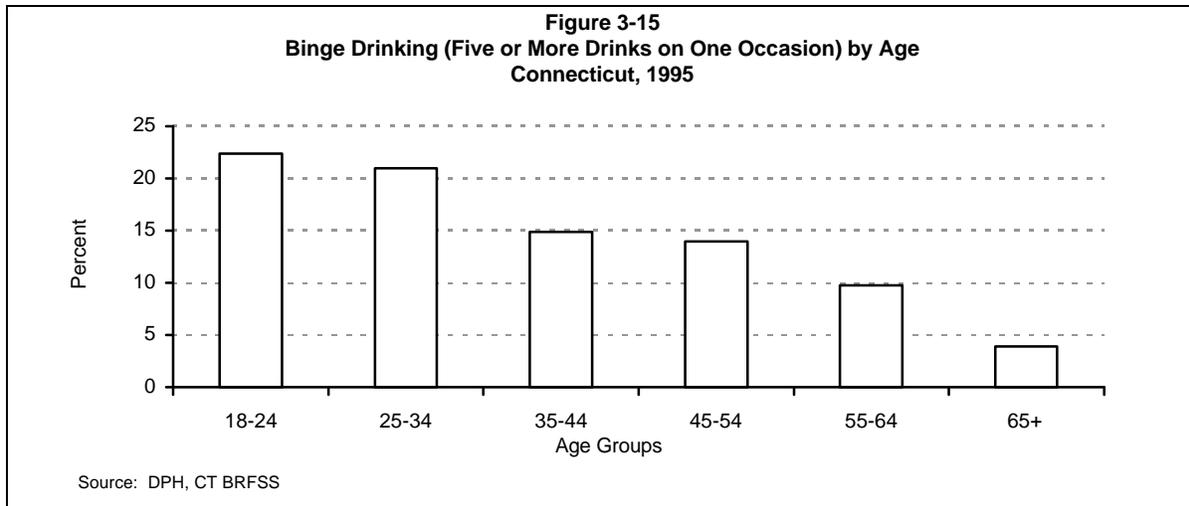
Questions on the BRFSS address different measures of alcohol consumption. Respondents are asked if they have had at least one drink of any alcoholic beverage such as beer, wine, wine coolers, or liquor in the past month, and those answering “yes” are considered current drinkers. Each year about two-thirds of Connecticut adults report consuming alcohol in the previous month, a figure that is well above the median for all states. In 1995, the prevalence of current drinking in Connecticut was 64.8%, with a median for all states of 52.7% and a range from 27.4% to 69.6%. Chronic drinking of 60 or more drinks per month, acute or binge drinking of 5 or more drinks on an occasion in the past month, and drinking and driving are also measured. The prevalence of binge drinking in 1995 was 14.4%, chronic drinking was 4.4%, and drinking and driving was 2.5%. Only binge drinking by college students is related to a *Healthy People 2000* objective, with a target of 32%. While not an exact measure of the objective, the BRFSS data for acute drinking among 18-24 year olds can provide consistent data over time to serve as an indication of the time trend. Between 1990 and 1995, the rate of binge drinking among 18-24 year olds in Connecticut decreased from 32.9% to 22.4% (Figure 3-13).

³⁴ Stroudemire A, Wallack L, Hedemark BS. Alcohol dependence and abuse. In: *Closing the Gap: The Burden of Unnecessary Illness*. Amler and Dull, eds. Oxford University Press. 1987.

High Risk Populations

Men and young people are at higher risk than others for alcohol use and abuse (Figures 3-14 and 3-15). Non-whites overall and non-white females are at lower risk than whites for binge drinking.





Intervention Strategies

- Enhance resources for treatment of alcohol abuse and other forms of substance abuse, including outpatient treatment, detoxification, and short- and long term residential treatment.
- Provide accessible and culturally appropriate substance abuse services and expand services in prisons.
- Remove barriers to substance abuse treatment by providing transportation, child care, housing, and vocational and educational support as needed.
- Assure outreach and case management services to substance abusing pregnant women, mothers, youth, and other underserved populations.
- Assure adequate enforcement of policies relating to drug offenses, drunk driving (and boating), and sale and possession of alcohol and controlled substances.

PHYSICAL INACTIVITY

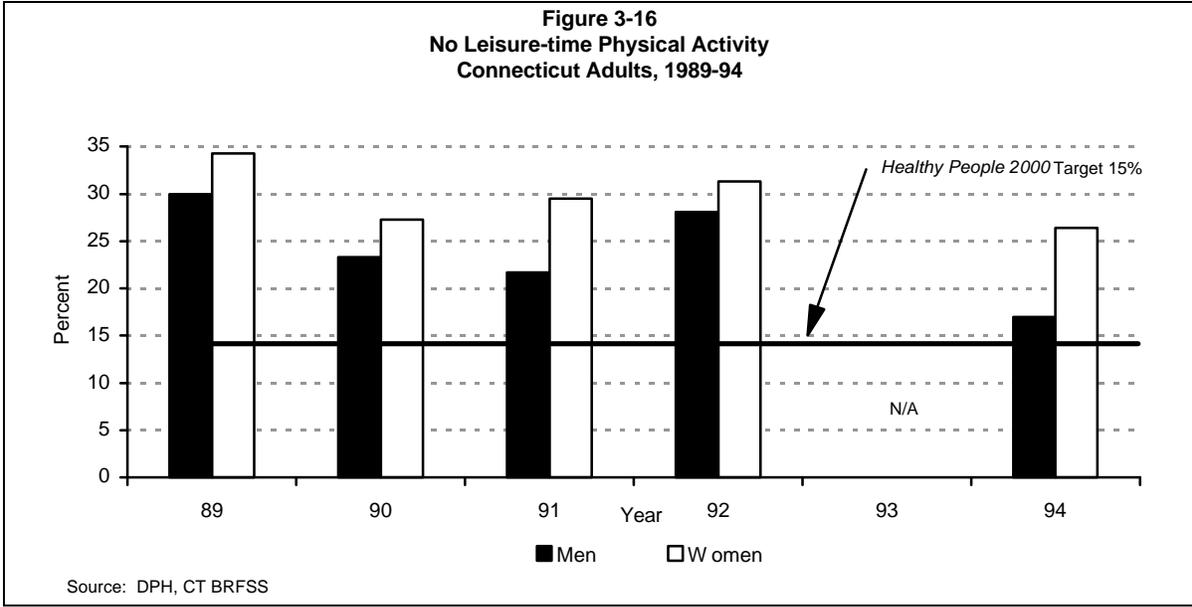
Summary

Regular exercise decreases the risk of coronary heart disease and overall mortality. Poor diet and physical inactivity together are estimated to cause 300,000 deaths each year in the US³⁵. In addition to the potential for reducing mortality, physical activity may also have beneficial effects on hypertension, diabetes, weight control, osteoporosis, anxiety, and depression. Recent studies indicate that 30 minutes or more almost every day of even mild to moderate levels of activity, such as walking, gardening, yard work, or dancing, can improve health and reduce the risk of heart disease.

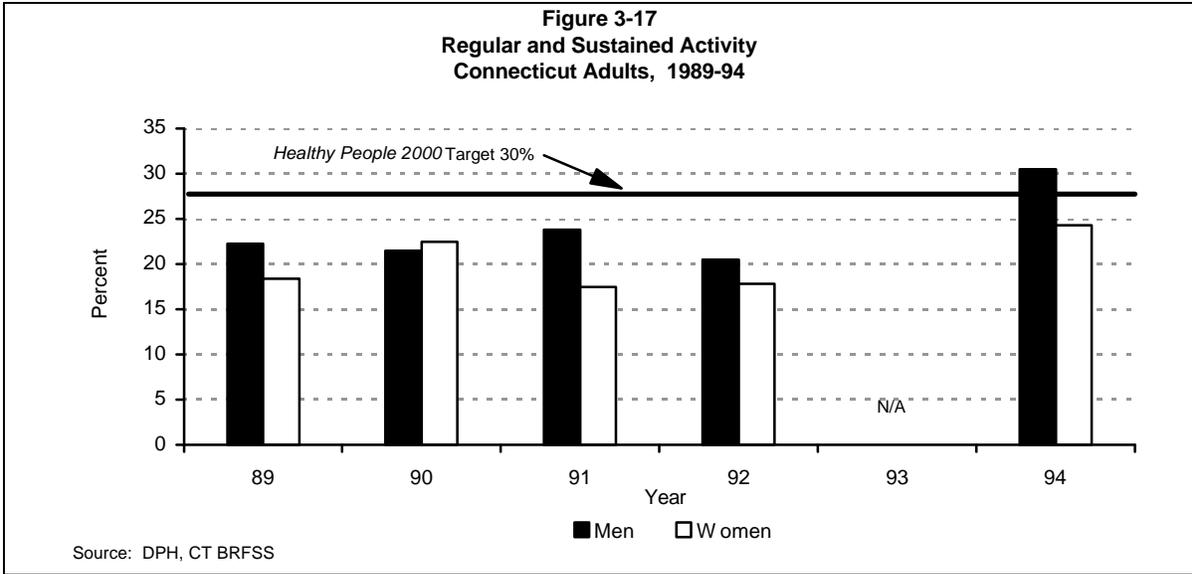
Time Trends

Between 1989 and 1994, BRFSS respondents aged 18 and older were asked if they participated in any physical activity or exercise outside their regular job duties during the previous month; the question was not asked in 1993. The proportion of adults who reported “no leisure time physical activity” was at least 20% in each of the years reported. In every year, women were more likely than men to report no physical activity (Figure 3-16). For both men and women, the rate of no leisure-time physical activity was consistently greater than the *Healthy People 2000* objective of 15%, although the rate did drop in 1994. The decrease between 1992 and 1994 was statistically significant.

³⁵ McGinnis JM, Foegen WH. 1993.



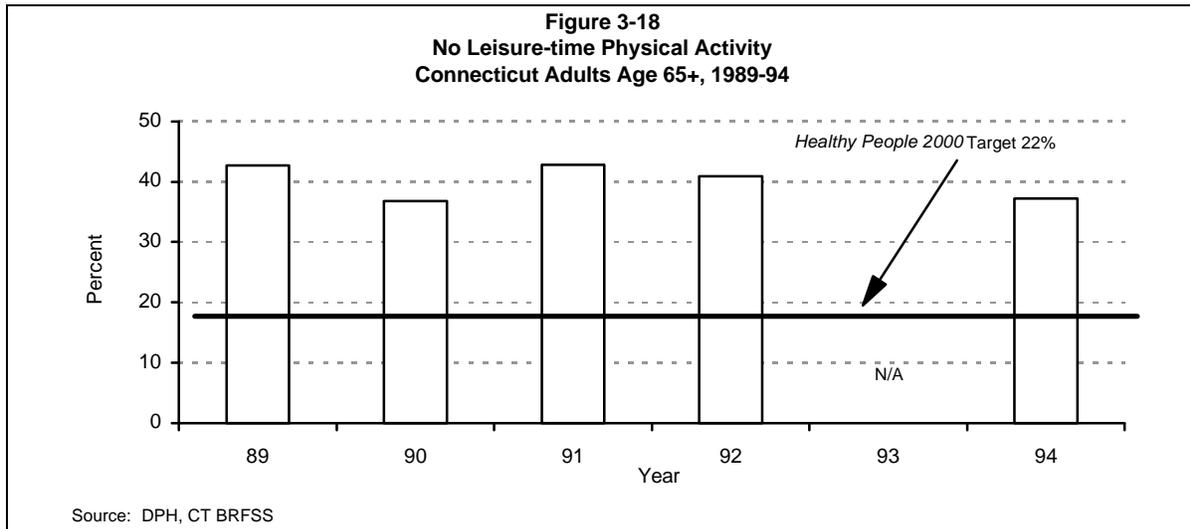
A second physical activity objective pertains to regular and sustained exercise. From the responses, the percentage of adults who were exercising at least 5 times a week for 30 minutes at a time for selected activities was determined. This value was fairly constant for 1989-1992 at about 20% and then increased in 1994. In most years, men were more likely than women to engage in regular and sustained exercise, and in 1994 the *Healthy People 2000* objective was met for men with a rate of 30.3% (Figure 3-17). No data were collected for this objective in 1993.



High Risk Populations

In 1994, women (26.4%) and non-whites (28.8%) were significantly more likely than men (17.0%) and whites (20.9%), respectively, to report no leisure time physical activity. Non-white women were especially likely to report no leisure time activity, with 41% so reporting. Adults aged 65 and older did not

meet their own target of 22%, with 37.3% reporting no activity (Figure 3-18). Many in this age group did engage in vigorous and regular exercise. People who reported low incomes were also more likely to be sedentary; this may be related to age, however, as the elderly are more likely to have lower incomes.



Potential for Intervention

Young people should be encouraged to exercise through school and community programs, physical education classes, and family involvement. Adults should be made aware of and encouraged to follow the newer exercise guidelines from the CDC and American College of Sports Medicine calling for moderate exercise on most days accumulated for 30 minutes over the course of the whole day.

Intervention Strategies

- Beginning at an early age, encourage lifelong physical activity through comprehensive school health education and other programs targeting young people.
- Assist work sites and employers to encourage their employees to maintain healthy lifestyles that include daily physical activity.
- Promote the creation of safe and affordable environments for physical activity, such as bike paths, open space, and greenways.
- Encourage efforts to remove barriers to municipalities and other agencies that might reduce their interest in offering free recreational opportunities.
- Educate the public and health care purchasers about the benefits of physical activity including the new recommendations to accumulate 30 minutes or more of moderate exercise during the course of most days.
- Encourage the development of programs that address physical inactivity in the context of other risk factors, such as obesity or elevated cholesterol.

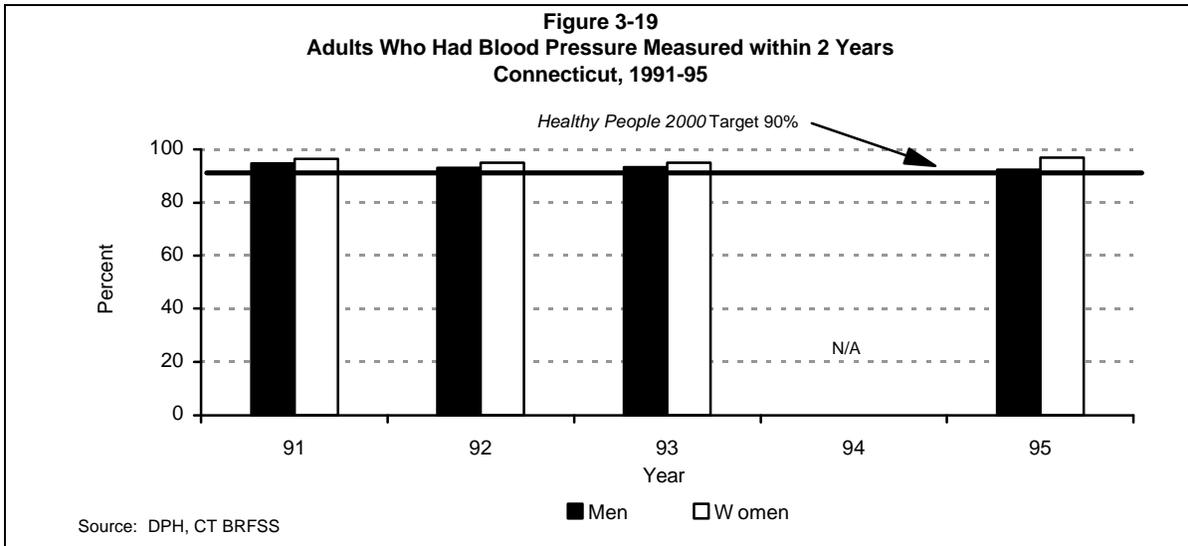
BLOOD PRESSURE

Summary

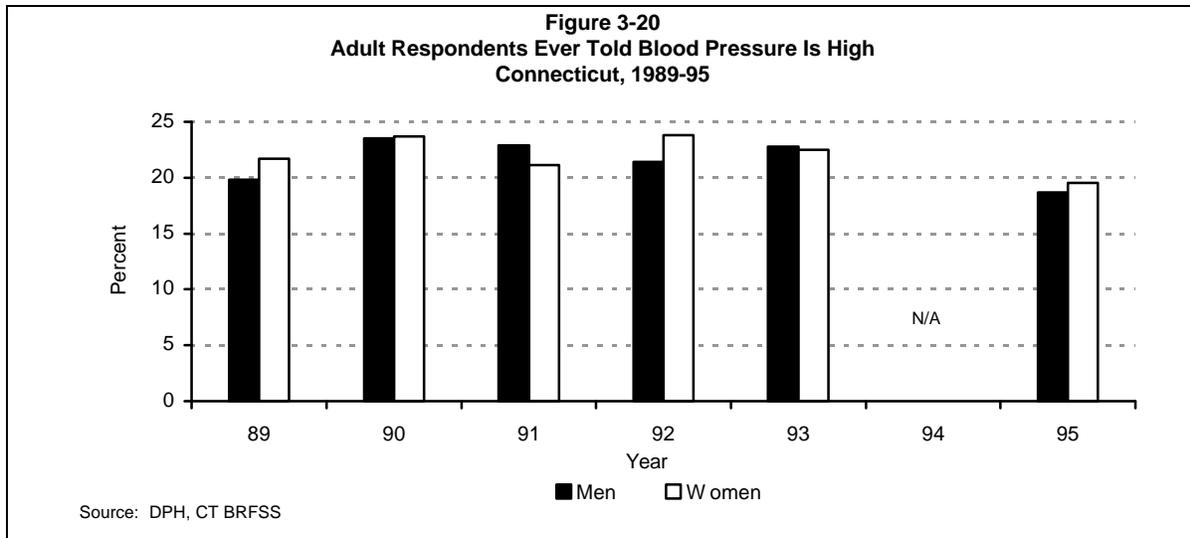
High blood pressure or hypertension is the most important risk factor for stroke and is a major risk factor for heart disease. Because high blood pressure produces no clear symptoms, regular blood pressure measurements are necessary for detection and control. Treatment with medication, behavior modification, or both can often prevent or postpone serious health problems.

Time Trends

Starting in 1991, BRFSS respondents were asked about how long it had been since they last had their blood pressure taken by a doctor, nurse, or other health professional. They were not asked to state what the blood pressure reading was. In each year, over 94% of respondents reported they had their blood pressure measured by a health professional within the past 2 years (Figure 3-19), thus meeting part of a *Healthy People 2000* objective. In all years, rates were somewhat higher for women than for men, and in 1995 this difference reached statistical significance. Further improvement in blood pressure screening to meet objectives does not appear necessary.



Although not a *Healthy People 2000* objective, hypertension awareness has been measured by the BRFSS in most years. In 1995 nearly 1 in 5 adults (19.1%) had ever been told their blood pressure was high. This rate compares favorably with other states, where the median rate was 22.0% and the range was 18.5% to 29.8%. The rate for men or women did not change much from 1989-1995 (Figure 3-20).



High Risk Populations

Young males 18-34 years of age and low-income persons may be at high risk for not having their blood pressure screened recently. In terms of hypertension awareness, rates were similar for men and women and were not significantly different between whites and non-whites, but the rate was directly related to age, with 39.7% of the 65 and older respondents reporting they had ever been told their blood pressure was high. Nationally, blacks have a higher incidence and prevalence of hypertension than whites.³⁶

Potential for Intervention

Healthy People 2000 and *Healthy Connecticut 2000* objectives emphasize screening for and control of hypertension, rather than reducing its prevalence, in keeping with current guidelines that encourage maintaining treatment and control among those already identified. Screening may still be important for certain high-risk populations, such as low-income persons and young males. As high blood pressure is related to other lifestyle risk factors, weight reduction and/or increasing physical activity may offer preventive benefits. These strategies, along with other lifestyle changes, are often recommended in the first stages of treatment, before beginning drug therapy.

Intervention Strategies

- Promote healthy lifestyles incorporating weight control, physical activity, lower salt intake, non-smoking, and moderate alcohol consumption that reduce the risk of high blood pressure.
- Provide blood pressure screening programs targeting high risk populations.
- Reduce, and remove where possible, any barriers to follow-up services, to help persons with high blood pressure adhere to recommended treatment schedules.

³⁶ Brownson RC, Remington PL, Davis JR. *Chronic Disease Epidemiology and Control*. Washington, DC: American Public Health Association. 1993:112f.

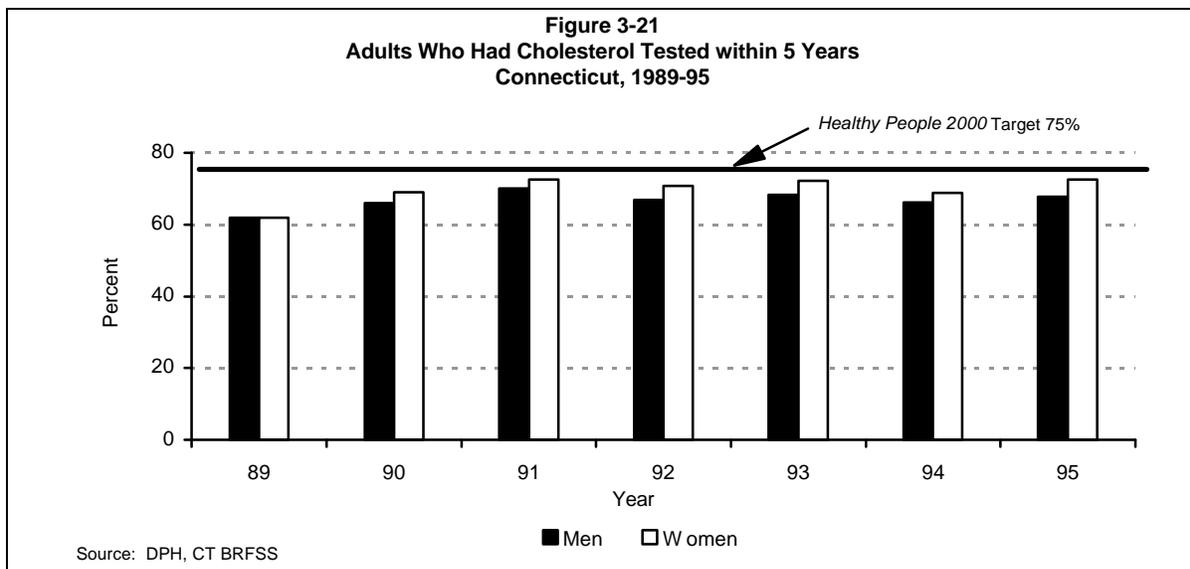
BLOOD CHOLESTEROL

Summary

High blood cholesterol is one of the major modifiable risk factors for cardiovascular disease, especially coronary heart disease (CHD). High blood cholesterol may account for as much as 30% of CHD in the United States.³⁷ A simple blood test can identify those at risk.

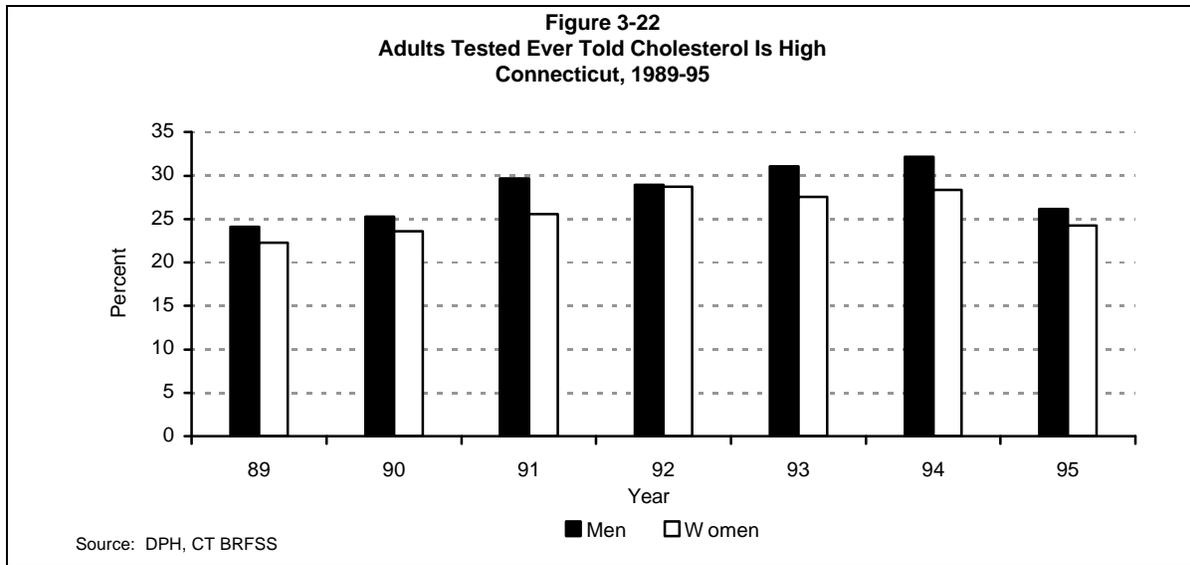
Time Trends

BRFSS respondents were asked if they ever had their blood cholesterol checked, and if so, how long had it been since it was last checked. About three-fourths of all adults had ever had their cholesterol checked, and in most cases it was within the previous five years. The percent of all respondents who had their cholesterol checked in the past 5 years, which is a *Healthy People 2000* objective, increased from 1989 to 1991 and has subsequently leveled off at about 70% (Figure 3-21).



Respondents who had been tested were asked if they had ever been told their cholesterol was high. In 1995, 25.2% answered “yes.” This represented about 472,000 Connecticut residents. The rate increased slightly between 1989 and 1991 and remained fairly constant through 1995 (Figure 3-22), while rates of screening also remained steady (Figure 3-21).

³⁷ Brownson RC, Remington PL, Davis JR. *Chronic Disease Epidemiology and Control*. Washington, DC: American Public Health Association. 1993.



High Risk Populations

Younger persons (especially those 18-24), non-whites, and those with lower incomes were less likely to ever have had their blood cholesterol checked or checked in the past five years. The rate of testing in the past five years in 1995 was 72.2% for whites and only 59.2% for non-whites, a statistically significant difference. Among persons who had been tested, whites and all persons aged 45 and older were more likely than others to have been told their cholesterol was high.

Potential for Intervention

A diet high in fat, especially saturated fat, is a risk factor for high cholesterol. There are also non-modifiable genetic factors that increase the risk of hyper-cholesterolemia. Body mass index is directly correlated with cholesterol levels, so weight reduction may be beneficial. Physical inactivity and smoking are related to lower levels of HDL--the "good" cholesterol. Recommendations for adults include having a cholesterol screening every five years, reducing dietary fat, especially saturated fat, and maintaining desired weight. Treatment of high cholesterol may also start with dietary changes and move to drug therapy if necessary.

Intervention Strategies

- Coordinate interventions with other programs that promote physical activity, avoidance of tobacco, and weight control, which all affect cholesterol levels.
- Provide nutrition information at point of purchase, and utilize social marketing to promote the consumption of healthy diets, including low fat items.
- Encourage healthy eating habits at an early age through comprehensive school health education and education of food service staff.
- Encourage adults to have their cholesterol screened at least every five years, and remove any barriers to screening for high risk populations.
- Reduce and remove where possible any barriers to follow-up services, so that persons with borderline-high or high blood cholesterol follow recommendations for treatment.

DIET AND OVERWEIGHT

Summary

Poor diet and physical inactivity account for an estimated 300,000 deaths each year in the U.S.³⁸ The factors related to diet that are represented on the BRFSS include overweight (or obesity) and consumption of fruits and vegetables. Each is related to a *Healthy People 2000* objective. Overweight has been associated with a higher risk of cardiovascular disease, type II diabetes, hypertension, high blood cholesterol, and certain cancers.

One of the *Healthy People 2000* objectives is for 100% of Americans to eat a total of five servings of fruits and vegetables each day. Consumption of fruits and vegetables has been associated with positive health outcomes and reductions in cancer risk, heart disease, and neural tube defects. BRFSS respondents were asked six questions in 1994 that addressed the frequency of consumption of fruit juice, fruits, green salads, potatoes, carrots, and other vegetables. Serving size and actual number of servings were not considered. From their responses, respondents were classified by frequency of consumption. The proportion of adults who consumed fruits and vegetables five or more times a day was 33.5% overall, including 27.9% of men and 38.7% of women. While this is very far from the objective of 100% of adults, the rate for Connecticut was the highest among the 50 BRFSS participants.

Results of a 1995 survey of 12,402 Connecticut students aged 12-18 show that this population group is doing even worse than adults³⁹. Over 50% of those surveyed reported not eating any fruit, and 1 in 4 reported not eating any vegetables the previous day.

Time Trends

Overweight is determined from self-reports of height and weight obtained during the interviews, and is converted into body mass index (BMI: weight in kilograms divided by height in meters squared). BMI's of 27.8 or higher for men and 27.3 for women are considered overweight, and are approximately 20% above desirable body weight.

The proportion of overweight Connecticut adults was less than or equal to the national and state objective of 20% only in 1989 and 1992. In 1995, 24.7% of all adults, 21.9% of women, and 27.8% of men were overweight. In each year from 1989-1995, men were more likely to report being overweight than women; the prevalence rate for men was above the 20% target each year, while women had reached the objective in five of the seven years (Figure 3-23). If men and women are reporting with similar degrees of accuracy, these results suggest that more work is needed to reduce overweight among men to meet the overall objective.

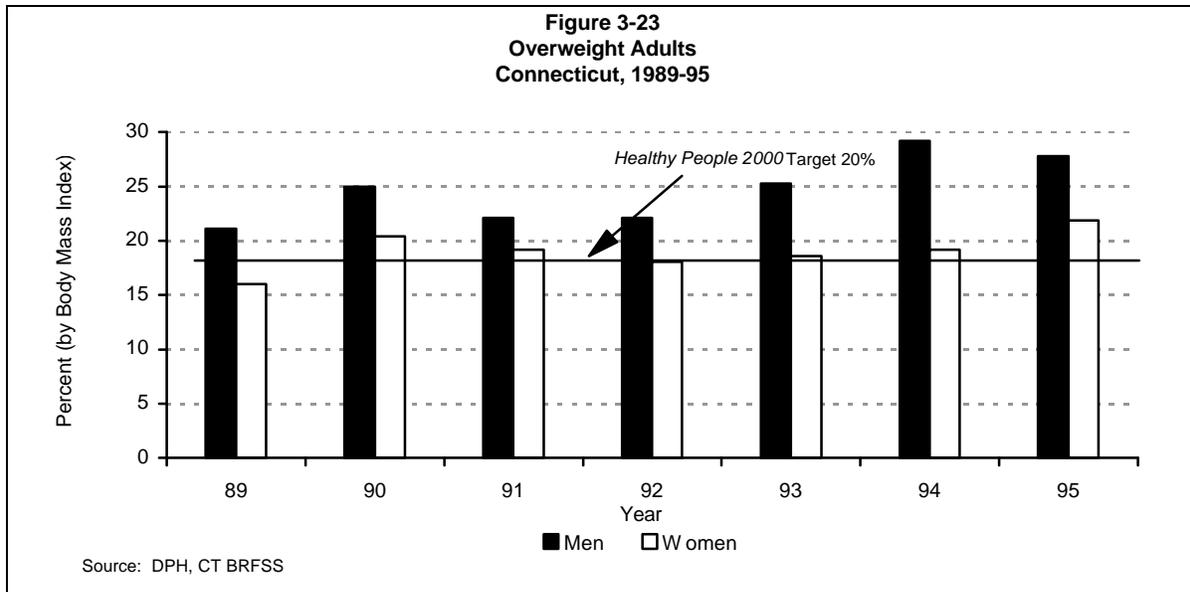
High Risk Populations

Men, especially non-whites (31.5%) are more likely to be considered obese than others based on BRFSS results. Other demographic groups that appear to be at higher risk for obesity from the BRFSS include blacks (43.4%) and 55-64 year olds of any race (37%). Recent national results where height and weight were actually measured indicate that 33% of men and 36% of women were obese⁴⁰. These and other results based on actual measurements suggest that obesity is under-reported in the BRFSS. Men and youth are high risk subgroups for low fruit and vegetable consumption.

³⁸ McGinnis JM, Foegen WH. 1993.

³⁹ Beuhring T, Saewyc EM, Billian Stern C, and Resnick MD. "Voice of Connecticut Youth Survey".

⁴⁰ "Update: Prevalence of Overweight Among Children, Adolescents and Adults - United States", 1988-1994. Morbidity and Mortality Weekly Report 46: 199-202, 1997.



Potential for Intervention

Early interventions using a realistic behavioral approach to calorie control, in combination with increasing physical activity, may be effective in reducing obesity. Increasing public and professional awareness about prevention and the consequences of obesity are key. Voluntary weight loss is a popular activity, and results from the BRFSS indicated that 36% of all respondents and 63% of overweight respondents were trying to lose weight in 1994. In spite of this, obesity remains a considerable problem, suggesting that commonly used strategies are not always successful. Because dietary and exercise habits are frequently established at an early age, interventions should be designed to target the young and even preschoolers.

Intervention Strategies:

- Develop programs at the state and community level to educate the public about the importance of healthy diets that are low in fat and contain at least five servings a day of fruits and vegetables.
- Provide nutrition information at point of purchase, and utilize social marketing to promote the consumption of healthy diets including low fat items and fruits and vegetables.
- Promote increased physical activity along with reduced caloric intake as a more effective method to lose weight than either technique alone.
- Encourage primary care physicians to determine the body mass index of their patients and to counsel overweight patients to lose weight.
- Encourage healthy eating habits at an early age through the use of comprehensive health education and education of food service staff.

SUMMARY

The results of the 1995 Behavioral Risk Factor Surveillance Survey for the health-related behaviors discussed above are summarized in Table 3-10. The findings are presented for both sexes combined as well as separately, and with reference to *Healthy People 2000* objectives and progress made since 1990.

Table 3-10
Prevalence of Health-related Behaviors by Sex for Adults Aged 18+
Connecticut, 1995

Characteristic	Sex			Healthy People 2000 Objective	Objective Achieved?	Improved since 1990?
	Male	Female	Both Sexes			
Current smoking ^a	21.0%	20.6%	20.8%	15%	No	Yes
Chronic drinking ^b	7.4%	1.7%	4.4%	-	-	?
Binge drinking ^c	23.0%	6.6%	14.4%	-	-	Yes
Drinking & driving ^d	4.5%	0.6%	2.5%	-	-	?
No exercise ^e	17.0%	26.4%	21.9%	15%	No	Yes
Regular exercise ^f	30.3%	23.9%	26.9%	30%	Yes (Men)	Yes
Blood pressure checked ^g	92.4%	96.8%	94.7%	90%	Yes	Unchanged
Told blood pressure high ^h	18.7%	19.5%	19.1%	-	-	?
Cholesterol screened ⁱ	67.7%	72.5%	70.2%	75%	No	Unchanged
Told cholesterol high ^j	26.2%	24.3%	25.2%	-	-	-
Overweight ^k	27.8%	21.9%	24.7%	20%	No	No
Fruit/veg. Consumption ^l	27.9%	38.7%	33.5%	100%	No	N/A

^a Respondents who report ever smoking 100 cigarettes and who smoke now (regularly or irregularly).

^b Percent of adults who reported drinking 60 or more drinks in past month.

^c Percent of adults who consumed five or more drinks on one occasion in the past month.

^d Percent of all adults who reported having driven after having perhaps too much to drink in the past month.

^e Percent who engage in no leisure time physical activity (1994 data).

^f Percent who exercise 5 times per week for 30 minutes at a time (1994 data).

^g Percent who had blood pressure checked within 2 years.

^h Percent of all respondents who have been told their blood pressure was high.

ⁱ Percent who had blood cholesterol checked within the past 5 years.

^j Percent of those who had cholesterol checked who were told it was elevated.

^k Overweight: females with body mass index (BMI - weight in kilograms divided by height in meters squared) equal to or more than 27.3, and males with BMI equal to or greater than 27.8.

^l Percent of all adults who consume five or more servings of fruits and vegetables per day.

? Either trend is not evident or meaning of any trend is not clear.

Source: DPH, Behavioral Risk Factor Surveillance System analysis, 1995.

CHRONIC DISEASES

Chronic diseases have been referred to as chronic illnesses, non-communicable diseases, and degenerative diseases. They are generally characterized by multiple risk factors, a long latency period, a prolonged course of illness, non-contagious origin, functional impairment or disability, and low curability. Although the causes of many chronic diseases remain obscure, epidemiologists have identified specific risk factors that are associated with many of the leading chronic diseases. Control of a single factor, such as cigarette smoking, for example, can reduce the risk of many chronic diseases. The goals of chronic disease control are to reduce the incidence of diseases, delay the onset of disability, alleviate the severity of the diseases, and prolong the individual's life.

HIGHLIGHTS

- Cardiovascular diseases is the leading cause of death in Connecticut, the U.S., and the world, although declines in death rates for some categories continue.
- About 90% of lung cancers may be preventable through abstinence from use of tobacco, but additional efforts are needed in smoking prevention and cessation.
- Lung cancer incidence rates continue to increase among Connecticut women, and are higher for women than men less than 45 years old.
- Breast cancer is the most common cancer diagnosed among Connecticut women, and is the second leading cause of cancer death; some such deaths could be prevented by increasing the proportion of women screened regularly, including uninsured and underinsured women.
- Incidence rates of invasive cervical cancer among all women declined between 1980 and 1994. Crude incidence rates continue to be higher for black women than white women.
- An estimated 5.1% of Connecticut adults aged 18 and over have diagnosed diabetes; the same proportion may be undiagnosed.
- Seventy percent of socioeconomically disadvantaged children aged 6-8 years have untreated dental disease.

CARDIOVASCULAR DISEASE

Summary

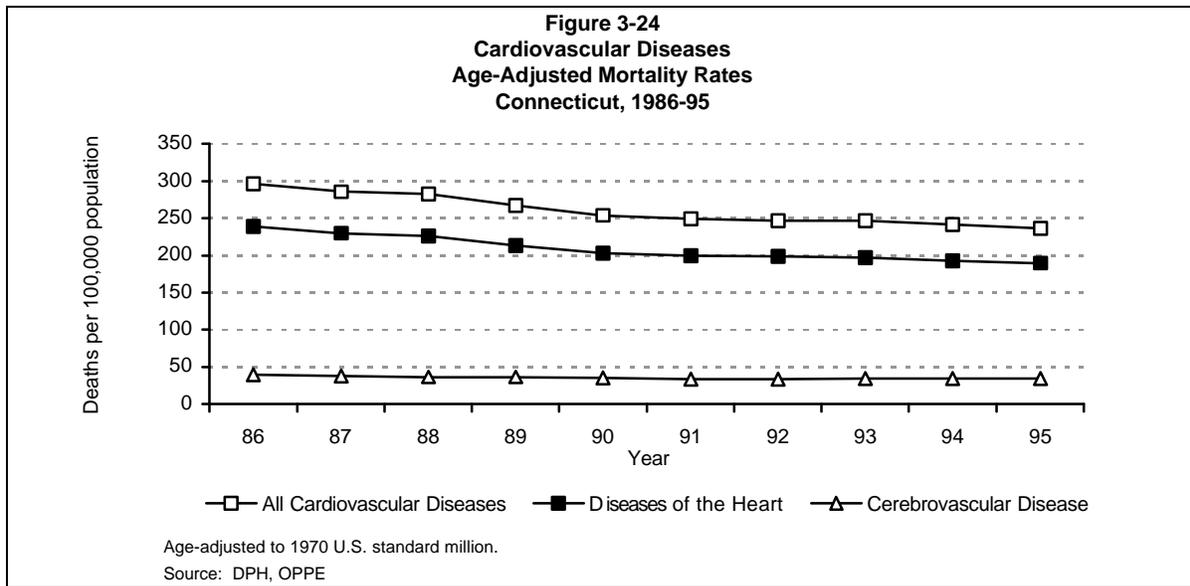
Cardiovascular disease (CVD) is not a single disease, but a category of disorders affecting the heart and blood vessels. Coronary heart disease, cerebrovascular disease (stroke), atherosclerosis, congenital heart disease, and hypertension all are forms of cardiovascular disease. Among men and women and across all racial and ethnic groups, cardiovascular disease is the world's, our nation's and the state's leading killer. More than 950,000 Americans die of cardiovascular disease each year, accounting for more than 40% of all deaths.⁴¹

⁴¹ U. S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention. *Preventing Cardiovascular Disease: Addressing the Nation's Leading Killer At-A-Glance*. Hyattsville, MD: DHHS. 1997.

CVD mortality is only part of the burden of CVD. About 57 million Americans (almost 25% of the U.S. population) live with some form of CVD.⁴² More than 9 million Americans aged 65 or older report disabilities caused by heart disease. Stroke is also a leading cause of disability in the U.S., affecting 500,000 people each year.

Time Trends

In 1994 in Connecticut, CVD contributed to more than 12,000 deaths (44% of all deaths) and more than 2,000 deaths (32%) to those under 65 years of age.⁴³ Death rates for cardiovascular disease and its two major sub-categories, diseases of the heart and cerebrovascular disease, have declined steadily since 1986 (Figure 3-24).



Economic Aspects

Both the human and economic costs of cardiovascular disease are very high. Almost 6 million hospitalizations each year are due to CVD.⁴⁴ The cost of CVD in the U.S. includes health expenditures as well as lost productivity. In 1994, the estimated direct (medical care) and indirect (lost productivity) cost of cardiovascular disease in Connecticut was \$1.1 billion. This is approximately \$500 per person in the state.⁴⁵

The economic burden of CVD has an enormous impact on the U.S. health care system, and this burden continues to grow as the population ages. Treatment, while effective in delaying death, is likely to continue to increase the financial impact.

High Risk Subgroups

Although CVD is often regarded even by physicians as affecting primarily men and older people, it is also a major killer of women and is the leading cause of death among middle-aged Americans. For diseases

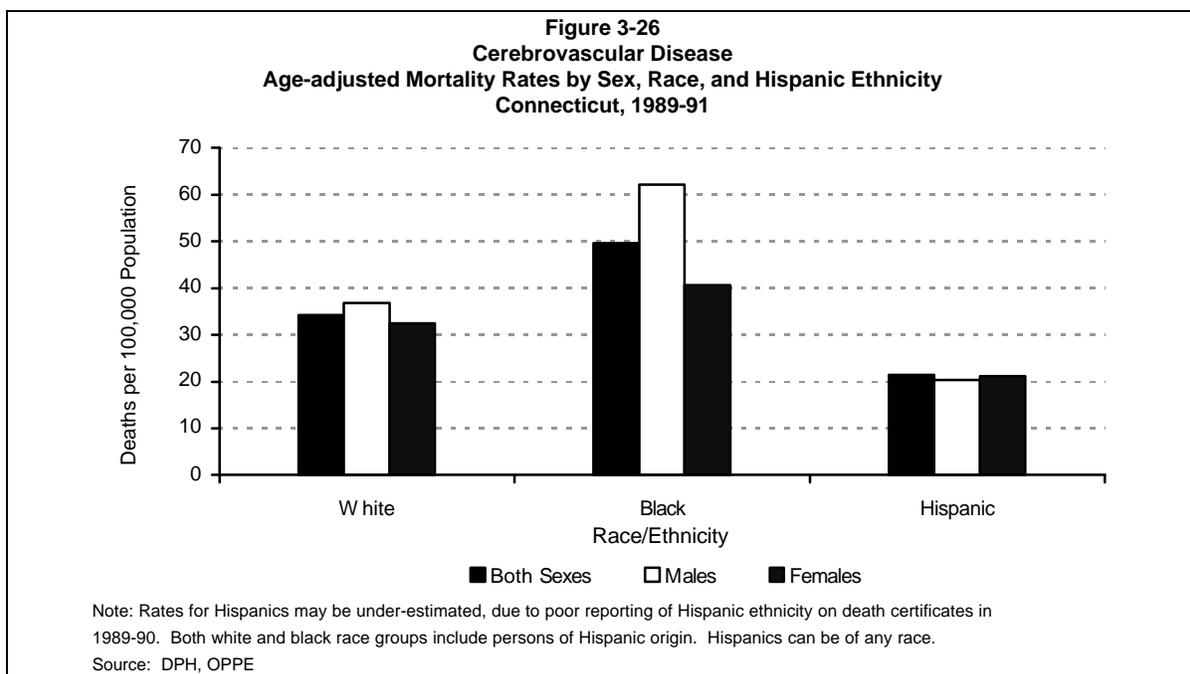
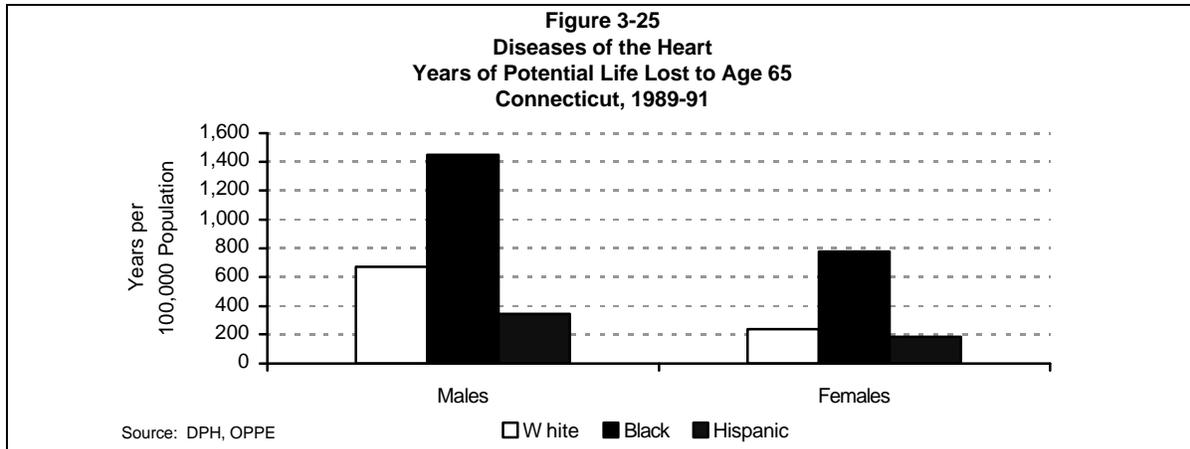
⁴² U. S. Department of Health and Human Services, Public Health Service.

⁴³ U. S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Center for Health Statistics. 1994.

⁴⁴ U. S. Department of Health and Human Services.

⁴⁵ U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention. *State Cardiovascular Disease Highlights, 1997. The Burden of Cardiovascular Disease in the United States.* Hyattsville, MD: DHHS. 1997.

of the heart, rates of premature mortality (deaths before age 65) for black males and females were more than twice the comparable figures for whites⁴⁶ and Hispanics from 1989 to 1991 (Figure 3-25). Cerebrovascular disease death rates were highest for black persons, especially black males (62.1 per 100,000 population); rates for whites and Hispanics were considerably lower.



Modifiable Risk Factors and Potential for Intervention

CVD deaths are considered to be premature and preventable by modifying lifestyle. In Connecticut, over half of all heart disease deaths and over two-thirds of all stroke deaths are attributed to four CVD risk factors--smoking, physical inactivity, hypertension, and overweight-- and thus are potentially preventable.

⁴⁶ U. S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention. *Preventing Cardiovascular Disease: Addressing the Nation's Leading Killer At-A-Glance*.

The major modifiable risk factors for CVD are smoking, high blood pressure, elevated blood cholesterol, diet, obesity, physical inactivity and diabetes (Please see section on Behavioral Risk Factor prevalence).

The presence of more than one risk factor increases the risk of coronary heart disease, diseases of the heart, and cerebrovascular disease. A person with two major risk factors has a risk of heart disease or stroke six times as great as a person with no risk factors.⁴⁷ With three factors, the risk of cardiovascular disease is 20 times as great. Approximately 80% of adults in Connecticut reported having at least one of these factors, and 43% reported two or more.⁴⁸ In 1994, in Connecticut, adult prevalences of major risk factors for cardiovascular disease were higher than the year 2000 national health objectives; 20% of Connecticut adults used tobacco and 22% did not exercise, whereas the national health objectives are 15% for each risk factor. One quarter of Connecticut residents were overweight, compared to the national health objective of 20%.

People with risk factors for CVD need to be identified, made aware of the situation, and provided with tools to make changes in their behaviors. Interventions to reduce risk factors could include the community based programs shown in Table 3-11. Current interventions target the major risk factors and provide programs promoting behavioral changes. Professional education is also a component of initiatives to address CVD. The DPH CVD program staff provide technical assistance to, and oversight of, more than 30 local health departments and other community agency contractors who receive funding to target each of the CVD risk factors in their residents through the implementation of program strategies.

**Table 3-11
CVD Risk Factors and Intervention Strategies**

CVD Risk Factors	Strategies/Objectives
Elevated Cholesterol Levels	Cholesterol screening/referral, education and counseling aimed at assisting clients to take action to reduce elevated cholesterol.
Diabetes	Multi-session self-care education programs on reducing risk for cardiovascular disease and other diabetes-related complications including: peripheral vascular disease, neuropathy, end-stage renal disease, and blindness.
Physical Inactivity	Multi-session physical activity programs to help individuals introduce at least a moderate level of physical activity into their lifestyles.
Nutrition/Excess Dietary Fat	Multi-session education programs that provide information and practical skills necessary to establish healthy eating patterns, including the reduction of excess dietary fat.
High Blood Pressure	High blood pressure screening, referral, education and counseling programs necessary to initiate action to control high blood pressure.
Smoking	Individual counseling and group multi-session cessation and prevention programs to motivate and assist smokers in ceasing or reducing tobacco intake. Promote protective environmental changes to decrease exposure of infants and children to ETS.
Education/Training	Education and training programs for health care professionals to enhance program effectiveness and increase professional awareness of modifiable risk factors.
Media Campaigns	Media campaigns to improve public awareness of risk factors and how to reduce them.

CANCER

Overview

Cancer ranks higher than heart disease (a sub-category of cardiovascular diseases) in terms of age-adjusted death rates to persons under age 65 and age-adjusted YPLL under age 65 in the U.S. and Connecticut. The temporal decline in death rates for heart disease under age 65 has been greater than that for cancers.

This section focuses on cancers of the lung, breast, and uterine cervix, along with melanomas of the skin. These types of cancer were selected on the basis of high incidence rates (lung and breast), knowledge of

⁴⁷ Connecticut Department of Public Health. *Behavioral Risk Factor Surveillance System*. 1995.

⁴⁸ Connecticut Department of Public Health.

major causal factors (i.e., smoking for lung cancer, and excessive sun exposure for melanoma) and availability of effective screening tests that can detect cancers at an early stage (breast and cervix). Because early detection could prevent a portion of breast and cervical cancer mortality, screening utilization among Connecticut women is an important public health indicator. Invasive cervical cancer is much less commonly diagnosed than breast cancer, but it is more preventable (in terms of morbidity and mortality) through screening.

Colon cancer is the third most commonly diagnosed cancer in Connecticut but detection and treatment of early-stage cancers reduces mortality. Recently reported evidence supports screening for colorectal cancer among persons 50 years of age and older. The U.S. Preventive Health Services Task Force recommends screening by fecal occult-blood testing annually or with sigmoidoscopy periodically.⁴⁹ Prostate cancer is the most commonly diagnosed cancer among men but the Task Force does not recommend routine screening with digital rectal examination, prostate-specific antigen or transrectal ultrasound. However the American Cancer Society does recommended that all men be screened for prostate cancer.

Lung Cancer

Incidence and Mortality

Lung cancer is the most common cause of cancer death in both men and women in the U.S. and Connecticut. Incidence and mortality rates declined among males from 1980 to 1994, but increased among Connecticut women. Another criterion of public health importance is premature mortality, or years of potential life lost (YPLL) before age 65. For lung cancer, the YPLL in 1994 was 140.0 per 100,000 population⁵⁰ (151.6 in males, 130.8 in females). These rates were the highest among all cancers in Connecticut. Changes in standardized incidence rates are shown in Figure 3-27. Crude incidence rates from 1990-1994 by sex and race are given in Table 3-12.

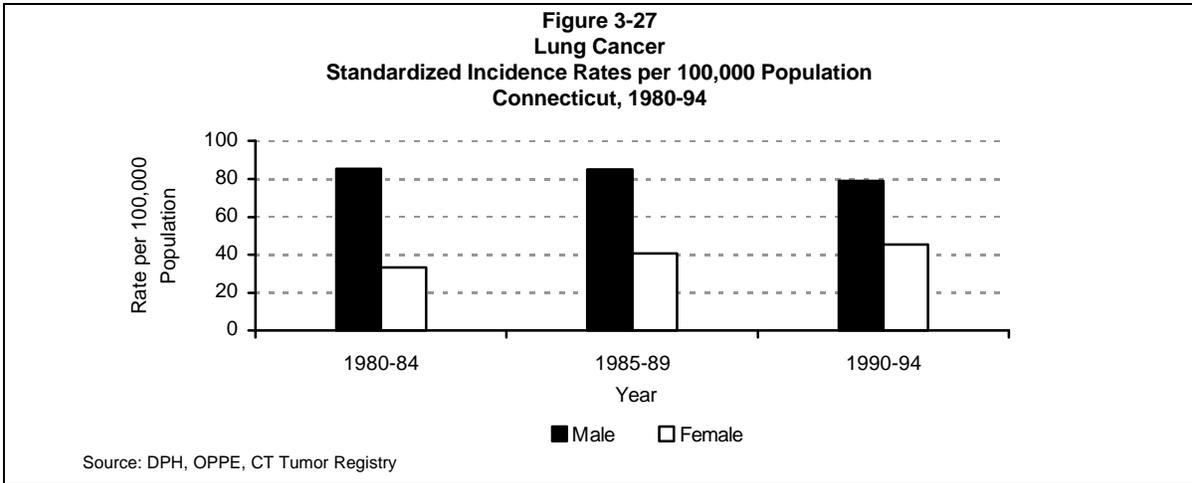
Table 3-12
Lung Cancer Incidence Rate by Sex and Race
Connecticut, 1990-94

	Males		Females	
	Black	White	Black	White
Number	428	6,177	238	4,652
Rate per 100,000 population	62.1	87.0	31.4	61.7

Source: DPH, OPPE, CT Tumor Registry

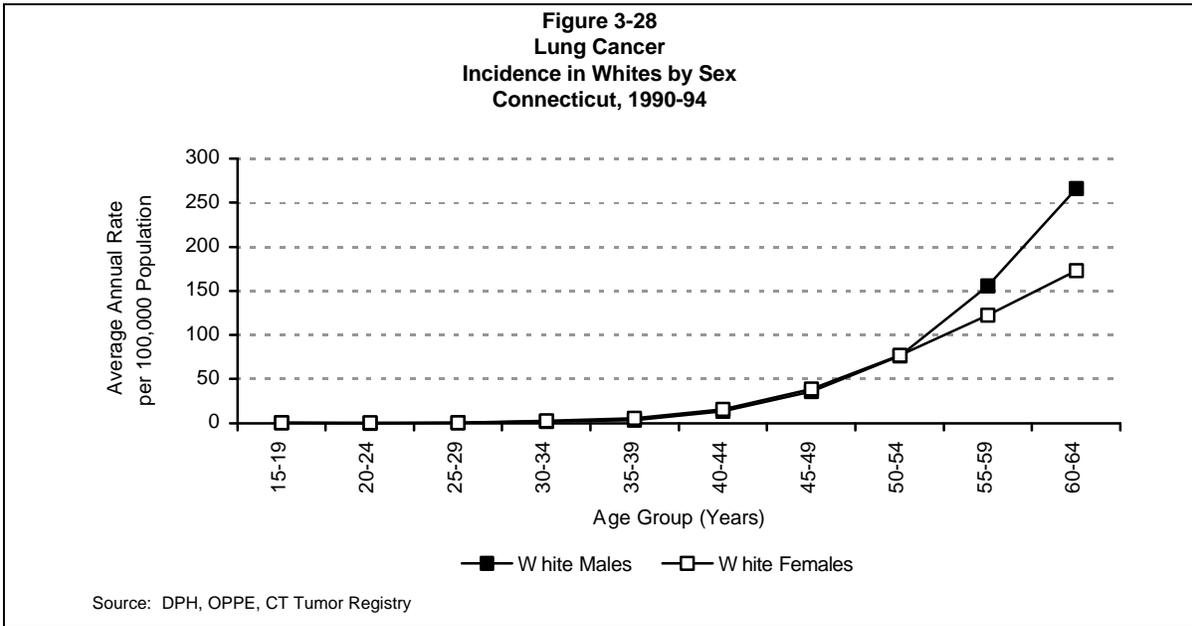
⁴⁹ U.S. Department of Health and Human Services, Public Health Service, Office of Disease Prevention and Health Promotion, U.S. Preventive Health Services Task Force. *Guide to Clinical Preventive Services*, 2nd Edition. Washington DC: DHHS. 1996 February.

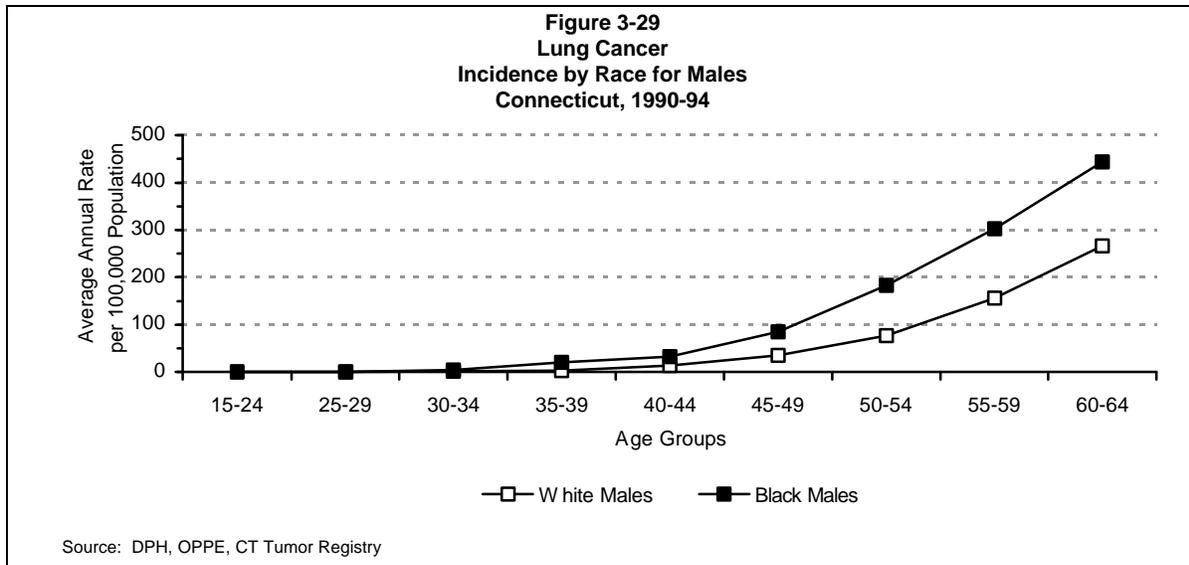
⁵⁰ Age-adjusted to the 1940 U.S. standard million population.



Age-specific average annual incidence rates in 1990-94 were higher for women than men from ages 30-34 through 40-44, with equal rates at age 45-49; only for ages 50-54 and older did rates for men exceed those for women. The age-specific rates are shown in Figure 3-28 for white males and females. Age-specific incidence rates were higher for black males than white males, including ages <65 years (Figure 3-29). Such racial differences were much smaller, however, among women.

Racial and ethnic differences in lung cancer incidence and mortality persist, especially among males. While lung cancer incidence and mortality rates among Hispanics have been low, increases are expected as their smoking rates increase.





Geographic Variation

The numbers of incident lung cancers diagnosed from 1990-94 among residents of several Connecticut towns were higher than expected on the basis of statewide incidence rates. There were clusters of lung cancers in males in towns in the Hartford and New Haven areas (Table 3-13). The distribution of male lung cancer cases by town is illustrated in Map 3-11. The number of female cancers were smaller than for males, but rates were relatively high in the towns of Branford, Milford and West Haven, and the counties of New Haven and New London (Table 3-14).

**Table 3-13
Lung Cancer in Males
Connecticut, 1990-94**

Towns with Significantly Elevated Standardized Incidence Ratios (SIRs) ^a	Number of Cancers		SIR
	Observed	Expected	
Bristol	145	119.4	1.21
Derby	41	29.3	1.40
E. Hartford	146	114.8	1.27
Hartford (cluster includes Hartford, E. Hartford, Bristol, Plainville)	230	196.4	1.17
New Haven ^c	284	200.9	1.41
Plainville	54	35.9	1.51
Shelton (cluster includes Derby and New Haven)	90	68.3	1.32
Stratford	166	132.9	1.25

^a Standardized incidence ratio is the ratio of observed to expected numbers.

Source: DPH, OPPE, CT Tumor Registry

Table 3-14
Number of Lung Cancers and Standardized Incidence Ratio (SIRs) by Sex and County
Connecticut, 1990-1994

County	Number of Cancers				SIR	
	Observed		Expected		Males	Females
	Males	Females	Males	Females		
Fairfield	1,592	1,197	1,664.3	1,249.1	0.96	0.96
Hartford	1,767	1,218	1,727.3	1,297.0	1.02	0.94
Litchfield	332	238	365.6	260.6	0.91	0.91
Middlesex	294	226	275.4	204.5	1.07	1.11
New Haven	1,792	1,387	1,639.7	1,252.5	1.09	1.11
New London	472	372	460.3	336.4	1.03	1.11
Tolland	176	136	196.0	136.0	0.90	1.00
Windham	202	128	183.8	138.6	1.10	0.92

Source: DPH, OPPE, CT Tumor Registry

Modifiable Risk Factors and Potential for Intervention

About 90% of lung cancers may be preventable through abstinence from tobacco; the remaining 10% are related to occupational exposures to asbestos and certain other chemicals. There is an enormous potential for public health efforts to reduce the burden of morbidity and mortality from lung cancer, through effective smoking prevention and cessation programs. Such programs could include special efforts in geographic areas with relatively high lung cancer incidence and mortality rates. The long average time interval between initiation of smoking and diagnosis of lung cancer means that the results of smoking prevention efforts will take many years to appear, but smoking prevention in adolescents is crucial to reducing the future burden of lung cancer and other smoking-related diseases in the population.

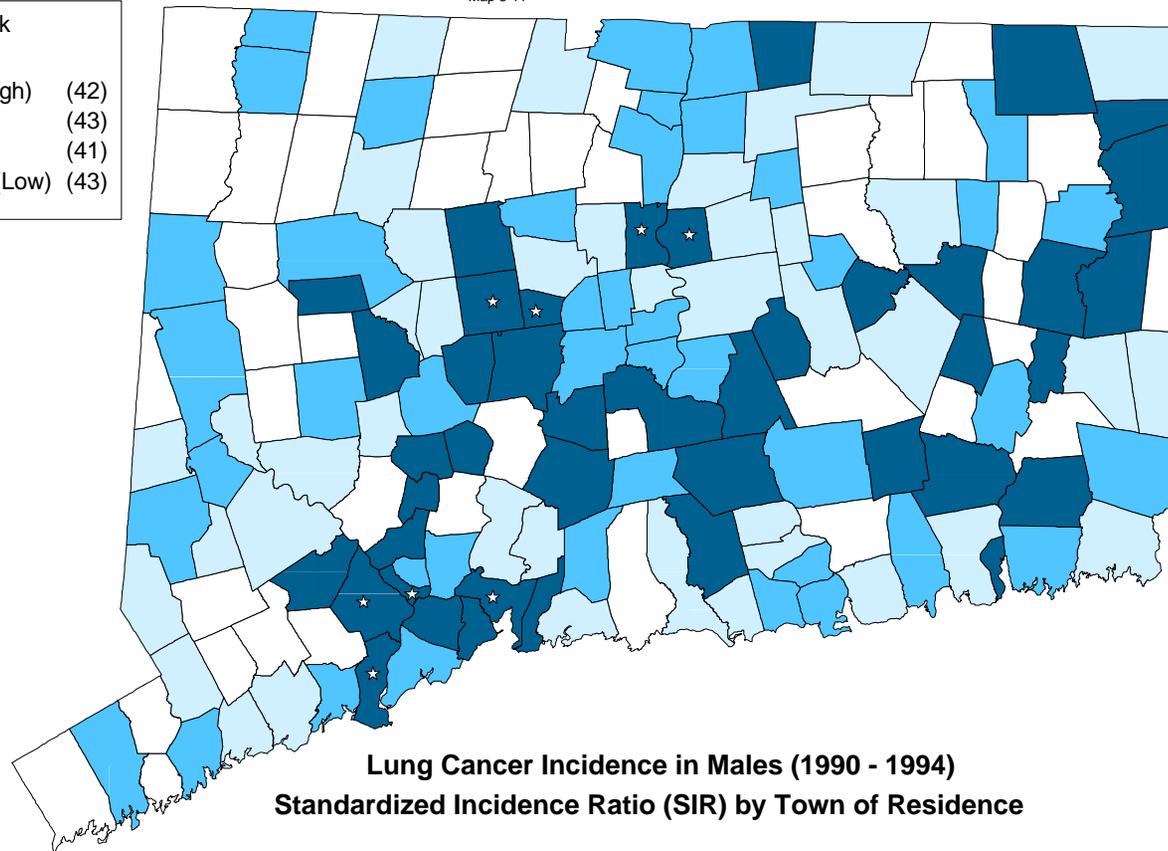
Breast Cancer

Incidence and Mortality

Among women in Connecticut, breast cancer is the most common cancer diagnosed and the second leading cause of cancer death. The Connecticut death rate has been below the year 2000 target of 23.1 per 100,000 population for several years (Figure 3-30). However, a proportion of late-stage cancers and deaths are preventable through annual high-quality screening, and expansion of screening (especially for lower-income and uninsured women) would further reduce the mortality rate. Screening for breast cancer by mammography and clinical breast examination is recognized as being important in reducing the mortality rate from breast cancer, through detection at an earlier stage.

Map 3-11

Town Rank	
(# of towns)	
■ First Quartile (High)	(42)
■ Second Quartile	(43)
■ Third Quartile	(41)
■ Fourth Quartile (Low)	(43)



☆ Significantly elevated ($p < 0.05$) SIR based on statewide rates
Source: DPH, OPPE, Tumor Registry, 1997

High Risk Groups

Breast cancer is one of only a few cancer sites which is associated with higher social class. For all cancers combined, and most cancer sites (such as lung, stomach and cervix) incidence rates are higher among the lower social classes. The higher breast cancer incidence rates among higher social classes are due in part to reproductive history; that is, larger numbers of pregnancies and earlier age at first pregnancy are protective against breast cancer and tend to be less common in higher social classes. Social class differences are also involved in black-white breast cancer differences, although postmenopausal rates may be higher in whites than blacks even within social class groups.⁵¹

Screening and Stage at Diagnosis

The distribution of stage at diagnosis (Table 3-15) is a “process” indicator of progress toward earlier detection of breast cancer, whereas the breast cancer mortality rate is a long term indicator of progress in breast cancer control. There are no specific *Healthy Connecticut 2000* objectives for stage at diagnosis. However, breast cancer mortality and breast cancer screening objectives are relevant, because screening can detect cancers at an early stage, for which survival rates are highest. *Healthy People 2000* targets for breast cancer screening and baseline data from the National Health Interview Survey (NHIS) are shown in Table 3-16.

The NHIS does not provide state-specific data. However, data from the Behavioral Risk Factor Surveillance Survey show that the minimum objective of 60% of Connecticut women with a mammogram and clinical breast exam in the past two years was reached in 1990-94. BRFSS data overestimate screening rates, however, and do not assess regular annual screening.

There is ample support for targeting older women in screening programs. First, screening rates tend to decline with age. Second, the risk of invasive breast cancer increases with age (Figure 3-31). Screening increases the chance that breast cancer will be detected at an early stage (e.g., *in situ* or local). Breast cancer survival rates are five times higher for cancers diagnosed at the *in situ* or local stage, compared to the regional and distant (metastatic) stages. The in-hospital costs are lower for early than late stage breast cancer patients in Connecticut⁵². However, screening and follow-up of abnormal screening tests for women who will never be diagnosed with breast cancer during their lifetime produces a cost that far outweighs the savings resulting from earlier diagnosis of cancers that are detected. That is, screening is costly, and society must weight the costs and benefits of different medical interventions, based on economic analyses using such criteria as cost per year of life saved. Nearly one-third of Connecticut breast cancers are still being detected at regional and distant stages, after some metastasis has occurred.

⁵¹ Baquet CR, Horm JW, Gibbs T et al. Socioeconomic factors and cancer incidence among blacks and whites. *Journal of the National Cancer Institute*. 1991;83:551-557.

⁵² Polednak AP, Shevchenko I, Flannery JT. Estimating breast cancer treatment charges in Connecticut. *Connecticut Medicine* 1996;60:263.

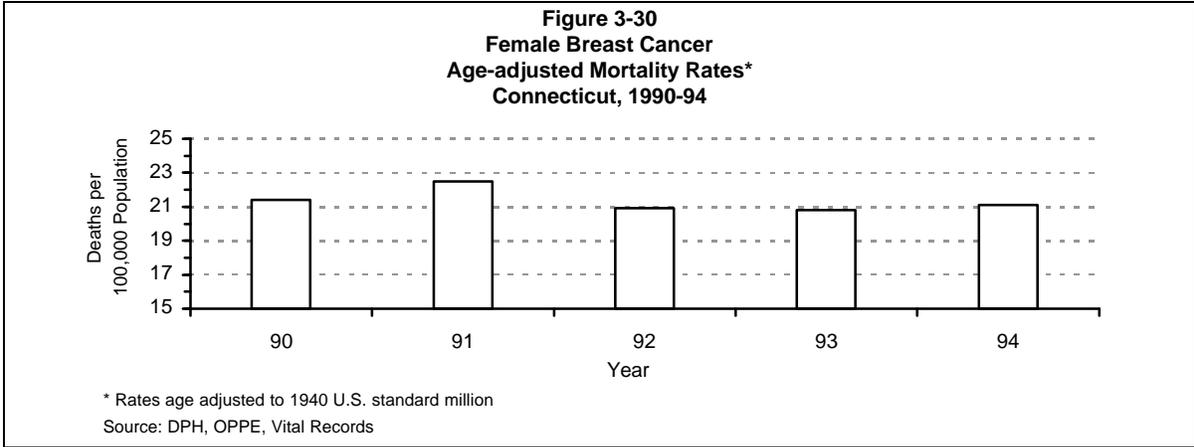


Table 3-15
Female Breast Cancer
Stage at Diagnosis of Incident by Race
Connecticut, 1990-94 and U.S., 1986-91

Race	Stage (%)				
	In situ	Local	Regional	Distant	Unknown
Connecticut					
Black	12.7	46.6	33.5	4.4	2.8
White	12.6	57.0	23.0	4.5	3.0
All races	12.6	56.4	23.6	4.5	3.0
National^a					
1986-91 Total	-	58	32	6	3
Black	-	48	38	9	5
White	-	59	32	6	3

Source: National Cancer Institute, Surveillance, Epidemiology and End Results (SEER) Program.

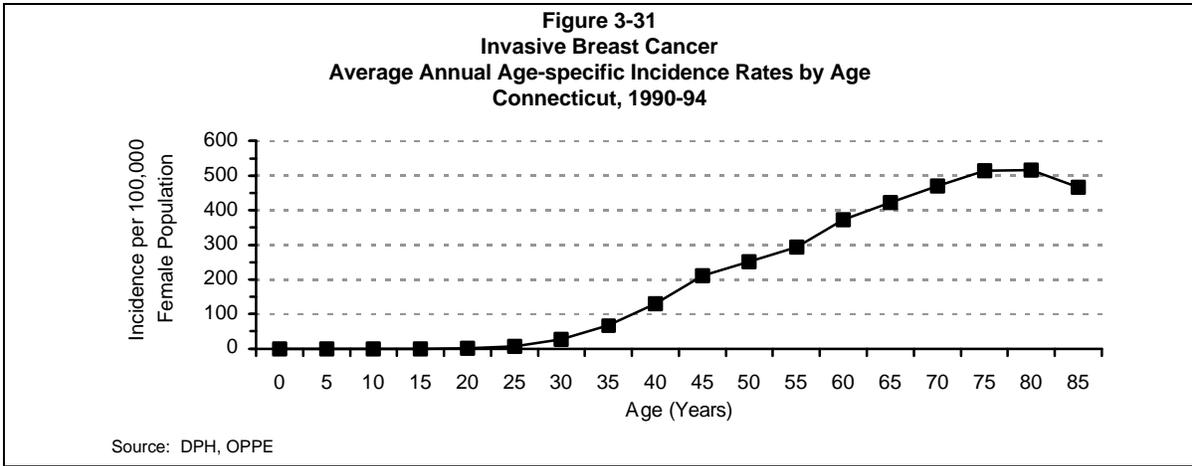
^a From SEER registries only. There are no national data. SEER data are used by National Cancer Institutes as national data; the latest data published are for 1986-91. SEER reports do not include *in situ* breast cancer.

Table 3-16
Clinical Breast Exam and Mammogram Received within Preceding 2 Years
United States, 1992

Group	1987 Baseline	1992 Status ^a	Year 2000 Target
All women aged 50+	25%	51%	60%
Black women	19%	Estimate not reliable	60%
Hispanic women	18%	44%	60%
Annual family income <\$10,000	15%	30%	60%
Less than high school education	16%	28%	60%
Women aged 70+	18%	26%	60%

Source: CDC, National Center for Health Statistics, National Health Interview Survey

^a Data available only for "within preceding 3 years."



High incidence rates for invasive breast cancer have been noted for Fairfield County (which includes affluent areas) and for several towns statewide that also have relatively high proportions of persons with higher incomes (Table 3-17, Table 3-18). These towns could be targeted for special efforts in primary prevention.

Table 3-17
Invasive Breast Cancer by Towns with Elevated SIRs^a
Connecticut, 1990-94

Town	Number of Cancers		SIR
	Observed	Expected	
Bloomfield	126	98.0	1.29
Wethersfield	176	141.5	1.24
Southbury	121	94.0	1.29
Groton	146	115.3	1.27
Guilford	94	70.7	1.33
Easton	37	25.1	1.47
Weston	43	30.3	1.42
Westport	150	106.1	1.41

^a Standardized Incidence Ratios. Only towns with more than 20 cancers are shown.
Source: DPH, OPPE, CT Tumor Registry

Table 3-18
Number of Breast Cancers and SIR by County of Residence
Connecticut, 1990-94

County	Number of Cancers		SIR
	Observed	Expected	
Fairfield	3,395	3,210.1	1.06
Hartford	3,274	3,280.0	1.00
Litchfield	644	665.0	0.97
Middlesex	518	528.8	0.98
New Haven	3,201	3,129.6	1.02
New London	892	858.5	1.04
Tolland	365	368.7	0.99
Windham	311	364.5	0.85

Source: DPH, OPPE, CT Tumor Registry

Modifiable Risk Factors and Potential for Intervention

The scope of primary prevention of breast cancer is limited at present, but the risk of breast cancer may be modified by changes in diet, such as lower fat intake, especially in early life, higher intake of fruits and vegetables, greater physical activity, reduction in body weight, and reduction in alcohol intake. Some women

may be genetically susceptible to the effects of cigarette smoking as a cause of breast cancer, and this could give greater impetus to the need for smoking prevention and cessation programs targeted to females.

The DPH houses the Connecticut Breast and Cervical Cancer Early Detection Program, part of a national program run by the CDC. The program provides statewide public and professional education, community outreach, direct breast and cervical cancer screening and diagnostic services, and case management (tracking and clinical follow-up) to low-income, underinsured and uninsured women age 40 and older. CDC mandates that 80% of women screened through the program be at least 50 years old. The national program has already been shown to be effective in detecting breast cancers at earlier stages over time.

Melanoma of the Skin

Incidence and Regional Variation

Age-standardized incidence rates for melanoma have increased for both males and females in Connecticut (Table 3-19). Marked regional variation has been observed among Connecticut towns, with higher standardized incidence ratios in certain ocean shoreline towns; consequently, rates for Fairfield and New London counties are higher than for other state counties (Table 3-20). Such geographic patterns are believed to be related, at least in part, to differences in recreational sun exposure, but epidemiological studies are needed. Map 3-12 illustrates the Connecticut SIRs by town of residence.

Table 3-19
Time Trends in Age-standardized Incidence Rates for Melanoma of the Skin
Connecticut, 1980-94

Years	Incidence per 100,000 Population	
	Males	Females
1980-84	11.3	8.9
1985-89	14.1	10.7
1990-94	18.2	12.5

Source: DPH, OPPE. CT Tumor Registry

Modifiable Risk Factors and Potential for Intervention

There is no year 2000 objective for melanoma of the skin; however, it is a growing public health problem, and many cases may be prevented by modifying behavior starting in childhood. Interventions to reduce risk factors for skin cancer are outlined below.

- Educating parents and caregivers of children about the risks of skin cancer associated with excessive sun exposure during childhood.
- Developing educational messages for the public, emphasizing the need to avoid sun exposure during certain times of the day, and to wear protective clothing. Special efforts may be needed for residents of ocean shoreline areas and all Connecticut residents who use shoreline and lake beaches for sunbathing.
- Skin cancer screening by dermatologists may result in detection of undiagnosed melanomas and other skin cancers.

Table 3-20
Number of Melanoma of the Skin Cancers by County of Residence
Connecticut, 1990-94

County	Number of Cancers		SIR
	Observed	Expected	
Fairfield	843	744.8	1.13
Hartford	696	757.5	0.92
Litchfield	160	156.9	1.02
Middlesex	115	124.5	0.92
New Haven	703	714.0	0.98
New London	262	206.5	1.27
Tolland	109	95.2	1.14
Windham	47	87.3	0.54

Source: DPH, OPPE, CT Tumor Registry

Invasive Cervical Cancer

Incidence, Mortality, and High Risk Groups

Incidence rates for invasive cervical cancer in Connecticut declined from 1980-94 (Table 3-21). In 1994, the Connecticut age-standardized death rate for invasive cervical cancer was 2.1 per 100,000 population, nearly twice the year 2000 objective of 1.1 per 100,000. Most invasive cervical cancers are regarded as preventable though frequent, high-quality screening, which detects pre-invasive lesions. Certain subgroups of women (minority, poor and uninsured) continue to fall behind in screening rates, and Hispanic women are less likely to have had a recent Pap test.⁵³

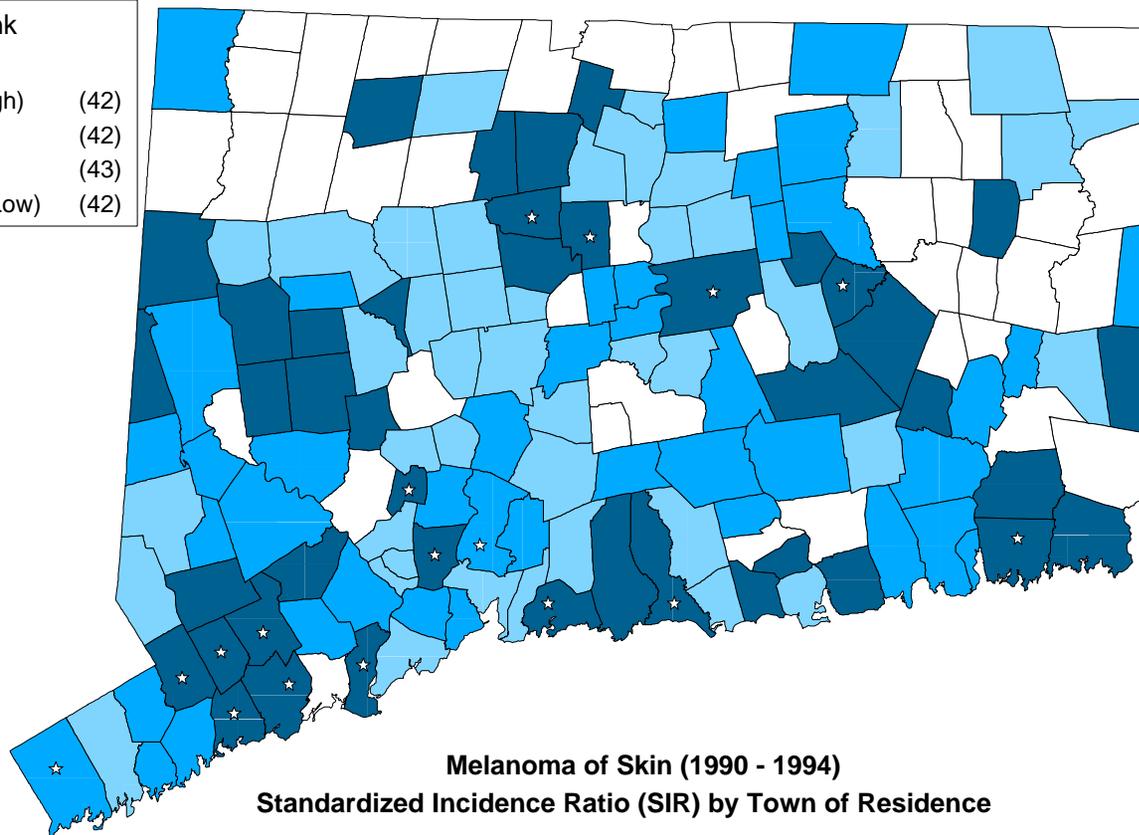
Table 3-21
Invasive Cervical Cancer
Time Trends in Age-standardized Incidence Rates
Connecticut, 1980-94

Years	Incidence ^a per 100,000 Population
1980-84	8.1
1985-89	7.9
1990-94	7.4

Source: DPH, OPPE, CT Tumor Registry

^a Standardized to 1970 U.S. standard million population.

⁵³ Polednak AP. Reported Pap test use by Hispanic women in Connecticut and Long Island. *Connecticut Medicine* 1996; 60:3-8.



Melanoma of Skin (1990 - 1994)
Standardized Incidence Ratio (SIR) by Town of Residence

☆ Significantly elevated ($p < 0.05$) SIR based on statewide rates
Source: DPH, OPPE, Tumor Registry, 1997

Invasive cervical cancer incidence rates rise until the age of 45-49 years, with no clear pattern at older ages (Figure 3-32). Incidence rates are higher for black than white women. In 1990-94, the crude incidence rates for invasive cervical cancer were 12.8 per 100,000 for black women (97 cases) and 8.8 (667 cases) for white women. Estimated incidence rates were also higher in Hispanic women than all white women in Connecticut, although identification of Hispanic ethnicity in the Connecticut Tumor Registry is incomplete. Racial-ethnic differences can be explained largely by black-white differences in social class. Social class affects the risk of development of cervical lesions that can progress from pre-invasive to invasive cancer, and is also strongly related to screening rates.

Screening and Potential for Intervention

For cervical cancer control, the *Healthy People 2000* target is to increase to at least 95% the proportion of women aged 18+ who have ever received a Pap smear, and to at least 85% those who received a Pap smear in the past 3 years. The 1987 baseline (national) values were 88% and 75%, respectively. Screening status for various demographic subgroups are shown in Table 3-24 .

The year 2000 target for women aged 18+ has almost been reached in Connecticut, with more than 80% reporting affirmatively in the 1990 through 1994 Behavioral Risk Factor Surveillance Surveys.⁵⁴ As with breast cancer screening, however, screening rates are overestimated in the BRFSS, data are not available on regular screenings in each woman surveyed, and certain subgroups are screened infrequently. Regular screening is important because of the limitations of Pap tests (e.g., inadequacy of the smear and the potential for misreading of smears). Moreover, the Pap test is a *screening* test, and is not intended to be diagnostic; some significant lesions will be missed, and some women found with such lesions will not receive proper diagnostic tests and treatment.

Geographic Variation

Towns or regions with relatively large proportions of women of lower socioeconomic status, including minority women (blacks, Hispanics, and certain Asian groups), have higher incidence rates for invasive cervical cancer (Table 3-22).

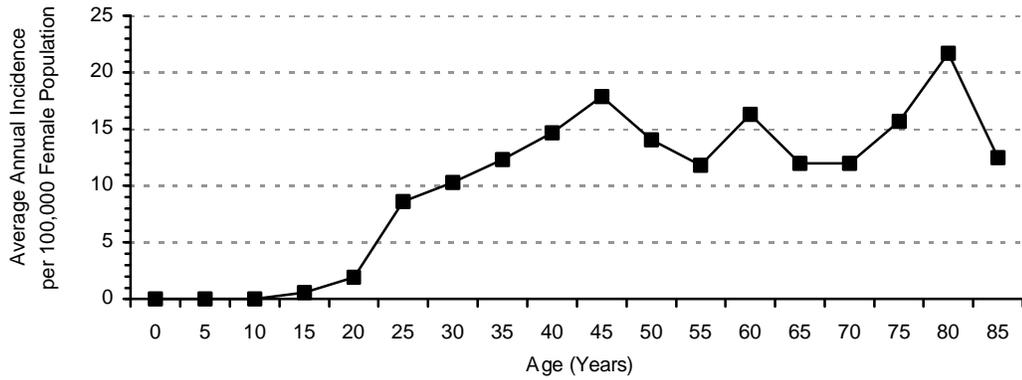
Table 3-22
Number of Invasive Cervical Cancers and SIR by Town of Residence ^a
Connecticut, 1990-94

Town	Number of Cancers		SIR
	Observed	Expected	
<i>Relatively High SIR</i>			
Bridgeport	57	31.2	1.82
New Haven	42	28.0	1.50
Windham	10	4.8	2.10
<i>Not statistically significantly elevated, but historically high SIR</i>			
Hartford	38	28.1	1.35
New London	11	5.6	1.95
West Haven	20	12.7	1.57

^a Towns with more than 10 cancers are shown.
Source: DPH, OPPE, CT Tumor Registry

⁵⁴ Connecticut Department of Public Health. *Behavioral Risk Factor Surveillance Survey*. 1996.

**Figure 3-32
Invasive Cervical Cancer Age-specific Incidence Rates
Connecticut, 1990-94**



Source: DPH, OPPE, CT Tumor Registry

**Table 3-23
Number of Invasive Cervical Cancers and SIR by County of Residence
Connecticut, 1990-94**

County	Number of Cancers		SIR
	Observed	Expected	
Fairfield	222	198.6	1.12
Hartford	163	201.1	0.81
Litchfield	38	41.3	0.92
Middlesex	40	33.7	1.19
New Haven	200	189.6	1.05
New London	68	54.9	1.24
Tolland	15	26.4	0.57
Windham	28	26.2	1.07

Source: DPH, OPPE, CT Tumor Registry

**Table 3-24
Pap Smear Received within Preceding 3 Years
United States, 1992**

Group	1987 Baseline	1992 Status	Year 2000 Target
All women aged 18+	75%	74%	85%
Hispanic women	66%	74%	80%
Annual family income <\$10,000	64%	66%	80%
Less than high school education	58%	58%	75%
Women aged 70+	44%	45%	70%

Source: CDC, National Center for Health Statistics, National Health Interview Survey

CHRONIC OBSTRUCTIVE PULMONARY DISEASE

Introduction

Chronic obstructive pulmonary disease (COPD) involves a process characterized by nonspecific changes in the lung parenchyma and bronchitis that can lead to emphysema and airflow obstruction. Clinically and pathologically, chronic bronchitis, emphysema, and chronic airway obstruction can be difficult to differentiate, and they are frequently grouped together under the heading of COPD. Age-adjusted mortality rates for males were fairly constant from 1986-1995, whereas rates for women have increased steadily (Figure 3-33). Mortality rates were similar for black and white males, but were lower for black females than white females (Figure 3-34). The economic cost of COPD includes both the cost of care and the loss of productivity. Disability in COPD patients progresses gradually after initial diagnosis, and after an average of 7.5 years, most COPD patients are no longer capable of productive work.⁵⁵

COPD is thought to result from direct interaction of lung tissue with environmental agents, of which tobacco smoke is the most significant.⁵⁶ Thus, the strongest risk factor for COPD development is cigarette smoking. Both men and women smokers have approximately 10 times the risk for COPD compared to nonsmokers. The occurrence of wheezing, frequent cough, and airway hyper-responsiveness in children also has been associated with parental smoking.⁵⁷

Modifiable Risk Factors

Elimination of tobacco use is the single most important way to prevent COPD occurrence. Exposure to environmental tobacco smoke (ETS) is also known to cause the development or exacerbation of symptoms or illnesses that range from the sub-clinical to those requiring hospitalization. There is no known safe level of exposure to ETS, and no way to quantify actual exposure. In addition, individual characteristics or other factors that may affect resultant symptoms or illness are extremely difficult to account for. However, it is simpler to describe the risks of exposure to ETS for fetuses, infants, and very young children, populations whose respiratory, cardiovascular, and other bodily systems are developing and who are clearly at risk from smaller dosages that may be inconsequential in adults.

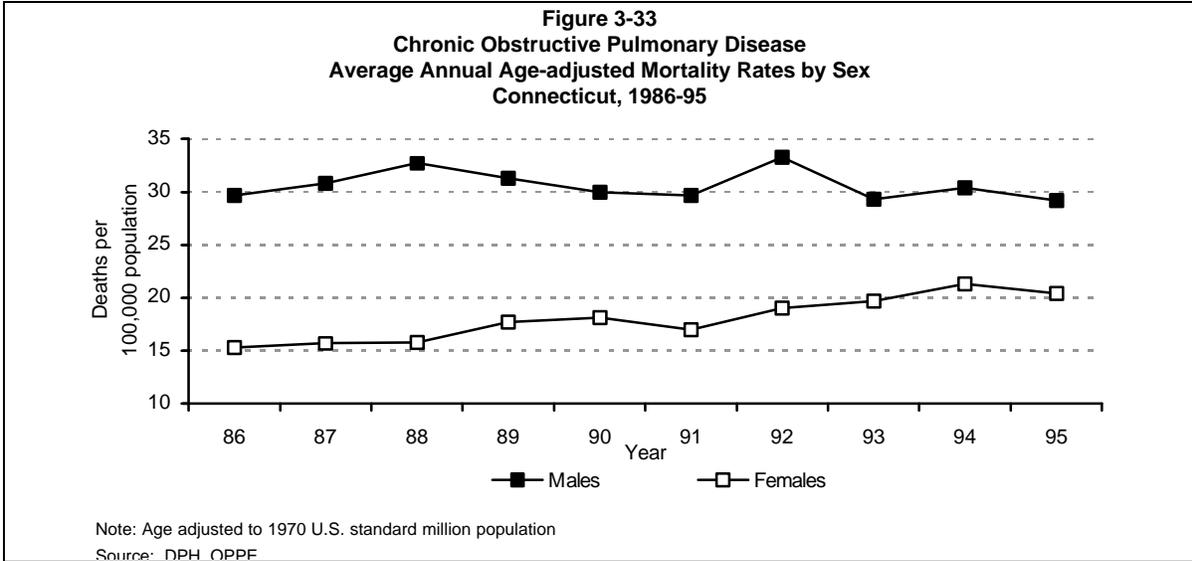
Children's exposure to ETS is a significant public health problem. Each year In Connecticut, an estimated 30 infants die from causes related to maternal smoking during pregnancy and/or exposure to ETS in the first months of life.⁵⁸ Affected male infants less than one year old lose almost 70 years of potential life, and female infants lose 76 years of potential life. There is some evidence that ETS exposure is a risk factor for asthma.

⁵⁵ Goldring JM, James DS, Anderson HA. Chronic lung disease. In: *Chronic Disease Epidemiology and Control*, The American Public Health Association, 1993:179.

⁵⁶ Goldring JM.

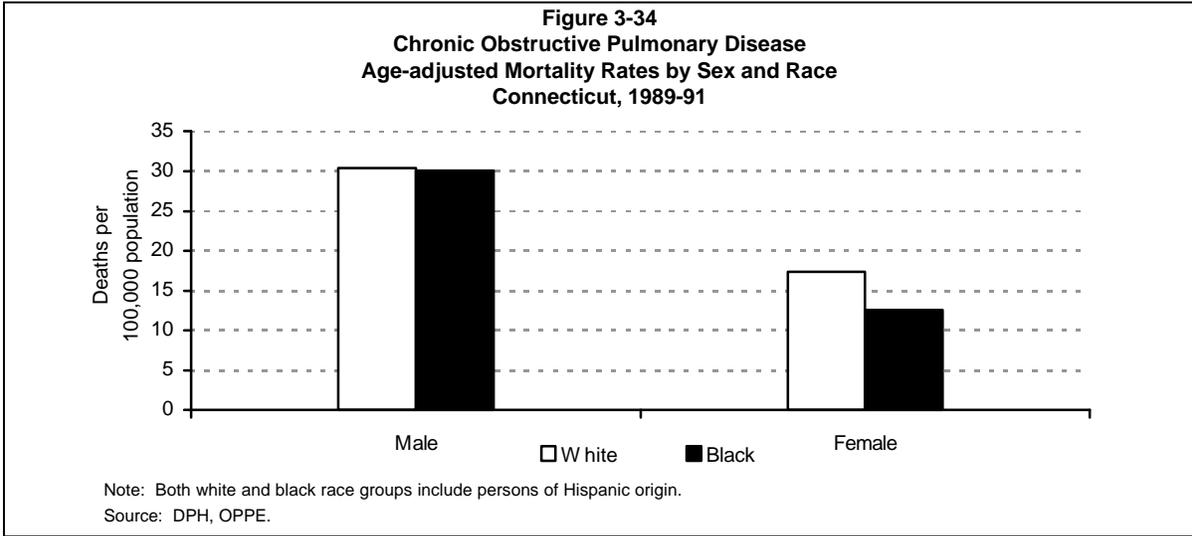
⁵⁷ Goldring JM.

⁵⁸ Adams ML. "The public health impact and economic cost of smoking in Connecticut, 1989." *CT Med*. 1994;58:195-198.



Potential for Intervention

Policy initiatives include raising the excise tax on cigarettes and media campaigns challenging the tobacco industry in extensive advertising efforts. A national tobacco settlement, approved by the U.S. Congress, has awarded money to states for public education programs that could be allocated for community interventions targeting women of childbearing age in prenatal clinic and office settings. These programs could focus on making protective environmental changes in the home and vehicles, and both quitting and decreasing smoking by this population. In addition, media awareness campaigns and especially media targeting youth could be funded. Based on experience in California and Massachusetts, where substantial amounts of money were allocated for tobacco use prevention, the most effective programs were high quality and highly promoted media campaigns and local community programs.



DIABETES

Diabetes is a major cause of death and disability in Connecticut. It is the leading cause of end-stage renal disease over all ages and the leading cause of blindness among working-age adults. Diabetes is a major cause of non-traumatic lower extremity amputations and major congenital malformations. Other complications associated with diabetes include cardiovascular disease and peripheral vascular disease. The disease burden of diabetes and its complications is large, costly, disproportionately affects minority populations and older age groups and is likely to increase as minority populations grow and the total population becomes older.

Prevalence

Based on the 1994 Connecticut BRFSS, an estimated 5.1% or 127,000 adults (18 years and older) have diagnosed diabetes. However, national health surveys indicate that the prevalence of undiagnosed diabetes is as great as that of diagnosed diabetes.⁵⁹ Therefore, the true prevalence of adult diabetes in Connecticut is at least twice the BRFSS prevalence estimate or 10.2%. There are two types of diabetes, insulin-dependent diabetes (Type 1) and non-insulin-dependent diabetes (Type II). Type I diabetes (formerly known as “juvenile” diabetes) is one of the most common childhood diseases, affecting an estimated 1,400 children in Connecticut under age 20.⁶⁰

Impaired glucose tolerance (IGT) refers to a condition in which blood sugar levels are higher than normal but not high enough to be classified as diabetes. IGT is a major risk factor for Type II diabetes. This condition is present in about 11% or approximately 273,500 Connecticut adults.⁶¹ In addition, an estimated 915,170 adults in Connecticut are at increased risk of undiagnosed diabetes due to the risk factors of age, obesity, sedentary lifestyle, or history of gestational diabetes.⁶²

Mortality

Because people die of the complications of diabetes rather than the disease itself, diabetes is underreported as the underlying cause or even as a contributory cause of death. Diabetes was the seventh leading underlying cause of death listed on 1994 Connecticut death certificates, with 627 deaths directly attributable to diabetes. Diabetes also contributed to an additional 1,844 deaths in 1994 (Figure 3-35).

Trends

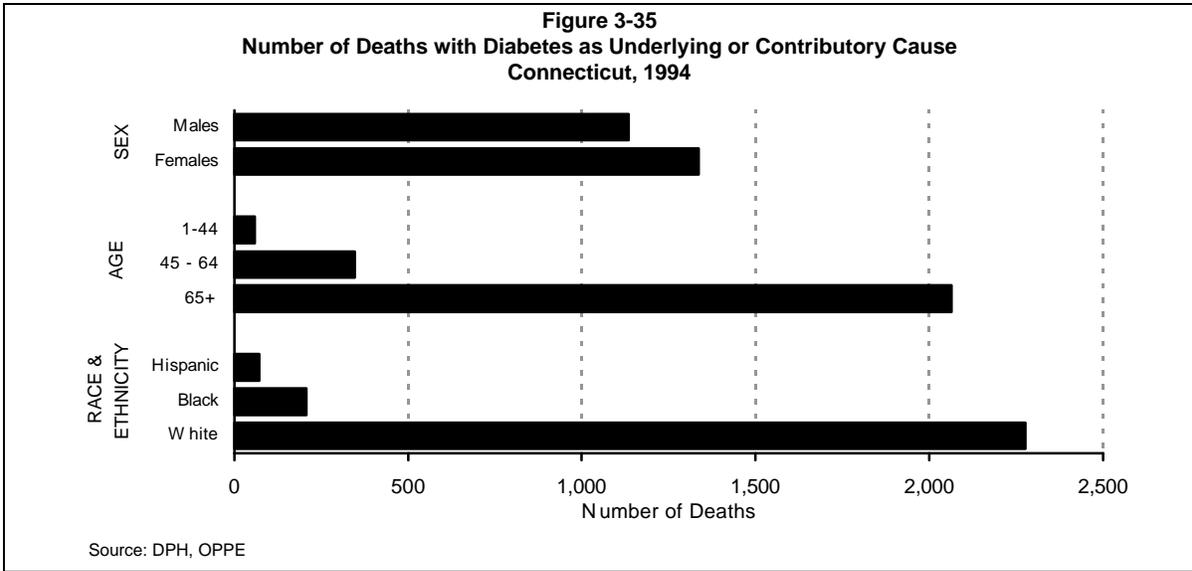
A statistically significant difference ($p < 0.05$) was found between the 1979-81 and 1989-91 age-adjusted mortality rates for diabetes (11.9 and 12.5 per 100,000 population, respectively), indicating an upward trend in mortality due to diabetes. Because of the higher prevalence of diabetes in minority populations and older Americans, an increase in the number of diabetics is expected due to the demographic shift in the population.

⁵⁹ Harris MI, Hadden WC, Knowler WC, Bennett PH. Prevalence of noninsulin-dependent diabetes and impaired glucose and plasma glucose levels in US populations aged 20-74 years. *Diabetes Care*. 1987; 36:523-534.

⁶⁰ Laporte RE, Matsushima M, Yue-Fang Chang: Prevalence and Incidence of Insulin-Dependent Diabetes. In *Diabetes in America*, Harris MI, ed. National Diabetes Data Group, NIH publ. no. 95-1468, 1995.

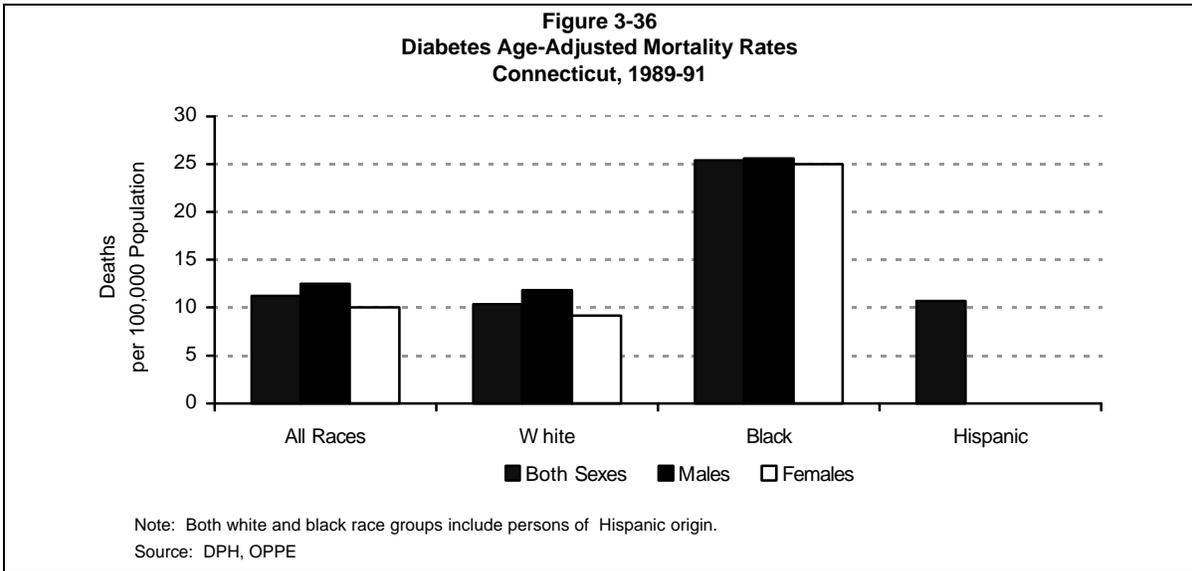
⁶¹ U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention. *National Diabetes Fact Sheet: National Estimates and General Information on Diabetes in the United States*. Atlanta, GA: DHHS. 1995.

⁶² Connecticut Department of Public Health. *Behavioral Risk Factor Surveillance Survey*. 1996. Algorithm in “‘Estimated Number of Adults with Diagnosed Diabetes, by Age, Sex and State’ and ‘Estimated Number of Adults in the Nondiabetic Population at Increased Risk for Undiagnosed Diabetes by State, United States’”, prepared by CDC, Division of Diabetes Translation, 1992.

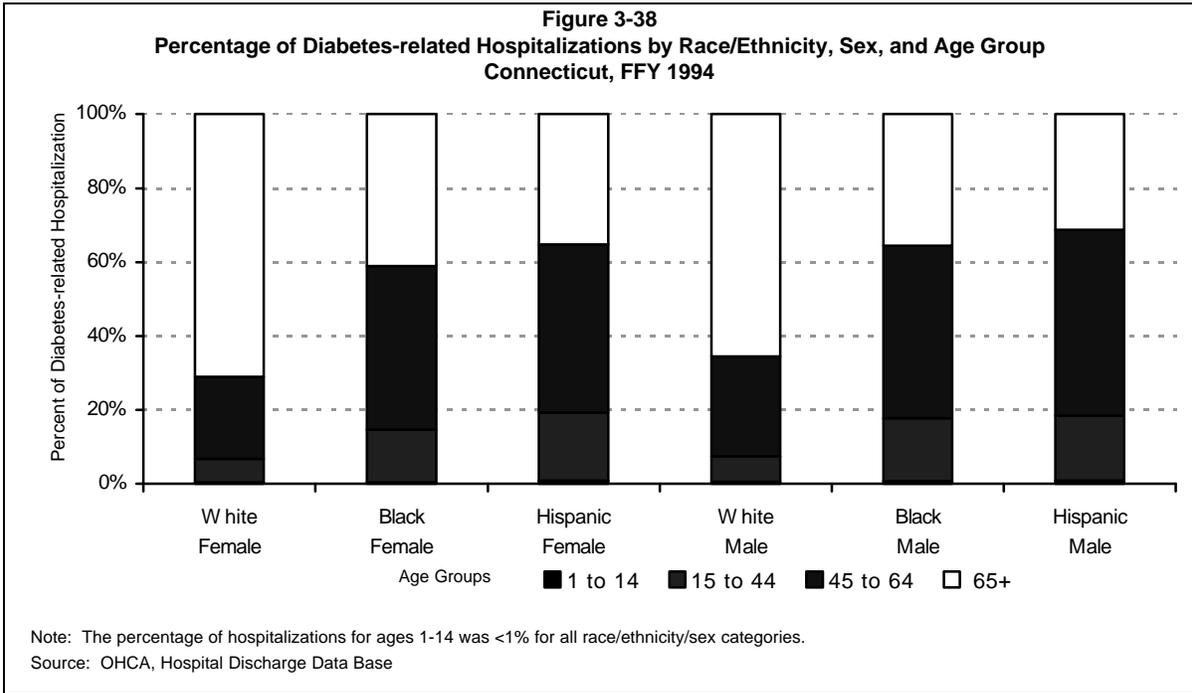
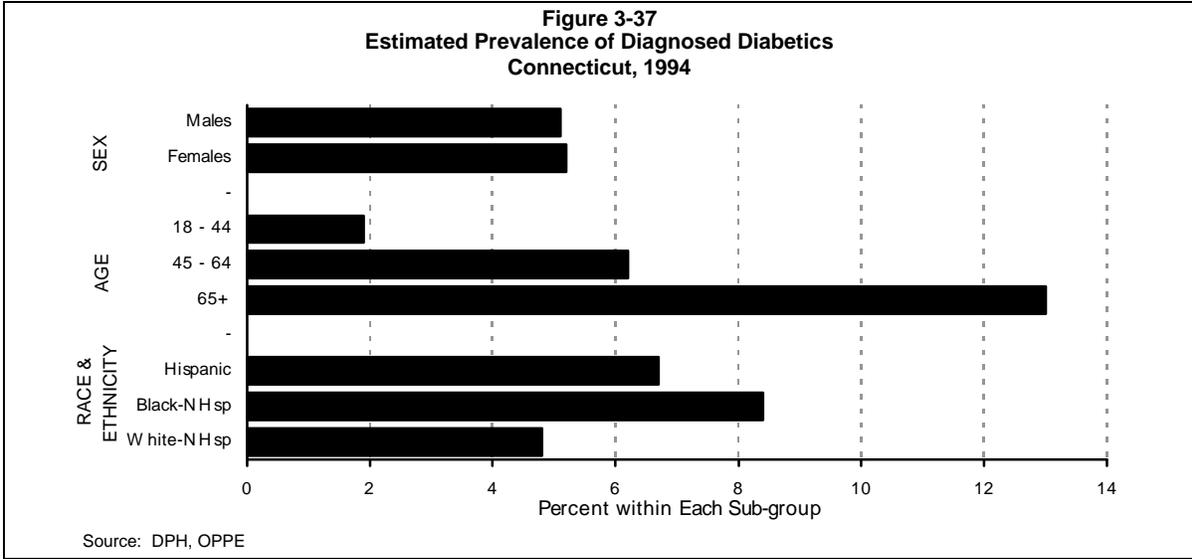


High Risk Subgroups

The 1989-1991 Connecticut age-adjusted mortality rate for diabetes was greater for blacks than whites, regardless of sex (Figure 3-36). As shown in Figure 3-37, the prevalence of diabetes was disproportionately high among minorities and older age groups. Black non-Hispanics and Hispanics had higher prevalence rates than white non-Hispanics, and the 65+ age group had the highest prevalence rate of all age groups.⁶³ Preliminary analyses of 1994 Connecticut hospital discharge data indicate that black and Hispanic diabetics were hospitalized at younger ages than whites for diabetes and related conditions (Figure 3-38).



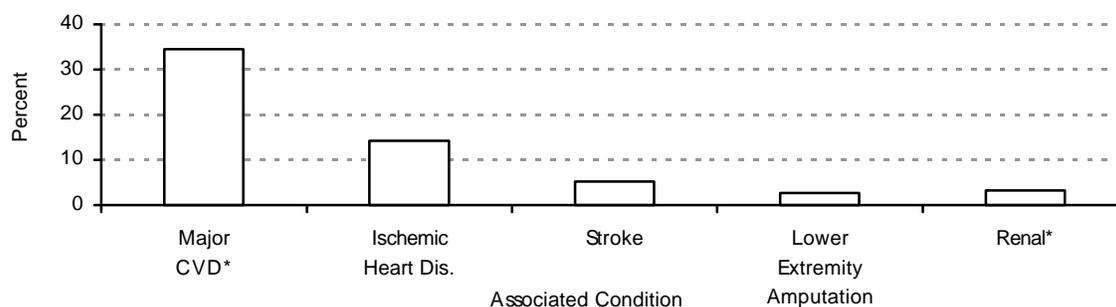
⁶³ Connecticut Department of Public Health, *Behavioral Risk Factor Surveillance Survey*. 1996.



Morbidity

People with diabetes in Connecticut suffer from many diabetes-related complications or conditions. The percentage of hospitalized diabetics receiving inpatient treatment for selected diabetes associated conditions (Figure 3-39) indicates that cardiovascular disease is a major comorbidity-morbidity of diabetes.

Figure 3-39
Hospitalized Diabetics (N=42,471)
Percent Receiving Inpatient Treatment for Diabetes-associated Conditions
Connecticut, 1994



**CVD* = Cardiovascular disease. "Renal" includes dialysis treatments and kidney transplants.

Source: OHCA, Hospital Discharge Abstract and Billing Data Base

The complications and conditions most commonly associated with diabetes are as follows.⁶⁴

- *Heart Disease* - Cardiovascular disease is 2 to 4 times more common in people with diabetes. Middle-aged people with diabetes have total death rates (all causes) twice as high, and heart disease death rates about 2 to 4 times as high, as middle-aged persons without diabetes. In 1994, cardiovascular disease was reported on death certificates in 48% of diabetes-related deaths in CT.
- *Stroke* - The risk of stroke is 2 to 4 times higher among persons with diabetes.
- *High Blood Pressure* - An estimated 60 - 65% of persons with diabetes have high blood pressure.
- *Blindness* - An estimated 40% of people with diabetes have at least mild signs of diabetic retinopathy. Diabetes is the leading cause of new cases of blindness among adults 20 to 74 years of age. Diabetes was the major cause of blindness for 1,859 legally blind people registered with the CT Board of Education and Services for the Blind in 1994.⁶⁵
- *Kidney Disease (Treatment by Dialysis or Transplantation)* - Diabetes is the leading cause of end-stage renal disease (ESRD), accounting for 36% of new cases. Diabetes was listed as the primary cause of ESRD for 730 Connecticut residents registered with the ESRD Network of New England.⁶⁶ It is known that diabetes status is underreported for persons with ESRD due to the reporting of only the primary cause of ESRD for those registered with the network. In 1994, 1,409 hospitalizations were for diabetes-related kidney treatment, transplant or dialysis.⁶⁷
- *Nerve Disease* - About 60 - 70% of people with diabetes have mild to severe forms of diabetic nerve damage, with such manifestations as impaired sensation in the feet or hands, delayed stomach emptying, carpal tunnel syndrome, peripheral neuropathy. Severe forms of diabetic nerve disease are a major contributing cause of lower extremity amputations.
- *Amputations* - In 1994, 1,085 Connecticut residents underwent lower extremity amputations due to diabetes or diabetes-related conditions.⁶⁸
- *Dental Disease* - Studies show that periodontal disease, which can lead to tooth loss, occurs with greater frequency and severity among persons with diabetes. In one study, 30% of patients with Type I diabetes over age 18 had periodontal disease.

⁶⁴ U.S. Department of Health and Human Services.

⁶⁵ Connecticut Board of Education and Services for the Blind. *Statistics on Blindness in Connecticut, August 1994*. Wethersfield, CT, 1994.

⁶⁶ End Stage Renal Disease Network of New England, Inc. *ESRD of New England 1995 Annual Report*. New Haven, CT. 1996.

⁶⁷ Connecticut Office of Health Care Access. Hospital Discharge Abstract and Billing Data Base.

⁶⁸ Connecticut Office of Health Care Access.

- *Pregnancy Complications* - The rate of congenital malformations in babies born to women with pre-existing diabetes varies from 0 - 5% among women who receive preconception care to 10% among women who do not receive preconception care. Between 3% and 5% of pregnancies among women with diabetes result in death of the newborn; this compares to a rate of 1.5% for women who do not have diabetes. Gestational diabetes develops in some pregnant women, then disappears when the pregnancy is over. A history of gestational diabetes, however, is a risk factor for eventual development of Type II diabetes. Gestational diabetes occurs in 2% to 5% of pregnancies, and at higher rates among African Americans, Hispanics, and American Indians.

Economic Aspects

The estimated direct cost (medical care) and indirect cost (lost productivity and premature mortality) of diabetes in CT totaled about \$1.6 billion in 1994.⁶⁹ Approximately \$52 million was charged for 1994 CT in-patient hospitalizations due to diabetes and its complications. Medicaid and Medicare were the expected payers for 78% of this bill. Charges for cardiovascular disease hospitalizations for which diabetes was a contributing factor totaled \$236.7 million in 1994.⁷⁰

Modifiable Risk Factors and Potential for Intervention

Approximately 90% of all people with diabetes have Type II.⁷¹ Obesity is strongly linked to the development of Type II diabetes. Interventions to reduce obesity including nutrition education programs, physical activity programs, and educational programs to increase public knowledge of diabetes. Targeting high risk populations would reduce diabetes incidence, prevalence, and mortality rates in Connecticut. Complications associated with diabetes can be prevented or delayed with early detection, improved delivery of care, and diabetes self-management. Interventions that provide individuals with the knowledge and skills required in adequate diabetes self-management, knowledge and utilization of available community resources, and appropriate utilization of health care resources could do much to reduce the economic and personal burden associated with diabetes.

DENTAL DISEASES

Dental diseases and conditions are among the most prevalent and preventable chronic health problems, and dental caries remains the single most common disease of childhood that is not self-limiting or treatable with antibiotics. Dental disease is an infectious disease process that can reduce overall health, productivity, and quality of life.

Seventy percent of socioeconomically disadvantaged children, aged 6-8 years, have untreated dental disease. Poor and minority children, who make up 20% of the population, experience between 60 and 75% of the dental disease.⁷² The poor and minority populations in Connecticut are growing relatively more rapidly than the majority population, with a concomitant projected overall rise in the prevalence of dental disease in children. According to a DPH study on the accessibility and availability of the dental provider network under Medicaid managed care, a severe lack of access to dental care exists for Connecticut's

⁶⁹ American Diabetes Association. *Direct and Indirect Costs of Diabetes in the United States in 1992*. Alexandria, VA: 1993.

⁷⁰ Connecticut Office of Health Care Access.

⁷¹ U.S. Department of Health and Human Services, Public Health Service, National Institutes of Health, National Diabetes Data Group. *Diabetes in America*. 2nd edition. Bethesda, MD: NIH publication number 95-1468. 1995.

⁷² U. S. Department of Health and Human Services, Public Health Service, National Institute of Health. *Oral Health of United States Children, National and Regional Findings: the National Survey of Dental Caries in US School Children 1986-1987*. Bethesda, MD: (NIH)89-2247. 1989.

Medicaid-eligible children. The numerous obstacles impeding access to dental care for the state's neediest children are discussed in the study report.⁷³

The 1996 prevalence of dental decay in Connecticut in 6-8 year old children (approximately 55%) may be at least equal to the national 1996 baseline (54%), which is 20% higher than the *Healthy Connecticut 2000* target of <35%.⁷⁴ Although year 2000 targets have been set for prevalence of dental decay in adolescents aged 15 and for the percent of caregivers who use feeding practices that prevent baby bottle tooth decay, Connecticut levels have not been determined.

Baby bottle tooth decay (BBTD) is a serious, fully preventable disease that affects preschool children. BBTD is caused by improper feeding practices, such as putting a baby to bed with a bottle of liquids high in sugar (such as juice), or pacifying a baby during the day with a bottle. Continuous exposure of the baby's fragile teeth to such liquids causes rapid decay, resulting in destruction of the teeth, severe pain, difficulty eating and resultant nutritional impairment, crooked and decayed permanent teeth, ear infections, and possible future speech problems. Estimates of the prevalence of BBTD range from 6% to as high as 85% in populations at risk.^{75,76} A survey of children enrolled in the Head Start Program in the city of Hartford indicated a prevalence rate for BBTD of 25%.⁷⁷ A survey of preschool children in the towns of northwestern Connecticut revealed a 20% prevalence of BBTD, and over 70% prevalence of risk behavior (improper infant feeding patterns) among young mothers.⁷⁸ The cost of treating extensive early childhood caries, such as baby bottle tooth decay, is more than \$1,000 per child.

In 1986, 36% of people aged 65 and older had lost all their teeth. Low-income adults aged 65 and older experienced an even greater rate of tooth loss (46%).⁷⁹ In older people, the loss of natural teeth can contribute to psychological, social, and physical handicaps. Even when missing teeth are replaced with dentures, there may be limitations in speech, chewing ability, and quality of life, yet visits to a dentist decline with age.

⁷³ Wolfe SH. *Present and Projected Dental Provider Participation in the Connecticut Medicaid Managed Care Program: Impact on Dental Care Access*. Hartford, CT: Connecticut Department of Public Health. 1996 December.

⁷⁴ Connecticut Oral Health Survey and Needs Assessment conducted by the DPH Oral Health Program.

⁷⁵ U. S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention. *Healthy People 2000: National Health Promotion and Disease Prevention Objectives - Healthy People 2000 Review 1995-96*. Hyattsville, MD: (PHS) 96-1256. 1996 November.

⁷⁶ Bruerd B, Jones C. Preventing baby bottle tooth decay: eight-year results. *Public Health Rep.* 1996; 111:63-66.

⁷⁷ Benitez C, O'Sullivan D, Tinanoff N. Effect of a preventive approach for the treatment of nursing bottle caries. *ASDC Jour Dent Child.* 1994; 61(1):46-50.

⁷⁸ Connecticut Department of Public Health, Unpublished data from the Oral Health Program Survey.

⁷⁹ U. S. Department of Health and Human Services. *Healthy People 2000 Review 1995-96*.

INJURIES

HIGHLIGHTS

- Unintentional injuries are the leading cause of death for persons aged 1 to 34 years.
- Two-thirds of unintentional injury deaths in Connecticut occur to males.
- During 1994, 42 State residents died in residential fires, almost twice the number reported in 1993.
- Falls are the most common cause of nonfatal injury and the second leading cause of unintentional injury death in Connecticut.
- About 80% of all Connecticut deaths due to falls occur among people aged 65 and older.
- Motor vehicle crashes are the leading cause of unintentional injury death in Connecticut, accounting for an average of nearly one death per day.
- In states like Connecticut with helmet laws that apply only to young riders, death rates from head injuries are twice as high among motorcyclists as in states with full motorcycle helmet laws.
- Drownings account for 1 in 20 unintentional injury deaths in Connecticut.
- Nearly half of Connecticut suicides in 1994 were performed with a firearm.
- Connecticut's age-adjusted mortality rate for homicides nearly doubled between 1986 and 1994. Virtually all of this increase was due to the increase in firearm homicides.
- Black males between the ages of 15 and 34 years old account for 1.5% of Connecticut's population but 30% of its homicide victims.
- Firearms cause nearly one of every five injury deaths in Connecticut.

UNINTENTIONAL INJURIES

Introduction

Unintentional injuries kill 1,000 Connecticut residents and cause 36,000 hospital admissions⁸⁰ in our state each year. Injuries are the leading cause of premature death for males and the second leading cause for females, surpassed only by cancers.⁸¹ Unintentional injuries are the third leading cause of death based on age-adjusted mortality rate (24.4 per 100,000 population) and the sixth leading cause of death in Connecticut based on number of deaths (1,004 deaths) in 1994.⁸² Unintentional injuries are the leading cause of death for individuals between the ages of 1-34 years. More children and adolescents die each year from unintentional injuries than from all other childhood diseases combined.

An estimated one in four Americans is injured annually, costing the U.S. more than \$100 billion a year in medical care costs and lost productivity.⁸³ The leading causes of fatal unintentional injuries include motor vehicle crashes, falls, fires, and drownings. The relative importance of various causes of injury vary substantially with age. For example, motor vehicles are the leading cause of unintentional injury death for ages up to 75 years, while falls are most frequent for ages 75 and older. The types of unintentional injuries discussed here are residential fires, falls, motor-vehicle-related injuries, and drownings.

⁸⁰ Office of Health Care Access. Hospital Discharge Abstract and Billing Data Base. FY 1995 N=<35,950.

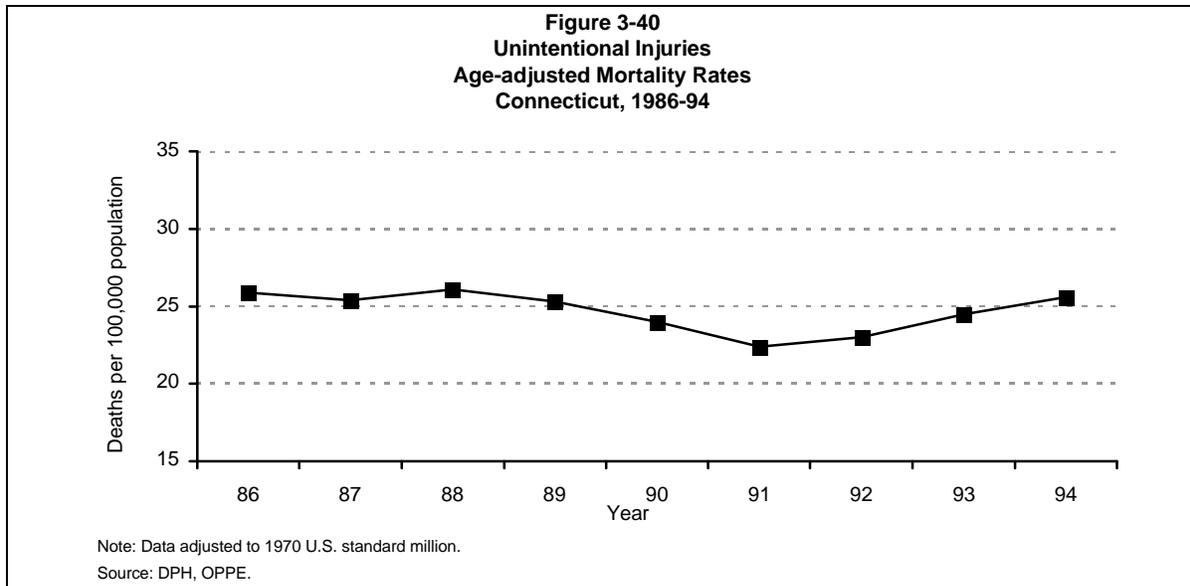
⁸¹ Years of Potential Life Lost before age 65, adjusted to 1940.

⁸² Age-adjusted to 1940 U.S. standard million.

⁸³ Rice DP, MacKenzie EJ, and Associates. *Cost of Injury in the United States: A Report to Congress*. San Francisco, CA: Institute for Health and Aging, University of California, and Injury Prevention Center, Johns Hopkins University. 1989:282pp.

Time Trends

Although there was a 23.5% decline in the mortality rate due to unintentional injuries from 1979-81 to 1989-91, there was a steady increase in the mortality rate since 1991. From 1991 to 1994, the mortality rate increased 14% (Figure 3-40).



Risk Groups

Deaths caused by injury comprise a disproportionately large share of deaths in young age groups compared with deaths from all causes (Figure 3-41). Two thirds of unintentional injury deaths in Connecticut occur to males. Death rates for males exceed those for females for every age group (Figure 3-42).

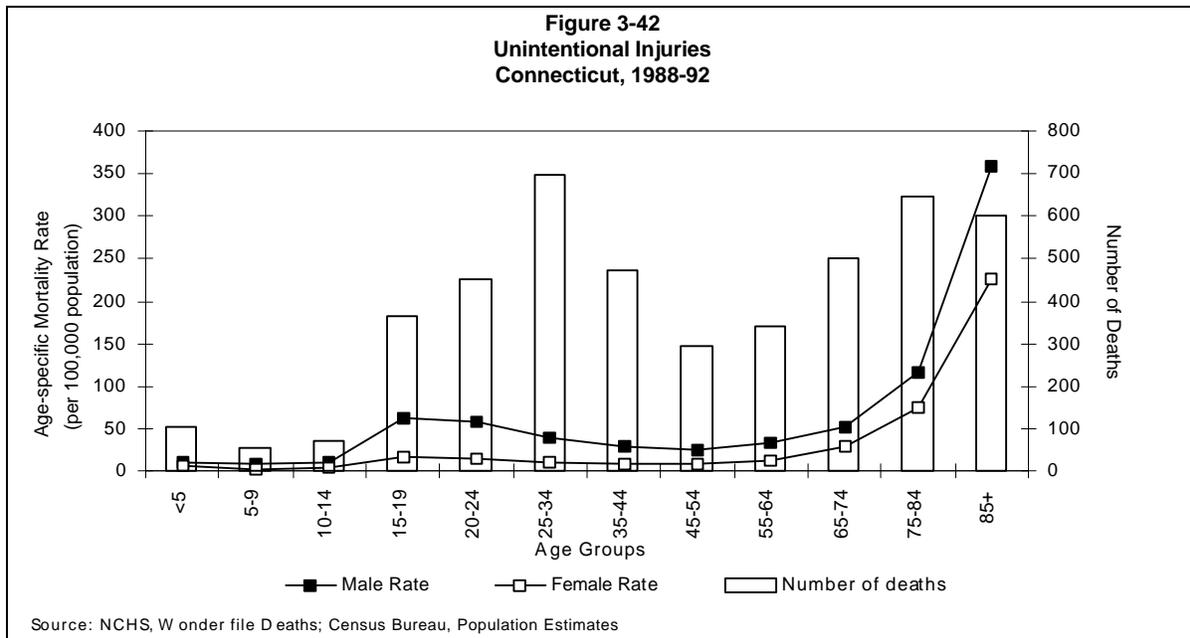
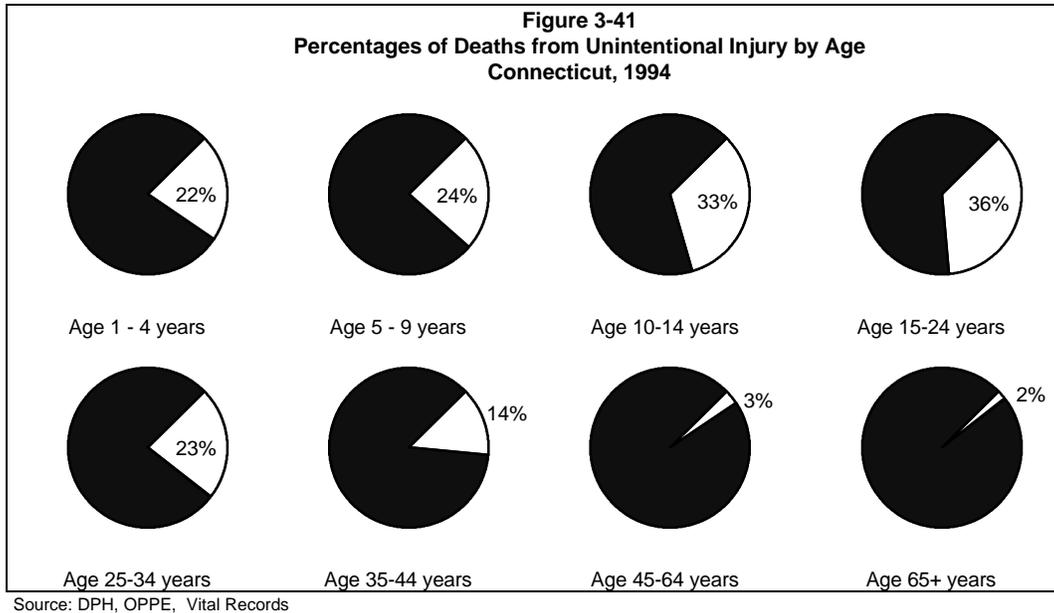
Modifiable Risk Factors

Most risk factors are specific to the type of injury. However, several general factors are common to many types of injuries. These include:

- Alcohol/substance abuse
- Risk-taking behavior, especially among children, adolescents, and young adults.
- The perception that injuries are “accidents” and are a normal part of life.
- Low socioeconomic status.

Intervention Strategies

- Develop or enhance injury surveillance capability at the state and local levels.
- Promote the development of community-based intervention programs. Effective programs may include a mixture of strategies, including environmental and engineering changes, enforcement and legislation, and education.



RESIDENTIAL FIRES

Summary

Deaths due to fires include burn injury deaths and smoke inhalation deaths. During 1994, 42 Connecticut residents died in residential fires, almost double the number (22) reported in 1993. The most common cause of all fatal fire deaths was fires in private dwellings.

High Risk Subgroups

Very young children, the elderly, and black males are at highest risk of residential fire deaths. During 1994, children under the age of five years had an age-adjusted mortality rate for residential fires of 2.2 per 100,000 population, which is twice the AAMR of 1.1 per 100,000 for the total population. A combination of factors contribute to the increased risk of children and the elderly, such as less acute perception of danger, less control of their environments, and a limited ability to react properly and promptly. Because children have thinner skin, the burns they sustain are more severe. Persons aged 65 and older also had a mortality rate of 2.2 per 100,000 population, twice the rate of the general population. Black males had a residential fire death rate of 2.4 per 100,000, more than twice the rate of the general population.

Modifiable Risk Factors

- Lack of functioning smoke detectors
- Cigarette smoking
- Low socioeconomic status
- Lack of maintenance for heating and cooking equipment and use of alternative heating and cooking sources
- Improper storage of matches, lighters, fuel, and other flammable materials
- Lack of supervision for young children

Intervention Strategies

- Promote installation of smoke detectors and conduct public education campaigns to encourage smoke detector testing and battery replacement.
- Conduct community smoke detector giveaway and installation programs.
- Enforce building and fire codes including requirements for smoke detectors in all new residential housing and existing multi-family housing designed for 2+ families and requirements for sprinklers.
- Expand juvenile fire setter programs, and promote identification and referral of at risk children.
- Conduct fire safety education campaigns targeting parents, children, and general public with fire safety messages including “ Stop, Drop and Roll”, supervision of children around fire sources, the role of alcohol abuse and smoking in residential fires, and development and practice of exit drills from the home.
- Flammability standards for children’s sleep wear and mattress have proven effective in reducing risks. Standards should be expanded to cover clothing and furniture intended for other age groups.

FALLS

Summary

In 1995, falls were the most common cause of non-fatal injury and the second leading cause of unintentional injury death in Connecticut (196 deaths). In FFY 1995, there were 11,055 hospitalizations in Connecticut due to falls, nearly 60 hospitalizations for every fatality. The hospitalization rate for falls during 1995 was 378/100,000 residents.⁸⁴ Each year one person in thirty receives emergency treatment because of a fall.⁸⁵ Nonfatal falls result in high morbidity cost because falls often result in long term disability.⁸⁶

Time Trends

The 1994 Connecticut age-adjusted mortality rate for falls was 2.4 per 100,000 population for all ages, compared to 1.8 in 1987. During the intervening years the rate ranged from a high of 2.5 to a low of 2.1, with no consistent upward or downward trend.

High Risk Subgroups

The elderly are at highest risk of both dying and being hospitalized as the result of a fall, because of the greater severity of injury and longer recovery periods required. More than 40% of all Connecticut deaths due to falls occur among people aged 85 or older, although this group makes up less than 2% of the population. Approximately 80% of all Connecticut deaths due to falls occur among people aged 65 and older. The 1994 death rate due to falls for persons aged 65 and over was more than seven times that of the total population, and the rate for persons 85 years and older was 62 times that of the general population.

Although young children have a very low death rate from falls compared to other age groups, falls are a leading cause of nonfatal injury. Nationally, children aged 14 and under account for one-third of all fall related visits to hospital emergency departments.⁸⁷ Osteoporosis is a risk factor for falls, especially among the elderly (see below); osteoporosis is eight times more common in women than in men⁸⁸, and women have higher rates of hip fractures than men, at least to age 95. Males at all ages are at higher risk than females for fall-related deaths although the male-to-female ratio is considerably less (3:1) than for other causes of injury-related death.⁸⁹ Elderly females, however, are at considerably higher risk than males for nonfatal fall-related injuries.

⁸⁴ Office of Health Care Access.

⁸⁵ McCaig LF. *National Hospital Ambulatory Medical Care Survey: 1992 Emergency Department Summary*. Advance Data from vital and health statistic; # 245. Hyattsville, MD: National Center for Health Statistics. 1994.

⁸⁶ Rice DP, MacKenzie EJ, and Associates.

⁸⁷ *Falls Fact Sheet, National Safe Kids Campaign*. 1996.

⁸⁸ U. S. Department of Health and Human Services. *Unrealized Prevention Opportunities: Reducing the Health and Economic Burden of Chronic Disease*. 1997 March.

⁸⁹ U. S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Center for Health Statistics. CDC WONDER/PC, Version 3.2. 1997 February.

Healthy People 2000 identified persons between 65 and 85 years, persons 85 years and older, and black males aged 30 to 69 years as target populations.⁹⁰ In 1994, Connecticut's mortality rate from falls exceeded the U.S. rate⁹¹ for all ages, for persons aged 85 and older and for black males aged 30-69 years, though the number of deaths among black males was small (5 in 1994).

Modifiable Risk Factors

Different risk factors are associated with falls among different age groups. Approximately 80% of falls among children under the age of four occur in the home and are associated with furniture, stairs, and windows. Falls among children aged 5-14 years are divided between home, school, and other locations and are often associated with playground equipment.⁹²

Falls among older adults are usually related to a combination of risk factors including home and environmental hazards, interaction and misuse of medications, physical inactivity, certain diseases, alcohol abuse, vision problems, and osteoporosis.⁹³ Early menopause, either natural or surgical, has been associated with an increased risk of osteoporosis. Potentially modifiable risk factors, in order of impact, include immobility, heavy alcohol use, chronic use of corticosteroids, lack of use of estrogen replacement therapy, smoking, physical inactivity, and low calcium intake.⁹⁴

Intervention Strategies

- Promote programs that stress proper nutrition and exercise to reduce or delay the onset of osteoporosis. Children and adolescents should consume adequate amounts of calcium; cigarette smoking, heavy drinking, and excessive thinness should be discouraged; and physicians should explain the benefits (and risks) of estrogen replacement therapy to women approaching menopause.
- Conduct safety assessments to identify and correct environmental hazards in and around the home.
- Promote health care assessments to identify and address conditions that may increase risk of falls.
- Insure regular access to preventive health care services such as vision screening.
- Promote exercise programs designed to increase strength and improve balance gait and flexibility.
- Conduct medication safety reviews to identify drug interactions/misuse that place older adults at risk of falls.
- Develop social support systems for older adults especially those living alone or in isolated areas.
- Promote or require the use of window guards in multi-story residences where young children live.
- Promote safe design and regular inspection and maintenance of playgrounds, with a special focus on maintaining the protective surface to a depth of 9-12 inches.
- Promote or require the use of helmets and other appropriate safety gear for sports and recreational activities such as bicycling, motorcycling, in-line skating, and skate boarding.
- Educate parents and caregivers on home safety hazards including stairs, babywalkers, windows, and the importance of supervision.

⁹⁰ U. S. Department of Health and Human Services, Public Health Service. *Healthy People 2000: National Health Promotion and Disease Prevention Objectives*. Washington DC: Public Health Service. 1990.

⁹¹ U. S. Department of Health and Human Services, Public Health Service. *Healthy People 2000: National Health Promotion and Disease Prevention Objectives - Healthy People 2000 Review 1995-96*. Hyattsville, MD: (PHS) 96-1256. 1996 November.

⁹² *Falls Fact Sheet, National Safe Kids Campaign*.

⁹³ American Association of Retired Persons. *Developing Fall Prevention Programs for Older Adults - A Guide for Program Planners and Volunteer Leaders*. AARP. 1993.

⁹⁴ Brownson RC, Remington PL, and Davis JR. Arthritis and other musculoskeletal disease. In: *Chronic Disease Epidemiology and Control*. American Public Health Association. 1993.

Motor-Vehicle-Related Injuries

Summary

Motor vehicle crashes are the leading cause of unintentional injury death in Connecticut, accounting for an average of nearly one death per day.⁹⁵ No disease or injury claims more lives of people between the ages of 1 and 34. Motor-vehicle-related injuries also account for nearly 4,000 hospitalizations in Connecticut each year⁹⁶ and represent 5% of emergency department visits.⁹⁷ As adults aged 70 and older become a greater proportion of the population, they will account for an increasing percentage of the licensed driving population. They also represent a greater share of the motor vehicle injury problem each year. Older people have a greater risk of crashes per mile driven than younger adults, and once involved in a crash, they are more vulnerable to injury and death.⁹⁸

The 1994 Connecticut age-adjusted death rate due to motor vehicle crashes was 10.9 per 100,000 population.⁹⁹ Connecticut has surpassed the *Healthy People 2000* target of 14.2 per 100,000, and falls just short of the *Healthy Connecticut 2000* target of 10.8 per 100,000.

Motor-vehicle-related injuries include deaths and injuries to motor vehicle occupants, motorcyclists, and bicyclists, and pedestrians struck by motor vehicles. As shown in Figure 3-43, occupants including both drivers and passengers comprise more than half of these fatalities, while pedestrians constitute about one-quarter of these deaths.

Time Trends

Death rates and number of deaths due to motor vehicle crashes in Connecticut have dropped since the 1980s. After peaking in 1988, the number of deaths dropped by more than one-third (Figure 3-44). Alcohol involvement in fatal crashes also decreased between 1988 and 1994, both in terms of numbers and as a percentage of all motor vehicle fatalities; it increased, however, in 1995 (Figure 3-44).

High Risk Groups

Adolescents and young adults are at highest risk of dying of motor vehicle injuries, while the elderly rank second. In 1994, males between the ages of 15 to 34 accounted for the most motor vehicle-related fatalities (Figure 3-45), and males aged 85 and older had the highest rate of death. Between 1990 and 1994, three out of every four motor vehicle-related fatalities to Connecticut residents occurred to males. Males between the ages of 20-24 were four times more likely to be killed than females.

⁹⁵ ICD-9 Codes: E810-E825, 1990-1994 = 1,759 deaths or 351.8/year.

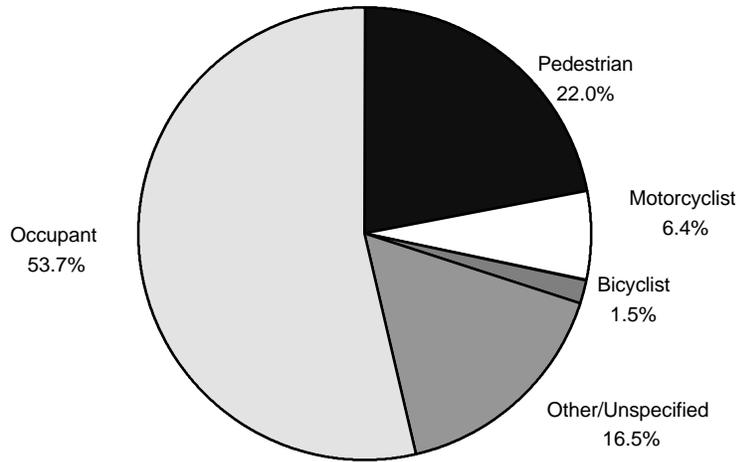
⁹⁶ Office of Health Care Access. (3,980 discharges for FY95).

⁹⁷ McCaig LF.

⁹⁸ U. S. Department of Transportation, National Highway Traffic Safety Administration. *Addressing the Safety Issues Related to Younger and Older Drivers - A Report to Congress January 19, 1993 on the Research Agenda of the National Highway Traffic Safety Administration*. DOT HS807 957. 1993.

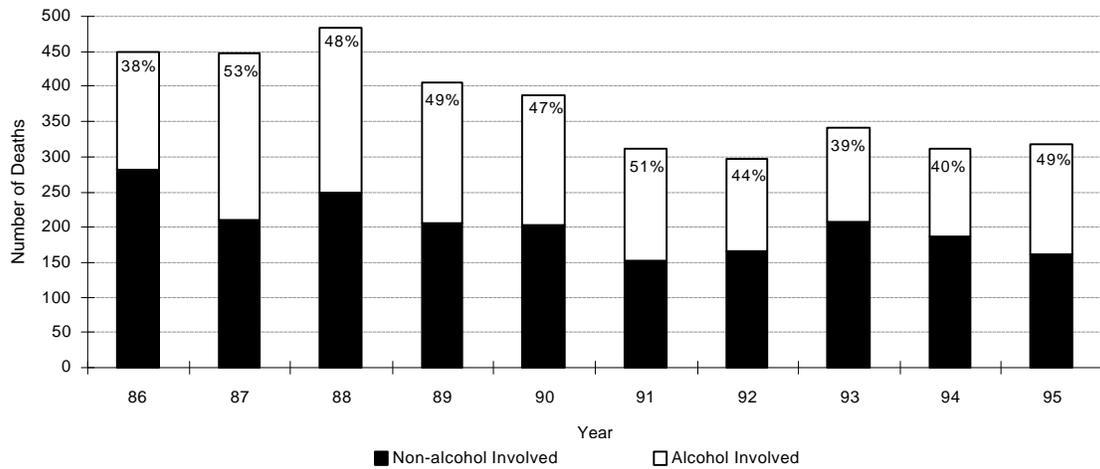
⁹⁹ Mortality rates adjusted to 1940 standard million.

Figure 3-43
Motor-vehicle-related Fatalities
Percentage of Deaths by Person Killed
Connecticut, 1994

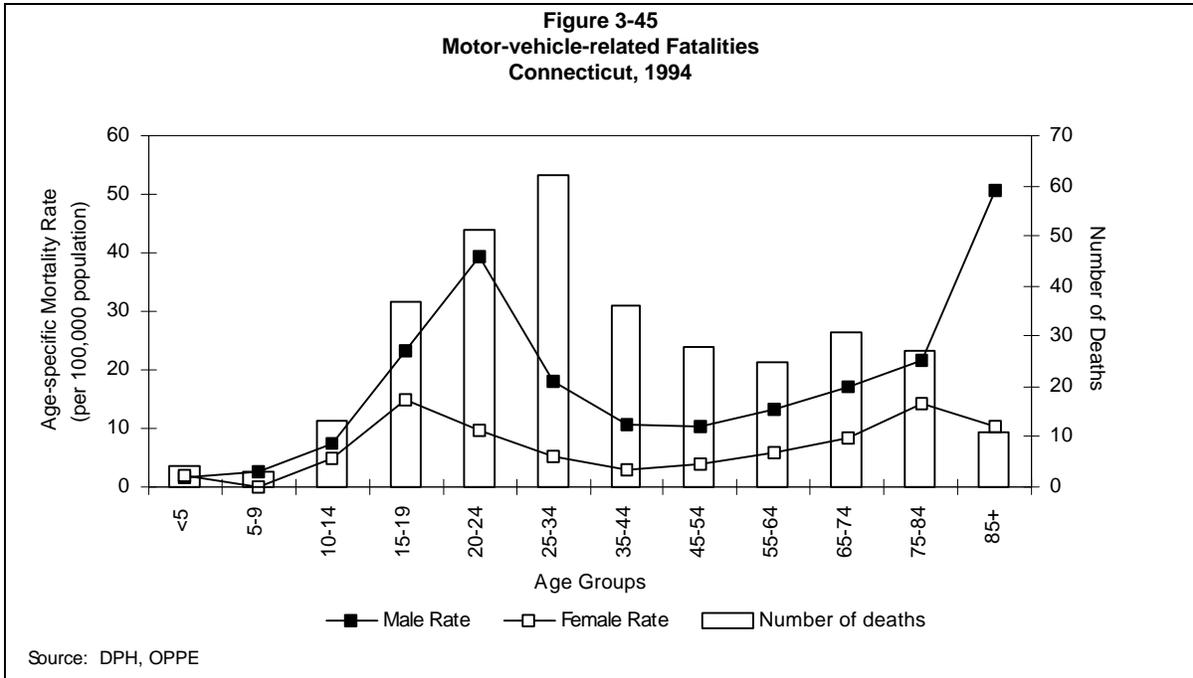


Source: DPH, OPPE, Vital Records.

Figure 3-44
Motor-vehicle-related Fatalities
Total Number and Percentage Involving Alcohol
Connecticut, 1986-95



Source: Connecticut Department of Transportation. Based on occurrences as reported in police crash reports.



Modifiable Risk Factors

Major factors contributing to the likelihood of a motor vehicle accident include speed, vehicle characteristics, roadway features (include lighting), alcohol intoxication, and other drug use. When a crash occurs, important determinants of the likelihood and severity of injury include speed of impact, vehicle crash-worthiness, the use of airbags, safety belts, child safety seats, and motorcycle and bicycle helmets.

Safety Belts

Research studies indicate that the use of lap and shoulder safety belts in passenger cars reduces the risk of fatal or serious injury by 40-55%.¹⁰⁰ The average hospital bill for a driver admitted as a result of motor vehicle injury is 55% higher if the person is unbelted.¹⁰¹

Child Safety Seats

Child safety seats are extremely effective when correctly installed and used, reducing the risk of death by 71%, hospitalizations by 67%, and minor injuries by 50%.¹⁰²

Alcohol

Two in five Americans will be involved in an alcohol-related crash at some time in their lives. Among fatally injured motor vehicle drivers in Connecticut in 1995, 39.5% had blood alcohol levels at or above 0.10%.¹⁰³

¹⁰⁰ U.S. Department of Transportation, National Highway Traffic Safety Administration. Final Rule, FMVSS 208: Occupant Crash Protection, 49 CFR, part 571. Washington DC: 1984.

¹⁰¹ U. S. Department of Transportation, National Highway Traffic Safety Administration. *Benefits of Safety Belts and Motorcycle Helmets - Report to Congress February 1996*. DOT HS 808 347. 1996.

¹⁰² Kahane CJ. *An Evaluation of Child Passenger Safety. The Effectiveness and Benefits of Safety Seats (Summary)*. Washington DC: National Highway Traffic Safety Administration. DOT HS 806-889. 1996.

Motorcycles

Motorcycles are less stable and less visible than cars, and they have high performance capabilities. For these and other reasons, motorcycles are more likely than cars to be in crashes. When motorcycles crash, their riders lack the protection of an enclosed vehicle, so they are more likely to be injured or killed. Per mile traveled, the number of deaths on motorcycles is about 16 times the number in cars.¹⁰⁴ Death rates from head injuries are twice as high among motorcyclists in states with no helmet laws or in states, such as Connecticut, whose law applies only to young riders, than in states with laws that apply to all motorcyclists.¹⁰⁵ Helmets are about 29% effective in preventing motorcycle deaths and about 67% effective in preventing brain injuries.^{106,107}

Intervention Strategies

- Promote the use of safety belts, child safety seats, and bicycle and motorcycle helmets. Incorporate education on the correct use of child safety seats, safety belts, and helmets into well child and preventive health visits.
- Promote increased enforcement of existing laws concerning the legal drinking age, “zero tolerance” for drivers under age 21, speed limits, and driving under the influence of alcohol.
- Conduct high visibility public awareness campaigns to complement law enforcement campaigns.
- Improve driver screening and training programs.
- Pass universal age requirements for bicycle and motorcycle helmets.
- Lower the current legal standard for driving under the influence (DUI) from 0.10% blood alcohol concentration (BAC) to 0.08% BAC.
- Conduct sobriety checkpoints as a deterrent for DUI.
- Identify and refer chronic DUI offenders to alcohol/drug abuse treatment programs .
- Promote community-based programs that teach pedestrian and bike safety skills and educate drivers to be aware of pedestrians and bicyclists.
- Make low-cost or free bike helmets and child safety seats available to low-income families.
- Conduct risk assessments to identify roadway hazards.
- Enhance emergency medical services (EMS) and trauma systems to reduce deaths and disability related to motor vehicle accidents.
- Link police accident data with hospital records, EMS records, and other medical records, to better understand the contributing factors in motor vehicle crashes.

DROWNINGS

Summary

Drownings account for 1 in 20 unintentional injury deaths. From 1989 to 1994, there were an average of 41 drownings annually among Connecticut residents. The Connecticut age-adjusted death rate for drowning was 0.9 per 100,000 population¹⁰⁸ which surpassed the *Healthy People 2000* objective of 1.0 deaths per 100,000.

¹⁰³ U. S. Department of Transportation, National Highway Traffic Safety Administration. *Traffic Safety Facts 1995*. 1996.

¹⁰⁴ U. S. Department of Transportation, National Highway Traffic Safety Administration. *Traffic Safety Facts - Motorcycles 1995*. 1996.

¹⁰⁵ Sosin DM, Sacks J, Holmgren P. Head injury-associated deaths from motorcycle crashes: Relationship to helmet-use laws. *Journal of the American Medical Association*. 1990; 264:2395-2399.

¹⁰⁶ Wilson D. *The Effectiveness of Motorcycle Helmets in Preventing Fatalities*. DOT publication number DOT HS 807 416 National Highway Traffic Safety Administration Technical Report. 1989 March.

¹⁰⁷ U. S. Department of Transportation, National Highway Traffic Safety Administration. *Benefits of Safety Belts and Motorcycle Helmets*.

¹⁰⁸ Mortality rates adjusted to the 1940 standard million. Note that the count of death found in WONDER for 1994 is 39 (compared to 28 for vital records) which yields an AAMR of 1.2 which does not meet the CT 2000 objective.

Drowning, by definition, is fatal. Additionally, a relatively high proportion of all submersion-related injuries are fatal. In cases of “near drownings” an individual is under water long enough to suffer the consequences of oxygen deprivation, which can lead to brain damage. The number of potential drownings in which persons are rescued without serious medical consequences is unknown, but is believed to be substantial.

Time Trends

The number of deaths in Connecticut due to unintentional drownings declined between 1989 and 1994 (Figure 3-46). Most of the decline is attributable to a decline in male drowning deaths.

High Risk Groups

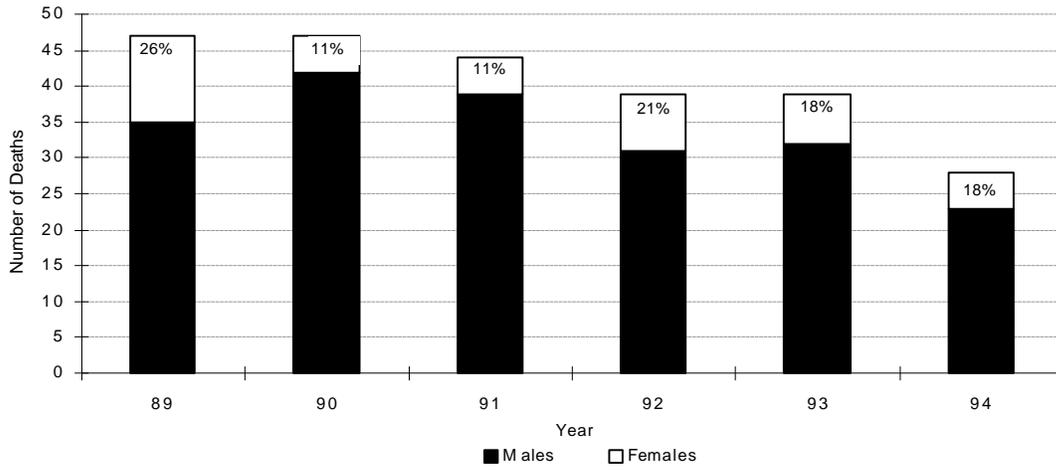
Persons of all ages are at risk of drowning in open water sites, such as lakes, rivers, and oceans, and also in incidents related to boating and other water craft (Figure 3-47). Children may drown in as little as one or two inches of water, and are therefore at risk of drowning even in wading pools, bathtubs, toilets, and hot tubs.

Drowning victims are roughly five times more likely to be males than females. Adolescent and young adult males as well as black males of all ages are particularly at risk. Although Connecticut surpassed the *Healthy People 2000* objective for overall drowning deaths, 1994 drowning rates for males aged 15 to 34 and for black males fell short of the national objective.

Modifiable Risk Factors and Intervention Strategies

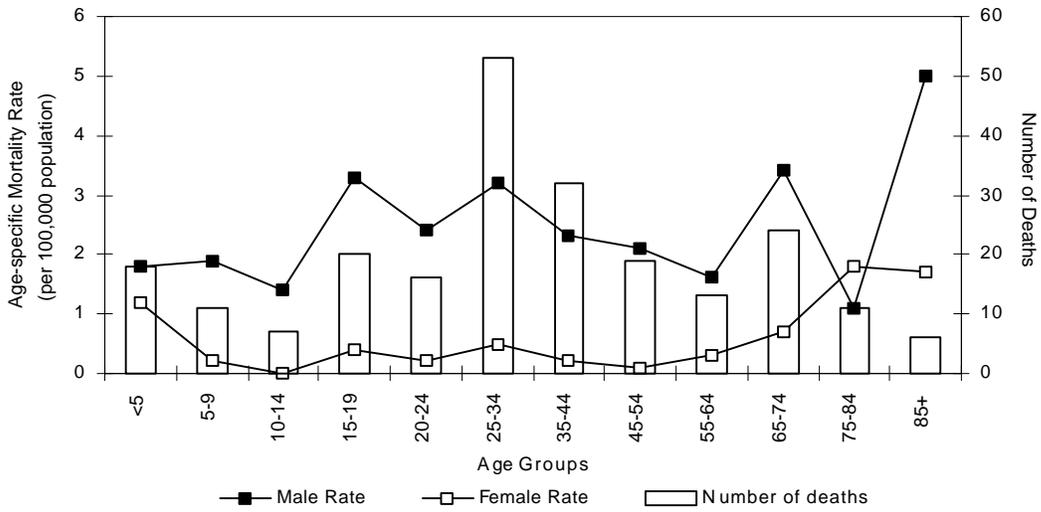
- Promote and require the use of personal flotation devices for all boaters.
- Promote swimming and water safety classes for children and adolescents.
- Promote cardio-pulmonary resuscitation (CPR) training for adults and adolescents.
- Require fencing and safety equipment for swimming pools.
- Conduct public education/awareness campaigns for boating safety.
- Promote boat safety training for boat operators.
- Enforce laws prohibiting under-age drinking.
- Enforce laws prohibiting operating boats under the influence of drugs and alcohol.
- Provide education for parents and caregivers on the importance of supervision of young children near any amount of water inside and outside the home, including bathtubs, buckets, and backyard pools including baby pools.

Figure 3-46
Unintentional Drownings
Connecticut, 1989-94



Source: DPH, OPPE

Figure 3-47
Unintentional Drownings
Age-specific Mortality Rates
Connecticut, 1988-92



Source: CDC, Wonder Data Base

INTENTIONAL INJURIES

Intentional injury encompasses injuries and deaths that are self-inflicted or perpetrated by another person. In Connecticut, homicide and suicide constitute the third leading cause of years of potential life lost before age 65.¹⁰⁹ Between 1988 and 1992, homicide and suicide were responsible for one-quarter of the deaths to Connecticut residents between the ages of 1 and 24 years, and were the second and third leading causes of death in this age group.¹¹⁰ In 1995, 474 Connecticut resident deaths were caused by suicide and homicide. In 1996, 28 domestic violence homicides (60% women and 25% children), 755 rapes, and 7,012 aggravated assaults were reported to the police.¹¹¹

In 1995, 2,134 hospitalizations of Connecticut residents were reported for self-inflicted injury and 3,340 for assault.¹¹² Domestic violence is the leading cause of injury to women in the U.S.¹¹³ A total of 13,039 Connecticut females, aged 16 and older, reported domestic physical abuse to the police during 1996.¹¹⁴ The comprehensive cost (monetary cost plus quality of life cost) of murder, rape, and assault in Connecticut in 1992 was estimated at \$2.9 billion, including nearly \$90 million in medical and mental health care.¹¹⁵

The categories of intentional injuries discussed here include suicide and attempted suicide, homicide and injuries due to assault, domestic violence, and deaths and injuries due to firearms.

SUICIDE AND SUICIDE ATTEMPTS

Summary

Suicide accounts for one-fifth of all injury deaths in Connecticut. In 1994, 320 residents took their own lives. This is slightly fewer deaths than those due to motor vehicles, but 50% more deaths than by homicide. Although suicide ranks eleventh as a cause of death in Connecticut, it ranks sixth in terms of premature deaths, reflecting the younger average age of suicide victims as compared to persons who die of other causes. Connecticut's 1994 age adjusted-suicide rate of 9.1 per 100,000 is about 20% lower than the U.S. rate, but falls far short of the *Healthy Connecticut 2000* target rate of 6.7 per 100,000.¹¹⁶

Experts agree that the number of suicides is undercounted. The extent of underreporting is unknown, but is estimated at 25%-50%. It is estimated that suicide attempts are eight times more common than completed suicides. Individuals who complete suicide are most likely to be male, while those who survive a suicide attempt are most likely to be female.

Methods

Nearly half of Connecticut suicides were performed with a firearm. Hangings and carbon monoxide poisoning, specifically motor vehicle exhaust, accounted for one-fourth and one-fifth of the suicides respectively. The method used for suicide varies by gender (Figure 3-48). While firearms were the most

¹⁰⁹ U. S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention. *1997 Connecticut State Health Profile*. 1997.

¹¹⁰ Connecticut Department of Public Health. *Preventive Health and Health Services Block Grant Annual Report*. 1997 January.

¹¹¹ Connecticut Department of Public Safety, Division of State Police. *Crime in Connecticut, 1996 Annual Report*. Uniform Crime Reports. 1997.

¹¹² Office of Health Care Access.

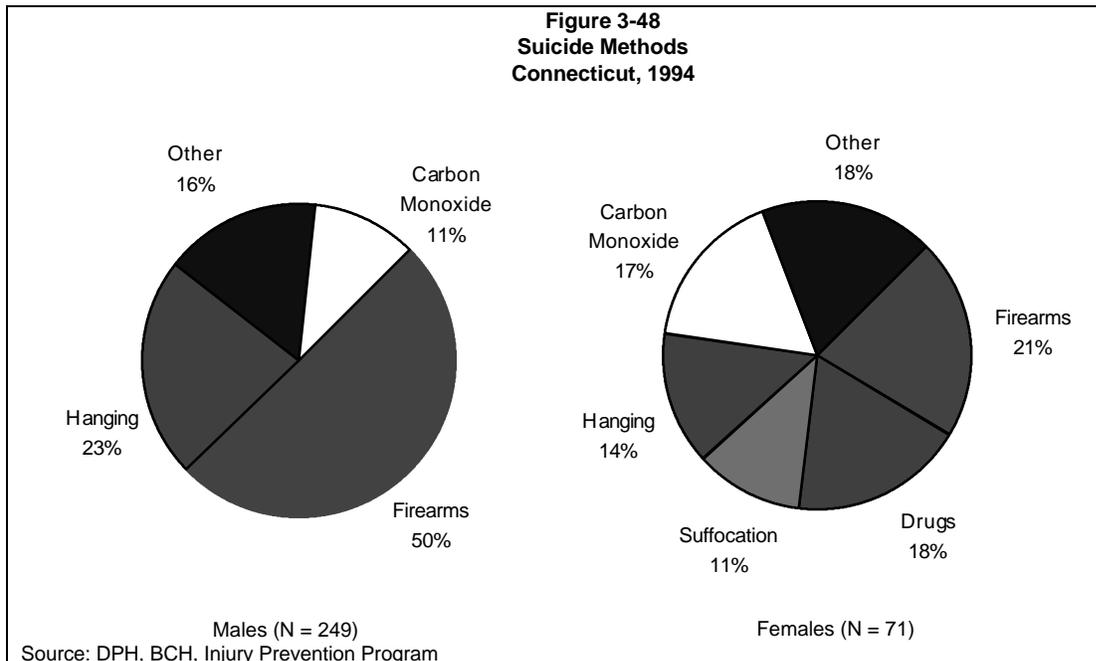
¹¹³ The National Center for Education in Maternal and Child Health, Children's Safety Network. *Building Safe Communities, State and Local Strategies for Preventing Injury and Violence*. 1994.

¹¹⁴ Connecticut Department of Public Safety.

¹¹⁵ National Public Services Research Institute, Children's Safety Network Economics and Insurance Resource Center. Landover, MD. 1994.

¹¹⁶ Connecticut Department of Public Health. *Healthy Connecticut 2000 Baseline Assessment Report*. Hartford, CT. 1994. Objective 7.2.

common method used for both sexes, they were used in half of all male suicides, but only 21% of female suicides.



High Risk Subgroups

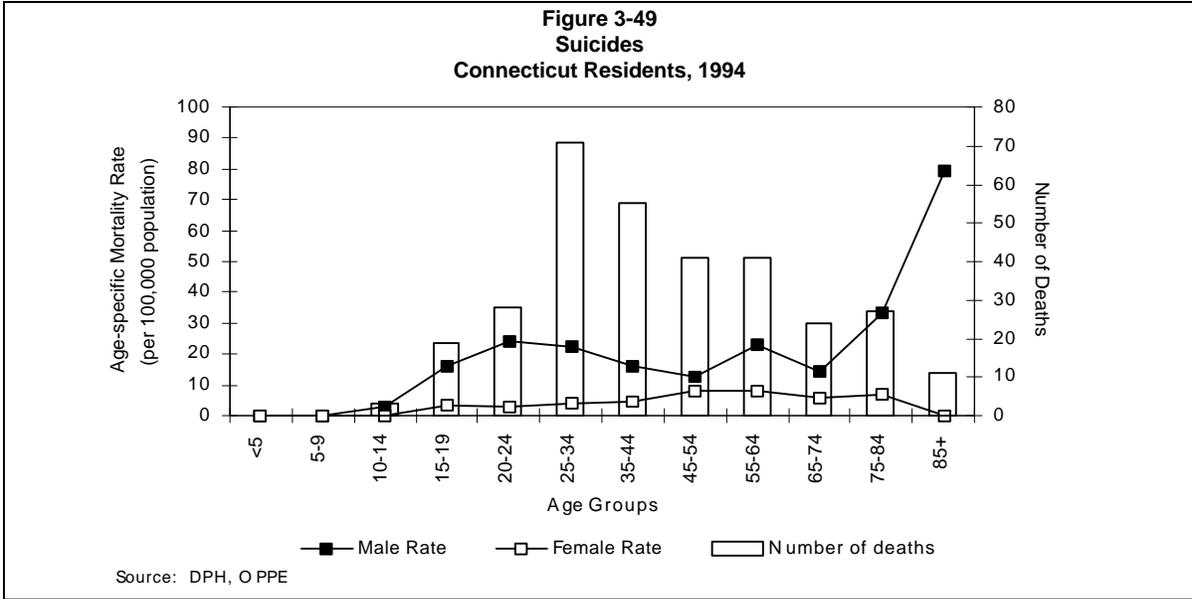
In 1994, three and one half times as many males as females committed suicide. While the highest rate of suicide was found among elderly white males, half the suicides in the State were to males between the ages of 15 and 54 (Figure 3-49). The suicide rate for whites in Connecticut was double the rate for blacks. The results of a 1995 survey of high school students found that 24% of Connecticut high school students had seriously considered suicide in the past year.¹¹⁷

Time Trends

The overall rate of death due to suicide remained fairly steady in Connecticut from 1984 to 1994. Recent cohort studies cited by the CDC indicate that the rate of suicide among youth in the U.S. is higher than the rates of their grandparents at a similar age. National data also show an increase in suicides among blacks, especially young adult black males.¹¹⁸

¹¹⁷ Connecticut State Department of Education. *Youth Risk Behavior Survey Report*. 1995.

¹¹⁸ Kachur SP, Potter LB, James SP, Powell KE. *Suicide in the United States, 1980-1992*. Atlanta, GA: DHHS, PHS, Centers for Disease Control and Prevention, National Center for Injury Prevention and Control. 1995: Violence Surveillance Summary Series, No. 1.



Modifiable Risk Factors and Potential for Intervention

Risk factors for suicide in the groups with the highest rates are generally considered to have more differences than similarities. Among older people, identified risk factors include social isolation, alcohol abuse, depression, increased mental and physical illnesses, and easier access to firearms. For youths, risk factors include the suicide of a friend, hopelessness, and intoxication and rage combined with an available method and privacy. Common warning signs include talking about not wanting to live, a feeling of hopelessness, giving possessions away, abuse of alcohol and/or drugs, depression, low school grades, concern about sexual identity or homosexuality, and loss of a significant other because of the break-up of a relationship, death, or divorce.

Intervention strategies for youth suicide prevention include those that directly affect known or suspected risk factors, programs that increase the recognition of suicide warning signs, and appropriate and timely referral to resources. Recommended interventions aimed at preventing suicide among the elderly include senior peer counseling programs, efforts that target high-risk persons, improving mental health services through suicide prevention centers, and programs that increase awareness of risk factors among those who have frequent contact with seniors.

HOMICIDE AND INJURY DUE TO ASSAULT

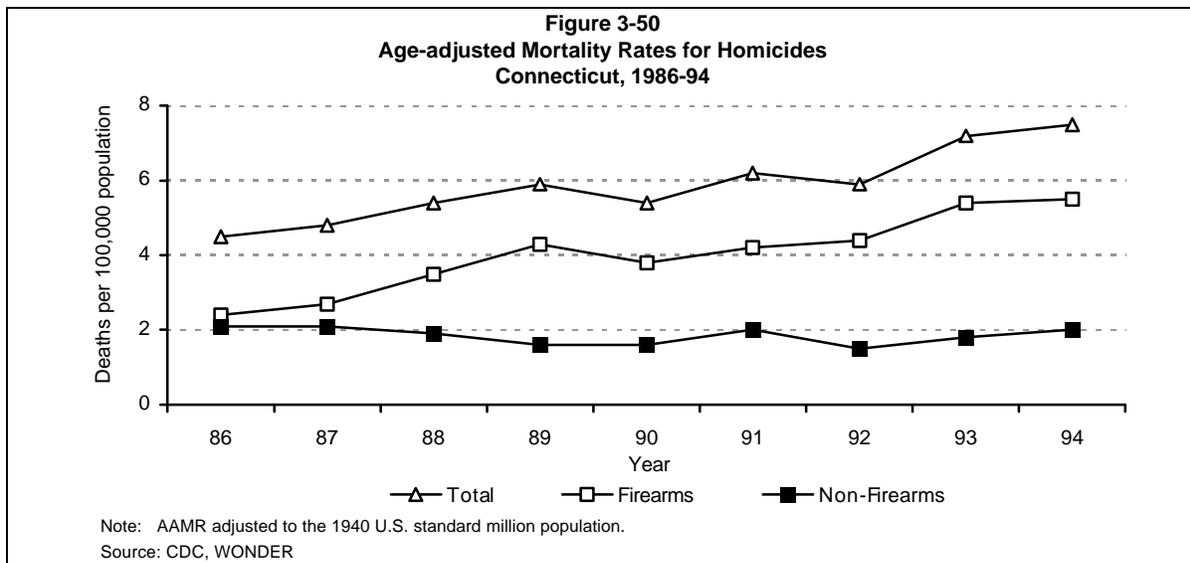
Summary

In 1994, an average of four Connecticut residents died each week from homicide. Firearms were used in seven out of ten of these homicide deaths. Although Connecticut's homicide rate of 7.5 per 100,000¹¹⁹ was lower than the U.S. rate of 10.1 per 100,000, the state rate was considerably higher than the *Healthy Connecticut 2000* objective of 5.0 deaths per 100,000.¹²⁰

Clearly, not all assaults result in death. In Connecticut, there are nearly six times as many hospitalizations for assault-related injuries as deaths.¹²¹ Police crime reports track aggravated assaults, those assaults that involve the use or attempted use of a dangerous weapon likely to produce death or great harm. In 1996, there were 7,012 aggravated assaults reported to police.¹²²

Time Trends

Connecticut's age-adjusted mortality rate for homicides nearly doubled from 1986 to 1994 (Figure 3-50). Virtually all of this increase was due to the increase in firearm homicides. The increased use of firearms has increased the lethality of arguments that previously might have resulted only in treatable injuries. During the same period, the rate of death due to non-firearm homicides remained steady. By contrast, the aggravated assault rate decreased 63% from 1990 to 1995.



¹¹⁹ Mortality rate age adjusted to 1940 U.S. standard million.

¹²⁰ Connecticut Department of Public Health. *Healthy Connecticut 2000*. Objective 7.1.

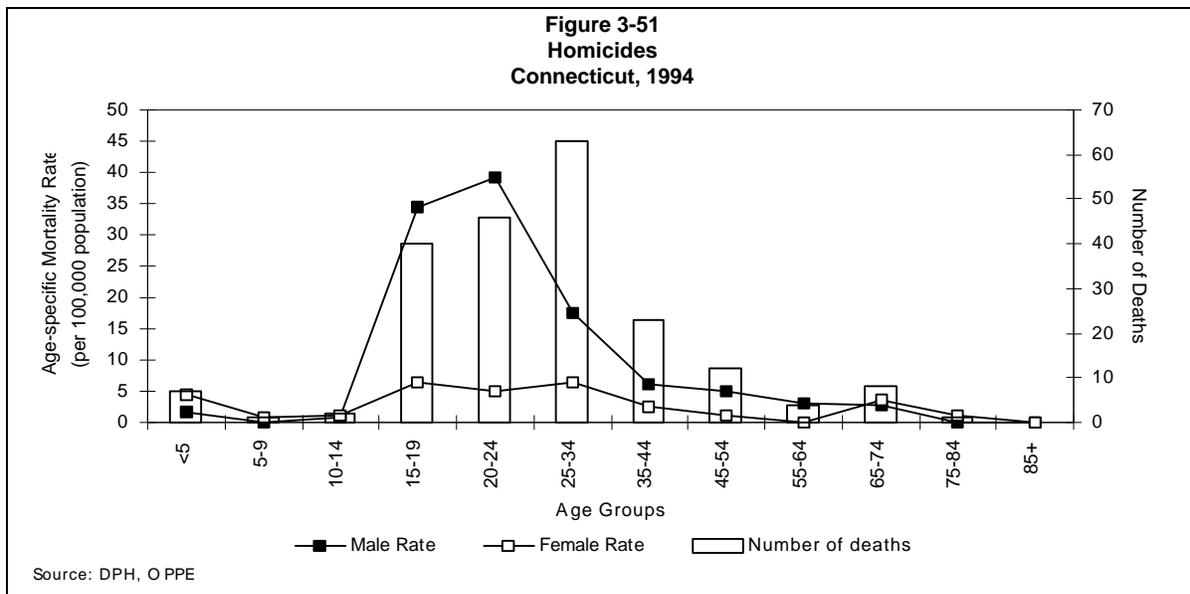
¹²¹ Office of Health Care Access.

¹²² Connecticut Department of Public Safety.

High Risk Subgroups

Differences by sex and race are much more pronounced for homicide than for deaths due to many other causes. Three times more males than females die from homicide. During 1994, those in the 15 - 34 age group accounted for the highest number of deaths (Figure 3-51). In 1994, 44% of the State's homicide victims were black and 27% were Hispanic, even though blacks comprise 8.3% and Hispanics 6.5% of the state's population.¹²³ In Connecticut, homicide was the thirteenth leading cause of death overall, but among black males it ranked fourth. This excess was most pronounced among black males between the ages of 15 and 34. Although black males between the ages of 15 and 34 years old accounted for 1.5% of the State's population, they accounted for 30% of Connecticut's homicide victims.

Other populations at risk include young children and women. Seven Connecticut children under the age of five were killed in 1994 by injuries intentionally inflicted by another person. Of almost 16,400 victims of family violence reported to police in 1996, 80% were female.¹²⁴ The Family Violence Victim Advocate Program received 29,388 court referred requests for services for victims of domestic violence in 1996.



¹²³ U. S. Department of Commerce, Economics and Statistics Administration, Bureau of the Census. *1990 Census of Population - Social and Economic Characteristics Connecticut*. Washington DC. 1993 September.

¹²⁴ Connecticut Department of Public Safety.

Modifiable Risk Factors and Potential for Intervention

Forty to sixty-seven percent of homicides occur between people who know each other, whether they are family members or other acquaintances. Arguments and fights, precipitated by anger, have been identified as precursors to many homicides.¹²⁵ A 1995 survey of 944 Connecticut high school students found that 38% of them reported being in a physical fight in the past year.¹²⁶ The prevention of homicides among spouses and intimates is directly linked to the prevention of physical and emotional abuse, especially as directed toward women. Scientific studies have shown a correlation between homicide deaths and lower socioeconomic status, alcohol use, and access to weapons.¹²⁷

Several high-risk behaviors increase the likelihood that children and youth might become involved in violent incidents. These include consistently choosing physical fighting as a way to settle a conflict, low achievement in school leading to failure or dropping out, and the use of alcohol or drugs. Identified risk factors include a history of psychological, physical or sexual abuse, lower socioeconomic status with its resultant stresses, racism, frequent moves, recent relocation, immigrant status, living in overcrowded conditions, and emotional or physical disabilities that hamper the ability to learn or demonstrate non-violent ways of handling conflict.¹²⁸

Children and youth typically model adult behavior. Interventions directed at decreasing adult violence in the home, community and media would therefore seem to be appropriate strategies for reducing youth violence as well. Successful interventions incorporate local needs and a sensitivity to the target population. They may include reducing the incidence of precursors, such as arguments and fighting, that can lead to violence, reducing the occurrence of abuse in high-risk situations, increasing the safety mechanisms of lethal weapons and eliminating unsupervised access to them by children and youths, and incorporating measures to improve socioeconomic status.

DOMESTIC VIOLENCE

Summary

Populations directly affected by domestic violence are women and children, but the cost to society in terms of indirect effects is staggering. Domestic violence is the leading cause of injury among women, and is linked to numerous other health care problems including depression, drug abuse, and suicide.¹²⁹ Nationally, at least 10 battered women are killed each day and almost one-quarter of women seen in emergency rooms have injuries related to domestic violence.¹³⁰ Connecticut's domestic violence issues are similar. In 1995, 8.9 per 1,000 couples or 12,229 females age 16 and older were victims of family violence that was reported to police.¹³¹ The number of reported incidents represents a 2.5% increase compared to 1994.

Children who are victims of violence or witness violence in the home are more likely to be involved in violent behavior when they get older. Nationally, more than 3.3 million children are reported to have seen a parent assaulted or killed.¹³² Child victims of abuse or neglect comprise at least 70% of men in the

¹²⁵ Prothrow-Stith D. *Violence Prevention Curriculum for Adolescents*. Newton, MA: Education Development Center, Inc. 1987.

¹²⁶ Connecticut State Department of Education.

¹²⁷ Prothrow-Stith D. 1987.

¹²⁸ National Center for Injury Prevention and Control. *The Prevention of Youth Violence: A Framework for Community Action*. Atlanta, GA: 1993.

¹²⁹ The National Center for Education in Maternal and Child Health, Children's Safety Network. *Building Safe Communities, State and Local Strategies for Preventing Injury and Violence*. 1994.

¹³⁰ The National Center for Education in Maternal and Child Health, Children's Safety Network.

¹³¹ Connecticut Department of Public Health. *Preventive Health and Health Services Block Grant Annual Report*. 1997 January.

¹³² Charles Stewart Mott Foundation. *1994 Annual Report: A Fine Line, Losing American Youth to Violence*.

criminal justice system.¹³³ In 1996, 2,637 or 14% of Connecticut's children were directly involved in situations in which one or both adults in their homes were arrested for cases involving family violence. Another 6,000 or 32% of children were present in the home when a violent incident occurred, but were not directly involved in the family violence incident.¹³⁴

Domestic violence is also frequently related to sexual assault. "Forty percent of battered women are also sexually assaulted by their partners".¹³⁵ But the problem may be more frequent, as it is estimated that at least 92% of rapes go unreported to criminal authorities and that at least 44% of women have been victims of attempted or completed sexual assault.¹³⁶ Twenty-two percent of college students and 10% of high school students have experienced physical violence in dating relationships.¹³⁷ According to Connecticut's 1995 Uniform Crime Report, there were 666 forcible rapes of females and 107 attempted rapes (a total of 773) reported to the police.¹³⁸ In Connecticut there were 1,084 rapes of women age 12 and over reported to the Connecticut Sexual Assault Crisis Center (CONNSACC) during SFY 1995-96.¹³⁹

Modifiable Risk Factors and Potential for Intervention

Public health agencies need to collaborate with social service, criminal justice, education, mental health, and other public and private agencies committed to assessment, intervention and elimination of the problem. In addition, strategies to intervene in the problem of domestic violence include:

- Provide education about "dating violence" and appropriate referral through school-based health centers and other school-based clinical and educational programs.
- Incorporate knowledge of risk factors of potential perpetrators into service provider education with the goal of targeted prevention and appropriate referral.
- Provide education and technical assistance to service providers in the installation and use of protocols to properly identify and refer battered women. Incorporate environmental modifications such as improved lighting and security on school campuses and in the community.
- Provide awareness activities that include information about the significant effect of domestic violence on children, that most perpetrators are known to the victims, and that domestic violence and rape are grossly underreported.
- Improve data collection to determine the incidence of the problem and successful strategies for intervention.

¹³³ Charles Stewart Mott Foundation.

¹³⁴ Connecticut Department of Public Safety.

¹³⁵ The National Center for Education in Maternal and Child Health, Children's Safety Network.

¹³⁶ The National Center for Education in Maternal and Child Health, Children's Safety Network.

¹³⁷ The National Center for Education in Maternal and Child Health, Children's Safety Network.

¹³⁸ Connecticut Department of Public Safety.

¹³⁹ Connecticut Department of Public Health.

DEATHS AND INJURIES DUE TO FIREARMS

Summary

Firearms cause nearly one of every five injury deaths in Connecticut. In 1994, 293 Connecticut residents were shot to death; 49% of the firearms deaths were homicides, 48% were suicides and 3% resulted from unintentional shootings. Firearms cause approximately equal numbers of homicides and suicides (143 and 140, respectively), however, guns are used in a larger percentage of homicides than suicides (69% and 44%, respectively).

High Risk Subgroups

In 1994, 87% of the firearms deaths in Connecticut occurred to males. In terms of racial disparity, the firearms mortality rate for blacks was four times higher than for whites. The risk of gun-related death was highest for the 15-24 age group, particularly males (Figure 3-52). The mortality rate increased again among elderly males. While two-thirds of firearm deaths to people between the ages of 15 to 24 were due to assault, suicide accounted for 89% of firearm deaths for those 55 years and older.

Time Trends

Connecticut's firearms mortality rate is two-thirds the national rate, but both rates have risen steadily over time. Connecticut's rate increased more than 50% from 1985-1994; firearms deaths from homicides in Connecticut increased 162%, and suicides increased 23%, while unintentional deaths decreased 67%. The firearm death rate for blacks increased 91%, while the rate for whites increased 41%. For about the same time period, the AAMR overall and for homicide increased, but suicide and unintentional injury showed little variation (Figure 3-53). Although blacks in Connecticut were three times as likely as whites to die from a firearm in 1985, by 1994 the gap had widened such that blacks were four times as likely as whites to die from a gunshot wound.

Modifiable Risk Factors and Potential for Intervention

A gun at home is 43 times more likely to be used to kill a family member or friend than a criminal intruder.¹⁴⁰ People who have guns in their homes are at a much greater risk of suicide than people who do not keep guns in their home.¹⁴¹ A suggested public health strategy is separate storage of firearms and ammunition to reduce access by children and youth. More information on modifiable risk factors is contained in the sections on suicide and homicide.

¹⁴⁰ Kellermann AL, Reay DT. Protection or peril? An analysis of firearm related deaths in the home. *New England Journal of Medicine*. 1986;314:1557-1560.

¹⁴¹ Kellermann AL et al. Suicide in the home in relation to gun ownership. *New England Journal of Medicine*. 1992;327:467-472.

Figure 3-52
Firearms Deaths
Connecticut, 1994

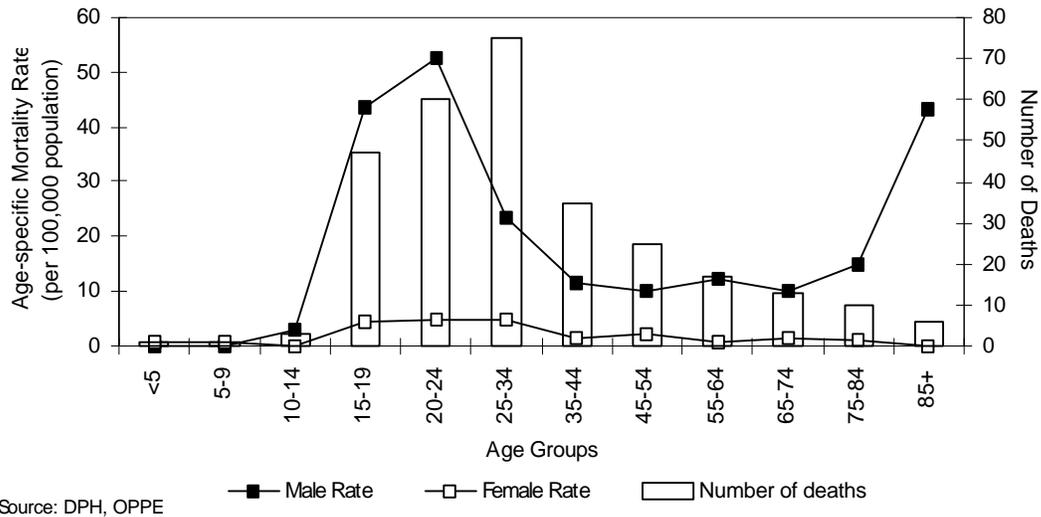
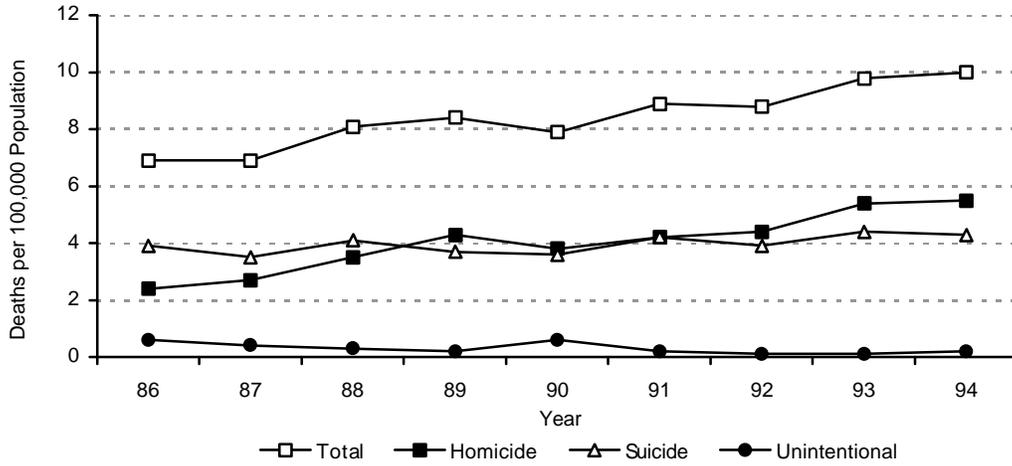


Figure 3-53
Firearms Deaths
Age-adjusted Mortality Rates
Connecticut, 1986-94



INFECTIOUS DISEASES

HIGHLIGHTS

- In 1996, the rate of newly reported AIDS cases acquired from heterosexual contact surpassed the rate for those acquired from homosexual contact for the first time in Connecticut.
- The proportion of newly reported AIDS cases who are Hispanic has steadily been increasing in the 1990s.
- HIV seroprevalence in childbearing women decreased during the most recent four years, both overall and in urban areas; however it increased in non-urban areas.
- In 1996, the incidence of gonorrhea and chlamydia was the lowest ever reported in Connecticut, while the rate of primary and secondary syphilis increased for the first time since 1989.
- In 1996, tuberculosis incidence fell to the lowest rate ever reported in Connecticut (4.2 cases per 100,000 population), whereas the total number and percentage of new cases who were born outside the U.S. and its territories increased to the highest level ever, 50%.
- The overall percentage of 2 year old children in Connecticut who were fully immunized was 87% in 1996, the highest state-specific rate in the nation.
- In 1995, Connecticut had the highest reported rate of Lyme disease in the nation (47.1 cases per 100,000 population).
- Between 1991 and 1995 in the 5 years before a vaccine was licensed, varicella-related disease was annually responsible for 29 deaths, >700 hospitalizations, and more than \$11 million in hospital costs in Connecticut.
- Antibiotic-resistant strains of invasive pneumococcal disease are emerging, but there is a vaccine for the disease that is underutilized. The percentage of the elderly receiving the influenza vaccination exceeds the year 2000 target (60%), while the percentage receiving the pneumonia vaccination still fall short (37%).

HIV/AIDS

Summary

Acquired Immunodeficiency Syndrome (AIDS) is a life threatening state of immunodeficiency that is the usual end result of infection with the human immunodeficiency virus (HIV). Since the early 1980's, when AIDS was first recognized in Connecticut, surveillance efforts have targeted adults who develop AIDS and children who develop HIV infection and AIDS. In addition, the prevalence of HIV infection in women giving birth in Connecticut (see *Survey of Childbearing Women for HIV Infection* later in this chapter) and the mortality rates from AIDS have been used to help determine the magnitude and the impact of the HIV/AIDS epidemic.

There are signs that the AIDS epidemic in Connecticut has stabilized and could be decreasing somewhat. After a steady climb since the beginning of the epidemic, the Connecticut crude AIDS incidence rate by year of diagnosis remained stable in 1994 and 1995 (Figure 3-54). In addition, pediatric AIDS cases decreased for 3 consecutive years, and the HIV seroprevalence among childbearing women has also been decreasing. Finally, the death rate in persons with AIDS dropped for the first time ever in 1996.

In spite of the positive trends, the magnitude and epidemiology of AIDS continue to pose a major challenge to prevention. In 1995, AIDS was the leading cause of mortality for Connecticut residents aged 25-44 years, and overall, HIV infection was the seventh leading cause of death. One hundred fifty-nine of the 169 towns in Connecticut have had at least one AIDS case among their residents. While injection drug use remains the leading means of HIV transmission, heterosexual contact has become the next leading means of HIV transmission. Poor urban areas and race-ethnic minorities continue to be disproportionately affected, with persons of Hispanic ethnicity making up an increasing proportion of all new cases.

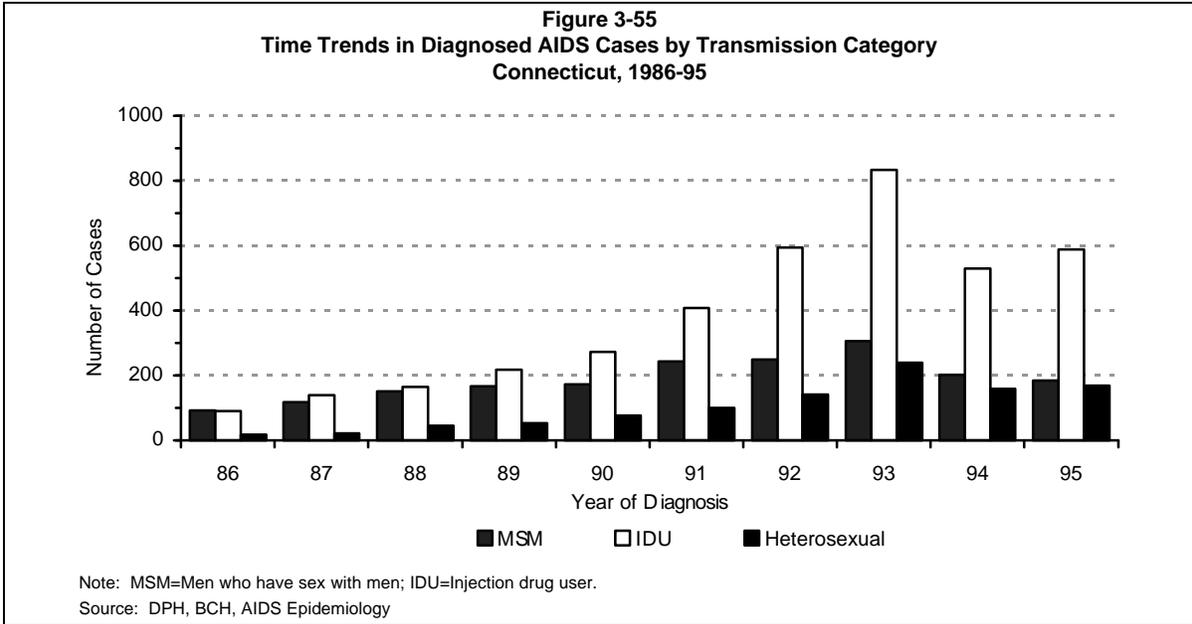
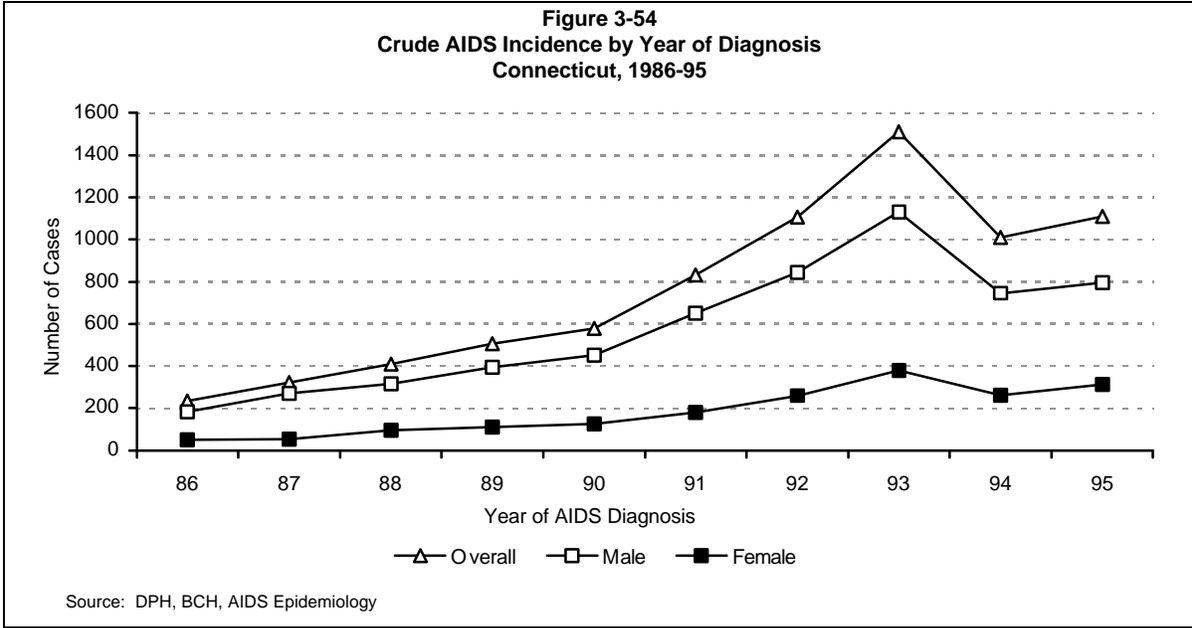
Time Trends

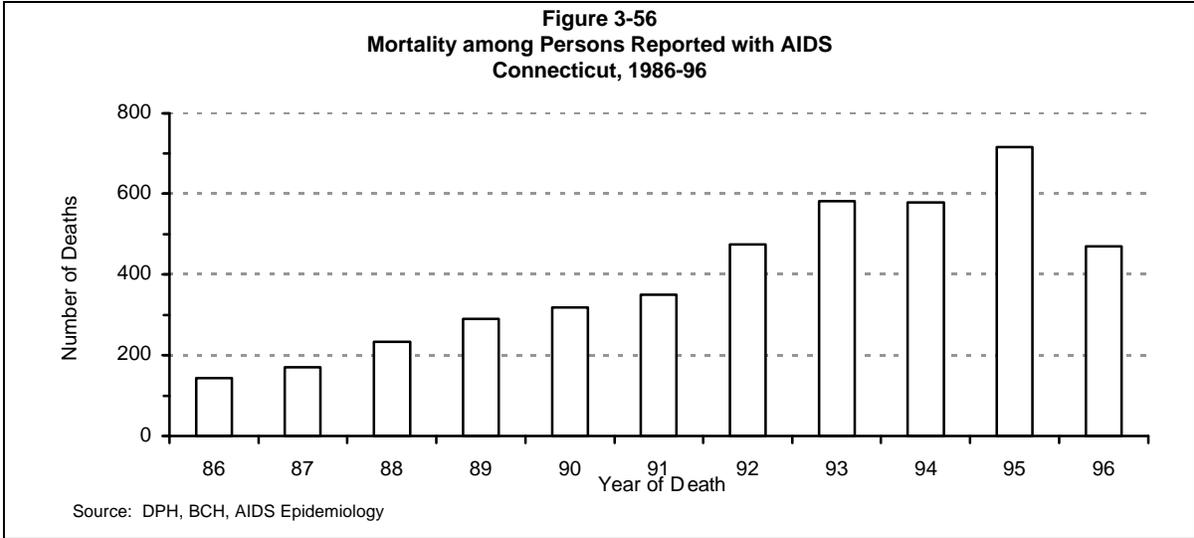
AIDS incidence for both sexes has shown evidence of plateauing (Figure 3-54). However, the proportion of all cases that are female has steadily increased since the beginning of the epidemic. In 1996, 28% of all reported cases were in women. When examined by HIV transmission category, injection drug users (IDU) became the leading transmission category in the late 1980's and in 1996 accounted for more than 50% of all cases. The only transmission group that has shown a sustained drop in numbers in recent years is men who have sex with men (MSM) (Figure 3-55). Mortality among persons reported with AIDS¹⁴² showed a decline in 1996 for the first time. This decline coincides with the widespread availability of protease inhibitors, a new class of potent anti-retroviral agents (Figure 3-56).

High Risk Groups/Geographic Variation

High risk groups for AIDS include urban residents and racial/ethnic minorities. Through 1996, AIDS incidence in blacks has been 11.3 times higher than in non-Hispanic whites, and AIDS incidence in Hispanics 7.8 times higher. However, because they make up over 80% of the population of the state, whites have accounted for 36.5% of all cases, a close second to blacks (40.2%), and followed by Hispanics (21.9%). Compared to incidence in towns with less than 50,000 residents, AIDS incidence is 7.9 times higher in towns with at least 100,000 population and 2.1 times higher in towns with 50,000-99,999 population. Since AIDS was first reported in Connecticut, 59% of all AIDS cases have been residents of Hartford, New Haven, Bridgeport, Stamford and Waterbury.

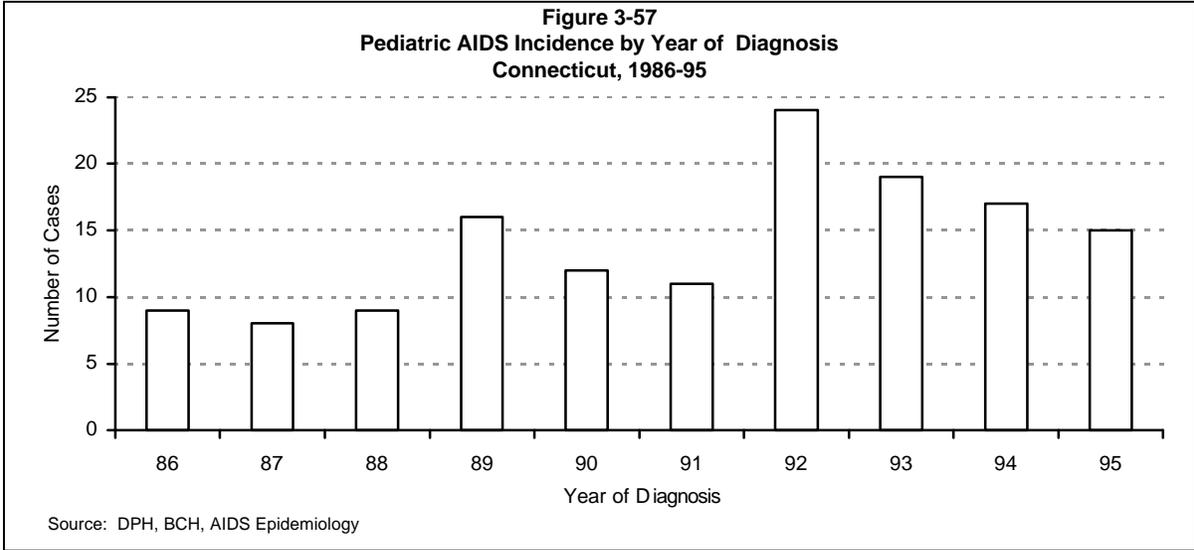
¹⁴² The DPH AIDS Epidemiology program counts deaths to persons reported with AIDS, regardless of whether the cause of death was AIDS-related. In contrast, reporting of deaths in the DPH annual *Registration Report* is based on underlying causes of death as recorded on death certificates; hence, the *Registration Report* contains counts of deaths attributed specifically to HIV infection, including, but not limited to, persons with AIDS. The number of deaths due to HIV infection according to the *Registration Report* for a given year will thus be lower than the number of deaths to persons with AIDS, as reported by the DPH Epidemiology program, for the same year.





Pediatric AIDS

The number of pediatric AIDS cases peaked at 24 cases in 1991. Since then, incidence has been steadily decreasing, to only 15 cases diagnosed in 1995 (Figure 3-57). Groups of children most affected by AIDS include race-ethnic minorities (48% black, 31% Hispanic vs. only 11% white) and children living in urban areas (29% in Hartford and 21% in New Haven). It appears that the decline through 1995 was due in large part to the decline in the number of HIV-infected women giving birth in recent years. More recently, the use of zidovudine (AZT) prenatally and perinatally to prevent perinatal transmission of HIV may be a factor.



SURVEY OF CHILDBEARING WOMEN FOR HIV INFECTION

Summary

An important component of HIV/AIDS surveillance is a serosurvey of all childbearing women for HIV infection. For the serosurvey, samples of blood taken from newborns for required genetic screening are blinded as to identity and tested for the presence of maternal antibody to HIV. The results reflect the magnitude of the HIV epidemic among women and related trends, and provide a direct measure of how many newborns are exposed to HIV each year. The sixth period of the Survey of Childbearing Women (SCBW) in Connecticut was completed in 1995. The first survey period began April 1, 1989 and ran for one year through March 31, 1990, and a new survey period commenced each year thereafter. For the sixth survey period (1994-95), 101 samples tested positive for HIV, with the prevalence for the period being 0.24%. This was the lowest percentage of births testing HIV positive since the survey began, and continued a downward trend which began in the fourth survey period (Table 3-25). Of the total tested (266,673), the number of infants born to HIV-infected mothers from April 1, 1989 through March 31, 1995 was 765 (0.29%).

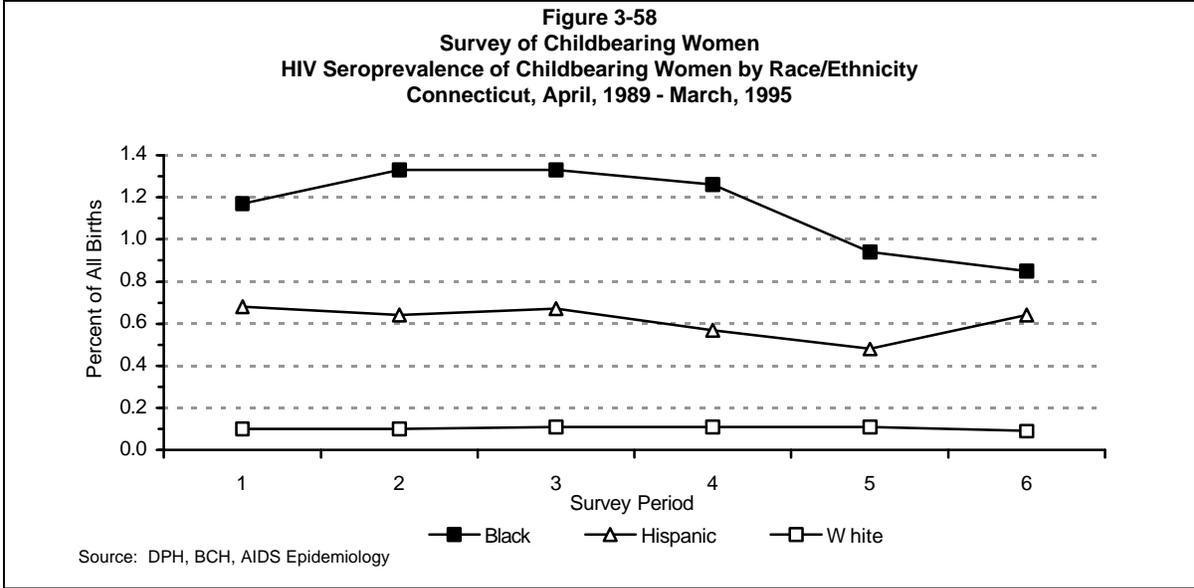
Table 3-25
Survey of Childbearing Women Summary
Connecticut Residents, 1989-95

Survey Period	Total No. Women Tested	HIV+ Women	Percent HIV+ Births
1 (4/89-3/90)	45,890	138	0.30
2 (4/90-3/91)	46,750	143	0.31
3 (4/91-3/92)	44,915	149	0.33
4 (4/92-3/93)	43,264	123	0.28
5 (4/93-3/94)	43,054	111	0.26
6 (4/94-3/95)	42,800	101	0.24

Source: DPH, BCH, AIDS Epidemiology

High Risk Subgroups

The HIV seroprevalence (percentage positive) of childbearing women in Connecticut is associated with race/ethnicity, reflecting the state's race-specific AIDS case incidence rates. Black non-Hispanic women had the highest seroprevalence in all survey periods; however, a downward trend began in survey period 4 and continued through the latest. The seroprevalence for Hispanic women has been less than that for black non-Hispanic women, but greater than for white women. Seroprevalence among Hispanic women increased in the last survey period to its highest rate ever. The seroprevalence for white non-Hispanic women has been stable (Figure 3-58).



Geographic Variation

HIV seroprevalence in childbearing women has been highest in urban areas and in the three counties with the largest urban populations: Fairfield, Hartford, and New Haven. However, over time, the rate in these three counties has decreased while it has increased in the less urban counties (Table 3-26). This is consistent with AIDS surveillance data indicating that the HIV/AIDS epidemic is becoming more widespread.

Table 3-26
Survey of Childbearing Women
Percentage of HIV+ Childbearing Women by County of Residence
Connecticut, April, 1989 - March, 1995

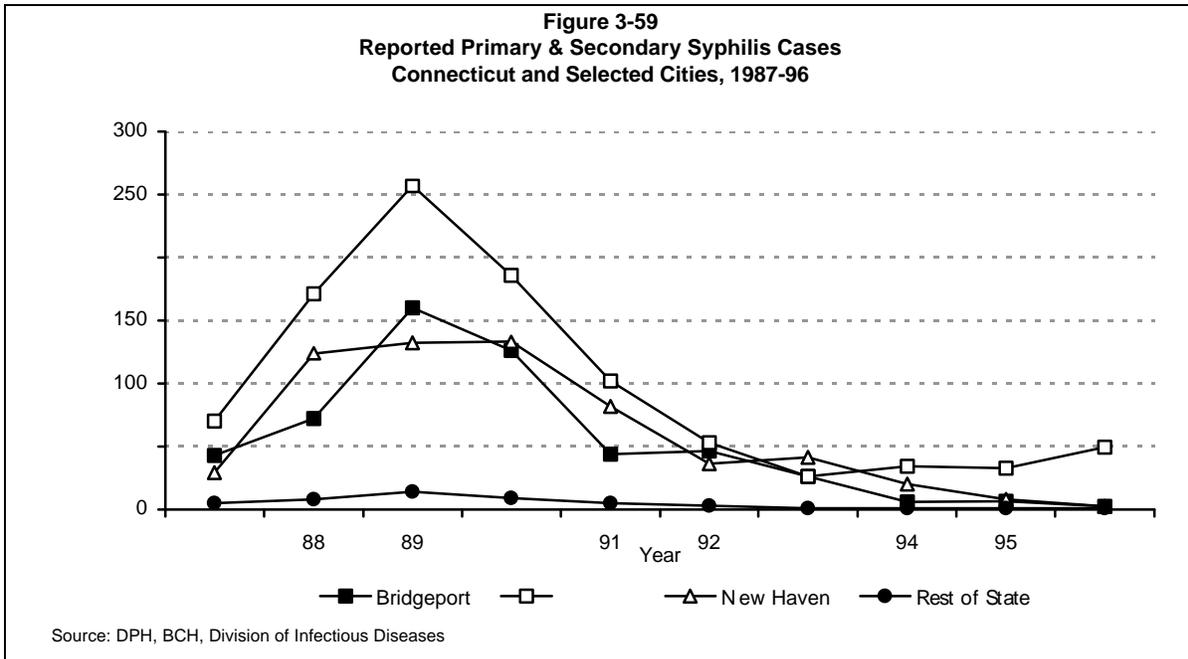
County	Survey Period					
	1	2	3	4	5	6
New Haven	0.43	0.39	0.52	0.36	0.33	0.26
Hartford	0.31	0.35	0.27	0.29	0.32	0.26
Fairfield	0.36	0.37	0.29	0.31	0.23	0.21
New London	0.17	0.19	0.26	0.33	0.18	0.15
Middlesex	0	0.15	0.21	0	0.11	0.16
Litchfield	0	0	0.23	0.18	0.15	0.36
Tolland	0	0	0.19	0	0.14	0.13
Windham	0.16	0	0.32	0.16	0.17	0.24

Source: DPH, BCH, AIDS Epidemiology

PRIMARY AND SECONDARY SYPHILIS

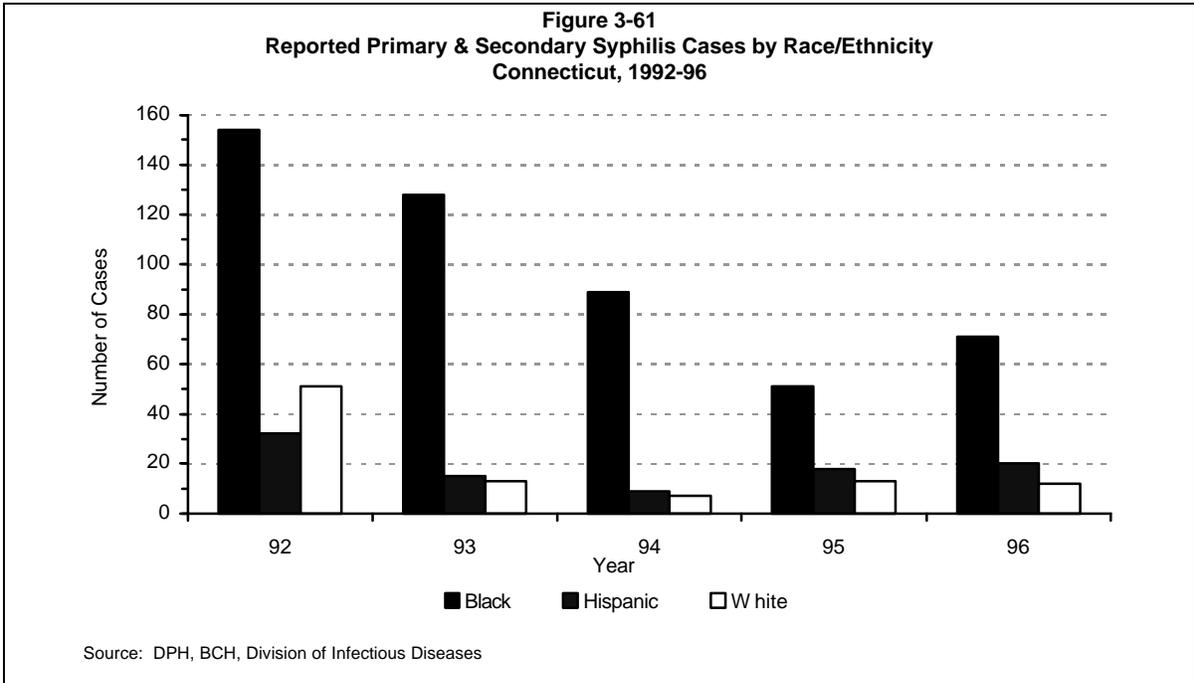
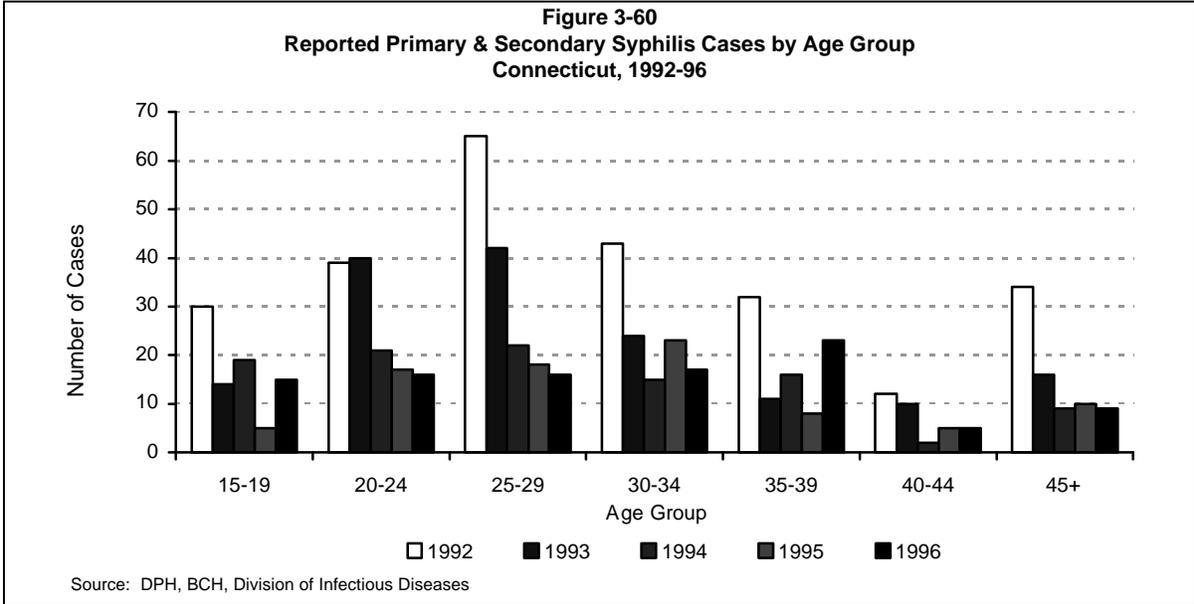
Summary

In 1996, the rate of primary and secondary (P&S) syphilis for Connecticut was 3.2 cases per 100,000 population. The 103 total cases represented an increase of 20% from the 86 total cases reported in 1995, and was Connecticut's first increase in P&S syphilis since 1989. Between 1989 and 1995, P&S syphilis had fallen 92% from the 1989 high of 1,139 cases reported. Syphilis is most infectious during the primary and secondary stages, and often goes unnoticed or is misdiagnosed. Untreated, syphilis can eventually cause debilitating nervous system disorders and death in both infected adults and newborns. Furthermore, syphilis is a significant risk factor in acquiring and transmitting HIV through sexual contact.



High Risk Subgroups

In 1996, P&S syphilis occurred most frequently in Hartford County residents (89 of 103 cases), and was rather evenly distributed among all age groups from 15-39 years of age (Figure 3-60). Formerly a problem in all of Connecticut's biggest cities, only Hartford had more than 5 cases (Figure 3-59). There were significant increases in P&S syphilis among the 15-19 year age group, and the 35-39 year age group, with those groups experiencing increases of 200% and 188% respectively. Blacks were most likely to acquire syphilis, and their rate of 25.9 cases per 100,000 population was 2.8 times higher than the rate in Hispanics (9.4/100,000) and 61.6 times higher than the rate in whites (0.4/100,000). Figure 3-61 shows the number of P&S syphilis cases by race/ethnicity.

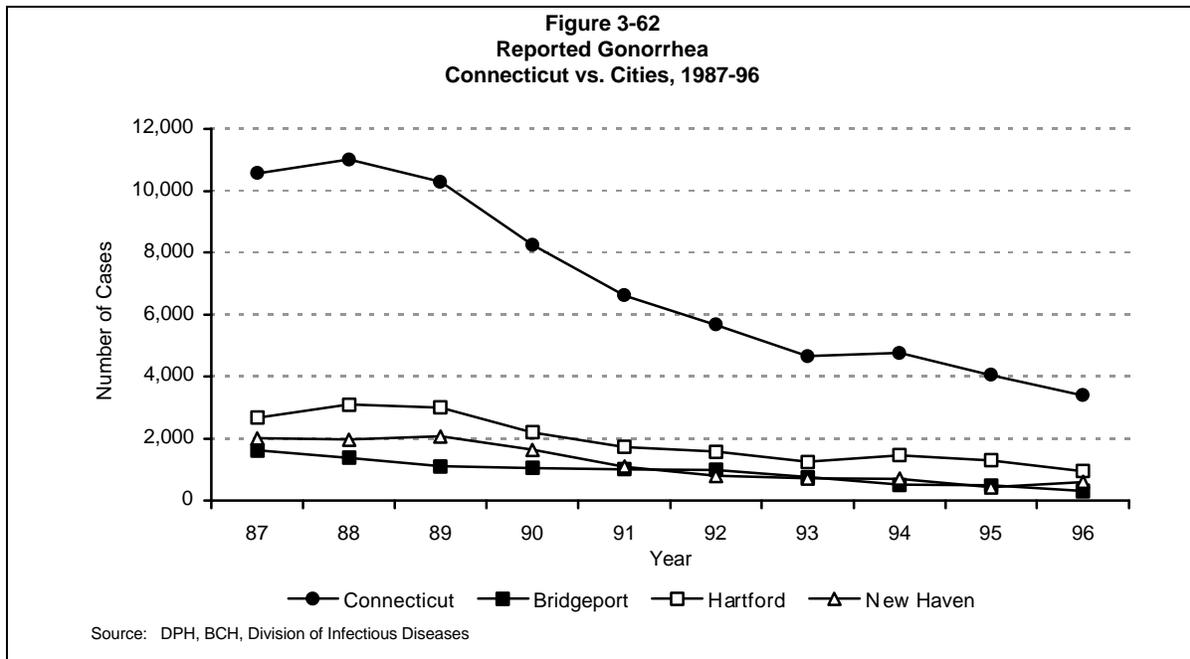


GONORRHEA

Summary

Gonorrhea is a bacterial, sexually-transmitted disease that is a major cause of pelvic inflammatory disease and infertility. Untreated infections can also predispose to HIV transmission. The rate of gonorrhea per 100,000 Connecticut residents in 1996 was 103. This represented a decrease of 17% from the rate of 124 in 1995, and was the lowest rate yet reported in Connecticut. The levels of gonorrhea declined in four of the state's five largest cities in 1996: 28% (1,312 to 950 cases) in Hartford; 35% (489 to 320 cases) in Bridgeport; 40% (348 to 210 cases) in Waterbury; and 10% (141 to 107 cases) in Stamford (Figure 3-62). In spite of the encouraging overall trend, several features of current gonorrhea occurrence are of concern. New Haven experienced a gonorrhea increase of 43% (423 to 607 cases) from 1995 to 1996. The reason for this increase has not been determined.

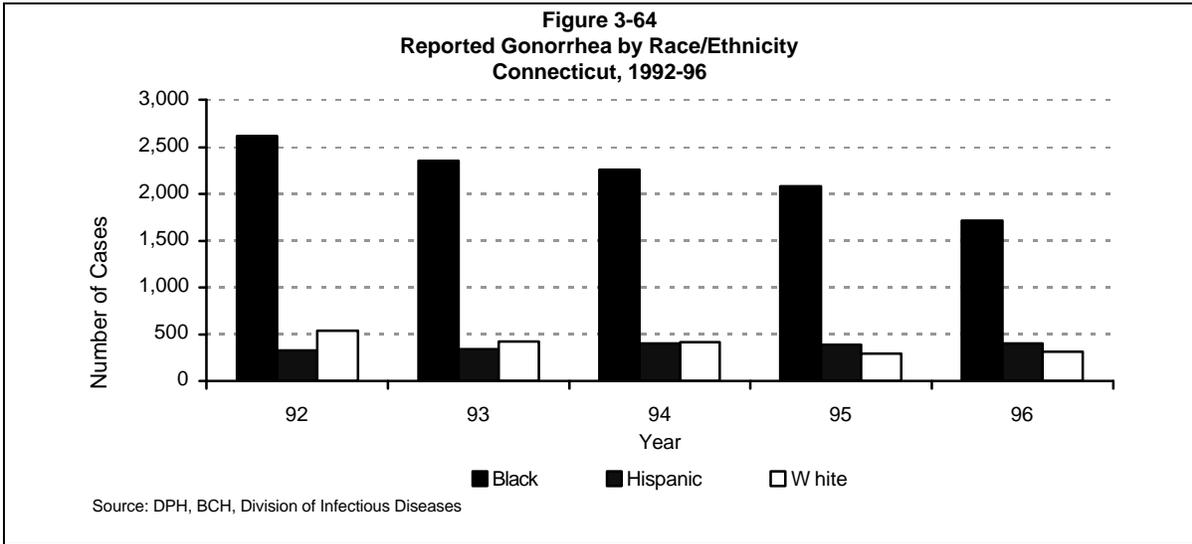
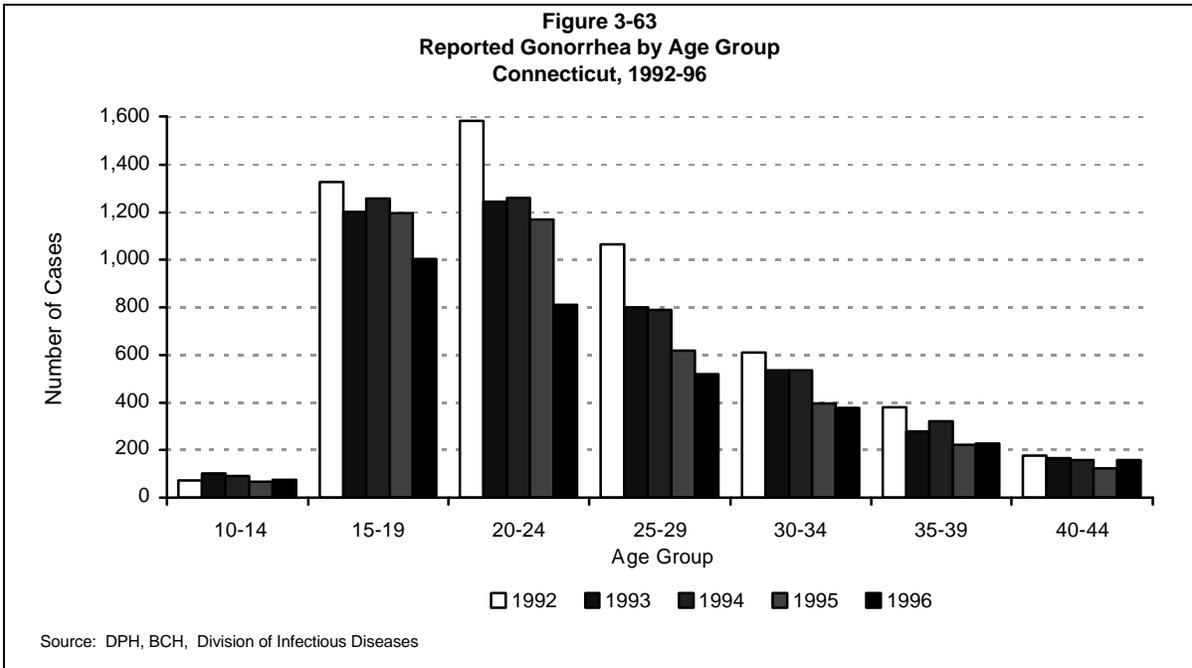
In addition to those discussed above, 36 cities in Connecticut reported more than five cases of gonorrhea in 1996, an increase of 14% from 1995 (31 cities).



High Risk Subgroups

Gonorrhea has consistently been more prevalent in individuals between the ages of 15-24 years (Figure 3-63). Although the rate and number of cases among blacks continues to decline, in 1996 their rate of 864 cases per 100,000 was 3.3 times the rate¹⁴³ of 260 for Hispanics, and 58 times the rate of 15 for whites (Figure 3-64).

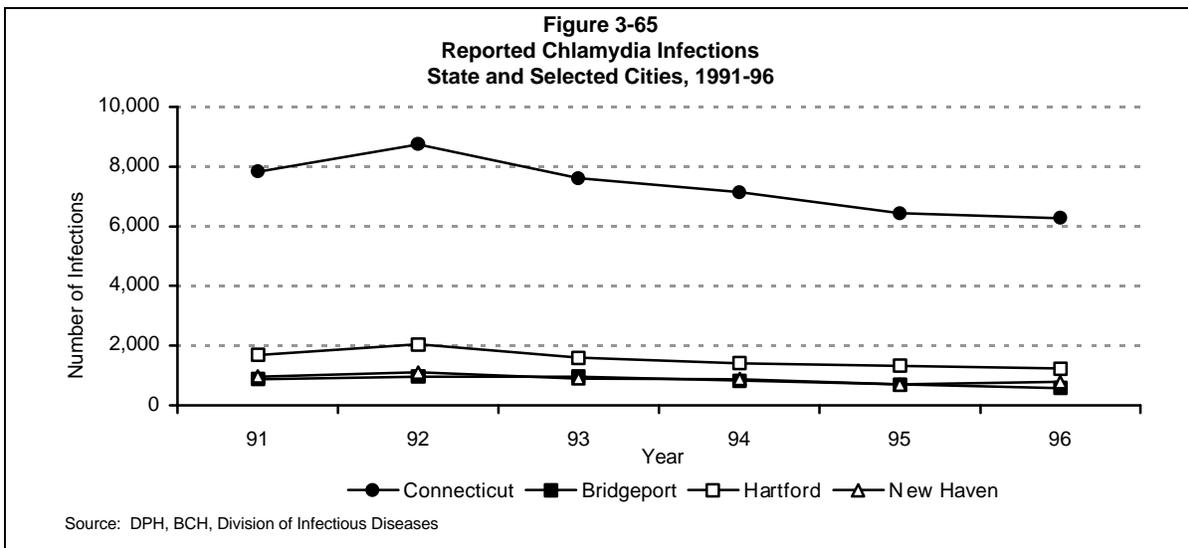
¹⁴³ Rates include data on cases where race/ethnicity was unknown. These data have been distributed among the three categories in proportion to known cases.



CHLAMYDIA

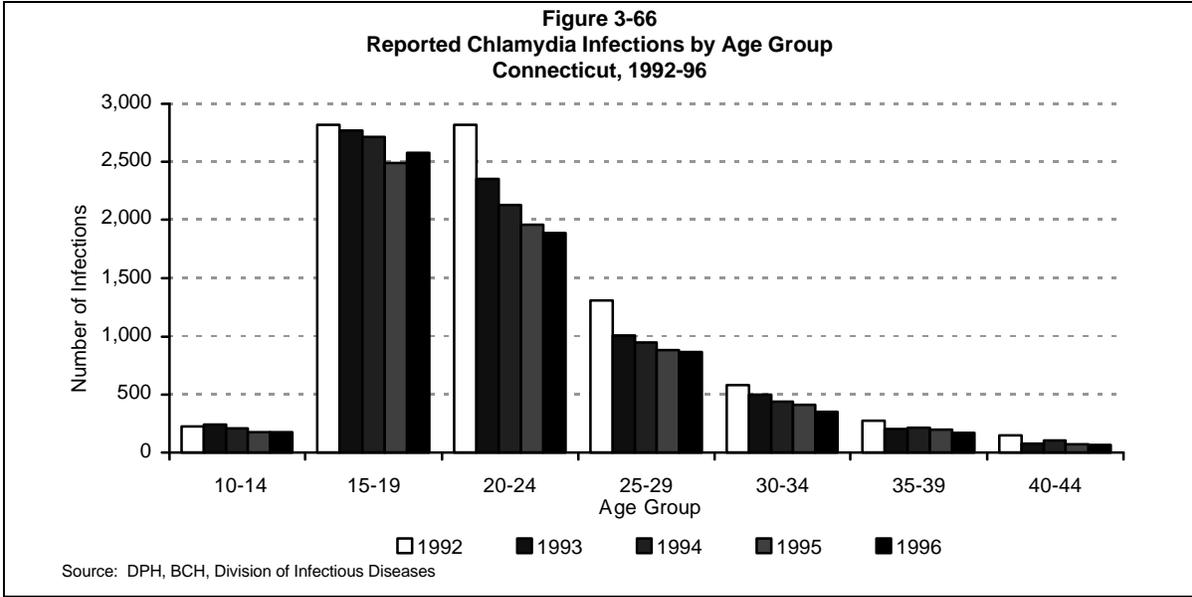
Summary

Chlamydia is a sexually transmitted disease that, like gonorrhea, is a major cause of pelvic inflammatory disease and infertility in women. Untreated infection can also predispose to HIV infection. The chlamydia rate per 100,000 Connecticut residents fell to 191 in 1996. This marked a decrease of 3% from the rate of 197 per 100,000 in 1995, but is still well above the *Healthy People 2000* objective of 170 cases per 100,000 population. Chlamydia first became reportable in the state in July 1990, and has declined each year since its high of 8,748 cases reported in 1992 (Figure 3-65). In 1996, there were 6,269 total cases reported, of which 1,239 (20%) occurred in residents of Hartford. Other cities reporting high percentages of the state's morbidity were: New Haven, 13% (797 cases); Bridgeport, 9% (581 cases); Waterbury, 6% (393 cases); New Britain, 4% (255 cases); and Stamford, 3.5% (221 cases). No other city reported more than 200 cases. There were 373 cases for which the city of residence was not reported. Figure 3-65 shows the number of chlamydia infections for selected cities from 1991-1996. New Haven was the only one of the above named cities to experience an increase in chlamydia in 1996 (41% increase). There were 117 cities in Connecticut that reported 10 or fewer cases of chlamydia in 1996. Among women screened for chlamydia in family planning and correctional settings, the prevalence of infection decreased for the fifth consecutive year to 4.3% and 2.1%, respectively.

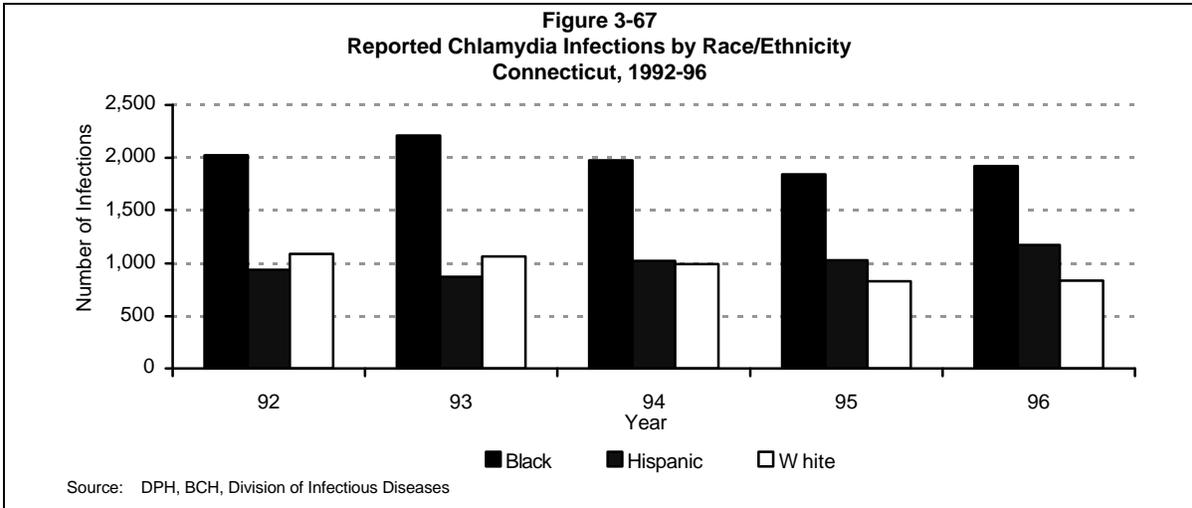


High Risk Subgroups

In Connecticut, as in the rest of the United States, chlamydia occurs most frequently in individuals between the ages of 15 and 24 (Figure 3-66). In 1996, 85% of reported chlamydia infections were in women. This reflects efforts to screen and treat asymptomatic women for carriage of chlamydia before they suffer the consequences of chlamydia infection. The repercussions of untreated chlamydia are much more severe for women, and screening programs for women of child-bearing age are rapidly becoming more accessible throughout the state.



According to the CDC, up to 40% of women with untreated chlamydia will develop pelvic inflammatory disease (PID), and undiagnosed PID caused by chlamydia is believed to be common.¹⁴⁴ Of those with PID, 20% will become infertile; 18% will experience debilitating, chronic pelvic pain; and 9% will have a life-threatening tubal pregnancy. Tubal pregnancy is the leading cause of first-trimester, pregnancy-related deaths in African-American women.¹⁴⁵ Chlamydia may also result in adverse outcomes of pregnancy, including neonatal conjunctivitis and pneumonia. In addition, recent research has shown that women infected with chlamydia have a 3-5 fold increased risk of acquiring HIV, if exposed. Minorities bear the highest rates of chlamydia both in Connecticut (Figure 3-67) and across the United States.



MEASLES

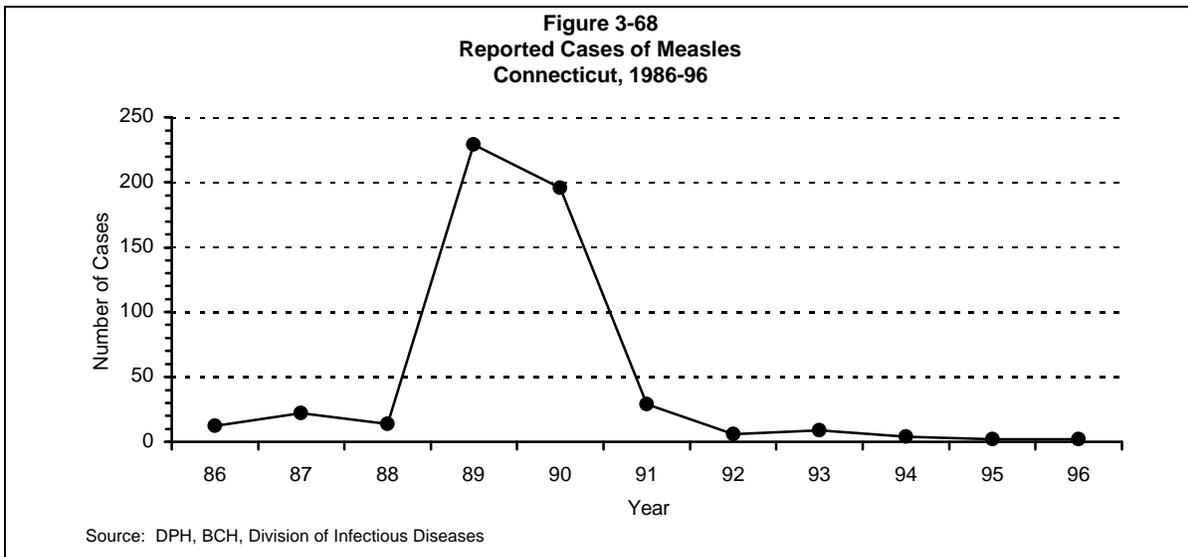
¹⁴⁴ Centers for Disease Control and Prevention. Recommendations for the prevention and management of *Chlamydia trachomatis* infections, 1993. *Morbidity and Mortality Weekly Report* 1993; 42(RR-12), 1-4.

¹⁴⁵ Centers for Disease Control and Prevention.; 1-4.

Summary

Measles is a vaccine-preventable disease that is caused by a highly infectious virus. Complications of measles include pneumonia, encephalitis, and death. A national objective for the year 2000 is to reduce indigenous cases of measles to zero. Measles disease in Connecticut decreased dramatically from 1963 to 1968 as a result of licensure of the vaccine in 1963. While there were fluctuations in incidence of measles from 1968-1978, measles incidence never approached pre-vaccine era levels. In 1979, measles rates began to stabilize as states began adopting school immunization laws.

The incidence of measles was relatively low through the early to mid-1980s after declining from the previous decade. From 1980-1988, the number of reported measles cases was no more than 25 in any given year. The number of cases increased in 1989 and 1990 to a total of 424 and an annual average case rate of 6.5 cases per 100,000. This rate was more than 15 times higher than the annual average rates for measles in the previous 10 years in Connecticut and paralleled a similar increase nationally. A major factor underlying the increase was low immunization rates in pre-school children, particularly in urban areas. In 1991, the number of reported measles cases began to drop, and reached an all-time low in 1995 and 1996 of 2 cases per year (Figure 3-68).



High Risk Subgroups

In 1989, measles incidence rates were highest in children ages 0-4 and 10-14 years old (Table 3-27). The distributions of cases by race/ethnicity were not equal, with rates highest in Hispanics (65 cases, 15.9 cases per 100,000) followed by whites and blacks (134 and 12 cases respectively, 4.6 cases per 100,000 each). In 1990, measles incidence rates continued to be highest in children ages 0-4 years old and adults in their 20s and 30s, especially among Hispanics.

Table 3-27
Measles Incidence Rate by Age Group
Connecticut, 1989-90

Age Group	1989		1990	
	Cases	Rate/100,000	Cases	Rate/100,000
0-4	61	26.3	63	28.6
5-9	23	10.7	17	7.3
10-14	51	26.3	10	5.2
15-19	33	13.2	10	4.1
20-24	21	7.5	37	13.9
25-29	18	6.2	23	8.1
30-39	10	1.7	33	6.3
40-49	8	1.7	2	.5
50-59	2	.6	1	.3
60+	2	.3	0	0
All Ages	229	6.8	196	5.9

Source: DPH, Infectious Diseases Division.

Measures to Reduce Measles in Connecticut

In 1989, Connecticut DPH, in collaboration with the Connecticut Chapter of the American Academy of Pediatrics, recommended and began supplying a second dose of measles containing vaccine to persons at high risk of measles, including middle-junior high school and post-secondary school entrants. In 1989, the state passed a college immunization law that required college entrants to provide proof of receipt of two doses of measles, mumps, and rubella (MMR) vaccine. In 1991, school immunization regulations were modified to require two doses of measles containing vaccine for middle-junior high school entrants. Connecticut DPH currently receives funding from CDC to implement the Childhood Immunization Initiative program, which is designed to achieve and maintain high vaccination coverage levels among children in high-risk urban areas of the state during their first 2 years of life.

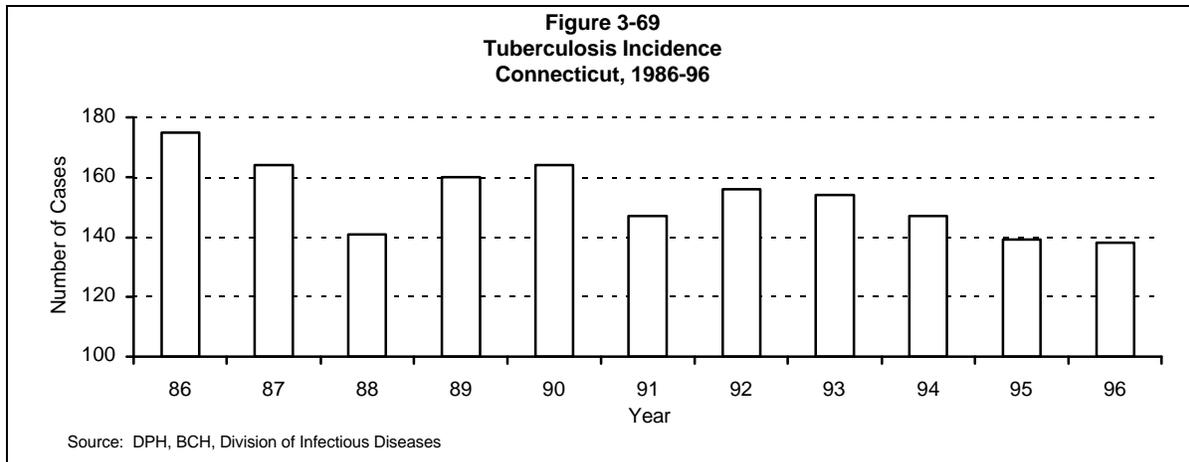
TUBERCULOSIS

Summary

Tuberculosis (TB) is a life threatening disease resulting from progressive infection with the tubercle bacillus. It is acquired by inhalation of tubercle bacilli coughed into the air by another person with active tuberculosis. Infection with TB can be latent (positive skin test, lifetime risk of activation) or can result in tuberculosis, which has a 50% case fatality rate if left untreated. Most cases of tuberculosis arise in persons who have had latent infection for a number of years. As both the disease and latent infection are treatable, tuberculosis has been targeted by the U. S. Public Health Service for elimination by the year 2010.

For calendar year 1996, 138 TB cases were reported in Connecticut; this was the lowest number ever reported and the fourth consecutive year of decrease. Since 1986, TB incidence has decreased at an annual average rate of 2% per year (Figure 3-69). Only one case of multi-drug-resistant tuberculosis was diagnosed in Connecticut in 1996. Only 9% of 1996 cases have been documented as having HIV co-infection, the lowest percentage since HIV-TB co-infection became reportable in 1991.

The decrease in TB and HIV-related TB is due primarily to aggressive prevention activities, in particular, more aggressive case management with directly observed therapy, more intensive contact investigations, screening and preventive treatment for HIV and TB co-infection in prisons and drug treatment programs, and TB screening and preventive treatment among refugees and immigrants.



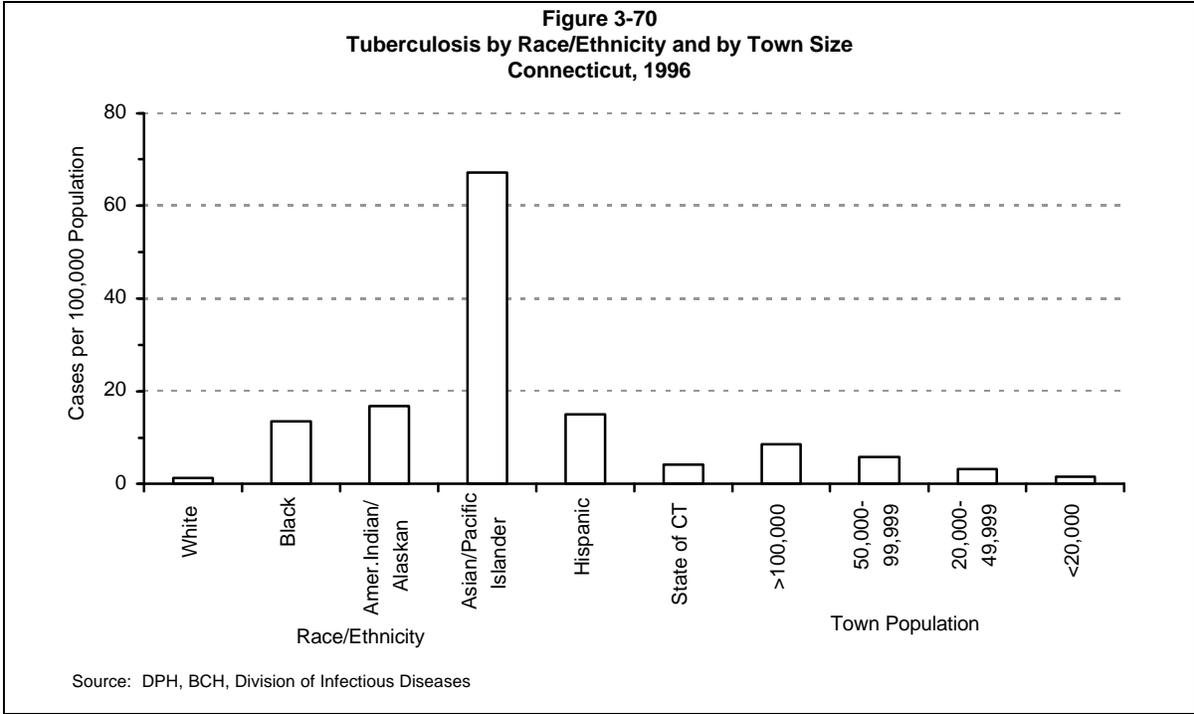
TB/HIV Co-infections

HIV co-infection is one of the most reliable predictors that a person with latent TB infection will develop active TB disease. Because of this, the Council of State and Territorial Epidemiologists recommended in 1990 that states consider making TB/HIV co-infection reportable.¹⁴⁶ In August 1991, this condition was made reportable in Connecticut. Through 1996, 502 individuals with latent TB and HIV co-infection were reported. Almost half of the reports came from the Department of Correction, where screening of all new prison inmates has become routine. The remaining 287 co-infections were diagnosed as a result of systematic tuberculin skin test screening in other settings, including methadone maintenance programs. Most co-infections (343, 69%) have been reported from the five largest cities (over 100,000 population): Hartford (131, 26%), New Haven (74, 15%), Bridgeport (70, 14%), Stamford, and Waterbury (each 34, 7%).

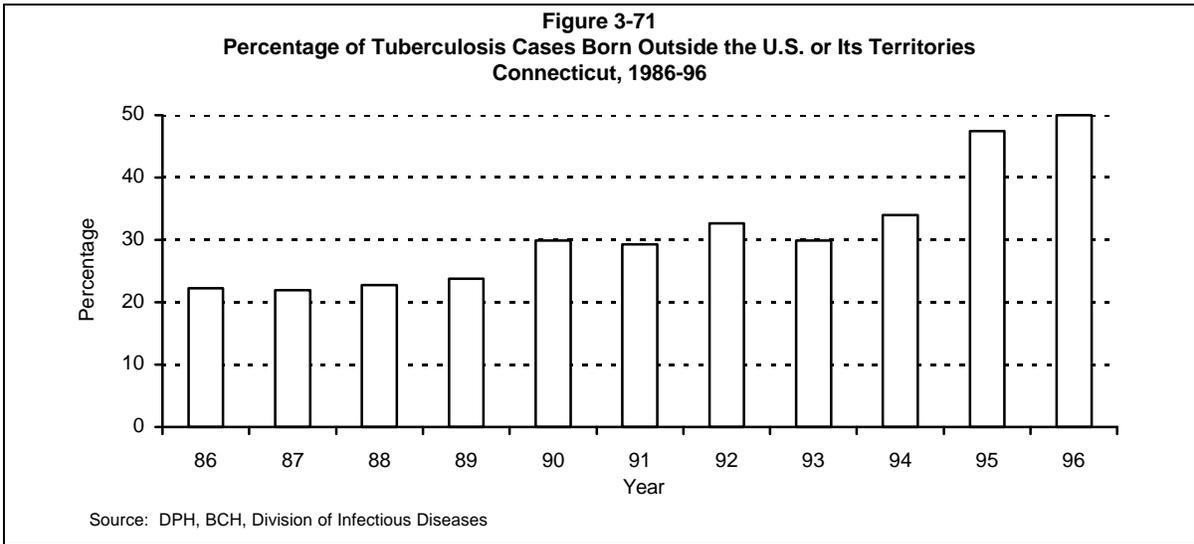
High Risk Groups/Geographic Variation

High risk groups for TB in Connecticut include race-ethnic minorities, especially those of Asian and African origin, residents of urban areas, and persons born outside the US and its territories (Figure 3-70). Compared to whites, the risk of tuberculosis was more than 50 times higher in persons of Asian origin and 10 times higher in blacks and Hispanics in 1996. Compared to the incidence in the most rural parts of Connecticut (towns with less than 20,000 residents), residents of the five towns with populations of at least 100,000 were nearly six times more likely to develop TB.

¹⁴⁶ Council of State and Territorial Epidemiologists. *Position Statement No. 14: TB/HIV Surveillance and Control*. CSTE Annual Meeting, Bolton Landing, New York, April 8-12, 1990.



The incidence of TB in the foreign born and its proportional contribution to morbidity in Connecticut has risen steadily since 1980 (Figure 3-71). In 1995, Connecticut became one of eight states in which foreign-born TB incidence contributed at least 50% to annual incidence. This group has become high priority to develop meaningful early prevention initiatives.



CHILDHOOD IMMUNIZATIONS

Summary

A national health objective for the year 2000 is 90% immunization coverage for the basic primary immunization series by age two. The resurgence of measles among preschool aged children in Connecticut during 1989 and 1990 prompted a review of early childhood immunization levels in the state. Studies of both measles disease incidence and early childhood immunization rates completed in 1990-91 demonstrated that early childhood immunization coverage rates fell far short of the national objective¹⁴⁷ (Table 3-28). These studies revealed several reasons for under-immunization, including missed immunization opportunities, delayed starting of the immunization series, and inability of providers to track the immunization status of their clients. Since then, immunization levels of children reaching their second birthday have been monitored by annual retrospective surveys of school enterers and by the National Immunization Survey. As of 1995, early childhood immunization rates had improved to 85% completion by age 2 years. In addition, monitoring is now being done of children enrolled in Medicaid managed care.

High Risk Subgroups

Vaccination levels are low among urban residents of the state, among children who have delayed initiation of vaccination, among children who have moved into an area after birth (in-migrants), and among those whose parents have other indicators of poor utilization of or poor access to health care.

Table 3-28
Percent of First Grade Children Immunized by Age 2 Years,
by Vaccine and by Geographic Area
Connecticut, 1990-91

Vaccine ^a	Hartford (N = 666)	New Haven (N = 810)	Bridgeport (N = 773)	Non-urban (N = 671)	Connecticut (N = 817)
DTP-3	87.4%	91.0%	84.8%	94.9%	93%
DTP-4	59.2%	59.4%	48.7%	75.0%	72%
OPV-3	81.8%	81.8%	68.2%	88.1%	86%
MMR	78.1%	79.0%	70.4%	86.0%	85%
ALL(4DTP)	51.8%	53.3%	44.0%	65.7%	63%

^aDTP-3 = 3 doses of diphtheria, tetanus, and pertussis vaccine (DTP). DTP-4 = 4 doses of DTP vaccine.

OPV-3 = 3 doses of polio vaccine. MMR = measles, mumps, and rubella vaccine.

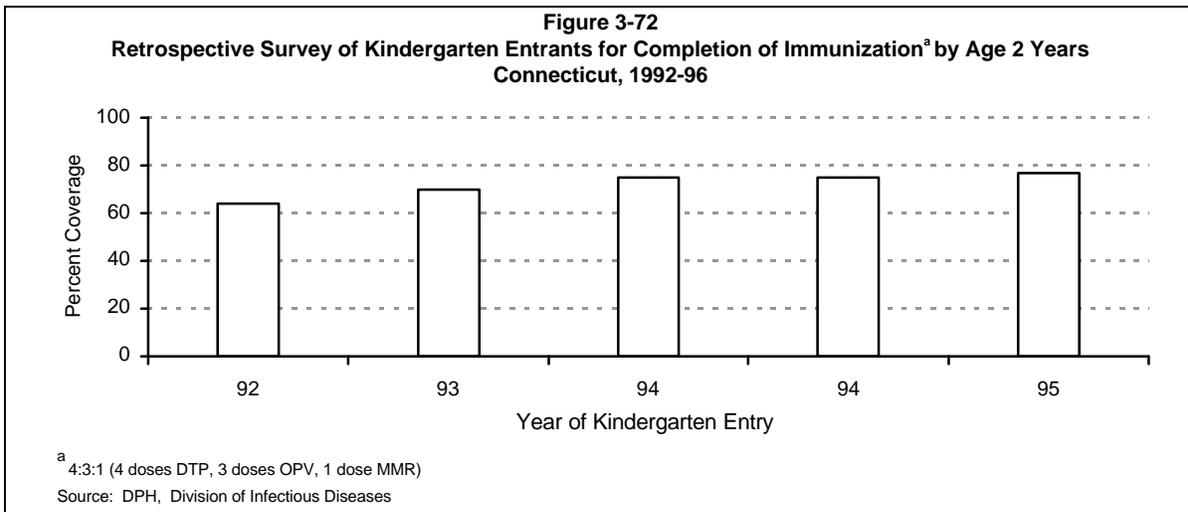
ALL(4DTP) = 4 doses of DTP, 3 doses of OPV, and 1 dose of MMR vaccines.

Source: DPH, BCH, Division of Infectious Diseases

¹⁴⁷ Centers for Disease Control and Prevention. Early childhood vaccination levels among urban children - Connecticut, 1992. *Morbidity and Mortality Weekly Report* 1992; 40:888-891.

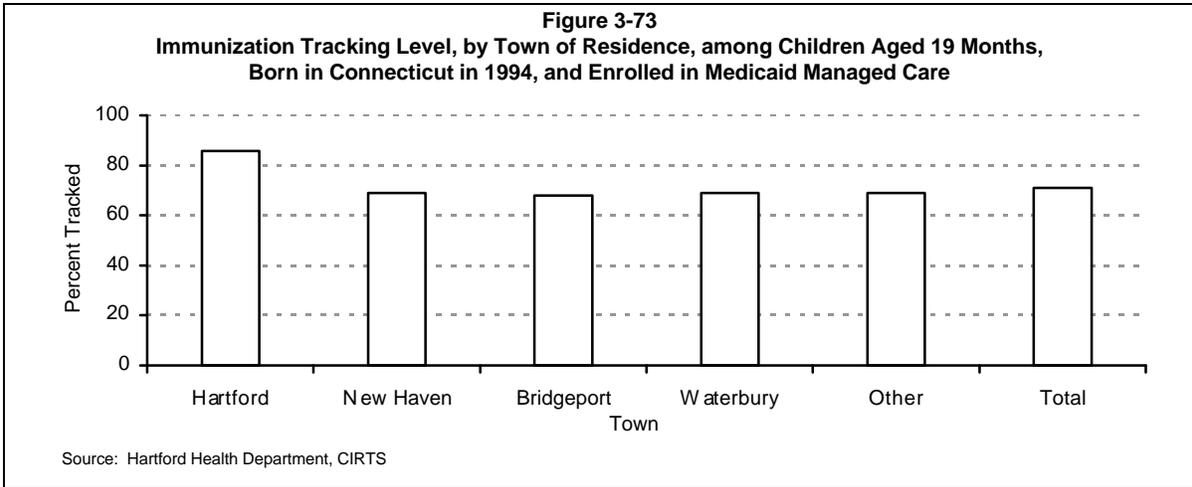
Measures to Improve Immunization Coverage Rates for 2 Year Olds

In 1993, the Immunization Program with CDC funding initiated the Childhood Infant Immunization program in Connecticut to achieve national immunization objectives. Funds were provided to selected high-risk communities in the state to implement activities designed to improve the quality and quantity of immunization services in their area, enhance provider and parent awareness and build community partnerships, and improve methods of measuring immunization coverage. In addition, an immunization registry and tracking system was initiated in the Hartford area. In 1996, this was expanded to East Hartford and in 1997 to children enrolled in Medicaid managed care. In 1994, CDC initiated the National Immunization Survey (NIS) to determine estimates of state and national vaccination coverage levels among children 19-35 months. The NIS estimated vaccination coverage rates for the primary immunization series reported for children in Connecticut in 1994 and 1995 were 86% and 85%, respectively, which approaches the national year 2000 objective of 90%. In the U.S., rates for the same years were 75 and 76%, respectively. Since 1991, the Immunization Program has conducted an annual survey of kindergarten enterers statewide to determine their immunization levels at age 2 years. The data from these surveys, which reflect immunizations occurring 3 years earlier, show that immunization levels among 2 year olds have been steadily increasing since 1990 (Figure 3-72).



Tracking of Immunizations

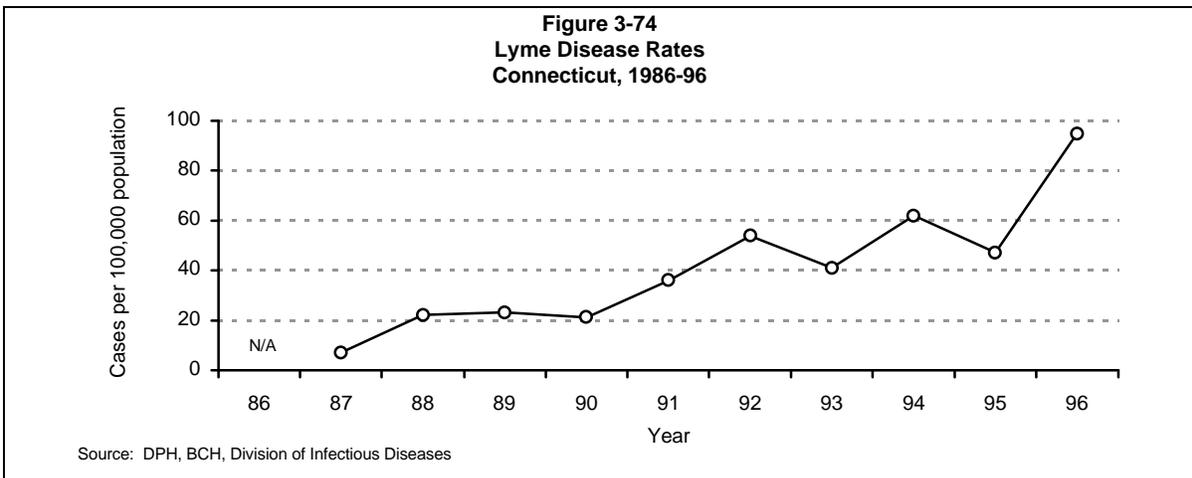
Beginning in late 1996, the Connecticut Immunization Registry and Tracking System (CIRTS) operated by the Hartford Health Department began working with the Department of Social Services and the Medicaid Managed Care (MMC) plans to assess tracking and immunization levels of Connecticut children reaching 2 years of age and enrolled in MMC. A child was “tracked” if the physician in the MMC plan to which he/she was assigned had a record of immunizations by the time the child was 19 months of age. The implication of not being tracked is that the MMC plan does not know whether the child is receiving immunizations and, thus, cannot take action to assure that immunizations and well-child care are being provided. Overall, levels of tracking by aged 19 months among children enrolled in MMC were 71% for those born in 1994 (range, 57-83% by plan) and 72% for those born in 1995 (range 47-88%). The strongest predictor of whether a child was tracked was residence in Hartford, where CIRTS has been active since 1993 (Figure 3-73).



LYME DISEASE

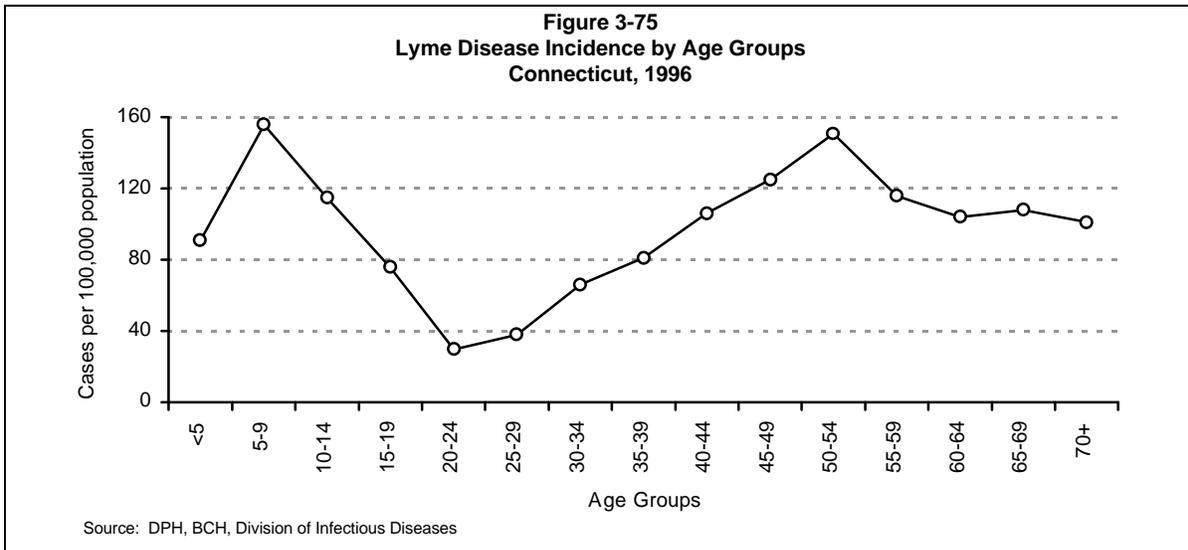
Summary

Connecticut has had the highest reported rate of Lyme disease in the nation for the previous six years. Since the first full year of surveillance in 1988, Lyme disease incidence increased in all areas of the state (Figure 3-74), particularly in Windham and Litchfield counties. In 1996, the incidence of Lyme disease statewide was 94 cases per 100,000 population.



High Risk Sub-Groups

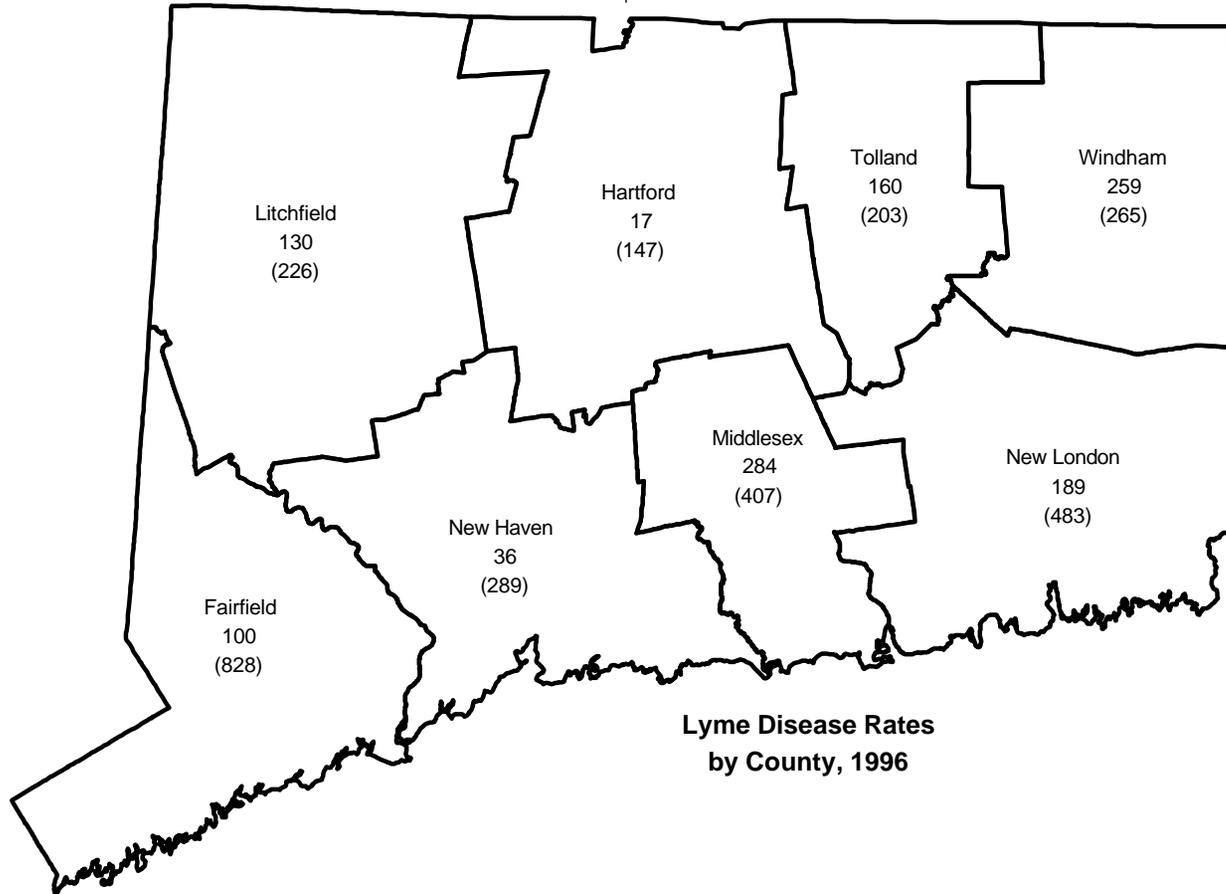
Age and geographic location in Connecticut are strong indicators of who may acquire Lyme disease. In 1996, incidence was highest among children aged 5-9 years (156 cases per 100,000 population) and persons aged 50-54 (151 cases per 100,000). The lowest reported rate was in persons aged 20-24 (30 cases per 100,000) (Figure 3-75). Historically, incidence of Lyme disease in children between the ages of 5 and 14 has been higher than any other age group. Counties reporting the highest incidence of Lyme disease in 1996 were Windham and Middlesex, with rates of 259 and 284 cases per 100,000 population, respectively. In contrast, Hartford County reported the lowest incidence of Lyme disease (17 cases per 100,000 population) (Map 3-13).



Intervention Strategies

The Connecticut Lyme Disease Program is a collaborative effort among DPH, which is the lead agency, the Connecticut Agricultural Experiment Station, the University of Connecticut Department of Geography, and the University of Connecticut Bureau of Educational Research and Services. The goal of the program is to reduce the incidence of Lyme disease through public and professional education and piloting of methods to reduce tick populations.

Map 3-13



**Lyme Disease Rates
by County, 1996**

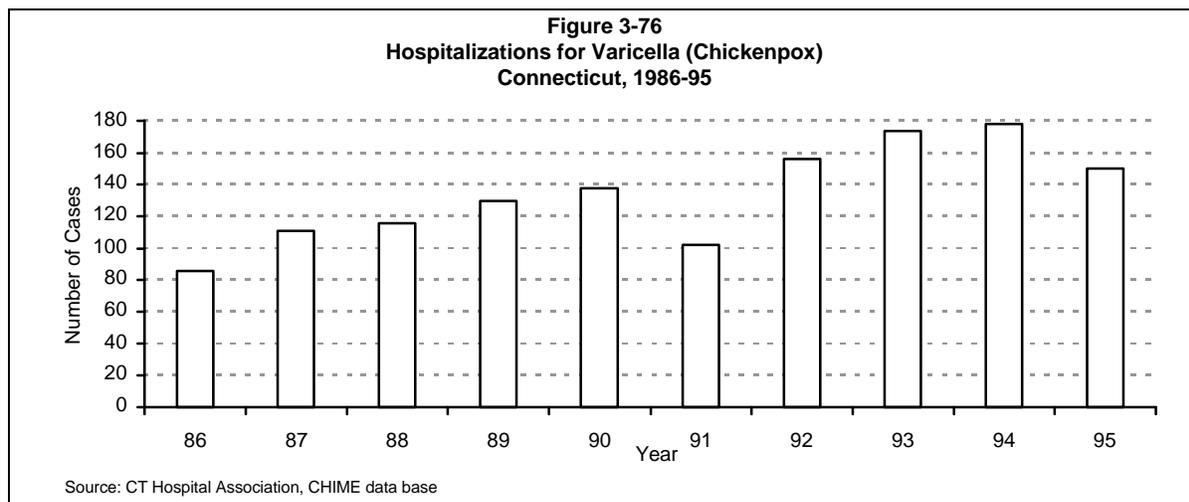
Note: The number of cases in each county is listed in the parenthesis.
Source: DPH, BCH, Epidemiology Division, 1997

VARICELLA (CHICKENPOX AND SHINGLES)

Summary

Infection with varicella-zoster virus causes varicella (chickenpox) and shingles. It has assumed public health importance since varicella vaccine was licensed in early 1995. In the absence of vaccination, almost everyone develops chickenpox at some time during their life. The number of cases approximates the birth cohort over time; thus, there were an estimated 4 million cases of chickenpox annually in the United States in the early 1990s.¹⁴⁸ In addition, there are an estimated 9,000 hospitalizations each year for chickenpox and its complications, and in recent years, there have been 100 deaths annually with chickenpox as an underlying cause.¹⁴⁹ The most common complications of chickenpox, which can result in hospitalization, are bacterial infections of skin lesions, pneumonia, dehydration, encephalitis, and hepatitis. Based on national figures,¹⁵⁰ it is estimated that 1.4% of the entire population of Connecticut gets chickenpox in any given year. Shingles is a form of chickenpox that can only occur in people in whom a latent infection with varicella-zoster virus was established when they had chickenpox. A total of 15-20% of all persons with a history of chickenpox will get shingles in their lifetime.

Chickenpox is still viewed as a benign disease of childhood against which vaccination is not needed; however, this is not the case. In Connecticut each year from 1991 to 1995, an average of 156 residents were hospitalized with chickenpox and 569 with shingles. The average cost per hospitalization in 1995 was \$13,412 for chickenpox (total cost, \$2 million), and \$17,626 for shingles (total cost, \$9.2 million).¹⁵¹ Hospitalizations for varicella more than doubled from 1986 to 1994 (Figure 3-76). In addition, each year between 1990 and 1994, an average of two people died because of chickenpox, and another 25 from shingles.



High Risk Subgroups

High risk subgroups for hospitalization due to varicella include children; 49% of all hospitalizations in Connecticut are in children less than 10 years of age (Figure 3-77), persons who are immunosuppressed

¹⁴⁸ Centers for Disease Control and Prevention. Prevention of varicella. Recommendations of the Advisory Committee on Immunization Practices (ACIP). *Morbidity and Mortality Weekly Report* 1996; 45(RR-11):1-25.

¹⁴⁹ Centers for Disease Control and Prevention, 1996.

¹⁵⁰ Centers for Disease Control and Prevention, 1996.

¹⁵¹ Hadler, J. Connecticut Department of Public Health, Division of Infectious Diseases. Personal communication based on analysis of data provided by the Connecticut Hospital Association, 1997.

(17% of all hospitalizations) and minorities. Overall, blacks were 2.5 times more likely to be hospitalized with varicella than whites, and Hispanics were 4.1 times more likely (Figure 3-78).

Measures to Reduce Varicella Illness

Because the varicella virus vaccine was only recently been licensed in United States (March, 1995), many susceptible children and adolescents have not yet been vaccinated and varicella continues to occur, with annual outbreaks in the spring. Since January 1, 1997, the state Immunization Program has been making varicella vaccine purchased with federal funds available to vaccinate all infants without health insurance or enrolled in Medicaid. Surveillance of hospitalizations and eventually of incident cases will be important in the future to assess the impact of vaccination, to evaluate the effectiveness of vaccination programs and prevention strategies, and, in the long run, to determine long- term changes in the epidemiology of chickenpox and shingles.

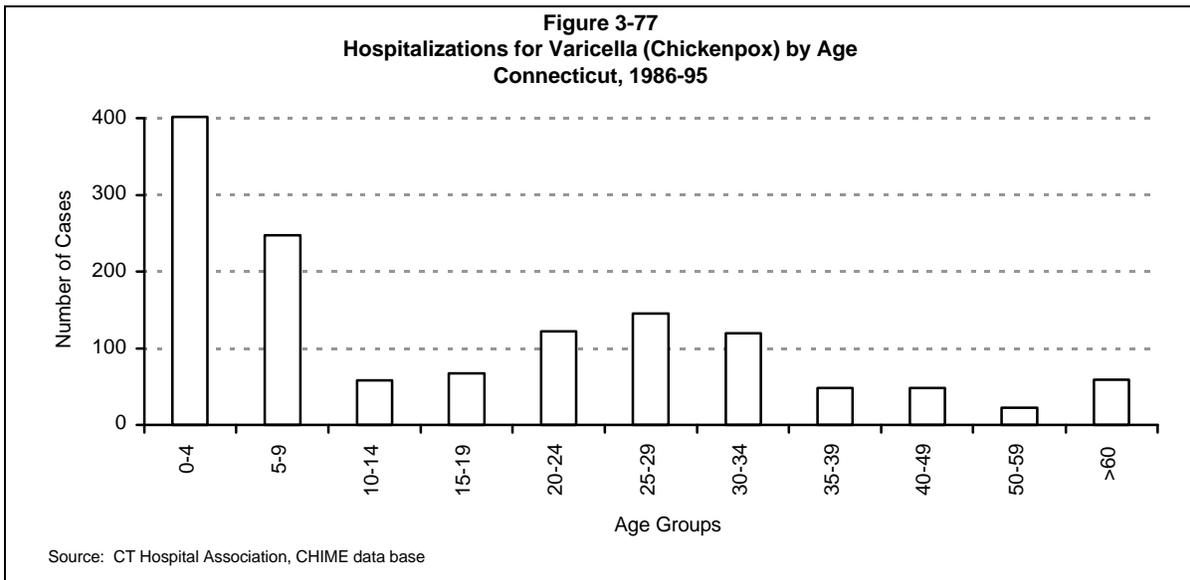
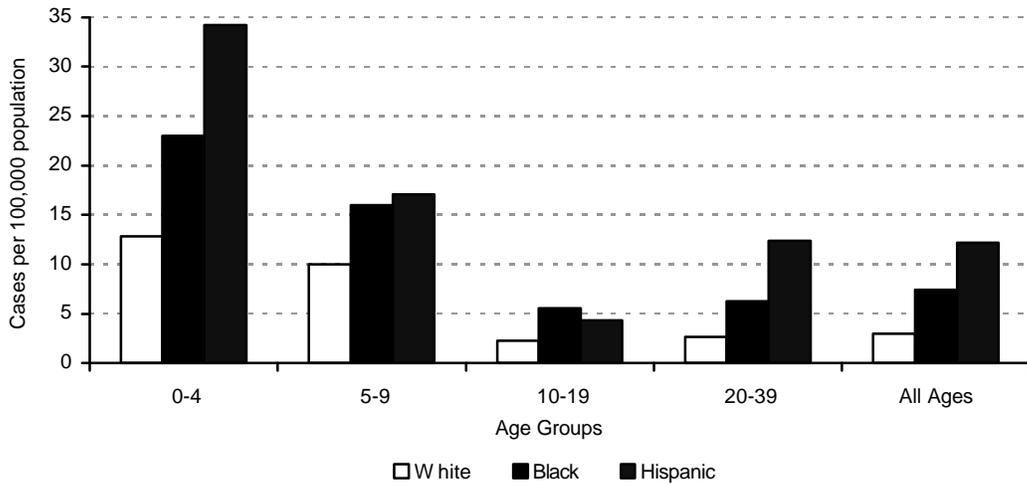


Figure 3-78
Hospitalizations for Varicella (Chickenpox)
Average Annual Rates by Race/Ethnicity for Selected Age Groups
Connecticut, 1986-95



Source: CT Hospital Association, CHIME data base

INVASIVE PNEUMOCOCCAL DISEASE

Summary

The bacterium *Streptococcus pneumoniae* can cause a wide range of infections, including pneumonia, otitis media, meningitis, and bloodstream infections. Invasive infections due to *S. pneumoniae* are among the most common serious bacterial infections in man. They are of public health concern because many are preventable with vaccine, they can occur in clusters in crowded settings, and because antibiotic-resistant strains of *S. pneumoniae* have recently emerged.

As part of the Connecticut Emerging Infections Program, DPH is conducting active, population-based laboratory surveillance for invasive pneumococcal infections, i.e., those infections in which *S. pneumoniae* is isolated from a body site that is normally sterile (blood, spinal or joint fluid). The purpose of the surveillance system is to assess geographic and temporal trends in drug-resistant *S. pneumoniae* (DRSP). During the first 12 months of active surveillance (March 1, 1995 through February 29, 1996), 801 cases (25 per 100,000 population) of invasive pneumococcal disease were identified. A total of 733 isolates from 705 cases were tested for antimicrobial susceptibility to a panel of drugs, including penicillin; 119 (16%) were penicillin non-susceptible and 67 (9%) had high-level resistance. This is a 12-fold increase in penicillin non-susceptible *S. pneumoniae* and a 36-fold increase in high-level resistance from 1993.

High Risk Subgroups

The rate of invasive pneumococcal disease was highest among those aged 0-4 years, those 65 years and older, and among blacks (Table 3-29). Although the rate was lowest among whites, levels of penicillin-non-susceptible and penicillin-highly-resistant *S. pneumoniae* were much higher in whites than in other groups. No cases of penicillin non-susceptible or penicillin highly resistant *S. pneumoniae* were reported among Hispanics.

Table 3-29
Incidence of Disease and Percentage of *Streptococcus pneumoniae* Isolates Resistant to Penicillin by Age and by Race/Ethnicity Connecticut, 3/1/95 - 2/29/96

Group	Disease Incidence		<i>S. pneumoniae</i> Penicillin Resistance	
	No. Cases (N=705)	Rate per 100,000 ^a	Non-susceptible Isolates (%)	Highly Resistant Isolates (%)
<i>Age (years):</i>				
0-4	126	55 ^b	16%	12%
5-64	308	12	16%	8%
65+	271	61 ^b	16%	8%
<i>Race/Ethnicity:</i>				
White	454	17 ^b	19%	12% ^b
Black	154	59 ^b	15%	6%
Hispanic	51	24	0%	0%
Other/Unknown	46	81	13%	7%

^a Group-specific rate per 100,000 population based on 1990 U.S. Census counts.

^b Statistically significant ($p < 0.05$).

Source: DPH, BCH, Division of Infectious Diseases

Geographic Variation

Penicillin non-susceptible *S. pneumoniae* cases were reported from all counties in Connecticut, ranging from 13% in Hartford County to 29% in Middlesex County. The percentage of penicillin highly resistant *S. pneumoniae* ranged from 6% in New Haven County to 21% in Middlesex County.

Antimicrobial Susceptibility Testing

As shown in Table 3-30, a low percentage of penicillin-susceptible *S. pneumoniae* isolates were resistant to other antimicrobials. At least 50% of penicillin-non-susceptible and highly resistant *S. pneumoniae* isolates were resistant, however, to one or more other antimicrobials, including amoxicillin, cefotaxime, and TMP-S. Co-resistance at lower levels was found for chloramphenicol, clindamycin, erythromycin, and tetracycline.

Control of Drug Resistant *Streptococcus pneumoniae*

In Connecticut, drug-resistant *S. pneumoniae* has increased over time, and its emergence challenges both the medical and public health communities. Controlling the increase of drug-resistant bacteria will require more judicious use of antimicrobial agents and wider use of the existing vaccine. Although appropriate antimicrobial-drug use has unquestioned benefit, often these agents are used inappropriately by physicians and patients, creating additional selective pressure for antibiotic resistance. The vaccine for the 23 most common serotypes of *S. pneumoniae* has been available since the early 1980s, but remains underutilized.

Table 3-30
Percentage of Penicillin Susceptible, Non-susceptible, and
Highly Resistant Pneumococcal Isolates Resistant to Selected Antimicrobials
Connecticut, 3/1/95 - 2/29/96

Antimicrobial	<i>S. pneumoniae</i> Isolates: Susceptibility/Resistance to Penicillin		
	Susceptible (%)	Non-susceptible (%)	Highly Resistant (%)
Amoxicillin	0	5 ^a	92 ^a
Cefotaxime	<1	55 ^a	94 ^a
Chloramphenicol	<1	13 ^a	20 ^a
Clindamycin	<1	6 ^a	8 ^a
Erythromycin	2	18 ^a	19 ^a
Ofloxacin	<1	2	3
Rifampin	<1	<1	2
Tetracycline	2	17 ^a	22 ^a
TMP-S	8	70 ^a	97 ^a
Vancomycin	0	0	0

^a Statistically significant (p<0.05).

Source: DPH, BCH, Division of Infectious Diseases

PNEUMOCOCCAL AND INFLUENZA IMMUNIZATIONS IN THE ELDERLY

Summary

One of the national health objectives for the year 2000 is to increase influenza and pneumococcal vaccination levels to at least 60% for persons at high risk for influenza and pneumococcal disease, including those aged 65 years or older. In Connecticut, estimates of influenza and pneumococcal vaccination coverage levels are based on data from the BRFSS. In 1995, 62% of respondents aged 65 and older reported getting a flu shot in the past year. This was an improvement over the 56% rate reported in 1994 and exceeded the national objective of 60% (Figure 3-79). In 1995, 37% of respondents aged 65 and older reported they had received a pneumonia vaccination. This was a marked improvement over the 19% rate reported in 1993, though still far below the objective of 60%. Achieving this objective will require continuing collaboration among public and private organizations to improve awareness and vaccine delivery, changes in clinical practice, vaccine delivery mechanisms that limit cost and remove accessibility constraints, and surveillance data, such as those provided by the BRFSS, to assess the progress of current and future programs.

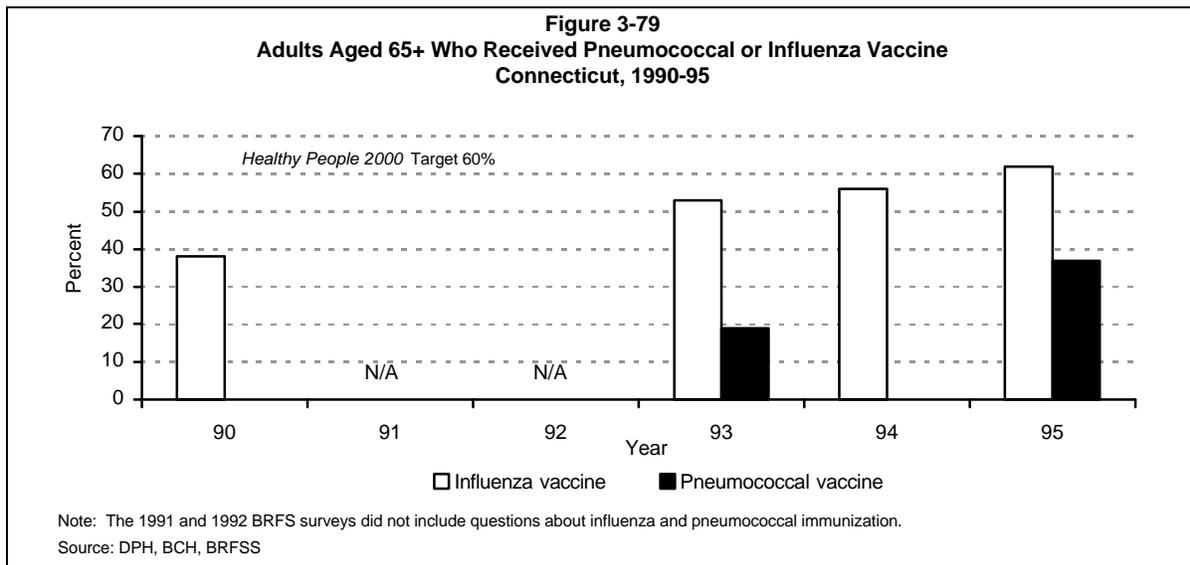
Reasons for Optimism

The influenza vaccination rate reported in the 1995 BRFSS for Connecticut was the highest reported for older persons to date. Reasons suggested for the rise in influenza vaccination levels include 1) greater acceptance of preventive medical services by practitioners, 2) increased delivery and administration of

vaccine by health-care providers and sources other than physicians (e.g., visiting nurse and home health agencies), and 3) the initiation of Medicare reimbursement for influenza vaccination in 1993.

Need for Improvement

Both in Connecticut and nationally, pneumococcal vaccination levels have increased over time, but remain substantially lower than coverage achieved for influenza vaccine. Nationally, distribution of pneumococcal vaccine increased from 1.2 million doses in 1989 to 3.6 million doses in 1993, consistent with increasing self-reported vaccination levels. The lower rate of coverage may reflect that many providers and patients may not be routinely reminded about the need for pneumococcal vaccination among persons aged 65 years and over, whereas campaigns for influenza vaccination occur annually before the influenza season. Thus, there is a need to educate providers and the public about the current recommendations benefits of pneumococcal vaccination .



FOODBORNE DISEASES

Summary

Safety of the food supply is a major public health concern. Ingestion of food products contaminated with pathogenic infectious agents can lead to a wide range of health consequences with substantial mortality. Some of the more severe health consequences are paralysis (botulism), acute and chronic intestinal illness complicated by dehydration, weight loss, and malnutrition (wide variety of pathogens), bloodstream infection (typhoid fever, many other bacterial pathogens), and hemolytic-uremic syndrome (Shiga-toxin-producing bacteria, including *Escherichia coli* O157:H7). Four relatively common foodborne bacterial pathogens that can cause many of these health consequences are most commonly used for monitoring food safety: *Salmonella*, *Campylobacter*, *Escherichia coli* O157:H7 (referred to henceforth as O157), and *Shigella*.

A national health objective for the year 2000 is to reduce the incidence of infections with O157 to 4 per 100,000 population, *Campylobacter* infections to 25 per 100,000 population, *Salmonella* infections to 16 per 100,000 population, and to reduce outbreaks of infections due to *Salmonella enteritidis* to fewer than 25 outbreaks yearly. There is no year 2000 objective for *Shigella* infections. The recent status of progress toward these objectives is shown in Table 3-31. In addition to achieving the infection rates shown in the table, Connecticut had 2 outbreaks of infections due to *S. enteritidis* in SFY 1995, which was twice the *Healthy Connecticut 2000*¹⁵² objective of 1 outbreak per year.

Table 3-31
Infection Rates for Key Foodborne Pathogens
Connecticut, SFY 1996

Disease Organism	Infection Rate per 100,000 Population	
	Year 2000 Target	Connecticut SFY 1996
<i>Salmonella species</i>	16	18.8
<i>Campylobacter jejuni</i>	25	NA ^a
<i>Escherichia coli</i> O157:H7	4	2.0

^aThe Epidemiology Program discontinued lab reporting and tabulation of this pathogen in 1993, however, it was recently reinstated and will appear as a tally on future reports.
Source: DPH, BCH, Division of Infectious Diseases

From 1992-1996, O157, *Salmonella*, and *Shigella* infections were all physician-reportable diseases and laboratory-reportable findings. *Campylobacter* was made reportable in 1997. From 1992-1996, 243 cases of O157 (average annual rate of 1.5 cases per 100,000 population), 3,585 cases of salmonellosis (average annual rate of 24 cases per 100,000 population), and 917 cases of shigellosis (average annual rate of 5.6 cases per 100,000 population) were reported in Connecticut. Since 1992, DPH investigated 10 outbreaks of salmonellosis, seven of which were due to *S. enteritidis*. The introduction and dissemination of strains of *S. enteritidis* that can infect chickens and intact shell eggs is responsible for an increase in outbreaks of salmonellosis. Since 1992, DPH has investigated four outbreaks of O157. Vehicles for the bacterial pathogen in these outbreaks were varied and included undercooked ground beef, foods purchased at a single delicatessen, lettuce, and unpasteurized apple cider.

Time Trends

The average annual incidence between 1992 and 1996 of infections caused by *Salmonella*, *Shigella*, and *E. coli* O157:H7 is shown in Figure 3-80.

¹⁵² Connecticut Department of Public Health and Addiction Services, Office of Health Policy Development. *Healthy Connecticut 2000 Baseline Assessment Report*. Hartford, CT: The Department. 1994.

High Risk Subgroups

For salmonellosis, rates of illness were highest in children under age 10 years and adults aged 20-29 years and >80 years (Figure 3-81). Rates of illness in cases of shigellosis were highest among those aged <10 years and 20-29 years. The highest rates of *E. coli* O157:H7 infections were observed in children under the age of 10.

Risk Factors and Measures to Reduce Foodborne Illness

The key risk factors for local outbreaks are improper holding temperatures, inadequate cooking, contaminated equipment, food from unsafe sources, and poor personal hygiene. Increasingly, widespread but low-level outbreaks from contaminated food products once thought to be safe (e.g., apple cider, lettuce, raspberries, other produce) are being identified.

Measures to reduce foodborne illness occur at the local, state, and national levels. At the local level, routine inspection of food establishments aims to improve their sanitary conditions. At the state and national levels, requirements to pasteurize or otherwise decontaminate certain foods, guidelines for safe food storage and preparation, and investigation and control of outbreaks assure reasonable protection from contaminated foods. State and local health codes nationwide and in Connecticut generally follow model food establishment codes developed by the national Food & Drug Administration. At the national level, oversight of food production and importation attempts to limit the extent to which food products are contaminated before they are brought to market.

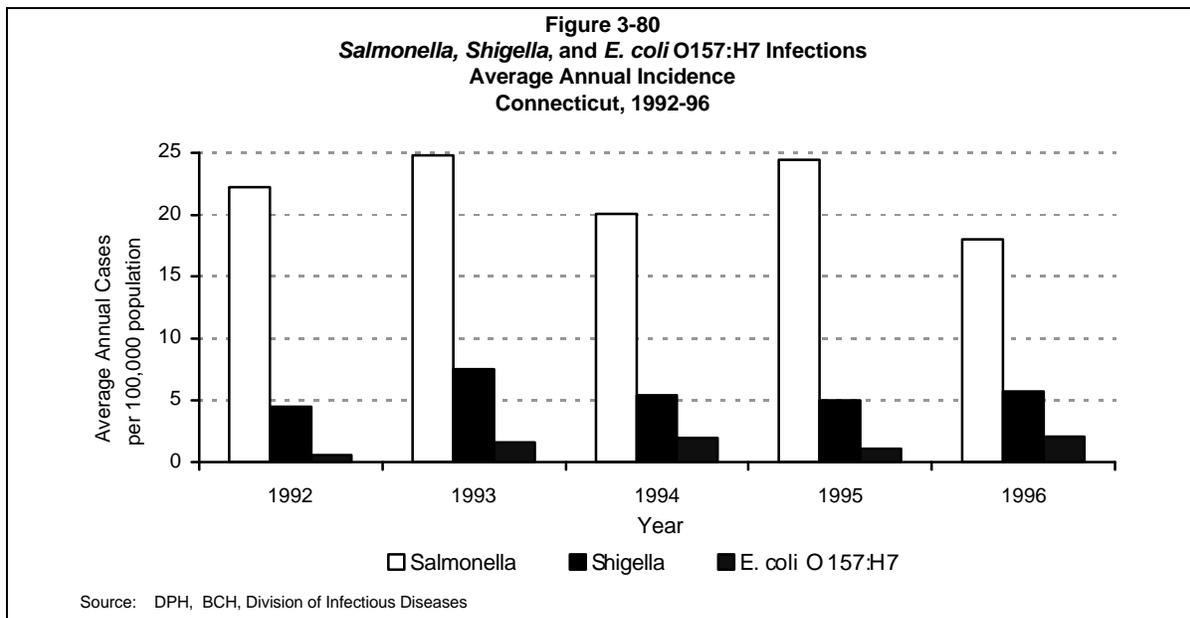
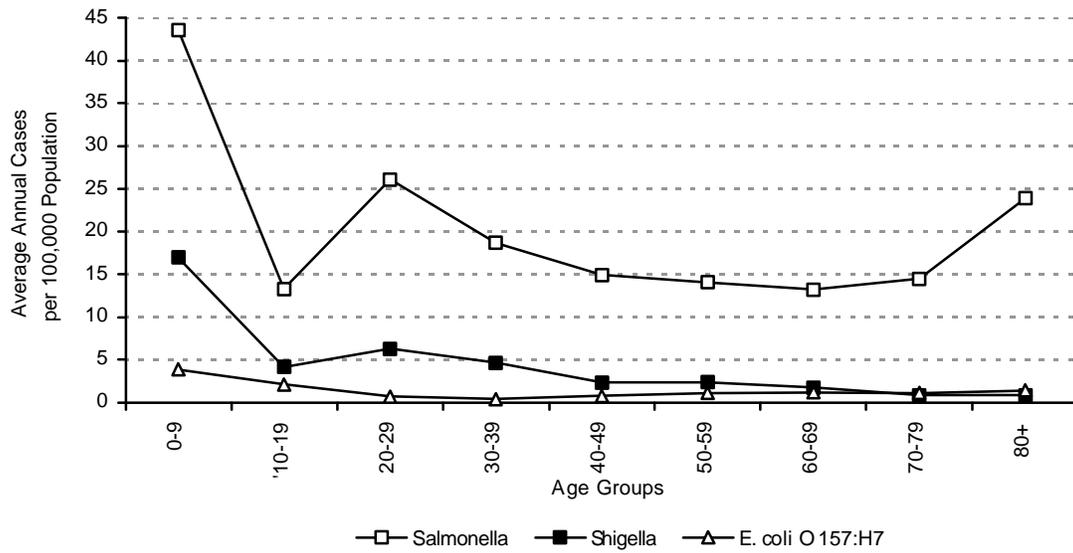


Figure 3-81
Salmonella, Shigella, and E. coli O157:H7 Infections
Average Annual Incidence by 10 year Age Groups
Connecticut, 1992-96



Source: DPH, BCH, Division of Infectious Diseases

ENVIRONMENTAL AND OCCUPATIONAL HEALTH

HIGHLIGHTS

- In 1996 all eight Connecticut counties were in violation for one or more of the six “criteria” air pollutants regulated by the U.S. EPA, and all exceeded the federal standard for ozone. Fairfield County was out of attainment for carbon monoxide. All Connecticut residents are thus at some risk for respiratory disease from exposure to such pollutants.
- Connecticut has more than 500 hazardous waste sites. Approximately 74,000 people live in the vicinity of the 15 federal Superfund sites and may be exposed to contamination related to the sites.
- More than 600 community public water supplies serve about 83% of Connecticut’s population; at any given time more than 99% are in compliance with water supply regulations. There is zero incidence of waterborne disease in Connecticut.
- Based on preliminary data, the prevalence of elevated blood lead levels of ≥ 10 $\mu\text{g}/\text{dL}$ in Connecticut children under age 6 was 6.2% in 1995. In the towns of Bridgeport, New Haven, and Hartford, the prevalence was 22.1%, 18.0%, and 12.9%, respectively.
- The 1992 Connecticut infant mortality rate for birth defects was 1.7 per 1,000 live births.
- Connecticut industries with rates of non-fatal occupational illness and injury that are higher than the *Healthy People 2000* objectives are: state and local government; agriculture, forestry, and fishing; manufacturing; construction; retail; transportation/public utilities; wholesale; services and mining.
- The four leading occupational illnesses in 1992-96, as reported to the Connecticut occupational surveillance system, were: repetitive trauma disorders, poisonings by toxic materials, skin disease/disorders, and respiratory diseases/disorders.

AIR POLLUTION

Summary

The Healthy Connecticut 2000¹⁵³ and Healthy People 2000¹⁵⁴ objectives include county attainment standards for ambient air pollution. In 1996, all 8 Connecticut counties were out of attainment for at least one of the six criteria air pollutants regulated by the U.S. EPA. The contaminant of most concern in Connecticut is ozone and none of the 8 counties meet the ozone standard. Other contaminants such as particulate matter and carbon monoxide were problems in more limited areas of the state (Map 3-14).

¹⁵³ Connecticut Department of Public Health and Addiction Services, Office of Health Policy Development. *Healthy Connecticut 2000 Baseline Assessment Report*. Hartford, CT: The Department. 1994: Objective 11.5.

¹⁵⁴ U.S. Department of Health and Human Services, Public Health Service. *Healthy People 2000: National Health Promotion and Disease Prevention Objectives. Full Report with Commentary*. Washington, D.C., Public Health Service. 1990:320.

Connecticut and the rest of the Northeast have a more severe ozone problem than most regions in the United States. Surface-level ozone is primarily a product of chemical reactions starting with various emissions from automobiles. Ozone is a well studied respiratory irritant that among other effects can cause or exacerbate asthma. Particulate matter (PM₁₀) has been associated with increased mortality in numerous epidemiological studies. Carbon monoxide is a special risk to those with pre-existing conditions such as heart disease or pregnancy.

High Risk Subgroups

The population groups that are at risk from the six criteria pollutants are shown in Table 3-32. Different groups are associated with different pollutants.

**Table 3-32
Populations at Risk for Air Pollutants**

Pollutant	Population at Risk
<i>Particulate matter</i>	Pre-adolescent children (≤13 years old) Elderly persons (65+ years old) Persons with pre-existing respiratory disease ^a
<i>Sulfur dioxide</i>	Pre-adolescent children (≤13 years old) Persons with pre-existing respiratory disease ^a
<i>Carbon monoxide</i>	Pregnant women Persons with pre-existing coronary heart disease
<i>Ozone</i>	Persons with pre-existing respiratory disease ^a Elderly persons (65+ years old)
<i>Nitrogen dioxide</i>	Pre-adolescent children (≤13 years old) Pre-adolescent children (≤13 years old) Persons with pre-existing respiratory disease ^a
<i>Lead</i>	Children ≤5 years old Pregnant women

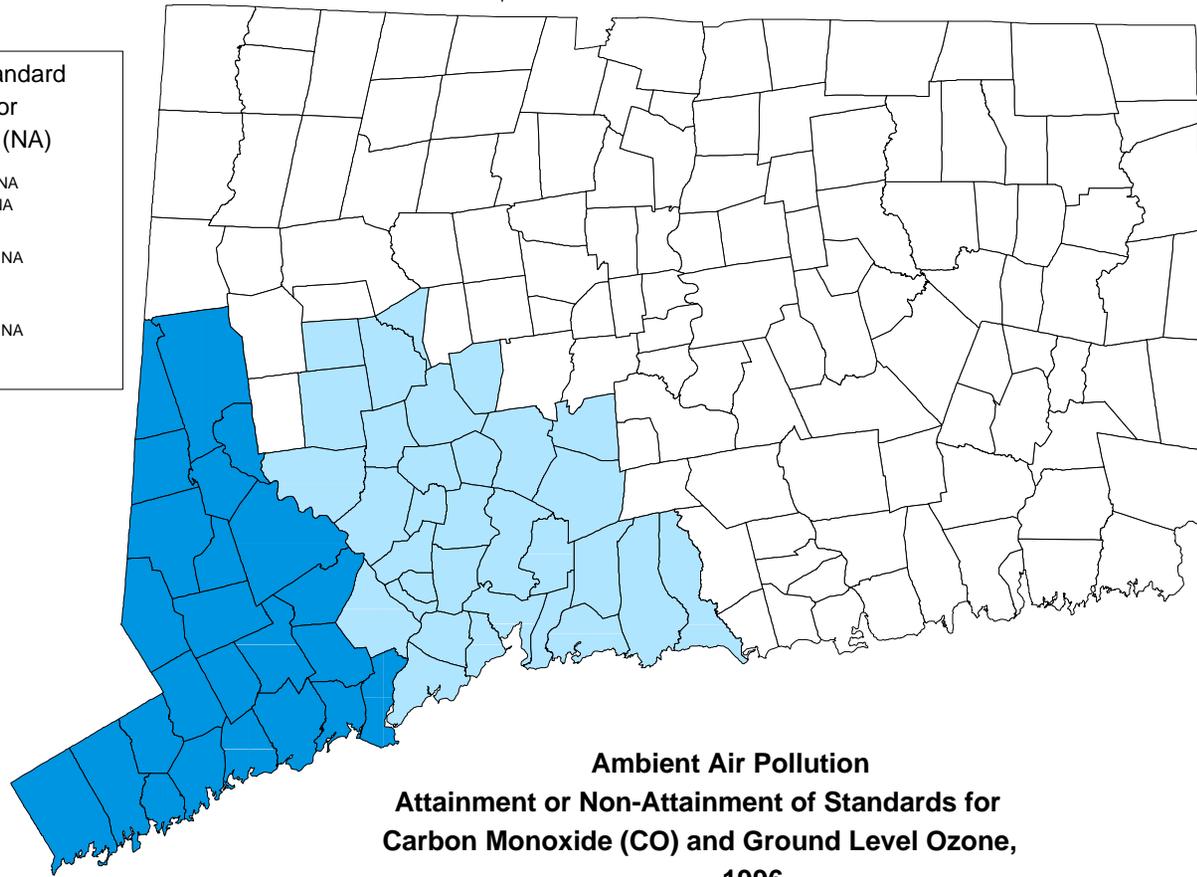
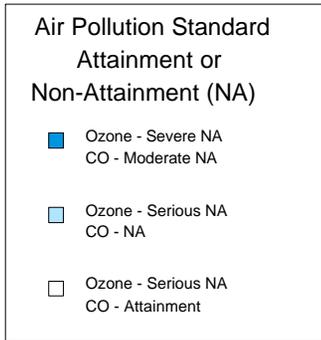
^a "Respiratory disease" comprises asthma and chronic obstructive pulmonary disease (COPD), including emphysema and chronic bronchitis.

Source: DPH, Environmental Epidemiology and Occupational Health Division

Geographic Variation

All Connecticut counties are in violation of at least one ambient air standard. Ozone accounts for most areas being out of attainment. The areas of Connecticut that are in "Severe Non-attainment" and "Serious Non-attainment" for ozone are shown in Map 3 - 14. Only Fairfield County is in consistent non-attainment for carbon monoxide. For particulate matter (PM₁₀) only the City of New Haven is in non-attainment. As all Connecticut counties violate the ozone standard, all Connecticut residents are at some risk from ozone exposure. Estimates of high risk populations in counties in non-attainment for ozone are given in Table 3-33.

Map 3-14



**Ambient Air Pollution
Attainment or Non-Attainment of Standards for
Carbon Monoxide (CO) and Ground Level Ozone,
1996**

Source: DPH, BCH, 1997

Table 3-33
Estimated Populations at Risk for Asthma and Chronic Obstructive
Pulmonary Disease (COPD) in Ozone Non-attainment Areas
Connecticut, 1996

County	Age specific Populations		Persons at Risk for:		
	≤13 years	65+ years	Asthma		COPD
			Pediatric	Adult	All
Fairfield	147,079	110,068	10,778	23,279	47,587
Hartford	152,118	119,626	11,079	23,919	48,986
Litchfield	32,301	24,593	2,345	4,841	10,048
Middlesex	24,697	18,771	1,809	4,051	8,122
New Haven	145,631	117,977	10,519	22,523	46,382
New London	48,443	30,422	3,456	7,055	14,209
Tolland	23,051	11,555	1,671	3,601	6,881
Windham	21,097	12,895	1,519	2,758	5,774
Connecticut	594,417	445,907	43,176	92,027	187,989

Source: American Lung Association

HAZARDOUS WASTE SITES

Summary

As part of a cooperative agreement with the Agency for Toxic Substances and Disease Registry, part of the U.S. Public Health Service, the DPH Division of Environmental Epidemiology and Occupational Health identify populations at risk to help prevent exposures and their adverse health effects. More than 110,000 Connecticut residents live within one mile of the state's 15 federal Superfund sites (i.e., those that are on the National Hazardous Waste Priority List) (Map 3-15). Approximately 74,000 people have been exposed to site-related contaminants, most through drinking water. Volatile organic compounds, some of which are carcinogenic, are most often associated with these exposures. Additional potential exposures have been identified for soil, ambient air and surface waters. The Superfund sites represent only a small fraction of the more than 500 state-listed sites, many of which have not yet been fully characterized.

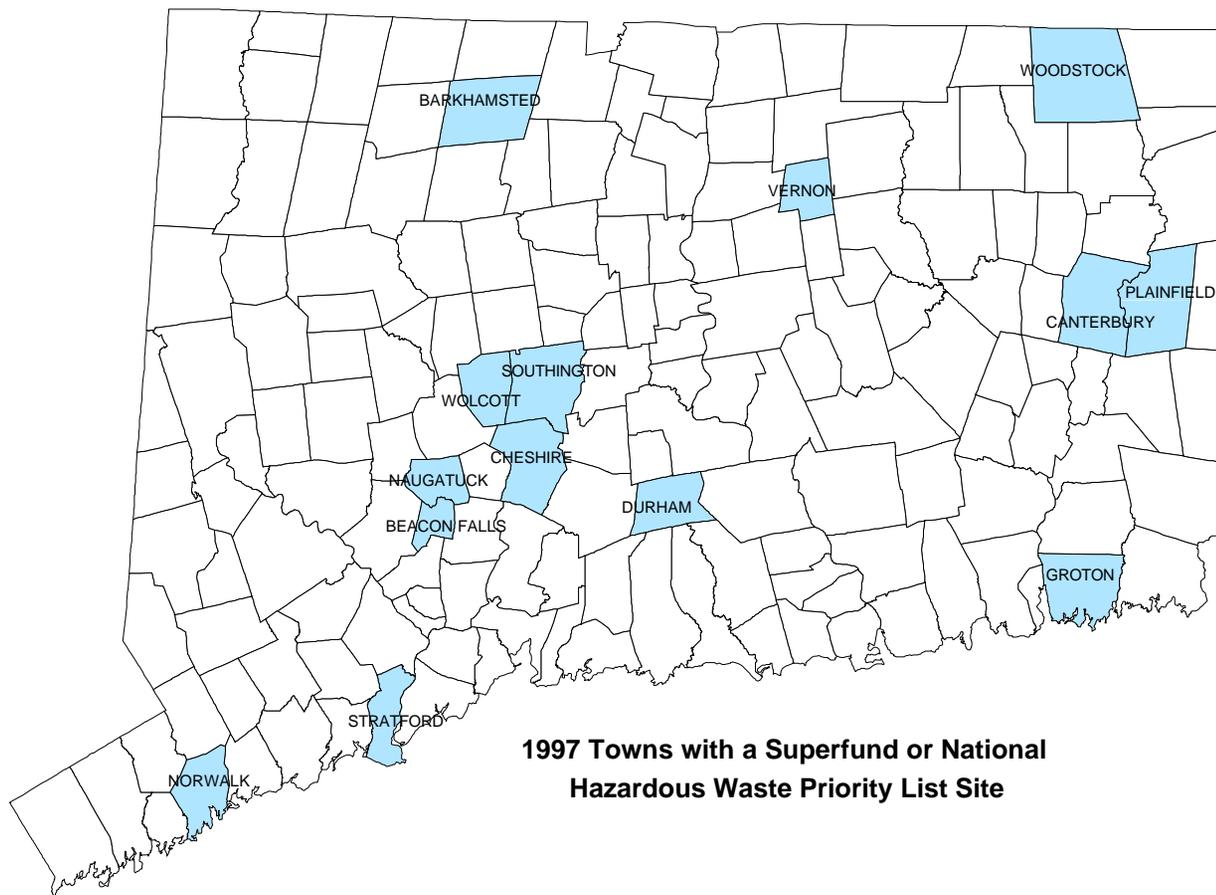
Data from Superfund sites around the country suggest that proximity to hazardous waste is associated with a small to moderate increased risk of some specific cancers, and increases in the risk of birth defects, neurotoxic disorders, leukemia, respiratory and sensory irritation, and dermatitis.¹⁵⁵

Modifiable Risk Factors for Intervention

Hazardous waste sites are evaluated and cleaned up on a case-by-case basis. Regulatory agencies such as the Connecticut Department of Environmental Protection (DEP) and the U.S. EPA have authority to order or conduct cleanup, but they often rely on DPH for prioritization of health risk. Health studies and risk assessments conducted by DPH are utilized by DEP and EPA to make health protective risk management decisions.

¹⁵⁵ Testimony of Barry L. Johnson, Ph.D., Assistant Surgeon General, Assistant Administrator, Agency for Toxic Substances and Disease Registry, Public Health Service, U.S. Department of Health and Human Services before the Subcommittee on Commerce, Trade and Hazardous Materials Committee on Commerce, U.S. House of Representatives. May 23, 1995.

Map 3-15



**1997 Towns with a Superfund or National
Hazardous Waste Priority List Site**

Source: U.S. Public Health Service, Agency for Toxic Substance & Disease Registry,
Division of Environmental Epidemiology & Occupational Health

DRINKING WATER

Summary

The DPH is the primacy agency for the federal Safe Drinking Water Act (SDWA) in Connecticut. The principal goal in this capacity is to ensure a safe and adequate supply of drinking water by reducing or eliminating the threat of bacteriological and chemical contamination and by developing and coordinating water supply planning activities. It is estimated that all of Connecticut's 3.2 million residents and a significant transient population are benefited by the program.

DPH, through its Water Supplies Section, regulates both community and non-community public water systems in Connecticut. Public systems are those that serve 25 or more people or have 15 or more service connections. Community systems (the category of systems to which year 2000 objectives pertain) serve a year-round *residential* population. About 83% of the state's population receive water from community systems. Recent and anticipated changes in federal and state legislation have broadened DPH's scope of responsibility for drinking water supplies. Re-authorization of SDWA in 1996, for example, enabled DPH to establish a Drinking Water State Revolving Fund, which will increase public health protection by providing significant funding to public water systems for infrastructure improvements. Private water systems, including residential wells, came under the agency's jurisdiction for the first time in 1997, and up to 500,000 entities ultimately could be affected.

Water Quality

Two national year 2000 objectives pertain to drinking water. The first (Objective 11.3) is to reduce outbreaks of waterborne disease from infectious agents and chemical poisoning to no more than 11 per year; and the second (Objective 11.9) is to increase to at least 85% the proportion of people who receive drinking water that meets federal safe drinking water standards.¹⁵⁶

Waterborne Disease Outbreaks

There has been zero incidence of waterborne disease in Connecticut in the 1990's. The high quality of drinking water in Connecticut has been maintained through a variety of regulatory activities and coordinated planning activities. All surface water supplies, for example, are filtered or are under order to do so, significantly reducing risk from waterborne disease.

Compliance with Federal Standards

The national year 2000 objective for safe drinking water has been exceeded. In 1996, greater than 90% of Connecticut's population on community water supplies received drinking water in full compliance with the federal standards.

¹⁵⁶ U.S. Department of Health and Human Services, Public Health Service. *Healthy People 2000. National Health Promotion and Disease Prevention Objectives*. Washington, DC, Public Health Service. 1990:106.

BLOOD LEAD LEVELS IN CHILDREN

Summary

Childhood lead poisoning is one of the most common and preventable pediatric public health problems in the United States. With the elimination of lead in gasoline, the remaining major source of lead exposure in children is ingestion of lead paint chips or dust from deteriorated lead-based paint in older homes. The sale of lead-based paint for residential use was banned in 1978. Additionally lead-based paint that was available prior to 1950 contained higher concentrations of lead. Many homes built prior to 1950 contain lead-based paint throughout the interior and exterior of the home. In 1990, the U.S. Census documented 1,320,850 dwelling units in Connecticut, of which 462,808 (35%) were constructed prior to 1950.¹⁵⁷

Screening of young children is one component of the overall strategy to eliminate childhood lead poisoning. According to the 1990 U.S. Census, there were 272,294 children under age six living in Connecticut. In 1995, 74,027 children under age six (27.2%) were screened for lead poisoning. Screening for lead poisoning is especially important for children between the ages of one and two, as they are at higher risk due to the frequency of hand-to-mouth activity and the vulnerability of their rapidly developing nervous systems to the effects of lead exposures. Of children in this age group, 35% were screened in 1995.

Based on preliminary data, prevalence of elevated blood lead levels of 10 µg/dL or greater among the children age less than six years was 6.2% during 1995. This figure is higher than the national estimate of 4.4%¹⁵⁸ for this age group. The prevalence of children with elevated blood lead levels of 10 µg/dL or greater among Connecticut's urban areas was even higher than the Connecticut statewide or national figures. Urban areas also contain a larger share of the State's older housing and are more likely to contain lead-based paint in deteriorated condition.

Geographic Variation within Connecticut

The percentage of dwellings constructed prior to 1950 and the prevalence of elevated blood lead levels varies considerably by municipality. Based on preliminary data, the three towns with the highest prevalence of elevated blood lead levels for children less than 6 years of age are Bridgeport (22.1%), New Haven (18.0%), and Hartford (12.9%), each far exceeding the national estimate of prevalence among children of this age. These municipalities also have some of the highest percentages of housing built prior to 1950 -- Bridgeport (53.5%), New Haven (57.1%), and Hartford (51.1%). In fact, most Connecticut municipalities have a higher percentage of pre-1950 housing than the 27% of national average used by the CDC in their current screening guidelines.¹⁵⁹

Current Intervention Activities

Lead poisoning transcends all geographic, racial and socioeconomic boundaries. The DPH Childhood Lead Poisoning Prevention Program (CLPPP) provides a comprehensive base of services that include activities at the state and community levels. This involves:

¹⁵⁷ State of Connecticut, Office of Policy and Management, The Connecticut Data Center. *Connecticut Population and Household Characteristics, 1990 Census Complete Count Data - Part A*. Hartford, CT: OPM. August 1991.

¹⁵⁸ U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention. Report on Phase 2 of the Third National Health and Nutrition Examination Survey (NHANES 3), Update: Blood Lead Levels - United States, 1991-1994. *Morbidity and Mortality Weekly Report*. 1997;46(7):141-146.

¹⁵⁹ U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention. Screening young children for lead poisoning: guidance for state and local public health officials. Atlanta, GA: DHHS. November 1997.

- Surveillance of children tested for lead poisoning, including the collection of demographic, medical, and environmental/dwelling information on children affected by lead poisoning. This information is used to identify and monitor communities that will most benefit from targeted prevention and intervention strategies.
- Developing, implementing, and enforcing regulations to ensure effective and safe identification and remediation of lead-based paint hazards.
- Developing primary prevention strategies, which may include establishing “standard of care” regulations to address “lead-safe” rental housing and developing appropriate renovation and remodeling protocols.
- Evaluating the quality and appropriateness of existing risk reduction materials and developing additional materials and mechanisms for training staff and community professionals.

At the municipal level, local health departments provide public health services which complement those offered by the DPH. These services include:

- The identification and screening of children who are most at risk for lead exposures.
- Confirmatory testing and follow-up of children with elevated screening results and referrals to area health care professionals as necessary.
- Epidemiologic investigations, inspections and identification of sources of exposure.
- Providing risk reduction information to families of children identified with elevated blood lead levels and to those who may be at risk for lead exposures.

BIRTH DEFECTS - PREVENTION SURVEILLANCE

Summary

Advances in maternal and infant care have resulted in a steady decrease in infant mortality rates; however, the proportion of infant deaths attributed to birth defects has increased. Nationwide in 1986, the underlying cause of infant death was listed as birth defects for 8,005 infants (20.5%), while an additional 1,008 infants had this listed as a contributing cause, for a total of 23.3%.¹⁶⁰ Birth defects also contribute substantially to YPLL. In 1986, congenital anomalies were the fifth leading cause of years of potential life lost before the age of 65, accounting for approximately 5.4 % of all YPLL.¹⁶¹ As DPH is developing a statewide surveillance system for birth defects, available data are limited.

Mortality

An analysis of linked birth/infant death data for a 1991 United States cohort¹⁶² indicated that the infant mortality rate due to birth defects was 1.8 per 1,000 live births. The rate for blacks (2.1 per 1,000) slightly exceeded that for whites (1.8 per 1,000). In Connecticut in 1992, the infant mortality rate due to birth defects was 1.7 per 1,000 live births. In contrast to the U.S. figures, this rate was highest for white births (1.8 per 1,000) followed by blacks (1.2 per 1,000), and others (0.7 per 1,000).

¹⁶⁰ U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention. Contribution of birth defects to infant mortality - United States, 1986. *Morbidity and Mortality Weekly Report*. 1989;38:633-635.

¹⁶¹ U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention. Premature mortality due to congenital anomalies - United States, 1986. *Morbidity and Mortality Weekly Report*. 1988;37:505-506.

¹⁶² Infant Deaths and Mortality Rates by Race of Mother and for 61 Selected Causes of Death and Birthweight: United States, 1991 Birth Cohort. (LFWK73). <http://www.cdc.gov/nchswww/datawh/statab/unpubd/mortabs/lfwk73.htm>

Morbidity

There is no comprehensive national surveillance system for birth defects. Estimates on incidence of birth defects are based on data found in the Birth Defects Monitoring Program (BDMP) of the CDC. Birth defects contribute substantially to morbidity and disability of children. Of approximately 80,000 infants that are born with a major birth defect each year in the United States, approximately 6,000 die within the first 28 days of life and another 2,000 die during the next eleven months.¹⁶³ Children with birth defects account for 25-30 percent of pediatric hospital admissions. Those infants that survive with birth defects are affected with various degrees of disability; the estimated cost in the U.S. for medical care for children with birth defects exceeds \$1 billion annually.¹⁶⁴

Modifiable Risk Factors

Environmental and nutritional causes of birth defects have been postulated, but supporting data are limited. Folic acid is a key modifiable risk factor; folic acid supplementation before conception and during early pregnancy has been related to decreases in neural tube defects. The characterization of trends in birth defects, identification of risk factors and sentinel events, and development of intervention strategies will be addressed by the new Connecticut Birth Defects Prevention and Surveillance program at DPH.

OCCUPATIONAL DEATHS, INJURIES, AND DISEASES

Summary

Connecticut's overall occupational fatality rate (2.3 per 100,000 full-time worker equivalents) for 1992-1995 is lower than the U.S. year 2000 target¹⁶⁵ (4.0 per 100,000) (Table 3-34). However, the rate for the agriculture, forestry and fishing sector (22.5 per 100,000) exceeded the year 2000 target (9.5 per 100,000). Connecticut's construction sector had a lower rate (9.7 per 100,000) for the period than the year 2000 target (17 per 100,000). The average number of occupational fatalities for 1990-95 was 32 (Figure 3-82).

Table 3-34
Number and Rate of Fatal Occupational Injuries
Connecticut, 1992-95

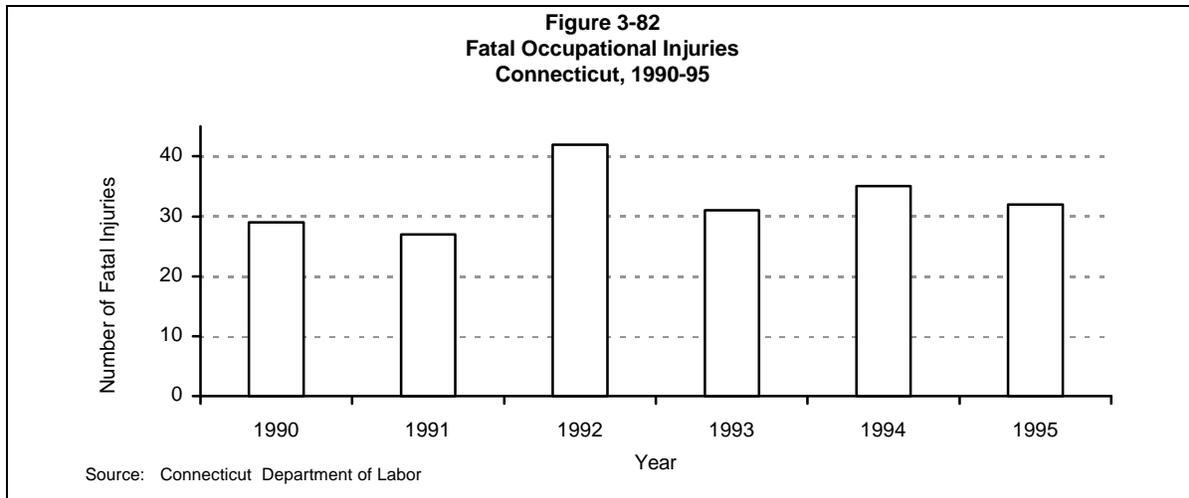
Industry	Number of Injuries by Year					Total	Rate ^a
	1992	1993	1994	1995			
<i>Private Industry</i>	37	28	31	30	126	2.5	
Agriculture, Forestry & Fishing	0	0	8	4	12	22.5	
Construction	7	0	6	6	19	9.7	
Manufacturing	9	5	2	3	19	1.6	
Transportation & Public Utilities	3	5	5	6	19	7.0	
Wholesale & retail trade	9	10	5	8	32	2.4	
Services	5	3	4	2	14	0.8	
Other	0	0	1	1	2	0.4	
<i>State and Local Government</i>	5	3	4	2	14	2.0	
Total	42	31	35	32	140	2.3	

^a Rate is per 100,000 full-time worker equivalents for 1992-1995.
Source: Connecticut Department of Labor

¹⁶³ Lynberg, Chavez, Edmunds, Mulinare. 650-7.

¹⁶⁴ Lynberg, Chavez, Edmunds, Mulinare. 650-7.

¹⁶⁵ U.S. Department of Health and Human Services, Public Health Service. *Healthy People 2000: National Health Promotion and Disease Prevention Objectives*. Washington, DC: Public Health Service. 1990:298.



Those most at risk for workplace fatalities are white males 25-44 years of age who are wage and salary workers. From 1992-1995, the most common types of workplace fatalities were transport incidents, assaults, and violent acts (Table 3-35). Industry sectors with non-fatal occupational illness and injury rates that exceeded the year 2000 target of 6,000 were: state and local government (13,100); agriculture, forestry & fishing (11,800); manufacturing (11,500); transportation & public utilities (10,500); construction (10,200); retail (8,500); wholesale (7,800); services (7,500); and mining (6,900)¹⁶⁶ Table 3-36.

Table 3-35
Number of Fatal Occupational Injuries by Event or Exposure
Connecticut, 1992-95

Event or Exposure	Year				Total	
	1992	1993	1994	1995	No.	Percent
Transport. incidents	9	10	19	13	51	36.4
Assaults & violent acts	10	10	8	8	36	25.7
Contact with objects and equipment	5	3	2	6	16	11.4
Falls	7	5	4	0	16	11.4
Exposure to harmful substances, environments	5	3	1	3	12	8.6
Other	6	0	1	2	9	6.4
Total	42	31	35	32	140	99.9

Source: Connecticut Department of Labor

¹⁶⁶ Rates were calculated as 100,000 full-time worker equivalents for each industry sector and target.

**Table 3-36
Non-Fatal Occupational Illness and Injury
Connecticut, 1994**

Type of Industry	Number of Workers	Injuries & Illnesses	Rate ^a		
			CT	U.S.	Target ^c
<i>All Industries (Total)</i>	1,501,800	111,400	9,000	N/A ^b	
<i>Private Industries (Total)</i>	1,326,100	93,800	8,500	8,400	6,000
Agriculture, Forestry & Fishing	13,600	1,300	11,800	10,000	8,000
Mining	700	100	6,900	6,300	6,000
Construction	49,500	4,500	10,200	11,800	10,000
Manufacturing	285,300	32,400	11,500	12,200	
Transportation & Public Utilities	68,400	6,800	10,500	9,300	6,000
Wholesale	76,100	5,700	7,800	7,700	
Retail	259,400	15,700	8,500	7,900	
Finance, Insurance & Real Estate	135,600	3,100	2,600	2,700	
Services	430,400	24,200	7,500	6,500	
<i>State & Local Government</i>	175,600	17,600	13,100	N/A ^b	

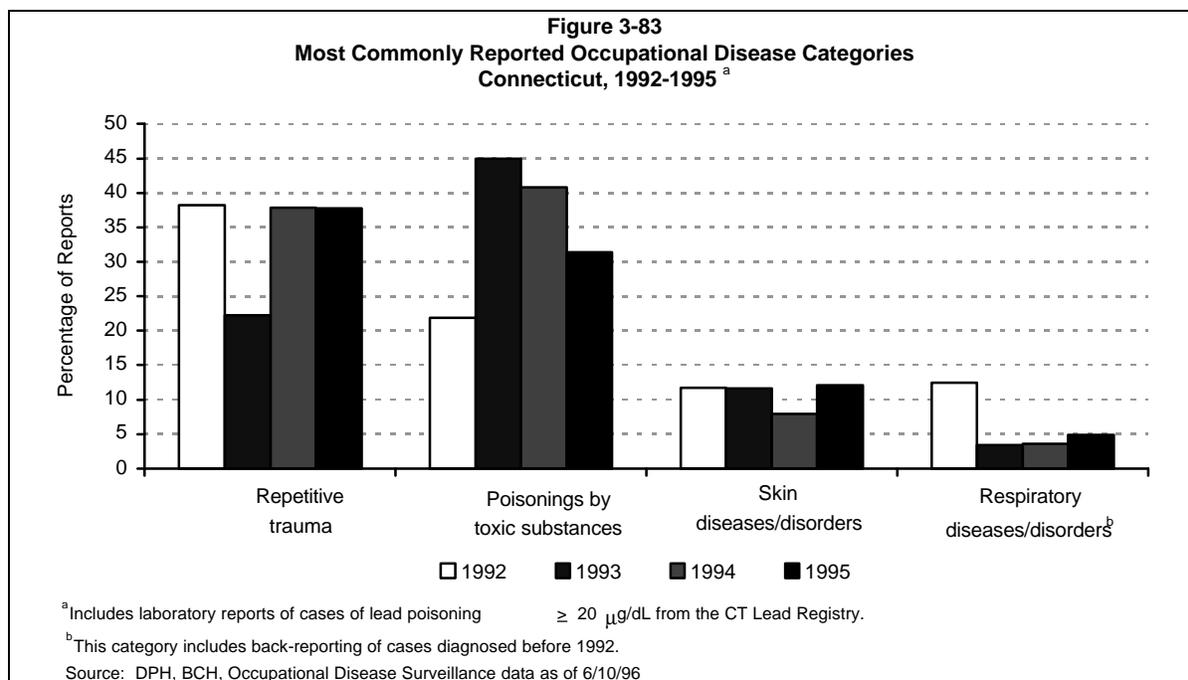
^aRates are per 100,000 full-time workers.

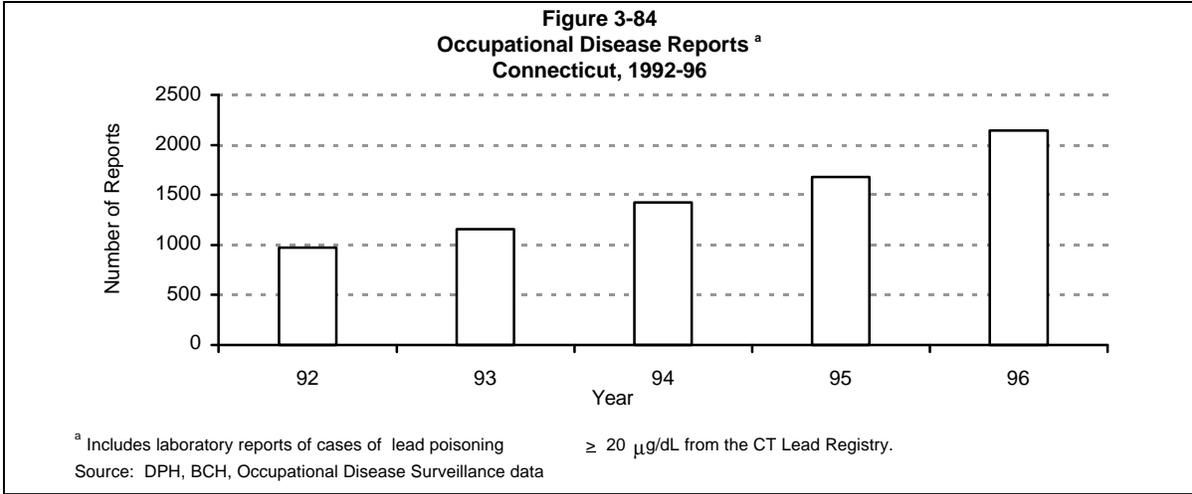
^bThere are no national data for federal public sector employees, because OSHA does not cover federal employees in all states. The U.S. data therefore include only employees in private industry.

^cThe target is a national goal for the year 2000.

Sources: Bureau of Labor Statistics Annual Survey; U.S. Public Health Service, *Healthy People 2000*.

The four types of occupational illnesses most reported to the Occupational Disease Surveillance System from 1992-95 were repetitive trauma disorders, poisonings by toxic substances, skin diseases/disorders, and respiratory diseases/disorders (Figure 3-83). The number of reports has been increasing each year (Figure 3-84) because outreach efforts have made more physicians aware of the reporting requirements; however, the relative proportions of reports in each of the four major categories has remained fairly stable.





Potential for Intervention

Physicians have been required to report occupational diseases since 1949. The DPH Occupational Health Surveillance Program (OHSP) conducts surveillance on occupational diseases. The OHSP investigates clusters of occupational diseases, including lead and mercury toxicity, asthma, silicosis, skin diseases/disorders, and repetitive trauma disorders. DPH engages in educational efforts with physicians and workers to reduce the top four categories of reported occupational illnesses, i.e., repetitive trauma disorders, poisonings by toxic materials, skin diseases/disorders, and respiratory diseases/disorders. Education strategies include distribution of fact sheets and presentations to workers, physicians, occupational nurses, and other interested parties.