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The Population of Connecticut: Abridged LifeTables by Sex and Color 1959-61 and 1969-71

Thomas E. Steahr

Department of Rural Sociology

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FOREWORD

The preparation of data required for the calculation of the life tables for Connecticut's population presented in this report involved the assistance and cooperation of several persons. Special thanks are due Mr. Edward Aubin, research analyst, Department of Health, State Vital Statistics, for providing data on the number of deaths by age intervals for 1971. At the time this study was under preparation, the State report containing these data was in the process of being printed but unready for public purchase. Mr. Aubins cooperation greatly facilitated the rapid analysis of current mortality in Connecticut's population. Special recognition is also due Mr. Vincent Bolduc and Miss Kathy Skambis -- research assistants, Department of Rural Sociology, The University of Connecticut -- for their help in preparation of agespecific death rates and in the development of a computer program for life table construction.

Life tables are presented for nonwhites in Connecticut based on the 1959-1961 and 1969-1971 periods. The reader should be advised that these tables are based on a relatively small number of nonwhites and specific life table values for nonwhites may change significantly with small changes in number of deaths by age. This instability is not the case for life tables for white persons since they were derived from a larger population. However, it would be appropriate to view the nonwhite life table values as suggestive of their mortality conditions but not as reliable as data in the life tables for the white population.

The research reported in this publication was supported in part by Federal funds may available through the provisions of the Hatch Act.

THE POPULATION OF CONNECTICUT: ABRIDGED LIFE TABLES BY SEX AND COLOR 1959-61 and 1969-71

By Thomas E. Steahr*

PART I - INTRODUCTION TO LIFE TABLES

Types of Life Tables

A life table is one of several statistical techniques used to study mortality conditions in a population. Unlike the procedures involved in the calculation of crude rates, age-specific mortality rates, or various standardized rates of mortality, a life table is not influenced by the actual age distribution of a population nor does it involve the selection of some standard population for comparative purposes. It is a statistical model, based on certain assumptions that efficiently summarizes the mortality conditions of the population under investigation. Two important assumptions of the life tables in this report are that the original cohort be diminished by deaths only; e.g. in and out migration is not allowed, and that deaths are uniformly distributed throughout each age interval. Implications of these assumptions will become evident in the following section on interpretation of the life table.

Life tables fall into one of two categories, either current life tables or generation life tables. Current life tables or period life tables are based upon actual death statistics collected over a short period of time, usually one to three years. They assume that a hypothetical group of people born at the same time are subject to a fixed schedule of age-specific mortality rates which gradually diminish their numbers by death until all numbers of the original cohort are dead. Since the age-specific mortality rates are derived from an actual population experience, period life tables offer a concise description of mortality conditions during a brief time interval.

Generation life tables or cohort life tables are derived from mortality conditions experienced by a group of persons born at the same date, e.g. all persons born during 1900. This group would be followed throughout its lifetime until all persons of this cohort had died. Thus a generation life table requires data over a very long period of time, which is the primary reason why generation life tables are less common than period life tables. All of the life tables presented in this report are period life tables.

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Life tables are also classified according to the way the age intervals are presented. Complete or unabridged life tables present mortality rates by single years of age. Abridged life tables present mortality rates by age intervals of five or ten years. All the period life tables presented in this report are abridged tables using age intervals of under 1 year, 1 to 4 years, and 5-year intervals up to 85 years of age and over. Abridged tables are less accurate than unabridged tables but the differences are small and for most purposes abridged tables provide adequate results.

There are three common methods of constructing abridged life tables: the Reed-Merrell method, the Greville method, and the method of reference to a standard table. These techniques involve different ways of converting central death rates by age groups into age-specific probabilities of dying. All of the tables contained in this report were calculated using the Reed-Merrell method for abridged life tables.

The life tables presented here are comparable to those contained in an earlier report1, with two major differences. First, life tables for whites and nonwhites in Connecticut were separately constructed for this report but in the previous publication they were constructed for the total population only. Secondly, central death rates by color and sex were directly calculated from the Reed-Merrell conversion formulae and not by extrapolations from a table of nax values for given central death rate values. For these two reasons abridged life tables by sex and color were prepared for two time periods: 1959-1961 and 1969-1971. The three year interval was selected to increase the stability of age-specific central death rates and the census data for 1960 and 1970 provided the needed information for rate conversions. 2 Also provided in this report are life tables for total males and total females in Connecticut at both time periods. A statistical summary of mortality trends is presented in Part III. All life tables were calculated by a computer with a special purpose program for the Reed-Merrell method.

Interpretation of Life Tables

The most common interpretation of a life table is to view it as showing the lifetime mortality experience of one cohort of persons. Since this hypothetical cohort of 100,000 persons, called the radix of the life table, is exposed to a set schedule of mortality rates based on actual death data, this interpretation stresses the implications the mortality schedule has for future populations. In other words, if there were 100,000 births in an actual population and if the age-specific mortality rates did not change throughout their lifetimes, that original cohort would be depleted at the rate shown in the life table.

^{1.} Stockwell, Edward G., Abridged Life Tables, by Sex, For Connecticut, 1959-1961; Agricultural Experiment Station, The University of Connecticut, Storrs, Research Report 10 (July 1965), 44 pp.

^{2.} For a more detailed discussion of life table methodology see Shryock, Henry S. and Jacob S. Siegel, The Methods and Materials of Demography, Vol. II, U. S. Bureau of the Census, U. S. Government Printing Office, Washington, D.C., 1971, pp. 429-461.

Following this interpretation, the separate columns of a life table mean the following. Column 1 is the age interval, age x to age x + n. For example, in Table 1, 10-14 years of age refers to persons between their 10th and 15th birthdays. Column 2, the $_{n}q_{\chi}$ values, refers to the probability that a person alive at the start of a given age interval will die before reaching the end of that interval. In Table 1, of the 97,713 males alive at exact age 10 years, 173 will die before reaching age 15 years because the probability of death is .001774 during that age interval. Column 3, the $l_{\rm X}$ values, shows the number of survivors alive at the beginning of each age interval. In Table 1, of the 100,000 Connecticut males there would be 97,713 survivors at exact age 10 years. Column 4, the n^dx values, show the total number of deaths that would occur within each age interval out of the total number of births of the original cohort. In Table 1, for example, there would be 173 male deaths in the age interval between 10 to 15 years of age. Column 5, the ${\rm nL}_{\rm X}$ values, shows the number of person-years lived within each of the age intervals. For example in Table 1, for the 100,000 births there would be 488,206 person years lived between the ages of 10 to 15 years. Of the 97,713 persons who reach age 10, there are 97,540 who will survive to age 15 and they would live 5 years each $(97,540 \times 5 = 487,700 \text{ person years})$. Of the 173 persons who die during the interval, they will live on the average of 506 person years, as determined by the appropriate Reed-Merell linear equations. Column 6, the $T_{\mathbf{x}}$ values, indicates the total number of years lived after the start of a given age interval. In Table 1, for example, the 100,000 male births in Connecticut would live a total of 5,887,497 person years after their 10th birthday. The last column 7, the $e_{\mathbf{X}}$ values, shows the mean life expectancy for persons who survive to the start of the indicated age interval. Connecticut males in Table 1 who pass their 10th birthday have a mean expectation of life of 60.3 more years.

A second interpretation of a life table views it in terms of a stationary population i.e., as a population whose total number and age distribution does not change over time. A stationary population would be achieved if the total number of births each year was the same and if each birth cohort was exposed to the fixed schedule of age-specific mortality rates of the life table. Over a long period of time the annual number of deaths would equal the number of births and there would be no population growth. With this interpretation, columns 1 (age intervales, 2 (nq_X) , and 7 (e_X) would mean the same as described above hut the other columns would be viewed differently. Column 3, the l_x values, now indicate the number of persons who reach a given age level. For example, Table 1 shows 97,713 males reaching their 10th hirthday and, given a constant number of births, there would be that many males reaching that age every year. Column 4, the $_{n}d_{x}$ values, now indicates the number of deaths in each age interval that would occur each year in a stationary population. Thus, there would be 173 male deaths between 10 to 15 years of age every year assuming a constant number of births. Column 5, the $_{\rm n}L_{\rm X}$ values, now indicates the number of persons living within each age interval. In Table 1, there would be 488,206 males 10-14 years of age living in the stationary population at any time. Column 6, the T_{X} values, now mean the number of persons living within a certain age interval and all older age intervals. In Table 1, there would be 5,887,497 males 10 years of age and older living in the stationary population at any given time.

Use of Life Tables

Life tables have a wide variety of applications in the study of population. In addition to their utility in mortality studies and public health analysis (with the calculation of multiple decrement life tables), life table values are used in the construction of true rates of natural increase and in the determination of survival rates for analysis of population size, net migration, and fertility performance. An early, definitive study on mortality using life table techniques was published in 1936 by Dublin, Latka, and Spiegelman. 3 In this volume they discuss how life table values enter into the calculation of the true birth rate, the true death rate, and the true rate of natural increase which represents the inherent growth potential of a given population. The authors also illustrate how life table methodology may be used to compute the average years of married life remaining to a cohort of couples just married and techniques to calculate estimates of maternal or paternal orphans. In addition, economic applications are discussed in terms of life insurance problems, estimates of the money value of a man, amount of compensation for injury or death, and application to mortality of business enterprises. Such applications are suggestive of the wide utility of life tables for the analysis of many problems.

Life table values are also used by demographers to estimate net migration by age and sex for a given geographic area and a given time period. This method is also particularly useful for areas lacking data on births and deaths by age and sex. The forward survival rate method, the reverse survival rate method, or an average of the two results provides good estimates of net migration in a population by age groups. Life table survival rates may also be used to estimate population of an area during intercensal years.

In the area of mortality research, life table methodology may be employed to study mortality levels by specific cause of death. In the area of health and morbidity analysis, life table methodology has been used to calculate the probabilities of contracting a specific disease, to determine the chances of survival or recovery from the disease, or to estimate the length of hospitalization time. Other types of multiple decrement life table techniques have been used to estimate working life of male persons and to estimate the average number of years of school life for a population. In brief, life table values and techniques are powerful analytical tools in the study of population.

Life tables for Connecticut presented here by sex, color, and age for two points in time will allow such applications to be made in the study of Connecticut's population. With these data the researcher does not have to make the assumption that life table values computed for the nation as a whole apply to Connecticut's population -- an assumption which may be responsible for error in substantive results.

Dublin, Louis I.; Alfred J. Latka; and Martimer Spiegelman. <u>Length</u>
 <u>of Life: A Study of the Life Table.</u> (Revised Edition). New York:
 The Ronald Press Company, 1949, pp. 379.

^{4.} Shyrock, Henry S. and Jacob S. Siegel, The Methods and Materials of Demography, Vols. I and II, U. S. Bureau of the Census, U. S. Government Printing Office, Washington, D.C., 1971, for a detailed coverage of life table applications.

PART II - CONNECTICUT ABRIDGED LIFE TABLES

Table 1 - Abridged Life Table for Total Connecticut Males: 1969-1971
Table 2 - Abridged Life Table for Total Connecticut Males: 1959-1961
Table 3 - Abridged Life Table for Total Connecticut Females: 1969-1971
Table 4 - Abridged Life Table for Total Connecticut Females: 1959-1961
Table 5 - Abridged Life Table for Connecticut Nonwhite Males: 1969-1971
Table 6 - Abridged Life Table for Connecticut White Males: 1969-1971
Table 7 - Abridged Life Table for Connecticut Nonwhite Females: 1969-1971
Table 8 - Abridged Life Table for Connecticut White Females: 1969-1971
Table 9 - Abridged Life Table for Connecticut White Females: 1959-1961
Table 10- Abridged Life Table for Connecticut White Males: 1959-1961
Table 11- Abridged Life Table for Connecticut White Females: 1959-1961
Table 12- Abridged Life Table for Connecticut White Females: 1959-1961

Table 1--Abridged Life Table for Total Connecticut Males: 1969-1971

(1)	(2)	(3)	(4)	(5)	(6)	(7)
				Number of y	ears lived	Mean years
Age interval	Probability of dying during age interval	Number of survivors alive at beginning of each age interval	Number dying during age interval	During this interval	During this & all subse- quent intervals	of life re- maining to survivors at beginning of each interva
x to $x + n$	χ ^Ω α	1 _x	d n x	n X	Tx	ê _x
Under 1 year 1-4 5-9 10-14 15-19 20-24 25-29 30-34 35-39 40-44 45-49 50-54 55-59 60-64 65-69 70-74 75-79	.018741 .002293 .001918 .001774 .005740 .007842 .007653 .008571 .011410 .018127 .029886 .046452 .080652 .118068 .179462 .249953	100,000 98,126 97,713 97,713 97,540 96,980 96,219 95,483 94,664 93,584 91,888 89,142 85,001 78,145 68,919 56,550 42,415	1,874 225 188 173 560 761 736 818 1,696 2,746 4,141 6,856 9,227 12,368 14,135 14,944	98,643 391,088 486,151 488,206 486,420 483,035 479,267 475,440 470,805 464,027 453,083 436,213 408,925 368,808 314,696 247,951 174,444	6,863,378 6,764,735 6,373,648 5,887,497 5,399,291 4,912,871 4,429,836 3,950,569 3,475,129 3,004,324 2,540,297 2,087,214 1,651,001 1,242,076 873,268 558,572 310,621	68.6 68.9 65.1 60.3 55.4 50.0 41.4 36.7 27.4 19.4 19.9 12.7 9.3
80-84 85 and over	.466501 1.000000	27,472 14,656	12,816 14,656	83,793 52,385	136,178 52,385	5.0 3.6

Table 2--Abridged Life Table for Total Connecticut Males: 1959-1961

(1)	(2)	(3)	(4)	(5)	(6)	(7)
	-			Number of y	ears lived	Mean years
Age interval	Probability of dying during age interval	Number of survivors alive at beginning of each age interval	Number dying during age interval	During this interval	During this & all subse- quent intervals	of life re- maining to survivors at beginning of each interva
x to x + n	n ^q x	1 _x	n ^d x	n ^L x	Tx	8 x
Under 1 year 1-4 5-9 10-14 15-19 20-24 25-29 30-34 35+39 40-44 45-49 50-54 55-59 60-64 65-69 70-74 75-79 80-84	.024180 .003210 .002258 .002153 .004620 .006848 .005476 .007022 .010231 .019513 .031091 .053121 .081809 .129547 .191367 .261904 .358858	100,000 97,582 97,269 97,049 96,840 96,393 95,733 95,208 94,540 93,572 91,747 88,894 84,172 77,286 67,274 54,400 40,152 25,743	2,418 313 220 209 447 660 524 669 967 1,826 2,853 4,722 6,886 10,012 12,874 14,248 14,409 12,878	98,249 388,474 482,964 484,771 483,176 480,330 477,353 474,463 470,522 463,689 452,205 433,504 404,746 362,645 305,066 236,699 164,453 75,684	6,786,310 6,688,061 6,299,587 5,816,623 5,331,852 4,848,676 4,368,346 3,890,993 3,416,530 2,946,008 2,482,319 2,030,114 1,596,610 1,191,864 829,219 524,153 287,454 123,000	67.9 68.5 64.8 59.9 55.1 50.3 45.6 40.9 36.1 31.5 27.1 22.8 19.0 15.4 12.3 9.6 7.2 4.8

Table 3--Abridged Life Table for Total Connecticut Females: 1969-1971

(1)	(2)	(3)	_(14)	(5)	(6)	(7)
				Number of y	ears lived	Mean years
Age interval	Probability of dying during age interval	Number of survivors alive at beginning of each age interval	Number dying during age interval	During this interval	During this & all subse- quent intervals	of life re- maining to survivors at beginning of each interva
x to x + n	n x	1 _x	n ^d x	n x	Тх	e _x
Under l year	.013683	100,000	1,368	99,009	7,500,240	75.0
1-4	.001965	98,632	194	393,358	7,401,231	75.0
5-9	.001459	98,438	144	490,138	7,007,873	71.2
10-14	.001404	98,294	138	491,143	6,517,736	66.3
15-19	.002367	98,156	232	490,231	6,026,593	61.4
20-24	.003081	97,924	302	488,878	5,536,362	56.5
25-29	.003200	97,622	312	487,362	5,047,484	51.7
30 – 34	.004710	97,310	458	485,474	4,560,122	46.9
35-39	.006799	96,851	659	482,725	4,074,648	42.1
40-44	.010494	96,193	1,010	478,636	3,591,923	37.3
45-49	.016804	95,183	1,599	472,203	3,113,287	32.7
50-54	.025428	93,584	2,380	462,349	2,641,084	28.2
55-59	037473	91,204	3,418	448,063	2,178,735	23.9
60-64	.059114	87,786	5,189	426,810	1,730,672	19.7
65-69	.090919	82,597	7,510	395,437	1,303,862	15.8
70-74	.147516	75,087	11,077	349,282	980,425	12.1
75-79	.232536	64,011	14,885	284,148	559,143	8.7
80-84	.353114	49,126	17,347	162,085	274,994	5.6
85 and over	1.000000	31,779	31,779	112,909	112,909	3.6

Table 4--Abridged Life Table for Total Connecticut Females: 1959-1961

(1)	(2)	(3)	(4)	(5)	(6)	(7)
				Number of	years lived	Mean years
Age interval	Probability of dying during age interval	Number of survivors alive at beginning of each age interval	Number dying during age interval	During this	During this & all subse- quent intervals	of life re- maining to survivors at beginning of each interva
x to x + n	n ^q x	¹ x	n x	n ^L x	$^{\mathrm{T}}x$	e X
Under 1 year 1-4 5-9 10-14 15-19 20-24 25-29 30-34 35-39 40-44 45-49 50-54 55-59 60-64 65-69 70-74 75-79 80-84	.017602 .002714 .001544 .001479 .001564 .002372 .003464 .004809 .006953 .010677 .017960 .027798 .042448 .069933 .109051 .174775 .273649	100,000 98,240 97,973 97,822 97,677 97,524 97,293 96,956 96,489 95,819 94,795 93,093 90,505 86,663 80,603 71,813 59,262 43,045	1,760 267 151 145 153 231 337 466 671 1,023 1,703 2,588 3,842 6,061 8,790 12,551 16,217 18,098	98,726 391,480 487,962 488,747 488,021 487,081 485,671 483,682 480,886 476,750 470,046 459,441 443,644 419,196 382,390 329,233 256,922	7,355,074 7,256,349 6,864,869 6,376,907 5,888,160 5,400,139 4,913,058 4,427,387 3,943,705 3,462,819 2,986,069 2,516,023 2,056,582 1,612,938 1,193,742 811,352 482,119 225,197	73.6 73.9 70.1 65.2 60.3 55.4 50.5 45.7 40.9 36.1 31.5 27.0 22.7 18.6 14.8 11.3 8.1

Table 5--Abridged Life Table for Connecticut Nonwhite Males: 1969-1971

(1)	(2)	(3)	(4)	(5)	(6)	(7)
				Number of y	ears lived	Mean years
Age interval	Probability of dying during age interval	Number of survivors alive at beginning of each age interval	Number dying during age interval	During this interval	During this & all subse- quent intervals	of life re- maining to survivors at beginning of each interva
x to x + n	n ^q x	1 _x	n x	n ^L x	$^{\mathtt{T}}\mathbf{_{x}}$	ê _x
Under 1 year 1-4 5-9 10-14 15-19 20-24 25-29 30-34 35-39 40-44 45-49 50-54 55-59 60-64	.033702 .004008 .002936 .002322 .008502 .016390 .016351 .021249 .026613 .044684 .061116 .066724 .113792	100,000 96,630 96,243 95,960 95,737 94,923 93,367 91,841 89,889 87,497 83,587 78,479 73,242 64,908	3,370 387 283 223 814 1,556 1,527 1,952 2,3910 5,109 5,236 8,334 9,751	97,560 384,197 476,436 479,353 476,928 470,874 463,102 454,505 443,873 428,275 405,439 379,974 346,314	6,329,359 6,231,800 5,847,604 5,371,168 4,891,815 4,414,887 3,944,013 3,480,911 3,026,406 2,582,533 2,154,258 1,748,819 1,368,845 1,022,531	63.3 64.5 60.8 56.0 51.1 46.5 42.2 37.9 33.7 29.5 25.8 22.3 18.7 15.8
65-69 70-74 75-79 80-84 85 and over	.178065 .237750 .364475 .280740	55,157 45,335 34,557 21,962 15,796	9,821 10,778 12,595 6,166 15,796	251,443 200,307 140,335 79,976 50,000	722,061 470,618 270,311 129,976 50,000	13.1 10.4 7.8 5.9 3.2

Table 6--Abridged Life Table for Connecticut White Males: 1969-1971

(1)	(2)	(3)	(4)	(5)	(6)	(7)
				Number of y	ears lived	Mean years
Age interval	Probability of dying during age interval	Number of survivors alive at beginning of each age interval	Number dying during age interval d	During this interval	During this & all subse- quent intervals	
x to x + n	n ^q x	1 _x	n x	n x	T _x	e X
Under 1 year	.017097	100,000	1,710	98,762	6,909,843	69.1
1 – 4	.002117	98,290	208	391,838	6,811,081	69.3
5-9	.001823	98,082	179	487,170	6,419,244	65.5
10-14	.001734	97,903	170	489,164	5,932,075	60.6
15-19	.005546	97,734	542	487,422	5,442,911	55.7
20-24	.007186	97,191	698	484,239	4,955,489	51.0
25-29	.006968	96,493	672	480,789	4,471,250	46.3
30-34	.007494	95,821	718	477,372	3,990,461	41.7
35-39	.010345	95,103	984	473,228	3,513,089	36.9
40-44	.016582	94,119	1,561	467,032	3,039,861	32.3
45-49	.028329	92,558	2,622	456,765	2,572,829	27.8
50-54	.045652	89,936	4,106	440,217	2,116,064	23.5
55-59	.075442	85,830	6,475	414,040	1,675,847	19.5
60-64	.116985	79,355	9,283	374,836	1,261,807	15.9
65-69	.179512	70,071	12,579	319,975	886,971	12.7
70-74	.250333	57,493	14,392	252,023	566,996	9.9
75-79	.352046	43,100	15,173	177,316	314,973	7.3
80-84	.471866	27,927	13,178	84,702	137,657	4.9
85 and over	1.000000	14,749	14,749	52,955	52,955	3.6

Table 7--Abridged Life Table for Connecticut Nonwhite Females: 1969-1971

(1)	(2)	(3)	(4)	(5)	(6)	(7)
				Number of y	ears lived	Mean years
Age interval	Probability of dying during age interval	Number of survivors alive at beginning of each age interval	Number dying during age interval	During this interval	During this & all subse- quent intervals	of life re- maining to survivors at beginning of each interval
x to x + n	n ^q x	1 _x	n x	n L	x	e x
Under 1 year 1-4 5-9 10-14 15-19 20-24	.026264 .003778 .001928 .001918 .003459 .006739	100,000 97,374 97,006 96,819 96,633 96,299	2,626 368 187 186 334 649	98,098 387,514 482,240 483,655 482,425 479,951	6,964,944 6,866,846 6,479,332 5,997,093 5,513,438 5,031,013	69.7 70.5 66.8 61.9 57.1 52.2
25-29 30-34 35-39 40-44 45-49 50-54	.007583 .015119 .017006 .025100 .033318 .053625	95,650 94,924 93,489 91,899 89,592 86,607	725 1,435 1,590 2,307 2,985 4,644	476,598 471,212 463,653 454,018 440,987 422,082	4,551,062 4,074,464 3,603,252 3,139,599 2,685,581 2,244,594	47.6 42.9 38.5 34.2 30.0 25.9
55-59 60-64 65-69 70-74 75-79 80-84 85 and over	.074921 .088350 .125570 .149504 .255660 .244454	81,963 75,822 69,123 60,443 51,407 38,264 28,910	6,141 6,699 8,680 9,037 13,143 9,354 28,910	394,891 362,892 324,404 280,556 224,244 138,805 96,721	1,822,512 1,427,621 1,064,729 740,326 459,770 235,526 96,721	22.2 18.8 15.4 12.3 8.9 6.2 3.3

Table 8--Abridged Life Table for Connecticut White Females: 1969-1971

(1)	(2)	(3)	(4)	(5)	(6)	(7)
				Number of	years lived	Mean years
Age interval	Probability of dying during age interval	Number of survivors alive at beginning of each age interval	Number dying during age interval	During this interval	During tbis & all subse- quent intervals	of life re- maining to survivors at beginning of each interva
x to x + n	р х а	1 _x	n x	n ^L x	Тх	e x
Under 1 year 1-4 5-9 10-14 15-19 20-24 25-29 30-34 35-39 40-44 45-49 50-54 55-59 60-64 65-69 70-74 75-79	.012235 .001766 .001414 .001364 .002283 .002756 .002791 .003699 .005993 .009597 .015952 .024226 .035990 .058035 .089631 .147464	100,000 98,777 98,602 98,463 98,328 98,104 97,833 97,560 97,199 96,617 95,689 94,163 91,882 88,575 83,434 75,956 64,755	1,224 174 139 134 225 270 273 361 583 927 1,526 2,281 3,307 5,141 7,478 11,201 15,027	99,114 394,026 491,020 491,994 491,104 489,851 488,502 486,964 484,657 480,963 474,913 465,483 451,737 430,893 399,738 353,351 287,559	7,539,604 7,440,490 7,046,464 6,555,444 6,063,450 5,572,346 5,082,495 4,593,993 4,107,029 3,622,372 3,141,409 2,666,496 2,201,013 1,749,276 1,318,383 918,645 565,294	75.4 75.3 71.56 61.7 661.7 56.0 47.3 37.8 37.8 24.0 19.8 15.8 12.1
80-84 85 and over	.355576 1.000000	49,728 32,046	17,682 32,046	163,681 114,055	277,736 114,055	5.6 3.6

Table 9--Abridged Life Table for Connecticut Nonwhite Males: 1959-1961

(1)	(2)	(3)	(4)	(5)	(6)	(7)
				<u>lumber of y</u>	ears lived	Mean years
Age interval	Probability of dying during age interval	Number of survivors alive at beginning of each age interval	Number dying during age interval	During this interval	During this & all subse- guent intervals	of life re- maining to survivors at beginning of each interva
x to x + n	x ^P n	1 _x	n x	n ^L x	T _x	e x
Under 1 year 1-4 5-9 10-14 15-19 20-24 25-29 30-34 35-39 40-44 45-49 50-54 55-59 60-64 65-69 70-74 75-79 80-84	.045063 .005600 .003549 .003385 .005829 .012310 .011944 .019846 .024035 .045676 .044507 .080865 .108790 .162951 .241684 .293555 .371110	100,000 95,494 94,959 94,622 94,302 93,752 92,598 91,492 89,676 87,521 83,523 79,806 73,352 65,372 54,720 41,495 29,314 18,435	4,506 535 337 320 550 1,154 1,106 1,816 2,155 3,998 3,717 6,454 7,980 10,652 13,225 12,181 10,879	96,737 378,916 469,988 472,353 470,306 465,990 460,361 453,138 443,445 427,934 408,833 383,781 347,684 301,321 240,854 176,532 118,920	6,200,939 6,104,202 5,725,287 5,255,300 4,782,947 4,312,641 3,846,651 3,386,290 2,933,152 2,489,707 2,061,773 1,652,940 1,269,159 921,475 620,154 379,299 202,767 83,847	62.0 63.9 60.3 55.5 50.7 46.0 41.5 37.0 32.7 28.5 24.7 20.7 17.3 14.1 11.3 9.1 6.9
80-84 85 and over	.543136 1.000000	18,435 8,422	10,013 8,422	51,592 32,255	83,847 32,255	4.6 3.8

Table 10--Abridged Life Table for Connecticut White Males: 1959-1961

(1)	(2)	(3)	(14)	(5)	(6)	(7)
				Number of y	ears lived	Mean years
Age interval	Probability of dying during age interval	Number of survivors alive at beginning of each age interval	Number dying during age interval	During this interval	During this & all subse- quent intervals	of life re- maining to survivors at beginning of each interval
x to x + n	x ^P n	¹ _x	n x	n L	T _x	e x
Under 1 year 1-4 5-9 10-14 15-19 20-24 25-29 30-34 35-39 40-44 45-49 50-54 55-59 60-64 65-69 70-74 75-79 80-84	.022587 .003050 .002188 .002098 .004570 .006491 .005028 .006292 .009548 .018540 .030639 .052283 .080958 .128658 .190281 .261284 .358639 .499382	100,000 97,741 97,443 97,230 97,026 96,582 95,956 95,473 94,872 93,967 92,224 89,399 84,724 77,865 67,847 54,937 40,583 26,028 13,030	2,259 298 213 204 444 627 483 601 906 1,742 2,826 4,674 6,859 10,018 12,910 14,354 14,555 12,998 13,030	98,365 389,189 483,904 485,685 484,108 481,354 478,566 475,951 472,335 465,877 454,669 436,147 407,587 365,542 307,865 239,146 76,596 47,886	6,817,013 6,718,649 6,329,460 5,845,557 5,359,872 4,875,764 4,394,410 3,915,844 3,439,893 2,967,558 2,501,681 2,047,012 1,610,865 1,203,278 837,736 529,871 290,728 124,482 47,886	68.2 68.7 65.0 60.1 55.2 50.5 45.8 41.0 36.3 31.6 27.1 22.9 19.0 15.5 12.4 9.7 7.2 4.8 3.7

Table 11--Abridged Life Table for Connecticut Nonwhite Females: 1959-1961

(1)	(2)	(3)	(4)	(5)	(6)	(7)
				Number of y	ears lived	Mean years
Age interval	Probability of dying during age interval	Number of survivors alive at beginning of each age interval	Number dying during age interval	During this interval	During this & all subse- quent intervals	of life re- maining to survivors at beginning of each interva
x to x + n	n ^q x	1 _x	d n x	n ^L x	T _x	e X
Under 1 year 1-4 5-9 10-14 15-19 20-24 25-29 30-34 35-39 40-44 45-49 50-54 55-59 60-64 65-69 70-74 75-79	.030103 .005774 .001784 .003758 .001744 .005003 .008809 .012181 .020195 .023717 .029653 .057131 .084481 .111539 .155356 .212595	100,000 96,990 96,430 96,258 95,896 95,729 95,250 94,410 93,260 91,377 89,210 86,564 81,619 74,724 66,389 56,075 44,154	3,010 560 172 362 167 479 839 1,150 1,883 2,167 2,645 4,946 6,895 8,335 10,314 11,921 14,132	97,820 385,259 479,015 480,382 479,085 477,585 474,290 469,395 461,804 451,626 440,014 421,343 391,563 353,492 306,907 251,367 185,564	6,763,540 6,665,720 6,280,462 5,801,447 5,321,065 4,841,980 4,364,395 3,890,105 3,420,710 2,958,906 2,507,280 2,067,266 1,645,923 1,254,360 900,868 593,961 342,594	67.6 68.7 65.1 60.3 55.5 50.6 45.8 41.2 36.7 32.4 28.1 23.9 20.2 16.8 13.6 10.6 7.8
80-84 85 and over	.416924 1.000000	30,022 17,505	12,517 17,505	92,544 64,486	157,030 64,486	5.2 3.7

Table 12--Abridged Life Table for Connecticut White Females: 1959-1961

(1)	(2)	(3)	(14)	(5)	(6)	(7)
				Number of years lived		Mean years
Age interval	Probability of dying during age interval	Number of survivors alive at beginning of each age interval	Number dying during age interval	During this interval	During this & all subse- quent intervals	of life re- maining to survivors at beginning of each interva
x to x + n	n x	1 _x	n x	n ^L x	^T x	e _x
Under 1 year 1-4 5-9 10-14 15-19 20-24 25-29 30-34 35-39 40-44 45-49	.016661 .002512 .001529 .001369 .001559 .002173 .003096 .004401 .006326 .010197	100,000 98,334 98,087 97,937 97,803 97,650 97,438 97,136 96,709 96,097 95,117	1,666 247 150 134 153 212 302 428 612 980 1,668	98,794 391,938 488,592 489,345 488,646 487,752 486,481 484,678 482,130 478,255	7,382,219 7,283,426 6,891,438 6,402,897 5,913,552 5,424,906 4,937,154 4,450,673 3,965,995 3,483,865 3,005,610	73.8 74.1 70.3 65.4 60.5 55.6 50.7 45.8 41.0 36.3 31.6
50-54 55-59 60-64 65-69 70-74 75-79 80-84 85 and over	.026848 .041135 .068960 .108125 .174037 .272878 .420505	93,449 90,940 87,199 81,186 72,408 59,806 43,486 25,200	2,509 3,741 6,013 8,778 12,602 16,320 18,286 25,200	461,404 446,079 422,012 385,356 332,105 259,415 134,078 93,428	2,533,877 2,072,473 1,626,394 1,204,382 819,027 486,921 227,506 93,428	27.1 22.8 18.7 14.8 11.3 8.1 5.2 3.7

PART III - SUMMARY OF LIFE TABLES

Summary of Mortality by Sex and Color

While the preceeding life tables are useful for a detailed study of mortality conditions, a summary view would be valuable in detecting major trends in these data. Table 13 summarizes changes in mortality of the state population by selected life table measures from the 1959-1961 period to the 1969-1971 period by sex and color.

Table 13--Change in Mortality of Connecticut Population by Selected Life Table Measures, by Sex and Race, 1959-1961 and 1969-1971

Race, Sex and Years	Expectation of Life at Birth Age 1 Age 65			Probability of Surviving to Age 65	Median Age	
1969-1971						
White Males White Females Nonwhite Males Nonwhite Females	69.1 75.4 63.3 69.6	69.3 75.3 64.5 70.5	12.7 15.8 13.1 15.4	.701 .824 .552 .691	72.6 79.9 67.6 75.5	
1959-1961						
White Males White Females Nonwhite Males Nonwhite Females	68.1 73.8 62.0 67.6	68.7 74.1 63.9 68.7	12.3 14.8 11.3 13.6	.678 .812 .547 .664	71.7 78.0 66.8 72.5	

In terms of changes in the expectation of life at birth, both sexes and racial categories have made improvements during the past decade. White females in 1969-1971 have an expectation of life at birth of 75.4 years compared to 73.8 years in the 1959-61 period. Nonwhite males have an expectation of life at birth of 63.3 years in the 1969-1971 period compared to the 62.0 year life expectancy during the 1959-1961 period. A general pattern at both time intervals is that females, regardless of race, have a longer expectation of life at birth than do males. The one exception to that pattern was during the 1959-1961 period when nonwhite women had a slightly lower life expectancy (67.6 years) than did white men (68.1 years).

A second summary indicator of changing mortality conditions of Connecticut's population is the expectation of life at age 1 year. The reason expectation of life at age 1 is longer than expectation of life at birth is that the latter is strongly affected by the infant mortality rate, but the former is not. Thus, expectation of life at age 1 shows mortality conditions affecting persons who have survived

that first hazardous year of life. Life expectancy after the first birthday by race and sex exhibits the same patterns previously described, namely improvements during the ten-year interval were achieved by both groups, but females have a longer life expectancy than males. It should also be noted that life expectancy after the first birthday is longer for both sex and race categories in the 1969-1971 period, except for white females whose life expectancy declines slightly. This means the white female infant mortality rate is low and does not retard the average life expectancy when calculated from birth as it does for the other categories.

A third indicator of mortality conditions in a population is expectation of life at age 65. Mortality of the elderly account for the majority of deaths in Connecticut and changes in their life expectancy reflect improvements in medical and socioeconomic conditions responsible for death rate levels. The following list shows gains in years of life expectancy from 1959-1961 period to the 1969-1971 period by race and sex at age 1 and age 65:

	Age 1	Age 65
White males	.6 years	.4 years
White females	1.2 years	1.0 years
Nonwhite males	.6 years	1.8 years
Nonwhite females	2.8 years	1.8 years

These data indicate that gains in life expectancy of the elderly have been smaller than those for life expectancy at birth. The single exception is nonwhite males. This pattern means that improvements in conditions affecting mortality have been most pronounced at the younger ages while mortality conditions for the elderly have improved less. For the most recent period, white males have an average life expectancy of 12.7 more years after reaching their 65th birthday. The usual pattern of females, regardless of racial category, having a longer life expectancy than males is also present for persons 65 years of age.

A fourth way of summarizing mortality levels from life table data is to examine the proportion of persons in the original cohort of 100,000 births surviving to age 65. As shown in Table 13, the probability or proportion of persons reaching their 65th birthday has increased for both sex and racial categories during the ten-year interval. White females have the highest probability of reaching that age (.824) and nonwhite males have the lowest (.552). The changes of nonwhite males surviving to age 65 has not improved substantially during the ten-year interval.

A final summary measure of life table mortality is the median age at death of the initial cohort of 100,000 births. The median age at death is the age corresponding to the $l_{\rm X}$ value of 50,000 in the life tables presented previously. It is the age at which half of the original cohort will have died. In both sex and racial categories, the median age at death is higher than the expectation of life at birth, the mean age of death, because the median is the mid-point of all deaths and is less influenced by deaths at the younger ages. Therefore, as shown in Table 13, one half of the 100,000 white male cohort born in 1969 to 1971 can expect to survive to age 72.6 years. White females have a median age of death of 79.9 years; nonwhite males have a median

age of death of 67.6 years compared to 75.5 years for their female counterparts.

In conclusion, mortality conditions for males and females in both racial categories have improved during the ten-year interval. However, this improvement has been more pronounced at the younger ages as compared to 65 years and over. Females in Connecticut have maintained their lead in longevity over males, with white females exhibiting the most favorable mortality. Nonwhite males continue to exhibit the least favorable mortality levels by having substantially shorter life expectancy than the other categories.