

Population Estimates and Projections



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BUREAU OF THE CENSUS

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Estimates of the Population of Massachusetts Counties and Metropolitan Areas: July 1, 1976 (Revised) and 1977 (Provisional)

This report presents total population estimates for July 1, 1976 and provisional estimates for July 1, 1977, for counties and metropolitan areas in Massachusetts. These estimates were prepared by the Bureau of the Census as part of its continuing population estimates program. They are consistent in methodology with county estimates for other States jointly prepared by State agencies and the Bureau of the Census through the Federal-State Cooperative Program and published in **Current Population Reports**, Series P-26.

County estimates for July 1, 1971-1975 and provisional estimates for July 1, 1976, were published earlier in **Current Population Reports**, Series P-25 or P-26. The provisional estimates in the last cited report are superseded by the numbers published here.

The decision on methodology used in this report was based upon the results of tests of the methods. The Administrative Records method has been tested against special censuses conducted since 1970. The other methods were evaluated against the 1970 census. For a detailed description of the Federal-State Cooperative Program and an analysis of 1970 test results for methods other than the Administrative Records method, see **Current Population Reports**, Series P-26, No. 21, "Federal-State Cooperative

Program for Local Population Estimates: Test Results—April 1, 1970," April 1973. Summary results of tests of the Administrative Records method are presented in **Current Population Reports**, Series P-25, Nos. 649-698, and in detail in Series P-25, No. 699 (forthcoming).

The estimates shown for July 1, 1976, are based on an average of the following methods, adjusted to agree with the July 1, 1976 State estimate.

1. **The Regression (ratio-correlation) method.**¹ In the Regression method, a multiple regression equation is used to relate changes in a number of different data series to change in population distribution. The series of data used in the Regression method for Massachusetts are: school enrollment in grades 1 through 8 plus special and ungraded enrollment (X_1), and motor vehicles (X_2). The prediction equation used for Massachusetts is given by

$$\hat{Y} = 0.2464 + 0.4381X_1 + 0.3292X_2$$

¹ More detailed descriptions of the methods are given in **Current Population Reports**, Series P-25, Nos. 427 and 520. Modifications made to the methodologies for the current series will be given in forthcoming reports in Series P-25.

2. Component Method II.¹ This method employs vital statistics to measure natural increase and school enrollment to measure net migration. The estimates produced by Component Method II are specific to the population under 65 not residing in group quarters. To this population is added an estimate of the population 65 and over based on the change in Medicare enrollees from 1970 to the estimate date, the institutional and college population, and reported military population living in barracks.

3. The Administrative Records method.¹ This is a component method which uses individual Federal income tax returns to measure the intercounty migration of the nongroup quarters population and reported birth and death statistics to estimate natural increase. The tax returns are matched by Social Security number in the base year and the estimate year to determine the number of persons whose county of residence changed during the estimating period. A net migration rate based on exemptions claimed by the matched cases is then applied to the total population. The resulting estimate is made specific to the nongroup quarters population under age 65 by excluding from the migration computations data relating to persons 65 years and over as well as persons residing in group quarters. These estimates of migration are then combined with the independent estimates of the population 65 and over used in the Component Method II estimate and the other components of population change—births, deaths, immigration, and the net movement between the military and civilian population.

¹ See footnote 1 on page 1.

The provisional July 1, 1977 estimates for all counties in the State were developed by adding to the 1976 estimates the average change between the 1976 and 1977 Component Method II estimates and the Regression method estimates. All counties were subsequently adjusted to agree with the provisional July 1, 1977 State estimate.

Table 2 presents figures for New England county metropolitan areas (NECMA's) which are geographically situated in whole or in part in the State of Massachusetts. The titles and definitions of NECMA's are those currently defined by the Office of Management and Budget, Executive Office of the President. Where a NECMA falls in more than one State (indicated in the NECMA title) information on the other State parts of the area can be obtained by referring to the P-26 or P-25 report for that particular State.

Corresponding estimates for other States will be published as they become available. The appendix table lists reports published to date for States in the 1976-77 series, together with those published for earlier years.

The 1970 census populations for the State and counties shown on the table reflect all corrections to the census count made subsequent to the release of the official State figure. Counties with corrections of more than 500 are Middlesex and Worcester.

The estimates presented in the table have been rounded to the nearest hundred without being adjusted to the State total, which was independently rounded to the nearest thousand. Percentages are based on unrounded numbers. Births and deaths are taken from reported vital statistics from April 1, 1970, to December 31, 1976, with extrapolations through June 30, 1977. Net migration is the residual difference between net change and natural increase.

Table 1. ESTIMATES OF THE POPULATION OF MASSACHUSETTS COUNTIES: JULY 1, 1976 AND 1977

(State estimates are shown to the nearest thousand, county estimates to the nearest hundred)

COUNTY	JULY 1, 1977 (PROVI- SIONAL)	JULY 1, 1976	APRIL 1, 1970 (CENSUS)	CHANGE, 1970 TO 1977		COMPONENTS OF CHANGE, 1970 TO 1977 ¹			
				NUMBER	PERCENT	BIRTHS	DEATHS	NET MIGRATION	
								NUMBER	PERCENT
MASSACHUSETTS.....	5,782,000	5,791,000	5,689,170	93,000	1.6	544,000	403,000	-48,000	-0.8
BARNSTABLE.....	137,700	132,800	96,656	41,000	42.4	10,200	10,100	41,000	42.4
BERKSHIRE.....	142,900	146,000	149,402	-6,500	-4.4	13,400	11,300	-8,600	-5.8
BRISTOL.....	467,800	469,300	444,301	23,500	5.3	46,200	33,200	10,500	2.4
DUKES.....	8,100	7,800	6,117	2,000	32.3	700	700	2,000	32.0
ESSEX.....	625,200	627,800	637,887	-12,700	-2.0	60,100	47,700	-25,100	-3.9
FRANKLIN.....	61,900	61,300	59,210	2,700	4.6	6,100	4,900	1,500	2.6
HAMPDEN.....	458,400	459,600	459,050	-700	-0.2	45,200	32,400	-13,500	-2.9
HAMPSHIRE.....	131,000	133,000	123,981	7,100	5.7	10,300	7,200	4,000	3.2
MIDDLESEX.....	1,387,900	1,392,000	1,398,397	-10,500	-0.7	128,900	87,500	-51,900	-3.7
NANTUCKET.....	5,600	5,500	3,774	1,900	49.2	500	400	1,800	47.0
NORFOLK.....	617,700	618,200	604,854	12,800	2.1	49,400	38,800	2,300	0.4
PLYMOUTH.....	388,900	380,700	333,314	55,600	16.7	40,500	22,400	37,600	11.3
SUFFOLK.....	705,500	714,400	735,190	-29,700	-4.0	69,500	60,200	-39,000	-5.3
WORCESTER.....	643,400	642,900	637,037	6,300	1.0	63,100	46,100	-10,700	-1.7

¹BIRTHS AND DEATHS ARE BASED ON REPORTED VITAL STATISTICS FROM APRIL 1, 1970 TO DECEMBER 31, 1976, WITH EXTRAPOLATIONS TO JUNE 30, 1977. NET MIGRATION IS THE DIFFERENCE BETWEEN NET CHANGE AND NATURAL INCREASE.

Table 2. ESTIMATES OF THE POPULATION OF METROPOLITAN AREAS AND THEIR COMPONENT COUNTIES: MASSACHUSETTS, JULY 1, 1976 AND 1977

(SMSA totals rounded independently of county numbers)

STANDARD METROPOLITAN STATISTICAL AREA AND COUNTY	JULY 1, 1977 (PROVI- SIONAL)	JULY 1, 1976	APRIL 1, 1970 (CENSUS)	CHANGE, 1970 TO 1977		COMPONENTS OF CHANGE, 1970 TO 1977 ¹			
				NUMBER	PERCENT	BIRTHS	DEATHS	NET MIGRATION	
								NUMBER	PERCENT
BOSTON-LOWELL-BROCKTON-LAWRENCE- HAVERHILL, MASS.-N.H. (MASS. PORTION) ²	3,725,300	3,733,200	3,709,642	15,600	0.4	348,300	256,600	-76,100	-2.1
ESSEX.....	625,200	627,800	637,887	-12,700	-2.0	60,100	47,700	-25,100	-3.9
MIDDLESEX.....	1,387,900	1,392,000	1,398,397	-10,500	-0.7	128,900	87,500	-51,900	-3.7
NORFOLK.....	617,700	618,200	604,854	12,800	2.1	49,400	38,800	2,300	0.4
PLYMOUTH.....	388,900	380,700	333,314	55,600	16.7	40,500	22,400	37,600	11.3
SUFFOLK.....	705,500	714,400	735,190	-29,700	-4.0	69,500	60,200	-39,000	-5.3
NEW BEDFORD-FALL RIVER, MASS. ³ ..	467,800	469,300	444,301	23,500	5.3	46,200	33,200	10,500	2.4
BRISTOL.....	467,800	469,300	444,301	23,500	5.3	46,200	33,200	10,500	2.4
PITTSFIELD MASS. ⁴ ..	142,900	146,000	149,402	-6,500	-4.4	13,400	11,300	-8,600	-5.8
BERKSHIRE.....	142,900	146,000	149,402	-6,500	-4.4	13,400	11,300	-8,600	-5.8
SPRINGFIELD-CHICOPEE- HOLYOKE, MASS. ⁵ ..	589,400	592,600	583,031	6,400	1.1	55,500	39,600	-9,500	-1.6
HAMPDEN.....	458,400	459,600	459,050	-700	-0.2	45,200	32,400	-13,500	-2.9
HAMPSHIRE.....	131,000	133,000	123,981	7,100	5.7	10,300	7,200	4,000	3.2
WORCESTER-FITCHBURG- LEOMINSTER, MASS. ⁶ ..	643,400	642,900	637,037	6,300	1.0	63,100	46,100	-10,700	-1.7
WORCESTER.....	643,400	642,900	637,037	6,300	1.0	63,100	46,100	-10,700	-1.7
METROPOLITAN.....	5,568,700	5,583,900	5,523,413	45,300	0.8	526,500	386,800	-94,400	-1.7
NONMETROPOLITAN.....	213,300	207,500	165,757	47,600	28.7	17,500	16,200	46,200	27.9

¹BIRTHS AND DEATHS ARE BASED ON REPORTED VITAL STATISTICS FROM APRIL 1, 1970 TO DECEMBER 31, 1976, WITH EXTRAPOLATIONS TO JUNE 30, 1977. NET MIGRATION IS THE DIFFERENCE BETWEEN NET CHANGE AND NATURAL INCREASE.

²NEW ENGLAND COUNTY METROPOLITAN AREA. THE POPULATION OF THE BOSTON SMSA IN 1970 WAS 2,899,101; FOR THE LOWELL, MASS.-N.H. SMSA (MASS. PORTION) IT WAS 212,860; FOR THE BROCKTON SMSA IT WAS 150,416; AND FOR THE LAWRENCE-HAVERHILL, MASS.-N.H. SMSA (MASS. PORTION) IT WAS 221,208.

³NEW ENGLAND COUNTY METROPOLITAN AREA. THE POPULATION OF THE FALL RIVER, MASS.-R.I. SMSA (MASS. PORTION) IN 1970 WAS 142,084; AND FOR THE NEW BEDFORD SMSA IT WAS 161,288.

⁴NEW ENGLAND COUNTY METROPOLITAN AREA. THE POPULATION OF THE PITTSFIELD SMSA IN 1970 WAS 96,817.

⁵NEW ENGLAND COUNTY METROPOLITAN AREA. THE POPULATION OF THE SPRINGFIELD-CHICOPEE-HOLYOKE, MASS.-CONN. SMSA (MASS. PORTION) IN 1970 WAS 534,859.

⁶NEW ENGLAND COUNTY METROPOLITAN AREA. THE POPULATION OF THE WORCESTER SMSA IN 1970 WAS 372,144; AND FOR THE FITCHBURG-LEOMINSTER SMSA IT WAS 97,164.

APPENDIX

ESTIMATES PUBLISHED IN SERIES P-26 SINCE 1970

(Reports issued under the Federal-State Cooperative Program for Population Estimates, jointly prepared by the Bureau of the Census and designated State agencies)

State	Report No.*			State	Report No.*		
	1976 and provisional 1977	1975 and provisional 1976	1974 and provisional 1975		1976 and provisional 1977	1975 and provisional 1976	1974 and provisional 1975
Alabama.....	77-1	76-1	75-1	Montana.....	77-26	76-26	75-26
Alaska.....	77-2	(²)	(³)	Nebraska.....	77-27	76-27	75-27
Arizona.....	(¹)	76-3	75-3	Nevada.....	77-28	76-28	75-28
Arkansas.....	77-4	76-4	75-4	New Hampshire.....	77-29	76-29	75-29
California.....	77-5	76-5	75-5	New Jersey.....	77-30	76-30	75-30
Colorado.....	77-6	76-6	75-6	New Mexico.....	77-31	76-31	75-31
Connecticut.....	77-7	76-7	75-7	New York.....	77-32	76-32	(³)
Delaware.....	77-8	76-8	75-8	North Carolina.....	77-33	76-33	75-33
Florida.....	77-9	76-9	75-9	North Dakota.....	77-34	76-34	75-34
Georgia.....	77-10	76-10	75-10	Ohio.....	77-35	76-35	75-35
Hawaii.....	77-11	76-11	75-11	Oklahoma.....	77-36	76-36	75-36
Idaho.....	77-12	76-12	75-12	Oregon.....	77-37	76-37	75-37
Illinois.....	77-13	76-13	75-13	Pennsylvania.....	77-38	76-38	75-38
Indiana.....	77-14	76-14	75-14	Rhode Island.....	77-39	76-39	75-39
Iowa.....	77-15	76-15	75-15	South Carolina.....	77-40	76-40	75-40
Kansas.....	77-16	76-16	75-16	South Dakota.....	77-41	76-41	75-41
Kentucky.....	77-17	76-17	75-17	Tennessee.....	77-42	76-42	75-42
Louisiana.....	77-18	76-18	75-18	Texas.....	(¹)	(²)	(³)
Maine.....	77-19	76-19	75-19	Utah.....	77-44	76-44	75-44
Maryland.....	77-20	76-20	(³)	Vermont.....	77-45	76-45	75-45
Massachusetts.....	(¹)	(²)	(³)	Virginia.....	77-46	76-46	75-46
Michigan.....	77-22	76-22	75-22	Washington.....	(¹)	(²)	(³)
Minnesota.....	77-23	76-23	75-23	West Virginia.....	77-48	76-48	75-48
Mississippi.....	77-24	76-24	75-24	Wisconsin.....	77-49	76-49	75-49
Missouri.....	77-25	76-25	75-25	Wyoming.....	77-50	76-50	75-50

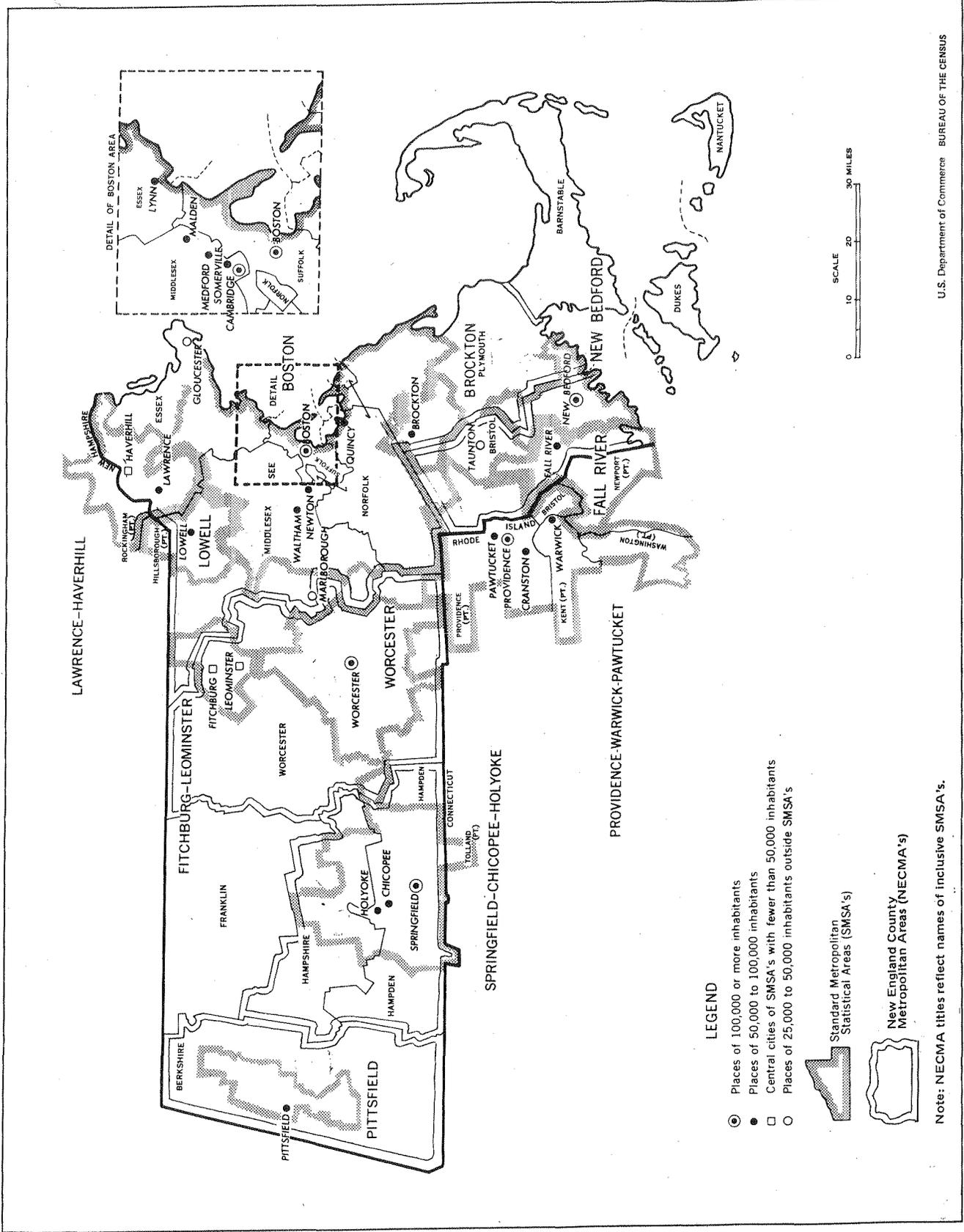
*County estimates for all States for 1971 and provisional 1972 are published in Series P-25, No. 517. County estimates for all States for 1972 and provisional 1973 are published in Series P-26, Nos. 49-93 and Series P-25, Nos. 527, 530, 531, 532 and 535. County estimates for all States for 1973 and provisional 1974 are published in Series P-26, Nos. 94-117, 119-138 and Series P-25, Nos. 596, 597, 599, 602, 604 and 609.

¹County or county equivalent estimates for 1976 and provisional 1977 are published in Series P-25 for the following States: Arizona, No. 730; Washington, No. 738; Massachusetts, No. 797; and Texas, No. 798.

²County or county equivalent estimates for 1975 and provisional 1976 are published in Series P-25 for the following States: Washington, No. 707; Alaska, No. 712; Massachusetts, No. 715; and Texas, No. 717.

³County or county equivalent estimates for 1974 and provisional 1975 are published in Series P-25 for the following States: Washington, No. 624; Maryland, No. 629; New York, No. 631; Massachusetts, No. 633; Texas, No. 637; and Alaska, No. 638.

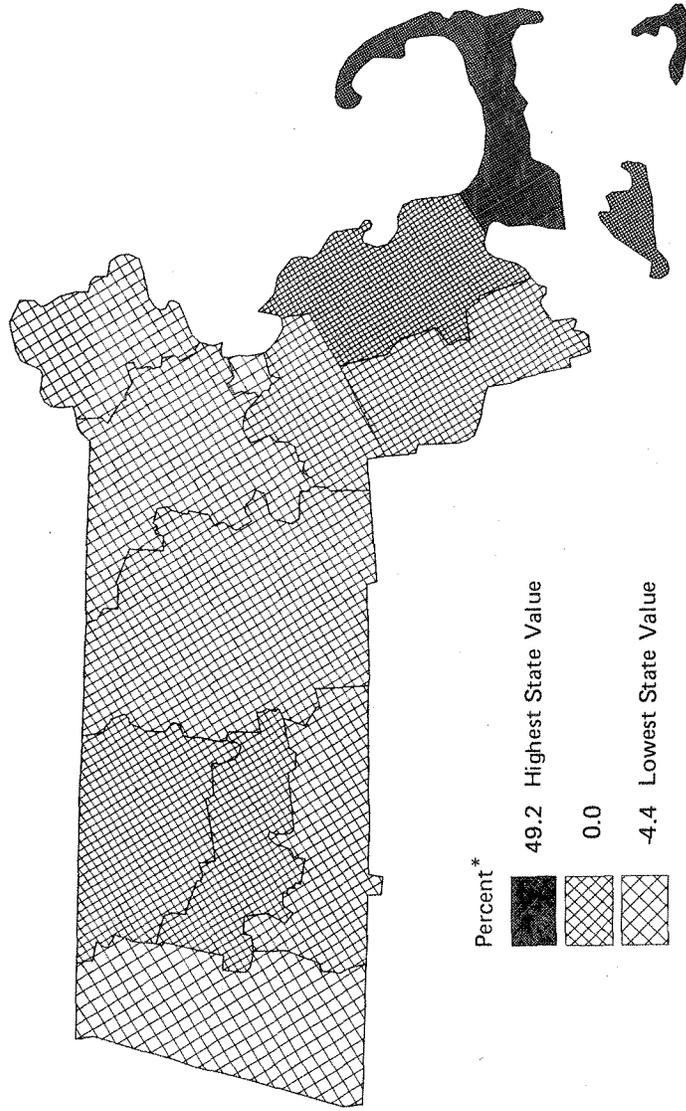
COUNTIES, METROPOLITAN AREAS, AND SELECTED PLACES: MASSACHUSETTS



Note: NECMA titles reflect names of inclusive SMSA's.

Percent Change in Population of Massachusetts Counties

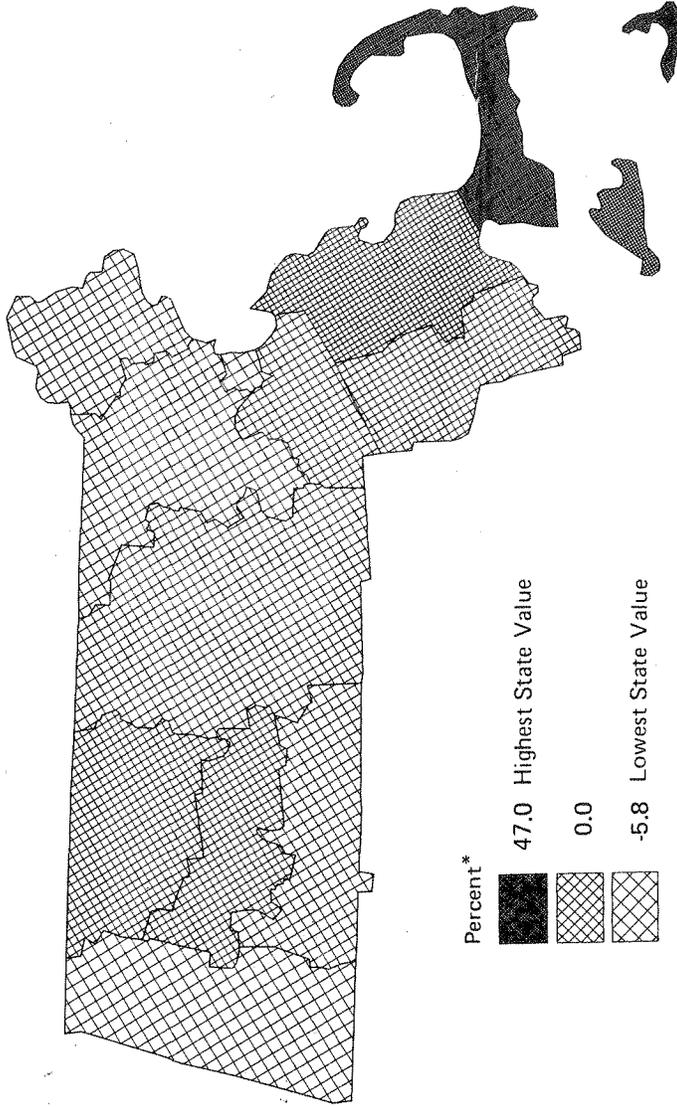
1970 — 1977



*The intensity of the line patterns showing county data values varies continuously from the lowest value within the State (sparsest line pattern) to the highest value within the State (most dense line pattern). While small variations are difficult to distinguish, the maps give an overall impression of change patterns.

Percent Net Migration for Massachusetts Counties

1970 — 1977



*The intensity of the line patterns showing county data values varies continuously from the lowest value within the State (sparsest line pattern) to the highest value within the State (most dense line pattern). While small variations are difficult to distinguish, the maps give an overall impression of change patterns.