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URBAN MIGRATION IN THE PROCESS OF INDUSTRIALIZATION: BRITAIN AND THE UNITED STATES IN THE NINETEENTH CENTURY*

by

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Almost by definition, conventional historical wisdom refers to those interpretations which have become so well-known and obvious that they are essentially taken for granted. This is the case, for example, with respect to the importance of the accumulation of productive capital in the process of economic development. Such is also the case with regard to the association of a growing trend toward urbanization with the complex phenomenon of modern economic growth. Indeed, Simon Kuznets (whose work has done much to give substance to that latter concept) has written that it ". . . has been so common in the course of modern economic growth that urbanization has become a widely recognized feature of modern life and perhaps no statistical elaboration is needed." [Kuznets, 1966, p. 270.] This attitude is quite typical; historically, the correlation between industrialization and urbanization appears so close that discussion of the specific nature of the interconnections is often deemed unnecessary.

It should perhaps come as no surprise, then, to discover that the ready acceptance of the significance of the interrelationships between these two processes has resulted in their neglect in most treatments of the historical experience; allusions are made to the economies of scale in production afforded by cities, but little else is said. Thus, to take two of the most familiar cases of industrialization, a survey of the standard literature on nineteenth-century American and British economic

history yields only rarely a substantive analysis of its interactions with urbanization. Yet the traditional accounts of the two countries' economic growth imply relationships between urban and industrial development which are, interestingly enough, quite different. For England, it is usually argued that exogenous changes in agricultural technology resulted in a surplus of agricultural labor and forced a migration to urban centers; the availability of cheap labor in the cities provided the impetus to rapid industrialization. In the case of the United States, on the other hand, it is normally suggested that high wages and rapid economic growth induced by urban-centered industry attracted workers away from agriculture and into the cities; the resultant labor shortage in rural areas inspired the adoption of new agricultural techniques. This apparent contradiction has by and large been ignored.

Before the question of the role of urbanization in the process of industrialization can be dealt with properly, the nature of urban growth must itself be clarified. Both the United States and Great Britain experienced fundamental, though by no means identical, economic change during the nineteenth century; both, too, became progressively more urbanized. As is well known, rates of natural increase in the urban areas were not nearly great enough to account for the growth of population actually observed there. It follows that urbanization was importantly determined by migration. Much of this migration was international in character, and this aspect has been rather extensively studied. However, a large portion of urban migration was not international, but internal. This latter process appears to be much less well understood.

In large measure, the unsatisfactory state of knowledge concerning the process of urban migration in England and the United States during the nineteenth century can be ascribed to the unsatisfactory state of the data relating to that process. This is not to say that the data do not exist; indeed, as discussed below, the abundance and quality of the data in raw form is generally quite good, for both countries. The problem is precisely that this data has not been adequately worked up and analyzed. The question raised by Vance over thirty years ago, for instance, seems to have remained unanswered to this date: "What is the amount and proportion of migration within the United States (1) from agricultural to industrial areas, (2) from city to country, (3) between types of farming areas, (4) from city to city." [Vance, 1938, p. 115.] The situation with respect to Britain is little better.

The traditional belief in the significance of urbanization for modern economic growth is, almost certainly, correct. But before it can be held with confidence--let alone the exact nature of the relationships involved can be studied in detail--we must first vastly improve our knowledge of the process of urban migration itself. As Dorothy S. Thomas concluded some years ago: "Our examination of researches bearing on these differentials led us to almost no acceptable generalizations about the strength and direction of selective internal migration. This is not surprising for, although the field is old with respect to speculation, it is new with respect to empirical research." [Thomas, 1938, pp. 160-161.]

Once the data were made available, any number of interesting and important questions might be studied. For example, the effects of the internal mobility of a country's population upon the specific nature of

its industrialization could be clarified. In the argument developed by Rothbarth and extended by Habakkuk, the existence of a frontier in America caused high wages to be paid to urban laborers. In this view, the mobility of labor stimulated the search for labor-saving technology and thereby produced an incentive toward capital investment and accumulation, and so toward modern economic growth.[1] Yet, for England, the traditional interpretation has been that relatively low wages in agriculture forced migration to urban areas, and the consequent large supply of urban labor facilitated industrialization. Economic growth in one case is caused by urban in-migration, and in the other by urban out-migration.

One very much neglected topic regarding internal migration concerns the implications for the areas in which the migration originates. In so far as the movement of population is rural-urban, one ought to consider the impact of urban growth on the non-urban origin areas. In general we can distinguish two basic, and contradictory, hypotheses. Classical economic analysis suggests that the region which loses population through migration will benefit; the loss of the "surplus" labor will serve to raise the marginal productivity of the remaining population, and thus boost real incomes. An opposite point of view is associated with the literature on dual economies, where it is frequently argued that the rural areas will lose the cream of their labor force--the young, the educated, the skilled, the highly motivated--and hence will be left worse off after the migration occurs. It would be useful to examine the historical record on this matter.

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[1] See Rothbarth [1946] and Habakkuk [1962].

Not unrelated to the "cream-skimming" allegation contained in the preceding argument, is the human capital approach to the analysis of population movements. Penrose has made the general judgement that "In practice migration has never taken place on a scale adequate to bring the distribution of population into anything approaching a close correspondence with the distribution of resources." [Penrose, 1934, pp. 177-178.] This is basically a statement about the proportions of human to non-human capital, and about the efficacy of migration as a mechanism of equilibration. If the generalization just quoted is correct, it would be important to know the reasons for the failure to equate at the margins.

In addition to these somewhat broader issues, there are also a variety of specific interpretations which could be investigated. For example, the role of the frontier in American economic history is essentially a matter of the patterns of international and internal migration. If there was in fact a "safety-valve" effect, some measure of it ought to be obtainable from the detailed statistics of migration. In the case of England, Redford's study of labor migration stands out as exemplary, and his notion of the wave-like process of migration has been widely accepted. His analysis, however, refers to the period 1800-1850, while many subsequent writers have simply extrapolated his findings and conclusions, and applied them to most of the rest of the century as well. Redford himself speculated that the decade of the 1850's might indeed have seen a transition in the character of British internal migration.[2] The more general validity of his thesis might profitably be tested. Again with

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[2]See Redford [1964, first published in 1926].

reference to Britain, the "special character" of the migration to London is invariably remarked. It would be valuable to give firmer content to this notion, and to express its implications for the experience of modern economic growth.

This list of problems for study in the history of nineteenth-century urbanization could certainly be extended; but it is perhaps already sufficiently long to provide justification for this choice of topic, time and place.

The published censuses of the United States and Great Britain for the nineteenth century do not contain data on interregional migration. Migration streams must be estimated from the population and nativity data which are reported in the censuses. The net migration into a region, disaggregated by age, sex, and, for the United States, by race, can be computed using the population tables. However, the age-sex-race data alone cannot tell us the origin of the in-migrants; nor can it be used to separate in- from out-migration. For this purpose, nativity data are required. A general discussion of the methods used to calculate both regional net migration and migration streams is presented below; information on the specific sources of, and adjustments to, the data, may be found in the appendices.

There is a striking lack of comment on the quality of the British data. Virtually every discussant notes several insurmountable (and possibly quantitatively important) obstacles to accurate enumeration. The point most strongly made is that by 1851 the data is vastly superior to that available for earlier periods. A further problem for our purposes is that the discussion centers on less important data--that on emigration and

immigration--rather than on the basic population and nativity data. The raw census data are used as the basis for many of the series presented in Mitchell's Abstract of British Historical Statistics [1962]. This standard reference on British statistics argues that "Whilst none is perfect, it seems likely that the first two [decennial censuses] were alone in omitting a significant proportion of the population" [p. 2]. Mitchell concludes that the underenumeration is negligible for all censuses beginning in 1821.

While more information on the quality of the data, especially the county and city data, would be useful, it appears that by 1851, the data are considered usable by those who have attempted to use them.

Comments on the quality of the United States data are as rare as those on the British. In general, the early censuses of the United States, like those of Britain, are considered as good as the censuses of almost any country today. In some respects, the United States Census of 1850 is more comprehensive than that of 1950.[3] Both the British and the United States data seem of sufficiently high quality to warrant the application of our method of estimating internal migration patterns.

Of course, some quantitative information of various types on internal migration has already been derived from the raw data. However, many of these studies are of a basically anecdotal nature, and do not permit serious scientific analysis of the tenability of certain hypotheses in economic history. However, there are three major pioneering analyses of

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[3]The most notable exception to these comments on the generally high quality of United States census data concerns the 1870 census; it is generally believed that it significantly underenumerated the population of the eleven states of the former Confederacy. See Coale and Zelnik [1963].

internal migration in the United States or United Kingdom for the nineteenth century: those by Ravenstein [1885, 1889]; Kuznets and Thomas [1957, 1960, 1964]; and Friedlander and Roshier [1966a,b].

For decades, demographers have attempted to make inferences about the pattern of migration and the process of urbanization by careful readings of nativity data. The general procedure is to examine the nativity tables of a particular region at some point in time and detail the distribution of places of birth of the residents of the region. Thus, Ravenstein notes that

> The natives of Surrey enumerated throughout England and Wales number 996,655, but Surrey has a population of 1,436,899. Consequently, even though all the natives of Surrey were to return to the country of their birth, it would still be necessary to retain within its limits 440,244 natives of other countries, equivalent to 30.7 per cent of all inhabitants, in order to maintain its population at its present level. Surrey, therefore, is a county of absorption. [Ravenstein, 1885, p. 184.]

Statements of this type are frequently made, and the inference is drawn, or strongly implied, that this is a meaningful statistic in the study of migration and urbanization. While such casual empiricism has an appropriate place, it is incapable of telling the complete story. It leaves unanswered such crucial questions as <u>when</u> and <u>why</u> the migration occurred. As will be demonstrated below, our methods allow us to overcome several of the major limitations of this type of analysis and to present a richer array of information on internal migration.

The most authoritative and comprehensive work on United States internal migration in the 19th century is the monumental three volume work edited by Kuznets and Thomas, <u>Population Redistribution and Economic Growth</u> [1957, 1960, 1964]. This work, comprised of essays by Everett Lee and

others, can be of only limited use for our purposes since it starts with the decade of the 1870's, and leaves untouched the preceding two decades which we consider quite important. Although taken as source material in many subsequent investigations, this study suffers from several inadequacies. First, Lee's study presents data only on net migration into or out of a region and does not produce information obtainable on migration streams. That is, he presents data on net inflow to or outflow from a region, but not on the origins or destinations of the migrants. This additional information is crucial, for example, in identifying rural-urban migration, a key feature of the literature on economic dualism. In addition, one would have an almost hopeless task attempting to analyze formally the factors inducing migration; knowing that there was a certain net outflow from Mississippi, or net inflow into California, in a certain decade, allows one to examine only the forces "pushing" migrants out of Mississippi, or "pulling" migrants into California. However, the forces "pulling" migrants to California may well affect potential migrants differently in New York City than in rural Mississippi; migration from rural Mississippi to urban California has different economic implications than migration to urban California from urban Illinois. Thus, data on migration streams is essential for certain types of inquiries.

Second, and directly connected with the lack of data on migration streams, is the absence of any finer geographical breakdown than state net migration. For the study of rural-urban migration, for example, state data are unsatisfactory; a breakdown by counties and cities is required.

Third, the value of the body of data presented in the Lee study suffers from certain methodological defects. For example, he assumes

uniform mortality rates across regions and as Price [1955] has subsequently shown, this can lead to errors in the migration estimates themselves.

These considerations should suffice to warrant a more thorough analysis of internal migration in the United States in the second half of the nineteenth century than that provided by Lee, and were a prime motivation in our decision to undertake this project.

For the United Kingdom, the most comprehensive study on internal migration for this period is the work of Friedlander and Roshier [1966 a,b]. This study, like that of Lee for the United States, appears inadequate from our point of view -- although, unlike Lee, they do estimate county -to-county migration streams, beginning with 1851. This still leaves unanswerable the rural-urban questions for all British cities with the exception of London, which is the only one that can be closely approximated by county observations. Further, their definition of the "most important" migration streams employs the criterion of which flows were heaviest relative to population in the counties. They report only these results and, because of this procedure, many of the reported streams involve migration between pairs of counties in Wales. Unfortunately, these are not the most interesting or important migration flows from the point of view of social and economic history.

The crux of the Friedlander and Roshier method is to assume that "the age distributions of migrants at the time of migration are constant irrespective of time, origin, or destination." [Friedlander and Roshier, 1966, p. 245.] Since a major theme of the internal migration literature refers precisely to hypotheses about differential propensities to migrate by age and sex (as well as other characteristics), assuming an age distribution a priori makes it difficult to test these hypotheses. In addition, if this

powerful assumption is not valid, large errors in estimating the migration streams will result.[4] While they do offer some justification for making this strong assumption, it would clearly be preferable to have a procedure which does not require it.

Finally, Roshier and Friedlander use English life tables in the calculation of survival rates; this procedure is also questionable, and, again, some other procedure would be preferable.

Our primary aim in this project is to derive, through employing an improved methodology, a set of more detailed and accurate estimates of internal migration in the second half of the nineteenth century for both the United States and the United Kingdom. This data can then serve as an input to studies on the economic history of the two countries. We also hope that our methodology will prove useful to scholars working on migration problems for other countries, since our work differs from that which has preceded it in several important respects.

For each country, we derive migration estimates by decade for the period 1850-1910, and examine a detailed disaggregated set of migration flows: state-state and state-city in the United States, and county-county and county-city in the United Kingdom. A uniform method is applied to the data for both countries, rendering a comparison of the two different historical experiences potentially more meaningful. For each region we also derive new estimates of net internal migration. All of this data is disaggregated by age and sex, and, in the case of the United States, also by race. We thus make available new and disaggregated figures on the size of migration flows and the characteristics of migrants.

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[4] Estimates prepared in connection with the present study demonstrate that the age distributions of migrants from different regions are not uniform.

The present paper develops this methodology and applies it to the decade 1850-1860. The decision to begin our investigation with this decade was made for the following reasons:

a) prior to 1850, the relative scarcity and poor quality of the data render it inadequate for the application of our method;

b) virtually all of the problems of data which appear for later periods are present for the period 1850-60. Therefore, with but minor adjustments, the methodology may be employed for the later periods;

c) as mentioned above, with respect to the United States and United Kingdom, there are reasons for believing that the period beginning in 1850-60 is of particular interest;

d) the data needed for testing certain important hypotheses about migration become relatively more abundant by 1850 (e.g., wage rates).

Techniques for computing net migration from the regional age, sex, and race tabulations of censuses have been worked out by Hamilton [1934], Hamilton and Henderson [1944], Siegel and Hamilton [1952], Price [1955], and Lee [1957].[5] These techniques produce an estimate of the expected population in each region at the end of a decade by the application of survival rates to each age, sex and race cohort enumerated at the beginning of the decade. The difference between the expected population and the enumerated population of each cohort at the end of the decade is an estimate

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[5] For a review of the literature on this methodology, see Hamilton [1966].

of the net out migration from the region between the two censuses.

All of these techniques begin with the simple identity:

$$(1) \qquad P_o + B - D + M = P_1$$

which says that the aggregate population of a region at the beginning of the period (P_o) plus the number of births within the time period (B) less the number of deaths (D) plus the net in-migration (M) must equal the aggregate population at the end of the period (P_1). For every age, sex, and race cohort there is a similar identity. For example, for white females ten to twenty years old at the beginning of the period we have:

$$(2) \qquad P_o - D + M = P_1$$

where, in this case, each quantity refers only to white-females aged ten to twenty at the beginning of the period. In addition to the age cohorts in existence at the beginning of the period there is also the cohort of those born within the period. For this group the corresponding identity would be:

$$(3) \qquad B - D + M = P_1$$

The age-sex-race tabulations of the population censuses provide us with the information on P_o and P_1.[6] If we can obtain data on births and deaths, we can use these identities to compute an age-sex-race breakdown of the net migration. Unfortunately, neither the American nor British

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[6] See Appendices A and B for a discussion of the data used in this paper.

ensuses for the nineteenth century provide reliable statistics on the number of births and deaths. However, sufficient information on mortality and fertility rates are available to allow an estimation of these numbers. When computing net migration it is commonplace to assume that the number of deaths in any given cohort between the two census dates can be obtained by applying the appropriate mortality rate to the original cohort population. Symbolically this can be written as:

$$(4) \qquad D = dP_o$$

where d is the mortality rate applying to the age, sex and race cohort in question. Substitution of equation (4) into equation (2) produces:

$$(5) \qquad M = P_1 - (1 - d)P_o$$

In this formulation the term (1 - d) is a survival ratio--the fraction of the given cohort which survives the period from the first census to the second. The equation is usually written as:

$$(6) \qquad M = P_1 - sP_o$$

This technique is open to objection, since it implicitly assumes that no migrants die. This point can be illustrated by rewriting equation (2) as follows:

$$(7) \qquad P_o - D_n - D_m + M = P_1$$

where all the symbols denote the same quantities as before except that D is now divided into two groups: those non-migrants in the region who die

during the period (D_n) and those persons who migrated into the region within the period but then died before the end of the period (D_m). It is this latter group that the survival technique assumes is zero (since $sP_o = P_o - [1 - s]P_o = P_o - D_n$). Siegel and Hamilton [1952] have shown that this omission is not always a trivial one. In order to correct for this problem, a further assumption can be used to estimate D_m. First, it is helpful once more to rewrite equation (2) as follows:

$$(8) \qquad P_o - D_n + M_p - D_{mb} - D_{ma} = P_1$$

Here, P_o, D_n and P_1 are defined as before: M_p denotes the total number of potential migrants into the region at the beginning of the period (the number of people who would have migrated had no one died during the period); D_{mb} is the number of the potential migrants who died before they migrated into the region in question; and D_{ma} is the number of potential migrants who died during the period but after arriving in the region. The net migration figure which we wish to compute is the number of potential migrants less those who died before migrating ($M = M_p - D_{mb}$).

We can rewrite equation (8) using the survival ratio as follows:

$$(9) \qquad sP_o + M - D_{ma} = P_1$$

To compute M we must estimate D_{ma}. By applying the same survival rate to the potential migrants as we applied to the non-migrants we can estimate the sum of D_{mb} and D_{ma}.[7]

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[7] There are at least two objections to this assumption. (1) Migrants are likely to be hardier people than non-migrants (even in the same race-sex-age cohort). (2) Migration is a dangerous and health destroying process, thus migrants are exposed to greater risks of death. It will be observed that these two effects work in opposite directions. The assumption made can be thought of as requiring that these two factors exactly cancel.

$$(10) \qquad (1 - s)M_p = D_{mb} + D_{ma}$$

We further assume that D_{mb} equals D_{ma}. If the total number of migrants within a period were distributed uniformly throughout the census decade, we would expect more to have died after moving than before since the probability of dying generally rises with age. On the other hand, the morbidity preceding death may deter migration in a sizable number of cases. This will have an opposite effect: death will overtake more of the potential migrants before they move than after.[8] We shall assume these two effects roughly cancel leaving an equal chance of dying before as after moving for a member of the potential migrant group. This assumption allows us to write:

$$(11) \qquad D_{ma} = \frac{(1 - s)M_p}{2} = \frac{(1 - s)(M + D_{ma})}{2}$$

Solving for D_{ma} yields:

$$(12) \qquad D_{ma} = \frac{(1 - s)}{(1 + s)} M$$

Substituting this last expression into equation (9) and solving for M yields[9]

$$(13) \qquad M = \frac{(1 + s)}{2s} (P_1 - sP_o)$$

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[8] This point was made by Hamilton and Henderson [1944].

[9] It should be noted that this equation is identical to the formula suggested by Siegel and Hamilton [1952, p. 491].

Equation (13) can be used to estimate the net migration into each census region by age, sex, and race.[10] With the exception of the survival ratios, all the information required is available in the age classification tables in the published censuses.

The real difficulty in estimating net migration is in obtaining accurate estimates of the survival ratios by age, sex, race, and region. Accurate estimates are particularly important because of the sensitivity of the results to small changes in the survival ratio. Table 1 illustrates this fact by presenting the estimated out-migration from Virginia of female slaves who were between 20 and 29 years of age in 1850, between 1850 and 1860, for several assumed survival ratios. As can be seen, a substantial change in the rate of migration can be produced by small changes in the survival rate.

There are essentially two approaches to the problem of estimating the survival ratios. The first technique employs life-tables which give the probability of death at each age.[11] Since accurate data on mortality experience is not available for either the United States of the United Kingdom in the nineteenth century, life tables which could be used in migration calculations would have to be based on partial data, sampling

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[10]The equation does not apply to the cohorts born during the inter-censal period. Estimating these flows requires estimates of fertility by region. Techniques for including these cohorts in the calculations are discussed below.

[11]Jaffe [1951] presents techniques for computing survival rates from life tables, p. 5-7.

Table 1: An Illustration of the Sensitivity of Net Migration Estimates to the Survival Ratio

Survival Rate	Net Out-Migration	Rate of Out Migration[a] (in percent)
.75	1914	6.9
.76	2328	8.3
.77	2735	9.6
.78	3138	10.9
.79	3534	12.1
.80	3925	13.3
.81	4312	14.4

Note: This illustration is based on female slaves 20-29 years old in 1850 and 30-39 in 1860 in the State of Virginia. The number enumerated in this cohort in 1850 was 36,974 and in 1860 it was 26,090. The national census survival rate for this cohort of female slaves was .78 (see Table 2). United States. Census Office, The Seventh Census [1853], p. xliv and United States. Census Office, The Eighth Census of Population of the United States in 1860 [1864], pp. 594-595.

a: Defined as a percentage of the expected population in 1860 on the assumption of no migration. Hamilton [1965] has demonstrated that this definition is the most appropriate one.

techniques, or extrapolation.[12]

An alternative to the life-tables based on statistical material are "model" life-tables which reflect theoretical mortality experience. If the fragmentary data available were sufficient to provide estimates of the parameters of these theoretical models, life-tables could be computed for each sex, race, and region.[13]

The use of life-tables, whether statistical or theoretical, for migration calculations, however, will compound and transmit any errors in the reporting of ages to the migration estimates. [Hamilton, 1934; 1965.] For example, it can be established that censuses generally underenumerate the number of children under five years of age relative to other age groups. Thus it is frequently found that a census will report more persons

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[12]See Yasuba [1962], Chapter III for a discussion of the available American data. In the United States, several states (such as Massachusetts) have reasonably complete mortality data extending back well into the nineteenth century. Unfortunately, only a relatively few regions have data sufficiently complete for the construction of life-tables and the application of the tables prepared for one region to other regions may not be warranted. The situation for the United Kingdom is no better. On the quality of the vital statistics, Mitchell [1962] states:

> The beginning of civil registration in each of the various parts of the United Kingdom has almost as great an effect on the information available for vital statistics as the 1801 census has for population . . . [C]omparisons over time cannot be made with a great degree of accuracy until the later part of the century, and comparisons between kingdoms are perhaps equally dangerous. But the civil registration particulars are more complete than the statistics of baptisms, burials and marriages from the parish registers, which is the only information we have for earlier dates. [pp. 3-4.]

[13]For a discussion of model life tables and their application see Coale and Demeny [1966].

computed after adjustments for immigration, while those for the Black population can be based directly upon the published age distributions. In Table 2, the national survival ratios for each age-sex-race cohort which can be isolated in the U.S. censuses of 1850 and 1860 are illustrated as an example of the results obtained. The correction for immigration to the United States during the decade is somewhat complicated and has been relegated to Appendix C.

The distortions in the age distributions caused by misreporting or underenumeration are apparent in the survival ratios shown. No true survival ratio could exceed one, and the higher survival ratios for the 40-49 year old 1860 cohorts than for the 30-39 1860 cohorts is very unlikely to reflect a true mortality reversal. Rather, these peculiarities reflect a systematic underenumeration of young children and of single gainfully occupied adults. However, to the extent that the degree of underenumeration at each age is uniform across the regions under study, use of the census survival ratios will automatically correct for this bias while the use of life-table survival ratios would introduce serious errors.

When the CSR technique has been employed it frequently was assumed that the national-cohort-survival ratios apply uniformly to each region of the country. This technique obviously will not take account of possible differences in mortality by cohort between regions. As Price [1955] has noted, this omission can cause considerable error. There are at least two approaches which could be used to correct this oversight. The first would be to obtain data on mortality by region and to use this information directly. As already noted, there do not exist accurate vital statistics for either the United States or the United Kingdom during the nineteenth century. However,

10 to 15 years of age at one census than it reported as under five years of age 10 years previously.[14] A life-table would yield an estimate of the survival ratio for this cohort of less than one and thereby attribute the improved enumeration of this age cohort in every region to net migration—greatly exaggerating the true migration. For this reason the computation of net migration by the technique known as the Census Survival Rate (CSR) method is preferred.

The CSR technique observes the rate of decline (or increase) of each age-sex-race cohort between successive censuses for a closed population. In the case of a country with little or no immigration or emigration the national survival ratio for each cohort can be computed from the age tabulations of the total population. If the country has experienced considerable net immigration or emigration the aggregate cohort populations would have to be corrected for the net changes. If the country experienced in-migration but negligible out-migration, age classifications for the native-born population might be used when available.[15]

During the nineteenth century the United States experienced considerable immigration of foreign-born whites, and negligible immigration of Negroes. Census survival ratios for the White population therefore must be

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[14]For example, the number of male slaves aged 10-14 reported in the U.S. Census of 1860 was 276,928 while this same cohort was measured in 1850 as containing only 267,088. The difference cannot be explained by immigration since importation of slaves was illegal at this time and illegal importation or enslavement of free Negroes was comparatively negligible. The data are from the United States. Census Office, Census of Population: 1850 [1853], p. xliv and the United States. Census Office, Census of Population: 1860 [1864], pp. 594-595.

[15]For the United States, data on the native-born population do not become available until 1870.

Table 2: National Census Survival Ratios by Age, Sex, and Race: The United States 1850–1860

		White[a]		Free Colored		Slave	
Age in 1850	Age in 1860	Male	Female	Male	Female	Male	Female
0 - 4	10 - 14	1.017	1.008	1.004	.982	1.037	.967
5 - 9	15 - 19	.952	1.021	.859	.958	.921	.952
10 - 19	20 - 29	.904	.916	.843	.935	.893	.867
20 - 29	30 - 39	.779	.809	.811	.783	.754	.780
30 - 39	40 - 49	.804	.855	.819	.801	.803	.779
40 - 49	50 - 59	.792	.822	.733	.743	.731	.685
50 - 59	60 - 69	.768	.794	.653	.671	.708	.714
60 - 69	70 - 79	.580	.607	.479	.521	.405	.430
Over 70	Over 80	.292	.323	.331	.409	.342	.384

a: See Appendix C for details of adjustment made for immigration.

partial enumerations of deaths were made at the time of the censuses in both countries during the latter half of the century. While these data are known to suffer from a significant underenumeration of deaths, it has been argued that the census mortality statistics can be used to rank order the states on the basis of mortality since it is believed that the rate of underenumeration was roughly uniform across regions.[16] Such information could be used to adjust the national cohort survival ratios for differences in state mortality.

A second approach employs the census data on state or foreign country of birth. It rests on the assumption that the death rate of persons born within a given region, regardless of their residence, is equal to the death rate of persons residing in the region regardless of their place of birth.[17]

If we consider the population born in a given region regardless of the region of residence, we have the following population identity:

$$(14) \qquad P_o + B - D = P_1$$

which says that the total population born in a region and alive at time zero (P_o) plus those born within the region during the intercensual period and

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[16] Yasuba [1962] has examined the 1850 mortality data with some care and concludes that: "The evidence examined so far seems to lead us to the inference that the relative levels of mortality shown by the 1850 Census represented roughly the relative levels of actual mortality for the year ending June 1850." [p. 82.]

[17] This assumption is probably reasonably accurate as long as the effects of migration on the region in question have not been large, i.e., if the number of people born in and residing in the region represents the bulk of both (a) the population of region and (b) the number of persons born within the region.

still living at the time of the second census (B) less those members of the original native population who died (D) will be equal to the population born in the region and alive at the time of the second census (P_1). The survival rate for the population P_o can then be computed from the following formula:

$$(15) \qquad s = \frac{P_1 - B}{P_o}$$

In order to carry out the computation of state-of-birth survival ratios using equation (15) it is necessary to estimate the number of children born in each region and surviving to the end of the decade. This is accomplished by estimating fertility ratios for each region and using these ratios to distribute all native born children under ten years of age at the end of the census decade to a state of birth. These regional fertility ratios can be estimated by taking a weighted average of the ratio of infants under one year of age to women of child-bearing age at both the initial and terminal censuses.

The definition of the child-bearing-age cohort is somewhat arbitrary; nevertheless, we have adopted the practice of counting all women between the ages of twenty and thirty-nine and one-half of the women between fifteen and nineteen. This crude fertility ratio is then converted to an index by dividing each region's ratio by the national ratio computed in the same manner.

In order to distribute the native born children to their region of birth a census decade fertility ratio for the nation as a whole is computed as the ratio of all native born children under ten years of age to

the average number of women of child-bearing age during the decade. This latter cohort is defined as the average of women who were fifteen to thirty-nine at the first census and women who were twenty to thirty-nine a decade later. This definition has the advantage that it includes all of the women who were 15 to 29 at the first census (and hence 25-39 at the second census) and in addition it counts with a weight of one-half those women who were 30 to 39 at the first census (40-49 at the second) and those women who were 10-14 at the first census (20-24 at the second).

This ratio of children to women is multiplied by the regional fertility index previously mentioned to obtain a regional census decade fertility ratio. This ratio is then multiplied by the average number of women of child-bearing age in the region during the decade, computed in the same manner as that cohort was for the nation. As an example of the results obtained by this technique, Table 3 illustrates the distribution of native-born children under ten in 1860 to their state of birth for the native-born population of the United States.[18]

These estimates are used in equation (15) along with the nativity data to compute the survival rates by state of birth. These results are presented in Table 4, Column 1 for the 1850-60 U.S. data. One would expect differences in the state survival ratios computed in this manner to arise solely from differences in the age distribution of the population of these states. To assess the impact of these age differences, average

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[18] See Appendix A for the sources and a detailed description of the data used. Note that Table 3 also presents for comparison the distribution of children to their state of birth applying the national fertility ratio (1.856) uniformly to all states.

TABLE 3. DISTRIBUTION OF NATIVE BORN CHILDREN UNDER TEN IN 1860 TO STATE OF BIRTH -- FREE POPULATION

REGION	WOMEN 15 TO 39 IN 1850	WOMEN 20 TO 39 IN 1860	AVERAGE NUMBER OF WOMEN	RATIO OF INFANTS UNDER ONE YEAR TO ONE HALF THE WOMEN 15 TO 19 YEARS PLUS THE WOMEN 20 TO 39 1850	1860	WEIGHTED AVERAGE	STATE FACTOR	STATE FERTILITY RATIO	DISTRIBUTION OF CHILDREN STATE OF BIRTH IF WOMEN A OF AVERAGE FERTILITY US AVERAGE	STATE AVERA
AINE	115601	92795	104198	.142	.134	.138	.853	1.583	193431	164986
EW HAMPSHIRE	68088	51528	59808	.104	.111	.107	.660	1.225	111026	73286
ERMONT	61848	45506	53677	.123	.127	.125	.769	1.428	99644	76663
ASSACHUSETTS	235926	225565	230745	.112	.122	.117	.721	1.339	428350	308994
HODE ISLAND	34052	31024	32538	.120	.123	.121	.749	1.391	60402	45255
ONNECTICUT	80457	78172	79314	.108	.124	.116	.716	1.328	147236	105354
EW YORK	689049	664245	676647	.127	.135	.131	.806	1.497	1256113	1012901
EW JERSEY	102591	109737	106164	.152	.157	.154	.953	1.768	197080	187721
ENNSYLVANIA	476910	444672	460791	.156	.166	.160	.989	1.837	855403	846359
ELAWARE	18259	16322	17290	.158	.169	.163	1.006	1.868	32096	32290
ARYLAND	103423	94266	98844	.156	.152	.154	.950	1.763	183491	174308
ISTRICT OF COLUMBIA	11325	13113	12219	.126	.155	.141	.872	1.619	22683	19788
IRGINIA	188962	159450	174206	.155	.174	.164	1.010	1.875	323392	326670
ORTH CAROLINA	118935	97893	108364	.163	.166	.164	1.013	1.880	201164	203726
OUTH CAROLINA	56578	44232	50405	.136	.162	.148	.910	1.690	93570	85195
EORGIA	99783	82630	91206	.180	.191	.185	1.142	2.120	169312	193335
LORIDA	8665	10267	9466	.178	.201	.190	1.173	2.177	17572	20610
LABAMA	82488	73014	77751	.176	.193	.184	1.134	2.105	144335	163681
ISSISSIPPI	54161	46283	50222	.189	.181	.185	1.143	2.122	93231	106548
OUISIANA	56354	59282	57318	.147	.144	.145	.896	1.664	106403	95370
EXAS	27818	53664	40741	.200	.223	.216	1.329	2.468	75630	100540
RKANSAS	29759	42830	36294	.217	.209	.213	1.311	2.434	67375	88326
ENNESSEE	149192	117306	133249	.183	.197	.184	1.137	2.111	247360	281339
ENTUCKY	147741	129072	138406	.189	.198	.193	1.191	2.211	256934	306080
ISSOURI	113517	152005	132761	.202	.203	.203	1.250	2.320	246454	308025
LLINOIS	162668	249418	206043	.191	.197	.195	1.200	2.227	382494	458851
NDIANA	187564	196641	187102	.202	.200	.201	1.240	2.302	347332	430705
HIO	391908	340304	366151	.169	.175	.172	1.060	1.967	679715	720185
ICHIGAN	77254	110378	93817	.164	.164	.164	1.012	1.879	174159	176274
ISCONSIN	59350	109085	84217	.200	.202	.201	1.239	2.300	156338	193712
OWA	36302	94463	65382	.195	.222	.215	1.324	2.457	121373	160664
CALIFORNIA	4281	43594	23937	.089	.190	.181	1.117	2.074	44436	49633
MINNESOTA TERRITORY	1059	26706	13882	.178	.210	.209	1.289	2.393	25770	33221
OREGON TERRITORY	1907	6627	4267	.189	.298	.274	1.687	3.132	7921	13364
UTAH TERRITORY	2161	6112	4136	.236	.308	.290	1.786	3.315	7677	13707
NEW MEXICO TERRITORY	13400	14792	14096	.107	.160	.135	.832	1.544	26167	21761
UNENUMERATED	0	21392	10696	0.	.186	.186	1.147	2.130	19855	22781
TOTAL	4068562	4143390	4105976	.156	.168	.162	1.000	1.856	7622924	7622198

Table 4: Ranking of States by an Index of the Relative Mortality of Their Natives: 1850-1860

State	From Nativity Data on State of Birth		Correction for Differences in Age Distribution		Index of Relative Mortality[a]
	Survival Ratio (1)	State Relative (2)	Survival Ratio (3)	State Relative (4)	(5)
District of Columbia	.708	.800	.860	.987	.811
Rhode Island	.753	.851	.850	.976	.872
Arkansas	.810	.916	.893	1.025	.894
Missouri	.812	.919	.886	1.018	.903
Delaware	.816	.923	.865	.994	.929
New Jersey	.818	.925	.863	.992	.933
North Carolina	.838	.948	.873	1.003	.945
Massachusetts	.816	.923	.849	.975	.946
Maryland	.840	.950	.863	.991	.959
Virginia	.852	.963	.871	1.001	.963
Connecticut	.828	.937	.843	.968	.968
South Carolina	.859	.972	.873	1.003	.969
Kentucky	.868	.982	.880	1.010	.972
New Hampshire	.832	.941	.840	.965	.975
Tennessee	.875	.990	.883	1.014	.976
Indiana	.883	.999	.886	1.017	.982
Florida	.882	.997	.881	1.012	.986
Maine	.873	.988	.860	.988	1.000
Georgia	.899	1.017	.884	1.015	1.002
Pennsylvania	.889	1.006	.870	.999	1.007
Alabama	.918	1.038	.885	1.017	1.021
Vermont	.892	1.009	.850	.977	1.032
Mississippi	.934	1.056	.888	1.020	1.036
New York	.909	1.029	.862	.990	1.039
Ohio	.926	1.047	.877	1.007	1.040
Louisiana	.934	1.056	.870	.999	1.057
Illinois	.982	1.111	.885	1.017	1.093
Michigan	1.006	1.137	.878	1.009	1.128
Territories	1.140	1.289	.872	1.002	1.287
Texas	1.158	1.310	.886	1.018	1.288
Iowa	1.204	1.362	.890	1.022	1.333
Wisconsin	1.270	1.436	.879	1.010	1.423
California	3.937	4.453	.806	.926	4.811
UNITED STATES	.884	1.000	.871	1.000	1.000

a: Column (2) divided by column (4). Note that a low index number indicates a high mortality rate relative to the nation.

state-survival ratios were computed using weighted averages of the national age-sex-race cohort survival ratios where the weights were the percentages of the 1850 population in each age-sex-race cohort. These figures are given in column 3 of the table. In order to compute an index of relative mortality both the survival ratios computed from the nativity data and the weighted average ratios were converted to relatives by dividing each survival ratio by the ratio for the nation as a whole computed by the same technique (these numbers are given in columns 2 and 4). The index of relative mortality was then defined as the ratio of these two relatives (column 5 of the table).

Upon examination of this "healthiness index," a major difficulty appears. Seven regions have impossibly high relative mortality indices (Illinois, Michigan, the territories, Texas, Iowa, Wisconsin, and California), reflecting the fact that their survival ratios as computed from the nativity data were either greater than one or in the case of Illinois impossibly close to one.

We believe these excessively high survival ratios reflect, in part, an improvement in the coverage of the census between 1850 and 1860. All of the areas mentioned are in the western part of the United States and in 1850 were either on the frontier or still in the process or rapid settlement just behind the frontier. The populations of such regions were probably underenumerated relative to the more stable populations of the eastern seaboard. It is also fairly certain that the degree of underenumeration declined substantially between 1850 and 1860.[19] To the

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[19] For a more extensive discussion of this problem of underenumeration on the frontier see Thompson [1955] and Sabagh [1943], Chapter 2. California in 1850 presents special difficulties; see Appendix A for details.

extent that the high survival indices for these western states reflect only a change in the coverage of the two censuses, use of these figures will have the same error-correcting properties that the Census Survival Ratios by age cohort possess.[20]

Appendix Table D-1 presents the net migration estimates for the United States employing the correction for state differences in mortality (and state differences in the degree of improvements in census coverage).[21]

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[20] Another type of error in the nativity data would produce errors in the survival ratios which would not automatically correct themselves. It is known that some migrants (particularly foreign-born ones) have a tendency to announce as their birth place their new residence rather than their true home state or country. Thus the number of people reported as natives of the states in which they reside would be consistently overenumerated. In states with high rates of in-migration, the rapid growth of these false "natives" would bias the survival ratios upward. See Lee and Lee [1960]; Eldridge [1965], pp. 92-93; and United States. Bureau of the Census, Census of Population: 1950, Volume IV, Part 4, Chapter A [1953], p. 4. The misreporting of nativity was not always the result of misreporting by the migrants. The director of the 1850 U.S. Census noted the following:

> Blanks in the nativity column (of the enumerators manuscripts) sometimes extend to whole pages. These blanks were considered in the office to mean that the person was born in the state, as the only probable construction. (United States. Census Office, Census of Population: 1850 [1853], p. iv.)

It would be possible to compensate for these difficulties by assuming a constant propensity for migrants' birth places to be misreported. Given a value for this "misrepresentation propensity" we could recompute the nativity data and then recompute the nativity-specific survival ratios. The difficulty encountered in following this procedure is in choosing an appropriate value for the misrepresentation propensity. The followup survey on the 1950 U.S. Census indicates that approximately three percent of the birth places were misreported; United States. Bureau of the Census, Census of Population: 1950, Volume IV [1953], p. 4. As a rough indication of the effect such an adjustment might have on the net migration figures, adjustments were made to the nativity data assuming a propensity to misreport of four percent. The results obtained with these adjusted data are presented in Appendix D.

[21] In Appendix Table D-1 the state mortality correction was applied to the city population data as well as the balance of the state. This is undoubtedly a poor technique as there is considerable evidence that urban mortality rates were higher than rural mortality rates; Yasuba [1962], Chapter III. We intend to correct for this difference by exploiting the data available in the mortality censuses of 1850 and 1860.

Appendix Table D-2 presents net migration estimates which use the national survival ratios without this adjustment. Appendix Tables D-1 and D-2 contain estimates for the net migration of children under the age of ten as well as estimates for the other cohorts. These numbers were computed using a modification of the technique described above, necessitated because these children were born during the decade. Our estimate of the net migration of children was obtained using the following formula:

$$(16) \qquad M = P_1 - (B - D)$$

Here M is the net migration of children in a given sex-race cohort, P_1 is the number of children in that cohort under ten enumerated in the region at the end of the decade, B is the number of births in the region during the intercensual period, and D is the number of deaths occurring to members of this age-sex-race cohort. The quantity (B - D) is the number of children born in the region and surviving until the end of the decade. This number was computed by the technique outlined when describing the calculations underlying Table 3. The only difference between the numbers presented in Table 3 and those which we wish to calculate involves the necessity of obtaining these estimates by sex and race. To accomplish this breakdown we employed sex-race fertility ratios rather than the aggregate ratios described in our discussion of Table 3. When calculating the net migration of free colored males under ten, for example, the fertility ratios were computed as the ratio of free colored males under ten to free colored females in the child-bearing age group.

In Appendix Tables D-3 and D-4 the numerical results presented in Appendix Tables D-1 and D-2 are presented as rates of net migration where

Table 5: Comparison of Results Obtained by Two Different Methods of Calculating Numbers of Immigrants: United States: 1850-1860 *

Region	Using National Survival Ratios For Each State		Using State Mortality Factors Computed from Nativity Data	
	Total		Total	
	Male	Female	Male	Female
Maine	-18,819	-20,662	-18,864	-20,711
New Hampshire	-7,268	-7,801	-3,719	-4,089
Vermont	-14,152	-15,687	-18,627	-20,041
Massachusetts	35,588	48,215	62,075	76,220
Rhode Island	1,605	2,925	11,122	13,131
Connecticut	21,215	24,126	27,162	30,263
New York	103,842	111,270	45,462	53,260
New Jersey	35,565	31,759	52,858	49,061
Pennsylvania	29,286	25,089	21,918	17,799
Delaware	1,099	-733	4,309	2,425
Maryland	-11,285	-8,621	-39	2,721
District of Columbia	5,028	5,940	10,523	12,198
Virginia	-53,318	-65,479	-29,226	-41,857
North Carolina	-37,555	-40,336	-15,823	-18,293
South Carolina	-49,555	-49,290	-40,475	-39,945
Georgia	-39,645	-37,059	-40,448	-37,848
Florida	15,599	13,326	16,308	13,960
Alabama	2,952	-2,532	-4,765	-9,971
Mississippi	18,931	10,633	8,607	952
Louisiana	51,728	39,775	36,450	26,280
Texas	156,748	131,105	114,532	95,283
Arkansas	77,757	63,457	93,308	77,331
Tennessee	-72,498	-86,313	-61,721	-75,758
Kentucky	-42,671	-56,716	-29,844	-44,572
Missouri	142,639	103,071	184,428	139,674
Illinois	299,750	229,988	250,490	187,147
Indiana	38,953	10,362	48,026	18,681
Ohio	-50,856	-68,412	-87,302	-103,129
Michigan	133,876	104,078	103,291	77,418
Wisconsin	180,092	153,373	101,207	85,636
Iowa	196,866	165,850	147,354	122,777

*The figures given are for the total population.

provided in the census publications of the United States and the United Kingdom. Such estimates are based on the assumption that a migrant makes only one move in his lifetime--the move away from his region of birth. While such an assumption could not be reasonably applied to the mobile populations of the twentieth century, it probably will not introduce serious error into the nineteenth-century data.[24]

To apply the CSR technique to the nativity data the base population is taken to be the number of people living in the destination region who were born in the origin region. A survival ratio is applied to this nativity cohort at the first census date and the resulting number of expected survivors is subtracted from the number of persons in the nativity cohort at the second census. The result is an estimate of the migration of persons born in a given region to the destination region. If the assumption that people make only one move in their lifetime is valid then this migration will be an estimate of the number of persons moving from the origin region to the destination region.

As in the previous techniques for estimating net migration, the difficulty in using this technique also arises in selecting the appropriate survival ratio. This problem is aggravated in this case because the age classifications of the populations are not available for each nativity class. Since survival ratios are obviously sensitive to the age distribution

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[24]This assumption is certain to be most strongly violated in the case of the United States for the foreign-born category, members of which may have established a temporary residence in an east-coast port city but then subsequently changed residence by moving westward.

of the population, it will be difficult to compensate for differences in the age distributions of various nativity classes.[25]

Several studies have attempted to estimate point-to-point migration using nativity data, when age breakdowns were not available. Friedlander and Roshier, for example, used a hypothetical age structure "calculated from English life tables" to apply to those born outside each region [1966, p. 245]. Eldridge and Kim [1968] computed census survival ratios for each region of birth and applied them to natives of those regions wherever they were living. Burch and Elizaga applied regional survival ratios to every population cohort within the destination region regardless of the region of birth.[26] The technique of using hypothetical age-structures has the disadvantage of not providing the automatic correction for under-enumeration which the Census Survival Rate technique possesses. The technique used by Eldridge and Kim will have this error-compensating property because the survival rates are applied to the same population from which they were computed. Their technique, however, has the disadvantage

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[25] It might be possible to estimate the age distribution of the population born in the region and living there at the time of the census by tracing the populations born in the state through time and subtracting estimates of out-migration by age and year of departure. This estimated age-distribution of the region's natives could be subtracted from the age distribution of the total population to obtain an age distribution of non-natives. However, such a technique would require out-migration estimates covering a period of at least fifty years prior to the census with which one is working. At the present time such adjustments are beyond the scope of our project.

[26] Thomas K. Burch, Internal Migration in Venezuela, unpublished Ph.D. dissertation, Princeton University, 1962, and Juan C. Elizaga, "Assessment of Migration Data in Latin America," Milbank Memorial Fund Quarterly, January 1965. We have not directly consulted either of these works, but draw upon the information concerning them which is presented in Eldridge and Kim [1968, p. 8].

We began our project with the recognition that serious economic analysis of the historical experience of urbanization during the process of industrialization was hampered by a surprising lack of relevant data. Thus far our work has been comprised of efforts designed to overcome this lack and to develop a methodology for estimating migration flows from available census data. While at present our results are confined to the single decade 1850-60 for the United States and the United Kingdom, they already suffice to indicate the potential fruitfulness of the enterprise. As an indication of the types of results which can be obtained, we would like to call the reader's attention to several interesting phenomena which emerge from the data.

1. With respect to the settlement of the agricultural states in the upper Mississippi Valley (which, during this decade experienced an increase in population due to net in-migration equal to forty or fifty percent of the base, 1850, population), our figures (see Appendix D) reveal several noteworthy features about the sources of this immigration. American-born settlers predominated; persons from abroad accounted for roughly ten to twenty percent of all immigrants in these states, though in the case of Wisconsin they comprised almost forty percent of the immigrants. The Americans moving to this region generally made relatively short moves, coming from the agricultural areas to the east. In the case of Illinois, for example, twenty-five percent of all in-migration originated in the states of Ohio and Indiana; other states supplying large numbers of migrants were New York, Pennsylvania, and Kentucky (in that order).

Table 6.

Urban Immigration into Three English Cities: 1850-1860

Age in 1861	Total Number of Immigrants						As a Percentage of the Total Cohort Alive at the End of the Decade					
	London		Birmingham		Manchester (& Salford)		London		Birmingham		Manchester (& Salford)	
	M	F	M	F	M	F	M	F	M	F	M	F
10-14	-7,815	-3,707	366	193	-2,440	-2,080	-5.65	-2.70	2.45	1.30	-10.04	-8.57
15-19	-94	22,164	2,109	2,478	1,470	2,970	-0.08	18.86	17.60	20.04	7.41	14.51
20-24	29,190	44,913	3,561	3,590	4,488	6,562	30.69	40.91	32.60	28.42	25.33	31.90
25-29	27,619	37,715	2,156	2,714	2,025	3,755	32.12	36.21	21.46	24.68	12.03	19.40
30-34	3,926	13,297	216	921	-1,310	-109	3.97	12.09	1.99	8.70	-7.16	-0.55
35-39	-7,138	-708	-591	570	-2,645	-1,122	-7.68	-0.69	-6.20	6.38	-15.76	-6.60
40-44	-10,004	-5,063	-595	227	-2,383	-1,160	-10.87	-5.13	-6.75	2.70	-15.83	-7.29
45-49	-7,752	-4,579	-271	84	-1,714	-841	-11.05	-6.05	-4.06	1.29	-14.96	-7.04
50-54	-7,628	-3,848	-420	33	-1,722	-978	-13.00	-5.94	-7.68	0.61	-16.84	-9.08
55-59	-6,860	-3,196	-547	-166	-1,541	-973	-16.70	-6.95	-13.64	-4.17	-22.27	-13.15
60-64	-5,406	-3,177	-382	-187	-1,363	-893	-15.35	-7.26	-11.79	-5.34	-23.75	-13.76
65-69	-2,165	-39	-217	-92	-667	-418	-11.18	-0.15	-11.88	-4.33	-24.13	-12.30
70-74	-1,759	1,339	-156	-11	-509	-307	-13.07	7.47	-13.50	-0.79	-28.39	-13.19
75-79	-2,059	-475	-178	-75	-325	-333	-27.59	-4.58	-30.58	-9.79	-37.40	-26.92
80 and over	-1,917	-2,244	-244	-348	-435	-511	-42.96	-28.41	-71.14	-58.19	-86.31	-59.98

former is traditionally thought of as having enjoyed the advantages of a diversified economy, the latter displayed a monistic industrial structure based upon textile production (Jacobs, 1969, pp. 86 f.). It is interesting to note that we do not seem to detect this as a common pattern for United States urbanization during this decade (see below).

3. An interesting aspect of the data on net migration into the urban areas of the United States is the apparent absence of similarities in the patterns of population growth among the various cities. The newer cities in the west - Chicago and St. Louis - which were developing in conjunction with the rapidly expanding agriculture of the region, were growing even more rapidly than the states in which they are situated. On the other hand, the older, established cities of the east differed both with respect to the western cities and among themselves. New York and Philadelphia both display high rates of net immigration; however, unlike the western cities, certain specific age cohorts exhibit rates of net out-migration. The New York and Philadelphia cases follow what seems to be a weakened version of the English pattern discussed in point 2, above; specifically, the youngest age cohort of children and the older adult age cohorts are found on balance to be leaving the city. Boston and Baltimore, by way of contrast, have rates of urban growth roughly paralleling the rates of in-migration in the rest of their states. Cincinnati falls between these two extremes, with a moderately more rapid rate of growth than the rest of Ohio but with net out-migration from the older cohorts and the younger children's cohorts. Interestingly,

the remainder of Ohio saw out-migration of its young adults while Cincinnati experienced an inflow of these persons.

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Appendix A: Data for Migration Calculations: The United States 1850-1860.[1]

The basic data required for the computation of migration streams are the age, sex, and race classifications of the population for each state and city and the classification by region of birth for each state and city. The original data were published as follows.

Classification by Age, Sex, and Race for States and Territories.

1850: from table XXI, pp. xlii-xliv of the Seventh Census of the United States: 1850 . . . [United States. Census Office, 1853.]

1860: from the Recapitulation section, pp. 592-597, of the Population of the United States in 1860 . . . [United States. Census Office, 1864.]

Classification by Region of Birth of the Free Population for States and Territories.

1850: from table CXX, pp. 116-118 of the Compendium of the Seventh Census . . . [United States. Census Office, 1854.]

1860: from the Recapitulation section, pp. 616-623 of the Population of the United States in 1860 . . . [United States. Census Office, 1864.]

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[1]Tables of the data used in the calculations are available from the authors upon request.

Classification by Age, Sex, and Race for Eight Major Urban Areas.

	1850[b]	1860[c]
Cook County (Chicago), Illinois	pp. 694-702[a]	pp. 78-81
Orleans Parish (New Orleans), Louisiana	pp. 466-703[a]	pp. 188-193
Baltimore City, Maryland	p. 397[b]	pp. 210-213
Suffolk County (Boston), Massachusetts	pp. 48, 49[a]	pp. 218-219
St. Louis County, Missouri	p. 398[b]	pp. 276-283
New York County, New York	p. 396[b]	pp. 322-327
Hamilton County (Cincinnati), Ohio	pp. 810-818[a]	pp. 364-369
Philadelphia City, Pennsylvania	p. 396[b]	pp. 406-411

Classification by Region of Birth of the Free Population for Eight Major Cities.

	1850[b]	1860[c]
Chicago, Illinois	p. 399	p. 613
New Orleans, Louisiana	p. 399	p. 615
Baltimore, Maryland	p. 399	p. 611
Boston, Massachusetts	p. 399	p. 608
St. Louis, Missouri	p. 399	p. 614
New York, New York	p. 399	p. 609
Cincinnati, Ohio	p. 399	p. 612
Philadelphia, Pennsylvania	p. 399	p. 610

[a] Seventh Census of the United States: 1850 [United States. Census Office, 1853]

[b] Compendium of the Seventh Census [United States. Census Office, 1854]

[c] Population of the United States in 1860 [United States. Census Office, 1864]

The age and sex classifications were identical for both censuses. The age cohorts used in tabulating the data are: under 1, 1-4, 5-9, 10-14, 15-19, 20-29, and thereafter in ten-year ranges up to the age of 99, and two additional age categories of over 100 and "age unknown."[2] In 1850, the

[2] For the city data in 1850, all age cohorts 70 and above are reported as one category; in 1860, age cohorts 80 and above are reported as one category.

population was divided into White, Free Colored, and Slave. In 1860, the only change was to further divide the White population by reporting "Civilized" Indians separately. These Indians, when enumerated, presumably were included in the White population in 1850.

The published tables were checked for consistency by summing rows and columns to compare with the published row and column totals, and a few errors in transcribing numbers from original to summary tables were discovered, as well as some addition errors in producing column or row totals. In most cases the correct data could be found in the supplemental tables or in the Compendium Volume of the 1850 Census [1854]. Appendix Table A-1 lists the errors uncovered in the published results.

All of the 1850 Census tables for California report figures based on incomplete returns, due to the loss by fire of the San Francisco county returns and the loss in transit of the returns from Contra Costa and Santa Clara counties. We adjusted the 1850 figures by using the results of the 1852 Special Census of California (published in United States. Census Office, Compendium of the Seventh Census [1854], p. 394).

The total 1852 population of these three counties was subtracted from the California total for that year, and the ratio of the 1850 reported population to the 1852 state population (less the total population of the three counties missing from the 1850 returns) was then multiplied by the 1852 total population to estimate the 1850 total population. This technique produced an estimate of the 1850 population of 112,815--1.218 times larger than the reported total in the volumes of the 1850 Census.

Table A-1. Errors discovered in the published census data, 1850-1860.

a. Age-Sex-Race Tables: 1850

Corrections:

1) The published table shows 36,580 for the number of White females, 5-9, in Maine; this is a transcription error. The correct figure is 36,590, which is given in the Maine state table. [1853, p. 2.]

2) The published table shows 501 for the number of Free Colored females, 5-9, in Tennessee; this is a transcription error. The correct figure is 504, which is given in the Compendium table. [1854, p. 70.]

3) The published table shows 12,572 for the total number of Free Colored females, 50-59; this appears to be an error in addition. The correct total is 12,582.

Further note:

The 1850 age-sex-race table was reproduced in the Compendium of the Seventh Census [1854, pp. 88-89], with an entry at female slaves, 40-49, in South Carolina of 14,518. This was a transcription error from 14,513 in the original table.

b. Age-Sex-Race Tables: 1860

Corrections:

1) The published table shows 2,280 White males, 60-69, in California. This results from a transcription error. The correct figure, derived from combining the White and Asiatic populations of this category in the California age-sex table, is 2,780. [1864, pp. 23 and 27.]

2) The published table shows 110 White males, 70-79, in Oregon, a transcription error. The Oregon age-sex table shows 119. [1864, p. 401.]

3) The published table shows 203 Free Colored females 30-39 for Missouri, a transcription error. The Missouri state age-sex table shows 293. [1864, p. 280.]

Table A-1 (continued).

b. Age-Sex-Race Tables: 1860 (continued)

Further note:

The 1860 census returns from Hancock, Sunflower, and Washington Counties in Mississippi and from Bienville Parish in Louisiana were not delivered at the Census Office, due to the secession of those states at the outbreak of the Civil War and the presumed refusal or inability of the Census Marshals to deal with the Union Government. Therefore, estimates for the populations of these districts were made by the Census Office (Indian populations were not estimated in either state, nor was the Free Colored population in the Mississippi counties) and these totals were included in the returns as persons of unknown age. The figures follow.

	White		Slave		Free Colored	
	M	F	M	F	M	F
Mississippi						
Hancock	1,282	1,000	457	400	-	-
Sunflower	602	500	2,000	1,917	-	-
Washington	612	600	7,467	7,000	-	-
Louisiana						
Bienville	3,170	2,730	2,881	2,119	51	49

c. Nativity Table: 1850

Corrections:

1) The published tables, both in the Statistics Volume of the Seventh Census [1853] and in the Compendium to the Seventh Census [1854] show as zero the number of Danes residing in Vermont in 1850. This is inconsistent with the column and row totals which were published; 1 appears to be the correct entry.

Table A-1 (continued).

d. Nativity Table: 1860

Corrections:

1) The published table shows as 1,383 the number of people born in France residing in Texas. This was mistranscribed from the Texas state nativity table, which shows 1,883. [1864, p. 490.]

2) There is an addition error in the published table, showing the column total of those born in Ohio as 2,122,605; the correct figure is 2,122,603.

3) The published table shows as 353 the number of people born in South Carolina residing in Virginia. This was mistranscribed from the Virginia state nativity table, which shows 357. [1864, p. 523.]

4) The published table shows as 1 the number of people born in Kansas residing in Virginia. This was mistranscribed from the Virginia state nativity table, which shows a 7. [1864, p. 523.]

e. Age-Sex-Race Tables for Eight Major Urban Counties: 1850

Corrections:

1) There is an error in the New Orleans aggregate population figures for 1850. The free population reported for the city alone in 1850 is 99,364, which we have adjusted downward by 110 to 99,254. This adjustment is necessitated by the following discrepancies in the tables for free colored males: in the statistics volume the number of Free Colored males in the city is reported as 3,999, whereas the total for the parish is 3,955. Furthermore, the Compendium reports the number of Free Colored males in the city plus Algiers and Lafayette (two suburbs of New Orleans) as 4,104, and the Statistics Volume reports their number in Lafayette as 147,yielding 3,957 in the city plus Algiers (for which separate data are not available). The city tabulation is then clearly in error, but we have no way of knowing how many Free Colored males were residing in Algiers. Thus to estimate the number of Free Colored males in the city alone we have taken the ratio of Free Colored females in the parish to those in the city (1.017) and have divided the number of Free Colored males in the parish by this ratio to get 3,889, or 110 fewer Free Colored males in the city than the incorrect number reported. The figures we use are 0.983 times the published values. [1853, p. 474.]

Table A-1 (continued)

f. Age-Sex-Race Tables for Urban Counties: 1860

Corrections:

1) The published table shows 91,045 for the total number of White males in Suffolk County, Massachusetts, and 190,279 for the total White population. These are errors in addition; the correct figures are 90,045 and 189,279.

2) The table also shows 1,086 for the total number of Free Colored males in Suffolk County, Massachusetts, and 2,398 for the total Free Colored population. These are errors in addition; the correct figures are 1,186 and 2,498. [1864, p. 219].

g. Nativity Table for Eight Major Cities: 1850

Corrections:

1) In six of our eight cases, the sum of the United States-born residents of the city is not equal to the published figures; we use the actual sum. [1854, p. 399].

City	Published Sum	True Sum
New Orleans, Louisiana	50,470	50,464
Baltimore, Maryland	130,491	130,489
Boston, Massachusetts	88,948	88,944
St. Louis, Missouri	36,529	36,526
New York, New York	277,752	277,750
Philadelphia, Pennsylvania	286,346	286,345

2) The total population of New Orleans has been reduced by 110 to 99,254, and the United States-born total has been further reduced by 110 to 50,354 by reducing each native-born category in proportion. (See Table A-1, Panel e.)

h. Nativity Tables for Eight Major Cities: 1860

Corrections:

None

Another and more serious problem affecting the 1850 California Census is the substantial underenumeration of the population; this error was estimated at the time by the Census Office to be approximately thirty percent. [Sabagh, 1943, pp. 120-121.]. Underenumeration was also a problem in California at the time of the 1860 Census; however, the Census of that year was certainly more accurate than that of 1850. [Sabagh, 1943, ch. 2.] Our unadjusted estimates of net migration into California for this decade will exaggerate the true flows to the extent that the degree of underenumeration was lower in 1860 than in 1850, since we have made no attempt to correct the 1850 data for misreporting. However, as noted in the text, the estimates obt obtained using state correction factors will correct automatically for this un underenumeration.

For the purposes of our migration calculations for the period 1850-60, the United States was divided into 37 regions: the 31 states in existence in 1850, the District of Columbia, and five territorial areas--Minnesota, Oregon, Utah, New Mexico, and an area unenumerated in 1850.

There were several boundary changes in the decade of the 1850's which affected the definitions of each of these five territories.[3] In 1850, Minnesota and Oregon were territories, but before 1860 both became states and were reduced in area. Minnesota was admitted as a state with its present boundaries by a Congressional act of May 11, 1858, with the remainder of the old territory included in what was later to become Dakota Territory. Oregon was admitted as a state with its present boundaries by a Congressional act of February 14, 1859, and the remaining area was incorporated as the Territory of Washington.

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[3]The following discussion draws upon Douglas [1939] as well as the census publications.

There are several discrepancies between the U.S. internal boundaries as they existed in 1860, and the divisions reported in the volumes of the Eighth Census, taken in 1860 [1863 and 1864]. The data were originally collected according to the 1860 political divisions, but apparently were rearranged before publication to coincide with boundaries extant sometime before the formation of Idaho Territory, on March 3, 1863. Because of these rearrangements, we have regrouped the divisions reported in the 1860 Census volumes into regions comparable in area with the divisions of 1850, as follows.

1) Minnesota: The Territory was originally bounded by the Missouri and White Earth Rivers on the west. In 1858 the present western boundary was established, and the western portion of the old Territory (81,960 square miles) was ceded to Dakota. In our calculations, the figures reported for Minnesota Territory in 1850 and Minnesota State in 1860 are regarded as representing equivalent areas and comparable populations. The probability of significant error is negligible: the western portion of the territory was sparsely populated in 1850; we estimate that its population was between 600 and 1,000.

2) Oregon: For our calculations, we aggregated the 1860 population of Oregon State and Washington Territory, which were equal in area to the Oregon Territory of 1850, with the exception of a small area (4,638 square miles) ceded by Washington to Negraska Territory in 1861. This region is now part of south-western Wyoming, and contained no more than 200 persons in 1860.

3) Utah: This Territory was considerably reduced in size by the formation of Colorado and Nevada Territories in 1861, and by the cession of 10,740 square miles to Nebraska on March 2, 1861. Nevada was formed entirely from area previously in Utah Territory, but Colorado was formed from sections of Utah, New Mexico, Nebraska, and Kansas Territories. The western section of Colorado was acquired from Utah. To establish comparable boundaries for Utah in 1850 and 1860, we use the data of the 1850 Utah Territory as reported, and amalgamate the 1860 Territories of Utah and Nevada, and include the western part of Colorado Territory and the part of Nebraska Territory originally in Utah.[4]

4) New Mexico: This territory had two boundary changes between the census of 1850 and the final tabulation of the 1860 census figures: a) the area of the Gadsden Purchase (45,535 square miles) was annexed by a Congressional act of August 4, 1854; and b) an area of 14,000 square miles was ceded to Colorado in 1861. For our calculations, we use the boundaries of 1850, and adjust the 1860 population to correspond by subtracting the 1860 population of the Gadsden Purchase and adding the 1860 estimated population of the area ceded to Colorado. The Gadsden Purchase was approximately

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[4]Unfortunately, county data for western Nebraska and the entire Territory of Colorado are not available for 1860, so an ad hoc technique was used to estimate the 1860 total population of these regions by examining the county population figures for 1870. In that year the area in western Colorado consisted of Summit, most of Lake, and about half of Conejos counties. The 1870 populations of these counties were multiplied by the percentage of area included in the region transferred from Utah and then were deflated by a factor of 0.86, the ratio of the 1860 to the 1870 Colorado population. In this manner, we estimate the 1860 populati of the Colorado region to be 1,850. The area transferred to Nebraska in 1861 was in 1868 transferred to Wyoming, and at the time of the 1870 ensus comprised Sweetwater and Carbon counties in Wyoming. Following a similar procedure as was used for Colorado, the population of this area in 1860 was estimated at 210.

coincident with Arizona county as enumerated in the 1860 census, when it had a population of 6,482. We estimate that the 1860 population of the area ceded to Colorado was 7,200.[5]

5) Unenumerated in 1850: A large central area of the continental United States was unenumerated in 1850; it consisted of most of the 1860 Territories of Dakota, Nebraska, Colorado, all of the State of Kansas, and all of the Indian Territory (now the state of Oklahoma). In 1860, all of this area was included in the census with the exception of the Indian Territory. For the purposes of our calculations it is assumed that these areas had no population in 1850. Since there were people residing there in 1850, they will appear as migrants in the results.

In all of the calculations the age and nativity distributions of Utah plus Nevada territories and New Mexico territory in 1860 were used to distribute the adjusted population of these two regions.

For the calculation of migration into urban areas, we increased the number of regions to 45 by breaking eight states into two parts: the major city of the state and the remainder. Classifications both by age-sex-race distributions and by nativity groups are available for 29 cities from the 1850 Census and for 9 cities from the 1860 Census; cities appearing in both Censuses are those of the latter year: Chicago, Illinois; New Orleans, Louisiana; Baltimore, Maryland; Boston, Massachusetts;

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[5]This area corresponded to the 1870 Colorado counties of Costilla, and parts of Saguache, Pueblo, Bent, Conejos, Huerfano, and Las Animas. The 1860 population was estimated from the 1870 county data in the same manner as the 1860 population of western Colorado.

St. Louis, Missouri; New York, New York (New York County only); Cincinnati, Ohio; Philadelphia, Pennsylvania; and Washington, District of Columbia.

A problem of boundary change occurs in several of these cities. As an example, the city of Chicago annexed five portions of surrounding Cook County between 1850 and 1860. To adjust the city populations for such changes would be a tedious exercise. For convenience, we decided to consider as urban areas the counties containing the cities, rather than the cities themselves. This is reasonable since the cities were either coterminous with the counties or represented a large portion of the county population (the lowest proportion was 70 percent in the cases of Chicago and Cincinnati). We presumed there would be many fewer boundary changes for counties than for cities in any period we might consider, and found that in the 1850-1860 decade there were no such changes. [United States. Bureau of the Census, Fourteenth Census of the United States . . . 1920, Vol. I, pp. 139-149.]

In the cases of Baltimore, St. Louis, New York and Philadelphia in the two census years, the cities and their counties represented the same area. For Washington, instead of the city itself, we have used the entire District of Columbia, data for which is reported separately in both Censuses. In the cases of Chicago, Cincinnati, Boston and New Orleans the nativity data are available only for the cities proper, requiring an upward adjustment to correspond with the larger populations of Cook, Hamilton, and Suffolk Counties, and Orleans Parish, respectively.

A simple adjustment was used to make age-sex-race and nativity data commensurable for these areas for both census years: inflating each of the nativity classifications in the various cities by the ratio of

the total free county population to the free city population. The adjustments do not account for slaves in New Orleans, Baltimore and St. Louis, since no birth place data are reported for them. The nativity data adjustment factors are presented in Table A-2.

Table A-2 footnotes (continued)

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[l]United States. Census Office [1864], p. 219 (Table I, Population by Age and Sex, Massachusetts.).

[m]United States. Census Office [1853], p. 830 (Table II, Population by Sub-Division of Counties, Ohio).

[n]United States. Census Offices [1853], p. 817 (Table I, Population by Counties, Ohio).

[o]United States. Census Offices [1864], p. 612 (Nativity of the Population of the City of Cincinnati, Ohio).

[p]United States. Census Office [1864], pp. 365, 367 (Table I, Population by Age and Sex, Ohio).

Appendix B: Data for Migration Calculations: The United Kingdom, 1850-1860[1]

The basic data required for computing British migration streams are age and sex classifications of the population by county and city and the classification by place of birth of the population of each county and city. The data were published as follows.

Classification by Age and Sex for Counties.

1851: England, Wales and Scotland: House of Commons: Papers: 1852-53, volume LXXXVIII, part I, [1853], pp. CXII-CXCV.
Ireland: House of Commons: Papers: 1863, vol. LVI, [1863], p. 6.

1861: England and Wales: House of Commons: Papers: 1863, vol. LIII, [1863], part I, pp. XIV-XVII, p. 815.
Ireland: House of Commons: Papers: 1863, Vol. LVI, [1863], p. 6.
Scotland: General Registry Office, Census of 1951 for Scotland Vol. III, [1954],p. 43.

Classification by Region of Birth for Counties.

1851: House of Commons: Papers: 1852-53, vol. LXXXVIII, [1853] Part 1, pp. ccxl-ccxcvi.

1861: House of Commons: Papers: 1863, Vol. LIII, [1863], Part 1, pp. 35, 243, 321, 413, 515, 516, 595, 655, 729, 797, 885.

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[1]Tables of the data used in the calculations are available from the authors upon request.

Classification by Age and Sex for Cities.[2]

1851: House of Commons: Papers: 1852-53, Vol. LXXXVIII, [1853], Part 1, p. 81; Part 2, p. 526.

1861: House of Commons: Papers: 1863, vol. LIII, [1863], Part 1, pp. xviii, xix.

Classification by Region of Birth for Cities.

1851: House of Commons: Papers: 1852-53, vol. LXXXVIII, [1853], Part 1, p. 81; Part 2, p. 526.

1861: House of Commons: Papers: 1863, vol. XXXXVI LIII, [1863], Part 2, pp. 528, 529, 657-659, 732, 733.

The age and sex classifications and the nativity classifications were identical for both Censuses. The age cohorts used in the tabulations were 0-4, 5-9, 10-14, . . ., 95-99, 100 and over, and "age not stated."[3]

The published data were checked for consistency by summing rows or columns to compare with the published column or row totals. A number of errors were found in the 1861 census data. When an error was found, the published total was changed on the assumption that the error was in addition rather than in transcription (transcription errors, in any case, would not be traceable to a particular entry). Table B-1 lists the corrections made.

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[2]The cities presently under study are: Birmingham, Bolton, Coventry, Leeds, Liverpool, Manchester and Salford, and Sheffield. London is treated both as a city and as a county; the data for London are obtainable from the county tables.

[3]The "age not stated" classification appears only in the data for Scotland and Ireland.

Table B-1. Errors discovered in the published census data, 1851-1861.

a. Age-Sex Tables for Counties: 1851

Corrections:

1) None.

b. Nativity Tables for Counties: 1851

Corrections:

1) None.

c. Age-Sex Tables for Counties: 1861

Corrections:

1) Rutlandshire's total male population was published as 11,646 but should be changed to 11,651.

Table B-1 (continued)

d. Nativity Table for Counties: 1861

Corrections:

1) The total number of males over 20 living in London was published as 726,805 and should be changed to 726,807.

2) The total number of males under 20 living in Kent was published as 166,151 and should be changed to 166,071.

3) The total number of females under 20 living in Kent was published as 161,090 and should be changed to 161,095.

4) The total number of females under 20 living in Berkshire was published as 49,617 and should be changed to 49,611.

5) The total number of males under 20 living in Bedfordshire was published as 31,623 and should be changed to 31,620.

6) The total number of males under 20 living in Somersetshire was published as 100,297 and should be changed to 100,295.

7) The total number of males under 20 living in Durhamshire was published as 125,149 and should be changed to 125,119.

8) The total number of females under 20 living in Cumberlandshire was published as 46,520 and should be changed to 46,522.

9) The total male population of Ruthlandshire was published as 11,646 and should be changed to 11,651.

e. Age-Sex Tables for Cities: 1851

Corrections:

1) None.

Table B-1 (continued)

f. Nativity Tables for Cities: 1851

Corrections:

1) None.

g. Age-Sex Tables for Cities: 1861

Corrections:

1) None.

h. Nativity Tables for Cities: 1861

Corrections:

1) None.

from Great Britain and Ireland in 1853 and 1854. The eleven yearly totals were then divided by sex according to the ratios of males to females among the total arrivals in the United States in those years. Finally, since the dates of the 1851 and 1861 Censuses were April 8 and March 31, respectively, we subtracted an estimate of first-quarter 1851 departures from the total for the year, and used an estimate of first-quarter departures for 1861 as the figure for that year.[7] Table B-2 presents these data.

The absence of age data for British and Irish emigrants necessitated the use of the age distributions of arrivals in United States ports (see Appendix C). These distributions were applied to the yearly emigration totals for males and females, and re-aggregated to find totals for sex- and age-in-1851 cohorts of those who left Great Britain and Ireland between the censuses of 1851 and 1861. The results are presented in Table B-3. These totals were then subtracted from the 1851 national totals given in the censuses of Great Britain and Ireland, and the results were used to compute the national ten-year Census Survival Rates given in Table B-4.

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[7]This estimate was obtained from the United States immigration data for 1856, in which arrivals during the first quarter of the year represented 7.32 percent of the annual total.

For the migration calculations over the decade 1851-1861, Britain was divided into 49 regions: the 42 counties of England, three subdivisions of London, two regions in Wales--defined as North and South Wales--each comprised of six counties,[4] and Ireland and Scotland--each counted as a single unit.

In order to calculate national survival rates by sex and age cohorts, the population of Great Britain and Ireland must be "closed" in a manner similar to that described in Appendix C for the United States. Data on immigration and emigration for Great Britain and Ireland are difficult to obtain. Immigration statistics for the period prior to 1870 are not reliable [Willcox, 1929, vol. I, p. 622]; but in view of the very small increase of the foreign-born population in these countries between 1851 and 1861, it was not felt necessary to correct the survival rates to account for immigration. However, this is not true of emigration over the period, which was substantial. Data on emigration was assembled from the following sources.

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[4]The six counties included in South Wales in the 1851 Census are Glamorganshire, Carmarthenshire, Pembrokeshire, Cardiganshire, Brecknockshire, and Radnorshire; those in North Wales are Montgomeryshire, Flintshire, Denbighshire, Merionethshire, Carnarvonshire and Anglesey. The 1861 Census reports data only for South and North Wales.

Emigration For the Year:	Source
1853	House of Commons: Papers: 1854, volume XXVIII, [1854], p. 92.
1854	House of Commons: Papers: 1854-1855, volume XVII, [1855], p. 70.
1855	House of Commons: Papers: 1856, volume XXIV, [1856], p. 60.
1856	House of Lords: Papers: 1857, volume XXXIV, [1857], p. 67.
1857	House of Lords: Papers: 1857-1858, volume XLVI, [1858], p. 77.
1858	House of Lords: Papers: 1859, volume XXX, [1859], p. 75.
1859	House of Commons: Papers: 1860, volume XXIX, [1860], p. 69.
1860	House of Commons: Papers: 1861, volume XXII, [1861], p. 53.
1861	House of Commons: Papers: 1862, volume XXII, [1862], p. 74.

With the exception of the figures for 1859, we do not have detailed age-sex disaggregations for the emigrants, but only the total emigrants departing from English and Welsh ports by nationality--English and Welsh, Scottish, Irish, various foreigners, and "Not Distinguished." Those not distinguished we distributed in proportion to the native/foreign ratio of the figures for emigrants of reported nationality. The total figure for each year was obtained by adding the English and Welsh, Scottish, and Irish to our estimate of native-born among those not distinguished.[5] The totals for 1851 and 1852, for which we found no published tables, were estimated in the following manner. The ratios of the 1851 and 1852 British and Irish arrivals in the United States to the average of those arrivals in 1853 and 1854,[6] were applied to the average of total native emigration

[5]The category of "Not Distinguished" sometimes included cabin passengers. They should form part of the totals for emigrants for, according to Willcox, ". . . until 1860 one would not be far wrong in treating all passengers, even the few cabin passengers, as persons who sailed for overseas countries with a view to changing their abode." [1929, vol. I, p. 622.]

[6]For 1851, the ratio used was 1.514, and for 1852, 1.099.

Table B-2. Native-born emigrants from Great Britain and Ireland--April 1851 to March 1861.

Year	Male	Female
1851	252,888	153,881
1852	190,388	128,253
1853	176,126	120,282
1854	175,348	108,066
1855	100,483	64,703
1856	99,786	66,165
1857	119,081	79,918
1858	67,526	41,229
1859	71,459	43,704
1860	74,229	48,443
1861	3,766	2,511
Sub-totals	1,331,170	893,662
Total	2,224,832	

Table B-3. Gross emigration of natives from Great Britain and Ireland, by 1851 age cohort and year of departure.

1851 Cohort	Year of Departure 1851	1852	1853	1854	1855	1856	1857	1858	1859	1860	1861	Total
						M A L E						
1-4	16,337	12,013	10,885	10,626	5,969	5,818	6,800	3,775	3,895	3,971	203	80,292
5-9	14,743	10,871	9,845	9,556	5,376	5,368	6,966	4,585	6,181	8,254	522	82,267
10-14	13,605	11,138	11,959	15,168	11,174	13,830	19,470	12,533	14,270	15,388	791	139,326
15-19	35,050	31,128	32,689	35,017	20,830	20,955	25,031	13,964	14,285	14,118	671	243,738
20-24	53,106	40,020	36,423	35,052	19,112	17,772	19,517	10,034	9,604	9,026	418	250,084
25-29	45,039	31,205	26,172	23,567	12,219	11,076	12,182	6,449	6,367	6,168	291	180,735
30-34	28,071	19,477	16,820	15,624	8,350	7,713	8,490	4,403	4,245	4,008	184	117,385
35-39	19,548	13,575	11,483	10,416	5,426	4,880	5,287	2,735	2,637	2,502	116	78,605
40-44	12,366	8,453	7,133	6,470	3,386	3,073	3,346	1,722	1,644	1,529	69	49,191
45-49	7,789	5,350	4,491	4,033	2,070	1,826	1,917	945	865	765	32	30,083
50-54	4,628	3,065	2,466	2,122	1,035	858	834	371	293	208	6	15,886
55-59	2,175	1,333	969	719	281	170	107	27	7	0	0	5,788
60-64	430	171	70	18	0	0	0	0	0	0	0	689
65-69	0	0	0	0	0	0	0	0	0	0	0	0
Total	252,887	187,799	171,405	168,388	95,228	93,339	109,947	61,543	64,293	65,937	3,303	1,274,069
						F E M A L E						
1-4	14,480	11,799	10,801	9,477	5,532	5,518	6,441	3,195	3,243	3,478	183	74,147
5-9	12,834	10,337	9,322	8,018	4,646	4,817	6,809	4,432	5,874	7,843	474	75,406
10-14	11,203	10,927	12,930	14,524	10,475	12,479	16,391	8,753	9,379	10,352	521	117,934
15-19	29,022	26,305	25,536	23,191	13,827	13,716	15,736	7,557	7,264	7,155	325	169,634
20-24	31,900	25,253	22,048	17,961	9,557	8,575	9,071	4,098	3,872	3,890	186	136,411
25-29	19,943	14,557	11,956	9,575	5,196	4,896	5,498	2,651	2,631	2,742	134	79,779
30-34	11,387	8,824	7,734	6,506	3,662	3,527	4,004	1,938	1,923	1,991	96	51,592
35-39	8,202	6,425	5,653	4,755	2,659	2,534	2,845	1,361	1,337	1,371	66	37,208
40-44	5,894	4,566	3,969	3,307	1,831	1,727	1,926	919	900	920	44	26,003
45-49	4,016	3,091	2,682	2,226	1,229	1,158	1,279	598	568	557	25	17,429
50-54	2,693	2,052	1,744	1,405	744	655	703	313	284	266	12	10,871
55-59	1,523	1,129	914	702	356	311	280	103	70	44	1	5,433
60-64	723	449	301	173	58	26	8	0	0	0	0	1,738
65-69	62	13	0	0	0	0	0	0	0	0	0	75
Total	153,882	125,727	115,590	101,820	59,772	59,939	70,991	35,918	37,345	40,609	2,067	803,660

Table B-4. National Census Survival Rates by Age and Sex: Great Britain and Ireland, 1851-1861.

1861 Cohort	Survival Rates	
	Male	Female
10-14	.949	.936
15-19	.928	.963
20-24	.890	1.009
25-29	.879	.919
30-34	.937	.834
35-39	.955	.830
40-44	1.000	.916
45-49	.922	.868
50-54	.877	.844
55-59	.801	.784
60-64	.795	.819
65-69	.678	.720
70-74	.527	.536
75-79	.477	.499
80 and over	.236	.265

Appendix C: Immigration Estimates for the United States, 1850-1860.

Computation of age-specific survival ratios for the resident White population of the United States requires estimates of the number, age, sex and country-of-origin of the immigrants arriving in the intercensal period 1850-1860. There are three major sources of immigration data for the United States during the mid-nineteenth century:

a) State Department reports to Congress,"Passengers Arriving in the United States," published yearly as House of Representatives' Executive Documents; b) Walter F. Willcox, editor, International Migrations [1931]; c) United States Department of the Treasury, Bureau of Statistics, "Immigration into the United States," in various issues of Monthly Summary of Commerce and Finance (beginning with 1892). Despite minor differences in aggregate immigration totals among these sources, the latter two seem to be derived from the first. Thus, we have used the State Department reports as the basic source for this period.[1]

In these reports, various aggregations were published of immigration: by country of birth, by age at time of entry, by port-of-entry, by quarter of entry, etc. The State Department totals were used, except for 1850 and

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[1]Since all immigration data were recorded by quarterly periods, it was convenient to use the dates July 1, 1850 - June 30, 1860 for the decade in question, despite the census enumeration date of June 1 for both years. The discrepancy arising from this usage is small and was ignored in all calculations.

1852, where it was necessary to make separate tabulations.[2] These aggregations of age-sex compositions and nativity were then used as bases for the calculations described below.[3]

Necessary Corrections to the Data

As indicated by Willcox [1931], the available data are inaccurate for a number of reasons.

(1) Cabin passengers were not counted among the arrivals in the State Department reports. An estimate based on the period 1892-1903, calculated by Marian Rubins Davis (Willcox [1931], Vol. 2, p. 659), indicates that about eight percent should be added to the reported arrivals to account for those who did not travel steerage class.

(2) The data for this period are for arriving passengers, rather than for declared immigrants, so a correction must be made for visitors and return migrants. Our estimate indicates that about eleven percent of the passengers arriving during the decade left the United States within

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[2] In 1850, neither an age-sex nor a nativity aggregation was reported; therefore, we summed the age-sex and nativity classifications by port-of-entry for the third and fourth quarters, to obtain arrivals during 1850 after the census date. In 1852, only total arrivals by nativity were aggregated so it was necessary to calculate the age distribution by summing the age classifications by port-of-entry; the resulting total was a bit smaller than the reported totals of arrivals by nativity. This difference was added to the age distribution designated as of unstated age, and by sex proportionally to the sex ratio of the tabulated total.

[3] The age distributions available in the 11 reports consulted for this period were available by sex and by 5 year age cohorts through age 39, and by sex for all immigrants 40 years of age and older.

the period, so we will assume immigrants were 89 percent of the reported arrivals, as corrected.[4]

(3) Overland immigration was not recorded. A substantial number of Canadians and Mexicans entered the United States overland rather than by sea as immigrants during this period, and separate estimates of Canadian and Mexican immigrants were made.[5]

(4) Although there presumably was some overland immigration through Canada and Mexico of other nationals, we assume that by 1850 this was insignificant and will make no correction for it.

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[4]An estimate of return migration from the United States during the years 1850-1860 was prepared in the following manner. The increase in the number of foreign-born in the United States from 1850 to 1860 was 1,927,954. The reported immigration for the period was 2,670,464--757,782 in excess of the reported increase. The excess can be accounted for by deaths and by return migration. Our estimate of the extent of return migration as a percentage of arrivals during the period was derived using the following equation:

$$dP_o + I - (1 - d)^{1/2} I + rI = X,$$

where P_o is the foreign-born population of the United States in 1850 (2.21 million), I is the total reported foreign arrivals (2.67 million), d is the ten year crude death rate, r is the return rate, and X is the excess of immigration over population increase (0.76 million). An estimate of the five-year survival rate of immigrants, $(1 - d)^{1/2}$, is used assuming that those immigrating are in the country for an average of five years. In order to solve the equation an annual crude death rate of 13 per thousand was used to establish d. (Yasuba [1963], p. 80). This yields a decade return rate, r, of 10.9 percent.

[5]Because the reported arrivals by sea of Canadians and Mexicans cannot account for the total rise in the Canadian- and Mexican-born population of the United States during the decade 1850-60, we have used census data for 1850 and 1860 to estimate the immigration from these two countries for the period. Computations were made of the increase of Canadian- and Mexican-born residents as a proportion of the increase in non-North-American-born population between the censuses of 1850 and 1860. Assuming that the gross numbers of Canadian and Mexican arrivals were in these proportions to the total reported non-North-American-born arrivals, we find that the decade totals of gross immigration are 145,800 for Canadians (as opposed to 64,500 reported as arriving by sea), and 20,300 for Mexicans (as opposed to 3,200).

(5) Most of the yearly State Department documents indicate that no report was received for various periods from some of the immigration agents. Since this produces a relatively small and unsystematic undercount, we have made no attempt to correct for it.

Computation of Gross Immigration

(1) Aggregate Immigration.

We multiplied non-North-American-born arrivals by 1.08 to account for cabin passengers, and deflated these figures by 0.11 to account for returnees. This yields a net deflation factor of four percent to be applied to total non-North-American-born reported arrivals. We then added the estimates of Canadian and Mexican immigration.

(2) Sex Distribution by Year.

These adjusted aggregates were divided by sex according to the sex division of the unadjusted yearly totals, assuming that cabin passengers, returnees, and Canadian and Mexican arrivals all had the same proportions of men and women as the original reports indicate. The sex distribution of arrivals also included United States citizens; an implicit assumption, therefore, is that arrivals of United States citizens had the same sex distribution as the immigrants.

(3) Age Composition of Immigrants.

The reported age distributions of arrivals from abroad also included Americans returning home. The calculations outlined below are based on total arrivals, but were applied to our estimates of immigrants.

First, an average age distribution of arrivals from abroad for the decade was computed by averaging the age-sex distributions of the

yearly figures by the nine age cohorts reported plus an unstated age category. Then, assuming that the unstated age category represented the same distribution as the remainder, the figures for the stated age categories were inflated by an appropriate factor so that they summed to 100 percent.

Second, since the population-closing process for 1860 involves the age-sex composition of immigrants in 1860, it was necessary to break down the age distribution into single years of age. This was done by fitting a smooth curve, the area under which summed to one, to the male and female age distributions as reported by age cohort. The curve for those over forty was fitted using a rough exponential-decay curve to the total for this classification, producing a smooth decline from the total for age 39.

Finally, to estimate the number of immigrants who would have been of a given age and sex in 1860 (had no deaths occurred), the figures were aggregated by year of arrival to show what percentage of those arriving in a given year would be in a certain age cohort at the 1860 census date. To do this, we assumed that on the average the immigrants would be n years older, where n = 1860 - Y, with Y = calendar year of arrival. These percentages were applied to the immigration total by sex and year producing estimates of the 1860 age composition of immigrants for both sexes. The resulting figures are given in Table C-1.

(4) Nativity Composition of Immigrants.

Birthplaces of those arriving in the United States from foreign countries are shown in the State Department reports, both by port-of-arrival and in summary tables. The yearly figures were reaggregated into the same

nativity classifications as those used in the 1850 and 1860 Censuses.[6] The decade totals were then adjusted for cabin passengers and return migrants, so that the total immigration by nativity groups is identical with the total by age given in 1860. These data are presented in Table C-2.

Computation of Net Immigration

In order to close the population of the United States for our internal migration calculations, the number of immigrants to the country between the 1850 and 1860 censuses who lived to be enumerated in 1860 must be subtracted in order to have an 1860 population comprised of those who were residing in the United States in 1850, or who were born in the country in the intercensal period. This must be done both by age-sex and by nativity disaggregations of the immigrants. Accordingly, the yearly immigration figures given in Table C-1 were adjusted to remove those immigrants who died before the end of the decade. In order to make this adjustment, we assumed that both the rates of survival and of underenumeration were equal for 1850 residents and immigrants by specific cohorts. An immigrant's chance of dying was assumed to have been in proportion to the fraction of the decade he was in the country. Table C-3 presents the resulting estimate of net migration by age in 1860.[7]

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[6] Other countries of origin were placed in the "Others" category, excepting ambiguous classifications, which were placed in the "Unknown" category.

[7] The computation of the number of deaths among the immigrants entailed an iterative process. Since we could not compute the survival rates for natives without first subtracting the net number of immigrants we could not apply these ratios directly to the immigration data. In order to obtain a solution we first computed the national survival ratios assuming that all of the immigrants died. These ratios were then applied to the immigrants to obtain an estimate of net immigration which was used to refine the national survival ratios. The new ratios were used to obtain a new estimate of net immigration, and the process was repeated until the results converged.

Table C-2. Immigrants by place of birth, adjusted for cabin passengers and return migration, decade ending June 30, 1860.

Country or region of birth	Unadjusted decade total	Adjusted decade total[a]
Asia	15	14
Africa	134	129
Belgium	4,737	4,548
British America[b]	145,777	145,777
Central America	428	411
China	38,664	37,117
Denmark	3,491	3,351
France	75,935	72,897
German States	961,686	923,217
Great Britain	471,639	452,773
Greece	31	30
Holland	10,908	10,472
Ireland	921,973	885,094
Italy	7,301	7,009
Mexico[b]	20,298	20,298
Norway	10,045	9,643
Portugal	1,001	961
Russia	419	402
Spain	9,017	8,656
Sweden	11,891	11,415
Sardinia	1,700	1,632
Switzerland	24,737	23,748
South America	1,283	1,232
Sandwich Islands	24	23
Turkey	87	84
West Indies	10,437	10,020
Others	4,805	4,613
Unknown	30,053	28,851
Total	2,768,516	2,664,417

[a]Adjusted total equals unadjusted total deflated by four percent, as discussed in the text.

[b]The figures in both columns for British America (Canada) and Mexico are the adjusted totals discussed in footnote 5 in this Appendix.

Table C-3. Estimated net immigration by 1860 cohorts for decade ending June 30, 1860.

1860 age cohort	Net immigration: male	Net immigration: female
10-14	96,621	90,260
15-19	98,759	95,253
20-29	467,673	350,658
30-39	425,478	216,421
40-49	193,936	94,539
50-59	76,386	44,587
60-69	18,705	15,644
70-79	285	1,090
Total	1,377,843	908,452
Grand total	2,286,295	

The census survival ratios for the White population, as adjusted for immigration, are given in the text. Since it was assumed that the immigration of non-Whites to the United States was negligible, survival rates given in the text for the Free Colored and Slave populations are based on the age distributions as published.

Appendix D

Inter-Regional Migration Estimates for the United States, 1850-1960.

NOTE: In the following tables, all ages refer to the age in 1860.

These tables include only the results for the total population. Tables with a disaggregation by race are available from the authors on request.

1850 TO 1860 NET MIGRATION BY AGE AND SEX OF THE TOTAL POPULATION
CALCULATED BY CENSUS SURVIVAL RATE METHOD USING STATE MORTALITY FACTORS COMPUTED FROM NATIVITY DATA

REGION	30-39		40-49		50-59		60-69	
	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE
MAINE	-3074	-2750	1848	-268	1285	565	662	434
NEW HAMPSHIRE	-1198	-1665	1325	212	990	732	372	424
VERMONT	-3249	-2444	-459	-1670	-740	-719	312	-374
MASSACHUSETTS	17484	11823	9372	4992	3902	5320	2304	4010
RHODE ISLAND	2566	2431	1775	1613	986	1295	499	900
CONNECTICUT	6460	5374	4517	3097	2123	2246	1220	1364
NEW YORK	32906	15667	12724	-822	-3540	-1693	-1975	-390
NEW JERSEY	17513	13685	10184	6294	3864	3562	1256	1831
PENNSYLVANIA	22166	8658	14078	4395	1698	1344	-257	-54
DELAWARE	1037	597	868	446	368	425	49	29
MARYLAND	4263	3814	1996	1065	160	442	-618	-209
DISTRICT OF COLUMBIA	3157	2701	1672	1248	699	750	220	442
VIRGINIA	635	-3329	3135	-35	-1064	-1418	-664	-1129
NORTH CAROLINA	651	-2577	2243	-130	3034	1418	-786	-783
SOUTH CAROLINA	-3131	-3978	-1835	-2477	-960	-1569	-1720	-1733
GEORGIA	-3616	-5476	-846	-1991	-2539	-2447	-87	-476
FLORIDA	2302	1700	1071	1088	681	540	-42	37
ALABAMA	1220	-2481	-735	-1463	-1581	-2144	-705	-770
MISSISSIPPI	695	-2767	-2125	-2697	-1361	-2103	-301	-3
LOUISIANA	9456	3471	-3512	-1971	-4487	-1487	-1592	-658
TEXAS	17755	11894	7437	5869	3594	2665	1141	973
ARKANSAS	15012	10912	7907	6217	3443	2588	1716	1159
TENNESSEE	-3587	-9545	-1819	-4685	872	-2741	-2722	-2455
KENTUCKY	2011	-2601	1179	-378	306	-1966	-1107	-1234
MISSOURI	41258	26210	18910	12846	8660	6180	2690	2358
ILLINOIS	61038	38715	24358	16182	13502	8570	3659	3438
INDIANA	18602	9151	7501	4804	9637	2684	-1119	-29
OHIO	-26	-8544	-397	-5883	-3634	-3728	-639	-2485
MICHIGAN	24116	15284	11884	6589	5524	3780	2285	1848
WISCONSIN	22607	17763	9349	6082	5751	3829	2287	1981
IOWA	30465	20657	14495	10055	7963	5743	3356	2535
CALIFORNIA	-77889	6384	-46199	1161	-16266	370	-3895	139
MINNESOTA TERRITORY	15731	10438	6942	4674	3598	2506	1684	1233
OREGON TERRITORY	5843	1746	1855	762	879	429	277	149
UTAH TERRITORY	3122	1621	1402	826	598	546	257	234
NEW MEXICO TERRITORY	716	-1223	-61	-527	-391	-430	-304	-361
UNENUMERATED IN 1850	22874	7560	7950	3606	3150	1771	1077	600
TOTAL	308093	198836	129989	79126	50704	37855	8790	12975

Table D-1 (continued)

1850 TO 1860 NET MIGRATION BY AGE AND SEX OF THE TOTAL POPULATION
CALCULATED BY CENSUS SURVIVAL RATE METHOD USING STATE MORTALITY FACTORS COMPUTED FROM NATIVITY DATA

REGION	70-79		80 AND OVER		AGE UNKNOWN		TOTAL		AGGREGATE
	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	
MAINE	776	745	-87	181	-934	-485	-18864	-20711	-39575
NEW HAMPSHIRE	787	680	-310	-125	-41	-55	-3719	-4089	-7808
VERMONT	3	-64	-43	-104	-40	-25	-18627	-20041	-38668
MASSACHUSETTS	1349	2576	-45	862	-1514	-406	62075	76220	138295
RHODE ISLAND	301	538	41	226	-20	0	11122	13131	24253
CONNECTICUT	851	1027	-277	46	-275	-137	27162	30263	57425
NEW YORK	-1077	-735	-762	-899	-1808	-1225	45462	53260	98722
NEW JERSEY	301	566	-181	-13	-99	-155	52858	49061	101919
PENNSYLVANIA	-1249	-833	-766	-878	-1030	-1069	21918	17799	39717
DELAWARE	-78	-34	-40	5	-45	-33	4309	2425	6734
MARYLAND	-456	-483	-255	-237	-15	-20	-39	2721	2682
DISTRICT OF COLUMBIA	105	114	58	82	5	-13	10523	12198	22721
VIRGINIA	-796	-535	-1023	-939	-199	-272	-29226	-41857	-71083
NORTH CAROLINA	307	-275	69	106	526	323	-15823	-18293	-34116
SOUTH CAROLINA	-755	-802	-458	-481	-5968	-5745	-40475	-39945	-80420
GEORGIA	-987	-989	168	116	-107	-181	-40448	-37848	-78296
FLORIDA	10	46	79	41	292	426	16308	13960	30268
ALABAMA	-848	-730	-73	47	-44	-71	-4765	-9971	-14736
MISSISSIPPI	-879	-577	64	94	6830	5965	8607	952	9559
LOUISIANA	-417	-340	127	174	3676	2895	36450	26280	62730
TEXAS	282	361	207	210	2332	1964	114532	95283	209815
ARKANSAS	243	191	221	294	170	39	93308	77331	170639
TENNESSEE	-880	-993	-166	-270	79	-91	-61721	-75758	-137479
KENTUCKY	-403	-524	-115	-83	-96	-114	-29844	-44572	-74416
MISSOURI	640	555	510	410	50	-43	184428	139674	324102
ILLINOIS	962	944	622	538	-647	-666	250490	187147	437637
INDIANA	-149	-322	162	77	-181	-232	48026	18681	66707
OHIO	-2974	-2093	-469	-813	-231	-375	-87302	-103129	-190431
MICHIGAN	631	412	418	367	-61	-122	103291	77418	180709
WISCONSIN	774	699	428	316	-137	-193	101207	85636	186843
IOWA	956	789	316	263	-9	-56	147354	122777	270131
CALIFORNIA	-564	18	75	94	-4299	-4	-96252	31498	-64754
MINNESOTA TERRITORY	493	346	150	113	2	0	69520	56558	126078
OREGON TERRITORY	66	27	21	11	-68	-76	22906	11067	33973
UTAH TERRITORY	64	71	14	19	3	2	13406	8076	21482
NEW MEXICO TERRITORY	-361	-211	202	91	-250	0	3567	117	3684
UNENUMERATED IN 1850	231	156	67	51	370	55	93850	48107	141957
TOTAL	-2739	341	-1051	-8	-3783	-195	1095574	841426	1937000

Table D-2.

1850 TO 1860 NET MIGRATION BY AGE AND SEX OF THE TOTAL POPULATION CALCULATED BY CENSUS SURVIVAL RATE METHOD USING NATIONAL SURVIVAL RATIOS FOR EACH STATE

REGION	UNDER TEN		10-14		15-19		20-29	
	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE
MAINE	-6347	-6851	-2667	-3023	-681	-2008	-9622	-7227
NEW HAMPSHIRE	-2868	-2893	-502	-806	218	461	-4115	-2501
VERMONT	-1767	-2311	-2038	-2185	-1392	-2482	-7075	-5577
MASSACHUSETTS	-14607	-14715	-890	-177	8210	11381	24359	37548
RHODE ISLAND	-2904	-3579	-228	-348	1174	1361	2445	3961
CONNECTICUT	-1922	-647	1345	1391	3322	3601	7081	10315
NEW YORK	-10886	-12319	-3450	-3444	8063	14604	43574	73834
NEW JERSEY	-3643	-4935	1856	1904	3638	3600	9400	13752
PENNSYLVANIA	-11240	-7474	-6311	-4835	-2851	-563	11551	23054
DELAWARE	-609	-720	370	-20	332	-171	271	174
MARYLAND	-7742	-7320	-1630	-1593	-68	177	-1653	989
DISTRICT OF COLUMBIA	-751	-557	451	915	363	1085	1749	2209
VIRGINIA	-2033	-6408	-5637	-6083	-12557	-13858	-22535	-21154
NORTH CAROLINA	-7909	-4816	-3867	-4073	-8349	-9754	-14447	-10321
SOUTH CAROLINA	-3128	-2756	-6252	-5904	-7166	-7371	-14222	-12302
GEORGIA	-7241	-2404	-5990	-3823	-8154	-7744	-10567	-11956
FLORIDA	3728	2961	2154	2161	1292	1385	4343	3194
ALABAMA	4021	4449	276	788	-2179	-1497	472	-1569
MISSISSIPPI	5925	5398	-845	-506	-1137	-221	7818	4302
LOUISIANA	9207	6762	1898	1208	2632	4794	26932	18816
TEXAS	27444	27350	20611	19858	17290	17171	40605	29300
ARKANSAS	15332	12818	11258	10240	8514	8707	20085	15290
TENNESSEE	-18445	-16578	-10087	-9438	-13029	-13680	-18452	-21283
KENTUCKY	-15390	-15697	-7365	-5952	-8294	-9032	-7999	-14218
MISSOURI	12669	13155	16133	14808	13969	11921	45049	28957
ILLINOIS	32723	32378	29384	26939	29455	24814	82813	60635
INDIANA	-4615	-4330	435	227	1763	-1503	10547	3153
OHIO	-20497	-18359	-15796	-15617	-10697	-11215	-11958	-14194
MICHIGAN	16452	15740	12484	12048	12544	11233	33076	25350
WISCONSIN	28424	26228	18058	17247	16672	15712	35846	32993
IOWA	31711	29879	23143	21827	20444	19322	41460	37303
CALIFORNIA	10064	9122	8812	7813	11218	7957	87966	24942
MINNESOTA TERRITORY	12228	11594	8079	7188	6450	6444	18267	15690
OREGON TERRITORY	3026	3211	1983	1837	1709	1501	9714	2991
UTAH TERRITORY	1688	1337	1353	1160	1176	1191	5429	2388
NEW MEXICO TERRITORY	3091	3208	1095	786	-119	166	4461	3073
UNENUMERATED IN 1850	10144	9351	7981	7232	7371	6618	38915	14305
TOTAL	83333	78632	95604	89750	101146	94107	491583	366216

Table D-2 (continued)

1850 TO 1860 NET MIGRATION BY AGE AND SEX OF THE TOTAL POPULATION
CALCULATED BY CENSUS SURVIVAL RATE METHOD USING NATIONAL SURVIVAL RATIOS FOR EACH STATE

REGION	30-39		40-49		50-59		60-69	
	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE
MAINE	-3066	-2742	1854	-262	1290	570	664	437
NEW HAMPSHIRE	-1607	-2512	866	-257	622	349	117	141
VERMONT	-2515	-1733	111	-1119	-292	-282	624	-78
MASSACHUSETTS	12046	6170	5530	1315	1459	2801	871	2361
RHODE ISLAND	659	444	416	246	130	357	-4	282
CONNECTICUT	5306	4233	3690	2301	1557	1660	852	943
NEW YORK	44628	27402	20839	6524	1582	2983	1008	2442
NEW JERSEY	14202	10429	7881	4178	2401	2173	410	938
PENNSYLVANIA	23523	9974	15019	5258	2303	1908	95	289
DELAWARE	494	54	472	65	112	173	-87	-117
MARYLAND	2207	1791	541	-331	-744	-446	-1127	-744
DISTRICT OF COLUMBIA	2043	1447	910	482	265	253	-21	136
VIRGINIA	-3375	-7247	406	-2659	-2894	-3180	-1813	-2233
NORTH CAROLINA	-2874	-6232	-15	-2495	1501	-171	-1742	-1789
SOUTH CAROLINA	-4604	-5525	-2827	-3525	-1597	-2230	-2116	-2131
GEORGIA	-3482	-5344	-763	-1909	-2488	-2398	-56	-448
FLORIDA	2173	1590	986	1017	633	501	-70	16
ALABAMA	2522	-1220	115	-690	-1080	-1688	-408	-516
MISSISSIPPI	2509	-1105	-955	-1676	-715	-1560	52	285
LOUISIANA	12699	6171	-1102	-213	-3252	-582	-1048	-219
TEXAS	25944	18247	12449	9538	6340	4654	2411	1867
ARKANSAS	12171	8519	6212	4858	2518	1862	1260	822
TENNESSEE	-5278	-11284	-2892	-5744	167	-3424	-3125	-2838
KENTUCKY	-223	-4639	-249	-1643	-578	-2757	-1607	-1698
MISSOURI	33123	19648	13900	8984	5920	3991	1364	1274
ILLINOIS	70684	46573	30365	20868	17043	11340	5422	4840
INDIANA	17218	7746	6491	3922	8970	2131	-1484	-328
OHIO	6410	-2557	3992	-1986	-807	-1224	1002	-998
MICHIGAN	29892	20079	15943	9759	8132	5759	3618	2859
WISCONSIN	39176	31381	21173	14568	12339	8598	5608	4489
IOWA	40400	28689	20921	14853	11580	8470	5122	3850
CALIFORNIA	46062	18132	8572	6320	2635	2581	1383	1016
MINNESOTA TERRITORY	18280	12054	8110	5381	4184	2889	1959	1422
OREGON TERRITORY	7297	2204	2468	1014	1154	561	394	201
UTAH TERRITORY	3892	2083	1799	1098	814	728	351	319
NEW MEXICO TERRITORY	2434	221	952	277	171	27	64	-91
UNENUMERATED IN 1850	26152	8623	9070	4099	3598	2018	1233	686
TOTAL	476822	241764	213250	102416	84973	49395	21176	17687

Table D-2 (continued)

1850 TO 1860 NET MIGRATION BY AGE AND SEX OF THE TOTAL POPULATION
CALCULATED BY CENSUS SURVIVAL RATE METHOD USING NATIONAL SURVIVAL RATIOS FOR EACH STATE

REGION	70-79		80 AND OVER		AGE UNKNOWN		TOTAL		AGGREGATE
	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	
MAINE	777	747	-87	182	-934	-485	-18819	-20662	-39481
NEW HAMPSHIRE	633	505	-390	-232	-42	-56	-7268	-7801	-15069
VERMONT	174	108	57	-3	-39	-25	-14152	-15687	-29839
MASSACHUSETTS	585	1625	-405	329	-1570	-423	35588	48215	83803
RHODE ISLAND	23	179	-84	22	-22	0	1605	2925	4530
CONNECTICUT	641	769	-375	-99	-282	-141	21215	24126	45341
NEW YORK	348	664	-104	-233	-1760	-1187	103842	111270	215112
NEW JERSEY	-115	123	-360	-239	-105	-164	35565	31759	67324
PENNSYLVANIA	-1082	-660	-696	-798	-1025	-1064	29286	25089	54375
DELAWARE	-141	-104	-68	-31	-47	-36	1099	-733	366
MARYLAND	-694	-747	-360	-376	-15	-21	-11285	-8621	-19906
DISTRICT OF COLUMBIA	0	-19	16	8	3	-19	5028	5940	10968
VIRGINIA	-1368	-1111	-1295	-1257	-217	-289	-53318	-65479	-118797
NORTH CAROLINA	-171	-793	-190	-200	508	308	-37555	-40336	-77891
SOUTH CAROLINA	-949	-1006	-550	-588	-6144	-5912	-49555	-49290	-98845
GEORGIA	-972	-975	175	123	-107	-181	-39645	-37059	-76704
FLORIDA	-1	38	74	38	287	425	15599	13326	28925
ALABAMA	-726	-621	-18	101	-43	-69	2952	-2532	420
MISSISSIPPI	-741	-453	124	152	6896	6017	18931	10633	29564
LOUISIANA	-209	-159	222	267	3749	2930	51728	39775	91503
TEXAS	691	689	367	342	2596	2089	156748	131105	287853
ARKANSAS	86	73	160	233	161	35	77757	63457	141214
TENNESSEE	-1066	-1176	-265	-370	74	-98	-72498	-86313	-158811
KENTUCKY	-635	-758	-230	-203	-101	-119	-42671	-56716	-99387
MISSOURI	157	143	325	247	30	-57	142639	103071	245710
ILLINOIS	1604	1480	854	734	-597	-613	299750	229988	529738
INDIANA	-292	-447	104	27	-184	-236	38953	10362	49315
OHIO	-2170	-1389	-122	-519	-213	-354	-50856	-68412	-119268
MICHIGAN	1166	832	620	526	-51	-107	133876	104078	237954
WISCONSIN	2025	1654	850	630	-79	-127	180092	153373	333465
IOWA	1566	1273	516	422	3	-38	196866	165850	362716
CALIFORNIA	307	294	449	323	-1078	30	176390	78530	254920
MINNESOTA TERRITORY	583	407	187	136	2	0	78329	63205	141534
OREGON TERRITORY	102	40	29	14	-57	-62	27819	13512	41331
UTAH TERRITORY	97	104	23	28	3	2	16625	10438	27063
NEW MEXICO TERRITORY	-192	-87	352	192	-208	0	12101	7772	19873
UNENUMERATED IN 1850	269	181	81	61	399	58	105213	53232	158445
TOTAL	310	1423	-14	-11	-209	11	1567974	1041390	2609364

Table D-3.

1850 TO 1860 NET MIGRATION BY AGE AND SEX OF THE TOTAL POPULATION
AS A PERCENTAGE OF THE 1850 COHORT SURVIVING TO 1860
CALCULATED BY CENSUS SURVIVAL RATE METHOD USING STATE MORTALITY FACTORS COMPUTED FROM NATIVITY DATA

REGION	UNDER TEN		10-14		15-19		20-29	
	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE
MAINE	-6.77	-7.49	-6.81	-8.09	-1.91	-5.38	-15.22	-11.49
NEW HAMPSHIRE	-6.68	-6.97	-.49	-2.52	4.02	5.34	-11.03	-5.24
VERMONT	-3.95	-5.18	-13.10	-14.18	-10.32	-15.47	-23.94	-20.06
MASSACHUSETTS	-9.12	-9.24	4.14	5.49	24.21	29.47	35.87	48.60
RHODE ISLAND	-12.35	-14.73	12.53	10.88	35.82	36.66	39.22	50.84
CONNECTICUT	-3.51	-1.60	10.15	10.64	22.12	22.42	24.91	34.01
NEW YORK	-2.07	-2.39	-5.27	-5.33	.38	3.53	9.79	18.18
NEW JERSEY	-3.98	-5.43	13.23	13.60	20.93	19.75	28.86	37.92
PENNSYLVANIA	-2.51	-1.71	-4.17	-3.44	-2.53	-1.00	4.16	8.74
DELAWARE	-3.53	-4.22	13.89	7.58	14.20	4.95	11.50	10.26
MARYLAND	-7.10	-6.83	.36	.38	4.32	4.84	1.67	6.30
DISTRICT OF COLUMBIA	-7.81	-5.52	43.73	63.90	43.42	69.66	78.43	79.91
VIRGINIA	-.77	-2.44	-1.37	-2.00	-9.37	-10.43	-11.19	-10.41
NORTH CAROLINA	-4.54	-2.89	.19	-.39	-8.45	-10.45	-9.98	-5.43
SOUTH CAROLINA	-2.63	-2.34	-8.72	-8.43	-13.29	-12.86	-17.35	-14.38
GEORGIA	-3.88	-1.35	-7.60	-5.25	-12.26	-11.30	-10.43	-11.70
FLORIDA	22.23	17.76	30.50	32.38	22.31	23.08	51.00	38.63
ALABAMA	2.63	2.96	-1.65	-.89	-5.89	-4.55	-1.66	-3.95
MISSISSIPPI	5.14	4.73	-4.82	-4.34	-5.91	-3.87	7.53	2.66
LOUISIANA	10.84	7.81	-.56	-2.26	2.38	8.44	48.00	30.49
TEXAS	57.32	59.53	54.81	56.16	55.17	54.63	100.11	67.92
ARKANSAS	33.08	28.11	80.04	77.12	75.90	74.76	110.74	89.96
TENNESSEE	-8.56	-8.13	-9.43	-9.16	-15.42	-15.63	-13.60	-16.22
KENTUCKY	-7.15	-7.49	-6.18	-4.79	-8.91	-9.64	-4.50	-10.48
MISSOURI	8.11	8.77	42.44	41.47	43.81	37.89	80.72	56.82
ILLINOIS	17.59	17.96	26.98	25.48	32.29	25.33	66.98	49.02
INDIANA	-2.08	-2.01	2.33	2.11	4.25	-.14	11.52	4.84
OHIO	-5.19	-4.77	-13.04	-13.32	-11.04	-10.96	-9.20	-10.07
MICHIGAN	22.13	21.73	22.90	23.47	25.13	21.19	53.82	39.60
WISCONSIN	40.82	38.29	15.55	15.44	22.03	20.00	46.76	43.49
IOWA	69.15	67.27	63.95	62.78	66.11	60.62	106.16	96.33
CALIFORNIA	221.28	206.57	42.91	40.51	62.07	31.94	119.00	109.46
MINNESOTA TERRITORY	941.34	911.48	1189.93	1039.84	1264.97	1199.70	2592.09	2335.02
OREGON TERRITORY	95.55	111.07	104.53	105.95	114.31	87.16	501.09	160.37
UTAH TERRITORY	46.94	36.53	64.23	53.90	101.43	100.67	284.94	111.09
NEW MEXICO TERRITORY	29.15	31.02	-2.77	-7.45	-22.22	-17.02	28.58	11.46
UNENUMERATED IN 1850	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	1.88	1.81	3.35	3.27	4.36	3.92	15.72	12.50

Table D-3 (continued)

1850 TO 1860 NET MIGRATION BY AGE AND SEX OF THE TOTAL POPULATION
AS A PERCENTAGE OF THE 1850 COHORT SURVIVING TO 1860
CALCULATED BY CENSUS SURVIVAL RATE METHOD USING STATE MORTALITY FACTORS COMPUTED FROM NATIVITY DATA

REGION	30-39		40-49		50-59		60-69	
	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE
MAINE	-7.65	-7.02	6.38	-.93	5.90	2.66	4.87	3.12
NEW HAMPSHIRE	-5.98	-8.24	8.63	1.25	8.08	5.55	4.39	4.42
VERMONT	-14.68	-11.37	-2.79	-9.80	-5.69	-5.56	3.68	-4.38
MASSACHUSETTS	23.19	14.21	16.82	8.73	10.81	14.24	11.09	16.91
RHODE ISLAND	25.13	22.17	23.83	20.64	20.98	25.13	18.09	27.24
CONNECTICUT	23.74	19.20	22.65	15.11	15.18	15.23	13.62	12.99
NEW YORK	12.96	6.02	6.91	-.46	-2.93	-1.51	-2.85	-.59
NEW JERSEY	54.37	40.12	42.77	26.03	23.91	22.61	13.05	18.11
PENNSYLVANIA	13.19	5.01	11.79	3.74	2.13	1.77	-.55	-.12
DELAWARE	18.04	9.88	20.51	10.22	13.27	15.48	3.25	1.76
MARYLAND	10.63	9.46	6.79	3.63	.87	2.42	-5.90	-1.91
DISTRICT OF COLUMBIA	112.22	75.18	76.65	50.88	52.57	48.26	27.96	46.71
VIRGINIA	.70	-3.62	5.08	-.06	-2.54	-3.48	-2.57	-4.44
NORTH CAROLINA	1.24	-4.50	6.66	-.35	14.05	6.08	-5.44	-5.07
SOUTH CAROLINA	-7.56	-8.92	-6.44	-8.13	-5.45	-8.56	-15.26	-15.13
GEORGIA	-5.94	-8.76	-2.22	-5.24	-10.63	-10.49	-.66	-3.71
FLORIDA	34.89	29.05	22.99	28.55	26.08	25.93	-2.63	3.05
ALABAMA	2.28	-4.55	-2.01	-4.30	-7.34	-10.81	-5.70	-7.13
MISSISSIPPI	1.53	-6.27	-6.78	-9.65	-8.04	-14.45	-3.39	-.04
LOUISIANA	20.09	8.21	-8.50	-6.56	-20.47	-9.94	-17.12	-9.10
TEXAS	80.81	64.06	47.05	50.67	41.11	42.33	26.88	33.16
ARKANSAS	107.73	84.82	87.27	82.72	65.70	61.73	68.28	59.90
TENNESSEE	-5.51	-14.17	-4.59	-11.32	3.55	-10.66	-17.69	-16.58
KENTUCKY	2.99	-4.02	2.69	-.93	1.13	-7.74	-7.11	-8.37
MISSOURI	87.66	62.00	57.74	47.70	46.95	40.40	28.47	30.36
ILLINOIS	89.58	61.61	48.19	38.05	45.09	34.25	22.63	26.76
INDIANA	28.01	14.17	16.37	11.35	34.80	10.28	-6.22	-.20
OHIO	-.02	-5.95	-.39	-6.10	-5.44	-6.15	-1.71	-7.00
MICHIGAN	75.25	51.21	46.20	29.48	31.63	27.41	25.31	26.65
WISCONSIN	63.72	58.48	31.23	26.75	35.50	31.35	27.36	31.44
IOWA	175.25	122.17	99.18	84.25	96.69	87.67	79.54	79.06
CALIFORNIA	-37.77	82.50	-45.14	23.25	-45.86	16.90	-42.10	16.22
MINNESOTA TERRITORY	1351.02	1756.67	926.65	1666.69	1205.22	1796.16	1320.48	2277.25
OREGON TERRITORY	241.35	205.42	131.50	124.85	146.93	145.62	90.77	122.56
UTAH TERRITORY	245.56	173.64	177.36	125.08	114.11	127.49	116.25	111.79
NEW MEXICO TERRITORY	11.28	-18.89	-1.49	-14.53	-15.91	-20.52	-18.90	-28.38
UNENUMERATED IN 1850	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	16.24	11.70	9.98	6.91	6.35	5.30	1.96	3.08

Table D-3 (continued)

1850 TO 1860 NET MIGRATION BY AGE AND SEX OF THE TOTAL POPULATION
AS A PERCENTAGE OF THE 1850 COHORT SURVIVING TO 1860
CALCULATED BY CENSUS SURVIVAL RATE METHOD USING STATE MORTALITY FACTORS COMPUTED FROM NATIVITY DATA

REGION	70-79		80 AND OVER		AGE UNKNOWN		TOTAL		AGGREGATE
	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	
MAINE	12.71	11.97	-4.21	7.77	-74.35	-63.54	-5.45	-6.06	-5.75
NEW HAMPSHIRE	19.36	14.05	-20.17	-6.04	-73.29	-63.74	-2.20	-2.33	-2.26
VERMONT	.08	-1.52	-2.92	-6.38	-72.73	-58.78	-10.17	-11.00	-10.59
MASSACHUSETTS	14.58	22.49	-1.56	20.13	-76.26	-64.99	11.32	13.34	12.35
RHODE ISLAND	23.88	33.25	10.96	37.20	-73.28	0.	14.58	16.23	15.43
CONNECTICUT	20.13	19.18	-19.28	2.17	-71.18	-61.76	13.38	14.57	13.98
NEW YORK	-3.84	-2.61	-9.39	-10.05	-72.19	-62.21	2.38	2.79	2.59
NEW JERSEY	7.31	12.76	-15.07	-.83	-59.18	-60.27	18.46	16.88	17.66
PENNSYLVANIA	-6.59	-4.14	-15.00	-14.15	-74.12	-63.83	1.51	1.22	1.36
DELAWARE	-12.66	-4.85	-21.24	2.00	-83.98	-64.80	8.02	4.47	6.24
MARYLAND	-11.30	-10.29	-20.20	-13.34	-62.45	-53.54	-.01	.78	.38
DISTRICT OF COLUMBIA	37.85	30.49	88.63	57.38	100.34	-30.69	40.05	42.48	41.32
VIRGINIA	-7.62	-4.97	-27.59	-20.30	-27.77	-34.87	-3.42	-4.92	-4.17
NORTH CAROLINA	5.61	-4.25	3.29	3.94	262.84	105.65	-3.02	-3.47	-3.25
SOUTH CAROLINA	-17.82	-17.40	-29.13	-24.49	-54.87	-55.41	-10.10	-9.77	-9.93
GEORGIA	-17.98	-18.51	9.84	5.97	-23.88	-37.31	-6.95	-6.62	-6.79
FLORIDA	1.96	11.36	53.17	28.87	83.61	11721.14	29.22	26.67	27.98
ALABAMA	-19.82	-18.78	-5.71	3.59	-34.34	-45.79	-.96	-2.04	-1.49
MISSISSIPPI	-28.91	-21.45	7.79	11.28	533.52	483.07	2.18	.25	1.23
LOUISIANA	-15.75	-14.20	15.95	20.49	591.17	1543.54	11.06	8.54	9.84
TEXAS	25.09	42.90	83.63	101.01	408.37	831.89	65.41	59.77	62.72
ARKANSAS	29.69	30.48	128.54	189.13	515.66	83.37	70.68	61.49	66.20
TENNESSEE	-15.39	-16.98	-8.54	-12.57	31.62	-23.62	-9.61	-11.85	-10.73
KENTUCKY	-6.84	-8.53	-6.01	-3.84	-33.73	-35.17	-4.68	-7.17	-5.91
MISSOURI	21.69	21.51	81.44	66.22	21.19	-18.79	42.18	33.84	38.13
ILLINOIS	18.91	21.89	62.08	58.44	-59.07	-54.50	40.89	32.33	36.73
INDIANA	-2.42	-6.03	11.79	5.88	-49.56	-47.66	7.28	2.93	5.14
OHIO	-17.73	-14.13	-11.03	-20.06	-30.84	-37.77	-6.69	-8.06	-7.36
MICHIGAN	19.97	15.87	64.50	67.72	-42.89	-49.59	37.11	29.49	33.41
WISCONSIN	29.23	34.58	95.87	86.29	-41.96	-45.99	37.24	34.42	35.89
IOWA	75.74	77.08	141.35	135.45	-12.20	-42.20	90.06	79.32	84.84
CALIFORNIA	-42.28	7.34	51.25	172.75	-53.57	-5.64	-23.48	76.42	-14.36
MINNESOTA TERRITORY	1692.77	1926.10	1816.42	5434.93	0.	0.	1303.87	1406.19	1347.87
OREGON TERRITORY	81.83	86.42	279.73	440.89	-67.86	-59.32	186.54	123.81	160.11
UTAH TERRITORY	85.70	96.71	116.55	182.77	0.	0.	129.54	81.93	106.32
NEW MEXICO TERRITORY	-47.86	-39.50	91.99	50.54	-66.77	0.	7.82	.26	4.09
UNENUMERATED IN 1850	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	-1.57	.19	-2.06	-.01	-10.76	-.81	7.28	5.82	6.56

Table D-4.

1850 TO 1860 NET MIGRATION BY AGE AND SEX OF THE TOTAL POPULATION AS A PERCENTAGE OF THE 1850 COHORT SURVIVING TO 1860 CALCULATED BY CENSUS SURVIVAL RATE METHOD USING NATIONAL SURVIVAL RATIOS FOR EACH STATE

REGION	UNDER TEN		10-14		15-19		20-29	
	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE
MAINE	-6.77	-7.49	-6.79	-8.08	-1.89	-5.36	-15.20	-11.47
NEW HAMPSHIRE	-6.68	-6.97	-2.95	-4.91	1.32	2.68	-13.24	-7.64
VERMONT	-3.95	-5.18	-10.54	-11.64	-7.51	-13.02	-21.72	-17.66
MASSACHUSETTS	-9.12	-9.24	-1.52	-.31	16.73	21.79	27.28	39.03
RHODE ISLAND	-12.35	-14.73	-2.53	-3.91	15.88	17.11	18.24	27.78
CONNECTICUT	-3.51	-1.60	6.47	6.91	17.74	18.14	20.29	28.98
NEW YORK	-2.07	-2.39	-1.67	-1.71	4.45	7.65	14.54	23.40
NEW JERSEY	-3.98	-5.43	5.29	5.59	11.96	11.17	18.90	27.12
PENNSYLVANIA	-2.51	-1.71	-3.55	-2.81	-1.87	-.35	4.91	9.53
DELAWARE	-3.53	-4.22	5.38	-.30	5.36	-2.65	2.74	1.76
MARYLAND	-7.10	-6.83	-3.72	-3.75	-.18	.46	-2.77	1.61
DISTRICT OF COLUMBIA	-7.81	-5.92	13.00	27.48	11.75	31.68	36.56	37.93
VIRGINIA	-.77	-2.44	-4.96	-5.61	-12.67	-13.57	-14.48	-13.73
NORTH CAROLINA	-4.54	-2.89	-5.24	-5.86	-13.42	-15.09	-14.95	-10.77
SOUTH CAROLINA	-2.63	-2.34	-11.38	-11.17	-15.88	-15.40	-19.81	-17.00
GEORGIA	-3.88	-1.35	-7.43	-5.07	-12.09	-11.14	-10.25	-11.52
FLORIDA	22.23	17.76	28.45	30.27	20.35	21.16	48.37	36.28
ALABAMA	2.63	2.96	.41	1.23	-3.86	-2.55	.54	-1.81
MISSISSIPPI	5.14	4.73	-1.56	-.98	-2.54	-.48	11.71	6.59
LOUISIANA	10.84	7.81	5.06	3.32	8.54	14.96	58.33	39.29
TEXAS	57.32	59.53	107.77	110.26	109.93	107.99	176.42	129.47
ARKANSAS	33.08	28.11	57.07	54.45	53.01	52.49	81.97	64.50
TENNESSEE	-8.56	-8.13	-11.47	-11.24	-17.34	-17.47	-15.64	-18.17
KENTUCKY	-7.15	-7.49	-8.68	-7.37	-11.40	-12.02	-7.24	-12.97
MISSOURI	8.11	8.77	26.78	25.85	27.52	22.84	58.77	38.40
ILLINOIS	17.59	17.96	39.95	38.29	46.39	38.06	86.35	65.72
INDIANA	-2.08	-2.01	.50	.27	2.31	-1.91	9.33	2.84
OHIO	-5.19	-4.77	-9.87	-10.14	-7.62	-7.66	-5.56	-6.51
MICHIGAN	22.13	21.73	40.00	40.75	43.16	37.93	77.96	60.79
WISCONSIN	40.82	38.29	67.88	67.90	80.33	75.21	123.35	117.44
IOWA	69.15	67.27	130.33	128.74	135.21	125.16	197.95	182.48
CALIFORNIA	221.28	206.57	718.03	701.74	894.05	630.23	1382.18	1296.25
MINNESOTA TERRITORY	941.34	911.48	1750.09	1534.08	1867.30	1763.65	3808.35	3430.62
OREGON TERRITORY	95.55	111.07	179.62	182.03	195.48	154.46	760.57	263.56
UTAH TERRITORY	46.94	36.53	121.30	106.71	176.84	174.14	445.56	191.79
NEW MEXICO TERRITORY	29.15	31.02	24.41	17.78	-2.84	3.76	71.86	46.69
UNENUMERATED IN 1850	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	1.88	1.81	5.30	5.19	6.52	5.82	20.11	14.86

Table D-4 (continued)

1850 TO 1860 NET MIGRATION BY AGE AND SEX OF THE TOTAL POPULATION
AS A PERCENTAGE OF THE 1850 COHORT SURVIVING TO 1860
CALCULATED BY CENSUS SURVIVAL RATE METHOD USING NATIONAL SURVIVAL RATIOS FOR EACH STATE

REGION	30-39		40-49		50-59		60-69	
	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE
MAINE	-7.63	-7.00	6.40	-.91	5.92	2.68	4.89	3.15
NEW HAMPSHIRE	-8.20	-10.71	5.50	-1.48	4.95	2.58	1.35	1.43
VERMONT	-11.73	-8.33	.70	-6.78	-2.32	-2.25	7.59	-.94
MASSACHUSETTS	15.11	7.02	9.39	2.18	3.83	7.09	3.97	9.42
RHODE ISLAND	5.63	3.53	4.87	2.74	2.41	6.04	-.13	7.44
CONNECTICUT	18.87	14.63	17.91	10.86	10.77	10.89	9.21	8.69
NEW YORK	18.27	10.81	11.76	3.79	1.36	2.77	1.51	3.84
NEW JERSEY	41.14	28.53	30.89	16.12	13.86	12.87	3.98	8.66
PENNSYLVANIA	14.09	5.81	12.66	4.50	2.91	2.53	.21	.64
DELAWARE	7.98	.83	10.36	1.38	3.75	5.85	-5.36	-6.60
MARYLAND	5.28	4.26	1.76	-1.08	-3.87	-2.35	-10.32	-6.52
DISTRICT OF COLUMBIA	58.87	32.65	33.82	15.93	16.16	13.20	-2.16	11.65
VIRGINIA	-3.59	-7.58	.63	-4.14	-6.65	-7.53	-6.76	-8.46
NORTH CAROLINA	-5.16	-10.30	-.04	-6.35	6.57	-.69	-11.39	-10.95
SOUTH CAROLINA	-10.78	-12.00	-9.61	-11.21	-8.78	-11.78	-18.19	-18.03
GEORGIA	-5.73	-8.56	-2.01	-5.04	-10.44	-10.30	-.43	-3.50
FLORIDA	32.46	26.78	20.87	26.30	23.90	23.72	-4.32	1.30
ALABAMA	4.82	-2.28	.32	-2.07	-5.12	-8.69	-3.37	-4.88
MISSISSIPPI	5.73	-2.59	-3.15	-6.21	-4.37	-11.10	.61	4.12
LOUISIANA	28.53	15.44	-2.82	-.75	-15.69	-4.12	-11.92	-3.20
TEXAS	152.05	126.55	101.42	106.02	93.38	95.18	73.13	81.93
ARKANSAS	78.07	59.19	61.28	57.78	42.95	39.70	44.81	37.98
TENNESSEE	-8.07	-16.35	-7.11	-13.54	.66	-13.00	-19.82	-18.70
KENTUCKY	-.32	-6.97	-.55	-3.95	-2.08	-10.55	-10.04	-11.20
MISSOURI	63.55	41.97	38.32	30.12	28.98	23.56	13.04	14.81
ILLINOIS	113.35	80.98	65.64	53.61	62.19	49.52	36.64	41.16
INDIANA	25.19	11.78	13.92	9.10	31.81	8.02	-8.11	-2.21
OHIO	4.54	-1.85	4.07	-2.14	-1.26	-2.10	2.78	-2.93
MICHIGAN	105.17	75.85	69.88	49.24	52.50	47.09	45.19	46.50
WISCONSIN	157.10	146.84	100.62	91.16	108.37	100.17	95.47	101.38
IOWA	309.78	226.16	190.81	165.89	187.44	172.36	161.83	160.05
CALIFORNIA	107.48	1132.74	40.30	609.02	35.75	567.11	71.92	570.39
MINNESOTA TERRITORY	2020.33	2610.63	1393.13	2469.27	1803.58	2664.72	1976.80	3379.78
OREGON TERRITORY	387.87	333.69	225.16	213.80	248.24	245.06	166.14	212.77
UTAH TERRITORY	393.54	287.14	292.88	213.97	199.90	218.75	204.32	196.12
NEW MEXICO TERRITORY	49.33	4.36	29.95	9.83	8.95	1.66	5.12	-9.21
UNENUMERATED IN 1850	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	27.86	14.43	17.74	9.08	11.18	7.00	4.84	4.24

Table D-4 (continued)

1850 TO 1860 NET MIGRATION BY AGE AND SEX OF THE TOTAL POPULATION
AS A PERCENTAGE OF THE 1850 COHORT SURVIVING TO 1860
CALCULATED BY CENSUS SURVIVAL RATE METHOD USING NATIONAL SURVIVAL RATIOS FOR EACH STATE

REGION	70-79		80 AND OVER		AGE UNKNOWN		TOTAL		AGGREGATE
	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	
MAINE	12.73	12.00	-4.21	7.81	-74.36	-63.55	-5.44	-6.05	-5.74
NEW HAMPSHIRE	15.18	10.17	-24.75	-10.93	-73.21	-63.29	-4.21	-4.35	-4.29
VERMONT	4.51	2.64	4.00	-.19	-73.21	-60.68	-7.92	-8.82	-8.37
MASSACHUSETTS	5.98	13.43	-13.31	7.27	-74.83	-64.06	6.24	8.10	7.19
RHODE ISLAND	1.55	9.64	-19.58	3.16	-70.28	0.	1.91	3.28	2.61
CONNECTICUT	14.67	13.90	-25.26	-4.52	-70.64	-61.51	10.20	11.34	10.78
NEW YORK	1.25	2.45	-1.33	-2.71	-73.04	-62.66	5.60	5.99	5.79
NEW JERSEY	-2.60	2.50	-27.98	-14.32	-58.57	-59.50	11.84	10.41	11.12
PENNSYLVANIA	-5.75	-3.31	-13.72	-12.94	-74.25	-63.96	2.02	1.73	1.88
DELAWARE	-21.26	-13.78	-33.54	-11.55	-81.48	-65.67	1.95	-1.28	.32
MARYLAND	-16.42	-15.26	-27.35	-20.29	-59.89	-53.92	-3.16	-2.40	-2.77
DISTRICT OF COLUMBIA	0.	-4.11	19.82	4.54	48.80	-36.36	16.67	17.88	17.30
VIRGINIA	-12.61	-9.95	-33.63	-26.16	-29.16	-35.67	-6.08	-7.50	-6.79
NORTH CAROLINA	-2.95	-11.59	-8.57	-7.03	239.93	95.22	-6.90	-7.37	-7.13
SOUTH CAROLINA	-21.71	-21.15	-33.89	-29.01	-54.74	-55.25	-12.09	-11.79	-11.94
GEORGIA	-17.75	-18.29	10.27	6.34	-23.92	-37.38	-6.82	-6.49	-6.66
FLORIDA	-.19	9.25	49.10	26.37	81.01	11526.99	27.67	25.21	26.48
ALABAMA	-17.34	-16.32	-1.44	7.87	-34.28	-45.45	.60	-.53	.04
MISSISSIPPI	-25.24	-17.44	15.63	18.89	557.89	504.65	4.92	2.86	3.91
LOUISIANA	-8.35	-7.02	29.48	33.26	637.55	1651.95	16.35	13.46	14.95
TEXAS	79.17	105.42	190.93	211.82	585.34	1139.32	106.86	97.79	102.53
ARKANSAS	9.39	10.41	83.19	133.98	436.53	66.87	54.69	46.91	50.89
TENNESSEE	-18.19	-19.63	-13.31	-16.81	28.91	-24.82	-11.10	-13.28	-12.19
KENTUCKY	-10.47	-12.00	-11.68	-9.14	-34.50	-35.69	-6.57	-8.95	-7.74
MISSOURI	4.80	5.00	46.86	36.02	11.48	-22.49	30.52	23.38	27.05
ILLINOIS	34.46	37.49	93.14	87.12	-59.55	-54.81	52.00	42.19	47.23
INDIANA	-4.78	-8.23	7.43	2.02	-49.48	-47.61	5.84	1.61	3.76
OHIO	-13.45	-9.75	-2.98	-13.31	-29.57	-37.08	-4.00	-5.49	-4.74
MICHIGAN	41.61	36.13	107.87	109.43	-40.44	-49.04	52.45	43.19	47.95
WISCONSIN	108.79	116.43	270.88	244.77	-34.42	-43.06	85.07	78.56	81.95
IOWA	165.38	165.77	307.66	289.71	5.42	-38.17	146.70	130.36	138.75
CALIFORNIA	110.73	576.69	1476.35	2856.01	-64.63	203.42	198.66	650.90	252.76
MINNESOTA TERRITORY	2576.09	2915.66	2914.11	8417.72	0.	0.	1767.04	1854.06	1804.87
OREGON TERRITORY	162.75	164.77	497.11	722.11	-73.21	-62.28	271.45	178.01	231.69
UTAH TERRITORY	167.16	182.30	246.41	346.61	0.	0.	187.99	123.16	156.26
NEW MEXICO TERRITORY	-32.76	-20.96	206.29	137.23	-71.49	0.	32.01	21.10	26.63
UNENUMERATED IN 1850	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	.18	.81	-.03	-.02	-.73	.05	10.74	7.27	9.02

Table D-5.

1850 TO 1860 NET MIGRATION BY AGE AND SEX OF THE TOTAL POPULATION
CALCULATED BY CENSUS SURVIVAL RATE METHOD USING STATE MORTALITY FACTORS COMPUTED FROM ADJUSTED NATIVITY DATA

REGION	UNDER TEN		10-14		15-19		20-29	
	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE
MAINE	-6347	-6651	-2814	-3163	-825	-2149	-9862	-7469
NEW HAMPSHIRE	-2868	-2893	-108	-428	623	869	-3391	-1724
VERMONT	-1767	-2311	-2710	-2837	-2069	-3135	-8208	-6692
MASSACHUSETTS	-14607	-14715	2658	3320	11587	14930	30987	45011
RHODE ISLAND	-2904	-3579	1047	906	2367	2604	4694	6442
CONNECTICUT	-1922	-647	2157	2182	4122	4420	8630	11945
NEW YORK	-10886	-12319	-11153	-10972	884	7185	30789	59931
NEW JERSEY	-3643	-4535	4626	4616	6215	6220	13873	18446
PENNSYLVANIA	-11240	-7474	-7448	-5946	-3869	-1608	9881	21312
DELAWARE	-605	-720	781	371	718	201	895	784
MARYLAND	-7742	-7320	197	197	1568	1847	1019	3781
DISTRICT OF COLUMBIA	-751	-557	1358	1858	1206	2074	3256	4032
VIRGINIA	-2033	-6408	-1626	-2211	-9048	-10369	-16949	-15614
NORTH CAROLINA	-7905	-4616	13	-369	-5069	-6482	-9275	-5079
SOUTH CAROLINA	-3128	-2796	-4793	-4465	-5936	-6095	-12267	-10287
GEORGIA	-7241	-2404	-6610	-4420	-8683	-8277	-11403	-12795
FLORIDA	3728	2961	2541	2536	1620	1714	4879	3694
ALABAMA	4021	4449	-1414	-845	-3618	-2966	-1856	-3856
MISSISSIPPI	5925	5398	-3115	-2706	-3084	-2196	4638	1252
LOUISIANA	9207	6762	61	-594	1025	3118	23901	15890
TEXAS	27444	27350	16644	16042	13873	13831	34449	23972
ARKANSAS	15332	12818	16172	14931	12617	12801	27292	21797
TENNESSEE	-18445	-16978	-8627	-8025	-11770	-12409	-16406	-19284
KENTUCKY	-15390	-15697	-5302	-3952	-6479	-7223	-5112	-11446
MISSOURI	12669	13155	26365	24582	22964	20654	61026	43306
ILLINOIS	32723	32378	25898	23614	26262	21754	77079	55544
INDIANA	-4615	-4330	2302	2008	3476	164	13239	5693
OHIO	-20497	-18359	-22686	-22266	-17017	-17578	-21996	-24244
MICHIGAN	16452	15740	9942	9622	10066	8846	28850	21474
WISCONSIN	28424	26228	9946	9471	9871	9195	24724	22491
IOWA	31711	29879	20965	19748	18500	17461	38194	34257
CALIFORNIA	10064	9122	1360	1108	2482	760	29161	7982
MINNESOTA TERRITORY	12228	11594	7917	7040	6317	6316	17902	15376
OREGON TERRITORY	3026	3211	1908	1766	1644	1439	9480	2891
UTAH TERRITORY	1688	1337	1288	1097	1130	1145	5279	2295
NEW MEXICO TERRITORY	3091	3208	912	609	-275	3	4136	2762
UNENUMERATED IN 1850	10144	9351	7838	7102	7234	6500	38177	14035
TOTAL	83333	78632	86490	81527	90629	85564	429705	347905

Table D-5 (continued)

1850 TO 1860 NET MIGRATION BY AGE AND SEX OF THE TOTAL POPULATION
CALCULATED BY CENSUS SURVIVAL RATE METHOD USING STATE MORTALITY FACTORS COMPUTED FROM ADJUSTED NATIVITY DATA

REGION	30-39		40-49		50-59		60-69	
	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE
MAINE	-3239	-2907	1722	-384	1191	476	602	375
NEW HAMPSHIRE	-1236	-1525	1297	183	967	708	356	406
VERMONT	-3366	-2558	-550	-1757	-811	-788	262	-421
MASSACHUSETTS	18113	12477	9815	5416	4185	5610	2470	4201
RHODE ISLAND	2664	2532	1846	1683	1030	1343	526	932
CONNECTICUT	6646	5561	4652	3227	2216	2342	1279	1432
NEW YORK	33170	16128	12906	-656	-3425	-1587	-1908	-326
NEW JERSEY	17914	14077	10461	6549	4039	3730	1357	1939
PENNSYLVANIA	22185	8675	14089	4405	1705	1351	-253	-49
DELAWARE	525	484	787	368	316	374	20	-2
MARYLAND	4317	3866	2034	1101	183	466	-605	-196
DISTRICT OF COLUMBIA	3343	2909	1798	1375	772	832	260	493
VIRGINIA	514	-3447	3052	-114	-1120	-1470	-698	-1163
NORTH CAROLINA	546	-2685	2177	-200	2988	1372	-815	-812
SOUTH CAROLINA	-3268	-4122	-1927	-2574	-1019	-1631	-1757	-1770
GEORGIA	-4032	-5690	-1105	-2241	-2699	-2604	-180	-565
FLORIDA	2575	1935	1253	1239	788	626	13	80
ALABAMA	573	-2720	-897	-1612	-1675	-2230	-760	-818
MISSISSIPPI	302	-3128	-2378	-2920	-1502	-2220	-378	-65
LOUISIANA	9886	3830	-3191	-1737	-4322	-1366	-1520	-601
TEXAS	21333	14680	9642	7485	4804	3540	1701	1367
ARKANSAS	17087	12652	9140	7205	4115	3114	2048	1402
TENNESSEE	-4068	-10013	-2108	-4971	682	-2926	-2830	-2558
KENTUCKY	1811	-2784	1051	-491	227	-2036	-1151	-1276
MISSOURI	45150	29334	21294	14677	9962	7219	3320	2870
ILLINOIS	66291	43000	27637	18743	15435	10084	4622	4205
INDIANA	19115	9428	7700	4978	9769	2793	-1047	29
OHIO	-1074	-9518	-1112	-6518	-4094	-4136	-907	-2728
MICHIGAN	26552	17311	13600	7933	6629	4618	2849	2276
WISCONSIN	27947	22180	13213	8870	7899	5389	3372	2800
IOWA	37613	26456	19142	13531	10579	7717	4634	3487
CALIFORNIA	-112918	4698	-63161	177	-22139	-57	-5449	-29
MINNESOTA TERRITORY	17671	11754	7922	5267	4089	2827	1915	1392
OREGON TERRITORY	7070	2133	2374	974	1112	541	376	193
UTAH TERRITORY	3772	2010	1737	1057	781	700	336	306
NEW MEXICO TERRITORY	2177	8	801	159	88	-39	10	-131
UNENUMERATED IN 1850	25619	8451	8888	4019	3525	1978	1207	672
TOTAL	310286	224812	135601	94446	57270	46660	13277	17347

Table D-5 (continued)

1850 TO 1860 NET MIGRATION BY AGE AND SEX OF THE TOTAL POPULATION
CALCULATED BY CENSUS SURVIVAL RATE METHOD USING STATE MORTALITY FACTORS COMPUTED FROM ADJUSTED NATIVITY DATA

REGION	70-79		80 AND OVER		AGE UNKNOWN		TOTAL		AGGREGATE
	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	
MAINE	743	713	-104	162	-936	-486	-19869	-21683	-41552
NEW HAMPSHIRE	777	669	-315	-132	-42	-55	-3940	-4322	-8262
VERMONT	-23	-92	-59	-120	-40	-25	-19341	-20736	-40077
MASSACHUSETTS	1437	2687	-3	925	-1507	-404	65135	79458	144593
RHODE ISLAND	315	557	48	236	-20	0	11613	13656	25269
CONNECTICUT	884	1068	-260	69	-274	-137	28132	31262	59394
NEW YORK	-1046	-703	-747	-884	-1807	-1224	46777	54573	101350
NEW JERSEY	351	642	-159	14	-98	-154	54936	51144	106080
PENNSYLVANIA	-1247	-831	-765	-877	-1030	-1069	22008	17889	39897
DELAWARE	-90	-48	-46	-3	-46	-35	3651	1774	5425
MARYLAND	-451	-476	-252	-234	-15	-20	253	3012	3265
DISTRICT OF COLUMBIA	123	137	64	96	5	-12	11434	13237	24671
VIRGINIA	-814	-553	-1031	-949	-200	-272	-29953	-42570	-72523
NORTH CARCLINA	293	-291	61	97	525	323	-16465	-18942	-35407
SOUTH CARCLINA	-773	-821	-466	-490	-5984	-5760	-41318	-40811	-82129
GEORGIA	-1032	-1032	146	93	-109	-184	-42948	-40319	-83267
FLORIDA	33	67	92	50	301	428	17827	15330	33157
ALABAMA	-871	-750	-83	38	-44	-71	-6224	-11381	-17605
MISSISSIPPI	-909	-603	52	81	6817	5954	6368	-1153	5215
LOUISIANA	-389	-316	141	187	3685	2899	38484	28072	66556
TEXAS	461	505	275	267	2447	2018	133073	111057	244130
ARKANSAS	357	277	268	339	177	42	104605	87378	191983
TENNESSEE	-930	-1042	-192	-297	77	-94	-64617	-78597	-143214
KENTUCKY	-425	-545	-124	-93	-97	-114	-30991	-48657	-79648
MISSOURI	869	752	601	490	59	-36	204279	157003	361282
ILLINOIS	1312	1236	748	644	-619	-636	277388	210566	487954
INDIANA	-115	-297	173	86	-180	-231	49817	20321	70138
OHIO	-3105	-2207	-525	-861	-234	-378	-93247	-108793	-202040
MICHIGAN	856	589	503	434	-56	-115	116243	88728	204971
WISCONSIN	1177	1007	558	413	-116	-168	127015	107876	234891
IOWA	1397	1139	458	377	0	-43	183193	154009	337202
CALIFORNIA	-795	-30	33	72	-5562	-15	-166924	23688	-143236
MINNESOTA TERRITORY	568	397	180	133	2	0	76911	62136	139047
OREGON TERRITORY	97	38	27	13	-58	-63	27056	13136	40192
UTAH TERRITORY	92	99	22	27	3	2	16128	10075	26203
NEW MEXICO TERRITORY	-217	-105	329	176	-213	0	10839	6650	17489
UNENUMERATED IN 1850	263	177	79	59	394	58	103368	52402	155770
TOTAL	-627	2014	-273	638	-4795	-77	1200696	979468	2180164

Table D-6.

1850 TO 1860 NET MIGRATION BY AGE AND SEX OF THE TOTAL POPULATION
AS A PERCENTAGE OF THE 1850 COHORT SURVIVING TO 1860
CALCULATED BY CENSUS SURVIVAL RATE METHOD USING STATE MORTALITY FACTORS COMPUTED FROM ADJUSTED NATIVITY DATA

REGION	UNDER TEN		10-14		15-19		20-29	
	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE
MAINE	-6.77	-7.49	-7.14	-8.42	-2.29	-5.72	-15.52	-11.81
NEW HAMPSHIRE	-6.68	-6.57	-.65	-2.67	3.85	5.17	-11.17	-5.40
VERMONT	-3.95	-5.18	-13.50	-14.57	-10.76	-15.85	-24.28	-20.42
MASSACHUSETTS	-9.12	-9.24	4.84	6.20	25.12	30.40	36.92	49.77
RHODE ISLAND	-12.35	-14.73	13.40	11.76	36.99	37.80	40.44	52.18
CONNECTICUT	-3.51	-1.60	10.77	11.26	22.86	23.14	25.69	34.86
NEW YORK	-2.07	-2.39	-5.19	-5.25	.47	3.62	9.89	18.29
NEW JERSEY	-3.98	-5.43	14.25	14.63	22.09	20.86	30.14	39.31
PENNSYLVANIA	-2.51	-1.71	-4.17	-3.44	-2.52	-.99	4.17	8.75
DELAWARE	-3.53	-4.22	12.05	5.88	12.29	3.30	9.61	8.41
MARYLAND	-7.10	-6.83	.47	.48	4.44	4.96	1.79	6.42
DISTRICT OF COLUMBIA	-7.81	-5.92	49.92	71.17	49.81	77.24	86.83	88.32
VIRGINIA	-.77	-2.44	-1.48	-2.11	-9.47	-10.53	-11.29	-10.51
NORTH CAROLINA	-4.54	-2.89	.02	-.56	-8.61	-10.59	-10.13	-5.60
SOUTH CAROLINA	-2.63	-2.34	-8.98	-8.69	-13.53	-13.10	-17.59	-14.63
GEORGIA	-3.88	-1.35	-8.13	-5.82	-12.77	-11.81	-10.98	-12.23
FLORIDA	22.23	17.76	35.11	37.16	26.70	27.40	56.85	43.90
ALABAMA	2.63	2.96	-2.03	-1.28	-6.26	-4.92	-2.07	-4.35
MISSISSIPPI	5.14	4.73	-5.50	-5.04	-6.61	-4.57	6.66	1.84
LOUISIANA	10.84	7.81	.16	-1.55	3.17	9.27	49.32	31.61
TEXAS	57.32	59.53	75.72	77.50	76.74	75.68	130.22	92.16
ARKANSAS	33.08	28.11	99.22	96.08	95.08	93.38	134.79	111.27
TENNESSEE	-8.56	-8.13	-9.99	-9.73	-15.95	-16.13	-14.15	-16.76
KENTUCKY	-7.15	-7.49	-6.41	-5.02	-9.14	-9.86	-4.75	-10.71
MISSOURI	8.11	8.77	50.82	49.82	52.53	45.95	92.44	66.68
ILLINOIS	17.59	17.96	33.83	32.25	39.74	32.06	77.22	57.84
INDIANA	-2.08	-2.01	2.70	2.48	4.65	.21	11.96	5.24
OHIO	-5.19	-4.77	-13.54	-13.82	-11.58	-11.47	-9.77	-10.62
MICHIGAN	22.13	21.73	29.74	30.38	32.33	27.89	63.48	48.07
WISCONSIN	40.82	38.29	29.58	29.50	37.63	34.82	67.32	63.34
IOWA	69.15	67.27	109.43	107.96	113.40	104.83	169.02	155.32
CALIFORNIA	221.28	206.57	17.53	15.74	31.29	9.52	72.47	65.61
MINNESOTA TERRITORY	941.34	911.48	1652.98	1448.16	1762.66	1666.11	3597.29	3240.39
OREGON TERRITORY	95.55	111.07	166.58	168.66	181.25	142.72	715.41	245.54
UTAH TERRITORY	46.94	36.53	111.29	97.26	163.78	161.36	417.58	177.65
NEW MEXICO TERRITORY	29.15	31.02	19.59	13.28	-6.33	.07	64.22	40.45
UNENUMERATED IN 1850	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	1.88	1.81	4.77	4.69	5.81	5.27	17.33	14.06

Table D-6 (continued)

1850 TO 1860 NET MIGRATION BY AGE AND SEX OF THE TOTAL POPULATION
AS A PERCENTAGE OF THE 1850 COHORT SURVIVING TO 1860
CALCULATED BY CENSUS SURVIVAL RATE METHOD USING STATE MORTALITY FACTORS COMPUTED FROM ADJUSTED NATIVITY DATA

REGION	30-39		40-49		50-59		60-69	
	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE
MAINE	-8.03	-7.40	5.92	-1.33	5.44	2.23	4.41	2.69
NEW HAMPSHIRE	-5.74	-8.41	8.43	1.08	7.88	5.36	4.19	4.22
VERMONT	-15.13	-11.84	-3.33	-10.26	-6.21	-6.06	3.07	-4.90
MASSACHUSETTS	24.17	15.09	17.72	9.53	11.67	15.11	11.97	17.82
RHODE ISLAND	26.27	23.25	24.95	21.68	22.07	26.24	19.21	28.41
CONNECTICUT	24.56	19.97	23.45	15.83	15.93	15.96	14.36	13.72
NEW YORK	13.07	6.12	7.02	-.37	-2.83	-1.42	-2.76	-.49
NEW JERSEY	56.08	41.62	44.30	27.31	25.20	23.87	14.22	19.34
PENNSYLVANIA	13.20	5.02	11.80	3.74	2.14	1.78	-.55	-.11
DELAWARE	15.85	7.89	18.32	8.31	11.23	13.42	1.31	-.12
MARYLAND	10.78	9.60	6.92	3.76	.99	2.56	-5.78	-1.79
DISTRICT OF COLUMBIA	122.88	83.73	85.23	57.97	60.03	55.36	34.17	53.87
VIRGINIA	.57	-3.74	4.94	-.18	-2.67	-3.61	-2.70	-4.57
NORTH CAROLINA	1.04	-4.69	6.46	-.54	13.81	5.87	-5.63	-5.25
SOUTH CARCLINA	-7.87	-9.21	-6.74	-8.42	-5.77	-8.87	-15.54	-15.41
GEORGIA	-6.55	-9.36	-2.88	-5.86	-11.23	-11.09	-1.37	-4.38
FLORICA	40.31	34.10	27.74	33.53	31.13	31.01	.84	6.80
ALABAMA	1.81	-4.96	-2.44	-4.72	-7.75	-11.20	-6.12	-7.54
MISSISSIPPI	.66	-7.04	-7.53	-10.36	-8.80	-15.14	-4.22	-.90
LOUISIANA	21.16	9.13	-7.78	-5.82	-19.86	-9.20	-16.47	-8.38
TEXAS	108.78	88.58	68.34	72.39	61.56	62.99	44.89	52.19
ARKANSAS	132.65	106.39	109.12	103.71	84.94	80.34	88.15	78.39
TENNESSEE	-6.21	-14.77	-5.28	-11.93	2.76	-11.31	-18.28	-17.16
KENTUCKY	2.69	-4.29	2.39	-1.21	.84	-8.00	-7.38	-8.63
MISSOURI	100.58	72.75	68.17	57.14	56.63	49.48	36.84	38.75
ILLINOIS	102.14	71.84	57.40	46.26	54.11	42.31	30.01	34.36
INDIANA	28.58	14.65	16.87	11.80	35.40	10.73	-5.84	.20
OHIO	-.73	-6.58	-1.08	-6.71	-6.09	-6.78	-2.41	-7.64
MICHIGAN	87.21	61.05	55.65	37.36	39.96	35.25	33.22	34.55
WISCONSIN	88.67	82.11	49.68	43.92	54.89	49.67	45.42	50.03
IOWA	267.32	193.31	161.82	140.07	158.71	145.55	135.70	134.36
CALIFORNIA	-41.68	45.43	-46.97	2.70	-47.50	-1.98	-44.82	-2.58
MINNESOTA TERRITORY	1903.70	2461.95	1311.63	2329.56	1698.89	2513.24	1862.52	3188.83
OREGON TERRITORY	362.22	311.27	208.75	197.94	230.55	227.78	152.82	196.92
UTAH TERRITORY	367.95	267.06	272.56	198.53	184.86	202.73	188.51	181.32
NEW MEXICO TERRITORY	42.52	.15	24.29	5.44	4.44	-2.31	.77	-12.78
UNENUMERATED IN 1850	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	15.97	13.34	10.27	8.32	7.14	6.59	2.96	4.15

Table D-6 (continued)

1850 TO 1860 NET MIGRATION BY AGE AND SEX OF THE TOTAL POPULATION
AS A PERCENTAGE OF THE 1850 COHORT SURVIVING TO 1860
CALCULATED BY CENSUS SURVIVAL RATE METHOD USING STATE MORTALITY FACTORS COMPUTED FROM ADJUSTED NATIVITY DATA

REGION	70-79		80 AND OVER		AGE UNKNOWN		TOTAL		AGGREGATE
	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	
MAINE	12.13	11.41	-5.01	6.92	-74.23	-63.43	-5.72	-6.33	-6.02
NEW HAMPSHIRE	19.08	13.80	-20.47	-6.37	-74.96	-63.64	-2.33	-2.46	-2.39
VERMONT	-.57	-2.17	-3.99	-7.32	-72.36	-58.48	-10.52	-11.34	-10.93
MASSACHUSETTS	15.63	23.61	-.10	21.74	-76.39	-65.08	11.93	13.97	12.97
RHODE ISLAND	25.17	34.66	12.93	39.12	-73.79	0.	15.29	16.96	16.15
CONNECTICUT	21.02	20.05	-18.20	3.27	-71.30	-62.09	13.91	15.11	14.52
NEW YORK	-2.73	-2.50	-9.21	-9.89	-72.21	-62.21	2.45	2.86	2.66
NEW JERSEY	8.59	14.05	-13.35	.91	-59.07	-60.37	19.30	17.69	18.49
PENNSYLVANIA	-6.56	-4.13	-14.98	-14.13	-74.13	-63.84	1.51	1.23	1.37
DELAWARE	-14.35	-6.74	-24.06	-1.18	-84.56	-67.70	6.73	3.24	4.97
MARYLAND	-11.14	-10.15	-19.99	-13.18	-62.52	-53.60	.07	.86	.47
DISTRICT OF COLUMBIA	45.85	37.84	101.12	69.46	103.76	-29.29	44.45	47.14	45.85
VIRGINIA	-7.78	-5.14	-27.77	-20.49	-27.88	-34.83	-3.50	-5.00	-4.25
NORTH CAROLINA	5.34	-4.45	2.91	3.60	261.90	105.47	-3.14	-3.59	-3.37
SOUTH CAROLINA	-16.20	-17.76	-29.55	-24.88	-54.86	-55.39	-10.29	-9.96	-10.12
GEORGIA	-16.65	-19.20	8.50	4.76	-24.17	-37.70	-7.35	-7.02	-7.19
FLORIDA	6.67	17.06	63.86	36.31	88.89	12145.29	32.63	29.90	31.31
ALABAMA	-20.25	-15.22	-6.46	2.89	-34.20	-45.61	-1.25	-2.32	-1.78
MISSISSIPPI	-29.67	-22.25	6.28	9.65	528.46	478.51	1.61	-.30	.67
LOUISIANA	-14.81	-13.30	17.84	22.19	597.05	1557.23	11.74	9.18	10.50
TEXAS	45.96	67.22	124.47	143.88	480.05	957.58	82.43	75.43	79.09
ARKANSAS	47.19	47.82	168.62	235.91	580.78	97.12	83.32	73.00	78.28
TENNESSEE	-16.15	-17.70	-9.81	-13.74	30.62	-24.24	-10.01	-12.24	-11.13
KENTUCKY	-7.19	-8.85	-6.46	-4.29	-33.99	-35.08	-4.85	-7.33	-6.08
MISSOURI	30.87	30.56	100.63	82.98	26.21	-16.50	48.15	39.20	43.80
ILLINOIS	27.08	30.08	78.38	73.44	-59.33	-54.64	46.83	37.60	42.35
INDIANA	-1.92	-5.59	12.64	6.59	-49.46	-47.62	7.57	3.20	5.42
OHIO	-16.39	-14.80	-12.26	-21.10	-31.04	-37.83	-7.11	-8.46	-7.78
MICHIGAN	28.52	23.88	81.69	84.29	-41.45	-49.21	43.35	35.07	39.33
WISCONSIN	50.03	56.08	140.69	126.96	-39.99	-45.06	50.97	47.18	49.16
IOWA	136.74	137.46	253.11	239.89	0.	-40.04	129.77	115.14	122.65
CALIFORNIA	-45.35	-9.31	17.16	100.69	-52.74	-16.09	-31.08	44.88	-24.28
MINNESOTA TERRITORY	2419.05	2741.18	2703.59	7934.34	0.	0.	1690.22	1780.82	1729.54
OREGON TERRITORY	149.18	150.87	446.09	646.28	-71.80	-61.00	257.34	169.12	219.86
UTAH TERRITORY	152.81	167.26	227.18	322.15	0.	0.	178.40	116.39	148.07
NEW MEXICO TERRITORY	-35.69	-24.38	185.84	121.24	-70.56	0.	27.92	17.58	22.82
UNENUMERATED IN 1850	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	-.48	1.15	-.54	1.08	-12.81	-.32	7.97	6.81	7.41

Table D-7.

1[illegible] TO 19[illegible] NET MIGRATION BY AGE AND SEX OF THE TOTAL POPULATION
FOR EIGHT URBAN AREAS, THE REMAINDERS OF THEIR STATES, AND THE DISTRICT OF COLUMBIA
CALCULATED BY CENSUS SURVIVAL RATE METHOD USING STATE MORTALITY FACTORS COMPUTED FROM NATIVITY DATA

REGION	UNDER TEN		1 -14		15-19		2[illegible]-29	
	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE
COOK COUNTY (CHICAGO)	3[illegible]43	3[illegible]1	2548	2531	2737	3453	1[illegible]176	11[illegible]57
REMAINDER OF ILLINOIS	29643	29334	19129	17[illegible]53	13668	14595	6[illegible]081	38358
ILLINOIS	32686	32335	21678	19586	2[illegible]4[illegible]6	18[illegible]48	7[illegible]189	49414
ORLEANS PARISH (NEW ORLEANS)	2638	2255	812	1177	1263	2881	1[illegible]489	8711
REMAINDER OF LOUISIANA	67[illegible]	4617	-1[illegible]33	-2[illegible]49	-495	-21	12948	6734
LOUISIANA	9[illegible]38	6872	-222	-871	777	2941	23437	15444
BALTIMORE CITY	-5516	-4582	-83[illegible]	38[illegible]	33	2747	4455	6523
REMAINDER OF MARYLAND	-222[illegible]	-2728	981	-228	1197	-943	-37[illegible]3	-2812
MARYLAND	-7736	-731[illegible]	151	153	1527	18[illegible]6	952	371[illegible]
SUFFOLK COUNTY (BOSTON)	-4253	-5252	32	8	1556	2539	1[illegible]148	12776
REMAINDER OF MASSACHUSETTS	-1[illegible]367	-9449	226[illegible]	295[illegible]	9681	12[illegible]22	2[illegible]153	31461
MASSACHUSETTS	-1451[illegible]	-147[illegible]	2292	2959	11238	14563	3[illegible]3[illegible]	44236
ST. LOUIS COUNTY AND CITY	-423	217	3548	3742	4797	5944	2[illegible]962	16[illegible]37
REMAINDER OF MISSOURI	13[illegible]63	13848	19538	177[illegible]9	15281	11916	349[illegible]8	22653
MISSOURI	1264[illegible]	13[illegible]65	23[illegible]89	21452	2[illegible]8[illegible]	1786	55872	38691
NEW YORK COUNTY	-3392	-5[illegible]3	16[illegible]7	1[illegible]5	6661	11[illegible]57	3854[illegible]	5123[illegible]
REMAINDER OF NEW YORK STATE	-7537	-7329	-12938	-12152	-5942	-4[illegible]45	-8[illegible]45	8381
NEW YORK STATE	-1[illegible]929	-12331	-11332	-11147	719	7[illegible]12	3[illegible]493	59611
HAMILTON COUNTY (CINCINNATI)	-5786	-5[illegible]65	-2387	-1924	425	1276	8111	6266
REMAINDER OF OHIO	-1482[illegible]	-13391	-1953[illegible]	-194[illegible]6	-16555	-17962	-287[illegible]1	-291[illegible]1
OHIO	-2[illegible]6[illegible]6	-19456	-21717	-21331	-1613[illegible]	-16684	-2[illegible]588	-22634
PHILADELPHIA COUNTY AND CITY	-3381	-1668	-588	1237	1419	652	.17143	2375[illegible]
REMAINDER OF PENNSYLVANIA	-7641	-5576	-6923	-7197	-53[illegible]2	-8142	-7282	-2457
PENNSYLVANIA	-11022	-7244	-7462	-5959	-3883	-1622	9861	21291
DISTRICT OF COLUMBIA	-751	-557	123[illegible]	1994	1[illegible]97	1934	3[illegible]41	3772

Table D-7 (continued)

1955 TO 1965 NET MIGRATION BY AGE AND SEX OF THE TOTAL POPULATION
FOR EIGHT URBAN AREAS, THE REMAINDERS OF THEIR STATES, AND THE DISTRICT OF COLUMBIA
CALCULATED BY CENSUS SURVIVAL RATE METHOD USING STATE MORTALITY FACTORS COMPUTED FROM NATIVITY DATA

REGION	30-39		40-49		50-59		60-69	
	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE
COOK COUNTY (CHICAGO)	1[illegible]54[illegible]	[illegible]4	3413	2399	1[illegible]62	1395	991	748
REMAINDER OF ILLINOIS	5[illegible]499	3[illegible]673	2[illegible]955	13783	12439	7175	2668	2691
ILLINOIS	61[illegible]38	38715	24359	16182	13[illegible]2	857[illegible]	3659	3438
ORLEANS PARISH (NEW ORLEANS)	3888	2862	-28[illegible]9	-481	-24[illegible]5	-468	-551	-108
REMAINDER OF LOUISIANA	5569	61	-7[illegible]1	-149	-2[illegible]81	-1[illegible]2[illegible]	-1[illegible]41	-552
LOUISIANA	9456	3471	-3512	-1971	-4487	-1487	-1592	-658
BALTIMORE CITY	1889	238	-591	538	-265	663	-258	6[illegible]
REMAINDER OF MARYLAND	2375	1434	259[illegible]	529	427	-2[illegible]2	-358	-27[illegible]
MARYLAND	4263	3814	1996	1[illegible]65	16[illegible]	442	-618	-2[illegible]9
SUFFOLK COUNTY (BOSTON)	4959	266	-633	-471	-421	62	-134	225
REMAINDER OF MASSACHUSETTS	12525	9163	1[illegible][illegible]6	5464	4823	5256	2438	3786
MASSACHUSETTS	17484	11923	9372	4992	39[illegible]2	532[illegible]	23[illegible]4	4[illegible]10
ST. LOUIS COUNTY AND CITY	12514	9[illegible]5[illegible]	3326	3[illegible]97	1341	1825	671	935
REMAINDER OF MISSOURI	28744	17158	15593	9747	7217	4[illegible]3[illegible]5	2[illegible]18	1421
MISSOURI	41258	2621[illegible]	1891[illegible]	12846	8667	618[illegible]	269[illegible]	2358
NEW YORK COUNTY	22246	12113	3362	654	-1616	62	-689	611
REMAINDER OF NEW YORK STATE	1[illegible]669	3755	9362	-1475	-1923	-1755	-1286	-1[illegible]2
NEW YORK STATE	329[illegible]6	15867	12724	-822	-3[illegible]54[illegible]	-1693	-1975	-390
HAMILTON COUNTY (CINCINNATI)	3322	14[illegible]	-1221	-497	-878	-5	-4	145
REMAINDER OF OHIO	-3351	-9944	824	-5387	-2755	-3723	-636	-2631
OHIO	-29	-8544	-397	-5383	-3634	-3728	-639	-2485
PHILADELPHIA COUNTY AND CITY	11554	5525	2798	1259	-11[illegible]7	349	-291	662
REMAINDER OF PENNSYLVANIA	1[illegible]612	3134	11279	3135	2[illegible]7[illegible]7	996	33	-715
PENNSYLVANIA	22168	8658	14[illegible]78	4395	1698	1344	-257	-54
DISTRICT OF COLUMBIA	3157	27[illegible]1	1672	1248	699	75[illegible]	22[illegible]	442

Table D-7 (continued)

1955 TO 1960 NET MIGRATION BY AGE AND SEX OF THE TOTAL POPULATION FOR EIGHT URBAN AREAS, THE REMAINDERS OF THEIR STATES, AND THE DISTRICT OF COLUMBIA CALCULATED BY CENSUS SURVIVAL RATE METHOD USING STATE MORTALITY FACTORS COMPUTED FROM NATIVITY DATA

REGION	7 AND OVER		AGE UNKNOWN		TOTAL		AGGREGATE
	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	
COOK COUNTY (CHICAGO)	265	318	18	-4	34714	32938	67652
REMAINDER OF ILLINOIS	1653	1496	-666	-662	21669	154496	376165
ILLINOIS	1921	1814	-647	-666	256 79	187436	439226
ORLEANS PARISH (NEW ORLEANS)	-66	-88	-344	-68	12915	16473	29588
REMAINDER OF LOUISIANA	-181	-74	4 22	2965	23718	9721	33438
LOUISIANA	-245	-162	3676	2896	36626	26394	63020
BALTIMORE CITY	-55	-91	-4	-7	-645	9611	7966
REMAINDER OF MARYLAND	-588	-619	-11	-12	681	-5869	-5179
MARYLAND	-644	-711	-15	-2	36	2741	2776
SUFFOLK COUNTY (BOSTON)	-59	336	-817	-147	1 379	12736	23115
REMAINDER OF MASSACHUSETTS	1262	2662	-695	-259	51596	63 59	114654
MASSACHUSETTS	1203	3	-1514	-406	61971	75797	137768
ST. LOUIS COUNTY AND CITY	399	494	96	34	47231	41375	88606
REMAINDER OF MISSOURI	931	659	-47	-78	137336	99388	235724
MISSOURI	1331	1154	5	-43	184589	139773	324353
NEW YORK COUNTY	-451	-346	-65	-86	66293	71297	137590
REMAINDER OF NEW YORK STATE	-1553	-11 5	-1742	-1139	-2 944	-17865	-39809
NEW YORK STATE	-2 04	-1453	-18 8	-1225	45254	53429	98683
HAMILTON COUNTY (CINCINNATI)	-344	-117	-79	-86	1159	1393	2552
REMAINDER OF OHIO	-2927	-23 9	-152	-288	-88432	-1 4142	-192544
OHIO	-3271	-2425	-231	-375	-87239	-1 2745	-189984
PHILADELPHIA COUNTY AND CITY	-115	267	-274	-22	272 8	37681	64889
REMAINDER OF PENNSYLVANIA	-1617	-1646	-755	-848	-4789	-19316	-24105
PENNSYLVANIA	-1732	-1378	-1 3	-1 69	22419	18362	40781
DISTRICT OF COLUMBIA	186	198	5	-13	1 546	12469	23015

Table D-8.

1885 TO 1895 NET MIGRATION BY AGE AND SEX OF THE TOTAL POPULATION FOR EIGHT URBAN AREAS, THE REMAINDERS OF THEIR STATES, AND THE DISTRICT OF COLUMBIA AS A PERCENTAGE OF THE 1885 COHORT SURVIVING TO 1895
CALCULATED BY CENSUS SURVIVAL RATE METHOD USING STATE MORTALITY FACTORS COMPUTED FROM NATIVITY DATA

REGION	UNDER TEN		10-14		15-19		20-29	
	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE
COOK COUNTY (CHICAGO)	3.89	31.2[illegible]	72.11	73.15	97.74	115.27	231.34	256.14
REMAINDER OF ILLINOIS	16.79	17.15	24.0[illegible]	23.2[illegible]	20.54	21.38	59.83	39.75
ILLINOIS	17.53	17.9[illegible]	25.98	25.48	32.29	25.33	66.98	49.[illegible]2
ORLEANS PARISH (NEW ORLEANS)	15.61	12.05	11.74	17.[illegible]1	22.[illegible]1	46.97	129.75	84.11
REMAINDER OF LOUISIANA	9.77	6.64	-3.16	-6.49	-1.81	-[illegible].8	31.93	16.71
LOUISIANA	1[illegible].93	7.9[illegible]	-.56	-2.26	2.38	9.44	48.[illegible]0	3[illegible].49
BALTIMORE CITY	-16.44	-13.85	-7.24	3.32	3.78	28.53	34.16	39.62
REMAINDER OF MARYLAND	-2.95	-3.69	3.21	-.78	4.6[illegible]	-3.41	-8.51	-6.62
MARYLAND	-7.1[illegible]	-6.83	.36	.39	4.32	4.84	1.67	6.3[illegible]
SUFFOLK COUNTY (BOSTON)	-16.48	-19.43	.39	[illegible].1	24.14	36.[illegible]4	93.47	1[illegible]3.27
REMAINDER OF MASSACHUSETTS	-7.71	-7.15	4.81	6.48	24.22	28.37	27.37	4[illegible].[illegible]0
MASSACHUSETTS	-9.12	-9.23	4.14	5.49	24.21	29.47	35.87	48.6[illegible]
ST. LOUIS COUNTY AND CITY	-2.4[illegible]	1.26	78.29	89.[illegible]5	149.19	169.94	382.42	255.8[illegible]
REMAINDER OF MISSOURI	9.35	9.6[illegible]	39.18	37.26	35.95	27.31	54.77	36.64
MISSOURI	8.[illegible]3	9.65	42.44	41.47	43.81	37.89	8[illegible].72	56.82
NEW YORK COUNTY	-3.4[illegible]	-5.[illegible]4	4.57	2.92	24.53	38.27	92.8[illegible]	1[illegible]3.93
REMAINDER OF NEW YORK STATE	-1.76	-1.76	-7.19	-6.9[illegible]5	-3.69	-2.39	-2.98	3.[illegible]1
NEW YORK STATE	-2.[illegible]7	-2.39	-5.27	-5.33	.38	3.53	9.79	18.18
HAMILTON COUNTY (CINCINNATI)	-15.87	-14.31	-19.45	-16.2[illegible]	4.61	13.[illegible]5	56.7[illegible]	40.69
REMAINDER OF OHIO	-4.14	-3.84	-12.54	-13.[illegible]0	-12.1[illegible]	-12.6[illegible]	-13.71	-13.77
OHIO	-5.22	-4.8[illegible]	-13.[illegible]4	-13.32	-11.[illegible]4	-1[illegible].96	-9.2[illegible]	-1[illegible].[illegible]7
PHILADELPHIA COUNTY AND CITY	-4.57	-2.32	-1.94	4.57	6.18	27.[illegible]	48.67	57.31
REMAINDER OF PENNSYLVANIA	-2.[illegible]3	-1.52	-4.68	-4.[illegible]3	-4.[illegible]7	-5.91	-3.61	-1.22
PENNSYLVANIA	-2.45	-1.66	-4.17	-3.44	-2.53	-1.[illegible]5	4.16	8.74
DISTRICT OF COLUMBIA	-7.81	-5.[illegible]2	43.73	81.[illegible]4	49.42	59.66	78.43	79.91

Table D-8 (continued)

1[illegible] TO 1[illegible] NET MIGRATION BY AGE AND SEX OF THE TOTAL POPULATION
FOR EIGHT URBAN AREAS, THE REMAINDERS OF THEIR STATES, AND THE DISTRICT OF COLUMBIA
AS A PERCENTAGE OF THE 1[illegible] COHORT SURVIVING TO 1[illegible]
CALCULATED BY CENSUS SURVIVAL RATE METHOD USING STATE MORTALITY FACTORS COMPUTED FROM NATIVITY DATA

REGION	3[illegible]-39		4[illegible]-49		5[illegible]-59		6[illegible]-69	
	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE
COOK COUNTY (CHICAGO)	222.53	21[illegible].7[illegible]	91.11	88.47	[illegible].52	111.15	132.73	127.[illegible]2
REMAINDER OF ILLINOIS	70.65	51.89	44.77	34.61	44.37	[illegible].19	17.3[illegible]	21.95
ILLINOIS	89.53	61.61	48.19	38.[illegible]5	45.[illegible]9	34.25	22.63	26.76
ORLEANS PARISH (NEW ORLEANS)	28.18	23.75	-2.[illegible]95	-5.68	-4.[illegible]52	-12.51	-29.46	-6.44
REMAINDER OF LOUISIANA	16.74	2[illegible].2	-2.51	-6.91	-13.[illegible]2	-9.[illegible]9	-14.32	-9.94
LOUISIANA	2[illegible].9	8.21	-8.5[illegible]	-6.56	-2.47	-9.94	-17.12	-9.1[illegible]
BALTIMORE CITY	13.54	16.7[illegible]	-5.53	5.39	-4.[illegible]9	12.[illegible]2	-1[illegible].54	1.91
REMAINDER OF MARYLAND	9.[illegible]9	5.5[illegible]	13.84	2.74	3.28	-1.73	-4.46	-3.46
MARYLAND	1[illegible].63	9.46	6.79	3.63	.87	2.42	-5.9[illegible]	-1.91
SUFFOLK COUNTY (BOSTON)	41.34	18.17	-5.68	-4.7[illegible]	-8.16	1.19	-6.12	8.2[illegible]
REMAINDER OF MASSACHUSETTS	19.75	13.36	21.64	11.55	13.98	16.35	13.12	18.[illegible]5
MASSACHUSETTS	23.19	14.21	16.82	8.73	1[illegible].81	14.24	11.[illegible]9	16.91
ST. LOUIS COUNTY AND CITY	125.43	14[illegible].94	49.[illegible]4	81.96	52.43	1[illegible]9.1[illegible]	76.61	[illegible]125.55
REMAINDER OF MISSOURI	77.5[illegible]	47.68	6[illegible].1[illegible]	42.1[illegible]	46.[illegible]5	31.97	23.54	2[illegible].24
MISSOURI	87.66	62.[illegible]	57.74	47.7[illegible]	46.95	4[illegible].4[illegible]	28.47	3[illegible].36
NEW YORK COUNTY	43.[illegible]3	2[illegible].72	8.95	1.84	-8.24	.35	-8.28	6.87
REMAINDER OF NEW YORK STATE	5.27	1.83	6.39	-1.[illegible]3	-1.9[illegible]	-1.86	-2.11	-1.75
NEW YORK STATE	12.96	6.[illegible]2	6.91	-.46	-2.93	-1.51	-2.85	-.59
HAMILTON COUNTY (CINCINNATI)	2[illegible].36	9.77	-1[illegible].28	-5.59	-15.33	-.11	-.17	5.9[illegible]
REMAINDER OF OHIO	-2.57	-7.69	.91	-6.15	-4.51	-6.63	-1.81	-7.97
OHIO	-[illegible].2	-5.95	-.39	-6.1[illegible]	-5.44	-[illegible].15	-1.71	-7.[illegible]6
PHILADELPHIA COUNTY AND CITY	35.38	14.[illegible]9	11.44	4.93	-7.45	2.29	-4.[illegible]2	7.72
REMAINDER OF PENNSYLVANIA	7.84	2.34	11.87	3.4[illegible]	4.33	1.64	.[illegible]8	-1.93
PENNSYLVANIA	13.19	5.[illegible]1	11.79	3.74	2.13	1.77	-.55	-.12
DISTRICT OF COLUMBIA	113.22	7[illegible].15	74.[illegible]5	[illegible].89	52.57	48.26	27.96	46.71

Table D-8 (continued)

1950 TO 1960 NET MIGRATION BY AGE AND SEX OF THE TOTAL POPULATION
FOR EIGHT URBAN AREAS, THE REMAINDERS OF THEIR STATES, AND THE DISTRICT OF COLUMBIA
AS A PERCENTAGE OF THE 1950 COHORT SURVIVING TO 1960
CALCULATED BY CENSUS SURVIVAL RATE METHOD USING STATE MORTALITY FACTORS COMPUTED FROM NATIVITY DATA

REGION	75 AND OVER		AGE UNKNOWN		TOTAL		AGGREGATE
	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	
COOK COUNTY (CHICAGO)	1[illegible]7.69	159.13	134.[illegible]	-12.41	1[illegible]8.57	114.[illegible]5	111.17
REMAINDER OF ILLINOIS	29.66	31.26	-61.66	-55.64	37.21	29.[illegible]8	32.77
ILLINOIS	35.[illegible]1	36.38	-59.[illegible]7	-54.5[illegible]	4[illegible].93	3[illegible].37	36.77
ORLEANS PARISH (NEW ORLEANS)	-12.3[illegible]	-11.31	-64.54	-47.7[illegible]	17.5[illegible]	24.63	20.91
REMAINDER OF LOUISIANA	-6.35	-3.[illegible]7	4527.48	6588.77	9.25	4.[illegible]5	6.73
LOUISIANA	-7.27	-5.[illegible]8	591.17	1943.54	11.[illegible]9	8.57	9.88
BALTIMORE CITY	-5.33	-5.29	-48.31	-45.1[illegible]	-.64	3.18	3.86
REMAINDER OF MARYLAND	-13.83	-12.[illegible]7	-69.97	-54.97	.28	-2.4[illegible]	-1.[illegible]6
MARYLAND	-12.22	-11.[illegible]1	-62.45	-53.54	.[illegible]1	.78	.4[illegible]
SUFFOLK COUNTY (BOSTON)	-6.84	25.62	-76.53	-64.31	12.64	14.33	13.52
REMAINDER OF MASSACHUSETTS	11.[illegible]	18.[illegible]2	-75.73	-65.12	11.[illegible]6	13.[illegible]6	12.[illegible]8
MASSACHUSETTS	9.77	18.65	-76.26	-64.99	11.29	13.26	12.3[illegible]
ST. LOUIS COUNTY AND CITY	165.18	192.16	375.16	165.42	92.[illegible]9	94.2[illegible]	93.[illegible]6
REMAINDER OF MISSOURI	29.13	25.43	-22.34	-37.45	35.5[illegible]	2[illegible].52	31.16
MISSOURI	38.71	37.59	21.19	-18.79	42.12	33.8[illegible]	38.[illegible]8
NEW YORK COUNTY	-15.29	-8.1[illegible]	-72.66	-62.33	2[illegible].45	21.17	2[illegible].81
REMAINDER OF NEW YORK STATE	-4.65	-3.37	-72.13	-62.2[illegible]	-1.32	-1.13	-1.23
NEW YORK STATE	-5.52	-3.52	-72.19	-62.21	2.37	2.8[illegible]	2.58
HAMILTON COUNTY (CINCINNATI)	-31.6[illegible]	-1[illegible].39	-65.[illegible]4	-59.12	1.[illegible]6	1.34	1.19
REMAINDER OF OHIO	-14.89	-13.29	-24.22	-34.[illegible]	-7.39	-8.86	-8.12
OHIO	-15.76	-13.1[illegible]	-3[illegible].84	-37.77	-6.68	-8.[illegible]3	-7.35
PHILADELPHIA COUNTY AND CITY	-3.76	5.47	-75.6[illegible]	-64.83	11.22	14.59	12.96
REMAINDER OF PENNSYLVANIA	-7.76	-7.73	-73.5[illegible]	-63.5[illegible]	-.39	-1.61	-1.[illegible]0
PENNSYLVANIA	-7.24	-5.27	-74.12	-63.83	1.54	1.2[illegible]	1.4[illegible]
DISTRICT OF COLUMBIA	56.39	38.73	1[illegible].34	-3[illegible].69	4[illegible].16	4[illegible].79	42.[illegible]5

Table D-9.

ESTIMATES OF THE NET MIGRATION STREAMS BETWEEN REGIONS -- 185[illegible]-1860
APPLYING THE REGION OF BIRTH SURVIVAL RATE TO THE NATIVE POPULATION

REGION OF ORIGIN -- THE U. S.	DESTINATION OF MIGRATION									
	ALABAMA	ARKANSAS	CALI-FORNIA	CON-NECTICUT	DELAWARE	DISTRICT OF COLUMBIA	FLORIDA	GEORGIA	ILLINOIS	INDIA
ALABAMA	[illegible]	14739	707	40	2	32	2790	1819	353	-[illegible]
ARKANSAS	305	[illegible]	2[illegible]97	1[illegible]	7	29	7	86	33	11[illegible]
CALIFORNIA	1	7	[illegible]	26	[illegible]	15	[illegible]	8	1[illegible]2	3
CONNECTICUT	1[illegible]6	91	1792	[illegible]	43	157	71	256	6[illegible]48	49[illegible]
DELAWARE	-13	68	98	37	[illegible]	89	1[illegible]	9	83[illegible]	7
DISTRICT OF COLUMBIA	25	2	4[illegible]1	27	34	[illegible]	18	18	221	7
FLORIDA	756	151	76	18	5	6	[illegible]	732	39	[illegible]
GEORGIA	32121	13[illegible]4	157	-2	-6	56	8[illegible]61	[illegible]	146	-13
ILLINOIS	113	68[illegible]	5[illegible]48	159	26	32	[illegible]	26	[illegible]	386[illegible]
INDIANA	11[illegible]	715	2566	23	16	46	14	3	36981	[illegible]
IOWA	13	77	19[illegible]1	36	[illegible]	5	2	3	[illegible]2865	123[illegible]
KENTUCKY	-4[illegible]5	4975	2217	2	-[illegible]	82	25	76	18372	958
LOUISIANA	581	1334	998	26	[illegible]	7	97	68	559	26
MAINE	89	45	7517	655	15	138	11[illegible]	164	4560	47
MARYLAND	5[illegible]	171	1386	17[illegible]	1591	3246	48	19	5121	121
MASSACHUSETTS	243	82	8289	6[illegible]13	135	272	12[illegible]	32[illegible]	12836	139[illegible]
MICHIGAN	19	48	1953	67	-7	19	[illegible]	15	3339	186
MISSISSIPPI	2262	12632	14	8	[illegible]	8	166	2[illegible]5	348	8
MISSOURI	69	48[illegible]5	9131	24	11	39	14	23	7278	96
NEW HAMPSHIRE	48	31	18[illegible]5	616	5	95	-4	75	[illegible]4737	36
NEW JERSEY	9	2[illegible]	1257	96[illegible]	1[illegible]10	195	39	2[illegible]	1[illegible]982	198
NEW YORK	56[illegible]	[illegible]428	18297	9979	271	872	146	1[illegible]82	63428	916
NORTH CAROLINA	-461	114[illegible]7	585	174	-6	58	1389	-1683	2162	-97
OHIO	8	56[illegible]	665[illegible]	3[illegible]7	61	111	1[illegible]	63	75385	6232
PENNSYLVANIA	222	28[illegible]	6658	565	3565	1[illegible]74	-1[illegible]	435	52991	1894
RHODE ISLAND	88	28	616	2138	-158	38	1[illegible]	99	17[illegible]2	14
SOUTH CAROLINA	3595	7321	257	13	-[illegible]	44	4943	572[illegible]	-391	-9[illegible]
TENNESSEE	-651	39678	1973	15	1	48	161	555	11477	-85
TEXAS	196	1[illegible]96	711	-[illegible]	[illegible]	3	24	48	2[illegible]6	4
VERMONT	37	5[illegible]	2255	548	-[illegible]	66	3[illegible]	83	8594	74
VIRGINIA	-1372	2655	1759	117	57	3721	125	-1[illegible]56	12958	128
WISCONSIN	1	37	1447	93	3	19	1	5	3[illegible]25	49
TERRITORIES	29	116	1347	34	[illegible]	13	1	5	428	23[illegible]
TOTAL NATIVE	38749	117333	91965	22898	6676	1[illegible]635	18418	9471	347715	11457[illegible]

Table D-9 (continued)

ESTIMATES OF THE NET MIGRATION STREAMS BETWEEN REGIONS -- 185[illegible]-186[illegible]
APPLYING THE REGION OF BIRTH SURVIVAL RATE TO THE NATIVE POPULATION

REGION OF ORIGIN -- THE U. S.	DESTINATION OF MIGRATION									
	IOWA	KENTUCKY	LOUISIANA	MAINE	MARYLAND	MASSA-CHUSETTS	MICHIGAN	MIS-SISSIPPI	MISSOURI	NEW HAMPSHIR
ALABAMA	50	201	5833	1	-9	48	23	8491	1651	9
ARKANSAS	29	161	768	9	1	16	-8	327	2999	-2
CALIFORNIA	72	11	21	37	8	163	124	2	124	6
CONNECTICUT	3529	198	-4	-23	-18	291[illegible]	2257	6	894	3
DELAWARE	548	-119	12	-14	13[illegible]8	56	239	12	362	-1
DISTRICT OF COLUMBIA	91	6[illegible]	4	26	666	145	26	-11	311	2
FLORIDA	-2[illegible]	-2	339	-15	-3	3[illegible]	16	-221	-2	1
GEORGIA	164	80	4[illegible]87	9	6[illegible]	22	18	3114	1525	11
ILLINOIS	19802	1[illegible]5	123	25	23	375	1697	7[illegible]	19653	74
INDIANA	42698	2846	24[illegible]	14	44	74	2896	52	2[illegible]532	11
IOWA	[illegible]	546	9	13	3[illegible]	8[illegible]	258	37	7651	12
KENTUCKY	5819	[illegible]	634	5	-[illegible]	56	759	-2[illegible]2	42437	17
LOUISIANA	163	2[illegible]3	[illegible]	21	13	3[illegible]	54	656	719	6
MAINE	2718	149	-67	[illegible]	-91	18479	133[illegible]	46	735	32[illegible]7
MARYLAND	3376	-1128	147	4	[illegible]	55[illegible]	282	-15	2683	23
MASSACHUSETTS	5794	427	57	361	-141	[illegible]	3574	39	2[illegible]12	5438
MICHIGAN	3867	75	12	29	3	136	[illegible]	19	973	17
MISSISSIPPI	1	196	53[illegible]5	-8	-65	23	24	[illegible]	2833	6
MISSOURI	3174	1553	537	7	3[illegible]	82	99	196	[illegible]	-1
NEW HAMPSHIRE	3[illegible]94	-2	-12	1234	-15	12163	1321	4[illegible]	597	[illegible]
NEW JERSEY	3499	-74	9[illegible]	13	3[illegible]7	765	[illegible]33[illegible]5	4	152[illegible]	57
NEW YORK	4[illegible]676	1624	654	289	-43	5581	72986	511	1[illegible]532	1[illegible]29
NORTH CAROLINA	2771	1793	45[illegible]	5	85	55	297	6[illegible]4	6619	-2
OHIO	73831	5375	269	57	119	3[illegible]9	215[illegible]9	196	24622	92
PENNSYLVANIA	4157[illegible]	1245	172	28	4422	7[illegible]6	9628	95	11248	1[illegible]1
RHODE ISLAND	619	-75	-36	127	-39	5499	4[illegible]2	-[illegible]	247	422
SOUTH CAROLINA	-28	-264	1258	-[illegible]	1[illegible]	42	38	3179	1525	-1[illegible]
TENNESSEE	2185	14[illegible]36	696	4	5[illegible]	33	115	-16[illegible]4	36827	3
TEXAS	44	86	25[illegible]	-3	-13	2[illegible]	16	199	33[illegible]	11
VERMONT	6501	91	-34	257	-84	3[illegible]64	41[illegible]4	87	1355	2[illegible]2[illegible]
VIRGINIA	12257	-1445	324	39	171[illegible]	774	.972	-146	2[illegible]976	32
WISCONSIN	38[illegible]0	69	33	44	12	211	133[illegible]	27	1529	64
TERRITORIES	542	75	34	15	17	77	13[illegible]	12	153[illegible]	23
TOTAL NATIVE	283209	29276	22175	2601	8[illegible]16	52574	129821	15822	227549	12681

Table D-9 (continued)

ESTIMATES OF THE NET MIGRATION STREAMS BETWEEN REGIONS -- 185 -186
APPLYING THE REGION OF BIRTH SURVIVAL RATE TO THE NATIVE POPULATION

REGION OF ORIGIN -- THE U. S.	DESTINATION OF MIGRATION NEW JERSEY	NEW YORK	NORTH CAROLINA	OHIO	PENN-SYLVANIA	RHODE ISLAND	SOUTH CAROLINA	TENNESSEE	TEXAS	VERMONT
ALABAMA	29	251	66	161	61	-2	197	2231	24181	79
ARKANSAS	2	9	34	72	22	2	3	636	8399	3
CALIFORNIA	28	265	1	242	39	19	2	15	52	6
CONNECTICUT	2127	-1814	83	-2418	41	148	5	180	183	-1146
DELAWARE	9	224	-2	-895	238	73	7	20	71	3
DISTRICT OF COLUMBIA	86	298	38	181	281	2	13	67	75	4
FLORIDA	26	8	-1	8	48	-7	95	-326	834	-1
GEORGIA	125	326	485	37	165	118	529	21	1771	17
ILLINOIS	2	1281	6	1595	679	44	8	543	4283	114
INDIANA	88	316	-7	4797	379	6	5	432	2	56
IOWA	58	255	1	1	287	2	3	198	523	39
KENTUCKY	45	4	9	33	3	-1	4	2166	1	8
LOUISIANA	91	346	18	3	166	1	9	291	5676	11
MAINE	428	1989	42	125	94	676	39	81	28	519
MARYLAND	852	1681	-40	-2372	56	156	11	-94	522	21
MASSACHUSETTS	1782	4978	123	1121	2	4748	-11	456	358	-422
MICHIGAN	1	1687	5	1445	292	25	2	1	121	13
MISSISSIPPI	24	72	45	271	8	-3	6	1627	14286	1
MISSOURI	87	245	12	53	212	-1	2	8	9275	11
NEW HAMPSHIRE	3	449	67	11	325	976	3	138	142	396
NEW JERSEY	0	8436	25	-1631	7993	1	5	2	24	2
NEW YORK	2	0	192	-876	18	955	81	1626	1864	22
NORTH CAROLINA	45	359	0	74	1	-2	29	-57	8577	5
OHIO	46	2222	-1	0	5167	25	-1	1511	1358	11
PENNSYLVANIA	11776	72	-51	-3944	0	244	55	795	957	2
RHODE ISLAND	317	-391	7	97	389	0	9	123	143	-96
SOUTH CAROLINA	124	362	31	-169	158	8	0	-1788	76	4
TENNESSEE	28	1	734	394	1	3	112	0	287	4
TEXAS	18	8	14	95	4	-2	11	128	0	1
VERMONT	318	54	30	-1188	249	299	24	73	168	0
VIRGINIA	375	866	725	3	2347	-26	-286	-34	6557	13
WISCONSIN	124	1	14	532	285	26	1	69	115	113
TERRITORIES	24	156	1	159	123	-24	1	93	398	18
TOTAL NATIVE	41860	33886	5775	6974	49672	9912	3837	54	156194	2149

Table D-9 (continued)

ESTIMATES OF THE NET MIGRATION STREAMS BETWEEN REGIONS -- 185_-186_
APPLYING THE REGION OF BIRTH SURVIVAL RATE TO THE NATIVE POPULATION

REGION OF ORIGIN -- THE U. S.	DESTINATION OF MIGRATION (AREAS WITH BOUNDARY CHANGES BETWEEN 185_ AND 186_)							
	VIRGINIA	WISCONSIN	MINNESOTA	NEW MEXICO TERRITORY	OREGON + WASHING-TON TERR.	NEVADA + UTAH TERR	UNENUM-ERATED	TOTAL
ALABAMA	96	25	44	32	1[illegible]3	68	347	64623
ARKANSAS	-83	-45	[illegible]	27	363	52	821	17280
CALIFORNIA	15	147	8	21	328	2[illegible]8	33	2189
CONNECTICUT	172	4183	1794	18	254	168	2091	26477
DELAWARE	132	167	128	3	51	55	153	7[illegible]58
DISTRICT OF COLUMBIA	5[illegible]7	4[illegible]	73	6	39	14	137	4[illegible]
FLORIDA	23	13	17	5	11	2	33	2768
GEORGIA	-18	-351	37	27	78	64	627	84578
ILLINOIS	122	378[illegible]	5359	33	33[illegible]5	1153	14830	9[illegible]127
INDIANA	144	2889	3811	13	2371	21[illegible]	1561[illegible]	143[illegible]13
IOWA	41	452	1396	6	1634	734	5877	27333
KENTUCKY	1265	323	623	58	1948	262	9921	115623
LOUISIANA	36	49	96	51	124	56	295	13476
MAINE	195	6[illegible]41	6556	24	892	288	16[illegible]3	6[illegible]988
MARYLAND	4292	532	517	51	322	124	1417	32538
MASSACHUSETTS	5[illegible]8	7783	4[illegible]57	58	791	583	3311	79496
MICHIGAN	19	1757	1719	7	271	18[illegible]	24[illegible]7	22615
MISSISSIPPI	85	55	66	23	81	45	229	41[illegible]89
MISSOURI	229	222	641	1[illegible]7	48[illegible]6	621	18238	64[illegible]75
NEW HAMPSHIRE	144	42[illegible]	2586	14	221	131	9[illegible]7	37337
NEW JERSEY	-862[illegible]	2252	758	34	328	22[illegible]	999	37492
NEW YORK	2[illegible]45	61189	22192	327	261[illegible]	144[illegible]	13321	386139
NORTH CAROLINA	4196	73	149	12	348	96	1665	38883
OHIO	3[illegible]32	1431[illegible]	76[illegible]5	68	338[illegible]	824	19743	331679
PENNSYLVANIA	13863	13321	7867	137	16[illegible]1	1[illegible]16	1[illegible]593	219389
RHODE ISLAND	75	1[illegible]98	479	17	128	35	3[illegible]7	14619
SOUTH CAROLINA	32	62	38	4	73	1[illegible]	3[illegible]2	36271
TENNESSEE	1541	7[illegible]	128	84	1354	277	3931	142687
TEXAS	21	3[illegible]	11	1[illegible]5	55	71	[illegible]19[illegible]	4133
VERMONT	62	10751	4371	2[illegible]	345	288	17[illegible]3	47331
VIRGINIA	[illegible]	663	868	91	1175	251	5578	74597
WISCONSIN	21	[illegible]	5561	6	245	6[illegible]	3[illegible]55	23560
TERRITORIES	25	537	[illegible]	[illegible]	[illegible]	[illegible]	0	6180
TOTAL NATIVE	24217	136618	79555	1489	29635	96[illegible]6	14[illegible]274	2299610

Table D-10.

ESTIMATES OF THE NET MIGRATION STREAMS BETWEEN REGIONS -- 185[illegible]-186[illegible]
APPLYING THE FOREIGN-BORN SURVIVAL RATE TO THE FOREIGN-BORN

REGION OF ORIGIN -- FOREIGN	DESTINATION OF MIGRATION: ALABAMA	ARKANSAS	CALIFORNIA	CONNECTICUT	DELAWARE	DISTRICT OF COLUMBIA	FLORIDA	GEORGIA	ILLINOIS	INDIA
ASIA (EXCLUDING CHINA)	1	0	11	6	0	0	1	1	14	
AFRICA	1	0	3	3	0	1	4	2	5	
BELGIUM	5	0	87	8	0	5	1	6	156	2
BRITISH AMERICA	69	44	1593	919	11	17	22	51	5892	92
CENTRAL AMERICA	0	0	29	0	0	0	0	0	7	0
CHINA	0	0	1238	3	0	0	0	1	0	
DENMARK	26	2	389	26	1	1	6	6	218	3
FRANCE	251	68	2479	169	38	47	41	82	2778	18
GERMAN STATES	760	334	6343	2492	369	954	141	722	38286	195
GREAT BRITAIN	551	153	5059	3405	529	386	153	470	15946	34
GREECE	2	18	27	1	0	0	0	4	0	
HOLLAND	7	1	128	20	0	3	2	7	414	13
IRELAND	1656	384	9714	16211	1706	2128	245	1924	25632	716
ITALY	54	4	822	17	1	27	22	13	64	2
MEXICO	4	1	2681	2	0	3	0	2	7	
NORWAY	14	1	219	6	0	0	3	3	1431	1
PORTUGAL	1	0	427	77	0	0	3	3	115	
RUSSIA	5	7	76	13	0	1	1	3	39	2
SPAIN	45	0	137	3	0	16	23	10	5	
SWEDEN	45	7	411	12	2	4	9	10	1893	9
SARDINIA	7	0	53	2	0	0	0	0	1	9
SWITZERLAND	40	12	502	80	9	28	3	18	1682	111
SOUTH AMERICA	0	0	659	12	1	7	1	0	6	
SANDWICH ISLANDS	0	0	40	16	0	0	0	0	1	
TURKEY	0	0	3	2	0	0	0	0	0	
WEST INDIES	11	2	89	60	3	7	272	22	45	
OTHER COUNTRIES	43	48	658	32	4	19	19	41	434	18
TOTAL FOREIGN	3598	1086	42957	23588	2674	3654	972	3431	95[illegible]61	3457
AGGREGATE	42347	118419	134922	46486	935[illegible]	14289	19390	12872	442776	14914

Table D-10 (continued)

ESTIMATES OF THE NET MIGRATION STREAMS BETWEEN REGIONS -- 185.-186.
APPLYING THE FOREIGN-BORN SURVIVAL RATE TO THE FOREIGN-BORN

REGION OF ORIGIN -- FOREIGN	DESTINATION OF MIGRATION: IOWA	KENTUCKY	LOUISIANA	MAINE	MARYLAND	MASSA-CHUSETTS	MICHIGAN	MIS-SISSIPPI	MISSOURI	NEW HAMPSHIR
ASIA (EXCLUDING CHINA)	7	2	21	2	3	37	6	[illegible]	4	2
AFRICA	2	1	14	2	1	36	2	[illegible]	2	1
BELGIUM	26	13	89	1	8	11	174	2	91	[illegible]
BRITISH AMERICA	2432	180	247	5123	97	7915	1[illegible]675	54	824	130[illegible]5
CENTRAL AMERICA	[illegible]	[illegible]	8	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
CHINA	[illegible]	2	2	[illegible]	1	8	[illegible]	[illegible]	[illegible]	[illegible]
DENMARK	193	12	91	17	19	62	56	9	135	[illegible]
FRANCE	7[illegible]8	612	4447	35	175	374	715	169	1547	3[illegible]
GERMAN STATES	11284	7955	7328	112	12826	2912	11349	594	25911	12[illegible]
GREAT BRITAIN	4493	1763	1529	104[illegible]	19[illegible]5	9157	93[illegible]7	37[illegible]	3645	89[illegible]
GREECE	[illegible]	[illegible]	5	1	[illegible]	7	1	[illegible]	2	[illegible]
HOLLAND	765	44	77	4	1[illegible]9	1[illegible]2	1853	11	225	2
IRELAND	8215	65[illegible]1	8398	4465	7269	54224	8793	1153	12727	372[illegible]
ITALY	7	67	337	14	64	1[illegible]8	22	33	162	5
MEXICO	1	9	95	1	2	6	3	1	21	1
NORWAY	1664	2	18	7	2	49	128	4	42	1
PORTUGAL	[illegible]	1	43	18	7	288	2	[illegible]	8	2
RUSSIA	11	11	25	2	4	17	19	7	21	[illegible]
SPAIN	3	6	537	7	4	42	3	14	15	4
SWEDEN	428	12	57	21	14	2[illegible]6	77	6	7[illegible]	5
SARDINIA	1	1	43	[illegible]	2	2[illegible]	2	[illegible]	14	[illegible]
SWITZERLAND	737	219	261	3	51	97	371	4[illegible]	1342	3
SOUTH AMERICA	2	2	7	5	9	49	[illegible]	[illegible]	6	3
SANDWICH ISLANDS	[illegible]	[illegible]	[illegible]	2	[illegible]	18	1	[illegible]	[illegible]	5
TURKEY	[illegible]	[illegible]	[illegible]	1	[illegible]	4	[illegible]	[illegible]	[illegible]	[illegible]
WEST INDIES	17	9	343	31	51	95	15	6	4[illegible]	4
OTHER COUNTRIES	68	51	98	2[illegible]	38	241	.65	52	185	7
TOTAL FOREIGN	31[illegible]64	17475	24120	10934	22661	76[illegible]79	43639	2525	47[illegible]39	611[illegible]
AGGREGATE	314273	46751	46295	13535	31[illegible]67	128653	173460	18347	274588	18791

Table D-10 (continued)

ESTIMATES OF THE NET MIGRATION STREAMS BETWEEN REGIONS -- 1850-1860
APPLYING THE FOREIGN-BORN SURVIVAL RATE TO THE FOREIGN-BORN

REGION OF ORIGIN -- FOREIGN	DESTINATION OF MIGRATION NEW JERSEY	NEW YORK	NORTH CAROLINA	OHIO	PENN-SYLVANIA	RHODE ISLAND	SOUTH CAROLINA	TENNESSEE	TEXAS	VERMON
ASIA (EXCLUDING CHINA)	9	60	1	12	17	4	2	3	2	
AFRICA	3	20		7	7	4	2	1	1	
BELGIUM	31	251		151	63		1	5	8	
BRITISH AMERICA	334	16158	14	2171	1518	826	25	113	134	467
CENTRAL AMERICA		16			1				1	
CHINA		22			6					
DENMARK	51	349	3	47	68	2	11	9	43	
FRANCE	704	6384	12	3765	2426	35	63	128	559	20
GERMAN STATES	9873	74911	223	49215	40404	238	866	1131	6010	63
GREAT BRITAIN	5782	41447	404	13973	20399	2365	371	779	670	916
GREECE		13		1	1	1				
HOLLAND	388	1565	4	513	223	4	7	14	22	
IRELAND	18127	145603	259	22477	59121	7387	1432	3653	1117	3937
ITALY	39	544	7	119	181	9	17	108	19	
MEXICO	7	33		9	17			3	3638	
NORWAY	18	157	1	5	24	11	1	4	95	
PORTUGAL	4	103	4	2	26	25	4	4	2	
RUSSIA	11	296	5	132	73	1	5	12	12	
SPAIN	15	236	1	11	42	2	9	1	17	
SWEDEN	25	490	2	34	139	9	11	9	44	
SARDINIA	1	14		61				1		
SWITZERLAND	334	1802	2	3241	1287	10	9	165	132	
SOUTH AMERICA	11	91	1	9	22	6	2	2	1	
SANDWICH ISLANDS		10			1	1				
TURKEY	1	11		1	2					
WEST INDIES	81	572	7	29	207	21	27	8	14	
OTHER COUNTRIES	68	886	4	231	221	17	51	44	324	
TOTAL FOREIGN	35903	292037	954	96113	125886	10918	2910	6197	12756	9557
AGGREGATE	77763	325923	6729	103087	175558	20830	6747	11604	16895	11708

Table D-10 (continued)

ESTIMATES OF THE NET MIGRATION STREAMS BETWEEN REGIONS -- 1850-1860
APPLYING THE FOREIGN-BORN SURVIVAL RATE TO THE FOREIGN-BORN

DESTINATION OF MIGRATION
(AREAS WITH BOUNDARY CHANGES BETWEEN 1850 AND 1860)

REGION OF ORIGIN -- FOREIGN	VIRGINIA	WISCONSIN	MINNESOTA	NEW MEXICO TERRITORY	OREGON + WASHINGTON TERR.	NEVADA + UTAH TERR	UNENUMERATED	TOTAL
ASIA (EXCLUDING CHINA)	3	8	1	0	1	7	0	344
AFRICA	1	0	0	0	0	4	7	138
BELGIUM	2	1359	27	1	7	0	21	2636
BRITISH AMERICA	113	53[illegible]7	2344	22	313	261	1[illegible]37	73[illegible]93
CENTRAL AMERICA	0	0	0	0	1	0	0	63
CHINA	1	0	0	0	124	0	0	1[illegible]4[illegible]8
DENMARK	11	336	49	2	22	559	45	2897
FRANCE	166	77[illegible]	253	31	78	22	238	322[illegible]2
GERMAN STATES	3[illegible]7[illegible]	3623[illegible]	5375	167	484	186	1949	38[illegible]685
GREAT BRITAIN	1783	12846	1451	57	462	2956	1168	171921
GREECE	2	0	0	0	0	0	0	83
HOLLAND	23	1434	114	1	8	4	25	8254
IRELAND	482[illegible]	14612	3748	243	728	283	1746	471319
ITALY	75	3[illegible]	13	3	12	16	1[illegible]	3[illegible]65
MEXICO	1	5	1	1419	12	29	4	8[illegible]22
NORWAY	2	6271	2461	8	18	53	134	12850
PORTUGAL	9	3	5	1	5	0	7	1188
RUSSIA	4	27	17	0	9	2	1[illegible]	9[illegible]9
SPAIN	7	7	1	7	2	3	0	1232
SWEDEN	16	196	928	1	25	72	61	5431
SARDINIA	1	2	0	0	0	5	1	328
SWITZERLAND	77	138[illegible]	316	7	3[illegible]	29	149	15583
SOUTH AMERICA	2	3	0	2	5	8	1	[illegible]936
SANDWICH ISLANDS	0	0	0	0	22	0	1	119
TURKEY	0	0	0	0	0	0	0	25
WEST INDIES	22	15	1	2	3	0	4	2143
OTHER COUNTRIES	27	195	65	5	44	18	78	4593
TOTAL FOREIGN	1[illegible]238	81[illegible]36	17163	197[illegible]	2415	4517	6689	121[illegible]467
AGGREGATE	34455	217654	96718	3459	320[illegible]5	14123	146963	351[illegible]077