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# Appendixes

# Appendix A

## Notes on Earlier Research for Decades since 1870

### *1. Introduction*

Lack of adequate statistical information hampered the conscientious efforts of early investigators concerned with the effect of immigration on the growth of American population. Despite their limitations, the analyses of such pioneers as Tucker, Chickering, and Jarvis are interesting in their treatment of technical problems and in the reasoning on which their conclusions are based.[1]

Immigration has had a long history in the United States. For the most part, however, it was seldom treated dispassionately even when an attempt was made only to ascertain the pertinent facts and their reliability. Books and innumerable articles were written to "prove" that immigration did not contribute to the population growth of this country because immigration depressed the fertility rate of the native population; that immigration, if it continued, would result in race suicide of the Nordic element; that immigration was a threat to "American" institutions, etc. For this reason much of the literature on the subject is almost worthless.

[1] George Tucker, *Progress of the United States in Population and Wealth: As Exhibited by the Decennial Census* (Hunt's Merchant's Magazine, New York, 1843). Tucker discusses migration to the United States for the period 1790–1840 (Chap. X, pp. 80–88). He indicates difficulties with regard to the statistical data and notes the special problem of United States–Canadian border migration.

Jesse Chickering, *Immigration into the United States* (Little and Brown, 1848). Chickering has much to say about the irregularity of the United States immigration statistics and the border migration problem, and he estimates the contribution of immigration to population growth. This small volume contains an appendix on immigration to the United States prior to 1820.

References to Edward Jarvis' work are contained in *Statistical View of the United States,* a compendium of the *Seventh Census,* by J. D. B. DeBow, Superintendent, Census Office, 1854, pp. 119–122. Jarvis was concerned with estimates of immigration and methods of estimating the mortality of immigrants for the period 1790–1850.

## 2. *The Estimates by Mayo-Smith*

Mayo-Smith studied the problem of immigration and wrote the first systematic treatise in the United States on the subject.[2] He was also concerned with purely statistical investigations of the foreign born. Of particular interest for this analysis is his article on immigration and the foreign born population.[3]

Mayo-Smith's principal techniques and results may be summarized as follows:

1. According to the census of 1880, the number of foreign born in the United States was 6,679,943. Immigrant arrivals in 1880–1890 amounted to 5,246,613. The total of 11,926,556 represents the number of foreign born in the United States if there had been no emigration and no deaths in this decade. According to the census of 1890, there were 9,249,547 foreign born. "This leaves us with 2,677,009 to account for by emigration and deaths" (*ibid.*, p. 305).

2. Official statistics on emigration are not available. Emigration may be estimated on the basis of statistics of departing passengers supplied to the government by the principal shipping companies. These data include United States citizens going abroad. To estimate foreigners departing, Mayo-Smith assumes that "the U.S. citizens who are among the passengers departing sooner or later reappear among passengers arriving in this country" (p. 306). Since the statistics on arrivals from abroad show the number of United States citizens, Mayo-Smith concludes that for a series of years, rather than for a specific year, a valid estimate of foreigners departing can be obtained.

3. Using the series for passengers arriving and passengers departing, and subtracting from each the number of United States citizens arriving, Mayo-Smith obtains a net immigration total for the decade of 4,414,337. Subtracting the net immigration estimate from the gross immigration total of 5,264,613 leaves a net loss by emigration of 832,276.

[2] Richard Mayo-Smith, *Emigration and Immigration: A Study in Social Science* (Scribner, 1890), p. 316.

[3] *Quarterly Publications of the American Statistical Association,* March–June 1893, pp. 304–320.

4. Having obtained an annual net immigration figure Mayo-Smith assumes a probable death rate, applying this rate thus: "Starting with the foreign-born population of the United States in June 1880, I have allowed a death rate of 15 pro mille, and at the end of the year have added the immigration of the year ending June 30, 1881. With this population I have continued, allowing a death rate of 15 pro mille, and adding at the end of the year the immigration for the year ending June 30, 1882. Continuing this process the survivors of the foreign born and of the immigrants should have been in 1890, 9,825,727. This still leaves a deficiency of 576,180" (p. 308).

5. In addition to this deficiency, Mayo-Smith mentions the immigration from Canada not shown in official returns from July 1, 1885 to July 1, 1890. According to a report of the Canadian Minister of Agriculture, 379,942 immigrants passed through Canada en route to the United States in 1885–1890. Mayo-Smith applies a death rate of 15 per 1,000 to this group and concludes that survivors in 1890 would amount to 368,186. Consequently, the total deficiency should be increased to 944,366 (p. 309).

6. Having completed this part of the analysis, Mayo-Smith proceeds to investigate the foreign born data by nationality groups. His method, applied to specific groups (Irish, German, Hebrew, etc.), is similar to that for the total foreign born population. Again he finds discrepancies between the census of 1890 and his estimates of population for specific nationality groups.

7. On the basis of his findings Mayo-Smith suggests four reasons for this great deficiency: (a) the death rate among the foreign born was greater than 15 per 1,000, (b) emigration was greater than allowed for, (c) some foreign born might have declared themselves to be native born in the census, and (d) the enumeration of the foreign born at the *Eleventh Census* may have been defective (p. 309). He omitted a fifth reason—that his method may have contained errors that biased his results in one direction.

First, in estimating emigration of the foreign born, he assumed that all United States citizens departing from the United States return to this country sooner or later. This assumption is inaccurate for at least two obvious reasons: some United States citizens

die while abroad and some take up permanent residence outside the United States. Also, the United States citizens include some naturalized foreign born. Further, the number of departures is probably underreported by the steamship companies. Finally, more ports of arrival than of departure are listed in each annual report and the information on emigration was furnished on a voluntary basis by the steamship companies.

Second, Mayo-Smith assumes a death rate of 15 per 1,000 for the foreign born. Subsequent findings indicate that the death rate in 1890 was 19.4 per 1,000 for this population and in 1880, about 19.8 per 1,000.[4] If we take 8 million as the average population of the foreign born in 1880–1890, an underestimate of 4 per 1,000 in the death rate is equivalent to an underestimate of 320 thousand in mortality. Although admittedly crude, this figure indicates the possible order of magnitude of the error in Mayo-Smith's mortality estimate.

Finally, Mayo-Smith's technique of estimating the surviving net immigration also introduces an error. He should have centered his net immigration data at the middle of each year instead of assuming that all the immigrants came in at the end of the year. Thus he neglected a half year of mortality on a total net immigration of 4,414,337 for the decade, roughly about 33 thousand at the death rate he used.[5]

[4] William S. Rossiter, *Increase of Population in the United States, 1910–1920*, Bureau of the Census Monograph I, p. 200.

[5] Mayo-Smith's technique is:

| | |
|---|---|
| Foreign born, June 1880 | 6,679,943 |
| *Times* Death rate | 0.015 |
| *Equals* Mortality | 100,199 |
| Balance, June 30, 1881 | 6,579,744 |
| *Plus* Net immigration for year ending June 30, 1881 | 631,640 |
| *Equals* Foreign born, June 30, 1881 | 7,211,384 |
| *Times* Death rate | 0.015 |
| *Equals* Mortality | 108,171 |
| Balance, June 30, 1882 | 7,103,213 |
| *Plus* Net immigration for year ended June 30, 1882 | 735,648 |
| *Equals* Foreign born, June 30, 1882 | 7,838,861 |

etc. This procedure yields Mayo-Smith's estimate of 9,825,727 in June 1890.

### 3. *The Estimates by Rossiter*

We have already mentioned a second study related to the present analysis, William S. Rossiter's *Increase of Population in the United States, 1910–1920.* His estimate of net immigration for 1870–1910 and his appraisal of the foreign born white count of the 1920 census are especially relevant.

Before turning to the problem of estimating net immigration after 1870, Rossiter observes with regard to the period 1820–1870 that

> . . . no data are available on which to base an estimate of the immigration which took place during the first half of the nineteenth century. It may be safely assumed, however, that the emigration up to 1850 was negligible; an examination of the census statistics and of the immigration statistics for the period 1850 to 1870, due account being taken of mortality, indicates that emigration between 1850 and 1870 was also negligible. . . . During the succeeding decades, however, considerable emigration took place, and it is therefore necessary to estimate it in order to secure an estimate of the net immigration.[6]

To expedite the analysis, Rossiter assumes that white emigration represented total emigration (nonwhite emigration was negligible) during this period. His method of estimation may be summarized thus:

1. The number of white immigrants during a decade are added to the number of foreign born whites enumerated at the beginning of the decade.
2. Estimated mortality is deducted from the sum obtained in (1).
3. The foreign born white persons enumerated at the end of the decade are subtracted from the result obtained in (2); the remainder represents the number of surviving foreign born white emigrants (p. 199).

Rossiter's estimates of emigration can be accurate only under one of two conditions: (a) that the census data, immigration statistics, and mortality estimates are all correct, or (b) that these three series, if incorrect, yield results in which the errors developed in this system of linear combination exactly cancel out. The first condition certainly doesn't hold and the probability of the second is extremely slight.

[6] *Op. cit.*, p. 199.

In preparing his mortality estimate, Rossiter first estimates the mortality (for the 10-year period) of the foreign born whites enumerated at the beginning of the decade. His technique requires a series of approximations, which take into account the advancing age of the foreign born population and the further determination of increases in death rates by age. Thus Rossiter says:

> It was estimated, therefore, after a careful inspection of the rates for each fifth year of age from 15 to 70, that the increase in the general rate for the entire foreign born population during a period in which the average age advanced by 5 would be about 30 per cent.[7]

Since the general rate was 30 per cent higher at the end than at the beginning of the decade, Rossiter assumes that the average rate for the decade was 15 per cent higher than the rate at the beginning of the decade. He further assumes that

> . . . the decrease during the decade in the total number to which the rate was applied was approximately one-fifth, and therefore the average was approximately nine-tenths of the number at the beginning of the decade. Thus, in order to obtain a decennial rate applicable to the foreign-born white population enumerated at the beginning of a decade, the normal rate should be increased by 15 per cent to account for the effect of the advance in age, and the result should be decreased by 10 per cent to account for the effect of the reduction in number. This would yield a net increase of only 3.5 per cent . . . in the decennial rate applicable to the number enumerated at the beginning of the decade.[8]

To estimate mortality among white immigrants during the decade, Rossiter multiplies the normal annual death rate for the foreign born white population by 5, assuming that immigration was distributed uniformly throughout the decade (i.e. the average length of residence for all immigrants during a decade was 5 years). Then this result ". . . was arbitrarily reduced by one-fourth to

[7] *Ibid.*, p. 201. Rossiter assumed that the average age of the group increased about 5 years during the decade. The basis of the assumption is this: the younger element in the foreign born population, e.g. ages 10–30, is hardly affected by death, whereas the older element is greatly affected; consequently in such a population distribution, the extreme older age range (i.e. maximum age) would remain virtually unchanged while the younger or minimum age group would advance almost 10 years. As an average for the entire group, 5 years is reasonable, especially since the distribution of the ages of the foreign born population is approximately symmetrical.

[8] *Ibid.*

account for the lower average age of immigrants than of the entire foreign-born population." [9]

Finally, Rossiter combines these mortality results as follows:

A, foreign born population (e.g. 1890)
*Minus* B, foreign born mortality (1890–1900)
*Equals* C, foreign born population in 1900 excluding migration.

D, total immigration (1890–1900)
*Minus* E, mortality of immigrants (1890–1900)
*Equals* F, surviving immigrants in 1900.

The difference between the sum of *C* and *F* and the census enumeration of foreign born white in 1900 is the number of surviving emigrants at the end of the decade. The total number of emigrants departed during the decade is estimated by adding to this difference an estimate of mortality among the emigrants.

Various assumptions and arbitrary adjustments with regard to the mortality estimates made by Rossiter are open to criticism, of which Rossiter was himself aware. His results are presented in Section 5.

### *4. The Estimates by Willcox*

Willcox, the dean of American demographers, has studied various problems with regard to immigration and has devised two methods for estimating net immigration.[10] One is as a percentage of gross. In examining the immigration data for 1907–1914 Willcox found that net immigration was 61 per cent of gross. He observes:

In estimating net immigration during earlier years it is probably safe to assume that between 1900 and 1907 likewise it was about 61 per cent of gross immigration. Before that it must have been greater. If one supposes that it was 65 per cent for the decade 1891–1900, and that for each decade of the nineteenth century it was 5 per cent above what it was in the next later decade, the series in Table 195 results [pp. 390–391].

He does not indicate the basis for the linear aspect of his assumption; and if the nativity composition of immigration to this country in the nineteenth century as well as the conditions of transpor-

[9] *Ibid.*
[10] Walter F. Willcox, *Studies in American Demography* (Cornell University Press, 1940), Chap. 20, "Immigration," pp. 386–418.

tation are true as reported, the return flow was definitely smaller in the earlier recorded period of immigration. Willcox's second method is an indirect one, requiring comparison between the proportions of the sexes among immigrants with those among the foreign born. He regards this method as less accurate and it will not be discussed here.[11]

### 5. *A Brief Comparison*

The estimates by Mayo-Smith, Rossiter, and Willcox gave no sex or age distribution. However, the totals of net immigration obtained by the various methods are compared in the following tabulation.

ESTIMATES OF NET IMMIGRATION TO THE UNITED STATES, ALL RACES, 1820–1940

(*thousands*)

| *Period* [a] | *Rossiter* | *Present* | *Period* [b] | *Willcox* |
|---|---|---|---|---|
| 1820–1830 | 137 | ... | 1820–1830 | 152 |
| 1830–1840 | 558 | ... | 1831–1840 | 569 |
| 1840–1850 | 1,599 | ... | 1841–1850 | 1,542 |
| 1850–1860 | 2,663 | ... | 1851–1860 | 2,208 |
| 1860–1870 | 2,356 | ... | 1861–1870 | 1,852 |
| 1870–1880 | 2,530 | 2,269 | 1871–1880 | 2,109 |
| 1880–1890 [c] | 4,273 | 4,492 | 1881–1890 | 3,673 |
| 1890–1900 | 3,239 | 2,532 | 1891–1900 | 2,397 |
| 1900–1910 | 5,558 | 5,285 | 1901–1907 | 3,794 |
| 1910–1920 | 3,467 | 3,197 | 1908–1914 | 4,092 |
| 1920–1930 | ... | 3,085 | 1915–1922 | 1,277 |
| 1930–1940 | ... | 104 | 1923–1930 | 2,543 |

[a] Census periods.
[b] Fiscal years used in the *Annual Reports of the Commissioner of Immigration*, Bureau of Immigration and Naturalization.
[c] Mayo-Smith's estimate is 4,414 thousand.

... Indicates absence of data.

Willcox notes that his method probably exaggerated the outflow of aliens from the United States in 1850–1900,[12] a point corroborated by the results obtained by Rossiter and us for 1870–1900.

11 *Ibid.*, pp. 391–392.
12 *Ibid.*, p. 392.

# Appendix B

## Reference Tables

TABLE B–1

ANNUAL ARRIVALS AND DEPARTURES, ALL ALIEN PASSENGERS, 1870–1945, AND IMMIGRANTS AND EMIGRANTS, 1908–1945

*(thousands)*

| *Fiscal Year Ending June 30* | *Arrivals* | *Departures* | *Fiscal Year Ending June 30* | *Arrivals* | *Departures* |
|---|---|---|---|---|---|
| | | *All Aliens* | | | |
| 1870 | 403 | 37 | 1900 | 519 | 134 |
| 1871 | 343 | 43 | 1901 | 563 | 275 |
| 1872 | 423 | 44 | 1902 | 731 | 345 |
| 1873 | 473 | 71 | 1903 | 921 | 389 |
| 1874 | 328 | 83 | 1904 | 841 | 311 |
| 1875 | 245 | 112 | 1905 | 1,060 | 398 |
| 1876 | 190 | 90 | 1906 | 1,166 | 469 |
| 1877 | 165 | 94 | 1907 | 1,438 | 671 |
| 1878 | 158 | 69 | 1908 | 925 | 715 |
| 1879 | 198 | 66 | 1909 | 944 | 400 |
| 1880 | 484 | 60 | 1910 | 1,198 | 380 |
| 1881 | 695 | 50 | 1911 | 1,030 | 518 |
| 1882 | 816 | 64 | 1912 | 1,017 | 615 |
| 1883 | 645 | 66 | 1913 | 1,427 | 612 |
| 1884 | 561 | 87 | 1914 | 1,403 | 634 |
| 1885 | 438 | 154 | 1915 | 434 | 384 |
| 1886 | 358 | 108 | 1916 | 367 | 241 |
| 1887 | 513 | 97 | 1917 | 363 | 146 |
| 1888 | 567 | 129 | 1918 | 212 | 193 |
| 1889 | 465 | 150 | 1919 | 237 | 216 |
| 1890 | 476 | 148 | 1920 | 622 | 428 |
| 1891 | 579 | 153 | 1921 | 978 | 426 |
| 1892 | 644 | 164 | 1922 | 432 | 345 |
| 1893 | 544 | 163 | 1923 | 673 | 201 |
| 1894 | 347 | 210 | 1924 | 879 | 217 |
| 1895 | 301 | 206 | 1925 | 458 | 226 |
| 1896 | 363 | 158 | 1926 | 496 | 228 |
| 1897 | 244 | 139 | 1927 | 538 | 254 |
| 1898 | 250 | 129 | 1928 | 501 | 274 |
| 1899 | 335 | 134 | 1929 | 479 | 252 |

*(Continued on page 96)*

TABLE B–1 (*Continued*)

| *Fiscal Year Ending June 30* | *Arrivals* | *Departures* | *Fiscal Year Ending June 30* | *Arrivals* | *Departures* |
|---|---|---|---|---|---|
| 1930 | 446 | 272 | 1940 | 209 | 166 |
| 1931 | 281 | 291 | 1941 | 152 | 88 |
| 1932 | 175 | 288 | 1942 | 111 | 75 |
| 1933 | 151 | 244 | 1943 | 105 | 59 |
| 1934 | 164 | 177 | 1944 | 142 | 84 |
| 1935 | 180 | 189 | 1945 | 202 | 93 |
| 1936 | 191 | 193 | | | |
| 1937 | 232 | 224 | | | |
| 1938 | 253 | 223 | | | |
| 1939 | 268 | 202 | | | |
| | | *Immigrants and Emigrants* | | | |
| 1908 | 783 | 395 | 1930 | 242 | 51 |
| 1909 | 752 | 226 | 1931 | 97 | 62 |
| | | | 1932 | 36 | 103 |
| 1910 | 1,042 | 202 | 1933 | 23 | 80 |
| 1911 | 879 | 296 | 1934 | 30 | 40 |
| 1912 | 838 | 333 | | | |
| 1913 | 1,198 | 308 | 1935 | 35 | 39 |
| 1914 | 1,218 | 303 | 1936 | 36 | 36 |
| | | | 1937 | 50 | 27 |
| 1915 | 327 | 204 | 1938 | 68 | 25 |
| 1916 | 299 | 130 | 1939 | 83 | 27 |
| 1917 | 295 | 66 | | | |
| 1918 | 111 | 95 | 1940 | 71 | 22 |
| 1919 | 141 | 124 | 1941 | 52 | 17 |
| | | | 1942 | 29 | 7 |
| 1920 | 430 | 288 | 1943 | 24 | 5 |
| 1921 | 805 | 248 | 1944 | 29 | 6 |
| 1922 | 310 | 199 | | | |
| 1923 | 523 | 81 | 1945 | 38 | 7 |
| 1924 | 707 | 77 | | | |
| 1925 | 294 | 93 | | | |
| 1926 | 304 | 77 | | | |
| 1927 | 335 | 73 | | | |
| 1928 | 307 | 78 | | | |
| 1929 | 280 | 69 | | | |

TABLE B–2

ESTIMATED 5-YEAR SURVIVAL RATIOS OF THE UNITED STATES FOREIGN BORN WHITE POPULATION, SELECTED PERIODS, 1870–1940

| *Age Group* | *1870–1880* | *1880–1890* | *1890–1900* | *1903–1907* | *1913–1917* | *1923–1927* | *1930–1935* | *1935–1940* |
|---|---|---|---|---|---|---|---|---|
| | | | | *Males* | | | | |
| 0– 4 to 5– 9 | .888927 | .898520 | .913575 | .929759 | .947067 | .964023 | .977270 | .971729 |
| 5– 9 to 10–14 | .972661 | .982556 | .980895 | .972322 | .972570 | .977277 | .985806 | .983653 |
| 10–14 to 15–19 | .969304 | .974964 | .973743 | .978466 | .980867 | .985361 | .987780 | .990384 |
| 15–19 to 20–24 | .964094 | .970186 | .971088 | .978391 | .979273 | .977870 | .983796 | .991006 |
| 20–24 to 25–29 | .955639 | .962356 | .965834 | .965055 | .968034 | .975752 | .983136 | .985017 |
| 25–29 to 30–34 | .946793 | .952117 | .958671 | .964807 | .964740 | .970973 | .978350 | .979422 |
| 30–34 to 35–39 | .939223 | .944452 | .950135 | .958535 | .962281 | .968702 | .972338 | .980294 |
| 35–39 to 40–44 | .928306 | .933878 | .937921 | .944172 | .954666 | .957500 | .970562 | .970473 |
| 40–44 to 45–49 | .903645 | .908211 | .912001 | .934526 | .941201 | .951823 | .949020 | .953721 |
| 45–49 to 50–54 | .906731 | .910604 | .913060 | .912291 | .924948 | .926916 | .934050 | .941949 |
| 50–54 to 55–59 | .845288 | .848178 | .849757 | .882737 | .896801 | .904193 | .904366 | .906552 |
| 55–59 to 60–64 | .849397 | .847682 | .844569 | .846887 | .862543 | .877377 | .871000 | .869135 |
| 60–64 to 65–69 | .751538 | .745214 | .747647 | .784737 | .829742 | .819593 | .828673 | .829399 |
| 65–69 to 70–74 | .728460 | .720692 | .720983 | .742787 | .695065 | .748238 | .739315 | .747204 |
| 70–74 to 75–79 | | | | .659605 | .635497 | .640625 | .668170 | .668001 |
| 65 and over to 70 and over | .596606 | .588754 | .588621 | | | | | |
| 75 and over to 80 and over | | | | .390341 | .463495 | .465240 | .458558 | .455386 |

(*Continued on page 98*)

TABLE B–3

FOREIGN BORN WHITE MALE POPULATION OF THE UNITED STATES, JANUARY 1, 1920, AND ESTIMATE FOR APRIL 1, 1930

| AGE GROUP | CENSUS JAN. 1, 1920 | ESTIMATED SURVIVORS JAN. 1, 1923 | JAN. 1, 1920–JAN. 1, 1925 | | ADJUSTED ESTIMATE JAN. 1, 1923 | ESTIMATED SURVIVORS JAN. 1, 1927 | JAN. 1, 1925–APR. 1, 1930 | | ADJUSTED SURVIVORS JAN. 1, 1927 | ESTIMATED SURVIVORS APR. 1, 1930 |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | *Immigrants* | *Emigrants* | | | *Immigrants* | *Emigrants* | | |
| All ages | 7,528,322 | 7,133,124 | 1,535,310 | 598,729 | 8,069,705 | 7,516,797 | 842,235 | 267,701 | 8,091,331 | 7,622,409 |
| Under 5 | 22,857 | 8,864 | 18,000 | 3,000 | 23,864 | 4,620 | 12,000 | 1,000 | 15,620 | 5,327 |
| 5– 9 | 85,774 | 47,072 | 50,000 | 17,000 | 80,072 | 34,194 | 23,000 | 3,500 | 53,694 | 28,489 |
| 10–14 | 167,152 | 116,849 | 142,000 | 32,000 | 226,849 | 107,704 | 62,000 | 3,500 | 166,204 | 91,933 |
| 15–19 | 259,270 | 201,719 | 225,000 | 42,000 | 384,719 | 254,983 | 163,000 | 9,000 | 408,983 | 247,913 |
| 20–24 | 456,988 | 333,741 | 230,000 | 50,000 | 513,741 | 403,139 | 167,000 | 21,000 | 549,139 | 452,012 |
| 25–29 | 792,088 | 581,074 | 258,000 | 56,000 | 783,074 | 556,083 | 180,000 | 43,000 | 693,083 | 590,438 |
| 30–34 | 946,818 | 837,161 | 232,000 | 69,000 | 1,000,161 | 807,347 | 85,000 | 50,000 | 842,347 | 732,124 |
| 35–39 | 1,008,667 | 950,181 | 185,000 | 86,000 | 1,049,181 | 983,254 | 51,000 | 46,000 | 988,254 | 874,696 |
| 40–44 | 803,195 | 902,281 | 75,000 | 82,000 | 895,281 | 983,781 | 34,000 | 30,000 | 987,781 | 961,225 |
| 45–49 | 744,423 | 753,817 | 28,000 | 40,000 | 741,817 | 828,694 | 29,000 | 16,000 | 841,694 | 903,712 |
| 50–54 | 651,546 | 676,904 | 25,000 | 29,000 | 672,904 | 684,611 | 18,000 | 16,000 | 686,611 | 749,527 |
| 55–59 | 503,789 | 555,800 | 24,000 | 26,000 | 553,800 | 597,435 | 11,000 | 8,000 | 600,435 | 613,104 |
| 60–64 | 392,629 | 419,954 | 21,000 | 24,000 | 416,954 | 472,411 | 6,000 | 8,000 | 470,411 | 503,885 |
| 65–69 | 275,400 | 304,913 | 17,000 | 21,500 | 300,413 | 334,508 | 1,235 | 7,000 | 328,743 | 368,444 |
| 70–74 | 194,732 | 204,240 | 5,310 | 16,000 | 193,550 | 219,587 | | 5,701 | 213,886 | 238,165 |
| 75–79 | 124,170 | 128,881 | | 5,229 | 123,652 | 126,377 | | | 126,377 | 139,854 |
| 80–84 | 56,701 | 65,781 | | | 65,781 | 74,540 | | | 74,540 | 71,997 |
| 85 and over | 28,381 | 30,881 | | | 30,881 | 31,410 | | | 31,410 | 38,148 |
| Unknown | 13,732 | 13,011 | | | 13,011 | 12,119 | | | 12,119 | 11,416 |

TABLE B-2 (*Continued*)

| *Age Group* | *1870–1880* | *1880–1890* | *1890–1900* | *1903–1907* | *1913–1917* | *1923–1927* | *1930–1935* | *1935–1940* |
|---|---|---|---|---|---|---|---|---|
| | | | | *Females* | | | | |
| 0– 4 to 5– 9 | .896850 | .908867 | .920705 | .932446 | .950524 | .965321 | .980889 | .980717 |
| 5– 9 to 10–14 | .975335 | .986050 | .982369 | .978983 | .976617 | .984005 | .987098 | .989120 |
| 10–14 to 15–19 | .972186 | .978083 | .976815 | .982367 | .983268 | .984974 | .990280 | .991826 |
| 15–19 to 20–24 | .964583 | .969672 | .972734 | .977333 | .981917 | .982789 | .987698 | .989222 |
| 20–24 to 25–29 | .955262 | .960854 | .965715 | .971599 | .972259 | .976251 | .984682 | .977467 |
| 25–29 to 30–34 | .948675 | .952381 | .960241 | .964637 | .967391 | .974819 | .983434 | .983289 |
| 30–34 to 35–39 | .938052 | .941690 | .949211 | .962266 | .969147 | .974092 | .980446 | .990913 |
| 35–39 to 40–44 | .939298 | .944304 | .948021 | .948898 | .957080 | .963756 | .972802 | .992636 |
| 40–44 to 45–49 | .912062 | .917270 | .920240 | .944269 | .953496 | .961280 | .967912 | .966883 |
| 45–49 to 50–54 | .923049 | .924544 | .927812 | .924408 | .936982 | .942985 | .944535 | .943121 |
| 50–54 to 55–59 | .859585 | .858831 | .861668 | .896393 | .907619 | .917593 | .924210 | .936677 |
| 55–59 to 60–64 | .864559 | .865165 | .865483 | .863567 | .883637 | .890882 | .899606 | .899149 |
| 60–64 to 65–69 | .743626 | .742616 | .742491 | .799651 | .837077 | .832258 | .850783 | .852204 |
| 65–69 to 70–74 | .740759 | .737443 | .736866 | .745267 | .712195 | .771327 | .781283 | .782860 |
| 70–74 to 75–79 | | | | .665361 | .642921 | .694663 | .713931 | .707020 |
| 65 and over to 70 and over | .598676 | .593411 | .592872 | | | | | |
| 75 and over to 80 and over | | | | .406912 | .477610 | .446850 | .468291 | .473170 |

For the derivation of these survival rates see the discussion in the text. For periods following 1900 they are based on the death rates shown in Forrest E. Linder and Robert D. Grove, *Vital Statistics Rates in the United States, 1900–1940*, Bureau of the Census, 1943, pp. 186–187. For the middle 4-year period of each census interval from 1900 to 1930 (1903–1907, 1913–1917, and 1923–1927), these death rates for successive census dates were weighted equally. For the first 3-year period of each census interval from 1900 to 1930 the initial-year death rates were weighted by 7 and the terminal-year death rates by 3; and for the terminal 3-year period, the weights were reversed. For the first quinquennium of 1930–1940, the death rates for 1930 were weighted by 3, and those for 1940 by 1; and for the second quinquennium the weights were again reversed.

TABLE B–4

FOREIGN BORN WHITE POPULATION OF THE UNITED STATES, MALE AND FEMALE ESTIMATED FOR CENSUS DATES, 1880–1900

*(absolute figures in thousands)*

| *Item* | *1870–1880* | *1880–1890* | *1890–1900* |
|---|---|---|---|
| | *Males* | | |
| 1. Initial census figure | | | |
| a. Date | 6/1/70 | 6/1/80 | 6/1/90 |
| b. Number | 2,942.6 | 3,521.6 | 4,951.9 |
| 2. Estimated survivors | | | |
| a. Date | 6/1/80 | 6/1/90 | 6/1/1900 |
| b. Number | 2,385.1 | 2,784.8 | 3,933.1 |
| 3. Migration, intracensal period | | | |
| a. Date | 6/1/70–6/1/80 | 6/1/80–6/1/90 | 6/1/90–6/1/1900 |
| b. Arrivals | 1,858.0 | 3,415.7 | 2,577.3 |
| c. Departures | 527.7 | 756.2 | 1,317.7 |
| d. Net immigration (b − c) | 1,330.3 | 2,659.5 | 1,259.5 |
| 4. Migrant survivors | | | |
| a. Date | 6/1/80 | 6/1/90 | 6/1/1900 |
| b. Number | 1,255.2 | 2,521.2 | 1,211.1 |
| 5. Estimated survivors, end of census period | | | |
| a. Date | 6/1/80 | 6/1/90 | 6/1/1900 |
| b. Number (2b + 4b) | 3,640.3 | 5,306.0 | 5,144.2 |
| | *Females* [a] | | |
| 1b. Initial census figure | 2,551.1 | 3,038.0 | 4,170.0 |
| 2b. Estimated survivors | 2,110.5 | 2,440.7 | 3,346.2 |
| 3. Migration, intracensal period | | | |
| b. Arrivals | 1,141.5 | 2,120.1 | 1,546.4 |
| c. Departures | 202.8 | 287.0 | 273.7 |
| d. Net migration (b − c) | 938.8 | 1,833.1 | 1,272.6 |
| 4b. Migrant survivors | 887.8 | 1,741.9 | 1,215.3 |
| 5b. Estimated survivors, end of census period | 2,998.2 | 4,182.6 | 4,561.5 |

[a] Same dates as for males.

Because of rounding, detail will not necessarily add to total.

TABLE B-5

FOREIGN BORN WHITE POPULATION OF THE UNITED STATES, MALE AND FEMALE, ESTIMATED FOR CENSUS DATES, 1910–1940

*(absolute figures in thousands)*

| *Item* | *1900–1910* | *1910–1920* | *1920–1930* | *1930–1940* |
|---|---|---|---|---|
| | *Males* | | | |
| 1. Initial census figure | | | | |
| a. Date | 6/1/1900 | 4/15/10 | 1/1/20 | 4/1/30 |
| b. Number | 5,515.3 | 7,523.8 | 7,528.3 | 7,502.5 |
| 2. Estimated survivors | | | | |
| a. Date | 7/1/03 | 7/1/13 | 1/1/23 | 4/1/35 |
| b. Number | 5,160.6 | 7,103.6 | 7,133.1 | 6,780.4 |
| 3. Migration, first intracensal period | | | | |
| a. Date | 6/1/1900–7/1/05 | 4/15/10–1/1/15 | 1/1/20–1/1/25 | 4/1/30–4/1/40 |
| b. Arrivals | 2,926.2 | 3,553.2 | 1,535.3 | 250.0 |
| c. Departures | 1,450.1 | 2,118.0 | 598.7 | 297.1 |
| d. Net immigration (b − c) | 1,476.1 | 1,435.2 | 936.6 | −47.1 |
| 4. Adjusted survivors | | | | |
| a. Date | 7/1/03 | 7/1/13 | 1/1/23 | 4/1/35 |
| b. Number (2b + 3d) | 6,636.8 | 8,538.8 | 8,069.7 | 6,733.3 |
| 5. Estimated survivors | | | | |
| a. Date | 7/1/07 | 7/1/17 | 1/1/27 | |
| b. Number | 6,160.9 | 7,985.6 | 7,516.8 | |
| 6. Migration, second intracensal period | | | | |
| a. Date | 7/1/05–4/15/10 | 1/1/15–1/1/20 | 1/1/25–4/1/30 | |
| b. Arrivals | 3,812.7 | 1,034.9 | 842.2 | |
| c. Departures | 2,106.2 | 858.1 | 267.7 | |
| d. Net immigration (b − c) | 1,706.5 | 176.8 | 574.5 | |
| 7. Adjusted survivors | | | | |
| a. Date | 7/1/07 | 7/1/17 | 1/1/27 | |
| b. Number (5b + 6d) | 7,867.4 | 8,162.5 | 8,091.3 | |
| 8. Estimated survivors, end of census period | | | | |
| a. Date | 4/15/10 | 1/1/20 | 4/1/30 | 4/1/40 |
| b. Number | 7,504.2 | 7,819.3 | 7,622.4 | 6,006.9 |
| | *Females* [a] | | | |
| 1b. Initial census figure | 4,698.5 | 5,821.8 | 6,184.4 | 6,480.9 |
| 2b. Estimated survivors | 4,375.9 | 5,500.3 | 5,851.5 | 5,935.8 |
| 3. Migration, first intracensal period | | | | |
| b. Arrivals | 1,232.1 | 1,914.4 | 1,171.4 | 321.1 |
| c. Departures | 288.5 | 640.5 | 196.5 | 169.9 |
| d. Net immigration (b − c) | 943.5 | 1,273.9 | 974.9 | 151.2 |
| 4b. Adjusted survivors (2b + 3d) | 5,319.5 | 6,774.3 | 6,826.5 | 6,087.0 |
| 5b. Estimated survivors | 4,947.4 | 6,343.1 | 6,384.5 | |
| 6. Migration, second intracensal period | | | | |
| b. Arrivals | 1,609.5 | 547.9 | 712.8 | |
| c. Departures | 451.0 | 236.7 | 113.7 | |
| d. Net immigration (b − c) | 1,158.5 | 311.2 | 599.1 | |
| 7b. Adjusted survivors (5b + 6d) | 6,105.9 | 6,654.3 | 6,983.6 | |
| 8b. Estimated survivors, end of census period | 5,826.2 | 6,378.8 | 6,618.3 | 5,533.6 |

[a] Same dates as for males.

TABLE B–6

ESTIMATES OF THE FOREIGN BORN WHITE POPULATION OF THE UNITED STATES BY SEX, JULY 1, 1870–1939

(*millions*)

| *Year* | *Male* | *Female* | *Total* | *Year* | *Male* | *Female* | *Total*[1] |
|---|---|---|---|---|---|---|---|
| 1870 | 2.95 | 2.56 | 5.51 | 1905 | 6.41 | 5.13 | 11.54 |
| 1871 | 3.07 | 2.66 | 5.73 | 1906 | 6.72 | 5.31 | 12.03 |
| 1872 | 3.23 | 2.77 | 6.00 | 1907 | 7.10 | 5.50 | 12.54 |
| 1873 | 3.38 | 2.90 | 6.28 | 1908 | 6.98 | 5.61 | 12.59 |
| 1874 | 3.45 | 2.96 | 6.41 | 1909 | 7.19 | 5.71 | 12.90 |
| 1875 | 3.45 | 2.98 | 6.43 | 1910 | 7.61 | 5.85 | 13.46 |
| 1876 | 3.44 | 2.97 | 6.41 | 1911 | 7.72 | 5.97 | 13.69 |
| 1877 | 3.40 | 2.95 | 6.35 | 1912 | 7.73 | 6.08 | 13.81 |
| 1878 | 3.38 | 2.94 | 6.31 | 1913 | 8.06 | 6.28 | 14.33 |
| 1879 | 3.38 | 2.95 | 6.33 | 1914 | 8.32 | 6.48 | 14.80 |
| 1880 | 3.55 | 3.05 | 6.60 | 1915 | 8.11 | 6.45 | 14.60 |
| 1881 | 3.84 | 3.25 | 7.09 | 1916 | 7.98 | 6.41 | 14.39 |
| 1882 | 4.19 | 3.46 | 7.65 | 1917 | 7.93 | 6.37 | 14.31 |
| 1883 | 4.42 | 3.64 | 8.06 | 1918 | 7.76 | 6.27 | 14.03 |
| 1884 | 4.58 | 3.77 | 8.35 | 1919 | 7.58 | 6.18 | 13.76 |
| 1885 | 4.61 | 3.84 | 8.45 | 1920 | 7.46 | 6.19 | 13.65 |
| 1886 | 4.64 | 3.89 | 8.52 | 1921 | 7.58 | 6.36 | 13.94 |
| 1887 | 4.75 | 3.97 | 8.72 | 1922 | 7.44 | 6.34 | 13.78 |
| 1888 | 4.87 | 4.06 | 8.93 | 1923 | 7.55 | 6.41 | 13.96 |
| 1889 | 4.91 | 4.12 | 9.03 | 1924 | 7.77 | 6.55 | 14.31 |
| 1890 | 4.97 | 4.18 | 9.15 | 1925 | 7.71 | 6.53 | 14.24 |
| 1891 | 5.14 | 4.31 | 9.45 | 1926 | 7.67 | 6.52 | 14.19 |
| 1892 | 5.35 | 4.45 | 9.80 | 1927 | 7.66 | 6.51 | 14.17 |
| 1893 | 5.48 | 4.56 | 10.04 | 1928 | 7.62 | 6.51 | 14.12 |
| 1894 | 5.47 | 4.59 | 10.06 | 1929 | 7.56 | 6.50 | 14.05 |
| 1895 | 5.43 | 4.60 | 10.02 | 1930 | 7.49 | 6.48 | 13.96 |
| 1896 | 5.44 | 4.62 | 10.06 | 1931 | 7.34 | 6.39 | 13.73 |
| 1897 | 5.41 | 4.61 | 10.02 | 1932 | 7.15 | 6.25 | 13.40 |
| 1898 | 5.38 | 4.60 | 9.98 | 1933 | 6.96 | 6.11 | 13.07 |
| 1899 | 5.40 | 4.63 | 10.03 | 1934 | 6.80 | 5.99 | 12.80 |
| 1900 | 5.52 | 4.70 | 10.22 | 1935 | 6.65 | 5.88 | 12.53 |
| 1901 | 5.58 | 4.72 | 10.29 | 1936 | 6.50 | 5.76 | 12.26 |
| 1902 | 5.70 | 4.76 | 10.47 | 1937 | 6.36 | 5.66 | 12.02 |
| 1903 | 5.91 | 4.86 | 10.77 | 1938 | 6.23 | 5.57 | 11.79 |
| 1904 | 6.12 | 4.98 | 11.10 | 1939 | 6.10 | 5.48 | 11.58 |

Because of rounding, detail will not necessarily add to total.

For the intercensal yearly estimates migration data were available. But the mortality estimate for the decade as well as the discrepancy between the census enumeration and the estimated total had to be distributed annually.

For 1870–1900 annual mortality estimates are the sum of mortality of foreign born in the country at the beginning of the period and mortality of migrants during the period. Total mortality for each census period of the foreign born living in the country at the beginning of the period was centered at the midpoint of each period, and annual values were interpolated along a straight line.

Total mortality of the net migrants in each census period was distributed annually by the following procedure: (a) a percentage distribution of net annual migration, weighted by the number of years migrants were in this country (migrants of the first year of the period, weighted 10; of the second year, weighted 9; etc.), was applied to the total mortality for the period to yield the estimated total mortality during the period of migrants of each year; (b) these totals were divided by the number of years the migrants were in this country to yield average annual mortality for migrants of each year; (c) the average annual mortality estimates derived in step (b) were then added to yield the total annual mortality estimates for migrants (for the first year, this total was the mortality estimate for migrants of the first year; for the second year, it was the sum of the mortality estimates for migrants of the first and second years; etc.).

For 1900–1940, annual mortality was estimated by the following procedure: For each segment of the decade for which mortality had been estimated (e.g. June 1, 1900–July 1, 1903, July 1, 1903–July 1, 1907, and July 1, 1907–Apr. 15, 1910) the average annual mortality was calculated and centered at the midpoint of the given period. From the straight line connecting (or extending) these points the average annual mortality in each year was estimated (col. 3 of the following tabulation). The sum of these estimates differed only slightly from the estimate for the decade as a whole.

For the entire period, to adjust the annual estimates to the census enumeration, the difference between the log of the ratio of the estimated number to the census count at the end of the decade and the log of 1 (the ratio at the beginning of the decade) was interpolated annually along a straight line. The antilogs yielded the ratio by which the estimated number at the beginning of each fiscal year was adjusted to bring it into line with the census enumeration. The estimates for July 1 were then derived by simple straight-line interpolation. The procedure is illustrated in Table B–7.

TABLE B–7

CALCULATION OF ESTIMATES OF FOREIGN BORN WHITE MALES, JULY 1, 1900–1910

*(absolute figures in thousands)*

| *Period* | *Preliminary Estimate of Number at Beginning of Year* | *Net Migration during Year* | *Mortality during Year* | *Preliminary Estimate of Number at End of Year* | *Adjustment Factor for* | *Log of Col. 5, Lines 1 and 14 Interpolated along Straight Line* | *Final Estimate of Number at Beginning of Year* | *Change during Year in (7)* | $^1/_{12}$ *of* | *Estimated Number on July 1 of Given Year* |
|---|---|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| 1. June 1, 1900–1901 | 5,515.3 | 161.9 | 113.9 | 5,563.4 | 1.0000 | 0.00000 | 5,515.3 | 49.7 | 4.1 | 5,519.4 |
| 2. June 1, 1901–1902 | 5,563.4 | 233.4 | 115.0 | 5,681.8 | 1.0003 | 0.00014 | 5,565.0 | 120.2 | 10.0 | 5,575.0 |
| 3. Dec. 15, 1901 | | | 115.0 | | | | | | | |
| 4. June 1, 1902–1903 | 5,681.8 | 326.5 | 116.1 | 5,892.2 | 1.0006 | 0.00028 | 5,685.2 | 212.9 | 17.7 | 5,702.9 |
| 5. June 1, 1903–1904 | 5,892.2 | 314.3 | 117.2 | 6,089.2 | 1.0010 | 0.00042 | 5,898.1 | 199.1 | 16.6 | 5,914.7 |
| 6. June 1, 1904–1905 | 6,089.2 | 405.6 | 118.3 | 6,376.5 | 1.0013 | 0.00056 | 6,097.2 | 289.5 | 24.1 | 6,121.3 |
| 7. July 1, 1905 | | | 119.0 | | | | | | | |
| 8. June 1, 1905–1906 | 6,376.5 | 421.3 | 120.3 | 6,677.4 | 1.0016 | 0.00070 | 6,386.7 | 304.1 | 25.3 | 6,412.0 |
| 9. June 1, 1906–1907 | 6,677.4 | 476.6 | 123.6 | 7,030.4 | 1.0020 | 0.00085 | 6,690.8 | 355.8 | 29.6 | 6,720.4 |
| 10. June 1, 1907–1908 | 7,030.4 | 41.4 | 126.9 | 6,944.9 | 1.0023 | 0.00099 | 7,046.6 | −83.7 | −7.0 | 7,039.6 |
| 11. Nov. 23, 1908 | | | 130.1 | | | | | | | |
| 12. June 1, 1908–1909 | 6,944.9 | 323.2 | 130.2 | 7,137.9 | 1.0026 | 0.00113 | 6,962.9 | 195.7 | 16.3 | 6,979.2 |
| 13. June 1, 1909–Apr. 15, 1910 | 7,137.9 | 478.5 | 116.6 | 7,499.9 | 1.0029 | 0.00127 | 7,158.6 | 365.2 | 34.8[a] | 7,193.4 |
| 14. Apr. 15, 1910 | 7,499.9 | | | | 1.0032 | 0.00139 | 7,523.8 | | | |
| 15. Apr. 15, 1910, census | 7,523.8 | | | | | | | | | |

[a] Col. 8 divided by 10.5.

Col. 1:

Lines 1 and 15: census data.

Lines 2, 4–6, 8–10, and 12–14: From col. 4.

Col. 2:

From unpublished worksheets. Data are adjusted to fiscal year beginning June 1. For example, line 1 is the sum of 12,590 (number for the month of June) and 149,331 ($^{11}/_{12}$ of 162,906, the number for the fiscal year July 1, 1900–1901).

Col. 3:

Lines 3, 7, and 11: Calculated from Table B–5. For example, line 3 is the difference between the estimated survivors July 1, 1903, and the total number June 1, 1900, divided by the number of years covered ($3\,^1/_{12}$) and centered at the midpoint of the period (Dec. 15, 1901).

Lines 1, 2, and 4–6: Extrapolated from or interpolated between lines 3 and 7 along a straight line.

Lines 8–10 and 12–13: Extrapolated from or interpolated between lines 7 and 11 along a straight line.

Col. 5:

Line 1: Since the entry in col. 1 is from the census, it requires no adjustment.

Lines 2–13: Antilogs of col. 6.

Line 14: The ratio of line 15 to line 14 in col. 1.

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|---|---|---|
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