

UNITED STATES DEPARTMENT OF LABOR  
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BUREAU OF LABOR STATISTICS  
A. F. Hinrichs, *Acting Commissioner*

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# Postwar Outlook for Physicians



*Bulletin No. 863*

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## Letter of Transmittal

UNITED STATES DEPARTMENT OF LABOR,  
BUREAU OF LABOR STATISTICS,  
*Washington, D. C., February 12, 1946.*

**The SECRETARY OF LABOR:**

I have the honor to transmit herewith a report on the employment outlook for physicians. This is one of a series of occupational studies prepared in the Bureau's Occupational Outlook Division for use in vocational counseling of veterans, young people in schools, and others considering the choice of an occupation. The present study was prepared by Judith Grunfel. The Bureau wishes to acknowledge the helpful comments received in connection with this study from Dr. Olin West, Secretary and General Manager of the American Medical Association, Dr. Paul C. Barton, Executive Director of the Procurement and Assignment Service, and Dr. Antonio Ciocco, Chief of the Statistical Methods Section, Division of Public Health Methods, U. S. Public Health Service.

A. F. HINRICHS,  
*Acting Commissioner.*

Hon. L. B. SCHWELLENBACH,  
*Secretary of Labor.*

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## Postwar Outlook for Physicians

### *Summary*

IN VIEW of a prospective demand for medical services well in excess of the prewar demand, and the wartime attrition of medical manpower, the postwar outlook for physicians appears promising nationally, and particularly in the numerous States and rural communities in which the numbers of physicians have fallen considerably short of the need for medical services and the increase in population.

The long-term rate of increase in the medical labor force has not kept pace with the increase in population. From 1910 to 1940, there was a net addition of 13.4 percent to the medical labor force, as compared with a 43.2-percent increase in population. The decrease in numbers of physicians relative to population is somewhat mitigated by improvements in means of transportation—of particular importance in rural areas. The relatively slow growth of the number of physicians in the 3 decades preceding the war was a reflection of the fact that a large proportion of new entrants into the profession each year merely replaced those dying or retiring. The replacement needs have been affected by the age composition of the medical labor force. The number of physicians 65 years and over rose from 7.9 percent of the total in 1920 to 10.1 percent in 1930 and to 11.5 percent in 1940.

Over half of all physicians resided in 8 States in 1940. There were 21 States in which, although the population increased between 1920 and 1940, the number of physicians actually decreased. In 25 States the number of physicians increased, but in all except 8 the population increased faster than the number of physicians. In the remaining 2 States the relative decrease in physicians exceeded the decrease in population. There was wide disparity in the population-physician ratio in 1940, ranging from 511 persons per physician in New York State to 1,635 persons in Mississippi.

Owing to a comparatively smaller increment of new entrants, the States with a greater number of persons per physician likewise have a greater proportion of older physicians, whose service capacity is lower.

The major factors which affected the location of physicians before the war were availability of purchasing power for medical care as reflected in income levels, the general trend toward urbanization, the availability of modern hospitals, and the proximity of medical schools. The war has accentuated the wide variations in the population-physician ratios among the various States.

The postwar demand for physicians is bound to exceed the prewar demand, because of the increase in population, programs for medical care of veterans, the probability of larger armed forces, and the likelihood that there will be more adequate medical care for the general population.

The number of physicians will not increase enough within a few years after the war sufficiently to meet the increased needs for their services. Deaths of some older physicians, the retirement or reduced service capacity of others in the older groups, and mortality of younger physicians serving with the armed forces will have offset at least two-thirds of the gains represented by the new physicians trained in the decade—even though training was accelerated during the war.

There will be shortages of physicians in some of the specialized fields particularly. The postwar demand for psychiatrists may considerably exceed the available supply, owing to the mental disturbances induced by modern warfare. Shortages of psychiatrists for rehabilitation of veterans already discharged are reported even in the States with large numbers of physicians. A demand for more physicians with training in obstetrics and pediatrics may arise from the extension of maternity and child-care facilities. The need for specialists in industrial medicine is also suggested.

Geographically, postwar needs for physicians appear to be greatest in those States in which the actual number of physicians declined during the two decades preceding the war, particularly because of the high average age of the physicians remaining in those States. Surveys of incomes of independent practitioners showed that physicians ranked high among the major professions and that their average net income almost doubled from 1939 to 1943. While about one-third of active physicians had been withdrawn for the armed forces in 1943, the total gross income of the remaining civilian physicians rose about 48 percent from 1939 to 1943.<sup>1</sup>

### *Prewar Trends*

#### GROWTH IN NUMBER OF PHYSICIANS RELATIVE TO POPULATION

The medical profession is the fourth largest among professional occupations in the United States; only teaching, engineering, and law claimed more workers in 1940. The 1940 American Medical Directory listed 175,163 physicians, including nearly 10,000 designated as "retired" and "not in practice."<sup>2</sup> This indicates that slightly over 165,163 physicians were active in 1940, which approximates the census figure of 165,629 physicians and surgeons in 1940.

During the three decades before the war the number of physicians had increased more slowly than total population. In 1910 there were 151,132 gainful workers reported as physicians and surgeons, but this included osteopaths—a group which was not shown separately. If it may be assumed that the number of osteopaths in 1910 was no greater than in 1920 (5,030), the number of physicians in 1910 would have been about 146,000. The increase between 1910 and 1940 in the number of physicians was therefore about 13.4 percent, as compared with a 43.2-percent increase in population over the same period.

<sup>1</sup> For discussion on earnings of physicians, see p. 19.

<sup>2</sup> Public Health Reports (Washington), March 3, 1944 (p. 286).

Trends in the number of women in the profession may be indicated in part by the fact that the 7,219 women physicians in 1920 constituted 4.8 percent of the total; by 1940 their number had increased to 7,708, which was 4.6 percent of the total number of physicians.<sup>3</sup>

#### RISING PROFESSIONAL STANDARDS AND TRENDS IN SUPPLY OF GRADUATES

A general trend toward raising the low standards of professional training and licensure, which prevailed at the beginning of the century, became most apparent in the medical profession after the American Medical Association established the Council on Medical Education and Hospitals in 1904. In its first classification of medical schools in 1907 the latter reported numerous substandard schools.

The Carnegie report on medical education, published in 1910, noted that many schools required "little or nothing more than the rudiments or the recollection of a common-school education," and concluded that a 2-year college training was the minimum basis upon which modern medicine could be successfully taught.<sup>4</sup> From

TABLE 1.—Number of Accredited Medical Schools, Students, and Graduates in the United States, 1905-45<sup>1</sup>

| Year                       | Number of schools | Number of students <sup>2</sup> |        | Number of graduates |        |                  |
|----------------------------|-------------------|---------------------------------|--------|---------------------|--------|------------------|
|                            |                   | Total                           | Women  | Total               | Women  |                  |
|                            |                   |                                 |        |                     | Number | Percent of total |
| 1905.....                  | 160               | 26, 147                         | 1, 073 | 5, 606              | 219    | 4. 0             |
| 1910.....                  | 131               | 21, 526                         | 907    | 4, 440              | 116    | 2. 6             |
| 1915.....                  | 96                | 14, 891                         | 592    | 3, 536              | 92     | 2. 6             |
| 1920.....                  | 85                | 13, 798                         | 818    | 3, 047              | 122    | 4. 0             |
| 1921.....                  | 83                | 14, 466                         | 879    | 3, 186              | 151    | 4. 7             |
| 1922.....                  | 81                | 15, 635                         | 989    | 2, 529              | 154    | 6. 1             |
| 1923.....                  | 80                | 16, 960                         | 1, 030 | 3, 120              | 214    | 6. 9             |
| 1924.....                  | 79                | 17, 728                         | 954    | 3, 552              | 214    | 4. 3             |
| 1925.....                  | 80                | 18, 200                         | 910    | 3, 974              | 204    | 5. 1             |
| 1926.....                  | 79                | 18, 840                         | 935    | 3, 982              | 212    | 5. 4             |
| 1927.....                  | 80                | 19, 662                         | 964    | 4, 035              | 189    | 4. 7             |
| 1928.....                  | 80                | 20, 545                         | 929    | 4, 262              | 207    | 4. 9             |
| 1929.....                  | 76                | 20, 878                         | 925    | 4, 446              | 214    | 4. 8             |
| 1930.....                  | 76                | 21, 587                         | 955    | 4, 565              | 204    | 4. 5             |
| 1931.....                  | 76                | 21, 982                         | 990    | 4, 735              | 217    | 4. 6             |
| 1932.....                  | 76                | 22, 135                         | 955    | 4, 936              | 208    | 4. 2             |
| 1933.....                  | 77                | 22, 466                         | 1, 056 | 4, 895              | 214    | 4. 4             |
| 1934.....                  | 77                | 22, 799                         | 1, 020 | 5, 035              | 211    | 4. 2             |
| 1935.....                  | 77                | 22, 888                         | 1, 077 | 5, 101              | 207    | 4. 1             |
| 1936.....                  | 77                | 22, 564                         | 1, 133 | 5, 183              | 246    | 4. 7             |
| 1937.....                  | 77                | 22, 095                         | 1, 113 | 5, 377              | 238    | 4. 4             |
| 1938.....                  | 77                | 21, 537                         | 1, 161 | 5, 194              | 237    | 4. 6             |
| 1939.....                  | 77                | 21, 302                         | 1, 144 | 5, 089              | 260    | 5. 1             |
| 1940.....                  | 77                | 21, 271                         | 1, 145 | 5, 097              | 253    | 5. 0             |
| 1941.....                  | 77                | 21, 379                         | 1, 146 | 5, 275              | 280    | 5. 3             |
| 1942.....                  | 77                | 22, 031                         | 1, 164 | 5, 163              | 279    | 5. 4             |
| 1943.....                  | 76                | 22, 631                         | 1, 150 | 5, 223              | 241    | 4. 6             |
| 1944.....                  | 77                | 23, 529                         | 1, 176 | 5, 134              | 239    | 4. 7             |
| 1944 (second session)..... | 77                | 24, 666                         | 1, 141 | 5, 169              | 252    | 4. 9             |
| 1945 (to June 30).....     | 77                | 24, 028                         | 1, 352 | 5, 136              | 262    | 5. 1             |

<sup>1</sup> Data are from Journal of the American Medical Association (Chicago), August 13, 1921, August 19, 1922, August 18, 1923, August 16, 1920, August 19, 1944, and September 1, 1945. Figures relate to schools approved by AMA Council on Medical Education and Hospitals.

<sup>2</sup> Includes figures for schools of the basic medical sciences.

<sup>3</sup> Refers to the academic year between July 1, 1943, and June 30, 1944.

<sup>4</sup> A full discussion of the outlook for women physicians is presented in U. S. Women's Bureau Bulletin 203, No. 7: The Outlook for Women in Occupations in the Medical Services: Women Physicians.

<sup>5</sup> Carnegie Foundation for the Advancement of Teaching, Bulletin No. 4: Medical Education in the United States and Canada, by Abraham Flexner (New York, 1910), p. 12.

1918 accredited medical schools required premedical training of at least 2 years of college work, including physics, chemistry, and biology.

At the same time that standards were rising, the number of schools and enrollments therein were declining. As table 1 indicates, graduations reached their lowest point in 1922, rising gradually thereafter to a peak in 1937. However, the annual average between 1930 and 1939 (5,011) was lower than the number graduated in 1905.

Opinion varies in the medical profession with respect to the number of physicians to be trained. The Commission on Medical Education, established in 1925 by the Association of American Medical Colleges for studying "the educational principles involved in the training and licensing of physicians," stated in its final report (1932):<sup>5</sup>

There are in the United States approximately 156,440 licensed physicians, or 1 to 780 of the population. In European countries the ratio is in the neighborhood of 1 to 1,500. Assuming that 1 to 1,200 would be a correct ratio for this country, we now have an excess of 25,000 doctors. The recognized medical schools of the United States are graduating about 5,000 a year. Graduates from unapproved schools, together with those from Canada and Europe, bring the annual increment to the medical profession up to 5,400. At this rate the number of physicians will increase more rapidly than the general population, so that by 1950 the ratio of physicians to population will be 1 to 750. . . . Owing to the excessive number of applicants, the medical schools are in a position to make a selection of the more desirable students, which should be based on character, personality, intelligence, ability, scholastic achievements.

The former director of that commission, Dr. Willard C. Rappelye, in hearings before a Senate committee in 1944, expressed the opinion that the number of physicians available "is entirely adequate for the medical needs of peacetime and that there is no justification for any substantial increase in the output of the medical schools."<sup>6</sup>

Another point of view was expressed by an editorial in the *New England Journal of Medicine* (published by the Massachusetts Medical Society), March 9, 1939, as follows:

It is sometimes claimed that the medical profession is overcrowded. The proponent of this claim is usually a member of the medical profession and the ground for the complaint is that there are many doctors, far too many, who are not able to make a comfortable living. If one employs in other fields the line of reasoning which has led to this conclusion, one may well declare that the United States, not to speak of the earth, is overcrowded. \* \* \*

It has been said that medical schools should decrease their enrollments because there are too many doctors. If they ought to become smaller, it is not for this reason. The size of a medical school should be determined primarily by the number of students who can be educated there at the highest possible level of quality of education. This, one must remember, is not a fixed level.

From bare statistical comparisons with other countries one might conclude, as has been done, that the United States has too many doctors per thousand of population, and also by the same token, too many telephones, too many automobiles, too many bathtubs. It is a fact that no one knows how many physicians there should be in the United States and any arbitrary limitations might prove to be a serious mistake. Perhaps if there were better physicians, even more would be needed to care adequately for the population. Our health is far from perfect.

In 1935, the AMA Council on Medical Education issued "a general warning against the admission of larger classes than can properly be accommodated or than can reasonably be expected to satisfy scholastic standards."<sup>7</sup>

<sup>5</sup> *Journal of American Medical Association*, December 24, 1932 (pp. 2206-2208).

<sup>6</sup> *Wartime Health and Education*, Hearings before Subcommittee of Senate Committee on Education and Labor (77th Cong., 2d sess.), on S. Res. 74, part 6 (p. 2135), Washington, 1944.

<sup>7</sup> *Journal of American Medical Association*, August 31, 1935 (p. 686).

Enrollments of freshmen decreased from 6,457 in 1933-34 to 5,791 in 1937-38.<sup>8</sup> In reference to the decrease in total enrollments from 22,888 medical students in 1935 to 21,587 in 1938, it was pointed out that "classes in subsequent years in many cases will be further reduced."<sup>9</sup>

The trend toward raising premedical training requirements may be illustrated by the fact that of the 77 schools accredited by the Council on Medical Education and Hospitals, 45 in 1938-39, and 56 in 1941 required 3 years of college, 6 required a baccalaureate degree prior to admission to medical school, 5 admitted students with 3 years of college work if the baccalaureate degree was conferred in absentia at the end of the first year of medicine, one required 4 years, and only 9 schools accepted in 1941 the minimum of 2 years of college training. Actually, of the 5,134 medical graduates between June 1943 and 1944, 4,131, or 80 percent, held a baccalaureate degree.<sup>10</sup> Since there were, on the average, two applicants for every position in a first-year medical class, and in some schools considerably more than this number there was a "pressure on all students who want 'to play safe' to take more than the minimum premedical requirements whether they are interested in science or not," according to James B. Conant, President of Harvard University.<sup>11</sup>

The rising professional standards are also reflected in the licensure requirements. Most States require graduation from a reputable medical school, the passing of a licensing examination before a State board, and annual registration in the community of practice. In addition, a hospital internship is required in 21 States, the District of Columbia, Alaska, Hawaii, and Puerto Rico.<sup>12</sup> Those who choose to specialize in some branch of medicine—an increasing proportion—must also undertake extended postgraduate work. As early as 1933, the American Medical Association passed a resolution favoring the creation of examining boards in medical specialties. By 1941 sixteen boards for the certification of specialists were reported.

The high standards established by the examining boards have contributed greatly to the admirable achievements of American physicians and surgeons. On the other hand, Dr. R. L. Wilbur, addressing the Thirty-Fourth Annual Congress on Medical Education and Licensure in February 1938, stated:

The greatest danger, both to the public and to the profession, lies in the tendency of some of the boards [for examination of specialists] to conceive of their function in terms of a medieval guild, each rigidly to restrict the activities of its own members and to seek first to promote the welfare, financial and professional, of its own group. The shortsightedness of such a policy is, of course, apparent. Unless these boards are broadminded enough to place the public interest ahead of their own immediate apparent profit, they will serve no useful purpose and must soon be superseded by some other agency.<sup>13</sup>

Altogether, since the beginning of the century, premedical and medical training have been lengthened from about 3 or 4 years to some 8 or 9 years (costing the student at least \$6,000), including an internship year. Notwithstanding such stringent requirements, some 12,000 persons applied annually for admission to approved medical schools during the thirties, and almost half of them were rejected.

<sup>8</sup> *Journal of American Medical Association*, August 26, 1939 (p. 770).

<sup>9</sup> *Idem*, April 29, 1939 (p. 1717).

<sup>10</sup> *Journal of American Medical Association*, August 19, 1944 (p. 1126).

<sup>11</sup> *Idem*, April 28, 1939 (p. 1652).

<sup>12</sup> U. S. Office of Education, *Medical Guidance Leaflet No. 6*, 1941 (p. 3).

<sup>13</sup> *Journal of American Medical Association*, April 23, 1938 (p. 1328).

Some of the rejected applicants went abroad to obtain medical education; in the decade of the thirties, on the average 290 graduates of European schools (including American citizens and immigrants from their native countries) were admitted annually to medical practice in the United States.

Medical schools not approved by the American Medical Association added 173 licensed physicians annually on the average during the five-year period from 1934 to 1938. During the same period 545 graduates of osteopathic schools were licensed in a few States which admit those graduates to the practice of medicine or surgery.<sup>14</sup> During the same decade the annual supply of licensed new entrants from various sources averaged as follows:

|  | <i>Graduates</i> |
|--|------------------|
| From all schools.....  | 5, 584           |
| From approved schools.....   | 5, 011           |
| From unapproved schools.....   | 173              |
| Graduates from osteopathic schools (licensed as physicians<br>and surgeons)..... | 110              |
| Graduates from European schools.....   | 290              |

Thus about 90 percent of physicians licensed during the thirties were graduates of medical schools approved by the American Medical Association.

As a result of the developments in training and licensing of physicians, the number of new entrants to the profession grew smaller in relation to the total size of the profession; the number of graduates per 1,000 registered physicians dropped from 46 in 1906 to 21 in 1923, rose to 30 during the thirties, and amounted to 28 in 1941-42.

In view of these trends, and the intense competition for entrance to medical schools, persons considering medical training should inform themselves not only as to the minimum premedical requirements of the schools to which they apply, but also as to the viewpoint of the schools on the desirable optimum of premedical preparation.

#### EFFECT OF TRENDS IN SUPPLY OF NEW PHYSICIANS UPON GROWTH OF MEDICAL PROFESSION

The long-term trend in graduations relative to available numbers of physicians has affected the age composition of the practicing physicians. This in turn has affected the service capacity of the profession and the rate of deaths and retirements from practice.

Owing to the absolutely and relatively smaller supply of potential entrants to the profession since 1905, as well as to lengthening of the average life span, the number of physicians 65 years of age and over, as shown by census data, constituted 7.9 percent of the total in 1920, and 10.1 percent in 1930. In 1940 the 18,966 physicians of this age group were 11.5 percent of the total. This indicates that nearly 12 out of every 100 physicians and surgeons belonged to the age group referred to usually as the age of retirement or partial activity.

This long-range trend in the age distribution of physicians affected the service capacity of the available medical labor force at the outbreak of war. The median age of all male physicians was 44.1 years in 1940—the highest among professional men, except for veterinarians and clergymen. As “the average patient load decreases regularly with advanced age above 45 years,”<sup>15</sup> half of the physicians reported

<sup>14</sup> Journal of American Medical Association, April 29, 1939 (p. 1717).

<sup>15</sup> Public Health Reports, September 3, 1943 (p. 1344).

as actively employed in 1940 were therefore approaching the point beyond which the patient load would be expected to decrease.

The replacement needs caused by death of physicians have become a major factor affecting medical manpower.

On the average, about 3,800 physicians were lost to the profession each year from 1923 to 1938, death being the major factor.<sup>16</sup> During this 15-year period new entrants to the profession totaled 81,000,<sup>17</sup> or an average of 5,400 annually, indicating that 70 percent of new entrants were needed to replace losses to the profession caused by death and retirement. The net addition to the profession averaged, therefore, 30 percent of all new entrants between 1923 and 1938.

Toward the end of the thirties replacement needs caused by death were increasing. Both for 1936 and for 1938 it was reported that "the number removed by death annually approximates 4,000."<sup>18</sup> This indicates that over 70 percent of the new entrants prior to the outbreak of the war were necessary to make up these losses.

#### GEOGRAPHICAL DISTRIBUTION OF PHYSICIANS

There are wide disparities among the various parts of the country in the numbers of physicians relative to population, not only as between States, but also as between rural and urban areas.

The U. S. Public Health Service study covering the period 1923-38 points out that—

In States with expanding physician totals, the losses from the profession during the period represented 34 per 100 physicians in 1923; there was no significant change through migration, and 70 new registrants were located in these States in 1938 for every 100 physicians residing therein in 1923. The median age of physicians in these States was 43 years. At the other extreme, States with net decreases in physicians during the interval lost 38 from the profession and in addition realized a net loss of 3 physicians through migration, but obtained only 31 new registrants for every 100 physicians in 1923. In these States the median age of physicians in 1938 was 53 years. These large differences in the recruitment of young physicians and the resulting contrast in age distributions among the . . . States suggest that unless methods are devised and employed to promote an increased acquisition of young physicians in States heretofore showing net losses, the disparities may become more pronounced in years to come.<sup>19</sup>

The considerably higher median age in States in which losses to the profession exceeded replacements indicates a considerably higher ratio of older physicians with lower service capacity in the numerous States affected by the cumulative deficit of replacements. This cumulative deficit of younger physicians should be kept in mind in considering the population-physician ratios in the States in which numbers of physicians were decreasing.

Census data indicate that in 21 States with increasing population the number of physicians decreased during the two decades from 1920 to 1940 (table 2). In these 21 States, in which the trend in the number of physicians ran contrary to population trends, the population totaled more than 37 million in 1940, or over 28 percent of the population of the United States.

In 25 States and the District of Columbia, the number of physicians increased between 1920 and 1940, but only in 8 States did the rate of increase in the number of physicians exceed the rate of growth of the

<sup>16</sup> Public Health Reports, March 3, 1944 (p. 282).

<sup>17</sup> *Idem*, November 20, 1942 (p. 1753).

<sup>18</sup> *Journal of American Medical Association*, April 29, 1939 (p. 1707).

<sup>19</sup> Public Health Reports, November 20, 1942 (p. 1757).

population. In the remaining 2 States—Montana and North Dakota—the relative decrease in physicians exceeded that in population. Thus in 39 of the 48 States and in the District of Columbia, the number of people per physician increased between 1920 and 1940. In one State it remained unchanged, and in 8 States it decreased.

TABLE 2.—State Populations in Relation to Numbers of Physicians, 1920-40<sup>1</sup>

| State  | Percent of increase in population, 1920-40 | Percent of increase or decrease in number of physicians, 1920-40 | Population per physician |       |
|--|--|--|--------------------------|-------|
|  |  |  | 1920                     | 1940  |
| <b>Increase in population, decrease in physicians:</b> |  |  |                          |       |
| Alabama.....   | 20.6                                       | -17.9  | 1,036                    | 1,523 |
| Arkansas.....  | 11.3                                       | -28.9  | 743                      | 1,161 |
| Colorado.....  | 19.5                                       | -7.3   | 530                      | 684   |
| Georgia.....   | 7.9  | -22.4  | 879                      | 1,222 |
| Idaho.....   | 21.5                                       | -14.0  | 900                      | 1,271 |
| Indiana.....   | 17.0                                       | -9.3   | 685                      | 883   |
| Iowa.....  | 5.6  | -17.9  | 674                      | 867   |
| Kansas.....  | 1.8  | -18.7  | 696                      | 871   |
| Kentucky.....  | 17.8                                       | -17.1  | 785                      | 1,115 |
| Maine.....   | 10.3                                       | -19.2  | 696                      | 951   |
| Mississippi.....                                       | 22.0                                       | -19.4  | 1,081                    | 1,635 |
| Missouri.....  | 11.2                                       | -17.4  | 533                      | 758   |
| Nebraska.....  | 1.5  | -18.8  | 687                      | 834   |
| Nevada.....  | 42.4                                       | -5.9   | 506                      | 766   |
| New Hampshire.....                                     | 10.9                                       | -11.7  | 698                      | 876   |
| Oklahoma.....  | 15.2                                       | -15.3  | 767                      | 1,043 |
| South Carolina.....                                    | 12.8                                       | -7.1   | 1,239                    | 1,505 |
| South Dakota.....                                      | 1.0  | -22.5  | 979                      | 1,276 |
| Tennessee.....   | 24.7                                       | -15.4  | 723                      | 1,066 |
| Vermont.....   | 1.9  | -18.4  | 623                      | 778   |
| Wyoming.....   | 29.0                                       | -12.7  | 748                      | 1,105 |
| <b>Increase in population, increase in physicians:</b> |  |  |                          |       |
| Arizona.....   | 49.4                                       | +47.2  | 877                      | 890   |
| California.....  | 1,01.6                                     | +60.9  | 803                      | 630   |
| Connecticut.....                                       | 23.8                                       | +44.0  | 803                      | 685   |
| Delaware.....  | 19.5                                       | +20.7  | 811                      | 803   |
| District of Columbia.....                              | 51.5                                       | +41.6  | 357                      | 382   |
| Florida.....   | 95.9                                       | +43.4  | 677                      | 925   |
| Illinois.....  | 21.8                                       | +7.6   | 604                      | 683   |
| Louisiana.....   | 31.4                                       | +20.6  | 924                      | 1,006 |
| Maryland.....  | 25.6                                       | +25.1  | 616                      | 619   |
| Massachusetts.....                                     | 12.1                                       | +18.2  | 642                      | 608   |
| Michigan.....  | 43.3                                       | +37.7  | 821                      | 855   |
| Minnesota.....   | 17.0                                       | +20.0  | 840                      | 819   |
| New Jersey.....  | 31.8                                       | +68.8  | 901                      | 704   |
| New Mexico.....  | 47.6                                       | +1.2   | 854                      | 1,245 |
| New York.....  | 29.8                                       | +55.9  | 614                      | 511   |
| North Carolina.....                                    | 39.6                                       | +20.8  | 1,197                    | 1,383 |
| Ohio.....  | 19.9                                       | +8   | 647                      | 770   |
| Oregon.....  | 39.1                                       | +12.4  | 631                      | 781   |
| Pennsylvania.....                                      | 13.5                                       | +13.6  | 765                      | 765   |
| Rhode Island.....                                      | 18.0                                       | +25.3  | 817                      | 770   |
| Texas.....   | 37.6                                       | +2.7   | 765                      | 1,025 |
| Utah.....  | 22.5                                       | +7.8   | 876                      | 995   |
| Virginia.....  | 16.0                                       | +9.6   | 962                      | 1,018 |
| Washington.....  | 28.0                                       | +5.4   | 683                      | 830   |
| West Virginia.....                                     | 29.9                                       | +5   | 850                      | 1,009 |
| Wisconsin.....   | 19.2                                       | +22.5  | 947                      | 922   |
| United States.....                                     | 24.6                                       | +14.2  | 729                      | 796   |

<sup>1</sup> Source: Census of Population 1920, Occupations; Census of Population 1940, United States Summary; Vol. III, The Labor Force, Parts 3, 4, 5, table 13. Percentages have been computed.

The population-physician ratio ranged from 511 persons per physician in the State of New York in 1940 to 1,635 persons in Mississippi.

#### FACTORS AFFECTING DISTRIBUTION OF PHYSICIANS

The relationship between per capita income payments and population-physician ratios in various States in 1940 (table 3) indicates that

a major factor affecting distribution of physicians is purchasing power as reflected in income levels. In the four States with the lowest per capita income—below \$300—there were, on the average, 1,456 persons per physician, as compared with an average of 683 persons in the six States with a per capita income of over \$800.

TABLE 3.—Per Capita Income and Population-Physician Ratios, by States, in 1940

| State                     | Per capita income payments <sup>1</sup> | Population per physician <sup>2</sup> | State               | Per capita income payments <sup>1</sup> | Population per physician <sup>2</sup> |
|---------------------------|---|---------------------------------------|---------------------|---|---------------------------------------|
| District of Columbia..... | \$1,080                                 | 382                                   | Missouri.....       | \$505                                   | 758                                   |
| Delaware.....             | 896                                     | 803                                   | Iowa.....           | 485                                     | 867                                   |
| New York.....             | 863                                     | 511                                   | Utah.....           | 480                                     | 995                                   |
| Nevada.....               | 836                                     | 766                                   | Arizona.....        | 473                                     | 890                                   |
| Connecticut.....          | 827                                     | 688                                   | Florida.....        | 471                                     | 925                                   |
| California.....           | 805                                     | 630                                   | Virginia.....       | 450                                     | 1,018                                 |
| New Jersey.....           | 803                                     | 704                                   | Idaho.....          | 440                                     | 1,271                                 |
| Massachusetts.....        | 766                                     | 608                                   | Nebraska.....       | 433                                     | 834                                   |
| Illinois.....             | 726                                     | 683                                   | Kansas.....         | 422                                     | 871                                   |
| Rhode Island.....         | 715                                     | 770                                   | Texas.....          | 413                                     | 1,025                                 |
| Maryland.....             | 712                                     | 619                                   | West Virginia.....  | 398                                     | 1,099                                 |
| Michigan.....             | 649                                     | 855                                   | South Dakota.....   | 376                                     | 1,276                                 |
| Ohio.....                 | 643                                     | 770                                   | North Dakota.....   | 368                                     | 1,256                                 |
| Washington.....           | 632                                     | 830                                   | Louisiana.....      | 357                                     | 1,006                                 |
| Pennsylvania.....         | 628                                     | 765                                   | Oklahoma.....       | 356                                     | 1,043                                 |
| Wyoming.....              | 605                                     | 1,105                                 | New Mexico.....     | 356                                     | 1,245                                 |
| Oregon.....               | 579                                     | 781                                   | Tennessee.....      | 317                                     | 1,066                                 |
| Montana.....              | 574                                     | 1,058                                 | North Carolina..... | 316                                     | 1,383                                 |
| New Hampshire.....        | 546                                     | 876                                   | Georgia.....        | 315                                     | 1,222                                 |
| Indiana.....              | 541                                     | 883                                   | Kentucky.....       | 308                                     | 1,115                                 |
| Colorado.....             | 524                                     | 684                                   | South Carolina..... | 286                                     | 1,505                                 |
| Vermont.....              | 521                                     | 778                                   | Alabama.....        | 268                                     | 1,523                                 |
| Wisconsin.....            | 516                                     | 922                                   | Arkansas.....       | 252                                     | 1,161                                 |
| Minnesota.....            | 509                                     | 819                                   | Mississippi.....    | 202                                     | 1,635                                 |
| Maine.....                | 509                                     | 951                                   |                     |   |                                       |

<sup>1</sup> Survey of Current Business (U. S. Bureau of Foreign and Domestic Commerce, Washington), August 1944 (p. 14). Per capita income payments are derived by division of total income payments by total population excluding armed forces and civilians outside continental United States. In five States however, income was transferred from the State of the recipients' employment to the State of residence before computation of per capita income. These States are New York, New Jersey, District of Columbia, Maryland, and Virginia.

<sup>2</sup> Census of Population, 1940.

Population-physician ratios are also more favorable in predominantly urban States than in predominantly rural States with similar per capita income payments. Studies have revealed "a striking increase in the number of physicians practicing in urban centers and a corresponding decline in the number engaged in rural practice since the beginning of this century."<sup>20</sup> The physician-population ratio in the most-urban States was 1½ times that of the most-rural States in 1923 and twice as great in 1938.<sup>20</sup>

Availability of hospital facilities and proximity of medical schools likewise affect the geographical distribution of physicians. The 18 States in which there were no approved 4-year medical schools up to July 1945 are, with some exceptions, at a disadvantage as compared with 5 States which have 26 approved schools with 42 percent of the entire student enrollment in this country and 44 percent of the graduates between June 1944 and June 1945.<sup>21</sup> Wartime experience with shortages of physicians has aroused an interest in some of the States without medical schools in the establishment of such schools. Medical training facilities are also being extended by the conversion

<sup>20</sup> Public Health Reports, September 11, 1942 (p. 1363).

<sup>21</sup> Journal of American Medical Association, September 1, 1945 (p. 51).

of a few schools of basic medical sciences (giving the first 2 years of medical-school training) into full 4-year schools.

The extent to which availability of hospitals affects location of physicians is illustrated by the fact that in 1938 there were only 67 physicians per 100,000 population in counties without general or allied special hospitals as contrasted with 157 for counties in which there were 250 hospital beds or more.<sup>22</sup> Construction of modern hospital facilities in the numerous areas now lacking them may offer attraction for considerably more physicians, and persons planning to enter the profession should bear this in mind.

### *Wartime Developments Affecting Postwar Outlook*

#### WITHDRAWALS OF PHYSICIANS FOR ARMED FORCES

The war required the placement of 12 million healthy men—that part of the population normally needing the least medical care—in the armed forces, where the need for medical care is greater than that of the general population. To serve these men—less than 10 percent of the population—40 percent of the Nation's active practicing physicians were withdrawn from civilian practice. The other 60 percent—the older physicians and those less physically fit—were left to take care of 90 percent of the population.

The Army needed 7.2 doctors per thousand servicemen and has primarily sought those under 45 years of age. At the request of the medical profession recruitment was to proceed on a voluntary basis and the Procurement and Assignment Service was organized for this purpose, with representation of the civilian medical profession.

Although there were 176,000 physicians on the roster of the American Medical Association before the war, only about 130,000 were available for direct medical care for the Armed Forces and for civilians, after deduction for those not directly engaged in care of patients and after adjustment for those 65 years of age and over, who (according to Dr. Frank H. Lahey, Chairman of the Procurement and Assignment Service) were considered as 33 percent efficient.<sup>23</sup>

About 60,000 physicians were in the armed forces and the Veterans Administration in November 1944. The withdrawal of physicians differed widely among the States, despite the attempts of the Procurement and Assignment Service to make it as equitable as possible. The prewar ratio of population to effective practitioners was 1,022 to 1. A wartime general ratio of 1,500 population per effective physician was adopted by the Procurement and Assignment Service as "the minimum below which it would be unsafe to reduce civilian medical service."<sup>24</sup> Recruiting quotas were established for the States in proportion to the prewar number of active practitioners weighted by the ratio of physicians of this category to the State population.

Nevertheless, some States lost more than their quotas of physicians to the armed forces, while others lost less. Among the States in the former group, by the end of September 1942, were 16 of the 21 States in which numbers of physicians had decreased during the previous two

<sup>22</sup> Public Health Reports, September 11, 1942 (p. 1951).

<sup>23</sup> Investigation of Manpower Resources. Hearings before Subcommittee of Senate Committee on Education and Labor (77th Cong., 2d sess.) on S. Res. 291, Part 1 (p. 201), Washington, 1943. See also chapter by Harold S. Diehl, M. D., in *Doctors at War* (New York, 1945).

<sup>24</sup> Investigation of Manpower Resources. Hearings, op. cit., Part 2 (p. 662).

decades. For example, Alabama, with 1,523 persons per physician in 1940, exceeded its quota by 94 percent; Mississippi, with a ratio of 1,635 to 1, surpassed its quota by 55 percent. Above-quota withdrawals also occurred in South Carolina, Kentucky, and other States. On the other hand, California, Connecticut, Illinois, Massachusetts, New York, and the District of Columbia, which had the most favorable population-physician ratios in 1940, had not met their quotas in September 1942.

To check this trend, active recruiting was limited to 21 States in 1943, and to 31 cities in 1944.

As a result of this accentuation of the prewar trends toward geographical maldistribution of the physicians relative to population, by October 31, 1942, the population-physician ratio exceeded the 1,500-to-1 minimum in 29 States, including almost all the States in which numbers of physicians had decreased between 1920 and 1940. The long-term downward trend has resulted in a high proportion of older physicians in those States, and since over half of the practicing physicians under 45 years of age had entered the armed forces at the end of 1942, the remaining older physicians were forced to take on a heavier load of patients. As a result, the disproportion between deaths and new entrants is causing an increasing attrition of civilian physicians in these States. This indicates that, comparatively, the highest need and demand for medical services may be found in those States after the war. In Alabama, for instance, in 1944 over 27 percent of the population resided in counties with more than 3,000 persons per physician, as compared with 12.2 percent in 1940; in Arizona the corresponding figures were 27.1 percent and none; and in South Carolina 30.4 percent and 4.5 percent.<sup>25</sup> At the end of 1943 there were 553 counties with more than 3,000 persons for every active physician in private practice, 141 counties with more than 5,000, and 20 counties with more than 10,000.<sup>26</sup>

A survey of the postwar intentions of physicians in the armed forces showed that disinclination to settle in small communities continues.<sup>27</sup>

#### WARTIME DEVELOPMENTS IN TRAINING OF PHYSICIANS

Early in the war it became evident that additional physicians were needed, but the medical schools were already taking all the students they could train. "The number of qualified applicants for medical schools is about double the number admitted year by year," stated Dr. Thomas Parran, Surgeon General of the U. S. Public Health Service in November 1942.

To meet the situation, a program of accelerated training was undertaken. The program, adopted by all medical schools except the Woman's Medical College, made possible the completion of the usual 4-year training in 3 years, by eliminating summer vacations. Between July 1, 1942, when accelerated training was initiated in most schools, and July 1945, four classes were graduated. The number of graduates during those 3 years was 20,662 as compared with 15,535 graduates

<sup>25</sup> Wartime Health and Education. Hearings, op. cit., Part 6 (p. 2176).

<sup>26</sup> Interim Report from Subcommittee on Wartime Health and Education to Senate Committee on Education and Labor, on S. Res. 74, January 1945 (p. 14).

<sup>27</sup> Journal of American Medical Association, June 16, 1945 (p. 523).

from approved medical schools during the 3 preceding years—a 5,127 increase above normal.

In April 1944, the Selective Service abolished occupational deferments of premedical students and of medical students not enrolled in medical schools by July 1, 1944. With no new assignments to the premedical Army Specialized Training Program, the Council on Medical Education and Hospitals estimated that the medical schools will have to select 75 percent of their 1946 freshmen from among civilians, and stated:

This is manifestly impossible, and it is probable that entering classes in 1946 will be approximately half filled unless the Enlisted Reserve Corps are reinstated or Selective Service regulations changed. . . . Should no adjustment be made to correct the present situation a considerable reduction of graduates after the war will ensue. Although schools will continue the accelerated program, they will probably admit classes only once annually instead of every 9 months. This of itself will reduce the number of graduates from the present annual average of 7,000 to 5,000. If classes can be only half filled, this number will be reduced to 2,500 graduates per year. Since 3,300 to 3,500 physicians die each year, there will result an annual and cumulative deficit of 1,000 doctors a year. . . . An unknown number of war casualties among medical officers will also reduce the supply of physicians.<sup>28</sup>

A resolution, adopted by the American Medical Association at its annual session in June 1944, emphasized the imminent danger to national health and requested immediate action by the President or Congress. At the same session, another resolution on lifting of sex discrimination from young women desiring to study medicine was rejected, on the recommendation of the reference committee which stated that "there is no large reservoir of qualified premedical women from which schools could select substantially increased numbers of women medical students."<sup>29</sup> As shown by table 1, the number of women students has not shown any significant increase during the war.

### *Postwar Demand and Supply of Physicians*

The demand for physicians after the war will undoubtedly exceed that before the war, owing to the needs for medical care of veterans, to the possible maintenance of a larger military service than in 1940, to population increase, and to the likelihood that medical care of civilians will be well above prewar levels. As the war has also affected the supply of graduates, the postwar outlook depends in the final analysis on the wartime and immediate postwar supply of new entrants to the profession relative to replacement needs and to the additional demand.

#### POSTWAR DEMAND

In evaluating the outlook for the profession, it is necessary to study the factors affecting demand for the services of physicians. In this connection a distinction must be made between the real needs of people for medical care, and the "effective demand" for such care. It was not found possible in this study to estimate the number of physicians required to meet the real needs of the population, since there are no authoritatively determined general standards for the medical care of a population, and since concepts of medical care, as

<sup>28</sup> Journal of American Medical Association, August 19, 1944 (p. 1111).

<sup>29</sup> *Idem*, July 1, 1944 (p. 656).

well as techniques, are changing constantly. Besides, a realistic evaluation of outlook for use in vocational guidance must concern itself with the question of effective demand.

Effective demand for the services of private practitioners is influenced primarily by income levels and the rising standards of medical care desired by the population. On the other hand, effective demand for the services of the one out of five physicians who were salaried employees in 1940—working for such institutions as hospitals, sanatoria, insurance companies, industrial plants, research foundations, medical schools, business firms, medical cooperatives, public health clinics, or government agencies—is determined more directly by the policies and funds of the institutions employing them, and only to a small extent by general income levels.

#### *Medical Care of Veterans*

Complete care, including hospitalization and out-patient treatment by the Veterans' Administration, is assured by the Servicemen's Readjustment Act for the treatment of conditions incurred or aggravated as the result of military service. The Veterans' Administration is also authorized to furnish hospitalization, but not out-patient treatments, for disabilities which are not service connected, provided beds are available in its facilities, and provided the patient is unable to pay for hospitalization.

The Servicemen's Readjustment Act of 1944, Public Law 346, authorized appropriations for expansion of the present hospital facilities of the Veterans' Administration, which will require additional physicians. The peak demand for hospitalization is expected to occur in 1975 and ultimately 275,000 to 302,000 hospital and domiciliary beds will be provided, as compared to 80,570 in operation on November 30, 1941. The greatest expansion among hospital beds will be for care of neuropsychiatric patients.<sup>30</sup> The Veterans' Administration also employs physicians for various types of administrative work such as rating the extent of disabilities of veterans for purposes of compensation, and adjudicating claims. A conservative estimate of the increase between 1940 and 1950 in physicians needed by the Veterans' Administration for all purposes is nearly 4,000.<sup>31</sup>

#### *Hospital and Health-Center Facilities for Civilians*

To a great extent effective demand for the services of physicians depends on income levels, as suggested by the data in table 3. Although it is difficult to calculate the amount of the increase in demand for physicians' services which would occur if substantially full employment were achieved, the increase would doubtless be great. Total income levels under conditions of full employment would be more

<sup>30</sup> Health Needs of Veterans. Interim Report from Subcommittee on Wartime Health and Education to Senate Committee on Education and Labor (79th Cong.), Washington, February 1945 (p. 8). Wartime Health and Education. Hearings, op. cit., part 5 (p. 1755).

<sup>31</sup> An estimate of 15,000 is suggested by Victor Johnson, secretary of AMA Council on Medical Education and Hospitals, and Fred C. Zapffe, secretary of Association of American Medical Colleges, in a report, The National Stake in the Imperative Resumption of Training for the Scientific Profession, issued jointly by the National Research Council (OSP Bulletin No. 22) and the American Council on Education (Higher Education and National Defense Bulletin No. 84), May 28, 1945. This estimate appears to relate to the number of physicians needed at the time when about 300,000 hospital beds will be in use—i. e., some years after 1950.

than two-thirds higher than in 1940, according to the U. S. Department of Commerce.<sup>32</sup>

In this study no attempt was made to estimate the increase in the numbers of physicians required to meet the demands of the population for medical services if full employment were achieved. Instead, allowance is merely made for the increase in population from 1940 to 1950, on the assumption that the ratio of the general population to the number of doctors serving it at the end of the decade would be no different than at the beginning. To the extent that greater income may mean increased demand for physicians' services, the estimates presented herewith understate the prospective effective demand.

On the other hand, some allowance ought to be made for the trend toward an extension of public health services. The manpower problems of the Army and Navy have been much more serious than they would have been had the Nation's health been better, according to Interim Report No. 3 of the Senate Subcommittee on Wartime Health and Education. About 40 percent of the men of military age were found to be ineligible for military service because of physical and mental disabilities.

The health deficiencies of the population, thus strikingly illustrated, have stimulated considerable public interest in the provision of adequate medical service, according to need, through such means as privately sponsored programs of financing medical care (including prepayment plans), and publicly sponsored health programs, involving such suggestions as insurance under social security, the further development of preventive medicine, and the construction of additional hospitals, health centers, and maternity clinics.

A comprehensive program for extension of medical care is embodied in the President's message to Congress of November 19, 1945.<sup>33</sup> His recommendations include Federal aid for construction of additional hospitals and health centers within the reach of every community; expansion of public health, maternal and child health services; "facilities that are particularly useful for prevention of disease, mental as well as physical"; Federal support of a broad program to strengthen medical education and research; and finally a system for general prepayment of medical costs to assure all Americans ready access to necessary medical, hospital, and related services. Should this program materialize, there will be large increases in the demand for physicians in hospitals for civilians, in teaching, and in medical research.

The importance attached to grants to the States for construction of additional hospitals is reflected in pending bills.<sup>34</sup> The manning of additional hospitals to be constructed after the war is estimated to require 8,300 physicians.<sup>35</sup> Postwar planning by various private organizations for extension of medical care through prepayment schemes also points to an increased demand for physicians after the war.

<sup>32</sup> Full Employment Act of 1945. Hearings before Subcommittee of Senate Committee on Banking and Currency (79th Cong., 1st sess.) on S. 380, Part 8 (p. 689).

<sup>33</sup> Congressional Record, November 19, 1945.

<sup>34</sup> See, for instance, Senate Bills S. 191 and S. 1050.

<sup>35</sup> Hospital Construction Act. Hearings Before Senate Committee on Education and Labor (79th Cong., 1st sess.) on S. 191, Washington, 1945 (p. 83).

*Postwar Needs of Armed Forces*

If the armed forces should be maintained at higher levels than before 1940, there would be an increased need for physicians because of the lower ratio of population to physicians maintained in the armed forces. There are no official estimates of the size of the postwar armed forces to be maintained, but the number of physicians needed may be suggested by the fact that between 12,000 and 16,000 physicians would be required to serve 2.5 million men, depending on whether peacetime or wartime ratios are to be assumed. This implies that about 10,000 to 14,000 more physicians would be needed after than before the war for the armed forces, if a military establishment of that magnitude may be assumed.

*Summary of Additional Postwar Demand*

The additional postwar demand for physicians arising from medical care of veterans, expanded armed forces, planned construction of new hospital facilities for civilians, and population increase may be roughly estimated as follows for about 1950:

|  | <i>Number of physicians</i> |
|--|-----------------------------|
| Total increase, 1940 to 1950, in physicians needed.....  | 32, 500-36, 500             |
| Veterans' Administration.....  | 4, 000                      |
| Expanded peacetime armed forces (assuming 2,500,000).....  | 10, 000-14, 000             |
| Medical care for civilians at prewar levels, allowing for growth in population.....                                  | <sup>1</sup> 10, 200        |
| Extension of medical care above prewar levels, staffing proposed new hospitals and health centers for civilians..... | 8, 300                      |

<sup>1</sup> Based on the assumption of a 12.8 million population increase by 1950 (minus an estimated increase of 2 million in the armed forces and of 2 million veterans receiving medical care under the program of the Veterans' Administration) and of an average of 363 persons per physician according to the 1940 census, with the physicians 65 years and older adjusted downward by two-thirds.

**SUPPLY IN RELATION TO ADDITIONAL DEMAND**

In estimating the changes in the medical labor force by 1950 as compared to that of 1940, it is necessary to take into consideration the replacement needs caused during the decade by deaths of physicians as well as such changes in their age distribution as may be indicative of changes in the numbers in retirement or of lowered service capacity. Offsetting deaths and retirement is the influx of younger physicians being graduated from medical school and entering the profession. An estimate of replacement needs is complicated by the fact that losses of military physicians from death and disability may considerably exceed those of civilian physicians in the respective age groups, but the actual numbers of military casualties are unknown. Also, in estimating the supply of graduates during the decade, another unknown factor is the effect of the draft of premedical students on enrollments of freshmen in medical schools in 1945-46 and on graduations at the end of the decade. The following rough estimates of supply relative to replacement needs and to additional postwar demand are therefore subject to considerable limitations.

*Replacement Needs*

It is assumed in estimating replacement needs caused by death that mortality and life expectancy for physicians at various ages are not far different from those for all white males and females.<sup>36</sup> The com-

<sup>36</sup> Public Health Reports, March 3, 1944.

puted mortality of physicians between 1940 and 1950 in each age group and the numbers of physicians who may be expected to survive by 1950 in the respective age groups are shown in table 4.<sup>37</sup>

TABLE 4.—*Estimated Mortality of Physicians, 1940-50, and Survivors in 1950*

| Physicians reported in 1940 <sup>1</sup> |         | Mortality between 1940 and 1950 | Physicians expected to survive in 1950 |         |
|--|---------|---------------------------------|--|---------|
| Age group                                | Number  |                                 | Age group                              | Number  |
| All age groups.....                      | 165,341 | 29,783                          | All age groups.....                    | 135,558 |
| 20-24 years.....                         | 1,869   | 47                              | 20-24 years.....                       | 1,822   |
| 25-34 years.....                         | 45,017  | 1,651                           | 35-44 years.....                       | 43,366  |
| 35-44 years.....                         | 39,935  | 2,921                           | 45-54 years.....                       | 37,014  |
| 45-54 years.....                         | 31,766  | 5,014                           | 55-64 years.....                       | 26,752  |
| 55-64 years.....                         | 27,788  | 8,658                           | 65-74 years.....                       | 18,130  |
| 65-74 years.....                         | 15,677  | 8,773                           | 75-84 years.....                       | 6,904   |
| 75-84 years.....                         | 3,289   | 2,719                           | 85-94 years.....                       | 570     |

<sup>1</sup> Not including 260 on public emergency work in 1940 for whom no age data were tabulated by the Census.

Replacement needs caused by deaths between 1940 and 1950 may well exceed the estimate of about 29,800 arrived at in the above table, for it may be assumed that wartime mortality of the overworked older civilian physicians as well as that of younger military physicians would exceed the peacetime mortality rates derived from Census life tables.

It will be necessary also to replace those physicians who retire or whose service capacity is diminished because of age. In setting quotas for recruitment of physicians, the Procurement and Assignment Service assumed that because of retirement of some, partial retirement of others, and lowered service capacity of other older physicians, on the average, three physicians of 65 years and over were required to serve as many patients as one practitioner in younger age groups. This, of course, does not imply that the greater experience of older physicians does not enhance the quality of their services; it attempts to allow only for the amount of their services—the number of patients seen. If the above computation of surviving physicians were modified to count each physician 65 years or older as performing the equivalent of one-third service (and if we include the 10,000 physicians reported by the American Medical Directory as retired in 1940 but counted in the total to which the Procurement and Assignment Service applied the adjustment factor), a loss during 1940-50 of the equivalent of about 38,000 full-service physicians would be indicated, as the combined result of deaths and the aging of the profession. Should retirement be accelerated as a result of long-run social trends or the increased wartime strains on older physicians, the losses to the profession would exceed this number.

#### *Graduations of Students*

During the war an increase in graduations was made possible by accelerated training and by deferments of premedical and medical students from induction into the armed forces, but the change in the deferment policy affecting premedical students, mentioned above, may have the ultimate effect of reducing the output of graduates in 1948 and 1949. Graduates from approved medical schools num-

<sup>37</sup> Mortality rates were computed from U. S. Census Bureau, United States Life Tables 1939 to 1941, Vital Statistics—Special Reports, Volume 19, No. 4 (p. 31). These rates for white males and females have been applied to determine the mortality of male and female physicians.

bered 15,535 during the 3 academic years 1939-40 to 1941-42. From July 1942, when the acceleration program started, to June 1945, a total of 20,662 persons was graduated. Thus there was an increase of 5,127 in the number of graduates as compared with the previous 3-year period. Referring to this increase in supply of graduates owing to acceleration of training, however, Dr. Victor Johnson, secretary of the Council on Medical Education and Hospitals of the American Medical Association, pointed out that "recent policies of the national authorities pertaining to premedical students will more than offset this net gain in the next few years,"<sup>38</sup> and continued: "From now until at least 1947, medical-school freshmen must be women, or men who were physically disqualified, under or over the draft age, or veterans. Because people in these categories are limited in numbers, those admitted to our medical schools in the next year or two will be appreciably reduced in numbers or in quality." It was pointed out that in 1922 the number of graduates fell to 2,529 as a consequence of reduced wartime freshman enrollments.

During the 6 academic years ending in June 1945, the number of graduates from approved medical schools totaled 36,197. There were in addition 18,202 freshmen, sophomores, and juniors enrolled in the academic year 1944-45. If the numbers of enrollments and graduates are maintained at wartime levels and if acceleration should be continued in the 3-year cycle from July 1945 to June 1948—that is, even if conditions are most favorable—the total number of graduates in the decade would be about 60,000. On the other hand, if the decline in numbers of graduates anticipated by Dr. Johnson should become apparent in the graduating class of June 1949, the number of graduates during the 10 academic years ending in June 1949 (i. e., the academic years 1939-40 to 1948-49) may not surpass 55,000.

Some hundreds of graduating physicians would under normal circumstances have died during the decade but no estimate can be made of this number since their exact age composition is not available and since it is impossible to estimate the casualties among those in the armed forces. Offsetting these losses will be a small number of licensed graduates of unapproved medical schools.

#### *Summary of Additional Postwar Supply in Relation to Demand*

In summary, on the basis of conservative assumptions as to the numbers needed to replace physicians dying or in complete or partial retirement, it is estimated that the following changes would occur during the decade in the numbers of physicians available for service:

##### Estimated losses:

|   |                      |
|---|----------------------|
| Loss of full-service-equivalent physicians arising from deaths and ageing of the profession (based on peacetime mortality rates)..... | Number<br>38,000     |
| Additional deaths of civilian physicians from wartime strains.....  | Unknown number       |
| Deaths and disability of physicians in armed forces above normal expectations.....  | Unknown number       |
| <b>Total losses (minimum).....</b>  | <b>38,000</b>        |
| <b>Estimated gains: Increment of graduate physicians.....</b>   | <b>55,000-60,000</b> |
| <b>Estimated maximum net gain in number of physicians available for service.....</b>  | <b>17,000-22,000</b> |

<sup>38</sup> *Journal of American Medical Association*, September 1, 1945 (pp. 39, 41, 50).

The increase in the number of physicians available for service, as calculated above will fall short of additional demand—estimated at 32,500 to 36,500—by at least 10,500 under the most favorable conditions, and under the conservative estimates above, could fall short by more than 19,500, as a result of military casualties and additional deaths of civilian physicians from wartime strains. Despite all the limitations of any estimate, the postwar shortage of physicians is bound to assume considerable proportions, resulting from a combination of long-term trends in the training and age distribution of physicians, and the effects of the war on demand and supply.

The gravity of such a shortage is increased by the fact that, because of the age composition of the profession, output of graduate medical students from accredited schools in the prewar decade exceeded losses to the profession by not much more than 1,000 each year. At prewar rates of training it would take a number of years to alleviate the conditions implied by the above estimates.

The extent of shortage of physicians will vary among the different fields of specialization. Since conditions of modern warfare cause mental disability, an acute postwar shortage of psychiatrists may be anticipated. In August 1944 there were only about 3,000 members in the American Psychiatric Association, which included 90 percent of the physicians qualified in this field.<sup>39</sup> Psychiatrists are stated to be the "scarcest category of medical specialists, both within the Army and in civilian life."<sup>39</sup> Even in New York City, where there is the greatest concentration of psychiatrists in the country, facilities for the rehabilitation of men rejected or discharged by the armed forces for neuropsychiatric reasons are reported to be "far short of needs."<sup>40</sup>

The need for more physicians with training in obstetrics and pediatrics was emphasized by Dr. Martha M. Eliot, of the U. S. Children's Bureau, in hearings before the Senate Subcommittee on Wartime Health and Education.

Thousands of mothers and hundreds of thousands of children go without care that we know how to give, but are not able to provide because of inadequacy of facilities, of well-trained physicians, nurses, and other professional workers, and of administrative personnel . . . There are in the United States about 1,400 certified obstetricians, or 1 to 2,000 registered births. There are about 1,700 certified pediatricians, or 1 to 19,000 children under 15 years. Obviously, these specialists, cannot handle the actual service to all these patients. Even from the standpoint of consultation, the number is not sufficient because of the distribution. Some States have as few as 1 or 2 specialists in the entire State. Only 3 percent of the pediatricians are in communities of less than 10,000 population, yet 60 percent of the children live in communities as small or smaller. Many more specialists in pediatrics and obstetrics need to be trained and the general practitioners who see the bulk of mothers and children should have opportunity for further training in obstetrics and pediatrics.

In view of an urgent need for physicians with additional training in various specialized fields and in view of a prospective postwar demand for physicians generally well in excess of the prospective supply, the postwar outlook for physicians would seem exceptionally bright.

<sup>39</sup> Journal of American Medical Association, August 19, 1944 (p. 1104).

<sup>40</sup> New York City Committee on Mental Hygiene of the State Charities Aid Association, in New York Times, September 22, 1944.

## *Incomes in the Medical Profession*

Earnings prospects are of interest to those considering training for the profession. Money incomes of physicians are influenced largely by the demand for their services relative to the supply, but there is wide variation in earnings among individual physicians, resulting from such factors as the length of professional training and experience, the field of specialization, the size of community, and the geographical location.

Information on incomes of physicians is based on voluntary reports to surveys, and, like all such data, is subject to limitations resulting from failure of some individuals to report. The findings of the various surveys as to levels of income differ somewhat, but are not generally very widely divergent;<sup>41</sup> and in any event the findings concerning percentage changes from year to year in any particular survey should not unduly reflect the biases of selection.

The wide variations in physicians' incomes may be illustrated by the findings of a survey by the American Medical Association of incomes in 1928.<sup>42</sup> About 20 percent of the physicians reporting gave their gross incomes as less than \$4,500, about 50 percent reported less than \$7,500, and about 20 percent earned more than \$13,500. Specialists earned, on the average, more than general practitioners, who averaged a gross income of \$7,781.<sup>43</sup> Those located in the smallest communities were found to earn less than physicians in larger towns and cities. The highest average income was found in cities with a population of 50,000 to 100,000. (That this was true in 1939 also is indicated by the findings of another survey.<sup>44</sup>) Incomes increase with the length of professional experience, but the peak of average annual gross income was found in the group with 15 to 19 years in practice, which illustrates the above-mentioned findings that the average patient load decreases after 45 years of age.

A survey of incomes in 1929 by the Committee on the Costs of Medical Care<sup>45</sup> reported a median gross income for private practitioners of \$7,662. The median in communities of less than 5,000 population was \$4,746, as compared to \$9,245 in larger communities.

The effects of the depression are reflected in a decline of nearly 38 percent in average gross income of independent practitioners between 1929 and 1933 (table 5), and the effects of increasing employment are reflected in an increase of nearly 59 percent in their average gross income in 1941, as compared with 1933. Net income dropped by nearly 44 percent and then increased by 71 percent in the same years.

<sup>41</sup> For example, a Department of Commerce survey of incomes in 1939 found an average net income of \$4,229 (Survey of Current Business, October 1943), as compared to \$4,470 found by another survey in the same year (Medical Economics, September 1940). On the other hand, the Department of Commerce reported an average gross income of \$3,567 in 1929, as compared to \$9,764 reported by a survey by the American Medical Association for 1928 (Journal of the American Medical Association, May 16, 1931). The Association, in commenting on the latter figure, pointed out that general practitioners, whose average incomes were lower than those of specialists, failed to report to the survey in proportion to their numbers in the profession, and that "the figures for general practice are underweighted while for each type of special practice the amounts are overweighted to varying degrees." If adjustment were made for this factor, average incomes would have been somewhat lower.

<sup>42</sup> Journal of the American Medical Association, May 16, 1931.

<sup>43</sup> For more recent data on incomes of general practitioners and of specialists in various fields, see Medical Economics, October 1945, and January 1946.

<sup>44</sup> Physicians' Incomes, Medical Economics, September 1940.

<sup>45</sup> Maurice Leven: The Incomes of Physicians. An Economic and Statistical Analysis, Publications of the Committee on the Costs of Medical Care, No. 24, 1932, (p. 106).

TABLE 5—Average Annual Income of Physicians in the United States, 1929–1941<sup>1</sup>

| Year      | Gross income | Net income | Year      | Gross income | Net income |
|-----------|--------------|------------|-----------|--------------|------------|
| 1929..... | \$8,567      | \$5,224    | 1936..... | \$7,020      | \$4,204    |
| 1930..... | 8,173        | 4,870      | 1937..... | 7,276        | 4,285      |
| 1931..... | 7,191        | 4,178      | 1938..... | 7,053        | 4,093      |
| 1932..... | 5,775        | 3,178      | 1939..... | 7,261        | 4,229      |
| 1933..... | 5,368        | 2,948      | 1940..... | 7,632        | 4,441      |
| 1934..... | 5,871        | 3,382      | 1941..... | 8,524        | 5,047      |
| 1935..... | 6,295        | 3,695      |           |              |            |

<sup>1</sup> Data are from Survey of Current Business (U. S. Bureau of Foreign and Domestic Commerce, Washington), October 1943.

Compared to incomes in other predominantly independent professions, earnings of physicians reached the top level in recent years. Although the average income of independent lawyers exceeded that of independent physicians in 1929, 1933–37, and 1939, “in 1941, for the first time since comparable data became available, the average net income of physicians exceeded that of private legal practitioners and thus reached the top position among the three major independent professions of medicine, law, and dentistry.”<sup>46</sup> This reversal is explained as being “the result of a combination of secular influences (a differential rate of increase in the number of lawyers and physicians), cyclical factors, and the beginning of a shortage of physicians arising from war.”<sup>47</sup>

Incomes of physicians increased further during the war because of the shortage of civilian physicians. In 1943, according to another survey<sup>48</sup> based on 5,134 returns, the net income averaged \$8,688 as compared to an average of \$4,470 found by a survey by the same organization in 1939. The shift toward higher income levels is reflected in the fact that in 1939 45 percent of the physicians grossed less than \$5,500 as compared to only 16 percent in that income group in 1943. On the other hand, over half had gross incomes of \$11,500 or more in 1943, as compared to a sixth in 1939, as indicated in the following statement.<sup>49</sup>

| Gross income of—      | Cumulative percent |      |
|-----------------------|--------------------|------|
|                       | 1939               | 1943 |
| \$1,500 or more.....  | 95.6               | 99.0 |
| \$3,500 or more.....  | 78.1               | 94.0 |
| \$5,500 or more.....  | 54.9               | 84.3 |
| \$7,500 or more.....  | 37.2               | 73.8 |
| \$9,500 or more.....  | 24.1               | 62.2 |
| \$11,500 or more..... | 16.4               | 50.8 |
| \$13,500 or more..... | 10.9               | 41.2 |
| \$15,500 or more..... | 7.0                | 32.6 |
| \$17,500 or more..... | 4.8                | 27.6 |
| \$19,500 or more..... | 3.5                | 22.5 |

The total gross income of active civilian physicians rose from 994.3 million dollars in 1939 to 1,469.4 million dollars in 1943, when “the average physician was in the top 3 percent United States income bracket.”<sup>50</sup> Thus, in 1943, when about a third of the active physicians

<sup>46</sup> Survey of Current Business (U. S. Bureau of Foreign and Domestic Commerce, Washington) October 1943.

<sup>47</sup> *Ibid.*, May 1944.

<sup>48</sup> Physicians' Incomes, in *Medical Economics*, December 1944 (pp. 43, 44).

<sup>49</sup> *Medical Economics*, May 1945 (p. 44). Includes only active civilian nonsalaried physicians (i. e., those who derived less than 50 percent of their incomes from salaries).

<sup>50</sup> *Ibid.* (p. 47).

had been withdrawn to serve the armed forces, the total gross income of the remaining civilian physicians exceeded that received in 1939 by nearly 48 percent. This reflects the considerable increase in the patient load of civilian physicians. In view of the likelihood that for some years after the war the numbers of physicians will fall short of estimated needs, earnings may continue at levels approaching those achieved during the war.



## Occupational Outlook Publications of the Bureau of Labor Statistics

This bulletin is one of a series of reports on employment trends and opportunities in the various occupations and professions, for use in the vocational guidance of veterans, young people in schools, and others considering the choice of an occupation. The reports describe the long-run outlook for employment in each occupation and give information on earnings, working conditions, and the training required.

Reports are usually first published in the Monthly Labor Review (subscription price per year, \$3.50) and are reprinted as bulletins. Both the Monthly Labor Review and the bulletins may be purchased from the Superintendent of Documents, Washington 25, D. C. Following is a list of other bulletins in the series, with their prices and with the dates of the publication of articles in the Monthly Labor Review:

- Employment Opportunities for Diesel-Engine Mechanics. Bulletin No. 813 (1945), price 5 cents. (Monthly Labor Review, February 1945.)
- Occupational Data for Counselors, A Handbook of Census Information Selected for use in Guidance. Bulletin No. 817 (1945), price 10 cents. (Prepared jointly with the U. S. Office of Education.)
- Postwar Employment Prospects for Women in the Hosiery Industry. Bulletin No. 835 (1945), price 5 cents. (Monthly Labor Review, May 1945.)
- Employment Opportunities in Aviation Occupations, Part I—Postwar Employment Outlook. Bulletin No. 837-1 (1945), price 10 cents. (Monthly Labor Review, April and June 1945.)
- Employment Opportunities in Aviation Occupations, Part II—Duties, Qualifications, Earnings, and Working Conditions. (Not yet available in bulletin form.)
- Employment Outlook for Automobile Mechanics. Bulletin No. 842 (1945), price 10 cents.
- Employment Opportunities for Welders, Bulletin No. 844 (1945), price 10 cents. (Monthly Labor Review, September 1945.)
- Employment Opportunities in Foundry Occupations. (Monthly Labor Review, December 1945; not yet available in bulletin form.)