

The Prevalence of Disability in the United States With Special Reference to Disability Insurance

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THE STATISTICIAN interested in determining the prevalence of disability in the population of the United States finds a wealth of material in sickness surveys, routine reportings, and hospital statistics for specific periods, localities, or groups of the population.

The disability surveys began with the Federal census of 1880. Between that year and 1905 there were six census enumerations: two Federal censuses (1880 and 1890), the Michigan census of 1884, and the Massachusetts censuses of 1885, 1895, and 1905. While these six census enumerations make no clear-cut distinction between sickness and disability, it is assumed that, in general, disabling conditions resulting from illness or other reasons were recorded. The prevalence of disability revealed through those early censuses varied considerably from State to State and, for a particular area, for separate enumerations. In general, prevalence rates ranged roughly from 7 to 33 disabled individuals per 1,000 persons on the day of enumeration.

No substantial studies on the prevalence of disability in the United States are known for the years 1906-14. The period 1915-19, however, was especially productive in this field. In 1915 the Metropolitan Life Insurance Company made a series of house-to-house canvasses in a number of eastern communities. These surveys were made by the agents of the company, but were not limited to the families of insured persons. The rates found in the different areas showed wide variations, ranging from a low of 14 to a high of 31 disabled persons per 1,000 persons of all ages and both sexes. Only a fraction of this variation can be attributed to differences in the age and sex composition of the groups canvassed.

Between 1915 and 1917, the New York City Department of Health conducted three surveys on the prevalence of disability in certain sections

of the city, and again varying rates were obtained. The Public Health Committee of the New York Academy of Medicine found in 1919 that the prevalence of disability in New York City was 22 per 1,000.

In 1916 the United States Public Health Service began studies of this type. In connection with the pellagra studies, information was obtained on disabling disease in a number of cotton-mill villages in South Carolina. The prevalence rates obtained in different canvasses showed marked variations, ranging from a minimum of 15 to a maximum of 49 per 1,000.

After 1919 there was another lull in disability studies. Then, in the years 1928-32, the Committee on the Costs of Medical Care made a number of local surveys and, in one of its major studies, recorded the disability experience of a sample consisting of some 9,000 families in 17 States and the District of Columbia, observed continuously over a year. From this study a prevalence rate of 21 per 1,000 may be derived, computed from days of disability per person per year in the canvassed population.

Other than the recent National Health Survey, conducted by the United States Public Health Service, the surveys thus briefly cited probably represent the more important enumerations of the disabled in the general population. There have been many other surveys with more restricted objectives, particularly in the last decade, among the general population or particular economic groups. For instance, there have been a number of special surveys in California, Iowa, Kentucky, Mississippi, Wisconsin, and in other States to enumerate the physically handicapped. There have been special surveys of the deaf and the blind, of handicapped children, and of the prevalence of cancer, tuberculosis, and other chronic diseases; studies and routine reports of absenteeism in certain industrial establishments; and surveys of unemployable persons among relief clients and among the families of emergency workers. Finally, hospital statistics, especially for patients in mental

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hospitals and in institutions for epileptics and the feeble-minded, have provided valuable periodic information for special groups.

Despite the large volume of information available from these numerous sources, and the current reporting of communicable disease, we cannot say that we know precisely the normal prevalence of disability in the population. It may vary widely, in time and space, depending on the composition of the population, economic and social differences or changes, the emotional state of the group canvassed, and the level of development in hygiene, public health, and medical service. Strictly speaking, an exact determination of prevalence even at a given time is impossible because of the tenuous concepts involved in defining disability. The distinction between "illness" and "health" or between "disability" and "ability" is quantitative and not qualitative, i. e., the distinction is one of degree; and this quantitative distinction is made qualitative only through the arbitrary elements of a definition or standard.

In addition to the difficulties inherent in the concept of disability, a canvass of disability suffers from defects in the techniques of enumeration. For various reasons, disability is not always reported to the enumerator, and often it is not reported accurately. Some disablement is concealed; some is missed because the disabled person is separated from his family, and some is missed because there is no "able" member of a family to make the report. Much disability, moreover, goes unrecognized. The use of medical examinations to disclose disability has many potential advantages, but it also introduces new difficulties.

It is, therefore, not surprising that there are wide variations among the disability rates obtained from surveys. Nevertheless each substantial survey has produced rates which are sufficiently credible to warrant use when adequate allowances are made for recognizable shortcomings in the data.

The National Health Survey, which was made possible by financial assistance of the Works Progress Administration, was by far the most extensive undertaking of its kind. It included a sample population comprising more than 2.5 million individuals in 83 cities located in 18 States and in 23 rural counties in 3 States. The over-all disability prevalence rate was 44 per 1,000, one of the highest disclosed by a general survey.

Yet for well-recognized reasons, even this figure probably understates the "true" prevalence of disability in the canvassed areas in the winter of 1935-36.

Studies made by the staff of the National Health Survey have shown a significant association between the ability of the enumerator, as determined by psychological examination, and the recorded prevalence of chronic disease, and a similar, though less marked, association with the recorded prevalence of disability in the population canvassed.¹ Adjustments need to be made for this factor. Also, the returns on disablement caused by certain specified diseases, such as mental disease and tuberculosis, are patently much too low.² There is reason to believe there was some underenumeration of various other categories, such as the blind. Moreover, to avoid many administrative complexities, the National Health Survey excluded institutional groups such as persons in penal and correctional institutions; those in schools for the blind and the deaf, and in other institutions for handicapped individuals; residents of homes for the aged; and persons in the Army and the Navy. While the exclusion of some of these groups probably has little significance for the disability prevalence rate, the exclusion of others materially affects the end results.

A National Estimate of the Prevalence of Disability

In developing general estimates of the prevalence of disability in the United States, extensive use has been made of the findings of the National Health Survey and of other data, with various adjustments for recognized deficiencies.³ On this basis it is estimated that on an average day of the year there probably are approximately 7 million disabled persons in the United States—that is, persons of all ages who, because of hereditary or congenital defects, accidents, or disease, are

¹ Lienau, O. O., "The Enumerator Factor in the Health Survey." An address before the American Statistical Association, Dec. 28, 1938, mimeographed.

² U. S. Public Health Service, National Institute of Health, *The National Health Survey: 1935-36: The Magnitude of the Chronic Disease Problem in the United States* (Preliminary Reports, Sickness and Medical Care Series), Bull. No. 6, 1938, pp. 4-5.

³ The prevalence of mental diseases, including epilepsy, was estimated from the institutional statistics of the State of Massachusetts, plus the non-hospitalized cases as determined by the survey of chronic diseases by Bigelow and Lombard. The prevalence of idiocy and imbecility was estimated from miscellaneous available statistics.

unable, temporarily or permanently, to engage in gainful occupation or to follow their other normal pursuits. This estimated total number of the disabled is roughly equivalent to a rate of almost 55 disabled persons per 1,000 in the population.

On the basis of the best available information the 7 million disabled have been classified according to broad categories, using as primary criteria the factor of duration and the arbitrary distinction between primarily physical and primarily mental disablement. It is estimated that slightly more than 50 percent of the total number are incapacitated by disabilities of less than 6 months' duration, while for nearly an equal proportion the incapacity lasts 6 months or longer. Of the latter group (3.4 million persons) it is estimated that almost 60 percent are physically disabled and that for slightly more than 40 percent the disability is primarily mental. It is further estimated that approximately one-third of the 7 million disabled consist of cases in which the disabilities are of a year's duration or longer, and that of these 2.4 million persons about 57 percent are physically

disabled and about 43 percent mentally disabled. These tentative estimates are summarized in chart 1.

Prevalence of Disability Among Wage Earners

From an economic standpoint, the prevalence of disability among wage earners and other gainfully occupied persons in the population is particularly important. Many of the surveys have given special attention to disability among this group.

On the basis of the National Health Survey and other data an estimate has been made of the number of disabled among persons in ages 16-64 who presumably would have been employed or seeking work if it were not for their disability (chart 1). Of these persons, approximately 1,240,000 are individuals who have been disabled for 6 months or more; 720,000 of these are physically and 520,000 mentally disabled. Some 760,000 of the disabled persons who would otherwise be in the labor market have disabilities which have lasted a year or more; of these, approximately 60 percent suffer from physical disability and 40 percent from mental disability.

An enumeration of the disabled among the wage earners probably has somewhat greater objectivity than obtains for many other groups, because incapacity to do gainful work—especially when there is a concurrent loss of earnings—is more accurately reportable than inability to do housework, attend school, or engage in other pursuits. There is, however, an offsetting error to the extent that an alleged attachment to the labor market is factitious among many persons who are permanently disabled or have chronic disability of long duration.

The survey method probably gives reasonably accurate results as to the extent of short-term disability prevailing among workers, though it tends somewhat to understate the actual prevalence. It is well known that disability rates from surveys are often substantially lower than otherwise comparable rates observed under sickness insurance systems here or abroad. It is not difficult to account for this disparity. Many workers—especially those employed at weekly, daily, or monthly wages or at piece rates—continue to work when they are not really fit to work as judged by medical standards. Therefore, when an insurance system furnishes substantial, even though partial, reimbursement of wages, the

Table 1.—Average number of days of compensable disability per year per worker aged 16-64, with a 7-day waiting period and specified maximum benefit periods, estimated on basis of selected disability experiences¹

Experience	Average number of compensable days for maximum benefit period of—		
	13 weeks	20 weeks	52 weeks
Male and female workers:			
National Health Survey ²	3.8	4.3	4.8
Manchester Unity ³	6.0	7.7	9.1
Leipzig ⁴	6.5	7.4	8.0
Czechoslovakia ⁵	8.0	9.4	10.6
Male workers:			
Intercompany morbidity investigation ⁶	3.0	4.4	5.3
White railroad workers ⁷	3.4	4.3	5.3
Workmen's Sick and Death Benefit Fund ⁸	4.2	5.1	5.9

¹ Applied to workers covered by Federal old-age and survivors insurance, with age distribution based on 1937 wage reports.

² Unpublished data, National Health Survey, 1935-36.

³ National Health Insurance Joint Committee, *Report for 1912-13 of the Administration of the National Insurance Act, Part I (Health Insurance)*, Cmd. 6907, London, 1913, p. 593, table 1; modified by recent National Health Insurance experience as reported by Watson, Alfred W., "The Analysis of a Sickness Experience," *Journal of the Institute of Actuaries*, London, Vol. 62, Pt. 1, No. 303 (1931), pp. 12-61.

⁴ *Krankheits- und Sterblichkeitsverhältnisse in der Ortskrankenkasse für Leipzig und Umgegend*, Berlin, 1910.

⁵ *Statistika Invalidního a Starobního Pojištění a Nemocnosti Dělnků Za Leto 1931 a 1932*, Praha, 1936, pp. 162-163, tables 74-75.

⁶ Fitzhugh, Gilbert W., "Recent Morbidity Upon Lives Insured Under Group Accident and Health Policies and Premiums Based Thereon," *Transactions, Actuarial Society of America*, Vol. 38 (October 1937), pp. 354-383. Data represent experience among white male employees of firms with 25 or more workers.

⁷ U. S. Public Health Service, *Public Health Reports*, Vol. 63, Pt. 1, No. 15 (Apr. 15, 1938), pp. 555-573.

⁸ "A Study of the Disability Data From the Workmen's Sick and Death Benefit Fund for the Years 1912-1916," *Report of the Health Insurance Commission of the State of Illinois*, Springfield (May 1919), pp. 335-346.

rate of recorded disabilities increases. Some malingering occurs under insurance—apparently of radically different frequency in different insurance systems—and has the effect of exaggerating the actual disability prevalence rates. On the other hand, in the absence of an insurance program, simulation of ability to work tends to result in an understatement of disability prevalence.

In insurance statistics we find wide variations in the rates summarizing the prevalence, incidence, or duration of disability, even after allowances have been made for differences in age, sex, marital status, and race. These variations appear to be closely associated with economic factors. For illustrative purposes, some of the disability rates observed under insurance programs, as well as from data of the National Health Survey, are shown in table 1, in which the rates have been standardized for age and sex and have been applied to the estimated number of persons in ages 16-64 connected with the labor market. When statistics of this character are examined in greater detail than is feasible here, it becomes apparent that secondary factors influence the recorded rates. For instance, when the level of insurance benefit approaches the level of earnings the volume of compensable disability increases. With longer waiting periods

between the commencement of disability and the beginning of compensation for disability, the volume of compensable disability decreases more than can be accounted for by the added waiting period. There seems to be an indication that in periods of widespread unemployment disability rates often decline among those who have jobs even though there is an increase among the general population. Presumably, those who are employed fear loss of their jobs if they become disabled; they cling to their work as long as possible, despite a measure of disablement. Among those who have lost their jobs or are without jobs the disability rates tend to be relatively high.

The Volume of Compensable Disability

The volume of compensable disability which may be expected among the gainfully employed is an indeterminate quantity unless considered in conjunction with the specifications of a particular program. The attractiveness of the benefits, in terms of waiting period, maximum duration of benefit, benefit rate, and the like, must be examined in light of living costs and earnings levels, opportunities for employment, and other factors. And, because disability is, in some measure, determined on the basis of subjective criteria, the tech-

Chart 1.—Number of cases of disability in the population and in the labor market on an average day, by duration and type of disability, estimated on basis of National Health Survey

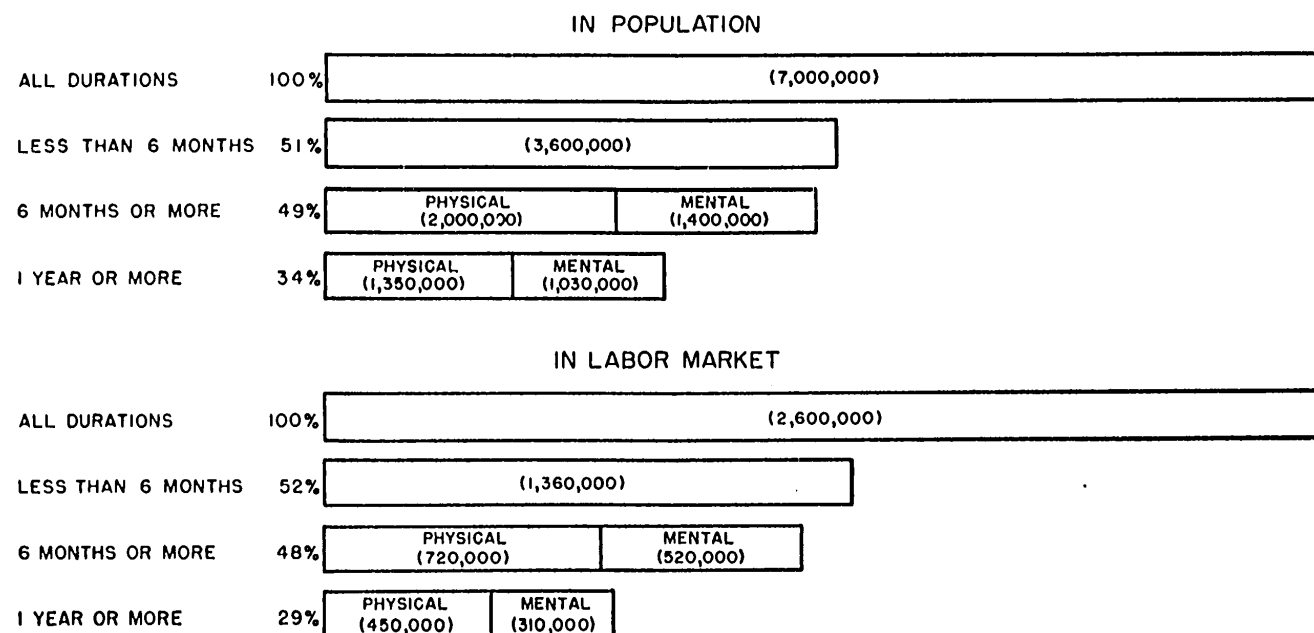
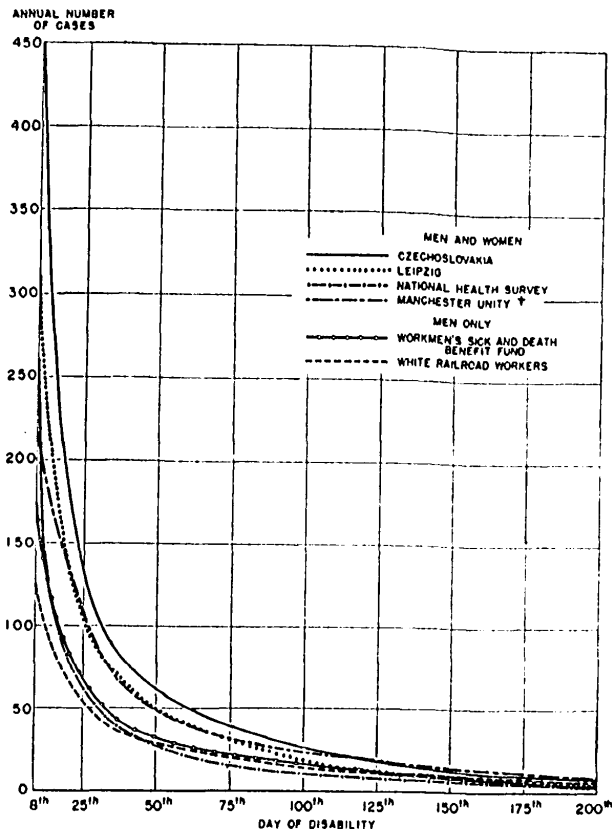


Chart 2.—Average number of cases of disability continuing for specified day or longer, per year per 1,000 workers aged 16-64, estimated on basis of selected disability experiences ¹



¹ Applied to workers covered by Federal old-age and survivors insurance, with age distribution based on 1937 wage reports.

† Adjusted according to recent National Health Insurance experience.

nique and rigor of the certification of disability are essential determinants, especially in an insurance program for protracted or permanent disability.

This article will not consider in detail the specifications for a disability insurance program that would furnish at least a minimum of economic security against the loss of earnings among wage earners. Some indication may be given, however, as to the general magnitude of compensable disability that may be anticipated under a specified insurance program. The details of the calculations are not included here; they will be reported later.

The disability risk may be divided into two categories: temporary disability, in which the wage earner needs a temporary benefit to tide him over relatively short-term loss of earnings; and permanent disability (including protracted

disability which often cannot be differentiated from permanent disability), in which the worker needs an allowance that would provide subsistence to him and his family much as in old age.⁴ In the estimates for both categories the coverage of the present Federal old-age and survivors insurance is used as the population base.

Temporary Disability

The estimate of the volume of temporary disability among workers now covered by the old-age and survivors insurance program is based on the following assumptions: (1) a benefit rate analogous to the prevailing unemployment compensation benefits; (2) a continuous 7-day waiting period; (3) a maximum benefit period of 26 weeks; (4) a certification system in which the medical opinion as to the existence of disability is subject to check by a salaried physician; and (5) "current" insurance status as a requirement for eligibility—that is, receipt of at least \$50 in wages for covered employment in each of 6 or more out of the 12 preceding calendar quarters.

On these basic assumptions (and with numerous other subsidiary assumptions)⁵ it is probable that the volume of compensable temporary disability would be, on the average, 5 to 6 days per person per year, or 150 to 180 million compensable days for an estimated currently insured population of eventually about 30 million covered workers. Of course, individual insured workers would experience disability which differs widely from the average. From available data on the distribution of cases in terms of duration, it is probable that 15 to 25 percent of the insured would experience disability lasting 8 days or more within a given year, and of these a much smaller proportion would suffer disability of several months' duration (chart 2).

These estimates are slightly lower than would result from applying the British experience to the coverage of the Federal old-age and survivors insurance system, and they are substantially lower than would result from using the German or Czechoslovakian experience. These differences are due to adjustments which take into consideration the existing limitations of those sickness

⁴ For a more comprehensive analysis of the basis on which this division rests, see: Falk, I. S.; Reed, L. S.; and Sanders, B. S., "Some Problems in the Formulation of a Disability Insurance Program," *Law and Contemporary Problems*, Autumn 1939, pp. 645-665.

⁵ See Falk, Reed, and Sanders, op. cit.

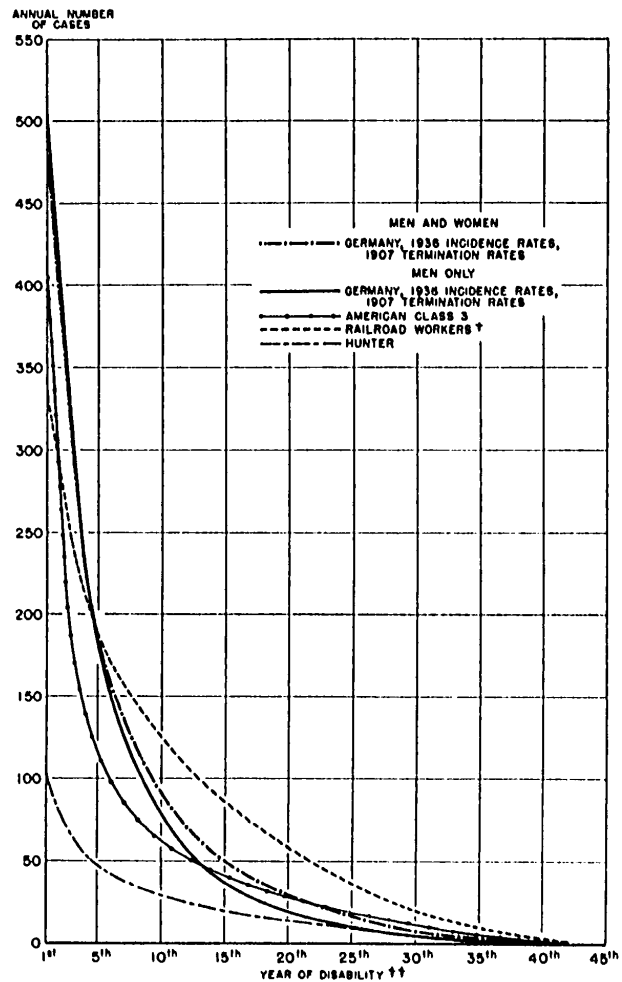
insurance systems to manual or low-income workers, the assumption of less disabling illness in the United States because of the absence of severe wars and famines which have left their marks on the population of those countries, and the persistence of lower disability rates in the United States because of higher levels of living and increasingly adequate provision of public health and medical services. Without these more favorable conditions, the expected average duration of compensable disability would be increased to 7, 8, or even 9 days per person per year.

Permanent Disability

The estimate of the extent of permanent disability under an insurance program is based on specifications included in a bill (S. 3924) recently introduced in Congress by Senator Wagner. This bill proposes disability benefits for insured workers who become permanently and totally disabled and who are both fully and currently insured under the terms of the Federal old-age and survivors insurance system. In general terms, a worker would have this status when he had received wages of at least \$50 from covered employment in at least half the potential calendar quarters of coverage or in 40 quarters or more, including at least 6 in the last 12 quarters preceding disablement. No benefits would be paid during the first 6 months of permanent disability, during which, presumably, benefits for temporary disability would be available. Except for the annual increment for duration of covered employment, the benefit formula is the same as the present old-age and survivors insurance formula, i. e., 40 percent of the first \$50 and 10 percent of the next \$200 in the average monthly wage, as legally defined. The proposed definition of permanent total disability is rather strict, and the certification of disability would be made by physicians employed by the insurance system.

The expected volume of disability under the provisions of such a program would not reach substantial maturity for 20 or 25 years. During such a maturation period, the annual number of new cases of disabled persons would be greater than the withdrawals from the annuity rolls because of death, recovery, or attainment of age 65 when old-age benefits become payable. There may also be some increase in the annual incidence of new cases if the covered population increases in size

Chart 3.—Average number of cases of disability continuing into specified year or longer, per year per 100,000 workers aged 20-64, estimated on basis of selected disability experiences¹



¹ Applied to workers covered by Federal old-age and survivors insurance, with age distribution based on 1937 wage reports.

† Incidence based on group life insurance experience of railroad workers; mortality of disabled lives based on group life insurance experience of insured workers in general.

†† Permanent disability, by definition, is sickness which has lasted more than 6 months. The first year of disability, for example, includes disabling sickness in the period between the first day after 6 months and 1 year and 6 months.

and also as a result of "aging" of the insured population. To estimate the expected volume of disability requires, therefore, a forecast of population for at least two or three decades ahead. It requires a knowledge of the age, sex, and marital status of the eligible groups. For these factors (with the exception, however, of marital status) the intermediate population estimates of the National Resources Committee have been used. The estimate also requires a forecast of the pattern

of earnings histories among the insured, to determine the expected number who will have had qualifying earnings. For this it has been necessary to rely on the employment experience of taxable workers in only two years, 1937 and 1938.

Taking into consideration these primary specifications (and a number of more detailed specifications), an attempt has been made to estimate the volume of compensable disability for 30 or 40 years ahead, using available information from sickness surveys, the experience of private domestic insurance companies; fraternal organizations; group insurance against sickness and disability; Federal, State, and private employee disability insurance systems; and foreign social insurance systems (chart 3). These calculations indicate that at that time among about 28 million eligible persons the average number of beneficiaries for permanent total disability benefits may reach between 460,000 and 700,000 when the system has matured.

In determining this volume of compensable disability, allowance has been made for many factors which are subject to quantitative determination. There are, of course, other factors which cannot be evaluated and for which no allowances have been made; it is possible only to recognize their importance and realize that marked changes in these factors may seriously affect the forecast. Furthermore, a rather strict interpretation of the

term "permanent total disability" has been assumed. A liberalization of the definition or of its interpretation could increase this estimate by 50 percent or more. It is further to be noted that these estimates give the number of disabled among those who would meet the qualifying conditions, tentatively assumed to constitute less than half of the persons connected with the labor market in the United States. These figures do not take account of the disabled among groups not covered by the insurance system, among those covered but not eligible for disability benefit, or among those 65 years of age and older. Among all individuals who are attached to the labor market, the total number of disabled with disabilities of 6 months' or longer duration may be three or four times the figures given here for the expected volume of compensable permanent total disability.

The magnitude of these estimates indicates that disability is one of the serious economic risks threatening the security of American families. Its economic consequences are even more severe than its prevalence would indicate, because of the unpredictability of its occurrence in any particular family. The economic dislocations and the losses resulting from disability are of a magnitude to warrant concerted effort among all groups interested in the control and prevention of its occurrence and in the mitigation of its social and economic consequences.