This PDF is a selection from an out-of-print volume from the National Bureau of Economic Research

Volume Title: Studies in Income and Wealth, Volume 14

Volume Author/Editor: Conference on Research in Income and Wealth

Volume Publisher: NBER

Volume ISBN: 0-870-14169-4

Volume URL: http://www.nber.org/books/unkn51-2

Publication Date: 1951

Chapter Title: Measuring Estate Tax Wealth

Chapter Author: Horst Mendershausen, Raymond W. Goldsmith

Chapter URL: http://www.nber.org/chapters/c9718

Chapter pages in book: (p. 125 - 142)

Part III

Measuring Estate Tax Wealth

HORST MENDERSHAUSEN, *Federal Reserve Bank of New York*
and
RAYMOND W. GOLDSMITH

This paper summarizes one part of an extensive study of the saving process and the capital market in the United States directed by one of the authors under the sponsorship of the Investment Committee of the Life Insurance Association of America.

The attempt to estimate the wealth of the top percentile of the population of the United States, the main results of which are presented here, has depended heavily on a special tabulation of the estate tax returns filed during 1945, cross-classified by age of decedent and size of estate, prepared by the Bureau of Internal Revenue, which was kindly made available to us. We are indebted also to the Actuarial Division of the Metropolitan Life Insurance Company for making available to us mortality data derived from insurance records and for advice in the utilization of these data.

A Function of Estimates of Interpersonal Distributions of Private National Wealth

National wealth analysis has always had three main goals: the study of the growth and composition of tangible national wealth; the analysis of debt and equity relationships for different groups of individuals, business enterprises, and nonprofit organizations; and the measurement and explanation of the distribution of total private wealth among individuals, grouping them either by strictly economic indicators such as the amount of wealth or income, or by other criteria such as age, occupation, social status, and ethnic groups.

This paper deals with only one aspect of the interpersonal distribution of private wealth in the United States, and is far from exhausting even that one. It is confined to a description of a new attempt to estimate the amount and composition of the wealth of persons with estates above the exemption limit of the federal estate tax, which has varied between $40,000 and $100,000. The component of total private wealth that the estimates discussed here are intended to cover is called 'estate tax wealth', defined as the wealth of individuals whose estates, properly reported, would be subject to the federal estate tax if they died at a certain time.

The estimates obviously cover only a small part of the population of the United States – less than 1 percent. Notwithstanding the marked inequality in the distribution of wealth they include considerably less than half of the total private wealth of the country. From an economic point of view, however, this upper section of the wealth pyramid is often of great importance. It includes most of the privately held stock in business corporations, a large part of the equity in unincorporated business enterprises, and most of the privately held corporate and state and municipal bonds, mortgages, and nonresidential real estate. Before we can fully utilize these estimates of the wealth of the 'rich', as we may for convenience call all persons having estates above the federal estate tax exemption limit, they must be supplemented with similar estimates for the other 99 percent of the population and their wealth.

There are three main ways of obtaining the essential data. The first, most similar to the approach described in this paper but still not giving complete coverage, is to use the court records of probated estates. An attempt to tap this source on a broad scale was made about a decade ago in a project financed by the WPA.[1] Transcripts of about a thousand pro-

[1] Several less extensive studies of probated estates in various parts of the country are referred to in C. L. Merwin, 'American Studies of the Distribution of Wealth and Income by Size', *Studies in Income and Wealth, Volume Three;* see also Part IV of this volume.

bated estates were collected, but funds ran out before the project could be completed and the records, we are told, are gathering dust in a basement of the Department of Commerce.

The second way is to collect information on the assets and liabilities of a representative sample of living persons. An important step in this direction has recently been taken by the Federal Reserve Board's Survey of Consumer Finances. After successive enlargements and improvements of the questionnaire, the 1950 Survey, taken at the beginning of the year, provides for the first time sufficient information on the main assets and liabilities of individuals to permit the derivation of estimates of total wealth and its composition (with the possible exception of life insurance) not only for the entire population except the rich but also for broad age, income, and wealth groups.

Under a third, more indirect, approach estimates may be prepared of the totals attributable to all individuals of most assets and liabilities such as cash, bank deposits, securities, equity in life insurance contracts, dwellings, and consumer durable goods. Subtracting from these totals figures for the rich derived from federal estate tax returns yields the wealth of most of the population. The obvious danger in this procedure is that every error in the subtrahend and the minuend will be reflected in the residual. Since the residual is well over half the minuend – the proportion unfortunately will be considerably smaller for some important assets – this method may not be as risky as, for instance, the attempt to measure saving by deducting estimated consumer expenditures from estimated disposable income. To use this approach satisfactorily we shall have to wait until estate tax returns filed in the calendar year 1950 are published – properly classified by age – to match the data from the 1950 Survey of Consumer Finances. This, if the present lag in the publication of estate tax statistics continues, will not happen before 1954.

B Estimating Procedures and Limitations

1 General approach

For the great majority of wealth owners, and probably also for a very substantial proportion of total private wealth, statisticians in this country will generally have to rely on small samples or on the residual approach just sketched. For holders of larger estates, however, there fortunately exists in the United States, as in some other countries, an easily available and in one sense comprehensive statistical source – the declarations made under the estate tax law for all persons dying and leaving estates above a certain minimum.

The method by which estate tax wealth has been estimated from federal estate tax statistics (known as the estate multiplier method) is basically simple.[2] The estates of decedents filed during a calendar year are multiplied by a set of reciprocals of age-specific death rates for the preceding year, using as fine a division by age groups as possible.[3]

The basic assumption, that decedents constitute a random sample with respect to both the size and structure of the estates of the living in the same age group, implies the absence of conscious manipulation of estates 'in anticipation of death' and in the preparation of estate tax returns. If the data on the estates of decedents pertain to a small social group, as do the present estate tax statistics, they can be regarded only as a sample of the living population of that group. The mortality data to be applied in that case must, of course, also refer to that group.

The estate multiplier method has been used in estimating the private wealth of several foreign countries, e.g., Great Britain, the Netherlands, Australia, and France. The present paper, however, constitutes, as far as we know, the first attempt to apply it to American data.

Since the introduction of the estate tax by the Federal Revenue Act of 1916 statistics of estate tax returns have been collected by the Bureau of Internal Revenue and published in *Statistics of Income*. Beginning with returns filed during 1923 these statistics have been published annually, showing – apart from occasional additional information – the number of returns filed during the calendar year and the size and composition of estates classified by either gross estate, the aggregate of all assets, or net, the excess of such assets over various allowed deduction items.

These statistics still lack one important feature as a basis for an estimate of wealth, classification by age of decedents, essential since there is reason to assume that the size of a person's estate bears some relation to his age,

[2] Bernard Mallet seems to have been the first to publish the use of the estate multiplier method: 'A Method of Estimating Capital Wealth from the Estate Duty Statistics', *Journal of the Royal Statistical Society*, March 1908. G. H. Knibbs, a pioneer in wealth statistics, points out that Mallet's procedure followed a suggestion by T. A. Coghlan during a discussion at the Royal Statistical Society (cf. *The Private Wealth of Australia and its Growth*, Commonwealth Bureau of Census and Statistics, Melbourne, 1918).

[3] Denoting the number of living persons within the age group i as l_i, the number of decedents of the same age as d_i, and the total amount of their estates as e_i, the wealth, w_i, of all living persons of the age group is given by $w_i = e_i \frac{l_i}{d_i}$; hence the total private wealth of n age groups by $W = \sum_{i=1}^{i=n} e_i \frac{l_i}{d_i}$ (cf. Corrado Gini, *L'ammontare e la Composizione della Ricchezza delle Nazioni*, Torino, 1914).

and it is well known that the age distribution of the living differs greatly from that of the dead (cf. Table 1). These facts practically forbid any direct inference from the wealth distribution of the dead to that of the living by multiplying the Bureau of Internal Revenue totals for all decedents by the reciprocal of the over-all death rate for the entire population, or even for the adult population.

The tabulations of estate tax returns by age of decedent for 1945 provided one of the two basic elements for estimating the wealth of the rich by the estate multiplier method and, subject to the limitations to be discussed in the remainder of this section, they were statisfactory. No equally satisfactory source has as yet been found for the second basic element, the death rates specifically applicable to owners of estates above the exemption limit of the federal estate tax. Application of the over-all mortality rates for the entire population leads to entirely unsatisfactory results, as Section C will show. While the rates applied in this paper are much more appropriate, we realize that our solution is not entirely satisfactory.

2 LIMITATION OF COVERAGE

Federal estate tax returns must be filed for estates with gross values exceeding a certain minimum amount, called the specific exemption. Since 1916 the specific exemption has varied between $40,000 and $100,000, and since 1942 has been $60,000. Obviously this high threshold excludes the great majority of decedents and restricts the wealth estimates derived from the returns to the upper wealth brackets. The wealth of the rich alone can be analyzed on this basis. In 1945, e.g., the 15,878 returns filed under the tax represented only 1 percent of the decedents in the United States. Unless the exemption is drastically lowered, this will remain a serious limitation on the usefulness of federal estate tax returns for comprehensive national estimates. For the wealthiest 1 percent of the population, however, probably no better detailed source of information on private wealth exists.

3 ABSENCE OF DATA ON FAMILY UNITS

The estates covered in the estate tax statistics are those of individuals, not of family units. The two differ to the extent that total wealth of family units is legally divided among its members. In practice, division of property is, of course, more common within the wealthier sector of the population. If it leads to the formation of units below exemption limits, it will withdraw some part of the wealth from the reach of the estate tax and the statistics based on it. It may distribute the estimated wealth of one family unit over several tax cases, at least in the course of time.

Division of property will thus tend to produce an understatement of total estate tax wealth, and probably also of the inequality of wealth among

the families owning wealth in excess of the estate tax limitation. It will also raise the number of estate tax wealth holders over the affected number of family units.

4 INADEQUACY OF NET AND GROSS ESTATE CONCEPTS

Neither the gross nor net estate concept reflects an individual's 'net worth'. Net worth, however, can be derived easily as the difference between the gross estate and one deduction item, 'debts, mortgages, and liens'. This difference is called the 'economic estate' in this report and all wealth estimates are in terms of it. But classification of wealth holders and wealth by size had to remain on the basis of the published categories, either gross or net estate.

5 TIME REFERENCE OF ESTATE TAX RETURNS

All available statistics are for returns filed during a certain calendar year. The Internal Revenue Code now requires a return to be filed within 15 months after the date of death, but under certain conditions, extensions are granted.[4] The dates of death covered by returns filed during a certain year are thus distributed over that year and some earlier years. As a rule the majority of returns cover deaths during the preceding calendar year. For instance, of 15,187 returns filed in 1943, 75 percent covered deaths between September 12, 1941 and October 21, 1942, 21 percent covered later deaths, and 4 percent earlier deaths, a few of which went as far back as the 1920's.

For some analytical purposes it may be necessary to divide the estate tax data published for one year among several inferred years, using a set of lag factors. In this report we shall, however, simply use the calendar year 1944 as an approximation to the true period for the deaths covered by returns filed during 1945. It is very unlikely that this assumption significantly distorts the estimates.

6 EFFECT OF GIFTS BEFORE DEATH

The changing treatment of *inter vivos* gifts cannot be examined here in detail. While the tax authorities have generally attempted to make as many *inter vivos* transfers as possible subject to the estate tax, taxpayers have striven to construct the transfers so as to escape taxation or, after 1932, to make them subject to the lower rates of the gift tax. As taxpayers have certainly not been entirely unsuccessful in this tug of war the estate tax on balance probably stimulated *inter vivos* transfers.

[4] Approximately 85 percent of the returns filed in 1943 for estates of citizens and resident aliens were filed within the specified period (*Statistics of Income for 1942*, Part 1, p. 266).

We do not know how total wealth and its distribution would look if tax-inspired transfers were counted in with the remaining estate at the time of death. We may be fairly sure, however, that aggregate estate tax wealth would be somewhat higher, and its distribution by size within the group probably even more unequal than it now appears. *Inter vivos* transfers seem to rise more than proportionately with the size of estates. But to judge from the amounts reported since 1933 on gift tax returns, and from a recent study matching estate tax returns filed in 1945 with the gift tax returns of the decedents for 1932-44,[5] it is unlikely that the inclusion of gifts before death with estates left at death would sharply increase the estate tax wealth or substantially alter its distribution by size.

The matching of the estate tax returns filed in 1944 with decedents' gift tax returns for the preceding 13 years indicates an average of gifts reported between June 7, 1932 and December 31, 1944 of 7 percent of net estates transferred at death. Since these figures do not include gifts made by the decedents before June 7, 1932, gifts below the exemption limit, or cases in which the identity of decedents and donors could not be clearly established, the true ratio of wealth transferred through gifts to wealth left at death must exceed 7 percent, and may be estimated as at least 10 percent but not in excess of 15 percent. The ratio of reported gifts to net estates transferred at death rose from 3 percent for estates of less than $100,000 to an average of somewhat over 11 percent for estates of $1,000,000.

7 VALUATION OF ASSETS

This is a problem of a rather metaphysical nature to which imperfect man has only imperfect answers. Treasury *Regulations 105* stipulates that valuation of property must follow the general rules of "fair market value at the time of the decedent's death" or at the date one year after the decedent's death ('optional value').[6] Fair market value is defined as "the price at which the property would change hands between a willing buyer and a willing seller, neither being under any compulsion to buy or to sell".

Stressing that "the fair market value of a particular kind of property includable in the gross estate is not to be determined by a forced sale price", the Regulations proceed to various devices of establishing fair market

[5] Cf. 'Characteristics of Property Transfers During Life and at Death as Revealed by Special Analyses of 1945 Estate Tax Returns and Prior Gift Tax Returns' (Exhibit 5 accompanying statement of Secretary Snyder before the Committee on Ways and Means, House of Representatives, February 3, 1950); also J. A. Pechman, 'Analysis of Matched Estate and Gift Tax Returns, *National Tax Journal*, III (1950), pp. 153-64.

[6] 1942, pp. 22 ff. Optional value was introduced in 1935.

value, requiring "fair appraisal" for some types of property, e.g., interest from unincorporated business, "appraisal of a reputable and competent expert" for articles of artistic value, etc.

The "fair market value" principle looks simple and reasonable, but its application may not lead straight to a specific dollars and cents figure. Unless some property belonging to the estate is actually sold during the year following the date of death and the sales price is entered in the return under the optional value provision, the fair market value is a matter of guesswork. Market price quotations for stocks and bonds, and sales prices of similar objects of real estate are useful guides. But the less ordinary the piece of property and the less frequent trading in things of its kind or bulk, the more uncertain its value and the wider the probable divergence of estimates between different parties with conflicting interests.

Occasionally values are determined in bargaining between the tax officials and the administrators or beneficiaries of the estate, the former arguing for higher, the latter for lower values, although some beneficiaries have preferred higher estate values in order to minimize the income tax on capital gains they expected to realize on the sale of certain inherited properties. Agreement to a higher value on one piece of property may be given in return for agreement to a lower value on another. Or agreement to a 'blockage concession' – conceding a lower than market price on substantial amounts of stock held by the estate – may be exchanged for agreement that a certain transfer of property was made 'in contemplation of death'. Agreement may be voluntary or the result of court litigation, but the latter is rather rare as the potential cost frequently induces the parties to come to a quick settlement.

8 UNDERSTATEMENT ON TAX RETURNS

These difficulties of valuation make the question whether and to what extent tax returns understate the 'correct' figures much more difficult to answer for estate than for income tax returns. Indeed, it can be answered quantitatively only if one assumes that the final values determined after audit by the Bureau of Internal Revenue and after discussion between the Bureau and the executors more nearly approximate the true values at the time of death than the figures entered on the tax returns which form the basis of all the Bureau's tabulations and statistics. This seems a reasonable assumption. If it is accepted, the estimates should be adjusted upward. Unfortunately, not enough is known about the differences between unaudited and audited returns to make it with confidence, or for anything except the final aggregate of total wealth.

The only information on the results of auditing is given in C. Lowell Harriss' study based on special tabulations of 17,825 estate tax cases closed

in 1941, including 1,200-1,300 cases of nonresident aliens.[7] Professor Harriss found that the difference between total net estates in audited and unaudited returns was about 10 percent, and that the percentage difference was about the same for estates in all size groups above $100,000.

Whether the understatement has deviated considerably from 10 percent in other years, and particularly how large it was for returns filed in 1945, is not known. What is more important, the incidence of the understatement on different types of property has not yet been determined. It is probably uneven, being smallest for assets that present lesser problems of valuation and smaller opportunities of concealment (e.g., bank deposits, mortgages, bonds, and insurance), and largest for such assets as tangible personal property, real estate, and interests in unincorporated businesses. Stocks probably occupy an intermediate position, valuation problems being practically absent for small blocks of listed stocks but very important for large blocks, especially of small and moderately sized corporations, and for unlisted stocks.

9 INSURANCE CORRECTION

Life insurance is an asset for which the simple procedure of multiplying amounts reported on estate tax returns by inverse death rates cannot be followed. While the distribution of all the other assets may be assumed to be about the same among the persons of a given age dying during a certain interval and among the population to which they belong – subject, of course, to the reservations with respect to manipulation – the distribution of life insurance must be different because death automatically increases the value of the policy from its reserve to its face value. Hence, the life insurance assets of the decedents are larger than the share they held in the equity of the life insurance companies while alive. Using the standard procedure in this instance would seriously overstate the estimated insurance assets of the living.

Since the data for 1944 permit segregation of life insurance from other assets for each age group it is possible to make a more adequate, though

[7] 'Wealth Estimates as Affected by Audit of Estate Tax Returns', *National Tax Journal*, Dec. 1949. Forty-two percent were filed in the same year, 1941; 49 percent in 1940; 7 percent in 1939; and the remaining 2 percent in earlier years. About 44 percent, mostly smaller estates, were closed with no change in tax; 56 percent had a different, usually higher, tax after audit. About 5 percent of all cases, originally reported nontaxable, were closed as taxable.

For the sample as a whole Harriss estimated the net increase in the value of the net estate as about 10 percent of the reported net estate before the deduction of the specific exemption. For net estates of $40,000-100,000, the percentage increase caused by audit tended to be smaller, 2-10 percent. For the larger estates, the net increase hugged the 10 percent level, not counting a few extraordinary values in the thinly populated top classes.

still rough, estimate. A fairly large company, one of the few classifying the reserves against insurance in force by attained age of policy holders, gave us the ratio of reserves to face amount for insurance holders of different age groups as of the end of 1948.[8] The average ratio for all age groups was 27.8 percent, only slightly higher than the ratio shown by 82 companies (data from the American Life Insurance Association) at the end of 1944, 26.4 percent. By adjusting the reserves-to-face amount ratios of the reporting company to the average 1944 ratio for 82 companies, a set of factors was obtained that made it possible to reduce, at least approximately, the amounts of insurance shown in the estates for each age group to equity (reserve) levels. This ratio rose, first sharply then slowly, from 7 percent for policy holders in the 20-30 year age group to about 36 percent in the 50-60 year group, and to 81 percent for policy holders 85 years and older. Since insurance formed on the average 7 percent of gross estates in 1944 the correction reduced total estimated estate tax wealth about 5 percent; its effect on the estimate of the economic estate in some age and size groups was even more marked.

10 ABSENCE OF SEPARATE TABULATIONS FOR MEN AND WOMEN

Since the age-specific death rates for men and women are known to differ considerably, the failure of the basic estate tax tabulations to separate returns by sex is likely to lead to some error in the estimate of total estate tax wealth unless both sexes happen to be represented on estate tax returns in exactly the same proportion as in the population potentially liable to estate tax.[9] While this condition is probably not fulfilled in actuality we cannot say how much it is departed from in the returns filed during 1945.

One way of obtaining an idea of the possible error is to consider the situation in 1922, one of the few years – all in the early '20's – for which estate tax returns were published for men and women separately. The estimate derived from combined data for the two sexes is about 3 percent higher than the aggregate net estate wealth of men and women estimated separately. We do not know whether the error for 1944 is the same proportion. On the one hand, the relative difference in the death rates between men and women seems to have widened;[10] this would tend to increase the

[8] Figures cover 96 percent of the outstanding ordinary life insurance of the company. The ratios were obtained by dividing the mean reserve as of December 31, 1948 by the face amount of insurance in force at that date.

[9] Cf. G. H. Knibbs, *op. cit.*, p. 81: "Since experience has shown that the multiplier rate at a given age differs between males and females and the average wealth possessed differs, the wealth possessed by the sexes should be estimated separately in order to secure precision in the result."

[10] In 1922 the specific death rate for white males in the registration states was 11 percent above that for females; by 1940 the difference had risen to 26 percent (*Vital Statistics Rates in the United States, 1900-1940*, p. 127).

error. On the other hand, women in 1944 were probably reported among estate tax decedents more nearly in the same proportion as in the population on which the average death rates for the two sexes is based than in 1922; this would tend to reduce the error.

C Problems of Wealth-Specific Mortality Rates

The decedents covered by the estate tax returns are on the average older than the decedents in the general population (Table 1). The average age of 'estate tax decedents' in 1944 was 71 years, that of all white decedents – omitting nonwhites on the assumption that they contribute only a negligible number of estate tax decedents, or at least a number far below their proportion in the total population – above the age of 15, 65 years. The proportion of decedents younger than 55 is twice as high in the white population as in the estate tax sample, while from 65 years upward, the reverse holds. This difference in the age distribution reflects the lower mortality among the wealthier sectors of the population, i.e., the greater longevity of the well-to-do. (It would be even more striking if deaths in the total population instead of in the white population alone had been used.)

Table 1

Distribution of Decedents by Age Groups
Estate Tax Returns and United States White Population, 1944

Age Group	Estate Tax Decedents	Deaths in U.S. White Population[a]
Under 55	12.0	24.4[b]
55-64	18.2	19.3
65-74	29.6	26.0
75-84	29.5	23.0
85 and over	10.7	7.3
All age groups	100.0	100.0
Average age, years	71	65[b]

[a] Excluding deaths in armed forces. Source: Department of Commerce, Bureau of the Census: *Vital Statistics – Special Reports*, Vol. 25, No. 4, April 9, 1946.
[b] Above 15 years of age.

Clearly the age-specific death rates of the white population, let alone the rates for the entire population, are too high for estate tax wealth owners. Another set of mortality rates, based on the experience of the Metropolitan Life Insurance Company with a group of risks called the '$5,000 Whole Life Classification', probably more nearly represent estate tax wealth owners.[11] The minimum policy issued in this group, composed

[11] According to an estimate for 1947, about 260,000 lives were insured in this classification, of whom about 2,750 died – approximately 8 percent of the total insured by the company on ordinary policies (excluding the $5,000 Whole Life Classifica-

predominantly of well-to-do individuals, is $5,000 and the premium may not be paid less frequently than annually. Since applicants' qualifications are measured by more rigorous standards than in ordinary life insurance, the members of this group are relatively healthy.[12]

The company derived mortality data from this material by relating dollar amounts of policies becoming due to dollar amounts of policies in force. Mortality rates based on lives are not available from this source at present. As a result, the mortality rates used here are weighted by ratios of amounts of insurance held by decedents and living persons within each age group. This weighting is undesirable for purposes of wealth estimation. It is likely to cause random deviations of the available from the unavailable (true) mortality rates, and possibly a systematic bias. The extent of such bias, however, is limited by the fact that the rates were computed for 5-year age intervals. Therefore, the systematic relation between age and the wealth ratio of decedents to living, which could produce bias, is largely neutralized.[13] Inverse mortality rates were obtained from the Metropolitan data for as fine an age division as the estate tax statistics warranted – 10-year groups up to 50 years, 5-year groups from 50 to 85. These inverse mortality rates were multiplied by the number of returns and the amounts of various assets to obtain the number of wealth holders in the living population and estimates of their wealth.[14]

These rates are consistently lower than the United States white population death rates for the corresponding age groups, except for the lowest age

---

tion), indicating that this group is not nearly as restricted as that of estate tax wealth holders, which accounts for less than 1 percent of the population.

[12] The medical examination of applicants for this type of insurance is more thorough than for ordinary life insurance, and the admissible maximum mortality expectation is 110 percent of normal mortality, as against 125 percent for ordinary life insurance. In the mid-1930's a study by the company showed that 28 percent of the applications filed after screening by its own insurance agents were rejected, 12 percent for medical reasons.

The influence of the selection of particularly healthy individuals on the mortality statistics was greatly reduced by the device of computing the rates on the basis of policies that had been in existence for at least five years. Studies by the company showed that mortality in the first few years after writing the policy was exceedingly low, rose to the third or fourth year, then levelled off, in the several age groups.

[13] From a stochastical point of view, the differences between mortality rates based on amounts of insurance and those based on numbers of policies are insignificant in all age groups. The same is probably true for the differences between rates based on amounts of insurance and those based on lives.

[14] The inapplicability of this method to reported insurance assets was discussed in Section B9.

The estates on the 711 returns that did not carry information about the age of the decedent were treated as if the age distribution of their owners paralleled that of the 15,167 cases of known age.

group (Table 2).[15] The Metropolitan Life Insurance rates, therefore, seem better adapted to our purpose than the over-all white population rates.

Table 2

Metropolitan Life ($5,000 Whole Life) and United States White Population Death Rates per 1,000 Population, 1944 and 1947

Age Group	Metropolitan Life		U.S. White Population		Ratio: Metropolitan to U.S.	
	1944[a]	*1947*	*1944*[b]	*1947*	*1944*	*1947*
20-29	3.6	.8	2.1	1.5	1.71	.53
30-39	1.4	1.0	3.1	2.4	.45	.42
40-54	4.4	3.7	6.7	7.0	.66	.53
55-64	14.8	13.3	19.7	19.3	.75	.69
65-74	35.4	35.5	44.9	44.9	.79	.79
75-84	95.0	94.5	107.0	107.6	.89	.88
85 & over	207.4	185.7	221.4	173.9	.94	1.07

[a] Including war casualties.

[b] Excluding war casualties.

But how well adapted are they? Unfortunately, not much is known about mortality conditions in different social economic groups in general and of those in the wealthiest group in particular. Evidence indicates that over a considerable part of the scale, at least in the younger and middle age brackets, age-specific mortality is an inverse function of economic level. But no direct information exists on the mortality rate pertinent to the relatively high economic level we are dealing with in estimating estate tax wealth. Some check may be obtained by comparing the ratios of Metropolitan to United States white population death rates with certain findings of the Chicago Community Inventory for 1940.[16] In general, the ratios of Metropolitan Life to United States white population death rates are lower. Since the estate tax population group is certainly on a higher economic level than the top fifth in Chicago, the direction of the differences is acceptable, but we do not have any check on their size.[17]

[15] The exception is due to the different treatment of war casualties in the two bodies of data.

[16] University of Chicago; unpublished data communicated by Albert Mayer through the courtesy of the Inventory's Director, Philip Hauser. The Inventory established mortality rates for samples of the Chicago population representing 5 economic groups, ranked by the rental value of private dwellings from the lowest to the highest fifth of the population. The ratio of the mortality rates for the highest fifth of the white male population to the rates for the total white male population, expressed in percentages of the latter, is shown in Table 3.

[17] The difference in the timing of the two sets of data may affect the comparison. A set of ratios for 1941 computed from Metropolitan Life Insurance data is higher than those for 1944 in all except the lowest and the two top age groups; but they still remain below the Chicago rates.

Table 3

Ratios of Top Group Mortality to General White Mortality
National, 1944; Chicago, 1940

Age Group	Metropolitan Life ($5,000 Whole Life) to U.S. White Population Rates, 1944	Top Fifth White Male to General White Male Mortality, Chicago, 1940
20-29	1.71	.76
30-39	.45	.66
40-54	.66	.77
55-64	.75	.87
65-74	.79	.88
75-84	.89	.99
85 and over	.94	

D ESTIMATES FOR 1944

The estimates of estate tax wealth derived by multiplying the amounts reported on federal estate tax returns filed in 1945 by the reciprocals of the Metropolitan '$5,000 Whole Life' death rates for 1944 (after correction for overstatement of insurance involved in this method) are still affected by three major sources of downward bias: *inter vivos* gifts that escape the tax; tendency of taxpayers to understate estate values; and division of property among members of the family. Together they probably cause a 20 percent underestimate of aggregate wealth and its degree of inequality. The lumping together of the estates of men and women, on the contrary, may cause some upward bias, probably of smaller proportions, in the number of wealth holders and aggregate wealth.

While we cannot adjust for these inherent causes of bias until we have more information, we can experiment with the effects of different sets of mortality rates (Table 4). The lowest estimate, about 650,000 wealth holders with $103 billion of economic estate, is obtained with the help of the mortality rates for the United States white population in 1944; the highest, 1,150,000 wealth holders with $172 billion of economic estate, with the help of Metropolitan Life Insurance rates for 1947. The first estimate certainly understates the correct figure considerably, while the second probably overstates it slightly by anticipating the decline in mortality between 1944 and 1947. The wide range of the estimates clearly indicates the extreme importance of the choice of mortality rates.

The third estimate in Table 4, obtained by using the Metropolitan Insurance 1944 rates for $5,000 Whole Life policies, is regarded as the most satisfactory, subject to the three qualifications concerning bias mentioned above. The estate tax decedents of 1944 corresponded to a population of 908,000 living estate tax wealth holders with an aggregate economic estate of about $140 billion. This figure is increased to about $155 billion when

a probable net 10 percent downward bias in the underlying returns is allowed for, and raised further to about $170 billion when *inter vivos* gifts are added to estates passing at death.

Table 4

Number of Wealth Holders and Their Economic Estates, 1944, by Age Based on Different Mortality Rates[a] and Corrected for Insurance Bias[b]

		AGE GROUPS							
	All	20-29	30-39	40-49	50-54	55-64	65-74	75-84	85 & over
	WEALTH HOLDERS (thousands)								
Metropolitan Rates									
1 1947 unadj.	1,149.8	128.9	196.4	267.3	145.1	217.7	132.6	52.6	9.1
2 1947, 2 lowest age groups adj.	998.2	75.5	98.2	267.3	145.1	217.7	132.6	52.6	9.1
3 1944	908.0	29.4	143.2	223.8	126.1	195.2	133.0	49.2	8.1
U.S. White Population Rates, 1944									
4 Adj. according to Chicago experience for top 1%[c]	846.4	70.5	103.1	214.6	104.2	178.7	133.0	45.9	7.6
5 Unadj.	652.4	50.4	66.5	145.9	86.5	147.2	104.8	43.6	7.6
	ECONOMIC ESTATES (billions of dollars)								
Metropolitan Rates									
1 1947 unadj.	172.4	16.6	25.0	34.2	20.5	35.4	27.1	11.6	2.1
2 1947, 2 lowest age groups adj.	153.0	9.7	12.5	34.2	20.5	35.4	27.1	11.6	2.1
3 1944	140.2	3.8	18.2	28.6	17.8	32.2	26.9	10.8	1.9
U.S. White Population Rates, 1944									
4 Adj. according to Chicago experience for top 1%[c]	130.3	9.1	13.1	27.4	14.7	29.5	24.6	10.0	1.8
5 Unadj.	102.6	6.5	8.5	18.7	12.2	24.3	21.2	7.5	1.8

[a] MORTALITY RATES USED

Age Group	Metropolitan $5,000 Whole Life 1947 Unadj. (1)	1947 Adj. (2)	1944 (3)	U.S. White Population, 1944 Adj. (4)	Unadj. (5)
20-29	.8	1.4	3.6	1.5	2.1
30-39	1.0	2.1	1.4	2.0	3.1
40-49	2.7	2.7	3.3	3.4	5.0
50-54	6.0	6.0	6.9	8.3	10.0
55-64	13.3*	13.3*	14.8	16.2	19.7
65-74	35.5*	35.5*	35.4	38.6	44.9
75-84	94.5*	94.5*	95.0	101.7	107.0
85 & over	185.7	185.7	207.4	221.4	221.4

* *Wealth estimates for these age classes were obtained from the underlying rates for 5-year intervals.*

[b] Based on 15,167 estate tax returns with information on age, plus 711 returns without such information which are assumed to have the same age distribution.

[c] Derived by extrapolation.

E Suggestions for Improving Estimates

Our experimental work with the application of the estate multiplier method to the Bureau of Internal Revenue statistics leads us to believe that it is the easiest and most reliable approach to estimating a substantial fraction of the private wealth of the country in a form sufficiently detailed for analytical work and, what is of great importance, on a continuous annual basis. Before the method can be made to yield the best results of which it is capable, however, some improvements in the basic data are either essential or at least highly desirable. The more important are enumerated below. All except item 9 are within the competence of the Bureau of Internal Revenue, and most of these, items 1, 2, 4, 5, 7, and 8, could be accomplished without altering the form of the estate tax return now in use.

1) Cross-tabulation of estate tax returns by age of decedent and size of estate. This is by far the most important suggestion. Unless classification by age is made a regular feature of the tabulation of estate tax returns reliable wealth estimates by the estate multiplier method will be practically impossible.

2) Segregation of returns by sex and marital status. This additional tabulation would be very helpful in improving the accuracy of the estimates even if provided only at regular, say 3- to 5-year intervals. Besides it should be of considerable interest to sociologists.

3) Classification of returns by decedent's occupation. An extension of tabulations in this direction would seem justified only if a standard classification, including the former occupations of retired persons, can be developed.[19]

4) Separate tabulation of returns by year of death instead of by year of filing. This tabulation should be available once or twice a decade as its main purpose is to keep a certain check on the lag between dates of death and filing.

5) Tabulation of audited returns, covering either all returns filed during a few months of each year, or all returns at intervals of 3 to 5 years. The tabulation should at least occasionally go beyond total values of estates and compare audited with unaudited values for certain types of assets and liabilities.

6) Segregation of the different types of real estate (distinguishing decedents' homes, rented residential real estate, nonresidential real estate, and farm real estate); and of the different types of stock (common and preferred stock in publicly held corporations, and stock in closely held corporations, say in those of which the decedent owned at least 10 percent of the voting stock).

[19] Cf. the discussion in W. L. Crum, *Distribution of Wealth* (Harvard Business Research Studies, 13, 1935), pp. 14-5.

7) Combination, for a sample of returns, of estate tax returns of the decedent and of his spouse.
8) Integration, again probably on a sample basis only, of decedents' estate tax returns and their gift tax returns (as done recently for the first time for estate tax returns filed in 1944).
9) Development of specific death rates for estate tax wealth holders.

From the viewpoint of improving the accuracy of the estimates of total wealth derived by the estate multiplier method, item 9 is the most important desideratum after item 1. While each of the additional types of information listed under 2-8 will probably change total estimated wealth by only a few percent – not all, moreover, working in the same direction – improvements in the death rates used may well affect the results by 10 or 20 percent, and will also significantly alter relationships between holders of different ages or wealth. Contrary to the suggestions regarding improvements in the tabulations of estate tax returns it is, however, difficult to indicate exactly how more appropriate death rates can be obtained. One possible way is to study holders of large life insurance policies – perhaps several companies could join in the undertaking – with the purpose of deriving a special mortality table for the top group of wealth holders. Another possibility, unfortunately subject to some obvious drawbacks, is to use the estate tax returns themselves, which are now available for 30 years and have always shown the age at death, as the source of a mortality table. A third is to elaborate, and apply to a smaller top group, the method used recently in the Chicago Community Inventory in which separate death rates were calculated for each fifth of the population ranked according to the rental value of their habitation.