

Medicare's Common Denominator: The Covered Population

by James Hatten

This report describes Medicare eligibility requirements; the processes to establish Medicare entitlement; types of coverage; the composition of the enrolled population; and outlines some differences in measurement techniques used in a decennial census in contrast to Medicare enrollment.

Current Medicare enrollment figures do not represent a complete count of any segment of the total United States population. Some persons age 65 and over are not eligible for Medicare; others are eligible but not entitled. However, the Medicare enrollment figures are frequently used as surrogate counts of the aged population because they provide excellent sources of detailed demographic and geographic information for a large proportion of those age 65 and over. The data are produced semi-annually, based on daily updates.

Introduction

Since 1790, 20 attempts have been made to enumerate the entire United States population—to take a complete “body count”—to determine the nation’s common denominator. In a decennial census the target is to count and obtain accurate information about every man, woman, and child. Achieving that target requires the considerable efforts of many people at a cost of millions of dollars. Nevertheless, the results of this count have many important uses, such as the reapportionment of the United States Congress, and of State and local government bodies, and the allocation of Federal programs worth billions of dollars. Other resulting measures—where we live, how old we are, to which racial-ethnic group we belong, and other important socio-economic characteristics—have countless uses. Elected officials, businessmen, government administrators, planners, researchers, and others use the data in determining needs for public services; estimating potential markets; planning and evaluating public and private programs; and forecasting changes for the future. Legislation establishing Health Service Areas, Professional Standards Review Organization (PSRO) areas, and similar programs increases the demand for current data on the number of persons within specific areas.

Two primary uses of population data are apparent. Absolute numerical counts are often used directly, as in growth or migration studies, and for population estimates or projections. Less obvious, but no less important, are uses of population data as denominators in constructing relative numbers, such as average

per capita expenditures, percent elderly, female, or non-white, hospital beds per 1,000, influenza cases per 10,000 and deaths per 100,000. These rates and ratios are computed to ensure that measures between population groups, geographic areas, time periods, etc., are comparable, and that differences in the absolute numbers, or distributions within populations, are considered.

Americans have been “measured” every 10 years since 1790. As the time since the latest census lengthens, however, population data, particularly for small areas, become less reliable. The Medicare population, on the other hand, has been “measured” twice each year, since July 1, 1966, fulfilling a growing need for certain local area population data. Following the 1970 decennial census, Medicare data were used extensively and “accepted as the standard for measuring census age, sex, and race errors” in evaluating the coverage of the population 65 years of age and over (U.S. Bureau of Census, 1970, PHC [E]-7).

The Census counts are different from Medicare counts in some aspects, yet Medicare data for the age 65-years-and-over group are frequently used as substitutes for the total elderly population. Although some of the characteristics measured in the Medicare count are supposedly the same as those measured in a decennial census, subtle differences occur in measuring the same variable. This paper explains some of these differences; outlines how the Medicare population is measured; and provides information on the availability and sources of Medicare enrollment data, or Medicare’s common denominator.

A thorough understanding of the potential uses, and not so obvious limitations, of Medicare population data is essential not only to the use of these data as substitutes for Census data but also to their use in Medicare program analyses. Therefore a description of Medicare's disabled and ESRD population is included in this report.

As with most large-scale data collection activities, some types of errors are unavoidable. In a complete count of a large population, under-enumerating, over-enumerating, and misreporting (deliberate or otherwise) are potential components of error that must be dealt with, along with computer processing and coding errors. In the case of Medicare enrollment data, over-enumerating (delayed reporting of, or unreported, deaths); under-enumerating (all aged persons are not covered by Medicare); misreporting (race is self-designated); and processing errors should be considered.

In addition, administrative and legal requirements of the Medicare entitlement and Social Security benefit payment processes account for other problems. For Medicare purposes, eligible persons are those who could, upon completing an application or enrollment form, be entitled to Hospital Insurance (HI) protection or be enrolled in the Supplementary Medical Insurance (SMI) program or both. Entitled persons are those who have established entitlement by such action and are on the Medicare rolls. As described in the Social Security Act, enrollment refers only to those persons voluntarily applying for SMI or Premium-hospital insurance coverage, who pay the required premium. However, for purposes of this paper, enrollees include persons covered under the hospital or medical insurance program or both.

Under Medicare there are two major groups of persons insured and two major health care coverages available. Users must select the appropriate group and coverage for their specific needs. The following are major groups and corresponding coverages allowed:

- Aged (age 65 and over)—may enroll for HI and SMI, for HI only or SMI only. The sum of these three enrollments is the most complete count obtainable from Medicare data for the aged, and is therefore the Census substitute.
- Disabled—may enroll for HI and SMI or HI only (not SMI only). Although not used as a surrogate count, these counts are included in this paper because they are so frequently used in program analyses.

Persons with end-stage renal disease (ESRD) are included in one of these categories, depending upon their age (persons 65 or older are counted as aged; persons under 65 are counted as disabled). Medicare covers practically all persons with ESRD, a good population base for evaluating mortality and morbidity studies of this diagnostic category.

Within each of these categories there are subtleties that users should be aware of, even though some of them are relatively unimportant. Some apply to time periods, program requirements, measurement techniques, etc.

Medicare Eligibility—Who May Be Covered?

Nearly all persons age 65 and over were eligible for HI protection when the Medicare program first started. Those entitled to monthly Social Security cash benefits or payments from the Railroad Retirement system were included. For those who did not qualify for monthly cash benefits on the basis of their own covered employment, or as a dependent or survivor of an insured worker, a special transitional provision of the law provided eligibility.¹ Hence, early Medicare data were a close measure of the total United States population age 65 and over.

Effective July 1, 1973, disabled persons entitled to cash benefits under the Social Security or Railroad Retirement programs for at least 24 consecutive months became eligible for benefits under the HI program. Hospital Insurance protection was also extended to persons under age 65 who: 1) have end-stage renal disease and require renal dialysis or a kidney transplant; 2) are currently or fully insured or entitled to monthly Social Security benefits; or 3) are the dependent child or spouse of someone insured or entitled to benefits.

Effective October 1978, the "under age 65" restriction was removed (P.L.-95-292) for persons with end-stage renal disease. Prior law had inadvertently excluded persons over 65 with end-stage renal disease who were currently, but not fully, insured.

Who is Not Covered?

Three major groups of persons 65 years of age and over not covered by Hospital Insurance under Medicare are: 1) those who are eligible to purchase HI but do not; 2) those who cannot purchase the protection because of residence requirements; and 3) those for whom HI insurance and Social Security cash benefits are available, but who continue to work and do not apply for any benefits.

Those not covered represent a growing segment of the aged population. Virtually every aged person had HI protection when Medicare began, but various estimates suggest that an increasing number are not covered. The Administrator on Aging estimated 2 percent of the aged population was without protection in 1976 (U.S. Department of Health, Education and Welfare, 1976). As of mid-1979, The Health Care Financing Administration (HCFA) estimated 95 percent of this group was covered (*The 1980 Annual Report of the Board of Trustees of the Federal Hospital Insurance Trust Fund*) leaving 5 percent without HI protection. HCFA's projections of the total covered and non-covered population, given in Table 1, indicate that more than 1.0 million aged persons did not have HI coverage available free on July 1, 1979. Of the estimated 1,030,000 persons who may obtain HI by paying the premium, only 23,452 chose to buy the coverage as of July 1979, according to enrollment records. That leaves slightly over 1 million

¹ For more information, see 42 U.S. Code 1395 *et. seq.*

TABLE 1
Projected Population Age 65 Years and Over,¹ July 1, 1979
(in thousands)

Age	Grand Total	HI Coverage Available Free To Recipient			HI Coverage Available on Payment of Premium			HI Coverage Not Available or Services Not Accessible		
		Total	SSA-RRB	Deemed Insured & Prouty	Total	Civil Service Employees	Others	Total	Beneficiaries Abroad ²	Aliens & Others
Total	25379	24080	23347	733	1030	306	724	269	190	79
65-69	8679	8090	8090	0	509	129	380	80	45	35
70-74	6709	6249	6229	20	383	97	286	77	53	24
75-79	4567	4397	4227	170	113	55	58	57	44	13
80-84	2950	2896	2684	212	21	21	0	33	29	4
85+	2474	2448	2117	331	4	4	0	22	19	3
Men										
Total	10187	9759	9596	163	321	125	196	107	78	29
65-69	3879	3679	3679	0	169	56	113	31	18	13
70-74	2807	2665	2654	11	111	40	71	31	22	9
75-79	1752	1696	1650	46	33	21	12	23	18	5
80-84	1011	991	941	50	7	7	0	13	12	1
85+	738	728	672	56	1	1	0	9	8	1
Women										
Total	15192	14321	13751	570	709	181	528	162	112	50
65-69	4800	4411	4411	0	340	73	267	49	27	22
70-74	3902	3584	3575	9	272	57	215	46	31	15
75-79	2815	2701	2577	124	80	34	46	34	26	8
80-84	1939	1905	1743	162	14	14	0	20	17	3
85+	1736	1720	1445	275	3	3	0	13	11	2

Source: Division of Medicare Cost Estimates, Office of Financial and Actuarial Analysis, ORDS, HCFA.

¹ Excludes persons 64 years and 11 months of age who may be included in Medicare enrollment counts.

² May be enrolled but covered services are not available where currently residing.

persons who could, but do not, buy HI. There are more than one-quarter million people for whom HI services are not available. Most of these people live abroad and, although enrolled, cannot receive covered services in a foreign institution. The remaining 79,000 are aliens who are not eligible for services because they do not meet resident requirements.

In addition, not all of the estimated 24 million persons for whom HI services are available free actually receive the coverage. An estimated 0.4 million persons (as of January 1, 1980) who continue to work beyond age 65 do not receive Social Security cash benefits, since their income exceeds the maximum amount allowed for retirement benefits. Some are covered by employers' health insurance plans, and fail to apply for HI coverage, even though they are encouraged to do so.

The number of aged persons enrolled for SMI, but not for HI, may be an indicator of the increasing number not eligible for HI because the transitional provision coverage expired after 1974, and now requires as many quarters of coverage as the regular fully insured status requirement for retirement insurance benefits. In 1968 when only three quarters of coverage were required for HI insurance, 51,000 persons were enrolled in SMI only. In 1979, after fully insured status was required for HI, almost 400,000 persons had SMI only. Of these, 24,000 were retired Federal employees

insured under the Federal Health Benefits Act of 1959. Almost three-fourths of these former employees were women, who are less likely to have the work credits required under Social Security. Persons who retire from Federal service after July 1, 1960, and have the opportunity to be covered under the Federal Employees Health Benefits Act of 1959 are ineligible for HI benefits under the transitional provisions. They may, as mentioned above, purchase SMI coverage, and thus be included in Medicare enrollment data. As of July 1, 1979, 24,000 were enrolled in SMI. Aliens who are not lawfully admitted for permanent residence and who have less than five years of continuous residence in the United States are also ineligible for HI benefits.²

Vietnamese, Cubans and others are sometimes lawfully admitted, but not necessarily for permanent residence. These persons are admitted under "color of law" as refugees and may, after two years, have

² From June 11, 1973 through June 1, 1976, some aliens with less than 5 years continuous residence were provided SMI protection because a Federal district court order held the alien residence requirements unconstitutional. Although the Supreme Court reversed the order on appeal, these erroneous SMI entitlements warranted the application of equitable relief provisions and SMI entitlement continued.

their status adjusted so they may be covered when eligible. (P.L.-89-732).

Additionally, persons convicted of espionage, censorship, sabotage, treason, sedition, subversion, or conspiracy are ineligible for Medicare.

Medicare Entitlement—Who May Be Counted?

The Medicare population includes all persons who have established entitlement to HI or SMI protection or both. Those age 65 and over who are eligible for Social Security monthly cash benefits, but who have not submitted an application³ for these benefits, must apply for and become entitled to such benefits to obtain HI protection. It is not necessary for a person to receive monthly Social Security benefits to have HI protection. Establishing entitlement to these benefits is a necessary prerequisite, however.

For each person entitled to Medicare protection, a basic record is established on a Health Insurance Master File (HIM), maintained by the Health Care Financing Administration. Identification of each person's record is based on his or her Social Security or Railroad Retirement Board claim number, including a one- or two-position beneficiary identification code (BIC), that indicates the type of Social Security or Railroad Retirement benefit the individual is entitled to.

The complex benefit structure, which includes: primary and auxiliary beneficiaries; simultaneous or dual entitlement; changing BIC's (for example, changing wives to widows) with related and necessary cross-reference number maintenance, may be the source of alleged duplication in Medicare records, despite the extensive efforts made to minimize duplication. Since persons may be on the HIM file, and other Medicare administrative files with the same account number but different BIC's, a comparable BIC routine has been developed to eliminate duplicate counting. This procedure combines the separate BIC's into groups of similar codes so that multiple records will not be created.

The HIM file is updated daily with current maintenance and use information. Maintenance data consist of enrollments, terminations, cross-references, changes of address, and other data received from the Social Security Administration's (SSA's) master beneficiary record and from the Railroad Retirement Board as part of the administrative process.

Medicare enrollment data are derived from a shortened version of the HIM, called the Health Insurance Skeleton Eligibility Write-off (HISKEW). This file is produced quarterly, and comprehensive annual enrollment data are produced from the first quarterly update each March. The data show the characteristics of persons entitled as of July 1 of the previous year (unlike the decennial census which uses April 1),

³ Form SSA-1, Application for Retirement Insurance Benefits. While this form can constitute an application for any and all types of Social Security benefits, other application forms are designed for claiming other types of benefits, for example, Wives or Husbands Insurance Benefits (Form SSA-2).

although some tables include persons enrolled at any time during the year and others show enrollment by month of entitlement. Less comprehensive data are produced in early October, showing persons entitled as of January 1.

Unlike a census, these nine-month retrospective views of Medicare enrollees (except for geographic information) were selected to provide sufficient time so most of the transactions feeding into the system could be received and processed, while lessening delays in producing enrollment data.

Who is Not Counted?

Persons may be unaware of benefits due them, and therefore do not apply for Social Security cash payments. These persons, although eligible, would not be included in Medicare counts. One of HCFA's primary areas of activity is to ensure that persons eligible for benefits are informed and encouraged to take appropriate action to obtain these benefits.

There may be a small number of persons who, by choice, are not counted in Medicare enrollment figures despite their entitlement to such protection. On occasion, individuals entitled to monthly cash benefits have asked to waive their HI entitlement for a variety of reasons, including religious and philosophical beliefs. Others have tried to refuse HI entitlement because they preferred to rely on other protection. However, the law does not permit individuals entitled to monthly cash benefits to waive HI entitlement. HI entitlement can be withdrawn only through a withdrawal of the Social Security application for retirement/survivors/disability benefits. This withdrawal involves not only loss of prospective benefits, but also requires that the individual refund all amounts paid to him, or on his behalf, under Social Security and Medicare.

An unknown proportion of the estimated 0.4 million persons who are eligible for Medicare but continue to work do not apply for the coverage and are not counted.

Entitlement Basis

The Medicare population comprises two broad entitlement groups—aged (persons 65 years and over), and disabled (persons under 65.) All disabled persons entitled to monthly benefits and Medicare are, upon attaining age 65, automatically converted from disabled beneficiaries to aged beneficiaries. Their entitlement continues, but on the basis of age rather than disability, even though there may be no change in their disabling condition. This change does not affect the amount of monthly cash benefits nor Medicare protection offered. Since separate trust funds were established by Congress for retirement/survivors benefits and disability benefits, and the disability trust fund has no liability for persons age 65 or over, this change in entitlement is performed automatically. These disabled persons may have been entitled to retirement/survivors benefits had they had the opportunity to continue working. All enrollment tabulations of disabled

beneficiaries with age distributions, therefore, have an upper limit of 64 years.⁴

The automatic conversion feature may cause some difficulty for certain users interested in enrollment data on persons ever enrolled. The possibility of duplication certainly exists, since a person may be both disabled and aged in the same year. Data on disabled persons ever enrolled and those showing aged persons ever enrolled are not arithmetically manipulative. Adding the terms of the two sets does produce duplicate counts, the amount of which is measured by the difference between the sum of the two sets and a count of all Medicare enrollees ever enrolled, a difference of about 190,000 persons in July 1, 1979.

Type of Coverage

The Medicare population may also be described in terms of coverage, meaning the type of protection available. The total Medicare aged population currently consists of persons 65 years of age and over entitled to either hospital or medical insurance or both.

Most Medicare enrollees 65 years and over have both HI and SMI protection. A few enrollees must have both types of coverage. The law permits persons attaining age 65 who are not eligible for HI to purchase hospital coverage. These individuals may enroll in the HI program only if they enroll in the SMI program. Such a restriction is necessary to reduce any excessive use of the more expensive HI coverage, which might occur if an individual were enrolled for HI—covering primarily institutional care—but not for SMI—covering primarily outpatient care.

Some Medicare enrollees have one type of coverage and not the other. Every United States resident, citizen, or alien who is age 65 or over and meets residence requirements may participate voluntarily in the SMI program. Thus, while the number of persons eligible for SMI is potentially larger than that for HI, the number enrolled is smaller, because many do not elect the SMI coverage. To enroll before July 1, 1973, a person had to file a written request during specified periods. To prevent loss of entitlement or delay in coverage, the 1972 Social Security Amendments provide for automatic enrollment in SMI for persons as they become entitled to HI, and individuals must take the action of declining SMI enrollment if they do not want the coverage. The configuration of possible coverages is shown in Figure 1.

The non-concentric circles of about the same size in that figure represent the HI sub-population and the SMI sub-population. A large overlap exists, representing

⁴ There is one instance in which the automatic conversion is not properly reflected in enrollment tabulations. Persons with "ESRD only," who do not have sufficient work credits to be insured under Social Security, retain their entitlement to Medicare based on the original ESRD entitlement. They are however, shown in enrollment tabulations as aged, instead of as disabled persons over age 64.

95 percent (in July 1979) of the Medicare enrollees who have both types of coverage (HI and SMI). The small crescent shaped slices on either side of the diagram represent enrollees who have HI only (shown on the left) and those who have SMI only (shown on the right). Since some persons do not have "total" Medicare coverage some simple arithmetic is necessary to arrive at the total Medicare population count (HI only enrollment, SMI only enrollment or both types of enrollment) when it is not shown. The formula follows:

(1) HI and/or SMI = (HI and SMI) + (HI only) + (SMI only). Or, applying elementary set theory:

(2) HI and/or SMI = (HI) + (SMI) - (HI and SMI). Those persons with (HI and SMI) coverage are included in (HI) as well as (SMI). They have been added twice in (2) above, and must be subtracted once to arrive at an unduplicated count of the total Medicare population.

In most cases, for those interested in the characteristics of the entire Medicare population, data are available. However, in some instances, output data contain counts for (HI), (SMI), and (HI and SMI). In these instances, if the total population is required, the count must be derived.

For the Medicare population under 65 years of age, rules for participation under the two programs are somewhat different from those for the aged group. By law, persons under 65 cannot enroll in the SMI program without having HI protection. This requirement precludes the "SMI only" group found in the aged population.

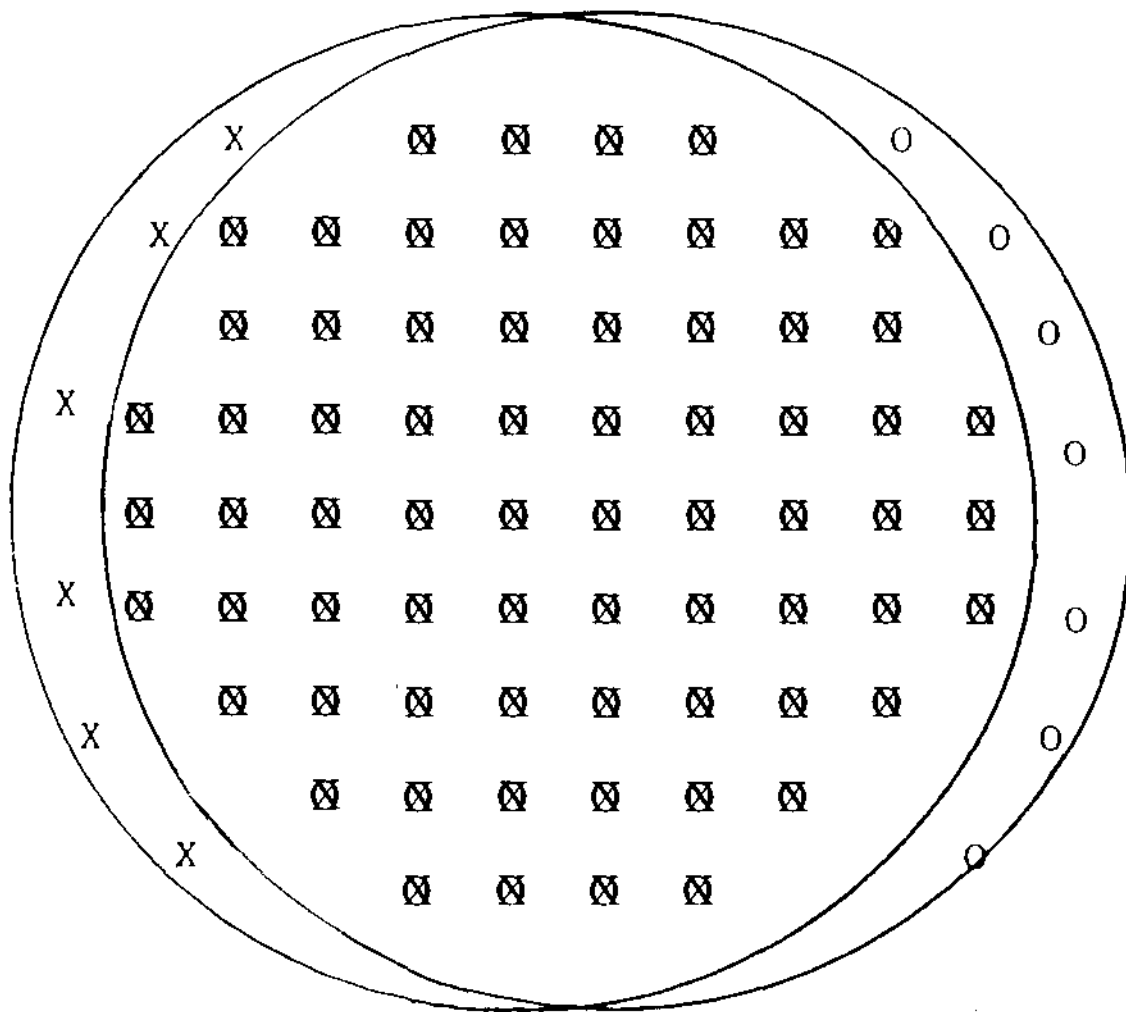
The total Medicare disabled population, therefore, consists of all persons entitled to hospital insurance protection. For the disabled, SMI enrollment is, in general, a "proper subset" of HI enrollment, since every person enrolled in SMI is also enrolled in HI.

Figure 2 shows only one crescent shaped slice representing persons with HI only protection. There is no "SMI only" group shown, as in Figure 1. Therefore, counting disabled persons entitled to HI only or HI and SMI and disabled persons entitled to (HI) should produce the same number. This, in fact, is not true because of one exception to the participation requirements. If persons were granted entitlement to HI and SMI, and it was later determined that the criteria for entitlement were not met, by law their entitlement to HI would have to be terminated. However, some of these persons are allowed to maintain SMI coverage through provisions of equitable relief. This assumes that the individuals did not contribute to Government error by fraud or similar fault.

This is one explanation of why Medicare counts for HI only or HI and SMI coverage and (HI) coverage for the disabled differ in annual enrollment publications (Health Care Financing Administration, 1978). As of July 1, 1979, Medicare counts for the disabled HI only or HI and SMI enrollments were 2,910,788; for HI, the enrollment counts were 2,910,766. The difference may be assumed to be as explained previously, although processing error may contribute to some extent.

In summary, the Medicare common denominator is the sum of persons enrolled in HI only, in SMI only,

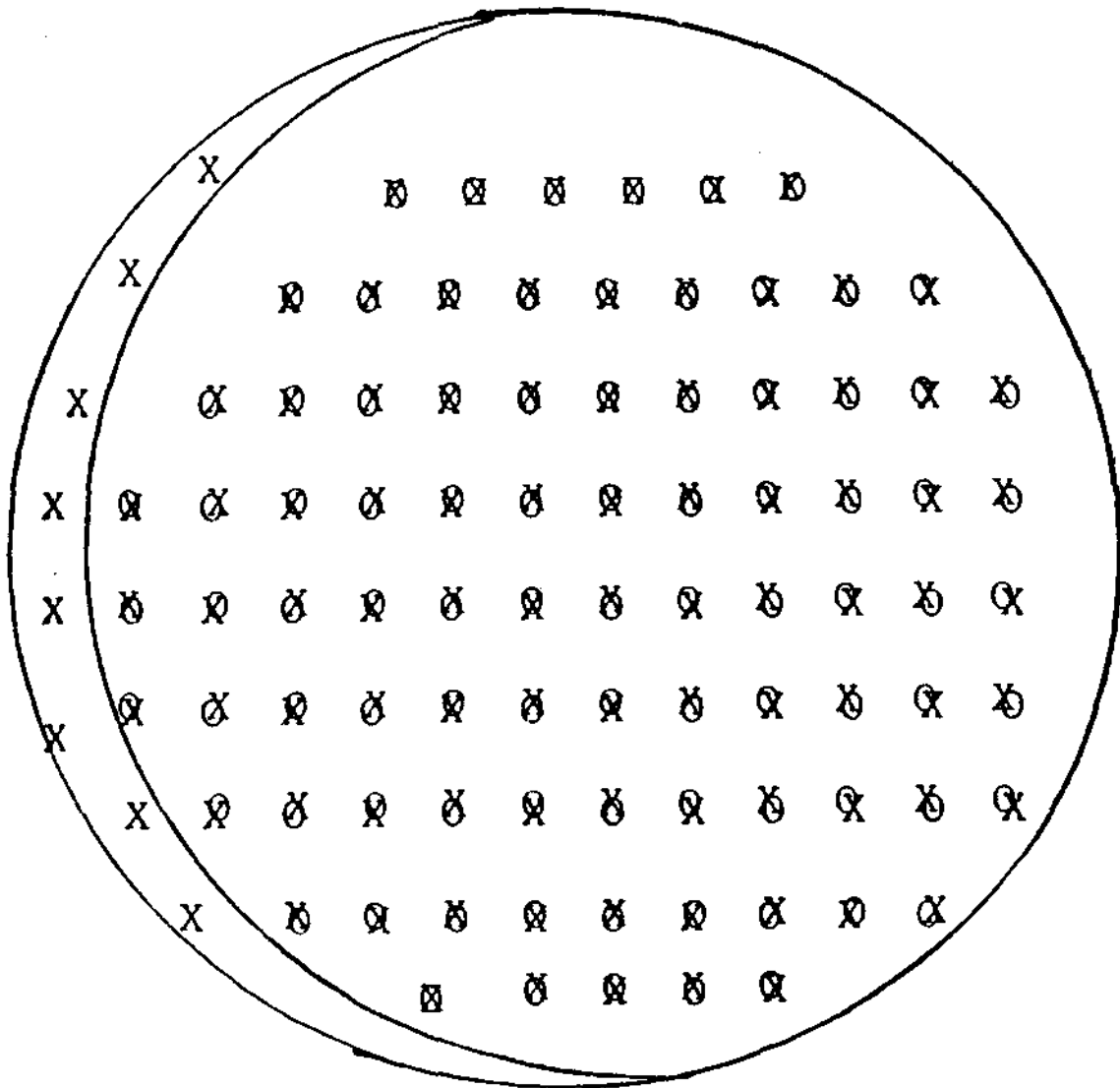
FIGURE 1
Medicare Enrollment for Persons 65 Years and Over,
By Type of Coverage



LEGEND

- X — HI only enrollees
- O — SMI only enrollees
- ⊗ — HI & SMI enrollees

FIGURE 2
Medicare Enrollment for Persons Under Age 65 Years,
By Type of Coverage



LEGEND

- X — HI only enrollees
- Ø — HI & SMI enrollees

and in both HI and SMI. Other denominators are used and obtained by separating the total Medicare population into the two major age groups and the two types of Medicare coverage.

Demographic and Geographic Characteristics

AGE

For Medicare purposes, age is defined in the legal interpretation. That is, a person attains an age 24 hours before the anniversary of his birth date. Also, a person entitled to Social Security or Medicare benefits on any day of a particular month is considered to be entitled to those benefits for the entire month. These legal and administrative interpretations create some minor distortions in Medicare data distributed by age. Some persons are counted as being one year older than they actually are. For example, persons born on August 1, 1914 would be eligible for Medicare protection for the aged on July 1, 1979, assuming other requirements were met. Legally, they attained age 65 on July 31, or 24 hours prior to their birthdate. Since they were eligible for Medicare protection as of July 31, they are entitled to this protection for the entire month, beginning July 1. These persons are enumerated as age 65 on July 1, although were they responding to a typical census count, their age would likely be reported as 64. Each of the age intervals shown in Medicare data may be thus affected. Herein lies one difference between census or other survey data and Medicare data.

The evidence required to establish the age of almost all cash beneficiaries provides an excellent basis for accurate age information for the Medicare population.

For persons establishing entitlement to Medicare by virtue of their eligibility for Social Security or Railroad Retirement benefits, age usually has been determined years earlier. Each applicant is required to give a date of birth (month, day, year) and their present age (on last birthday) when applying for a Social Security number (SSN).

Before January 1, 1980, no proof-of-age was required for an SSN. However, the claims development policies required to establish entitlement to monthly cash benefits include uniform and rigorous proof-of-age verifications. In other words, although a person's age may have been previously *determined*, age must be *established* or verified from documents submitted by an applicant before benefits are payable. Effective January 1, 1980, applicants for an SSN are required to submit a birth certificate for proof-of-age, even though many years may elapse before benefits could be payable.

Before December 19, 1977, the *approximate* age of a claimant who attained age 65 in 1967 or before was established on any documentary evidence recorded in SSA or HCFA records at least three years before the date the application was filed. After December 19, 1977, the date of birth of persons filing for Medicare must be established under regular evidence-of-age procedures. The specific proof-of-age procedures are

followed in every determination in which the claimant's age is an immediate factor of entitlement to benefits. This includes almost all types of Social Security claims.

Proof-of-age procedures differ, depending on whether a claimant alleges a date of birth indicating age 75 and over, or under 75. In the first instance, date of birth is established on the basis of two documents, if both were recorded at least five years prior to the date of application for benefits. This rule is based on findings that this evidence, although not reliable in establishing exact date of birth, will establish that a person is within three years of the age shown. Usually, for Social Security purposes, a three-year difference is not critical at age 75. It may, of course, affect Medicare distributions of persons by age.

For persons under age 75, a public or religious record of birth established prior to age 5 is required, when available. Public records of birth include birth certificates issued by a governmental entity and hospital birth records. Religious records of birth include baptismal certificates, cradle rolls, Bris, and naming certificates. Studies have shown that these documents established before age five have near perfect accuracy. (Social Security Administration, April 1965).

Proof-of-age procedures provide excellent data on age for those receiving benefits. In a study conducted by SSA, the net error rate in date of birth determinations for retirement and survivor beneficiaries was about 3 percent. (Social Security Administration, December 1978). Three-fourths of these errors were of a magnitude of one year or less.

Age is not recorded in the basic HIM file. Instead, date of birth, which remains constant, is recorded, to be used in calculating age. Date of birth data are maintained in 5-digit Julian dates to aid computer processing at specific time intervals. At each processing period, however, each person's age is calculated based on the elapsed time between the first day of month of birth (not birth date) and Julian date of the particular base or reference period. This method of calculating age introduces another small bias. The data processing programs used to generate enrollment data routines include repetitive comparisons of other pertinent data to distinguish between persons. For example, individuals 10 years old and 110 years old have equivalent Julian dates of birth. Several checks and balances are included in these processing programs to keep to a minimum any errors arising from calculating age.

For Medicare enrollment data, age is determined in different ways based on the particular type of data shown. For monthly enrollment, age is determined as of the last birthday on the first of the month of enrollment.

Mid-year figures are shown (as of July 1) for most of the Medicare data. These figures serve as the basis for utilization rates in other Medicare data. Age is determined as of the last birthday on July 1, selected as an average of, or representative of, the 12 monthly enrollments. Table 2 shows monthly HI enrollment for the aged during 1979. The average of the 12 months (24,536,376) is relatively close (less

than 0.05 percent difference) to the July 1 enrollment figure of 24,548,391; therefore, July 1 is used as a base for calculating other rates. (A more accurate basis for rates would be a weighted average, considering the number of months each enrollee was entitled during a period. Additional processing costs for this method are too expensive to achieve only a minor improvement in accuracy.)

A minor distortion occurs in SMI enrollment data for July 1 because of the entitlement start dates of those enrolling in SMI during a general enrollment period. These open enrollment periods allow those meeting the requirements to enroll in SMI from January 1 through March 31 each year. Those choosing to enroll are all entitled as of July 1, which causes a slight increase in July 1 SMI enrollment because of the cumulative effect of enrollments occurring during the January through March period.

TABLE 2
Medicare—Number of Persons 65 and Over Enrolled for Hospital Insurance by Month of Coverage, 1979

Month of Coverage	Persons 65 Years and Over
January	24,300,602
February	24,325,171
March	24,378,016
April	24,413,493
May	24,455,767
June	24,492,438
July	24,548,391
August	24,604,924
September	24,661,646
October	24,717,620
November	24,751,466
December	24,786,962

The third method of enumerating enrollees is by the "ever-enrolled" concept, in which persons are counted if they were entitled at any time during the year. Included are those whose coverage was terminated during the year because of death or other reasons. In this enumeration procedure, age is determined at the last birthday as of July 1.

Enrollment data for persons ever enrolled, combined with other Medicare data on persons served, indicates persons not receiving services. In calculating use rates for certain sub-populations (for example, ESRD beneficiaries), ever-enrolled figures are sometimes used because the persons using services exceed a mid-year count; persons enrolled after July 1 are not included in mid-year enrollment counts, but may be included in utilization counts.

There are occasions when age must be imputed. Some persons on Medicare files have unknown years of birth. During 1979 this number exceeded 7,000 aged persons, but has diminished from 9,600 in 1976. The underlying cause of these errors is now being investigated and efforts will be made to reduce or eliminate them. Until corrections are made, imputations of age are based on reason for entitlement. If a person whose age is not known is entitled to Medicare because of SSA retirement/survivors benefits, age is imputed to be 65. If disabled, imputed

age is 64. This process reduces accuracy in distributions showing age, and the error may be compounded when persons are cross-classified with detailed geographic breakouts.

RESIDENCE

Although the geographic reference in Medicare data (region, division, State, county and ZIP code) is referred to as area of residence, it is not necessarily an actual residence. It is rather a mailing address to which Social Security benefits or Medicare payments are sent. For some detailed local area analyses, the difference between a person's residence and his or her mailing address in Medicare tabulations can cause particular problems. Researchers using Medicare data to estimate local area populations or sub-populations should be aware of the potential disparity between residence and mailing address.

Some people have more than one residence. For example, a person may reside in Florida during winter months, then reside in New England during the summer. Some may change mailing address with each move; others may not. As another example, some people reside in Florida full-time, while maintaining banking accounts in New York, to which their Social Security checks are mailed.

HCFA has been requested to supply "adjusted" counts for local areas where a difference between residence and mailing address may exist for a significant number of enrollees. However, the Privacy Act of 1974 precludes the releases of names and addresses of individuals without their specific permission. Persons needing exact information on actual place of residence should seek other sources of data.

The Bureau of the Census enumerates persons at their place of residence (where they usually eat or sleep) in a decennial census, regardless of where they receive mail. This is another difference between census data and Medicare enrollment data.

Mailing addresses are specified by, and changed at the request of, Medicare beneficiaries. Mailing addresses may include institutions (such as rehabilitation or domiciliary care facilities), banks, post offices, or the mailing address of a representative payee. For beneficiaries who use the direct deposit option for their cash benefits, two addresses are maintained on the HIM file. One is the bank mailing address, the other is the beneficiary mailing address. The latter is the address used to group beneficiaries by geographic area.

Address changes are processed as part of the daily HIM file update. Therefore, while mid-year enrollment figures are produced with the 9-month retrospective update, addresses are current (as reported) as of the file update. Since the migration rate for the elderly is not high, the difference in geographic and demographic base causes only minor distortion for users of the data.

Persons whose "residence" is not known may constitute a more serious problem for users with local area interest in enrollment. During 1979, 26,865 entitled persons (less than 0.1 percent) had unknown

State of residence recorded in the HIM file. Most of these resulted from processing errors that occurred in the assignment of State codes, particularly when partial address changes were submitted. For the disabled, temporary enrollment records are sometimes established on the HIM file for persons with end-stage renal disease to ensure that these persons receive their benefits on the date of entitlement. Often these temporary records are incomplete and do not contain an appropriate State code. These persons are included in United States totals in the enrollment tables and shown separately as Residence Unknown.

Many local area planners using Medicare enrollment data are equally concerned with unknown county-of-residence factor. As of July 1, 1979 20,100 persons had mailing addresses that did not permit identification of county of residence. These persons are included in counts for States but not in counts for metropolitan and nonmetropolitan counties, or for Standard Metropolitan Statistical Areas (SMSA's). There is one exception: where there is only one type of county in a State, figures for county unknown are assigned to that type. The State of Vermont, for example, has no metropolitan counties.

The unknown county of residence factor is primarily caused by data exchange procedures between the Railroad Retirement Board and the Social Security Administration. The 1972 amendments to the Social Security Act provided for several improvements in operating effectiveness of the Medicare program. One of these, Section 263 (PL92-603), granted the Railroad Retirement Board authority to collect Medicare premiums for all individuals entitled under that program, whether or not they were also entitled under Social Security. This 1972 amendment eliminated some of the problems and administrative expenses related to the division of responsibility under prior law. This amendment became effective with premiums due beginning March 1973.

After March 1973, data on the characteristics of RRB beneficiaries are applied to the SSA system from the RRB system. Unfortunately, the RRB system does not contain data on county of residence. SSA must, therefore, derive a county code for each RRB beneficiary from mailing addresses.

A file write-off of the RRB beneficiaries with unknown county records is performed at the end of each calendar quarter. Each quarter, about 10,000-15,000 records are thus located and entered into a mechanical process that matches ZIP codes and assigns an appropriate county code. In this manner, 90 percent of the unknowns are determined. The remaining 10 percent are corrected manually.

During the June file write-off, all records (including SSA and other enrolled persons) with unknown county of residence are examined for correction.

The 26,865 enrolled persons with unknown State of residence would be an addition to the unknown county of residence count.

RACE

Medicare records reflect information obtained when individuals apply for a Social Security Number, including self-designated race indicators of white,

Negro, and other. Respondent input on race is completely voluntary since it has no bearing whatever on entitlement to benefits. When persons do not respond to the question, they are classified in Medicare data as race unknown. Published Medicare data currently classify persons as white, all other races, and race unknown.

The Office of Management and Budget (OMB), Executive Office of the President, has issued minimum race and ethnic standards for Federal statistical and administrative purposes effective for SSA on October 1, 1980.

The Form SS-5, Application for a Social Security Number, is being revised to reflect the new race classifications and will contain the following categories of Race/Ethnic Description:

- North American Indian or Alaskan Native
- Asian (Pacific Islander or American Asian)
- Negro or Black (not Hispanic)
- White (not Hispanic)
- Hispanic

Race unknown, whether or not specifically indicated in enrollment data, is included in the "all persons" or equivalent totals. Enrollment data as of July 1, 1979 show that the number of enrollees without a race designation was 752,320 (2.7 percent).

The data exchange procedures between SSA and the RRB do not include race information. HI enrollment by type of entitlement among aged persons classified as race unknown is shown in Table 3.

TABLE 3
Type of HI Entitlement, July 1, 1979

	Number	Percent
Total Aged Race Unknown ¹	677,627	100.0
Entitled to RRB	455,138	65.7
Entitled to SS	143,289	21.1
Other Enrolled Persons	89,200	13.2

¹ Persons entitled to both Social Security and Railroad Retirement benefits are counted as RRB.

The 89,000 "other enrolled persons" may include those issued Social Security Numbers by the Internal Revenue Service in the taxpayer registration program of 1962-64, which did not require information on race. Others who are not Social Security or Railroad Retirement beneficiaries may have applied for a Social Security Number to obtain Medicare coverage when it first became available. No serious effort was made to record race for these persons.

A study conducted by the Division of Statistics, Office of Research and Statistics, SSA, based on linked records from the Census Bureau and SSA, revealed that 96 percent of workers with unreported race in 1972 were white (U.S. Department of Health, Education and Welfare, May 11, 1978).

SEX

Sex information is derived from the Form SS-5, Application for a Social Security Number and Form SSA-18, Application for Hospital Insurance Entitlement. Other forms in the claims development process

which require identifying information include sex. Since sex does bear on the types of benefits payable, and, in the past, when they are payable (different retirement ages for men and women), it is required information.

As of July 1, 1979, there were only 77 aged HI enrollees, and 313 disabled enrollees with unknown sex. The former group are counted as women, the latter as men in enrollment data.

DEATHS

Deaths of Medicare enrollees are reported in two ways. First, the SSA district offices may transmit the information to central records after verifications or proofs of death are obtained. Preferred proofs include: 1) a public record of death certified by a custodian of these records; 2) a statement executed by a physician of the institution where death was confirmed; 3) statement by funeral directors; 4) coroner's report of death; or 5) death notifications from the Treasury Department because of returned checks.

The second source of reported deaths are Medicare provider billing forms. These notifications are applied directly to the HIM, but are verified before acceptance in the SSA Master Beneficiary Record file.

Depending on the source of the information, there may be a significant time lag between the date of death and the entry into Medicare records. Incentives that exist for persons to obtain Medicare coverage as soon as possible do not apply to the reporting of terminations. Thus, additions to the files are likely to be recorded more timely than terminations, leading to some over-enumeration. The nine-month lag in updating enrollment files was adopted to include most of these transmittals.

Medicare coverage is terminated the month after the month of death. Therefore, persons whose month of death is July are included in those entitled. During 1979, 110,000 deaths were reported for Medicare beneficiaries who, although deceased during July, were counted because their entitlement was terminated in August. These persons would not be counted in a census.

Summary

Medicare data, largely because of the proof of age procedures, are among the best sources of information by age for the covered population. Produced relatively frequently, they are also a good source of other detailed demographic and geographic data, despite the limitations imposed by legal and administrative provisions of the Social Security Act.

The system from which enrollment data are derived provides useful and necessary information for three broad efforts: research, publications, and inquiries.

When enrollment data are linked with records of bills submitted by providers and suppliers of services,

the objectives of evaluating the Medicare program operations can be met. HCFA's Office of Research, Demonstrations, and Statistics (ORDS) conducts studies that evaluate Medicare reimbursement, coverage, eligibility, access to services, health care providers, and other areas concerning the health care industry. ORDS funds significant outside research through its grants program to assist in the resolution of major health care financing policy and program issues.⁵

A major research publications program has been established by ORDS. *The Health Care Financing Review*, published quarterly, includes reports of research conducted within HCFA, as well as outside material. Other formats published periodically include *Health Care Financing Research Reports*, *Health Care Financing Notes*, *Health Care Financing Program Statistics*, and *Health Care Financing Grants and Contracts Reports*.

More than 15 percent of the requests for information on health care matters received by the Statistical Information Services Branch, Division of Information Analysis during 1979 were for Medicare enrollment data, the largest single area of information requests. Almost one-quarter of these requests were for information on enrollment and other coverages or populations (for example, Medicaid recipients).

Persons interested in obtaining copies of HCFA publications referred to in this article may write to:

Office of Research, Demonstrations,
and Statistics Publications
Room 1-E-9 Oak Meadows Building
6340 Security Boulevard
Baltimore, Maryland 21235

Persons interested in obtaining information not contained in published format may write to:

Statistical Information Services Branch
Division of Information Analysis
Office of Research, Demonstrations,
and Statistics
Room 2-B-15 Oak Meadows Building
6340 Security Boulevard
Baltimore, Maryland 21235

Note on Disclosure of Confidential Information

The Privacy Act of 1974 (PL 93-579) restricts the release of data with which a user may identify individuals and thereby gain additional information about them. The release of such information is termed disclosure, and it must be avoided under penalty of law.

Several disclosure avoidance techniques have been developed. For enrollment output, data suppression has been selected to prevent disclosure of confidential information. This suppression may cause loss of

⁵ For more information, see U.S. Department of Health, Education and Welfare, FY 1980.

information, especially with detailed geographic distributions, because every effort is made to protect the identity of Medicare beneficiaries included in enrollment data.

Acknowledgments

The author gratefully acknowledges the assistance of James Welsh for data processing information, Mildred Corbin, Eugene Stickler and staff of the Division of Information Analysis for helpful comments, and Marlene Langhere, for coordinating and typing the report.

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