Eligibility for the Medicare Buy-in Programs, Based on a Survey of Income and Program Participation Simulation

by Kalman Rupp and James Sears[*]

Fewer people appear eligible for Medicare buy-in programs than most earlier research indicated, implying that participation rates may be higher than previously believed. The authors estimate a 63 percent rate of participation among those eligible for the combined Qualified Medicare Beneficiary and Specified Low-Income Medicare Beneficiary programs in 1999. The estimates are based on Survey of Income and Program Participation data matched to the Social Security Administration's administrative records. The matched data provide information of better quality than the data used in previous studies.

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Summary

Medicare buy-in programs are designed to reduce out-of-pocket expenses of beneficiaries with modest income and assets. This article provides estimates of the size of the Medicare beneficiary population eligible for the Qualified Medicare Beneficiary (QMB) program, the Specified Low-Income Medicare Beneficiary (SLMB) program, and the Qualified Individual-1 (QI-1) program. The buy-in programs use the same resource limits (twice those used in the Supplemental Security Income (SSI) program) but different thresholds for determining income eligibility. The QMB program uses 100 percent of the poverty line as the cutoff, QI-1 covers persons above 120 percent but at or below 135 percent of the poverty line, and the SLMB program is in between.

Making informed judgments about the rate of participation in the buy-in programs and the need for outreach requires an accurate estimate of the size of the eligible population. If that population is underestimated, policymakers might come to unduly optimistic conclusions about current buy-in participation. In contrast, an overestimate may make current participation seem too low. If policymakers react to an upwardly biased estimate of the eligible population by increasing outreach, they are bound to be disappointed by the results of that effort.

Estimates of the eligible population from past studies of the QMB and SLMB programs range from 5.1 million to 9.1 million. In the absence of new information, it is difficult to judge the accuracy of those estimates because the methodologies had substantial shortcomings that might bias the results. The most common shortcomings include the lack of high-quality, monthly income data and the lack of information on assets from the same data file that was used to estimate participation and income eligibility for Medicare.

The current study uses the most recently available (as of August 2000) Survey of Income and Program Participation (SIPP) file that is matched to the Social Security Administration's (SSA's) administrative records. The data file covers 1995 information. Estimates were also obtained using 1991 data to assess the sensitivity of eligibility estimates to the year chosen.

The SIPP has several major advantages over other data sources because it contains relevant, high-quality information on both income and assets for establishing financial eligibility for the buy-in programs. First, the SIPP collects detailed and conceptually appropriate information on monthly, rather than

annual, income and therefore has more complete information about income than do other surveys. As a result, SIPP-based estimates of poverty are substantially lower than estimates based on the Current Population Survey. Second, the SIPP also collects information on assets at the individual level. Thus, the survey provides enough detail to measure the major income and asset exclusions directly. Finally, the SIPP data are matched to SSA administrative records: Medicare eligibility can therefore be accurately measured, and self-reported data on Social Security and SSI benefits can be replaced with more accurate monthly information.

Our 1995 simulation estimates that approximately 4.8 million persons in the U.S. noninstitutionalized population were eligible for the QMB program and an additional 1.6 million for the SLMB program. The total—roughly 6.5 million—is within the range of estimates from past studies but is closer to the lower end, suggesting that the eligible population is smaller than was previously believed. When the estimated QI-1 eligible population of 0.9 million is added, the total for the three buy-in programs is 7.4 million. Because the QI-1 program did not exist in 1995, only the estimated 6.5 million QMBs and SLMBs would actually have been eligible to receive benefits. The 7.4 million figure represents the 1995 Medicare beneficiaries who would be eligible for buy-in under program rules for 2000. Adjusting that number to account for increases in the Medicare population between 1995 and 1999 yields an estimated eligible population of 7.8 million in 1999.

Compared with other elderly Medicare recipients, eligible elderly QMBs and SLMBs have poorer health, more functional limitations, and higher rates of health care use. Thus, not only are their income resources relatively limited, but their need for potentially expensive medical care is also greater. Similar differences were not found in health, functional limitations, and health care use among disabled participants in the QMB and SLMB programs.

Our estimates imply that about 2.5 million noninstitutionalized individuals were eligible for but not enrolled in the QMB and SLMB programs in 1999. That finding suggests that fewer eligibles may be available for targeting by outreach efforts than was previously believed. Outreach may be more difficult than it would be with a larger eligible population.

An estimated 63 percent of the noninstitutionalized individuals who were eligible for the QMB and SLMB programs participated in 1999. We adjusted the participant population downward to account for the institutionalized population. Since our estimate of the size of the population eligible for buy-in is lower than most earlier research indicated, the participation rate may be higher than previously believed.

This analysis was replicated using 1991 SIPP data, and the results were consistent with the 1995 findings.

Introduction

Medicare beneficiaries are liable for certain cost-sharing charges, namely, premiums, deductibles, and coinsurance. However, under the three Medicare buy-in programs—Qualified Medicare Beneficiary (QMB), Special Low-Income Medicare Beneficiary (SLMB), and Qualified Individual (QI)—Medicaid funds may be used to reduce such out-of-pocket expenses. Title XIX of the Social Security Act links Medicaid eligibility for elderly, blind, and disabled individuals to the eligibility standards for Supplemental Security Income (SSI). Accordingly, participants of the buy-in programs must meet monthly standards for income and assets.

The major criteria for eligibility for all of the buy-in programs are to:

a. Be eligible for Medicare,

b. Have countable income levels as specified by the thresholds of the various program components, and

c. Have assets with a value that does not exceed 200 percent of the SSI asset limit.

The proper measurement of eligibility variables should consider the operational definition of buy-in eligibility rules. For example, following SSI rules, the implementation of criteria (b) and (c) depend on whether the person is considered as an individual or a member of a couple. The determination of income follows SSI rules and is based on monthly, rather than annual, income. The rules allow a certain amount of unearned and earned income to be excluded from the calculation. Some income items, such as General Assistance, are excluded altogether. The rules for determining asset eligibility also allow certain exclusions—for example, the value of the principal residence and, almost always, one car. The first $4,500 of the value of one car, van, or light truck is always excluded. The entire value of that vehicle is excluded if the vehicle is used for work-related or medical purposes.

The largest and most generous of the buy-in programs is the QMB program, which was introduced by the Medicare Catastrophic Coverage Act of 1988. Aged or disabled Medicare beneficiaries are eligible for QMB buy-in if they have monthly countable income at or below the federal poverty level and countable resources below 200 percent of the resource limit set for the SSI program.[1] Under the federal/state QMB program, Medicaid is required to pay Medicare Part B monthly

premiums and Part A and B coinsurance and deductibles.[2] Medicaid coverage under the QMB program is limited to payment of those charges unless the individual is otherwise eligible for Medicaid. However, some states supplement those benefits (for example, Maryland provides prescription drug cost sharing for QMBs).

The Specified Low-Income Medicare Beneficiary program covers Medicare eligibles who meet the QMB resource eligibility criteria and whose countable income is greater than or equal to 100 percent but below 120 percent of the poverty line. Medicaid protection is limited to payment of the Part B premiums unless the beneficiary is otherwise eligible for Medicaid. Congress added SLMB protections in 1990 as part of the deficit-reduction package.

The Balanced Budget Act of 1997 made another category of persons—Qualified Individual beneficiaries—eligible to apply for buy-in protection. Qualifying criteria for the QI-1 program include income at or above 120 percent but below 135 percent of the poverty line and assets that do not exceed the level required for QMB or SLMB eligibility. The QI-2 program covers individuals at or above 135 percent but below 175 percent of poverty, but the portion of the Part B premium it covers is less than $3 per month. Unlike QMB and SLMB coverage, QI benefits are not an entitlement. The benefits are funded by a federal block grant program serving eligible persons on a first-come, first-served basis up to the legislatively mandated cap. This article addresses the QI-1 program, which covers Part B premiums, but omits the QI-2 program because of its negligible impact on beneficiaries.[3]

This study is the first that uses SIPP data matched to the Social Security Administration's (SSA's) administrative records to estimate eligibility for the Medicare buy-in programs. The database has an advantage over the data sets used in past studies because it contains the detailed, high-quality information needed to estimate income and asset eligibility jointly using individual-level data. Past studies have lacked appropriate income and asset information and have often relied on annual rather than monthly income data and on asset data that are adjusted in the aggregate rather than at the individual level.

The use of monthly income data is very important. If incomes were uniformly distributed throughout the year, there would be no difference between income eligibility based on monthly and annual data. However, income tends to fluctuate over the year. Therefore, some people who may not appear to be income-eligible based on annual income may have relatively low (or zero) income for one or several months that would qualify them as income-eligible for those months.

This article:

- Discusses previous studies,
- Describes data sources and methodology used in the current study, and
- Presents the study's estimates of the Medicare population eligible for buy-in programs.

Methodology and Estimates of Eligibility from Previous Studies

A number of recent studies have estimated the eligible population for the various buy-in programs. Estimates for the QMB and SLMB programs, for example, range from 5.1 million to 9.1 million. In interpreting the validity of the various estimates, the following major areas should be addressed:

- The availability of high-quality information on monthly income (reflecting the monthly nature of income-eligibility rules), including items relevant to the earned and unearned income disregards used to determine eligibility;
- The availability of high-quality information on assets, including items relevant to determining eligibility (asset disregards);
- The availability of high-quality information on Medicare eligibility status; and
- The feasibility of developing individual-level estimates of buy-in eligibility rather than using indirect methods and making aggregate adjustments.

Other important considerations are the time frame of the eligibility determination and how to deal with the institutionalized population in the study. Although estimates of the number of buy-in participants are very sensitive to the year reflected in the analytic files (because of substantial program growth), estimates of the size of the eligible population are expected to be less sensitive to the time of the survey. Because the Medicare buy-in programs are relatively new and participation has substantially increased in recent years, the programs have not reached a stable, steady-state stage of development. By contrast, the forces determining eligibility for the programs change relatively slowly over time.

This section reviews the data sources and methodology used in five previous studies to estimate the size of the Medicare population eligible for buy-in programs. Most of the studies used microdata with some aggregate adjustments to estimate eligibility, but none of them used a data set that has high-quality information on all three key variables—income, assets, and Medicare enrollment—relevant to determining buy-in eligibility. The

Medicare Current Beneficiary Survey (MCBS) has accurate information on Medicare enrollment (and therefore on the population potentially eligible for buy-in) because it uses matched administrative records, but the Current Population Survey (CPS) does not. However, both major microdata sources used in those studies lack data on monthly income, undercount annual income, and most important, lack appropriate data on assets. They also lack sufficient detailed information to estimate income and asset eligibility.

Actuarial Research Corporation

A 1999 study prepared by the Actuarial Research Corporation (ARC) used averages of the Current Population Survey of March 1996, 1997, and 1998, which covered calendar years 1995, 1996, and 1997. Those averages were augmented to account for the institutionalized population by using data from the Medicare Current Beneficiary Survey. The CPS annual income data were used to simulate income eligibility for the QMB and SLMB programs. Those estimates were adjusted to include the institutionalized population, to account for population miscount in the CPS, and to correct for the use of annual—as opposed to monthly—income data in the CPS and for the lack of direct measures of assets. The corrections were based on SIPP data and were applied as aggregate adjustments. Counts of beneficiaries actually participating in a buy-in program were obtained from the Health Care Financing Administration's (HCFA's) billing records for Part B premiums.

The ARC study considered both the institutionalized and noninstitutionalized populations in estimating the number of people eligible for the QMB and SLMB programs as of July 1996. Their estimate—more than 9.1 million—may be the highest such estimate produced to date.

The study had several weaknesses. It used annual CPS data rather than monthly income data, which creates a downward bias in estimating income eligibility. To deal with that problem, the study used an aggregate adjustment. The undercounting of income in the CPS may result in upwardly biased estimates of eligibility. Since the CPS does not provide information on assets, the ARC used aggregate data from the SIPP to account for asset eligibility. The analysis did not consider detailed eligibility rules related to asset and income disregards. The actuarial estimates did not provide standard errors or any sort of confidence intervals.

Barents Group

In contrast, a study of eligibility for the QMB and SLMB programs by the Barents Group (1999) relied primarily on individual-level data. The study used the Medicare Current Beneficiary Survey, the 1996 MCBS Access to Care file, and the 1997 Income and Asset Supplement to the MCBS. Eligibility for the two programs was estimated using information on annual income and assets from the 1997 Income and Asset Supplement, with adjustments for SSI payments (annual totals, obtained from SSA administrative records) and income and asset disregards. Because the broad asset and income categories contained in the 1997 file do not identify SSI exclusions, the more detailed 1992 MCBS Income and Asset file was used to impute amounts, such as the excludable value of an automobile.

The study had several attractive methodological features. It used individual-level information from the MCBS matched to HCFA administrative records, which produced a relatively large sample size (13,231 records). The matched HCFA data allowed the analysis of enrollment and eligibility. The MCBS contains a large number of variables relevant to the description of persons who are eligible for or enrolled in buy-in programs.

Several weaknesses of the study related primarily to the shortcomings of the data on income and assets. The MCBS is believed to understate income and assets (Barents Group 1999, p. 51), which suggests an upward bias in eligibility estimates. In addition, because the 1997 file did not contain sufficient detail on income and assets, the study used imputations based on more detailed 1992 data—an additional source of error in individual-level estimates of eligibility. Other sources of error were the assumption of a uniform $4,500 value for automobiles and the apparent failure to subtract the value of the primary home. The MCBS contains only annual income information, whereas eligibility and participation in QMB are monthly concepts. The resulting downward bias in eligibility estimates counterbalances the upward bias mentioned earlier to an unknown extent. A final weakness is that the model estimated that 6.6 percent of SLMB and 18.6 percent of QMB enrollees were ineligible, although caseworkers had determined them to be income-eligible.[4]

Barents estimated that in 1996, approximately 8.51 million Medicare beneficiaries were eligible for the buy-in programs. Because the methodology included shortcomings that may result in errors in both directions, it is difficult to make strong conclusions about the direction and magnitude of errors in that estimate.

Families USA Foundation

A study by the Families USA Foundation (1998), prepared by the Lewin Group, based its estimate of buy-in eligibles primarily on the March 1997 Current Population Survey of the noninstitutionalized population. Because the CPS does not contain information on assets, the Lewin Group used aggregate SIPP estimates to impute asset eligibility.

The Lewin Group's methodology shared some of the strengths and weaknesses of that used by the Barents Group. Both studies used individual-level data with large sample sizes as their primary source of eligibility estimates. To determine income eligibility, they used annual data from the CPS (Lewin) and the MCBS (Barents) rather than the conceptually correct monthly information. Both data sources are believed to understate income. To determine asset eligibility, both studies used a weak methodology, but the Lewin Group's was weaker in that the CPS, in contrast to the MCBS, does not contain any information on assets and therefore must rely on aggregate estimates at the state or census-division level to impute asset eligibility.

The Families USA estimate of QMB and SLMB eligibles was 8.04 million. Because different methodological shortcomings may result in either an upward or a downward overall bias, it is not possible to conclude whether the results reflect net overestimates or underestimates in the absence of other evidence.

Moon, Brennan, and Segal

Estimates of QMB and SLMB eligibility by Moon, Brennan, and Segal (1998) were based primarily on 1996 individual-level CPS data, with further adjustments to account for various factors. Those data were trended forward to 1998, using cost-of-living adjustments for Social Security beneficiaries to increase projected incomes. Asset data were derived assuming a rate of return of 5 percent on financial assets (interest, dividend, and rental income). The numbers were adjusted upward to reflect the institutionalized population.

The study's advantages included the use of microdata to estimate eligibility and the presentation of separate estimates for the QMB and SLMB programs, but there were a number of methodological weaknesses. First, the authors used annual CPS data without adjustment, creating a source of downward bias in the estimates. Second, the CPS undercounting of income was a source of upward bias. Third, the asset test was based on crude approximations and included only interest, dividend, and rental income flows converted to asset levels assumed to produce the given income flow. Specifically, in the absence of CPS data on assets, the authors estimated assets using the capitalization-of-income approach, which is a weak approach. The assumed 5 percent rate of return may have been too low for the analysis period and also a source of downward bias in the estimated number of eligible persons. By not considering detailed rules for asset eligibility (for example, exclusion rules for automobiles), the study further biased the estimates. Finally, the methodology was not clearly documented.

Moon, Brennan, and Segal estimated the number of QMB eligibles to be 5.7 million and SLMB eligibles to be 1.6 million. The combined total of 7.3 million is one of the lower estimates, especially considering that the authors adjusted for the institutionalized population. Because the methodology implied both upward and downward biases of unknown magnitude, it is impossible to reach firm conclusions about the net results of those biases in the absence of other evidence.

General Accounting Office

The General Accounting Office (1999) used several sources of data to derive estimates of buy-in eligibility and analyzed data from the 1996 Medicare Current Beneficiary Survey. GAO apparently did not have access to the MCBS supplement covering 1996 income and assets. Instead, the study relied on an indicator variable to identify people with annual income below $10,000 and used the March 1996 CPS and the 1995 Survey of Consumer Finance (SCF) for additional financial information. Using the SLMB threshold of 120 percent of the poverty line, the income eligibility algorithm was rerun using the CPS, and the aggregate numbers were readjusted to reflect CPS totals. From CPS data, GAO estimated that about 200,000 people below the $10,000 threshold would have exceeded the SLMB cutoff of 120 percent of poverty. Using the SCF, GAO estimated that about 61 percent of people with income below $10,000 would qualify for Medicare Part B buy-in on the basis of countable assets. The final numbers of eligibles were derived by deflating the MCBS/CPS estimate of income eligibles by the SCF's estimated proportion of asset eligibles.

The use of SCF information on assets was a relative strength of the GAO study. Other things being equal, it yields estimates that are more precise than those of studies that rely on only MCBS or CPS data. However, the aggregate nature of the SCF adjustment was problematic. Like studies based on MCBS or CPS data, the GAO study lacked both high-quality information on monthly income and satisfactory individual-level data on assets. In addition, using annual income of $10,000 was a very crude approximation of the monthly eligibility cutoff of the SLMB program. The failure to consider differences between the rules applying to individuals and couples contributed to the problem. The study reported that MCBS sample sizes were small but provided no data. In general, the study methodology was not well documented. Finally, the study did not give separate estimates for the QMB and SLMB programs.

GAO estimated that 5.1 million Medicare beneficiaries were potentially eligible for the QMB or SLMB program in 1996. Even if allowances for changes since 1996 were made, the GAO estimate would remain lower than the other estimates, for several possible reasons. First, the analysis may have excluded institutionalized individuals.

Second, the study's information on assets from the SCF was of better quality than that of other studies using CPS or MCBS data. Given the crudeness of the measurement of income eligibility and the use of aggregate adjustments involving three different data sets, other factors may have contributed to the relatively low GAO estimate.

Data Sources and Methodology Used in this Study

The foregoing review suggests that the availability of a data set that has high-quality, individual-level data on income, assets, and Medicare enrollment will facilitate estimation of the size of the Medicare population eligible for buy-in with much greater confidence than has been feasible for past studies. The SIPP data matched to SSA administrative records satisfy all three key requirements for valid and reliable estimates of buy-in eligibility.[5]

Data Sources

The main source of data for this analysis was a SIPP file containing 1995 data (from the 1993 SIPP panel) matched to SSA administrative records. The SIPP contains detailed data on family composition, other demographic variables, income, and assets. The 1993 SIPP panel includes nine interviews, or waves, covering the period from February 1993 through January 1996. In Wave 1, 19,864 households containing approximately 63,000 individuals were interviewed (Weinberg 1999). In this study, we used only data for 1995 from the 1993 panel because the detailed information on assets was collected only in Wave 7, which took place during 1995. The information on income was collected for each of the 4 months before the month of the interview for each wave. Data on SSI and Social Security income were obtained from SSA administrative records.

Three SSA administrative record databases were matched to the 1995 SIPP data file: the Numident file, which is SSA's master file of all Social Security number (SSN) holders and applications;[6] the Master Beneficiary Record (MBR), which contains data on Social Security receipt; and the Supplemental Security Record (SSR), which contains information on the receipt of SSI. The only role of the Numident in our simulation was to identify the subset of the SIPP universe with a valid SSN match.[7] The match was needed to adjust weights to compensate for attrition from the SIPP analytic sample that arises from nonmatched SIPP records. Of the 63,000 individuals in the SIPP panel, 52,460 had valid SSNs. The match rate differed by age group and other variables.

The MBR is the record of benefit payment from Social Security Title II programs, and it was used to derive the amount of Social Security benefits that sample members received in a given month. That data source is particularly useful in that the information on the receipt and amount of Social Security benefits is believed to be of high quality because it is not affected by attrition, nonresponse error, and errors in self-reported benefit amounts. Of the 52,460 SIPP records with a valid Numident match, 15,480 had an MBR and were therefore eligible to receive Social Security payments for at least one month before the record was extracted.

The SSR is the principal source of information on the receipt of SSI benefits. The quality of that information is also believed to be superior to that of SIPP information for reasons similar to those mentioned in reference to the MBR. Of the 52,460 observations with a valid Numident match, 5,068 had an SSR, indicating eligibility to receive SSI payments at any point before the record was extracted.

The study universe was restricted to SIPP respondents who had a valid SSN match and were interviewed for Wave 7, which contains information on assets. It was further restricted to persons aged 18 or older during the reference month (the month before the interview that contains the asset questions).

To generalize results of the analysis to the SIPP universe of interest, we had to account for attrition from the sample. Without such adjustments, weighted population totals would have been systematically biased downward. The SIPP includes a weight that accounts for attrition between the Wave 1 and Wave 7 interviews, and we further adjusted that weight to account for respondents lacking a Numident match. That adjustment was done separately for the aged and disabled persons of working age in the study population. Conceptually, the adjustment factor is the inverse of the probability of the person's having a Numident match. The percentage of persons with a valid Numident match was 89.3 for the aged and 86.8 for the working-age disabled. Therefore, the adjustment factor was 1.12 (that is, 1/.893) for the aged and 1.15 (that is, 1/.868) for the working-age disabled. The final analysis weights were derived as a product of SIPP weights from Wave 7 and the SSN match adjustment factor.[8]

Determining Eligibility for Buy-in Programs

In estimating the size of the population eligible for Medicare buy-in programs, the following five variables should be measured:

1. Medicare eligibility,
2. Status as an individual or member of a couple,
3. Income eligibility,
4. Asset eligibility, and
5. U.S. residency.

A person must meet criteria 1, 3, 4, and 5 to be deemed eligible. To establish income and asset eligibility,

the person has to be properly classified as an individual or a member of a couple, because both the income and asset eligibility rules are conditional on family status.

Medicare Eligibility. Elderly (aged 65 or older) Social Security beneficiaries are automatically eligible for Medicare. Retired-worker beneficiaries under age 65 are not eligible unless they have end-stage renal disease.[9] Disabled Social Security beneficiaries are eligible for Medicare after a 2-year waiting period.

Elderly and disabled persons were potentially eligible for Medicare if they were Social Security beneficiaries, defined as persons in current-payment or suspension status during the reference month. Persons in suspension status were included because they remain eligible even when their Social Security benefits have been suspended. For example, disabled persons who are in the extended period of eligibility are not eligible to receive Social Security benefits during months in which their earnings exceed the level of substantial gainful activity ($700 a month in 2000), but they retain their Medicare eligibility. This analysis excluded retired-worker beneficiaries under age 65 from the pool of Medicare eligibles.

All Social Security beneficiaries aged 65 or older were identified as eligible for Medicare by the simulation. However, because Medicare eligibility is limited to Social Security Disability Insurance (DI) beneficiaries who had been in current-payment or suspension status for at least 2 years, disabled persons also had to be considered by the length of time they were on the DI rolls.

In summary, we measured Medicare eligibility by applying the Medicare eligibility rules to the MBR data file, which contains records of all individuals who have ever received Social Security benefits. That gave us confidence in the accuracy of our estimate of the size of the Medicare-eligible population.

Our definition of the Medicare-eligible population represents a *stock* as opposed to a *flow* concept of eligibility—that is, it identifies those who were eligible for Medicare during the reference month as the appropriate universe. The concept of eligibility implies that comparisons with the universe of people who are eligible for or participate in Medicare buy-in programs are appropriate only if other measurements are defined on the basis of a stock concept. A problem with past studies is that they made comparisons in which one definition was based on annual flows and the other was based on a point-in-time, or stock, measurement.

Status as Individual or Member of a Couple. SIPP respondents were classified as a member of a couple if they reported that they were married, with spouse present. All others, including those who were married but separated or whose spouse was absent, were classified as individuals.

Income Eligibility. Income eligibility was established by measuring countable monthly income (based on the 1995 SIPP data) according to the buy-in program definitions, with Social Security adjusted to reflect the MBR benefit information for the reference month. Social Security was included in countable income, but certain elements of income, such as General Assistance, foster care, and child support, were excluded.

Countable income is also affected by the general income exclusion (GIE) of $20 and the earned income exclusion (EIE). The first $20 of unearned monthly income is excluded from countable income based on the GIE rules. If the individual or couple has no unearned income (or has less than $20 of unearned income), the GIE of $20 (or the remainder) can be used to exclude earned income. The treatment of the remaining monthly earned income is as follows under the EIE rules: the first $65 and one-half of the remaining earned income amount are excluded from countable income.

Next, those monthly income levels were compared with 1/12 of the percentage of the annual federal poverty level for a family of one (individual) or two (couple) that pertained to each of the buy-in programs.[10] People were classified as income-eligible for the QMB program if their income was at or below the monthly version of the federal poverty line, for the SLMB program if their monthly income was above the monthly version of the federal poverty line but at or below 120 percent, and for the QI-1 program if their monthly income was above 120 percent of the monthly version of the federal poverty line but below 135 percent. Because the reference month occurred during 1995 for the study sample, we used the 1995 poverty guidelines published in the *Federal Register*: $7,470 for an individual and $10,030 for a two-person family.[11] We used $10,030 for couples.

Note that because we used monthly SIPP and SSA record data, our concept of income eligibility adequately represents the programmatic definition of income eligibility. Most other studies, however, have relied on data sources, such as the CPS and MCBS, that have only annual data on income. Because income may change on a monthly basis, people move in and out of poverty and may be eligible for certain months but ineligible for others. The use of annual measures of income in other studies is based on the incorrect assumption that income is uniformly distributed during the year. However, a person or couple may appear ineligible based on annual income data, although in fact they are eligible for one or several months during the year. The converse is also true.

Some studies try aggregate adjustments for this shortcoming, but the use of microdata, such as the SIPP, is inherently superior. Moreover, SIPP tends to report the receipt of income more completely than the CPS does and produces poverty estimates that are consistently

lower than the CPS estimates. Martini and Dowhan (1997) estimate (using 1987-1991 data) that on average, SIPP poverty rates are 27 percent lower than CPS estimates (about 9 percent versus 12 percent). Such differences in poverty and income measures are expected to have profound effects on the estimate of buy-in eligibility. Essentially, the more complete the accounting of income items, the lower the poverty rate and, therefore, the lower the estimated size of the buy-in population.

Martini and Dowhan (1997) attribute at least half of the difference between the CPS and SIPP poverty rates to the reporting of Social Security benefits. Because SSA administrative records provide a reporting of Social Security income that is even more comprehensive than the SIPP coverage, one can infer that the SIPP matched with SSA administrative records may produce even more accurate—and lower—poverty estimates than the SIPP alone produces.

Asset Eligibility. The QMB, SLMB, and QI-1 asset-eligibility rules require that countable resources not exceed $4,000 for individuals or $6,000 for couples. Those amounts are set at 200 percent of the SSI asset limit (currently $2,000 for individuals and $3,000 for couples).[12] Certain assets—most notably the value of the principal residence and the value of an automobile up to $4,500 (or over $4,500 when used for work-related or medical reasons)—are excluded from the value of countable assets.[13] Using the SIPP asset data, we could account for those exclusions.

The measurement of assets at the individual level is a major strength of the current study. Most previous studies either made aggregate adjustments using sources external to their primary data source or relied on the capitalization of asset income flows to estimate the value of assets. Both methods are clearly inferior to relying on asset information for individuals and couples.

One potential shortcoming of the SIPP is that it seems to underreport assets for wealthy people. Curtin, Juster, and Morgan (1989) find that SIPP data do not fully capture equity in businesses, farms, and real estate other than the home. However, their analysis suggests that SIPP asset data would be reliable for individuals with low or moderate wealth. We therefore considered the SIPP asset data to be appropriate for estimating buy-in eligibility.

U.S. Residency. The SIPP covers only U.S. residents, and it excludes institutionalized individuals. Therefore, we do not need to test for U.S. residency, but we do make adjustments to account for institutionalized U.S. residents.

The weighted SIPP population is intended to be representative of the entire noninstitutionalized U.S. population, but the survey was not designed to be representative at the state level. For confidentiality reasons, publicly available SIPP data group several of the less populous states together. For example, the SIPP includes a single indicator for residency in Alaska, Idaho, Montana, and Wyoming. Because of this limitation, this study did not address state-to-state variations in buy-in programs such as the higher poverty guidelines for Alaska and Hawaii.

Measuring Standard Errors

Although other studies ignored the possibility that random errors might affect point estimates of the size of the Medicare population eligible for buy-in, we believe that it is important to characterize the statistical uncertainty of estimates by developing accurate estimates of standard errors. The standard errors can then be used to develop confidence intervals around the point estimates. Because the SIPP has a complex sample design, standard error estimates that assume simple random sampling with equal probability will be systematically biased downward, implying an optimistic scenario about the confidence interval of estimates. We therefore used statistical techniques that account for the "design effect" of complex surveys such as the SIPP. We used a bootstrap technique, which is believed to produce highly accurate estimates of the true standard errors of complex surveys, especially for small subgroups.

Sensitivity Analysis

Finally, we conducted a sensitivity analysis using 1991 SIPP data. The number of participants in the Medicare buy-in programs has increased dramatically over the years, and the estimates are therefore very sensitive to timing. Arguably, the size and characteristics of the population meeting the criteria for buy-in eligibility should be much more stable over time. Replicating our eligibility simulation using 1991 SIPP data allowed us to assess the sensitivity of eligibility estimates to timing.

Results

An estimated 7.4 million people would have met the eligibility requirements for the QMB, SLMB, and QI-1 programs in 1995. As Table 1 shows, about 6.5 million were eligible for the QMB and SLMB programs, which were actually available in 1995.[14] The Medicare population in Table 2 consists of elderly beneficiaries, who are aged 65 or older, and individuals with disabilities, who are aged 18 to 64.

About 79 percent of those eligible for buy-in are elderly, and those elderly individuals are more likely than nonelderly buy-in eligibles to be female, to live alone, and to be widowed and less likely to be high school graduates. Some of the differences are quite dramatic:

although about two-thirds of the elderly buy-in eligibles are female, more than half of the eligibles under age 65 are male.

The characteristics of the elderly population eligible for the QMB and SLMB programs are also substantially different from those of the entire elderly Medicare population. The eligible elderly tend to be relatively old, and women and blacks tend to be substantially overrepresented among them. The proportion who are married is relatively low, whereas the proportion who are widowed or divorced is relatively high. They are more likely to live alone and be less educated than other elderly Medicare beneficiaries.

By virtue of being eligible for a buy-in program, elderly QMB and SLMB eligibles have lower income and resources than other elderly Medicare beneficiaries. Our data show that they are relatively disadvantaged on several other dimensions as well. They are more likely to be in poor health, to have functional limitations, and to have had five or more doctor visits and one or more hospitalizations during the previous year. Thus, QMB and SLMB eligibles not only have more limited means than other elderly Medicare beneficiaries but also a greater need for medical services.

The demographic and educational differences between the disabled QMB- and SLMB-eligible population and the corresponding disabled Medicare population are similar to those observed for the elderly. Overall, however, the two disabled populations tend to be quite similar in terms of health, functional limitations, and use of medical care.

Because of changes in the Medicare population, the current pool of buy-in eligibles may be larger than that of 1995. Between 1995 and 1999, the Medicare Part A population is estimated to have increased by about 5.1 percent (Committee on Ways and Means 1998). The elderly Medicare population grew by only 1.8 percent during that period, but the disabled Medicare population grew by 22.6 percent. When we proportionately adjust our estimates for those increases, the buy-in eligible group increases from 7.4 million to 7.8 million.[15] That adjustment expands the QMB- and SLMB-eligible population from 6.5 million to 6.9 million.

As a check on the robustness of our results, we replicated the analysis on 1991 data from the 1990 panel of the SIPP and then inflated our 1991 estimates by the growth in Medicare Part A between 1991 and 1995. We came up with 6.6 million buy-in eligibles in 1991 and adjusted that estimate to 7.5 million for 1995.[16] The closeness of the inflated 1991 estimate to the estimate based on 1995 data suggests that the estimates from the 1995 SIPP panel may be fairly robust.

Policymakers are interested in buy-in participation rates as well as the number of persons who are eligible. According to the Health Care Financing Administration, 5.3 million people were participating in the QMB and SLMB programs at the end of 1999. However, that figure includes nursing home residents, who are not part of our estimated eligible population. In calculating a participation rate, we followed the lead of Families USA (1998) in accounting for institutionalized individuals by using an 18.9 percent adjustment to the participant population. We estimated that 63 percent of noninstitutionalized individuals who were eligible for the QMB and SLMB programs in 1999 were actually participating in them, which implies that approximately 2.5 million people who were eligible were not participating. Our participation rate was 11 percentage points higher than Families

Table 1.
Persons eligible for a buy-in program, by type of program and basis for Medicare eligibility, 1995

Basis for Medicare eligibility	QMB	SLMB	QMB and SLMB combined	QI-1	Total
			Number (thousands)		
Disabled	1,077	277	1,354	181	1,535
Elderly	3,782	1,352	5,134	709	5,843
Total	4,859	1,629	6,488	890	7,378
			As a percentage of total in program		
Disabled	22.2	17.0	20.9	20.3	20.8
Elderly	77.8	83.0	79.1	79.7	79.2
Total	100.0	100.0	100.0	100.0	100.0

SOURCE: Survey of Income and Program Participation file matched to Social Security Administration administrative records.

NOTES: The disabled population consists of people aged 18 to 64. The elderly population consists of people aged 65 or older.

The estimates refer to eligibility during the SIPP reference month (between January and April 1995).

Table 2.
Characteristics of the disabled and elderly buy-in eligible and Medicare populations, 1995

Characteristic	QMB- and SLMB-eligible population			Medicare population		
	Disabled	Elderly	All	Disabled	Elderly	All
Population (thousands)	1,354	5,134	6,488	3,369	31,280	34,650
Unweighted N	202	880	1,082	518	5,279	5,797
			Percentage distribution			
Age						
39 or younger	28.4	0	5.9	18.7	0	1.8
40 to 49	23.8	0	5	21.8	0	2.1
50 to 59	32.0	0	6.7	34.2	0	3.3
60 to 69	15.8	24.8	23	25.4	30.6	30.1
70 to 79	0	46.3	36.6	0	47.9	43.2
80 or older	0	28.9	22.8	0	21.5	19.4
Total	100.0	100.0	100.0	100.0	100.0	100.0
Sex						
Female	47.1	72.8	67.4	39.7	57.6	55.8
Male	52.9	27.2	32.6	60.3	42.4	44.2
Total	100.0	100.0	100.0	100.0	100.0	100.0
Race and ethnicity						
Non-Hispanic						
White	61.4	58.3	58.9	74.0	85.5	84.4
Black	26.2	22.4	23.2	16.4	7.6	8.4
Asian or other	3.7	5.1	4.8	3.0	1.9	2.0
Hispanic	8.6	14.3	13.1	6.7	5.0	5.2
Total	100.0	100.0	100.0	100.0	100.0	100.0
Married						
Spouse present	17.1	22.8	21.6	44.0	54.7	53.6
Separated or spouse absent	6.5	3.9	4.4	3.5	1.9	2.0
Divorced	24.8	10.9	13.8	21.9	6.2	7.7
Widowed	10.0	54.4	45.1	6.3	33.2	30.6
Never married	41.6	8.0	13.0	24.3	4.1	6.0
Total	100.0	100.0	100.0	100.0	100.0	100.0
Living arrangement						
Alone	29.6	49.4	45.3	21.3	32.5	31.4
With others	70.4	50.6	54.7	78.7	67.5	68.6
Total	100.0	100.0	100.0	100.0	100.0	100.0
Education						
High school graduate	52.0	30.3	34.8	56.4	61.6	61.1
Less than high school	48.0	69.7	65.2	43.6	38.4	38.9
Total	100.0	100.0	100.0	100.0	100.0	100.0
Health status						
Excellent	2.7	2.1	2.3	1.6	7.9	7.3
Very good	13.1	11.9	12.1	11.0	19.4	18.6
Good	27.1	27.0	27.0	25.9	35.3	34.4
Fair	29.0	37.2	35.5	30.2	25.7	26.1
Poor	28.0	21.8	23.1	31.2	11.8	13.7
Total	100.0	100.0	100.0	100.0	100.0	100.0

(Continued)

Table 2.
Continued

Characteristic	QMB- and SLMB-eligible population			Medicare population		
	Disabled	Elderly	All	Disabled	Elderly	All
Doctor visits in past year						
None	14.6	11.5	12.2	12.9	11.0	11.2
One	9.6	11.7	11.3	9.7	12.4	12.1
Two to four	26.4	34.9	33.1	26.8	38.8	37.6
Five or more	49.3	41.9	43.5	50.6	37.8	39.0
Total	100.0	100.0	100.0	100.0	100.0	100.0
Times hospitalized in past year						
None	80.7	81.1	81.0	79.3	84.0	83.5
One	9.2	13.5	12.6	12.5	11.7	11.7
Two or more	10.0	5.4	6.3	8.2	4.4	4.7
Total	100.0	100.0	100.0	100.0	100.0	100.0
			Percentage reporting			
Physical limitations						
Has difficulty—						
Seeing	29.1	25.1	25.9	24.2	13.3	14.3
Hearing	15.2	21.6	20.3	13.4	16	15.8
Lifting 10 pounds	41.5	44.8	44.1	43.7	25.2	27.0
Climbing stairs	45.5	52.3	50.9	50.2	29.4	31.4
Walking 3 blocks	47.9	50.9	50.2	53.8	29.9	32.2
Using phone	11.6	8.6	9.2	8.7	5.3	5.6
Getting around home	11.0	13.6	13.0	10.9	6.4	6.9
Getting around outside	21.5	30.2	28.4	26.6	14.6	15.7
With chair or bed	15.3	16.7	16.4	19.6	9.2	10.2
Bathing	12.4	18.0	16.8	15.2	8.5	9.2
Dressing	14.3	10.0	10.9	13.8	5.3	6.2
Eating	3.7	3.2	3.3	4.2	1.7	2.0
Using toilet	9.4	7.0	7.5	9.4	3.5	4.0
Preparing meals	15.2	15.5	15.5	15.1	7.3	8.1
Doing light housework	20.4	25.1	24.1	23.7	11.7	12.8
Unable or requires help—						
Lifting 10 pounds	19.8	24.9	23.8	22.4	12.6	13.5
Climbing stairs	27.0	33.7	32.3	30	16.4	17.7
Walking 3 blocks	28.0	32.6	31.6	32	18.1	19.4
Using telephone	5.0	2.2	2.8	3.4	1.6	1.8
Getting around home	4.4	4.8	4.7	4.8	2.7	2.9
Getting around outside	16.7	24.5	22.9	18.2	11.4	12.0
With chair or bed	6.0	4.7	5.0	7.2	2.6	3.1
Bathing	8.4	5.2	9.8	8.8	5.2	5.5
Dressing	10.0	5.1	6.1	8.1	3.1	3.6
Using toilet	6.4	2.5	3.3	4.7	1.6	1.9
Preparing meals	14.3	13.0	13.3	12.7	6.0	6.6
Doing light housework	16.6	18.4	18.0	17.9	8.4	9.3

NOTES: Estimates are based on weighted data from the Survey of Income and Program Participation (SIPP) file matched to Social Security Administration administrative records. The SIPP data were gathered between January and April 1995.

Percentages may not add to 100 because of rounding.

USA's because their estimate of the number of eligible persons exceeded ours by more than 1 million.

Adopting the Families USA adjustment facilitates comparison with their study, but there are many other possible ways to account for the institutionalized population. We explored several alternatives and achieved results that were quite robust. The first alternative was to generate a rough independent adjustment to the size of the participant population. The adjustment was based on the 1995 National Nursing Home Survey, which indicated that 56 percent of nursing home residents have Medicaid as their primary payer (Bishop 1999).[17] Since approximately 1.6 million Americans currently reside in nursing homes, we estimated that 900,000 buy-in participants (or about 17 percent of the buy-in population) were nursing home residents. The adjustment of 17 percent was close to the 18.9 percent from Families USA, and it raised our QMB and SLMB participation rate from 63 percent to 64 percent.

The second alternative was to follow the lead of the Actuarial Research Corporation (1999) in adjusting the size of the eligible population to account for institutionalized individuals. That method resulted in a participation rate for the entire population, including nursing home residents. Because nursing home residents enrolled in Medicaid to receive long-term care as well as buy-in, we expected that buy-in participation would be higher for a population that included them. To account for institutionalized individuals, the Actuarial Research Corporation adjusted the QMB-eligible population upward by 15 percent and the SLMB-eligible population upward by 7.5 percent. When we made similar adjustments, the overall participation rate in the QMB and SLMB programs was estimated at 68 percent. As expected, that rate was slightly higher than the one estimated for the noninstitutionalized population.

Because we estimated that the buy-in eligible population was smaller than most previous researchers had supposed, our estimates of buy-in participation were also higher. We concluded that approximately two-thirds of people who were eligible for the QMB and SLMB programs were participating in them in 1999. Although the treatment of nursing home residents affects the participation rate slightly, our estimates appear quite robust.

Notes

[1] Because poverty is an annual concept, eligibility is based on 1/12 of the relevant poverty guideline (see, for example, Health Care Financing Administration 1999).

[2] As of October 2000, Medicaid also pays for Part A premiums for 355,000 aged beneficiaries who are not automatically entitled to Part A protection.

[3] Another program, Qualified Disabled and Working Individuals (QDWIs), focuses on persons who were previously entitled to Medicare on the basis of disability and who lost eligibility because of substantial gainful activity. Since only a small number of individuals are enrolled in QDWI, that program is not discussed here.

[4] Note, however, that this discrepancy between survey and administrative data may be partly or completely the result of misreporting of income by buy-in applicants, rather than error in the survey data or methodology.

[5] The only previous study that used individual-level SIPP data to measure both income and asset eligibility for the QMB program is Yelowitz (1997). However, the purpose of that important study was not to estimate the size of the population eligible for a buy-in program. Moreover, Yelowitz did not estimate SLMB eligibility and did not have access to matched SSA administrative records.

[6] The Summary Earnings Record (SER)—another SSA administrative records file—was used to identify SIPP sample members who had a valid SSN. However, the source of the SSN information of the SER is the Numident. Because no information unique to the SER was used, we refer to the Numident source in the context of the SSN match throughout this article.

[7] Respondents in the SIPP are asked to voluntarily report their SSN to the interviewer, but some individuals refuse to do so. The implication for this study is that a certain portion of the SIPP universe cannot be matched to SSA administrative records.

[8] Note that weighting procedures implicitly assume that attrition within the cells used to derive the weights is random with respect to the analytic relationships of interest. To the extent that this assumption does not hold, weighted estimates will include some error reflecting differential attrition. That should not be a major problem for this study because the attrition from both sources is relatively modest. In addition, the use of separate factors for disabled persons of working age and persons who are aged 65 or older reduces this potential source of error. In any event, weight adjustments properly account for the overall level of attrition and therefore eliminate a systematic source of bias in estimating population totals.

[9] Because of the rarity of end-stage renal disease, the condition could not be modeled using SIPP data.

[10] We refer to 1/12 of the federal poverty level as the "monthly version" of the federal poverty level in this article. The SIPP uses 1/12 of the federal poverty level for the purpose of determining the poverty status of families.

[11] *Federal Register*, vol. 60, no. 27 (February 9, 1995), pp. 7772-7774.

[12] These values have not changed since 1989. Therefore, the asset-eligibility requirements implicitly are becoming increasingly strict over time because of inflation.

[13] The simulations excluded the value of the most expensive automobile based on the observation that in determining SSI income eligibility, the value of the automobile is excluded, typically on medical grounds, even if it is worth more than $4,500.

[14] To reflect the magnitude of potential statistical error around the point estimate of 6.5 million, we calculated the 95 percent confidence interval around that estimate. The number of people who were eligible for the QMB and SLMB programs combined in 1995 is estimated to be between 6.10 million and 6.83 million, with 95 percent confidence, using a bootstrap method to derive the estimate. Using the (incorrect) assumption of simple random sampling would have resulted in slightly narrower—and biased—estimates of the confidence interval.

[15] We relied on estimates of the Medicare Part A population from the *1998 Green Book* and made separate adjustments to the aged and disabled components of the Medicare population.

[16] The 1991 estimate for the elderly buy-in population—5.45 million—was proportionately adjusted for 8.2 percent growth in the elderly Medicare Part A population between 1991 and 1995. The 1991 estimate for the disabled buy-in population—1.17 million—was proportionately adjusted for 40.5 percent growth in the disabled Medicare Part A population between 1991 and 1995.

[17] A few of the Medicaid beneficiaries in nursing homes are medically needy individuals who do not receive buy-in, and a very few of the buy-in participants in nursing homes may not have Medicaid as their primary payer. Still, the 56 percent figure serves as a reasonable estimate of the portion of the nursing home population receiving buy-in.

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