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Behind the Scenes in Developing the Medicare Trustee Reports

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Summary: Ever wonder how the Health Care Financing Administration decides on certain assumptions used in projecting Medicare costs? Panelists discuss data sources and advice used in developing these projections.

Mr. Dale H. Yamamoto: John Wandishin is with the Office of the Actuary of the Health Care Financing Administrative (HCFA) in Baltimore, where he is primarily responsible for the hospital insurance (HI) trust funds. He will not only talk about HI, but also about the supplementary medical insurance (SMI) fund.

Mr. John A. Wandishin: What I'm going to talk about is basically how we do our projections and what assumptions we use, and then a little bit about the results of this year's trustees' report.

As with any projection, the first thing you have to do is look at what's happened historically. Let's take a look at what happened in 1998. In 1998, HI covered 33 million aged and 5 million disabled people. Most people who are covered by HI don't use a service in any given year. In 1998 only 22% of the covered people used services. The income amounted to \$140.5 billion, and the outgo amount was \$135.8 billion, giving a surplus of \$4.8 billion. This was the first surplus for HI in four years.

The main source of income is payroll taxes, which amounted to \$124.3 billion or 88% of total HI income. The payroll taxes, of course, are the 1.45% that each employee pays on their earnings, together with the additional 1.45% contributed by the employer. The tax is now calculated on all earnings; there's no longer a wage base for Medicare. It's scheduled to remain at the 2.9% level, forever. It would take an act of Congress to get the tax rate changed.

The second income item is interest earned by the trust fund. The net amount in 1998 was is \$9.1 billion, or 6% of total HI income. The third item is the Social

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Security benefit tax. This amounted to \$5.1 billion, or 4% of total HI income. This was a provision that started in 1994. Prior to 1994, Social Security beneficiaries had to pay tax on up to 50% of their benefit. Starting in 1994 they had to start paying tax on up to 85% of their benefit. The tax that comes from that additional 35% gets deposited into the HI trust fund. Other miscellaneous income amounted to \$2.1 billion, or 2% of total HI income. These are basically the premiums that are paid by those people who don't get HI coverage for free, or certain general revenue transfers, or people who were grandfathered in the beginning of the program.

On the expenditure side, most of the expenditures were benefits. The largest benefit category is inpatient hospital (IH). IH benefits amounted to \$85.4 billion in 1998, which was 64% of the total benefits. This includes payments to hospitals on the prospective payment system. It includes not only the diagnostic-related group amount, but also other amounts that are paid by Medicare, including cost of interns and residents, capital costs for the hospital, and additional payments for hospitals having a high proportion of low-income patients.

The next expenditure is home health care (HHC) agencies. These benefits amounted to \$12.7 billion, which was a 27% decrease from 1997. This large decrease was due to the Balanced Budget Act (BBA), which transferred certain HHC services to Part B, as well as the implementation of an interim payment system that would hold us over until a prospective payment system was ready to be implemented. The transfer to Part B, when fully implemented, was going to allow Part A to pay only for the first 100 visits after a hospital stay. Part A would pay for the first 100 visits after the hospital stay, and Part B would pay for any more visits past that point plus any not connected to a hospital stay. The transfer was to be done equally over six years.

However, in 1998 only one-sixth of the amount that was supposed to be moved was actually transferred. What ended up happening was that at the same time the HCFA was implementing a major fraud and abuse initiative that was pulling out claims and looking at them to see whether they were medically necessary. Future claims for the same person would come in, and nobody could tell whether that 100-visit limit had been met yet. The intermediaries didn't know what to do, so they weren't paying any of the claims. That certainly didn't go over too well with the HHC agencies, but hopefully that's all being fixed now. Things will get back a little bit to normal, and HHC won't be showing a 27% decrease anymore.

The next category is skilled nursing facilities (SNFs). These benefits amounted to \$13.5 billion, which was a 7% increase over the previous year. The SNFs are coming on to a new prospective payment system that started in July 1998, and many people are hoping that that will help HCFA better control the costs for the SNFs. Hospice benefits amounted to \$2.1 billion, which was about the same as 1997. In the early 1990s it was growing at about 30-40% per year, but with the implementation of fraud and abuse initiative, the growth rate has dropped to about 5% over the last few years, and in 1998 there actually was a 0% increase.

The last benefit category is for managed care. It's been increasing substantially because of the higher enrollment. As enrollment increases, of course, there are more dollars being spent. However, in 1998–99 the enrollment has been lower than what we had assumed as the plans try to figure out the new Medicare+Choice legislation and whether it's worth staying in Medicare or not. Finally, the last expense category is administrative expenses. This includes not only federal salaries and expenses but also funds that go to the intermediaries that help administer the HI program. It also includes the cost of the health care fraud and abuse control program provided for by the Health Insurance Portability and Accountability Act of 1996.

On the SMI side in 1998, we covered 32 million aged and 4 million disabled people. About 87% of them used services in 1998. Income amounted to \$87.7 billion, and outgo to \$77.6 billion, giving a surplus of \$10.1 billion. The surplus was that large because there were 13 premium payments in 1998, with the premiums for January being paid in December 1998. If only 12 premium payments had been made, the surplus would have been about \$4 billion.

Looking at the income items for SMI, the largest item is transfers from the general fund to the Treasury. They amounted to \$64.1 billion, which was 73% of total SMI income. Basically, this is the difference between the cost per beneficiary and the amount of the premium and a little bit of interest. It's set in law how it should be determined, and there's also a provision to maintain a small contingency reserve.

The next category of income is premium collections. They amounted to \$20.9 billion, or 24% of total SMI income. The premium is set annually, based on the method specified in the law. In 1998, it was \$43.80 a month. Interest and a small amount of other income amounted to \$2.7 billion, or 3% of total SMI income.

On the expenditure side, again, most of the expenditures were for benefits. Physician and other professional services amounted to \$45 billion, or 59% of total benefits. It includes payments for services provided in the office or in the hospital. It also includes durable medical equipment, lab, ambulance, and other services. It only grew at 2% over 1997. That was due to the fact that although there were higher per-person costs, a lower number of people were receiving services on a fee-for-service (FFS) basis. Facility payments amounted to \$17.9 billion, or 24% of total SMI income. This is for outpatient hospital (OH) facilities, SNF, and the new HHC agency benefit. Again, it also increased at 2% over 1997. Managed-care payments amounted to \$13.2 billion, or 17% of total benefits. It was a 20% increase over 1997, and, again, that was due to the rapid growth in the number of managed-care enrollees. The last category is administrative expenses. It's \$1.5 billion, or 2% of total outgo. It includes both the funds for Medicare carriers and intermediaries and the funds for federal salaries and related expenses.

I want to talk a little bit about how the trust fund operates and what a trustees' report is. Title XVIII of the Social Security Act established two trust funds—an HI trust fund and an SMI trust fund. All the financial operations are handled through these funds. Income that comes in is used to pay benefits right away, and any

income that's not used to pay benefits is invested in special government securities. The securities are held for periods of time when income is not sufficient to cover the benefits of the program, as had happened for HI the last three years before 1998. In that way it's very similar to the Social Security trust fund. The only big difference is for Social Security most of the payments are done on the third of every month as all benefit checks go out, whereas for Medicare the outlays are pretty much spread throughout the whole month.

The Social Security Act also established a board of trustees, which is made up of the Secretary of Treasury (the managing trustee), the Secretary of Health and Human Services, the Secretary of Labor, and the Commissioner of Social Security. It also has two public members: Steven G. Kellison, who many of you probably know, at least by name, and Marilyn Moon. Both began serving their four-year terms on July 20, 1995, so their terms are going to be up shortly after this meeting. The administrator of HCFA serves as the secretary for the board of trustees.

The Social Security Act requires that the board report to Congress annually on the financial and actuarial status of the two trust funds. That report should be delivered to Congress by April 1 of every year. In 1999, the report actually did get out on time; it was signed on March 30 and delivered to Congress. Because of the uncertainty about the future, the trustees make assumptions under three alternative sets. They call them the low cost, intermediate, and high-cost assumptions. I'll concentrate on the intermediate assumptions because they're the ones that gain the most notoriety.

We'll now take a look at the models we use to project the two program benefits. The models for HI and for SMI were developed separately, so there are some differences between the two models. The HI model, for the first 25 years of the projection period, is based on a three-factor model where the three factors are multiplied together to yield total expenditures, separately for each provider type. The first of the factors is the FFS population. The FFS population is tabulated using numbers of people from Social Security's Office of the Actuary, taking out those people not eligible for HI, and then using some assumptions as to how fast the managed-care enrollment is increasing.

The next factor is utilization. For HI that's known as the units of service per FFS person. What we do there is calculate historical factors and then assume a return to the normal historical trend. The normal historical trend for all the provider types in HI, after you take into account the effect of people shifting to managed care, is to have no increase in utilization. Therefore, the only change in this factor by the end of the 25-year projection period is due to the changing age/sex composition of the population; the factor for the 25th year is used for the last 50 years of the 75-year projection period.

The last factor is the reimbursement per unit of service; that factor includes both price and intensity, and it's projected using current law rulings about price and historical trends for intensity. This combined factor is then assumed to equal the

average hourly earnings increase for the last 50 years of the projection period. For all the provider types, that average hourly earnings increase is larger than just the price factor by itself, but it's smaller than the price and the intensity combined. There is a little bit of slowdown in growth assumed after the first 25 years. Finally, when we complete all these factors and these projections, we then have an FFS baseline. Managed-care projections are done by using the same managed-care population that we use in coming up with the FFS population, and the per capita increases as specified in the law and tied to the FFS increases.

On the SMI side, there are basically three broad categories of benefits: benefits processed by the carriers, benefits processed by the intermediaries, and managed-care benefits. For carrier benefits, which are mostly reimbursed on a fee schedule, we use a three-factor approach. The first factor is the FFS population. Again, this is calculated using the Social Security population numbers, assuming that historical rates of participation continue to apply and taking the managed-care enrollment out of that piece. The second factor for price increases is basically the Medicare economic index for physician services and the combined premium increase for most of the other professional services, such as labs and durable medical equipment. This factor is adjusted for assumptions regarding the physician participation rate and any legislative impacts that are going to occur. The final factor is a residual, where we look at what the historical trends have been, and we use that to develop projection factors for each type of service.

The benefits processed by the intermediary are basically the facility costs, which are reimbursed on a reasonable cost basis. There are two factors used in that model: population and per capita cost. Population, of course, is the FFS population. It's the same as the carrier population. And the per capita costs are computed very similarly to the residual factor for carriers. The thing to note is as these services begin to be paid under prospective payment systems, the model will change to use a three-factor approach that's very similar to the carrier model.

Finally, once we get the carrier and intermediary numbers, we then have total FFS numbers. We can then use these to project the managed care. We start with the managed-care population projection, and the per capitas again increase at rates tied to the FFS increase. For SMI, these projections are done only for the first 13 years of the projection period. After that, the types of service are combined, and the total increase is projected assuming that the rates of increase will gradually decline to the same rate of increase as gross domestic product (GDP) per capita by the end of the first 25 years. For the last 50 years it's assumed that the rates will increase at GDP per capita rate.

Mr. Yamamoto: John, before you talked about all the different factors going into the projections. Is there any kind of assumption, implicit or explicit, on the risk selection between participants in the Medicare+Choice versus the FFS plan? I guess I have no idea how you handle that.

Mr. Wandishin: We're assuming that people who join managed-care plans use less services on average, when more people join HMOs, the people who are left

have higher utilization rates. Because of that, once we get out far enough that we assume the managed-care population has reached its limit, which we assume to be at about

25–30% for the Medicare population, then there won't be any more utilization increases on the HI side. For SMI it's a little harder to do because obviously just about everybody uses SMI services. There is some usage even by the managed-care people, and they also take that into account because there's still some risk selection. The ones remaining in FFS do use more Part B services than the ones joining the managed-care plans.

Mr. Yamamoto: Is it adjusted somehow based on historical experience assumptions?

Mr. Wandishin: Yes, we've looked at what the pattern of the increase in managed-care enrollment has been historically and what the utilization increases have been historically for the population that's left.

Now we can talk about the assumptions. There are two types of assumptions made for the Trustees' reports. Some assumptions are made by the trustees and their staffs, and some are made just by HCFA. We'll start with the trustees' assumptions. As I stated earlier, they make three different sets of assumptions, but we're going to concentrate on the intermediate assumptions. Over the years technical advisory panels have commented on the validity of these assumptions. The most recent panel's report, which was tied to the 1994 advisory council, stated that the intermediate projections of the trustees provide a reasonable evaluation of the financial status of the trust fund. They did suggest some changes to some of the assumptions, but these changes basically offset each other; if all those recommendations were accepted, there would not be that much of a change in the overall status of the funds. Currently, new technical panels are reviewing these assumptions, and that will probably continue in the future.

The assumptions that the trustees make can be characterized as either economic or demographic. They're reexamined every year in light of recent experience and any new information about future trends. This past year that was particularly necessary because the Bureau of Labor Statistics (BLS) changed how it calculated the CPI, and that, of course, affected many of the assumptions. For each assumption that we make, we assume the value will move from its current level to an ultimate level somewhere over the next 5 to 30 years, depending on what assumption we're talking about. Ultimate values are assumed to be an average value for the future. Of course, in the future these values will fluctuate as they have in the past and exhibit cyclical patterns.

Next I'll discuss the major assumptions that we are presently using in Medicare projections. On the economic side there are six major assumptions, the first of which is the CPI. The CPI ultimately gets to 3.3% by 2007. That's a decrease of 0.2% from the ultimate value used last year, due to the aforementioned BLS change in the calculation. The change in the CPI has very little effect on the balance for HI because it affects income and outgo equally. On the SMI side, a CPI change

also affects income and outgo equally, but it may be of more concern because some of that income is coming from the general revenues of the Treasury.

The second economic assumption is real wages. It reaches its ultimate value at 0.9%, but only after 2010. It's a calculated value, actually. It's calculated from the labor productivity increases and the difference between the CPI-measured inflation and the GDP-measured price inflation. This is actually one of the most important factors in projecting the HI cost. For each 0.5% change in the real wage growth, the HI actuarial balance changes by 0.20% of taxable payroll. This is due to the fact that the real wage assumption only affects 60% of cost, but it affects 100% of the income.

On the SMI side the real wage growth affects outgo and income equally, but, again, it may be of some concern because some of that income is coming from the general revenues.

The next assumption is the real interest rate. It reaches its ultimate value by 2007 at 3.0%. This is 0.2% higher than it was last year, and that's directly related to the lowering of the CPI by 0.2%. Real interest went up 0.2%. In reality, interest plays little effect on the financial status of either HI or SMI. The SMI's trust fund is kept at a low level as required by law. The HI's trust fund is at a low level because of its financial imbalance. However, the HI actuarial balance is affected by the interest-rate assumption. For each one percentage point change in the assumed real interest rate, the actuarial balance changes by 0.17% of taxable payroll.

This sensitivity of the actuarial balance to the interest-rate assumption is implicit in the method that's used to calculate the actuarial balance. For this reason the HI actuarial balance is also calculated under a different method called the modified average cost method, under which the actuarial balance is defined as the difference between the arithmetic means of the cost rates and the income rates. The cost rates also include an amount to maintain the trust fund at a desired target level. The starting trust fund and the interest earned on the trust fund before it's exhausted are also recognized in the actuarial balance. The actuarial balance under the modified average cost method in this year's report was -1.84% of taxable payroll as compared to -1.46% based on the present value method.

The next economic assumption is the labor force participation rates. Prior to 1985 the rate for men had been decreasing dramatically, but since then it has leveled off and actually has increased over the past few years. The rate for women, especially older women, has increased significantly since 1985. Many more older men and women are employed today than had been projected prior to 1986. Exactly what's going to happen as the baby boom reaches retirement age at the beginning of the 21st century is one of the greatest uncertainties in projecting the future financial condition of Social Security and Medicare. What the trustees do is assume that the labor force participation growth rates will slow down in the next century. After 1998 they project the rates will increase at about 0.9% per year on average through 2008. They then slow down that rate of growth, until ultimately reaching about 0.1% per year increases toward the end of the 75-year projection period.

Higher labor force participation rates mean more income for HI and probably less benefits because of the Medicare secondary payroll rules. For SMI it means less benefits for Medicare because of the secondary payroll rules and, indirectly, less income because of those lower benefits. It should also be noted that more people working means more people paying taxes into the general revenues, which help finance the SMI program.

The next assumption is the unemployment rate. The unemployment rate has, of course, fallen dramatically in the past few years, reaching levels not seen in decades. Until this year that had not been factored into the long-term projections, but this year the long-term ultimate rate was lowered by 0.5 percentage points basically because trustees finally decided that the recent experience should at least be considered more in the long range. The total age/sex adjusted rate is assumed to be 5.5% in the year 2009 and later. Higher unemployment rates mean lower income for HI, but have little effect on benefits. For SMI higher rates have little effect on benefits or income, although it means fewer people working and paying taxes into the general revenues, which help finance the program.

The last economic assumption that we'll look at is the GDP assumption. This, again, is a calculated value. It's calculated from the growth in the labor force and the growth in individual worker productivity. GDP increases were quite high in the 1960s and 1970s because of the large increases in the labor force. However, with the retirement of the baby boom, the rate of GDP increase could dramatically decrease. This is the principal reason that the increase in GDP goes down in the trustees' report. The trustees estimate that real annual GDP growth will average 2.0% over the short-range projection period—a slower rate than the 2.4% increase that occurred over the last ten years. The projected slowdown of labor force growth also reflects the end of the relatively rapid growth in the labor force participation rates, particularly by women by 2010. Since labor force growth basically slows down to almost zero, as I mentioned earlier, real GDP growth will slow down to about the same level of growth as worker productivity, which is assumed to grow at 1.3% per year. A higher real GDP growth rate means higher HI income, but has a much lesser effect on benefits. For SMI, a higher rate has a much larger effect on benefits because prices are tied to the GDP growth. GDP per capita growth is the constraining factor used for long-range projections. Once again, income is affected in the same way as benefits for the SMI program.

Let's take a look at the major demographic assumptions, of which there are five that we use for Medicare. The first is the fertility rate. The fertility rate fell from an all-time high of 3.7% in 1957 to an all-time low of 1.74% during the mid-1970s. Since that time it has increased somewhat; it's currently slightly above 2%. The assumed ultimate rate is unchanged from last year at 1.9%, which is just below the level necessary to keep a constant population. In 1996 and 1997 fertility rates were higher than was expected, causing the first 25 years of the projection period to be slightly higher than last year. The ultimate rate is reached at the end of that 25-year period, in 2023. The Social Security Advisory Panel, which investigated trustees' assumptions, felt that the fertility assumption was a little conservative and should be raised from 1.9% to 1.95%. A higher fertility would mean that

eventually there would be more workers, which would result in more income for HI. Eventually there would be more HI beneficiaries, but that would come much later in the projection period. On the SMI side, a higher fertility rate would mean more people paying taxes into the general revenues, eventually creating more beneficiaries near the end of the projection period.

The next assumption is the mortality rate. There have been major improvements in life expectancy, especially among the elderly over the last six decades. The trustees have had to revise their mortality assumptions on a regular basis because of that improvement. The extent to which such improvements will continue in the future is the subject of much debate, of course. There's still room for further improvement, especially if there are cures found for cancer, strokes, and heart disease, or if doctors develop a better understanding of how to treat biological diseases. On the other hand, it's difficult, if not impossible, to predict what kind of new diseases might surface in the coming decades. Thus, the mortality assumptions are perhaps the most publicly debated of all the demographic assumptions. The Social Security Advisory Panel concluded that the trustees' mortality projections could be more conservative, since they assume a lower rate of mortality improvement than has been observed either in the near term (the last 20 years) or the long term (the last 90 years).

The mortality values used in this year's report are different from the ones used last year. This resulted because of the inclusion of additional data for 1995–97. That data showed better mortality than what the trustees had assumed. Therefore, the starting year, 1997, was better, and there were slightly higher rates of mortality reduction during the first 25 years for the projection period. The ultimate rate of mortality reduction is the same as was assumed last year. The age/sex adjusted death rate is assumed to decrease steadily during the entire projection period with a total reduction of 34% from the 1998 level by 2073. The life expectancies shown in Table 1 are based on the concept of a period life table and not a cohort life table. The effect of the higher mortality improvement on the HI program is that while more income will come into the program, far more will be paid out in benefits because we assume that most of the mortality improvement will come after age 65. On the SMI side, benefits would also increase, although more people would be paying the premium, adding more income to the program. Also very important to consider is whether this improvement in mortality improves or worsens the morbidity of the population.

The next assumption is the immigration assumption. Immigration also accounts for new entrants into the program and the labor force. Most immigrants are young and have all or most of their working lifetime ahead of them; the trustees take that into account for both legal and illegal immigration. The factors underlying legal immigration are mostly political. A change in immigration laws can change the rate of immigration at any time. On the illegal side, even the current rate of illegal immigration is highly uncertain. The trustees generally use middle-of-the-road estimates of illegal immigration and assume that the current rate of legal immigration continues in the future. The Social Security Advisory Panel stated that they felt those assumptions were appropriate and reasonable. The higher level of

immigration results in higher income to the HI program and eventually higher benefits. It works very similar to a higher fertility rate. On the SMI side, a higher immigration rate leads to more people paying taxes into the general revenue and eventually more beneficiaries.

The next assumptions that we'll talk about are disability incidence and termination rates. The Social Security law has objective criteria for determining whether a person is disabled or not, but even with that there's still a lot of subjectivity in actual practice. The rates tend to be cyclical depending on the health of the economy and, to some extent, the attitude toward disability. In the past, Congress has changed the definition of disability. It probably will happen again in the future. The trustees' assumptions generally assume that future disability rates reflect the average rates over the past few years. The incidence rates have varied over a wide range over the past 25 years. It's assumed that they will increase gradually until 2008. After 2008 the only increase in disability incidence rates is because of the rising retirement age for Social Security. Because that age doesn't affect Medicare, the Medicare rates hit their ultimate value in 2008. Higher incidence rates for disability mean lower income and more benefits for the HI program. Of course, the beneficiaries have to wait an additional two years before they start receiving Medicare disability benefits, but they will no longer be working and paying a payroll tax. On the SMI side more benefits will be paid to the additional beneficiaries, and more people will pay the premium. However, fewer people will be paying taxes into the general revenues.

The disability termination assumptions are projected separately by reason of termination, either death, recovery, or all other. Looking at the death termination rates, there are two notable developments affecting these rates among the disabled. There was a significant reduction in projected awards because of HIV impairments and the elimination of current and future payments to drug addicts and alcoholics. Both of these categories are assumed to have much higher death rates than the overall disability population, but they're relatively small compared to the total number of disabled workers.

On the recovery termination rates, the pattern of projected recovery rates is based on workload estimates and budgetary constraints affecting the anticipated number of continuing reviews that are expected in the future. For Medicare, since coverage continues after return-to-work for a number of months, adjustments must be made to the recovery rates to account for this. Lower termination rates affect the HI program by lowering income and increasing benefits. On the SMI side, lower termination rates mean more benefits; therefore, more people paying the premium but fewer paying taxes into the general revenues.

Now, as I mentioned earlier, there are certain assumptions we at HCFA make that the trustees don't get involved in. The first of these assumptions is our enrollment projections. For HI it's assumed that just about everybody who's eligible will be covered because it's basically free. We get the number of people from the Social Security Administration's (SSA) Office of the Actuary, who have done projections based on the fertility and mortality assumptions. We group those into people either

over or under age 65. For the over-65 group we take out those people who do not get coverage, such as aliens with less than 5 years of residence and certain government workers, and everybody else gets HI for free. Assumptions are made as to how the government workers will age because they're all closed groups. Eventually all of them will get coverage for free. There are also assumptions about what proportion of them will pay the premium and get coverage for HI that way.

On the disabled side, again, SSA's Office of the Actuary has counted people receiving disability income (DI) benefits and how long they've been receiving those benefits. Adjustments must be made because a person could get to the 24-month waiting period, but not in a consecutive 24-month period. They could have 12 months at one period of time, go back to work, and then get another 12 months; they would get Medicare enrollment based on that. We have to make adjustments to the Social Security numbers for that. We also have to make adjustments for people who have returned to work, lost their Social Security disability benefit, but continue to get a Medicare disability benefit. The managed-care enrollment must also be projected since those people receive FFS per capita amounts no matter how many services they may receive.

The SMI population projections are done in a similar manner. The aged side is done by applying an assumed percentage of enrollees who elect to pay the Part B premium to the Social Security 65-and-over population. This percentage is assumed to be constant after a very short settling-down period. On the disabled side the percentage is applied to the HI disabled population because all disabled people in Part B have to be enrolled in Part A. Again, this percentage factor is assumed to quickly reach its ultimate value after a short settling down period.

The next assumption that we make is on the utilization side. On the HI side, the rate of increase in utilization has fluctuated throughout the historical period. Recently this increase, as I mentioned earlier, has occurred primarily because of the managed-care shift. As managed-care plans on average enroll people with less utilization, the average utilization of those not in managed care increases. When we look at the number of people who have joined managed-care plans in the recent past and make an adjustment based on that, it tends to be just about the total utilization increase for the different provider types. We use that relationship in our assumed increases in the managed-care enrollment, and we're able to calculate the projected increases in utilization by type of provider. Care must be taken to take out any effects of legislation on utilization. Also included in this factor is an age/sex factor, which we calculate by grouping together reimbursement for each age/sex category. We take a three-year average and we assume that that average relationship holds for every year in the projection period.

On the SMI side, they include their utilization increases in the residual piece, which I'll discuss now. Historically, increases in per-FFS enrollees are calculated, and, where possible, price increases are taken out. For intermediary services, price increases are difficult to obtain because the definition of the type of service is difficult to determine. The projection is based on recent past trends and the growth per enrollee together with any legislated limits in payment updates. The increase in the

residual includes the increases in a number of services provided, the effective aging in the Medicare population, the shift to more expensive services, and certain administrative actions. For carrier services the ultimate rate is about 3% higher than the price factor. For intermediary services it's about 5.5% higher than the price factor. This residual ultimate factor is reached fairly quickly within a few years, and it's assumed to remain there for the next 13 years of the projection. After that, as I mentioned earlier, this factor gradually slows down to the same rate of growth as GDP per capita by the end of the first 25 years. It is then assumed to remain at that level for the last 50 years of the 75-year projection period.

The final assumption that we make is on price. For HI, this is the average reimbursement per unit of service. Since all the services covered by HI will be covered by prospective payment systems either now or in the short future, this piece has actually become much easier to project. The increases in price are defined by law usually as some function of a particular provider's market basket, which is their price of doing business. It also includes an intensity piece. For IH, the intensity has historically been between 1% and 2% since the beginning of the prospective payment system. However, since 1995 all but one year has been below 1%, and 1998 was negative for the first time ever. This caused us to revise our projection from assuming 1% growth per year in this intensity piece to 0.5% growth per year for the first 25 years of the projection period. So far for 1999 the growth in this piece seems to be following the 1998 growth line, meaning it will probably come in negative again.

For SNF and HHC they're either just starting or soon will start their prospective payment system. There are very little data to base their intensity piece on. We realize that that intensity piece is going to be a major component of our projections. Using historical growth market baskets for those particular providers and results from HCFA's demonstration projects with these new prospective payment systems (PPS), we were able to get some idea as to how much intensity or increase there would be for SNF and HHC. Our assumptions include an increase of about 1.5–2% each year in intensity for both SNF and HHC. As more experience develops with these new PPS systems, we'll be able to use that experience to better estimate this crucial piece of our projection model.

The SMI price factor again isn't too difficult to project. Basically, for carrier services, they're defined in law as either a function of CPI or the Medicare economic index, which works very similar to the market baskets on the HI side being a weighted average of various economic indices. For intermediary services it's historically been included in the residual factor, but as these services for HHC and OH start their prospective payment systems, we will now use a price factor and a residual that will include the intensity piece that HI includes in its price factor.

Mr. Kevin Clifton Wells: These economic and demographic assumptions, are they set consistently between OASDI and HI/SMI; do they vary?

Mr. Wandishin: They are consistent for all the trust funds. What ends up happening is usually around the beginning of December of each year, Social

Security's Office of the Actuary submits to all the trustees' staffs their recommendations for the assumptions to be used in the following year's report. Then the staffs of the trustees look over those assumptions and make suggestions for changes. Usually that's a process that takes about two months. Usually by the end of January there's agreement as to what the assumptions should be. They're used for both the Social Security reports and the Medicare report.

From the Floor: It looks like you and your staff do a lot of work, and I guess you should probably be complimented on all the projections and the work that you do. This is really out of left field, but have you thought of, investigated, or planned in any way for a catastrophe? I'm thinking of something totally unplanned for that would greatly increase income and/or expenditures. For instance, say somebody finds a way to make human beings live forever. Do you ever do any kind of a contingency or catastrophe planning, either in HCFA or at the trustees' level?

Mr. Wandishin: The short answer is no, but the longer answer is it has been talked about. The trustees currently are tied to three sets of assumptions, but there has been talk about moving to a stochastic projection which would probably get you closer to the type of events that you're talking about. Now, whether that'll actually happen sometime soon or not is anybody's guess.

Mr. Robert G. Lynch: I'd like to first make a follow-up comment on the consistency of the demographic assumptions, between HCFA and OASDI. I mean, they're definitely not consistent with the Bureau of the Census projection assumptions. If anybody tries to do a cross-correlation there, they don't match. As far as the demographic assumptions and the fecundity birth rate, forgive me if I fall into zoological terminology on this, being an ex-zoologist, but I'm trying to recall if the birth rate, and the changing distribution of birth rate by age, is taken much into account. I went through this all last year, and I'm starting to remember how much that was taken into account because from population demographic projections the average parents' ages have just as big an impact as the average birth rate, which is a fact that is often underappreciated and overlooked.

Mr. Wandishin: The fertility rates are done by age. I'm not positive about this, but I think they assume the same increases for all ages. It would not take that into account.

Ms. Susan E. Pierce: You mentioned that in doing the utilization projections by provider type you also account for legislative changes. Could you give an example? For instance, on the SNFs do you take into consideration what they may do because of the prospective payment system, e.g., whether they will try to get people out faster or they'll try to shift to a non-Medicare population, that type of thing?

Mr. Wandishin: We assumed the providers would do that on the SNF/PPS was because it's a per diem PPS system. The incentive is to keep people there as long as possible. We assume that there would be a 10% increase for the number of days for the Medicare population. The data, that have come in so far, of which

there is very little at this time, seems to imply that we might be about 5% too high on our estimate for 1999 on the SNF, which would then mean that actually what occurred was a 5% increase.

Ms. Pierce: And this is an increase that you expect because of the new prospective payment system?

Mr. Wandishin: Yes.

I will now talk a little bit about results of our projections. HI expenditures are expected to grow slower than income through 2002 because of the BBA cuts, but then start to grow at a faster rate after that. The trust fund will have surpluses until 2006 and then steadily decline after that. However, we're still able to pay benefits even when we have a deficit in the current year because we have assets in the trust fund. Without corrective legislation, however, the assets are projected to increase until 2006. They are then projected to decline steadily until they become exhausted in 2015. To the extent that future conditions are different from what we assume under the intermediate assumptions, the exhaustion of the trust fund could be much earlier or much later. The Board of Trustees recommends that assets be maintained at a level equal to the annual expenditures of the program to serve as a contingency reserve. The HI trust fund is not projected to ever reach that level; therefore, it does not even meet the short-range test that the trustees have set up.

This year's estimates, on the other hand, do represent a substantial improvement over last year's projections. This was due to the fact that there were higher payroll tax revenues in 1998 and lower benefit expenditures; we also adjusted our projection factors based on that experience. The higher payroll tax revenue in 1998 was due to, of course, the robust economic growth in the U.S. economy. The lower expenditures were due to the implementation of the BBA, the low increases in health care costs generally, and continuing efforts to combat fraud and abuse in the Medicare program. However, the fact that exhaustion is likely to occur in the relatively near future indicates the importance of addressing the remaining imbalance in HI through additional legislation that builds upon the strong steps taken by the BBA.

We also do 75-year projections each year. I don't know how many of you have ever projected health care costs for 75 years, but it certainly isn't an easy thing to do. Obviously, the results aren't very certain, but the results can provide valuable information for policymakers. However, in projecting out 75 years, as the dollar amounts of the income or outgo become almost meaningless. We instead express our projections as a percentage of taxable payroll. The income rate is the tax income, which comes from both payroll taxes and the tax on Social Security benefits, divided by taxable payroll. The cost rate is expenditures divided by taxable payroll. The long-range outlook has improved significantly since last year's report, but still remains seriously underfunded. This is because while the income rates remain fairly steady, the cost rates are projected to escalate sharply between 2010 and 2030 and continue to increase throughout the period. The HI payroll tax rates

are not scheduled to change under present law. Payroll tax income will remain at 2.9% taxable payroll. Income from taxation of benefits only goes up slightly as a percentage of taxable payroll. Although more and more Social Security beneficiaries will hit the income threshold and start paying taxes, that will have only a very minor effect on the income rate. The cost rates, however, will sharply escalate because of the retirement of the baby boomers. This will cause major financing problems as the worker-to-beneficiary ratio decreases from the current 4-to-1 down to about 2-to-1.

The cost rates and income rates can also be summarized into single values representing a weighted average over the given period. The difference between these summarized values is known as the actuarial balance. For 1999, under the intermediate assumptions, the actuarial balance for HI is -1.46% of taxable payroll. This deficit is roughly one-third of what it was just two years ago, prior to the BBA, and also represents a significant improvement from -2.10% in last year's report. However, the trust fund is nonetheless projected to be in deficit, and that should reinforce the importance of addressing the remaining imbalance through further legislation.

Let's take a look at the SMI results. The SMI status and how it is evaluated differs fundamentally from the Social Security and HI programs. These differences arise in the nature of financing for SMI. SMI's premium and the corresponding income from general revenues are established each year at a level sufficient to cover the following year's expenditures; therefore, by definition the SMI program is in financial balance. The first test of financial adequacy is conducted using the 1999 financing structure in place. The tests of financial adequacy are met under the intermediate assumptions as well as the upper-range and lower-range projections. Planned program financing is sufficient to maintain a level of trust fund assets that is adequate to cover a reasonable degree of variation between actual cost and expected cost. In each of the last few years, SMI expenditures have been lower than what we had projected when the financing was established. As a result, trust fund assets have grown to a level somewhat above what is considered adequate for a contingency reserve for the SMI program.

Accordingly, the SMI financing for 1999 was set below the level estimated to fully cover cost with the expectation that a small portion of the trust fund assets would be used in 1999 to make up the difference. This procedure, which resulted in raising the monthly premium in 1999 from \$43.80 to \$45.50, is intended to gradually bring the trust fund assets back down in line with what's needed for a contingency reserve. The amount of that contingency reserve that's needed in SMI is much lower than what's needed in HI or OASDI. This is because the SMI premium is set each year and can change annually based on estimated future cost, whereas for HI or Social Security the payroll taxes are set in law; obviously, changing a legislated tax rate is much more difficult. The assets held in the SMI trust fund are expected to decrease slightly from 1999 to 2002 as part of this process of bringing the reserves back in line with what's actually needed. After 2002 the assets held in the fund are projected to increase to remain at a level that's necessary for an adequate contingency reserve.

The SMI program is projected to grow rapidly but remain adequately financed into the indefinite future because of the automatic financing that's done on a year-to-year basis. The estimated costs shown in this year's report are lower than what was shown in last year's report. However, costs are still expected to continue to increase faster than the economy as a whole. Thus, even though the SMI program is considered adequately financed by traditional standards, the continuing trend of relatively rapid cost increases remains a source of great concern.

As stated earlier, increases in the cost per beneficiary during the initial 25-year period are assumed to decline gradually in the last 12 years of that period, ending up at the same rate of growth as GDP per capita for the following 50 years. Therefore, changes in the last 50 years of the projection period are attributable only to demographic changes in the population. Even with this assumed moderation of expenditure growth, a projected cost of the SMI program under current law would place steadily increasing demands on beneficiaries in society at large. Over time the SMI premiums and coinsurance amounts paid by the beneficiaries would represent a growing share of their total income. In 1998, for example, about 5% of a typical 65-year-old's Social Security benefit was withheld to pay the monthly SMI premium. Twenty years later the same beneficiary's premium would require 11% of such income. Similarly, SMI general revenues in fiscal year 1998 were equivalent to 5.9% of the personal and corporate federal income taxes collected in that year. If such taxes remain at their current level relative to the national economy, then SMI general revenue financing in 2070 would represent roughly 17% of total income taxes.

In conclusion, 1998 ended up being a much better year than any of us expected for both parts of Medicare, but still there are major problems. HI is still going broke in the relatively near future, somewhat later than projected last year, but still pretty close by. Beyond that, the HI program is in serious financial imbalance for the 75-year projection period. SMI is in actuarial balance basically because it's defined that way. However, the continued high growth rates are seriously increasing demands on both beneficiaries and society at large.

More must be done in the future to contain the cost increases in order to keep both of these programs running smoothly. The trustees' reports state that the National Bipartisan Commission on the Future of Medicare did manage to create a starting ground for these types of discussions. Many technical panels will continue to look at the trustees' assumptions and make comments as to their reasonableness. The last technical panel to look at Medicare-specific assumptions was the Health Technical Panel to the 1991 Advisory Council on Social Security, which concluded that the Medicare assumptions were basically reasonable. However, they didn't scrutinize these assumptions as much as they scrutinized the trustees' assumptions.

In 1999, a new technical panel is being formed to look specifically at the Medicare assumptions. We at HCFA are looking forward to working with this panel and seeing what their conclusions are. We have also started looking at these

assumptions ourselves, as concerns have arisen from the Medicare Commission over our long-range assumptions. We have had a group of people looking at whether our long-range constraints are reasonable. In Rick Foster's actuarial opinions for the HI and SMI reports, Rick himself has some questions as to whether the assumptions used are really the most likely.

Mr. Tom Messer: Since Rick Foster has to sign off on the HCFA assumptions, which of the trustees' assumptions caused him concern?

Mr. Wandishin: His concern, as stated in the actuarial opinion, is that the assumptions that he would consider the most likely would tend to be more towards the high-cost assumptions that are assumed as opposed to the low cost. If you pick an intermediate assumption, there should be a 50% chance that things are lower and 50% chance that they'll be higher. Rick feels it's closer to maybe a 70/30 split. But, his biggest concern, if I had to pick out one assumption, is probably the mortality assumption.

Mr. Messer: I think Guy King was probably the first one to put something similar to this in the 1994 report. What's been the reaction of the trustees to these types of actuarial opinions?

Mr. Wandishin: Obviously, they don't like that the chief actuary of HCFA is commenting about whether these are actually reasonable assumptions, but they have agreed with both Guy and Rick to allow them to state their opinion. There has been some pressure on both of them, as would be obvious, to tone down the language of their opinion, but I think both Guy and Rick felt comfortable with what finally was in the reports.

Mr. Dean L. Taylor: When Steve Kellison's tenure is up, will there be another actuary appointed as a public trustee, or was the appointment of an actuary just sort of a random decision?

Mr. Wandishin: The public trustees have been around since probably the mid-1980s. The president has to appoint both a Republican and a Democrat, and then they are confirmed by the Senate. Up until four years ago there was not an actuary as either of the public trustees. Steve Kellison was the first actuary. But most of the public trustees have been very knowledgeable on social insurance issues. A lot of them have backgrounds economically or demographically. Most of them have had a pretty good understanding of the assumptions, and I do know for a fact that both Guy and Rick have had less trouble in dealing with the public trustees than with many of the political appointees.

TABLE 1
 SELECTED DEMOGRAPHIC ASSUMPTIONS
 BY ALTERNATIVE CALENDAR YEARS 1940–2075

Calendar Year Historical data	Total Fertility Rate ¹	Age-sex adjusted death rate ² (per 100,000)	Life Expectancy ³			
			At birth		At Age 65	
			Male	Female	Male	Female
1940	2.23	1672.6	61.4	65.7	11.9	13.4
1945	2.42	1488.6	62.9	68.4	12.6	14.4
1950	3.03	1339.9	65.6	71.1	12.8	15.1
1955	3.50	1243.0	66.7	72.8	13.1	15.6
1960	3.61	1237.9	66.7	73.2	12.9	15.9
1965	2.88	1210.8	66.8	73.8	12.9	16.3
1970	2.43	1138.4	67.2	74.9	13.1	17.1
1975	1.77	1020.9	68.7	76.6	13.7	18.0
1976	1.74	1010.1	69.1	76.8	13.8	18.1
1977	1.80	981.8	69.4	77.2	13.9	18.3
1978	1.76	976.3	69.6	77.3	14.0	18.3
1979	1.82	944.8	70.0	77.7	14.2	18.6
1980	1.85	961.1	69.9	77.5	14.0	18.4
1981	1.83	934.5	70.4	77.9	14.2	18.6
1982	1.83	906.4	70.8	78.2	14.5	18.8
1983	1.81	916.0	70.9	78.1	14.3	18.6
1984	1.80	909.2	71.1	78.2	14.4	18.7
1985	1.84	912.3	71.1	78.2	14.4	18.6
1986	1.84	904.8	71.1	78.3	14.5	18.7
1987	1.87	895.6	71.3	78.4	14.6	18.7
1988	1.93	906.0	71.2	78.3	14.6	18.7
1989	2.01	882.4	71.5	78.6	14.8	18.9
1990	2.07	865.8	71.8	78.9	15.0	19.0
1991	2.07	854.7	71.9	79.0	15.1	19.1
1992	2.06	843.6	72.2	79.2	15.2	19.2
1993	2.04	863.3	72.0	78.9	15.1	19.0
1994	2.04	852.3	72.2	79.0	15.3	19.0
1995	2.02	849.9	72.4	79.0	15.3	19.0
1996	2.03	837.0	72.8	79.1	15.4	19.0
1997 ⁴	2.04	807.4	73.6	79.3	15.9	19.1
1998 ⁴	2.04	811.7	73.4	79.4	15.7	19.2
Intermediate						
1999	2.03	804.6	73.6	79.5	15.8	19.2
2000	2.03	797.8	73.8	79.6	15.8	19.2
2005	2.00	768.2	74.6	80.1	16.1	19.4
2010	1.97	746.3	75.2	80.4	16.3	19.5
2015	1.94	725.8	75.7	80.7	16.5	19.6
2020	1.92	704.8	76.0	81.0	16.7	19.8
2025	1.90	684.4	76.4	81.4	16.9	20.0
2030	1.90	665.0	76.8	81.7	17.1	20.2
2035	1.90	646.5	77.1	82.0	17.3	20.5
2040	1.90	629.0	77.4	82.3	17.5	20.7
2045	1.90	612.3	77.8	82.5	17.7	20.9
2050	1.90	596.4	78.1	82.8	17.9	21.1
2055	1.90	581.2	78.4	83.1	18.1	21.3
2060	1.90	566.7	78.7	83.4	18.3	21.5
2065	1.90	552.9	79.0	83.6	18.5	21.7
2070	1.90	539.7	79.3	83.9	18.7	21.9

TABLE 1—CONTINUED

Calendar Year Historical data	Total Fertility Rate ¹	Age-sex adjusted death rate ² (per 100,000)	Life Expectancy ³			
			At birth		At Age 65	
			Male	Female	Male	Female
2075	1.90	527.1	79.6	84.1	18.9	22.1
Low Cost:						
1999	2.05	811.1	73.5	79.4	15.7	19.1
2000	2.06	810.6	73.6	79.4	15.7	19.1
2005	2.08	807.7	74.0	79.5	15.7	18.9
2010	2.11	808.9	74.2	79.5	15.8	18.8
2015	2.15	800.9	74.6	79.6	15.8	18.8
2020	2.18	791.0	74.8	79.8	15.9	18.8
2025	2.20	780.8	75.0	79.9	16.0	18.9
2030	2.20	770.9	75.2	80.1	16.0	19.0
2035	2.20	761.3	75.3	80.2	16.1	19.1
2040	2.20	752.1	75.5	80.3	16.2	19.1
2045	2.20	743.2	75.7	80.5	16.3	19.2
2050	2.20	734.6	75.8	80.6	16.3	19.3
2055	2.20	726.3	76.0	80.7	16.4	19.4
2060	2.20	718.2	76.1	80.9	16.5	19.4
2065	2.20	710.4	76.3	81.0	16.5	19.5
2070	2.20	702.9	76.4	81.1	16.6	19.6
2075	2.20	695.5	76.6	81.2	16.7	19.7
High Cost:						
1999	2.01	798.7	73.7	79.6	15.8	19.3
2000	1.99	786.3	73.9	79.8	15.9	19.4
2005	1.91	733.6	75.1	80.6	16.4	19.8
2010	1.83	694.1	76.0	81.3	16.8	20.1
2015	1.74	660.4	76.6	81.8	17.2	20.5
2020	1.65	627.2	77.3	82.4	17.6	20.9
2025	1.60	595.5	77.9	82.9	18.0	21.3
2030	1.60	565.6	78.5	83.5	18.4	21.7
2035	1.60	537.6	79.1	84.0	18.8	22.1
2040	1.60	511.3	79.7	84.6	19.1	22.5
2045	1.60	486.6	80.2	85.1	19.5	22.9
2050	1.60	463.4	80.8	85.6	19.9	23.3
2055	1.60	441.5	81.3	86.1	20.3	23.7
2060	1.60	421.0	81.9	86.6	20.7	24.0
2065	1.60	401.6	82.4	87.1	21.1	24.4
2070	1.60	383.3	82.9	87.6	21.5	24.8
2075	1.60	366.2	83.5	88.0	21.9	25.2

¹ The total fertility rate for any year is the average number of children who would be born to a woman in her lifetime if she were to experience the birth rates by age observed in, or assumed for, the selected year, and if she were to survive the entire childbearing period. The ultimate total fertility rate is assumed to be reached in 2023.

² The age-sex-adjusted death rate is the crude rate that would occur in the enumerated total population as of April 1, 1990, if that population were to experience the death rates by age and sex observed in, or assumed for, the selected year.

³ The life expectancy for any year is the average number of years of life remaining for a person if that person were to experience the death rates by age observed in, or assumed for, the selected year.

⁴ Preliminary or estimated.