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Accounting for Sources of Projected Growth in Federal Spending on Medicare and Medicaid

Summary

According to projections by the Congressional Budget Office (CBO), federal spending on Medicare and Medicaid will grow from 4 percent of gross domestic product (GDP) in 2007 to 9 percent in 2032 and 19 percent in 2082. Spending growth will depend on two factors: trends in the cost of health care and the aging of the population. If health care costs per beneficiary grew at the same rate as per capita GDP and the age distribution of the population did not change, Medicare and Medicaid spending would remain a constant share of the economy. In reality, however, health care costs per beneficiary will grow more quickly than per capita GDP and the population will age.

Although many observers portray aging as the dominant cause of future growth in federal spending on Medicare and Medicaid, most of the increase that CBO projects will result from rising costs per beneficiary rather than rising numbers of beneficiaries. The effect of an aging population is smaller but still accounts for substantial spending growth. Those two factors also interact with each other: The rapid growth of health care costs is a more important factor when the population is aging over time; conversely, population aging looms larger when health care costs are rising over time.

Understanding the relative contributions of those two factors to the growth in federal spending on Medicare and Medicaid is important. The aging of the population, which has a smaller impact on spending growth, cannot be easily influenced by policy changes, but efforts can be made to stem the rising costs per beneficiary relative to per capita GDP—by far the larger factor in spending growth in the two programs.

To estimate the relative contributions of the two factors, CBO based its projections on three sets of reasonable assumptions. Regardless of the assumptions and methods used in the projections, the results were basically the same: More than half of the growth in federal spending on Medicare and Medicaid is attributable to health care costs per person growing more rapidly than per capita GDP. Depending on the approach used, by 2082 between 53 percent and 60 percent of the accumulated growth is attributable solely to per capita cost growth, between 14 percent and 17 percent is attributable solely to aging, and the remainder (between 26 percent and 32 percent) is attributable to the interaction of those two factors as costs grow and the population ages at the same time.

Over the next 25 years, aging will be relatively more important than it will be over the longer term, accounting for between 27 percent and 35 percent of projected growth by 2032, as the baby-boom generation ages and expands the number of Medicare and Medicaid beneficiaries. Even during that period, CBO estimates, more than half of the growth in spending will result from cost growth.

The Congressional Budget Office (CBO) projects that total federal spending on Medicare and Medicaid will grow from 4 percent of gross domestic product (GDP) in calendar year 2007 to 9 percent in 2032 and 19 percent in 2082.[1] Over that 75-year period, the population will become substantially older as life expectancy at age 65 increases—by 4 years in CBO's projections—and, in the earlier part of the period, as baby boomers become elderly. The resulting growth in the number of beneficiaries eligible for Medicare and Medicaid will lead to higher spending.

Despite the substantial contribution of aging to federal spending on the two programs, most of the projected increase in spending stems from CBO's expectation that, as in the past, health care costs per beneficiary will continue to grow more quickly than per capita GDP.[2] The magnitude of future cost growth is highly uncertain, but CBO assumes that, under current federal law, "excess cost growth" will slow gradually from historical levels. (Excess cost growth is the percentage by which the growth in per capita spending on Medicare and Medicaid exceeds the growth in per capita GDP, after adjusting for changes in the age distribution of the population.) Still, the assumed rate of excess cost growth remains positive throughout the projection period, averaging 1.7 percent for Medicare and 0.9 percent for Medicaid from 2018 to 2082.[3]

CBO's projections of federal spending on Medicare and Medicaid incorporate assumptions about the aging of the population and excess cost growth. To compute how much each factor contributes to growth in total spending on Medicare and Medicaid, CBO analyzed four scenarios:

- Scenario 1: Spending without population aging or excess cost growth (the base-case scenario),
- Scenario 2: Spending with population aging (but no excess cost growth),
- Scenario 3: Spending with excess cost growth (but no population aging), and
- Scenario 4: Spending with both population aging and excess cost growth.

The effect of either aging or excess cost growth alone can be computed by comparing Scenario 2 or Scenario 3 with Scenario 1. However, the total growth (the difference between Scenario 4 and Scenario 1) is not simply the sum of those two effects because the two effects interact: Higher spending per person has a larger influence as the number of beneficiaries rises; conversely, having more beneficiaries imposes a larger budgetary cost when health care costs are high (see Box 1). Thus, in addition to spending that can be attributed specifically to either aging or cost growth, this analysis identifies a share of the costs that results from the combined effects—the interaction—of the two factors.

Assumptions and Methods

This analysis considers the various scenarios and the associated allocation of costs under different sets of assumptions. Those assumptions and the approaches used in the analysis are discussed below. (The assumptions affect only how growth is allocated between aging and cost growth; CBO's projections of total federal spending on Medicare and Medicaid do not change.)

Issues in Choosing Assumptions and Analytic Methods

Two issues arise in selecting the appropriate way to assess the effects of aging and excess cost growth on federal spending on Medicare and Medicaid:

- What value of GDP to use when computing spending as a share of GDP, and
- How to construct spending under the base-case scenario (Scenario 1).

1. Federal spending on Medicare is net of beneficiaries' premiums.
2. In this brief, "spending" refers to total federal outlays and "costs" describes the amount spent on each beneficiary.
3. For details on historical trends and CBO's assumptions about future excess cost growth, see *The Long-Term Outlook for Health Care Spending* (November 2007), especially pp. 6–12.

Box 1.

Illustration of the Effects of Aging and Cost Growth on Spending

How aging, cost growth, and the interaction between those two factors affect spending can be illustrated using a simple example in which there is one elderly person and nine nonelderly people (see the accompanying table). Spending in the first year is $1,000 for a nonelderly person and $2,000 for an elderly person. Total spending is $11,000 ($9,000 for the nine nonelderly people and $2,000 for the elderly person).

In the second year, the situation changes as follows:

Aging Only

If another person becomes elderly but costs do not rise, spending in the second year totals $12,000 ($8,000 for the eight nonelderly people plus $4,000 for the two elderly people). The increase of $1,000 is attributable solely to aging.

Cost Growth Only

If the population does not age but costs rise 10 percent, spending in the second year totals $12,100 ($9,900 for the nine nonelderly people plus $2,200 for the elderly person). The increase of $1,100 is attributable solely to cost growth.

Aging and Cost Growth

If another person becomes elderly and costs rise 10 percent, spending in the second year totals $13,200 ($8,800 for the eight nonelderly people plus $4,400 for the two elderly people). The resulting increase of $2,200 exceeds the sum of the pure "aging" effect ($1,000) and the pure "cost growth" effect ($1,100) because of the interaction between the two (an extra $100 arising because the cost of the additional elderly person is magnified by the increase in per capita costs).

	Year 1	Year 2	Increase
		Aging Only	
		Cost Per Person Same in Both Years;	
		One Elderly Person in Year 1, Two Elderly People in Year 2	
Nonelderly	9,000	8,000	
Elderly	2,000	4,000	
Total	11,000	12,000	1,000
		Cost Growth Only	
		10 Percent Cost Growth from Year 1 to Year 2;	
		One Elderly Person in Both Years	
Nonelderly	9,000	9,900	
Elderly	2,000	2,200	
Total	11,000	12,100	1,100
		Aging and Cost Growth	
		10 Percent Cost Growth from Year 1 to Year 2;	
		One Elderly Person in Year 1, Two Elderly People in Year 2	
Nonelderly	9,000	8,800	
Elderly	2,000	4,400	
Total	11,000	13,200	2,200

Source: Congressional Budget Office.

Because older people are less likely to work than younger people, scenarios that incorporate projected aging (Scenarios 2 and 4) result in lower GDP than scenarios that hold the age distribution constant (Scenarios 1 and 3).[4] (By 2082, aging would reduce GDP by about 10 percent, CBO projects.) One option is to use the projected GDP from Scenario 4 (which reflects both aging and excess cost growth) as the denominator for computing spending as a share of GDP in all of the scenarios.[5] GDP would then be consistent across scenarios, and aging would affect only the spending projections.

Another option is to use the projected GDP from each scenario as the denominator for that scenario. In that case, the numerator (spending) and denominator (GDP) would be consistent within each scenario, and the results would reflect the effects of aging on both spending and GDP.

The second issue is how to construct spending in Scenario 1, the base-case scenario. Spending could be held constant at its 2007 share of GDP (4.1 percent). Alternatively, CBO's model could be modified to hold the age distribution of the population constant and assume that federal Medicare and Medicaid spending grows at the same rate as per capita GDP.[6] Because the model incorporates some factors that are used to construct CBO's baseline for the first 10 years of the projection period, spending in the resulting scenario is not a fixed share of GDP; spending increases slightly over those years—to 4.5 percent of GDP in 2018.

Three Approaches for Analyzing Sources of Spending Growth

This brief presents three approaches to analyzing the sources of projected growth in Medicare and Medicaid spending.[7] Although the results vary slightly, all of the approaches reach the same basic conclusion: Excess cost growth, by itself, accounts for more than half of the anticipated growth in health care spending, regardless of the assumptions and methods used; after 75 years, aging, by itself, accounts for less than 20 percent of the growth in spending.

Approach 1: Base-Case Scenario Is Modeled; GDP Is Consistent Across Four Scenarios. In the first approach, Scenario 1 incorporates factors from CBO's 10-year baseline, so federal spending on Medicare and Medicaid under that scenario is slightly higher than the 2007 level. It also uses the same level of GDP in the denominator across scenarios. Under those assumptions, by 2082

4. Projections of GDP can also vary slightly between scenarios for two other technical reasons related to the structure of CBO's long-term model. First, although the model targets certain macroeconomic assumptions, such as the size of the capital stock and the real (inflation-adjusted) interest rate, the targeting process is inherently imperfect. Second, the model can be run in either its standard microsimulation mode or a simpler actuarial mode; the two modes produce consistent but not identical projections. The age distribution can be held constant only in the actuarial mode; for consistency, this analysis runs all four scenarios using the actuarial mode.

5. That approach was used in CBO's *The Long-Term Budget Outlook* (December 2007) and is the standard procedure for CBO's long-term modeling efforts under different scenarios.

6. In previous CBO analyses, when the age distribution of the population was fixed, spending decreased slightly in the later decades of the projection period. The decrease occurred because, in CBO's projections, health care spending depends on both an individual's age and remaining life expectancy. See Congressional Budget Office, *Incorporating Longevity Effects Into Long-Term Medicare Projections*, Technical Paper 2004-02 (January 2004). As projected life expectancies increase, annual spending for a given age group tends to decline because costs are so concentrated near the end of life and because individuals in that group have a larger remaining life expectancy than previous generations. This analysis makes no adjustment for the remaining life expectancy, so projected spending is a nearly constant share of GDP after the 10th year.

7. The portion of spending growth attributable to aging is computed by subtracting spending under the base-case scenario (Scenario 1) from spending under the aging-only scenario (Scenario 2). Similarly, the portion of spending growth attributable to excess cost growth is computed by subtracting spending under the base-case scenario from spending under the scenario that reflects only excess cost growth (Scenario 3). The portion of growth caused by the interaction is simply the remainder of the total growth—that is, the remainder of the difference between Scenario 4 (which reflects aging and excess cost growth) and Scenario 1.

60 percent of the accumulated spending growth is attributable to excess cost growth (see the top panel of Figure 1). Population aging, by itself, accounts for only 14 percent of the spending growth. The remaining 26 percent results from the combination of the two effects.[8]

Over a shorter time frame, aging is slightly more important because the baby-boom generation will become elderly, resulting in an increased number of Medicare and Medicaid beneficiaries. By 2032, for example, aging accounts for more than a quarter of the accumulated growth (see the top panel of Figure 2). The portion of growth attributable to the interaction between aging and excess cost growth increases over time.[9]

Approach 2: Base-Case Scenario Is Modeled; GDP Varies Across Four Scenarios. The second approach allows GDP to vary across the scenarios—that is, the level of GDP in the denominator of each scenario is specific to that scenario. GDP is higher in scenarios that do not account for aging than in the scenarios that do. Using the scenario-specific GDP therefore results in a lower measure of health care spending as a share of GDP in the no-aging scenarios (see the middle panel of Figure 1). From that perspective, projected aging results in a slightly larger increase in spending than under the first approach (which used the same level of GDP in the denominator for each scenario). For example, 16 percent of the growth by 2082 is attributable solely to aging under this scenario-specific GDP approach, compared with 14 percent under the first approach (see the middle panel of Figure 2). The share of growth attributable to the interaction between aging and cost growth also is higher in this scenario. Nevertheless, the share attributable to excess cost growth is still more than half (53 percent).

Approach 3: Base-Case Scenario Holds Spending at Its 2007 Share of GDP; GDP Varies Across Four Scenarios. The third approach also uses scenario-specific GDP, but unlike the first two scenarios it holds spending in the base-case scenario constant at the 2007 share of GDP. That approach attributes slightly more of the growth to aging than do the first two approaches.[10] For example, 17 percent of the growth by 2082 is attributable solely to aging (see the bottom panel of Figure 2), as opposed to 14 percent and 16 percent under the other two approaches, respectively. Under this approach, 54 percent of the increase in spending is attributable to excess cost growth.

8. Another way to present those results would be to allocate the interaction effect to aging and cost growth in proportion to the pure effect of aging and the pure effect of excess cost growth. For example, if the 26 percent of the 75-year growth that is attributable to the interaction effect were distributed proportionately in that manner, excess cost growth would account for 81 percent of overall spending growth and aging would account for 19 percent.

9. Mathematically, total $\text{spending}_{\text{year 2}}$ = total $\text{spending}_{\text{year 1}}$ x (1 + growth from aging) x (1 + growth from cost increases) = total $\text{spending}_{\text{year 1}}$ x [(1 + growth from aging + growth from cost increases + (growth from cost increases x growth from aging)].

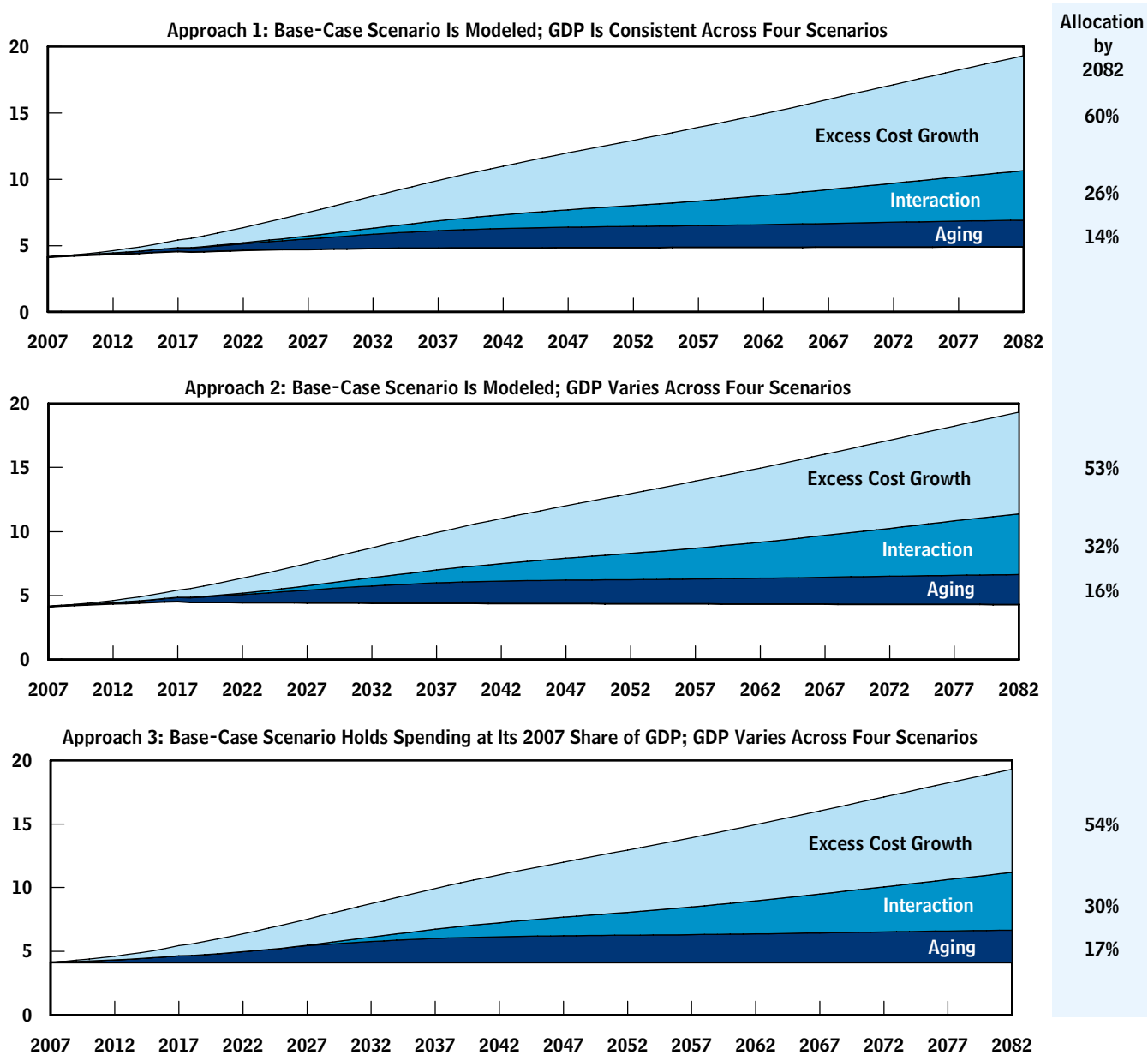
   The last term in the equation is the interaction factor. In the early years of the projection period, growth from cost increases and growth from aging are small, so the product of the two factors—the interaction effect—is especially small.

10. Under the third approach, the size of the interaction effect is particularly small in the first few decades of the projection period. That result is an artifact of the methods used. In these calculations, spending as a share of GDP is held constant in the base-case scenario. However, the other three scenarios incorporate factors from CBO's 10-year baseline projections.

Figure 1.

Allocation of Projected Growth in Federal Spending on Medicare and Medicaid, by Source

(Percentage of gross domestic product)



Source: Congressional Budget Office.

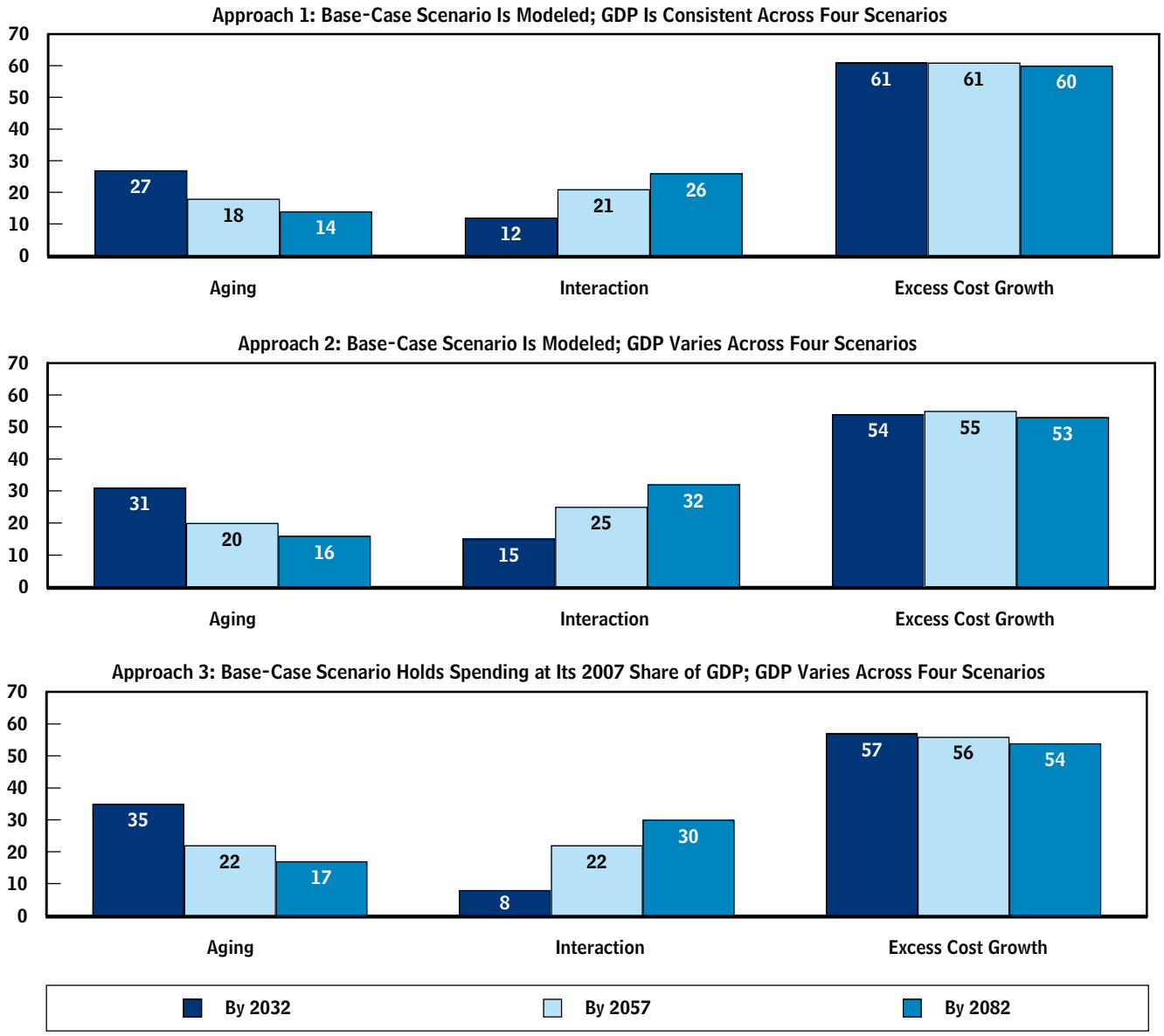
Notes: The portion of spending growth attributable to aging is computed by subtracting spending under the base-case scenario (Scenario 1) from spending under the aging-only scenario (Scenario 2). Similarly, the portion of spending growth attributable to excess cost growth is computed by subtracting spending under the base-case scenario from spending under the scenario that reflects only excess cost growth (Scenario 3). The portion of growth caused by the interaction between aging and excess cost growth is simply the remainder of the total growth—that is, the remainder of the difference between Scenario 4 (which reflects aging and excess cost growth) and Scenario 1.

Excess cost growth is the percentage by which the growth in per capita spending on Medicare and Medicaid exceeds the growth in per capita GDP, after adjusting for changes in the age distribution of the population.

Figure 2.

Allocation of Projected Growth in Federal Spending on Medicare and Medicaid by 2032, 2057, and 2082, by Source

(Percent)



Source: Congressional Budget Office.

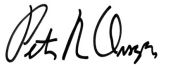
Notes: The portion of spending growth attributable to aging is computed by subtracting spending under the base-case scenario (Scenario 1) from spending under the aging-only scenario (Scenario 2). Similarly, the portion of spending growth attributable to excess cost growth is computed by subtracting spending under the base-case scenario from spending under the scenario that reflects only excess cost growth (Scenario 3). The portion of growth caused by the interaction between aging and excess cost growth is simply the remainder of the total growth—that is, the remainder of the difference between Scenario 4 (which reflects aging and excess cost growth) and Scenario 1.

Excess cost growth is the percentage by which the growth in per capita spending on Medicare and Medicaid exceeds the growth in per capita GDP, after adjusting for changes in the age distribution of the population.

Conclusion

Although the relative contributions of aging and excess cost growth depend on how the calculations are made, the implications of the three approaches are similar. Even if the growth of health care costs slows from its historical levels, as CBO assumes, federal spending on Medicare and Medicaid will grow substantially for the foreseeable future. With the retirement of the baby-boom generation, aging will have a larger effect on spending in the next several decades than it will later in the century. However, no matter which technical assumptions are used, the projected growth of health care costs per beneficiary is by far the larger contributor to the growth of federal spending on Medicare and Medicaid throughout the entire projection period.

This brief was written by Noah Meyerson. A related publication is *The Long-Term Outlook for Health Care Spending,* which presents in detail the Congressional Budget Office's projections of federal spending on Medicare and Medicaid and national spending on health care over the next 75 years. These publications are available on CBO's Web site (www.cbo.gov).



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