Review of Assumptions and Methods of the Medicare Trustees' Financial Projections

Technical Review Panel on the Medicare Trustees Reports

December 2012

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Preface

The Medicare Board of Trustees reports annually on the financial condition of the Hospital Insurance (HI) and Supplementary Medical Insurance (SMI) Trust Funds. These reports describe the current and projected financial status of the trust funds over a 75-year period. Periodically, on behalf of the Board, the Secretary of Health and Human Services convenes an independent panel of actuaries and economists to review the projection assumptions and methods underlying the Medicare reports. The results of these reviews are an important element in assuring Congress and the public at large that the official Medicare projections are reasonable. The 2010-2011 Panel includes the following members:

- John M. Bertko, F.S.A., M.A.A.A (Co-Chair).

- Joseph P. Newhouse, Ph.D. John D. MacArthur Professor of Health Policy and Management, Harvard University (Co-Chair).

- Barry P. Bosworth, Ph.D. Senior Fellow, Economic Studies Program and the Robert V. Roosa Chair in International Economics, Brookings Institution.

- Michael E. Chernew, Ph.D. Professor, Department of Health Care Policy, Harvard University.

- John P. Cookson, F.S.A., M.A.A.A. Principal Actuary, Milliman USA.

- Uwe E. Reinhardt, Ph.D. James Madison Professor of Political Economy and Professor of Economics, Princeton University.

- Geoffrey C. Sandler, F.S.A., M.A.A.A. Senior Actuary for Health Policy, Aetna.

- Louise M. Sheiner, Ph.D. Senior Economist, Board of Governors of the Federal Reserve System.

- Cori E. Uccello, F.S.A., M.A.A.A. Senior Health Fellow, American Academy of Actuaries.

Donald Oellerich, the Deputy Chief Economist in the Office of the Assistant Secretary for Planning and Evaluation (ASPE), Department of Health and Human Services (HHS), served as the Executive Director of the Panel.

The Panel was specifically asked to review the following six topics:

- Appropriate bases for setting long-range Medicare per beneficiary expenditure growth assumptions and associated issues such as the determination of sustainable shares of health spending.

- The sustainability of key Medicare cost growth factors under current law.

- Current assumptions regarding the long-term rate of growth in medical expenditures and/or changes in utilization of care.

- Current and alternative projection methodologies.

- Long-range growth assumptions for HI and SMI.

- Recommendations for areas of future research to improve the long-term projection methods, such as incorporating trends in health status.

Beginning in November 2010 and concluding in December 2011, the Panel held a series of twelve public meetings over fourteen days at HHS offices in Washington, D.C. or the Centers for Medicare & Medicaid Services (CMS) central office in Baltimore, MD on the following dates:

- November 23, 2010
- December 13, 2010
- December 14, 2010
- January 10, 2011
- January 28, 2011
- February 17, 2011
- April 12, 2011
- June 9, 2011
- June 10, 2011
- July 7, 2011
- September 9, 2011
- September 26, 2011
- November 9, 2011
- December 14, 2011

The Panel consulted with many experts in developing its findings and recommendations. It heard detailed presentations from the Chief Actuary in the Office of the Actuary (OACT) at CMS and from various staff members in OACT's National Health Statistics Group, Medicare and Medicaid Cost Estimates Group, and Parts C and D Actuarial Group. (OACT recommends the assumptions needed for the annual report to the Board of Trustees and prepares the Medicare projections using methodologies it has developed for this purpose.) The Panel also reviewed extensive background materials and heard presentations from invited experts in the field of health economics. Each meeting generated extensive discussion. Special thanks are due to the following individuals who made formal presentations to the Panel:

- Peter Budetti—Center for Program Integrity, CMS.

- Phil Ellis and Julie Topoloski—Congressional Budget Office.

- Sheila Conley—Deputy Assistant Secretary and Deputy Chief Financial Officer, HHS.

- Richard Gilfillan—Center for Medicare and Medicaid Innovation, CMS.

- Robert Reischauer—Public Trustee, Medicare Boards of Trustees.

This report presents the findings and recommendations of the Panel. The Panel generally concludes that the methods and assumptions used to project the financial status of the Medicare program are reasonable—or at least not unreasonable.. A number of refinements and possible improvements are recommended, including an update to the traditional long-range cost growth assumptions and use of a complementary methodology for establishing these assumptions. The

Panel unanimously agreed that the projection work of OACT is of excellent quality and that OACT performs in a highly competent and completely professional manner.

Throughout its deliberations, the Panel noted that the uncertainties associated with certain elements of the Affordable Care Act add substantially to the challenge of projecting Medicare's future financial operations. The legislation establishes a major program of research to develop innovative improvements to the delivery of and payment for health care services, but the ultimate impact of such innovations cannot be determined at this time. In addition, the lower payment updates for most categories of health care providers raise important questions about the long-range adequacy of Medicare payment rates, as discussed in Chapter IV. These issues will become clearer over time as implementation unfolds.

The Panel strongly recommends that further research be done to help develop and implement a number of the other recommendations made throughout this report. This research may be accomplished by additional staff resources and/or outside researchers in view of the limited resources currently available within OACT for such activities.

For their generous support, the Panel wants to thank the former HHS Assistant Secretary for Planning and Evaluation, Sherry Glied; the CMS Chief Actuary, Richard Foster; and their staffs. Throughout the project, the Panel was quickly provided with extensive information and support when needed from ASPE and OACT.

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John M. Bertko, Co-Chair   Joseph P. Newhouse, Co-Chair

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Chapter I: Executive Summary

Overall, with few exceptions, the Panel found that the methods and assumptions used by the Trustees are reasonable. The recommendations that follow should be considered proposed refinements and supplements to the existing procedures. The most significant of the recommendations involves the development of the long-range Medicare cost growth assumptions, which have the greatest impact on the evaluation of Medicare's long-range financial status. The current growth assumption used in the 2010 and 2011 Trustees Reports was determined by the Panel in its interim report[1] to be "not unreasonable." Based upon further discussion and analysis since its interim report was released, the Panel unanimously concluded that use of an updated long-range cost growth assumption together with a new, complementary modeling methodology would be a technical improvement. The Panel also strongly encourages future research to further refine this important assumption.

Many of the recommendations made by the Panel will require substantial research efforts to accomplish. Accordingly, the Panel recommends that staff and research budgets be significantly expanded as necessary to fulfill these recommendations.

The findings and recommendations of the Panel are detailed in chapters 2 through 4 of this report and are listed below. Unless otherwise noted, all recommendations apply to the intermediate set of assumptions. The general themes underlying these recommendations include (i) consistency of the methods and assumptions used in the HI and SMI projections; (ii) ease of understanding of the projection models; (iii) optimal use of available information; and (iv) clear communication and qualification of the projection methods and assumptions. In keeping with its charter, the Panel focused its attention on that portion of the Medicare projections that is specific to health care. It did not address the demographic, economic, and other aspects of the projections that are not specific to health care and that are shared with the projections of the Old-Age, Survivors, and Disability Insurance (OASDI) program.

Short-range assumptions and methodology

Finding II-1: In a conclusion similar to that of the 2000 Technical Panel, this Panel finds that the assumptions and methods used by the Trustees for the short-range projection period are generally reasonable.

Recommendation II-2: The Panel makes a general recommendation that the Medicare Trustees call for more frequent reviews of the continuing relevance of assumptions or recommendations.

Recommendation II-3: As a general matter, assumptions made for one part of Medicare should also be used for the other parts. In particular, the Panel recommends that assumptions regarding the termination of retiree coverage by employers should be consistent across all projection models (Parts A, B, C, and D). While the assumptions do not have to be identical, they should be developed and applied in a consistent manner so that they inform each other, with any differences clearly noted and explained.

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[1] 2010-2011 Medicare Technical Review Panel: *Review of the Long Range Assumptions of the Medicare Trustees' Projections: Interim Report*. February 2011. Internet address: http://aspe.hhs.gov/health/medpanel/2010/ interim1103.shtml.

Recommendation II-4: The Panel recommends that the Trustees consider explicit projection assumptions regarding the percentage of beneficiaries with private supplemental Medicare coverage, also commonly referred to as Medigap coverage. In particular, the Panel notes the potential for lower Medicare utilization, due to greater point-of-service cost sharing by beneficiaries, if fewer beneficiaries purchase Medigap coverage.

Recommendation II-5: The Panel recommends that the impact on inpatient hospital expenditures from legislative factors and case mix, as currently displayed in table IV.A1 of the Trustees Report, be presented separately rather than as part of "other factors."

Recommendation II-6: The Panel recommends that projecting trends in aggregated measures in addition to individual components may assist in any smoothing needed on the more volatile components.

Recommendation II-7: The Panel recommends comparing the historical trends in hospital compensation increases to economy-wide data in the Employment Cost Index (ECI).

Finding II-8: The Panel finds that the current assumptions for inpatient hospital case-mix growth may be too high and that those for skilled nursing facilities (SNFs) and home health care may be too low.

Recommendation II-9: The Panel recommends that the Trustees study the historical case-mix growth trends for hospitals, SNFs, and home health care, after adjusting for the estimated impacts resulting from payment system or "claims grouper" changes, to obtain a clearer picture of the underlying growth trends.

Recommendation II-10: The Panel recommends reconsideration of the current assumption that growth in SNF per capita utilization will rapidly decline from recent historical levels to zero percent per year for the balance of the short-range period. In view of past trends, the Panel believes an ultimate growth rate of 1 percent per year would be more appropriate.

Recommendation II-11: The Panel recommends reconsideration of the current assumption that growth in per capita home health utilization will rapidly decline from recent historical levels to zero percent per year for the balance of the short-range period. In view of past trends, the Panel believes an ultimate growth rate of 1 percent per year would be more appropriate.

Finding II-12: Although the Panel expects that there will be rebasing and re-pricing of unit prices for episodes of home health care in 2014, it finds that the Trustees' assumption of no material direct impact on utilization is reasonable.

Recommendation II-13: The Panel recommends that the Trustees and OACT continue to monitor the home health percentage shares of Part A and Part B expenditures and adjust assumed future shares as necessary as CMS expands its program-integrity efforts and as the cap on outlier payments affects expenditures.

Recommendation II-14: The Panel recommends that Part A hospice services be analyzed separately by site of service (for example, home, SNF, physician office, or nursing home).

Finding II-15: The Panel finds that the assumptions used for the behavioral offset for physician services are based on a study that is more than 10 years old and that includes data nearly 20 years old.

Recommendation II-16: The Panel recommends that a new study be conducted to estimate the behavioral offset for physician services.

Recommendation II-17: The Panel recommends that there be a single alternative scenario for physician payment rate updates, that it apply to the next 10 years, and that it be determined using the average physician payment increase for the last 10 years calculated on a 10-year rolling average basis. As shown in table II.4, a rolling average based on the period 2001-2010 would yield an update projection of 0.8 percent. Such an alternative scenario illustrates the potential magnitude of the understatement of Medicare Part B spending under current-law sustainable growth rate (SGR) system updates.

Recommendation II-18: OACT should continue to use its current methods to estimate the effects of increased enforcement to diminish fraud and abuse. These effects are difficult to predict, in part because changes in spending and usage can occur for services that are more susceptible to fraud and abuse, even when enforcement efforts are constant. Such efforts are likely to play a role but are too speculative to allow the formulation of assumptions. The Trustees should continue to monitor this issue.

Recommendation II-19: The Panel finds that the approach taken by the Trustees with regard to Accountable Care Organizations (ACOs) is reasonable. There is significant uncertainty surrounding the share of beneficiaries that will be part of ACOs in the next 10 years, and the Trustees should monitor this issue carefully on an annual basis.

Finding II-20: The Panel finds that the current assumptions for competitive bidding on durable medical equipment (DME) are reasonable and should be maintained.

Finding II-21: The Panel finds that the Trustees' assumptions related to Medicare Advantage (MA) plan quality, or Quality Measures, and the "star" system are reasonable.

Recommendation II-22: The Panel finds that the Trustees' assumption related to trends in MA bids is reasonable. Future work should continue to investigate this assumption.

Recommendation II-23: While the Panel finds that the current Trustees' approach to modeling MA enrollment is not unreasonable, the Panel recommends that the Trustees improve the modeling by using longitudinal analysis, incorporating trends in the non-MA market either explicitly or implicitly, and adopting an MA enrollment trend assumption.

Finding II-24: The Panel finds that the approach of using a macro forecast of the national health expenditures (NHE) drug estimates, which reflects adjustments based on interviews with industry experts, is reasonable.

Finding II-25: The Panel finds that the assumed Part D "induction factor" is reasonable.

Finding II-26: The Panel finds that the Trustees' approach is reasonable regarding expected changes in participation in the Federal retiree drug subsidy (RDS) program.

Recommendation II-27: The Panel recommends that OACT identify the sources of discrepancy between recent forecasts of prescription drug spending growth and subsequent actual experience.

Recommendation II-28: The Panel recommends that OACT explore the potential for bottom-up models of both the NHE drug component and Part D to improve forecasts in the short range, particularly within the first 1 to 3 years.

Recommendation II-29: The Panel recommends that OACT explore ways to build Part D experience into the short-range projections for year 4 and beyond.

Recommendation II-30: The Panel recommends that the Trustees and OACT continue to monitor the impact of changes in employer actions on retiree participation in Part D plans.

Long-range assumptions and methodology

Recommendation III-1: For national health expenditures, the Panel recommends that OACT and the Trustees consider the results from using two projection methods. The first is OACT's traditional approach that relates health spending growth to the gross domestic product (GDP) growth plus a constant, and the second is based on a "factors contributing to growth model" (described in chapter III). Going forward OACT will need to use its judgment in how it weights the projections that these models generate.

Finding III-2: The Panel finds that the Trustees' assumption used in the 2010 and 2011 Trustees Reports—that the quantity of services per beneficiary under Medicare (adjusted for demographics and prior to consideration of the Affordable Care Act) rises at the same rate as for per capita non-Medicare—is reasonable.

Recommendation III-3: The Panel recommends that the Trustees incorporate an assumption that the Affordable Care Act (ACA) will have a small, negative impact on the long-range growth rate of volume and intensity of services per beneficiary.

Recommendation III-4: In connection with a "GDP+X" approach to establishing long-range growth assumptions for Medicare, for service categories affected by the statutory productivity adjustments, the Panel recommends that per capita Medicare expenditures rise at an average rate that is equivalent to per capita GDP + 0.2 percent, after incorporation of the impacts of the ACA.

Uncertainty associated with certain provisions of current Medicare law

Finding IV-1: Current law specifies Medicare payment updates for hospitals and most other non-physician providers that equal (i) the increase in providers' input prices less (ii) the increase in the 10-year moving average of economy-wide private nonfarm business multi-factor productivity. The Panel finds that these payment updates may be feasible in the short to medium term. The Panel also affirms the findings by the Medicare Board of Trustees in their 2010 and 2011 annual reports that there is considerable uncertainty regarding the feasibility of these update adjustments over the long range. Some analyses suggest that they could be workable indefinitely, especially if providers transition to more integrated systems of care and payment mechanisms other than fee-for-service. However, other analyses suggest that quality of care and/or access to providers might be significantly reduced.

Finding IV-2: The statutory sustainable growth rate (SGR) formula that applies to physician services requires a very large near-term reduction in Medicare payment rates and future increases that, on average, will be below the increase in physicians' input prices. The Panel affirms the findings by the Medicare Board of Trustees in their 2010 and 2011 annual reports that the immediate, large reduction in physician payment rates is highly unlikely to be implemented. In addition, the Panel finds that there is substantial uncertainty regarding the feasibility of the ongoing downward adjustments in physician payment updates that would be required in subsequent years under the SGR mechanism.

Recommendation IV-3: In view of the uncertainty associated with the long-range feasibility of the productivity adjustments and the short- and long-range feasibility of the SGR performance adjustments under current law, the Panel recommends that the Medicare Board of Trustees continue to present alternative projections in which average Medicare spending per beneficiary rises faster than the current-law baseline.

Recommendation IV-4: The Panel further recommends inclusion of the alternative projections within the Medicare Trustees Report, in the form of a chart (and related text) that compares long-range Medicare expenditures as a percent of GDP under (i) current law; (ii) an alternative to current law in which physician payment rates are not as constrained as required by the SGR formula; and (iii) an alternative with both an SGR modification as above and assumed payment rate increases for other providers that are not as constrained as required by the productivity adjustments.

Chapter II: Short-Range Assumptions and Methodology

This chapter provides details of the Panel members' findings and recommendations, which are based on their understanding of the current short-range actuarial assumptions and projection methodology used by the Trustees for Medicare Parts A, B, C, and D projections.

The Office of the Actuary (OACT) performs both short-range and long-range projections on behalf of the Board of Trustees for Parts A, B, C, and D. The short-range projection period encompasses the next 10 years, starting with the year in which the Trustees Report is issued. For the detailed short-range fee-for-service (FFS) projections, OACT estimates the increases in utilization, case mix, and price by type of service (following current law). A range of assumptions drives these estimates. In some cases (particularly Parts C and D), broader models are needed to predict enrollment and other program attributes (e.g., the share of Medicare Advantage plans by quality rating categories). The Technical Panel reviewed these assumptions, focusing first on Parts A and B, then on Part C, and finally on Part D. In addition, the Panel made several overarching recommendations about the process.

General findings and recommendations

Finding II-1: In a conclusion similar to that of the 2000 Technical Panel, this Panel finds that the assumptions and methods used by the Trustees for the short-range projection period are generally reasonable.

The 2000 Technical Panel found the short-range assumptions and methodology to be reasonable but had a number of recommendations—mostly related to utilization and intensity—that were adopted by the Trustees and that have been used in the Medicare projections since that time.

However, the current Panel believes that it may be possible to enhance future projections through additional testing or additional methods of analyzing the data.

Recommendation II-2: The Panel makes a general recommendation that the Medicare Trustees call for more frequent reviews of the continuing relevance of assumptions or recommendations.

OACT reviews the latest data and trends each year as part of the process of developing projection assumptions to recommend to the Board of Trustees. In addition, it assesses possible improvements to the projection methodologies and adopts them when appropriate. In turn, the Trustees and their staffs consider OACT's recommendations and any updates for each year's report.

The OACT assumptions are periodically reviewed by independent Technical Panels of actuaries and economists. The goal has generally been to convene Technical Panels every 4 years. In practice, however, OACT's statutory and other workloads do not always leave sufficient time available to participate in and support external reviews. Medicare Technical Panels were formed in 1991, 2000, 2004, and, in the case of the current Panel, 2010.

Despite the annual updates to the short-range assumptions, there has been a tendency to continue to use certain key assumptions that have been recommended by the most recent Technical Panel, even if that recommendation was made some years ago and more recent data suggest a different trend. As a result, the current Panel is concerned that assumptions and recommendations may

become obsolete over time and believes that additional attention should be paid to whether they should stay in force. To assist with this effort, consideration should be given to convening independent Panels more frequently, i.e., within four years, especially given the changes in the law made by the Affordable Care Act (ACA).

Recommendation II-3: As a general matter, assumptions made for one part of Medicare should also be used for the other parts. In particular, the Panel recommends that assumptions regarding the termination of retiree coverage by employers should be consistent across all projection models (Parts A, B, C, and D). While the assumptions do not have to be identical, they should be developed and applied in a consistent manner so that they inform each other, with any differences clearly noted and explained.

A somewhat similar recommendation was made by the 2000 Panel concerning the consistent application of age and gender adjustments across service categories.[2] At that time, the only services that were projected based on utilization by age and gender were Part A. More recently, such data have been collected for several of the Part B types of services and have been used for the Part B projections.

A declining proportion of Medicare beneficiaries with access to employer-sponsored retiree health insurance would generally affect all parts of Medicare. For example, beneficiaries unable to replace their retiree coverage would likely face higher out-of-pocket costs for deductibles and coinsurance, which would influence the volume and intensity of their Part A and Part B services. Part B and Part D enrollment would likely increase, since many individuals rely on retiree coverage for these services and do not enroll in these parts. Some would try to retain supplemental coverage by joining private Medicare Advantage or other Part C plans.

Other instances of refining the consistency of assumptions across the individual parts of the program may also be possible.

Recommendation II-4: The Panel recommends that the Trustees consider explicit projection assumptions regarding the percentage of beneficiaries with private supplemental Medicare coverage, also commonly referred to as Medigap coverage. In particular, the Panel notes the potential for lower Medicare utilization, due to greater point-of-service cost sharing by beneficiaries, if fewer beneficiaries purchase Medigap coverage.

Traditional Medicare includes significant cost-sharing provisions payable out-of-pocket by beneficiaries who are not covered by a private supplemental Medicare insurance policy or other auxiliary coverage. For Part A, a beneficiary who receives inpatient hospital services furnished in a spell of illness is responsible for an inpatient hospital deductible, which is subtracted from the amount payable to the hospital by the HI trust fund. When a beneficiary receives such services for more than 60 days during a spell of illness, he or she is also responsible for a coinsurance amount equal to one-fourth of the inpatient hospital deductible for each of days 61-90 in the hospital. After 90 days in a spell of illness, each individual has 60 lifetime reserve days of coverage, for which the coinsurance amount is equal to one-half of the inpatient hospital deductible; if an individual exhausts these lifetime reserve days in a spell of illness, he or she must pay the full cost of inpatient care. A beneficiary is responsible for a coinsurance amount

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[2] See recommendation I-7 in the 2000 Panel report.

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equal to one-eighth of the inpatient hospital deductible for each of days 21-100**,** and for the full cost of care beyond 100 days, of skilled nursing facility services furnished during a spell of illness. In Part B, most services are subject to an annual deductible and coinsurance, the latter of which, in most cases, is 20 percent.

Because most beneficiaries are risk averse, a large private market has evolved to provide supplemental insurance coverage to pay for health care costs, including deductibles and copayments, that are not covered by Medicare and that would otherwise be payable out-of-pocket. The vast majority of Medicare beneficiaries have some type of supplemental Medicare coverage, frequently received as a retirement benefit from former employers, but also often purchased directly in the private market by individuals lacking access to such a benefit. (Many other beneficiaries have additional coverage through private Part C health insurance plans or the Medicaid program.)

Insurance theory predicts that diminution of cost sharing increases the level of health care utilization. This proposition is persuasively supported by the results of the RAND Health Insurance Experiment (HIE), a multi-year study by Joseph Newhouse, *et al.*, in which participants were randomly assigned to health insurance plans having different degrees of cost sharing at the point of service.[3] In principle, although there is every reason to expect that diminution of cost sharing by means of private or other supplemental insurance coverage will increase the level of utilization of medical services by Medicare beneficiaries, no existing survey has to date included sufficient information about beneficiaries' wealth, health status, and actual insurance characteristics to enable precise estimation of the additional utilization directly attributable to supplemental coverage. The key problem is disentangling the effects of (i) higher utilization of services by sicker individuals (who would use more services even with the same insurance but who also have a greater incentive to obtain insurance), and (ii) higher utilization by insured individuals (who have a greater incentive to use services because of their reduced out-of-pocket costs).

The best available analyses of this issue are based on data from the Medicare Current Beneficiary Survey (MCBS). Using data from 2003-2005, Michael Chernew and Lauren Cipriano ascribed to survey respondents the existence and generosity of supplemental coverage based upon the percentage of health care costs that each respondent reported as paying out-of-pocket.[4] The results suggested that individuals imputed to have the equivalent of first-dollar supplemental coverage had roughly double the average rate of health care utilization of those imputed not to have supplemental Medicare coverage (reflecting both the selection and induced-utilization factors noted above). Christopher Hogan, who appears to have implemented a more conservative approach to identification of supplemental insurance status for the same MCBS years, reported that beneficiaries with supplemental Medicare insurance consume roughly 50 percent more health care than beneficiaries without this coverage.[5] These studies indicate that

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[3] Newhouse, Joseph P., and the Insurance Experiment Group: *Free for All: Lessons from the RAND Health Insurance Experiment*. Cambridge: Harvard University Press, 1993.

[4] Chernew, Michael E., and Cipriano, Lauren: "Prototype Cost-Sharing, Cost-Growth Model." Contract report to the CMS Office of the Actuary, 2008.

[5] Hogan, Christopher: "Exploring the Effects of Secondary Coverage on Medicare Spending for the Elderly." Direct Research, LLC. Contract report to the Medicare Payment Advisory Commission, June 2009.

the level of Medicare utilization is substantially higher for Medicare beneficiaries with supplemental insurance policies, but the magnitude of the differential is uncertain, as is the degree to which it results from higher utilization induced by the more comprehensive coverage.

Since supplemental Medicare insurance appears to affect the level of health care utilization, market trends for this insurance become both relevant and potentially significant for projecting the level of Medicare expenditures. If in the future a greater share of Medicare beneficiaries have less generous supplemental insurance or are entirely without such coverage, the level and/or rate of growth of aggregate Medicare expenditures could be significantly affected. In particular, there is significant evidence that a trend is under way among employers to drop or reduce retiree health benefits. (However, the near-term implications of this trend for the overall level of supplemental insurance coverage among Medicare beneficiaries are uncertain, since many of those affected purchase other supplemental coverage.) The recent weak economic performance increases the likelihood that employer-sponsored retiree coverage will continue to decline and that individuals will forgo replacing it with Medigap policies.

The Panel recommends that available surveys such as MCBS, the Medical Expenditure Panel Survey (MEPS), and the Health and Retirement Study (HRS) be evaluated for evidence concerning the following:

- Whether the magnitude of supplemental insurance effects on the level of Medicare utilization can be documented more definitively, including the relationship between the generosity of coverage and utilization.

- Whether time series data assembled from multiple survey years suggest that the rate of health care cost growth varies by supplemental insurance status.

- Whether the same data indicate the existence of any trends in the supplemental insurance status of Medicare beneficiaries, both regarding the likelihood of having coverage (including the effects due to employers being less likely to offer it) and regarding the richness of coverage for those who continue to have it.

Employee benefits consultants could also offer a valuable perspective on these issues.

Even if available historical evidence concerning supplemental insurance trends is mixed, consideration should still be given to whether a reduction in the generosity and availability of such coverage over the short- and intermediate-range periods is likely. The results of this type of evaluation, as well as of other health care cost-sharing analyses (such as OACT research to develop a cost-sharing, cost-growth (CSCG) model and a National Institute of Aging grant to incorporate Medicare cost sharing into the Urban Institute's micro-simulation model), could conceivably establish a reasonable foundation for modifying or adjusting Medicare health care cost growth assumptions.

Part A findings and recommendations

The key components of the short-range Medicare Part A forecasts are future enrollment levels, utilization trend rates, market basket price increases, and changes in the intensity and mix of services. Each of these components is reviewed separately for each Part A service category—

inpatient hospital, skilled nursing facility, home health, and hospice—and the composite effects are reflected in the forecasted Medicare Part A trends.

The Panel finds that the methods used by the Trustees to develop these short-range assumptions are generally reasonable. However, certain projection elements could be enhanced by additional testing or by other ways of examining the data.

Recommendation II-5: The Panel recommends that the impact on inpatient hospital expenditures from legislative factors and case mix, as currently displayed in table IV.A1 of the Trustees Report, be presented separately rather than as part of "other factors."

Table IV.A1 presents detailed information on the past and projected factors that affect growth in Part A inpatient hospital expenditures. The residual category of "other factors" could be usefully expanded to show separate values for legislative, case mix, and all other factors. Separate values are available for past and projected case-mix increases, while the effects of legislation are available only on an estimated basis for future years. The remaining "other factors" include the "pass-through" payment amounts, such as for medical education, capital, and others that grow at different rates; these amounts have generally been treated as a residual. Since the impacts of increases in the case mix, legislation, and other factors are considered separately in projecting inpatient hospital costs, a separate presentation would clarify the effects of these assumptions and would allow easier interpretation of the other forces driving the trends.

Recommendation II-6: The Panel recommends that projecting trends in aggregated measures in addition to individual components may assist in any smoothing needed on the more volatile components.

While it is useful to recognize separate trends for utilization, market basket prices, intensity, and case mix for the different Part A service categories, it may also be useful to consider the trends in various aggregations. Examining composites may provide a better understanding of relationships between services, including inpatient and post-acute care, and of whether smoothing may be needed for more volatile components. Analyzing relationships between trend components for acute and post-acute care can add further insight. The assumption is that the volatility in the case-mix change and the utilization may be somewhat offsetting. Patterns for the individual factors may appear to be random, but examination of them in combination and by subcomponent or cross-benefit aggregation may provide additional insights.

For example, trends in inpatient utilization and intensity may be affected by shifting more services to outpatient hospital settings, as has happened in the past. Furthermore, the composite trend by type of service may be more stable than the cost patterns for the individual services, as increases in intensity (for example) may be a by-product of significant changes in utilization by site of service. Thus, reviewing the composites may help provide insight into any smoothing that may be needed on the sometimes volatile components. In addition, it may be important to look beyond inpatient admissions to determine if there are relationships with post-acute care. For example, it might be expected that changes in case-mix/severity-adjusted length of stay could be

related to increased use of SNF and home health care, although length of stay is not one of the current factors used to project Part A inpatient expenditures.[6]

A further consideration might be geographic mix change, since utilization and wages vary by area, and these differences could be reflected in the historical analysis and projections. One question to consider is how much impact migration from northern states to the Sunbelt over the past 20 years or so has had on underlying expenditure trends. What would the trends have been in the absence of this migration? A second question is how the geographic distribution of baby boomers about to join Medicare might affect future cost patterns. Currently, geographic effects are reflected in Part A projections only implicitly: it is assumed that past residual trends that include such factors will continue. To the extent that future migration patterns might differ from the past, perhaps in part due to the aging of the baby boom, an explicit analysis could help anticipate these effects.

Recommendation II-7: The Panel recommends comparing the historical trends in hospital compensation increases to economy-wide data in the Employment Cost Index (ECI).

The projection of increases in hospital input price indices is based upon a weighted average of price increases for a "market basket" of labor-related and non-labor-related cost components, together with a separate capital model.

The labor-related cost component reflects the projection of wages and benefits of hospital workers relative to non-hospital workers, which is then applied to economy-wide wages projected by the Office of the Chief Actuary at the Social Security Administration on behalf of the Social Security and Medicare Board of Trustees. The non-labor-related cost component is compared to the consumer price index (CPI), which is then projected forward and applied to the Trustees' CPI forecasts. The market basket weights are updated periodically.

The labor-related share of input price growth for the hospital market basket is projected in relation to assumed growth in average hourly compensation for the overall economy, since the Trustees' economic projections do not have sector-specific details such as hospital or health care compensation trends. However, the economy-wide data reflect significant changes in the mix of occupations, balance of full-time versus part-time employment, and other aspects that likely differ from the trends in hospital employment, which tends to be more homogeneous and stable over time. The Panel believes that economy-wide data as reflected in the ECI, which uses a fixed set of employment weights, would provide a closer comparison for understanding the nature of hospital-specific price growth. For example, a comparison between the hospital-specific and total-economy ECI increases indicates a generally positive differential that averages about 0.6 percent over the last 11 years, as shown in the last column of table II.1 below. Although this relationship cannot directly be used to set the assumed growth in average hospital compensation (because the Trustees' economic assumptions do not include ECI increases), understanding the basis for this historical differential could help inform the selection of inpatient hospital market basket assumptions.

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[6] Medicare pays a single amount for an inpatient hospital stay, based on the statutory rate for the applicable "diagnosis-related group," or DRG. Except in extreme cases involving outlier costs, the payments do not reflect the patient's length of stay.

Table II.1—Comparison of annual increases in hospital and economy-wide compensation, 2001-2011

				Difference between hospital hourly compensation and:	
Calendar year	Hospital hourly compensation (based on Employment Cost Index)	Economy-wide average hourly compensation	Employment Cost Index (total compensation)- all civilian workers*	Economy-wide average hourly compensation	Employment Cost Index (total compensation)- all civilian workers*
2001	5.3%	5.0%	4.2%	0.3%	1.1%
2002	5.1	3.6	3.3	1.5	1.8
2003	4.2	5.0	3.9	−0.8	0.3
2004	3.9	4.5	3.7	−0.6	0.2
2005	3.9	3.7	3.1	0.2	0.8
2006	3.8	3.9	3.3	−0.1	0.5
2007	3.6	3.2	3.3	0.4	0.3
2008	3.3	3.6	2.6	−0.3	0.7
2009	2.7	1.0	1.4	1.7	1.3
2010	2.0	3.0	2.0	−1.0	0.0
2011	1.9	2.7	2.0	−0.8	−0.1
2001-2011	3.6	3.6	3.0	0.0	0.6

* Bureau of Labor Statistics Series ID CIU1010000000000A; 12-month percent change ending 4th quarter calendar year.

Finding II-8: The Panel finds that the current assumptions for inpatient hospital case-mix growth may be too high and that those for skilled nursing facilities and home health care may be too low.

Recommendation II-9: The Panel recommends that the Trustees study the historical case-mix growth trends for hospitals, skilled nursing facilities, and home health care, after adjusting for the estimated impacts resulting from payment system or "claims grouper"[7] changes, to obtain a clearer picture of the underlying growth trends.

Growth in the average complexity (or intensity) of health care services is an important element of Medicare expenditures. Increases in the intensity of Part A services are generally measured using case-mix indexes, which represent the average complexity of all services in a category relative to the average for a base year.[8] Case-mix increases usually occur as a result of the development and diffusion of new medical technology. Shifts in the site of care, such as from inpatient to outpatient, can also increase the average case mix for both settings. Case mix is also affected by updates and revisions to Medicare's payment systems, such as the introduction of Medicare Severity Diagnosis Related Groups (MS-DRGs) in 2008. Finally, effects due to upcoding (inappropriate coding of claims by providers, resulting in a higher payment than warranted) can be severe, as has been the case for home health care.

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[7] "Claims groupers" are software programs used to determine the appropriate payment category for an inpatient hospital admission or other episode of care. For example, the determination of the most relevant diagnosis-related group (DRG) for a given hospital case is based on a patient's diagnoses, procedures, demographic information, and the presence of any complications or co-morbidities.

[8] For this purpose, the case mix is measured as an average across all claims in a category of the "relative weights" used in setting payment levels. The relative weights apply to Diagnosis Related Groups (DRGs) for inpatient hospital services, Resource Utilization Groups (RUGs) for skilled nursing facilities, and Home Health Resource Groups (HHRGs) for episodes of home health care.

It would be ideal to study the historical case-mix growth trends after adjusting for the estimated effects of payment system or grouper changes, which would better identify the effects of technology over time. A CMS analysis of claims in 2008 and 2009 found that significant portions of the unusually large inpatient case-mix increases for those years was attributable to the conversion to MS-DRGs. Similarly, a significant portion of the SNF case-mix increases during 2006 through 2009 is believed to be a consequence of the RUG revisions that were implemented in 2006. Analysis of the SNF case-mix increases excluding these years is likely to provide a better indication of the normal underlying trend.

This recommendation stems from the following discussion of case-mix and utilization assumptions for the projections of inpatient hospital, SNF, and home health care expenditures. As shown in the figure below for inpatient case-mix growth, the impact of adopting MS-DRGs is evident in the increases for 2008 and 2009. At 1.9 percent and 2.5 percent, respectively, these were the highest levels since 1991. Conversely, the inpatient case-mix index actually declined from 1998 through 2001, which had never happened previously. This period coincided with intensive efforts by CMS and the Department of Justice to investigate unwarranted DRG upcoding by a major hospital chain.

Excluding the 1998-2001 and 2008-2009 periods, the average inpatient hospital case-mix increase since the early 1990s has been 0.7 percent, and the 2002-2011 average was 0.5 percent. These trend averages are significantly lower than the Trustees' current short-range assumption of 1 percent per year, which was based on the recommendations of the 2000 Medicare Technical Panel. By restricting the historical period to years free of such "intervention" impacts, the current Panel concluded that a short-range case-mix assumption of about 0.5 percent would be more representative than the current assumption.

**Figure II.1—Increase in inpatient hospital case-mix index**
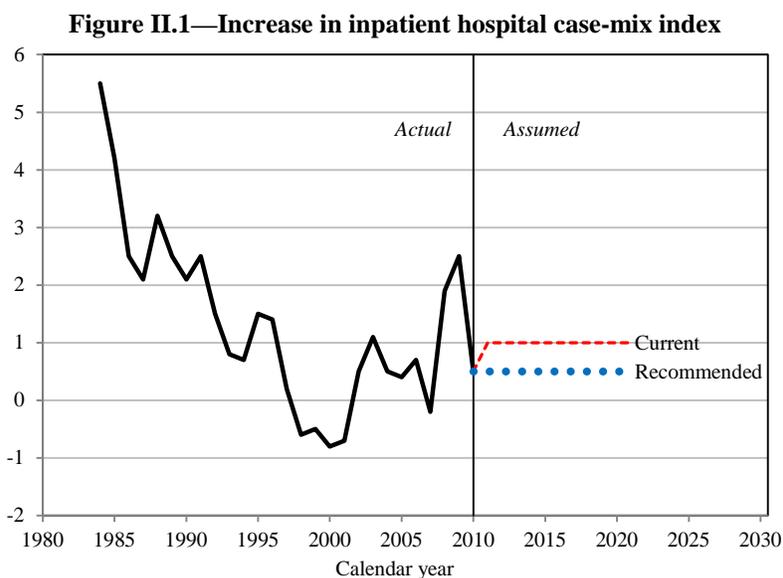
The number of inpatient hospital admissions per 1,000 Medicare fee-for-service beneficiaries declined significantly following the introduction of the inpatient prospective payment system in 1984. Inpatient utilization rebounded starting in 1990, but the trend in growth rates has been generally downward since then. On balance, the Panel is comfortable with the current

assumption that the age-sex-adjusted admission rate will remain constant throughout the short-range projection period.

Figure II.2—Increases in inpatient hospital utilization
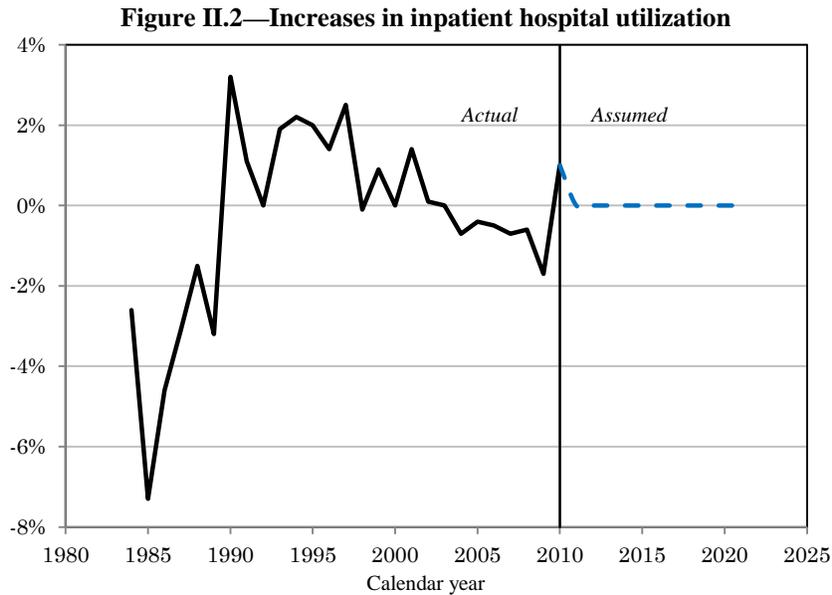
Based on the recommendations of the 2000 Technical Panel, the Trustees have assumed that SNF case-mix increases would average 1 percent per year during the short-range period. In practice, as shown in the figure below, the growth rate has been above the 1-percent level since the early 2000s, with a particular spike from 2006 through 2009 to well above those levels. As noted previously, a significant portion of the SNF case-mix increases from 2006 through 2009 can be attributed to the changes in the RUGs implemented in 2006. Even discounting this period, however, it appears that the SNF case-mix assumption should be increased. The figure below shows the actual past and assumed future SNF case-mix increases, with the ultimate growth assumption changed from 1 percent to 1.5 percent. The figure also illustrates the dramatic increase in SNF case mix that coincided with the further RUG revisions implemented in 2011. The "recommended" assumption shown below reflects both the Panel's conclusion that the ultimate growth assumption should be increased and the transition from the 2011 increase to an ultimate level of 1.5 percent, as developed by OACT for the 2012 Trustees Report.

Figure II.3—Increase in SNF case-mix index
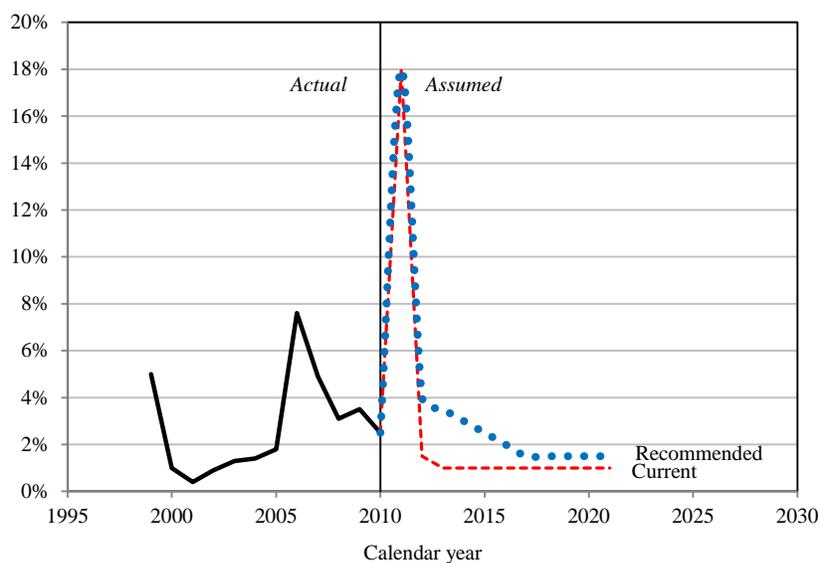
Recommendation II-10: The Panel recommends reconsideration of the current assumption that growth in SNF per capita utilization will rapidly decline from recent historical levels to zero percent per year for the balance of the short-range period. In view of past trends, the Panel believes an ultimate growth rate of 1 percent per year would be more appropriate.

The following figure shows actual past and assumed future values for the increase in SNF utilization (which is measured as the number of SNF days per 1,000 fee-for-service beneficiaries). As indicated, SNF utilization declined abruptly following the introduction of the prospective payment system in 1999. Since then, however, utilization has increased in all years, with most values at 4 percent per year or greater. The growth rate decelerated significantly in 2009 and 2010, possibly as a result of the recent economic recession. The current assumptions from the 2011 Trustees Report are shown, together with OACT's revised assumptions based on the recommended ultimate increase of 1 percent per year.

In view of the volatility of this growth factor, it will be important to continue to monitor emerging experience, especially as the economy recovers and possibly contributes to a return to higher levels of utilization growth.

Figure II.4—Increases in SNF utilization

Calendar year
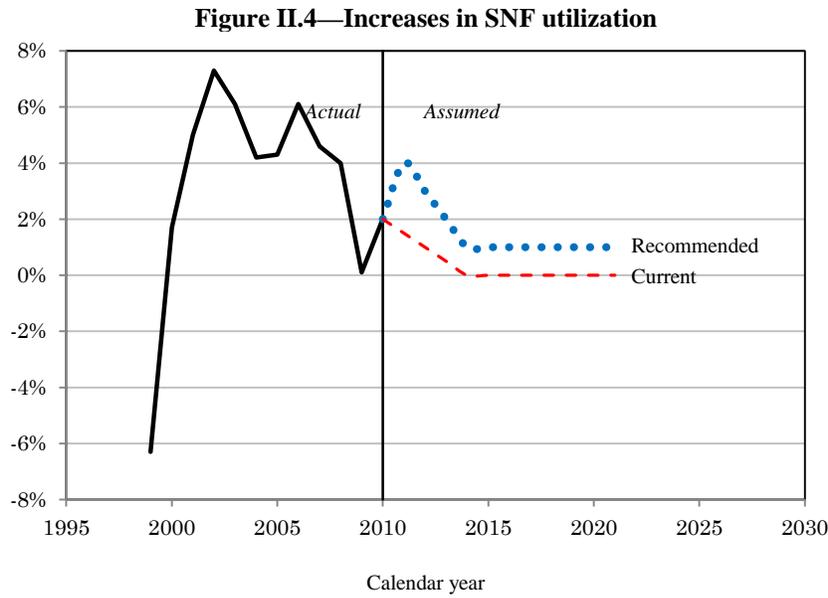
Payments for home health care services can be made under either Part A or Part B. Home health agency (HHA) visits not preceded by a hospital stay, or any visits beyond the first 100 following the stay, are covered by Part B. Covered HHA services are part-time or intermittent skilled nursing care, part-time or intermittent home health aide services, physical therapy, speech-language pathology, occupational therapy, medical social services, medical supplies, durable medical equipment, and certain osteoporosis drugs.

HHAs are paid on a prospective basis for 60-day episodes of care. A full episode payment is made as long as at least five home health visits are supplied in the 60-day period: otherwise, a much smaller per-visit payment is made. Payment rate increases are determined by the home health market basket, adjusted by legislative requirements. Under the Affordable Care Act, HHA payment rate updates are reduced by 1 percentage point from 2011 through 2013 and will be reduced by the economy-wide productivity adjustment factor from 2015 onward.

Table II.2 shows past and projected Medicare expenditures for home health services and the corresponding annual growth rates.

**Table II.2—Home health agency spending and growth***
(Dollar amounts in millions)

CY	Part A	% change	Part B	% change	Total	% change
2001	$4,011	—	$4,513	—	$8,525	—
2002	4,994	24.5%	5,019	11.2%	10,013	17.5%
2003	4,851	−2.9	5,096	1.5	9,947	−0.7
2004	5,440	12.1	5,852	14.8	11,292	13.5
2005	5,994	10.2	7,080	21.0	13,074	15.8
2006	5,854	−2.3	7,814	10.4	13,668	4.5
2007	6,206	6.0	9,190	17.6	15,397	12.6
2008	6,689	7.8	10,303	12.1	16,992	10.4
2009	7,070	5.7	11,569	12.3	18,640	9.7
2010	7,187	1.7	11,823	2.2	19,010	2.0
2011	7,257	1.0	12,360	4.5	19,617	3.2
2012	7,425	2.3	12,321	−0.3	19,746	0.7
2013	7,853	5.8	13,034	5.8	20,886	5.8
2014	8,421	7.2	13,974	7.2	22,395	7.2
2015	9,033	7.3	14,981	7.2	24,013	7.2
2016	9,633	6.6	15,965	6.6	25,597	6.6
2017	10,177	5.6	16,855	5.6	27,031	5.6
2018	10,981	7.9	18,170	7.8	29,151	7.8
2019	11,820	7.6	19,545	7.6	31,365	7.6
2020	12,746	7.8	21,059	7.7	33,806	7.8
2021	13,758	7.9	22,711	7.8	36,469	7.9

* Based on the data and assumptions from the 2012 Trustees Report.

The current projection methodology is based upon assumptions for increases in payment rates, case mix, and utilization. Although the average case-mix index was much higher than expected during the first year of the home health prospective payment system (2001), figure II.5 on the following page shows that it has since moderated and has been increasing at about 1.5 percent per year on average. The increase in the case-mix index experienced a jump in 2009 (perhaps coinciding with legislated reimbursement reductions for 2008-2011) but declined to 0.6 percent in the following year. Under current methodology, and based on the 2000 Technical Panel recommendations, OACT has assumed that this increase will average about 1 percent over the next few years and will become more in line with the assumptions for hospital and SNF case-mix indices.

A behavioral offset refers to instances in which providers adjust the volume and intensity of services provided to compensate (either partially or fully) for changes in payment rates. For home health care, the Panel recommends that future projections use an increase above the 2000 Technical Panel recommendation of 1 percent, depending upon what, if any, portion of the case-mix increase in 2009 can be attributed to a behavioral offset to legislated payment reductions. The figure below shows the current home health case-mix assumptions, together with an ultimate increase of 1.5 percent, which is equal to the 2002-2011 average.

**Figure II.5—Increase in home health case mix index**
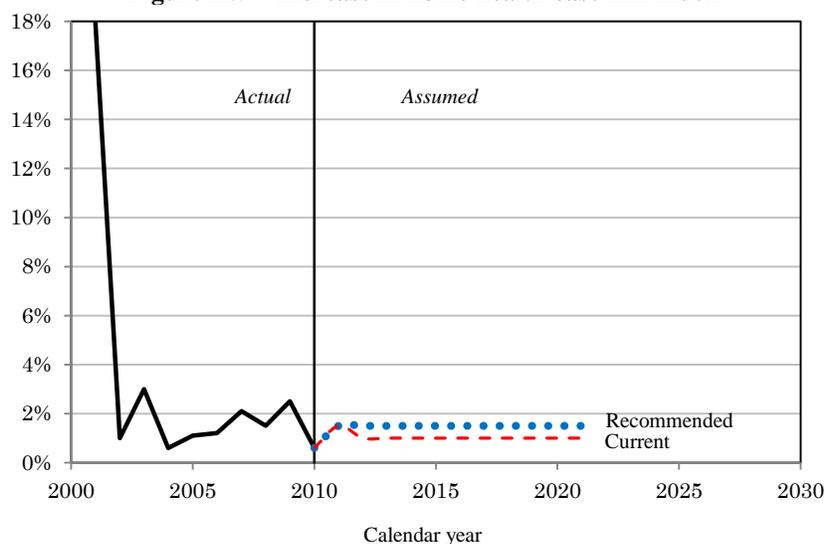
As noted previously in recommendation II-6, it may also be of value to examine the case-mix growth trends in aggregate across Part A services and to relate each of the component trends to the average. Doing so might provide a better understanding of the components and stronger evidence for reducing the inpatient case-mix assumption and increasing the SNF and HHA assumptions. In addition, to date the analysis of utilization, intensity, and case-mix growth trends for Part A has excluded the rapidly growing hospice services. Since hospice has a significant Part A component, such services should be included in the total analysis in the future.

Recommendation II-11: The Panel recommends reconsideration of the current assumption that growth in per capita home health utilization will rapidly decline from recent historical levels to zero percent per year for the balance of the short-range period. In view of past trends, the Panel believes an ultimate growth rate of 1 percent per year would be more appropriate.

Since shortly after the introduction of the home health care prospective payment system, the use of services has increased fairly rapidly, averaging 2.2 percent annually during 2004 through 2011. Based on the recommendations from the 2000 Technical Panel, the Trustees have assumed that future utilization growth would decelerate over the next few years and reach an ultimate level of zero for the balance of the short-range period. The assumption is based on an expectation that administrative efforts by CMS, such as the revision of the home health "outlier" payment policy in 2010, would help control unwarranted use of services. However, until further such controls are developed and implemented, this projection may prove optimistic and should be reconsidered in light of the consistently high positive growth trends since 2004. The figure below shows the actual past and assumed future utilization increases, with the recommended ultimate assumption increased to 1 percent per year from the current level of 0 percent.

Figure II.6—Increases in home health utilization
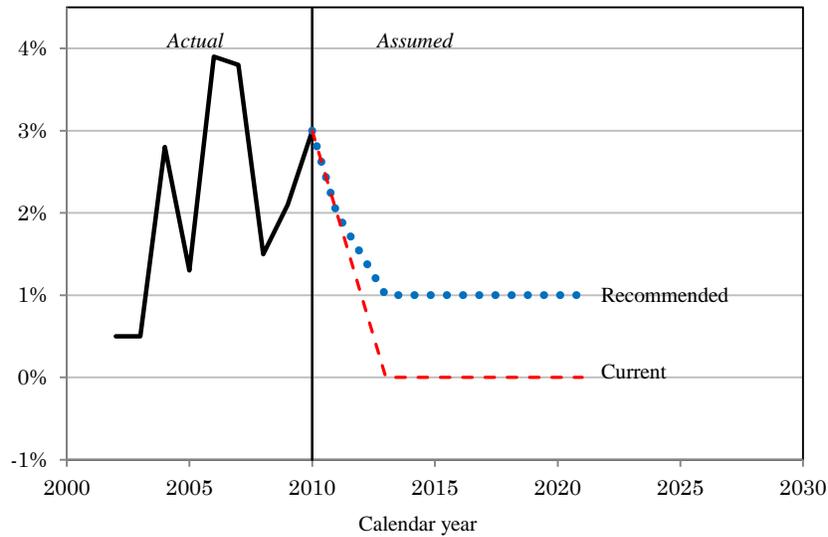
Finding II-12: Although the Panel expects that there will be rebasing and re-pricing of unit prices for episodes of home health care in 2014, it finds that the Trustees' assumption of no material direct impact on utilization is reasonable.

Under the Affordable Care Act, Medicare payments for home health episodes will be rebased to account for the drop in visits per episode since the inception of the prospective payment system. The total reduction in payments will be phased in annually from 2014 to 2017, with equal annual reductions not to exceed 3.5 percent, for a maximum of 14 percent. In determining the appropriate reduction, increased costs faced by providers will likely be taken into account as an offset, but this and other details, and their impacts, have not yet been finalized.

OACT and the Trustees have assumed that the rebasing will not have an impact on utilization. While there could possibly be some decrease in visits per episode, utilization as defined by the number of episodes should be largely unaffected. Other factors suggest that the rapid historical rates of utilization growth may have nearly reached their limit. Examples of these factors are (i) stiffer participation conditions that were recently implemented (such as the "face-to-face" requirement), and (ii) hospital-provider agreements, in place for some time, that have already stretched the number of episodes. The number of episodes that would not be considered profitable after the reductions are in place and would be eliminated as a result should be small.

Recommendation II-13: The Panel recommends that the Trustees and OACT continue to monitor the home health percentage shares of Part A and Part B expenditures and adjust assumed future shares as necessary as CMS expands its program-integrity efforts and as the cap on outlier payments affects expenditures.

The proportions of future home health expenditures paid from Part A and Part B are currently based on flat percentages equal to the most recent historical data. Since recently Part B home health has been increasing significantly, consideration should be given to varying the percentages in the future. However, OACT believes that a significant portion of the Part B increase may be attributable to fraudulent claims and inappropriate use of outlier payment

provisions, which may not continue. Continued monitoring should indicate whether this expectation is correct.

Recommendation II-14: The Panel recommends that Part A hospice services be analyzed separately by site of service (for example, home, SNF, physician office, or nursing home).

An examination of the hospice component trend data appears to show that some of the smaller types of hospice care (by dollar cost) are growing at a much faster rate than routine at-home hospice care, which is the largest category, and that hospice-related inpatient services are growing at the slowest rate (no doubt due to the hospice inpatient cap). These differences may not be significant now because of the low dollar volumes to which they apply, but they could become more significant if the trends continue. Also, as mentioned above, aggregating the hospice components with like services may provide a greater understanding of past and future trends.

Table II.3—Medicare hospice expenditures and average annual increase
by category of care, 2007-2010
(Dollar amounts in millions)

Category of hospice spending	2007	2008	2009	2010	Average annual increase
Total	$10,369	$11,263	$12,126	$12,869	7.5%
Routine home care	9,153	9,961	10,739	11,404	7.6
General inpatient care	921	972	1,011	1,052	4.5
Continuous home care	187	209	239	261	11.8
Physician services	92	103	112	123	10.2
Inpatient respite care	16	19	24	29	22.0
All other	0.4	0.2	0.1	0.1	−49.7

Part B findings and recommendations

The assumptions described here are for fee-for-service (FFS) Medicare projections. Spending projections for Part B services are based upon FFS enrollment, market basket increases and payment reductions under the sustainable growth rate (SGR) system, and residuals for volume and intensity:

- To project FFS aged enrollment, Social Security Administration population projections are multiplied by a historical ratio for Part B enrollment, and the estimated aged Medicare Advantage enrollment is then subtracted. To project FFS disability enrollment, the total disabled enrollment—which is a subset of Part A disability enrollment whose proportion has been fairly constant—is first estimated, and then the estimated Medicare Advantage disabled enrollment is subtracted.

- The projection of increases in Part B payments is based upon various economic indicators, as well as a "market basket" of labor-related and non-labor-related cost components similar to that described earlier for Part A, depending on the type of

Part B service. For physician services, current assumptions include rather large payment reductions as determined by the SGR system.

- Residuals are calculated for each Part B benefit category: physician services (about 42 percent of total Part B spending), outpatient hospital, laboratory services, durable medical equipment (DME), other carrier services (ambulatory surgical centers, ambulance, physician-administered drugs, etc.) and other intermediary services (therapy, dialysis, etc.). The general approach is to start with the growth in charges in each category and then to subtract known factors: enrollment growth, prices set for the year, age-sex effects, and estimated legislative effects. The result is a residual that is essentially volume and intensity.

As noted previously, the Panel finds that the methods used by the Trustees to develop these short-term assumptions are generally reasonable but that certain future projections could be enhanced by additional testing and data analysis.

Finding II-15: The Panel finds that the assumptions used for the behavioral offset for physician services are based on a study that is more than 10 years old and that includes data nearly 20 years old.

The behavioral offset refers to instances in which providers adjust the volume and intensity of services provided to compensate (either partially or fully) for changes in payment rates. Currently, a 30-percent behavioral offset is assumed for reductions in Medicare physician payment rates, meaning that if the physician update is less than the change in the Medicare Economic Index (MEI), it is assumed that 30 percent of this difference will be made up in increased volume and intensity. However, this assumption is one-sided: there is no assumption for a decrease if the update exceeds the MEI change.

The 30-percent assumption is based on a 1998 study by OACT using data from 1994 to 1996. During this period, there were both increases and decreases in payments.[9] However, this assumption is only applied to payment reductions of up to 15 percent. If the payment reduction were to exceed this limit, which would occur under the current SGR system, no behavioral response would be applied to the excess payment reduction. A nearly 30-percent payment reduction is scheduled for physician payments for 2013. Physician reaction to a reduction of this magnitude could result in considerably limited patient access to physician services. OACT believes that the updates as required by the SGR system are not sustainable.

Recommendation II-16: The Panel recommends that a new study be conducted to estimate the behavioral offset for physician services.

The Panel offered the following concerns and suggestions:

- Physicians' reactions to a reduction in payment rates will depend on the level of base payment relative to cost. If the payment rate is already below the physician's marginal cost of providing the service, then the loss in revenues cannot be offset through increased volume. Medicare payment rates may now be closer to costs than

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[9] See http://www.cms.gov/Research-Statistics-Data-and-Systems/Research/ActuarialStudies/Downloads/PhysicianResponse.pdf.

in 1994-1996. (However, a behavioral response would still be possible through coding claims at a higher payment level.)

- In addition to the fact that currently used estimates are based on old data, perhaps a third of the doctors at the time of the 1998 study are no longer working, and new doctors, who might react differently to payment changes, have begun to practice. In addition, the geographic distribution of physicians has changed, and many more physicians are now employees.

- Although fee variation over the past decade has been modest, new data are available that could be taken into account.

- The currently used "cliff" approach, with a complete falling-off for payment reductions in excess of 15 percent, should be replaced with a graded or step function.

- Underlying differences between OACT's methodology and that used by the Congressional Budget Office (CBO) should be identified and considered. CBO assumes a constant 25-percent offset.

- To the extent that data are available, a new study should include outcomes from reductions in commercial insurer payments, not just Medicare.

- Separate offset estimates should be prepared for primary care and specialty care.

Recommendation II-17: The Panel recommends that there be a single alternative scenario for physician payment rate updates, that it apply to the next 10 years, and that it be determined using the average physician payment increase for the last 10 years calculated on a 10-year rolling average basis. As shown in table II.4, a rolling average based on the period 2001-2010 would yield an update projection of 0.8 percent. Such an alternative scenario illustrates the potential magnitude of the understatement of Medicare Part B spending under current-law SGR system updates.

The Panel also considered two alternative scenarios in which the SGR is overridden by Congress: setting payment updates equal to zero, or using the MEI.

Table II.4—Comparison of 10-year rolling average MEI and physician updates

Year	Physician MEI increase	Physician update	10-year rolling average MEI increase	10-year rolling average physician update
1992	3.2%	1.9%	—	—
1993	2.7	1.4	—	—
1994	2.3	7.0	—	—
1995	2.1	7.5	—	—
1996	2.0	0.8	—	—
1997	2.0	0.6	—	—
1998	2.2	2.3	—	—
1999	2.3	2.3	—	—
2000	2.4	5.5	—	—
2001	2.1	5.0	2.3%	3.4%
2002	2.6	−4.8	2.3	2.7
2003	3.0	1.7	2.3	2.7
2004	2.9	1.5	2.4	2.2
2005	3.1	1.5	2.5	1.6
2006	2.8	0.2	2.5	1.5
2007	2.1	0.0	2.5	1.5
2008	1.8	0.5	2.5	1.3
2009	1.6	1.1	2.4	1.2
2010	1.2	1.3	2.3	0.8

Recommendation II-18: OACT should continue to use its current methods to estimate the effects of increased enforcement to diminish fraud and abuse. These effects are difficult to predict, in part because changes in spending and usage can occur for services that are more susceptible to fraud and abuse, even when enforcement efforts are constant. Such efforts are likely to play a role but are too speculative to allow the formulation of assumptions. The Trustees should continue to monitor this issue.

To assist the Panel in its deliberative process, Dr. Peter Budetti of the CMS Center for Program Integrity (CPI) provided an overview of current fraud initiatives. These initiatives include the following:

- Using predictive modeling to prevent and detect fraud early (in contrast to more traditional "pay and chase" methods), using risk-based approaches, and working with the private sector.

- Screening new providers and suppliers—19,000 a month for Medicare alone—and coordinating enforcement across both the Medicare and Medicaid programs.

- Implementing the National Fraud Prevention System,[10] which, among other activities, screens every fee-for-service claim throughout the country against proven predictive models and correlates every claim to provider, beneficiary, and service location data.

- Improving oversight of Part D through additional initiatives.

- Taking additional steps to streamline enrollment and to develop a Vulnerability Tracking System for tracking potential improper payments.

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[10] As authorized by the Small Business Jobs Act of 2010.

Dr. Budetti said that there is a great deal of uncertainty about the prevalence of health care fraud. The available data are not adequate to indicate whether different kinds of fraud are increasing or decreasing, but it is believed that between 3 percent and 10 percent of all health care spending is fraudulent.[11] However, these estimates have been questioned. While improper payments in Medicare and Medicaid exceed $70 billion a year, most of this amount is for improper documentation and other actions that do not constitute fraud. Although it is not known whether fraud is worse in the private or the public sector, Dr. Budetti is convinced that the amount of Medicare fraud is large. He further noted that the money that is spent looking for fraud has a substantial return on investment.

Similarly, the more time that law enforcement officials spend searching for fraud, the more they find. In any case, cost avoidance rather than financial recovery is the goal. Bundled payments may change the incentives and opportunities for fraud, but it is important to think through these issues ahead of time because fraudulent providers will act quickly. Increased cost sharing as a response to continued growth of medical costs may generate an additional burden on beneficiaries in the form of "fraud-cost sharing," because the intent to defraud Medicare knows no boundaries. Medicare beneficiaries are targets of fraud, and some of them have had their medical identities stolen. CMS tracks such instances to identify patterns of stolen identification numbers being used for fraudulent billings.

Although CMS has increased program integrity efforts and addressed home health outliers by capping payments, the Panel believes that future spending changes due to fraud and abuse enforcement activities are currently too speculative to estimate.

Recommendation II-19: The Panel finds that the approach taken by the Trustees with regard to Accountable Care Organizations (ACOs) is reasonable. There is significant uncertainty surrounding the share of beneficiaries that will be part of ACOs in the next 10 years, and the Trustees should monitor this issue carefully on an annual basis.

ACOs are groups of physicians, hospitals, and other health care providers that work together to provide coordinated and improved health care to patients. There are currently three ACO programs within Medicare:

- *Medicare Shared Savings Program (MMSSP)*—The MMSSP was established by the Affordable Care Act. Under this program, participating fee-for-service ACOs that meet specific performance and quality standards are eligible to receive payments for shared savings.

- *Advanced Payment Initiative*—This supplement to the MSSP provides upfront advances on anticipated shared savings to certain (mainly physician-only) ACOs.

- *Pioneer ACO Model*—This program, for health care organizations and providers that are already experienced in providing coordinated care to patients across differing care

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[11] Dr. Budetti attributed the 10-percent figure to work by Janet Shikles of the General Accounting Office. One document in which this estimate appears is *Contracting Oversight and Funding Need Improvement* (GAO/T-HRD-92-32), May 21, 1992, page 1.

settings, is characterized by an increasing level of risk to be transferred over a 5-year demonstration period.

These three programs were just recently established. The Final Rule for the MSSP was published on November 2, 2011, with the first wave of ACOs entering the program in April 2012.[12] The first wave of Advanced Payment ACOs became operational during April 2012, and the first performance period for the Pioneer ACOs began on January 1, 2012.

Currently there are 152 Medicare ACOs in operation, as follows: six ACOs in their final year of the Physician Group Practice (PGP) Transition Demonstration; 32 Pioneer ACOs in their first year of a 5-year pilot period; and 114 MSSP ACOs, 27 of which began on April 1, 2012 and 87 of which began on July 1, 2012. These 152 organizations are likely to be assigned about 2.4 million Medicare fee-for-service beneficiaries for their current performance year. Additional ACOs are expected to join in January 2013.

The financial impacts of ACO initiatives are modeled using stochastic simulation to account for significant uncertainties, including the characteristics of participating providers, the effectiveness of their cost-saving strategies, and potential measurement error in the formulaic determinations of shared savings. Current estimates for reductions in gross program expenditures and the associated shared-savings bonus payments are for the initial 4-year agreement period for the MSSP (through 2015) and for the 5-year demonstration period for the Pioneer Model (through 2016). Combined over these periods, gross program expenditures are estimated to be reduced by approximately $3.3 billion, partially offset by $2.2 billion in bonuses paid to participating organizations, resulting in roughly $200 million in net annual savings on average. Estimates may be updated in the future as successive agreement periods become defined and as data from the initial program operation become available and can be evaluated.

Since ACOs are a novel concept for Medicare, the Panel concluded that, at least in the very short term, growth will be relatively slow and impacts will be limited.

Finding II-20: The Panel finds that the current assumptions for competitive bidding on durable medical equipment (DME) are reasonable and should be maintained.

Competitive bidding for durable medical equipment, prosthetics, orthotics, and supplies (DMEPOS) was established as part of the Medicare program under the Medicare Prescription Drug, Improvement, and Modernization Act of 2003. Round One of competitively bid-based payments began in January 2011 for nine competitive bidding areas (CBAs). An expansion to a total of 90 CBAs by 2013 is planned under Round Two.
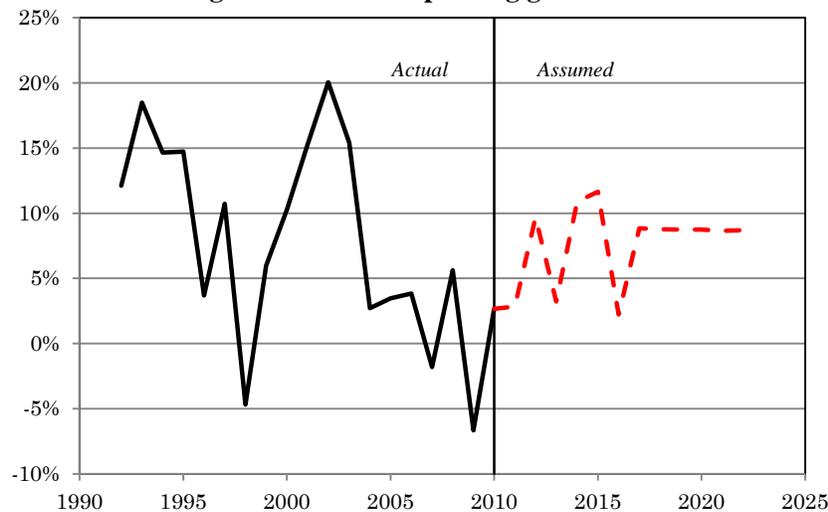
The Panel believes that the use of competitive bidding could reduce the rate of increase in DME spending. Although a full evaluation of the impact of competitive bidding on spending growth has not been completed, preliminary evidence indicates an approximate 32-percent reduction in average prices for the nine Round One CBAs.[13]

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[12] The second wave of ACOs occurred on July 1, 2012, and the third wave is scheduled for January 1, 2013.

[13] See http://www.dmecompetitivebid.com/cbic/cbicrd1.nsf/docsCat/CBIC~Suppliers~Single%20Payment%20Amounts?open&cat=CBIC~Suppliers~Single Payment Amounts.

Figure II.7—DME spending growth rate

Other fee-for-service topics

Additional topics that were considered by the Panel, but that did not result in formal findings or recommendations, include the following:

- The interaction between Part B and Part D drugs.

- A review of the end-stage renal disease (ESRD) market basket, which is now projected to be the same as the inpatient hospital market basket.

- The possible effects of hospital-based physicians.

- Shifts from inpatient to outpatient services and whether new elements ought to be added to past trends.

- Balance billing.

- The Institute of Medicine (IOM) recommendation that the Part B geographic areas for doctors should be the same as the Part A geographic areas for hospitals.

Subsequent to the Panel's deliberations, the Congressional Budget Office released a report on the impact of prescription drug use on Medicare expenditures for medical services.[14] The Panel has not reviewed this report but notes the potential relevance of CBO's findings for projections of Medicare spending.

Part C findings and recommendations

Medicare Part C represents Part A and Part B medical coverage that is provided through private plan sponsors. Most enrollees in Part C also receive their Part D prescription drug coverage

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[14] Congressional Budget Office: *Offsetting Effects of Prescription Drug Use on Medicare's Spending for Medical Services*. November 2012. Internet address: http://www.cbo.gov/sites/default/files/cbofiles/attachments/43741-MedicalOffsets-11-29-12.pdf.

from the plan. The vast majority of Part C beneficiaries are enrolled in Medicare Advantage (MA) plans, which assume most of the financial risk associated with providing health care services to beneficiaries. The remaining Part C beneficiaries are in other private plans that contract with Medicare and are paid on a cost-reimbursement basis.

The key components of Part C projections are the benchmarks, plan bids, and rebate payments. The MA ratebook[15] is the basis for the benchmarks. Beginning in 2012, quality bonuses are added to benchmarks for plans that achieve specific quality thresholds. The plan bids reflect the cost projected by plan sponsors for coverage of the Medicare Part A and Part B benefits. Rebates are a share of the difference between the benchmark and the bid that, if positive, is returned to the plan and must be used to enhance the benefit package and/or reduce the plan premium. (If a plan's bid exceeds the benchmark, the difference must be paid by enrollees in the form of higher premiums.)

Finding II-21: The Panel finds that the Trustees' assumptions related to MA plan quality, or Quality Measures, and the "star" system are reasonable.

Quality measures are tools that help CMS measure or quantify health care processes, outcomes, patient perceptions, and organizational structures that are associated with high-quality health care and that relate to quality goals, including effectiveness, safety, efficiency, patient-centeredness, equitability, and timeliness.

The Affordable Care Act, as modified through the introduction of CMS' national Quality Bonus Payment Demonstration, provides for Medicare to make quality bonus payments (QBPs) to MA organizations that meet quality standards measured under a five-star rating system. For 3 years, 2012 through 2014, the QBP amount will be scaled and will vary depending on the overall plan rating. For instance, most plans with an overall rating of three stars will receive a 3-percent QBP. Plans that receive an overall rating of five stars will receive a 5-percent QBP. For the years 2015 and forward, plans with an overall rating of four stars and above will receive a QBP of 5 percent.

The Trustees currently assume that MA plan quality will increase at 1.7 percent per year for the next 10 years and that beneficiaries will migrate to higher-quality plans in response to the greater benefits that are offered as a result of the more favorable payment rates. The Panel finds that this assumption is acceptable but that it should be monitored since it is based on very limited historical experience (2009-2011) and since the quality measures used may be revised.

Below are a table and two figures that show the 3-year historical change in Part C and Part D quality measure domains. (The quality scores for Part C plans with prescription drug coverage are the combination of the Part C and Part D scores.)

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[15] The MA ratebook is a set of statutory capitation payment rates, by county, originally used directly to establish payments to private health insurance plans contracting with Medicare. Under current law, the ratebook amounts are used as benchmarks, against which plan costs are compared in the calculation of plan payments.

Table II.5—Average quality scores for Part C and Part D plans by quality measure domain, 2009-2011

Domain	Average star quality rating		
	2009	2010	2011
Part C plans			
Staying healthy: screenings, tests, and vaccines	3.21	3.23	3.26
Managing chronic (long-term) conditions	2.82	2.60	2.84
Health plan responsiveness and care	2.95	3.04	3.11
Member complaints, appeals, and choosing to leave the health plan	3.45	3.92	3.48
Health plan's telephone customer service	2.82	3.41	3.85
Subtotal (weighted by the number of Part C measures) *	3.05	3.11	3.19
Part D plans			
Drug plan customer service	3.66	3.48	3.38
Drug plan member complaints and Medicare audit findings	3.52	2.85	2.90
Member experience with drug plan	2.98	3.29	3.03
Drug pricing and patient safety	3.70	3.35	3.31
Subtotal (weighted by the number of Part D measures) *	3.53	3.30	3.22
Grand total (weighted by the number of Part C and Part D measures) *	3.20	3.17	3.20

* In 2011, there were 36 Part C and 17 Part D quality measures. Each of these 53 quality measures received an equal weight when calculating the 2011 individual overall plan ratings. Likewise, the subtotals and grand total average ratings above were calculated by giving each of the quality measures an equal weight. Since every domain has a varying number of quality measures, the subtotals and grand total are not the mean of all domains; instead, there is a larger weight for those domains with a greater number of quality measures and a smaller weight for those domains with fewer quality measures.

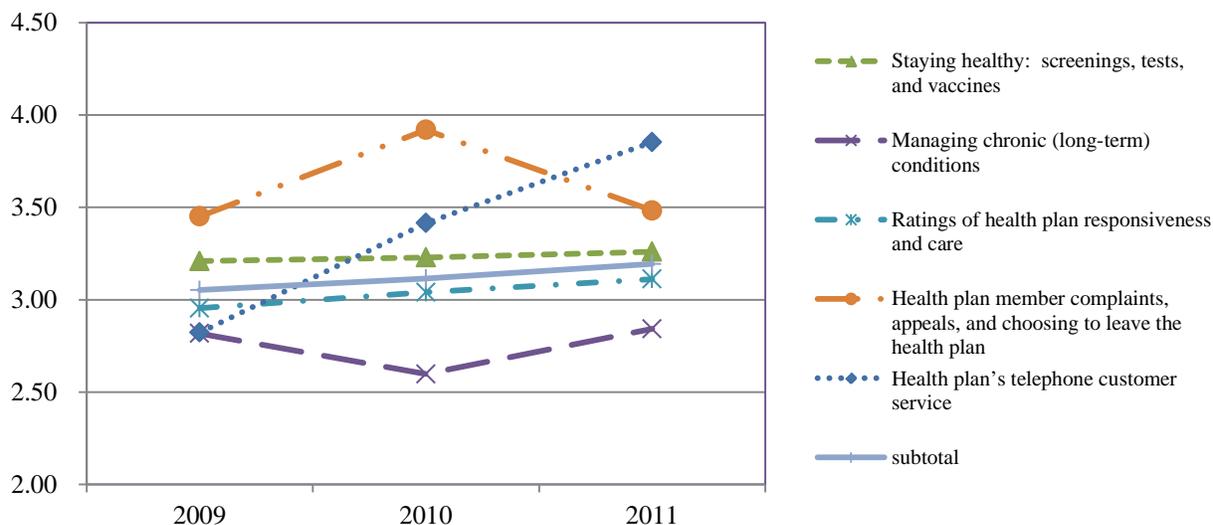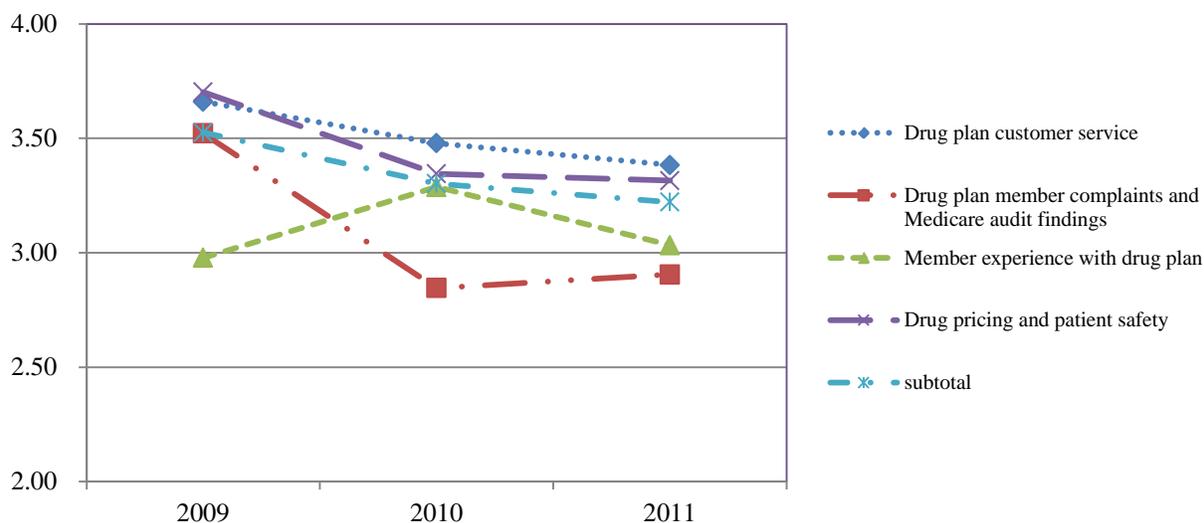**Figure II.8—Part C Average Rating by Quality Measure Domain**

Legend:
- Staying healthy: screenings, tests, and vaccines
- Managing chronic (long-term) conditions
- Ratings of health plan responsiveness and care
- Health plan member complaints, appeals, and choosing to leave the health plan
- Health plan's telephone customer service
- subtotal

Figure II.9—Part D Average Rating by Quality Measure Domain

Legend:
- Drug plan customer service
- Drug plan member complaints and Medicare audit findings
- Member experience with drug plan
- Drug pricing and patient safety
- subtotal

The Panel finds the Trustees' assumptions reasonable; in any case, spending is not very sensitive to the assumptions. An alternate assumption of no improvement in plan quality and no migration of beneficiaries lowers Part C spending by 1.6 percent by 2020 (and total Medicare spending by 0.2 percent). An alternative assumption that quality increases at 3.4 percent per year (elevating many plans into the highest quality category) results in a 1.2-percent increase in Medicare Part C spending by 2020 (and total Medicare spending by 0.1 percent).

Recommendation II-22: The Panel finds that the Trustees' assumption related to trends in MA bids is reasonable. Future work should continue to investigate this assumption.

The Trustees assume that plan bid growth will generally match fee-for-service (FFS) spending growth; even if bids were to grow faster or slower, the impact on total Medicare spending would be small.

The Affordable Care Act (ACA) lowered the growth rates of FFS spending because of the productivity adjustments and sharply lowered private plan benchmark levels relative to FFS spending. It also reduced the related MA rebate percentages. The result is that MA plans face large reductions in Medicare rebate payments, even if they can slow plan cost growth to match Medicare FFS rates.[16] Because small markets generally had more generous benchmarks relative to FFS spending, they are more affected than are large markets by the ACA benchmark changes. Table II.6 summarizes the ultimate level of MA benchmarks, after the ACA changes have fully phased in, and compares them to the pre-ACA level in 2010. The benchmarks are expressed as a percentage of the average FFS expenditure amounts in the same geographic areas and are shown before and after the expected effects of quality rating bonuses.

Table II.6—Comparison of statutory changes to Medicare Advantage benchmarks to level in 2010
(Average benchmark as a percentage of fee-for-service expenditures)

Quartile of FFS spending	2017 Benchmark: percent of FFS spending – no bonuses	2017 Benchmark: percent of FFS spending – including expected bonuses	Average Benchmark: percent of FFS spending 2010
Highest	95%	98%	109%
2nd	100	104	114
3rd	107.5	111	119
Lowest	115	119	136
Average (weighted by 2010 MA enrollment)	101	104	115

As noted, the Trustees' current assumption is that growth in plan bids will generally match FFS spending growth—that is, that MA plans will be able to pay providers smaller annual updates when FFS payment updates are reduced or alternatively achieve efficiency gains that match the fee reductions. The Trustees make one notable exception to this assumption because of the sustainable growth rate (SGR) provision in current law. OACT must establish the MA ratebook based on estimated FFS expenditures under current law, which, at the time of the determination, usually requires a very large reduction in physician payment rates. In practice, plans cannot negotiate physician payment rates at a correspondingly low level, and this difference is reflected in the Trustees' assumptions for MA bid growth. For example, the 2011 Trustees Report estimated the FFS physician update to be −29 percent, while the physician update assumed in the bid trend was about −3 percent.[17]

Because FFS spending and the bids rise together, but the MA benchmarks decline relative to FFS spending due to the ACA reductions, a sharp reduction is projected in the extra benefits that plans can offer. Under the Trustees' assumptions, the average bid-to-benchmark ratio rises from 89 percent in 2010 to 95 percent by 2020. At the same time, the average rebate decreases from

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[16] Because Medicare FFS payment rates are set administratively, while plan payments to providers are generally based on negotiated rates, it may be challenging for plans to keep cost growth at the low FFS rates required under current law. Evidence on plans' responses to benchmark growth is available in the following article: Song, Zirui, Landrum, Mary Beth, and Chernew, Michael E.: "Competitive Bidding in Medicare: Who Benefits from Competition?" *The American Journal of Managed Care* 18(9): September 2012.

[17] In practice, Congress has overridden the physician payment reductions for 2003 through 2012, but the changes have been made *after* the MA ratebooks were promulgated each year and they have not made a corresponding adjustment to the MA benchmarks.

about 8 percent of the benchmark in 2010 to 4 percent by 2020.[18] Under these conditions, projected enrollment in Part C decreases from 27 percent of eligible beneficiaries in 2012 to 17 percent in 2020.

Recommendation II-23: While the Panel finds that the current Trustees' approach to modeling MA enrollment is not unreasonable, the Panel recommends that the Trustees improve the modeling by using longitudinal analysis, incorporating trends in the non-MA market either explicitly or implicitly, and adopting an MA enrollment trend assumption.

The Panel members recommend further research because they are unable to assess the reasonableness of the MA enrollment model's key parameter. The Panel has a number of concerns about the model: (i) it is cross-sectional; (ii) it does not take into account a number of county-specific factors, such as population size, urban versus rural status, or prevalence of commercial managed care plans; (iii) it does not incorporate underlying trends in MA enrollment; and (iv) it does not incorporate features of the non-MA market, such as employer subsidies for supplemental coverage or trends in Medigap premiums. All of these factors may affect MA enrollment decisions.

The relationship between MA enrollment penetration and extra benefits is estimated using cross-sectional county data on current enrollment and benefits. The model is used to determine predicted changes in penetration by county as a function of changes in net extra benefits (those in excess of FFS Medicare less enrollee premiums). OACT's current procedures take into account the geographic location of the enrollment changes, so that (as it should) disenrollment in low-cost areas adds less to total FFS spending than does disenrollment in high-cost areas.

There is no consideration of risk selection and whether there will be selective disenrollment of more- or less-healthy beneficiaries. No attention is given to the possible impact of reductions in employer-provided retiree health benefits, of changes in the cost of Medigap policies, or of reductions in access to providers under FFS due to ACA payment rate reductions. Such changes are uncertain but would tend to increase MA enrollment (or to offset some of the enrollment reductions associated with lower MA payment rates).

There are reasonable alternative scenarios suggesting that the bids could grow either faster or more slowly than the Trustees' projection. In one scenario, bids could rise at a slower pace than OACT assumes. The MA plans are in a good position to find efficiencies and/or reduce the quality of their networks somewhat (but not reduce star payments) in order to maintain market share. In a second alternative scenario, bids could increase at a faster pace than FFS costs, with plans unable to match the slower FFS payment rate updates mandated by the ACA. This situation would further reduce rebate payments to MA plans.

OACT performed sensitivity analyses of these scenarios for the Panel. In the first scenario, bids are assumed to grow at FFS minus 1 percent (i.e., slower than in the Trustees' assumption). In this scenario, the average bid-to-benchmark ratio is roughly constant at about 90 percent

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[18] For a given plan with a bid that is less than the statutory benchmark, the rebate payment to the plan is calculated as a percentage of the difference. This percentage was 75 percent prior to 2012 but will be gradually reduced to 50 percent under the ACA. For 2014 and beyond, the rebate percentages are as follows: 50 percent for a star rating of less than 3.5; 65 percent for a star rating of 3.5 or 4.0; and 75 percent for a star rating of 4.5 or 5.0.

throughout projection period. The average rebate declines from about 8 percent of the benchmark in 2010 to 5 percent in 2015 but then increases to 7.5 percent by 2020. (Benchmarks decline sharply from 2012 through 2015.) Enrollment in Part C decreases much less than currently assumed, from 27 percent of Medicare-eligible beneficiaries in 2012 to 22 percent in 2020. By 2020, Part C spending is 33 percent above the baseline scenario, while total Medicare spending is essentially unchanged from the baseline scenario. This result occurs because aggregate Medicare costs become less dependent on the MA enrollment proportion as MA payment rates are reduced and become closer to FFS levels.

In the second scenario, bids are assumed to rise at FFS plus 1 percent (faster than the Trustees' assumption, and comparable to a scenario without productivity adjustments), possibly because providers have a better negotiating position with the MA plans than with Medicare FFS, particularly considering the productivity payment reductions. As a result, MA plan costs would rise, and plans could not continue to offer as many extra benefits as under the baseline scenario.

The enrollment effects (and hence effects on FFS spending) of such a scenario are quite ambiguous. If access to FFS providers under the productivity adjustments is greatly curtailed, penetration of MA plans could increase, despite their potentially much higher premiums. On the other hand, if access to FFS providers is still readily available, there could be a significant reduction in enrollment in MA plans.

Under this scenario, the average bid-to-benchmark ratio rises from 89 percent in 2010 to 98 percent in 2020. The average rebate decreases from about 8 percent of the benchmark in 2010 to approximately 1 percent by 2020. (Note: the average rebate level was restricted to be no lower than $0. If a negative rebate were considered—that is, a premium for basic coverage— then the average rebate in 2020 would likely be negative, and estimated MA enrollment for this scenario would be even lower than shown below.) Enrollment in Part C declines more than in the baseline, from 27 percent of Medicare-eligible beneficiaries in 2012 to just 13 percent in 2020.[19] By 2020, Part C spending is almost 20 percent below the baseline scenario, though total Medicare spending is essentially unchanged.

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[19] The analysis uses an enrollment model that doesn't consider potential access problems with FFS and assumes changes in enrollment solely determined by changes in extra benefits.

Table II.7—Summary of alternative scenarios for Medicare Advantage bid growth
relative to fee-for-service expenditure increases

Measure	Baseline	Scenario 1: FFS−1%	Scenario 2: FFS+1%
Bid-to-benchmark ratio	Rises from 89% in 2010 to 95% by 2020	90% throughout projection period	Rises from 89% in 2010 to 98% in 2020*
Average rebate	8% of the benchmark in 2010 4% by 2020	8% of the benchmark in 2010 5% by 2015 7.5% by 2020	8% of the benchmark in 2010 1% by 2020*
Enrollment in Part C	27% of eligibles in 2012 17% in 2020	27% of eligibles in 2012 22% in 2020	27% of eligibles in 2012 13% in 2020*
Part C spending	Baseline	33% above baseline	20% below baseline
Medicare spending	Baseline	Essentially unchanged	Essentially unchanged

* See text concerning nature of this result.

Despite the fact that the assumptions may not affect overall spending, a more refined MA enrollment model would be very useful for OACT since many legislative proposals affect MA plans.

Part D findings and recommendations

Medicare Part D provides access to a prescription drug benefit for Medicare Part A or Part B enrollees. The prescription drug plans are private health plans with a substantial Medicare subsidy. Eligible individuals can enroll in a stand-alone prescription drug plan (PDP) or participate through their Medicare Advantage plan (MA-PD) or an employer plan, and those with low incomes (less than 150 percent of the Federal poverty level) are eligible for premium assistance and reduced cost sharing. In addition, employer-sponsored retiree plans can receive a retiree drug subsidy. Part D plans are funded by a combination of enrollee premiums and Medicare payments for direct premium subsidies and a reinsurance subsidy. These Federal Medicare expenditures are financed primarily from general revenues, together with income from special State payments representing a portion of the States' forgone costs for providing prescription drugs to dual Medicare-Medicaid beneficiaries.

The methodology used for the Part D projections is based on two components: (i) growth in the number of Medicare beneficiaries enrolled in a Part D plan, and (ii) growth in per beneficiary Part D spending. Medicare Part D enrollees can be classified as follows:

- Beneficiaries covered through an employer-sponsored retiree health plan that is receiving the Part D retiree drug subsidy.

- Beneficiaries enrolled in an employer Part D plan.

- Beneficiaries receiving the Part D low-income subsidy.

- All other Part D enrollees.

The per beneficiary Part D spending projection methodology is based on the most recent year's Part D experience. That experience is projected forward using the rate of drug spending growth

for the total U.S. population from the national health expenditure (NHE) forecast, adjusted for the Part D provisions in the Affordable Care Act, including the gradual elimination of the coverage gap (or "donut hole").

The Panel finds that the methods the Trustees use to develop these short-term assumptions are generally reasonable but that certain future projections could be enhanced by additional testing or data analysis.

Finding II-24: The Panel finds that the approach of using a macro forecast of the NHE drug expenditures, which reflects adjustments based on interviews with industry experts, is reasonable.

OACT primarily relies on two econometric models to project prescription drug spending at the national level as a component of total health expenditures in the U.S.[20] The first model projects real per capita prescription drug spending and uses the following as independent variables: a 3-year moving average of real disposable personal income, a 3-year moving average of drug price growth (relative to economy-wide price growth), the share of drug spending paid for out-of-pocket, a 4-year moving average of new drug introductions, and the difference in the generic dispensing rate, lagged one year. The second model projects drug price growth using two independent variables: drug input price growth (relative to economy-wide input price growth and lagged one year) and the growth of spending on prescription drug research.

While the combination of these models fits the historical patterns relatively well, adjustments are made to the model output to reflect factors that could influence drug spending growth but that are not captured by the independent variables. One such factor is the large number of top-selling brand-name drugs with patent expirations in 2011 and 2012. OACT consulted with industry experts to devise a method to calculate a proper adjustment factor for drug spending growth due to patent expirations. The end result of this process is a projection of U.S. per capita prescription drug spending growth, which serves as the basis for the projection of growth in per enrollee Part D prescription drug spending. The Panel reviewed these methods and concluded that they were reasonable.

Table II.8 compares the projected annual growth in average Part D expenditures per enrollee from the 2011 Medicare Trustees Report with the corresponding per capita NHE prescription drug projections (without the impact of the Affordable Care Act) that were updated after the release of the 2011 Trustees Report and published in July 2011.

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[20] For more information, see CMS, "Projections of National Health Expenditures: Methodology and Model Specification." Internet address: http://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/Downloads/projections-methodology.pdf. July 2011.

Table II.8—Drug spending growth: NHE per capita versus Part D per enrollee, 2007 to 2020

	NHE drug spending per capita[1]	Part D spending per enrollee	Difference
Historical data:			
2007	3.7%	1.9%	1.8%
2008	2.1	3.8	−1.7
2009	4.4	2.9	1.5
Projected data:			
2010	3.6	1.6	2.0
2011	4.9	6.6	−1.7
2012	3.3	3.2	0.1
2013	4.2	5.0	−0.8
2014	4.6	4.3	0.3
2015	5.2	5.5	−0.3
2016	5.7	6.0	−0.3
2017	6.0	6.2	−0.2
2018	6.2	5.8	0.4
2019	6.4	5.4	1.0
2020	6.5	6.3	0.2

[1]To calculate, see http://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/ NationalHealthExpendData/Downloads/proj2010.pdf. NHE prescription drug spending projections without the impact of the Affordable Care Act can be found in table 2a, while U.S. population projections are shown in table 1.

During the historical period 2007-2009, differences between NHE and Part D spending projections are due to the use and mix of prescription drugs, which varied for the Medicare population compared to the U.S. population as a whole. For example, the increase in average Part D expenditures per enrollee from 2006 to 2007 was slower than for the overall population, in large part because the per enrollee costs in 2006, the first year of the Part D prescription drug benefit, were higher than average. In particular, the first wave of beneficiaries who were enrolled by the start of 2006 tended to be those with the greatest drug costs who would benefit the most from the Part D coverage. Many others, with below-average drug costs, enrolled later in the calendar year. (The first open enrollment period extended until May 15, 2006.) For 2008, the downturn in the economy affected drug utilization more significantly for those under age 65, especially for those families who suffered a job loss in this year.[21] Moreover, in 2009, while the utilization in the under-65 population rebounded somewhat, Part D enrollees experienced a greater move towards generics than did the population as a whole, which is one of the reasons that Part D per enrollee spending growth was lower.

For the projection period 2010-2020, the growth rates vary for other reasons. The Part D per enrollee growth rate in 2010 reflected available prescription drug event (PDE) data that were used to adjust the NHE projection. For 2012 through 2020, minor differences occur because the NHE projections were revised slightly after the 2011 Trustees Report was released. Finally, for 2011 through 2020, the Part D per enrollee growth rate reflects the following impacts of the Affordable Care Act: (i) the gradual closing of the Part D coverage gap, including higher drug use because of the 50-percent discount of brand-name drugs in the coverage gap beginning in 2011; (ii) the estimated impact on Part D prices based on ACA-mandated industry fees; and (iii) the impact of the Independent Payment Advisory Board.

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[21] Saul, S.: "In Sour Economy, Some Scale Back on Medications." *New York Times*, October 22, 2008.

Finding II-25: The Panel finds that the assumed Part D "induction factor" is reasonable.

Under Part D, beneficiaries' out-of-pocket cost-sharing responsibilities vary depending on where their spending is within the benefit design. Under the "defined standard" benefit package in 2012, beneficiaries are responsible for 100 percent of covered spending up to $320 and for 25 percent of costs from $321 to $2,930. There is a coverage gap or donut hole for covered spending from $2,931 until total out-of-pocket costs reach $4,700. In the donut hole, there is now a 50-percent drug manufacturer discount for brand-name drugs and 14-percent plan coverage for generic drugs. Beyond the coverage gap, individuals are responsible for 5 percent of costs.[22] The donut hole is being gradually phased out beginning in 2011 under the Affordable Care Act.[23] As beneficiaries' cost sharing declines, they are expected—depending on where their spending is within the benefit design—to have higher drug expenditures as they are motivated to demand more drugs.

The Trustees and OACT use an assumed induction factor to estimate what happens to prescription drug usage when prices change (as measured by an enrollee's out-of-pocket costs). It was derived by a comparison of the drug utilization pattern for beneficiaries before and after they reach the expenditure threshold for the donut hole, based on pre-ACA PDE data. The current assumed induction factor is 17.14 percent on the drug spending in the donut hole for the non-low-income beneficiaries if the donut hole is fully closed, and is proportionally smaller during the transition years before 2020. In terms of economic concepts, this induction factor can be roughly translated to a price elasticity of −0.2.[24] With this measure of price elasticity, a 10-percent decrease in out-of-pocket drug prices is expected to increase a beneficiary's drug spending by 2.0 percent.

Finding II-26: The Panel finds that the Trustees' approach is reasonable regarding expected changes in participation in the Federal retiree drug subsidy (RDS) program.

Since the introduction of the Part D benefit in 2006, the percentage of Medicare beneficiaries who receive their drug coverage from employer-sponsored retiree health plans has steadily declined. It is expected to decline substantially further due to changes made by the Affordable Care Act, particularly (i) the elimination of the employer tax deduction for the portion of retiree drug benefit costs reimbursed by the RDS (which will induce employers to drop retiree drug coverage) and (ii) the closing of the donut hole (which will make PDPs comparatively more attractive).

Table II.9 shows the precipitous rate of disenrollment from RDS plans for the period 2011 to 2016, as estimated by OACT on behalf of the Trustees. In 2012, it is estimated that 36 percent of

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[22] These rules apply to Part D enrollees who do not qualify for the Medicare "low-income subsidy." Except for nominal amounts per prescription, the cost-sharing requirements for enrollees with low incomes are paid through this subsidy. Alternative benefit package designs are also permitted, provided they are actuarially equivalent or that any additional benefit value is paid through enrollee premiums.

[23] Under the Affordable Care Act, the plan benefit coverage is being gradually expanded until the donut hole is fully closed in 2020, at which time the beneficiaries' cost sharing will be 25 percent for all drug expenditures above the deductible and below the threshold for catastrophic coverage.

[24] A literature survey of the price elasticity estimates indicates that −0.2 is reasonable. For example, the price elasticity ranges from −0.17 to −0.22 according to Newhouse, et al., 1993 (see footnote 3).

those who were enrolled in an RDS plan will disenroll and that this cumulative disenrollment rate will reach 90 percent in 2016, leaving few RDS plans and few enrollees. (OACT assumes that all of these beneficiaries will subsequently obtain prescription drug coverage through PDPs and MA-PDs, in many instances with financial support from their previous employers.)

Table II.9—Estimated cumulative disenrollment rate of Medicare beneficiaries currently receiving prescription drug coverage through retiree drug subsidy plans

2011	2012	2013	2014	2015	2016
9%	36%	63%	72%	81%	90%

Table II.10 shows historical and projected Part D participation by enrollment category. In light of the trend between 2006 and 2010 and the ACA changes, the Panel concluded that the projected rapid decline in the number of beneficiaries with drug coverage through employer RDS plans is reasonable. In addition, based on the trend between 2006 and 2010, the Panel finds it reasonable to assume that most individuals who lose coverage in RDS plans will enroll in other Part D programs.

Table II.10—Past and projected number of Medicare beneficiaries by type of prescription drug coverage

Calendar year	Total Part D eligible (in millions)	Percentage of eligibles enrolled in:				
		Part D plans	Retiree drug subsidy plans	Total Part D	Other creditable coverage	Total Part D and creditable coverage
2006	43.4	54%	17%	70%	14%	84%
2007	44.4	55	16	70	14	84
2008	45.5	56	15	71	13	84
2009	46.6	58	14	72	13	85
2010	47.5	59	14	73	13	86
2011	48.9	60	13	72	13	86
2012	50.6	65	9	74	13	87
2013	52.4	68	5	74	13	87
2014	54.0	69	4	73	13	86
2015	55.6	70	3	73	13	86
2016	57.1	71	1	73	13	86
2017	58.7	71	1	73	13	86
2018	60.4	71	1	73	13	86
2019	62.1	71	1	72	13	86
2020	63.9	71	1	73	13	86
2021	65.7	71	1	73	13	86

Recommendation II-27: The Panel recommends that OACT identify the sources of discrepancy between recent forecasts of prescription drug spending growth and subsequent actual experience.

Forecasting errors are inevitable, since it is not possible to anticipate all future developments that can affect health care expenditures. Moreover, costs for new programs such as Medicare Part D can be particularly hard to project because no prior experience is available. Nonetheless, the Panel finds that the projected growth rates for NHE prescription drug expenditures, and those for

Medicare Part D costs, have been significantly higher than the subsequent actual experience in recent years.

Although the NHE prescription drug projections were not used to project Part D costs until the 2004 Medicare Trustees Report, OACT has produced an annual projection of such spending since 1999. Table II.11 compares the most recent historical estimates of aggregate NHE prescription drug spending growth to projections from three selected publications.

Table II.11— Comparison of selected past NHE prescription drug spending growth projections to current historical estimates

Source	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Actual*	13.9%	13.9%	18.4%	15.4%	14.7%	14.0%	11.3%	9.2%	6.5%	9.5%	5.3%	3.1%	5.1%	1.2%
July 1999[†]	14.1	14.0	11.9	11.4	11.0	10.7	10.6	10.2	10.2	9.9	9.5	9.2	—	—
Feb 2004[‡]	12.8	15.2	19.7	16.4	15.9	15.3	13.4	12.9	12.4	12.1	11.7	11.3	10.7	10.2
Feb 2008[§]	13.3	14.1	18.1	15.3	14.7	14.0	10.5	8.4	5.8	8.5	6.7	6.8	7.1	7.6
Difference between actual increase for year and projected increase														
July 1999[†]	—	−0.1	6.6	4.0	3.8	3.3	0.7	−1.1	−3.7	−0.4	−4.2	−6.0	—	—
Feb 2004[‡]	—	—	—	—	—	—	−2.1	−3.7	−5.8	−2.6	−6.3	−8.2	−5.5	−9.0
Feb 2008[§]	—	—	—	—	—	—	—	—	—	—	−1.4	−3.6	−2.0	−6.4

* Based on most recent historical estimates (http://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/index.html).
[†] S. Smith, S. Heffler, M. Freeland, "The Next Decade Of Health Spending: A New Outlook," *Health Affairs*, July/August 1999, 86-95.
[‡] S. Heffler, S. Smith, S. Keehan, "Health Spending Projections Through 2013," *Health Affairs* Exclusive, February Web 11, 2004, w4-79-93.
[§] S. Keehan, A. Sisko, C. Truffer, "Health Spending Projections Through 2017: The Baby-Boom Generation Is Coming To Medicare," *Health Affairs* Web Exclusive, February 24, 2008, w145-w155.

Note: For each projection, the shaded entries represent the latest historical estimates at that time.

As shown in the table above, the forecast errors from three selected NHE projections have varied in direction and magnitude. For the NHE projections article published in July 1999, prescription drug spending growth was significantly underestimated in years two through five of the projection period (1999 to 2002), with the largest underestimation of 6.6 percentage points occurring in 1999. The actual increases reflected a large influx of new blockbuster prescription drugs, such as Celebrex and Vioxx, whose success was partly attributed to heavy television advertising that proved to be remarkably effective. Regulations on drug advertising were eased in 1997, leaving little experience to draw on to take into account the large effect that direct-to-consumer advertising had in 1999. Conversely, the projected growth for 2005 through 2008 was faster than the subsequent actual experience, in part because there was no economic slowdown forecast for 2008 and because, to that point, the historical data had indicated double-digit growth in all but two of the prior 18 years. In addition, the trend toward formularies and tiered copayment structures in private health insurance was only just beginning at that time, and there was little indication of the major shift toward generic drugs that was to result.

For the NHE projections articles published in February 2004 and 2008, prescription drug spending growth was overestimated in most years. There are three main reasons for these projection errors. First, although many of the industry experts who were consulted at this time believed that the generic dispensing rate would increase in the future, no one predicted the dramatic conversion that actually occurred, with the generic rate rising from 41.0 percent in 2001

to 71.2 percent by 2010 (and still climbing).[25] Because generic drugs cost significantly less than brand-name drugs, this shift resulted in much slower spending growth than anticipated. Second, both the 2004 and 2008 projections assumed that real GDP growth would be similar to historical averages at around 3.0 percent. Instead, the deep recession starting in late 2007 and the subsequent slow recovery produced real economic growth that averaged 1.1 percent from 2007 to 2010. Poor economic growth, together with high unemployment and the associated loss of private health insurance coverage, reduced the demand for prescription drugs. The third reason is that, at the time the projections were made, the historical data still showed rapid growth. For the projections released in February 2004, there had been eight consecutive years of double-digit growth, which was projected to continue through 2010. For the projections released in February 2008, only one of the prior twelve years (2005) experienced growth of less than 8.4 percent. Accordingly, the projected growth at that time—in the range of 6.7 to 7.6 percent for 2007-2010—could have been envisioned as low, even though it was consistent with other forecasts, such as those by IMS Health and pharmacy benefit managers, who anticipated similar growth rates.

As the historical rate of growth of NHE prescription drug spending has been lower than anticipated, the projection of such spending over the coming decade has also been lowered, as shown in the figure below. Besides this change in outlook, other factors have emerged to produce a lower projected trend. One example is that the estimates of the impact of top-selling brand-name drugs going off patent have increased over the past few years as the growth in these drugs has exceeded that in overall prescription drug spending. Thus, when the switch to generic drugs occurs, a larger portion of the market will be affected. Another example is the slower economic growth, a main driver of the NHE prescription drug projection. For the July 2011 projections used in the 2011 Trustees Report, income growth was expected to average 1.6 percent from 2011 to 2013, compared to growth of 2.3 percent in the February 2008 projections.

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[25] National Association of Chain Drug Stores: *2011-2012 Chain Pharmacy Industry Profile*. September 2011, page 55.

Figure II.10—NHE per capita R$_x$ drug expenditure projections, by Trustees Report
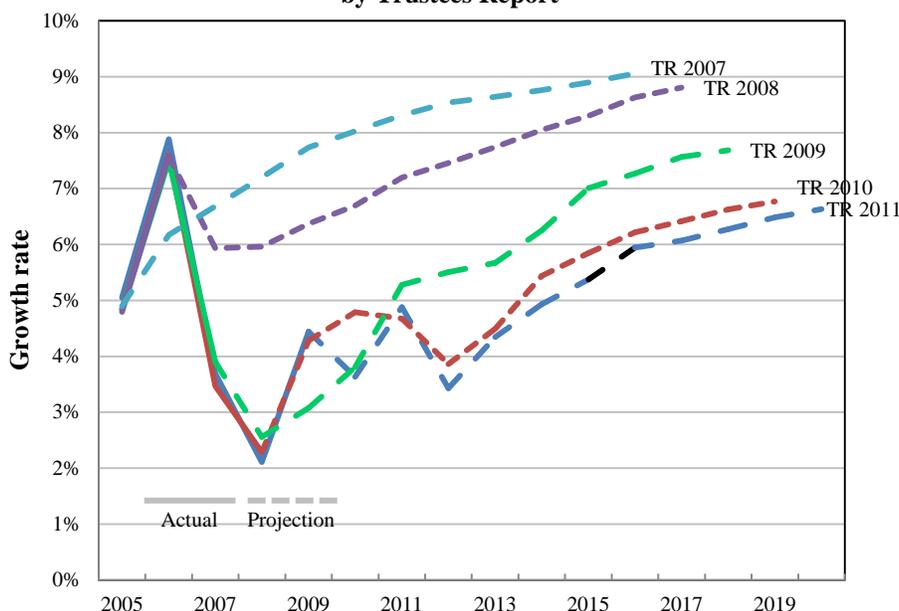
Note: The projections used in the 2011 Trustees Report were based on the NHE prescription drug spending projections published in July 2011. The projections for the 2010 and earlier Trustees Reports were based on the NHE projections published in February of the corresponding year.

The Panel recommends that the various factors contributing to these projection errors and the resulting lower actual growth rates be more fully investigated by OACT, the reasons for changes documented, and the projected trends compared to projections available from other public sources.

Recommendation II-28: The Panel recommends that OACT explore the potential for bottom-up models of both the NHE drug component and Part D to improve forecasts in the short range, particularly within the first 1 to 3 years.

As described earlier, the per capita NHE prescription drug projection, which is used in developing the Part D spending projection, is based on a macro-level econometric model that is adjusted at an aggregate level to account for factors that cannot be modeled econometrically (such as the effect of a drug losing patent protection). While this modeling approach allows OACT to develop a prescription drug projection that is consistent with underlying macroeconomic trends and the overall NHE projection, it does not take into account the detailed data available on various drug classes or on specific drugs that might influence very short-term (1-3 years) trends. For instance, a significant amount of public information exists on drugs in the FDA approval process, when they would be expected to reach the market, and when specific drugs will lose patent protection. Public data are also available that pertain to specific market expectations on drug research and development within certain therapeutic classes. Additionally, the emergence of specialty drugs, and the change over time in how those drugs are to be paid for (as a medical benefit versus a drug benefit), could have an impact on the spending trend. IMS Health and pharmacy benefit managers such as Express Scripts, Medco, and CVS Caremark

typically take this detailed information into account when developing their short-range projections.[26]

Though the recent experience may not be an indicator of the typical forecasting experience, these more micro-based approaches have tended to produce forecasts of prescription drug spending that are lower than those projected by OACT, as discussed in recommendation II-27. In the latest set of projections for 2011, per capita prescription drug spending growth was estimated by OACT to be 5.6 percent, compared to 2.3 percent from IMS Health, and compared to per member per month projections of 7.6 percent, 3-5 percent, and 4-7 percent from Express Scripts, Medco, and CVS Caremark, respectively. The Panel believes that since OACT has useful information about what new drugs are expected to reach the market, and which ones are losing patent protection, it could supplement its macro-based approach by producing estimates that reflect a more micro-based approach, particularly for the first 1 to 3 years of the short-range projection period.

Additionally, the Panel thinks that OACT could use this detailed micro model and information on the types of drugs used by Medicare beneficiaries to build more bottom-up projections for Part D specifically. For instance, since Medicare beneficiaries use proportionately more Lipitor than do those under age 65, the impact of Lipitor's patent expiration may be expected to have more of an impact on the Part D program than on overall NHE prescription drug spending. The Panel recognizes that OACT might require additional resources to employ more micro-based approaches and understands that it becomes increasingly difficult to anticipate these developments in the latter part of the short-range projection period (year 4 and beyond).

Recommendation II-29: The Panel recommends that OACT explore ways to build Part D experience into the short-range projections for year 4 and beyond.

The Medicare Part D benefit began in 2006; thus, currently 5+ years of historical Part D spending data exist that the Panel believes should be taken into account when OACT develops its short-range Part D projections. Because Part D covers a specific population and has a unique benefit design, the spending trend for the program may be different from that experienced for the population under age 65. Since 2006, as shown in table II.12, this has indeed been the case. In particular, Medicare beneficiaries and those under age 65 may have divergent experience regarding the mix of drugs they are taking, particularly with respect to specialty drugs. Additionally, for Medicare beneficiaries, there may be incentives for drug manufacturers or physicians to attempt to shift certain drug coverage from Part B to Part D or vice versa. Accordingly, the current source and potential change between Part B and Part D drug coverage must be considered in the forecasting of drug expenditures of the respective programs.

The Panel also discussed whether adjustments should be made for the concentration of Part D spending among beneficiaries who spend above their catastrophic threshold[27] and for the

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[26] IMS: http://www.imshealth.com/ims/Global/Content/Insights/IMS%20Institute%20for%20Healthcare%20Informatics/Documents/The_Global_Use_of_Medicines_Report.pdf; Express Scripts: http://www.express-scripts.com/research/research/dtr/archive/2010/dtrFinal.pdf; Medco: http://www.drugtrendreport.com/; CVS Caremark: http://info.cvscaremark.com/files/reports/Insights2011.pdf.

[27] The catastrophic threshold refers to the amount of total out-of-pocket covered spending above which a beneficiary's co-insurance rate drops to 5 percent. For 2012 this threshold is estimated to be $6,730 for applicable (non-low-income) beneficiaries.

possibility that there may be changes in the distribution of drug spending over time. For example, Part D spending may grow faster than the overall NHE prescription drug spending rate if the drugs going off patent are for chronic conditions but the new drugs becoming available are expensive biologics that will be largely paid for by catastrophic Part D coverage. Table II.12 shows average spending on prescription drugs for Part D beneficiaries, with and without the low-income subsidy (LIS), according to whether their total spending was higher or lower than the catastrophic threshold. In 2008 and 2009 the rate of growth for people above the catastrophic limit was significantly greater than the rate of growth for people below the limit. (For example, the rates were 8.37 percent and 1.72 percent, respectively, in 2008.)

Table II.12—Comparison of Part D cost growth rates for enrollees with high versus low drug expenditures

High spenders: beneficiaries whose total drug spending is higher than the catastrophic threshold					
	Average cost, per beneficiary			Year-over-year increase		
Year	LIS	Non-LIS	Total	LIS	Non-LIS	Total
2006	$9,464	$8,384	$9,217	—	—	—
2007	10,379	9,481	10,146	9.67%	13.09%	10.08%
2008	11,164	10,502	10,995	7.57	10.78	8.37
2009	12,035	11,811	11,979	7.80	12.46	8.95

Low spenders: beneficiaries whose total drug spending is lower than the catastrophic threshold					
	Average cost, per beneficiary			Year-over-year increase		
Year	LIS	Non-LIS	Total	LIS	Non-LIS	Total
2006	$1,606	$1,297	$1,418	—	—	—
2007	1,740	1,466	1,567	8.32%	13.07%	10.51%
2008	1,783	1,487	1,594	2.50	1.42	1.72
2009	1,899	1,524	1,656	6.46	2.50	3.91

The Panel encourages the Trustees and OACT to explore ways to use these data to inform some of the adjustment factors in the Part D projections. The focus should be on forecasts beyond 3 years, as the bottom-up, drug-specific information would be more useful in guiding the very short-term projections (1 to 3 years).

Recommendation II-30: The Panel recommends that the Trustees and OACT continue to monitor the impact of changes in employer actions on retiree participation in Part D plans.

Currently the Trustees and OACT assume that the great majority of individuals losing employer-based retiree drug coverage will migrate to other Part D plans. The Panel is concerned that, in addition to the effect of recent legislation on the number of beneficiaries with RDS coverage, other changes in employer subsidies and other mechanisms may affect the overall Part D participation rate. For example, the proportion of employers sponsoring retiree health plans has declined in recent years. This trend may well continue, and additional factors may arise and affect Part D participation. Accordingly, the Panel believes that it will be important for OACT to continue monitoring the enrollment trend for employer plans and any other developments

Chapter III: Long-Range Assumptions and Methodology

By statute, the Medicare Board of Trustees is required to project Federal spending for the Medicare program for 75 years into the future. It is a daunting requirement. Nevertheless, such long projection periods are important to providing insights to policy makers and others regarding the program's long-term solvency and sustainability.

As the Medicare Board of Trustees notes in its annual report to Congress, "The assumed long-range rate of growth in annual Medicare expenditures per beneficiary is one of the most critical determinants of the projected cost of Medicare-covered health care services in the more distant future." Seemingly minor changes in this assumption can result in substantial differences in the program's projected cost as the change compounds over periods as long as 75 years.

In thinking about very long-term growth rates in national health spending and in spending on Medicare, the actuaries tasked with making the projections can appeal to two assumed constraints dictated by common sense:

- It is plausible to assume that health spending per capita cannot grow indefinitely at annual growth rates exceeding the growth rates of GDP per capita. At some time in the future, health spending as a percentage of GDP must stabilize at some affordable level.

- As the fraction of GDP claimed by health care rises, the rate at which society is willing to trade off non-medical goods and services for additional medical care is apt to diminish. That insight, derived from standard economic theory, supports the notion that health spending as a percentage of GDP will have to stabilize at some point.

These plausible constraints limit the range of reasonable projections of future health spending and Medicare spending but still leave considerable room for the time path of future health expenditures. Users of these projections, including policy makers and—especially—journalists interpreting them to the public, should be mindful of the substantial uncertainty inherent in long-range projections and their sensitivity to the underlying assumptions.

The 2000 Medicare Technical Review Panel recommended that the long-range age-sex-adjusted growth rate for per capita national health expenditures (NHE) be set equal to the increase in per capita GDP plus 1 percentage point, or "GDP+1." The Panel further recommended that the assumed long-range increase in age-sex-adjusted Medicare expenditures per beneficiary equal the same growth rate developed for per capita NHE. These recommendations were adopted by the Trustees and used in the 2001 and later annual reports either directly or as the primary basis for the long-range growth assumptions. The 2004 Technical Panel reviewed this assumption and affirmed that it remained a reasonable choice.[28]

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[28] The 2000 Technical Panel considered many factors in arriving at its recommendation. One of the most critical factors was an expectation that the historical contribution of advances in medical technology would continue in the future. The Panel's full discussion of this subject is available in its final report at http://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/ReportsTrustFunds/Downloads/TechnicalPanelReport2000.pdf. The 2004 Panel's report is available at http://www.aspe.hhs.gov/health/medpanel/2004/2004_Technical_Review_Panel_on_the_Medicare_Trustees_Report.pdf.

Following enactment of the Affordable Care Act, the Trustees continued to use long-range Medicare cost growth assumptions based on GDP+1, with adjustments to reflect the lower payment rate updates mandated by the legislation. The ACA provisions were judged not to have an overall net impact on the growth in the utilization and intensity of services. Thus, for Part A and other services affected by the ACA payment update adjustments (i.e., reduced by the growth in economy-wide productivity), the average long-range growth rate was set equal to the pre-ACA level of GDP+1, less the annual productivity adjustment of 1.1 percent, for a total of GDP − 0.1 percent. Taking account of the growth rates for Parts B and D, the Trustees' overall average growth rate for Medicare as a whole averaged GDP + 0.1 percent in the long range.

One of the principal charges to the 2010-2011 Medicare Technical Review Panel was to evaluate the reasonableness of this important assumption and to consider possible improvements. As noted in its interim report, "The Panel finds that the current-law long-range growth assumption of per capita GDP minus 0.1 percentage point for Part A (and the corresponding reduction for affected Part B services), as used by the Trustees in their 2010 report, is not unreasonable in light of the provisions of the Affordable Care Act."[29] Subsequently, the Panel devoted considerable time and effort to the consideration of possible refinements and/or alternative methodologies for establishing the long-range growth rate assumptions for Medicare. This chapter describes the resulting findings and recommendations, together with their rationale.

Background

Prior to the passage of the ACA, there was little focus on the potential differences between prices paid by Medicare and those likely to be paid by the private sector and other payers. Analysis done by the 2000 Technical Panel suggested that historically Medicare spending and NHE had grown at similar rates, and the recommendation was to assume that the same pattern would continue in the future. However, because the ACA changed the way that Medicare provider payments are updated, the current Panel believes that more in-depth consideration of Medicare and non-Medicare price trends, both before and after the ACA, is necessary.

The ACA lowered scheduled payment updates for most Medicare providers. Before the ACA, the law specified that payment rates for institutional providers were to be updated by the increase in their input prices, while under the ACA they are to be updated by the increase in input prices less the rate of economy-wide productivity.[30,31] For purposes of the 2010 and 2011 Trustees

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[29] 2010-2011 Medicare Technical Review Panel: *Review of the Long Range Assumptions of the Medicare Trustees' Projections: Interim Report*. February 2011. Internet address: http://aspe.hhs.gov/health/medpanel/2010/interim1103.shtml.

[30] Payments for all Part A services are affected by this provision (inpatient hospital, skilled nursing facility, home health care, and hospice). All Part B services except physician, physician-administered drugs, and certain small facility care are also affected. (Many Part B services, including ambulatory surgical center, diagnostic laboratory, durable medical equipment, and ambulance are updated by the increase in the all-items CPI less the productivity adjustment.) The ACA does not affect payments for prescription drug coverage, which are market-based.

[31] Although the ACA did not change the payment updates for physicians, which are governed by the sustainable growth rate (SGR) provision, it nonetheless affected the Trustees' projection of spending on physicians. Prior to the enactment of the ACA, the Trustees had assumed that the SGR would have little impact in the long run, as it was assumed that care would be shifted to other providers whose payment rates were more generous. However, under the ACA, these payments are no longer more generous. Thus, under the Trustees' assumptions, the reduction in payment updates for hospitals and other providers mandated by the ACA made the SGR more applicable and lowered the assumed "effective" payment updates for physicians as well.

Reports, the Trustees, based on OACT's recommendation, used the longstanding assumption that growth in Medicare costs per beneficiary would increase on average at the rate of per capita GDP growth plus 1 percent except that this rate would decrease by about 1.1 percent per year for affected provider categories as a result of the ACA price update adjustments. In effect, the assumption was that (i) pre-ACA, Medicare and NHE provider prices would rise at the same rate; (ii) pre-ACA, the volume and intensity of Medicare and NHE services per person would increase at the same rate; and (iii) the reductions in Medicare prices under the ACA would not affect the number or mix of health services consumed by beneficiaries. Thus, for those reports, the effect of the changes in the provider updates under Medicare was to lower the growth rate of most categories of Medicare spending by 1.1 percentage points per year (the expected rate of economy-wide productivity growth).

The Panel considered four basic questions about the long-run projections:

- What is a good model for projecting long-run NHE?

- Is it reasonable to assume that Medicare and non-Medicare quantities of services (defined as volume and intensity) rise at the same pace absent the productivity adjustments, coverage expansions, and other provisions of the ACA?

- To what extent will the provisions of the ACA affect growth in the quantity of Medicare services per beneficiary?

- Is it reasonable to assume that Medicare and non-Medicare prices would increase at the same pace absent the productivity adjustments under the ACA (and, thus, is it reasonable to assume that Medicare price updates under the ACA are 1.1 percentage points lower than non-Medicare price updates)?

Recommendation III-1: For national health expenditures, the Panel recommends that OACT and the Trustees consider the results from using two projection methods. The first is OACT's traditional approach that relates health spending growth to GDP growth plus a constant, and the second is based on a "factors contributing to growth model" described below. Going forward OACT will need to use its judgment in how it weights the projections that these models generate.

The "GDP+X" framework for projecting NHE and Medicare expenditures is well-known, having originated with the 2000 Medicare Technical Review Panel and having subsequently been used for the long-range growth rate assumptions in the 2001 through 2011 Medicare Trustees Reports.[32,33] The current Panel is comfortable with continued use of the existing GDP+1

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[32] 2000 Medicare Technical Review Panel: *Review of Assumptions and Methods of the Medicare Trustees' Financial Projections.* December 2000. Internet address: http://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/ReportsTrustFunds/Downloads/TechnicalPanelReport2000.pdf.

[33] Through 2005, the long-range Medicare growth rate was assumed to be "GDP+X" where X was a constant 1 percentage point. During 2006-2009, a computable general equilibrium (CGE) economic model was used to develop a gradually declining set of year-by-year growth rates from the GDP+1 assumption, in such a way that the long-range Hospital Insurance actuarial balance equaled the balance projected with the constant growth assumption. As noted, this same process was used for the 2010 and 2011 Trustees Reports, with the further modification to incorporate the productivity adjustments introduced by the Affordable Care Act for most categories of provider payment updates.

assumption for projecting long-range NHE. In response to the further consideration of Medicare versus non-Medicare price growth, however, the Panel recommends a revision in "X" for the Medicare assumption from 1 percent to 1.4 percent. This change would recognize that the price updates negotiated by private payers can normally be somewhat lower than providers' input price growth, reflecting gains in provider productivity as discussed subsequently in connection with Recommendation III-4.

The factors model, which is based on research by Smith, Newhouse, and Freeland (2009),[34] models per capita NHE as a function of per capita income, relative medical price inflation, demographics, and coinsurance rates, as follows:

$$h_{NHE} = \varepsilon_y y + \varepsilon_c c + \varepsilon_i i + d$$

In the equation, h_{NHE} is the real increase in per capita health expenditures (deflated by the GDP price deflator), y is the real growth rate of per capita GDP, c is the growth rate of medical prices relative to the economy-wide average inflation rate ("relative medical price inflation"), i is the growth in the share of health spending that is paid out-of-pocket (i.e., the complement of the amount that is insured), d is the effect of changes in demographics on health spending growth, and ε_y, ε_c, and ε_i are the elasticities of health spending with respect to income, relative medical prices, and insurance, respectively.

OACT proposed to use the factors model to project NHE for the long run under the following assumptions:

- Over the final 50 years of the projection, the income elasticity of demand will gradually decline from its historical value of roughly 1.4 to 1.0.[35]

- Relative medical price inflation will be 0.8 percent annually, and the price elasticity of demand will transition from −0.4 to −0.6 as consumers become more price sensitive.

- There will be no change in the share of health expenditures that is insured.[36]

The Panel is comfortable with the general idea behind the factors model, which is that long-run health spending would be determined by societal preferences. The Panel is also comfortable with using such a model for national health expenditures, though it cannot be developed directly for Medicare as a result of data limitations and inadequate research to support Medicare-specific

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[34] Smith, Sheila, Newhouse, Joseph P., and Freeland, Mark S.: "Income, Insurance, and Technology: Why Does Health Spending Outpace Economic Growth?" *Health Affairs* 28(5): 1276-1284, 2009. Internet address: http://content.healthaffairs.org/content/28/5/1276.full.html.

[35] This aggregate time-series estimate of income elasticity is much larger than that estimated at a point in time across households, and it captures the effects of growing societal income on technology adoption.

[36] The share of Medicare spending that is covered by insurance is fixed by current law and is not affected by the ACA in the long range. However, the ACA will affect the portion of NHE that is insured in several ways, including the coverage expansions, statutory essential health benefits and actuarial value requirements, and the excise tax on high-cost employer health plans. By excluding these ACA insurance factors from the projection of NHE, the resulting increases in the volume and intensity of services are consistent with a constant level of coverage.

model parameters. Implicitly, this approach assumes that the elasticities in the above equation have been the same for Medicare and non-Medicare spending.

The Panel is also satisfied with the assumption that the income elasticity would decline over time as health spending increases as a share of income. Indeed, such an assumption is necessary if the share of GDP allocated to health spending is to stabilize, as it must eventually.

The Panel had less consensus about the assumption on relative medical price inflation. Some Panelists strongly felt that the available historical medical price indexes, which reflect the change in the price of a given medical procedure and are used in the factors model, overstate growth by a substantial margin because they fail to take into consideration improvement in the quality of care (that is, improved outcomes from the medical intervention).[37] They argued that the health care sector is too technologically dynamic to fit the model underlying Baumol's cost disease hypothesis, a model that is based on the premise that sectors that are more labor intensive often have lower productivity growth and, thus, higher price growth.[38] Some analysts have used Baumol's model to explain why measured productivity growth using official price measures is relatively low in the health sector. The Panel believed instead that, because technological change in the health sector has historically resulted in increased spending, particularly because improvements in medical treatments are often associated with increased demand, existing resource-based price measures may be partially capturing price increases associated with new technologies that improve outcomes. If that were the case, the true resource-based price increases for a constant product as used in the Baumol hypothesis would not be increasing as fast as implied by the existing medical price indexes. There was general agreement among the Panel members that application of the Baumol model in evaluating health sector productivity is confounded because of the role of technological change in the health sector.

Additionally, the Panel agreed that increases in the price of health care at the appropriate unit of measurement should be net of the cost of any quality improvement (i.e., changes in the service or product, which in the case of health care might be reflected by improved health outcomes). The Panel thought that the appropriate unit of measurement for determining relative medical price inflation and quantities for use in the factors model is the unit of service that the purchaser pays for—which is the concept that published price indexes have attempted to capture. In the case of Medicare, of course, the units are DRGs for hospital inpatient services, HCPCS codes for physician services, and analogous systems for other providers. Many private purchasers pay in the same units. However, most of the published medical price indexes are not adjusted to reflect

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[37] The Panel also explored the related question of whether the 1.1-percent productivity gains to be factored into the future price updates by Medicare, as prescribed in the ACA, are realistic and thus sustainable over the long run. Another way to put this question is whether Medicare in the future can buy today's quality level at the lower and lower future real prices for the units of service that Medicare buys (e.g., DRGs for hospital inpatient services). These issues are considered in more detail in the next chapter on uncertainty in long-range projections.

[38] There is a direct relationship between relative medical price inflation and productivity. If productivity growth in the medical sector is lower than economy-wide productivity growth, then medical prices will rise faster in that sector than overall inflation, resulting in positive relative medical price inflation. Changes in provider bargaining power vis-à-vis purchasers affect price growth as well. Other factors also influence medical price growth compared to other sectors of the economy, such as the labor share of inputs (for which the wage and other compensation increases associated with the labor component typically increase at a faster rate than the CPI- or PPI-related price increases for non-labor components).

changes in quality for these units, so the important issue is the degree to which quality has changed within these payment units.

The Panel did not agree on the rate of quality improvement for these units of care. Those who felt that quality had increased pointed to gains in cardiovascular mortality, reduced in-hospital mortality rates, and improvements in devices and dosing methods for drugs that have led to improved outcomes. Those who were skeptical of this argument pointed to new codes for new procedures such as angioplasty that were higher-priced; in other words, they thought that increases in quality were largely the result of new goods (i.e., codes) for which prices were commensurately higher. Additionally, they suspected that much of the measured improvement for in-hospital mortality was a consequence of earlier discharges and transfers from inpatient care to skilled nursing facilities or other post-acute settings, as opposed to true changes in the quality of a given procedure.

Although there was no consensus on the degree to which measured relative medical price inflation may be overstated, the Panel concluded that it would be appropriate for a factors model to reflect an assumption of relative medical price inflation. The model's price elasticity estimate and price measure are consistent with one another. In addition, the model closely tracks historical national health expenditures, even though the model parameters are estimated from economic literature and other sources that are largely independent from historical NHE data. Empirically, much of the explanatory power of the factors model derives from income and its interaction with the measure of technological change. The historical performance of the model is relatively robust against mismeasurement of the price term. Based on preliminary work by OACT, the Medicare projections using the revised GDP+1.4 assumption, and those based on the NHE projection from the factors model, appear to be very similar.

Finally, there was consensus among the Panel members that aggregate quality gains in medical care, if measured as health quality (outcome) produced per dollar of total spending across all units of service, likely had increased at rates well above the rates of quality gains for the units in which Medicare pays.[39] The Panel recognized that this aggregate measurement concept is not appropriate for use in updating Medicare payments, which are based on the same price concept that is currently used in the factors model.

Prior Technical Panels had argued that productivity in the health sector is higher than conventional measurements suggest. According to the 2000 Panel report, "Currently, the use of conventional health care price indices gives an overly pessimistic view of productivity gains in medical care." Similarly, the 2004 Panel report stated, "Historically, health care price increases have exceeded growth in other prices, and health care productivity has been assumed to be lower than the rest of economy. That assumption is, at best, an open question. There are strong reasons to suggest that health care productivity is underestimated, given the difficulty in accurately controlling for increases in the quality of medical services."

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[39] This difference implies that greater use of bundled or other global payment could result in increased measured productivity across the entire health sector, although the degree to which providers rather than purchasers would capture those productivity gains is an open question.

These arguments, however, could have been influenced by the numerous flaws in the official price indices before the 1990s, many of which have since been remedied.[40] Nonetheless, many current Panel members felt that (i) there are no good measures of true relative medical price inflation before the 1990s and (ii) as a result there is little basis for projecting relative medical price inflation out for 75 years.

In the end the Panel endorsed OACT's proposed factors model, which includes both income and relative medical price inflation as influences on spending growth, as well as consideration of a one-factor model that would use only income growth plus a constant.

Medicare spending projections

As noted above, the factors model as initially developed by Smith, *et al.* cannot be used directly to project Medicare expenditures. OACT's proposed procedure is to use the projection of national health spending as a basis for determining Medicare expenditures. Specifically, the factors model produces a long-range projection of increases in prices and quantities (i.e., growth in the volume and intensity of services) at the NHE level. The projected growth in NHE volume and intensity from the factors model would be combined with the statutory Medicare payment rate updates to project per beneficiary Medicare expenditure increases. The Panel is comfortable with this basic framework.

To discuss the relationship between non-Medicare and Medicare projections, it is necessary to decompose health spending growth into separate price and quantity factors. In particular, because Medicare pays providers per procedure (per DRG, or per physician office visit, for example) and the procedure prices are set by law, it is necessary to decompose health spending into prices paid per procedure and the number of procedures:[41]

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[40] With the introduction of the Producer Price Index (PPI) for health care services in the early 1990s, the Bureau of Labor Statistics (BLS) endeavors to measure price increases for specific treatment bundles that involve the same scope of resource inputs in each measurement period. More recently, BLS has incorporated direct measures of output quality for a few selected categories of hospital and nursing home services. This latter change, however, has been included in the PPI for only the last few years, which is not a sufficiently long time series to observe the effect on health care price measurement. However, since the number of quality-adjusted services is small relative to the total number of items, it is assumed that the overall impact on the hospital and nursing home PPIs is small.

[41] The growth in the number of procedures should be viewed as measuring both the actual number of procedures and the change in the mix. For example, a shift from low-priced procedures (physician office visits, for example) to higher-priced procedures (surgical interventions, for example) would raise q; similarly, a shift from inpatient to outpatient surgery would lower it. In other words, both p and q are vectors.

- The growth of non-Medicare spending per capita ($h_{non\text{-}Medicare}$) approximates the growth of price paid per procedure ($p_{non\text{-}Medicare}$) plus growth in the average quantity of procedures per person ($q_{non\text{-}Medicare}$).

$$h_{non\text{-}Medicare} = p_{non\text{-}Medicare} + q_{non\text{-}Medicare}$$

- The growth of Medicare spending per beneficiary ($h_{Medicare}$) is equal to the growth of Medicare prices per procedure ($p_{Medicare}$) plus the growth in the average quantity of Medicare procedures per beneficiary ($q_{Medicare}$).

$$h_{Medicare} = p_{Medicare} + q_{Medicare}$$

Finding III-2: The Panel finds that the Trustees' assumption used in the 2010 and 2011 Trustees Reports—that the quantity of services per beneficiary under Medicare (adjusted for demographics and prior to consideration of the ACA) rises at the same rate as for per capita non-Medicare—is reasonable.

The Panel agreed that it was reasonable to assume that quantities of Medicare and non-Medicare financed health care would continue to rise in parallel ($q_{Medicare} = q_{non\text{-}Medicare}$), before consideration of the effects of the Affordable Care Act. Traditionally, Medicare beneficiaries and those with private insurance have received care from the same providers, and assuming that this practice will continue seems like a reasonable baseline projection. To a great degree, advances in medical technology affect the health care services used by Medicare and non-Medicare patients alike. Moreover, future private-sector and Medicare efforts to adopt only those new technologies that are proven to be effective—and to forgo those that are not improvements or are not cost-effective—are likely to spill over to each other in many instances.

For these reasons, the Panel is comfortable with the existing assumption that, prior to consideration of the ACA, the increases in the volume and intensity of services per person would be similar for Medicare and non-Medicare covered individuals.

To complete the review of the long-range growth assumptions for Medicare, the Panel also considered the potential effects of the Affordable Care Act on the rate of growth in the quantity of services per beneficiary. In particular, the lower Medicare payment rates arising from the productivity adjustments, compared to the prior-law updates based on input price growth only, could affect the quantity of Medicare services in a number of ways. Other, non-Medicare ACA provisions could potentially affect the volume and intensity of Medicare services. For example, the coverage expansions under the ACA will increase aggregate use of health care services and could indirectly affect Medicare quantity growth if provider shortages were to occur. Similarly, although the long-range impact of the excise tax on high-cost employer health plans is less clear-cut, it would not have a material effect on Medicare quantity growth except indirectly, through possible spillovers of cost-reducing private-sector measures into Medicare. These indirect effects are believed to be small in comparison to the potential impact of the lower Medicare payment rates.

Recommendation III-3: The Panel recommends that the Trustees incorporate an assumption that the ACA will have a small, negative impact on the long-range growth rate of volume and intensity of services per beneficiary.

Quantity changes may be categorized as either volume effects—that is, the number of treatments per Medicare beneficiary—or intensity effects, such as the complexity of each type of treatment. Historically, changes in the volume and intensity of services per beneficiary (hereafter referred to as "V&I") have been an important component of cost growth for the Medicare program. In the pre-ACA long-range expenditure projections (both for the overall health sector and for Medicare), it was generally assumed that V&I would continue to grow because of the diffusion of the benefits of technological change. Additionally, it was assumed that payment under Medicare would be adequate for the level of utilization demanded by beneficiaries; that is, there would be no access issues for Medicare beneficiaries.

The current-law projections in the Medicare Trustees Reports for 2010 and 2011 assumed that Medicare V&I would be unaffected by the new ACA pricing arrangements and that beneficiaries would continue to increase utilization of services at the same rates as previously assumed.[42] The Panel examined several possible mechanisms by which lower Medicare price growth could affect Medicare V&I growth over the long run, recognizing the substantial uncertainty associated with such an exercise. The Panel concluded that the various factors would tend to have largely offsetting effects but judged that the overall, net impact of the lower payment rates would likely slow Medicare V&I growth slightly (for example, by 0.1 percentage point annually).

Mechanisms that could increase Medicare volume and intensity (post-ACA)

1. Coding intensity

Fee-for-service Medicare makes payments to medical service providers based upon diagnostic or service codes (such as DRGs) that are selected by providers and submitted in their billings. The nature of the payment system incentivizes providers to code services to maximize revenues, and it is widely believed that some providers inappropriately "upcode" in order to enhance revenues beyond what can be nominally justified. Empirical research suggests that upcoding has indeed

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[42] The traditional GDP+1 assumption for NHE and Medicare implicitly assumed that the long-range growth in health care costs would be significantly slower than the rates experienced in the past. Various factors were considered to act as "natural brakes" on growth, as health care costs consumed an increasing share of the economy. One of these natural brakes was the likelihood that new medical technology would be adopted more prudently and with greater focus on its cost-effectiveness. For the 2010 and 2011 Trustees Reports, OACT assessed whether the various factors in the ACA would tend to increase or decrease growth in V&I, compared to the prior-law projections. Finding a number of factors with offsetting impacts, the actuaries assumed that the overall net effect would be negligible. Also, as stated in OACT's May 13, 2011 memorandum discussing the illustrative alternative scenario prepared in conjunction with the 2011 Trustees Report, there was not a reliable basis for determining what the potential secondary impacts of the ACA might be, such as reduced beneficiary access to Medicare services, reduced quality of care, and/or increased morbidity or mortality rates. Additionally, "…including them in the current-law projections would lead to an increasingly improbable result and only reduce the usefulness of the estimates." Internet address of memorandum: http://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/ReportsTrustFunds/Downloads/2011TRAlternativeScenario.pdf.

occurred for hospitals.[43] An increase in the rate of upcoding, or a more general collapse in coding integrity, could in principle work to offset some of the lost revenue associated with the ACA payment update adjustments.

Strictly speaking, an instance of unwarranted upcoding would not be a true increase in Medicare service intensity, but it would be paid as if it were—which is the relevant issue when projecting Medicare spending. It is certainly conceivable that the financial pressure building from year to year, as the productivity adjustments accumulated, could increase the incentive for Medicare providers to engage in upcoding. The effects of coding intensity could be great, but the ultimate impact would depend on how well CMS could detect this behavior and respond appropriately. It seems unlikely that CMS would allow upcoding to expand indefinitely without appropriate cost justifications. Using its statutory authority, CMS has acted aggressively in recent years to identify upcoding and to offset its impacts by reducing annual payment rate updates for the types of service in question. Therefore, the Panel concluded that the long-range rate of annual upcoding affecting Medicare V&I growth will be essentially the same post-ACA as before.

2. Other "behavioral offsets"

It is believed by many that medical providers can, to some extent, offset the negative revenue effect of price reductions by exploiting the influence they have with patients to stimulate a compensating increase in service volume. This practice is known as supplier-induced demand, and it is widely thought to characterize physician behavior. Empirical evidence shows that in the aggregate, under some circumstances physicians will increase the measured volume of services in response to price reductions imposed by payers like Medicare. Both OACT and the Congressional Budget Office (CBO) have conducted studies that have found statistically significant evidence for such effects.[44]

There is very little research available on whether non-physician providers can offset price reductions through increases in volume. Since it is mostly non-physician providers that would be affected by the ACA payment update reductions, the Panel decided that there wasn't sufficient evidence to conclude that providers would react in this manner. Additionally, as these payment reductions drive payments towards marginal costs, the incentives to offset the reductions with greater volume diminish. That is, each additional service would not offset losses

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[43] Carter, Grace M., Newhouse, Joseph P., and Relles, Daniel A.: "How Much Change in the Case-Mix Index Is DRG Creep?" *Journal of Health Economics* 9: 411-428, 1990.

Silverman, Elaine, and Skinner, Jonathan: "Medicare Upcoding and Hospital Ownership." *Journal of Health Economics* 23: 369-389, 2004.

Dafny, Leemore S.: "How Do Hospitals Respond to Price Changes?" *American Economic Review* 95: 1525-1547, 2005.

[44] Codespote, Suzanne M., London, William J., and Shatto, John D.: "Estimated Volume-and-Intensity Response to a Price Change for Physicians' Services." CMS Office of the Actuary memorandum. August 13, 1998. Internet address: http://www.cms.gov/Research-Statistics-Data-and-Systems/Research/ActuarialStudies/Downloads/PhysicianResponse.pdf.

Congressional Budget Office: *Factors Underlying the Growth in Medicare's Spending for Physician Services.* June 2007.

in profits associated with the payment reductions.[45] As a result, the Panel concluded that there would be little to no impact on long-range volume growth, relative to the pre-ACA assumption, from non-physician provider incentives to offset the payment reductions through increases in the volume of services.

The Panel also considered the possibility that, as Medicare payment-to-cost ratios declined, providers might attempt to shift an increasing portion of the costs for Medicare services to commercial payers. Such cost-shifting is widely believed to occur already in response to relatively low Medicare and (especially) Medicaid payment rates, but the formal evidence is mixed.[46] Such a strategy would affect the prices charged to private insurance plans and would not cause an increase in Medicare V&I compared to pre-ACA expectations. However, increased cost-shifting could help prevent curtailment of services to Medicare beneficiaries as a result of inadequate payment rates (see discussion below). To be effective, this strategy would require shifting an ever-growing proportion of the cost of caring for Medicare patients onto private health insurance plans, a practice that does not seem feasible in the long range.

3. Efficacy of the cost-sharing natural brake

Fee-for-service Medicare continues to have patient cost-sharing formulas that are largely unaffected by the ACA.[47] Most beneficiaries have supplemental health insurance coverage in addition to Medicare through Medicare Advantage enrollment, employer-sponsored retiree health insurance, individually purchased private "Medigap" coverage, or Medicaid. This supplemental insurance reduces beneficiaries' cost-sharing requirements and, in the case of Medigap plans and Medicaid, often covers all cost-sharing payments for Part A and Part B services.

Prior to the ACA, it was expected that Medicare fee-for-service cost-sharing provisions would continue to increase significantly faster than beneficiaries' incomes and eventually lead to reductions in aggregate growth of Medicare V&I. This cost-sharing effect was typically referred to as one of the natural brakes that would work to slow Medicare spending growth from historical averages.[48] The theory behind this factor was that as health expenditures continue to rise over the long run, a greater proportion of employers would cease to sponsor supplemental

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[45] Should there, in fact, be any behavioral offsets, the Panel thought that they would likely be concentrated only in the most profitable services.

[46] Frakt, Austin B.: "How Much Do Hospitals Cost Shift? A Review of the Evidence." *Milbank Quarterly* 89(1): March 2011.

[47] For example, in Part A there is a deductible payable by the patient at the beginning of most Medicare-covered hospital admissions, and the patient is responsible for substantial daily copayments after the first 60 days of care in a "spell of illness." Patients must pay the full cost of inpatient care if they exhaust their "lifetime reserve days" in such a spell. In regard to Part B, beneficiaries are generally responsible for a 20-percent copayment on all services received after an initial deductible is met. The ACA eliminated beneficiary cost-sharing requirements for a number of preventive services for which such requirements still applied but did not otherwise affect the beneficiary deductible and coinsurance requirements.

[48] Additional background on the prior long-run methodology can be found in the following CMS Office of the Actuary memorandum: Caldis, Todd G.: "The Long-Term Projection Assumptions for Medicare and Aggregate National Health Expenditures." May 12, 2009. Internet address: http://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/ReportsTrustFunds/Downloads/ProjectionMethodology.pdf.

insurance benefits for their retirees, and more beneficiaries would opt not to incur the growing premium burden needed to maintain Medigap coverage for themselves. Empirical data have shown that the minority of Medicare beneficiaries without supplemental coverage—and who are thus personally exposed to copayment/coinsurance provisions—exhibit a substantially smaller per beneficiary health care consumption level than beneficiaries who have Medigap coverage or the equivalent.[49] As a result of fewer Medicare beneficiaries having supplemental coverage over the long run, it was anticipated that there would be an increase in the share of Medicare beneficiaries in this lower consumption group.[50] Additionally, Part B and Part D premiums could conceivably grow to such a level that increasing numbers of beneficiaries might opt to forgo this optional coverage, leading to more beneficiaries faced with very high out-of-pocket cost obligations and, thus, to lower levels of per beneficiary health care consumption. Finally, as out-of-pocket health care expenses come to represent an ever-larger share of personal consumption for affected Medicare beneficiaries, the medical consumption of such beneficiaries would likely be lowered due to their increasing price sensitivity.[51]

The ACA provisions are likely to change the impact of cost sharing as a natural brake on aggregate Medicare spending, although the ultimate effects are uncertain. For Medicare fee-for-service, the ACA provisions will slow the growth in expenditures and beneficiary cost-sharing requirements, which should result in less decay in employer-sponsored and individual Medigap coverage. Consequently, fewer Medicare beneficiaries would be exposed to higher out-of-pocket cost sharing and would likely consume more services. On the other hand, most of the cost-sharing exposure for Medicare beneficiaries occurs through Medicare Part B, for which only a portion of expenditures are affected by the ACA payment update reductions (around 50 percent of fee-for-service spending in 2011). Also, for Medicare Advantage enrollees, the ACA lowers payments to MA plans significantly, which will decrease the "rebate" amounts that plans currently use to reduce beneficiary cost-sharing requirements and premiums. Since roughly one in four Medicare beneficiaries is currently enrolled in Medicare Advantage plans, these beneficiaries would be exposed to higher out-of-pocket cost-sharing and premium requirements.

On net, the Panel concluded that there will be a modest upward impact on Medicare V&I growth relative to the pre-ACA baseline due to the effects of the reform legislation on the cost-sharing natural brake.

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[49] Analysis of the Medicare Current Beneficiary Survey (MCBS) indicates that roughly 10 percent of all Medicare beneficiaries are without any kind of supplemental Medicare coverage and that this group has approximately one-third the per enrollee health expenditures of Medicare beneficiaries with full supplemental coverage, after controlling for health status and other characteristics. (Based on research by Michael E. Chernew and Lauren Cipriano in developing a Cost-Sharing Cost-Growth model for the Office of the Actuary, 2008.)

[50] This trend could be dampened to the extent that Medicare beneficiaries could continue to obtain low- or zero-cost supplemental coverage by enrolling in a Medicare Advantage health plan or by being dually eligible for Medicaid benefits.

[51] Silberberg, Eugene: *The Structure of Economics: A Mathematical Analysis.* McGraw-Hill, 2000.

Mechanisms that could decrease Medicare volume and intensity (post-ACA)

1. Slower adoption of new, cost-increasing technology

Prior Technical Panels identified technological change aimed at improving medical care as a key driver of V&I growth into the distant future because of the continuing desire by medical consumers for improved health care.[52] As noted previously, the pre-ACA long-range Medicare V&I assumption is premised in part on a slowdown in the rate at which cost-increasing, quality-improving technology is adopted—one of the other postulated natural brakes. However, as Medicare payments are reduced relative to their pre-ACA levels, providers will have even less incentive to adopt cost-increasing innovations that lead to new services and more utilization. Instead, within the existing payment bundles (e.g., within DRGs), providers will try to provide a level of care that ensures that their costs are covered by the payment rates. In this instance, these Medicare payment rates may not be high enough to cover the costs of new innovations and the latest technologies that would otherwise have been adopted. As a result, Medicare beneficiaries may not have access to these new technologies and would be likely to decrease the rate of growth in the demand for services, leading to slower growth in Medicare V&I relative to pre-ACA expectations. Such an impact would likely occur at the margin, however—for example, by forgoing technologies that represent only a minor improvement. New innovations that are truly more effective than existing ones are likely to continue to be demanded, and approved, for Medicare and non-Medicare patients alike.

An additional possibility is that the developers of new medical devices, drugs, and treatments may anticipate that the slower payment updates for Medicare services will constrain what has historically been a guaranteed market for new medical technology. If so, they might direct their research and development efforts more toward cost-decreasing technology. Some U.S. and foreign companies are already moving in this direction, and the trend could accelerate as a result of the financial pressures associated with the ACA's productivity adjustments for Medicare payment rates.

2. Supply-side analysis

There are two major supply-side factors that the Panel believed could lead to slower growth in Medicare V&I as a result of the ACA payment update reductions. The first is the possibility that some providers affected by the payment update reductions may choose to exit the Medicare market, thus reducing capacity and, in turn, the volume of services.

It is possible that the provider payment reductions under the ACA will result in a partial bifurcation of care between Medicare and the privately insured, whereby some providers will be willing to accept the lower Medicare reimbursements, and other providers will shift their practice

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[52] 2000 Medicare Technical Review Panel: *Review of Assumptions and Methods of the Medicare Trustees' Financial Projections.* December 2000. Internet address: http://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/ReportsTrustFunds/Downloads/TechnicalPanelReport2000.pdf; and

2004 Medicare Technical Review Panel: *Review of Assumptions and Methods of the Medicare Trustees' Financial Projections*. December 2004. Internet address: http://www.aspe.hhs.gov/health/medpanel/2004/2004_Technical_Review_Panel_on_the_Medicare_Trustees_Report.pdf.

more toward those with private insurance. Indeed, this bifurcation has occurred to a significant degree with Medicaid. To the extent that Medicare reimbursements are lower than those offered by private insurers, such bifurcation would likely entail less-costly, and possibly lower-quality, services provided to Medicare beneficiaries, perhaps resulting in lower volume.

Over the long run, an increasing proportion of providers' costs are variable, and the incentives to exit the market may become more significant as payment rates do not keep up with costs. Those providers of marginal profitability are most likely to exit the market, and in the extreme case that Medicare payments were to fall well below the cost of providing required care, many providers would likely choose to operate only in other parts of the medical market. In practice, the Panel thought that massive provider exits from the Medicare market would likely be unsustainable, would result in a significant bifurcation and destabilization of the market, and would lead to legislative and regulatory changes. The likelihood of this outcome is very difficult to assess, and, in any case, it would represent a non-current-law scenario to the extent that the problem was addressed through new legislation. Accordingly, the possibility cannot be dismissed in a current-law projection. However, the Panel felt that it would be difficult for providers, particularly institutional providers, to completely abandon the Medicare market where such a large portion of health care is needed and consumed. Overall, the Panel decided that there was a reasonable probability that some Medicare providers affected by the ACA payment update adjustments would choose to exit the Medicare market and that this action would decrease the supply available to meet anticipated demand and would lead to lower Medicare V&I growth.[53]

The second supply-side factor is the possibility that some providers would remain in the Medicare market but would choose to shift their focus to more profitable segments of the market, providing less care to Medicare beneficiaries and more care to the non-Medicare market where fees are not regulated. Some published economic studies show that the supply of medical services to Medicare beneficiaries is sensitive to output prices under some circumstances.[54] Though there is a tremendous amount of uncertainty regarding the magnitudes of the implied supply responses to Medicare price changes, the Panel concluded that there is a reasonable probability that providers could furnish more services to non-Medicare patients and fewer services to Medicare patients. Such an outcome could lead to a more bifurcated health market,

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[53] The long-range feasibility of the lower Medicare payment rates is considered in greater detail in Chapter IV.

[54] Evidence concerning the potential magnitude of supply effects is summarized at greater length in the following paper prepared for OACT: Feldman, Roger, and Dowd, Bryan: "Evaluation of Economic Issues Relevant to Long-Range Health Expenditure Projections," December 11, 2011. See also (i) Dafny, Leemore S.: "How Do Hospitals Respond to Price Changes?" *American Economic Review* 95: 1525-1547, 2005; and (ii) Wu, Vivian Y., and Shen, Yu-Chu: "The Long-Term Impact of Medicare Payment Reductions on Patient Outcomes," National Bureau of Economic Research Working Paper No. 16859, 2011. Dafny found evidence of substantial provider sensitivity in terms of both quantity and intensity of services in response to changes in Medicare DRG payment rates. Wu and Chen indicate that quality of services for acute myocardial infarction may have been affected in hospitals experiencing the deepest Medicare payment reductions under the Balanced Budget Act of 1997.

as noted above, and could result in access issues for Medicare beneficiaries.[55]   While the Panel members thought that this factor would lead to lower Medicare V&I growth over the long run, they were reluctant to draw conclusions based upon the relatively small number of empirical studies that are available and recommended that OACT continue to pursue more research on this topic.

3. Less generous Medicare Advantage and supplemental plans

Previously, the Panel described its expectations that reductions in Medicare fee-for-service payments under the ACA will diminish the cost-sharing natural brake, leading to more medical consumption than would have occurred prior to the passage of the law. On the other hand, the ACA provisions that redesign Medigap to include nominal cost sharing and that reduce payments to Medicare Advantage plans will work in the opposite direction, exposing Medicare beneficiaries to more cost sharing than before. The decline in coverage generosity anticipated for both Medigap and Medicare Advantage, relative to pre-ACA rules, would occur as one-time, short-run changes. However, this initial jump in the level of cost sharing for some Medicare beneficiaries will result in a larger proportion of spending paid for directly by the consumer over the long run than previously assumed. Studies of the effects of insurance coverage on health expenditure growth have indicated that the higher the cost-sharing requirements, the more price-sensitive individuals become and the lower their medical consumption. Consequently, changes in the aggregate rate of coinsurance affect the cost-effectiveness level required for new technologies to be profitable.[56]   Thus, the Panel concluded that these changes in Medigap and Medicare Advantage coverage are likely to have a downward influence on Medicare V&I growth over the long run.

4. Effects of bundled payments and other innovations

The ACA also authorizes a major program of research into innovative ways to deliver and pay for Medicare services, with the goal of improving the quality of care and/or reducing its costs. These efforts will help stimulate improvements in provider-level efficiency that could reduce cost growth to a level consistent with the slower Medicare payment updates mandated by the new law. For example, efforts to better integrate care, tie payments to quality measures, and bundle Medicare payments across provider types may result in fewer duplicated services, a reduction in unnecessary tests or treatments, and adoption of new technologies in a more cost-efficient manner. Should efforts to identify and adopt cost-saving efficiencies for Medicare succeed, they would not only lower the volume and intensity of Medicare services but also likely

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[55] In practice, the Medicare Payment Advisory Commission (MedPAC), a statutory advisory body to Congress, is charged with annually reviewing Medicare payment levels to ensure, among other things, that Medicare beneficiaries have access to the supply of medical services to which they are entitled. When access has been threatened, such as would result if the level of Medicare prices paid to physicians were decreased by the approximately 29 percent that would currently be required by the sustainable growth rate (SGR) formula for January 1, 2013, Congress has been reluctant to impose large reductions, in part based on recommendations from MedPAC.

[56] See, for example, the following: (i) Newhouse, Joseph P.: "The Erosion of the Medical Market Place," Santa Monica, California: RAND, December 1978; (ii) Peden, Edgar A., and Freeland, Mark S.: "A Historical Analysis of Medical Spending Growth, 1960-1993," *Health Affairs:* 235-247, Summer 1995; and (iii) Peden, Edgar A., and Freeland, Mark S.: "Insurance Effects on U.S. Medical Spending (1960-1993)," *Health Economics*: 671-687, 1998.

spill over into the health system at large. Such changes could also improve the quality of care provided.

While optimism is widespread, at this time the likelihood of significant improvements in costs and quality as a result of the innovations research is not known.

Summary of discussion of Medicare volume and intensity

Though it is difficult to aggregate the effects considered here, judgmentally the balance of the factors appears skewed slightly in the direction of the Affordable Care Act contributing to an overall slower rate of Medicare V&I growth in the long range. In particular, the spillover effects from reduced incentives to develop or adopt new technologies, the supply-side responses regarding provider exits and shifts of services to non-Medicare segments of the market, and the potential benefits from efforts to bundle payments are likely to be stronger and to persist for an extended period. Although other factors would likely raise V&I growth, such as reduced cost-sharing requirements under fee-for-service, these effects were not judged to be as large. While the qualitative balance among the relevant factors is assumed to be negative, the Panel recognized that the tools available to attach magnitudes to these factors are limited and that more research is needed. As shown in Recommendation III-3, the Panel believes that it would be reasonable to apply a small negative V&I adjustment to the pre-ACA Medicare V&I assumptions.

The Panel's final area of inquiry involved the issue of Medicare versus non-Medicare payment rate updates and whether it was reasonable to assume, prior to the productivity adjustments introduced by the Affordable Care Act, that the two sets of price increases would be similar. The traditional GDP+1 long-range growth assumption for NHE and Medicare depends implicitly on this assumption. As noted previously in this chapter, the Panel concluded that, absent the ACA, in the long range Medicare payment rate updates would generally exceed those negotiated between providers and private insurance companies. This conclusion led to a recommendation to update the traditional GDP+1 assumption to reflect the difference in price updates between Medicare and overall NHE.

Recommendation III-4: In connection with a "GDP+X" approach to establishing long-range growth assumptions for Medicare, for service categories affected by the statutory productivity adjustments, the Panel recommends that per capita Medicare expenditures rise at an average rate that is equivalent to per capita GDP + 0.2 percent, after incorporation of the impacts of the ACA.

By definition, growth rates in Medicare expenditures per beneficiary are projected as follows (ignoring second-order interactions):

$h_{Medicare} = q_{Medicare} + p_{Medicare}$

Given the assumption that, prior to ACA impacts, $q_{Medicare} + q_{non\text{-}Medicare}$

$h_{Medicare} = Q_{non\text{-}Medicare} + P_{Medicare}$

Substituting in for $q_{non\text{-}Medicare}$ from $h_{non\text{-}Medicare} = q_{non\text{-}Medicare} + p_{non\text{-}Medicare}$

$h_{Medicare} = h_{non\text{-}Medicare} - p_{non\text{-}Medicare} + P_{Medicare} = h_{non\text{-}Medicare} + (P_{Medicare} - p_{non\text{-}Medicare})$

Thus, per capita Medicare spending growth can be thought of as equaling per capita non-Medicare spending growth plus any difference between Medicare and non-Medicare price growth. Prior Technical Panels did not explicitly consider the potential for Medicare and non-Medicare prices to diverge, nor did they delve into the mechanisms by which Medicare prices are updated. Instead, they used the projected growth in national health expenditures (h_{NHE}) as a proxy for growth in Medicare spending ($h_{Medicare}$). This assumption was justified by the belief that, historically, Medicare and non-Medicare spending had increased at similar rates and by an expectation that new medical technologies would continue to be the driving force behind health care cost growth in the future and would affect Medicare and NHE similarly.[57]

The current Panel is comfortable with continuing to assume that per capita NHE would increase in the long range at the rate of per capita GDP plus 1 percentage point, as recommended by the 2000 Panel. For Medicare, however, the Panel concluded that it is important to take into account the differences between how Medicare and commercial payers would update provider payment rates in the long-range future. Specifically, absent the ACA, Medicare would have been required by law to update most categories of provider payments in the future by formulas based on the increase in providers' input prices per service. In contrast, commercial payers typically negotiate rates with the providers in their networks; to the extent that providers can achieve productivity improvements, then it is reasonable to expect, in the long range, that the negotiated payment updates would reflect the increases in providers' input prices less their productivity gains. Such updates are consistent with the "output" or "transaction" price increases that providers would need in order to maintain constant profit margins in the long run.[58] The Panel noted that there is relatively little empirical research or data available comparing historical Medicare and private-payer price growth. Moreover, such comparisons would be substantially hampered by (i) the numerous legislative acts that have reduced Medicare's market basket price updates in the past, and (ii) the highly diverse nature of private-sector practices for establishing payment rates for medical services. The Panel encouraged OACT to conduct additional analysis in this area, particularly in the context of long-range paths toward equilibrium.

To incorporate the expected differences in Medicare versus commercial and other non-Medicare payment rate increases, while starting from the traditional GDP+1 assumption for long-range NHE growth, it is convenient to further rewrite the simple equations above as follows:

$$h_{Medicare} = h_{NHE} + (p_{Medicare} - p_{NHE}) = g + 1\% + (p_{Medicare} - p_{NHE})$$

where *g* represents the increase in per capita GDP.

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[57] Comparisons of per capita cost growth for Medicare versus private health insurance, adjusted to reflect similar covered services, indicate that over long periods cost growth for Medicare has averaged about 1 percent less per year than that for private health insurance. Over shorter periods, the difference can vary significantly and in either direction. See, for example, table 21 at http://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/Downloads/tables.pdf.

[58] In practice, other factors, such as the relative market power of providers versus insurers, can affect the negotiation process. It is not a foregone conclusion that private payers can always capture the financial advantage gained through providers' productivity improvements.

OACT's compilation of recent studies of resource-based provider productivity suggests that a reasonable assumption for overall health sector productivity growth is 0.4 percent per year.[59] Based on the discussion above, this estimate of productivity improvement can be used as the difference between the Medicare payment rate updates that would have been required in the future, absent the ACA, and the corresponding NHE-wide price updates ($p_{Medicare} - p_{NHE}$). Accordingly, the Panel felt that increasing the pre-ACA Medicare growth assumption from the original GDP+1 to GDP+1.4 was reasonable.

Correspondingly, for the average post-ACA long-range Medicare expenditure growth rate under the "GDP+X" framework, for provider categories subject to the productivity adjustments, the 2010-2011 Panel assumed that Medicare spending would grow at GDP + 1.4 − 1.1 − 0.1 or GDP+0.2. In this formulation, GDP+1.4 is the revised traditional assumption for pre-ACA Medicare growth, 1.1 is the ACA-legislated reduction in updates for most providers, and 0.1 is the Panel's rough estimate of the slight reduction in volume and intensity that the price reductions will cause.

The Panel noted that although the pre-ACA law specified that future Medicare provider payment updates were to rise with the increase in input prices, the payment updates *actually* provided to Medicare providers over much of history were, on average, significantly lower because Congress often overrode the current-law updates.[60] The following table shows the average updates to Medicare reimbursements over the last 10 and 20 years relative to the GDP deflator (a measure of economy-wide inflation).

Table III.1—Growth in Medicare payment updates relative to the GDP deflator
(Average annual rates)

Period	Medicare Part A	Medicare Part B (excluding physician)	Parts A and B composite
1991-2011	0.18%	−0.64%	−0.03%
2001-2011	0.43%	−0.21%	0.22%

Source: CMS, Office of the Actuary.

For Part A, reimbursements increased only a bit faster than general inflation, whereas for Part B, the updates were usually below general inflation. Taken together, the average increase in Medicare payments was similar to the increase in general inflation.[61] Had the historical

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[59] This figure reflects a weighted average of estimated resource-based, within-payment-unit productivity gains by type of service. The specific estimates are hospital productivity of 0.4 percent, physician productivity of 1.1 percent, and all other categories' productivity of zero. As noted previously, there is a significant degree of uncertainty for such productivity estimates. Footnote 64 in Chapter IV of this report lists the citations for these studies.

[60] In addition, the physician updates have long included the type of productivity adjustments that were introduced for institutional providers under the ACA.

[61] To be sure, some of the reductions in payment updates that Congress legislated were intended to offset certain actions of providers that unduly increased payments (DRG creep, for example), and thus the effective payment updates were somewhat larger than those shown in the table. Nonetheless, it seems clear that, in practice, Medicare payment updates to providers have generally not been as high as those specified under the pre-ACA law.

Medicare payment updates actually increased with input prices (that is, had they increased roughly 1 percentage point faster than the GDP deflator based on the average legislative payment reduction experienced during the period 1995-2011), Medicare spending growth would have been higher, and per enrollee Medicare spending likely would have increased more similarly to non-Medicare spending per person. A projection that took into account the pre-ACA price updates, and did not assume that Congress would override them in the future as it had in the past, would likely have shown that spending growth in Medicare would exceed spending growth for non-Medicare (assuming similar volume and intensity growth for each). Under such a projection, the gap between spending growth in Medicare and GDP growth would have been higher than implied by analysis of historical spending (which reflected actual price trajectories).

For some Panel members, the lower historical updates indicated that health-sector productivity had in fact increased significantly. Others interpreted these legislated reductions in updates as largely intended to offset coding changes and unbundling of services that did not reflect increased productivity. For example, after the MS-DRG system was implemented in 2008, the case-mix index increased at well above historical rates. CMS and Congress viewed this increase as coding a similar patient in a now more highly weighted (and therefore more highly reimbursed) category and adjusted the update percentage downward to compensate. Similarly, in the 1990s, when hospitals shortened stays and transferred many patients to hospital-based and other post-acute care, the use of these services expanded rapidly. In response, Congress lowered payment updates for hospitals to reflect the changing nature of hospital services and introduced prospective payment systems for skilled nursing care and home health services.

Chapter IV: Uncertainty Associated with Certain Provisions of Current Medicare Law

Finding IV-1: Current law specifies Medicare payment updates for hospitals and most other non-physician providers that equal (i) the increase in providers' input prices less (ii) the increase in the 10-year moving average of economy-wide private nonfarm business multi-factor productivity. The Panel finds that these payment updates may be feasible in the short to medium term. The Panel also affirms the findings by the Medicare Board of Trustees in their 2010 and 2011 annual reports that there is considerable uncertainty regarding the feasibility of these update adjustments over the long range. Some analyses suggest that they could be workable indefinitely, especially if providers transition to more integrated systems of care and payment mechanisms other than fee-for-service. However, other analyses suggest that quality of care and/or access to providers might be significantly reduced.

Finding IV-2: The statutory sustainable growth rate (SGR) formula that applies to physician services requires a very large near-term reduction in Medicare payment rates and future increases that, on average, will be below the increase in physicians' input prices. The Panel affirms the findings by the Medicare Board of Trustees in their 2010 and 2011 annual reports that the immediate, large reduction in physician payment rates is highly unlikely to be implemented. In addition, the Panel finds that there is substantial uncertainty regarding the feasibility of the ongoing downward adjustments in physician payment updates that would be required in subsequent years under the SGR mechanism.

Recommendation IV-3: In view of the uncertainty associated with the long-range feasibility of the productivity adjustments and the short- and long-range feasibility of the SGR performance adjustments under current law, the Panel recommends that the Medicare Board of Trustees continue to present alternative projections in which average Medicare spending per beneficiary rises faster than the current-law baseline.

Recommendation IV-4: The Panel further recommends inclusion of the alternative projections within the Medicare Trustees Report, in the form of a chart (and related text) that compares long-range Medicare expenditures as a percent of GDP under (i) current law; (ii) an alternative to current law in which physician payment rates are not as constrained as required by the SGR formula; and (iii) an alternative with both an SGR modification as above and assumed payment rate increases for other providers that are not as constrained as required by the productivity adjustments.

There was widespread agreement by the Panel that health care in the U.S. can be provided more efficiently. However, the long-term viability of the current-law Medicare payment update reductions and the payment formula specified for the Medicare physician fee schedule was the subject of considerable concern and discussion. The Panel has not attempted to reach a consensus on this issue and, in fact, concludes that it is not possible to determine an unequivocal,

"yes or no" answer to the long-range viability question.[62]   However, the Panel agrees that it is prudent to consider the potential financial consequences for the Medicare program should these existing payment provisions be repealed (or otherwise not implemented). Accordingly, the Panel has recommended continued use of an auxiliary projection based on an illustrative alternative to current law, including a new display within the Trustees Report that shows the impact of continuing legislative overrides to the SGR formula and the potential effects of changes to the productivity adjustments for other providers.

The Panel considered a number of long-term scenarios as part of an effort to better understand how the health sector might adapt to slower growth in Medicare revenues and what the consequences of this might be. In addition, a Panel subgroup investigated several topics that might indicate whether there were opportunities for affecting Medicare growth: the extent of waste and inefficiency in the provision of health care, the effectiveness of alternative delivery systems and payment mechanisms in reducing costs, and health care spending growth in countries with global budgeting systems. The results of the Panel and subgroup work are summarized in the next two sections.

Panel consideration of long-range scenarios

The Panel expressed reservations about the adequacy of Medicare payment rates in the long range if non-integrated, fee-for-service health care continues to be the primary form of care for beneficiaries. In particular, the Panel believed that it would be difficult, under the current-law Medicare payment system, for the amount and quality of medical services to increase at rates consistent with historical experience or those expected prior to the passage of the Affordable Care Act. On the other hand, the Panel noted the possibility that current-law Medicare revenues would at a minimum be adequate to cover today's level and quality of care, even in a fee-for-service world, and thus might provide an adequate level of revenues for the indefinite future.

The Panel thought that the development of more integrated systems of delivering health care, such as accountable care organizations, together with use of much broader bundles of services for payment purposes, could significantly improve providers' abilities to live within the means offered by Medicare payments under current law. Although the Panel agreed that these innovations could contribute to one-time reductions in the level of Medicare expenditures, whether they could permanently reduce the rate of growth of such spending was less clear and will depend on the details of future payment models that are currently under development.

These considerations led to the development of three long-range scenarios, designed to assess possible future implications on spending, productivity, access, and quality under alternative responses by providers to the slower growth in Medicare payments. The criteria used by the Panel to evaluate the scenarios can be summarized in two broad categories:

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[62] As noted in finding IV-2, the reduction in physician payment rates that will be required under the current SGR formula for 2013 is so extreme (roughly 30 percent) as to have only a negligible likelihood of actually occurring. Following the implementation of the first physician payment reduction required by the SGR provision in 2002 (4.8 percent), lawmakers have overridden every one of the subsequent payment reductions that were otherwise required in 2003 through 2012, and they are almost certain to act again to prevent the 2013 payment change.

- Provider viability—will hospitals, doctors, and other health care providers be able to cover their costs of providing services to Medicare beneficiaries in the long range, without undue reductions in margins that would threaten their financial viability? How would Medicare payment rates compare to those in the private sector, Medicaid, and elsewhere in the world?

- Beneficiary access to, and quality of, health care services—would Medicare beneficiaries continue to have access to primary and specialty health care services comparable to those available to people with private health insurance? Would the quality of services be similar to that in the rest of the health sector, including the availability of new medical technologies? Would a "bifurcated" system of health care develop, wherein Medicare beneficiaries would receive most care through a somewhat separate system of providers, with fewer amenities, possibly lower quality, and more restricted access to specialists (not unlike the circumstances that have developed for many Medicaid enrollees)?

Scenario 1: Fee-for-service, with continuation of historical trends

Under current law, growth in Medicare fee-for-service payment rates will lag behind the price increases that providers must pay for wages, employee benefits, medical supplies, facility costs (e.g., rent, energy, and utilities), and other inputs needed for the provision of health care services. The differential will increase by about 1.1 percent per year for most non-physician providers and accumulate to substantial amounts over the long range. By the end of the 75-year projection period, for example, Medicare payment rates for hospital services under current law would represent only 44 percent of what they would have been absent the productivity adjustments and other update reductions introduced by the Affordable Care Act. Similarly, under the SGR formula, current-law payments to physicians would be only one-fourth of the level they would be if based on increases in the Medicare Economic Index (MEI).

If providers can improve their "resource-based" productivity[63] by as much as the gains in economy-wide productivity, then their Medicare revenues per service would be sufficient to meet their net cost growth. However, available studies of resource-based health care

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[63] Resource-based multifactor productivity growth is defined as the increase in the number of constant-unit services (after adjusting for any change in the quality of the services provided) relative to the increase in inputs of all types used to produce these services. It is important to distinguish this concept from that of "outcomes-based" productivity, which includes the value of improved life expectancy, better health status, or other health-related factors in the measurement of output. With minor exceptions, Medicare payments for health care services are based on the level of resources used to provide a given service and not on the broader effect on health outcomes.

productivity suggest that, with the possible exception of physicians, most providers have not achieved this level of productivity.[64]

If historical trends for resource-based provider productivity continue, and if fee-for-service continues to be the dominant form of health care delivery and payment for Medicare, then Medicare payment rates would increase more slowly than providers' costs and after some point would likely fall progressively farther below the cost of providing services. Absent other steps to improve efficiency or to shift a portion of costs for Medicare patients to other payers, provider margins would decline. As estimated for the 2011 Trustees Report, for example, the total facility margins[65] for about 15 percent of hospitals, skilled nursing facilities, and home health agencies would become negative by 2019 as a result of the productivity adjustments. This percentage would increase to 25 percent in 2030 and to 40 percent in 2050.

Payment rates from private insurance plans to health providers are generally based on negotiations between the two parties. If providers accept increases that reflect growth in their input prices less their achievable productivity gains, and if private insurers are willing to pay such increases, then in this scenario Medicare payment rates would steadily decline relative to those in the commercial health sector, adding to the difference that already exists.[66,67]

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[64] The key studies of resource-based health provider productivity include the following:

Cylus, Jonathan D., and Dickensheets, Bridget A.: "Hospital Multifactor Productivity: A Presentation and Analysis of Two Methodologies." *Health Care Financing Review* 29(2): 49-64, Winter 2007-2008;

Fisher, Charles: "Multifactor Productivity in Physicians' Offices: An Exploratory Analysis." *Health Care Financing Review* 29(2): 15-32, Winter 2007-2008;

Newhouse, Joseph P., and Sinaiko, Anna D.: "Productivity in the Medicare Physician Fee Schedule Update." *Health Care Financing Review* 29(2): 5-14, Winter 2007-2008;

Newhouse, Joseph P., and Sinaiko, Anna D.: "Estimates of Physician Productivity: An Evaluation." *Health Care Financing Review* 29(2): 33-39, Winter 2007-2008;

Newhouse, Joseph P., and Sinaiko, Anna D.: "A Different Application for Productivity Measures, or Has the Difficulty of Measuring Physician Productivity Caused the Federal Deficit to Be Misestimated?" *Survey of Current Business* 87(6): 72-77, 2007; and

Harper, Michael J., Khandrika, Bhavani, Kinoshita, Randal, and Rosenthal, Steven: "Nonmanufacturing Industry Contributions to Multifactor Productivity, 1987-2006." *Monthly Labor Review*: 16-31, June 2010.

[65] Total facility margins are the excess of provider revenues from all sources (Medicare and non-Medicare) over total costs, relative to total revenues.

[66] In 2009, Medicare payment rates for inpatient hospital services were about 67 percent of those paid by private health insurance (American Hospital Association, *TrendWatch Chartbook 2011*). Similarly, Medicare rates for physicians were about 80 percent of private insurance levels (Medicare Payment Advisory Commission, *Report to Congress: Medicare Payment Policy*, March 2011).

[67] In practice, private insurers will also be under intense pressure to slow cost growth, and their efforts to do so may extend to limiting payment rate updates to levels below input price growth less provider productivity growth. If insurers are successful in this effort, then the gap between Medicare and private payment rates would grow more slowly—in fact, not at all if private payers could achieve the same lower price increases mandated for Medicare. On the other hand, if providers have a stronger negotiating position and can shift increasing amounts of Medicare costs to private payers through higher prices (without reducing the number of insured), then the gap could increase more rapidly. The payment rate illustrations shown here simply assume that increases in providers' input prices, less estimated achievable provider productivity gains, will be the basis for negotiated payment rate updates. Neither party is assumed to achieve a stronger negotiating position over time.

Historically, Medicare and private health insurance premiums have generally increased faster than household income, reflecting payment rate increases in excess of general inflation and growth in the volume and intensity of services per person. Under scenario 1, private insurers would continue to reflect the higher reimbursement rates in higher premiums, which would continue to grow steadily as a share of household income. Other things being equal, such a dynamic would lead to reduced numbers of privately insured individuals. In practice, however, the insurance coverage requirements in the Affordable Care Act would tend to limit this effect on the number insured.

Uncertainty

Figures IV.1 and IV.2 below illustrate the past and projected levels of Medicare payment rates for inpatient hospital care and physician services, respectively, relative to private health insurance, based on the assumption that private insurance plans continue to negotiate payment rates following the historical practice noted above. (The assumptions underlying the private-payer and Medicare rates are described in more detail in the notes to these tables.)
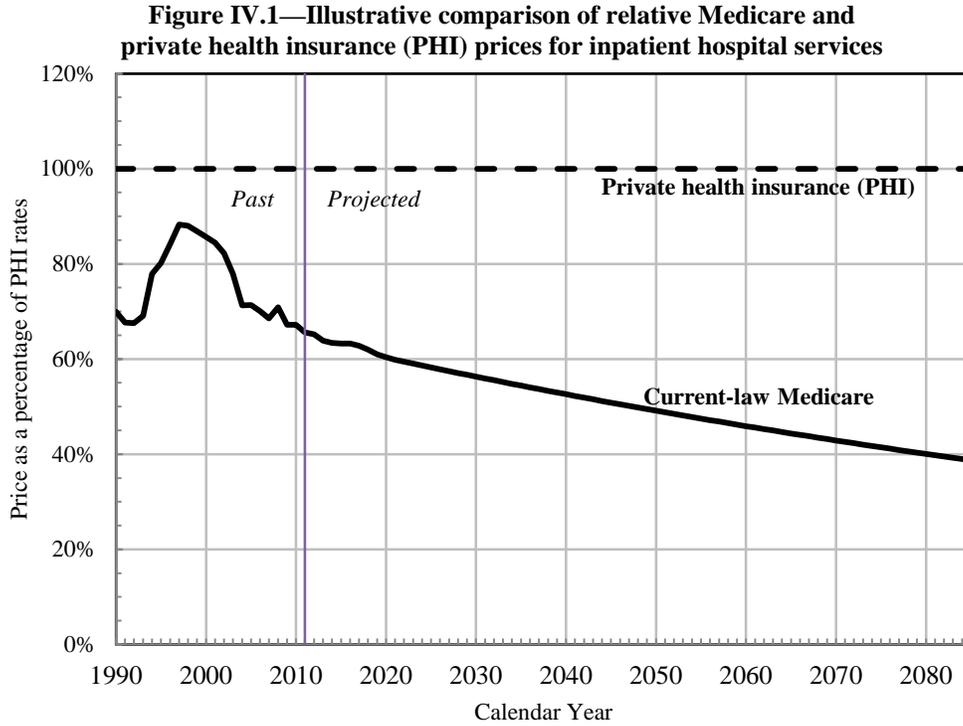
Figure IV.1—Illustrative comparison of relative Medicare and private health insurance (PHI) prices for inpatient hospital services

**Figure IV.2—llustrative comparison of relative Medicare and
private health insurance (PHI) prices for physician services**
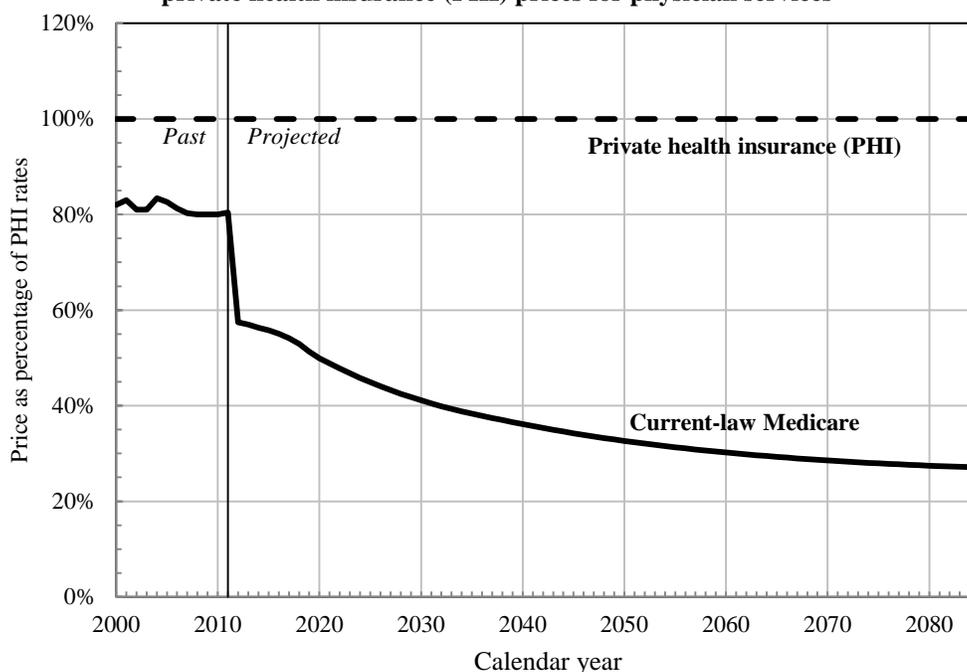
Note: The illustrative private health insurance payment rates for inpatient hospital and physician services assume that insurers will negotiate price updates equal to the providers' increase in input prices less the full amount of achievable productivity. In the long range, this assumption is consistent with constant margins (other things being equal), maintenance of the same level of provider wages relative to other professions, and provider ability to pay full price growth for other inputs (medical supplies, facility costs, insurance, etc.). Achievable hospital productivity is assumed to be 0.4 percent per year based on Cylus and Dickensheets (2007-2008), and achievable physician productivity is assumed to equal the economy-wide gain of 1.1 percent based on Fisher (2007-2008).

Projected Medicare hospital payment rates are based on current law—i.e., the increase in the market basket (MB) input price index less economy-wide productivity growth. Since the Medicare prices are shown relative to private, the key implicit assumption is the 0.7-percent differential between "MB−0.4%" for PHI and "MB−1.1%" for Medicare. The Medicare physician price projection is based on the SGR formula, including the estimated 28-percent reduction for 2012 (which has since been temporarily overridden by legislation; the projection under the new law would be very similar).

Under this scenario, as illustrated in these figures, Medicare payment rates for inpatient hospital services would decline steadily in comparison to private health insurance rates (again, assuming that the private health insurance plans continue historical contracting practices). Following the large near-term reduction in Medicare payment rates for physician services, Medicare rates would be less than 60 percent of private health insurance levels (which is similar to current Medicaid levels). Based on the assumptions underlying scenario 1, Medicare payment rates for physician services would also decline steadily thereafter relative to private insurance rates, due to the application of the SGR formula.

As discussed later, published studies have suggested that there is a significant amount of waste and inefficiency in the U.S. health care system. Some of these studies estimate that health care costs could be lowered by as much as 30 percent from current levels without harming the quality of care (and possibly improving it in the process). An analysis conducted for the Panel by the Office of the Actuary (OACT) estimated that hospital costs could be lowered by 5 to 10 percent by eliminating avoidable hospital days. In addition, during negotiations for the health reform legislation leading up to the Affordable Care Act, the hospital industry was willing to accept lower Medicare payments totaling $155 billion during 2010-2019 in exchange for an increase in the proportion of patients with health insurance.[68] In practice, in a fee-for-service scenario, not all of the existing inefficiency could be eliminated; reducing unnecessary services would also reduce provider revenues. Collectively, these factors suggest that aggressive efforts to improve efficiency could enable providers to offset the impact of the Medicare productivity adjustments for some period of time, perhaps 10 to 25 years. Because such improvements would affect the level of costs, however, rather than steady-state cost growth rates, providers would have to seek other ways of lowering cost growth to match the continuing lower increases in Medicare revenues in the long range.

Under such circumstances, the Panel thought that there was a reasonable likelihood that a number of providers could become unwilling or unable to continue treating Medicare patients and that beneficiaries' access to care could be notably reduced. Alternatively, partial "bifurcation" of the delivery system between Medicare and commercial payers could also be expected, not unlike current trends for the Medicaid program. The partially separate delivery system for Medicare would likely involve fewer amenities but could also involve lower quality of care (relative to quality in the private sector) and greater difficulty in access. Under these circumstances, lawmakers could find it necessary to revise Medicare payment rates to ensure continued access to care of the same quality available to other people in the U.S., much as they have acted to address Medicare physician payment rates under the SGR system in 2003-2012. If they were to do so, Medicare expenditures would exceed the amounts projected under current law, possibly by substantial amounts. Under the "illustrative alternative" projections prepared by OACT for the Medicare Board of Trustees, for example, Medicare expenditures in 2085 are about 70 percent greater than those projected under current law.

Scenario 2: Fee-for-service, with conversion of quality gains to efficiency gains

The first scenario relies heavily on traditional measures of resource-based health productivity, which indicate that health providers have generally not been able to achieve significant gains. These results are consistent with the labor-intensive nature of health care—which also frequently involves treatments customized to the individual patient—and with human services productivity in general, such as education.

On the other hand, the quality of health care has improved in many dimensions over time. To the extent that these gains have occurred *within* a payment unit (e.g., an inpatient hospital DRG), one could envision a scenario in which, without these quality gains, the cost of providing that unit of

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[68] See, for example, "HCA, Hospitals Agree to $155 Billion Health-Care Deal (Update3)," Bloomberg News, July 8, 2009. Internet address: http://www.bloomberg.com/apps/news?pid=newsarchive&sid=acmk0SbcgSzQ.

service could have been lower.[69] In practice, there is relatively little evidence for the degree to which quality may have increased within DRGs and other payment units. Certain studies indicate that quality of outcomes has improved in the treatment of specified disease categories.[70] Analyses of reductions in in-hospital mortality may also indicate improved quality of outcomes. These indicators are not conclusive, but it is reasonable to think that some improvements have occurred over time within treatment units.

Improvement in quality within service payment units could be achieved in more than one way. Some process improvements, such as surgical checklists or providing aspirin to patients with symptoms of heart attack, can be introduced with minimal impact on the resources required to provide the service. In other instances, quality improvement could result from additional human capital and/or technological resource use, such as continuous blood-oxygen monitors and electronic pharmacy order systems. Other techniques, such as lean production methods, could increase resource-based productivity, thereby freeing up staff and other resources and allowing them to be used for improving the quality of care.

If quality of care within payment units has been increasing significantly, it could indicate that actual resource-based productivity gains have been greater than traditionally measured. With improved productivity, providers would typically have two choices for how they manage the

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[69] Resource-based productivity studies define the product unit as the bundle of services for which payment is made—e.g., an inpatient hospital DRG or a physician fee schedule procedure code. Productivity is measured as the increase in real (medical-inflation and product-quality adjusted) output relative to the increase in real resource inputs. Improvements in health care quality that occur through more frequent utilization of services and more intensive treatment units are included in output. However, if actual improvement in the quality of the product unit is greater than measured, then the resource-based productivity estimate will be understated.

The Bureau of Labor Statistics' Producer Price Index compares transaction prices between two measurement periods based on (i) payer category (i.e., Medicare, Medicaid, private health insurance, or individual out-of-pocket expenditure), (ii) service category (e.g., a specific hospital DRG), and (iii) resource use (e.g., similar quantities of inputs such as operating room time, nursing staff time, etc.). This process achieves consistency in the definition of a service from one period to the next; it does not reflect any changes in the quality of health outcomes associated with the service, such as lower mortality or greater incidence of hospital-acquired infections.

Outcomes-based measures of productivity are designed to include such factors as the value of better health and extended longevity in output. As Newhouse has noted, evaluation of the adequacy of payment rates must use resource-based productivity, since (to date) payments for health services are based largely on input resources and costs and not on improvement in health outcomes. Newhouse, Joseph P., and Sinaiko, Anna D.: "Productivity in the Medicare Physician Fee Schedule Update." *Health Care Financing Review* 29(2): 5-14, Winter 2007-2008.

[70] See, for example, the following:

Cutler, David M., McClellan, Mark B., Newhouse, Joseph P., and Remler, D.: "Are Medical Prices Declining? Evidence from Heart Attack Treatments." *The Quarterly Journal of Economics* 113(4): 991-1024, 1998;

Berndt, E.R., Bir, A., Busch, S.H., Frank, R.G., and Normand, S.T.: "The Medical Treatment of Depression, 1991-1996: Productive Inefficiency, Expected Outcome Variations, and Price Indexes." *Journal of Health Economics* 21: 373-396, 2002; and

Eggleston, K., Shah, N.D., Smith, S.A., Wagie, A.E., Williams, A.R., Grossman, J.H., Berndt, E.R., Long, K.H., Bannerjee, R., and Newhouse, Joseph P.: "The Net Value of Health Care for Patients With Type 2 Diabetes, 1997-2005." *Annals of Internal Medicine* 151(6): 386-93, September 15, 2009.

input-price-based Medicare payment updates.[71]   First, they could use fewer resources, less-skilled resources, or older technology to provide a service and still achieve the same outcome quality, thereby forgoing within-DRG quality gains. This practice would lead to an increased Medicare margin for each unit of service. (However, to the extent that the provider market is competitive, it would be difficult for such providers to attract patients, because the perceived quality of their care would be lower than demanded or than that available from other providers. At the same time, if there is a great demand for access, nearly all providers would tend to have full patient loads, and lower-quality, lower-cost providers might still be in demand.) Second, providers could choose to apply the productivity gain to improving quality within DRGs or other service units. In other words, the existing resources that were freed as a result of the improved efficiency could be used to improve the quality of care and health outcomes. In this case, the margin for each unit of service may not increase, but the providers would be better able to attract patients to their facilities. The Panel felt that, over the historical period, providers would have been more likely to pursue this latter strategy, competing for patients by using the full amount of their revenue stream in order to provide the highest quality of care.

The Panel considered a future scenario in which the current fee-for-service payment system could remain in place over the long run, with providers focusing on reducing production costs rather than improving output quality. Applying resource-based productivity gains and other efficiency improvements to reduce costs (i.e., by using fewer resources and/or less-skilled personnel), and using current instead of new technology, would reduce the cost of providing a bundle of services without reducing the existing quality of care. Depending on the level of within-DRG productivity and quality gains, this approach might be able to accommodate some or all of the reduction in Medicare revenue growth resulting from the productivity adjustments introduced by the Affordable Care Act. If product-quality-constant, within-DRG productivity increases at the same rate as in the economy at large, then the full effect of the update adjustments could be offset by reducing inputs while still maintaining a constant level of quality of care. Conversely, if health quality gains within payment units are negligible or small, or are achieved by means other than productivity improvements, then quality would have to be reduced to accommodate the reduction in Medicare revenue growth.

Under this scenario, the lower Medicare payment updates would be an incentive for providers to practice care differently than they have historically. The Panel concluded that, based on this scenario, the minimum needs of beneficiaries could be met under the current-law productivity adjustments (assuming significant historical productivity-driven quality gains within DRGs), but the rate of quality improvement experienced in the past would likely be substantially curtailed in the future.

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[71] In the past, the normal basis for updating Medicare provider payment rates was the increase in the prices that providers must pay for their "market basket" of inputs required to provide services. These inputs include employee wages and fringe benefits, medical supplies, facility lease or purchase, insurance, utilities, etc. With one exception, prior to the Affordable Care Act there was no adjustment of the payment rate updates for any improvement in provider productivity. (However, lawmakers often enacted reductions in the market basket payment increases to reduce program expenditures or to offset unwarranted spending increases caused by provider behavior or ancillary consequences of changes in bundled payment categories, such as the recent conversion to MS-DRGs for inpatient hospital services.) Physician payment updates are an important exception to this general practice for Medicare: since its inception in 1973, the Medicare Economic Index used to update these payments has been adjusted for estimated achievable physician productivity.

Under scenario 2, the concerns about relative Medicare payment levels and access to care discussed in scenario 1 would not be as significant. If the assumptions underlying this scenario are accurate, then providers could perform services comparable to today's quality and availability (and possibly better) indefinitely into the future, despite the slower growth in Medicare revenues under current law. Moreover, if providers changed how they practice care such that the reduced inputs applied to treatment for Medicare and private patients alike, then private payers would follow and be able to negotiate price updates similar to those for Medicare.[72] Thus, all care could be provided at a lower price, and the quality of care would be roughly comparable across the entire health sector. Under these circumstances, potential disparities in the quality of care between Medicare and other patients would be minimized, and bifurcation of the health system would be much less likely.

However, a significant implication of scenario 2 is that the quality of care for payment units would no longer improve or would improve much more slowly than in the past. Specifically, scenario 2 assumes that a substantial portion of the gains in the quality of care historically have been achieved within the payment unit, by using more resources (tests, scans, etc.), more skilled resources (doctors and nurses), and/or new technologies. In the future, as providers became more motivated to use fewer resources, further quality gains would be much more limited. The Panel felt that this clearly was not a desirable outcome from a beneficiary perspective, relative to having greater quality improvement. However, this is an outcome that could be envisioned in an era in which payment levels are limited by all payers and providers must react to slower growth in revenues. If quality improvements were instead reduced for Medicare beneficiaries only, in response to Medicare-only payment rate constraints, then the diverging quality of care between Medicare and non-Medicare patients could quickly become untenable.

Scenario 3: Development of integrated care and broader payment bundles

The Panel believes that the health sector is likely to experience many important changes over the coming decades. While the nature and scope of these changes cannot be reliably predicted, it is reasonable to expect that innovative ways to better integrate care, improve quality, and reduce costs are likely to be developed and implemented over time. Mounting cost pressures will be a driving force for such developments, as health care costs continue to increase faster than the GDP or workers' earnings.

Moreover, the Affordable Care Act authorizes a major program of research, development, and testing for innovations in delivery systems and payment methods for Medicare, with the ability to implement changes nationally without further legislation, so long as those innovations either reduce expenditures without lowering quality or improve quality without increasing expenditures. The development of such changes within Medicare would likely "spill over" to the treatment of non-Medicare patients as well, especially as other provisions of the ACA provide private insurers with additional incentives to promote less-costly care.

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[72] An alternative hypothesis, leading to the same result, is that private insurers might be able to negotiate provider payment updates similar to those mandated for Medicare. In that instance, providers would find it necessary to furnish levels of care for patients with private insurance similar to the levels provided for Medicare beneficiaries.

Providers are increasingly recognizing that they will not be able to routinely raise prices to match their cost increases and, instead, will have to organize the delivery of care to live within overall revenue and budget constraints. An important aspect of this realization is the need to better integrate care through improved coordination of a patient's treatments among different physicians and other providers, with obvious opportunities to bolster efficiency and improve care, such as by reducing duplicative tests or adverse drug interactions. Improved patient communications and education can also lead to better quality and cost-effectiveness of care, as can the use of electronic health records and treatment-protocol advisory systems.

In addition, broader bundling of payments, up to and including full capitation, can improve the ability of a provider group to maximize efficiency—although if risk adjustment is not adequate, providers would have an incentive to select healthy patients and discriminate against those who are high-risk. As noted in scenario 1, if fee-for-service providers can minimize unnecessary services, they reduce not only health care costs but also their revenues from Medicare or elsewhere. Financially, they may not be better off. With more broadly bundled payments, however, the elimination of unnecessary services reduces providers' costs without necessarily affecting their revenue stream. The effect of bundling on revenues depends on the specific payment mechanism used; to the extent that the Medicare revenue stream still grows as in scenario 1, the efficiency gains accrue to the provider group, enabling it to better manage within an overall budget constraint.

Implementation of such innovations through Medicare must overcome an important statutory hurdle: the changes cannot increase Medicare spending relative to current-law projections, taking account of the physician payment reductions and the reductions in payment updates for most other providers based on gains in economy-wide productivity. In other words, integrated health care systems would have to hold spending growth to the same level mandated for fee-for-service providers, as described in scenario 1. This demanding requirement could substantially limit the widespread adoption of important health service delivery innovations that could lower expenditure trends from historical levels but not by as much as required to meet the budget constraint.

Under current law, the SGR formula, together with the productivity adjustments and other savings provisions in the Affordable Care Act, will significantly slow growth in Medicare expenditures per beneficiary from 2010 to 2020. As shown in table IV.1 below, the average annual increase in real, age-adjusted Medicare expenditures per beneficiary during this period is estimated to be 1.3 percent, which is equal to the projected increase in per capita GDP minus 0.8 percentage point. For comparison, this growth rate is roughly two-fifths of the real per beneficiary increase of 3.2 percent that was experienced over the last 20 years and that equaled the increase in per capita GDP plus 1.6 percent. Aggregate Medicare spending would still increase as a percentage of the GDP, reflecting rapid growth in enrollment as the post-World War II baby boom generation reaches age 65 and qualifies for benefits.

If the physician payment reductions under the SGR continue to be overridden, then real Medicare expenditures per beneficiary would increase at the estimated rate of per capita GDP in 2011-2020, as indicated by the projection in table IV.1 under an illustrative alternative to current law. This growth rate would still represent a much lower level than traditionally experienced by Medicare. If the SGR provision is overridden and the productivity adjustments are phased out,

as assumed in the illustrative alternative to current law, then growth rates after 2020 would be about 0.7 percent per year faster than under current law.

**Table IV.1—Past and projected average annual increases
in Medicare expenditures per beneficiary and GDP per capita,
and Medicare as a percentage of GDP**

Period	Total Medicare spending	Medicare spending due to increased enrollment & aging	Age-adjusted Medicare spending per beneficiary	Per capita GDP	"Excess" increase in Medicare spending*	Medicare share of GDP at end of period
Historical						
1991-2001	5.2%	1.7%	3.4%	2.4%	1.0%	2.4%
2001-2011	4.9	2.0	2.9†	0.8	2.1	3.7
1991-2011	5.1	1.8	3.2†	1.6	1.6	3.7
Projected, under current law ‡						
2010-2020	4.1	2.7	1.3	2.1	−0.8	4.0
2020-2035	4.4	2.3	2.1	1.5	0.6	5.6
2035-2085	2.4	0.7	1.7	1.7	0.0	6.2
Projected, under illustrative alternative to current law §						
2010-2020	4.9	2.7	2.1	2.1	0.0	4.3
2020-2035	5.1	2.3	2.7	1.5	1.2	6.6
2035-2085	3.1	0.7	2.4	1.7	0.7	10.7

* Real increase in age-adjusted Medicare expenditures per beneficiary less real increase in per capita GDP. Equivalently, the "X" in "GDP+X."
† Medicare growth rate is adjusted to remove the one-time effect on the average annual growth rate from adding Part D prescription drug benefits in 2006.
‡ As projected in the 2011 Medicare Trustees Report.
§ As projected in 2011 by OACT on behalf of the Medicare Board of Trustees. Assumes that physician payment updates are based on the MEI in all years and that the productivity adjustments to payment updates for other providers are gradually phased out during 2020-2034.

During 2020-2035 under current law, the per beneficiary Medicare growth rate is estimated to be equivalent to per capita GDP plus 0.6 percentage point.[73] Over the last 50 years of the long-range projection, average growth in Medicare spending per beneficiary would equal the increase in per capita GDP plus 0 percent. While these growth rates are significantly slower than either the historical experience or the expectation before the Affordable Care Act, there would still be a positive average growth trend, comparable to real per capita GDP growth—or faster— after 2020. Accordingly, the Medicare revenues available to integrated provider groups or other entities using alternative delivery mechanisms and/or payment models would still increase, despite the requirement that Medicare expenditures under a proposed innovation be no greater than current law.

The Panel considered a scenario in which integrated health providers could manage within this Medicare budget constraint by (i) paying full price increases for the inputs needed to provide services (e.g., wages and salaries, medical supplies, facility costs, energy, and insurance), and (ii) offsetting these higher cost growth rates by slowing growth in the volume and intensity of Medicare services provided to beneficiaries. In effect, this approach would allow the provider

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[73] While the productivity adjustments in the Affordable Care Act affect Medicare growth rates in all future years, many of the other ACA provisions have one-time or temporary effects on growth rates. For example, the reductions in Medicare Advantage payment benchmarks and rebate percentages phase in during 2011-2017, and the reduction in disproportionate share hospital (DSH) payments occurs in 2015.

price updates to exceed the current-law Medicare updates without overall costs increasing by more than the fee-for-service budget constraint. The statutory prohibition on higher spending would be met, thereby allowing the innovation in health service delivery and payment to be adopted without further legislation. In particular, if volume and intensity growth could be reduced by roughly 0.7 percentage point annually (it would still be positive), without harming the quality of care, then the provider group could adequately cover its net input price increases and thereby ensure the viability of its financial operations if it received global payments equal to the spending trajectory under current law.[74]

The changes in the scope and quality of care could be significant, however. The volume and intensity of Medicare services per beneficiary have increased by about 3.4 percent annually over the last 20 years and 2.7 percent over the last 5 years. Based on the Panel's recommendations for long-range expenditure growth assumptions, this growth rate is projected under current law to gradually decline over the long-range projection period, from 2.0 percent in 2035 to 1.0 percent in 2085. To compensate for covering the full net input costs for wages and other expenses in scenario 3, integrated provider groups would have to reduce the corresponding rates of volume and intensity growth for Medicare services by about 0.7 percentage point (to 1.3 percent in 2035, with steady further declines to 0.3 percent in 2085). The average annual increase under scenario 3 would be roughly half that of the existing current-law assumption, and the reduction would have to begin in the relatively near future. This impact would represent a substantial deceleration in growth for the volume and intensity of services provided to beneficiaries. The quality of care, access to care, and availability of new medical technologies would still improve relative to the 2010 levels, but the rate of improvement would have to be substantially slower than past trends. If, however, the new incentives changed the nature of technological progress or improved efficiency gains, then quality might continue to improve more rapidly than the increase in volume and intensity would imply—but evidence of such effects is scant at this time. If changes in technological progress and efficiency gains were not significant, and if similar restrictions on volume and intensity were not implemented for privately insured individuals, then differences in quality and access would increase steadily and could lead to legislative intervention.[75]

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[74] The reduction of 0.7 percentage point was derived as the difference between the statutory Medicare productivity adjustment (which equals economy-wide productivity growth of about 1.1 percent) and an estimate of achievable overall health productivity growth (0.4 percent). The latter estimate is based on sector assumptions of 0.4 percent for hospitals, 1.1 percent for physicians, and 0 percent for other provider categories, weighted by the respective expenditure shares for each sector.

[75] Non-Medicare payers will also face increasingly difficult cost pressures and will continue to seek ways to control expenditure growth. The Panel considers that slowing of the rate of spending growth (and associated volume and intensity growth) in the private sector is likely, and this expectation is reflected in the recommended long-range expenditure growth assumptions, with the NHE volume and intensity growth rate slowing from 2.0 percent to 1.0 percent in the long range. It is possible that integrated provider groups could succeed in further slowing private volume and intensity growth to the same level implied for Medicare under scenario 3 (i.e., the additional 0.7-percent reduction). To the extent that these efforts would be similar in scope and timing to the savings imposed by the Medicare productivity adjustments and physician payment reductions, then the impact on quality and access might be similar for all Medicare and private health insurance enrollees. If, instead, the commercial-payer efforts were to occur more gradually, then quality and access to care for Medicare beneficiaries would be affected sooner and more substantially than for those with private insurance.

Figure IV.3 illustrates the cumulative increase in the volume and intensity of services for Medicare beneficiaries under three projections. If past growth trends continued throughout the long-range future, then by 2085 the scope of services would be more than 200 percent greater than the level in 2035—a situation that the current and past Technical Review Panels have concluded would not be economically feasible. Based on the Panel's recommended long-range expenditure growth factors, Medicare volume and intensity in 2085 would be about 110 percent higher. However, with growth in volume and intensity further reduced by about 0.7 percentage point per year—as implied under scenario 3 in order to stay within the current-law spending constraints while paying for net input price increases—then the cumulative increase in 2085 would be about 50 percent.

Figure IV.3—Comparison of cumulative increase in Part A
volume and intensity under alternative growth trends
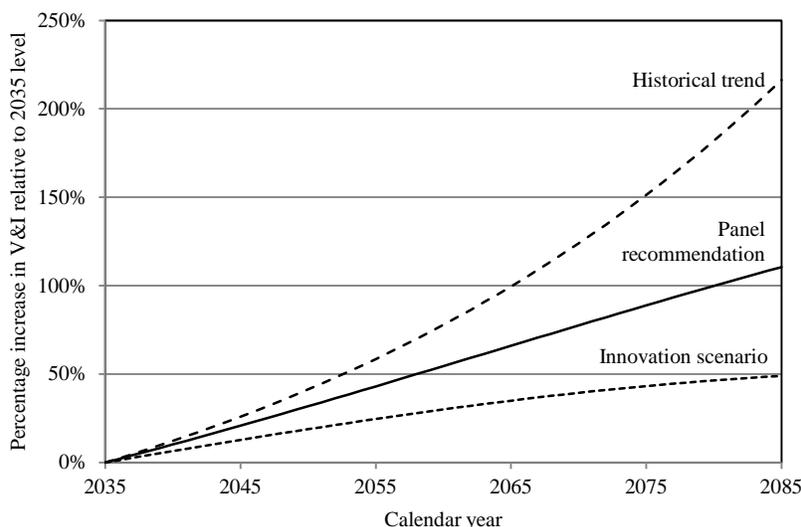
Summary of discussion of three long-range scenarios

As should be apparent from the three scenarios described above, the possible range of provider and payer reactions to the Medicare productivity adjustments and physician payment reductions is both very broad and highly uncertain. Plausible scenarios exist wherein the slower payment growth would either (i) cause substantial reductions in the quality and/or availability of care for Medicare beneficiaries relative to expectations prior to the enactment of the Affordable Care Act or (ii) be offset through efficiency gains introduced by innovative new approaches to the delivery of and/or payment for health care services. Which of these outcomes is more plausible cannot be determined at this time, and there is little consensus among the Panel members (or anyone else) as to the likelihood of one versus the other.

It must be noted that scenarios 2 and 3, in which the trajectory of Medicare expenditures is deemed adequate, both involve substantial reductions in the rate of improvement in quality and/or scope of services for Medicare beneficiaries, relative to levels expected prior to the ACA. (However, quality and scope would not be lower than current levels.) From a financial standpoint for providers, these scenarios would be viable indefinitely. But from the viewpoint of access to and quality of care for beneficiaries, the implied slowdown in improved volume and

intensity may not be acceptable—particularly if other persons in the U.S. received higher-quality or more voluminous care or if technology available in other countries was not available to beneficiaries. Ultimately the acceptability would likely depend on the ability of the health care system to provide quality improvements without the rate of volume and intensity growth that has been experienced historically. To maintain the existing volume and intensity growth with no sacrifice in the rate of quality improvement, increased funding, either from public or private payers, would be needed.

In view of the substantial uncertainty and the difficult questions raised, the Panel recommends that the Board of Trustees continue to use auxiliary projections, based on illustrative alternatives to current law, to show the possible magnitude of Medicare expenditures in the event that the productivity adjustments and physician-payment reductions are not fully implemented. These alternative projections should be shown within the Medicare Trustees Report, in the form of a chart comparing long-range Medicare expenditures as a percent of GDP under (i) current law; (ii) an alternative to current law in which physician payment rates are not as constrained as required by the SGR formula; and (iii) an alternative with both an SGR modification as above and assumed payment rate increases for other providers that are not as constrained as required by the productivity adjustments. The Panel is hopeful that the development of innovations in the delivery of and payment for health care in the U.S. will, in fact, help reduce spending growth to levels that are more manageable and sustainable in the long range while simultaneously improving the quality of care. But the members recognize the challenges involved in accomplishing this goal and are aware of the limited success with such efforts to date.[76]

Subgroup consideration of opportunities for affecting Medicare growth

A Panel subgroup considered several topics that might indicate whether there were opportunities for affecting Medicare growth: the extent of waste and inefficiency in the provision of health care, the effectiveness of alternative delivery systems and payment mechanisms in reducing costs, and health care spending growth in countries with global budgeting systems. Research on these topics, which the subgroup asked OACT to conduct or provide, is summarized below.

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[76] See, for example, Congressional Budget Office: "Lessons from Medicare's Demonstration Projects on Disease Management, Care Coordination, and Value-Based Payment," January 2012. Internet address: http://www.cbo.gov/sites/default/files/cbofiles/attachments/01-18-12-MedicareDemoBrief.pdf.

Waste and inefficiency

Estimates of waste and inefficiency in the U.S. health system are typically significant (some are as high as 30 percent), though the range is wide.[77] The subgroup was primarily interested in obtaining an estimate based on recent studies and data in order to assess what proportion of the Medicare payment update reductions over the long run could be accommodated through elimination of such inefficiencies. In particular, it was interested in the magnitude of savings associated with certain existing or proposed efficiency improvements and in an estimate of the proportion of inpatient hospital costs that could be attributed to avoidable hospital days.

The subgroup identified several medical procedures and interventions that could improve efficiency, as shown in table IV.2. OACT conducted a quick literature review for these improvements and provided estimates of achieved or possible savings, where available.

Table IV.2—Estimated savings from selected health system efficiency improvements

Efficiency improvement	Estimated savings (where available)
Eliminating central line catheter infections	$3 billion (one time)*
Using surgical checklists	$0.7 billion (one time)†
Minimizing number of orthopedic devices and increasing discounts	n/a
Increasing use of competitive bidding	$28 billion over 10 years‡
Triaging incoming patients from ERs to urgent care clinics	n/a
Increasing scope of practice for mid-level practitioners working with MDs and ODs	n/a
Using more retail and onsite clinics	n/a
Improving care transitions when patient leaves hospital	n/a

  * Waters, *et al.*, "The Business Case for Quality: Economic Analysis of the Michigan Keystone Patient Safety Program in ICU," *American Journal of Medical Quality*, September/October 2011.

  † OACT estimate of 27 million surgeries in 2009 (tables 3.1 and 3.4 in American Hospital Association chartbook: http://www.aha.org/research/reports/tw/chartbook/ch3.shtml applied to savings of $25 per non-cardiac surgery from Semel, *et al.*, "Adopting a Surgical Safety Checklist Could Save Money and Improve the Quality of Care in U.S. Hospitals," *Health Affairs*, September 2010.

  ‡ CMS estimated savings from the durable medical equipment (DME) competitive bidding program (https://www.cms.gov/apps/media/press/release.asp?Counter=4064&intNumPerPage=10&checkDate=&checkKey=&srchTy pe=1&numDays=3500&srchOpt=0&srchData=&keywordType=All&chkNewsType=1%2C+2%2C+3%2C+4%2C+5&intPag e=&showAll=&pYear=&year=&desc=&cboOrder=date).

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[77] See, for example, the following:

Fisher, E.S., Wennberg, D.E., Stukel, T.A., Gottlieb, D.J., Lucas, F.L., and Pinder, E.L.: "The Implications of Regional Variations in Medicare Spending. Part 1: The Content, Quality, and Accessibility of Care." *Annals of Internal Medicine* 138(4): 273-287, 2003a;

Fisher, E.S., Wennberg, D.E., Stukel, T.A., Gottlieb, D.J., Lucas, F.L., and Pinder, E.L.: "The Implications of Regional Variations in Medicare Spending. Part 2: Health Outcomes and Satisfaction with Care." *Annals of Internal Medicine* 138(4): 288-298, 2003b;

Bently, T., Effros, R., Palar, K., and Keeler, E.: "Waste in the U.S. Health Care System: A Conceptual Framework." *The Milbank Quarterly* 86(4): 629-659, 2008;

Garber, A., and Skinner, J.: "Is American Health Care Uniquely Inefficient?" *The Journal of Economic Perspectives* 22(4): 51-67, Fall 2008; and

Rauh, S., Wadsworth, E., Weeks, W., and Weinstein, J.: "The Savings Illusion—Why Clinical Quality Improvement Fails to Deliver Bottom-Line Results." *The New England Journal of Medicine*: December 29, 2011.

The subgroup thought that these types of improvements, including those mentioned above as well as others, should be analyzed through a comprehensive meta-analysis. However, the members acknowledged that such an analysis would take more time and resources than were available during the Panel's deliberations.

The subgroup suggested that OACT use data from the Milliman *Hospital Efficiency Index* to identify possible savings that could be achieved by eliminating avoidable hospital days.[78] The *Hospital Efficiency Index* compares "…any set of given inpatient hospital experience to the equivalent case-mix/severity adjusted most efficient practice found anywhere in the U.S." By identifying the number of hospital days associated with the most efficient practices, Milliman estimated the number of avoidable days for each and every hospital within and across all Medicare DRGs.

The hospitals that were in the bottom quintile of performance (i.e., had the greatest number of avoidable days) generally had the following characteristics:

- Smaller, rural, non-teaching, and/or government.

- Lower total facility and non-Medicare margins; highest Medicare margins.

- Lower percentage of total days and total revenue accounted for by Medicare.

- Lower average Medicare outlier payments and outlier proportion of total Medicare payments.

- Slightly higher case mix.

- Higher number of full-time-equivalent staff per discharge.

- Lower occupancy rate.

OACT conducted a series of simulations for the Panel in an attempt to identify the impact on costs for eliminating an "achievable" number of avoidable days.[79] Based on the assumptions used in the simulations, the Panel concluded that it might be reasonable to expect that hospital costs, relative to current practice patterns and payment systems, could be reduced by 5 to 10 percent by eliminating an "achievable" number of avoidable hospital days.

Finally, the subgroup wanted to explore the historical experience of Maryland's all-payer hospital system to determine whether inefficiencies could be removed through the rate-setting process. Since 1977, the Health Services Cost Review Commission has had full rate-setting

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[78] http://www.hospitalefficiencybenchmarks.com.

[79] All of the simulations started from quintiles of hospitals determined by the percentage of avoidable Medicare days, stratified by size and urban/rural status. It was assumed that the performance of the top five hospitals would remain unchanged. For all other hospitals, a linear improvement ratio was developed based on hospitals in the best quintile beginning to perform as did the top five hospitals and the average of hospitals in the worst quintile beginning to perform as did the average of hospitals in the second best quintile. Lastly, it was assumed that the marginal cost of an avoidable day was between 40 and 80 percent of the average cost per day.

authority for all payers and all general acute care hospitals in Maryland. Using this authority, the Commission had the goal of reducing the average cost per case for an equivalent hospital admission in Maryland, which in 1976 was 26 percent above the national average.[80] The Commission accomplished this goal by providing lower payment updates to high-cost, inefficient hospitals within a peer group. As a result, all of the eight hospitals that were more than 25 percent above the statewide average in 1977 exhibited lower cost increases or were out of business by 1993. By 1992, the average cost per case in Maryland was 13 percent below the national average. Since 1992, however, the annual rate of cost growth for Maryland hospitals has exceeded that of the national average by roughly 1 percentage point, suggesting that the underlying cost drivers are similar in a state trying to control cost growth through payment updates to those in the rest of the U.S. By 2007, the average cost per case in Maryland was 2 percent below the national average.

Alternative delivery systems and payment mechanisms

The subgroup was also interested in understanding whether the move towards bundled payments and accountable care organizations (ACOs) had the potential to create a more efficient health system, such that the lower Medicare payment trajectory under the Affordable Care Act would not be problematic. OACT reviewed the following information:

- Bundled payment systems

  — Sood, *et al.,* in providing recommendations for Medicare's bundled payment pilot, concluded that bundling could mitigate some of the negative incentives of the current system but may also have unintended adverse consequences.[81]

  — McClellan found that while bundled payments using quality measures may achieve higher quality and lower costs within the bundle, it is harder to determine the effect on overall health care expenditures and health outcomes.[82]

- Public sector ACO experience

  — OACT estimated that the new Medicare Shared Savings Program and Pioneer ACO programs would save about $900 million over the next 4 years (roughly 1 percent of Medicare expenditures for those participating).[83]

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[80] Murray, R.: "Setting Hospital Rates to Control Costs and Boost Quality: The Maryland Experience." *Health Affairs*: September/October 2009. Internet address: http://content.healthaffairs.org/content/28/5/1395.full.pdf+html.

[81] Sood, N., et al.: "Medicare's Bundled Payment Pilot for Acute and Postacute Care: Analysis and Recommendations on Where to Begin." *Health Affairs*: September 2011. Internet address: http://content.healthaffairs.org/content/30/9/1708.full.pdf.

[82] McClellan, Mark B.: "Reforming Payments to Healthcare Providers: The Key to Slowing Healthcare Cost Growth While Improving Quality?" *Journal of Economic Perspectives*: Spring 2011. Internet address: http://pubs.aeaweb.org/doi/pdfplus/10.1257/jep.25.2.69.

[83] CMS: "Final Rule: 42 CFR Part 425, Medicare Program; Medicare Shared Savings Program: Accountable Care Organizations." *Federal Register* 76(212): 67963, November 2, 2011.

CMS Office of the Actuary, unpublished estimate, December 14, 2011.

— Berenson and Burton concluded that the Medicare Physician Group Practice demonstration did not seem to meaningfully reduce spending growth, in part because it did not include sufficiently strong financial incentives to change provider behavior.[84]

- Private sector ACO experience

  — Baicker and Chandra questioned how well ACOs will sidestep cost-ineffective technologies, particularly if these technologies help them gain market share.[85]

  — McClellan indicated that while there are anecdotal successes for private plans, few quantitative results are available.[82]

  — James and Savitz noted how Intermountain Healthcare experienced significant savings through the implementation of clinical improvement initiatives, though in some cases its revenues fell by more than its costs.[86]

  — A recent pilot ACO comprising Blue Shield of California, Catholic Healthcare West, and Hill Physicians showed significant savings for CalPERS enrollees in the first year, though savings are expected to be lower in the second and third years of the pilot.[87]

  — Song, *et al.* reported that the Alternative Quality Contract implemented by Blue Cross Blue Shield of Massachusetts in 2009 achieved a modest reduction in medical spending growth in its first year, together with improved quality of care; however, the savings from slower cost growth were slightly outweighed by the performance bonuses and additional administrative costs associated with the program.[88]

In addition to the potentially lower expenditure levels from such initiatives, the Panel subgroup was interested in exploring the recent cost growth rates for top-performing health systems, such as the Cleveland Clinic, Geisinger Health System, Intermountain Healthcare, Kaiser Permanente,

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[84] Berenson, R., and Burton, R.: "Accountable Care Organizations in Medicare and the Private Sector: A Status Update." Internet address: http://www.urban.org/uploadedpdf/412438-Accountable-Care-Organizations-in-Medicare-and-the-Private-Sector.pdf.

[85] Baicker, K., and Chandra, A.: "Aspirin, Angioplasty, and Proton Beam Therapy: The Economics of Smarter Health Care Spending." Internet address: http://www.kc.frb.org/publicat/sympos/2011/2011.BaickerandChandra.paper.pdf.

[86] James, B., and Savitz, L.: "How Intermountain Trimmed Health Care Costs through Robust Quality Improvement Efforts." *Health Affairs*: June 2011. Internet address: http://content.healthaffairs.org/content/30/6/1185.full.pdf.

[87] Evans, M.: "Forging the Way: ACOs Taking Hold Despite Loose Definitions, with Different Methods—and Varying Results." *Modern Healthcare* 41(35): August 29, 2011; and

"Making Healthcare Affordable: Why Blue Shield of California Has Invested Heavily in ACO Development." *ACO Insights.* Internet address: http://www.acoinsights.com/making-healthcare-affordable.html.

[88] Song, Z., et al.: "Health Care Spending and Quality in Year 1 of the Alternative Quality Contract." *The New England Journal of Medicine* 365(10): September 8, 2011; and

"The 'Alternative Quality Contract,' Based on a Global Budget, Lowered Medical Spending and Improved Quality." *Health Affairs*: August 2012. Internet address: http://content.healthaffairs.org/content/31/8/1885.full.html.

Mayo Clinic, ThedaCare, and others. These systems are considered more efficient than fee-for-service Medicare, and several recent articles have pointed to the savings they have achieved.[89] OACT used Medicare Cost Report data to analyze changes in case-mix adjusted costs per inpatient hospital discharge for 2000-2009 for three such top-performing systems, as identified by the Panel, and also obtained the Milliman *Hospital Efficiency Index* data for top-performing plans, as shown in table IV.3.

Table IV.3—Cost growth for top-performing health systems, 2000-2009

System	Average annual increase in case-mix-adjusted inpatient cost per discharge* 2000-2009
U.S.	6.4%
Recognized top-performing systems:†	
A	7.3
B	8.9
C	9.0
Milliman Hospital Efficiency Index top performers:‡	
Top 35 community, non-teaching hospitals	6.1
Top 20 teaching hospitals	5.8

    * Based on Medicare Cost Report data.
    † Company names suppressed for confidentiality.
    ‡ Based on lowest percentage of avoidable days, minimum 2,000 Medicare cases.

    NOTE: Based on data from the Maryland Health Services Cost Review Commission (MHSCRC), from 2000 through 2007 cost per case for an "equivalent inpatient admission" grew similarly in Maryland and in the U.S. (approximately 5.1 percent per year, using the MHSCRC definition).

This analysis showed that hospital costs for the recognized top-performing systems grew somewhat faster over this period than for hospitals overall, a result that the subgroup speculated could be due to the top performers having already achieved some efficiencies through the elimination of lower cost cases. The top performers identified in the Milliman data grew slightly more slowly than the U.S. average, and, as noted in the footnote to the table, from 2000 through 2007 hospitals in Maryland grew at a similar rate to the U.S. average. These data, though not conclusive, suggest that while efforts to eliminate inefficiencies have enabled top-performing systems to reduce cost levels, those top performers have not yet demonstrated the ability to lower the rate of cost growth over an extended period.

Growth rates in other countries

Finally, the subgroup compared health expenditure growth rates in the U.S. to rates experienced in other countries, most notably those that operated within a single-payer system or under a

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[89] Paulus, R., et al.: "Continuous Innovation in Health Care: Implications of the Geisinger Experience." *Health Affairs*. Internet address: http://content.healthaffairs.org/content/27/5/1235.full.pdf;

"Geisinger Chief Glenn Steele: Seizing Health Reform's Potential to Build a Superior System." *Health Affairs*. Internet address: http://content.healthaffairs.org/content/29/6/1200.full.pdf;

Sidorov, J., et al.: "Does Diabetes Disease Management Save Money and Improve Outcomes?" *Diabetes Care*. Internet address: http://care.diabetesjournals.org/content/25/4/684.full; and

James, B., and Savitz, L.: "How Intermountain Trimmed Health Care Costs through Robust Quality Improvement Efforts." *Health Affairs*. Internet address: http://content.healthaffairs.org/content/30/6/1185.full.pdf.

global budget. Table IV.4 provides a comparison of the U.S. to the U.K., Canada, Finland, Sweden, and the median for countries in the Organisation for Economic Co-operation and Development (OECD) between 1990 and 2009.[90]

Table IV.4—Health spending and utilization growth for OECD countries, 1990-2009
(or the closest available period)

Country	Average annual change in:		
	Real per capita health spending	Physician visits per capita	Acute care hospital stays per 1,000
U.S.	3.3%	1.0%	−0.5%
U.K.	4.4	−0.9	−1.3
Canada	2.7	−0.9	−1.3
Finland	2.4	0.4	−1.5
Sweden	2.5	0.2	0.3
OECD median	3.2	0.7	−0.1

Source: OECD Health Data, 2011.

These data show that the U.S. has been experiencing growth similar to the OECD median since 1990. Over this same period, it also appears that basic measures of utilization growth, such as physician visits per capita and hospital stays per 1,000, have grown fairly similarly. These results suggest that the growth in price and intensity of health care in the U.S. has been similar to the OECD average. One might expect that U.S. intensity has grown more quickly—and thus prices more slowly—but OACT did not have data to determine these components separately. Compared to the U.K., growth in real U.S. health spending per capita has been slower despite faster utilization growth, suggesting that U.S. prices have grown much more slowly than those in the U.K.[91] Compared to Canada, Finland, and Sweden, growth in real U.S. health spending per capita has been faster and appears to have been driven mainly by faster utilization growth.

Conclusions

The Affordable Care Act specifies Medicare provider fee updates for hospitals and other non-physician providers that will rise for all future years about 1.1 percent more slowly than measures of inflation in providers' input prices. The sustainable growth rate mechanism that applies to physician services will continue to require payment updates below inflation in physicians' input prices. The price trajectory dictated by the Affordable Care Act and the SGR over the 75-year horizon raises significant concerns that, under the current delivery and payment systems, even clinically and economically efficient providers will not be able to provide future Medicare beneficiaries with the quantities and quality of health care, including access to new technologies, that are comparable to those provided to the commercially insured (assuming a continuation of past negotiating practices between providers and commercial payers). As a result, the long-range feasibility of these provisions of current law has been the subject of

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[90] Organisation for Economic Co-operation and Development: *Health Data 2011*. Internet address: http://www.oecd.org/document/30/0,3746,en_2649_37407_12968734_1_1_1_37407,00.html.

[91] Much of the faster growth in U.K. health spending began in 2000, based on Prime Minister Blair's pledge to increase Britain's health spending so as to be closer to the European average. Timmins, Nicholas: "Letter from Britain: Across the Pond, Giant New Waves of Health Reform." *Health Affairs*: 2138-2141, December 2010.

considerable interest and discussion. In particular, the Medicare Board of Trustees has warned that, if Congress were to continue to override the SGR payment mechanism, and if payment rates for other providers became inadequate and had to be adjusted upward, then the resulting levels of Medicare expenditures would be substantially greater than those projected under current law.

The Panel finds that the non-physician provider payment updates mandated in the ACA may be feasible in the short to medium term. The Panel also affirms the findings by the Medicare Board of Trustees in their 2010 and 2011 annual reports that there is considerable uncertainty regarding the feasibility of these update adjustments over the long range. On one hand, the Panel believes there is a possibility that, with reforms to the system authorized under current law, the slower payment updates could be continued indefinitely, in the sense that Medicare beneficiaries would continue to receive care with quality as good as, or better than, that received today. On the other hand, there is a great deal of uncertainty regarding this outcome. In particular, if the health sector overall could not transition to new payment models or achieve productivity increases commensurate with economy-wide productivity, then the quality of health care received by Medicare beneficiaries, relative to that received by commercially insured people, would fall over time. For these reasons, the Panel recommends that the Trustees continue to present an alternative projection in which Medicare per beneficiary spending rises faster than in the current-law baseline.

The concerns about the productivity adjustments to most Medicare provider payment updates are based on the risk that these payments will become inadequate in the long range. Unless providers could improve their resource-based productivity substantially above the levels they have achieved historically, steadily improve their efficiency through more integrated systems of care or payment mechanism reforms, or slow the rate of adoption of new technology, then over time their Medicare revenues would become inadequate to cover their input costs for providing services. In such a scenario, providers would become financially unable to continue delivering services to Medicare beneficiaries without shifting costs to other payers, reducing the scope and/or quality of care for their Medicare patients, or taking other steps that both the providers and the beneficiaries would consider to be undesirable. Under such circumstances, action would likely be taken to address the problem through more adequate payment rates, in much the same way as lawmakers have done repeatedly with physician payment rates.

Alternatively, several factors suggest that the current-law productivity adjustments might be able to continue indefinitely:

- The Panel recognized that historical provider updates under Medicare have often been lower than the rate of inflation in input prices. For example, inpatient hospital updates averaged more than 1 percentage point below input price inflation over the 1995-2012 period. Thus, the provider updates under the Affordable Care Act will be somewhat

similar to the actual historical experience over this period. However, the Panel also noted that this comparison is likely not indicative of future experience.[92]

- The Panel believes that productivity in the health sector is likely greater than official measures suggest, as these overstate price inflation by not fully accounting for quality improvements. To the extent this is the case, then productivity improvements could absorb some, though probably not all, of the provider payment growth reductions, meaning that health care quality could continue to improve, albeit not at the rate experienced historically.

- The Panel anticipates that the expected slowdown in spending in the commercial sector may be achieved, at least in part, by reductions in the private sector updates for payments per service, thus reducing the growth in the gap between Medicare and commercial payment rates.

- The Panel reviewed evidence that, even after 75 years of reduced growth, the Medicare payment rates in the U.S. would approximate those in some other OECD countries.

- Finally, the Panel believes that other provisions of the Affordable Care Act—namely, the mechanisms to move away from fee-for-service payment towards more fully integrated care, together with episode or even global bundled payment, and the other incentives for Medicare and private insurers to improve efficiency—will lead to greater cost-effectiveness in the delivery of health care, increasing the likelihood that the quality of care could be improved over time even given the legislated reductions in provider reimbursement growth. These models give providers strong financial incentives to control the total cost of entire medical treatments—e.g., to reduce hospital readmissions, to use generic drugs when they are close substitutes for brand-name drugs, to use lower-skilled and less expensive labor when it is safe to do so, and so on. Such changes would allow providers, at least in the short run, to capture efficiencies in the delivery of care as provision of unnecessary services is diminished. (In the longer run, in competitive provider markets, such cost savings might instead accrue to purchasers.)

The projected trajectory of Medicare expenditures under current law suggests that under traditional fee-for-service compensation, even with the Affordable Care Act and SGR reduced payment updates, per beneficiary spending will continue to grow in the future. Thus, when combined with the potential efficiency gains described above, the trajectory of spending implied by the ACA might be sufficient for the quality of health care to continue to rise, although not as fast as would be the case under the pre-ACA payment rates.

However, the Panel noted that while the rate of increase in spending per beneficiary under the ACA is positive, it is likely to be significantly slower than in the past. This slowdown in spending would be a cause for concern if volume and intensity growth, including access to new

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[92] Most of the 1-percentage-point difference was attributable to the first half of the 1995-2012 period, as Congress reacted to provider-driven shifts of care from acute to sub-acute settings, such as hospitals' skilled nursing wings, which increased their volume of reimbursable services. As such, the payment update reductions were an offset to undue increases in provider revenues rather than a true reduction in provider payments due to efficiency gains. Similarly, during the last 5 years, the major reductions in hospital payment updates were one-time changes required by law to maintain budget neutrality for documentation and coding changes associated with updating DRGs.

services, were to expand more rapidly in the private sector, creating a disparity in access and quality between the commercial and Medicare sectors. The SGR is particularly problematic in this respect, as it implies that Medicare would pay physicians at rates sharply below those paid by private insurers. (Moreover, this wedge between Medicare and commercial rates likely would persist even if the SGR were "fixed" by replacing payment cuts with payment freezes or minimal payment updates more consistent with the recent history of the SGR, since such updates would probably not keep up with private payment rate increases.) Thus, a possible implication of the Medicare spending trajectory under current law is a gradual bifurcation of the health system over time, with Medicare beneficiaries receiving care from different providers than the privately insured population, with fewer amenities and perhaps lower quality and greater difficulty in accessing providers—not unlike what is occurring with many state Medicaid programs. The Panel noted that providers will also face pressures from the commercial sector to control growth in the volume and intensity of health services. To the extent that these pressures were similar in Medicare and the private sector, the disparity in quality and access would be minimized.

The Panel believes that the quality of the health care received by Medicare beneficiaries could continue to rise even under a bifurcated system. However, disparate access or quality of care might well be viewed as undesirable by the beneficiary population and by society at large and would represent a different type of Medicare program than has existed historically. Thus, the Panel recommends that the Trustees continue to present alternative projections, with per beneficiary Medicare spending rising at the same pace as non-Medicare per capita spending.

The Panel believes that future monitoring of the evolution of the health care system is extremely important and that careful attention must be paid to the adequacy of Medicare payment rates over time. Further attention should also be given to how forecasting will evolve if new payment models and/or delivery systems are designed and adopted. Until new evidence is developed, a prudent approach is to note the concerns outlined in this section, to acknowledge the potential ability of the health care system to meet the challenges posed by the current-law Medicare fee trajectories (and the potential consequences of doing so), and to include appropriate cautions about whether these challenges can be met.