

September 29, 2017

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

Final Report

REVIEW OF ASSUMPTIONS AND METHODS OF THE MEDICARE TRUSTEES'
FINANCIAL PROJECTIONS

FINAL REPORT

September 2017

CONTENTS

Section	Page
Preface.....	v
Executive Summary.....	ES-1
Section 1. Introduction	1-1
1.1 General Support of Assumptions for Current Law Projections and Recommended Changes in Reflecting Uncertainty.....	1-1
1.2 Recommend an Examination of Report Presentation to Improve Engagement and Understanding of Stakeholders.....	1-1
Section 2. The Role of Medicare Cost Growth Factors in Current Law	2-1
2.1 Emphasize Impact of Per Beneficiary Cost Growth.....	2-1
2.2 Continuing an Illustrative Alternative.....	2-2
2.3 Assumptions Regarding the Illustrative Alternative.....	2-3
2.4 Sustainability and Response to Medicare Reductions in Payment Updates.....	2-5
Section 3. Impact of Payment Models and Delivery System Changes	3-1
3.1 Changing Environment.....	3-1
3.2 Future Trends of Medicare Advantage (MA) in Relation to Traditional Medicare (TM).....	3-3
Section 4. Part D Findings and Recommendations	4-1
4.1 Part D Short-Range Projections.....	4-1
4.2 Part D Long-Range Assumptions.....	4-6
Section 5. Impact of Changing Patterns of Aging and Care	5-1
5.1 Changes in the Distribution of Spending by Age and Sex.....	5-1
5.2 Shifts in Setting of Care Near the End of Life.....	5-4
Section 6. Transition from Short-Range to Long-Range Projections	6-1
Section 7. Conveying Uncertainty around Baseline Projections	7-1
7.1 Simplifying Multiple Approaches.....	7-1
7.2 High- and Low-Cost Scenarios.....	7-1
Section 8. Issues around Presentation of Trustees Report	8-1
8.1 The Absence of an Executive Summary.....	8-1
8.2 Representing Financial Implications in Terms of Tax Burden.....	8-3
Section 9. Recommendations for Future Research	9-1
References.....	R-1

Appendices

A:	Review of Alternative Payment Models	A-1
B:	Review of Recent Medicare Advantage to Traditional Medicare Spillovers Literature.....	B-1
C:	Response of Physicians to Lower Medicare Prices	C-1
D:	Changes in Care Settings Near the End of Life	D-1

FIGURES

Number		Page
2.1	Example of fan chart format	2-1
4.1	Historical per capita cost trend	4-3
4.2	National health expenditure (NHE) drug trend projections by Trustees Report (TR).....	4-4
4.3	Comparison of national health expenditure (NHE) drug and Part D per capita cost trends.....	4-5
5.1	The age profile of spending has become steeper over time.....	5-2
5.2	Estimated contribution of change in time to death (TTD) to growth in real per-enrollee spending growth, 1992–2008.....	5-4
6.1	Medicare projected excess cost growth under current law, 2026–2090	6-2
6.2	Part A expenditures under various alternatives for transition.....	6-3
6.3	Part B expenditures under various alternatives for transition.....	6-4
6.4	Part D expenditures under various alternatives for transition.....	6-4
7.1	HI trust fund balance at the beginning of the year as a percentage of annual expenditures.....	7-2
7.2	Estimated Hospital Insurance cost and income rates as a percentage of taxable payroll	7-3

TABLES

Number		Page
4.1	Historical Part D enrollment (in millions).....	4-2
5.1	Ratio of spending per enrollee in 85+ years age cohort versus 65–69 years age cohort	5-2
6.1	General approach to short-range, long-range, and transition periods in Trustees Report.....	6-1

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 offering Congress and the public at-large reasonable projections of this complex topic. The 2016–2017 Panel, composed of five academic economists and four actuaries, includes the following members:

- Ellen Meara, PhD, Professor, The Dartmouth Institute for Health Policy & Clinical Practice, Geisel School of Medicine at Dartmouth (Co-chair).
- Michael Thompson, FSA, MAAA, President & CEO, National Alliance of Healthcare Purchaser Coalitions (Co-chair).
- Melinda J. Buntin, PhD, Professor and Chair, Department of Health Policy, Vanderbilt University School of Medicine.
- Austin Frakt, PhD, Health Economist, Department of Veterans Affairs/Boston University/Harvard University.
- M. Kate Bundorf, PhD, Associate Professor, Department of Health Research and Policy, Stanford University School of Medicine.
- Mark Pauly, PhD, Professor, Wharton Health Care Management Department.
- Geoffrey Sandler, FSA, MAAA, Senior Director-Health Policy, Aetna.
- Greger Vigen, FSA, Consultant.
- Dale Yamamoto, FCA, MAAA, Red Quill Consulting.

Donald Oellerich, the Deputy Chief Economist in the Office of the Assistant Secretary for Planning and Evaluation, 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:

- Long-range Medicare per-beneficiary expenditure growth assumptions for HI and SMI.
- The sustainability of key Medicare cost growth factors under current law.

- Current assumptions regarding changes in use of care.
- Current and alternate approaches to providing high- and low- cost options or conveying uncertainty around Medicare projections more generally.
- Transitions from short-range to long-range projections.
- Recommendations for areas of future research to improve long-range projection methods, such as incorporating trends in health status.

Beginning in August 2016 and concluding in May 2017, the Panel held a series of seven public meetings over a period of 12 days at HHS offices in Washington, DC, or the Centers for Medicare & Medicaid Services (CMS) central office in Baltimore, MD. The Panel also held one public phone conference. The meetings and phone conference took place on the following dates:

- August 30, 2016.
- August 31, 2016.
- September 30, 2016.
- October 31, 2016.
- November 1, 2016.
- December 19, 2016.
- December 20, 2016.
- February 7, 2017.
- February 8, 2017.
- March 7, 2017.
- May 2, 2017.
- May 3, 2017.

The Panel considered peer-reviewed evidence; reports from government agencies and private organizations; reports of analyses compiled by the Office of the Actuary (OACT); the presentations and discussions with outside presenters; numerous discussions as a group and in subgroups between meetings; and the calculations, proposals, and expertise of panel members and their contacts.

The Panel heard from many experts when developing its findings and recommendations. It heard detailed presentations from the Chief Actuary in 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 a wide range of background materials and heard invited presentations from staff at the U.S. Department of the Treasury, the Congressional Budget Office, and Medicare Payment and Advisory Commission (MedPAC); an academic expert, and private sector experts in health economics and policy. Special thanks are due to the following individuals, who made formal presentations to the Panel:

- Randy Mariger and Tara Watson—U.S. Department of Treasury.
- Tom Bradley and Julie Topoleski—Congressional Budget Office.
- Mark Miller—MedPAC.
- Michael Chernew—Harvard Medical School.
- Murray Aitken—IMS Health.
- Jonathan Schwabish—The Urban Institute and PolicyViz.
- Elizabeth Fowler—Johnson & Johnson.

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EXECUTIVE SUMMARY

Periodically, on behalf of the Medicare Board of Trustees, 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 2016–2017 Panel was composed of five academic economists and four actuaries. The Panel considered peer-reviewed evidence; reports from government agencies and private organizations; reports of analyses compiled by OACT; the presentations and discussions with nine outside presenters; numerous discussions as a group and in subgroups between meetings; and the calculations, proposals, and expertise of panel members and their contacts. The Panel also held 12 days of in-person public meetings in conjunction with OACT staff as well as multiple phone calls.

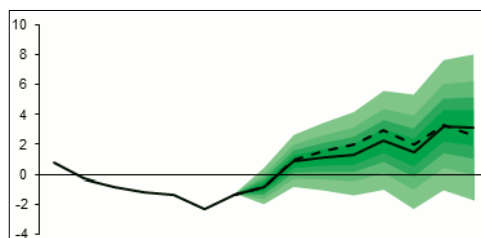
General Observations

- The Panel generally found the baseline assumptions used in the Medicare projections under current law to be reasonable and offered insights on emerging areas of interest.
- The Panel, like the prior Panel, noted the considerable challenge posed by making projections over a 75-year horizon, but members felt the assumptions used in long-range projections were broadly reasonable. The Panel did have several findings and recommendations on aspects of the long-range projections.
- The Panel made recommendations on how to better reflect uncertainty under the Medicare projections.
- The Panel made recommendations to improve the presentation of the Trustees Report to achieve greater stakeholder engagement and understanding.

Findings and Recommendations: Role of Medicare Cost Growth Factors in Current Law

Emphasize Impact of Per Beneficiary Cost Growth

- A large portion of the potential sensitivity in the Medicare projections is driven by the growth in per capita health care costs. (Finding 2-1)
- The report should isolate and give priority to the impact of per capita health care cost growth on Medicare projections. Isolating the impact of variation in health care cost growth in this way will help to convey the disproportionate impact of this factor on the future sustainability of the program. The Trustees should consider presenting the impact of a range of possible growth rates for per capita health care cost growth in a “fan chart” format. (Recommendation 2-1)



- The Panel recommends that the Trustees Report emphasize the sensitivity of projections to the growth in health care costs in an Executive Summary newly recommended below. (Recommendation 2-2)

Continuing an Illustrative Alternative

- The Panel affirms the finding by the Medicare Board of Trustees that the Affordable Care Act (ACA) and Medicare Access and CHIP Reauthorization Act of 2015 (MACRA) substantively lowered the rate of growth of provider payment rates relative to historical trends. (Finding 2-2)
- The Panel recommends that the Trustees Report continue to present an illustrative alternative projection that forecasts Medicare spending assuming a less than full implementation of the payment updates to providers specified under current law. (Recommendation 2-3)

Assumptions Regarding the Illustrative Alternative

- The Panel finds that the ultimate assumptions used in the illustrative alternative offer a reasonable estimate of the magnitude of the potential understatement of current law spending projections. (Finding 2-3)
- The MACRA physician bonuses will terminate in 2025 under current law. The Panel finds that the assumption to continue the MACRA physician bonuses as an illustrative alternative projection after 2025 is reasonable. (Finding 2-4)
- The Panel recommends that the Trustees consider later start dates for the transition to the ultimate assumptions for the illustrative alternative projection. Currently, the higher updates for physicians start in 2026, and those for hospitals and other providers start in 2020. (Recommendation 2-4)

Sustainability and Response to Reductions in Medicare Payment Updates

- The Trustees should research the long-range financial, quality and access implications of current law payment updates, bonuses, and provider compensation. (Recommendation 2-5)
- When researching long-range impacts, the Trustees should consider examining the relationship between payments and provider participation, and separately, access to specific Medicare-covered services. (Recommendation 2-6)

Findings and Recommendations: Impact of Payment Model and Delivery System Changes

Changing Environment

- The Panel agrees there is substantial uncertainty regarding the long run financial impact of new payment and delivery models on Medicare spending. (Finding 3-1)

- The Panel affirms that the current assumption of a small, negative adjustment to the long-range growth rate of volume and intensity of services per beneficiary is reasonable. Currently, this adjustment reflects ACA payments updates, but the Panel considered adjustments to volume and intensity in the context of broader payment and delivery reforms. (Finding 3-2)

Future Trends of Medicare Advantage (MA) in Relation to Traditional Medicare (TM)

- The Panel finds that the approach used by the Trustees for incorporation of MA to TM spillovers is generally reasonable. (Finding 3-3)
- The Panel recommends that the Trustees and OACT more clearly document how current projection methodology incorporates MA-to-TM spillovers, as well as other endogenous, market, and institutional changes to health insurance and the Medicare program. (Recommendation 3-1)

Findings and Recommendations: Part D

Part D Short-Range Projections

- The Panel finds that the projections of the number of Part D participants are reasonable. (Finding 4-1)
- 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. (Recommendation 4-1)
- The Panel finds that the near-term cost projections are reasonable and reflect recommendations of 2010–2011 Technical Panel to incorporate recent Part D experience into projections. (Finding 4-2)
- The use of higher trend rates for the reinsurance component of Part D for the short term should be documented in the actuarial methodology section of the Trustees Report. (Recommendation 4-2)
- The Panel recommends that OACT study the cost management techniques used by the Part D insurers in the past decade to understand whether they have influenced historic cost trends that may not continue in the future. (Recommendation 4-3)

Part D Long-Range Assumptions

- The Panel recommends that the Trustees analyze and research drug utilization to better understand how changing utilization could affect other medical services in long-range projection assumptions. In addition, empirical evidence on offsets should be monitored and additional analysis should be performed to better understand any identified offsets and whether they change over time. (Recommendation 4-4)

Findings and Recommendations: Impact of Changing Patterns of Aging and Care

Changes in the Distribution of Spending by Age and Sex

- Medicare spending has grown much more rapidly at older ages (85+) compared with younger ages (65–69) for two reasons: increased use of inpatient post-acute care (e.g., skilled nursing facility [SNF]), and changes in expected time to death as longevity has increased. This trend has moderated during the most recent decade. (Finding 5-1)
- The Panel finds that the current approaches to spending projections reflecting growth in post-acute care at older ages are reasonable. (Finding 5-2)
- Because of the relationship between rising longevity and time to death, the interaction of age and spending has changed over time in ways that are only partially accounted for in the Trustees Report. (Finding 5-3)
- The Panel recommends that the Trustees consider developing an approach to incorporate time to death into projections to account for the impact of rising longevity and changes in health on the age-sex distribution of spending over time. (Recommendation 5-1)

Shifts in Setting of Care Near the End of Life

- The Panel recommends that the Trustees and OACT monitor settings of care near the end of life. The goal in tracking settings of care would be to inform considerations regarding whether clinical and cultural shifts in the settings for end-of-life care warrant adjustments in the utilization assumptions for the different settings of care delivery (e.g., inpatient, outpatient, hospice). (Recommendation 5-2)

Findings and Recommendations: Transition from Short Range to Long Range

- A transition period between short-range and long-range forecasts for HI and SMI is an appropriate method. (Finding 6-1)
- The current length of the transition period is reasonable. (Finding 6-2)
- The current approach to the transition is reasonable. Multiple alternative approaches to the transition yield very similar results. (Finding 6-3)
- The Panel recommends that the Trustees Report continue to use the same approach to transitions between short-range and long-range projections for both HI and SMI. (Recommendation 6-1)

Findings and Recommendations: Conveying Uncertainty Around Baseline Projections

Simplifying Multiple Approaches

- It is difficult for readers to understand and compare the different sources of variation and to understand the most-important drivers of the projections. (Finding 7-1)
- The main discussion of uncertainty should be consolidated and illustrated in a way that conveys the most-important drivers of growth. (Recommendation 7-1)

High- and Low-Cost Scenarios

- The high- and low-cost scenarios posit a wide range of potential growth rates relative to the intermediate projection in the first 25 years, and modest rates of growth after that period. The Panel found that although plus or minus 2 percent is a reasonable range for an initial projection period, it is large when compounded over 25 years. The assumptions that the variance in growth rates will decrease dramatically after the first 25 years in all scenarios and that there will be no variance in the final 25 years of the projection period are not consistent with the intent of showing a high- or low-cost alternative. (Finding 7-2)
- The Panel recommends that the Trustees consider modifying the “high-low” health care cost growth assumptions in two ways. First, it should consider starting to reduce the range of variation in cost growth (plus or minus 2 percentage points) at an earlier year. Second, it should gradually reduce to a range that is greater than zero throughout the projection period, rather than reverting to zero. (Recommendation 7-2)
- A possible interpretation of the high/low graphs is that there is an equal chance that either the low-cost or high-cost alternative may occur in the future. This is not the correct interpretation. (Finding 7-3)
- The Panel recommends that the text convey that the high-cost and low-cost scenarios are not equally likely. (Recommendation 7-3)

Findings and Recommendations: Issues around Presentation of Trustees Report

- Although the Medicare Trustees Report is very detailed and offers considerable information to back up its complex projections, there is a need for a more concise, accessible, and digestible synthesis of the report conclusions. (Finding 8-1)
- The Panel recommends that the Trustees Report have an Executive Summary that synthesizes the conclusions of the report. Although the Overview section describes the report, it is longer than a traditional executive summary and may not highlight the most critical findings the way an executive summary would. (Recommendation 8-1)
- The Trustees should consider prioritizing and conveying the major takeaways for stakeholders for emphasis in the Executive Summary. (Recommendation 8-2)

- To the extent feasible, simple graphics should be included in both the Executive Summary and the main report to help to illustrate the content and improve the level of engagement with and understanding of the key results. (Recommendation 8-3)

Representing Financial Implications in Terms of Tax Burden

- The Medicare Trustees' report is a complex document. It is challenging to convey the economic implications for taxpayers and the economy of projected levels of Medicare-financed spending. (Finding 8-2)
- The Panel recommends that the Trustees provide information in the Trustees Report on the per capita level of taxation that would be required to finance projected Medicare spending. (Recommendation 8-4)

Findings and Recommendations: Recommendations for Future Research

The Panel recommends further study of the following areas, all of which have substantial impacts on spending in one or more parts of the Medicare program. (Recommendation 9-1)

- The response of various providers, including hospitals, physicians, and other service providers, to cuts in Medicare payment growth rates. Research should model any change in private prices in response to Medicare payment changes and, separately, the share of providers willing to accept Medicare patients.
- The use of prescription drugs in Parts B and D, including the long-range offset of prescription drug spending on outpatient, inpatient, and other medical spending.
- Changes in setting of care near the end of life. This should include the share of deaths in different settings (home versus hospital) and the intensity of care in each setting (use of Intensive Care Unit near end of life).
- Changes in spending over time should, wherever possible, be decomposed into changes in volume and intensity of services. Examples of such decompositions would be the number of prescriptions used by Part D enrollees and the distribution of those prescriptions across different price groups. In Part B, changes could be decomposed into the number of professional services per beneficiary and some measure of the intensity of service.
- Changes in the share of beneficiaries enrolled in MA and any spillovers of MA enrollment on TM.
- Changes in the distribution of spending by age, including estimates of spending by time to death.

SECTION 1. INTRODUCTION

On behalf of Medicare’s Board of Trustees, the Secretary of Health and Human Services convenes a Medicare Technical Panel composed of economists and actuaries to review the assumptions used in annual Medicare Trustees Reports. During the course of the Panels’ review, the 2017 Trustees’ Report was published. The 2017 reports uses the same methodology as the 2016 Report. Panel findings and recommendations apply to the methodology of both reports. Over the 9 months of meetings and review of materials outside of meetings, several themes emerged. The Panel felt the approach currently used in the Trustees Reports was broadly reasonable. Although the Panel discussed recommendations in many areas, a common conclusion held. When weighing the tradeoffs implied by a potential change to current assumptions or approaches, the evidence available was often too thin to support a change, or the complexity introduced by a proposed change made it impractical.

1.1 General Support of Assumptions for Current Law Projections and Recommended Changes in Reflecting Uncertainty

The Panel considered areas specified in the Secretary of Health and Human Services’ charter to the Panel in detail. Broadly, the Panel agreed that assumptions used in the current Trustees Reports were reasonable under current law.

In some cases of great uncertainty, such as uncertainty about how potentially cost-increasing (or cost-saving) technological innovations should be incorporated into projections, the Panel felt it did not have adequate evidence to suggest changes in assumptions. Panel deliberation regarding the assumptions underlying Part D consistently yielded findings that general assumptions and projection methods currently in use are broadly reasonable, and recommended changes are relatively minor. The Panel identified several longer-term trends that they believe OACT should track (or continue to track) to be prepared to change projection methodologies as health care systems evolve.

1.2 Recommend an Examination of Report Presentation to Improve Engagement and Understanding of Stakeholders

A second theme emerged throughout the Panel’s work. The report addresses complicated topics that can be challenging to readers. To address this issue, the Panel formed many findings and recommendations to improve the presentation of the report’s key findings, and to make the report more useful to Congress and to broader readers.

It is with this background in mind that the Panel presents its findings and recommendations to the Secretary.

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SECTION 2. THE ROLE OF MEDICARE COST GROWTH FACTORS IN CURRENT LAW

The most important factor in projected Medicare spending is cost growth in per beneficiary spending. In addition, the current law projections consider cost growth in light of payment rate updates under MACRA and the ACA that are substantially lower than historical payment updates. The Panel considered how the Trustees Report should reflect these issues.

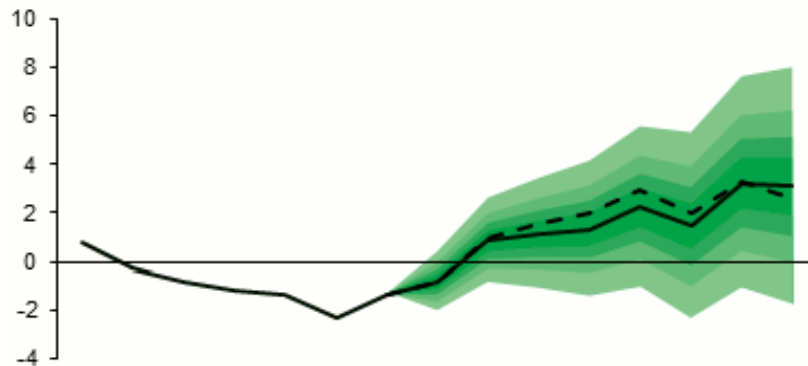
2.1 Emphasize Impact of Per Beneficiary Cost Growth

Finding 2-1: A large portion of the potential sensitivity in the Medicare projections is driven by the growth in per capita health care costs.

Recommendation 2-1: The report should isolate and give priority emphasis to the impact of the growth of per capita health care costs on the Medicare projections.

Isolating the impact of variation in health care cost growth in this way will help to convey the disproportionate impact of this factor on the future sustainability of the program. The Trustees should consider presenting the impact of a range of possible growth rates for per capita health care cost growth in a “fan chart” format.

**Figure 2.1
Example of fan chart format**



Because the greatest source of uncertainty is around per capita growth, it is important to isolate that impact and convey that in a sensitivity analysis. For example, a 1 percentage point increase in the rate of spending growth in Part A yields a change in the actuarial balance of between -1.22 percent over the 25-year valuation period and -2.88 percent over the 75-year valuation period (2016 Medicare Trustees Report). Graphically, the Trustees could present a range of possible growth rates for per capita health care cost growth in the next 25 years (e.g., ± 0.5 , 1, 1.5, and 2 percent).

It is also important to illustrate projected per capita growth assumptions in the context of what has been experienced in the past and explain the underlying factors that may suggest that future growth rates under current law may vary from those observed in the past.

A chart like **Figure 2.1** may help illustrate the effects of alternative assumptions of health care cost growth. Similar charts could also be constructed to show the relative impact of other factors that contribute to spending such as demographics or changes in wage growth.

It shows the Trustees' alternative assumptions, the health care cost growth assumptions, and the interactions between the two when high health care cost growth is added to lower GDP growth.

Recommendation 2-2 The Panel recommends that the Trustees Report emphasize the sensitivity of projections to the growth in health care costs in an Executive Summary newly recommended below.

2.2 Continuing an Illustrative Alternative

The Trustees Report, by law, is an actuarial projection reflecting a best estimate of the future state of Medicare under current law. Starting in 2012, the Report began offering an “illustrative alternative” to the primary projections to reflect the potential financial impact if certain elements of current law are not sustainable. The Panel was asked to reexamine this issue of current law sustainability and the illustrative alternative projection.

Finding 2-2: The Panel affirms the finding by the Medicare Board of Trustees that the Affordable Care Act (ACA) and Medicare Access and CHIP Reauthorization Act of 2015 (MACRA) substantively lowered the rate of growth of provider payment rates relative to historical trends.

The Panel devoted much of its discussion to the potential response to these payment updates, but members acknowledged substantial uncertainty regarding the implications of these payment changes for the health care delivery system. Though physicians, hospitals and other health care providers may innovate in ways that reduce costs while preserving an acceptable level of quality and access to care, it is also possible that reductions in the rate of growth of provider payments will negatively affect beneficiary access or quality of care. Although the Panel did not attempt to assess the likelihood of different outcomes, the members agreed that the current law projection could understate the long run financial expenditures from Medicare.

It is possible that Congress, similar to its actions around the sustainable growth rate (SGR) formula to update physician payment rates, could enact legislation reversing one or more of these changes to provider payments in response to pressure from providers and beneficiaries. Such changes would effectively increase future payment levels relative to current law, and in that case, the current law projection would understate future Medicare spending by a substantial amount in long-range projections. Thus, although it is clear in the report that the illustrative alternative is not a policy recommendation, the illustrative alternative provides information on a possible outcome that quantifies the potential understatement of current law Medicare spending.

Recommendation 2-3: The Panel recommends that the Trustees Report continue to present an illustrative alternative that forecasts increased Medicare spending assuming a less than full implementation of the payment updates specified under current law.

The first reference to possible higher Medicare spending was in the 2007 Trustees Report, which cautioned that forecasts of Part B spending under current law were likely to be underestimated because of the annual Sustainable Growth Rate (SGR) override. The SGR, a statutory method for determining the annual update to the Medicare physician fee schedule, was established as part of the Balanced Budget Act of 1997. Medicare payments to physicians were reduced by the SGR formula for the first time in 2002. In 2003 and each subsequent year, however, Congress passed legislation overriding the payment reduction. The 2007 report provided an alternative estimate, assuming the continuation of the SGR override, in a separate, publicly available report.¹ A comprehensive discussion of the alternative scenario was included in an appendix in the report for the first time in 2012. Given the consistent history of Congress overriding the SGR, the assumption that SGR would be overturned arguably led to a more accurate representation of projected spending for physician payments than the current law at that time. Indeed, the forecast incorporating the SGR override was used as the projected baseline in the 2014 report.

In the 2015 report, after the passage of MACRA, SGR was no longer current law, and the report included one illustrative alternative that assumed phasing out the productivity adjustments in the ACA, repealing the Independent Payment Advisory Board (IPAB), and phasing out MACRA. In the 2016 report, the phase-out begins in 2026 for the MACRA payment reductions, in 2020 for the productivity updates, and in 2019 for IPAB. Thus, the likelihood and magnitude of the overrides included in the illustrative alternative are no longer as certain as they were when the scenario only represented changes related to overrides of the SGR.

2.3 Assumptions Regarding the Illustrative Alternative

Finding 2-3: The Panel finds that the ultimate assumptions used in the illustrative alternative offer a reasonable estimate of the magnitude of the potential understatement of current law spending projections.

Current law specifies various long-range increases in fee payments for providers.

For physicians, MACRA created two levels of increases for 2026 and later:

- For providers paid through an alternative payment model, payment rates will increase by 0.75 percent each year.
- For all other providers, those in the Merit-based Incentive Payment System (MIPS) payment rates will increase by 0.25 percent each year.

The illustrative alternative projection assumes that physician payment rate updates will transition from those under current law to the rate of growth in the Medicare Economic Index (MEI) of 2.2 percent for 2040 and later.

¹ The report is available at http://www.cms.hhs.gov/ReportsTrustFunds/05_alternativePartB.asp

For most other Part A and B services (including hospitals), fees were historically increased based on a market basket of services. The ACA adjusted the market basket increases downward to reflect the annual growth in economy-wide productivity.

The illustrative alternative uses health care–specific productivity increases instead of economy-wide increases. These specific increases are projected to be 0.4% per year instead of 1.1%, implying that Medicare spending on Part A and B services affected by these updates would grow faster than that projected under current law (by 0.7% per year).

Finding 2-4: The MACRA physician bonus will terminate in 2025 under current law. The Panel finds that the assumption to continue the MACRA physician bonus as an illustrative alternative projection after 2025 is reasonable.

Under current law, temporary bonus payments are being made directly from Medicare to physicians.

- For physicians in alternative payment models, there is a 5 percent bonus that expires in 2025.
- For those in the Merit-based Incentive Payment System (MIPS), there is a \$500-million add-on that expires in 2025.

The illustrative alternative continues the 5 percent bonuses for physicians in alternative payment model instead of letting the bonus expire.

The Panel expects that MACRA bonuses and other forms of alternative payment will be widely discussed before the bonus expiration in 2025. Given the impact on physicians and the Medicare program, it is plausible that this bonus will continue after 2025.

Recommendation 2-4: The Panel recommends that the Trustees consider later start dates for the transition to the ultimate assumptions for the illustrative alternative projection. Currently, the higher updates for physicians start in 2026, and those for hospitals and other providers start in 2020.

The impact of the various payment updates is cumulative and increases over time. However, the timing of the potential impact is based on many complex and interactive factors. Many changes are underway within the Centers for Medicare & Medicaid Services (CMS) and the health care environment that will impact providers and payment methods. The mix of fee updates and bonuses in the ACA and MACRA laws reflect the direction of the industry. These initiatives are intended to encourage providers with aligned payments to support better care, smarter spending, and healthier populations. Current evidence regarding access to Medicare providers suggests a wide range of possible responses to current law, and that even the direction of response is unclear. Some key responses include:

- Various sources indicate a potential for additional productivity within the system. For example, the Medicare Payment and Advisory Commission (MedPAC) has evaluated income, margins, capacity, and other issues for hospitals in Chapter 3 of March 2017

report on Medicare Payment Policy. Improved productivity could enable the providers to sustain their service in the near term even with the low fee updates in the current law.

- Various programs within CMS impact physician revenue. These include multiple forms of value-based payment arrangements. These programs are expected to change over time as they are evaluated.
- Although payment rates may influence a provider’s decision to serve Medicare beneficiaries, many other factors may also be considered:
 - All sources of provider income, which is the combination of the volume of services provided, fee payments, bonuses, and other sources of income.
 - Their net (marginal) income, after expenses.
 - Decisions to affiliate or consolidate with provider organizations.

This evaluation may be different depending on the type of provider, their capacity, and their location.

- Further discussion on the impact of alternative payment models and delivery system changes is included in Section 3.

As research on these topics develops over time, the short- and long-range models will become more informed. This will allow the Trustees to reexamine these issues and determine the impact on subsequent illustrative alternative scenarios.

2.4 Sustainability and Response to Medicare Reductions in Payment Updates

Recommendation 2-5: The Trustees should research the long-range financial, quality and access implications of current law payment updates, bonuses, and provider compensation.

Recommendation 2-6: When researching long-range impacts, the Trustees should consider examining the relationship between payments and provider participation, and separately, access to specific Medicare-covered services.

This will inform the short- and long-range models used for projections. It will allow the Trustees to reexamine these issues and determine the impact on subsequent illustrative alternative scenarios. For example, various alternatives have been used to model the effect of changes in relative reimbursement and their consequences over time. Section 3 below will also address the impact of alternative payment models and delivery system changes, which also have relevance for this discussion. Appendix C includes a summary of literature suggesting uncertainty regarding the provider response to changes in Medicare payment levels.

The most recent Trustees’ reports mentions “access” multiple times in connection with the sustainability of features of current law payment updates, but without a definition of access

(from their viewpoint). The growing divergence in physician access between the traditional Medicare (TM) benefit and private plans, including Medicare Advantage (MA) plans, points to the importance of studying both provider participation and access to health care services.

Traditionally, the vast majority of physicians and hospitals in the United States have been willing to see patients covered by Medicare, enabling Medicare beneficiaries to receive care from a broad set of health care providers. Over time, many private health plans, in contrast, have developed provider networks and created financial incentives for patients to receive their care from a narrower set of providers. This divergence between Medicare and private health plan prices creates questions over how to define and interpret measures of Medicare beneficiaries' access to health care providers. OACT has not traditionally investigated access, but because it is important to the Annual Trustees Report, some entity should consider it. MedPAC's current treatment of access is limited to descriptive data of the current situation. Their discussion is near term and does not involve modeling or estimating medium- or longer-term changes in access given future Medicare payments embodied in current law.

The current OACT diagram charting projected future changes in Medicare physician payment rates relative to private payment rates assumes that private payment rates will change only as the Medicare input price index changes. Private payment rates may change based on a variety of reasons.

On the one hand, providers may respond to Medicare reductions by cost shifting and raising private prices (Fuchs 1978). On the other hand, models more consistent with economic theory and recent data suggest that physicians will respond to Medicare reductions by reducing private prices to replace less-profitable Medicare patients with still-lucrative private patients (Clemens and Gottlieb 2017). In other words, the current underlying assumption regarding divergence in Medicare versus private prices may not be supported by the research.

In addition, some plausible models suggest that initial payment rate reductions may increase Medicare volume initially as physicians recoup lost income by suggesting more patient services, but continued relative price reductions will eventually reduce volume as some providers recommend fewer unprofitable Medicare services or decline to take new Medicare patients. These possible volume changes would be important for OACT projections, possibly widening the range of uncertainty.

SECTION 3. IMPACT OF PAYMENT MODELS AND DELIVERY SYSTEM CHANGES

The Panel was asked to consider the assumptions that underlie OACT's long-range projections. In particular, the Panel assessed assumptions that might be affected by changing payment models and delivery system changes including trends in Medicare Advantage in relation to Traditional Medicare.

3.1 Changing Environment

Finding 3-1: The Panel agrees there is substantial uncertainty regarding the long run financial impact of new payment and delivery models on Medicare spending.

Many changes are underway in the health care environment. CMS, providers, and carriers are all making changes in the financing and delivery of care that could potentially have long-range impacts on health care delivery. Some of these changes could be the direct result of policies implemented by CMS, such as the implementation of the provisions of MACRA or through Center for Medicare and Medicaid Innovation (CMMI) initiatives. Others could be private-sector initiatives, driven by either payers or providers that have broader implications for health care delivery. The Panel considered whether and how to address the implementation or potential implementation of these types of programs into the short, transition, and long-range projections. The underlying question is whether these types of changes would affect the rate of increase in spending on Medicare-financed services caused by technological change, given a broad definition of "technological change."

Consequences of public efforts to control spending are documented in the studies summarized in Appendix A, which describe the impact that Alternative Payment Models such as accountable care organizations (ACOs) and bundled payments have on Medicare. Both initiatives have achieved some degree of savings and lower rates of service use. In the case of ACOs, however, savings have been reduced by CMS's issuance of bonus payments for high-performing ACOs. In addition, for both bundled payment and ACO initiatives, providers invest in the start-up infrastructure necessary to make these programs work. There is also the question of how sustainable these savings are and whether providers participating in these initiatives can keep reducing spending while maintaining adequate quality of care. For example, Pioneer ACOs posted significantly higher savings in the first performance year than in the second performance year.

CMS has also launched other initiatives aimed at reducing Medicare expenditures and improving quality of care. These include the Multi-Payer Advanced Primary Care Practice (MAPCP) Demonstration; the Comprehensive Primary Care Initiative (CPC), which, in 2017, evolved into CPC+; and the Independence at Home Initiative. As with the Pioneer program, savings are generally higher in the first performance years of these programs than the second and third years. Participants may make improvements at the onset of the program that may not continue in subsequent years. The main exception to this pattern is the Medicare Shared Savings Program, under which a higher proportion of older program entrants achieved savings than newer ones.

Short-range projections. The impact of payment models and delivery system changes are implicitly considered in the short range projections. Short-range projections establish a base of the cost of services provided to beneficiaries by category for the most recent year of available data and then forecast the annual percent change in expenditures for each year in the future. The annual growth rate is determined in part by trends in historical data and then adjusted for anticipated changes in future spending growth. Thus, the effects of new payment models could be reflected through the calculation of the base and the assumptions regarding short-range growth rates.

To the extent that new payment models have been implemented and have already affected Medicare spending (e.g., any effect that ACOs have already had on Medicare spending), they will generate a downward shift in the projection through their effect on the base and a short-range reduction in growth rates to the extent that their effect on historical growth rates influences assumed future growth rates. For Part A services, the effect of new payment models could be incorporated through assumptions regarding changes in utilization and case mix and, for Part B services, new payment models could affect Medicare payments through adjustments to the volume and intensity growth assumption. Any effects of delivery system changes in the short-range projection affect the long-range forecast through their effect on the 26-year base for the long-range projection, which is a linear extrapolation based on the level and rate of growth of spending at the end of the short-range projection.

The short-range projection currently does not explicitly account for recent changes in the delivery system beyond those that have already affected recent historical spending.

Long-range projections. The long-range forecast is based on the “factors contributing to growth” model. The factors model is estimated based on historical data and generates estimates for the effects of income, coinsurance, and medical prices on growth in per capita spending. Estimation of the model also generates a residual, “volume and intensity,” which serves as a baseline rate of growth for the Medicare projections. The Trustees set an annual assumption for each parameter in the model and use the model to forecast long-range spending levels by category (although the categories are more aggregated than those used in the short-range forecast).

Finding 3-2: The Panel affirms that the current assumption of a small, negative adjustment to the long-range growth rate of volume and intensity of services per beneficiary is reasonable. Currently, this adjustment reflects ACA payments updates, but the Panel considered adjustments to volume and intensity in the context of broader payment and delivery reforms.

Although the “excess cost growth” (the difference between growth in age-sex adjusted per capita health spending and growth in per capita GDP) is forecasted to decline over the long run because of slower growth in volume and intensity (potentially related to changes in delivery systems), the decline is not explicitly modeled and attributed to delivery system changes. Excess cost growth is forecast to decline from about 0.85% in 2040 to about 0.5% in 2090. These latest forecasts represent significant reductions from the historical average of 1.2% from 1990–2004 (Heffler 2016). This reduction is driven primarily by the decline in the rate at which increases in

societal income will be devoted to new health technologies (i.e. the income-technology elasticity).

The Panel focused on the long-range projection and considered whether to adjust the estimate of growth in volume and intensity from the factors model to reflect changes in health care delivery that could lower spending growth relative to historical levels. The Panel had divergent views on the likelihood of implementation and the expected impacts of changes to health care delivery, but ultimately decided that there was little new evidence on which to justify a revision to the current assumption of a small negative adjustment used in the Trustees Report.

3.2 Future Trends of Medicare Advantage (MA) in Relation to Traditional Medicare (TM)

Finding 3-3: The Panel finds that the approach used by the Trustees for incorporation of MA to TM spillovers is generally reasonable.

Another area of rapid change in the Medicare program is the growth in MA that now covers nearly one-third of beneficiaries. Considering alternative care coordination and utilization management techniques that are often used by managed care organizations, the Panel considered whether any spillovers from MA to TM were tracked and incorporated into the Trustees Report. Literature shown in Appendix B shows spillovers from MA to TM, but leaves unanswered the question of how spillovers may change with the rising share of beneficiaries covered by MA.

The short-range projection methodology creates a 10-year projection of spending (by Medicare Part) based on recent trends. As such, spillovers' short-range impacts are reflected in recent Medicare spending trends and, therefore, in the projection of them. To separately estimate spillovers would invite the thorny problem of avoiding double-counting them.

The long-range projection methodology is based on the factors contributing to growth model that incorporates how the effect of technology on health spending is mediated by public and private institutional attempts to control it. As such, to the extent care management in MA (or the commercial market) spill over to TM, that effect can be reflected in the assumed trend of factors model coefficients in the long-range projection. As described by OACT (2016), the key coefficients—the income-technology elasticity and the residual—are projected to trend downward over time, reflecting historical trends.

Recommendation 3-1: The Panel recommends that the Trustees and OACT more clearly document how current projection methodology incorporates MA-to-TM spillovers, as well as other endogenous, market, and institutional changes to health insurance and the Medicare program.

Current reports and memos do not articulate how MA-to-TM spillovers or other endogenous, market, and institutional changes to health insurance and the Medicare program are implicitly built into the long-range projection model.

Section 3 — Impact of Payment Models and Delivery System Changes

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SECTION 4. PART D FINDINGS AND RECOMMENDATIONS

The Panel reviewed the methods and assumptions used in the projection of the prescription drug benefit program (Part D). The program, started in 2006, has limited claims experience available to develop long-range projection assumptions. This chapter includes findings and recommendations of the Panel for the Part D program short-range and long-range projections.

4.1 Part D Short-Range Projections

The Medicare Part D methods and assumptions were a significant part of the 2004 Panel's review because of its passage in 2003. The 2004 Panel's recommendations focused on theoretical expectations of the program because it was new and little data were available regarding the market. The 2010–2011 Panel included commentary on the program; however, there was little evidence from the program which was still relatively new. Even now, with 5 more years of data, uncertainties around projection of this program are large.

The Part D program is a system of private health plans participating in the program with a substantial subsidy from Medicare. The plans may be standalone prescription drug plans or part of a Medicare Advantage Part D plan. Medicare-eligible retirees may also receive coverage through their employer plan that receive a subsidy from Medicare.

In general, Part D plans are funded through a combination of beneficiary premiums and Medicare payments in the form of direct subsidies and reinsurance payments. In total, beneficiaries pay about 25 percent of the cost, with the federal government paying the remainder.

The methodology used in the Part D projections is based on two components: (1) the projection of the number of Medicare beneficiaries enrolled in the various Part D programs and (2) the estimate of the future costs for each of the beneficiaries.

Finding 4-1: The Panel finds that the projections of the number of Part D participants are reasonable.

The projection of the number of Medicare beneficiaries enrolled in the various Part D programs is the first component of the Part D projection methodology. Because the Part D program is voluntary, not all Medicare-eligible beneficiaries will enroll in a plan. The projections are made for the following beneficiary groups:

- Beneficiaries covered by employer-sponsored plans that receive the Part D retiree drug subsidy (RDS).
- Beneficiaries in an employer Part D plan.
- Beneficiaries receiving a Part D low-income subsidy.
- Other Part D enrollees.

The projections are based on the percentage election of each category as well as assumptions of other anticipated changes in the future. As recognized by the 2010–2011 Panel, the ACA eliminated the tax-favored status of the RDS, so it was widely presumed that beneficiaries covered under employer-sponsored plans would erode. Recent experience, as shown in **Table 4.1**, has substantiated that expectation.

Table 4.1
Historical Part D enrollment (in millions)

Calendar year	Retiree drug subsidy	Employer Group Waiver Plan	Low-income subsidy			Total	All others	Total
			Medicaid full-benefit dual eligible	Other with full subsidy	Other with partial subsidy			
2006	7.2	1.4	5.7	2.3	0.2	8.3	10.7	27.6
2007	7.1	1.8	5.9	3.0	0.3	9.2	13.3	31.4
2008	6.8	2.1	6.3	3.2	0.3	9.7	13.9	32.6
2009	6.7	2.3	6.4	3.3	0.3	10.0	14.6	33.6
2010	6.8	2.4	6.6	3.5	0.3	10.4	15.1	34.8
2011	6.2	2.8	6.6	3.7	0.3	10.6	16.0	35.7
2012	5.6	3.6	6.9	3.7	0.3	11.0	17.2	37.4
2013	3.3	5.9	7.2	4.0	0.3	11.5	18.4	39.1
2014	2.7	6.5	7.4	4.1	0.3	11.8	19.5	40.5
2015	2.2	6.5	7.5	4.2	0.3	12.1	21.0	41.8

Source: 2016 Medicare Trustees Report, Table IV.B7.—Part D Enrollment

Recommendation 4-1: 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.

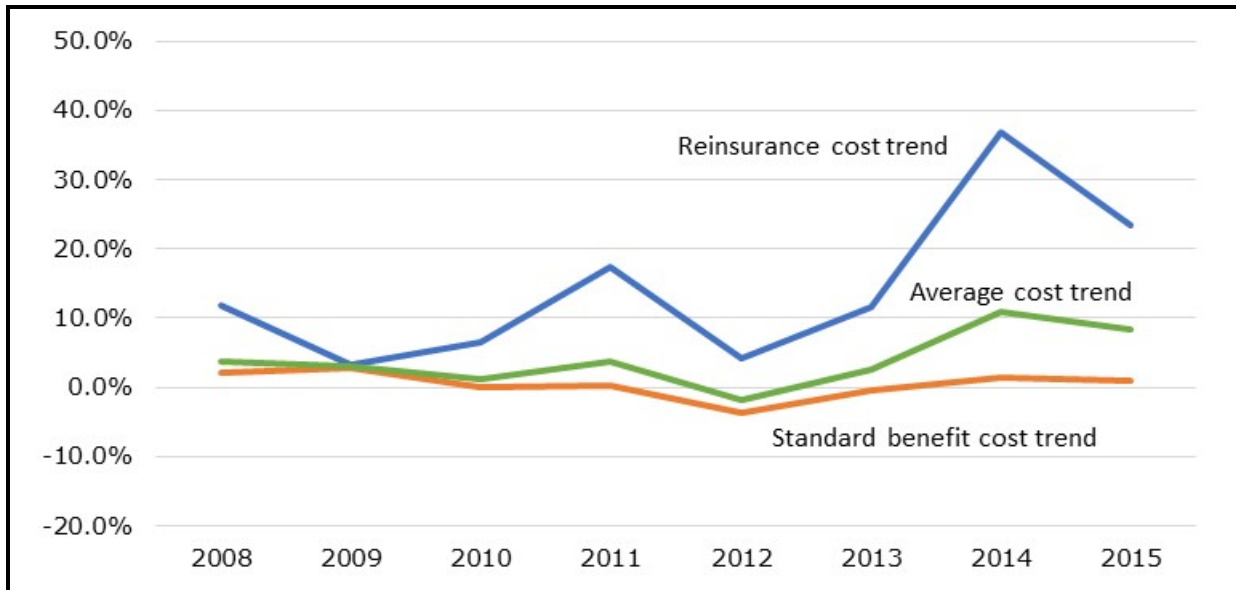
This recommendation was originally made by the 2010–2011 Panel (Recommendation II-30). The drop in the RDS count from 2012 to 2013, when the tax change took effect, reflects employers moving their retirees from the RDS program to other available Part D plans, primarily to Employer Group Waiver Plan programs. It is likely that RDS participation will continue to decline, but this should be monitored as employers consider alternatives. The 2010–2011 Panel noted that proportion of employers sponsoring retiree health plans has declined in recent years. Because current retirees and older employees are often grandfathered into maintaining existing benefits, the decline in retirees with coverage will likely evolve slowly over time until the death of current retirees with these grandfathered benefits.

Finding 4-2: The Panel finds that the near-term cost projections are reasonable and reflect recommendations of the 2010–2011 Technical Panel in recognizing recent Part D experience.

The 2010–2011 Panel recommended developing a “bottom-up” model to improve forecasts in the short term. Since the 2015 Trustees Report, the first 3 years of the cost projections have been based on a short-range trend model that reflects recent Part D experience and future anticipated costs based on publicly available information on patent expirations and new drug introductions. The model projects the first 3 years of cost trends and a short transition period for the fourth and fifth year before converging to the national health expenditures (NHE) projected growth rates.

Recommendation 4-2: The use of higher trend rates for the reinsurance component of Part D for the short term should be documented in the actuarial methodology section of the Trustees Report.

Figure 4.1
Historical per capita cost trend



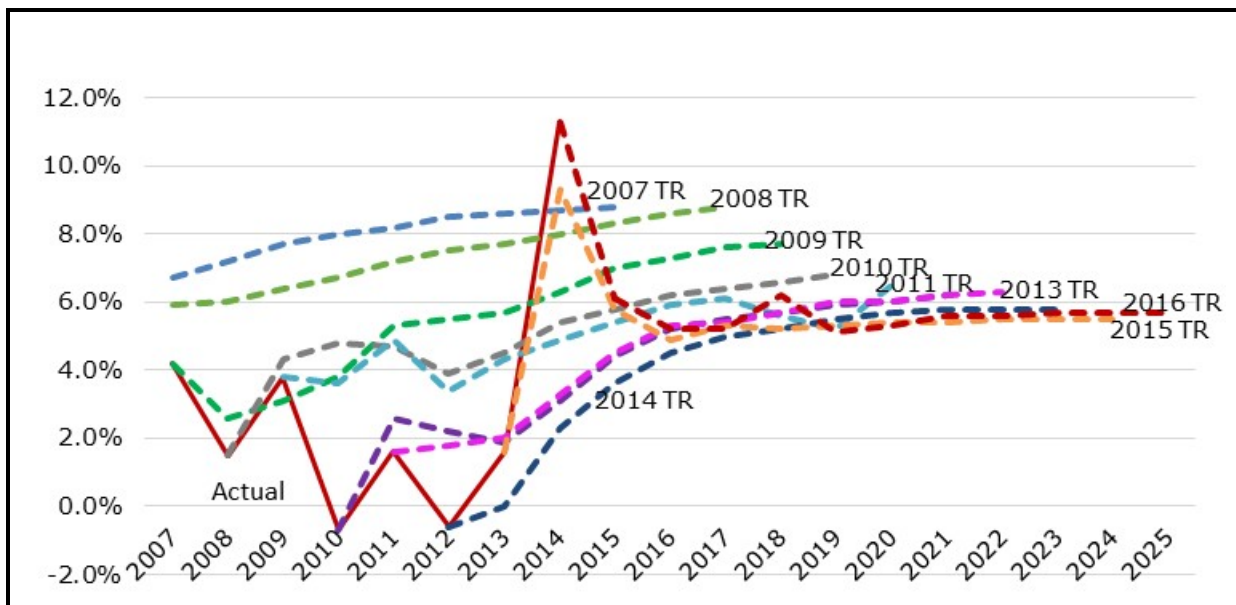
Source: Data provided by CMS Office of the Actuary, Technical Panel calculations.

There was a significant difference between the historical cost trends for amounts above the catastrophic threshold (reinsurance cost trend) and below the catastrophic threshold (standard benefit cost trend) (**Figure 4.1**). Most of this difference is because of the explosion of new specialty drugs and the use of these drugs by the Medicare population. The Panel thought that it would be important to use two different cost trend rates in the projections because of this historical experience. In discussing this with OACT, we understand that this difference is currently recognized in the projections. A larger gap in trend between the reinsurance and standard benefit cost trend is used in the first year (about five percentage points higher) and decreases over the next 5 years, with about a one percentage point difference from year 5 to year 10. The average cost trend is the result of the short-range trend model. Using a higher cost trend rate for the reinsurance benefits implies using a lower cost trend rate for the other Part D benefits so that in the short term, the weighted average will be similar to the trend used today (i.e. similar to the current model output). The Panel feels that this is an important distinction in the cost projections and should be documented in the Trustees Report.

The 2010–2011 Panel recommended that OACT identify the sources of discrepancy between recent forecasts of prescription drug spending growth and subsequent actual experience. The Panel found that recent projections have been more stable than the prior estimates.

The projection of prescription drug costs in the NHE has declined since the last Panel report. The underlying cost trends for the Part D program are heavily related to the prescription drug projections included in the NHE. The 2010–2011 Panel found that NHE projections available for the 2007 through 2011 Trustees Reports varied significantly. The 2010–2011 Panel recommended that OACT investigate the cause of the differences. In reviewing the NHE prescription drug projections compared with actual experience, the projected NHE costs have decreased significantly. There are many reasons for lower projected spending, including a stabilization of the drug market and better predictive analytics from several outside sources that track new drugs to be introduced and those that are expected to lose their patent.

Figure 4.2
National health expenditure (NHE) drug trend projections by Trustees Report (TR)



Source: CMS Office of the Actuary

Figure 4.2 shows that the current trend line (solid red line) is much lower than projected trends through the 2011 Trustees Report, which was the last report reviewed by the 2010–2011 Panel. The spike in 2014 was not picked up when the 2014 Trustees Report was issued, but subsequent years have been projected relatively close to each other. The 2014 spike was due to new brand name drugs introduced, particularly two new and expensive drugs to treat Hepatitis C. Multiple sources suggest that the one-time blip in trend has since moderated as the demand for and use of the drug has fallen (2017 Medicare Trustees Report, IMS Institute for Healthcare Informatics, 2016).

As recommended by the 2010–2011 Panel, OACT made several enhancements to the NHE prescription drug spending projections. First, the projection approach to show the impact of

likely patent expirations on drug spending has improved since 2010. In addition to identifying any drug in the top 50 that will soon lose patent protection, OACT has also developed a methodology for determining the impact on spending for each specific drug when that drug loses its patent protection.

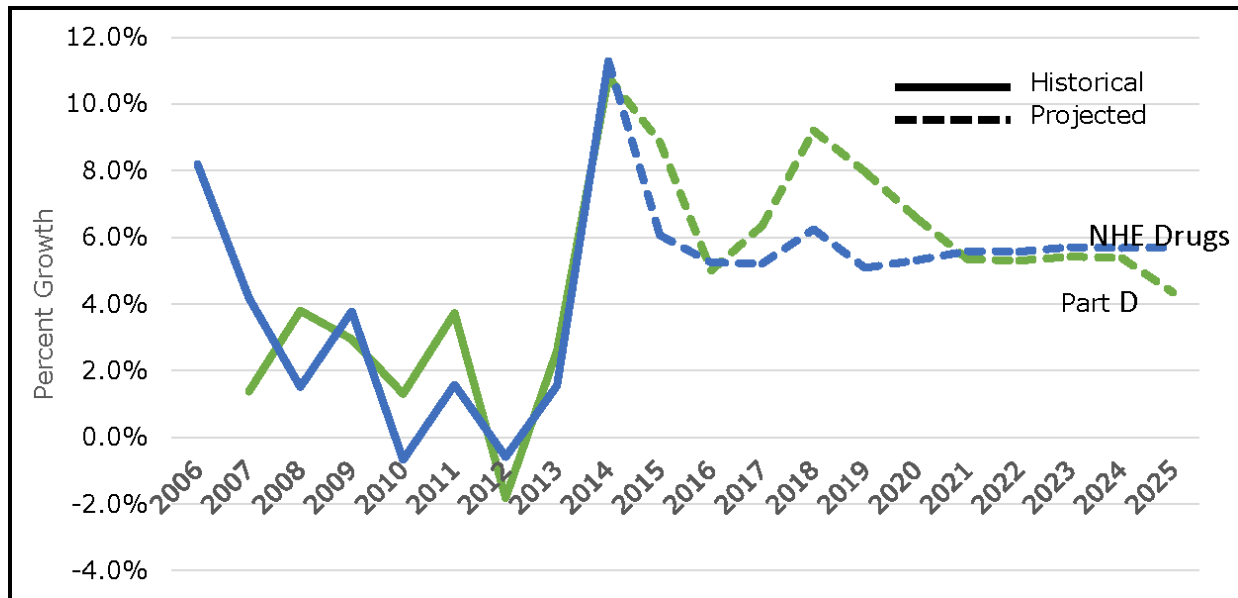
Second, the analysis of the pipeline of potential new drugs has been expanded. Although the impact from new drugs remains volatile and subject to considerable uncertainty, the pipeline analysis is organized by therapeutic class, and as a result, effort can be concentrated on the drug candidates in the top therapeutic classes that would most likely significantly increase drug spending if approved.

Finally, the National Health Expenditure prescription drug spending projections have been enriched by incorporating the results from the bottom-up Medicare Part D methodology.

Recommendation 4-3: The Panel recommends that OACT study the cost management techniques used by the Part D insurers in the past decade to understand whether they have influenced historic cost trends that may not continue in the future.

The historical cost trends of the Part D program have generally tracked the prescription drug component of the NHE in the past 10 years. **Figure 4.3** shows this comparison, as well as projections included in the 2016 Trustees Report.

Figure 4.3
Comparison of national health expenditure (NHE) drug and Part D per capita cost trends



Source: CMS Office of the Actuary

The trends in spending growth since the advent of part D differ markedly from those in the industry more generally. Commercial trend rates have been somewhat higher during the same historic timeframe. The 2007 through 2013 average annual trend rate was 3.6 percent for

commercial business and 2.1 percent for Part D (Health Care Costs Institute, *Health Care Cost and Utilization Reports* various years 2012 through 2015).

Part D insurers have used many different cost management tools to keep their program competitive in the market. These include utilization and care management techniques, focused contracts with pharmaceutical companies, tighter formularies, and preferred pharmacy arrangements. All of these methods have led to lower cost trends. Care management can continue to help control future costs. The other methods generally get the maximum impact over a short time. The Panel recommends that OACT review these methods to better understand how they have influenced historical experience and their potential effectiveness at controlling future costs.

4.2 Part D Long-Range Assumptions

The Panel heard expert presentations from several individuals, and many mentioned that there may be some correlation between prescription drug use and other medical services. From discussion with OACT, we understand that the projection model does not explicitly account for potential offsets from Part D that manifest in Parts A and B. However, in the short-range projection, such offsets are implicitly included, to the extent that they have occurred historically. In the long-range factors model, the assumption is that drug spending—and all other parts of Medicare—grows similarly to overall NHE. Therefore, any short-range effects are phased out through the transition.

The Trustees do not currently project utilization of drugs in Parts B and D. Therefore, if prescription drug utilization is reasonably expected to affect other medical services beyond the short-range projection window, the current long-range projection model would need to be modified. However, evidence on offsets is limited to short-range effects only. There is no evidence on whether offsets observed in the short term will continue in the long term.

Recommendation 4-4: The Panel recommends that the Trustees analyze and research drug utilization to better understand how changing utilization could affect other medical services in long-range projection assumptions. In addition, empirical evidence on offsets should be monitored and additional analysis should be performed to better understand any identified offsets and whether they change over time.

Empirical evidence on drug utilization, offsets to non-drug spending, and expert presentations to the Panel all imply that utilization of drugs (regardless of whether they are in Part D or B) is changing rapidly in ways that are not well understood in relation to Medicare projections. If this utilization was monitored and tracked over time, it would be possible to consider whether changing drug use and potential offsets of drug use in other parts of Medicare warrant changing the long-range assumptions used in the Factors of Growth Model.

A body of work shows offsets to drug spending. In response, a November 2012 report by the Congressional Budget Office (CBO) announced a methodological change to include offsets from Part D use when assessing potential changes to Medicare (Congressional Budget Office 2012). The offset CBO now applies is a 0.2 percent decrease in Parts A and B spending for every 1.0 percent increase in the number of prescriptions covered by Part D.

OACT reported to the Panel that in its analysis of Medicare Current Beneficiary Survey and Chronic Condition Warehouse database from 2000 through 2010, it found smaller offsets than CBO is using (Spitalnic presentation, 2016). They found a 0.05 percent to 0.12 percent reduction in Part A and B costs for each 1.00 percent increase in the number of prescriptions.

In addition, on the basis of presentations to the Panel on the current drug pipeline, we note that many future drugs could impact Part B spending as well, and there is potential for movement between Part B and D classification. Understanding where these future drugs will be paid under Medicare will be important to understand when setting assumptions regarding use in the long range.

Complementing these findings, there is a movement toward value-based contracting or value-based payment platforms where payers and at-risk providers will increasingly demand drugs that demonstrate value. Though there are myriad definitions of “value,” typically improved health that leads to reductions in use of medical services other than drugs (principally, hospitalization) is among them. Monitoring drug use and potential offsets to use of other medical services would capture any important changes to projections that arise from techniques like value-based payment.

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SECTION 5. IMPACT OF CHANGING PATTERNS OF AGING AND CARE

5.1 Changes in the Distribution of Spending by Age and Sex

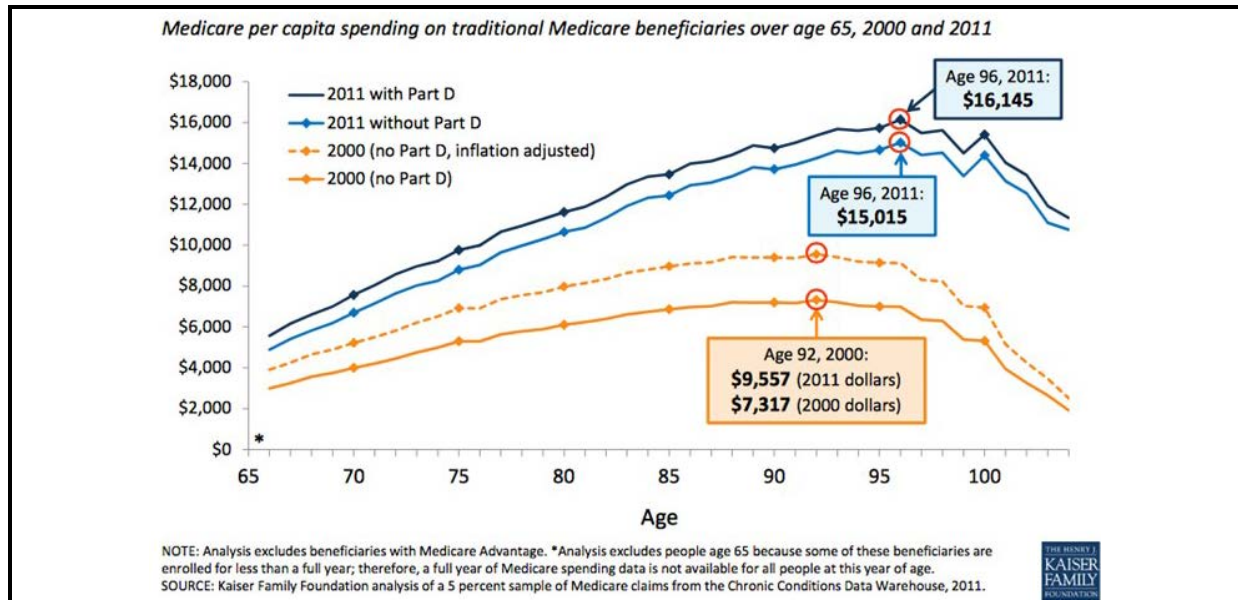
Finding 5-1: Medicare spending has grown much more rapidly at older ages (85+) compared with younger ages (65–69) for two reasons: increased use of inpatient post-acute care (e.g., skilled nursing facility [SNF]), and changes in expected time to death as longevity has increased. This trend has moderated during the most recent decade.

In its deliberation regarding factors that may affect long-range rates of growth in the Medicare program, the Panel investigated evidence on changes in the age distribution of spending over time resulting from changing morbidity, changing mortality, or other health system trends. Medicare spending rises with age up to a peak, followed by a slow decline. Life expectancy in the United States has grown steadily, [about 0.17 years annually](#), over the last half century (Pew Research Center 2014), and the peak age of Medicare spending has shifted to older ages as life expectancy has increased (**Figure 5.1**) (Neuman et al. 2016, Niu et al. 2015). Because end-of-life spending tends to be high regardless of age (about 25% of Medicare spending stems from patients in the last year of life), rising life expectancy tends to push this expensive period to later ages.

This postponed end-of-life spending could be expected to lead to a relative reduction in average spending at younger ages, compared with average spending at older ages. In addition to life expectancy trends, the increase of spending with age has grown in the last several decades (Niu et al. 2015, Meara et al. 2004). This is due, in part, to increasing spending on post-acute services for older beneficiaries (Niu et al. 2015, Zweifel et al. 1999). If not accounted for, and with changes in the age distribution of the population and changes in mortality rates, the trend in relative differences in spending by age could lead to overestimates of spending on younger age groups (as end-of-life spending is pushed to older ages) and underestimates of spending on older groups. These estimates in turn could impact long-range spending projections.

In response to questions regarding the source of changes in the age distribution of spending over time, the Panel requested information from OACT on these issues. OACT prepared a decomposition of the causes of rising relative spending at older ages. As seen in **Table 5.1**, about two-thirds of rising relative spending relates to increased use of skilled nursing and hospice care, while one-third of the increase can be explained by changing time to death, since spending in the last year of life is more than five times higher than average Medicare spending.

Figure 5.1
The age profile of spending has become steeper over time



Source: Neuman et al. 2016.

Table 5.1
Ratio of spending per enrollee in 85+ years age cohort versus 65–69 years age cohort

	1991	2012	Percent growth 1991–2012
Ratio of 85+ to 65–69 per member per month spending, 2014\$	2.13	2.60	23
Increase explained by time to death			7
Increase explained by skilled nursing facility and hospice care			19
Residual			–3

Source: Calculations by OACT staff using Medicare claims.

Finding 5-2: The Panel finds that the current approaches to the spending projections most likely to be impacted by growth in post-acute care at older ages are reasonable.

The rise in SNF care since 1991 has been unusually rapid. Panel members had varying views on whether this trend could continue and, if it did, at what rate it would continue. For example, new payment models give incentives to constrain care in expensive post-acute settings (Panel presentation by Mark Miller of MedPAC). However, some new payment models, such as bundled payment for joint replacement, may lead to increased volume, making the net effect on use of post-acute care unclear (Fisher 2016).

Current Trustee Reports account for growing SNF use in the short-range because short-range projections allow different rates of growth by type of service. Over the long run, there is little evidence to suggest a clear path of growth in SNF. Current methods in the Trustees Report, which project forward on the basis of service by age spending in the most recent 3 years, are likely to capture the most-recent trends in SNF use.

Finding 5-3: Because of the relationship between rising longevity and time to death, the interaction of age and spending has changed over time in ways that are only partially accounted for in the Trustees Report.

About one-third of growing relative spending at older ages relates to changes in survival, which can be captured with changing time to death. The trend of increased survival is expected to continue, so the Panel spent time considering whether time to death should be reflected in projections. The 2000 Technical Panel recommended that OACT adjust for time to death. In recent years, OACT staff have worked extensively on methods to incorporate time to death into projections. They presented this material at the December 19–20, 2016, Panel meeting (Cai et al. 2016). The annual average historical contribution of demographic change to growth in Medicare spending per member per month (1991–2008) is 0.16% with current Trustees Report methods and –0.30% when adjusted for time to death (Communication with OACT staff, February 2017). Although these are small in absolute terms, based on this preliminary research, controlling for time to death changes the direction of the effect of demographics (from increasing spending to decreasing spending). Also, for some services, like hospice and inpatient care, adjusting for time to death further lowers the estimated annual average contribution of demographic change to growth in Medicare per member per month spending.

Recommendation 5-1: The Panel recommends that the Trustees consider developing an approach to incorporate time to death into projections to account for the impact of rising longevity and changes in health on the age-sex distribution of spending over time.

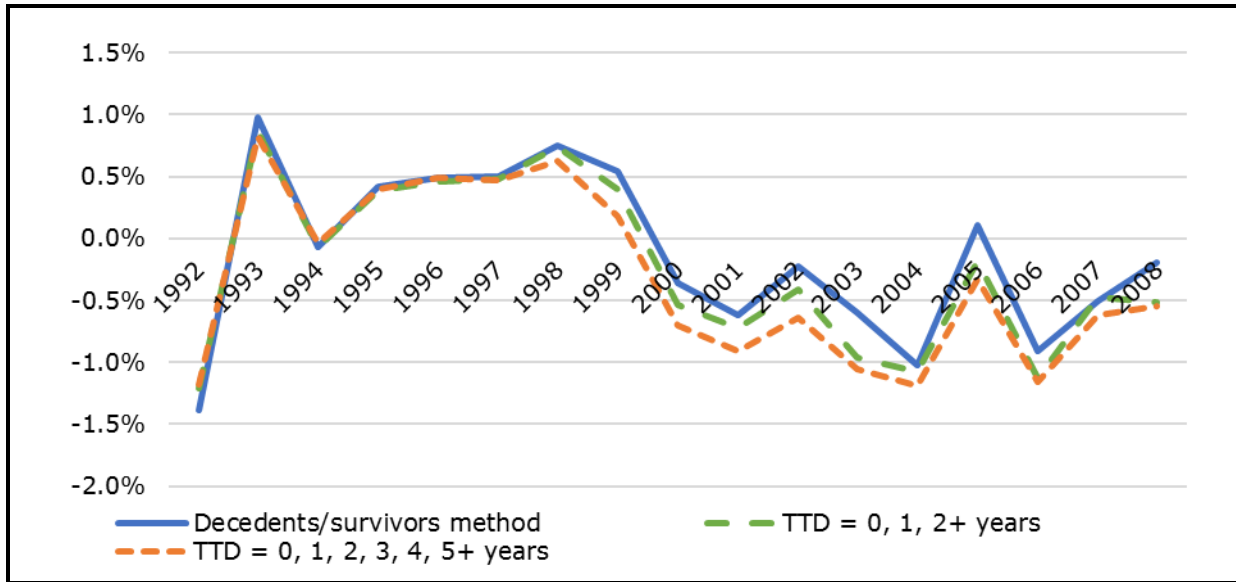
Demographic trends are a relatively fixed feature with respect to Medicare’s financial status and policies. Even if its impact is small, the act of accurately reflecting the contribution of demographics is useful, even if only to demonstrate the small magnitude of demographic effects to readers of the Trustees Report.

Furthermore, the Panel does not feel we currently have an accurate way to adjust for changing health status and its relation to spending. The Panel felt that measures of population health over time would have problems of comparability. In contrast, Panel members feel that longevity and time to death are a measurable and easy-to-understand, if crude, measure of a population’s health. In this sense, adjustments for time to death are a more straightforward way to account for trends in the health of the population. For all these reasons, the Panel recommends that the Trustees consider incorporating time to death into projections. OACT has made substantial progress in this area with its analysis in recent years, but the Panel recognizes that this will take additional modeling.

After considering OACT’s method with six time to death categories (0, 1, 2, 3, 4, and 5+ years to death), Panel members asked to see examples using a simple dichotomous 0, 1+ category distinction. End-of-life spending occurs primarily in the year of death, and the two-

category approach does not require simulating the distribution across time-to-death categories. The two-category measure has the advantage of being more transparent to readers of the TR, which Panelists support. However, the six-category version more accurately reflects changes in spending over time, as seen in **Figure 5.2**. OACT could consider either approach. The more-detailed six categories of time to death appears to more-accurately reflect spending as longevity changes, while simpler approaches do not require a five-year lag of data to implement.

Figure 5.2
Estimated contribution of change in time to death (TTD) to growth in real per-enrollee spending growth, 1992–2008



Source: Calculations from the Centers for Medicare & Medicaid Services Office of the Actuary

5.2 Shifts in Setting of Care Near the End of Life

Given the high spending that occurs in the final year before death, it is worth understanding how, if at all, care during this period is changing. The last two decades have seen a general decline in the proportion of deaths among the elderly population that occur in a hospital setting (Teno et al 2013). Supporting this move out of inpatient care, use of hospice and palliative care settings has increased. Although technology and specialty drugs have made it possible to provide intensive medical treatments near the end of life, patients are also more-educated about their care and are increasingly likely to opt for more palliative treatment options.

Recommendation 5-2: The Panel recommends that the Trustees and OACT monitor settings of care near the end of life. The goal in tracking settings of care would be to inform whether clinical and cultural shifts in the settings for end-of-life care are significant enough to warrant adjustments in the utilization assumptions for the different settings of care delivery (e.g., inpatient, outpatient, hospice).

As part of its charge to review changes in use of care and possible shifts across programs (Parts A, B, C, and D) and across settings within programs (inpatient hospital to other settings), the Panel considered trends in setting of care near the end of life. Time spent in the community

near the end of life, rather than inpatient settings, has received increasing attention as a measure of quality care, and patients express strong preferences to spend time at the end of life at home (Groff et al. 2016). Use of hospice services has grown in fee-for-service Medicare, while acute care hospital use has fallen in some settings, with patients more likely to die outside an acute care hospital setting (Teno et al. 2013). MA plans have begun to implement care management programs that educate patients on the availability of hospice use for patients near the end of life (Krakauer 2011).

These trends could change the cost of care. However, a review of the literature (Appendix D) suggested that these changes in attitude have not resulted in reductions in total spending, as patients that do use inpatient settings near the end of life are more likely to use intensive care (Teno et al 2013). The Panel felt that it did not have adequate evidence to draw conclusions regarding shifts in care use near the end of life

Section 5 — Impact of Changing Patterns of Aging and Care

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SECTION 6.
TRANSITION FROM SHORT-RANGE TO LONG-RANGE PROJECTIONS

The Panel was asked to consider long-range growth assumptions for hospital insurance (HI) and supplementary medical insurance (SMI) and the transition from short-range to long-range forecasts.

For each projection in the Trustees Report (part A, part B, and part D), estimates are based on prices (from current law) and a measure of volume and intensity. The volume and intensity of services are estimated differently in the short run (years 1 to 10), long run (years 26 to 75) and transition (years 11 to 25), as summarized in **Table 6.1**. Because different approaches are used for short-range and long-range periods, the growth rate at the end of year 10 could be substantially different than the growth rate that would occur if the long-range approach (the factors contributing to growth model based on NHE) was used.

Since 2000, only the 2000 Panel has considered the transition period explicitly in its report. Asked to comment on the definition of short range, transition period, and long range, the 2000 Panel found that defining these periods similarly for HI and SMI was appropriate despite differences in projection methods.

The 2010–2011 Technical Panel raised the issue of whether the transition from year 11 to year 25 should be handled differently. **Figure 6.1** below illustrates the challenge posed by transitioning from the short run to the long run. Short-range factors have led to high cost growth in parts B and D, but long-range projections anticipate that cost growth will return to much lower growth rates. This expectation is based on current law prices and volume and intensity predicted from the factors contributing to growth model. The transition requires a rapid decline in growth rates in parts B and D to “rejoin” the long-range growth rates predicted by the factors model. Ultimately, though, assessing the transition approach was outside the scope of the final 2010–2011 Technical Panel report.

Table 6.1
General approach to short-range, long-range, and transition periods in Trustees Report

	Price	Volume and Intensity
Years 1–10	Current law	Actuarial trend assumptions
Years 11–25	Current law	Linear transition
Years 26–75	Current law	National health expenditures factors model

Source: August 30, 2016, presentation by John Shatto to the Panel

Finding 6-1: A transition period between short-range and long-range forecasts for HI and SMI is an appropriate method.

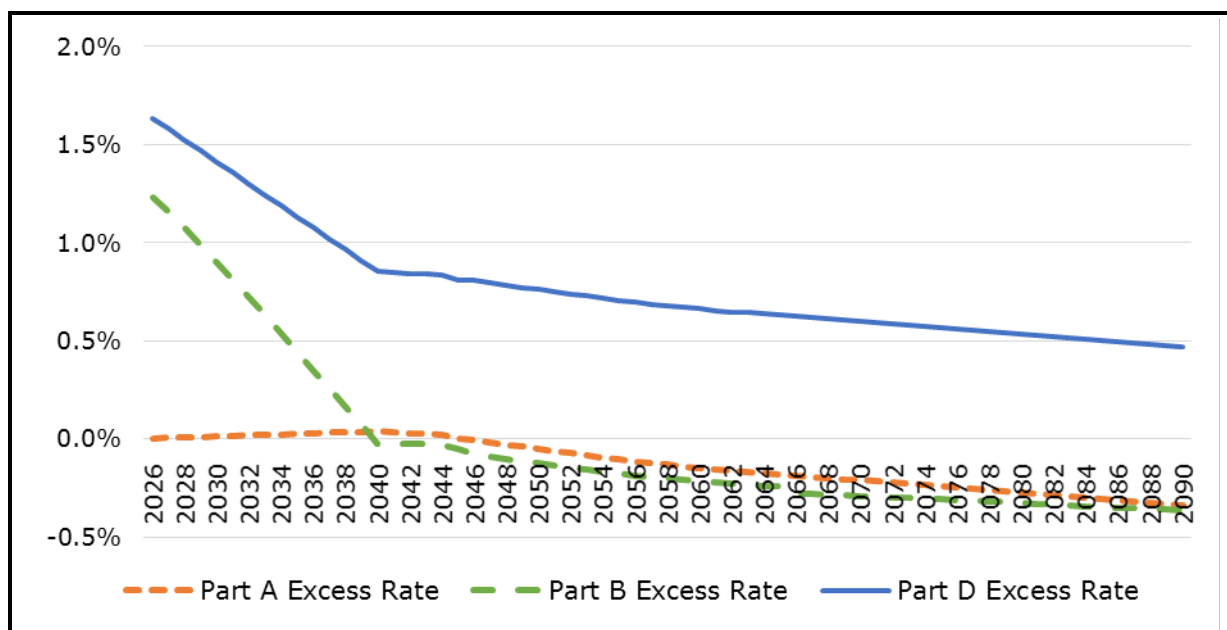
The current Panel discussed and dismissed an approach that would create difficult-to-explain cliffs in the rate of excess growth. The Panel felt that a discontinuity in the growth would be difficult to explain in this already complex set of projections. To see one problem that arises

from this approach, consider the following example. Suppose that the 2017 Trustees Report used no transition period. The “short-range” models would be used to make projections through 2026. The Factors of Growth Model would be used beginning in 2027. With this approach, the 2018 Trustees Report would then use the short-range projection methods through 2027, creating an artificially large difference in projected spending in 2027 between the 2017 and 2018 report.

Finding 6-2: The current length of the transition period is reasonable.

Given Panel agreement that the Trustees Report projections should retain a transition period from short-range to long-range projections, the Panel briefly considered the length of that transition. However, no evidence was presented, nor were Panel members aware of any evidence that would lead to changing the length of the transition period.

Figure 6.1
Medicare projected excess cost growth under current law, 2026–2090



Note: Calculations from the Centers for Medicare and Medicaid Services Office of the Actuary. An excess cost growth is the rate of change in per enrollee costs relative to the growth in per capita GDP. The chart displays projected long-range excess cost growth for Medicare Subparts A, B, and D under the current law. Under this scenario, excess cost growth is measured separately for each of the subparts through the end of the 75-year projection horizon because of the different growth rates applicable to each part. Excess cost growth displayed here does not include additional spending changes attributable to factors such as Independent Payment Advisory Board impacts or the age and sex composition of the Medicare population.

Finding 6-3: The current approach to the transition is reasonable because multiple alternative approaches to the transition yield very similar results.

Recommendation 6-1: The Panel recommends that the Trustees Report continue to use the same approach to transitions between short-range and long-range projections for both HI and SMI.

Given the Panel’s general agreement with short-range and long-range approaches to the projections, the Panel considered alternative, less-abrupt transitions between the short and long range. At the request of the Panel, the staff at OACT prepared detailed examples of an alternative approach to the current transition: a blending of the short-range and long-range assumptions. For each program, Part A, Part B, and Part D, OACT computed aggregate spending in five ways: (1) as currently shown in the 2016 TR, (2) under a scenario that extends the short-range methods forward from years 11 through the projection, (3) under a scenario that extends the long-range “factors contributing to growth model” back to year 11, (4) under a scenario that blends the dollar estimates implied by the short-range and long-range projection methods, and (5) under a scenario that blends the growth rates implied by short-range and long-range projection methods (**Figure 6.2, Figure 6.3, and Figure 6.4**).

The current methods used in the TR are more straightforward than the blended method, but they yield very similar results, as seen in Figures 6.2 to 6.4. Thus, the Panel concludes that there is no need to alter the approach to the transition period.

Figure 6.2
Part A expenditures under various alternatives for transition

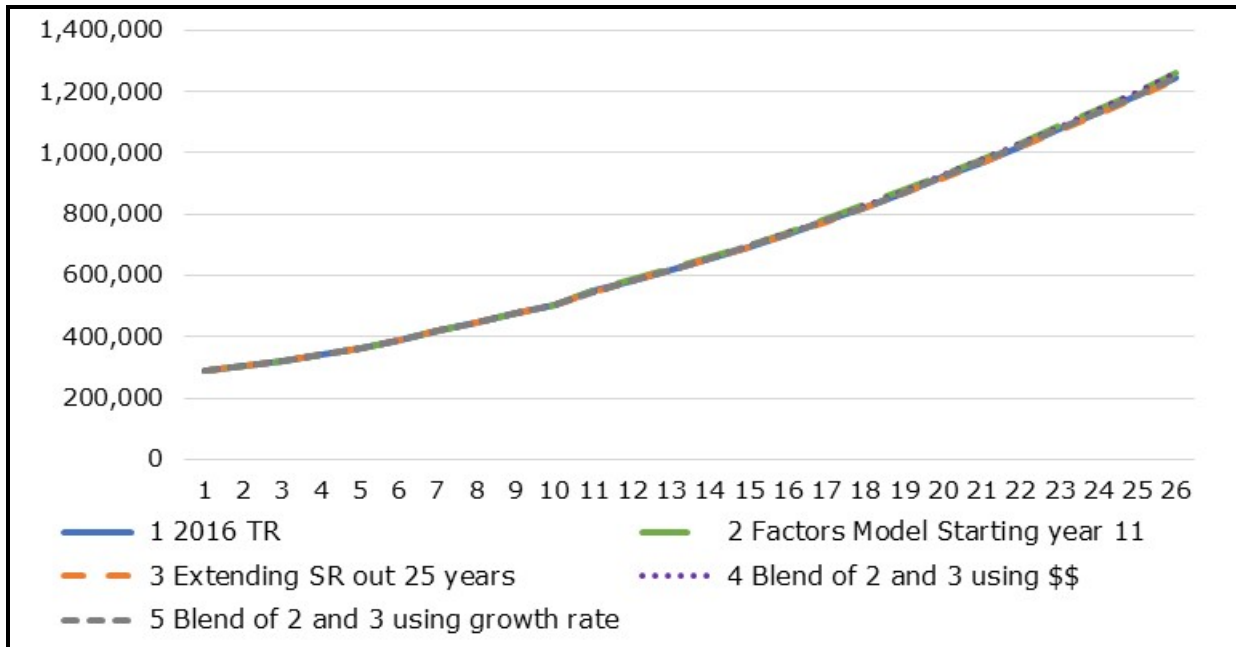


Figure 6.3
Part B expenditures under various alternatives for transition

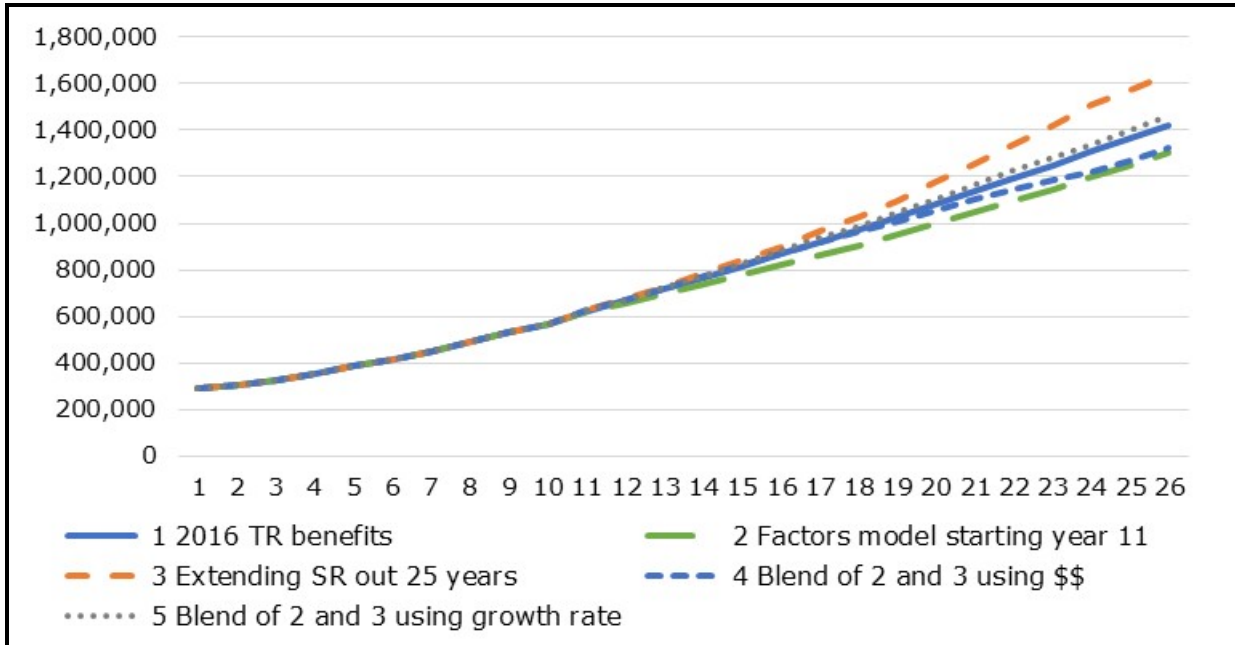
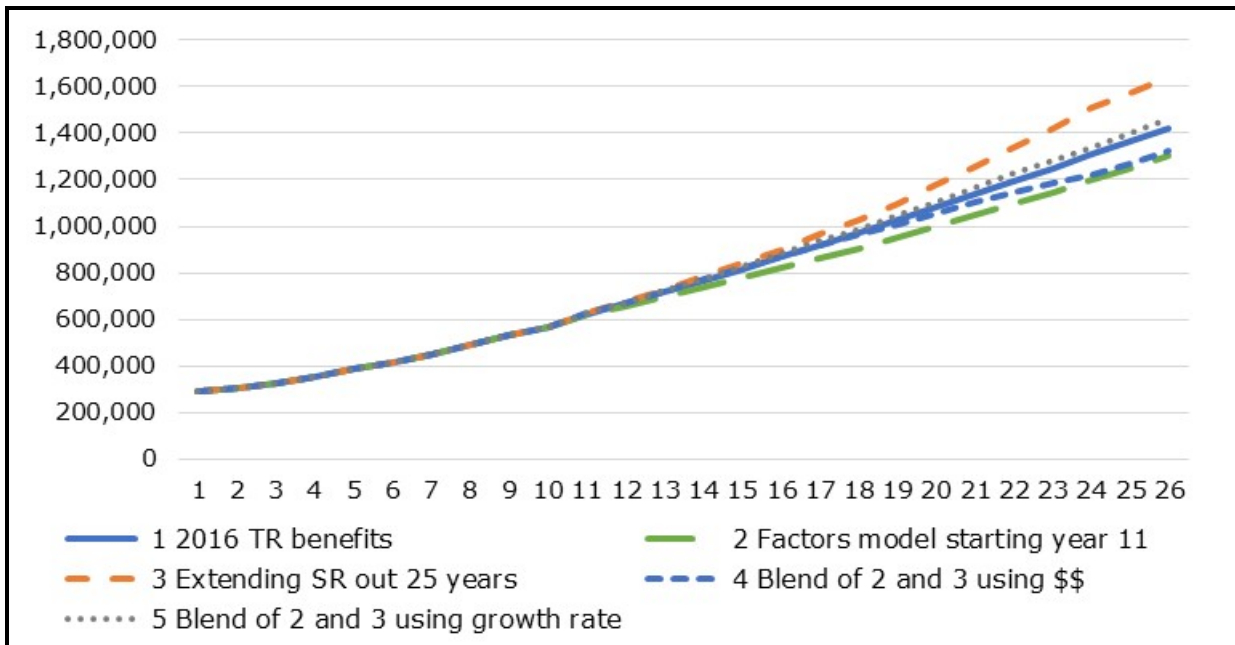


Figure 6.4
Part D expenditures under various alternatives for transition



SECTION 7. CONVEYING UNCERTAINTY AROUND BASELINE PROJECTIONS

In doing long-range projections, particularly of health care costs, there is considerable uncertainty and potential variation around any baseline projections. In the Trustees' Report, more than a dozen figures and tables dispersed throughout the report are used to present alternative projections and sensitivity analyses.

7.1 Simplifying Multiple Approaches

Finding 7-1: It is difficult for readers to understand and compare the different sources of variation and to understand the most-important drivers of the projections.

Future projections of health care costs are highly uncertain, especially over the 75-year horizons and dates of trust fund depletion that OACT considers. The Trustees Report includes multiple approaches to communicate uncertainty of the results, including High/Low projections and sensitivity analyses for each Medicare component.

The Panel found that although the Report includes considerable analysis of the sensitivity to assumptions, it may be hard to find and compare those analyses because of their number and dispersal throughout the report. In addition, it is not clearly conveyed that variations in the health care cost growth rate assumptions have a disproportionate impact on the overall projections relative to the impact of varying other assumptions.

The Panel also discussed alternative ways to consider and incorporate analyses of uncertainty into the report. Some Panel members felt that more could be done to put the assumptions driving the projections into historical context. The Panel concluded, however, that the potential to do a formal stochastic analysis of per capita cost growth is limited because selecting each parameter that would enter such a model is itself highly uncertain and subjective, and it could convey a false sense of statistical rigor.

Recommendation 7-1: The main discussion of uncertainty should be consolidated and illustrated in a way that conveys the most-important drivers of growth.

Some of the separate discussion of uncertainty is necessary, as there needs to be presentation of results by Part (A, B, D). However, to the extent possible, the discussions and presentation of uncertainty should be consolidated in one section of the Trustees Report. The Report should be presented in a manner that isolates the effects of changes in the major drivers in future costs (e.g., per capita cost growth vs. demographics).

7.2 High- and Low-Cost Scenarios

Finding 7-2: The high- and low-cost scenarios posit a wider range of potential growth rates relative to the intermediate projection in the first 25 years, and modest rates of growth after that period.

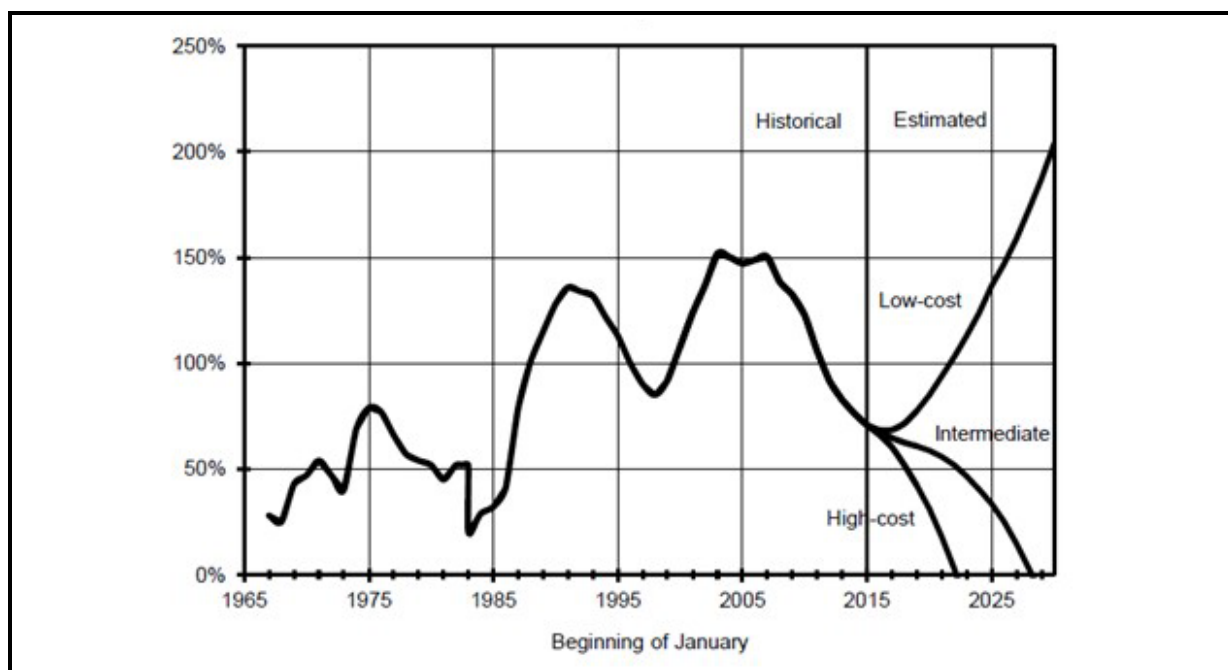
The Panel found that although plus or minus 2 percent is a reasonable range for an initial projection period, it is large when compounded over 25 years. The assumptions that the variance in growth rates will decrease dramatically after the first 25 years in all scenarios and that there

will be no variance in the final 25 years of the projection period are not consistent with the intent of showing a high- or low-cost alternative.

The current high/low alternate projections in the 2016 Trustees Report are highly driven by the cost trend assumption. The basic cost trend assumption is that under the high-cost alternative, health care costs will increase 2 percentage points more, relative to the taxable payroll increases, than the intermediate assumption. Likewise, the low-cost alternative assumes health care costs will increase 2 percentage points less.

These alternative cost projections are presented in the change in the HI trust fund balances in Figure III.B2 and the Estimated Hospital Insurance cost and income rates as a percentage of taxable payroll (of the Trustees Report (reproduced here in **Figures 7.1 and 7.2**).

Figure 7.1
HI trust fund balance at the beginning of the year as a percentage of annual expenditures



The 2–percentage point difference for the high/low cost projections has been used relatively consistently; the alternative projections have been shown in the HI Trustees Reports since 1974 including when the underlying cost trends have been in the 10 percentage point range. However, in the last few years, health care cost increases have been at their lowest since 1974.

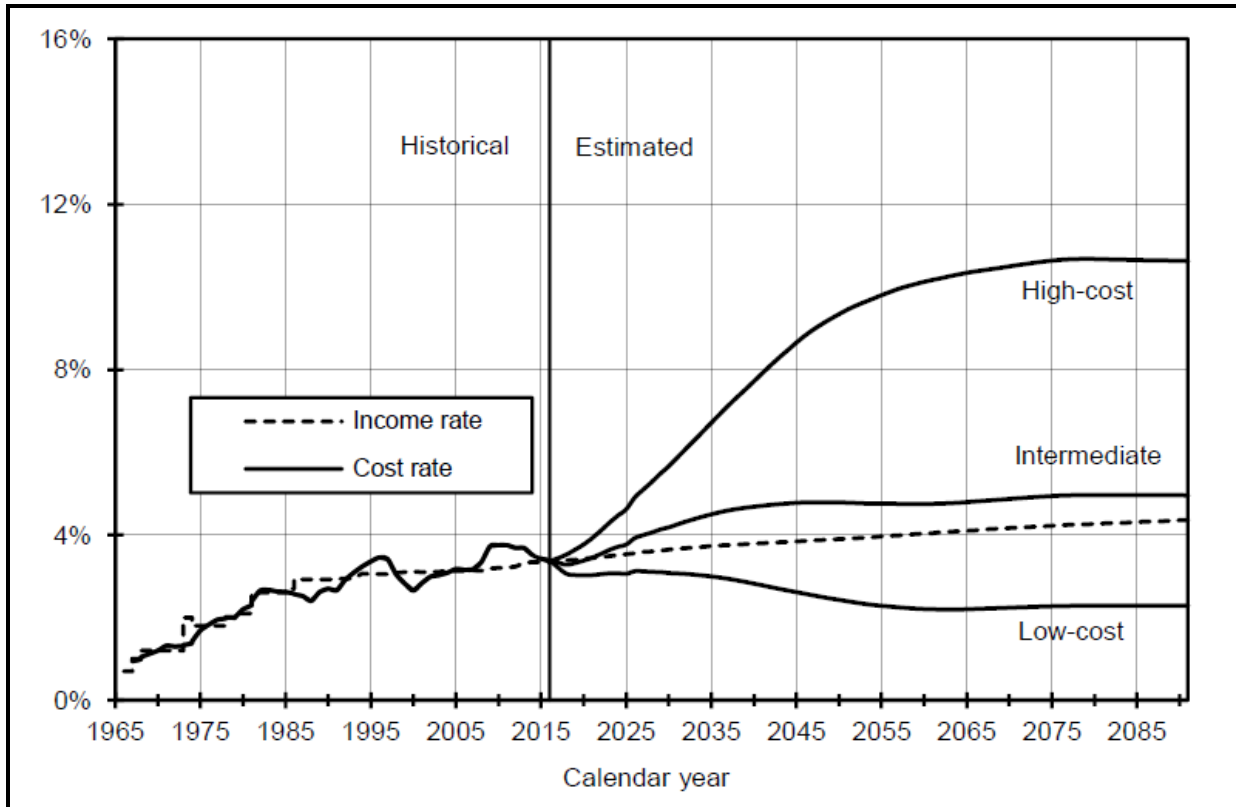
Recommendation 7-2: The Panel recommends that the Trustees consider modifying the “high-low” health care cost growth assumptions in two ways. First, it should consider starting to reduce the range of variation in cost growth (plus or minus 2 percentage points) at an earlier year. Second, it should gradually reduce to a range that is greater than zero throughout the projection period, rather than reverting to zero.

One approach that the Trustees could consider is aligning the range of plus or minus 2 percent in its high- and low-cost scenario medical cost growth rates with the short-range projections (10 years). The Panel feels that any small non-zero variance (e.g. ± 0.2 percent) is more plausible than a zero variance in the later years.

Finding 7-3: A possible interpretation of the high/low graphs is that there is an equal chance that either the low-cost or high-cost alternative may occur in the future. This is not the correct interpretation. The presentation could inadvertently convey that the higher- and lower-cost scenarios are equally likely, when that is not the intention.

Recommendation 7-3: The Panel recommends that the text convey that the high-cost and low-cost scenarios are not necessarily equally likely.

Figure 7.2
Estimated Hospital Insurance cost and income rates as a percentage of taxable payroll



Section 7 — Conveying Uncertainty Around Baseline Projections

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SECTION 8.

ISSUES AROUND PRESENTATION OF TRUSTEES REPORT

The Medicare Trustees Report is very detailed, offering considerable back-up for very complex projections. A detailed reading of the Report will provide a good sense for how the projections were made, but the overall message can get lost in the complexity.

Given that most users of the report (policymakers, public) will not read the report in its entirety, there is a need for a more-concise, easily found, and digestible synthesis of the report conclusions.

8.1 The Absence of an Executive Summary

Finding 8-1: Although the Medicare Trustees Report (the Report) is very detailed and offers considerable information to back up its very complex projections, there is a need for a more-concise, easily found, and digestible synthesis of the report conclusions.

The “Overview: Highlights” section on pages 7-9 of the 2017 Trustees Report summarizes the conclusions, and is in some sense serving the role of the executive summary, though not labeled as an Executive Summary. However, this overview (1) doesn’t highlight declarative statements, (2) it doesn’t include simple graphics, and (3) it does not include some of the cautionary statements found much later in the report. For example, it does not highlight the importance of per beneficiary cost growth in projected future spending, an important declarative statement found much later in the report. It does not elevate key takeaways about the major concerns the report raises. The format and placement of the Overview has been at the direction of the Trustees to stay consistent with the Trustees Report for the Old Age Survivors and Disability Insurance program.

Recommendation 8-1: The Panel recommends that the Trustees Report have an Executive Summary that synthesizes the conclusions of the report. Although the Overview section describes the report, it is longer than a traditional executive summary and may not highlight the most critical findings the way an executive summary would.

The Trustees Report should have an Executive Summary (labeled as such) that synthesizes the conclusions of the report. Declarative statements should be made based on “best estimates” under current law as clear findings. Ideally, the Executive Summary would be the first 3 or 4 pages of the report before the Table of Contents. Simple graphics should be included to help to illustrate the points. A separate “key findings” document with figures and bullet points would also be helpful.

The emphasis of the Executive Summary should be on the status of the programs, not on the assumptions that have been made to reach those conclusions. Progress/changes since the last report should be highlighted, but not at the expense of the overall status of the programs (e.g., the fact that there is no change in the date when the Trust Fund is projected to be exhausted should be less emphasized than the fact that such date is 1 year closer and the overall financial implications). Cautionary statements from later in the report also should be brought forward in the Executive Summary.

Recommendation 8-2: The Trustees should consider prioritizing and conveying the major takeaways for stakeholders for emphasis in the Executive Summary.

Because the Executive Summary will be the most widely read portion of the report, it will set the tone and priorities of the messages to be conveyed. We recommend that, where possible, graphical representations be used to supplement the prose discussion.

The following is an outline of potential key messages to convey in the Executive Summary. Given the range of potential messages, the Trustees should prioritize messages that are most important in any given year, balancing brevity and completeness.

- Based on intermediate projections under current law
 - Part A.
 - The year in which the Part A Hospital Fund is projected to be depleted.
 - The estimated tax burden required to bring the Part A fund into actuarial balance in the next fiscal year and the estimated increase in the payroll taxes required if no increase is implemented until the year of depletion.
 - A bar chart that reflects current payroll tax percentage, that required to achieve actuarial balance in next fiscal year, and that required to achieve actuarial balance in year of depletion.
 - Consider one scenario in which Part A is dealt with in the next fiscal year and another where Part A shortfalls are not addressed until the Fund is exhausted.
 - Part B.
 - The projected costs for Part B over short-range, intermediate, and long-range projects as a percentage of GDP.
 - A stacked bar chart that splits the required revenue between beneficiary premiums and general revenues under current law.
 - Part C.
 - The projected growth of Medicare beneficiaries (including MA enrollees) over future years.
 - Part D.
 - The projected costs for Part D over short-range, intermediate, and long-range projects as a percentage of payroll costs.

- A stacked bar chart that splits the required revenue between beneficiary premiums and general revenues (possibly split between direct subsidy and reinsurance) under current law.
- The total financial impact of Parts A, B, C, and D, based on a common metric (e.g., tax burden on typical household or impact on premiums for Medicare beneficiaries).
 - Include a discussion of the broader economic burden of the projected results (opportunity costs, impact on the fiscal deficit, and crowding out of the economy).
- Discussion of sustainability of the current law projections and an illustrative alternative projection.
- The key sensitivities and risks related to these financial projections.
 - Discuss sensitivity of projections to per capita expenditure growth rate, demographic trends.
 - Show shaded fan graph for overall costs of the programs with standard increments in per capita growth rate up or down.
 - Reinforce that current “best estimate” projections assume an overall declining rate of growth from historical patterns of growth (synthesize at high level and show graphically).
- Highlight, as appropriate, any key changes since last report and impact on projections.
- Include appropriate caveats.

Recommendation 8-3: To the extent feasible, simple graphics should be included in both the Executive Summary and the main report to help illustrate the content and improve the level of engagement with and understanding of the key results.

8.2 Representing Financial Implications in Terms of Tax Burden

Finding 8-2: The Medicare Trustees’ report is a complex document. It is challenging to convey the economic implications for taxpayers and the economy of projected levels of Medicare-financed spending.

The primary metrics for expressing the financial implications of Medicare spending are Medicare spending as a percent of GDP, which is included in the report’s introduction, and the estimated depletion date of the HI trust fund (the time at which it hits a zero balance), which is included in Section II.A, the Overview and Highlights. Later in the report, there are additional metrics specific to the different parts of the program. For Part A, Figure III.B.3. and Table III.B.7 present estimates of the magnitude of the difference between costs and income as a

percentage of taxable payroll, and Table III.B8 presents the actuarial balance, defined as the difference between the summarized income rate for the valuation period and the summarized cost rate for the same period. For Parts B, and D, the report presents estimates of spending for each part as a percentage of GDP (see, for example, Figures III.C4. for Part B and II.D1 for Part D). In addition, Table II.F3 shows SMI General Revenues as a Percentage of Personal and Corporate Federal Income Taxes, and II.F2 compares average monthly SMI benefits, premiums, and cost-sharing to the average monthly Social Security Benefits.

These approaches are helpful for describing the long-term impact of individual parts of the program, which is crucial given the different financing mechanisms for each part. However, they lack a picture of the full burden of projected spending of the program across its parts in ways that can be conveyed to a broader audience. In particular, spending as a percentage of GDP is likely less meaningful even to some decision makers, than the potential tax burden that would be needed to finance the projected spending. They do not convey the potential impact of higher spending on future growth of the economy.

Providing information from the perspective of taxpayers is important for two reasons:

- First, it provides information to the public on how much either they or future generations will likely pay for Medicare benefits in the future. Although the report provides information on spending levels and the total amount financed through taxation, the Panel felt that these metrics do not convey the likely price to taxpayers in the form of future tax rates.
- Second, translating spending for publicly financed services based on future tax rates provides information on the implications of public financing for economic growth. Higher tax rates are thought by most economists to produce effects on labor supply, career choice, investment choice, spending on tax advisors, and a host of economic activities.

The inefficiency cost or “excess burden” arising from these future tax rates will depend on responsiveness of behavior to taxation. Typical empirical estimates of that responsiveness suggest that excess burden will vary across tax instruments, but can be material. It would be lower for payroll taxes than general income taxes, for example. The additional excess burden cost of higher taxes (which increases with the square of the marginal tax rate) would be quite high for high-income taxpayers facing a progressive income tax. The increasing excess burden of growing entitlement spending, such as Medicare, and the harm that distortion will do to the economy when payroll or income taxes eat into the earnings of workers and firms in ways that change behavior is presumably one of the reasons why higher tax rates are not easily sustained.

Recommendation 8-4: The Panel recommends that the Trustees provide information in the Trustees Report on the per capita level of taxation that would be required to finance projected Medicare spending.

Although the Panel did not identify a specific approach to measuring future tax rates for Medicare-financed services, it did identify three principles guiding the development of a new measure:

1. The measure should translate future spending into some quantifiable measure of burden for a typical taxpayer.
2. The measure should be based on total Medicare spending, including Parts A, B, C and D.
3. The measure should provide an estimate of marginal tax rates to convey the degree of economic inefficiency associated with future spending.

The Panel recognized two important challenges in making these calculations: First, it requires forecasting income and tax payments over an extended period. Second, the different parts of Medicare are financed using different types of taxes. The Panel, however, identified a 2011 study that addressed these challenges (Baicker and Skinner 2011). Baicker and Skinner developed a life cycle model of labor supply, saving, and longevity improvement to estimate the effects of future spending on Medicaid and Medicare in 2060 on average and marginal tax rates by income group, and they address differences in the types of taxes potentially used to finance different programs by conducting two scenarios with different assumptions regarding the type of tax instrument used to raise revenue and providing estimates for taxpayers at different levels of income within each scenario. Although the Panel recognizes that other approaches are possible, the Baicker and Skinner analysis demonstrates the feasibility of conducting an analysis that addresses the three issues identified by the Panel: (1) translating spending into a quantifiable measure of burden for individuals—in this case two different measures of taxation; (2) combining spending across programs to provide a better sense of the aggregate impact of multiple programs; and (3) estimating the impact on GDP as an indicator of the excess burden of taxation.

Section 8 — Issues around Presentation of Trustees Report

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SECTION 9. RECOMMENDATIONS FOR FUTURE RESEARCH

As noted above, there were important areas in which data were lacking to evaluate critical assumptions. Filling these gaps should be a priority for OACT before the next review. The Panel felt it would be useful to summarize the broad topics for which additional research could significantly enhance the Trustees' ability to further refine its projections. What follows is a recommendation summarizing the broad topics of study that are needed.

Recommendation 9-1: The Panel recommends further study of the following areas, all of which have substantial impacts on spending in one or more parts of the Medicare program:

- The response of various providers, including hospitals, physicians, and other service providers, to cuts in Medicare payment growth rates. Research should model any change in private prices in response to Medicare payment changes and, separately, the share of providers willing to accept Medicare patients.
- The use of prescription drugs in parts B and D, including the long-range offset of prescription drug spending on outpatient, inpatient, and other medical spending.
- Changes in setting of care near the end of life. This should include the share of deaths in different settings (home versus hospital) and the intensity of care in each setting (use of Intensive Care Unit near end of life).
- Changes in spending over time should, wherever possible, be decomposed into changes in volume and intensity of services. Examples of such decompositions would be the number of prescriptions used by Part D enrollees and the distribution of those prescriptions across different price groups. In Part B, changes could be decomposed into the number of professional services per beneficiary and some measure of the intensity of service.
- Changes in the share of beneficiaries enrolled in MA and any spillovers of MA enrollment on TM.
- Changes in the distribution of spending by age, including estimates of spending by time to death.

Each of the areas mentioned above arose repeatedly during Panel discussions. The Panel felt a high degree of uncertainty around what, if any, changes to recommend in each of these areas, even though there was consensus that change along these dimensions has been swift, with potentially large impacts on the solvency of Medicare and the Trustees' projections. Panel members felt that, at a minimum, descriptive trends in each of these areas should be tracked and consulted explicitly when revisiting methods for the Trustees Report projections.

Section 9— Recommendations for Future Research

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**APPENDIX A:
REVIEW OF ALTERNATIVE PAYMENT MODELS**

The following table includes a summary of results and the timeline for each program that is analyzed in this review. Note that the table only includes programs that have produced annual savings for Medicare. Therefore, it does not include newer programs such as Next Generation Accountable Care Organizations (ACOs), the Comprehensive Primary Care Initiative Plus (CPC+), or the Comprehensive Care for Joint Replacement Model. The table reports the timeline of each program and the estimates of the savings to the Medicare program. These reflect historic results for federal programs that continue to change over time. These results do not indicate future financial impact of newer versions of these programs.

Summary of payment models and their effect on Medicare expenditures

Name of program	Timeline for program	Effect on Medicare expenditures
Medicare Shared Savings Program	April 2012 through present	In Performance Year (PY) 2015, a net loss of 0.3%, or \$216 million (including shared savings incentive payments to ACOs). The Office of the Actuary has reported approximate savings of 2-3 times the gross benchmark savings.
Pioneer ACO Program	January 2012 through end of 2016	\$384 million in savings over 2 performance years (\$279.7 million in PY1, 2012; \$104.5 million in PY2, 2013) before accounting for bonus payments. The Office of the Actuary has reported gross savings of approximately 3 times the amount identified against benchmarks through 2013.
Bundled Payment for Care Improvement Initiative	January 2013 through present	Lack of significant overall differences in Medicare payment amounts for Models 2, 3, and 4 in Year 2 of program (October 2013 through September 2014)
Multi-Payer Advanced Primary Care Practice Demonstration	July 2011 through 2016	\$227 million in savings compared to patient centered medical home (PCMH) beneficiaries after accounting for practice payments. Savings were nearly \$171 million compared to non-PCMH beneficiaries.
Independence at Home Demonstration	2012 through September 2017	\$14 million in savings for PY1 (2012–2013) and \$4.3 million in PY2 (2013–2014)
Comprehensive Primary Care Initiative	October 2012 through December 2016	No statistically significant change in Medicare costs in PY1 and PY2 (2013–2014) including care management fees

The following are detailed reviews of reports and evaluations pertaining to each of these programs.

Evaluation of Pioneer ACO Program, Years 1 and 2

<https://innovation.cms.gov/files/reports/pioneeracoevalrpt2.pdf>

The Pioneer Program was a shared savings ACO initiative incorporating high levels of risk that began in January 2012 and ended in 2016. Pioneer ACOs saved a total of \$384 million over the first two performance years, with \$279.7 million in savings accrued in the first performance year (2012) for 675,512 beneficiaries and \$104.5 million in the second performance year (2013) for 806,258 beneficiaries. This amounted to savings of \$35.62 per beneficiary per month (PBPM) in Performance Year (PY) 1 and \$11.18 PBPM in PY2. Twenty Pioneer ACOs had statistically significant savings in at least one performance year, while 12 did not. Savings were accompanied by reductions in use, particularly in regard to acute care inpatient stays and days, evaluation and management services, procedures, imaging services, and tests.

Early Performance of ACOs in Medicare

<http://www.nejm.org/doi/full/10.1056/NEJMsa1600142#t=articleTop>

The Medicare Shared Savings Program (MSSP) is the primary permanent ACO initiative in Medicare. The program was established in 2011, with ACOs joining the program as early as April 2012. An analysis of MSSP ACOs found significant savings in the pre- versus post-contract period. Pre-contract total annual Medicare spending per beneficiary was similar for ACOs and non-ACOs, as were spending trends. In PY1, the adjusted differential change for 2012 starters relative to the control group was \$144 per beneficiary, representing an estimated savings of 1.4%. This was driven by a 1.4% reduction in spending on inpatient care, a 2.1% reduction in spending on hospital outpatient care, a 6.1% reduction in spending on post-acute care at skilled nursing facilities (SNFs), and a 2.7% reduction in spending on home health care, though there also was a 1.5% increase in spending on office-based outpatient care.

In total, ACOs reduced spending by \$238 million but did not produce net savings for Medicare, which paid \$244 million in bonuses to ACOs.

Medicare ACO Results for 2015: The Journey to Better Quality and Lower Costs Continues

<http://healthaffairs.org/blog/2016/09/09/medicare-accountable-care-organization-results-for-2015-the-journey-to-better-quality-and-lower-costs-continues/>

In 2015, gross savings for MSSP were \$429 million. However, shared savings bonus payments were \$646, resulting in a net loss of \$216 million (0.3%). Generally, ACOs that have more experience in the program and have participated in it for more years are more likely to succeed than newer entrants. For example, in 2015, 54.5% of 2012 starters shared in savings, whereas only 21.3% of January 2015 starters did. Also, smaller, well-integrated physician-led

ACOs, most of which do not include hospitals, tended to produce more savings. In addition, ACOs with higher financial benchmarks received more in financial savings on average.

Association between Medicare ACO Implementation and Spending Among Clinically Vulnerable Beneficiaries

http://www.commonwealthfund.org/~media/files/publications/in-the-literature/2016/june/1882_colla_medicare_acos_spending_jamaintmed_06_20_2016_itl.pdf

Researchers used 5 years of Medicare data (2009–2013) to compare changes in spending/use of services for beneficiaries cared for by ACOs versus non-ACOs. Before implementation of ACOs, the average annual spending for clinically vulnerable patients was 114% greater than spending for the overall group of beneficiaries (\$22,235 vs. \$10,378 per person). After ACO implementation, spending decreased by \$136 per beneficiary per year, or 1.3%, for the overall beneficiary population and \$456, or 2%, for the clinically vulnerable population. Acute care spending decreased by \$46, or 1.4%, per beneficiary and \$192 per beneficiary in the clinically vulnerable group, or 2.3%. SNF spending decreased \$40, or 5%, overall, and \$120, or 5%, for the clinically vulnerable. Overall, hospitalizations and emergency department visits decreased by 5.1 and 12.2 events, respectively, per 1,000 beneficiaries. For the clinically vulnerable group, they decreased by 11.6 and 16.5 events annually per 1,000 beneficiaries.

Association between Hospital Participation in a Medicare Bundled Payment Initiative and Payments and Quality Outcomes for Lower Extremity Joint Replacement Episodes

<http://jamanetwork.com/journals/jama/fullarticle/2553001>

The Bundled Payments for Care Improvement (BPCI) initiative establishes payments for episodes of care for common procedures and services across different providers. The program launched in January 2013. This study compared lower-extremity joint replacement episodes both in a baseline and intervention period between BPCI-participating hospitals and non-BPCI-participating comparison hospitals. The BPCI mean Medicare episode payments were \$30,551 in the baseline period and declined by \$3,286, or 10.7%, in the intervention period. The comparison mean Medicare episode payment was \$30,057 in the baseline period, which declined by \$2,119, or 7%, to \$27,938 in the intervention period. Therefore, mean Medicare payments declined \$1,166 more for the BPCI hospitals than the comparison group, mainly because of reduced use of institutional post-acute care.

Centers for Medicare & Medicaid Services (CMS) BPCI Models 2–4: Year 2 Evaluation & Monitoring Annual Report

<https://innovation.cms.gov/Files/reports/bpci-models2-4-yr2evalrpt.pdf>

The Lewin Group led an evaluation of Models 2, 3, and 4 for Year 2 (October 2013 through September 2014) of BPCI. Lewin did not detect statistically significant changes in Medicare payments between BPCI and comparison groups from the baseline to intervention period. Lewin reasons that the lack of impact is because of less than 1 full year of BPCI experience for many participants; a limited sample size; and an impact of clinical episodes that is

aggregated not individualized, potentially masking payment changes for particular types of episodes. Nonetheless, total standardized payments did decline to an extent because of shifts to less-expensive care settings, discharge planning/care management, and reduced utilization (i.e., lower length of stay for SNFs).

Model 2 (retrospectively reconciled bundle for inpatient stay in acute care hospital plus post-acute care and services up to 90 days after hospital discharge). Average Medicare payments for the anchor hospitalization and 90-day post-discharge period for orthopedic surgery declined \$864 (3%) more for episodes initiated by BPCI hospitals than for comparison hospitals. For 30-day cardiovascular surgery episodes, total payments declined \$4,149 more for BPCI episodes than for episodes initiated at comparison providers. However, average Medicare payments for the index hospitalization for spinal surgery and the 90-day post-discharge period increased \$3,477 more for episodes initiated at BPCI hospitals than for comparison providers.

Model 3 (retrospectively reconciled bundle for episode of care triggered by acute care hospital stay that begins at initiation of post-acute care services with a SNF, inpatient rehabilitation facility, long-range care hospital, or home health agency). Under this model, there were statistically significant declines in SNF payments. However, there were no statistically significant differences between BPCI/comparison episodes from the baseline to intervention period for Medicare standardized allowed payments. There were also no statistically significant differences in payment for home health agency–initiated episodes except for total amount of payments included in the pre-bundle period for nonsurgical episodes. Additionally, standardized payments for SNF services declined in Model 3 SNF-initiated episodes relative to the comparison group for all clinical episode groups except the nonsurgical respiratory one.

Model 4 (prospectively determined bundle instead of retrospectively reconciled bundle for all services provided in episode of care at hospital). There was no statistically significant differences in Medicare standardized allowed payments between BPCI/comparison group episodes for the anchor hospitalization plus the 90 days post-discharge from the baseline to intervention period for orthopedic/cardiovascular surgery clinical episodes. However, there was a statistically significant increase in payments during the first 30 days post-discharge for cardiovascular surgery.

Multi-Payer Advanced Primary Care Practice (MAPCP) Demonstration Second Annual Report

<https://downloads.cms.gov/files/cmmi/mapcp-secondevalrpt.pdf>

<https://downloads.cms.gov/files/cmmi/mapcp-thirdevalrpt.pdf>

<https://downloads.cms.gov/files/cmmi/mapcp-finalevalrpt.pdf>

The MAPCP demonstration is a program designed to promote Primary Care Medical Home practices in eight states: Maine, Michigan, Minnesota, New York, North Carolina, Pennsylvania, Rhode Island, and Vermont. The demonstration pays a monthly care management fee for beneficiaries receiving primary care from advanced primary care practices. The second annual report from RTI International includes analysis lasting from 2011–2013 for every state except Pennsylvania, Maine, and Michigan, which lasted from January 2012 through December 2013. The third annual report (which did not include estimates of gross savings across all

demonstration states) lasts through 2014. Five states are continuing to participate in the program through 2016.

In their applications, the participating states projected reductions in avoidable inpatient hospitalizations, avoidable emergency department visits, and hospital readmissions, leading to decreases in expenditures. However, in the second annual report, only three of the eight MAPCP demonstration states—Vermont, New York, and Michigan—were associated with a slower rate of growth of total Medicare expenditures. Some initiatives were associated with slower growth in certain expenditure categories, such as specialty physician expenditures, non-facility expenditures, post-acute care, imaging, and laboratory expenses. Overall, in Years 1 and 2, the eight demonstration states produced net savings of \$323.5 million, for an average of approximately \$162 million per year. See the following table below which presents findings relative to beneficiaries assigned to patient centered medical homes. Note that the final evaluation report become available as of June 2017 and reports \$277 million in savings relative to beneficiaries assigned to patient centered medical homes after accounting for practice payments.

**Estimates of gross savings, MAPCP Demonstration fees paid, and net savings:
Year 2 of MAPCP Demonstration Reported in Second Annual Evaluation Report**

State	MAPCP Demonstration states				
	Eligible beneficiary quarters in Years 1 and 2	Gross savings in Years 1 and 2	Total MAPCP Demonstration fees	Net savings in Years 1 and 2	Return on fee investment
New York	157,032	\$12,637,119*	\$3,258,078	\$9,379,041	3.88
Rhode Island	60,214	\$5,795,880	\$1,009,374	\$4,786,506	5.74
Maine	247,558	-\$32,518,083	\$7,238,571	-\$39,756,696	-4.49
Minnesota	106,616	-\$19,553,595	\$1,258,309	-\$20,811,903	-15.54
North Carolina	152,322	\$9,955,916	\$4,166,490	\$5,789,426	2.39
Michigan	1,518,542	\$380,069,806*	\$43,964,835	\$336,104,971*	8.64
Pennsylvania	217,997	\$4,906,765	\$3,916,170	\$900,594	1.25
Vermont	381,814	\$35,699,155	\$8,603,828	\$27,095,327	4.15
Total	2,843,095	\$396,992,963	\$73,415,655	\$323,577,266	5.41

Note: * = statistically significant

Evaluation of the Comprehensive Primary Care Initiative (CPC): Second Annual Report

<https://innovation.cms.gov/files/reports/cpci-evalrpt2.pdf>

The CPC was a 4-year multipayer initiative that offered population-based care management fees with shared savings opportunities to participating primary care practices. It began in October 2012 and lasted through December 2016, at which point it was succeeded by CPC+, which began in January 2017. According to the evaluation, CPC reduced Medicare Fee-For-Service (FFS) expenditures, not including CPC care management fees, by 1% during the first 2 years, or \$15 PBPM in Year 1 (2013) and \$8 PBPM in Year 2 (2014), for an average of \$11 PBPM. The decline was driven mainly by reductions in inpatient hospital/SNF expenditures. However, when the care management fees are incorporated back into the modeling—for an average of \$18 PBPM—the savings are negated. Overall, CPC did not generate savings, and there was no statistically significant difference in change over time in total costs. None of the regions achieved statistically significant net savings over the first 2 years of CPC.

Independence at Home Demonstration Performance Year 2 Results

<https://www.cms.gov/Newsroom/MediaReleaseDatabase/Fact-sheets/2016-Fact-sheets-items/2016-08-09.html>

<https://innovation.cms.gov/Files/x/iah-yroneresults.pdf>

The Independence at Home Demonstration provides chronically ill patients with primary care services in a home setting. Practices that succeed in meeting designated quality measures while generating Medicare savings will be able to receive incentive payments. The program began in 2012, was originally authorized for 3 years, and then was extended for 2 more years through September 30, 2017. The initiative saved over \$10 million, or an average of \$1,010 per beneficiary. However, CMS paid out \$5.7 million in incentive payments, cutting net Medicare savings by more than half. The initiative served 10,484 beneficiaries in 15 participating practices.

For Year 1, the Initiative saved \$25.9 million. However, CMS paid out approximately \$11 million in practice incentive payments, reducing net Medicare savings by this amount.

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**APPENDIX B:
REVIEW OF RECENT MEDICARE ADVANTAGE TO TRADITIONAL MEDICARE
SPILLOVERS LITERATURE**

1. “[Managed care and medical expenditures of Medicare beneficiaries](#),” by Michael Chernew, Philip DeCicca, and Robert Town (Journal of Health Economics, 2008)

The authors use an instrumental variables (IV) approach and 1994–2001 Medicare Current Beneficiary Survey data to estimate that each percentage point increase in Medicare health maintenance organization (HMO) market penetration leads to a 1 percent decrease in annual, per capita traditional Medicare (TM) spending. The spending reduction is for both inpatient and outpatient care and is concentrated among TM beneficiaries with at least one chronic condition.

Their instrument for Medicare HMO market penetration is the county-level government payment rate to plans. Higher payment rates attract plans into markets and permit more-generous benefits, which increases market penetration. During the study period, those county-level plan payments were divorced from TM spending (the outcome variable), making them valid (exogenous) instruments for the analysis.

2. “[The spillover effects of Medicare managed care: Medicare Advantage and hospital utilization](#),” by Katherine Baicker, Michael Chernew, and Jacob Robbins (Journal of Health Economics, 2013).

Using a similar IV approach as Chernew, DeCicca, and Town, the authors examined the relationship between greater Medicare Advantage (MA) enrollment and hospital utilization in the following year. Their analysis focused on five states represented in 1999–2009 Healthcare Cost and Utilization State Inpatient Databases (SIDs)—Florida, New York, California, Arizona, and Massachusetts—which account for almost half of all MA enrollees.

They found higher MA penetration associated with reduced TM and commercial market hospital costs and utilization. A 10 percentage point increase in MA penetration is associated with a about a 4.5% decrease in overall and TM-specific hospital costs and a commensurate shortening of length of stay. In addition, preventable hospitalization rates are lower when MA market penetration grows. Their (non-IV) ordinary least squares (OLS) specification is conservative, obtaining a smaller spillover.

The size of the estimated spillover to TM would offset more than 10% of increased payments to MA plans. However, the way Medicare pays for hospital care (prospectively based on diagnosis related groups [DRGs]) means that it could only recoup spillover savings for services bundled into DRG payments over time, as payment rates are adjusted.

3. “[Medicare payments and system-level health-care use: The spillover effects of Medicare managed care](#),” by Katherine Baicker and Jacob Robbins (American Journal of Health Economics, 2015).

The authors extended prior work, focusing on 1999–2011. Their models include 1-year lags of MA market penetration. As in earlier work, market penetration is instrumented with MA payment rates.

They found that a 10 percentage point increase in MA market penetration is associated with a 7.3% decrease in hospital days, 9.1% decrease in nonsurgical hospital days, a 5.5% increase in outpatient visits, and a 8.9% increase in outpatient surgical visits. For beneficiaries with chronic conditions, the results are a bit larger. In addition, with a model that includes MA market penetration squared, they estimated that the spillover to hospital days is maximized when penetration is at 18%. OLS results are conservative, showing a smaller spillover effect.

In total, the authors calculate \$252 per TM beneficiary per year in spillover savings for every 10 percentage points in higher MA market penetration, though as noted above, the savings would have to be recouped in DRG payment updates over time.

4. “[Medicare managed care spillovers and treatment intensity](#),” by Kevin Callison (Health Economics, 2016).

Like prior studies, Callison uses 2003–2009 SID data and MA payment rates as an instrument for market penetration to examine the relationship between MA market penetration and TM-financed treatment intensity for patients hospitalized with acute myocardial infarction (heart attack). He finds that a 1 percentage point increase in MA market penetration is associated with a 0.94% reduction in TM hospital costs for AMI patients, a 2.2% reduction in the number of inpatient procedures, a 2.4% reduction in the probability of receiving an angioplasty, a 2.4% reduction in the probability of ventilator utilization, and a 1.8% increase in the probability of mortality. (This mortality finding is at odds with prior work relating MA penetration to mortality and hospitalization by [Afendulis, Chernew, and Kessler](#).) As in prior studies, OLS (non-IV) estimates are conservative in their estimation of a spillover effect.

5. “[Recent growth in Medicare Advantage enrollment associated with decreased Fee-For-Service spending in certain counties](#),” by Garret Johnson, Jose Figueroa, and Ashish Jha (Health Affairs, 2016)

The authors bring the spillover literature up to date with an analysis of the association of changes in county-level MA market penetration with changes in county-level TM spending between 2007 and 2014. Changes are measured over 2-year periods, and MA market penetration is lagged by a full period (i.e., 2007–2009 MA penetration change predicts 2009–2011 TM spending change, etc.). Unfortunately (for analytic purposes), the Affordable Care Act tied MA payments directly to TM spending, so the authors could not use the IV approach exploited in prior studies. However, an OLS approach, which the authors used, has underestimated the spillover in prior work, as discussed above.

A spillover was observed only for counties in the highest quartile of baseline MA market penetration (>17.2). In those counties, a 10% increase in penetration was associated with a \$154 annual decrease in TM spending per beneficiary. The results suggest a threshold effect,

by which spillovers only occur (or are detectable with OLS methods) when MA market penetration is sufficiently large. The estimated spillover accounts for 11% of the recent slowdown in TM spending and more than offset the payment to MA plans above TM costs.

6. “[Turning value-based health care into a real business model](#),” by Laura S. Kaiser and Thomas H. Lee, MD

This article from Intermountain Healthcare summarizes the business perspective on value-based care. It outlines why some of the early-adopter hospitals have moved in this direction. It references the “all-in” approach that creates spillover within the hospital setting (although the word spillover is not used). The article offers four examples of actions taken to move toward better care and affordability (their term for smarter spending).

As part of the “all-in” approach, Intermountain runs an MA program, but the MA program is not explicitly mentioned in the article.

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Recent Medicare Advantage Spillover Literature

Paper	Data	Method	Model specification	Estimates
1. Chernew et al, JHE, 2008	Annual Cost and Use files of MCBS from years 1994-2001	IV, use county-level payment rates from CMS to HMOs as instruments to identify the effect of county-level Medicare HMO penetration	Dependent variable is log of FFS beneficiary annual spending. In addition to county and year fixed effects, all models control for age, age squared, race, income, household size, marital status, general health status, sixteen disease indicators, smoking status and body mass index	a 10% point increase in Medicare HMO enrollment is associated with a reduction in expected FFS expenditure of between 7% and 8%
2. Baicker et al, JHE, 2013	Healthcare Cost and Utilization Project's state inpatient database for NY, MA, AZ, FL, and CA for 1999–2009 and from the Medicare enrollment files for 1998–2009	IV, use lagged county- or hospital-level payment rates from CMS to HMOs as instruments to identify the effect of county-level Medicare HMO penetration	examine the effect of MA enrollment on beneficiary spending, utilization, and quality both at the county- and hospital-levels	a 10% point increase in MA penetration yields a 4.7% decline in hospitalization costs for the full sample in the IV specification and a 4.5% decline for the TM FFS sample; a 10% point increase in MA penetration has no significant effect on length of stay in the OLS specification, but the IV regressions suggest a shortening of approximately 0.2 days (a 4% decrease relative to the average length of stay of about 5 days)
3. Baicker & Robbins, AJHE, 2015	20% sample of Medicare FFS enrollees during 1999-2011	IV, use lagged county-level payment rates from CMS to HMOs as instruments to identify the effect of county-level Medicare HMO penetration	examine the effect of MA enrollment on beneficiary inpatient utilization, outpatient utilization, and quality at the county-level	a 10% point increase in MA market penetration is associated with decreases of 7.3% in hospital days and 9.1% in nonsurgical hospital days and increases of 5.5% in outpatient visits and 8.9% in outpatient surgical visits. For beneficiaries with chronic conditions the results are a bit larger.
4. Callison, HE, 2015	Healthcare Cost and Utilization Project's state inpatient database for NY, MA, AZ, FL, and CA during 2003–2009 for all Medicare beneficiaries between 65-85 hospitalized with AMI	IV, use county-level payment rates from CMS to HMOs as instruments to identify the effect of county-level Medicare HMO penetration	examine the effect of MA enrollment on AMI beneficiary hospital costs and inpatient utilization	a 10% point increase in MA market penetration is associated with a 9.4% reduction in TM hospital costs for AMI patients, a 12% increase in average length of stay, a 22% reduction in the number of inpatient procedures, a 24% reduction in the probability of receiving an angioplasty, a 24% reduction in the probability of ventilator utilization, and a 18% increase in the probability of inpatient mortality for FFS Medicare patients suffering an AMI

(continued)

Recent Medicare Advantage Spillover Literature (continued)

Paper	Data	Method	Model specification	Estimates
5. Johnson et al, HA, 2016	Geographic Variation Public Use File on US county's MA penetration and average spending per beneficiary in FFS Medicare from 2007-2014, combined with AHRF, BLS, market data, and Medicare Master Beneficiary Summary File	used analysis of variance and chi-square tests to compare county-level population demographic characteristics and health care market based on their change in Medicare Advantage penetration; also used OLS with Medicare Advantage penetration as the independent variable and FFS Medicare costs as the dependent variable, and included a random intercept for each county in the model to allow for within-county correlation over time	using a lagged approach with eight years of data for each of the 3,014 counties, they look at the association of changes in county-level MA market penetration with changes in county-level TM spending between 2007 and 2014. Changes are measured over two year periods and MA market penetration is lagged by a full period (i.e., 2007-2009 MA penetration change predicts 2009-2011 TM spending change, etc.)	Overall, a 10% point increase in MA penetration was associated with a small and nonsignificant \$32.74 decrease in annual FFS Medicare cost growth. A spillover was observed only for counties in the highest quartile of baseline MA market penetration (>17.2%). In those counties, a 10% point increase in penetration was associated with a \$154 (an 18% decrease relative to the 2007 average FFS per capita Medicare costs of \$8,301) annual decrease in TM spending per beneficiary. The results suggest a threshold effect, by which spillovers only occur (or are detectable with OLS methods) when MA market penetration is sufficiently large. The estimated spillover accounts for 11% of the recent slowdown in TM spending and more than offset the payment to MA plans above TM costs.

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APPENDIX C: RESPONSE OF PHYSICIANS TO LOWER MEDICARE PRICES

Uncertainty regarding the sustainability of access for Medicare patients is driven by the observation that Medicare payment rates are projected to decline relative to private payment rates. Unless there are substantial increases in Medicare productivity, that may lead physicians to favor treating private patients and hospitals to reduce services of special relevance to the Medicare population. What does the economics literature suggest provider response might actually be? I will primarily focus on physician services in this note.

There is relatively little empirical descriptive literature that directly looks at the question of Medicare payment levels and access measures like willingness to take new Medicare patients. That literature looks only at levels and trends in Medicare payment rates, not those payment rates relative to privately insureds payment rates, and much of it is old.

However, that literature generally finds that payment levels do negatively affect access. For example, a 10% cut in Medicare fee levels would reduce access (percentage of doctors taking Medicare patients) by 1.6% (Brunt and Jensen, 2013) to 5% (Gillis and Lee, 1997), with Rodgers and Mussachio (1983) providing an intermediate estimate of 3.8%.

What about the more indirect question of cost shifting (raising private fee levels), which would presumably make private patients more attractive? Since 1996, there have been three studies of cost shifting by physicians. None found any evidence of it (Rice et al. 1996; Showalter 1997; Rosenman, Li, and Friesner 2000). Rosenman, Li, and Friesner (2000) analyze 1995 California primary care clinic data with relatively sophisticated methodologically that considers the potential endogeneity of Medicare prices and the role of government grants in a “seemingly unrelated regression” framework. However, because the data are from a single year, it is a cross-sectional analysis. Though they claim to find evidence of cost shifting—and that it is mitigated by government grants—it is most informative of price discrimination and is only interpretable as cost shifting under an assumption that relationships revealed by variations over providers are identical to those that would be revealed by temporal variations. Given that health care markets are local and likely idiosyncratic in unobservable ways, such an assumption is not justified.

Likewise, Showalter (1997) investigates price discrimination in a study based on 1983 to 1985 cross-sectional Physicians’ Practice Cost and Income Survey data. With physician-level ordinary least squares (OLS) models of physician fees and Medicaid volume with Medicaid reimbursements as the key independent variable, he finds evidence consistent with profit maximizing behavior by physicians, which makes cost shifting an impossibility. Public and private payments are positively correlated, and lower public payment is associated with lower public volume.

Rice et al. (1996) studied the effect of reductions in Medicare physician payment rates mandated by the Omnibus Budget Reconciliation Acts of 1989 and 1990 using a fixed effects specification with market year as the unit of analysis. OLS models of two different dependent variables—private billed charges and private billed charges less payment rates (called “excess charges”)—were estimated with Medicare payment rate as the key independent variable,

controlling for nurse wage levels, provider density, health maintenance organization (HMO) membership rate, and per capita income. The results are consistent with profit maximizing behavior on the part of physicians, not cost shifting. Private charges fell by 1.2% for each 10% reduction in Medicare payment rates. Because the models control for locality and year with fixed effects, they can produce valid estimates of cost shifting.

What's the Model?

Although there is a dearth of literature on direct measurement, there has been considerable work on modelling and testing models of physician supply decisions, which obviously bear on this subject. There is no consensus on the most-applicable model, but instead, discussion of two kinds of models that yield different conclusions. Which of these models is accepted as realistic is related to the empirical literature just summarized.

Discriminating Monopolist Model

Here we assume the physician has market power in the private market and can set prices there, following the rule of equating marginal revenue to marginal cost, whereas the physician's only decision on Medicare patients is whether to agree to treat the patient at an administered price taken as given. The physician is assumed to maximize "real net income," which is revenues in excess of the sum of explicit practice costs and the opportunity cost of the physician's practice work time. It seems plausible that the opportunity cost of foregone leisure rises as the physician provides more time input, and perfect substitution for non-physician inputs is impossible, so the physician firm has an upward sloping real marginal cost curve.

In this model, the physician responds to a reduction in payment by the government payer by seeking to replace now less-profitable Medicare patients with private patients. Although there may be some modest reduction in work hours, which change little with income changes the main issue is how many private patients will be brought in and how. If private price was at the profit-maximizing level, theory predicts that physicians will have to reduce their prices to attract more private patients ("reverse cost shifting"). How large the substitution will be depends on the elasticity of private demand at that point. If there are many private patients eager to consume more physician services when the price is reduced slightly, or even if the time price is reduced by shortening wait times to appointment, there will be a high degree of substitution and a consequent large reduction in access. If there are only a few potential new patients (or if they are constrained by their private insurer), there will be little change. Roughly speaking, the greater the degree of "near shortage" in the private market, the greater the reduction in Medicare access. Practically, primary care access may decline in this model much more than access to urologists or cardiothoracic surgeons.

Demand Inducement Model

In this model, the physician maximizes a utility function that includes both real net income and (negatively) the extent of deviation of advice to patients from what would represent ideal advice, especially for conditions where there is a grey area in defining ideal clinical practice. Physicians may be willing to alter the content of advice to increase patient demand for

their services. The response to that increase in demand can be an increased quantity of services or, where the physician controls the price, an increase in price.

This model has a long tradition in Medicare of predicting somewhat perverse effects to payment reductions in that some fraction of the payment savings is offset by increased Medicare volume. McGuire and Pauly have developed a general model of demand inducement in response to price changes that indicates (1) the possibility that quantity may rise when price is cut depends on the existence and strength of income effects, as physicians seeking to return to their prior net income become more willing to alter advice; (2) the increase in demand to offset a cut in the price of service that forms a large share of physician revenue is not limited to that service, but can spread to the quantities and prices of other services as well; (3) this “backward bending supply curve” behavior is logically limited to price reductions from relatively high initial levels—as price continues to be cut, income effects become less important, and price reductions result in reductions in quantity supplied. (It is believed that many Medicaid program are in this lower range.)

As applied to access, increasing quantity demanded through demand inducement can also be regarded as an increase in access. Thus, a cut in primary care fees may persuade primary care physicians to recommend more re-visits and take more new patients to return their incomes to closer to their original levels. Rossiter and Wilensky, studying inducement effects of physician-recommended revisits, found a positive but quite small effect. Fuchs and Yip have found evidence that price cuts for coronary artery bypass graft induced increase in use of or access to open heart surgery at a somewhat larger level. Jacobson et al. (2010) found that in response to payment rate cuts for chemotherapy drugs made by the Medicare Modernization Act, the likelihood that a lung cancer patient received chemotherapy increased. However, Colla et al. (2012) found that after the same cuts, the use of chemotherapy at the end of life (a marker of poor quality) fell.

There is also some evidence that payment cuts in public plans lead to some increases in private payments. More generally, cost shifting in the private physician market (in contrast to the hospital market) seems modest, if it exists at all (Gruber and Owings 1996), at least in the range of current fee levels.

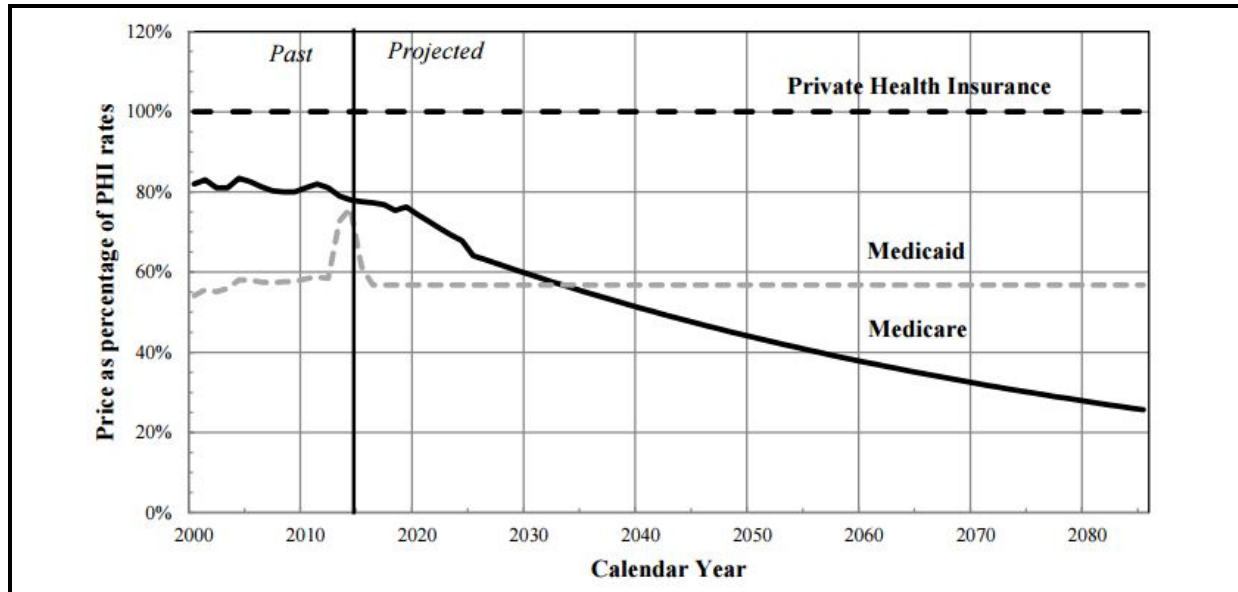
At the levels of modelling, the key issue is whether one believes that physicians maximize profits only or whether they also engage in demand inducement. The latter question has roiled health economics for decades without a definitive conclusion emerging. It is clear that physicians can “create” demand for their services, but the unanswered question is whether they actually do so in response to economic incentives and, if so, in which direction and to what extent.

Conclusion

It seems plausible to conclude that relatively modest reductions in Medicare payment rates will not have major immediate impacts on access. Indeed, they could paradoxically even result in increased access (or at least use), though the services furnished may not be high value. There may be some effects on private price, but they could be either positive or negative, as we do not know which model is most realistic. The extent of reduction in access depends on the

responsiveness of private patients to physician efforts to bring them in to replace Medicare patients, and that will vary across specialties. Finally, large enough price cuts will eventually produce declines in access under either model, and that is doubtless what has happened historically with the Medicaid program. If the current percentage of physicians willing to take new patients is assumed to be 90% or a little higher, the most-recent empirical studies suggest that a 30% reduction in relative price would reduce that percentage to 80–84%—not unsustainably catastrophic, but enough to provoke policy concern. If prices fall to Medicaid levels relative to private prices, there would be more serious problems.

Comparison of relative Medicare, Medicaid, and private health insurance (PHI) prices for physician services under current law



Source: Shatto and Clemens (2016)

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Appendix C — Response of Physicians to Lower Medicare Prices

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Appendix C — Response of Physicians to Lower Medicare Prices

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APPENDIX D: CHANGES IN CARE SETTINGS NEAR THE END OF LIFE

Background

Historically, a large share of Medicare spending (about 30%) occurs in the last months of life because of use of intensive service settings, treatments, and procedures. In the last decade or more, though, there has been an increasing focus on changes in care for patients near the end of life. Time spent in the community near the end of life, rather than inpatient settings, has received increasing attention as a measure of quality care, and patients express strong preferences to spend time at the end of life at home (Groff et al. 2016). Use of hospice services has grown in traditional Medicare, while acute care hospital use has fallen in some settings (Teno et al. 2013). Medicare Advantage plans have begun to implement care management programs that educate patients near the end of life on the availability of hospice and palliative care, as in Aetna's program of embedded case managers (Krakauer 2011). These trends have the potential to lower the cost of care. Medicare part A covers hospice services for patients expected to live 6 months or less. This benefit can occur at home or in inpatient settings.

As with all questions around changes in utilization of care, the question around end-of-life services is whether there are mid-range and long-range impacts of changing the types of services. If there is a cultural change in care at the end of life, given the importance of end-of-life spending overall, we would expect that projections of inpatient spending are likely overstated. Hospice services, despite accounting for relatively small levels of spending (\$15 billion in 2013), have grown rapidly. Part A hospice spending grew 7.5% per year from 2007 through 2010.

Setting of care, including outpatient hospice and its possible effects on inpatient care settings, is not explicitly addressed in the Trustees Report. Part A services are updated by the market basket and real per capita growth in volume and intensity for years 25 to 75, with adjustment for Affordable Care Act impacts. If hospice care, for example, were leading to meaningful shifts away from inpatient settings, then volume and intensity components of projections for inpatient care may be too high. If service use at the end of life has shifted from more expensive settings (inpatient settings) to less expensive settings (home), those changes should be reflected in assumptions underlying projections.

In the November 1st Panel Meeting, the Office of the Actuary (OACT) staff reported that OACT does "monitor the trends in inpatient and outpatient quarterly." However, they "do not have explicit assumptions that the two types of service will trend in a pattern related to the other." In the long range, OACT uses the Factors of Growth model. When forming projections, hospice spending is projected separately from other Part A services. Because of rapid growth over the period since 2000, hospice has a relatively high hospice residual (non-price) growth rate of 5 percent per year for the remainder of the projection period.

What Studies or Research Exist That Could be Used to Support One or More Alternatives?

The research on care at the end of life, and around hospice in particular, yields mixed results. Hospice use clearly is rising, and it is also clear that there is wide variation in spending around end of life care. It is less certain whether and how much spending offset occurs with use of hospice care.

Teno and colleagues (2013) documented a rise in hospice use at time of death from 22% in 2000 to 42% in 2009, a decline in deaths in acute care hospitals from 33% to 25% among fee-for-service Medicare patients with poor-prognosis cancer, and a rise in use of the ICU in the last month of life from 24% to 29%. Another study cited as evidence that hospice has potential to offset care in other settings comes from a 20% Medicare fee-for-service sample of patients with poor-prognosis cancers dying in 2011 (Obermeyer et al. 2014). As seen in Table 2, the hospice group has substantially lower spending in the last year of life. Although the authors were careful to match the hospice and non-hospice groups, one might interpret this as an upper bound on potential savings or cost offsets from hospice because patient preferences are likely to differ across these two groups. Aetna’s experience in Medicare advantage lends support to an offset. When patients were enrolled in a program of embedded nurse care managers trained to engage families in discussions of advanced care planning and provide other support, hospice election tripled to 80%, and acute care days and intensive care days both fell over 80% (Krakauer 2011).

Table D.2
End-of-life spending for decedents with poor-prognosis cancer

	Nonhospice group (n = 18,165)	Hospice group (n = 18,165)	Risk ratio (95% CI)
Hospitalizations, % (95% CI)	65.1 (64.4–65.8)	42.3 (41.5–43.0)	1.5 (1.5–1.6)
Intensive care unit admission, % (95% CI)	35.8 (35.1–36.5)	14.8 (14.3–15.3)	2.4 (2.3–2.5)
Invasive procedures, % (95% CI)	51.0 (50.3–51.7)	26.7 (26.1–27.4)	1.9 (1.9–2.0)
Death in hospital or nursing facility, % (95% CI)	74.1 (73.5–74.8)	14.0 (13.5–14.5)	5.3 (5.1–5.5)
Costs in last year of life, \$ (95% CI)	71,517 (70,543–72,490)	62,819 (62,082–63,557)	Difference, 8,697 (7,560–9,835)

Note: CI = confidence interval.

Source: Obermeyer et al. 2014

Two studies in the *New England Journal of Medicine* cast doubt on these savings. First, Gozalo et al. (2015) used a difference-in-difference analysis to compare spending between likely hospice users in a time before and after rapid expansion of hospice (2004 and 2009). As the authors report, between 2004 and 2009, the expansion of hospice was associated with a mean net increase in Medicare expenditures of \$6,761 (95% confidence interval: 6,335 to 7,186), reflecting greater additional spending on hospice care (\$10,191) than reduced spending on hospital and other care (\$3,430). Groff et al. (2016) reported measures of days spent in the community (rather than inpatient settings) in the last 6 months of life for 2013 Medicare fee-for-service decedents. The areas with the greatest hospice use were areas that also had the greatest use of inpatient settings (fewest days in community) for decedents in 2013. This runs counter to what one might expect of hospice use.

Finally, an August 2015 Medicare Payment and Advisory Commission report (Hogan 2015) prepared by contract reviewed the literature to answer the question of how hospice care affected Medicare spending in the last year of life. The authors conclude that the preponderance of evidence suggests that the hospice benefit has not reduced Medicare spending. The 2015 report focused mainly on older literature and a market-level analysis of 2012–2013 data to answer whether markets with more hospice use had lower spending.

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