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ECONOMIC EVALUATION OF THE 2015 MEDICARE ACCESS AND CHIP REAUTHORIZATION ACT (MACRA)

DEPARTURE FROM SUSTAINABLE GROWTH RATE FORMULA, COMPARISON OF HEALTH CARE EXPENSES WITH ECONOMIC INFLATION, AND FORECAST OF MEDICAL REIMBURSEMENT THROUGH 2030

Wenshuai Wan, MD, MS

Hospital of the University of Pennsylvania, Department of Radiology

Philadelphia, PA

USA

wenshuai.wan@gmail.com

Abstract

In April 2015, the Medicare Access and Chip Reauthorization Act (MACRA) replaced the sustainable growth rate formula-mandated recommendations for Medicare reimbursement. The new policies are designed to increase financial incentives for cost-effective care. This paper compares US health care expenses to economic inflation and analyzes the potential long term effects of MACRA.

Inflation is measured by the Consumer Price Index. Reimbursement modeling and sensitivity analysis focus on $68.6 billion of services provided by health professionals in the traditional fee-for-service program in 2013.

MACRA heavily promotes consolidation of health professionals into alternative payment systems, producing between -8.5% to +9.7% of predicted variation in reimbursement from a net present value basis of measurement from 2015-2030. This is associated with a 109-146% increase in reimbursement, depending on aggressiveness of alternative system incentive payments.

Growth of MACRA-based health care costs will be less than inflation rate for the general economy and medical commodities. This phenomenon may control health care costs but may also result in scenarios where costs exceeds revenue of providing medical services.

Keywords: health care policy, health economics, medical expenditure, government regulation of healthcare, pay-for-performance

Topic Groups: natural sciences and business, politics and business, economic growth

INTRODUCTION

Medicare Access and Chip Reauthorization Act (MACRA) 2015 marks the long-awaited repeal of Medicare's infamous sustainable growth rate (SGR) formula, which as part of the Balanced Budget Act of 1997, has influenced health care financing in the United States for 18 years. Except for once in 2002, short-term patches have been enacted following pressure from physicians and activist groups to override the growth rate formula's reimbursement cuts each year. If not averted again in 2015, Medicare's payment rate for physician and other health professional services would have been reduced by 21.2% on April 1, 2015.

The SGR patches imposed administrative burdens on the Centers for Medicare & Medicaid Services (CMS) and clinicians. They also created uncertainty for health care professionals and beneficiaries about interrupted access to care. The SGR repeal, long awaited by many physicians, was approved by Congress with strong bipartisan support in both the House of Representatives and the Senate. However, it is still uncertain whether the repeal, representing "the carrot," is attached to far-reaching payment reforms facilitated by the new legislation that represent "the stick."

Primary Aims

1. Identify changes in Medicare reimbursement policy from the sustainable growth rate formula in the Balanced Budget Act of 1997 to the new MACRA of 2015.
2. Compare growth of health care costs to US economic growth and inflation.

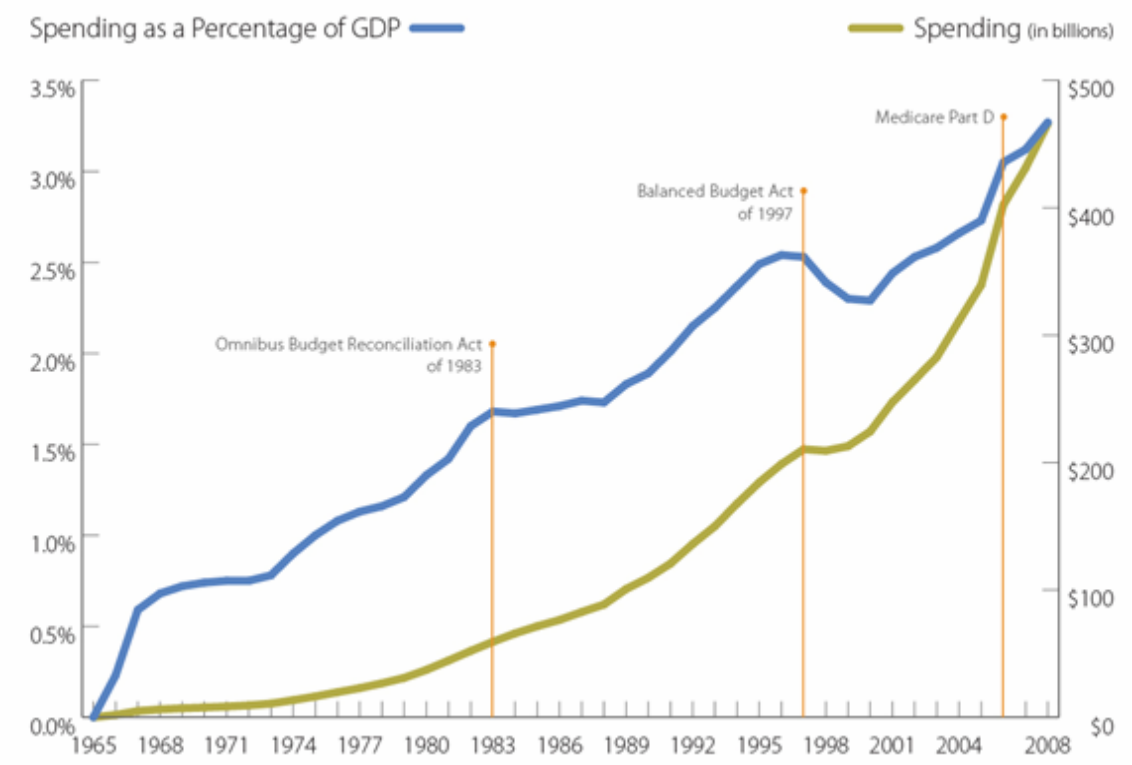
Secondary Aims

1. Simulate effects of MACRA on health care expenses through multiple phases of implementation from 2015 through 2030.
2. Perform sensitivity analysis on established parameters, including planned increases and pay-for-performance incentives.

THEORY

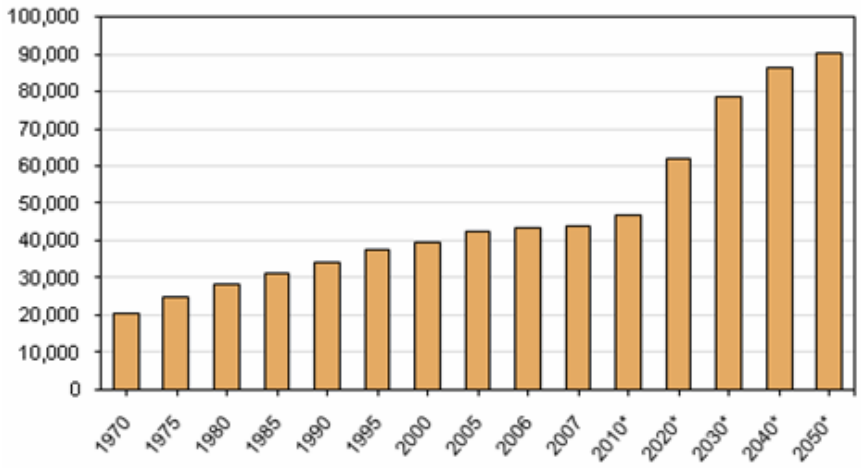
Since the inception of Medicare in 1965, spending has risen sharply across the nation, both in total dollars and as a percentage of GDP. Legislative action, such as the Omnibus Budget Reconciliation Act of 1983, the Balanced Budget Act of 1997, and the introduction of Medicare Part D in 2006, has been associated with dramatic shifts in Medicare spending trends (Figure 1).

Figure 1: Medicare Spending in the US from 1965 to 2008



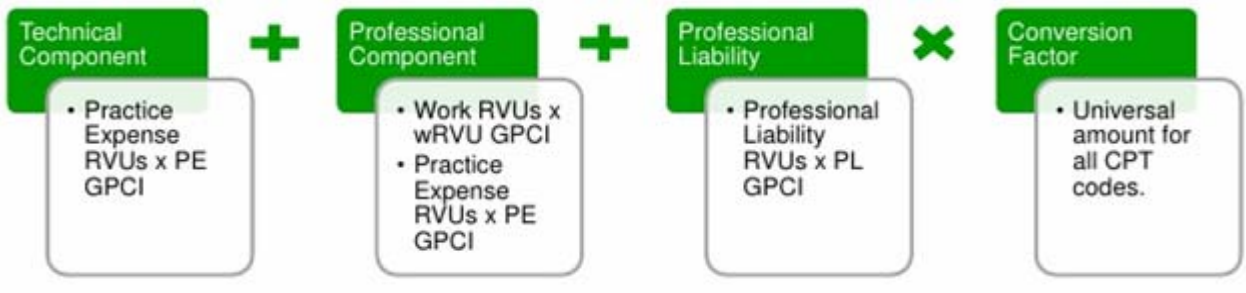
Despite efforts from both governmental legislation and attempts with managed care movements of private insurance, which were more popular in the 1990s, health care costs have continued to rise uncontrollably. The implications of a deficit in federal spending are debated. The Medicare health insurance program was first to enter a cash deficit in 2007, which will be followed by a deficit in the US Social Security system in 2017. Policy-makers recognize the importance of revising the governmental approach to controlling health care costs in order to avoid an expected deficit of over $300 billion in the Medicare plan by 2030.[i] This is especially pertinent given the expectation of higher utilization based on the increased number of beneficiaries (Figure 2).

Figure 2: Growing Number of Medicare Beneficiaries (in thousands) from 1970 to 2050.



Currently, reimbursement for Medicare services is based on a formula accounting for both technical and professional costs and adjusting for geography. This calculation (Figure 3) was designed and chosen to capture the transactional costs of providing medical services.

Figure 3: Formula for Reimbursement of Medical Services as Calculated by Medicare (GPCI, Geographic Practice Cost Index).



Under the SGR formula, if the growth in the volume of services exceeded the target growth rate, the yearly update to fees is reduced with a "conversion factor" to bring reduce spending in that calendar year. Four factors are used in calculating the SGR:

1. Estimated percentage change in fees for physicians' services.
2. Estimated percentage change in the average number of Medicare beneficiaries.
3. Estimated 10-year average annual percentage change in real GDP per capita.
4. Estimated percentage change in expenditures due to changes in law or regulations.

In order to meet the target SGR for the next calendar year, the physician fee schedule is updated accordingly. The update is calculated using two factors:

- Medicare Economic Index (MEI) - weighted average price change for various inputs involved with producing physicians' services
- Update Adjustment Factor (UAF) - compares actual and target expenditures, and is determined by a formula that includes the target and actual expenditures.

For instance, here is the list of contributors to the conversion factor and how the 21.2% reduction in reimbursement was calculated in calendar year 2015:

Conversion factor in effect in CY 2014	$35.8228
CY 2015 RVU budget neutrality adjustment	-0.06%
Conversion factor Jan. 1 2015–Mar. 31, 2015	**$35.8013**
APR. 1, 2015–DEC. 1, 2015	
Conversion factor in effect in CY 2014	$35.8228
Conversion factor without prior SGR patch	$27.2006
CY 2015 Medicare Economic Index	0.8% (1.008)
CY 2015 update adjustment factor	3.0% (1.03)
CY 2015 RVU budget neutrality adjustment	-0.06% (0.9994)
CY 2015 conversion factor on Apr. 1, 2015	**$28.2239**
Percent change in conversion factor on Apr. 1, 2015	**-21.2%**

The concept of transition from SGR (1997) to MACRA (2015) is based on a shift from fee-for-service (FFS) to pay-for-performance (P4P). Rather than getting paid for each episode of care (indemnity), whether an annual physical or a knee replacement, physicians will receive bundled payments with variable reimbursement. For instance, rates will differ depending on whether a knee replacement goes well versus if the surgery results in complications.

The replacement Medicare formula will let physicians choose from two ways to participate in the new payment scheme:

1. Merit-Based Incentive Payment System (MIPS) – rolls three older incentive programs into one larger one that gives doctors a quality score.
2. Alternative Payment Mechanism/Model (APM) – new payment arrangements that require physicians to consolidate and receive shared payments for groups of patients.

The new reimbursement system, especially the APM, is designed to increase financial incentives for cost-effective care. However, the model is more completely described as both a cost- and risk-sharing system. If the cumulative effect of the new payment updates do not keep up with physician costs, e.g. if both utilization and cost of providing medical services increases, then the volume (and/or quality) of care will substantially decrease -- an issue in the pre-existing SGR system.

METHODS

Evaluating the Medicare Access and Chip Reauthorization Act

Specifics of MACRA 2015 will be reviewed in the document, "H.R.2 - Medicare Access and CHIP Reauthorization Act of 2015," passed by the 114th Congress (2015-2016).[ii] This bill was introduced by Rep. Michael Burgess on March 24, 2015, passed by the US Senate on March 26, 2015, and passed into law on April 16, 2015. The legislature was reviewed by the Energy and Commerce; Ways and Means; Judiciary; Agriculture; Natural Resources; and Budget Committees of Congress.

Comparing Health Care Expenses with Inflation

Inflation will be measured by the Consumer Price Index (CPI) compiled by the US Bureau of Labor Statistics.[iii] Medical care, broken down into medical care commodities and medical care services, will be extracted as a subcomponent of overall CPI-U, which excludes rural populations but represents approximately 87% of the US population. Inflation of medical costs will be evaluated separately from other extracted components, including food, housing, apparel, transportation, recreation, education and communication, and other goods and services.

Forecasting Medical Reimbursement through 2030

Modeling of future medical reimbursement will focus on services currently billed under the traditional FFS program. In 2013, Medicare paid $68.6 billion for services provided by physicians and other health care professionals in the traditional FFS program. This spending covered 1.1 billion services for 32 million beneficiaries and was billed by 876,000 clinicians through the fee schedule (573,000 physicians and 303,000 other practitioners, including nurse practitioners, physician assistants, therapists, and chiropractors).

Although limiting analysis to only this group does not capture the full extent of economic impact, effectiveness of modeling will also be limited if the accuracy and precision of changes -- such as the case for other categories of MACRA-based reimbursement revision -- are unreliable. The changes to FFS reimbursement are the most well-defined (as of July 2015); are expected to be the most observable to health care providers; and will be the most heavily scrutinized in the upcoming segments of MACRA implementation.

Data will be analyzed and plotted using Microsoft Excel. Sensitivity analysis will include variables that will change overall reimbursement, which will be calculated based on net present value (NPV) of all services rendered between 2015-2030 using time value of money based on the 10 year US treasury bill yield, 2.16% on May 8, 2015.

FINDINGS

Medicare Access and Chip Reauthorization Act Implementation

The Medicare Access and CHIP Reauthorization Act, also known by its legislative name H.R. 2, will provide physicians and other health care professionals with stable fee updates for 5 years. This will be at current levels through June 2015, an update of 0.5% for the last 6 months of 2015, and an increase of 0.5% per year for 2016 through 2019.

In 2019, the Merit-Based Incentive Payment System (MIPS), will replace and consolidate three existing incentive payment programs: the Physician Quality Reporting System, the value-based payment modifier, and the meaningful use of electronic health records. Under MIPS, the payment rates in 2019 will be maintained through 2025 but with positive and negative adjustments based on the composite performance score of each eligible physician or other health care professional on a 0- to 100-point scale.

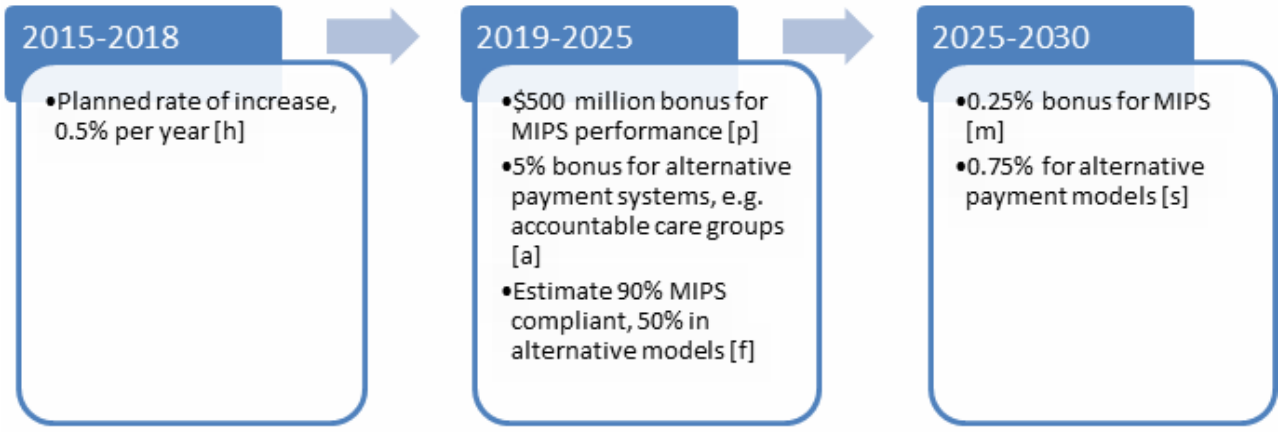
MIPS will assess performance in 4 categories: quality, resource use, meaningful use of electronic health records, and clinical practice improvement activities. The new incentive payments will be complicated, and many of the details remain to be worked out. The adjustments, however, are designed to be budget neutral in aggregate such that there will be no effect on overall payments beyond an additional $500 million that will be made available each year from 2019 to 2025 to reward exceptional performance.

Alternative payment mechanisms/models (APM) include accountable care organizations (ACOs), medical homes, bundled-payment arrangements, and other models being evaluated by the CMS Innovation Center. Such models involve a risk of financial loss and a quality measurement component. In 2015 thus far, about 25% of FFS Medicare reimbursements are related to beneficiaries assigned to an ACO.[i] The US Department of Health and Human Services (HHS) aims to have 85% of all Medicare fee-for-service payments tied to quality or value by 2016, and 90% by 2018. In addition, 30% of Medicare payments should be tied to quality or value through alternative payment models by the end of 2016, and 50% of payments by 2018.

Under the new legislation, clinicians who receive a substantial portion of their revenues from approved alternative payment mechanisms will not be subject to MIPS. Instead, they will receive a 5% bonus each year from 2019 to 2025. In 2026, the payment rules for all clinicians change again, with payment rates under APM increasing by 0.75% per year and rates for

MIPS increasing by 0.25% per year. See Figure 4 for a summary of rate changes and incentives:

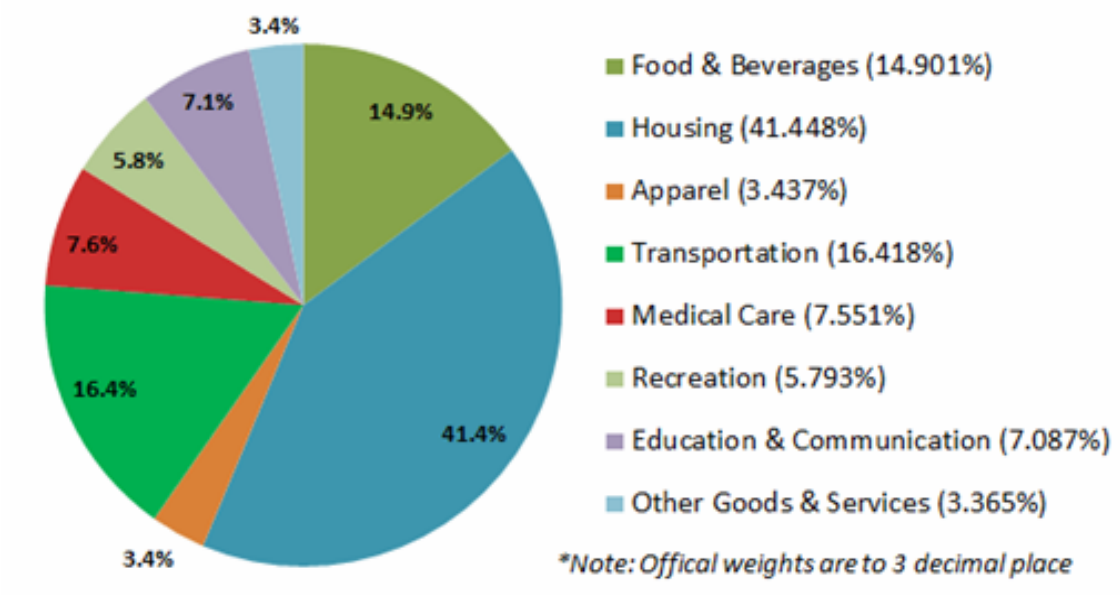
Figure 4: Multiphase Implementation of MACRA 2015 Medicare Payment System



Health Care Expenses versus Inflation

The momentum for payment reform and the specific payment mechanisms notwithstanding, health care professionals will be most concerned about payment updates that do not keep up with inflation. Medical care commodities and services comprise 7.6% of the overall basket of goods measured in the CPI-U, see Figure 5.

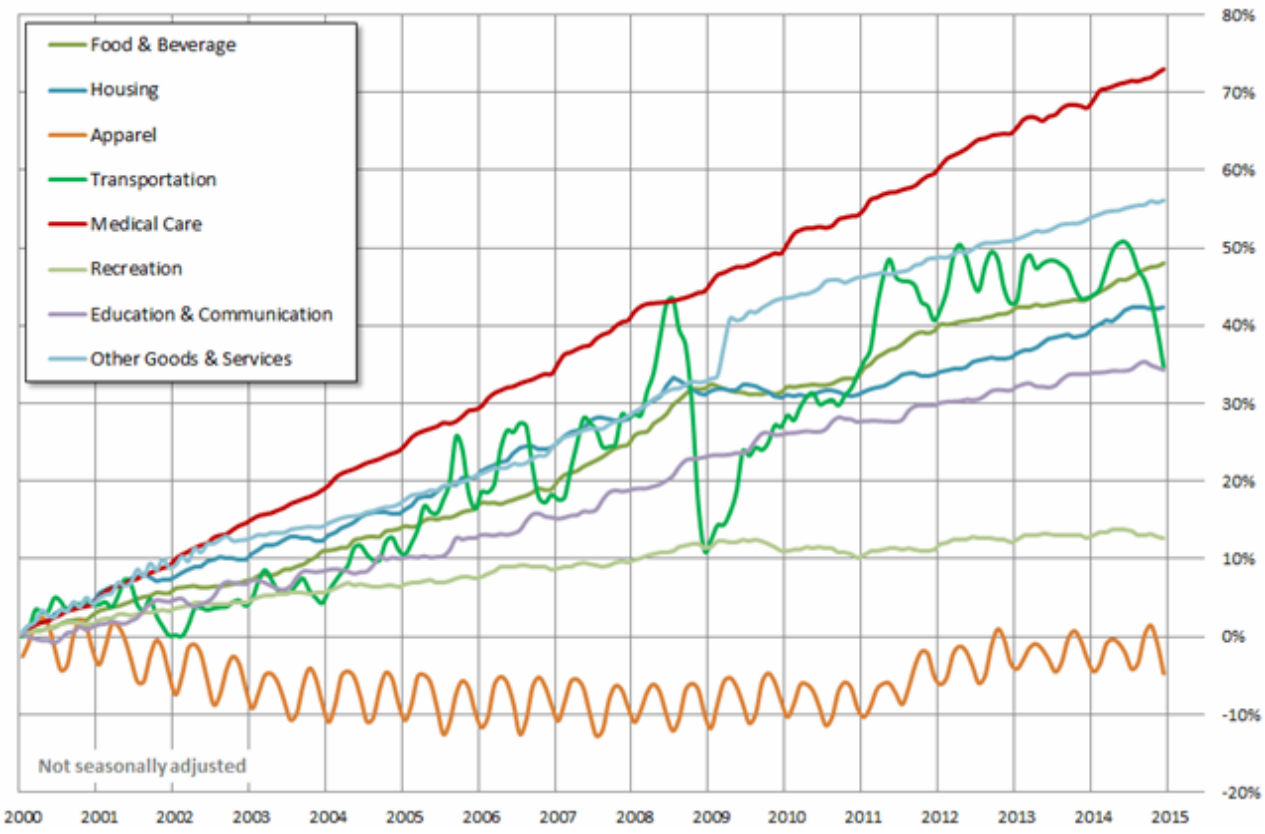
Figure 5: Consumer Price Index Components.



Of note, rate of increase of medical costs has higher acceleration than any other component of the CPI (Figure 6). The medical care bucket is also the only subcomponent of inflation with continually positive acceleration despite the US recession in the early 2000s, economic crisis in 2008, and double dip recession in 2011. In the March 2015 CPI release, the seasonally

adjusted index for medical care services declined for the first time (by 0.2 percent) since November 1975.[iv]

Figure 6: Trends in Subcomponents of CPI from 2000 to 2015.



Medical Reimbursement through 2030

Multiple assumptions are incorporated into the forecast model for Medicare reimbursement. As above, the model will focus on the $68.6 billion for services provided in the traditional FFS program from 2013. Inflation, both overall and for medical care only, is calculated based on the last calendar year, 2014, as the base case scenario. The low and high values will equal to the last relative minimum and maximum rates respectively from 2000 to 2015 (Table 1). In particular, inflation was noted to be -0.36% in 2009 and 3.84% in 2008.[v] Medical care commodities and services inflation was 2.2% in the second half of 2013 and 4.9% in the second half of 2002.[vi]

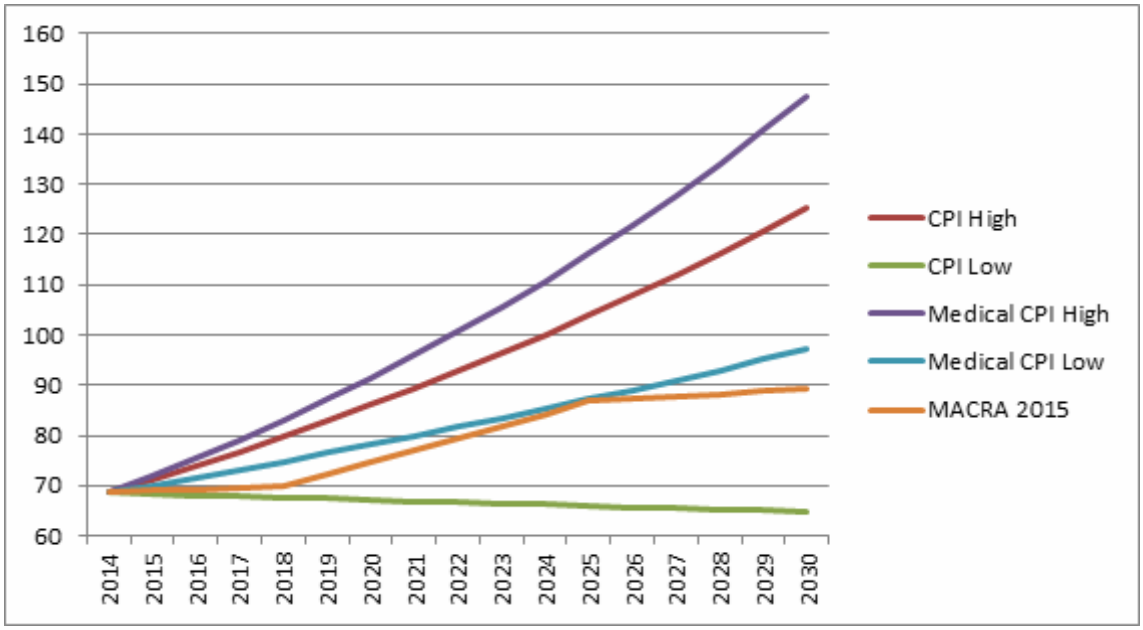
In addition, sensitivity analysis will evaluate the impact of changes for the following variables, with the base case scenario representing the MACRA proposed rate, low value representing a minimum of 0% increase in reimbursement, and high value representing 500% of legislated increase/performance bonus:

Table 1: Model Parameters and Sensitivity Analysis Variables and Scenarios. [xx] in Table 1 correlate with annotation in the implementation stage from "Figure 4: Multiphase Implementation of MACRA 2015 Medicare Payment System."

Variable	Base Case	Low Scenario	High Scenario
Inflation (General)	1.62%	-0.36%	3.84%
Inflation (Medical)	2.40%	2.2%	4.9%
H.R.2 Initial Annual Increase for 2015-2018 [h]	0.50%	0%	2.5%
Performance Bonus for MIPS for 2019-2025 [p]	$500 million	$0	$2.5 billion
Alternative Payment Models bonus for 2019-2025 [a]	5%	0%	25%
Fraction of Beneficiaries in Alternative Payment Models by 2018 [f]	50%	0%	100%
MIPS Bonus 2026+ [m]	0.25%	0%	1.25%
APM Bonus 2026+ [s]	0.75%	0%	3.75%

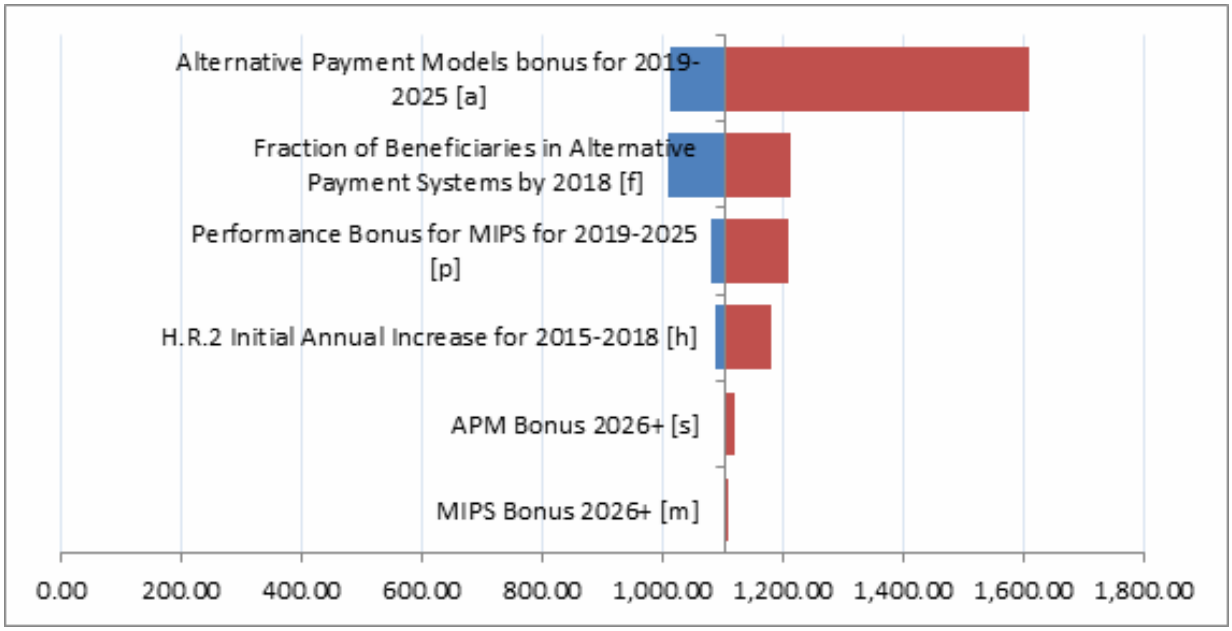
Figure 7 shows the per year Medicare reimbursement under MACRA 2015 versus the same basket of goods affected by inflation for both the general CPI and medical commodities/services:

Figure 7: Forecast Model (in billions of $) for Amount Spent Annually in Traditional Fee-For-Service Medical Care.



The cumulative effects of changes are calculated based on NPV of reimbursement (or similar basket of consumer spending in the case of low versus high CPI). The following tornado chart in Figure 8 shows the results of the sensitivity analysis:

Figure 8: Sensitivity Analysis of Amount of Reimbursement per Parameters in MACRA 2015.



DISCUSSION

The Medicare Access and CHIP Reauthorization Act is the largest and the most ambitious piece of health care legislation to govern reimbursement since the 1997 Balanced Budget Act, which introduced the original sustainable growth formula. This paper has described the planned changes in government regulation of health care cost growth. A forecast model is presented with the intention of answering the question of how MACRA compares to the status quo -- 17 years of temporary amendments to patch reimbursement for services provided to Medicare beneficiaries. For US health care professionals, hospitals, and even payers in the health care system (including third party insurers and patients to an increasingly larger amount), are we better off today than prior to April 2015?

In the new health care landscape, health care professionals are incentivized to consolidate into alternative payment systems. Whether this is in the form of current ACOs or not is unclear; however, MACRA does plan for at least 50% of providers to participate in Medicare reimbursement under APM rather than MIPS. This proportion will factor into the second largest source of variation identified in the sensitivity analysis (-8.5%, +9.7%). The base case scenario (Table 1) shows NPV of $1,103 billion from 2015-2030 for the subset of FFS medical care. The low and high scenarios vary between $1,009 billion for no enrollment versus $1,210 billion for 100% enrollment.

Effect of variability in the proportion enrolled is second only to the amount of incentive provided for APM-based services, leading to variation between 92% and 146% of base case NPV. Admittedly, this value is inflated given the unlikelihood of a 25% increase in APM reimbursement. Even a 10% increase (rather than the 5% planned) for the minimum 50% of APM-enrolled beneficiaries, though, would change the aggregate NPV to 109% of the base case scenario.

Traditional fee-for-service reimbursement will still have a role in the new health care system. MIPS will reimburse for individual claims, adjusted for meeting P4P performance indicators. However, variation up to 500% of currently planned MIPS-based incentives are shown in this study to change only between -2.3% and +9.4% of total NPV. Specifically, reimbursement varies between $1,077 billion when adding no incentive payment from 2019-2025 for meeting performance targets versus $1,206 billion when adding $2.5 billion (total) over the same 7 year period. After 2026, the difference is even smaller in the sensitivity analysis. In these cases, though, the $6 billion difference between $1,102 billion (0.25% incentive) and $1,108 billion (1.25% incentive) is further diminished by time value of money in the model. In contrast to SGR, MACRA relegates the impact of FFS payments to changes in APMs in terms of both magnitude and favorability of change.

Of note, the annual forecast model (Figure 7) suggests that reimbursement for medical services may not keep with inflation of either the general economy or cost of providing medical care. Examination of the CPI shows that medical commodities/services are by far the fastest growing subset of price increases and that this trend is unlikely to change in the future. The model of MACRA shows that the dollar amount attributed to medical services will be lower than all scenarios of CPI rates from 2000-2015. The only exception is a scenario ("CPI Low" in Figure 7) that assumes continual -0.36% of US prices for commercial goods from 2015-2030.

The above results are positive from the perspective of medical cost containment but dangerous when considering the implications of continued inflation of CPI-based medical costs. For instance, even assuming the lowest rate of growth for medical commodities, a similar basket of medical goods will cost health care providers $41.7 billion more to deliver from 2015-2030 than the amount they will reimbursed under the base case MACRA scenario. Thus, it is feasible that many medical services will become, literally, too expensive to provide.

CONCLUSIONS AND IMPLICATIONS

MACRA 2015 also contains other provisions related to medical services. This includes continuing support for the Children's Health Insurance Program (CHIP) and adding legislation which protects physicians against malpractice suits. The act also requires that electronic health records be interoperable by the end of 2018. However, the most carefully dissected component is expected to be the long-term effects on health care utilization and spending.

The SGR fix will not be a permanent solution to the ferment over physician payment systems. Findings from this study suggest that it is still uncertain whether physicians will find themselves "out of the frying pan" or "into the fire." And even if changes prove to be reasonable and fair, in 2025, the $500 million in annual updates for exceptional performance and the 5% annual bonus are scheduled to expire, resulting in a payment reduction for most physicians as time passes. The potential consequences are serious – health care providers may opt to not offer services that are important in underserved areas; financial wellbeing of physician groups and hospitals will be threatened; "brain drain" phenomenon, in which students interested in medicine pursue other vocations; and of course, interrupted care for beneficiaries in a health care system that is teetering on the edge of fiscal insolvency and untested incentives.

This review and associated forecast model has several limitations. First, the forecast only simulates the impact of a small fraction of total Medicare spending -- $68.6 billion within a total amount exceeding $400 billion since calendar year 2008.[vii] Notably absent is spending for inpatient care and prescription drugs. Other categories of spending, such as dental, public health, home health, and administrative costs, are also important but dwarfed in comparison to the above. Future studies can investigate how incentives may change both the cost and associated utilization of diagnosis-related group (DRG)-based hospital care and pharmaceuticals.

In addition, the forecast makes a critical assumption of net even growth of utilization on a per annual basis from 2015 to 2030, i.e. increased costs of certain services will be offset by decreased use of others due to the new MACRA legislation. Given the increase in Medicare beneficiaries over the next two decades, this finding is unlikely to correlate with reality. However, to incorporate changes of hypothesized utilization may introduce more bias than benefit, given the unprecedented nature of the new health care policies. This model thus serves as a baseline for what may occur in the transition from SGR to MACRA, with the expectation that increased utilization will only exaggerate discrepancies and disparities in reimbursement.

Replacement of the SGR formula should accelerate the movement away from unconstrained FFS payments and toward continued payment reform. Many physicians would probably prefer regular payment updates rather than updates based on complex and possibly nebulous measures of quality and value. The effects of the new legislation will result in exciting incremental and organic changes in the tenuous balance of over- and inappropriate use versus underuse of medical services.

The SGR formula lasted 18 years. Within this decade, MACRA is going to be under heavy scrutiny as well. From a policy development perspective, this will certainly include factors addressed in this paper, including total expenditure, correlation with the federal budget, and assessment of utilization to examine the effects of the shift from volume to value-based medical care. A complementary side of the transition, the clinical component, will also be closely examined by health services researchers to see if process measures under P4P systems correlate with important outcomes such as readmissions and mortality.

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