

CBO OVERSIGHT: THE ROLE OF BEHAVIORAL MODELING IN SCORING AND BASELINE CON- STRUCTION

HEARING BEFORE THE COMMITTEE ON THE BUDGET HOUSE OF REPRESENTATIVES ONE HUNDRED FIFTEENTH CONGRESS SECOND SESSION

HEARING HELD IN WASHINGTON, D.C., FEBRUARY 27, 2018

Serial No. 115-10

Printed for the use of the Committee on the Budget



Available on the Internet:
www.govinfo.gov

U.S. GOVERNMENT PUBLISHING OFFICE
WASHINGTON : 2018

COMMITTEE ON THE BUDGET

STEVE WOMACK, Arkansas, *Chairman*

TODD ROKITA, Indiana, <i>Vice Chairman</i>	JOHN A. YARMUTH, Kentucky, <i>Ranking Minority Member</i>
DIANE BLACK, Tennessee	BARBARA LEE, California
MARIO DIAZ-BALART, Florida	MICHELLE LUJAN GRISHAM, New Mexico
TOM COLE, Oklahoma	SETH MOULTON, Massachusetts
TOM McCLINTOCK, California	HAKEEM S. JEFFRIES, New York
ROB WOODALL, Georgia	BRIAN HIGGINS, New York
MARK SANFORD, South Carolina	SUZAN K. DELBENE, Washington
DAVE BRAT, Virginia	DEBBIE WASSERMAN SCHULTZ, Florida
GLENN GROTHMAN, Wisconsin	BRENDAN F. BOYLE, Pennsylvania
GARY J. PALMER, Alabama	RO KHANNA, California
BRUCE WESTERMAN, Arkansas	PRAMILA JAYAPAL, Washington,
JAMES B. RENACCI, Ohio	<i>Vice Ranking Minority Member</i>
BILL JOHNSON, Ohio	SALUD O. CARBAJAL, California
JASON SMITH, Missouri	SHEILA JACKSON LEE, Texas
JASON LEWIS, Minnesota	JANICE D. SCHAKOWSKY, Illinois
JACK BERGMAN, Michigan	
JOHN J. FASO, New York	
LLOYD SMUCKER, Pennsylvania	
MATT GAETZ, Florida	
JODEY C. ARRINGTON, Texas	
A. DREW FERGUSON IV, Georgia	

PROFESSIONAL STAFF

DAN KENIRY, *Staff Director*

ELLEN BALIS, *Minority Staff Director*

CONTENTS

Hearing held in Washington, D.C., February 27, 2018	Page 1
Hon. Steve Womack, Chairman, Committee on the Budget	1
Prepared statement of	3
Hon. John A. Yarmuth, Ranking Member, Committee on the Budget	5
Prepared statement of	6
Keith Hall, Director, Congressional Budget Office	8
Prepared statement of	12
Hon. Steve Womack, Chairman, Committee on the Budget, questions submitted for the record	50
Answers to questions submitted for the record	51

CBO OVERSIGHT: THE ROLE OF BEHAVIORAL MODELING IN SCORING AND BASELINE CONSTRUCTION

TUESDAY, FEBRUARY 27, 2018

HOUSE OF REPRESENTATIVES,
COMMITTEE ON THE BUDGET,
Washington, D.C.

The Committee met, pursuant to call, at 10:00 a.m., in Room 1334, Longworth House Office Building, Hon. Steven Womack [Chairman of the Committee] presiding.

Present: Representatives Womack, Renacci, Johnson, Faso, Smucker, Lewis, Ferguson, Smith, Sanford, Bergman, Woodall, Arrington, Grothman, Yarmuth, Jeffries, DelBene, Schakowsky, Jayapal, and Khanna.

Chairman WOMACK. This hearing will come to order. Welcome to the Committee on the Budget's hearing on the Congressional Budget Office's Role of Behavioral Modeling in Scoring and Baseline Construction. This is the third of five hearings that the Committee plans to hold this spring on oversight of the Congressional Budget Office.

Today's hearing, as we said, marks the third in our five-part series. As I have mentioned before, we are conducting these hearings to learn more about how CBO carries out its nonpartisan mandate and to consider potential areas for improvement.

Since its formation in 1974, CBO has been a vital support agency to Congress providing nonpartisan budgetary analysis and directly assisting the House and Senate Budget Committees. While CBO was established by the Congressional Budget Impoundment Act of 1974, the agency has not undergone a comprehensive review since then—more than 40 years ago. The demands on the agency have undoubtedly changed.

CBO's mission of supporting the Congressional budget process remains the same, but, as we have already learned, expectations of the agency have evolved over time. So, like our last two hearings, we are here to make sure the agency has everything it needs to effectively and efficiently fulfill its mission in the 21st century.

We open the oversight series with CBO director Dr. Keith Hall to broadly discuss the agency's organizational and operational structure including its staffing, assumptions processes, and work products.

In our last hearing we began to explore some of the more technical aspects of how CBO actually crafts the impartial work products Congress relies on to make informed legislative decisions. And

today, we will focus on how CBO conducts its modeling and scores legislative proposals including the assumptions made and processes used by the agencies analysts.

CBO uses models as a tool for analysts to estimate the cost of legislation, project baseline impacts, and produce long-term economic analysis. In order to estimate the effects of legislative proposals, CBO must make assumptions about the likely responses to new policies. There is no doubt a challenge, and I know we have a lot to learn today, from the experts. With that, I want to introduce our witnesses each coming with knowledge and understanding of CBO's current modeling framework.

At the witness stand today is the CBO director Dr. Keith Hall. A little later on Dr. Jessica Banthin, Deputy Assistant Director for health retirement long-term analysis. Dr. Banthin is here to share her expertise on how the agency practically applies its health insurance simulation model, as well as other models, in the course of cost estimating. And we will be joined by Dr. Jeffrey Kling Associate Director for Economic Analysis. He is here in his capacity as the Associate Director responsible for maintaining and enhancing the quality and transparency of CBO's work.

Before we start our discussions today, I want to remind everyone that our goal here is to learn and identify potential areas for improvement at CBO. CBO is vitally important to the congressional budgeting process. So, these discussions are not meant to be one sided or accusatory. Throughout this hearing series, CBO has welcomed the opportunity to discuss its work and undergo oversight.

However, it is certainly fair to acknowledge that CBO's scoring of legislative proposals has led to those scores being questioned—particularly related to healthcare policy. But, when it comes to recent efforts to repeal and replace Obamacare, the failure of Congress to do so is certainly not CBO's fault. However, it is a legitimate reaction of Congress to investigate how CBO, as a congressional support agency, comes to any of its conclusions and scores legislative proposals, including those related to healthcare policy.

Much of the interest in and debate surrounding CBO has been centered on transparency, and these hearings have already enhanced communication between the agency and Congress. They have also started to clarify CBO's role in the congressional budgeting process and begun to improve understanding of how CBO does its work. Without question, there is genuine interest on both sides of the aisle to fix the broken budget process, and I want to remind my colleagues that CBO is a critical piece to ensure Congress has a successful in fully functioning budget process.

Today, I look forward to hearing from our witnesses and engaging in more productive conversations with CBO. And with that I would like to yield to the Ranking Member, Mr. Yarmuth from the Commonwealth of Kentucky.

[The prepared statement of Chairman Womack follows:]

WOMACK OPENING STATEMENT
**CBO OVERSIGHT: THE ROLE OF BEHAVIORAL MODELING IN SCORING AND
 BASELINE CONSTRUCTION**

Washington, D.C., Tuesday, February 27, 2018

Remarks as prepared for delivery:

Good morning, and thank you for joining us as we continue the House Budget Committee's series of oversight hearings with the Congressional Budget Office.

Today's hearing marks the third in our five-part series with CBO.

As I've mentioned before, we are conducting these hearings to learn more about how CBO carries out its nonpartisan mandate and to consider potential areas for improvement.

Since its formation in 1974, CBO has been a vital support agency to Congress, providing nonpartisan budgetary analysis and directly assisting the House and Senate Budget Committees. While CBO was established by the Congressional Budget and Impoundment Act of 1974, the agency has not undergone a comprehensive review since then – more than 40 years ago. The demands on the agency have undoubtedly changed.

CBO's mission of supporting the congressional budget process remains the same, but as we've already learned, expectations of the agency have evolved over time. So like our last two hearings, we are here to make sure the agency has everything it needs to effectively and efficiently fulfill its mission in the 21st century.

We opened this oversight series with CBO's director, Dr. Keith Hall, and broadly discussed the agency's organizational and operational structure—including its staffing, assumptions, processes, and work products.

In our last hearing, we began to explore some of the more technical aspects of how CBO actually crafts the impartial work-products Congress relies on to make informed legislative decisions. And today, we'll focus in on how CBO conducts its modeling and scores legislative proposals, including the assumptions made and processes used by the agency's analysts.

CBO uses models as a tool for analysts to estimate the cost of legislation, project baseline impacts, and produce long-term economic analysis. In order to estimate the effects of legislative proposals, CBO must make assumptions about the likely responses to new policies. This is no doubt a challenge, and I know we have a lot to learn today from the experts. With that, I want to introduce our witnesses, each coming with knowledge and understanding of CBO's current modeling framework.

First, joining us again today is CBO's director, Dr. Keith Hall. Also with us is Dr. Jessica Banthin, Deputy Assistant Director for Health, Retirement, and Long-Term Analysis. Dr. Banthin is here to share her expertise on how the agency practically applies its Health Insurance Simulation model, as well as other models, in the course of cost estimating.

And finally, we welcome Dr. Jeffrey Kling, Associate Director for Economic Analysis. Dr. Kling is here in his capacity as the associate director responsible for maintaining and enhancing the quality and transparency of CBO's work.

Before we start our discussions today, I want to remind everyone that our goal here is to learn and identify potential areas for improvement at CBO. CBO is vitally important to the congressional budgeting process, so these discussions are not meant to be one-sided or accusatory. Throughout this hearing series, CBO has welcomed the opportunity to discuss its work and undergo oversight.

However, it's certainly fair to acknowledge that CBO's scoring of legislative proposals has led to those scores being questioned, particularly related to healthcare policy. But when it comes to recent efforts to repeal and replace Obamacare, the failure of Congress to do so is certainly not CBO's fault.

However, it *is* a legitimate reaction of Congress to investigate how CBO, as a congressional support agency, comes to any of its conclusions and scores legislative proposals—including those related to healthcare policy.

Much of the interest in and debate surrounding CBO has been centered on transparency, and these hearings have already enhanced communication between the agency and Congress. They have also started to clarify CBO's role in the congressional budgeting process and begun to improve understanding of how CBO does its work.

Without question, there is genuine interest on both sides of the aisle to fix the broken budget process. And I want to remind my colleagues that CBO is a critical piece to ensure Congress has a successful and fully functioning budget process.

Today, I look forward to hearing from our witnesses and engaging in more productive conversations with CBO. Thank you, and with that, I yield to the Ranking Member, Mr. Yarmuth.

Mr. YARMUTH. Thank you very much, Mr. Chairman. I would like to join you in welcoming our three CBO witnesses today: Director Hall, Dr. Bantnin, and Dr. Kling. We appreciate you coming before the Committee to testify and answer questions about how CBO incorporates behavioral responses into its analysis.

I anticipate that a lot of today's discussion will center on healthcare, and I am glad the Committee is looking into it. I am not necessarily being critical of the timing of this hearing, but I do think it is important to point out that it would have made more sense to hold this hearing before voting on the majority's bill to repeal the Affordable Care Act and gut Medicaid or before voting on their tax bill which repealed a key component of the ACA or before voting on a budget resolution that cuts \$1 trillion from Medicaid and ends the Medicare guarantee. Nevertheless, I am pleased that you were here Dr. Hall, Dr. Bantnin, and Dr. Kling.

A year ago, the President said nobody knew healthcare could be so complicated. I am quite certain that all three of you have long known just how complicated it is. That is why Congress relies on your objective nonpartisan expertise to research model and estimate the effects of large-scale changes to our nation's healthcare system. When you consider that our system represents fully one-sixth of the U.S. economy, there is absolutely no way we can responsibly legislate on behalf of the American people without knowing the entire impact of our healthcare proposals.

During the debate on the Affordable Care Act, long ago as that was, I called healthcare policy a giant Rubik's Cube. You may think you are changing one small part of one side but that change unexpectedly impacts a different side or many different sides. Healthcare has a lot more sides than a Rubik's Cube, which is why we have to rely on impartial analysis and input from unbiased experts, or we will find ourselves neck deep in unintended consequences.

And when it comes to access to healthcare, these unintended consequences can translate into severe consequences for American families. For example, after rigorous modeling, CBO ultimately estimated the House-passed bill to repeal the ACA would reduce the number of people with health insurance by 23 million in 2026. Now it is still unclear to me if that was the goal of my Republican colleagues or an unintended consequence, but either way, it is critical information for us to have. And we must have it before we vote.

That said, Director Hall, I am interested in hearing more about this estimate as well as about how CBO is updating the baseline to reflect actions taken by Republicans in Congress and the administration to deter ACA enrollment, destabilize the insurance markets, and prevent the law from being implemented as designed. I am also interested in hearing about how CBO is re-estimating proposals in the President's 2019 budget request.

My Democratic colleagues and I have grave concerns about many of his policies including massive cuts to healthcare, antipoverty programs, and investments in economic growth.

Again, I thank our witnesses for coming, and I look forward to their testimony. And I yield back.

[The prepared statement of Mr. Yarmuth follows:]

YARMUTH OPENING STATEMENT
**CBO OVERSIGHT: THE ROLE OF BEHAVIORAL MODELING IN SCORING AND
 BASELINE CONSTRUCTION**

Washington, D.C., Tuesday, February 27, 2018

Remarks as prepared for delivery:

Thank you, Mr. Chairman. I would also like to join you in welcoming our three CBO witnesses today: Director Keith Hall; Deputy Assistant Director for Health, Retirement, and Long-Term Analysis Jessica Banthin; and Associate Director for Economic Analysis, Jeffrey Kling.

We appreciate you coming before the committee to testify and answer questions about how CBO incorporates behavioral responses into its analyses. I anticipate that a lot of today's discussion will center on health care, and I'm glad the committee is looking into it.

I cannot blame our new Chairman for the timing of this hearing, but I do think it's important to point out that it would have made more sense to hold this hearing before voting on the Majority's bill to repeal the Affordable Care Act and gut Medicaid. Or before voting on their tax bill which repealed a key component of the ACA. Or before voting on a budget resolution that cuts \$1 trillion from Medicaid and ends the Medicare guarantee.

Nevertheless I am pleased you are here, Dr. Hall, Dr. Banthin, and Dr. Kling. A year ago, the President said, "Nobody knew health care could be so complicated." I am quite certain all three of you have known just how complicated it is.

That is why Congress relies on your objective, non-partisan expertise to research, model, and estimate the effects of large-scale changes to our nation's health care system. When you consider that our system represents fully one sixth of the US economy, there is absolutely no way we can responsibly legislate on behalf of the American people without knowing the entire impact of our health care proposals. During the debate on the Affordable Care Act, I called health care policy a giant Rubik's cube. You may think you are changing one small part on one side, but that change unexpectedly impacts a different side or many different sides. Health care has a lot more sides than a Rubik's cube, which is why we have to rely on impartial analysis and input from unbiased experts, or we will find ourselves neck deep in unintended consequences. When it comes to access to health care, these unintended consequences can translate into severe consequences for American families.

For example, after rigorous modeling CBO ultimately estimated the House-passed bill to repeal the ACA would reduce the number of people with health insurance by 23 million in 2026. Now, it is still unclear to me if that was the goal of my Republican colleagues or an unintended consequence, but either way it's critical information for us to have – and we must have it before we vote.

That said, Director Hall, I am interested in hearing more about this estimate, as well as about how CBO is updating the baseline to reflect actions taken by Republicans in Congress and the Administration to deter ACA enrollment, destabilize the insurance markets, and prevent the law from being implemented as designed.

I am also interested in hearing about how CBO is re-estimating proposals in the President's 2019 budget request. My Democratic colleagues and I have grave concerns about many of his policies including massive cuts to health care, anti-poverty programs, and investments in economic growth.

Again, I thank our witnesses for coming and I look forward to their testimony.

Chairman WOMACK. Thank you, Mr. Yarmuth. In the interest of time if any other members have opening statements I would like to ask for unanimous consent that members submit them for the record. Without objection.

Chairman WOMACK. We would now like to recognize the Director of the Congressional Budget Office back to the chamber here, Dr. Keith Hall. Dr. Hall, thank you for your time again today. Committee has received your written statement it will be made part of the formal hearing record. You will have 10 minutes to deliver your oral remarks, and that time begins right now. Sir, you are recognized.

**STATEMENT OF KEITH HALL, DIRECTOR, CONGRESSIONAL
BUDGET OFFICE**

Mr. HALL. Chairman Womack, Ranking Member Yarmuth, and Members of the Committee, thank you for inviting me to testify this morning about how CBO does its analysis. I would like to make seven points.

First, our goal is to provide budget estimates in the middle of the distribution of possible outcomes. All budget estimates are uncertain, but the budget process relies on estimates of specific dollar amounts. So those are what we produce in our baseline budget projections and in cost estimates for legislative proposals. To the extent feasible, we describe the uncertainty associated with those estimates, and we regularly compare our estimates with actual outcomes when available and to improve our estimating methods.

Second, our estimates are derived from data and research. Baseline projections and analysis of policy proposals rely on various types of information depending on the program involved in the specifics of any particular proposal. When applicable, we use historical information about spending, revenues, and other factors affecting budgetary outcomes.

We draw upon research from the professional community and utilize information about outcomes in analogous circumstances. We consult with congressional staff, staff members at relevant Federal agencies, and other experts with diverse views including experts from state governments, industry think tanks, and universities.

And we receive input from our panel of economic advisors and our panel of health advisors whose members represent a variety of perspectives. We write about the data and research that informed our analysis in our description of the basis of an estimate.

Third, our estimates incorporate behavioral reactions to proposed policy changes. Estimating how individuals, firms, government entities would react to a policy is a fundamental part of analyzing its effects. For example, our estimates account for changes in the production of various crops that would result from new farm policies, changes in people's likelihood of claiming government benefits if policies pertaining to those benefits are altered, and changes in the quantity of health services that would be provided if Medicare's payment rates to certain providers were adjusted.

Fourth, for major legislation and when practicable, our cost estimates reflect additional behavior changes that would affect total output in the economy. Those macroeconomic changes, including changes in the labor supply or private investment, are incorporated

into certain cost estimates using what is sometimes termed dynamic scoring.

Because such macroeconomic analyses are complex and time-consuming they are produced for only a small number of proposals. Usually when the gross budgetary effect is at least one quarter of 1 percent of gross domestic product in any year over the next 10 years, and when there is sufficient time to conduct the analysis.

Fifth, our analyses cover a broad range of topics. At the end of 2017 we had 40 people working on issues related to Medicare, Medicaid, the Affordable Care Act, prescription drugs, and other health-related topics; 29 working on education immigration, income security, labor, and retirement issues; 23 on national security issues; 17 on tax issues; 16 on energy and natural resource issues; 15 on macroeconomics; nine on the overall budget outlook; and eight on finance and housing issues.

Those people have specialized training to work on those topics and develop analyses specific to issues at hand. The analysis involved regularly used hundreds of models and other estimating techniques.

For example, in its analysis of our proposal to increase the counseling people received before obtaining a mortgage, CBO used evidence about how such counseling reduces the volume of loans and default rates among borrowers to estimate how the proposal would affect the cost of loan guarantees made by the Federal Housing Administration.

As another example, the agency estimated the effects of the ACA on labor supply in its economic projections. Mainly by calculating the effects of the law and marginal average tax rates and drawing upon research about changes in the labor supply resulting from changes in tax rates.

Six, their estimates are produced by a team of people not by models. Although our analysis often use models in preparing cost estimates, they also use information obtained from experts data and research to each other in which models or other inputs to use: how to distill the proposed changes in law, into inputs, into those models, and how to combine the results of the models with their other available information to produce a final estimate. The general process for preparing cost estimates is followed in our analysis of major proposals that would affect health insurance coverage for people under the age of 65.

For such proposals an especially large number of analysts and modeling efforts are usually involved because of the complexity of health insurance decisions. In those analyses CBO focuses on estimating the effects on coverage, premiums, and Federal spending, and the staff on the Joint Committee on Taxation estimates the tax related budgetary effects.

The analyses have three main steps. First, develop an analytical strategy. We first review the proposal and identify the key effects that it would have. With an estimate issue surrounding its implementation, such as how eligibility for a subsidy would be verified, assessing the probable timing of the effects.

As part of that process, we consult with outside experts and review existing evidence. Second, we model the effects of the proposal. We use several models including our health insurance sim-

ulation model, models of Medicaid, and JCT's individual tax model to analyze the proposals effects on health insurance coverage in the Federal budget.

We translate the features that proposal into changes relative to current law and the price and generosity of health plans and other in factors that would affect the decisions of all parties involved—states, employers, insurers, individuals, and others—and use those changes as inputs into modeling the proposal's effects on health insurance coverage and premiums. We then use the results from those analyses as building blocks to project the proposals budgetary effects including effects on the cost of the Medicaid program and on receipts of individual income taxes.

Third, we review and write about the estimate. At several points, we thoroughly review the projections for objectivity and analytical soundness. That rigorous process involves multiple people at different levels in CBO and JCT. When an estimate of the proposals total budgetary effect is nearly complete we write up their results along with a detailed explanation of how we arrived at them for the Congress. We followed these steps to prepare our November 2017 estimate of the effects of repealing the ACA's mandates for individual to have health insurance.

In developing an analytical strategy, we examine data and research that might shed light on the effects, we discussed the issues at a meeting of CBO's panel of health advisors and consulted other experts. In modeling the effects of the proposal, we estimated the number of people who would no longer enroll in health insurance as a result of the repeal, the effects and premiums, and the speed at which those changes would occur. And we projected how those changes in coverage and premiums would affect tax revenues, Medicaid spending, and other spending.

In writing about the estimate, we also indicated that we were undertaking considerable work to revise our methodology and that the preliminary results indicated that the estimated effects on health insurance coverage would be smaller than previously reported. In addition to other technical and economic changes, our next baseline projections will incorporate estimates of those effects because they repeal the penalty for not having insurance is now part of current law.

Seventh, we strive to make our analysis transparent, and we recently reallocated resources to make it still more so. We have released new publications this year describing our processes for producing economic forecast, budget baselines, and cost estimates. Key staff are making presentations to congressional staff about those processes.

In the coming months, some of our specific efforts to explain how our models have contributed to our estimates will include the following: exploring ways to make more supporting documentation for the methods used in baseline projections and costly estimates publicly available; publishing detailed information about key aspects of our updated model for stimulating health insurance coverage, including computer code, in how an analyst used the model in preparing estimates; developing a version of our model for projecting spending on discretionary programs to facilitate replication of roughly 40 percent of CBO's formal cost estimates.

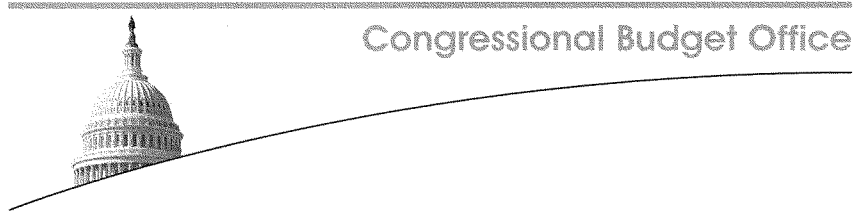
Releasing technical documentation and computer code explaining how key parts of our long-term budget model work and how they contribute to our analyses; providing information online that enables users to examine how a large variety of changes in baseline economic projections can affect projections of the Federal budget; publishing revised estimates of how certain changes to laws governing medical malpractice would affect medical spending; explaining the reasons behind the revisions to the methodology used; documenting the model used to project how those changes to laws would affect medical cost; and making computer code for that model available.

Posting a tool for examining the cost of different military force structures on our website; and providing computer code that generates results discussed in our working paper about our model of the maximum sustainable output of the economy.

More broadly, we plan to increase the public documentation of our modeling efforts by publishing more slide decks, working papers, appendices, supplemental data, related spreadsheets, and other technical material. We look forward to getting feedback on the usefulness of these transparency efforts.

I appreciate the opportunity to explain how we do our work, and I am happy to answer your questions. And thank you for your support and guidance as we carry out our mission to provide information to the Congress as you grapple with the difficult issues facing the Nation.

[The prepared statement of Keith Hall follows:]



Testimony

Seven Things to Know About CBO's Analyses

**Keith Hall
Director**

**Before the
Committee on the Budget
U.S. House of Representatives**

February 27, 2018

This document is embargoed until it is delivered at 10:00 a.m. (EST) on Tuesday, February 27, 2018. The contents may not be published, transmitted, or otherwise communicated by any print, broadcast, or electronic media before that time.

Chairman Womack, Ranking Member Yarmuth, and Members of the Committee, thank you for inviting me to testify this morning about how CBO does its analysis.¹ I would like to make seven points.

First, our goal is to provide budget estimates in the middle of the distribution of potential outcomes. All budget estimates are uncertain, but the budget process relies on estimates of specific dollar amounts, so those are what we produce in our baseline budget projections and in cost estimates for legislative proposals. To the extent feasible, we describe the uncertainty associated with those estimates. And we regularly compare our estimates with actual outcomes, when available, to improve our estimating methods.²

Second, our estimates are derived from data and research. Baseline projections and analyses of policy proposals rely on various types of information, depending on the program involved and the specifics of any particular proposal. When applicable, we use historical information about spending, revenues, and other factors affecting budgetary outcomes; we draw upon research from the professional community and utilize information about outcomes in analogous circumstances; we consult with Congressional staff, staff members at relevant federal agencies, and other experts with diverse views, including experts from state governments, industry, think tanks, and universities; and we receive input from our Panel of Economic Advisers and our Panel of Health Advisers, whose members represent a variety of

perspectives.³ We write about the data and research that informed our analysis in our description of the basis of an estimate.

Third, our estimates incorporate behavioral reactions to proposed policy changes. Estimating how individuals, firms, and governmental entities would react to a policy is a fundamental part of analyzing its effects. For example, our estimates account for changes in the production of various crops that would result from new farm policies, changes in people's likelihood of claiming government benefits if policies pertaining to those benefits were altered, and changes in the quantity of health care services that would be provided if Medicare's payment rates to certain providers were adjusted.

Fourth, for major legislation, and when practicable, our cost estimates reflect additional behavioral changes that would affect total output in the economy. Those macroeconomic changes—including changes in the labor supply or private investment—are incorporated into certain cost estimates using what is sometimes termed dynamic scoring.⁴ Because such macroeconomic analyses are complex and time-consuming, they are produced for only a small number of proposals—usually when the gross budgetary effect (excluding any effect arising from macroeconomic changes) is at least one-quarter of 1 percent of gross domestic product in any year over the next 10 years and when there is sufficient time to conduct the analysis.

Fifth, our analyses cover a broad range of topics. At the end of 2017, we had 40 people working on issues related to Medicare, Medicaid, the Affordable Care Act (ACA), prescription drugs, and other health-related topics; 29 working on education, immigration, income security, labor, and retirement issues; 23 on national security issues; 17 on tax issues; 16 on energy and natural resource issues; 15 on macroeconomics; 9 on the overall

1. The information in this testimony supplements that in other testimonies given earlier this year. See testimony of Keith Hall, Director, Congressional Budget Office, before the House Committee on the Budget, *The Congressional Budget Office's Work in 2017 and Plans for the Future* (January 30, 2018), www.cbo.gov/publication/53501, and testimony of Mark Hadley, Deputy Director, Congressional Budget Office, before the House Committee on the Budget, *The Congressional Budget Office's Baseline Projections and Cost Estimates: Process and Principles* (February 6, 2018), www.cbo.gov/publication/53539.

2. See Congressional Budget Office, *CBO's Record of Projecting Subsidies for Health Insurance Under the Affordable Care Act: 2014 to 2016* (December 2017), www.cbo.gov/publication/53094, *An Evaluation of CBO's Past Outlay Projections* (November 2017), www.cbo.gov/publication/53328, *CBO's Economic Forecasting Record: 2017 Update* (October 2017), www.cbo.gov/publication/53090, and *CBO's Revenue Forecasting Record* (November 2015), www.cbo.gov/publication/50831.

3. See Congressional Budget Office, "Panel of Economic Advisers" (accessed February 21, 2018), www.cbo.gov/about/processes/panel-economic-advisers, and "Panel of Health Advisers" (accessed February 21, 2018), www.cbo.gov/about/processes/panel-health-advisers.

4. See Congressional Budget Office, "Dynamic Analysis," www.cbo.gov/topics/dynamic-analysis, and "Does CBO Do 'Dynamic Scoring'?" (accessed February 21, 2018), www.cbo.gov/faqs#dynamic.

budget outlook; and 8 on finance and housing issues.⁵ Those people have specialized training to work on those topics and develop analyses specific to the issues at hand. The analyses involve regular use of hundreds of models and other estimating techniques. For example, in its analysis of a proposal to increase the counseling people receive before obtaining a mortgage, CBO used evidence about how such counseling reduces the volume of loans and default rates among borrowers to estimate how the proposal would affect the costs of loan guarantees made by the Federal Housing Administration.⁶ As another example, the agency estimated the effects of the ACA on the labor supply in its economic projections mainly by calculating the effects of the law on marginal and average tax rates and drawing upon research about changes in the labor supply resulting from changes in tax rates.⁷

Sixth, our estimates are produced by a team of people, not by models. Although our analysts often use models in preparing cost estimates, they also use information obtained from experts, data, and research to determine which models or other inputs to use, how to distill the proposed changes in law into inputs to those models, and how to combine the results of the models with other available information to produce a final estimate.

That general process for preparing cost estimates is followed in our analyses of major proposals that would affect health insurance coverage for people under age 65. For such proposals, an especially large number of analysts and modeling efforts are usually involved because of the complexity of health insurance decisions.⁸ In those analyses, CBO focuses on estimating the effects on coverage, premiums, and federal spending, and the staff of the Joint Committee on Taxation (JCT) estimates the tax-related budgetary effects. The analyses have three main steps:

- *Develop an analytical strategy.* We first review the proposal and identify the key effects it would have. We then examine issues surrounding its implementation, such as how eligibility for a subsidy would be verified, and assess the probable timing of effects. As part of that process, we consult with outside experts and review existing evidence.
- *Model the effects of the proposal.* We use several models—including our health insurance simulation model, models of Medicaid, and JCT's individual tax model—to analyze the proposal's effects on health insurance coverage and the federal budget. We translate the features of the proposal into changes, relative to current law, in the price and generosity of health plans and in other factors that would affect the decisions of all parties involved—states, employers, insurers, individuals, and others—and use those changes as inputs in modeling the proposal's effects on health insurance coverage and premiums. We then use the results from those analyses as building blocks to project the proposal's budgetary effects—including effects on the costs of the Medicaid program and on receipts of individual income taxes.
- *Review and write about the estimate.* At several points, we thoroughly review the projections for objectivity and analytical soundness. That rigorous process involves multiple people at different levels in CBO and JCT. When an estimate of the proposal's total budgetary effect is nearly complete, we write up the results, along with a detailed explanation of how we arrived at them, for the Congress.

We followed those steps to prepare our November 2017 estimate of the effects of repealing the ACA's mandate for individuals to have health insurance.⁹ In developing an analytical strategy, we examined data and research that might shed light on the effects, and we discussed the issues at a meeting of CBO's Panel of Health Advisers and consulted other experts.

In modeling the effects of the proposal, we estimated the number of people who would no longer enroll in health insurance as a result of the repeal, the effects on premiums, and the speed at which those changes would occur. And we projected how those changes in coverage and

5. See Congressional Budget Office, *The Congressional Budget Office's Work in 2017: A Report to the Congress* (January 2018), www.cbo.gov/publication/53460.

6. See Congressional Budget Office, *Options to Manage FHA's Exposure to Risk From Guaranteeing Single-Family Mortgages* (September 2017), www.cbo.gov/publication/53084.

7. See Edward Harris and Shannon Mok, *How CBO Estimates the Effects of the Affordable Care Act on the Labor Market*, Working Paper 2015-09 (Congressional Budget Office, December 2015), www.cbo.gov/publication/51065.

8. See Congressional Budget Office, *How CBO and JCT Analyze Major Proposals That Would Affect Health Insurance Coverage* (February 2018), www.cbo.gov/publication/53571.

9. See Congressional Budget Office, *Repealing the Individual Health Insurance Mandate: An Updated Estimate* (November 2017), www.cbo.gov/publication/53300.

premiums would affect tax revenues, Medicaid spending, and other spending.

In writing about that estimate, we also indicated that we were undertaking considerable work to revise our methodology and that preliminary results indicated that the estimated effects on health insurance coverage would be smaller than reported previously. In addition to other technical and economic changes, our next baseline projections will incorporate estimates of those effects because the repeal of the penalty for not having insurance (beginning in 2019) is now part of current law.

Seventh, we strive to make our analysis transparent, and we have recently reallocated resources to make it still more so. We have released new publications this year describing our processes for producing economic forecasts, budget baselines, and cost estimates.¹⁰ Key staff are making presentations to Congressional staff about those processes.¹¹ In the coming months, some of our specific efforts to explain how our models have contributed to our estimates will include the following:

- Exploring ways to make more supporting documentation for the methods used in baseline projections and cost estimates publicly available;
- Publishing detailed information about key aspects of our updated model for simulating health insurance coverage—including computer code—and about how analysts use the model in preparing estimates;
- Developing a version of our model for projecting spending on discretionary programs to facilitate replication of roughly 40 percent of CBO's formal cost estimates;
- Releasing technical documentation and computer code explaining how key parts of our long-term budget model work and how they contribute to our analyses;
- Providing information online that enables users to examine how a large variety of changes in baseline economic projections can affect projections of the federal budget;
- Publishing revised estimates of how certain changes to laws governing medical malpractice would affect medical spending, explaining the reasons behind revisions to the methodology used, documenting the model used to project how those changes to laws would affect medical costs, and making computer code for that model available;
- Posting a tool for examining the costs of different military force structures on our website; and
- Providing computer code that generates results discussed in a working paper about our model of the maximum sustainable output of the economy.¹²

More broadly, we plan to increase the public documentation of our modeling efforts by publishing more slide decks, working papers, appendixes, supplemental data, related spreadsheets, and other technical material.

We look forward to getting feedback on the usefulness of these transparency efforts. I appreciate the opportunity to explain how we do our work, and I am happy to answer your questions. Thank you for your support and guidance as we carry out our mission to provide information to the Congress and as you grapple with the difficult issues facing the nation.

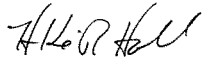
10. See Robert W. Arnold, *How CBO Produces Its 10-Year Economic Forecast*, Working Paper 2018-02 (Congressional Budget Office, February 2018), www.cbo.gov/publication/53537; Congressional Budget Office, *How CBO Prepares Baseline Budget Projections* (February 2018), www.cbo.gov/publication/53532; and Congressional Budget Office, *How CBO Prepares Cost Estimates* (February 2018), www.cbo.gov/publication/53519.

11. For example, see Jessica Banthin, Deputy Assistant Director, Health, Retirement, and Long-Term Analysis Division, Congressional Budget Office, "An Overview of CBO's Estimates of Federal Subsidies for Health Insurance for People Under Age 65: 2017 to 2027" (presentation at a Congressional Research Service seminar, Washington, D.C., January 10, 2018), www.cbo.gov/publication/53447; and Sarah Masi, Analyst, Budget Analysis Division, Congressional Budget Office, "Estimating the Costs of Proposals Affecting Health Insurance Coverage" (presentation at a Congressional Research Service seminar, Washington, D.C., January 10, 2018), www.cbo.gov/publication/53448.

12. See Robert Shackleton, *Estimating and Projecting Potential Output Using CBO's Forecasting Growth Model*, Working Paper 2018-03 (Congressional Budget Office, February 2018), www.cbo.gov/publication/53558.

This testimony was prepared by Jeffrey Kling with contributions from Jessica Banthin, Chad Chirico, Sebastien Gay, Teri Gullo, Jared Maeda, and Sarah Masi. In keeping with the Congressional Budget Office's mandate to provide objective, impartial analysis, the testimony contains no recommendations.

Mark Hadley, Wendy Edelberg, and Robert Sunshine reviewed the testimony; Christine Browne edited it; and Jorge Salazar prepared it for publication. An electronic version is available on CBO's website at www.cbo.gov/publication/53603.



Keith Hall
Director



Chairman WOMACK. With 3 seconds to go, that is very good, Dr. Hall.

Mr. HALL. I have had some practice lately.

Chairman WOMACK. I am impressed. We appreciate your testimony this morning, and as we begin the Q-and-A, I would like to welcome two additional witnesses to the table. They are Jessica Banthin, Deputy Assistant Director for health retirement long-term analysis at the CBO, and Jeffery Kling, Associate Director for economic analysis, at the CBO as well.

Chairman WOMACK. All three of our witnesses are available to answer the questions.

It should be noted that the Ranking Member and I have conferred prior to the meeting, and we have both agreed to defer our opening questions to the end out of respect for the colleagues of ours on both sides of the aisle who have full schedules and have other things going during the course of this particular hearing. So, with that, I am going to recognize first up my good friend Mr. Renacci from Ohio. The floor is yours.

Mr. RENACCI. Thank you, Mr. Chairman, for holding the hearing, and I want to thank Director Hall and his associates for the participation work at the CBO. You were tasked with the incredibly difficult job of forecasting outcomes of complex legislation. Oftentimes having to use various assumptions to predict the implications of policies that have never been tested before.

I want to touch upon a process the CBO uses to make assumptions on human behavior in response to the enactment of new policy. Last fall, S&P rating analysis estimated that repealing the individual mandate penalty for uninsured individuals will lead to 3 to 5 million Americans no longer having healthcare coverage. Compare this to CBO's analysis that estimated that 13 million Americans would no longer have coverage in a report issued in November 2017. This is quite a dramatic difference in analysis and is based on assumptions made by each organization.

Dr. Hall can you first please explain the difference in assumptions made by the CBO and S&P which led to such discrepancies, and why you think your assumptions are dramatically different from institutions like the S&P?

Mr. HALL. Well, let me start with just a broad characterization on the mandate. You know, our previous estimates of the effects of the mandate were in some respects anticipating. They were sort of projecting the likely impact.

So what has happened with the ACA is we have had a significant increase in coverage. So the question is kind of an empirical question. That big increase in coverage, how much of it was due to the mandate? How much was it due to just publicity? How much of it was due to other things?

So we are trying to parse out what the effects of the mandate were from the effects of other things, and we are beginning to get some data now, but we do not have very much data. And that has been our big challenge. It is because we have a little bit of data.

We probably do not have enough data to come up with a solid statistical estimate on those numbers. That is where we have this sort of notion that we are probably a little high. We were probably a bit high in our mandate, but we were not very confident, we now

know how much to lower it over time. Dr. Banthin can probably fill in a little bit more if that is okay?

Ms. BANTHIN. Good morning, Mr. Renacci. So, we published a slide deck in September 2017 talking about some of the issues Dr. Hall just mentioned. Both the financial effects of the penalty associated with the mandate as well as some of the nonfinancial effects.

For example, people's desire to comply with the law, possible changes in social norms regarding insurance coverage. Those non-financial effects are much harder to tease out. We are in the process of revising our methodology, and we will be discussing that in our forthcoming baseline report.

Mr. RENACCI. It is an important question because, as you can imagine, the number is always used, especially when it comes from CBO. Well, you are going to take 13 million Americans off of healthcare coverage where another organization said three to five. So, it is important that we figure out where your 13 million came from. Especially, when many times the other side uses those numbers against the legislation.

So, I think it is important. And I am not condemning you. I am just trying to make sure we understand how these differences come about because clearly when it is for me it has been real key. As a businessman for almost 30 years, I rely on information, and if your information is different from other organizations then, again, we have to figure out what the differences are. So I am hoping that in the future that can become more open.

I want to shift gears to assistance that is provided to the CBO through the CBO's panel of health advisors. Dr. Hall, can you talk about the composition of the panel of healthcare advisors and what role they play in assisting the CBO in producing its reports?

Mr. HALL. Sure. Well, the idea of the panel is to have a diversity of views and have people on there who can offer us advice on our work on healthcare. In particular, they meet once a year and we talk about topics of interest. So this is part of our way of sort of magnifying our expertise. We have a number of experts on the topics but getting some outside experts on there as well is really helpful.

We most recently use them on exactly the issue that you mentioned, on the mandate. We were thinking about changing our methodology, and we made it a major topic at our health panel meeting and got input from our health panel members. And they agreed that they thought our estimate was a little too high. But it did wind up being that helpful for us in actually figuring out how to change our methodology and how much to lower the estimate.

Mr. RENACCI. Thank you. I yield back, Mr. Chairman.

Chairman WOMACK. Mr. Jeffries, New York.

Mr. JEFFRIES. Thank you, Mr. Chairman, and I thank the distinguished Ranking Member as well. Director Hall, the Congressional Budget Act created the CBO to give Congress direct access to expertise is that correct?

Mr. HALL. Yes.

Mr. JEFFRIES. And that was done in 1974, is that right?

Mr. HALL. That is right.

Mr. JEFFRIES. And prior to the 1974 Act, Congress largely relied on the executive branch for most of its budgetary information. Is that right?

Mr. HALL. Yes.

Mr. JEFFRIES. And is it fair to say that relying on the executive branch to make congressional decisions largely put Congress at an informational disadvantage since the executive branch estimates were designed to enhance support for White House and administration policy?

Mr. HALL. Actually, no, that was one of the reasons that Congress decided to create us.

Mr. JEFFRIES. Now, for the last 40-plus years CBO has provided high quality information to Congress under, I believe, nine different directors appointed by the House Speaker and the Senate President pro tempore. Is that right?

Mr. HALL. That is correct.

Mr. JEFFRIES. And the CBO appoints staff based on their qualifications to do their job without any deference to ideology or political party. Is that right?

Mr. HALL. That is correct.

Mr. JEFFRIES. Now, the Trump administration has been very critical recently of the Congressional Budget Office. Is that right?

Mr. HALL. I have heard some, yes.

Mr. JEFFRIES. So, for example, the OMB Director, Mick Mulvaney, asked rhetorically, "Has the day of the CBO come and gone?" Are you familiar with that statement?

Mr. HALL. I am.

Mr. JEFFRIES. The Trump administration attacks have sought to discredit the CBO's analysis of Republican efforts with respect to healthcare. Is that right?

Mr. HALL. Yes.

Mr. JEFFRIES. So, in July of 2017, the White House tweeted a video claiming that the CBO inaccurately estimates healthcare covers. Is that right?

Mr. HALL. Yes.

Mr. JEFFRIES. Now, before unceremoniously resigning last September, HHS Secretary Tom Price claimed, "The CBO was wrong when they analyzed Obamacare's effect on cost and coverage." Are you familiar with that statement?

Mr. HALL. I am.

Mr. JEFFRIES. But as House Budget Chair, prior to his ascension, Tom Price recommended you for your current position. Is that right?

Mr. HALL. That is correct.

Mr. JEFFRIES. And in fact, when Tom Price recommended you he praised you for your vast understanding of economic policies. Is that right?

Mr. HALL. I believe so.

Mr. JEFFRIES. And you were appointed as Director of the CBO by John Boehner, the Republican Speaker of the House of Representatives. Is that true?

Mr. HALL. Yes.

Mr. JEFFRIES. Now the CBO's estimates, with respect to the ACA, have largely been accurate. Is that fair to say?

Mr. HALL. I think so. I think that is right. We are not perfect, but I believe we have done pretty well.

Mr. JEFFRIES. So, for instance, in July of 2012, the CBO estimated that 30 million people would be uninsured in 2016. Is that right?

Mr. HALL. Yes.

Mr. JEFFRIES. And the actual number turned out to be a close approximation about 27 million. Is that right?

Mr. HALL. That is correct.

Mr. JEFFRIES. And the CBO estimated that 7 million people would be enrolled in the Obamacare marketplaces and receiving subsidies in 2014. Is that right?

Mr. HALL. I think that is right.

Mr. JEFFRIES. I think the actual number turned out to be about 5 million. Is that correct?

Mr. HALL. I think that is right.

Mr. JEFFRIES. Now, were those estimates not more accurate than the estimates from many other entities including the RAND Corporation. Is that true?

Mr. HALL. I think generally we have done very well.

Mr. JEFFRIES. It was more accurate than an estimate from an estimate from the Lewin Group. Is that correct?

Mr. HALL. Yes.

Mr. JEFFRIES. It was more accurate than estimates from the Department of Health and Human Services Centers for Medicare and Medicaid. Is that right?

Mr. HALL. That one is about the same.

Mr. JEFFRIES. Okay. So, you have exceeded the estimations of almost every other entity that has analyzed the future of the Affordable Care Act. Is that correct?

Mr. HALL. I believe we have done pretty well, yes.

Mr. JEFFRIES. Now, is it fair to say that recent attacks on the CBO are part of a pattern by the Trump administration of undermining expertise in our democratic institutions?

Mr. HALL. I would not want to comment on that, but we are certainly not above criticism and critiques on our work.

Mr. JEFFRIES. Okay. I appreciate that. Republicans have attacked the FBI, attacked Special Counsel Bob Mueller, who has had a distinguished career and is a life-long Republican, attacked the intelligence community, attacked the Article III judicial branch as embedded in the United States Constitution, attacked the free press, so, I would just suggest Mr. Director, that you are in good company, and, as Jay-Z from Bedford-Stuyvesant, would say, "Brush your shoulders off." I yield back.

Chairman WOMACK. Mr. Johnson from Ohio.

Mr. JOHNSON. I thought this was a hearing on CBO, but I guess I missed something, Mr. Chairman. And I thank you for your diligence and having this series of hearings and helping us understand how we can, first of all, reauthorize and then reform the budget process and CBO's role and responsibility in that. We have had some discussions, Mr. Director, with you and your staff.

So, I have got some sort of basic questions here. Since CBO was founded on the principles of objectivity and transparency, why or

how would relying on outside data impact CBO's core duties and functions in serving the effort to provide Congress with scoring?

Mr. HALL. Well, we do in fact rely on outside data a fair amount. We look for data almost anywhere where we can find it. With keeping our eyes open, of course, of the data source and the level of objectivity and that sort of thing.

Mr. JOHNSON. Okay, well why is there so much tension then between CBO's access to private data and data transparency.

Mr. HALL. Well, lots of times we buy private data from companies, and, even if we do not buy the data they are kind enough to let us use it, we are careful not to disclose it freely because they are in the process of selling the data to other people. And if they notice I have it, and we let it go freely then that is a problem for them. So, we have to worry about confidentiality.

Mr. JOHNSON. Do you get pushback from data sources that say we do not want to release this data?

Mr. HALL. Oh, absolutely.

Mr. JOHNSON. How do you get past that hurdle when you think you need that data to do an accurate score?

Mr. HALL. Well, we do not always have to disclose the details of the data. We do try to detail where we got the data, on the nature of the data. We just feel like we often cannot actually release the data itself.

Mr. JOHNSON. Okay, how does CBO verify information provided by the various agencies through its own research? How do you verify that what they are telling you is accurate?

Mr. HALL. Well, we do rely on information from the different agencies. We do make an effort to look at other data as well to see if it is consistent. Though, actually, lots of times where agencies will perform an analysis and, rather than take the analysis on, we will ask for the data and do our own analysis. So, we do make an effort to make sure that the data we are getting from agencies is accurate, and, I say, by comparing it to other sources of data sometimes.

Mr. JOHNSON. Okay. All right. Moving on to another subject I know that CBO makes assumptions, has to from time to time in doing your scoring work. So, how does CBO make assumptions when the existing evidence and literature are unclear on the effects and the impacts of a particular legislative proposal?

Mr. HALL. Well, the first thing we do is we try to keep in mind that there is uncertainty in anything that we do and when we make an estimate we are trying to be in the middle of the range. We actually, literally sometimes, will sit down and come up with our best estimate, and then go through the exercise of saying, "Well, what are the chances the real number is higher? What are the chances it is lower? Are we in the middle of that?" So, we really try to make an effort to deal how we can with the uncertainty.

And, you know, sometimes we can look at data that is sort of related, maybe not exact data on the issue. Maybe how individuals make choices on different types of healthcare. How that informs their choices, for example, on Medicaid or something like that.

Mr. JOHNSON. Okay. All right. Shifting gears just a little bit, and I think we talked about this the last time you were before our Committee here, about the workload and the challenges of how

many different scores you have on your plate or scoring requests at any particular time. So how does a CBO analysts manage the challenges of making assumptions with limited time or access to information? You are trying to get through this process quickly. How do you manage that?

Mr. HALL. Well, we do what we can to support them. Actually, we have supervisors who help them and help them work things out. We will host some additional resources sometimes when data is harder to come by. But that is a continuing challenge for us, the turnaround times. Sometimes they are very quick. One of the things managers spent a lot of time on, are sort of urging committees to let us look at legislation early so we can start putting together the data that we are going to need once the legislation becomes more formal.

Mr. JOHNSON. Got you. Okay, Mr. Chairman, I yield back.

Chairman WOMACK. Ms. DelBene from Washington, you are recognized.

Ms. DELBENE. Thank you, Mr. Chairman, and thanks to all our witnesses for being with us today. Since the Trump administration took office in 2017 there have been a number of significant policy changes to the Affordable Care Act, including the elimination of the individual mandate.

A study released by the Urban Institute just yesterday found that the elimination of the individual mandate penalties and the other policy changes: such as the withdrawal of cost-sharing reduction payments and diminished Federal investments in advertising and enrollment assistance during 2017 that affected the 2018 open enrollment period, that those together will lead to an additional 6.4 million people uninsured in 2019 compared with prior law.

So, the advertising budget alone for open enrollment was cut by 90 percent. How will CBO account for these types of actions in its upcoming baseline projections?

Mr. HALL. Sure. Do you want to go?

Ms. BANTHIN. So we are watching closely all information regarding open enrollment advertising and all actions of the government that influence that, and we will be incorporating that into our baseline. We are also following and analyzing recently proposed regulations regarding association health plans and short-term plans. So we will speak to that when we publish our forthcoming baseline.

Ms. DELBENE. So, but how do you incorporate that? You brought up short-term health insurance plans proposed rule to expand short-term health insurance plan that the administration has released. So when you look at that rule, changes and advertising budget, how does that affect coverage and premiums in the marketplace? How are you going to address that specifically? Those are two specific examples but how are you going to approach those?

Ms. BANTHIN. So, we look at all of the changes that we believe will affect enrollment in the marketplace, and we discuss what impact we think they will have, we seek evidence and information that may help us analyze those effects, maybe through historical evidence.

We talk to outside experts, and we compile all that information and then use our model to assess the impact on enrollment. When a regulation is proposed but not yet final, we follow a budget rule

where we incorporate just 50 percent of the effect until it is final and then we incorporate the full effect.

Ms. DELBENE. Is that a standard that you used before, the 50 percent of the effect?

Ms. BANTHIN. Yes.

Ms. DELBENE. Okay. How did that come about?

Mr. HALL. It is just a tough way of dealing with a proposed rule that may not become a final rule. So, there is some probability it will become final, and so if you do not take it into account at all that is a zero chance. We do not want take 100 percent because they do not all turn into final rules. So, we have we generally viewed this as a 50/50 chance that the rule will become final and incorporate that in our baseline. And then, of course, once it becomes final then we incorporate the rest of it.

Ms. DELBENE. I understand. Okay, thank you very much; I yield back, Mr. Chairman.

Chairman WOMACK. Next we go to Mr. Faso of New York.

Mr. FASO. Thank you, Mr. Chairman, and I thank you and the Ranking Member for letting us go ahead of you. That is very indulgent. So, I appreciate.

Chairman WOMACK. Trying to be respectful of your time.

Mr. FASO. Well, thank you sir. On the issue of the individual mandate that has been routed about throughout the Nation over the last number of years: is it correct that when CBO did its forecast it counted as those people who would be losing insurance those who were currently paying the penalty to avoid buying insurance?

Ms. BANTHIN. So, we publish estimates that represent average annual coverage numbers, and we realize that in the real-world people may be uncovered for half a year. So, in real life some of the people who pay the penalty may pay a prorated penalty due to certain number of months uninsured, but they have been covered for the other months of the year. So, our estimates try to account for that.

Mr. FASO. So, when you did that how many people were paying the penalty in the most recent year?

Ms. BANTHIN. I do not know the number off the top of my head.

Mr. FASO. So, in other words when you did your analysis of loss of insurance, you did not actually count all of the people who were paying the penalty as losing insurance?

Ms. BANTHIN. That is correct.

Mr. FASO. If the fine or penalty is repealed, you counted only a portion of them?

Ms. BANTHIN. That is true, because we are presenting average annual statistics. So, for example, the real data from the IRS may show lots of people paying a small portion of the penalty. Let's say a whole lot of people paid half the penalty. We would then cut that number in half.

Mr. FASO. I think this was an example where frankly what came from CBO was a bit of a muddle. It was not really understood, I think, by either side in this political debate and certainly not in the media and among the general public. And that might be an area where you might seek more clarity—just a point.

The other thing, I am aware that the budget office in Canada publishes models that citizens can look at. Netherlands invites

international and domestic experts to come in and critique their CBO equivalent office. Have you considered doing such a thing, Director Hall, as well? In terms of trying to modernize and improve the forecasting abilities of your office.

Mr. HALL. Yes, actually if you sort of look at our transparency plan we have a few proposals that are doing just that.

Mr. FASO. So, what specifically are you going to be doing?

Mr. HALL. Yeah, well we have what we are calling our waterfall table. Which is looking at discretionary spending by category, and we are going to put that up so you can sort of see how our projection of discretionary spending is going to change from year to year. We are putting up a model on a military force structure that is sort of similar to that.

I think we are also going to work towards, what I call, a rule of thumb interactive model. Which will be based on our budget outlook forecast where people can then change some things like productivity or labor force participation and see the effects on the budget once you sort of vary those things. So, we have a few things like those that are designed to be interactive.

Mr. FASO. And what about in terms of outside experts to come in and help review and critique performance?

Mr. HALL. Well, we certainly bring them in all the time to look at our models. Especially when we are developing new models, we go to our experts, and we certainly use our panels to talk about our performance and get feedback from them on how we are doing in various aspects, especially on the economic forecast.

Mr. FASO. And is that something where you report to the committees in the House and Senate in terms of that process.

Mr. HALL. I do not think we officially report, but we certainly could do that if there is interest.

Mr. FASO. I think it might be useful to at least advise the committees as to who you have brought in, what the discussion was, and what decisions or determinations you made as a result of those evaluations that outside parties assist you with.

Mr. KLING. So, there is a process for that, you know, panel economic advisors, for example. Where at the meeting there is a number of the Committee staff who are attending the panel meeting itself. So, they can hear in real time what the panel members are telling us, what the discussion is about, the economic forecast, and then there is also a follow-up meeting with Budget Committee staff where they give us information about their takeaways from the meeting. And we talk about what we think we learned. So, that process is happening at a staff level at this time.

Mr. FASO. Great. Thank you, Mr. Chairman, I yield back.

Chairman WOMACK. Ms. Jayapal, Washington.

Ms. JAYAPAL. Thank you, Mr. Chairman, and thank you all so much for being with us. I wanted to go to the healthcare law and how you have incorporated changes that were made by the Republicans last year into this analysis, including rules that were just applied.

So a new analysis by the Urban Institute indicates that continuing unraveling of the ACA will increase premiums by double-digit percentages in most states next year, an estimated 18 percent on average. And that includes the elimination of the individual

mandate along with withdrawal of cost-sharing reduction payments and slashing of budgets to get the word out about the ACA and encourage enrollment.

On top of this, pulling Americans out of the ACA and into short-term limited duration policies would raise the uninsured in this country to 36.9 million next year. How are you incorporating these effects of the changes in both policy and law into your baseline estimates?

Mr. HALL. Sure. This is something we routinely do with our baseline. We have a specific healthcare baseline. So, we will do exactly this. We take on board the changes in law and et cetera. The rules are a little bit trickier, as we sort of discussed you know, because rules are not always finalized. And it is sometimes hard to see that, but we will be doing our own analysis with this. We will probably look at the Urban work, but we will do our own independent work to see what the effects will likely to be.

Ms. JAYAPAL. And, Director Hall, is part of the reason that these rules are difficult to analyze, or even some of the early projections around the ACA, when you assumed for example that states would welcome Medicaid expansion because it would help their populations in their states. That would be a logical assumption to make, I believe. I do not know if you agree with that or not. You certainly made it in your initial estimates.

Mr. HALL. That is right. That was the issue the Supreme Court overruled, the part that made it a requirement for states to expand.

Ms. JAYAPAL. So then you revised your budget estimates and you actually had to take into account the fact that certain states would not be expanding Medicaid. So, there would be fewer people in those states, but some of your projections underestimated the deep need across the country for health insurance. So, actually more people are enrolled in Medicaid and are pushing the projections up a little. Is that correct?

Mr. HALL. Well, that is right; we did underestimate the Medicaid numbers a little bit.

Ms. JAYAPAL. So, you know, what I am trying to understand is how much you look at behavior, the finality of a rule. So, for example, let us move to immigration in the budget and the estimates in the budget. DACA repeal and deportation of about 800,000 DACA recipients would reduce economic growth by an estimated \$280 billion and cost more than \$460 billion in economic output over the next decade.

Is the update to the baseline that CBO is currently working on taking into account this economic impact if the President and the Republicans refused to extend DACA permanent solution for DACA recipients? How do you take something like that into consideration?

Mr. HALL. Well, this is part of our annual update of the baseline where we, in fact, do try to take those on board. It is a little tricky for us when it happens off our schedule. So, we try not to make too many adjustments off our regular schedule for updating the baseline, but the changes that happen in time for us to put them into the baseline we definitely will take them into account.

Ms. JAYAPAL. So what would you do in a case like that. Would you estimate that DACA recipients are not going to have a perma-

nent solution? The deadline is March 5th. So, obviously the Supreme Court has ruled, and so that may, you know, provide us with a little bit more time. But the reality is at some point this year, those recipients are going to be deportable if there is not legislation passed. So, how do you take something like that into consideration?

Mr. HALL. I do not know how we are going to do it exactly this time. Obviously, we will be finishing our baseline over the next month or so, and so we will have to have to look at these things and decide.

Ms. JAYAPAL. Let me ask you about another extended complication or result of any proposals to deport or to limit legal migration to this country. At the end of 2012 the Social Security earnings suspense file—one of my favorite accounts because nobody knows anything about it, but I have studied it for years—contained \$1.2 trillion in uncredited earnings.

So these are earnings from undocumented immigrants using Social Security numbers that are not legitimate Social Security numbers. They are still paying taxes into the Federal budget that supports Social Security for all Americans.

If you were to deport undocumented immigrants, or if you were to limit legal migration, how do you estimate the enormous impact that that would have on the economics of our budget? And I see that I am out of time. So can I have 5 seconds for him to answer?

Chairman WOMACK. I will give you 10.

Ms. JAYAPAL. Oh, you are wonderful. Thank you.

Mr. HALL. Well one of the best things maybe to look at is we fairly recently did an estimate of the DACA, and we took a lot of these things right into account explicitly in their write-up of the estimate. It will give you an idea of how we think about this, and how we may deal with this if it comes up.

Ms. JAYAPAL. I will work with you afterwards just to see exactly that.

Mr. HALL. Yeah, we would be happy to follow up.

Ms. JAYAPAL. Thank you very much. I yield back.

Chairman WOMACK. Mr. Smucker, Pennsylvania.

Mr. SMUCKER. Thank you, Mr. Chairman. Director Hall, my congressional district, 16th district in Pennsylvania, leads the State in agricultural production. Local agriculture sector supports more than 96,000 jobs, and farmers producers in my district rely in many cases on a specific provisions within the farm bill to, during tough times, keep their operations open.

And today it is tough times. Net farm income is that at 12-year low. Farmers in my area are in crisis and in some situations on the brink of bankruptcy. So, it is critical that Congress gets this upcoming farm bill reauthorization right, and, as you know, CBO's cost estimate is an integral part of that reauthorization process.

So I would like to understand a little bit about the assumptions that you make in regard to the farm bill. And particularly my question is, with ag being one of the most volatile markets that that we have, how does CBO formulate its models to anticipate potential catastrophic risks, whether it is weather-related or in other areas? And how does it anticipate how that applies to farming practices?

Mr. HALL. I will give a sort of a general answer and then pass it on. But this is one of the reasons why we have experts in so many different areas. We have experts in ag. We have some ag economists on board who spent a lot of time with these issues, and you talk with ag experts at the Department of Agriculture and elsewhere.

So they have an understanding of these particular issues for agriculture. So, of course, our effort is to be as professional and use our expertise as much as possible and have these models accurately represent what would happen.

Mr. KLING. So you can see on our website, with every baseline in the spring there is a set of tables, 20 or so, that show for different kinds of crops what we think the yields are going to be and the prices are going to be on average. And then, the key thing that, I think, you are interested in, is that sometimes it is not the average. Sometimes it is higher. Sometimes it is lower.

So we have developed a set of modeling tools to look at history and see how much volatility has there been, and if the future is like the past then we can use that as a way to figure out what are the chances that prices are going to be below some threshold that might trigger some kind of payment. So, we are trying to keep track of those things through the model.

Mr. SMUCKER. Do you have different models for different titles of the farm bill?

Mr. KLING. Yes.

Mr. SMUCKER. Do you work with any of the other Federal agencies such as the USDA or private organizations to help better assess the uncertainty in the ag markets?

Mr. KLING. Yeah. So, we get a lot of information from them, and we also have an annual meeting where we have a bunch of people who study the agricultural sector—both private organizations, thinks tanks, universities, people from the executive branch—come in and talk about what is our outlook for the market and what are the key sources of uncertainty. And we try to take that information all on board.

Mr. SMUCKER. Thank you. I have a little time so I am going to switch gears. My fellow member from New York has already asked some questions in regards to other agencies in other countries internationally that we could potentially learn from. I know, as a business owner, some of my best ideas were when we share best practices with a similar organization. So I would like to hear just a little bit more about whether you have spent any significant amount of time looking at operations in other areas.

Mr. HALL. Sure. Well, first of all, we get lots of visits actually from Parliamentary Budget Offices of other countries and members to come and talk with us. And we have some discussions back and forth that way. The most formal thing we do is we participate in the OECD: Organization for Economic Cooperation and Development. They have actually a group of parliamentary budget or budget offices. They get together once a year and talk about common problems and such. So we do that. And then, there have been some pretty good examples, you know, Canada and the U.K. where.

Mr. SMUCKER. Okay, and I am almost out of time, but that is one of the most interesting ideas in information the Committee has

provided for us about online tools that Canada has made available so that legislators, or even members of the public who might be interested, could actually look at specific impacts of various policy proposals on their own time as they are developing those policies. So, and I know there may not be time to answer this, but are you looking to improve what we have in regard to that?

Mr. HALL. Yeah, absolutely. And I say we have a pilot on a number of things, and we are looking for feedback. When we try something, whether you find it helpful, that is great. Then we will put more resources into doing that kind of thing. One of our challenges is there is so many different ways of being transparent, and it takes resources to do all of them. We have to sort of make up, what I call business decisions, about which ones you find most useful that we should spend our time on and which ones probably are not worth our time.

Chairman WOMACK. Mr. Khanna, California

Mr. KHANNA. Thank you, Mr. Chairman. Director Hall, I just wanted to go over your background so people understand some of your qualifications. Tyler Cowen, who I disagree with but is one of the most brilliant economists in the world, said when you were appointed that you were an outstanding pick. Is that correct?

Mr. HALL. I hope so. I am not sure I heard that.

Mr. KHANNA. And you served President George W. Bush as a White House Chief Economist in his administration, correct?

Mr. HALL. That is correct.

Mr. KHANNA. And you were appointed by Speaker Boehner, correct?

Mr. HALL. Yes.

Mr. KHANNA. And before you were appointed, you wrote op-eds criticizing the increase in the minimum wage and philosophically criticizing the Affordable Care Act. Correct?

Mr. HALL. I would not use the word criticizing, but I was pointing out some effects that I thought were not being taken into account.

Mr. KHANNA. It would be fair on the spectrum of economists to say, before you took this role, you were more conservative in the conservative economists, correct?

Mr. HALL. Yes.

Mr. KHANNA. So, how do you feel when you hear the President or the Speaker attack the credibility of the CBO? I mean, do you do you think President George W. Bush would ever have done that?

Mr. HALL. No, I found the CBO to be a just a really great place with very competent people who do really great objective work. So, I would I would disagree with those criticisms.

Mr. KHANNA. I mean, you served as the Economic Advisor to President George W. Bush. Do you think he or his administration ever contemplated those kinds of attacks on the CBO?

Mr. HALL. I do not know.

Mr. KHANNA. Do you think that the attacks and the rhetoric against the CBO is undermining an essential part of our democracy in a way that for 40 years we have never seen before?

Mr. HALL. I can say I am not happy about it. But on the positive side, I have been very pleased with the people who have come to

our defense. Very capable people who really understand what we do. So, in that respect it is not been all negative for us.

Mr. KHANNA. I mean, because if you do come with a slightly conservative perspective, as there have been people who have come with a liberal perspective, would you say that you can vouch that the analysis of the CBO does not have a liberal bias?

Mr. HALL. Well, I think that is correct, and let me be clear that we are not above criticism. If people have complaints, if they think we are doing something wrong and want to give us feedback that we can take on board, that is actually helpful. So, I do not disagree that we should not be criticized.

Mr. KHANNA. But, sir, do you think there is any reason to doubt because of bias or ideological bias when you come out with estimates of how many people would lose insurance or gain insurance? Is there any reason to think that there is ideological bias behind that?

Mr. HALL. No, we work we work pretty hard to keep bias out of it.

Mr. KHANNA. And what would you be your recommendation, then, to those of us in Congress in terms of our rhetoric in attacking the CBO?

Mr. HALL. Well, I would I would hope that that people who are unhappy or unclear about what we have done would let us talk to them. You know, we have done a lot of outreach. I think we probably need to do more outreach to where you can explain what we have done and why we have done things. It would probably at least get some of the mystery out of what we have done. So, people can see that there is, in fact, real analysis behind our work.

Mr. KHANNA. Well, those are the only questions. I just want to make this comment that, you know, I feel for you. Because I think I disagree with a lot of your work before you were appointed in this position. I mean, I disagreed with the op-ed you wrote on minimum wage, the op-ed expressing skepticism of the Affordable Care Act.

But I think it is outrageous for people to question your integrity or the CBO's integrity when you have conservative economists questioning, invalidating your credibility—some of the leading economists—when you probably understand economics more than 95 percent of the people sitting in this body. To question the integrity, your integrity, or the integrity of the body I think is an ultimate disservice to our democracy. And I really appreciate your withstanding those political attacks and continuing to do your job.

Chairman WOMACK. Let's go now to Minnesota, and the gentleman from Minnesota is recognized, Jason Lewis.

Mr. LEWIS. Thank you, Mr. Chairman. I have to say, I do get somewhat of a kick out of my colleagues on the other side bemoaning attacks while immediately attacking anyone who disagrees with them. But be that as it may, I am not going to attack anybody today.

I do want to talk a little bit about your estimates on baseline, though, on baseline budgeting and some of the more volatile variables that you have to assume there. For instance, as I understand it, when you develop a baseline budget, you assume that temporary provisions will continue, or the discretionary appropriations passed each year will continue, as is emergency funds will continue; trust

fund depletion will not be a factor in spending; mandatory programs continue unabated.

What has been your experience when doing the baseline? What have been the most volatile variables that you think, in an honest, objective way, you have probably been wrong on?

Mr. HALL. Well, let me first go to the first part of your question. All those rules that you are talking about are rules that are set by either law or the Budget Committee or with consultation with the Budget Committee. So, we are actually not really making those decisions about how to do those. Those decisions are coming from the Budget Committees.

Mr. LEWIS. And we need to evaluate whether those decisions are prudent. And so, I am asking what variables have been the most problematic in assuming a baseline budget, say, for 10 years?

Mr. KLING. I would say the most problematic variable has actually come from the economic forecast. It has been our forecast on interest rates. Our projections of net interest have been farther off than any other budget category on a percentage basis, and we are not at all alone in that we forecast that interest rates would return to closer to the historical levels. Like just about every private sector forecaster, we have been very close to the blue chip consensus on our interest rate forecast, but nevertheless, everybody has been wrong, and it has been bad for our baseline budget because our net interest payments have been——

Mr. LEWIS. Emergency spending; you assume that continues? Has that been an issue?

Mr. KLING. So we do project forward emergency spending, and so that is a rule that, you know, Congress changes that from time to time. Sometimes it is higher; sometimes it is lower. That has not been what I would call the biggest category.

Mr. LEWIS. Let's talk a little bit about dynamic scoring. Again, our friends on the other side of the aisle think you do too much of it; some of us on this side think you do too little of it. When we are factoring that into the costs estimates, do you have a rule? How much do you use, and what is the rule?

Mr. HALL. Sure. Well, the biggest thing is the legislation needs to be big enough to have a dynamic effect to actually affect that the GDP or the labor supply or something like that. So, the rule we use is it has got to be greater than one quarter of 1 percent of GDP, so that puts it at, right now, probably \$40 billion or something like that.

And then, the second thing is, to be honest, whether or not Congress has the patience to wait for us to take a couple extra weeks to do the dynamic aspect of legislation. That has not always happened. Because it does take some time and effort to do that. Let me just say, just generally, about the dynamic: dynamic analysis is always part of our baseline. It is always part of our analysis of the President's budget.

So dynamic elements just have always been part of what worked for a long time, and a big part of what we do. Dynamic scoring is just now introducing it to individual pieces of legislation.

Mr. KLING. One important thing to add there is that we are following the guidelines that are set forth in the budget resolution, and so like the quarter percent of GDP, it is not something where

we have made a decision about that. It is that you collectively have made that decision, and we are implementing it.

Mr. LEWIS. True. But, I mean, calculating GDP is also a little bit like calculating interest rates. If you could predict either one, we would probably all be doing something else for a living. I mean, I understand how difficult that is.

I do want to take a microcosm of the dynamic effect, however. In my home state of Minnesota the Department of Health just released another report that 116,000 more Minnesotans lost their health insurance in the last two years. I happen to think the exchange from the ACA is not working too well. That is 349,000 now without health insurance.

So let me just ask you a very simple question, Director Hall. And that is, in your opinion, would more or fewer people buy health insurance if, indeed, the price of, say, a catastrophic policy, what my parents used to call major medical only—without the mandates, without the wellness benefits required from the ACA—if that price were to drop precipitously, would more or less people buy health insurance?

Mr. HALL. Well, more, yes. On the catastrophic? Yes.

Mr. LEWIS. Yes. I mean, so those effects of the ACA had an effect on fewer people buying health insurance?

Mr. HALL. Right. Now, one of the challenges we have got, right? Is how do you define coverage. Is it substantial enough to be coverage, or is it too small?

Mr. LEWIS. My time is up. I thank you for your indulgence and the Chairman's indulgence.

Chairman WOMACK. Mr. Ferguson from Georgia.

Mr. FERGUSON. Thank you, Mr. Chairman. And, Dr. Hall, I want to thank you again for spending time in our office and having some really good conversations. As I sit here, and I kind of think about it—I listen to the comments from my colleague from California, and talk about, you know, the attacks on the CBO office—you all probably feel a lot like we do sitting over here. You are involved in a process that has too many acceptable pathways to failure, because that is the way that it has been designed, and all you are doing is you are operating within the framework that we tell you to. Okay?

So, you know, what I am more interested in is more of the processes, and I have been trying to focus on the accuracy of the CBO scores going out into further years. And I think before, when we had the discussion, we talked about how the fact that you have got an accuracy rate—I think you said 2 or 3 percent at the 6-year mark. Okay? From what you scored on day one, going to 6 years out, I think you are at about 3 percent, right?

Mr. HALL. That is on the outlays. That is right.

Mr. FERGUSON. Yes, on the outlays. So, what I want to look at and talk about a little bit today is to get your thoughts about, well, how do we get better numbers for years 7, 8, 9, and 10? Okay? Because what we are doing is we are making decisions on 10-year numbers, and we have absolutely no idea what the accuracy of that 10-year number is. I mean, I think we feel like a lot of times, and what we are learning, is that we are, you know, closing the door, cutting the lights out, and throwing a dart at those out years.

So, when we say we are going to make this budget assumption, and it is going to score for this many, whether it is positive or negative, what kind of tools do you need? What do we need to think about? What conversations do we need to have about understanding what the accuracy of year 7 through 10 is?

If we cannot do that, do we need to clarify in the CBO scoring that the accuracy is really good in years one and two; it is this number in years three and four; and it goes out. And so, by the end—by the time you get to years 9 and 10, you know, you can say, “Well, we are dealing with about a 50 percent accuracy rate.” So, I will let you all take it and roll with that.

Mr. KLING. So, we have been doing 10-year projections starting in 1996. So, 1996, we could look ahead to 2007, and in 1997, we could look ahead to 2008. Those are the big years—the recession, for example—and so a lot of our 10-year projections have been at this time where the economy was in a place where I think people really did not expect it to be there, and we certainly did not expect that in the mid-1990s. And so, using that very short history, those 11 observations where we have the 10-year projections, to get a sense of what we expect our accuracy going forward is not really very helpful, because those conditions were very unusual.

It is the case that over a longer period of time, if we look at our 4-year, 5-year, 6-year projections, that they tend to be fairly stable, and so we do not have any reason to think that years 7, 8, or 9 particularly worse than 4, 5, and 6 in that regard.

Mr. FERGUSON. So, I mean, that is an interesting point that you can make that, but you cannot prove that those outlying years are just as stable. And just as you point out, it does not matter what the reason is; we were way the heck off in those 3 years that you just described. The point I am trying to make here is that we put so much value on that—either side—whether you like the score, or you hate the score, you go, and you put a lot of value on that 10-year number. Okay? And the point is we need to know what the probability of that number being right is, and you just pointed out a great example.

You had no idea in 1996 and 1997 what 2007 and 2008 were going to look like. Okay? So, I just think we need to be more honest with ourselves. Can we and do we need to say, “We can give you really good numbers for these 5 years, but beyond that, there are too many variables, and we just need to make decisions based on that on that uncertainty in the outlying years?” And you know, we are putting that 10-year window in there because we need that length of time to be able to balance, to get to balance.

So, my point is that I want you all to think about how we communicate the accuracy of those outlying years so that we can make better informed decisions as a Committee.

Chairman WOMACK. Mr. Smith from Missouri.

Mr. SMITH. Thank you, Mr. Chairman. Director, I want to make sure these numbers are correct. But in 2013, CBO projected 24 million people would be enrolled in the healthcare exchanges, is that correct?

Mr. HALL. Yes.

Mr. SMITH. And in fact, how many in 2017 were enrolled?

Mr. HALL. Do you have this?

Mr. SMITH. More like 10. So, that is a big miscalculation from 24 million to around 10 million. Do you know why there was such a miscalculation there?

Ms. BANTHIN. As we stated earlier, we did pretty well in forecasting 2014 and 2015 subsidies. We overestimated subsidies in 2016, and we have since revised down our estimates. Some of the reasons that we overestimated subsidies in 2016 have to do with—

Mr. SMITH. We are talking 2017.

Ms. BANTHIN. Right.

Mr. SMITH. So, you are only talking about 2016.

Ms. BANTHIN. Okay, so, 2017, but we are referring to our earlier estimate, say, from 2013. We did not anticipate the fact that employers would continue to offer as much coverage as they have. They are continuing to offer—

Mr. SMITH. Why did you not anticipate that number?

Ms. BANTHIN. We assumed employers would either stop offering or new firms might decide not to offer coverage so that their employees could take advantage of subsidies in the marketplace.

Mr. SMITH. But why did you assume that?

Ms. BANTHIN. Because the subsidies were available to low-income employees.

Mr. SMITH. And so, why did people not take advantage of that?

Ms. BANTHIN. We believe that, given the uncertainty surrounding the marketplace and also the nature of the coverage in the marketplace, employers made the decision to continue to offer typical employer policies to their workers.

Mr. SMITH. So, did you not consider that as a factor in making these evaluations early on in 2013?

Ms. BANTHIN. We have learned from that experience, and—

Mr. SMITH. But that was a reasonable expectation, and I am wondering why, when this report was done in 2013, that that reasonable outcome was not part of the factor?

Mr. HALL. So, in 2012 we published a report about employer response, and at the time there was a great deal of uncertainty, and there was some evidence that it could be very small, as it turned out to be. But there was also some evidence that pointed to it might be very, very large. And so, we were trying to be in the middle of the distribution of those potential outcomes, and we had a kind of moderate employer response.

It did turn out to be smaller, but at the time in 2012, looking at the debate at that point, there was also reason to be concerned that it could have been very large, and so that was one of those cases where we did—

Mr. SMITH. So, you erred on the side of extremely large.

Mr. HALL.—the kind of analysis that we talked about before, which was trying to—

Mr. SMITH. I have got a minute-45. I want to ask some more questions.

Mr. HALL. Sure.

Mr. SMITH. Director, when Mr. Lewis asked you a question, you made a statement that caught my interest, and you said, “The definition of coverage is what matters,” and maybe that is why you did

not go into the definition of how many people would have “coverage” under catastrophic plans.

In regards to evaluating the healthcare bill that was passed out of the House and we discussed, would coverage have been defined under CBO if we would have put in the language of the bill that anyone with some kind of healthcare coverage—if we defined it, then would you have considered HSA involvement or catastrophic plans as coverage? If we would have defined it in the law?

Ms. BANTHIN. Yes.

Mr. HALL. Yes.

Mr. SMITH. And so, if we would have defined it in the law, under your review and expectations we probably would have had an increase of people having access to healthcare rather than the decrease because of the individual mandate.

Ms. BANTHIN. I am not sure that would have been the outcome—

Mr. SMITH. But you have never figured that.

Ms. BANTHIN. Our definition of coverage is very broad.

Mr. SMITH. Have you ever figured that? So, what is the definition of coverage that you use?

Ms. BANTHIN. It is just insurance that covers serious illness and a range of services.

Mr. SMITH. So a catastrophic plan is not considered coverage?

Ms. BANTHIN. Yes, it is.

Mr. SMITH. So what was the number that you felt, under the healthcare bill that was passed, would increase coverage under a catastrophic plan?

Ms. BANTHIN. Catastrophic plans under the proposal would not—

Mr. SMITH. The healthcare bill that you evaluated.

Ms. BANTHIN. The EHB would still have been in effect, so those plans—

Mr. SMITH. So it would not have been considered coverage?

Ms. BANTHIN. They would not have been available for sale.

Mr. SMITH. So it would not have been considered coverage?

Ms. BANTHIN. There would be no policies like that to purchase.

Mr. SMITH. But there were policies within the healthcare bill that you evaluated and gave a CBO score that we passed out of the house. And you did not consider coverage for that?

Ms. BANTHIN. We did not have to make that determination. People were either covered through current law or not.

Mr. SMITH. Okay. I wish I had more time. But thank you.

Mr. HALL. Well, let me just say, the short answer is if it had included catastrophic coverage, that would have counted. We are just saying that the legislation we evaluated did not have policies with just catastrophic coverage. And we can follow it up but—

Mr. SMITH. Yeah, we will follow it up, because it did.

Chairman WOMACK. Welcome back, Ms. Schakowsky. You are recognized for 5 minutes.

Ms. SCHAKOWSKY. Thank you, Mr. Chairman. In the March 13, 2017 score for American Healthcare Act, the CBO estimated the effects of defunding Planned Parenthood. “To the extent that there would be reduction in access to care under the legislation, they would affect services that help women avert pregnancies. The peo-

ple most likely to experience reduced access to care would probably reside in areas without other healthcare clinics or medical practitioners who serve low-income populations. CBO projects that about 15 percent of those people would lose access to coverage.” So, on what basis did the CBO estimate the 15 percent of those people would lose coverage? Dr. Kling?

Mr. KLING. So, that estimate is based on CBO’s analysis of data on the locations and capacity of providers that specialize in offering family planning services, as compiled by the Health Resources and Services Administration.

So some areas of the country would lack other providers who serve low-income populations; other areas of the country would have those providers, but they would have limited capacity to serve all of Planned Parenthood’s clients, and a change in providers would affect access in instances where those providers do not offer the same breadth of family planning services as those offered by providers who specialize in family planning services, such long-acting and reversible contraceptives, same-day appointments, on-site refills, and confidentiality for minors.

Ms. SCHAKOWSKY. Thank you. CBO also looked at the effect that loss of access to reproductive health care would have on births. “CBO estimates that the additional births stemming from the reduced access under the legislation would add to Federal spending for Medicaid. In addition, some of those children would themselves qualify for Medicaid and possibly for other Federal programs.

“By CBO’s estimate, in the 1-year period in which Federal funds for Planned Parenthood would be prohibited under the legislation, the number of births in the Medicaid program would increase by several thousand, increasing direct spending from Medicaid by to \$21 million in 2017 and by \$77 million over the 2017 to 2026 period.” And on what basis did CBO determine that kind of reduction would mean more births?

Mr. KLING. So, CBO used data on the family planning services available from different types of health care providers and relied on research identifying the relative effectiveness of those services in preventing an unintended pregnancy. We projected that less effective services would be available under the proposal on average, resulting in additional births that would increase Medicaid spending.

Ms. SCHAKOWSKY. Thank you. Did you want to say something?

Mr. HALL. No.

Ms. SCHAKOWSKY. So, the former Chairman of this Committee, Diane Black, contested the CBO estimate during our budget markup last year. She said, “It is unreasonable for CBO to assume that women are incapable of finding another provider. Women are smarter than this.” So, when calculating the estimate, did the CBO assume that women are not smart enough to find another provider, or was its estimate based on some evidence that the closures of health providers in medically underserved areas could reduce access to birth control and thus lead to more births?

Mr. KLING. It was based on our analysis of the locations and the capacity of providers that we talked about in the answer to your first question.

Ms. SCHAKOWSKY. Thank you. One source of uncertainty in CBO estimates is that your office cannot always anticipate how a law

will be implemented, but I understand that the CBO does adjust its baseline and cost estimate as it receives new data and observes changes in implementation. The Trump administration cut the outreach budget for the insurance marketplace under the Affordable Care Act by 9 percent. Is that the sort of change that the CBO would look at?

Mr. HALL. Yes, it would, absolutely. We will be taking a look at that. We have not made any conclusions yet.

Ms. SCHAKOWSKY. The administration wants to let states take Medicaid healthcare benefits away from families who cannot provide employment. Is that the sort of change in implementation CBO would consider as it updates its model?

Mr. HALL. Yes.

Ms. SCHAKOWSKY. And after years of decline, the uninsured rate went up—is that the last year? Okay. Is that the sort of new data the CBO would incorporate in its baseline future estimate?

Ms. BANTHIN. I can answer that. We take account of all survey results that you are referring to, the Gallup poll. However, we place a little bit more weight on the National Health Interview Survey because of its larger sample and much higher response rate. That was released last week.

Ms. SCHAKOWSKY. And who does that survey?

Ms. BANTHIN. The Center for Health Statistics, CDC, HHS. It is a large, federally sponsored survey. That showed a tiny uptick that was not statistically significant in the number of uninsured.

Mr. HALL. But that only covered the first three quarters of 2017, so we have some more data to get.

Ms. SCHAKOWSKY. Good. Thank you. I yield back.

Chairman WOMACK. Governor Sanford, South Carolina.

Mr. SANFORD. Thank you, Chairman, and I thank each of you all for being here. I come from the coast of South Carolina, and there the tides gently come in, and they gently go out each day. When I look at your forecasts, here is my concern. Is it optimistic? Are we lulling ourselves to sleep based on forecasts that are relatively benign in what may prove not to be the case?

And, specifically, I want to get at the notion of asset values and the behavior that comes with that in terms of consumer spending and other. I will go back to what Mr. Smith was just getting at. If you look at your projections in 2012 on the ACA, it was not margin of error. It was just plain error.

And I am not faulting you for the different things you thought, but, I mean, the numbers; he focused in on a single year. We are talking from sort of a high point of 67 percent projected to, as the trend ran out of the window, down to 27 percent are projected. I mean, again, not margin of error, but just outright error. And I will go back to what you said, Dr. Kling, just a moment ago, which was, in fact, interest rates were really the larger area of error in forecasts.

So my question is this: if that is the case, and we were off on our interest rate numbers, given interest rate as a driver of the Federal budget going forward over the next 10 years, we could put ourselves into one heck of a financial conundrum. And so, I look at some of the wealth numbers; we are in uncharted waters with regard to Federal and central banks with zero interest rate policy

around the world. We have a global debt number that has run up to the highest ever.

I pulled the Shiller PE ratio. Our numbers are now higher than on Black Tuesday in terms of the Shiller PE index. I look at household net worth to disposable income; we have never before in the history of our country been at as high a level. I look at household net worth to GDP; again, same phenomenon. We had blips, both prior to the tech bubble and the crash of roughly 2008, but never before at the levels that we are seeing right now.

So maybe we are living in a bubble, and we do not even know it, and if that was the case, what does that do in terms of your projections? Because there is a wealth effect in the way that people spend money that would be real and have, I think, very grave consequences, not just in terms of the Federal budget but in terms of, ultimately, people's wealth in this country. Give me a little bit in terms of the degree to which you are incorporating that into your budget forecast.

Mr. HALL. Sure. Actually, the risk, I think, is a little difficult to talk about, difficult to summarize for folks. You know, when we do our economic forecaster budget forecasts, we give our best estimate. We try to give an idea of what the ranges are, and then we can say things like when the debt gets up to really high levels, the risk is higher, but it is hard to communicate exactly how high.

Mr. SANFORD. I am not faulting you, but I am just pointing out that there is a substantial contingent liability built into whether our budget—in fact, if the CBO budget is, from my standpoint, generous, then the administration budget is wildly optimistic. Would that be fair?

Mr. HALL. Well, we have not looked at the President's budget yet, so we know their take on that.

Mr. SANFORD. I understand the political distance, but, I mean, if yours is optimistic, then that would be wildly optimistic by comparative standard, correct?

Mr. HALL. Yeah, we are usually pretty close to private forecasters. We are pretty close to the consensus, because we are all looking at the same data.

Mr. SANFORD. I have got 45 seconds. Dig in just a little bit on the thought you were getting at, though, which is what Rumsfeld talked about, the known unknown, or the unknown that we do not know about. Where are we? I mean, to what degree is that built or not built into what you are forecasting?

Mr. KLING. So, one of the things that you might be interested in is in our long-term budget outlook we have analysis of budget uncertainty, where we look at some different factors of “Well, if productivity growth and economy is higher or lower than we project, then what are the effects on the budget? What are the effects of higher or lower healthcare spending?”

And so if you take a number of factors into account, you can see, like, the path of debt is either much higher than our central forecast, or it seems to be relatively flat. So, it would be unlikely for it to turn out that debt would be a lot lower than current levels. We project that it is going to be somewhat higher; it could be considerably higher, or it could remain around the same. But that cone

is definitely mostly up, and so that, I think, is something that would be of interest to you.

Mr. SANFORD. Thank you.

Chairman WOMACK. General Bergman, Michigan.

Mr. BERGMAN. Thank you, Mr. Chairman, and thank you all for being here, because this is always an educational experience, I think, for all of us who are listening. Sometimes I think it, may not be impossible, but if you are talking, you are not listening. So, I am always appreciative of the opportunity to sit here and listen to people who are deep in the details of what you do on a daily basis.

We are all, in our own way, deep in the details of what we do, but unless we share and collaborate across any arbitrary lines, artificial lines, then none of us are really doing our job on behalf of the American people.

My district, the first district of Michigan, and a couple of important details. Michigan has 14 districts, congressional districts. My district has 46 percent of the landmass. Okay? Why is that important? I get a chance to drive a lot of beautiful places, but I also get a chance to meet a lot of people.

For over a hundred years, the Upper Peninsula of Michigan has been on its economic back because of closure of mines, decreases in logging, all sorts of different things that go. So, we, just in Michigan alone, as the Upper Peninsula, feel left out of the decisions made in Lansing at times, our state capital. So there is a certain sensitivity, but a certain sense of realism, about what it means to be able to live your life, raise your family in the Upper Peninsula of Michigan.

So we know that on the bell curve we use, the UP fall out on the outside the statistical norm. Okay? When you look at assumptions, and you look at then validation of those assumptions, can you say they are in that statistical norm of the 80 percent across the board, for the most part?

Mr. HALL. Yeah, that is a good question, because so much of what we deal with is not based on statistical analysis. You know, if we had a nice statistical model, we could make an estimate, and we would have some idea of the uncertainty. So much of the uncertainty is unknown. These are the unknown unknowns. And so, we are—

Mr. BERGMAN. But if you take a list of—because I know time goes fast. When you are listing or creating your assumptions, that assumption, if you put it right back into a bell curve, does it fit in the middle, or do you ever look at “Where does my assumption fit into a norm?” Or is it just kind of pie-in-the-sky? How do you develop your list of assumptions?

But also, more importantly, do you share those lists of assumptions going in with folks like us who know our districts like the back of our hand? And when we look at something, I can say that there is no fit in my district for that assumption, because it is not a valid assumption. That is why I am curious as to how you do that.

Ms. BANTHIN. So, one example is that we do—in thinking about marketplaces and how well those marketplaces are functioning, we consider insurer participation, and we realize that in more rural areas there is less competition among insurers. We try to work that

uncertainty and to discuss it in our reports and work it into our estimates. That is just one example I can provide.

Mr. BERGMAN. Okay. Does the CBO communicate to Congress if you have a low level of confidence in any of the, you know, underlying assumptions, you know, of a cost estimate? Do you let us know "Hey, I feel really good about this," or "It is a little bit shaky"?

Mr. HALL. We try to make that as clear as we can in the write-up of the cost estimate. For example, with the ACA repeal proposals from last year, we had a section called uncertainty. So we discussed the uncertainty in some detail, because we thought there was a high level of uncertainty.

Mr. BERGMAN. Okay. And also, does the CBO ever collaborate with the private sector or foreign budget agencies when attempting to develop cost estimates in any particular area that you are looking at? Do you look at outside, you know, models and others that you say, "Hey, maybe we can apply this," or "This does not work for us because—" what is your process for doing that?

Mr. HALL. Well, absolutely. It is one of the reasons why we have expertise in-house. They spend a lot of time not only developing their own models, but looking to see other models that are available, whether it is the private sector or somewhere else, to see if that captures something that we are capturing. We will occasionally use outside models if it is something that we do not have on board.

Mr. BERGMAN. Thank you. Mr. Chairman, I see my time is out. Thank you very much.

Chairman WOMACK. Mr. Woodall, Georgia.

Mr. WOODALL. Thank you, Mr. Chairman. Thank you for having this hearing and thank you all for being here. I wanted to follow up on something that Dr. Banthin said, that CBO was surprised by how many employers went above and beyond to protect their employees from the uncertainty of the marketplace.

Continuing to provide that insurance might not have been there in their immediate financial interest, but certainly, in the long-term financial interest, taking care of your employees is good for business. How will that new understanding of how employers operate be reflected in the baseline going forward?

Ms. BANTHIN. Well, so we talk about this in our report on the process we follow in developing a cost estimate for any major proposal, but it is true for our baseline as well. We try to consider the timing of responses by affected parties. So employers are one of those important groups.

Mr. WOODALL. I might not be asking the right question, and so I apologize for interrupting. But I guess what I am saying is I thought what I heard you say is you expected employers to dump their employees. They did not, and they did not because they were protecting their employees from uncertainty.

Ms. BANTHIN. Exactly.

Mr. WOODALL. So you were surprised by the effort that employers went to protect their employees. My question is not the timing of that protection but how does the baseline going forward reflect that employers are protecting their employees more than you expected?

I am reading again about bonuses coming out from the tax bill. I do not think that was predicted behavior by JCT, but it is, in fact, behavior that is happening. So, how do we incorporate this new and better understanding of how employers are trying harder than you expected to take care of their employees?

Mr. HALL. Let me just say we will in fact take that into account in our model going forward and we have. This take on board that companies are going to be more likely to continue offering coverage. We can and do. That is one of those behavioral assumptions which we will change now, because what happened was different than what we expected.

Mr. WOODALL. Changing, Director Hall, just with respect to healthcare coverage, or change it with respect to dental coverage and child care and salary assumptions? Is it a behavioral change, that we thought employers were out to feather their own nest, but it turns out that to run a good business you have to take care of your employees?

And so, it is across the spectrum, and we will see it reflected in almost every employer-related bill going forward, or have you restricted that surprise to just healthcare? And employers are doing this unexpected behavior only with healthcare, but they are going to do exactly what we expected them to do with child care and transportation assistance and salaries and everything else.

Mr. HALL. Well, I mean, certainly, we have changed it. We will change it with healthcare. Yeah, I think we will probably think about other things, see that this experience helps inform our assumptions of behavior, behavioral assumptions in other things like child care and some of those things.

Mr. WOODALL. I see the headline over and over again; 23 million Americans expected to lose healthcare. It is not your fault; the media gets to report what the media wants to report. I have not seen—and thank goodness you all were here today—I had not seen that observation that employers take better care of their people to protect them from uncertainty than models had previously assumed. I understand that was reported, but it was not highlighted.

Does CBO go out of its way to highlight for us? You know, folks have been here for 10, 20 years; they expect the CBO to do what the CBO does. When CBO uncovers new behavioral information, is that highlighted for folks somewhere? “These are the changes we are assuming going forward from 2016; these are the changes we are assuming from 2017.”

Mr. HALL. Well, we certainly do that in our budget outlook. We actually have sections on there about how we are changing things. We do it also in what we call an annual analysis of actuals, where we look at all the budget categories once a year; see how we are doing, how we did; see if we need to adjust our forecast, adjust our models. We have done that in private so far.

One of the things that we are proposing to do is start releasing that. It would give you information on areas where we think our forecasting was not as accurate as it could be and where we have made adjustments. It would give you a feel for when we are making those changes.

Mr. WOODALL. We cannot sort this next one out in the 26 seconds that are remaining, but I noticed your reluctance to respond to Mr.

Sanford's "Are the President's expectations wildly optimistic for the economy?" When I go back to 1972 and the debate around the Act of 1974, the goal was to have CBO be the advocate for Article I. I know that Article II will not have any problem talking about how we have done our math wrong, and I wonder what the wisdom is of us not that being equally strong in defense of our work here. A different issue for a different hearing. Mr. Chairman, I thank you.

Chairman WOMACK. All right, thank you. The dais is now clear of the members seeking to ask questions. I am going to now yield to the Ranking Member, Mr. Yarmuth.

Mr. YARMUTH. Thank you, Mr. Chairman, and thanks to our witnesses for their responses. Just segueing off of Mr. Woodall's question, I am curious; maybe when you have analyzed or were analyzing the tax bill that recently was enacted and trying to model behavior, did you have a sense of how much—or the Joint Tax—have a sense of what the behavior was going to be with corporations? Because Mr. Woodall mentioned the bonuses.

And Morgan Stanley just did an estimate, according to a New York Times editorial, that 43 percent of corporate tax savings would go to buybacks and dividends; nearly 90 percent would help pay for mergers and acquisitions. Just 17 percent would be used for capital investment, and even a smaller share, 13 percent, would go toward bonuses and raises. Do you know whether those numbers correspond to expectations that maybe Joint Tax used or that you would use in your analysis of the tax bill?

Mr. HALL. Yeah, I do not know offhand. I do know that is going to be an important part of our budget update, our analysis of the tax bill, how exactly we view that. We will try to detail it once we sort of iron it all out. I kind of do not want to give away pieces of what we are still working on.

Mr. KLING. The outlook that we are preparing for you to publish this spring does have the advantage of this additional information that has come out in the last few months that the staff of the Joint Committee on Taxation did not have when they were doing their estimates in December. And so, we do have more information, and our estimates will take that on board.

Mr. YARMUTH. Great. I appreciate that. Thanks very much. We have talked a lot about healthcare today; I do not really want to talk too much about it anymore, so I want to move on to a different subject that may or may not enter the national dialogue pretty soon. That is the question of infrastructure. And, you know, the President has a plan that relies on basically a 20 percent investment by the Federal Government in projects, matched by an 80 percent investment by either state, local, or private investors.

And I assume that different types of infrastructure would yield different returns to the economy, would have different types of impact, and I am curious as to what factors might determine the impact of an infrastructure project. I just read something that I had never really thought of but makes good sense, that there are two different types of infrastructure spending; one is maintenance, and one is essentially new construction. And I am just curious as to how you would evaluate all of those different factors.

Mr. HALL. Shall we just say, just in general, it is pretty clear that specific infrastructure projects vary quite a lot in their return,

but it is really hard to characterize types of infrastructure that way, because there is so much variation in individual things. With respect to something like transportation, you know, we have done some work on that; you know, for example, shifting resources from rural areas to congested urban areas. That does increase the productivity of Federal spending.

I think what you are probably referring to is repairing and rehabilitating facilities like highways. Probably has a higher return then adding new highways, that sort of analysis we have found.

Mr. YARMUTH. Yes, that is interesting. And you mentioned rural and urban differences and how they interact. I was just reading something the other day that talked about—and I do not want to pit rural America against urban America—but that there is a possibility, depending on how you allocate resources, that you would be spending a disproportionate amount of money—disproportionate to the population—that might end up in a less than optimum return.

If you were spending 40 percent of the budget on rural areas as areas which have either a much smaller percentage of the population or a much smaller portion of GDP, is that something that should be considered as part of any infrastructure plan?

Mr. HALL. I think our point really kind of goes more toward the idea that there are urban areas that are very congested in terms of highways, and spending more in those areas has a bigger payoff than urban areas. It is not because they are rural areas; it is because they may not be as congested as urban areas.

Mr. YARMUTH. Got you. This is a question that is obviously timely, and I throw it out there because I have no idea. Has the CBO ever done any economic impact of gun violence? Did the CBO score the assault weapons ban in 1994? Are you aware?

Mr. HALL. We will have to back to you. I do not know.

Mr. YARMUTH. If there was assault weapons ban legislation introduced, what would CBO consider doing a score of assault weapons ban?

Mr. HALL. Well, I suppose if it came out of a Committee to the floor, we would have been required to do it, to do an estimate of that. So, we could check.

Mr. YARMUTH. But as far as you know, you do not have any sense now of what factors you would consider if you were actually considering doing a score of that. It would be new territory.

Mr. KLING. Unfortunately, you have the wrong people the table for that. We will have to get back to you.

Mr. YARMUTH. That is good. Going back to healthcare for just a second, I just want to get something into the record, when we were considering the Affordable Care Act in 2009 and 2010, CBO did score that legislation.

And I raise this question because, just during the last debate, a lot of our friends on the other side of the aisle tried to make a parallel that, yes, we used reconciliation to pass the Affordable Care Act in 2010, and they used reconciliation to pass the tax bill. But, of course, the difference was that the ACA had a positive score at that point over both the initial 10-year window and the second 10-year window. Is that not correct?

Mr. HALL. Yeah, that is right.

Mr. YARMUTH. And the tax bill obviously had a proposed deficit of \$1.5 trillion. So, it is a considerable difference in the budgetary impact of those two. One other question about healthcare. One of the things that we know we have to do, and we continue to talk about it and work on it, is reducing costs. And it seems to me that CBO has an incredible amount of knowledge and expertise and resources that it has devoted to analyzing certain cost impacts of certain policies.

And I guess my question is, is there any way Congress could avail itself of that expertise without regard to an individual proposal? Because it seems to me that you all have probably a better handle on what actually might drive cost down in the healthcare delivery system than anybody else in this body. And is there any way to get, essentially, a generic analysis of what possible steps we might consider? Essentially, asking you to propose solutions.

Ms. BANTHIN. Well, so we do not make policy recommendations, but—

Mr. HALL. But if you throw some at us, we can tell you tell you what we think.

Ms. BANTHIN. Or rank them somehow.

Mr. YARMUTH. Okay, that is fair enough. One other thing, just in the minute I have left. And I have talked about this many times before, and that is the pace of change in society and what a difficult time that gives you or anybody trying to make projections of more than a year or two.

I read an interview recently with the managing director of Mercedes-Benz. And he talked about a wide range of things, but one of the things he talked about which he says could happen essentially any day now is that the impact of artificial intelligence, and specifically IBM's Watson, on careers like basic legal profession, accounting, radiologists and so forth, that essentially IBM's Watson has proven itself to be more accurate than humans in many of these areas and that people could start losing jobs in these areas almost immediately. Is that something that you think about or have any way of incorporating into projections?

Mr. HALL. No, that is really hard to project that sort of thing. The sort of thing that we can and do is do these sorts of sensitivity analysis. What if productivity was much higher than we expect at the moment? And get some idea of what effect that would have—or much lower. So, we get some idea of the possible range of outcomes. But it is really hard to obviously predict something like that.

Mr. YARMUTH. Absolutely. Well, thank you very much for your work and for your participation today. I yield back.

Chairman WOMACK. Mr. Arrington, are you ready?

Mr. ARRINGTON. I am, Mr. Chairman.

Chairman WOMACK. Let's go to Texas.

Mr. ARRINGTON. Thank you, Mr. Chairman. And I was Chairing a Subcommittee roundtable, and I apologize for being late. And Mr. Hall and your colleagues, I appreciate your time and input here. I have got several questions but let me start with just an observation stemming from the Affordable Care Act implementation and your analysis around that.

The Obamacare, as we refer to it sometimes, expanded Medicaid beyond the 100 percent or 120 percent poverty. In some cases, because the Federal Government put that carrot out that they would pay 100 percent of it, it expanded upwards of 400 percent poverty in some states. When it did that, it captured able-bodied people who are able to work and were not working and are not working but receive government assistance.

And so, in that sort of vein of trying to get on behalf of the taxpayers and recipients of welfare, because we think it is good for everyone to have an honest, hard day's work and the value of that, along with we have a shortage of labor, along with, as fiduciaries of taxpayers, this is a really important thing for the American people.

Your analysis, though, suggested, I think, early on—and rightfully so, but maybe off the mark—that when President Obama and the Congress at that time passed the Affordable Care Act, that work would actually decline as a result based on the dynamic I just mentioned. And then you came back, I think, at a later time—I think maybe the first report was 2010, and then in 2014—revised those numbers.

So, now we are entering into this opportunity for the American people, whether it is with food stamps or Medicaid or whatever the government assistance program, compassionately and respectfully and responsibly, though, asking people who are able to work to work if they receive these benefits. Tell me about your behavioral modeling in that instance and why it changed, and have you perfected it and—

Mr. HALL. Sure. Taking into account the labor supply effective policies is an important behavioral component, I think, of what we do, and we do try to do that. I will give you, for example, I think it was 2016 we did an analysis of not a repeal and replace but just a full repeal of the ACA, and we did our dynamic portion of that, where we actually estimated the effect on the labor supply of eliminating the ACA. So you get this sort of labor supply impact.

We did that, and then we followed up with a piece, a research paper on how we came up with our labor supply effects. You know, what research we used et cetera. In fact, I think I referenced it in my statement as well. That is the sort of thing which may help inform your thinking, but that is certainly something we would want to take into account.

Mr. ARRINGTON. Were your findings that less people would work as a result of expanding Medicaid?

Mr. HALL. Yes.

Mr. KLING. The Medicaid effect is relatively small, so our analysis of the effects of the Affordable Care Act on labor supply mostly stems from the taxes in the act and from the phase-out of the premium tax credits, and very little from Medicaid itself.

Mr. ARRINGTON. But expanding Medicaid and raising taxes in that combination or some—and maybe there are other factors—caused less people to participate in the workforce. Is that yes or no?

Mr. KLING. Yes.

Mr. ARRINGTON. Were the numbers higher than you predicted in terms of people not participating in the workforce as a result of this Federal policy and legislation enacted or less?

Mr. KLING. So it is pretty hard to know exactly what those effects have been, because we only observe what happened, and we did not observe what would have happened if the law had not been enacted.

Mr. ARRINGTON. My only point is you came out with "Here is what will happen: fewer people will be in the workforce; less people will be incentivized to work as a result of the factors we just discussed." Were you off the mark because there were more people that did not participate and pulled back from the workforce, or were there less when you revised in—

Mr. KLING. The research that has come out since our original estimate, effects have been smaller in the literature, and that has caused us to revise down a little bit but not very much.

Mr. ARRINGTON. Okay. I am out of time. I yield back, Mr. Chairman.

Chairman WOMACK. Mr. Grothman, Wisconsin.

Mr. GROTHMAN. Thank you much, Mr. Chairman. In your view, what are the greatest challenges that you guys face in modeling for cost estimates that require extensive behavioral assumptions? Can you give me some examples of what you go through and [inaudible]?

Mr. HALL. Sure. Well, we are literally always fighting the clock, first of all. You know, lots of times the Congress moves at paces that are just much faster than we can move, so we do our best to sort of try to, you know, put out models and understand some of the behavioral issues ahead of time before that. And we kind of do the best we can with our current resources, frankly. We work flat-out on things.

Mr. GROTHMAN. Okay. Could you republish your confidence intervals for cost estimates produced using behavioral modeling?

Mr. HALL. Sometimes it might be possible. Most of the time we can try to give you some idea of the uncertainty. For us to produce actual ranges like that, it is kind of a decision, I would think, from the Budget Committee whether you want to see that or not. I think there are some issues with that, because you all want a point estimate, but when they see a range, they can pick the number that they like, so they will pick the low one or the high one. So, that can cause some confusion, but that is sort of above our paygrade as to whether you want us to produce those.

Mr. GROTHMAN. Can you walk us through the review process at to how you arrive at those figures?

Mr. HALL. Sure, sure. Well, just generally, you know, we have analysts who spend a lot of time on a piece, and they go through; they look at prior estimates to see what informed things. They do a lot of talking with folks to see how things will be implemented. We have sort of a process like that, but then there is a supervisor involved helping with that, helping with that, with the assumptions, with the modeling, and et cetera.

And then we have review at various levels. It is not just within one division. The work, especially for the important pieces, the review comes up to review at different levels within the organization.

And then everything goes out of the director's office, so we get a chance to look at everything that eventually comes out where we are.

Mr. GROTHMAN. You are frequently at a rush for time. How does that affect your outcomes, do you think?

Mr. HALL. It probably adds to the uncertainty. It increases the chance that we make a mistake, to be honest. You know, I would say it is like anything else: If you have more time, you have a better chance to be more accurate and more comfortable with things. That is always a balance for us to feel comfortable enough with an estimate that we are ready to let it go.

Mr. GROTHMAN. Okay. I will give you another question that always concerns me. Obviously, when you are under of the clock, you to a certain extent have to rely on information provided to you by the agencies, and sometimes the agencies may have an agenda. How often do you review the agency's assumptions, or do you do independent checking on what you are getting from them?

Mr. HALL. Well, we generally try to do that, in fact. We really do try to do that. We try to get data rather than analysis from agencies. If we have experience with an agency, and we found that some of the information we are getting is unreliable, we will go to a different source other than the agency sometimes, to be honest. That is actually one of the delicate things for us, because we find people within agencies that have the information and we think are reliable, and they do not always want to be identified.

Mr. GROTHMAN. Thank you. I will [inaudible].

Chairman WOMACK. All right, thank you. We have cleared the dais again, which is a good thing, and I will get to my questions. Dr. Hall, Dr. Banthin, Dr. Kling, are you all baseball fans?

Mr. HALL. Yes.

Ms. BANTHIN. Of course.

Chairman WOMACK. Follow a little bit of baseball? You know, we are 30 days away from opening day. You guys are at the plate; you are the hitters. Life; the economy; climate; all kinds of conditions are the pitcher. And if you follow baseball, you know that the pitcher does not just throw fastballs.

If the CBO was just up there to hit fastballs—fastballs meaning facts, easy-to-apply data in your calculations—life would be really easy for you. But the fact is there are a lot of curve balls out there. What are the breaking pitches that come at you that are the hardest to hit?

Mr. HALL. It is the things that are very new, where we have no experience, where we have not done an estimate that is at all like it before, where there is not necessarily much data, there is not much research on a topic. That becomes very, very hard for us. And then also in cases that are really complex.

Sometimes we even get estimates where, in terms of behavioral responses, one portion of the estimate pushes behavior one way; another pushes the estimate, pushes it exactly the opposite direction, so we wind up having this judgment as to which one is pushing harder. Those are the sort of things that are difficult. But it is the lack of information, lack of basis for making our assumptions that is the most difficult for us.

Chairman WOMACK. Hitters like to find the sweet spot. Dr. Banthin, is it hard to find the sweet spot in your calculations?

Ms. BANTHIN. Sometimes it is. When we are estimating a major health proposal that changes the entire healthcare system, that is when we have to think very carefully, review all available evidence, and then go beyond that and reach out to a range of experts. That will take us a lot of time, because if a new world is going to be created, and there is no real evidence we then have to talk to key stakeholders—insurance companies; state commissioners—and we cannot just talk to one or two. We have to talk to three, four, five, or six, and really think carefully about how these stakeholders will respond to the new policy.

Chairman WOMACK. Yeah. If you follow baseball long enough, you have hitters that just cannot hit a curve ball. They just cannot. Dr. Kling, is it important for CBO to be capable of adjusting on the fly to the unpredictability of the whole plethora of things that you have to consider when you are performing calculations for Congress?

Mr. KLING. I mean, it is absolutely important to try to pay attention to all the things that are happening. And so, as Dr. Banthin mentioned, in a case that is very uncertain, one of the ways we try to cope with that is to reach out to as many different experts with a variety of perspectives in order to take advantage of the wisdom of crowds in that circumstance.

Chairman WOMACK. Dr. Hall, are there any areas in your business that you just lack the adequate tools with which to be able to adjust to the changing environment where you have to deal every day on the basis? And the fact that you are on the clock, having to do it was some kind of speed and a level of accuracy that can be redeeming to the agency and at the same time provide all of us actionable information that is accurate enough that we can make well-informed decisions.

Mr. HALL. I would say the biggest challenge probably is how nimble we are, because when we get new topics we did not anticipate, we can acquire some expertise, we can acquire models and et cetera, but sometimes it takes time. And so, it is this sort of nimbleness that is probably our biggest challenge, because we have a really broad range of expertise throughout the place, but it is not so broad that that we have experts in everything that we could possibly get asked about, unfortunately.

Chairman WOMACK. Are the needs of the CBO reflected in your budget request?

Mr. HALL. Yes. And I have to say, ever since I have been in the job, we have been asking for more resources for healthcare and dynamic scoring, and we are hoping to get some more. And I think we actually have a plan going forward where we would like to over the next 2 or 3 years add about 20 people, just generally, so we can deal better with the transparency that that you all—seems like would want to have an increased level transparency from us, and a quicker turnaround.

We have real issues with peak load issues. Right? Because we cover a really broad waterfront of areas, when get a lot of action in one area, we do not always have a lot of people, so we are trying

to figure out how to be more deeper or have a deeper bench going forward. So, we are asking for some more resources for that.

Chairman WOMACK. I want to follow up on a question that Mr. Grothman asked just a minute ago, and that is the input information you get from other bureaucratic agencies. It has been asserted more than once that these agencies can provide input to you that can be way out of bounds, terribly inaccurate, a swag, if you will.

How often do you go back and verify, and is there a failsafe way to be able to take information from one agency that is critical for you to make a calculation and know within a certain amount of reason that that particular piece of information is really nothing but garbage to you? Garbage in; garbage out. So, how often do you do it, and are there mechanisms that you have in place or need to have in place to ensure that we can troubleshoot—maybe not necessarily second-guess, but it sounds like that is where I am going with this—these agencies?

Mr. HALL. Well, one of the things we do is when we get legislation, the very first thing we do is we will ask the Committee staff work in legislation, “Who should we talk to? What experts do you think we should be talking to? What data do you think we should look at?” So, we start from the same place that Committee staff are starting from, and then we go out on our independent way to sort of look at other data sources and other things. So, we try not to just rely on agency data; we try to do our best to get other data and confirm it and be sure that we touch all the bases.

Ms. BANTHIN. Yeah. In healthcare, we have enough expertise that I do not believe we fall into any trap like that. We get data from the executive branch agencies: Medicare claims data; Medicaid claims data; Household Survey data. And so, we analyze those data ourselves independently.

Chairman WOMACK. So, quantifiable data I understand, but if it is just seeking information from an agency, does it ever happen where the analyst says, “That does not look right. There is no way that that is accurate,” and go back and make them show their work as to why that data is being provided? Is there ever a circumstance like that?

Mr. HALL. There are, actually, and there are probably agencies who historically have not been very forthcoming with us we have struggled with. I would have to ask around for some other examples, but that certainly is true that we do have that happen sometimes.

Chairman WOMACK. You have described the process as a little bit of art and a little bit of science. You know, that sounds like a recipe at home where, based on experience, you get all of those components just right because you have done this over and over again, and you know exactly whether it needs a pinch of that or a dash of something else. How capable are you of making sure that the outcome that we are getting is based on accurate measurements and less of a particular bias that one or others may have toward the given subject?

Mr. HALL. We work in that under almost every level. When we hire people, we hire them based on their expertise, and we actually vet them, to the degree we can, about their ability to do objective work and not bring their personal views in. And we train them

very carefully about what we want them to do, how we want them to approach issues, how we want them trained. Then we have a review process of how people are doing.

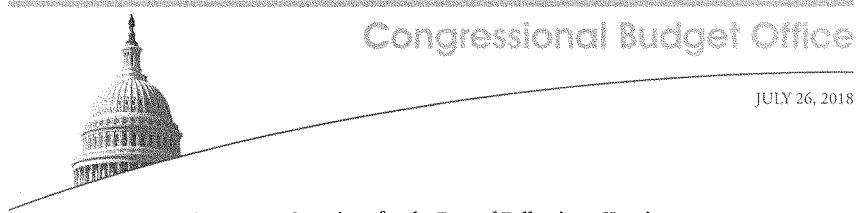
Are they doing a good job? Are they being accurate? Are they following the right procedures to be objective? Are they touching all the bases? Products that come up; they get reviewed at a number of different levels as well. We just really try everything we can to be sure, because everybody has opinions, and we need to have people who can take their personal views out and work just purely on their professional views, and I think CBO does a really good job of that. I have been in a lot of places.

Chairman WOMACK. I want to thank you, Dr. Hall, and the two other witnesses that are with us today—Dr. Kling, Dr. Banthin—for your testimony today. I want to advise members that they can submit written questions to be answered later in writing. Those questions and your answers will be made part of the formal hearing record. Any members who wish to submit questions or any extraneous material for the record may do so within 7 days. And with that, we wish you a very pleasant rest of the day, and this committee hearing stands adjourned.

[Whereupon, at 12:09 p.m., the Committee was adjourned.]

WOMACK Questions for the Record

- Why is confidentiality a prerequisite to getting agency information?
- Are there other ways to get the same information that do not require confidentiality?
- Does CBO use commercial models or are all of CBO's models developed in-house?
- Has CBO considered using commercial models instead of generating its own? Why or why not?
- A model clearly cannot account for all the factors associated with a particular policy change. As such, analysts likely need to estimate some effects that are then input into the estimate itself. How do analysts include these types of estimates – where the model is unable to account fully for some of the effects?
- Why does CBO not publish all of the assumptions that its analysts make in estimating the cost of a bill?
- What are the safeguards in place to ensure that behavioral modeling follows rigid standards, but at the same time remains flexible enough for analysts to score unique proposals?
- In addition, Office for Budget Responsibility [OBR] began publishing in December 2014 a systematic approach to assessing the uncertainty of policy decisions. It divides the particular measure into three separate categories: data uncertainty, modeling uncertainty, and behavioral uncertainty. In each category, it assigns a value to the uncertainty, describes in its opinion which factor is most impactful, and provides an overall uncertainty rating. Has CBO ever considered developing a systematized approach to categorizing the level of uncertainty of its estimates?



JULY 26, 2018

**Answers to Questions for the Record Following a Hearing
Conducted by the House Committee on the Budget on CBO Oversight:
The Role of Behavioral Modeling in Scoring and Baseline Construction**

On February 27, 2018, the House Committee on the Budget convened a hearing at which Keith Hall, Director of the Congressional Budget Office, testified about how CBO does its analyses along with Jessica Bantlin, Deputy Assistant Director for Health, Retirement, and Long-Term Analysis, and Jeffrey Kling, Associate Director for Economic Analysis.¹ After the hearing, Chairman Womack submitted questions for the record. This document provides CBO's answers. It is available at www.cbo.gov/publication/53796.

Question. Why is confidentiality a prerequisite to getting agency information?

Answer. Confidentiality is sometimes required to make use of certain data that improve CBO's estimates. For example, CBO's baseline projections of revenues are improved by using detailed information about taxes paid by businesses and individuals. The data contain confidential information and cannot be made publicly available. Confidentiality may also be important in obtaining information informally from staff of other government agencies, who might otherwise be reluctant to share information or judgments that are not in the public domain.

Question. Are there other ways to get the same information that do not require confidentiality?

Answer. Obtaining confidential data is usually a slow and costly process, so CBO generally relies on confidential data only when the information is superior to nonconfidential alternatives.

Question. Does CBO use commercial models or are all of CBO's models developed in-house?

Answer. CBO uses some commercial models as complements to its own. For example, CBO licenses macroeconomic forecasting models from two firms and uses them to inform the development of its own forecasting model. To take another example, CBO has purchased access to models developed by actuarial firms to assist with some estimates related to health insurance, such as the estimates of deductibles that would occur under certain proposals.

1. See testimony of Keith Hall, Director, Congressional Budget Office, before the House Committee on the Budget, *Seven Things to Know About CBO's Analyses* (February 27, 2018), www.cbo.gov/publication/53603.

Question. Has CBO considered using commercial models instead of generating its own? Why or why not?

Answer. In general, commercial models do not have the detail about federal spending and revenues that CBO needs to perform its work, nor do they necessarily have the ability to address changes in certain aspects of a program that might be affected by legislation. Therefore, if CBO made more use of commercial models, it would need to heavily modify them.

Question. A model clearly cannot account for all the factors associated with a particular policy change. As such, analysts likely need to estimate some effects that are then input into the estimate itself. How do analysts include these types of estimates—where the model is unable to account fully for some of the effects?

Answer. In some cases, an individual model cannot account for all of the factors associated with a particular policy change, but multiple models can. Some models are built around particular data, such as CBO's health insurance simulation model in its use of survey data on health insurance coverage, CBO's models of Medicaid enrollment and costs in their use of administrative data, and the Joint Committee on Taxation's (JCT's) individual tax model in its use of tax returns. In CBO and JCT's process for preparing cost estimates, for example, output from one or more of those models is often input to another one of them.

If a proposal affects important factors not directly addressed by a given set of models, then CBO and JCT use historical experience, evidence from similar policy changes, judgments from outside experts on the subject, and their own analytical assessments to formulate inputs to the models or to adjust the modeling results. For example, in assessing the consequences of states' decisions about applying for waivers to federal rules governing health insurance, CBO and JCT used historical evidence about similar decisions by states to make projections to be used as inputs to models.²

Question. Why does CBO not publish all of the assumptions that its analysts make in estimating the cost of a bill?

Answer. CBO strives to be transparent, providing clear, concise explanations and detailing the key components of the basis of each estimate. The agency also endeavors to make information accessible by providing context and explaining technical terms. The standard format for CBO's formal estimates includes a "Basis of Estimate" section aimed at explaining the key elements of an estimate. Those explanations can sometimes be complicated and time-consuming to produce, and the pace of legislative action generally does not allow for detailed documentation of an estimate. As Director Hall mentioned in his testimony at the hearing, the agency is exploring ways to make more supporting documentation of the methods used in baseline projections and cost estimates publicly available.

Question. What are the safeguards in place to ensure that behavioral modeling follows rigid standards, but at the same time remains flexible enough for analysts to score unique proposals?

2. For additional discussion, see Congressional Budget Office, *How CBO and JCT Analyze Major Proposals That Would Affect Health Insurance Coverage* (February 2018), www.cbo.gov/publication/53571.

Answer. The review process for estimates is the primary way that CBO ensures that the modeling used in its estimates is of high quality and also is adapted to the particular features of a proposal. Every formal cost estimate is subjected to extensive internal review to ensure that the analysis is objective, insightful, thorough, consistent, and clearly presented and explained. Analysts, who are experts in their subject areas, must show their results and justify the basis of their estimates to their managers. Analysts frequently call upon outside experts to provide information and sometimes to share their own analyses, when they are available, for comparison. When a model has been used to analyze multiple similar or related proposals, the results for a current proposal are usually compared with the results of previous analyses to ensure that the results are consistent and that differences can be logically explained. Following those reviews, all estimates undergo further review internally by numerous people at different levels of the organization.³

Question. In addition, Office for Budget Responsibility (OBR) began publishing in December 2014 a systematic approach to assessing the uncertainty of policy decisions. It divides the particular measure into three separate categories: data uncertainty, modeling uncertainty, and behavioral uncertainty. In each category, it assigns a value to the uncertainty, describes in its opinion which factor is most impactful, and provides an overall uncertainty rating. Has CBO ever considered developing a systematized approach to categorizing the level of uncertainty of its estimates?

Answer. Robert Chote, chairman of the committee overseeing the Office for Budget Responsibility, has given presentations to CBO's staff about that office's approach to uncertainty and other aspects of its analysis. CBO is examining how to systematically expand how it discusses and explains uncertainty in its estimates.

3. For additional discussion, see Congressional Budget Office, *How CBO Prepares Cost Estimates* (February 2018), www.cbo.gov/publication/53519.