

# Visualizing Data: An Economists' Guide to Presenting Data

## PART 2 of the presentation

{ Jonathan A. Schwabish  
jonathan.schwabish@cbo.gov  
Congressional Budget Office

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Note: All images and logos in this presentation are linked.

# CBO Showcase

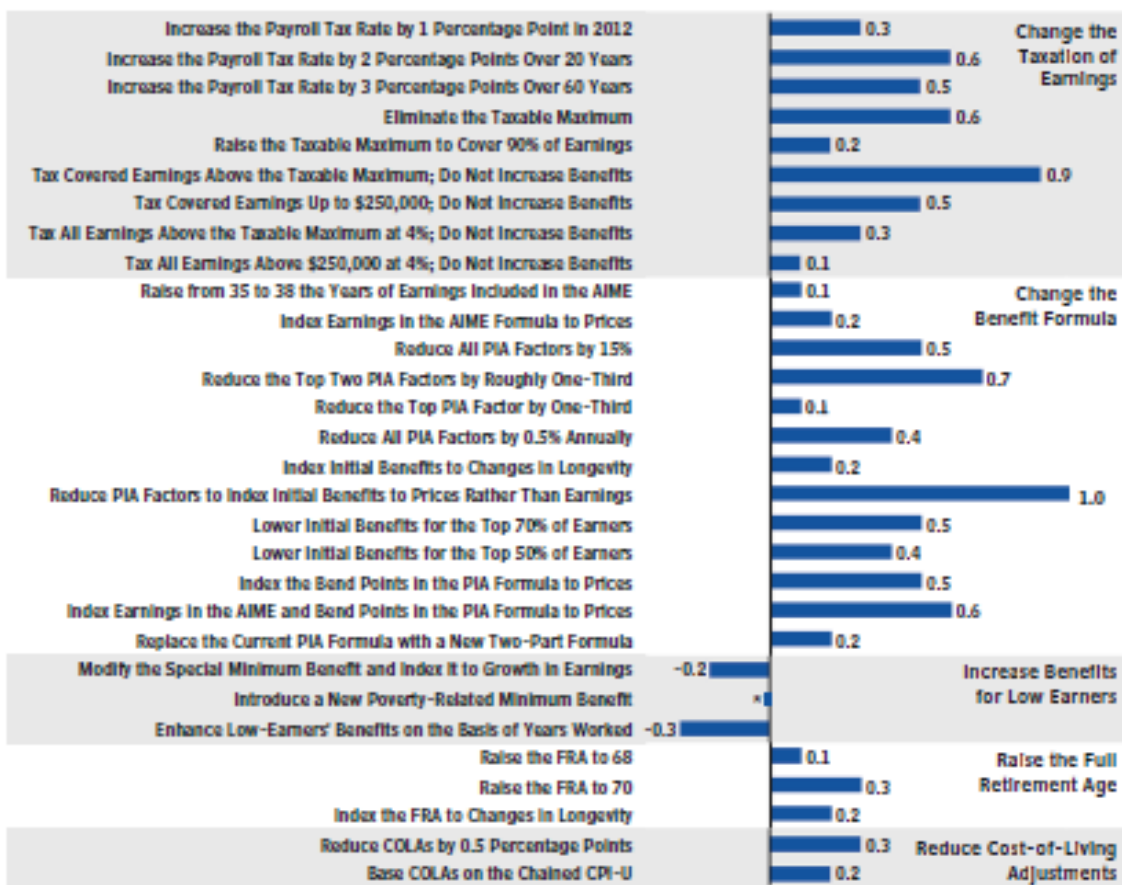
- Social Security Policy Options (July 2010)
- Budget & Economic Outlook (August 2010)
- Static Infographics
  - Social Security
  - Deforestation
  - TARP
  - Budget
  - SNAP (food stamps)

# Social Security Policy Options

(July 2010)

**Summary Figure 1.**

## Effects of the Policy Options on the OASDI Trust Fund Actuarial Balance



How do you show the long-term effects of 30 separate policy options in a clear, concise way?

# Social Security Policy Options

(July 2010)

**Table 2.**

**Changes to Social Security's Finances Under Various Options with Scheduled Benefits**

(Percentage of GDP)

		2020	2040	2060	2080	Annual Finances	75-Year Present Value as a Percentage of	
							GDP	Taxable Payroll
<b>Current Law<sup>a</sup></b>								
<b>Revenues and Outlays<sup>b</sup></b>								
Revenues		4.9	4.9	4.9	5.0		5.2	14.4
Outlays		5.2	6.2	6.0	6.3		5.8	16.0
Balance		-0.3	-1.3	-1.1	-1.3		-0.6	-1.6
<b>Percentage-Point Change from Current Law<sup>a</sup></b>								
<b>Change the Taxation of Earnings</b>								
<b>1</b>								
Increase the Payroll Tax Rate by 1 Percentage Point in 2012	Revenues	0.4	0.4	0.3	0.3		0.3	1.0
	Outlays <sup>d</sup>	*	*	*	*		*	*
	Balance	0.4	0.4	0.4	0.4		0.3	1.0
<b>2</b>								
Increase the Payroll Tax Rate by 2 Percentage Points Over 20 Years	Revenues	0.3	0.7	0.7	0.7		0.5	1.6
	Outlays <sup>d</sup>	*	*	*	*		*	*
	Balance	0.3	0.7	0.7	0.8		0.6	1.6
<b>3</b>								
Increase the Payroll Tax Rate by 3 Percentage Points Over 60 years	Revenues	0.2	0.5	0.8	1.0		0.5	1.5
	Outlays <sup>d</sup>	*	*	*	*		*	*
	Balance	0.2	0.5	0.9	1.1		0.5	1.4
<b>4</b>								
Eliminate the Taxable Maximum <sup>e</sup>	Revenues	0.8	0.9	0.9	0.9		0.9	n.a.
	Outlays	*	0.3	0.5	0.5		0.3	n.a.
	Balance	0.8	0.6	0.4	0.4		0.6	n.a.
<b>5</b>								
Raise the Taxable Maximum to Cover 90% of Earnings <sup>f</sup>	Revenues	0.3	0.4	0.4	0.4		0.4	n.a.
	Outlays	*	0.1	0.2	0.2		0.1	n.a.
	Balance	0.3	0.3	0.2	0.2		0.2	n.a.

Continued

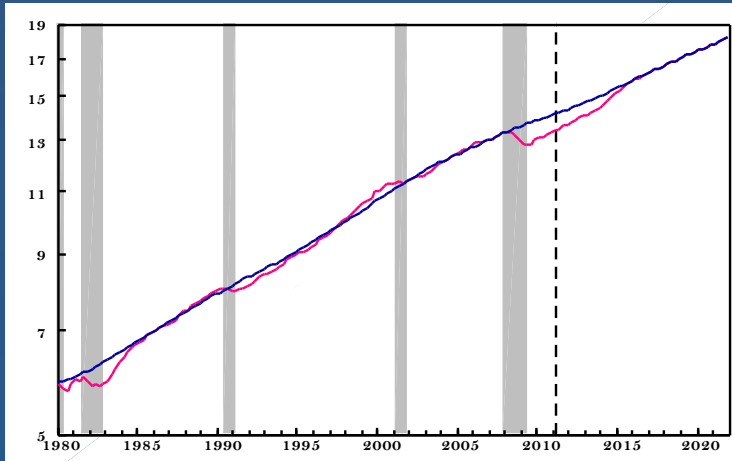
‘Sparklines’ and ‘Small Multiples’ can allow you to show a lot of information

# CBO Showcase

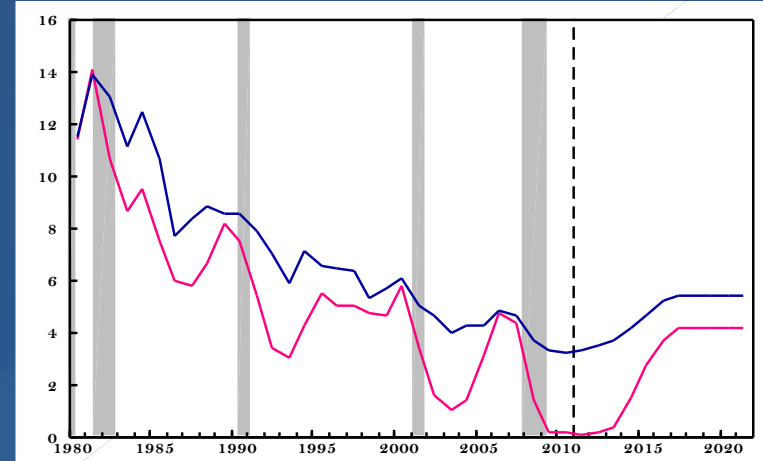
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# Budget & Economic Outlook

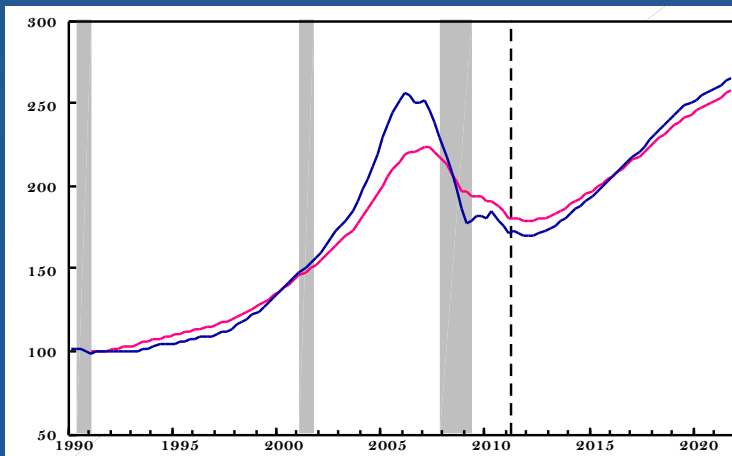
## Real Gross Domestic Product



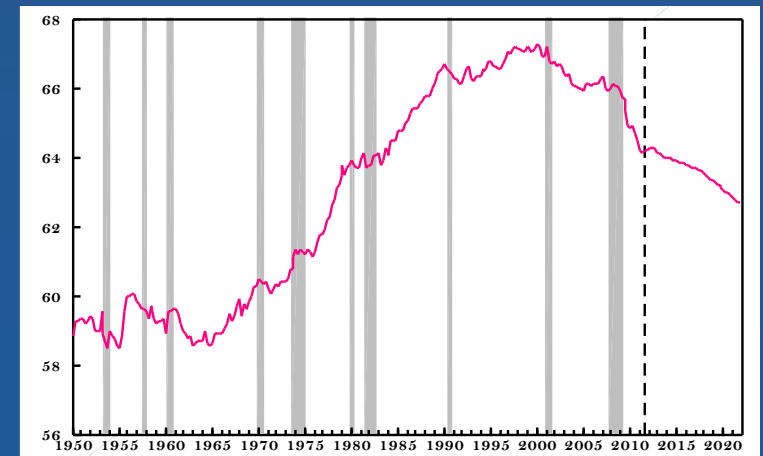
## Interest Rates



## House Prices



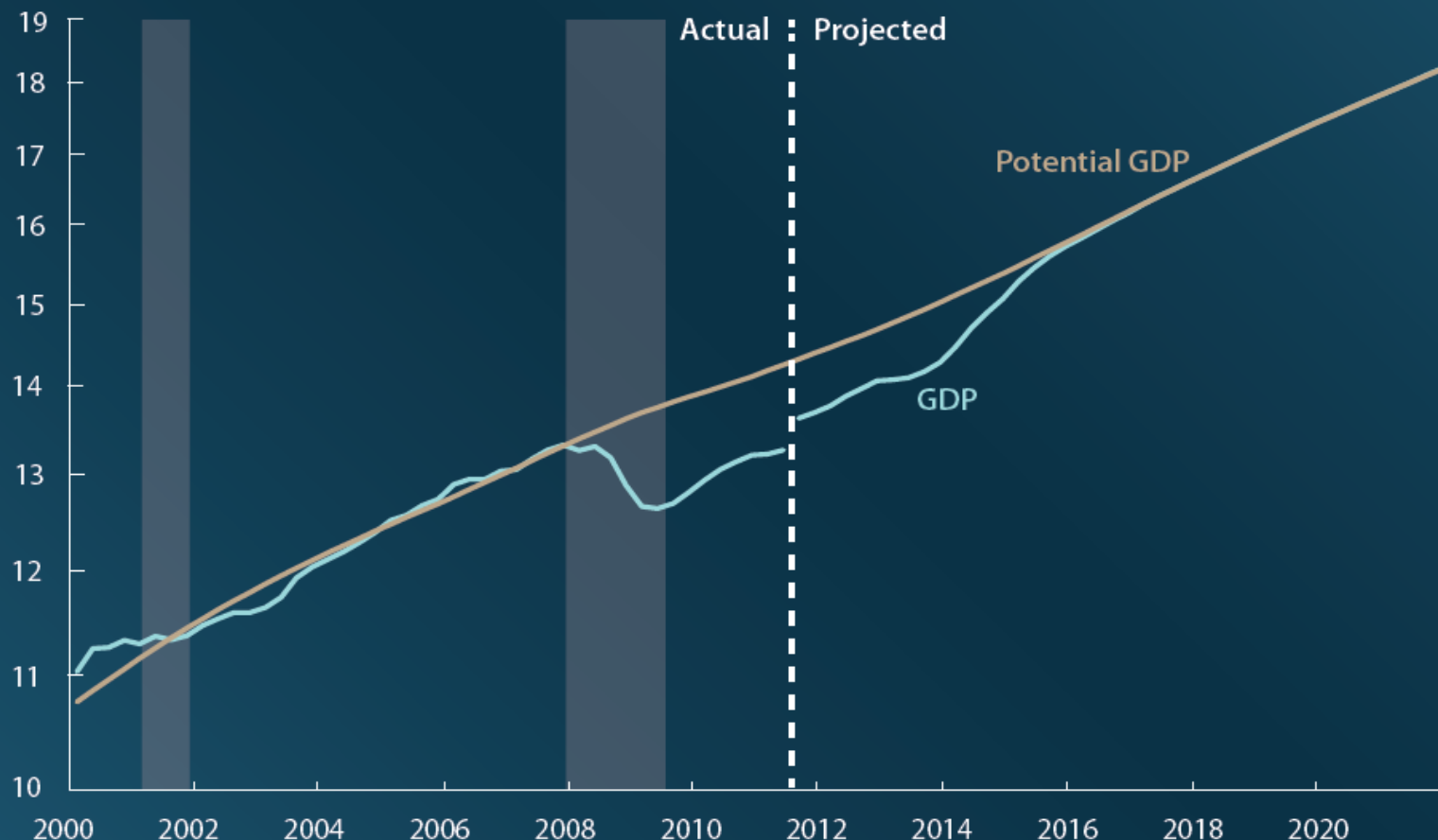
## Labor Force Participation Rate



# Real Gross Domestic Product

(Trillions of 2005 dollars, logarithmic scale)

CBO expects that the economic recovery will continue but that real (inflation-adjusted) GDP will stay below the economy's potential—a level that corresponds to a high rate of use of labor and capital—until 2017.



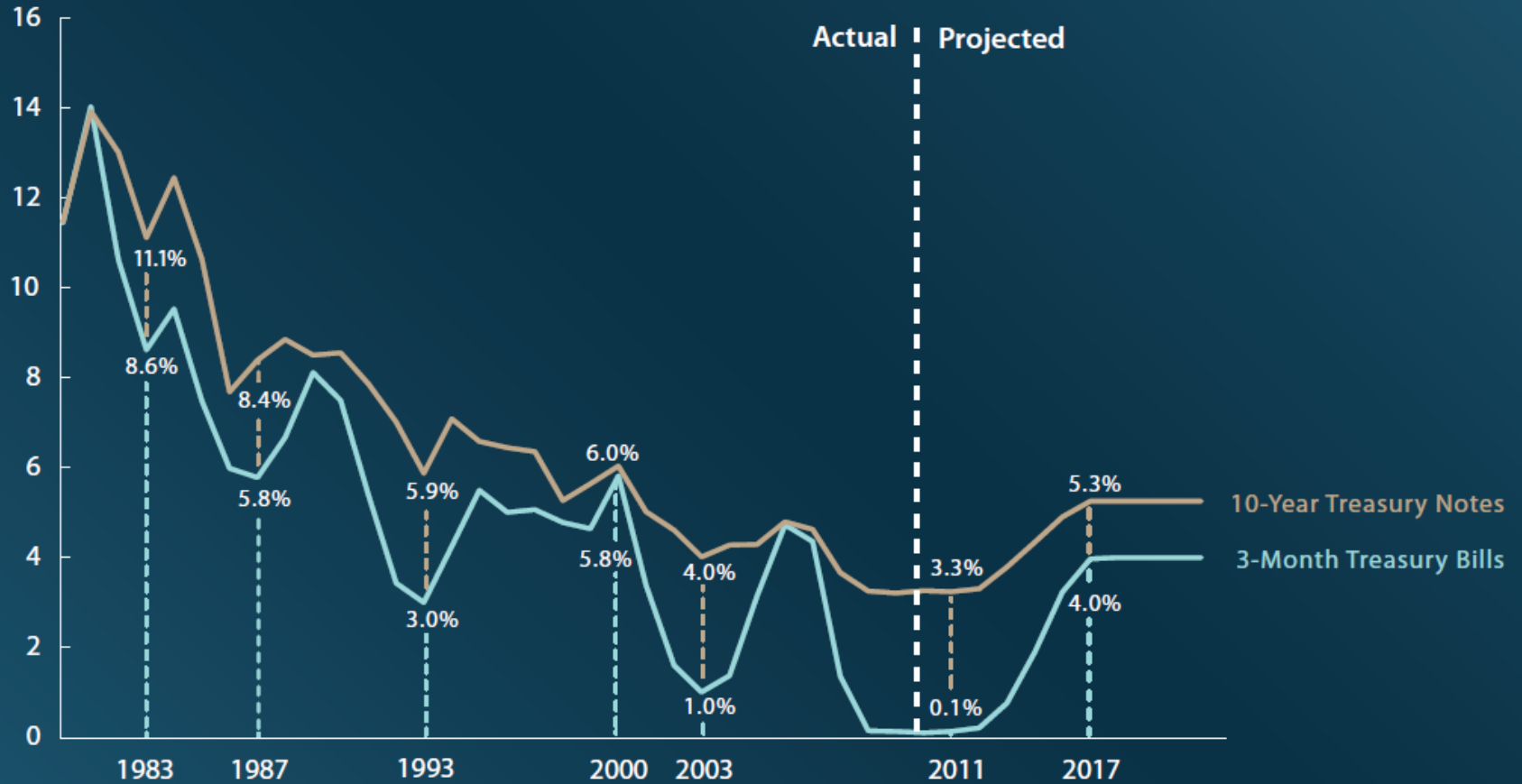
Sources: Congressional Budget Office; Department of Commerce, Bureau of Economic Analysis.

Notes: Real gross domestic product is the output of the economy adjusted to remove the effects of inflation. Potential GDP is CBO's estimate of the output that the economy would produce with a high rate of use of its labor and capital resources. Data are quarterly. Actual data for GDP, which are plotted through the second quarter of 2011, incorporate the July 2011 revisions of the national income and product accounts. Projections of GDP, which are plotted through the fourth quarter of 2021, are based on data issued before the revisions. Shaded bars indicate periods of recession.

# Interest Rates

(Percent)

Consistent with its forecast of modest economic growth through 2013 under current law, CBO projects that interest rates will remain very low for the next few years and then rise to more-normal levels as output approaches its potential in 2017.



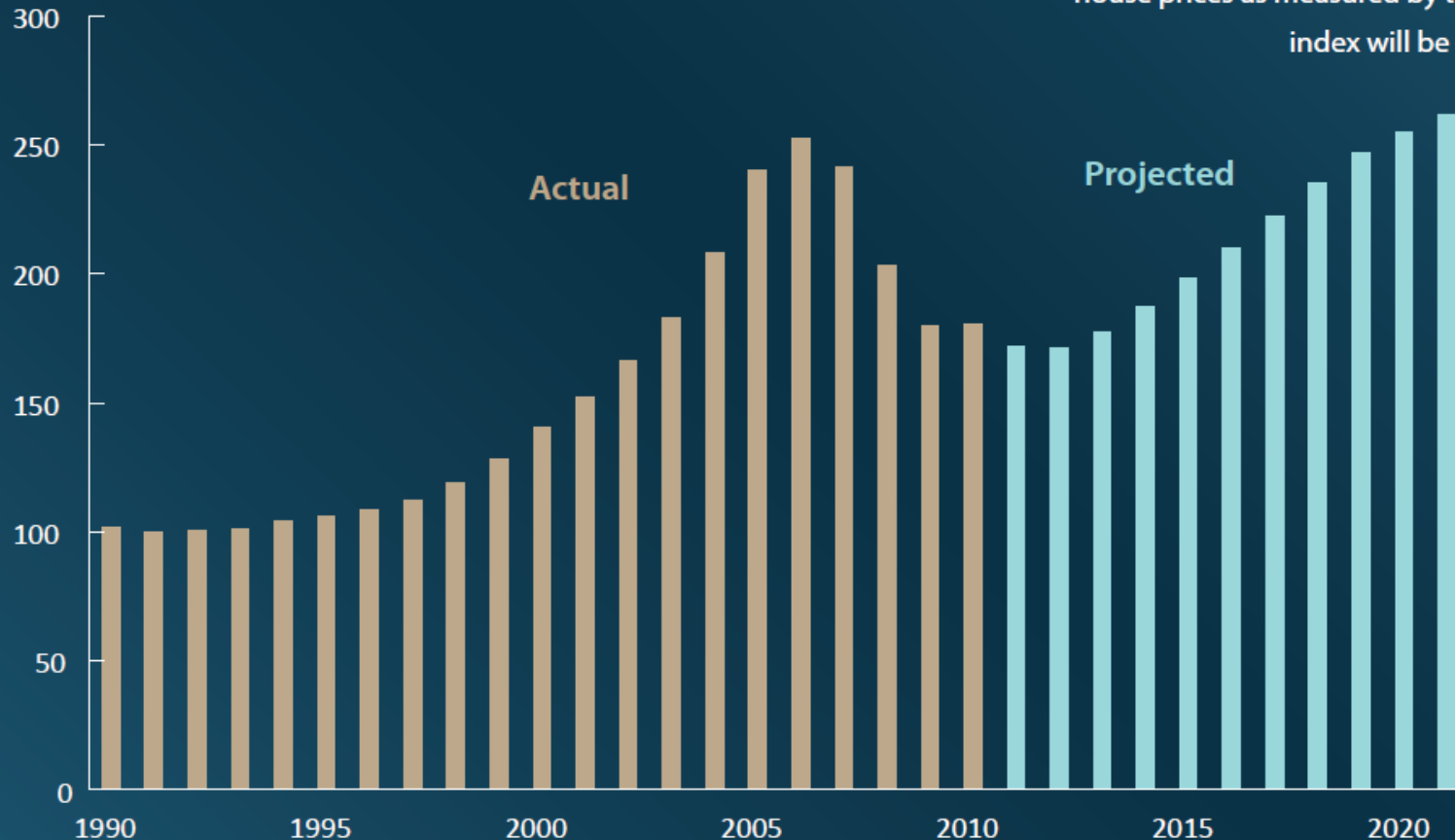
Sources: Congressional Budget Office; Federal Reserve.

Notes: Data are annual. Actual data are plotted through 2010; projections are plotted through 2021.

# House Prices

(Index, 1991 = 100)

House prices are nearing the end of their decline, in CBO's estimation. But they probably will not begin a sustained increase until the second half of 2012, when CBO expects there to be fewer foreclosures and distressed sales. CBO projects that by the end of 2013, house prices as measured by the S&P/Case-Shiller index will be back to 2003 levels.



Sources: Congressional Budget Office; Standard & Poor's (S&P) Financial Services.

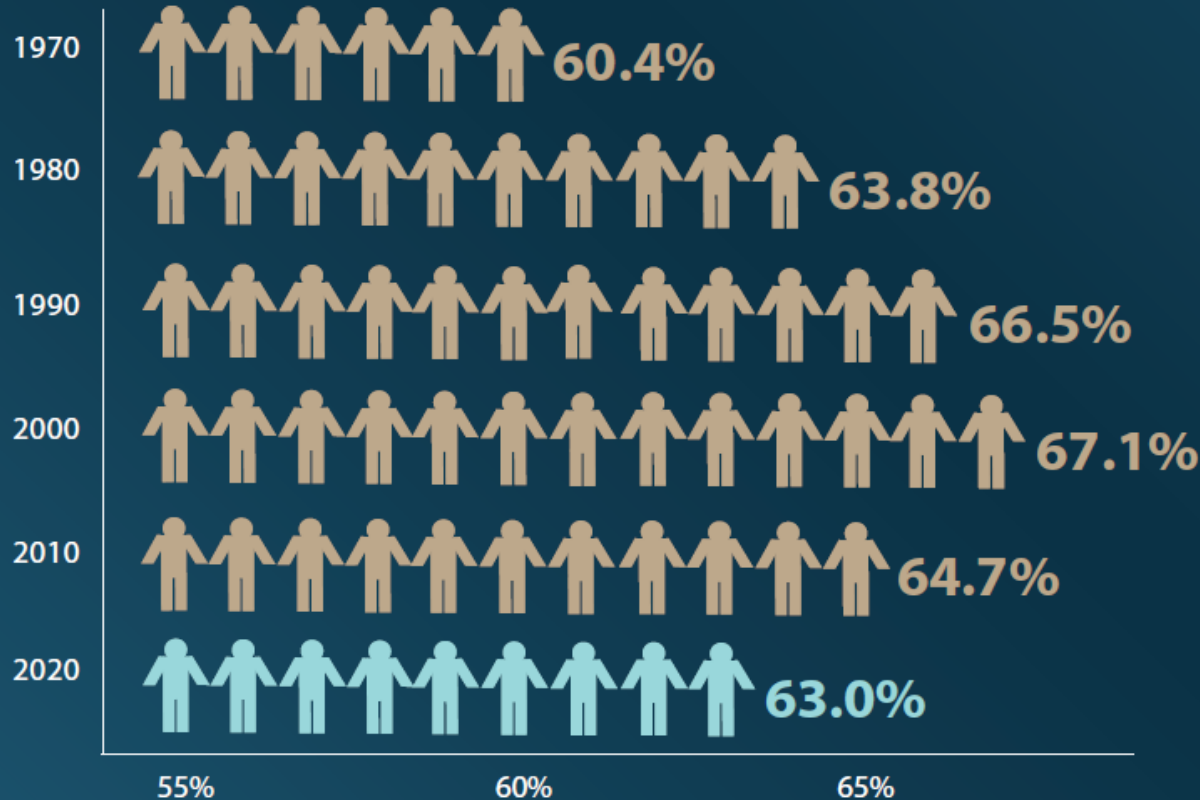
Notes: The S&P/Case-Shiller national home price index tracks the prices of home sales financed using mortgages purchased or securitized by Fannie Mae or Freddie Mac as well as sales financed with mortgages that do not conform to the size or credit criteria for purchase by Fannie Mae or Freddie Mac. Values shown are annual averages of quarterly data.

Actual data are plotted through 2010; projections are plotted through 2021.

# Labor Force Participation Rate

(Percent)

The labor force participation rate has fallen significantly in the past decade. Although economic recovery will increase the demand for labor, CBO expects that rate to continue to decline as the aging of the baby boomers and tax increases scheduled under current law prompt more people to leave the labor force.



Sources: Congressional Budget Office; Department of Labor, Bureau of Labor Statistics.

Notes: The labor force participation rate is the percentage of the civilian noninstitutionalized population age 16 or older that is either working or actively looking for work. Values are annual averages of quarterly data.

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# Social Security

Sources: Congressional Budget Office, Social Security Administration, Bureau of Labor Statistics, Bureau of Economic Analysis

For more information, see the following CBO publications:  
CBO's 2011 Long-Term Projections for Social Security; Additional Information  
CBO's 2011 Long-Term Budget Outlook  
Social Security Policy Options

CBO's  
Long-Term  
Projections

## SOCIAL SECURITY

### Finances of the U.S. Social Security System

**56 million**

Number of people who will receive Social Security benefits this year, equal to 1/6 of the population

**20%**

Share of total U.S. budget spent on Social Security in 2010

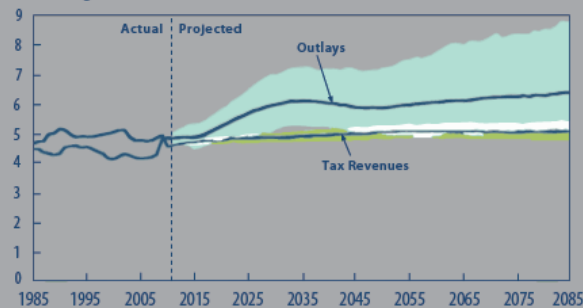
**1.6 percentage points**

Immediate and permanent payroll tax rate increase required for the Social Security system to be solvent over the next 75 years

**19%**

Cross-the-board reduction in payable benefits in the year after the exhaustion of the combined Social Security trust funds in 2038

Percentage of GDP



**21%** in 2010

grows to  
**36%** in 2035

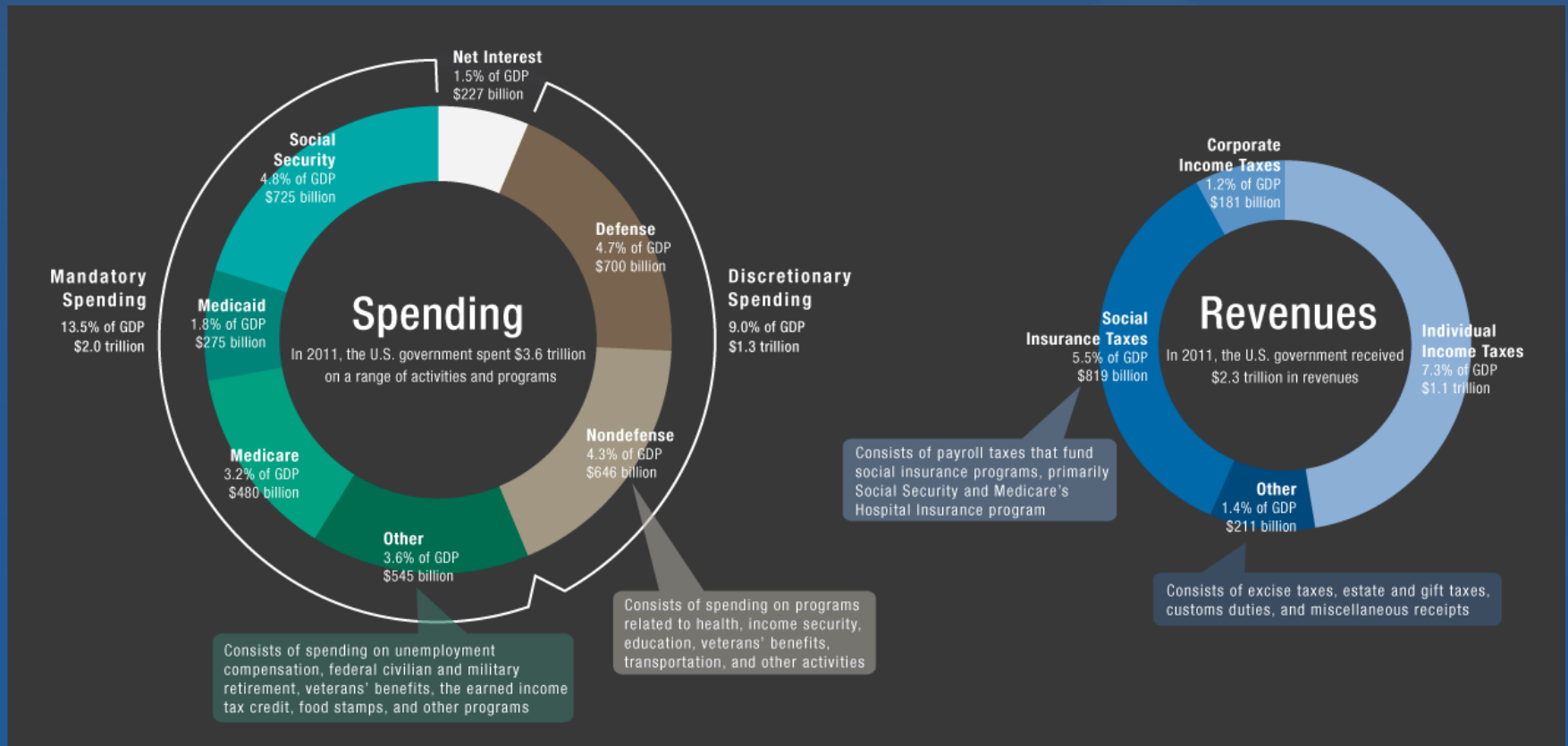
People 65+ as a share of the working-age population

**4.9%** in 2010

grows to  
**6.1%** in 2035

Social Security spending as a share of GDP

# Federal Budget



# My Showcase

- Education and the Economy
- Stock Check
- Hurricanes and the Media
- Others
  - UK University Students by Race
  - PISA International Education Test Scores
  - Economic Mobility
  - “Voices of the Vulnerable” (UN survey on the global economic crisis)

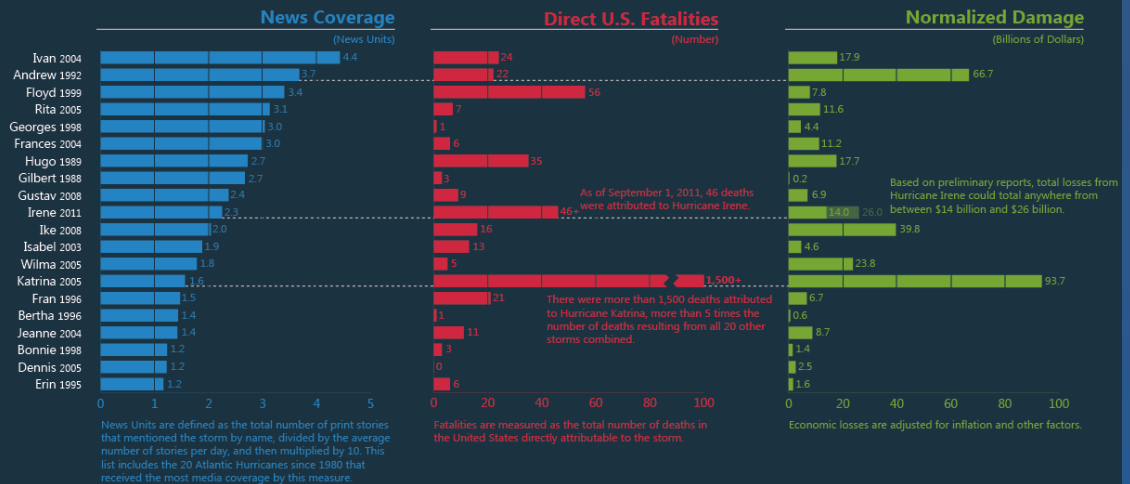




# Showcase: Hurricanes and the Media

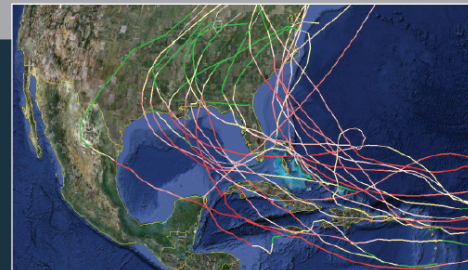
## Hurricanes: Does Media Coverage Rival the Storm?

About one week after Hurricane Irene reached the United States, there were 46 reported deaths directly related to the storm and total economic damage was estimated to reach at least \$14 billion. According to statistics compiled by Nate Silver of the FiveThirtyEight blog at the *New York Times*, during the time the storm was in the atmosphere, Hurricane Irene received the 10th-most media coverage of some of the largest hurricanes in the last 30 years. What is the relationship between media coverage of hurricanes and the number of direct U.S. fatalities and total economic damage?



### Average Economic Damage U.S. Hurricanes, 1980-2011 (Billions of Dollars)

Tropical Storm	\$0.4
Category 1 Hurricane	\$0.6
Category 2 Hurricane	\$7.5
Category 3 Hurricane	\$12.7
Category 4 Hurricane	\$18.3
Category 5 Hurricane	\$66.7



Storm Tracks of the 20 Hurricanes with the Most News Coverage Since 1980

Some literature suggests that the relationship between wind speeds and economic damage is exponential. That is, a hurricane with **90 miles per hour** winds might cause as much as **4 or 5 times** as much destruction as a hurricane with wind speeds of **75 miles per hour**.

Author: Jonathan Schwabish, jschwabi@yahoo.com

Sources and Notes: The data used here are primarily based on those found in Nate Silver's FiveThirtyEight blog entry "How Irene Lived Up to the Hype" in the *New York Times* (August 29, 2011). The "News Unit" measure was constructed by Silver using data from NewsLibrary.com. Additional U.S. fatality data for 10 hurricanes (Rita, Georges, Frances, Gilbert, Wilma, Bertha, Jeanne, Bonnie, and Dennis) were compiled from Wikipedia. Updated fatality data due to Hurricane Katrina from the *Wall Street Journal*, September 1, 2011. Additional normalized damage estimates for 5 hurricanes (Gilbert, Bertha, Jeanne, Bonnie, and Erin) were taken from Roger A. Pielke et al., "Normalized Hurricane Damage in the United States: 1900-2005," *Natural Hazards Review*, February 2008, and multiplied by 1.15, the approximate factor used by Silver in his blog post. Hurricane tracking map produced in Google Earth using data from Tropical Atlantic.

# To wrap up

- We are in the business of presenting information to policymakers and the public
- We are surrounded by a lot of information and it can be very complex
- Infographics offer a **complementary** way to present information to our constituents
  - They are not meant to replace thorough, in-depth research, but can give the user an alternative perspective and interface and perhaps an introduction into a topic