

# Economic Statistics Directions

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# The Challenge

Keeping official statistics relevant, timely, and accurate given the changing global economy and the rapidly evolving needs of customers



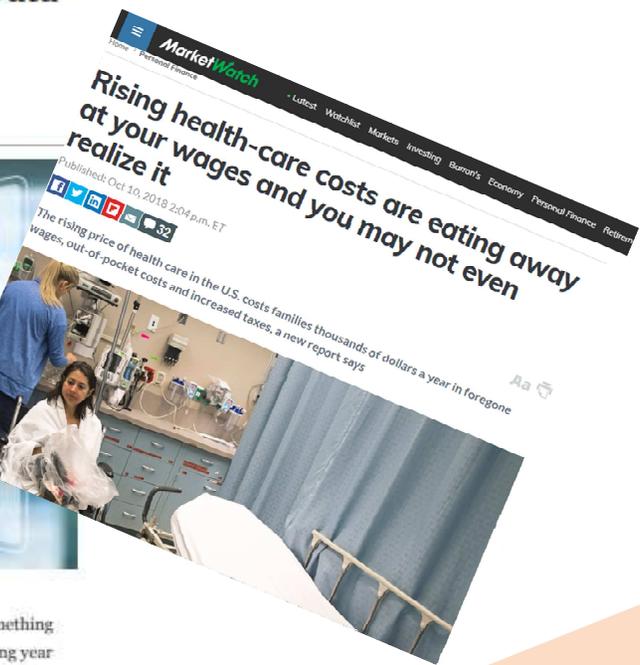
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## Realizing The Potential Of Big Data And Analytics

Daniel Newman Contributor  
CMO Network  
Explore all things Digital Transformation.



It's not what you know. It's what you do with what you know. That's something companies worldwide will be learning—for better or worse—in the coming year when it comes to big data.



# Gathering Feedback & Setting Priorities

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- Key mechanisms:
  - Policy makers and appropriators (at the Federal and local level)
  - Federal advisory committees
  - Industry associations
  - Academic communities and forums
  - Public feedback channels
  - Expert panel studies
  - International standards and guidelines

# Digital Economy

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- Multi-dimensional framework for exploration
  - Quality-adjusted prices (smart phones, cloud computing)
  - New digital platforms and business models (ride-sharing apps, advertising-supported digital content)
  - Global IT flows (intellectual property transactions)
- Major challenges
  - Defining the “digital economy”
  - Identifying transactions embedded in accounts but not separately identified



*Paradigm  
Shift*

New public-private partnerships for access to non-traditional data

# Digital Economy

**6.9%** of U.S. GDP  
or **\$1.4 trillion** in 2017



**9.9%** average annual growth  
from 1997 to 2017

Outpaced overall U.S. economic growth of **2.3%**

**5.1 million jobs** in 2017

**3.3%** of total U.S. employment



**\$132,223**

Average annual compensation per worker



# Health Care

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- New perspective for ongoing policy debate
  - Health care is a growing share of U.S. GDP
  - Consumer spending on medical care by different types of diseases rather than traditional groupings like hospitals and doctors' offices
  - Very strong policy interest and increasing public demand for information on this dynamic sector
- Major challenges
  - Limited information from traditional survey-based data sources
  - Building new framework for examining health care costs



*Paradigm  
Shift*

(1) “Blending” non-traditional and traditional data sources and (2) collaboration with the scientific community

# Health Care

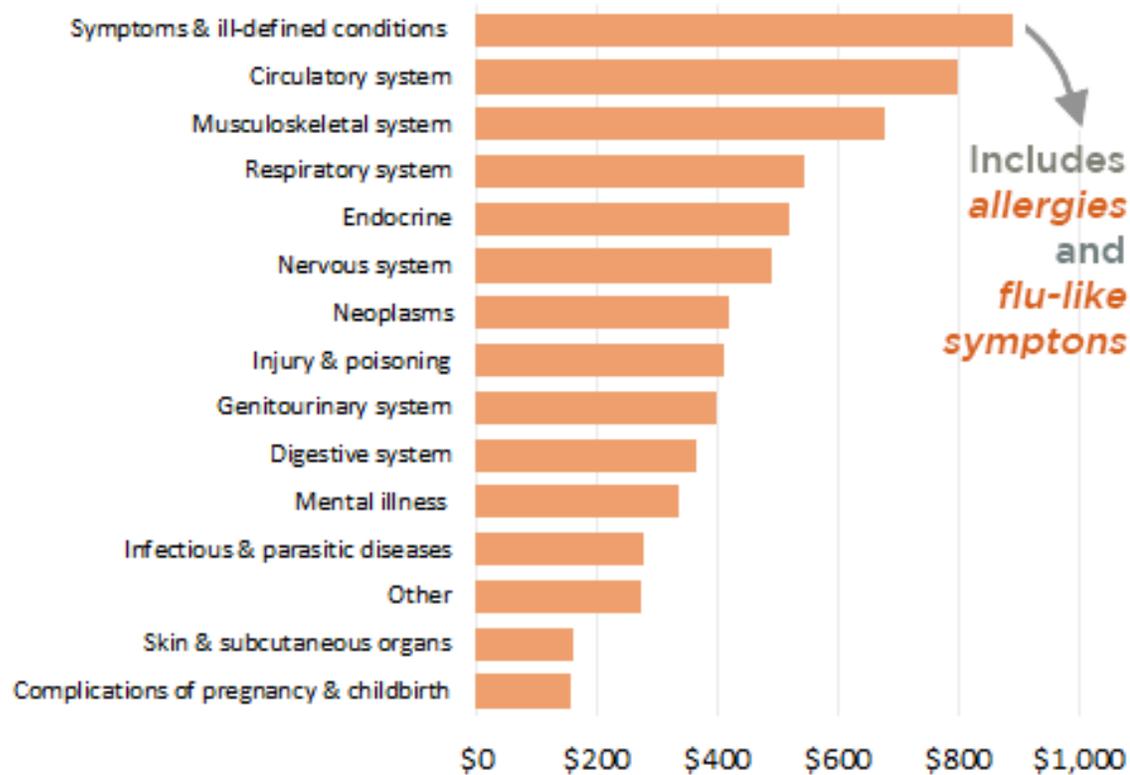


Health care accounts for  
**more than 14%**  
of the U.S. economy



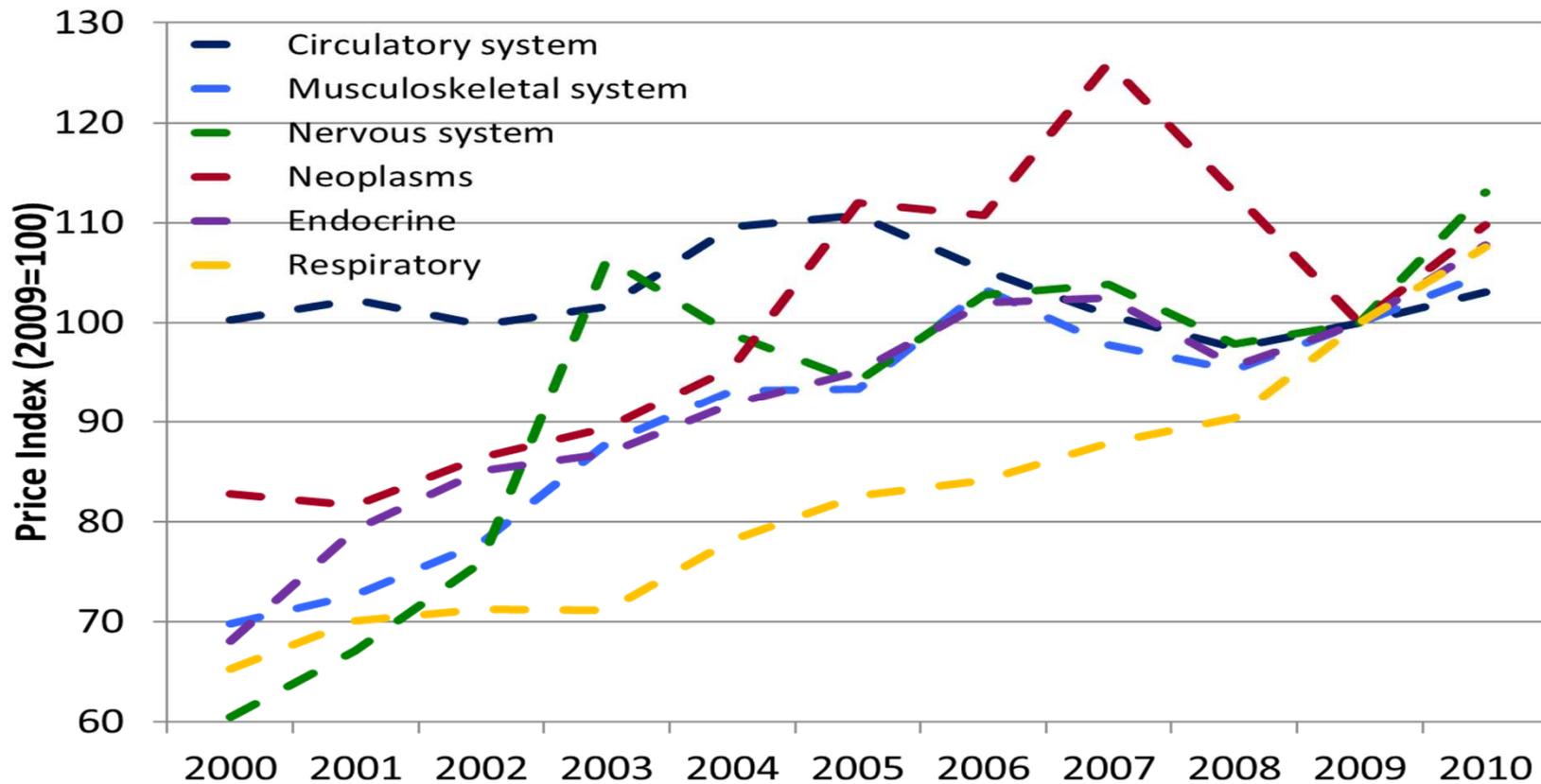
U.S. consumers spent  
**\$2.1 trillion** in 2015  
on medical services for  
diseases and conditions

## Per Capita Spending in 2015



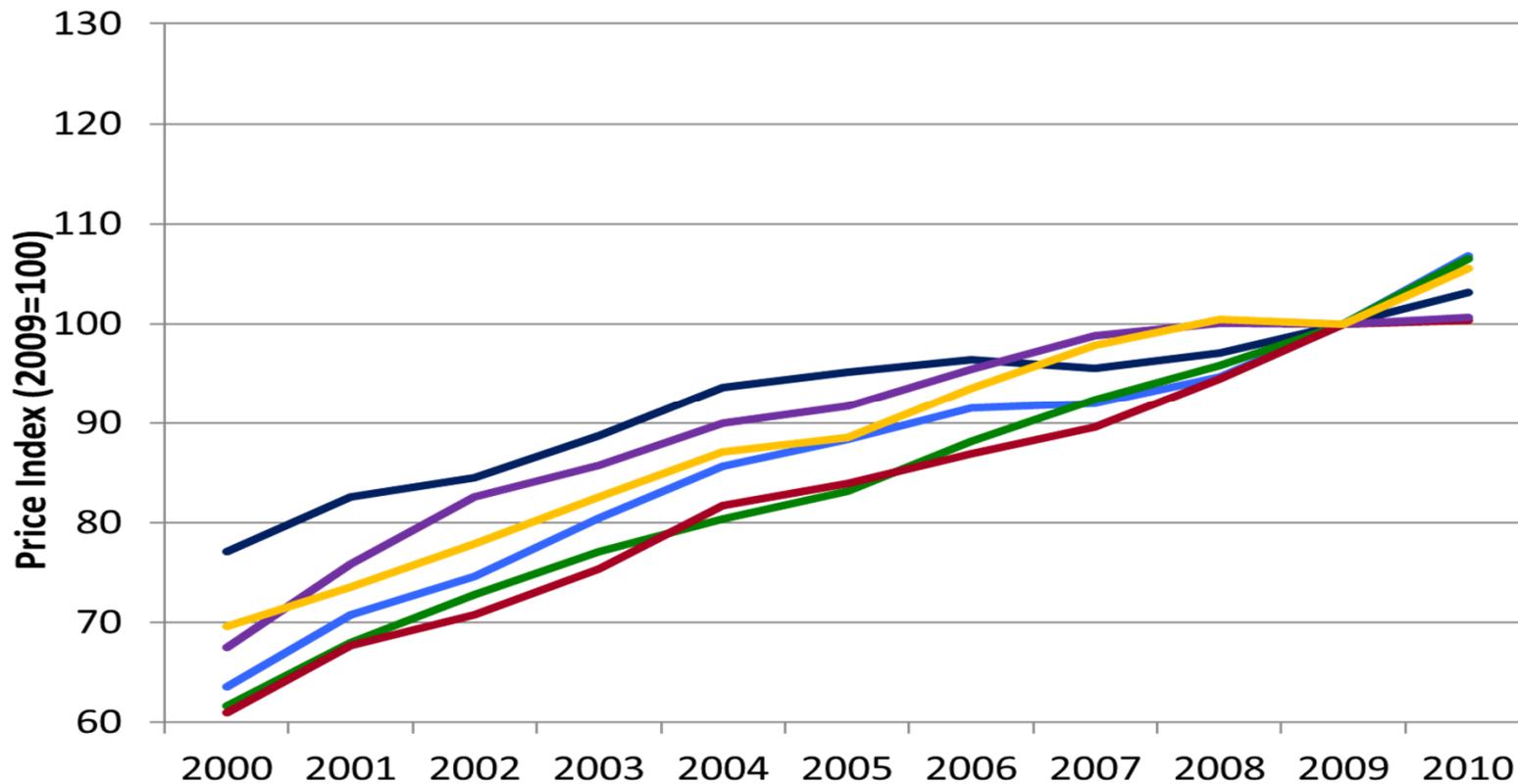
Source: Bureau of Economic Analysis

## Price Indexes: Survey data only



Source: Bureau of Economic Analysis

## Price Indexes: Survey + Big data



Source: Bureau of Economic Analysis

# Distribution of Income

- Going beyond GDP
  - What do topline numbers like GDP and Personal Income mean for well-being of individuals at different income levels?
  - Top priority—heightened attention from U.S. government officials echoes demands from academic and policy communities
- Major challenges
  - Deciding on concept of income (money income vs. national accounts' concept of personal income)
  - Access to timely source data with distributional breakouts



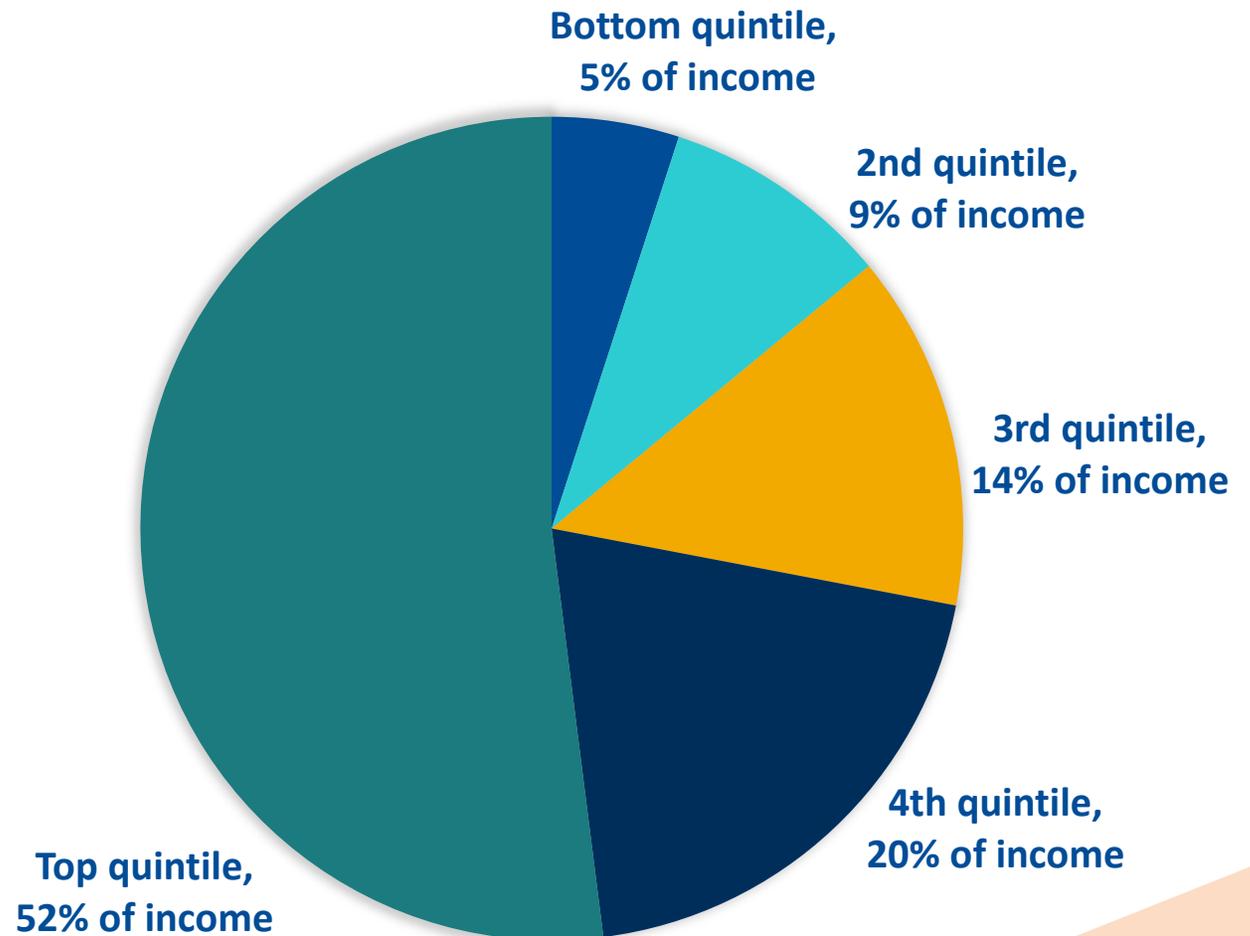
Information-sharing across different federal government agencies in ways that abide by legal constraints, including confidentiality requirements

# Distribution of Income

## Shares of Income by Quintile\*

### Shares of income by type

Bottom	Top
Compensation	
4%	51%
Proprietors' income	
1%	83%
Rental income	
5%	52%
Interest and dividends	
1%	75%
Transfers	
16%	16%



\* Data for 2012

Source: Bureau of Economic Analysis, University of Michigan

# Greater Geographical Detail

- Key to evidence-based policy making
  - National statistics are not enough—long-standing commitment to provide finer levels of geographical detail
  - State and municipal decision-makers need data tailored specifically to their localities
- Major challenges
  - Traditional data sources lack detail to break out economic activity in more granular geographic areas
  - Harmonizing top-down and bottom-up estimation methods to gain greater insights from both perspectives

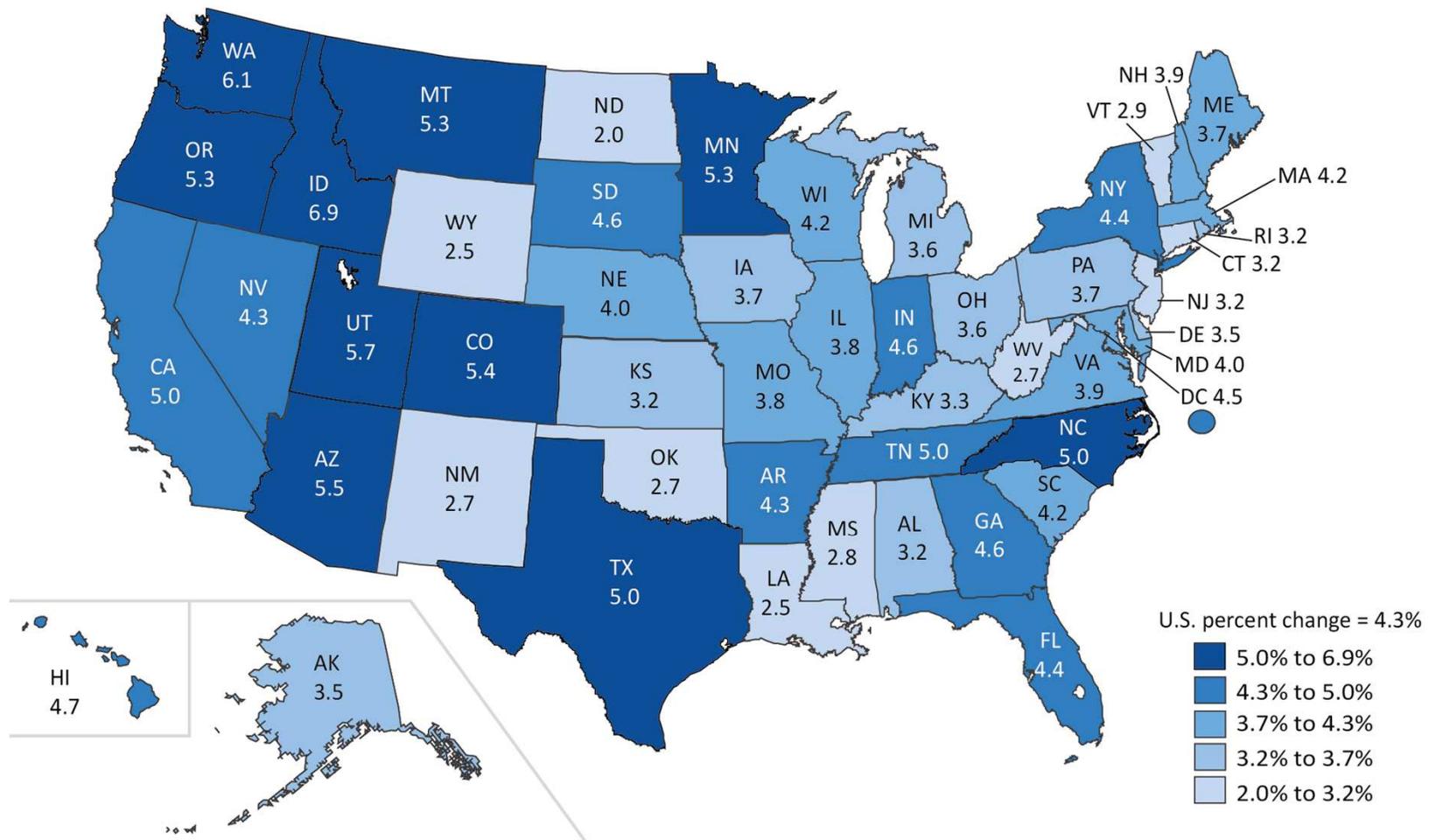


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(1) Consistency between national and local area estimates and (2) input from regional-level stakeholders, including new data sources

# Greater Geographical Detail

## Consumer Spending by State: Percent Change, 2016-2017



Source: Bureau of Economic Analysis

# Greater Geographical Detail

## Regional Price Parities

### What Does \$100 Buy?

The Relative Value of \$100 in Each State

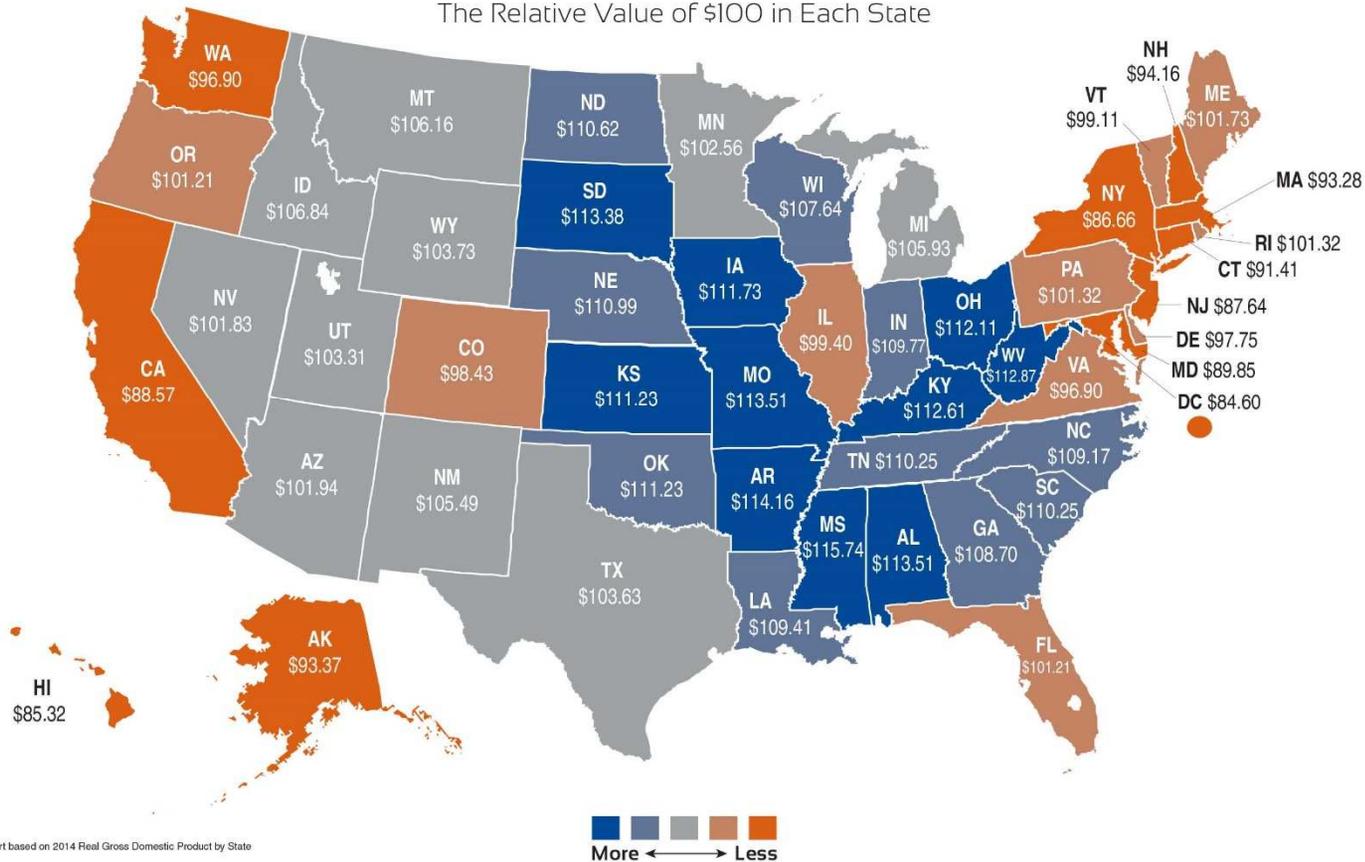


Chart based on 2014 Real Gross Domestic Product by State

Source: Bureau of Economic Analysis

# Increasing Accuracy and Timeliness

- The trade-off
  - To make informed decisions, government officials and other policy makers need accurate data that are not subject to large revisions,
  - AND customers are demanding this information in a more timely manner.
- Major challenges
  - Earlier access to data sources from other Federal statistical agencies
  - Filling data gaps in early estimates



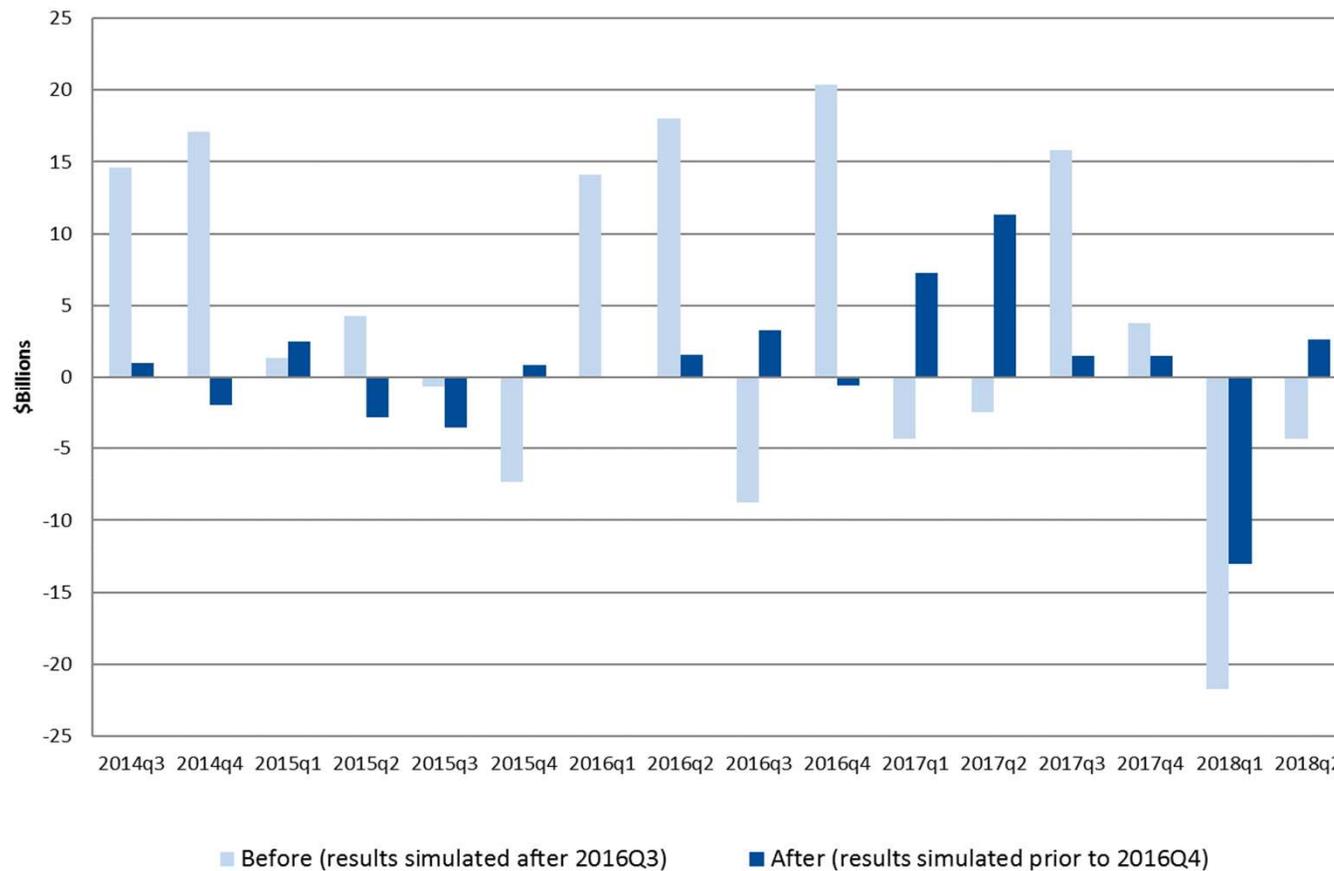
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(1) Cutting-edge tools (machine learning, artificial intelligence) and (2) an employee base with the right skill sets to apply these tools

# Increasing Accuracy and Timeliness



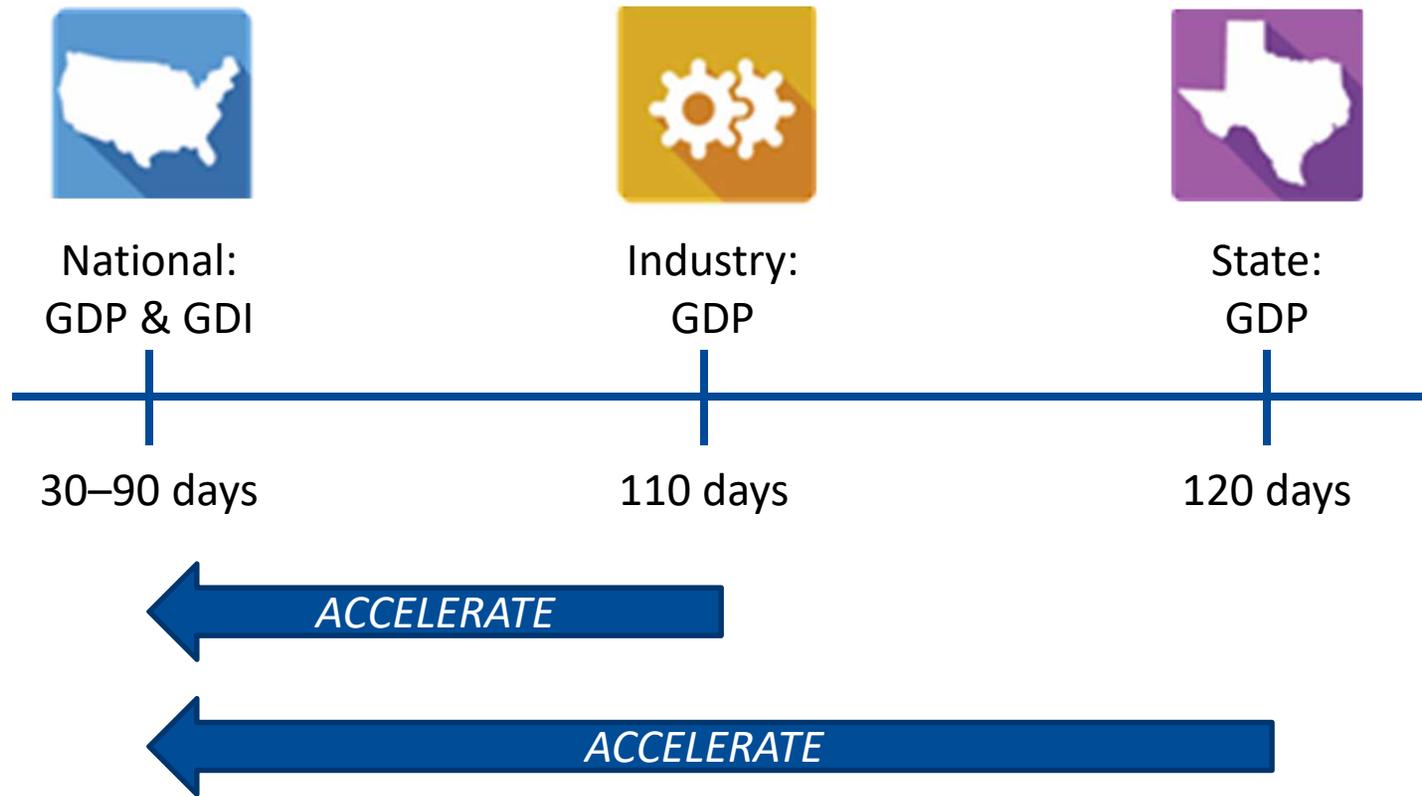
## Accuracy: Comparison of Revisions to PCE Health Care Services



Source: Bureau of Economic Analysis

# Increasing Accuracy and Timeliness

## Timeliness: Simultaneous Quarterly Releases



## Key Takeaway: Paradigm Shifts are Critical

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- Statistical agencies must change the way we do business in order to fulfill user demands for more relevant, timely information
  - New forms of collaboration (e.g. public-private partnerships to access non-traditional data, partnerships with outside experts to develop new data products)
  - New estimation approaches (e.g. blending non-traditional and traditional data sources, using cutting-edge data techniques such as machine learning)
  - Public feedback mechanisms for developing new products and gaining access to new data sources
  - Recruitment of multi-disciplinary staff with mix of skill sets

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June 3, 2019

