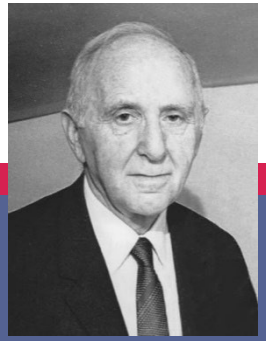
The Value of Medical Spending in Rich Countries

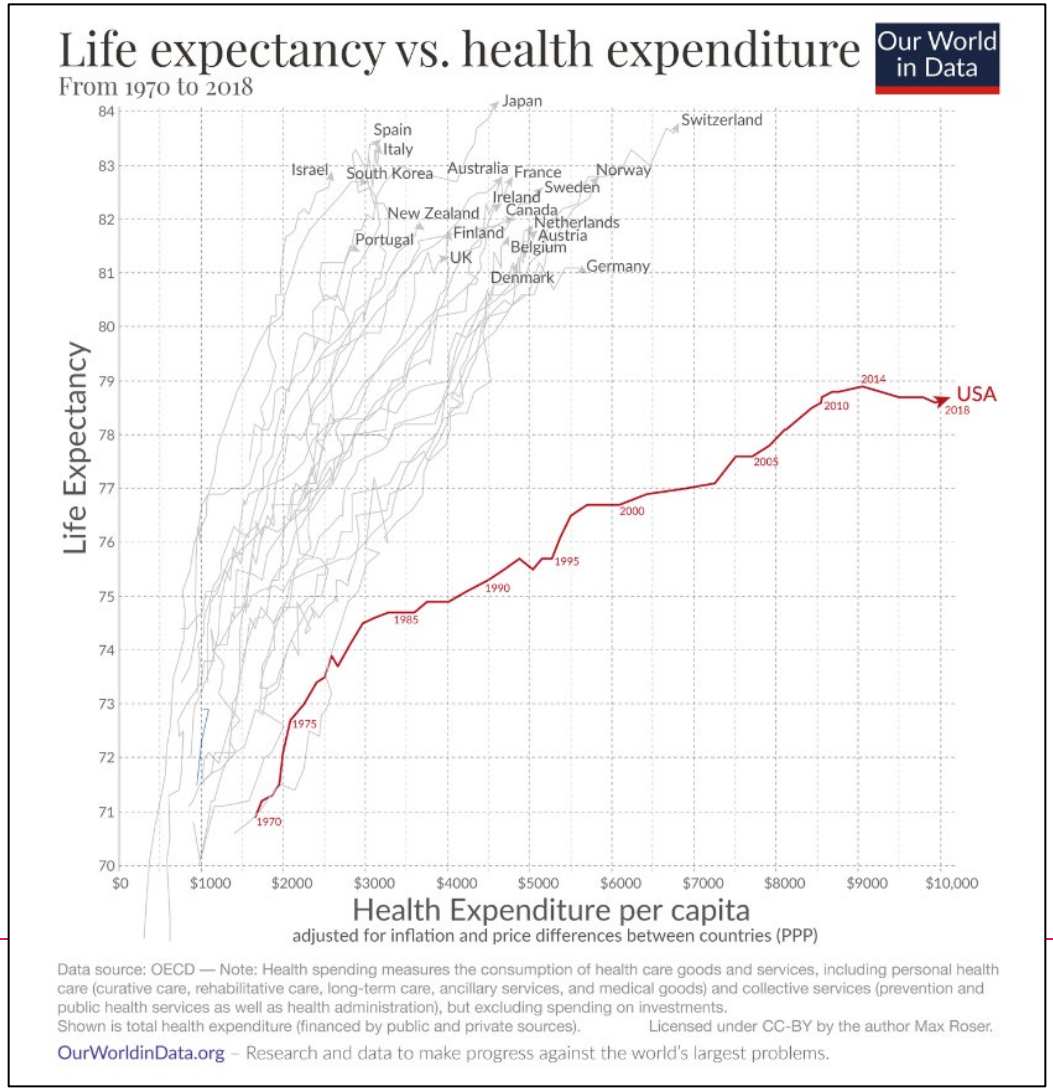
David M. Cutler

July 2025

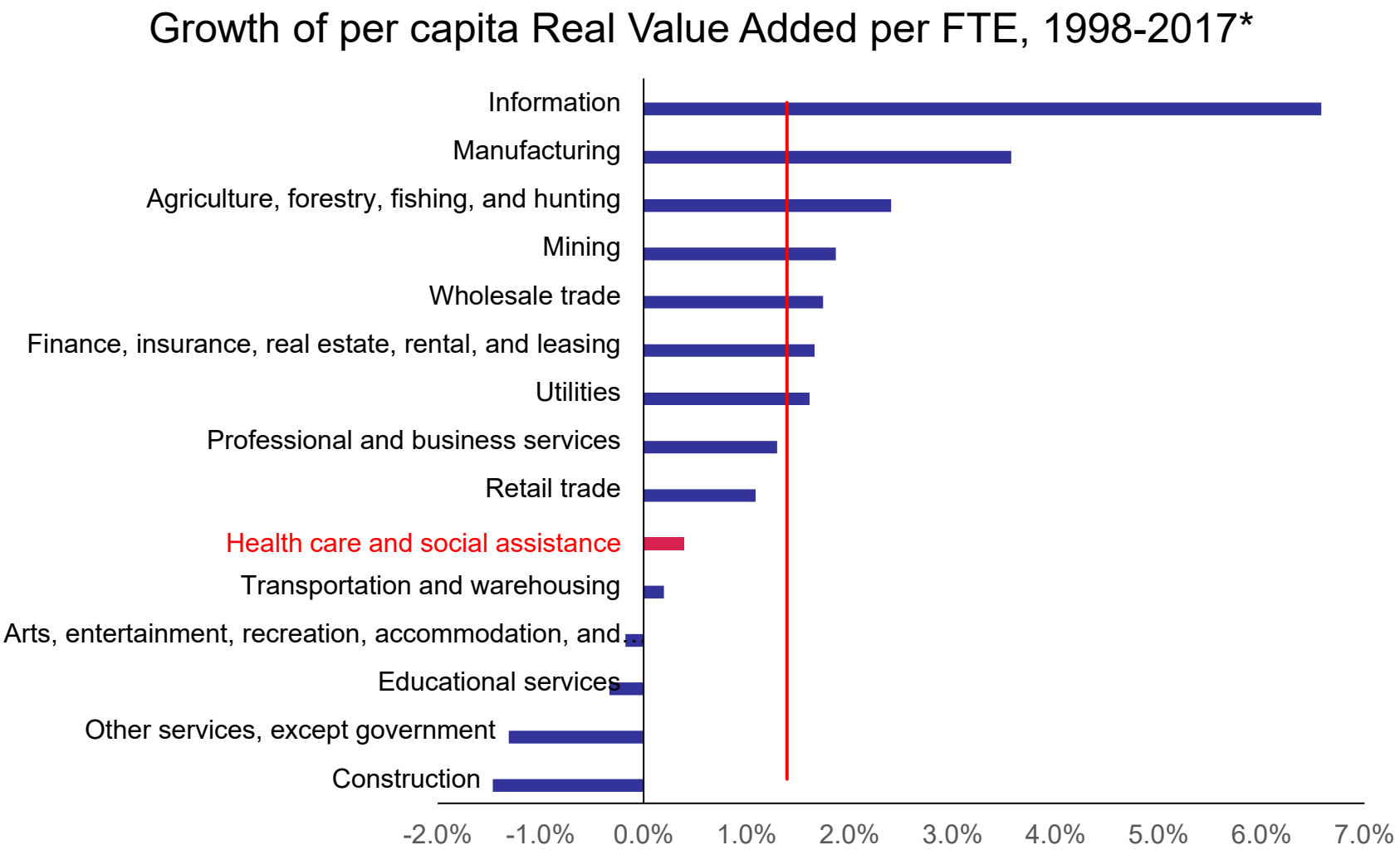


Simon Kuznets

Medical spending has increased greatly in rich countries, and mortality gaps are growing

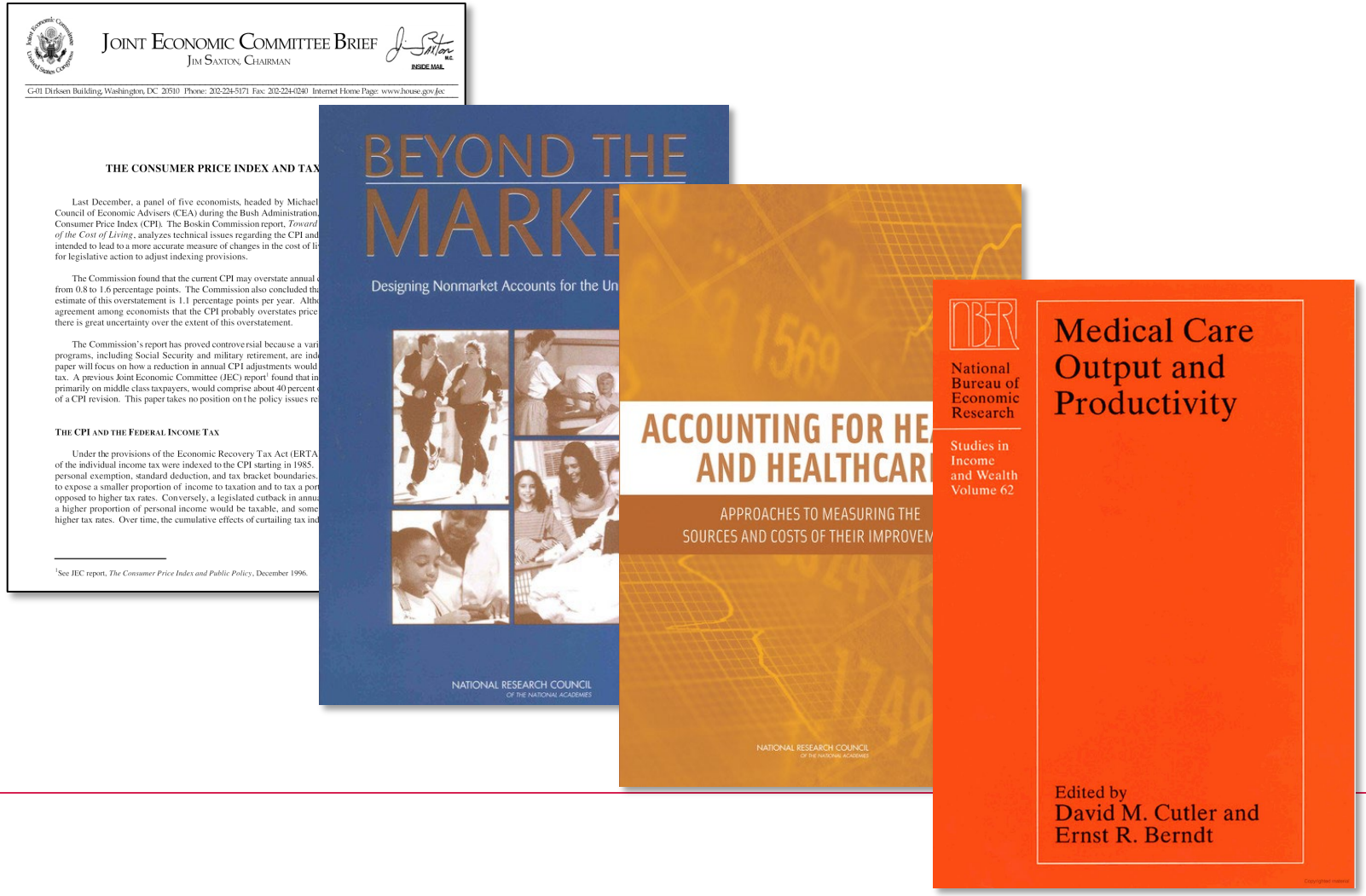


Estimated medical care productivity is low



*Value added = Gross output (sales) – Intermediate inputs (energy, raw materials)

Measurement of productivity in medical care has been a longstanding challenge

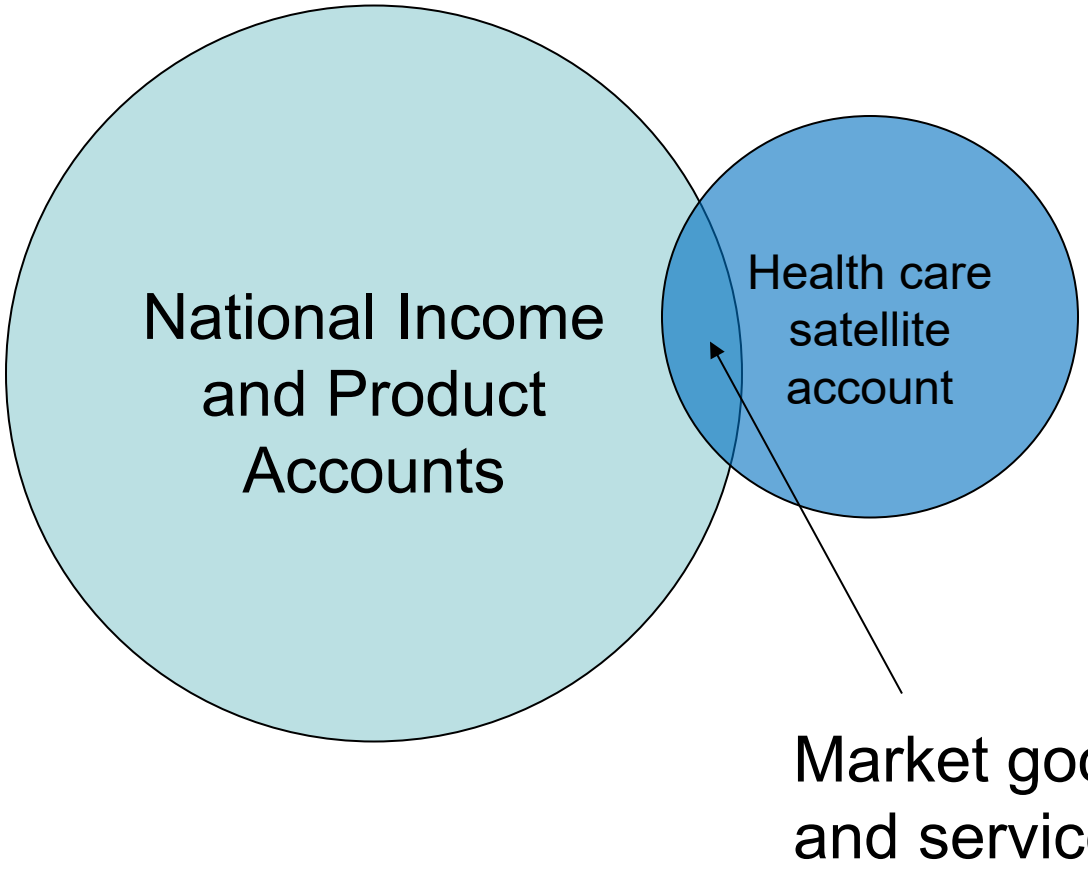


Two basic difficulties with medical care productivity

- We often get the industry wrong
  - We focus on the name of the company providing the treatment (hospital, physician, pharma company).
  - Consumers care about the condition being treated (heart disease, stroke, cancer)
  - Policy researchers may care about what the money is buying (admin, surgeries, consultations)

- We are not good at measuring outcomes
  - Improved health, relative to the counterfactual

A satellite health account



Introducing the New BEA Health Care Satellite Account

By Abe Dunn, Lindsey Rittmueller, and Bryn Whitmire

TOTAL HEALTH CARE spending reached 17.4 percent of gross domestic product (GDP) in 2013, and that share is expected to continue to grow significantly, according to the Centers for Medicare and Medicaid Services. Given this trend, it is critical to develop an understanding of what those increased expenditures represent. Are the increases attributable to rising costs of treatment or more individuals receiving medical care? What medical conditions account for the majority of spending? Which medical conditions see the cost of treatment rising most rapidly? Do these spending increases coincide with improvements in treatment? Answers to these questions are necessary in order to formulate policies that allow for society's efficient consumption of health care as well as for the improvement of the nation's overall health status.

The Bureau of Economic Analysis (BEA) has been conducting research to develop a health care satellite account (HCSA)—engaging in methodological research, evaluating new data sources, collaborating with academic researchers, and working jointly across multiple federal agencies (see the SURVEY OF CURRENT BUSINESS articles (2007), (2008), (2009), (2012), (2013)). The account builds on research by prominent health economists, recommendations from two reports of the National Academy of Sciences' Committee on National Statistics, and years of research both at BEA and the Bureau of Labor Statistics (BLS).

This first release of the HCSA presents preliminary estimates that may be used to improve our understanding of health care spending trends and its effects on the U.S. economy.

The principal contribution of the HCSA is that it redefines the commodity provided to patients by the health sector as the treatment of disease (for example, cancer or diabetes) rather than the specific types of medical care that individuals purchase (such as visits to a doctor's office or the purchase of a drug), as is currently published. Economists generally agree that doing this will allow for a greater understanding of the health sector and will help researchers better assess the returns to medical care spending (Berndt and others

Acknowledgments

We would like to thank David Johnson, Chief Economist at BEA, for his leadership and involvement in this challenging project over the past 8 months. His strong encouragement to incorporate large claims data into the first release of the satellite account proved to be a valuable insight, greatly improving the content of the first release. We would also like to thank Ana Aizcorbe, former Chief Economist, who led the health care satellite project for the previous 8 years. As Chief Economist, Aizcorbe led BEA to purchase and conduct research on large claims databases, ensured that BEA had the necessary computing power and researchers with expertise in this area, conducted key research, and encouraged the research of others. Her contributions ultimately laid the foundation for the satellite account. In addition, Aizcorbe provided valuable comments and assistance in the drafting of this document. Current and former staff of the Office of Chief Economist at BEA contributed valuable research related to the satellite account, including Elizabeth Bernstein, Seidu Dauda, Anne Hall, Tina Highfill, Eli Liebman, Sarah Pack, and Adam Shapiro. We would also like to thank project manager Elizabeth Bernstein for coordinating the involvement and input of staff from the Industry Economic Accounts and National Economic Accounts. Brendan Leary, Andrew Pinard and Brent Spithaler contributed greatly by developing an economic accounts software tool, which allowed us to integrate our estimates with the national income and product accounts. Also, thank you to Katharine Hamilton, Daniel Jackson, Gabriel Medeiros, and Patricia Washington for their help with the production of the industry estimates and associated box. We also thank Brian Callahan and BEA IT staff for assistance in managing the large data sets. We thank Virginia Henriksen for managing purchase agreements and contracts for data vendors and providing editorial input for nearly all research work. We thank Truven Analytics for the use of their data and their support, and to Richard Suzman and the National Institute of Aging for preliminary funding for alternative data sources. Finally, we thank our Academic Panel of Experts, including Ernst Berndt, David Cutler, Michael Chernew, Mark Duggan, Joe Newhouse, Jack Triplett and Allison Rosen, who have provided valuable advice and support throughout this process.

DESIGN OF A HEALTH ACCOUNT

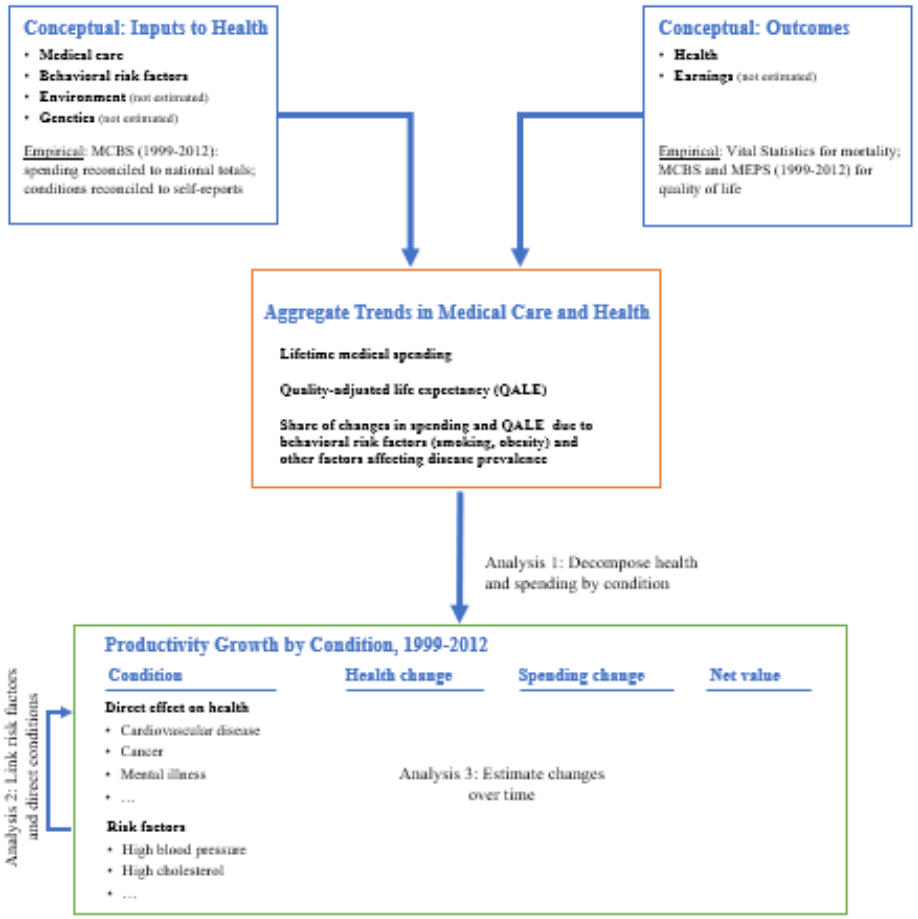
Conceptual Underpinnings

Inputs

Aggregates

Conditions

Figure 1: Depiction of Satellite Health Account



Note: The top row shows the conceptual inputs to a satellite health account: the inputs and health outcomes. The middle row shows aggregate trends in medical care and health. The lower row shows the productivity analysis. Productivity growth is determined from changes in health and medical spending.

DATA AND CONDITIONS

Data needs

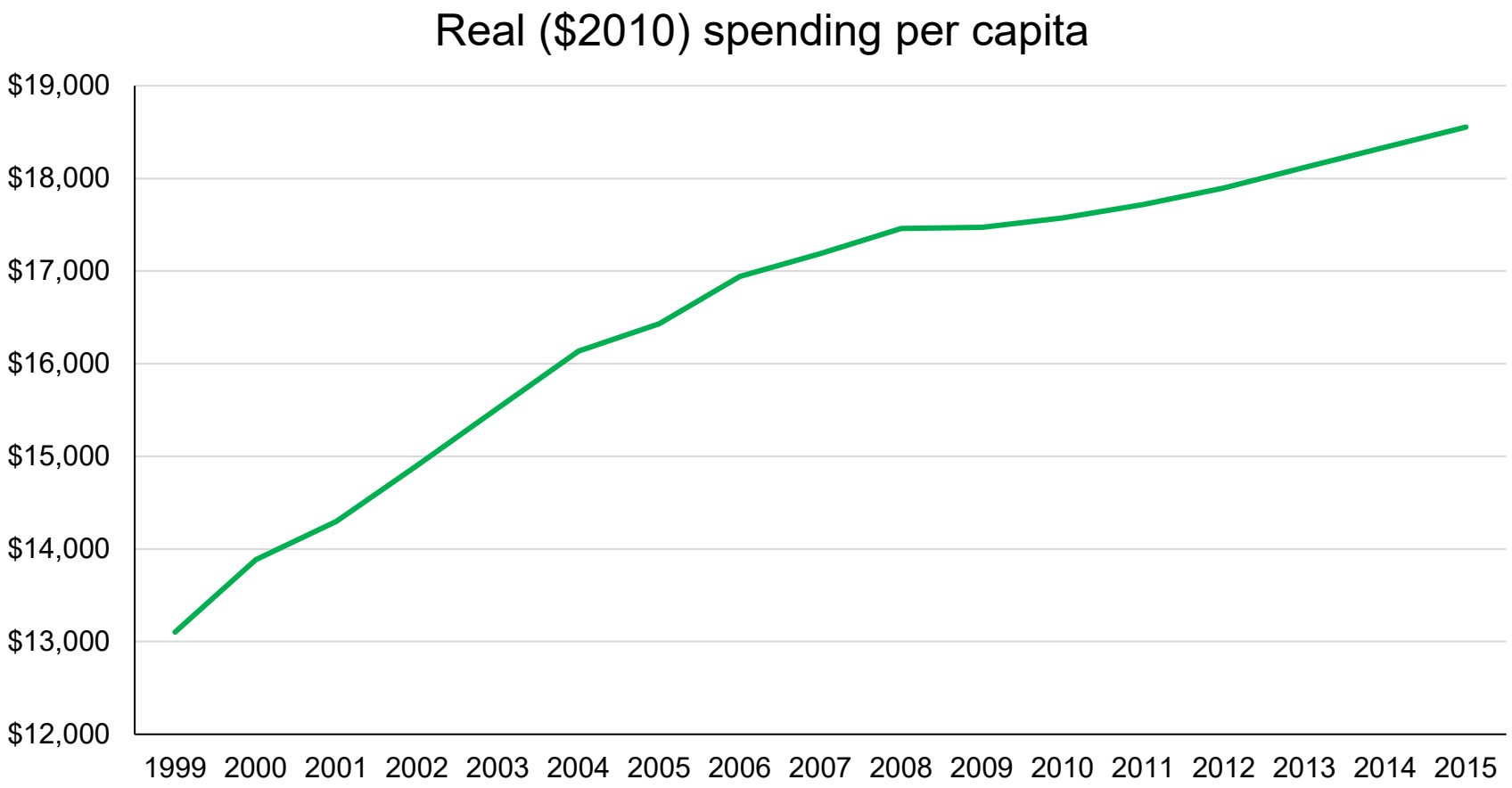
- Aggregate medical spending
- Population health metrics (length and quality of life)

- Condition data
  - To attribute spending and quality of life to conditions

Data are from Medicare Current Beneficiary Survey (MCBS).

- Elderly population only (N~10,000/year)
- Time periods: 1999 and 2012
- Total spending, not just Medicare
- Adjustments
  - Adjust weights in TM to match TM+MA population
    - Based on health info as well as demographics
  - Move spending across categories and adjust overall totals to match national health expenditure accounts
  - All spending in real (2010) dollars

Real per capita medical spending increased $4,800 annually over this time period



Data are age-adjusted to the 2010 population in 3 age groups.

Measuring population health

$$\mathrm{QALE}(t) = \sum_{k=0}^{T} \mathrm{Survival}(t+k) \cdot \mathrm{QoL}(t+k)$$

Survival
Determined from life tables

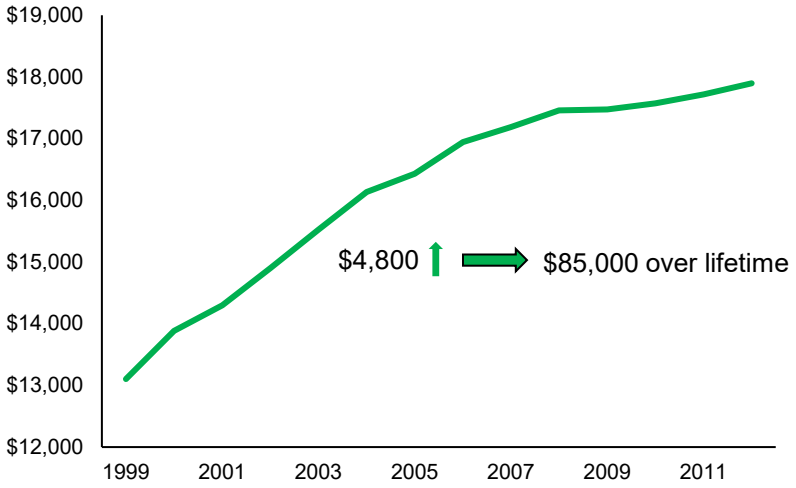
Quality of life
Specific impairments (X_{it}):
- Any ADLs (/6) and IADLs (/6)
- Functional limitations (5)
- Trouble seeing, hearing
- Health limits social activity

Relate 0-100 health score to these impairments in 2000-2002 MEPS
- $h_i = \beta_0 + \mathbf{X}_i\boldsymbol{\beta} + \varepsilon_i$

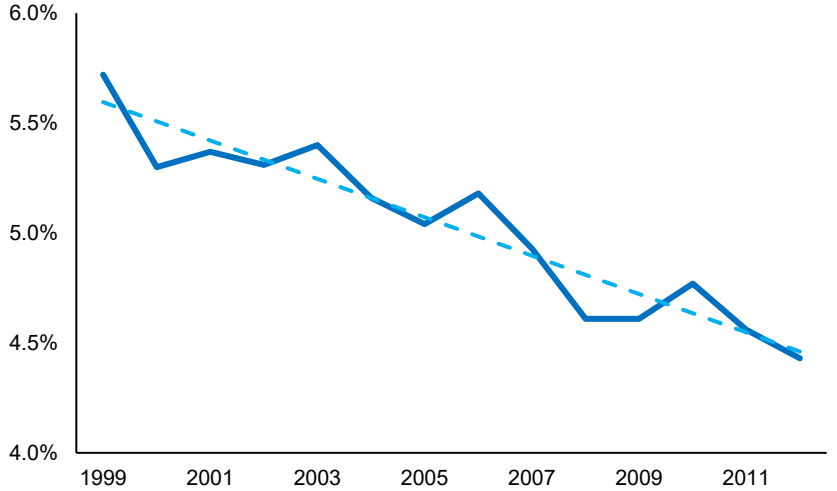
Weight impairments over time ($X_{it}\hat{\beta}$)

Aggregates – Population aged 65+

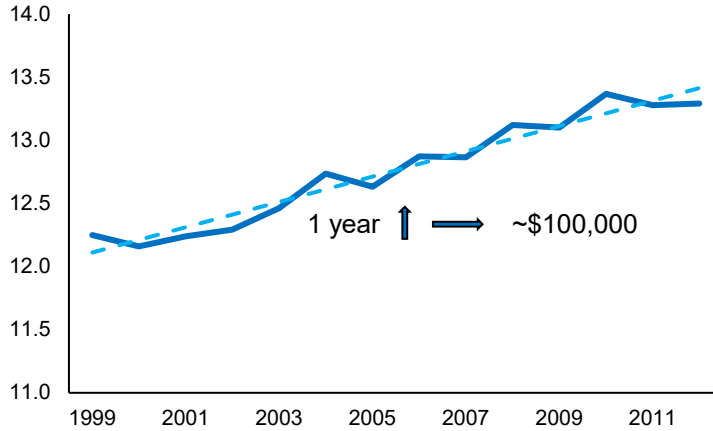
Real ($2010) spending per capita



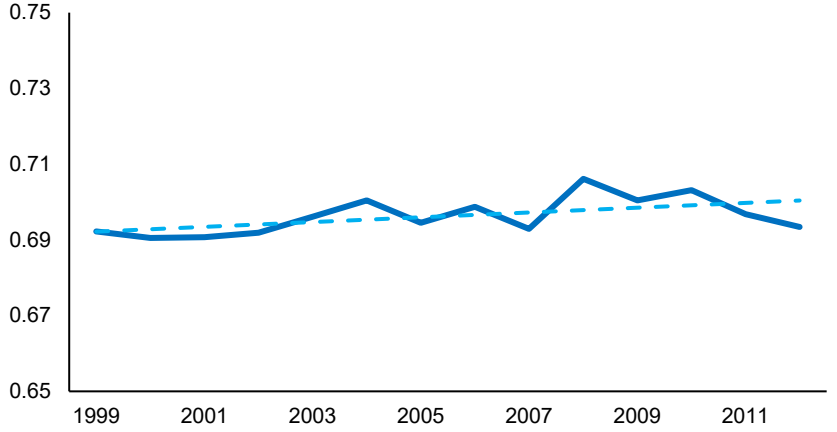
Mortality Rate in the Elderly Population



QALE at age 65

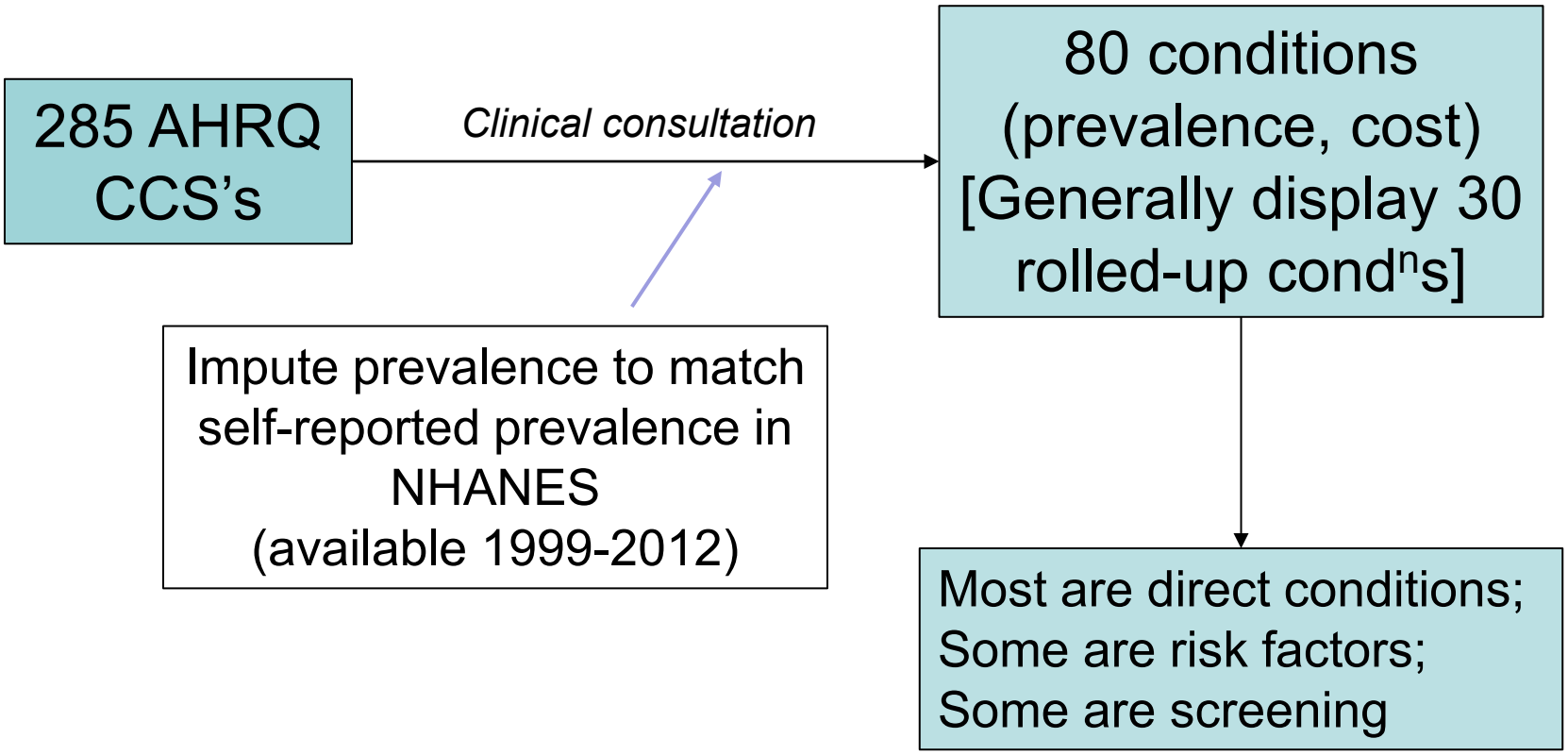


Quality of Life Score

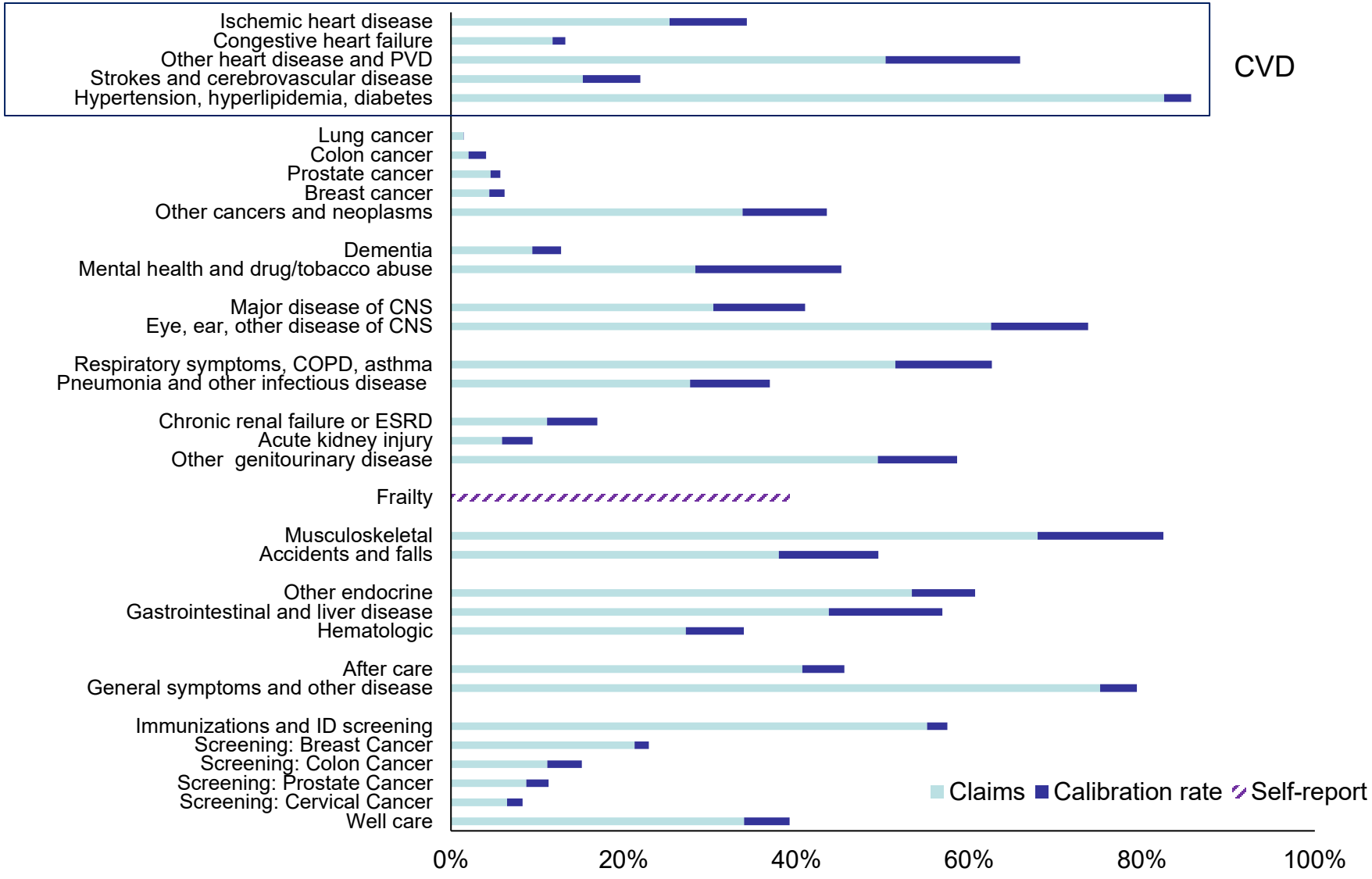


Data are age-adjusted to the 2010 population in 3 age groups.

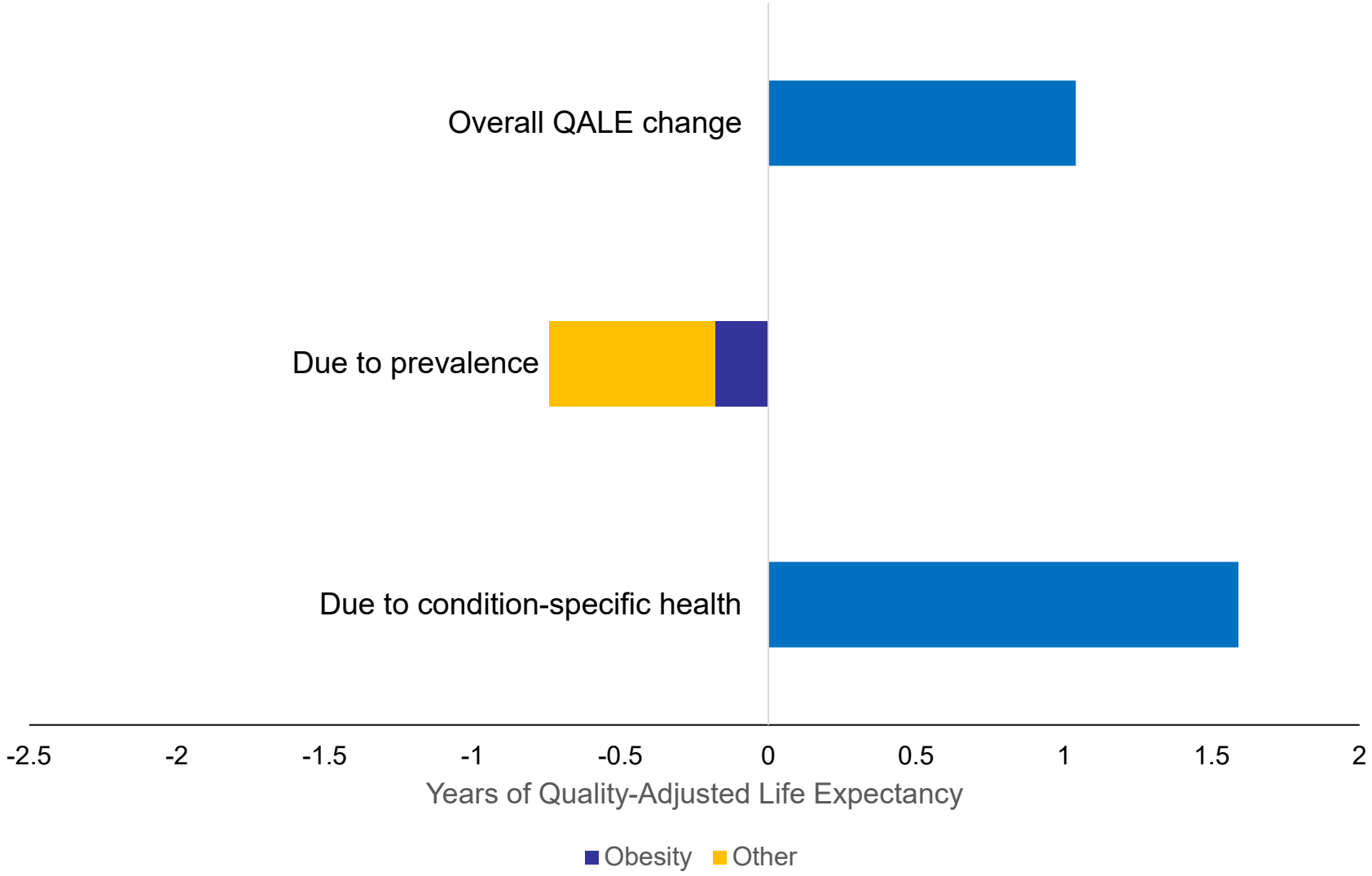
Conditions


285 AHRQ CCS's
Clinical consultation
80 conditions (prevalence, cost) [Generally display 30 rolled-up condⁿs]
Impute prevalence to match self-reported prevalence in NHANES (available 1999-2012)
Most are direct conditions;
Some are risk factors;
Some are screening

Conditions and Prevalence



The prevalence of most conditions is rising.



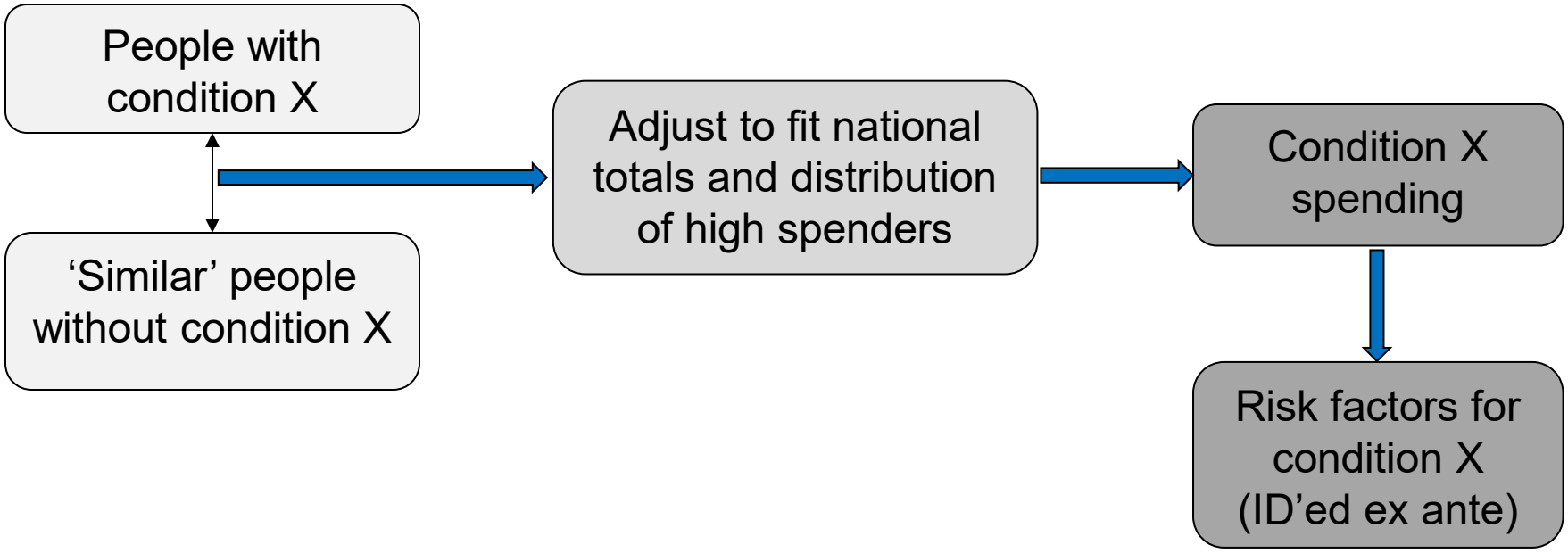
PRODUCTIVITY ANALYSIS

Key productivity assumption

- Medical spending for people with a condition affects QALE for people with that condition but not prevalence of other conditions.
  - E.g. treatment for MI affects MI QALE but not cancer incidence
  - Other than identified risk factors

- Compare estimates to simulation models
  - CVD: Ford et al.
  - Lung, colorectal cancer from SEER
  - Generally do well.

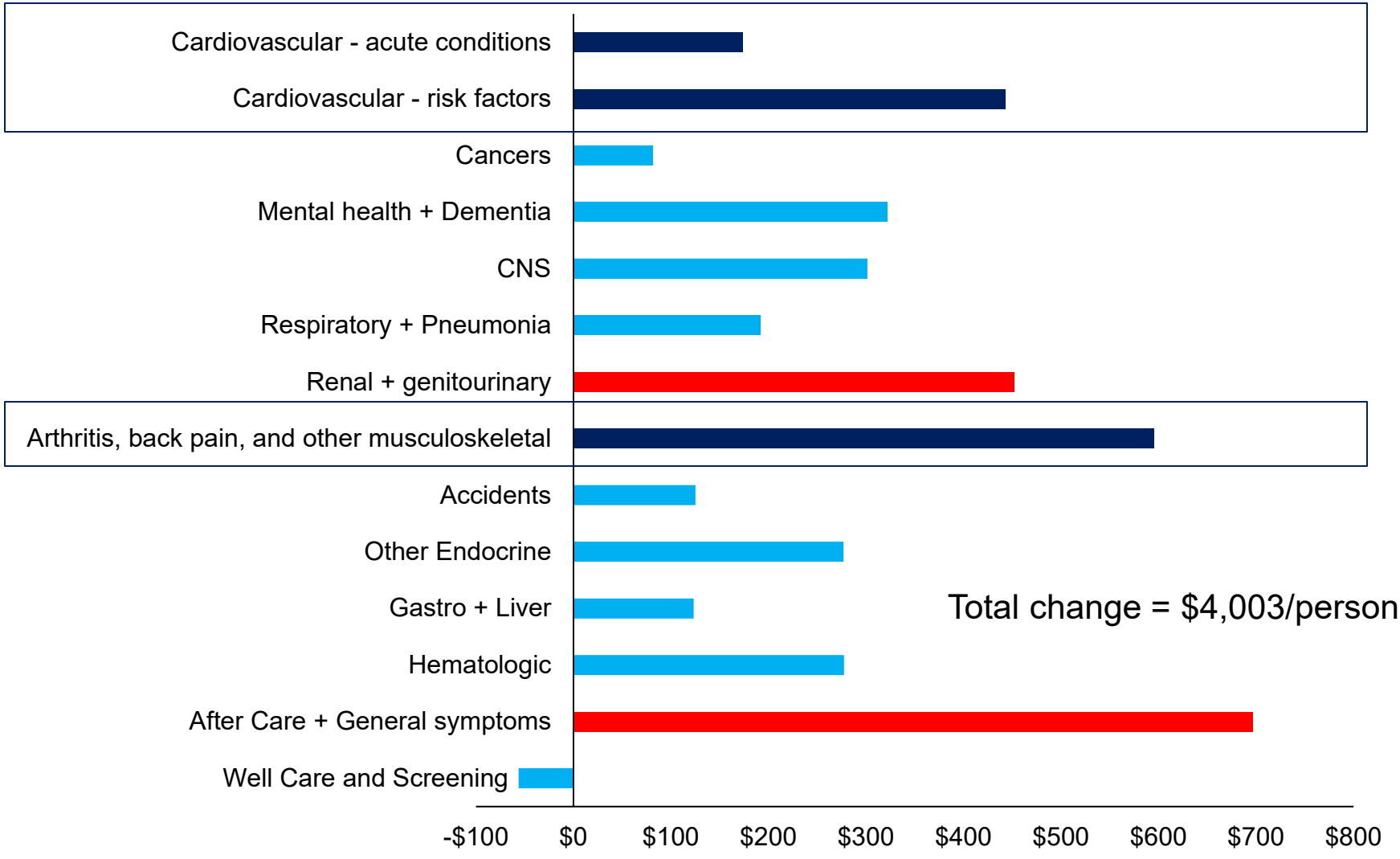
Attributing spending and health outcomes (mortality + QOL) to conditions



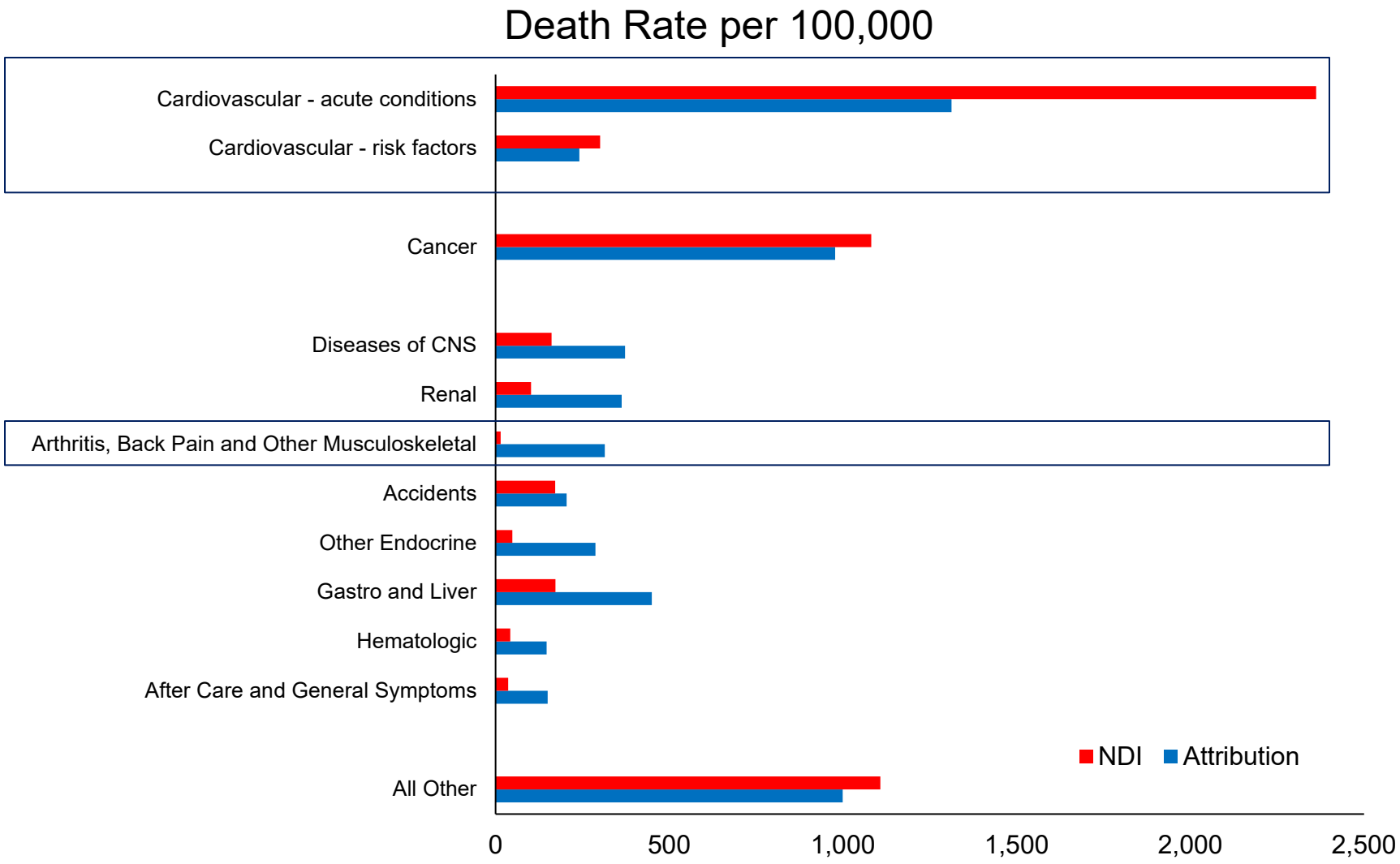
Ex: Heart disease

Ex: Heart disease & High cholesterol

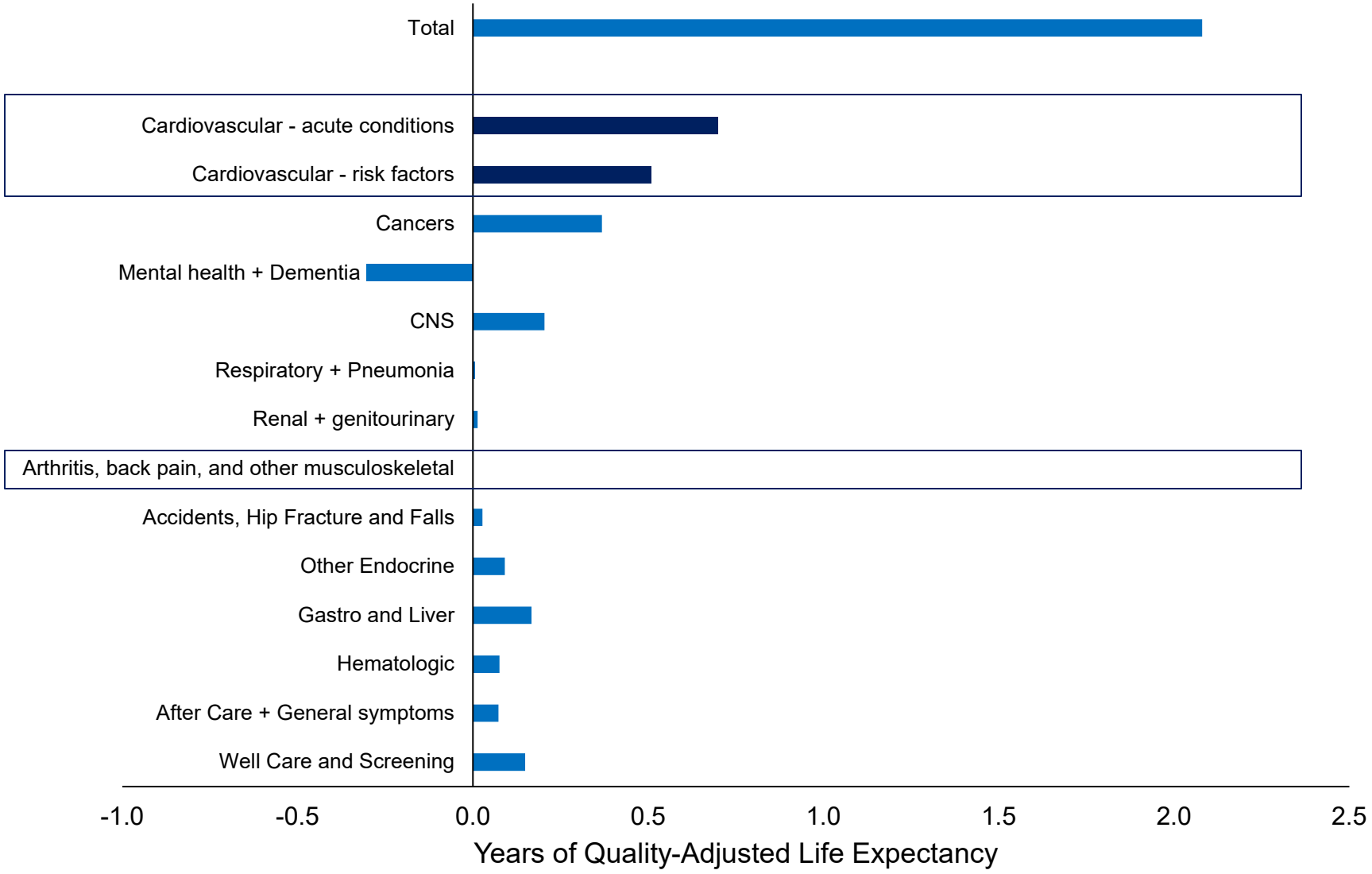
Increase in spending per capita



Cause of death differs greatly between official data and our estimates



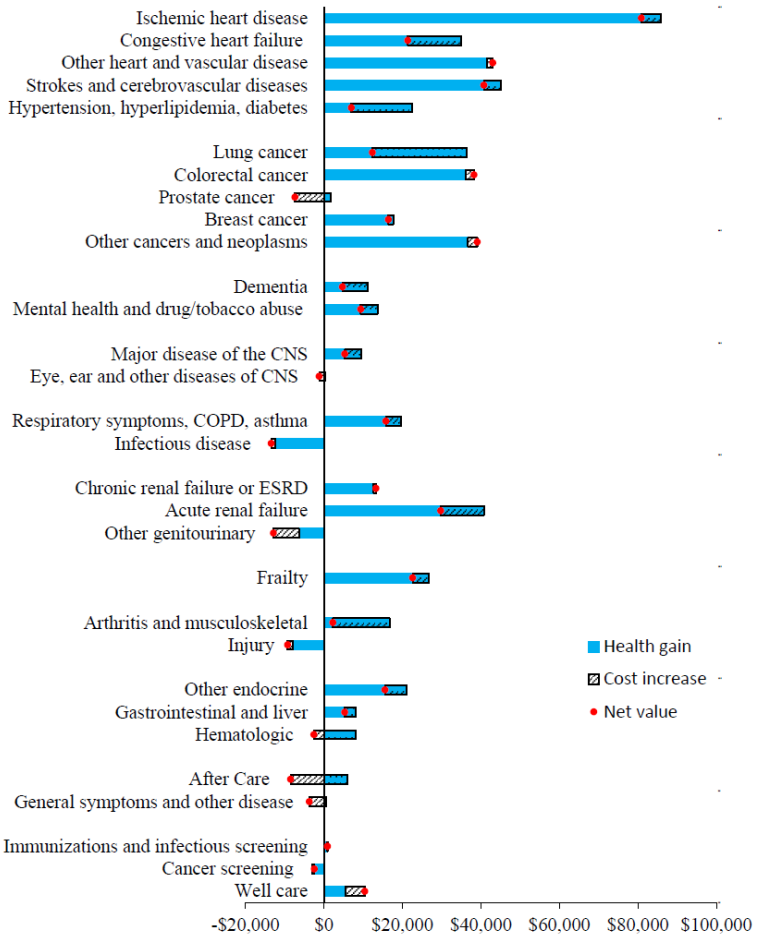
Impact of medical care on QALE by condition



Net value of health improvement

1. Overall benefit is positive ~$110,000
   - 21%↑, 1.5%/yr
2. Largest benefit for cardiovascular disease
3. Other benefits in some types of cancers, kidney failure
4. Notable failures are mental health and musculoskeletal.

Figure 9: Net Value of Medical Spending Change by Condition, 1999–2012



Note: Data are from the Medicare Current Beneficiary Survey with totals matching estimated national spending on the elderly. Spending is in real ($2010) dollars. The blue bar depicts improvement in health outcomes over the period, expressed in dollars. Health change is the change in QALE attributed to medical care and not changes in the prevalence of the condition. The hatched bar shows the change in medical spending. The red dot shows the net change in productivity estimate, defined as the dollar value of health improvement minus the increase in spending.

Conclusion

- Satellite accounts hold a good deal of promise for understanding the value of medical care and other interventions that affect health.