Health Care Satellite Account

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Overview

• Motivation for BEA’s Health Care Satellite Account (HCSA)

• Background on the HCSA

• Research in quality-adjustment
Motivation for **Health Care Satellite Account (HCSA)**

- HCSA’s goal: improve understanding of health care spending in the United States

- Redefine output and spending into more meaningful units
  - Output is the treatment of a condition (e.g., diabetes) not individual goods and services (e.g., prescription drug or doctor’s office visit)

- Example
  - Output = number of patients treated for diabetes
  - Expenditures = spending on the treatment of diabetes
  - Price = average spending per treated patient for diabetes
HCSA provides 2 versions (currently covering 2000-2019)

1. “MEPS Account” – using Medical Expenditure Panel Survey (MEPS)
   - Publicly available survey with around 30 thousand individuals annually

2. “Blended Account” – MEPS, MarketScan® claims data, and Medicare claims data
   - Incorporates millions of enrollees and billions of claims for Medicare population and private insurer claims
Use population weights from MEPS to fold in data from different sources

- Privately Insured → MarketScan®
- Medicare Population → Medicare FFS 5% Sample
- MEPS Other (e.g. Uninsured, Medicaid)
Satellite account currently includes 18 broad diseases
Volatile trends in disease-based price indexes using the MEPS account index
Less volatile disease-based price indexes using the Blended account index
Big data used to produce detailed condition-level estimates
The Diseases We Spend Our Health Dollars On

But there is good news for those who want to understand more. The Bureau of Economic Analysis (BEA) has made a real contribution to making health spending more comprehensible by analyzing health spending and price growth by common diseases and diagnoses such as cancer, heart disease, diabetes, and even the common cold.

At Last: The Data To Routinely Discuss Health Spending By Medical Condition
Motivation for quality-adjustment

• Between 2000 and 2019:
  o Health care spending grew from 13% to 18% of GDP
  o Life-expectancy has increased by 2 years from 2000-2019
  o Innovation is a key driver of spending growth in health care – Chernew and Newhouse (2011)

• Nearly half of the bias in the Personal Consumption Expenditure (PCE) deflator is due to unmeasured quality changes in the health sector
  • Lebow and Rudd (2003); Groshen, Moyer, Aizcorbe, Bradley and Friedman (2017)
Disease-based index grows faster than the official PCE health price index
Disease-based price indexes for select high price growth conditions

Estimates from the HCSA Blended detailed data.
Recent related literature (past 7 years)


Medical Literature – Cost-effectiveness Studies


• Dunn, Abe, Lasanthi Fernando, and Eli Liebman. "How Much Are Medical Innovations Worth? An Analysis Based on Millions of Patients and Thousands of Cost-Effectiveness Studies." In progress

Acute Health Events


Population Health

• Weaver, Marcia R., et al. "Health Care Spending Effectiveness: Estimates Suggest That Spending Improved US Health From 1996 To 2016: Study examines health care spending effectiveness, the ratio of an increase in spending per case of illness or injury to an increase in disability-adjusted life-years averted per case." Health Affairs 41.7 (2022): 994-1004.
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Cost-effectiveness studies and quality adjustment (Dunn, Hall and Dauda (2022)): Sovaldi example for Hepatitis C

- $S_{\text{New}}$ – $105,488 – Sovaldi
- $S_{\text{Old}}$ – $81,211 – Interferon
- $H_{\text{New}}$ – 9.40 QALYs – Sovaldi
- $H_{\text{Old}}$ – 8.28 QALYs – Interferon
- $VSLY$ – $50,000

$$\Delta \text{Net benefit} = VSLY \cdot Health\ Improvement - Spending\ Increase$$

$$= VSLY \cdot (H_{\text{New}} - H_{\text{Old}}) - (S_{\text{New}} - S_{\text{Old}})$$

$$= 50,000 \cdot (9.40 - 8.28) - (105,488 - 81,211)$$

$$= 31,723$$
Utility-based price index (based on Cutler et al. (1998))

Laspeyres Index = \frac{S_{\text{Old}} - \Delta \text{Net Benefit}}{S_{\text{Old}}} =

= \frac{S_{\text{New}}}{S_{\text{Old}}} - \frac{\$VSLY \cdot (H_{\text{New}} - H_{\text{Old}})}{S_{\text{Old}}}

Unadjusted price change

Quality-adjustment
Utility-based price index: Sovaldi example

\[ \text{Laspeyres Index} = \frac{105,488 - 50,000 \cdot (9.40 - 8.28)}{81,211} = 0.61 \]

→ 39 percent price decline

(Setting VSLY to $100,000 → Price decline is 109 percent)
Innovation implies a typical **price decline of around 18 percent. (VSLY $100k)**
Hepatitis C: Quality-adjusted price indexes– Dunn, Liebman, and Fernando (2022) (preliminary)
Rheumatoid Arthritis: Quality-adjusted price indexes—Dunn, Liebman and Fernando (2022) (preliminary)
BEA work and collaborations

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Quality-adjusted price index measured for acute conditions – Dauda, Dunn, Hall (2022)
Medical Literature – Cost-effectiveness Studies


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Spending improved U.S. health 1996-2016 – Weaver et al. (2022) → quality-adjustment has substantial effect on inflation in the health care sector

- Low back and neck pain: 263.8%
- Diabetes mellitus: 322.2%
- Drug use disorders: 132.1%
- Stroke: 62.6%
- Ischemic heart disease: 39.0%
- Breast cancer: -18.4%
- Lower respiratory infections: 42.5%
- All Causes: 121.5%

Percentage change in spending per case

Percentage change in DALYs per case, 1996 to 2016
Conclusion

• The HCSA provides a unique look at health care spending that is relevant for the IRA

• Measuring changes in treatment quality is key to understanding inflation in the health sector
  o Example of Rheumatoid Arthritis and Hepatitis C

• There has been substantial progress toward incorporating quality adjustment into price estimates for the health care sector

• Several methods and assumptions to consider when constructing quality-adjusted prices