A Satellite Account of U.S. Health Care Spending

Plans and Progress

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CSLS: Improving Measures of Output and Productivity in the Health Care Sector
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Measuring the Nation's Economy.

BEA
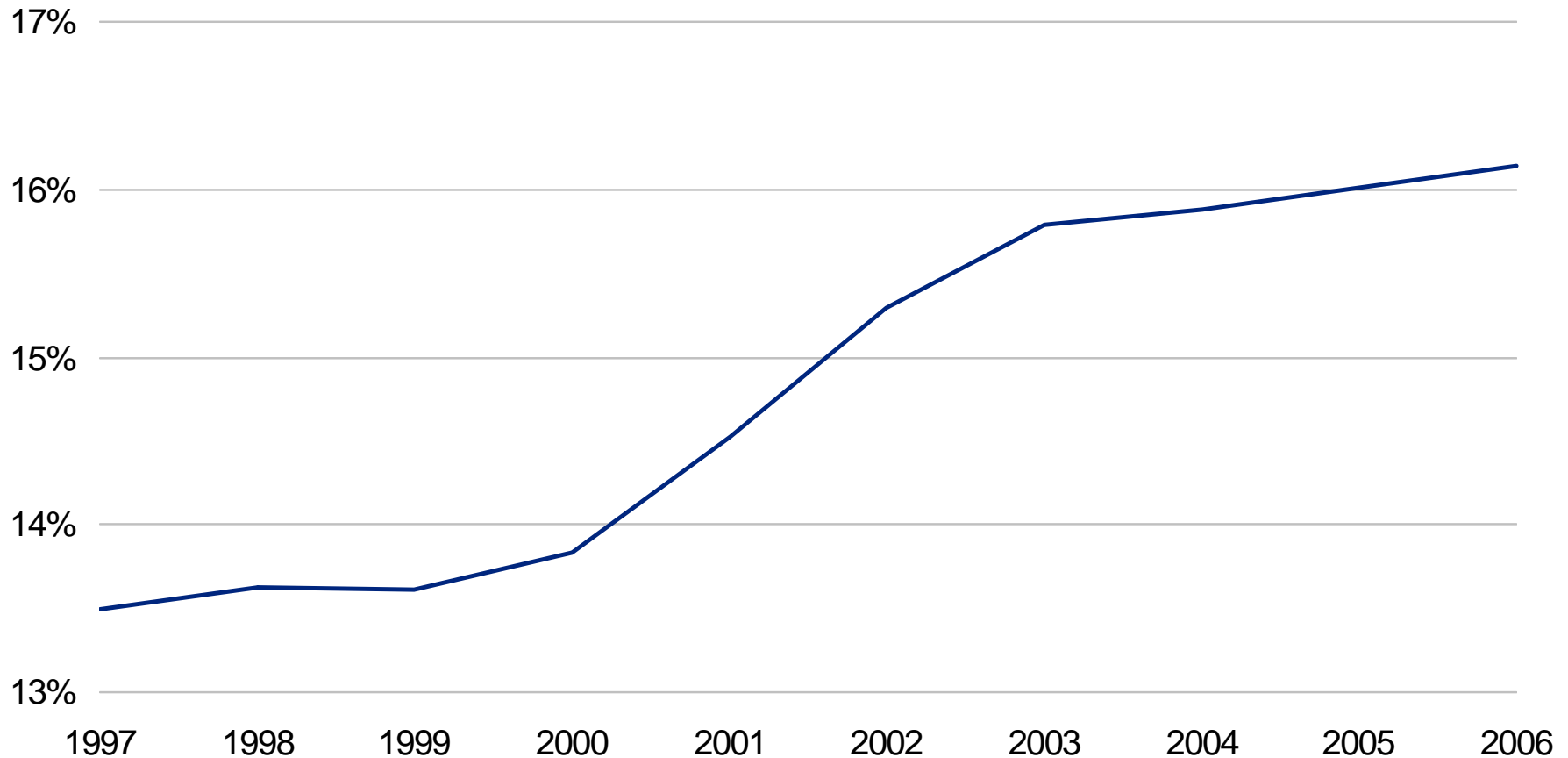**BUREAU OF ECONOMIC ANALYSIS**
U.S. DEPARTMENT OF COMMERCE

Overview

- Model of a national health account
- BEA's plans for a satellite account for health care spending
- Development of disease-based measures

The views expressed in this presentation are solely those of the authors and not necessarily those of the U.S. Bureau of Economic Analysis or the U.S. Bureau of Labor Statistics.

Health Care Spending as a Percent of GDP

Source: U.S. Bureau of Economic Analysis

Conceptual Model of a National Health Account

Inputs	Outputs

- Medical Care
    Market labor/capital
    Volunteer labor
- Time invested in own health
- Other consumption items
- Research and development
- Quality of the environment
	- Health status
	    Longevity
	    Quality of life
	- Financial externalities

Source: *Beyond the Market: Designing Nonmarket Accounts for the United States* (National Research Council, 2005)

BEA's Satellite Account for Health Care Spending

Three Broad Research Areas:

- Reconcile National Health Expenditure Accounts (NHEA) and National Income and Product Account (NIPA) measures

- Develop disease-based estimates for health care spending

- Develop disease-based price indexes for health care spending

Develop Disease-based Estimates of Health Care Spending

- Existing health care estimates measure spending--and prices--by type of treatment provided.

- To assess returns to medical care spending, one must redefine the good as the treatment of disease, not as the type of treatment provided.
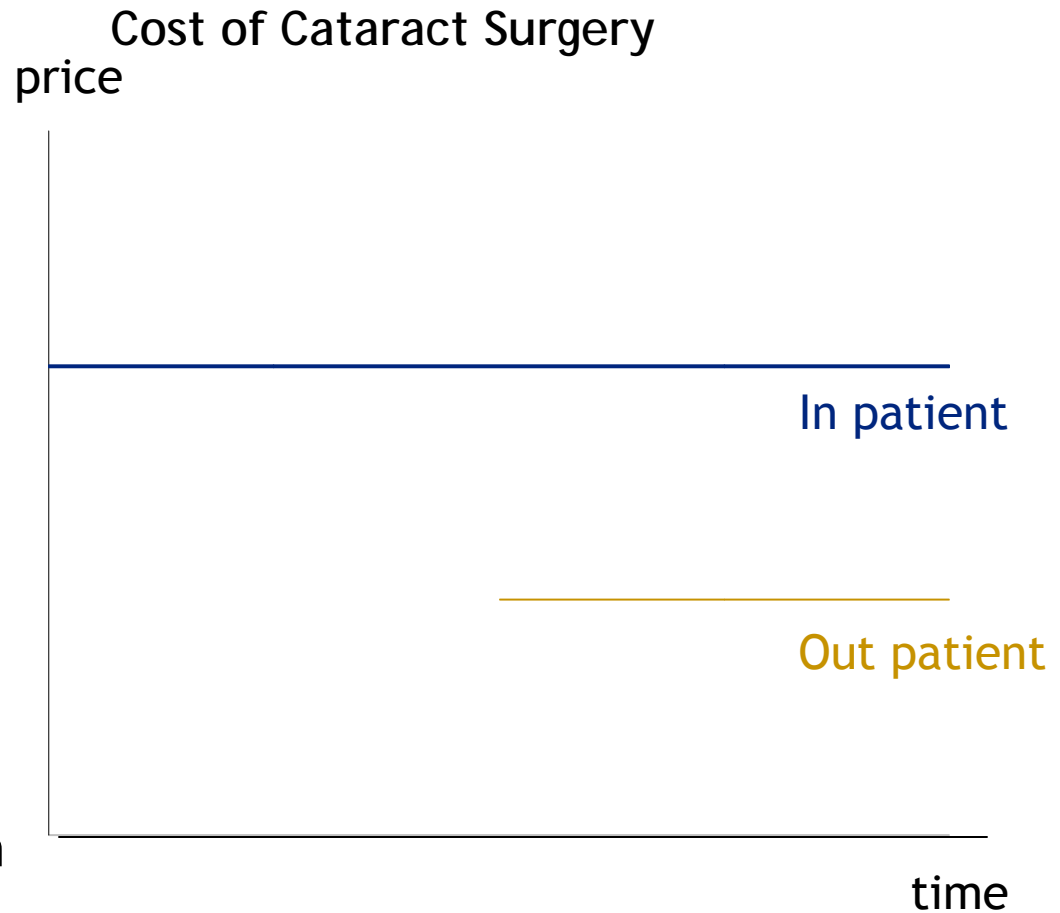
Treatment Substitution: An Example

Assumptions:

- No price change for either type of treatment

- No change in number of patients

Problem: As patients use outpatient services,

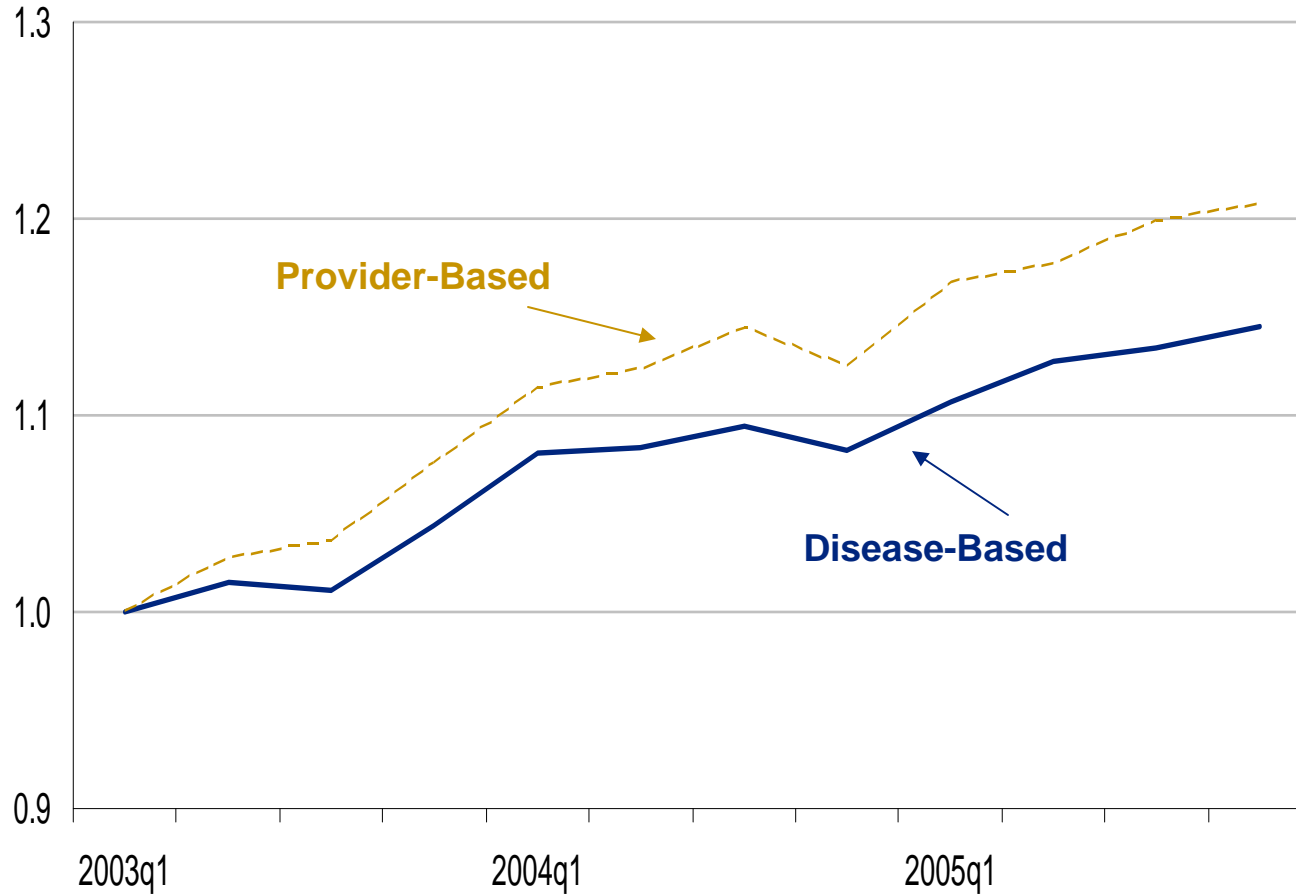- Nominal expenditures fall

- Treatment prices show no change

- "Real" spending falls, even though quantities did not

Cost of Cataract Surgery

price

In patient

Out patient

time

Previous studies suggest this issue is numerically important.

Disease-Based Price Indexes: Early Research

Comparison of Disease- and Provider-Based Indexes

Features of index:

- Constructed using large claims database for HMO patients

- Price = revenue from all sources

- Price is defined as price per patient treated for a homogeneous condition

- Dollars are allocated to conditions using "episode groupers"

- "Providers" are identified using "place of service" variable

Provider-Based

Disease-Based

Source: Aizcorbe and Nestoriak (2008)

Disease-Based Price Indexes: Early Research

Price Indexes: **P(2005:4)/P(2003:1)**

Major Disease Category	Disease	Provider	diff
INFECTIOUS DISEASES	1.36	1.37	(0.01)
ENDOCRINOLOGY	1.15	1.21	(0.05)
HEMATOLOGY	1.14	1.22	(0.08)
PSYCHIATRY	1.06	1.08	(0.02)
CHEMICAL DEPENDENCY	1.16	1.19	(0.03)
NEUROLOGY	1.19	1.26	(0.07)
OPHTHALMOLOGY	1.08	1.10	(0.02)
CARDIOLOGY	1.06	1.24	(0.18)
OTOLARYNGOLOGY	1.10	1.15	(0.05)
PULMONOLOGY	1.17	1.22	(0.05)
GASTROENTEROLOGY	1.15	1.23	(0.07)
HEPATOLOGY	1.12	1.23	(0.11)
NEPHROLOGY	0.96	1.09	(0.14)
UROLOGY	1.10	1.20	(0.10)
OBSTETRICS	1.10	1.18	(0.08)
GYNECOLOGY	1.15	1.26	(0.11)
DERMATOLOGY	1.16	1.18	(0.02)
ORTHOPEDICS & RHEUMATOLOGY	1.14	1.24	(0.10)
NEONATOLOGY	1.22	1.23	(0.00)

Source: Aizcorbe and Nestoriak (2008)

- The cost of treating infectious diseases rose, on average, 36 percent from 2003:1 to 2005:4, while the costs of the underlying treatments rose 37 percent.

- *Conclusion:* viewing the bundle of treatments as the "good" implies slower increases in price (and faster increases in quantity).

- Health economists view these differences as productivity.

- *Caveat:* these indexes do not account for changes in "quality" of treatment.

Disease-Based Price Indexes: Findings

Indexes: Contributions to differences (percentage points):

Major Disease Category	Disease	Provider	diff	Hospital		Office visits	Drugs	ER	Labs	Home Care	ASC	Other
				In	Out							
INFECTIOUS DISEASES	1.36	1.37	(0.01)	(0.02)	(0.00)	(0.01)	0.02	(0.00)	(0.00)	0.00	(0.00)	0.00
ENDOCRINOLOGY	1.15	1.21	(0.05)	(0.06)	(0.00)	(0.02)	0.03	(0.00)	(0.00)	0.01	(0.00)	0.00
HEMATOLOGY	1.14	1.22	(0.08)	(0.08)	(0.00)	(0.01)	0.01	(0.00)	(0.00)	(0.01)	(0.00)	0.01
PSYCHIATRY	1.06	1.08	(0.02)	(0.02)	0.01	(0.03)	0.02	(0.00)	(0.00)	(0.00)	0.00	0.00
CHEMICAL DEPENDENCY	1.16	1.19	(0.03)	(0.07)	(0.02)	(0.03)	0.01	0.04	0.00	(0.00)	0.00	0.04
NEUROLOGY	1.19	1.26	(0.07)	(0.05)	(0.01)	(0.02)	0.01	(0.00)	0.00	0.00	(0.00)	(0.00)
OPHTHALMOLOGY	1.08	1.10	(0.02)	(0.00)	(0.02)	(0.01)	0.00	(0.01)	(0.00)	0.00	0.01	0.01
CARDIOLOGY	1.06	1.24	(0.18)	(0.17)	(0.01)	(0.01)	(0.00)	(0.00)	0.00	0.00	(0.00)	0.00
OTOLARYNGOLOGY	1.10	1.15	(0.05)	(0.01)	(0.03)	(0.02)	(0.01)	(0.01)	0.00	0.00	(0.00)	0.01
PULMONOLOGY	1.17	1.22	(0.05)	(0.05)	(0.01)	(0.01)	0.00	(0.01)	(0.00)	0.01	(0.00)	0.02
GASTROENTEROLOGY	1.15	1.23	(0.07)	(0.05)	(0.02)	(0.02)	(0.00)	(0.01)	0.00	0.00	0.01	0.01
HEPATOLOGY	1.12	1.23	(0.11)	(0.10)	(0.01)	(0.00)	(0.01)	0.00	(0.00)	(0.00)	0.00	0.01
NEPHROLOGY	0.96	1.09	(0.14)	(0.04)	(0.02)	(0.00)	0.01	0.00	0.00	(0.00)	0.00	(0.07)
UROLOGY	1.10	1.20	(0.10)	(0.06)	(0.02)	(0.02)	0.00	(0.01)	0.00	0.00	(0.00)	0.01
OBSTETRICS	1.10	1.18	(0.08)	(0.09)	0.00	0.00	(0.00)	0.00	(0.00)	0.00	0.00	0.01
GYNECOLOGY	1.15	1.26	(0.11)	(0.07)	(0.01)	(0.02)	(0.00)	0.00	(0.00)	0.00	(0.00)	0.01
DERMATOLOGY	1.16	1.18	(0.02)	(0.00)	(0.00)	(0.02)	(0.00)	(0.01)	(0.00)	0.00	(0.00)	0.02
ORTHOPEDICS & RHEUMATOLOGY	1.14	1.24	(0.10)	(0.07)	(0.03)	(0.00)	0.00	(0.01)	0.00	0.01	0.00	0.00
NEONATOLOGY	1.22	1.23	(0.00)	(0.02)	0.00	0.00	(0.00)	(0.00)	0.00	0.00	(0.00)	0.01

Findings are consistent with long-run trends in the NHEA data.

Disease-Based Price Indexes: Specific Examples

Major Disease Category	Disease	Provider	diff	Hospital		Office visits	Drugs	ER	Labs	Home Care	ASC	Other
				In	Out							
Use of Ambulatory Surgical Centers:												
GASTROENTEROLOGY	15.5%	22.6%	(7.1%)	(5.3%)	(1.9%)	(1.5%)	(0.1%)	(0.5%)	0.0%	0.0%	0.6%	1.5%
OPHTHALMOLOGY	8.2%	10.2%	(2.0%)	(0.4%)	(1.6%)	(1.1%)	0.1%	(0.9%)	(0.0%)	0.0%	1.0%	0.9%
Use of Drugs, Home Care:												
ORTHOPEDICS & RHEUMATOLOGY	14.2%	24.0%	(9.8%)	(7.0%)	(3.0%)	(0.2%)	0.2%	(0.6%)	0.0%	0.5%	0.1%	0.1%
PULMONOLOGY	17.3%	22.4%	(5.1%)	(4.5%)	(0.6%)	(1.1%)	0.2%	(1.4%)	(0.0%)	0.8%	(0.0%)	1.6%
PSYCHIATRY	6.0%	8.1%	(2.1%)	(1.9%)	0.5%	(3.2%)	2.3%	(0.0%)	(0.0%)	(0.0%)	0.0%	0.2%

Ambulatory Surgical Centers: Small, growing fast, particularly in the treatment of gastrointestinal and eye conditions.

Home Care: There is anecdotal evidence of shifting medical equipment from hospitals to the home in the treatment of lung conditions.

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