Use of Administrative/Claims Data to Estimate Health Care Costs

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Administrative Data Sources

- Medicare
- Medicaid
- FEHBP
- VA
- Private insurance (MEDSTAT MarketScan)
- Managed care plans
- Provider cost and billing systems

Advantages of Administrative Data

- Defined population
- Low cost
- Standardized information
- Payments often tied to individual services
- Costs by type of service
- Services can be linked to identify episodes of care
- Service use and costs can be tracked longitudinally

Disadvantages

- Claims data limited to covered services
- Payment data subject to benefit design (deductible, caps)
- Data often not available for managed care/capitated plans
- Difficult to define incident cases of disease
- Time lags

Using Claim Payments to Estimate Costs

- Represents what was paid for services, not what it cost to produce
- Claims may not reflect final payment amount
- Payment formulas vary among insurers, and among types of service within insurer
- Medicare prospective payments generally based on average input costs
- Ignores variation among providers

Payment Data – Other Considerations

- Patient cost-sharing is not included
- Payment data incomplete if there is other primary insurance
- Payment systems sometimes change, affecting trend analyses/longitudinal studies
- Payments may be unsatisfactory measure for new or experimental services

Medicare Beneficiary Cost Sharing (fee-for-service)

	1990	1997	2004
• Part A		(millions)	
– Payments	$62,347	$114,327	$139,747
– Cost sharing	$5,980	$9,264	$12,673
– Ratio	0.096	0.081	0.091
• Part B			
– Payments	$39,072	$61,096	$115,579
– Cost sharing	$13,975	$23,522	$33,851
– Ratio	0.358	0.385	0.293

Source: Health Care Financing Review, 2006

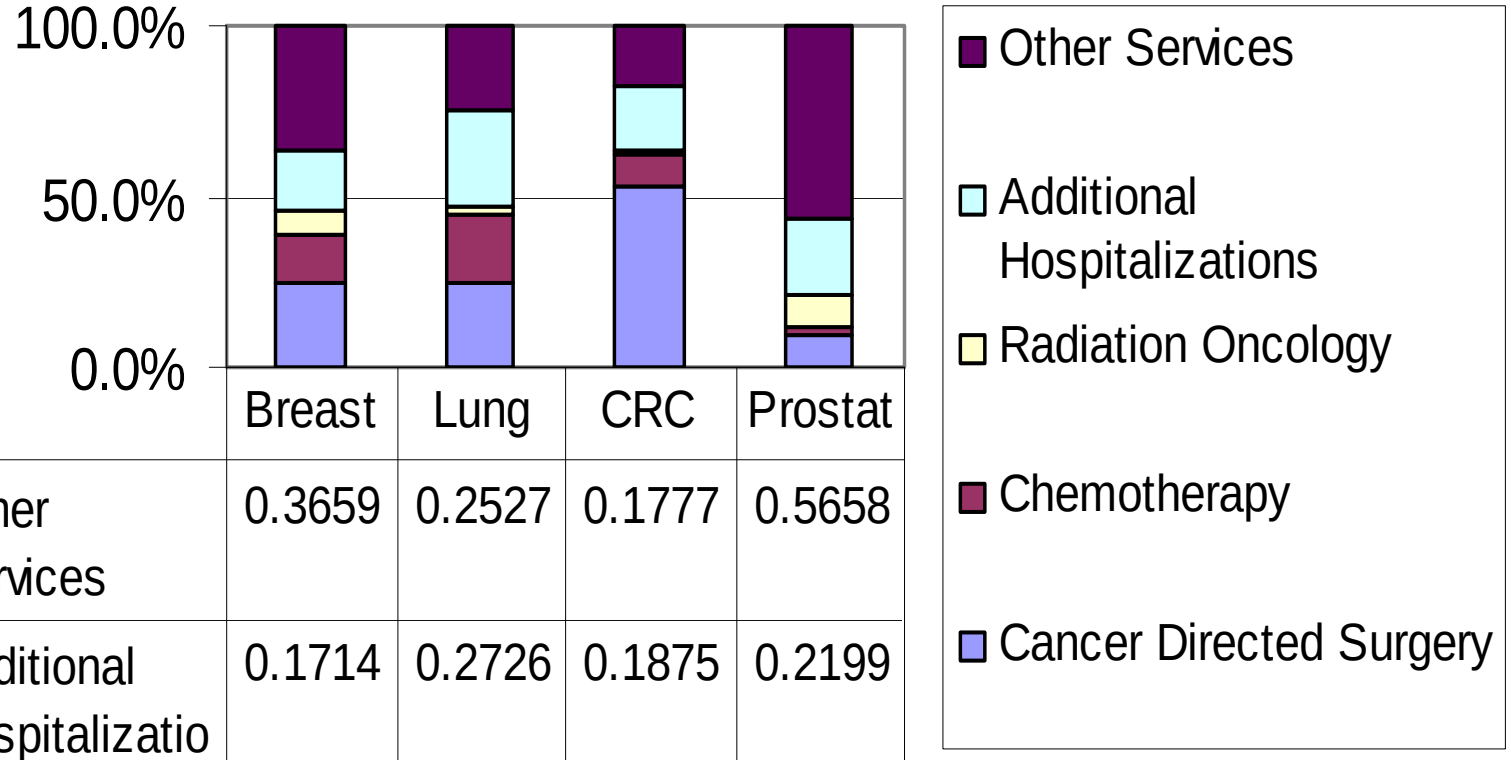
Identification of Specific Categories* of Services to Include

For the initial phase, we included:

- *Cancer Directed Surgery* (CDS)- all claims from index date of surgery + 60 days
- *Radiation Oncology*- all claims from radiation oncologists after the CDS period. If no CDS, all radiation oncology claims
- *Chemotherapy*- for pts with CDS, all services from the first date on a claim for chemotherapy to the date on the last claim. If no CDS, then all claims following diagnosis. A gap of more than 2 months are considered separate services
- *Other Hospitalizations* not captured by CDS or chemotherapy
- *All other services*

* All categories are mutually exclusive

Percent of Services Captured by Categories of Initial Care: 2002 Data



	Breast	Lung	CRC	Prostat
Other Services	0.3659	0.2527	0.1777	0.5658
Additional Hospitalizatio	0.1714	0.2726	0.1875	0.2199

Source: NCI, SEER-Medicare

Charges

- Provider-specific
- Reflect provider variation
- May not reflect input costs or what was paid

Medicare Payments as a Percent of Charges (fee-for-service)

	1990	1997	2004
• Inpatient hospital	52.4	50.7	30.0
• Physician/supplier	NA	41.6	36.7
• Outpatient	44.5	30.0	18.8

- Source: Health Care Financing Review, 2006

Cost-to-Charge Ratios for Hospital Services

- Need to work with cost reports
- Estimates cost of providing service
- Cost centers do not match revenue centers in claims files (see RESDAC technical note)
- Other provider cost reports – SNF, home health agency, hospice, renal facility
- Other cost allocation methods (days, visits)

Two-year cancer-attributable costs for colorectal cancer cases (2003 prices)

Stage	PPO	HMO
Local	$21,964	$19,276
Regional	$50,495	$51,388
Distant	$75,371	$47,901

Source: Kerrigan et al., 2005

Combining Datasets

- Medicare
- Medicaid
- VA
- Private insurance
- Managed care plans

Data Linkage

- Access can be difficult
- Sometimes difficult to match records
- Payments may have different bases
- May not be able to match claims for individual services
- For aggregate estimates, can combine datasets without linkage at the person level

Linkages – Disease Registries

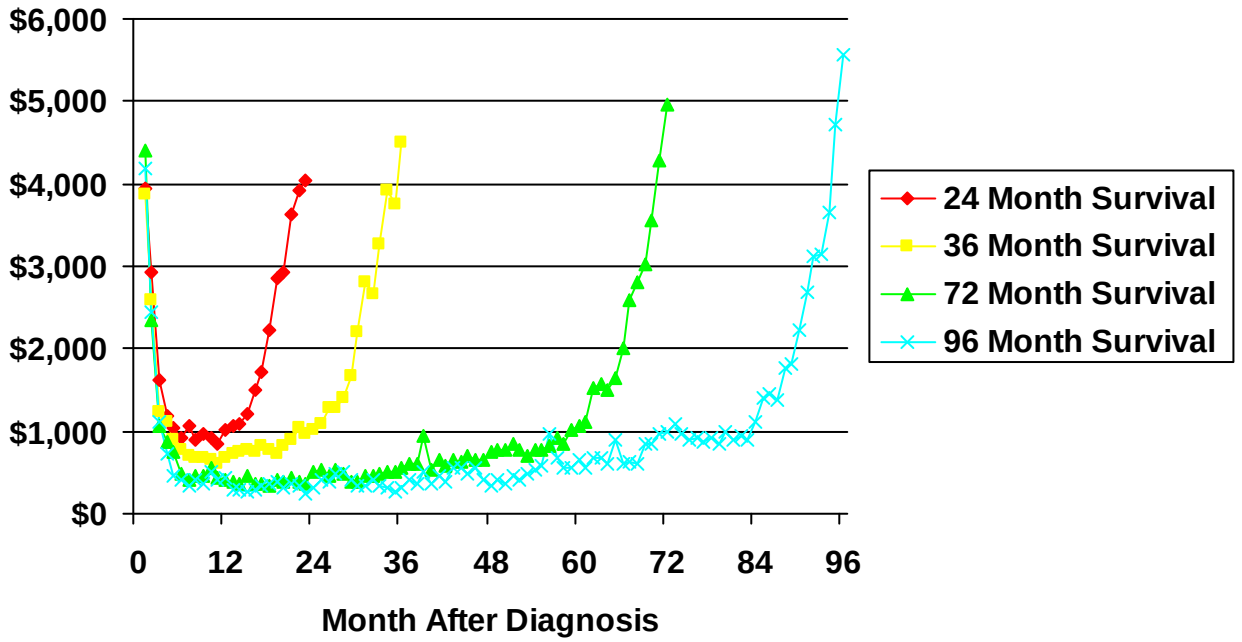
- Surveillance, Epidemiology, and End Results (SEER) - Medicare
- United States Renal Data System (USRDS) - Medicare
- Framingham Heart Study - Medicare
- Others?

Advantages of Linkage

- Identify incident cases
- Define phases of care
- Measure disease-attributable costs
- More clinical detail

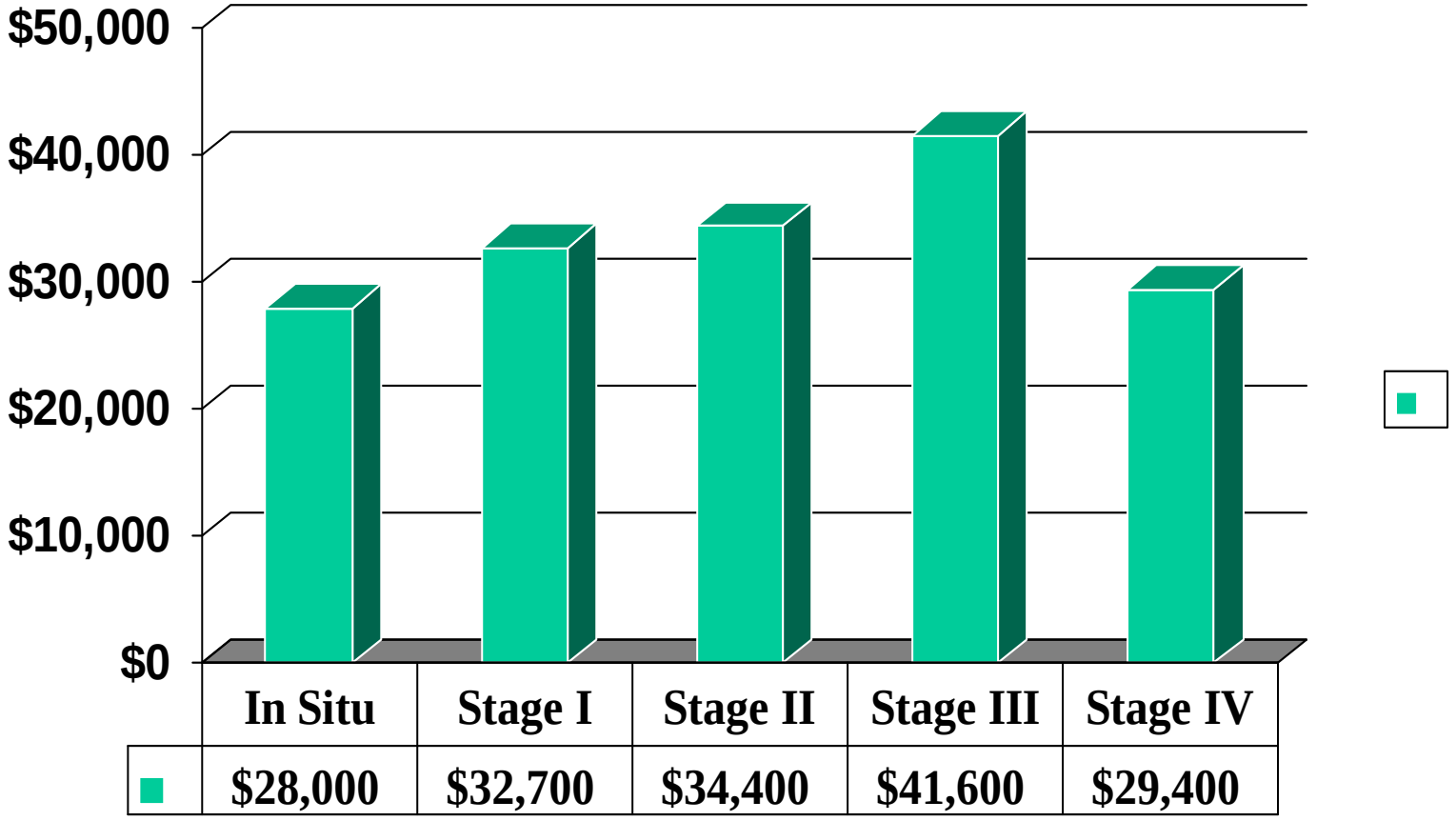
- However – additional time lags

Figure 1. Average Monthly Medicare Payments for Breast Cancer by Survival Time, SEER Medicare Data



Source: National Cancer Institute – SEER-Medicare

Average Colon Cancer-Related Treatment Costs from Diagnosis to Death, By Stage



Source: Brown ML, et al. Med Care. 1999 Dec;37(12):1249-59

Linkage -- Surveys

- Medicare Current Beneficiary Survey
- Health and Retirement Study
- National Health Interview Survey
- National Health and Nutrition Examination Survey
- National Long Term Care Survey

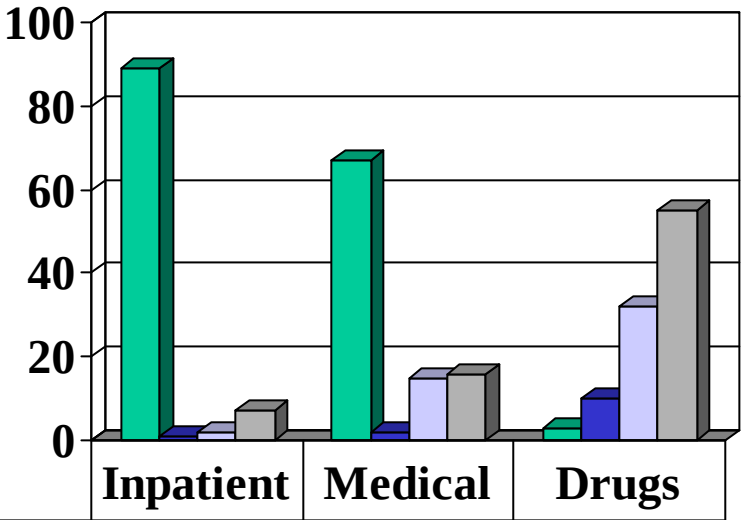
Survey Linkage -- Strengths

- Relationship of income, functional status, institutionalization etc. to costs
- More complete ascertainment of services, costs, and payers
- Patient attitudes, knowledge
- Better matching of cases and controls

Survey Linkage -- Limitations

- Authorization for linkage
- Small sample sizes, especially general surveys
- Reconciling claims and reported utilization/costs
- Time lags

Sources of Payment, 2004
Medicare Beneficiaries Aged 65+



	Inpatient	Medical	Drugs
Medicare	89	67	3
Medicaid	1	2	10
Out-of-pocket	2	15	32
Other	7	16	55

Source: Medicare Current Beneficiary Survey

Average Medicare payments, 1991-1994 (expressed in 1996 dollars)

Functional status	Avg. payment
• Non-institutionalized	
0 ADL difficulties	$3,604
1-2 ADL difficulties	$6,763
3-4 ADL difficulties	$9,131
5-6 ADL difficulties	$13,557
• Institutionalized	$5,960

Source: Riley, 2000.

Conclusions

- Administrative data can be accurate, low cost
- Administrative data can be strengthened by linkage to other datasets
- Best data source depends on study purposes
- Limitations must be kept firmly in mind