



JOHNS HOPKINS
BLOOMBERG SCHOOL
of PUBLIC HEALTH

Inpatient prices in Delaware: Preliminary analysis of MarketScan and Medicare Cost Report data

April 8, 2019

Background

- ▶ Background: Arnold Foundation project to support and inform state-level efforts to lower private sector prices
- ▶ Could encompass a range of policy approaches, including reference pricing, global budgets, out-of-network price regulation, etc.
- ▶ Analytic component:
 - ▶ Demonstrate the extent of price variation across services, geographies, settings, and consumers (e.g., by plan type)
 - ▶ Compare private sector prices to Medicare prices
 - ▶ Demonstrate extent of practices such as out-of-network billing
 - ▶ Analysis of hospital costs, margins

This slide deck

- ▶ MarketScan sample sizes by plan type
- ▶ Average inpatient prices overall and for selected procedures
- ▶ Variation in prices by MSA
- ▶ Comparison to neighboring states and national average
- ▶ Risk-adjusted prices
- ▶ Comparison of private and public (Medicare) prices
- ▶ Longitudinal hospital margin

Key Findings

- ▶ For a standard “basket” of inpatient services, the ratio of private prices between the highest and lowest-priced MSAs in DE is 1.06. The differential increases to about 1.45 for some procedures.
- ▶ Private prices in DE are higher than surrounding states, but only 1.05 times the national average.
- ▶ Risk-adjustment does not meaningfully impact price estimates.
- ▶ The private sector price for the inpatient “basket” is 2.43 times the Medicare price.

Data: MarketScan Commercial Claims

- ▶ Private-sector health data from approximately 350 payers
- ▶ Captures person-specific clinical utilization, expenditures, and enrollment across settings
- ▶ Includes active employees, early retirees, COBRA continuees and dependents insured by employer-sponsored plans
- ▶ Large sample sizes allow for meaningful segmentation
- ▶ High-quality and reliable coding
- ▶ Limitations: convenience sample, mostly from large employers, cannot look at specific providers

MarketScan analysis sample

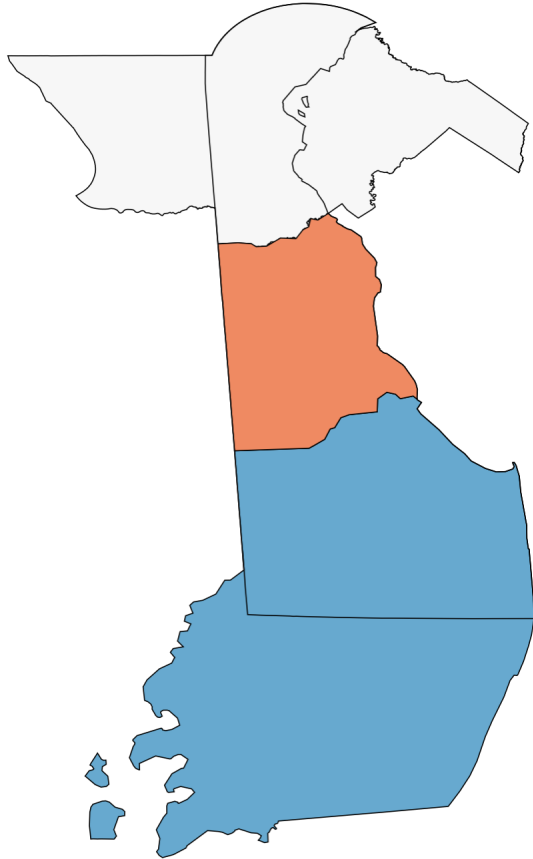
- ▶ **MarketScan sample:** Individuals age 18-64 with an inpatient admission that occurred within the state of DE from 2012-2016
- ▶ **Unit of analysis:** Inpatient admission
- ▶ **Main outcome:** Total spending per admission, Market basket of 15 services, Total spending by service (5)
- ▶ **Geography:** State, Metropolitan Statistical Area

Year	Total Mkt Sample	Inpatient Mkt Sample
2012	135,020	7,247
2013	128,983	6,834
2014	136,957	6,845
2015	132,887	6,085
2016	124,048	6,424

Private price variation within DE [2016]

	State Mean	Dover	Wilmington	Salisbury	Ratio Max to Min MSA
Inpatient Basket	7,944	8,193	7,877	7,764	1.06
Hip Replacement	35,444	32,740	35,011	39,491	1.21
Knee Replacement	35,459	34,959	35,374	36,341	1.04
Cesarean Section	16,498	15,306	16,756	16,372	1.09
Vaginal Delivery	12,098	12,391	12,033	12,081	1.03
PTCA	60,653	54,707	69,318	47,661	1.45

Private price variation within DE for inpatient basket [2016]

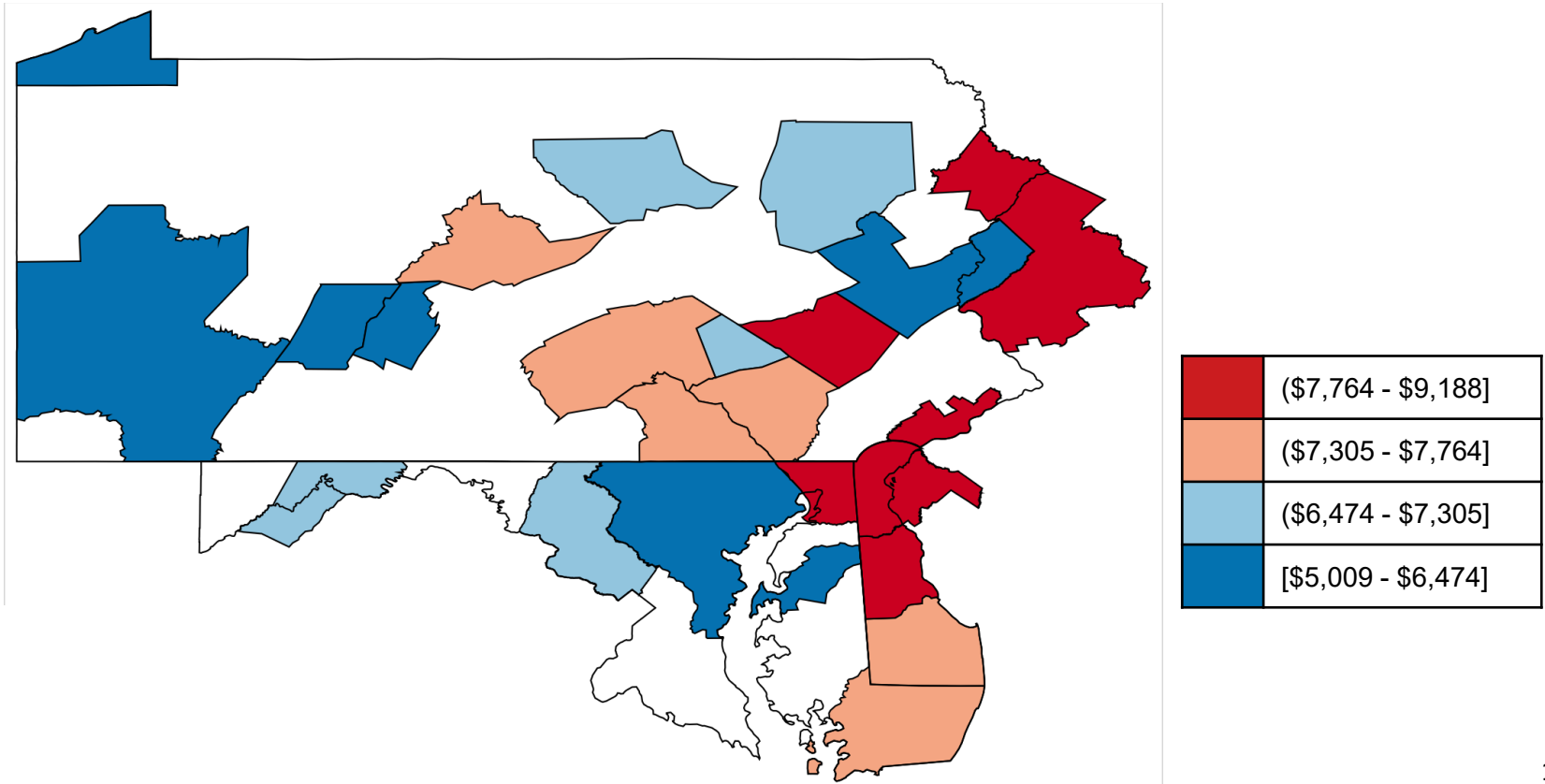


State Mean	Metropolitan Areas		
	Salisbury	Wilmington	Dover
7,944	7,764	7,877	8,193

Private prices in DE vs surrounding states [2016]

	DE	PA	MD	National
	Mean \$	Mean \$	Mean \$	Mean \$
Inpatient Basket	7,944	6,937	6,525	7,564
Hip Replacement	35,443	27,559	26,254	33,128
Knee Replacement	35,459	26,836	24,587	32,112
Cesarean Section	16,498	14,386	13,029	14,941
Vaginal Delivery	12,097	11,217	10,924	11,575
PTCA	60,653	31,296	25,399	36,113

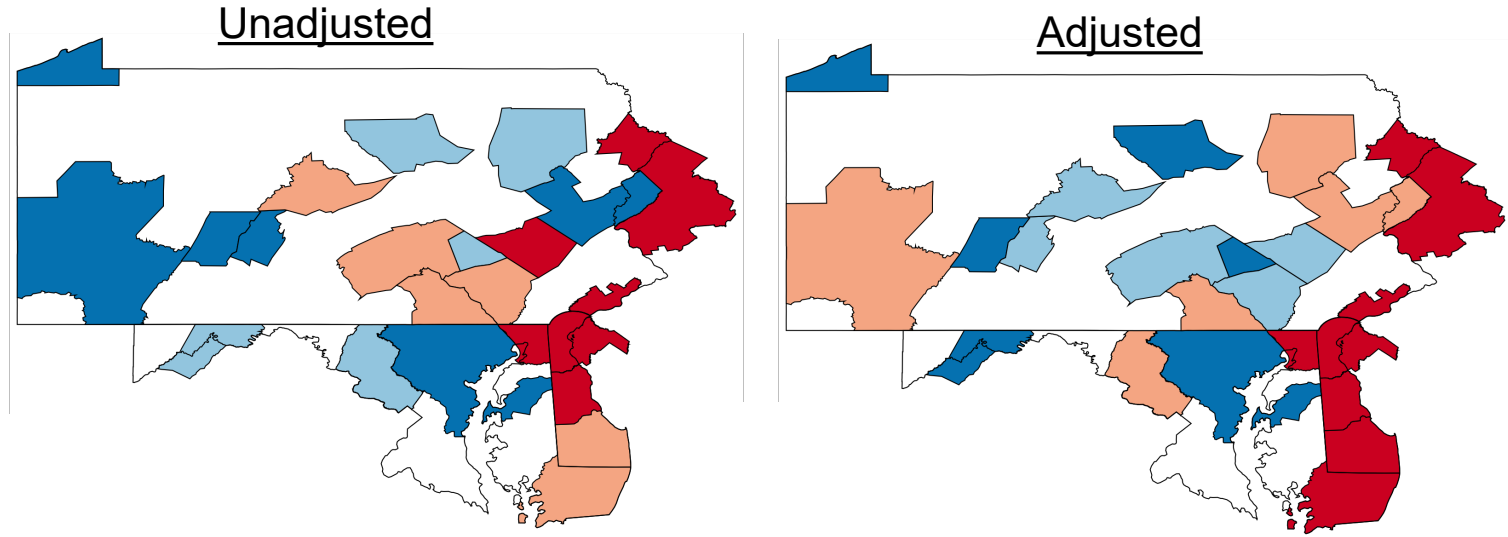
Private prices in DE vs surrounding states, Inpatient basket [2016]



Risk-adjustment

- ▶ Differences in quality and patient characteristics vary across the country and might impact prices
- ▶ To control for this, we use a multivariate regression to adjust for age, sex, 17 categories of comorbidities from the Charlson Index (e.g., congestive heart failure, diabetes), and a state fixed effect
- ▶ This model accounted for 64% of the variation in predicted prices

Interpretation not meaningfully impacted by risk-adjustment

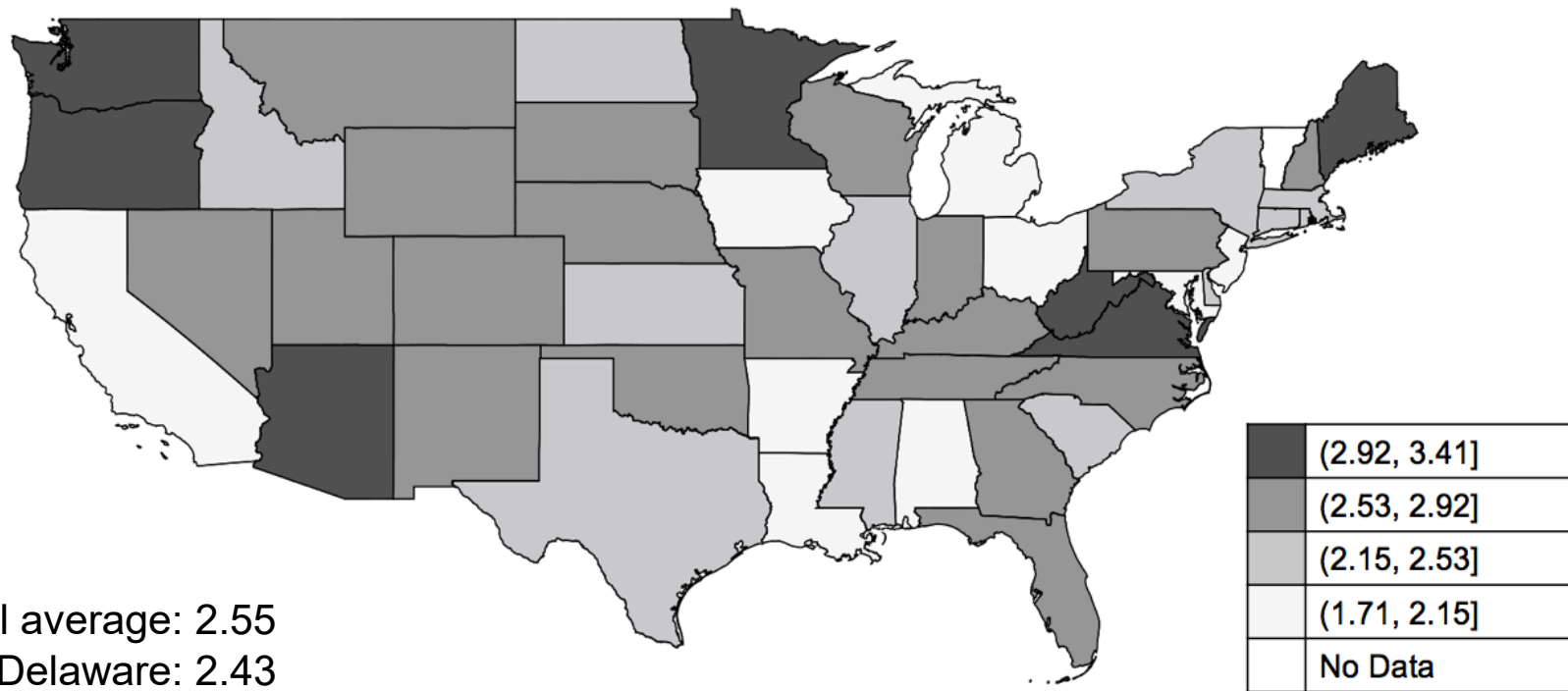


	DE \$	PA \$	MD \$	National \$
Inpatient Basket	7,944	6,937	6,525	7,564
Inpatient Basket, Adjusted	7,945	6,833	6,790	7,542

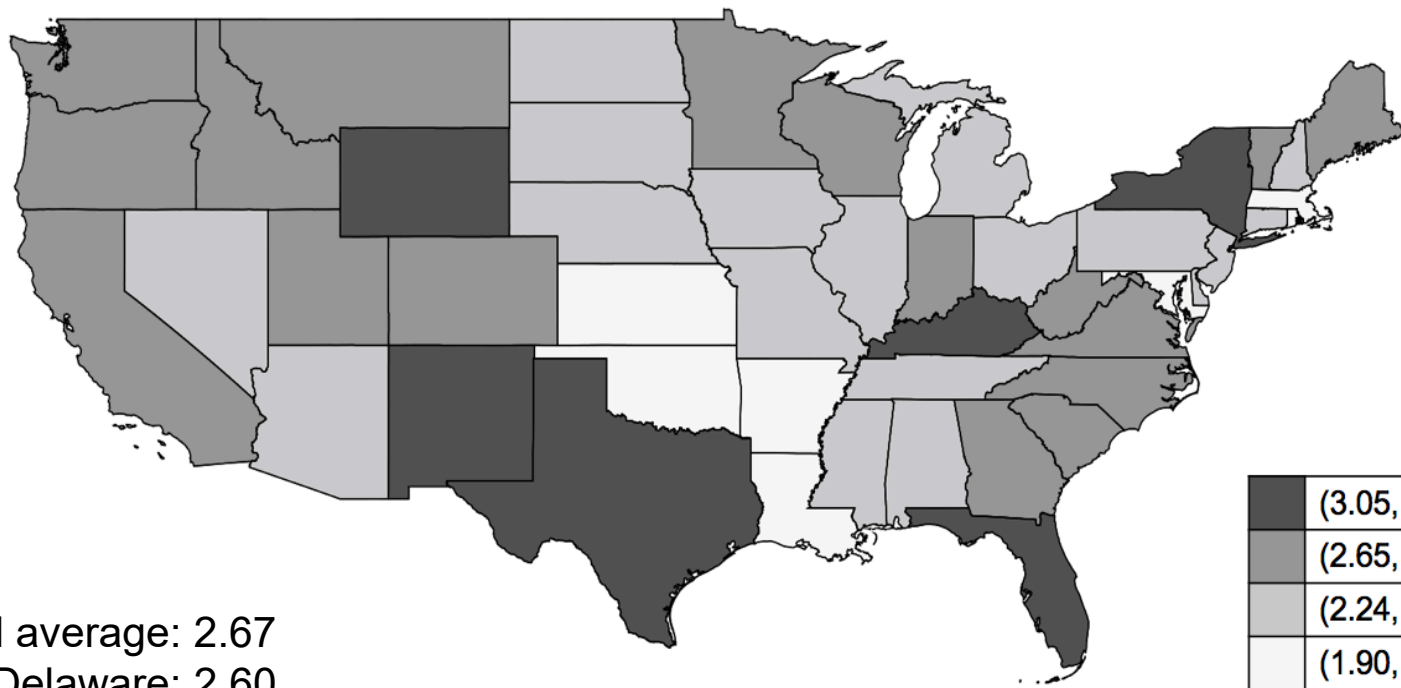
Medicare Payment Method

- ▶ Medicare pays most hospitals using a prospective payment system, which specifies a flat rate for each stay that depends primarily on a patient's medical condition or treatment
- ▶ This rate is computed from national base rates for 1) operating costs and 2) capital costs, adjusted for A) the relative costliness of the patient (DRG) and B) the geographic differences in input prices
- ▶ This approach estimates “the payments that the Medicare FFS program would have made for that admission.” This amount includes the Medicare beneficiary's cost-sharing amount. We exclude IME payments and pass-through amounts.

Private spending:Medicare spending ratio, inpatient basket [2016]



Private spending:Medicare spending ratio, knee replacement [2016]



National average: 2.67
Delaware: 2.60

Delaware Hospital Margin 2011-16

	2011	2012	2013	2014	2015	2016
BEEBE MEDICAL CENTER	2.7	5.3	9.1	9.2	11.5	7
CHRISTIANA CARE HEALTH SYSTEM	8.1	13.1	15.4	10.3	8.3	17
KENT GENERAL HOSPITAL	5.9	18.4	18.5	8.7	5.9	17
MILFORD MEMORIAL HOSPITAL				3.6	-3.3	10
NANTICOKE MEMORIAL HOSPITAL	8.7	9.3	15.3	11.6	2.3	9
ST. FRANCIS HOSPITAL WILMINGTON	1.3	1.4	15.9	-2	-4.2	-5
NATIONAL	4.4	5.5	5.1	5.2	4.7	4.3

Appendix

Creating the inpatient “basket”

- ▶ The basket includes the 15 most frequent hospital services, ranked by Diagnosis Related Group (DRG)
- ▶ Removes variation due to volume
- ▶ These 15 DRGs represent a significant amount of health care – 46% of total admissions and 37% of total spending.
- ▶ Example DRGs include: Vaginal delivery w/o complicating condition (CC), Major joint replacement or reattachment of lower extremity w/o major complicating condition (MCC), Cesarean section w/o CC/MCC, Cesarean section w CC/MCC, Spinal fusion except cervical w/o MCC, PTCA.

Creating the inpatient “basket”

<u>15 Most Frequent DRGs</u>	<u>Average DRG Price</u>	<u>X</u>	<u>Proportion Adm</u>	<u>Summation</u>
Vaginal Delivery w/o CC	\$11,082		.1393	} 15 DRG Market Basket
Major joint replacement or reattachment of lower extremity w/o MCC	\$32,850		.0451	
Cesarean section w/o CC/MCC	\$15,180		.0451	
⋮				
PTCA	\$36,871		.0090	

Medicare Payment Method

- ▶ For example, the operating base payment rate is calculated as (CBO, 2017):

Adjusted for geographic factors

$$\left(\text{Wage index} \times \text{Labor-related portion} \right) + \text{Nonlabor-related portion} \times \left(\text{COLA, if applicable} \right)$$

Adjusted for case mix

$$\text{Base rate adjusted for geographic factors} \times \text{DRG weight} \longrightarrow \text{DRG}$$

Wage index > 1.0000

68.8% of labor-related portion is adjusted for area wages

Wage index ≤ 1.0000

62% of labor-related portion is adjusted for area wages

Identifying inpatient procedures

Procedure	Age	ICD9	DRG
Hip Replacement	45-64	8151	470
Knee Replacement	45-64	8154	470
Cesarean Section	25-34		766
Vaginal Delivery	25-34		775
PTCA	18-64		247