

The Spillover Effects of Medicare Managed Care: Medicare Advantage and Hospital Utilization

Baicker, K., Chernew, M. E., & Robbins, J. A.
(2013) *Journal of Health Economics*, 32(6), 1289-1300.

Presented by Nada Boualam

09/29/2020

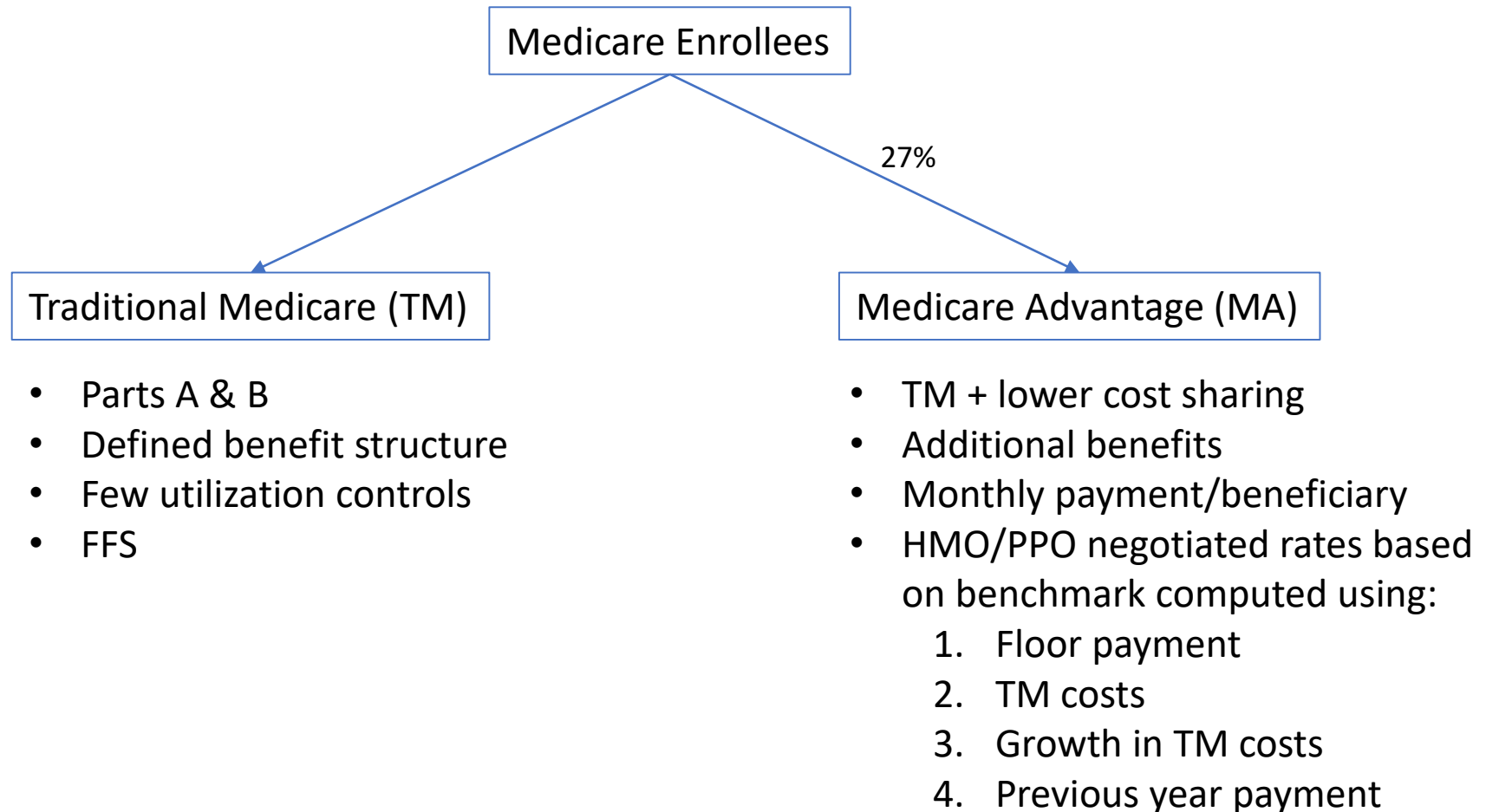
Motivation

- Changes in care induced by MA program may spill over to care delivered to TM enrollees & others
 - e.g. standard of care
 - Spillovers could be significant
- Sparse MA spillovers literature
- Potential spillovers could have implications on MA program design

Research Question

- What is the effect of changes induced by MA payment changes on the care received by other patients?
 - Hospitalization rates,
 - Quality of care,
 - Costs for TM & commercial enrollees

Medicare Overview



Potential Spillover Pathways

MA influence on:

1. Physician practice styles broadly
 - Utilization control strategies
2. Investment & adoption of technology
3. Prices & competition
4. Induced demand

Preview of findings

- When more seniors enroll in MA, hospital costs decline for all seniors and for commercially insured younger populations.
- Greater managed care penetration is not associated with fewer hospitalizations, but is associated with lower costs and shorter stays per hospitalization.
- These spillovers are substantial – offsetting more than 10% of increased payments to MA plans.

Data

- Focus on Florida, New York, California, Arizona, and Massachusetts

Source	Variable
CMS	Payment rates 1999-2009 Plan characteristics 1999-2009
Medicare Rate Book & State/County/Plan Database	County-level payment rates
Healthcare Cost and Utilization Project's (HCUP) State Inpatient Databases (SID)	Insurance provider Type of plan Total inpatient facility charges
Medical cost reports	Hospital cost-to-charge
Computed	Costs Patient Safety Indicators (hospital QoC) Prevention Quality Indicators

MA Payment Rates Over Time

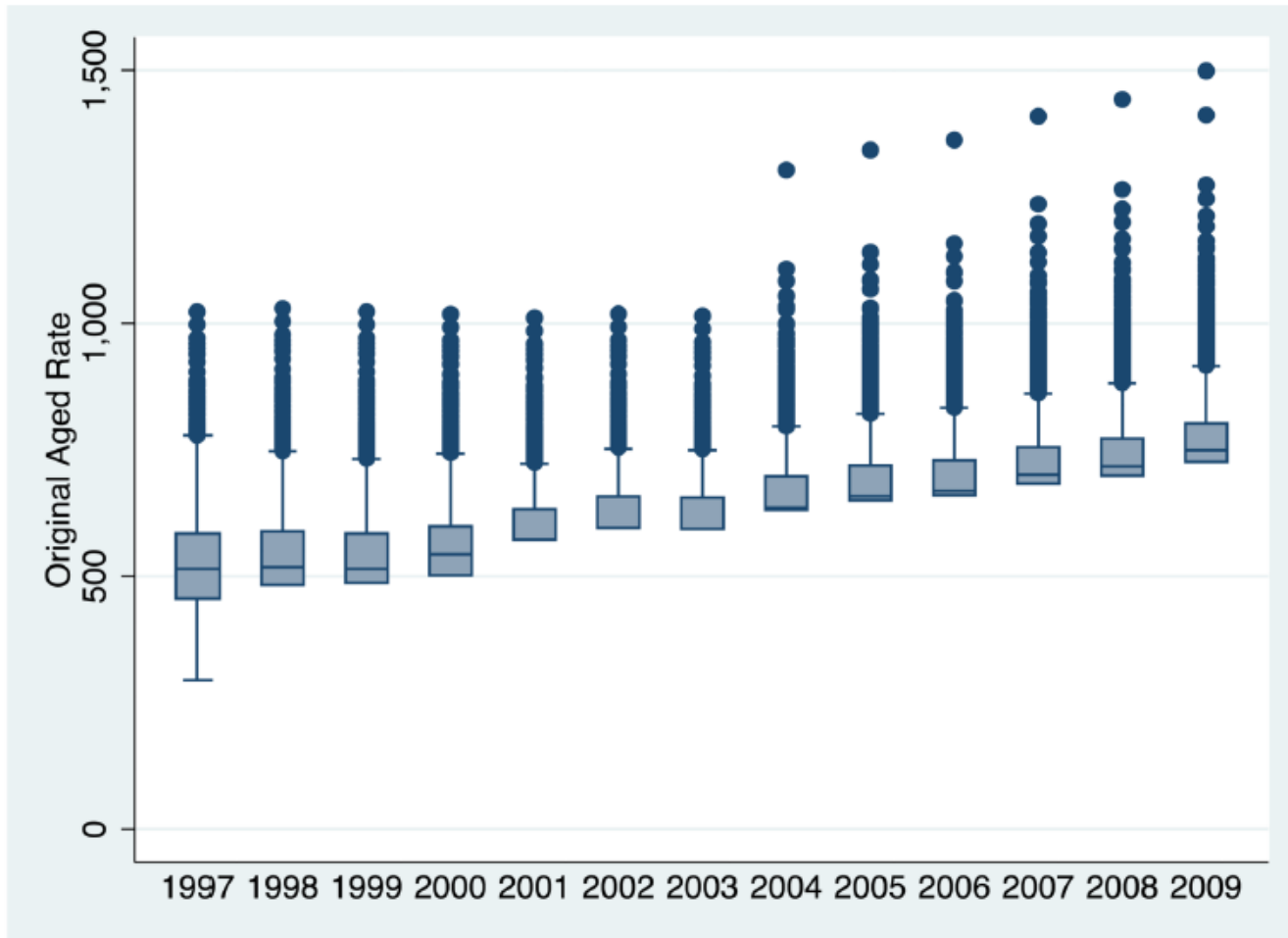


Fig. 3. Distribution of MA Payment Rates

Identification Strategy

- IV methodology
- Exploit exogenous changes in MA penetration over time to isolate the causal effect of MA penetration on system-wide healthcare use
 - Balanced Budget Act
 - Medicare Modernization and Improvement Act

Identification Strategy

$$Y_{ijt} = \beta_i + \beta_1 MA\ Penetration_{i,t-1} + X_{it}\beta_2 + Year_t\beta_3 + X_{it}^* Year_t\beta_4 + Z_{ijt}\beta_5 + \varepsilon_{ijt}$$

Where:

- Y_{ijt} is a measure of spending, utilization, or other outcome for individual j in area i in year t
- $MA\ Penetration_{it-1}$ is the MA HMO + PPO penetration in area i at year t-1
- X_{it} is a vector of area-time varying characteristics (demographic & economic conditions)
- $Year_t$ is a vector of year dummies
- Z_{ijt} is a vector of individual characteristics

Identification Strategy

$$MA\ Penetration_{it} = \gamma_i + \gamma_1 Payment_{it} + X_{it}\beta_2 + Year_t\beta_3 + X_{it}^* Year_t\beta_4$$

$$MA\ Penetration_{it} = \gamma_i + Payment_{it}^* Year_t\Gamma + X_{it}\beta_2 + Year_t\beta_3 + X_{it}^* Year_t\beta_4$$

$$MA\ Penetration_{it} = \gamma_i + \gamma_1 Simulated\ Benchmark_{it} + X_{it}\beta_2 + Year_t\beta_3 + X_{it}^* Year_t\beta_4$$

Where:

- Y_{ijt} is a measure of spending, utilization, or other outcome for individual j in area i in year t
- $MA\ Penetration_{it-1}$ is the MA penetration in area i at year $t-1$
- X_{it} is a vector of area-time varying characteristics (demographic & economic conditions)
- $Year_t$ is a vector of year dummies
- Z_{ijt} is a vector of individual characteristics
- $Payment_{it}$ is the benchmark payment rate, used as instrument for penetration
- Simulated Benchmark is the benchmark without TM component

Summary Statistics

Table 1
Summary statistics.

	1999–2009	2009		1999–2009	2009
Hospitalizations (patient-level)			MA (county-level, unweighted)		
Cost, dollars	11,258 (17,906)	12,422 (18,653)	MA penetration (%)	0.0726 (0.106)	0.147 (0.116)
Length of stay, days	5.701 (8.821)	5.423 (8.422)	MA HMO penetration (%)	0.0403 (0.0906)	0.0459 (0.0924)
Died during hospitalization (%)	0.0304 (0.172)	0.0260 (0.159)	Benchmark payment (dollars)	672.4 (105.4)	795.6 (76.09)
PQI (%)	0.143 (0.350)	0.133 (0.340)	Simulated benchmark (dollars)	646.3 (91.98)	788.8 (70.16)
PSI (%)	0.0184 (0.134)	0.0131 (0.114)			
Per person, county level			Insurance among hospitalized		
Cost, dollars	1203 (366.0)	1348 (367.1)	% Medicare	0.396 (0.489)	0.375 (0.484)
Number of hospitalizations	0.119 (0.0312)	0.121 (0.0317)	% Medicaid	0.129 (0.335)	0.143 (0.350)
Total days in hospital	0.616 (0.174)	0.650 (0.188)	% commercial Insured	0.281 (0.450)	0.262 (0.440)
Mortality in hospital (%)	0.00355 (0.0012)	0.00306 (0.00104)	% self-pay	0.0433 (0.203)	0.0461 (0.210)
PQI (visits)	0.0171 (0.0075)	0.0156 (0.00611)			

Results

- Increase in benchmark payment of \$100 increases penetration by 3–5 percentage points

Table 3
First stage.

Outcome:	Hospitalization level penetration								County level penetration			
	Payment	Payment × year	Simulated county benchmark	Simulated state benchmark	Payment	Payment × Year	Simulated county benchmark	Simulated state benchmark	Payment	Payment × Year	Simulated county benchmark	Simulated state benchmark
Payment	0.032913 ^{***} (0.0112644)	0.0474 ^{***} (0.0170)	0.0523 ^{***} (0.0142)	0.189 ^{***} (0.002)	0.032913 ^{***} (0.00544)	0.0474 ^{***} (0.0067)	0.0523 ^{***} (0.00773)	0.189 ^{***} (0.0173)	0.0334 ^{***} (0.0107)	0.045 ^{***} (0.0125)	0.0506 ^{***} (0.0129)	0.1405 ^{***} (0.0232)
Covariates	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Hosp FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No
County FEs	No	No	No	No	No	No	No	No	Yes	Yes	Yes	Yes
Year FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cluster	County	County	County	County	Hospital	Hospital	Hospital	Hospital	County	County	County	County
Obs	13,678,534	13,678,534	13,678,534	13,678,534	13,678,534	13,678,534	13,678,534	13,678,534	2376	2376	2376	2376
R-Squared	0.4825	0.51	0.4614	0.51	0.4825	0.51	0.4614	0.51	0.445	0.465	0.465	0.4921
F-stat	8.54	4.03	13.66	24.51	36.66	22.2	45.85	119.5	9.7	4.9	15.3	36.6

Results

- Lower total hospitalization costs for areas with greater MA penetration

Table 7
Effect of MA penetration on population-level hospital use and outcomes.

	Full sample		Over 65		Under 65	
	OLS	IV payment × year	OLS	IV payment × year	OLS	IV payment × year
Log total costs						
MA managed care penetration	−0.00282** (0.000795)	−0.00678** (0.00343)	−0.00240*** (0.000785)	−0.00412 (0.00337)	−0.00282*** (0.000881)	−0.00813** (0.00356)
Days in hospital per thousand residents						
MA managed care penetration	−0.864** (0.437)	−4.975** (1.933)	−1.714 (1.423)	−8.916 (5.497)	−0.480 (0.292)	−2.469** (1.092)
Number of hospitalizations per thousand residents						
MA managed care penetration	0.0670 (0.0592)	−0.0804 (0.229)	0.308 (0.194)	0.748 (0.795)	0.0348 (0.0360)	−0.101 (0.133)
PQI per thousand residents						
MA managed care penetration	0.0104 (0.0107)	−0.0909** (0.0446)	0.0571 (0.0376)	0.0546 (0.126)	0.00855 (0.00564)	−0.0585** (0.0261)

Threats

- Validity of IV approach
- Assumption that payment rates are unrelated to local spending on TM FFS enrollees
 - TM costs are an element of benchmark calculation
 - Previous research finds no evidence for serial correlation in spending growth in TM

Concluding Thoughts

- Any spillover effects of MA plans to others' spending or outcomes have direct implications for payment rates in limiting welfare losses
- Increasing MA penetration results in lower hospitalization costs and shorter LOS system-wide
 - Substantial magnitude of spillovers
 - Suggests higher optimal MA payments
- Future research on other types of utilization & quality of care.

Thank you!

Questions?

