Does Privatized Health Insurance Benefit Patients or Producers?
Evidence from Medicare Advantage

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Motivation

• Ongoing debate about delivering public health benefits via private insurers (e.g., public option, Ryan Plan)
  - For: Competition reduces costs, improves quality
  - Against: Large profits for insurers, inferior benefits for patients

• At core, empirical question about incidence:
  - Who reaps gains from (greater) privatization, patients or producers?
Background on Medicare

Medicare beneficiaries have two options for hospital + physician coverage:

- **Traditional Fee-for-Service Medicare (TM)**
  - Public coverage
  - Virtually no provider restrictions
  - Significant patient cost-sharing

- **Medicare Advantage (MA)**
  - Private coverage
  - Restricted network of providers
  - Little or no patient cost-sharing
  - Often offer supplemental benefits (e.g., vision, dental, drug coverage)
Background on Medicare Advantage

- Medicare eligibles can choose any plan offered in their county
- Plans are given capitation payment from Medicare for each enrolled beneficiary
- Plans can charge a supplemental premium to beneficiaries

\[
\text{Plan payments} = \text{capitation payments} + \text{premiums}
\]
In this paper, we investigate the following questions:

1. To what degree are increased capitation payments passed through to consumers?

2. What market factors determine this pass-through rate?
Outline

• Background

• Research design

• Pass-through

• Model

• Selection and imperfect competition
MA Payments

Capitation payments intended to reflect counterfactual TM costs

\[ \text{Capitation payment}_{ijt} = r_{it} \times b_{jt} \]

- \( b_{jt} \) is county-level “base payment”
  - Pre BIPA, largely determined by historical average TM costs
  - Base payments increased by approx 2% per year

- \( r_{it} \) is demographic risk adjustment
  - Normalized to have mean 1 in entire population
Data

- **Multiple sources:**
  - MA Rate-books: Payments for county × year
  - Plan Service Files: Benefits and premiums by plan × year
  - CMS Beneficiary Summary File: admin cost data for TM
  - CMS Denominator File: admin demographic data for all Medicare

- **Time frame:** 1997-2003
  - Premium data for 1997-2003
  - Benefits data for 2000-2003
  - Plan quality data for 1999-2003
  - Costs data for 1999-2003

- **Level of analysis:** County × year
  - Weight obs by number of Medicare beneficiaries
  - Focus on counties with 1+ plan (show that variation does not affect entry / exit into sample)
Outline

- Background
- Research design
- Pass-through
- Model
- Selection and competition
BIPA, passed in 2000 and implemented in 2001

- Implemented a set of payment floors: one for rural counties and one for urban counties.

- Plans were explicitly required to submit new premiums and benefits to take effect in February 2001. We define 2001 premiums using these post-update values.
BIPA Payment Floors

Distances to Floors

2001 Monthly Base Payment ($) vs. 2000 Monthly Base Payment ($) for Urban and Rural Floors.
Effect of BIPA on Payments

Figure: Pre-BIPA Payments, 2000

Figure 1: Map
(A) Pre-BIPA, 2000
(B) Post-BIPA, 2001

<table>
<thead>
<tr>
<th>Range</th>
<th># 2000</th>
<th># 2001</th>
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<tbody>
<tr>
<td>(479, 850)</td>
<td>777</td>
<td>1234</td>
</tr>
<tr>
<td>(434, 479)</td>
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<tr>
<td>(400, 405)</td>
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</table>
Effect of BIPA on Payments

Figure: Post-BIPA Payments, 2001

- **Figure 1:** Map
  - (A) Pre-BIPA, 2000
  - (B) Post-BIPA, 2001

- **Table: Range ofPayments**
  - **Range**
    - (479, 850]
    - (434, 479]
    - (405, 434]
    - [400, 405]
  - **# 2000**
    - 777
    - 792
    - 628
    - 911
  - **# 2001**
    - 1234
    - 1874
    - 0
    - 0
Econometric Model

- Measure exposure to BIPA with a *distance-to-floor variable*, $\Delta b_{jt}$:
  \[
  \Delta b_{jt} = \max \left\{ b_{u(j)t} - c_{jt}, 0 \right\},
  \]
- $\tilde{b}_{u(j)t} \equiv$ relevant urban/rural floor in year $t$
- $\tilde{c}_{jt} \equiv$ payment rate in absence of the floor in county $j$ in year $t$
Econometric Model

- Difference-in-differences with year-specific coefficients

\[ y_{jt} = \alpha_j + \alpha_t + \sum_{t \neq 2000} \beta_t \times I_t \times \Delta b_{jt} + f(X_{jt}) + \epsilon_{jt} \]

- \( \alpha_j \) and \( \alpha_t \) are county and year fixed effects
- \( f(X_{jt}) \) is a flexible set of controls

- Normalize \( \beta_{2000} = 0 \) in year when BIPA was passed
- Cluster standard errors at the county level
Identification

Assumption: In the absence of BIPA, outcomes for counties that were differentially affected by the payment floors would have evolved in parallel.

- Two broad approaches to assessing the validity of this assumption:
  - Plot $\beta_t$ coefficients over time to visually inspect for spurious pre-existing trends.
  - Show results robust to alternative specifications that isolate two key subsets of our identifying variation:
    - Alt Spec 1: include pre-BIPA Base Payment X Year FE
    - Alt Spec 2: include Urban X Year FE
Identification

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    - Alt Spec 2: include Urban X Year FE
BIPA Payment Floors

Alternative Spec 1: preBIPA base pay \times \text{year FE}
Identification

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- Two broad approaches to assessing the validity of this assumption:
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    - Alt Spec 2: include Urban X Year FE
BIPA Payment Floors

Alternative Spec 2:
Urban X year FE

Distances to Floors
First Stage Impact on Base Payment

Figure: Impact of $1 Increase in Distance to Floor

First Stage Results Table
Outline

• Background and data

• Research design

• **Pass-through**

• Model

• Selection and competition
Figure: Impact of $1 Increase in Monthly Payments
Distribution of Premiums

Figure: Impact of $1 Increase in Monthly Payments

(a) Min

(b) Median

(c) Max
For every $1$ increase in subsidy, mean premiums decline by $45$ cents

Obtain similar estimates when...

1. Investigate effect on distribution of premiums

2. Estimate alternative specifications that isolate subsets of identifying variation

3. Estimate Tobit specifications that take into account that plans could not give rebates during our time period

4. Aggregate up to a higher level
Benefits

Insurers could have alternatively passed-through subsidies via benefits

We evaluate the impact on benefits.

Three approaches:

1. [see paper] Impact of $50 increase (∼10%) in payments on copays, dental, etc. ▶ Additional Figures

2. Impact on actuarial value using data on utilization / insurance payments from MEPS
Monetized Benefits

**Figure:** Impact of $1 Increase in Monthly Payments

By 2003, max pass-through in benefits of 8 cents on the dollar

**Table:** Benefit Results Table
Unobserved Quality

Limited concern in this setting for two reasons

1. Rich product characteristics data
   - We see everything consumers see at the point of sale
   - Many other characteristics significantly constrained by regulation (e.g., essential benefits, network adequacy)

2. Additional analysis of quality data
   - Precisely estimated zero on beneficiary’s subjective evaluations of plan quality (CAHPS)
   - Precisely estimated zero on clinical quality measures (HEDIS)
Plan Availability

Examine two margins

- Extensive: Percent of counties with at least one plan
- Intensive: HHI conditional on having at least one plan
Plan Availability: Extensive and Intensive Margins

**Figure:** Impact of $50 Increase in Monthly Payments

(a) Extensive Margin (at least one plan)

(b) Intensive Margin, (HHI)
Pass-through Estimates: Key Takeaways

For every $1 marginal increase in subsidy:

- 45 cents passed-through in lower premiums
- 8 cents passed-through in more generous benefits
- No detectable effect on entry

⇒ About one-half (53 cents) of increase flows to consumers, with 95% confidence interval (35 cents, 71 cents)
Outline

- Background and data
- Research design
- Pass-through
- Model
- Selection and competition
Approach

⇒ Potential Mechanisms: Advantageous Selection and Market Power

• Graphical intuition

• Model that relates pass-through to competition and selection
No Selection, Perfect Competition

Price and Cost

Quantity

AC-b

AC-b'

P

p

p'

q

q'

Advantageous Selection, Perfect Competition

$P = MR$

Diagram showing price and cost relationship with quantities $q$, $q''$, and $q'$.
No Selection, Monopoly
Model Setup

Build a more general model

Want to express pass-through as a function market power and selection

- Aggregate demand: $Q(p) \in [0, 1]$

- Aggregate costs for industry: $C(Q) \equiv \int_{v_i \geq p^{-1}(Q)} c_i$
  
  - Average costs: $AC(Q) \equiv \frac{C(Q)}{Q}$
  
  - Marginal costs: $MC(Q) \equiv C'(Q)$

- Selection
  
  - Adverse selection: $MC'(Q) < 0$
  
  - Advantageous selection: $MC'(Q) > 0$
Equilibrium

- Perfect competition characterized by zero profits

\[ p = AC(Q) - b \]

- Monopolist’s first order condition

\[ p = \mu(p) + MC(Q) - b \]

- \( \mu(p) \equiv -\frac{Q(p)}{Q'(p)} \) is absolute markup term
Imperfect Competition

Following Weyl-Fabinger (2013), introduce conduct parameter $\theta \in [0, 1]$

$$p = \theta \left( \mu(p) + MC(Q) - b \right) + (1 - \theta) \left( AC(Q) - b \right)$$

- Nests extremes
  - Perfect competition: $\theta = 0$. Monopoly: $\theta = 1$

- Reduced form of standard models
  - Cournot: $\theta = 1/n$
  - Diff product Bertrand: $\theta = 1$ – aggregate diversion ratio
    - Requires “symmetry assumptions” on selection (see Mahoney-Weyl, 2014)
Pass-Through

- Define pass-through as $\rho \equiv -\frac{dp}{db}$

- Fully differentiating FOC yields

$$\rho = \frac{1}{1 - (1 - \theta) \left( \frac{dAC}{dp} \right) - \theta \left( \frac{d\mu}{dp} + \frac{dMC}{dp} \right)}$$

- Assuming linear demand and costs

$$\rho = \frac{1}{1 - \frac{dAC}{dp}} \left( \frac{1}{1 + \theta} \right)$$
Outline

- Background and data
- Research design
- Pass-through
- Model
- Selection and competition
Impact of Selection

- Want to estimate

\[ \rho = \frac{1}{1 - \frac{dAC}{dp}} \]

- Advantageous selection: \( \frac{dAC}{dQ} > 0 \) and \( \frac{dQ}{dp} < 0 \) \( \Rightarrow \) \( \frac{dAC}{dp} < 0 \) \( \Rightarrow \) \( \rho < 1 \)

- Two interpretations

1. Reduction in pass-through due to selection in perfect comp baseline
2. Proportional reduction in pass-through in linear model with any level of competition
Impact of Selection

Introducing risk rating

\[ \rho = \frac{AR}{1 - \left( \frac{dAC}{dp} - b \frac{dAR}{dp} \right)} \]

- \( \frac{dAC}{dp} - b \frac{dAR}{dp} \) measures selection *net of risk adjustment payments*
- Scaled by \( AR \) to convert base payment into capitation payment
Estimation Approach

• Main challenge: Have admin data on TM costs, not MA plan costs
  - Prior literature looks at switchers: Do beneficiaries who switch from FFS to MA have lower $t-1$ costs than beneficiaries who stay?
  - Evidence is mixed (e.g., Brown et al. 2014; Newhouse et al. 2012)
  - Magnitudes are not economically interpretable
  - Does not identify selection with respect to premiums
Estimation Approach

- Our approach builds on / formalizes switcher idea with two assumptions:

  **A1.** Cost curves are linear so that selection is parameterized by single slope parameter

  **A2.** Slope is less steep for MA plans (i.e., \( \frac{dAC^{MA}}{dp} < \frac{dAC^{TM}}{dp} \))

  - Consistent with Bundorf Levin Mahoney (2012), other evidence on managed care vs. fee for service cost structures

- Under these assumptions
  - TM slope provides upper bound on MA slope and therefore explanatory power of selection
Figure: Impact of $50 Increase in Monthly Payment

- $23 decrease in premiums raises MA by 4.7 pp on base of 30.5%
Average Costs

Figure: Impact of $50 Increase in Monthly Payment

- Slope of $\frac{dAC^{MA}}{dQ} - b\frac{dAR^{MA}}{dQ}$ is $149$, 95% CI ($-$9, $307$)
- No effect on utilization
Impact of Market Power

- Estimates above imply that $\rho^{PC} = 85$ cents

- Theory: Residual $\approx 35$ ppt due to market power

- **Can we find supporting empirical evidence?**

- Idea: Heterogeneity in pass-through estimates by pre-BIPA measures of market power
  - Number of pre-BIPA insurance plans
  - Pre-BIPA Insurer HHI
Figure: Pass-through

Heterogeneity by pre-BIPA Number of Insurers
Heterogeneity by pre-BIPA Insurer HHI

Figure: Pass-through
Conclusion

- Used sharp, differential increase in MA payments to study allocation of (marginal) surplus in privatized Medicare
  - One-half of increase passed-through to consumers
  ⇒ Implications for $156B in MA payment reductions scheduled under ACA

- Investigate explanations of incomplete pass-through
  - Advantageous selection has limited explanatory power
  - Evidence suggests market power more likely explanatory factor
  ⇒ Implication is that efforts to make markets more competitive may be key to increasing consumer surplus on the margin
### Summary Statistics

**Table:** County X Years with At Least One Plan, 1997-2003

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>County-Level Premium ($ per month)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>22.71</td>
<td>27.82</td>
<td>0</td>
<td>156.29</td>
</tr>
<tr>
<td>Min</td>
<td>15.05</td>
<td>26.25</td>
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<td>156.29</td>
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<tr>
<td>Median</td>
<td>21.60</td>
<td>29.60</td>
<td>0</td>
<td>156.29</td>
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<tr>
<td>Max</td>
<td>33.56</td>
<td>33.54</td>
<td>0</td>
<td>194.47</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>County-Level Benefits</strong>*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physician Copay ($ per visit)</td>
</tr>
<tr>
<td>Specialist Copay ($ per visit)</td>
</tr>
<tr>
<td>Drug Coverage</td>
</tr>
<tr>
<td>Dental Coverage</td>
</tr>
<tr>
<td>Vision Coverage</td>
</tr>
<tr>
<td>Hearing Aid Coverage</td>
</tr>
</tbody>
</table>

| **Number of Plans** | 2.75 | 1.41 | 1 | 7 |
| **HHI**             | 5,696 | 2,584 | 1,778 | 10,000 |

| **MA Enrollment** | 28.8% | 16.1% | 1.1% | 67.6% |
| **TM Costs ($ per month)** | 521.80 | 106.65 | 254.96 | 940.08 |

[Back to Data]
## Summary Statistics

### Table: All Counties, 1997-2003

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base Payment ($ per month)</td>
<td>490.58</td>
<td>83.96</td>
<td>222.99</td>
<td>777.91</td>
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<tr>
<td>At Least One Plan</td>
<td>65.1%</td>
<td>47.7%</td>
<td>0%</td>
<td>100%</td>
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<tr>
<td>Number of Plans</td>
<td>1.78</td>
<td>1.73</td>
<td>0</td>
<td>7</td>
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<tr>
<td>MA Enrollment</td>
<td>19.1%</td>
<td>18.4%</td>
<td>0%</td>
<td>69.8%</td>
</tr>
<tr>
<td>TM Costs ($ per month)</td>
<td>486.53</td>
<td>103.94</td>
<td>136.87</td>
<td>940.08</td>
</tr>
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</table>

[Back to Data]
**First Stage-Alternative Specifications**

**Figure:** Impact of $1 Increase in Distance to Floor

<table>
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<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
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<tbody>
<tr>
<td>Δb X 2001</td>
<td>0.993</td>
<td>0.996</td>
<td>0.993</td>
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<tr>
<td></td>
<td>(0.003)</td>
<td>(0.004)</td>
<td>(0.003)</td>
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<tr>
<td>Δb X 2002</td>
<td>0.990</td>
<td>0.997</td>
<td>0.987</td>
</tr>
<tr>
<td></td>
<td>(0.004)</td>
<td>(0.005)</td>
<td>(0.004)</td>
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<tr>
<td>Δb X 2003</td>
<td>0.995</td>
<td>1.002</td>
<td>0.992</td>
</tr>
<tr>
<td></td>
<td>(0.004)</td>
<td>(0.005)</td>
<td>(0.004)</td>
</tr>
</tbody>
</table>

**Main Effects**
- County FE: X
- Year FE: X

**Additional Controls**
- Pre-BIPA Payment X Year FE: X
- Urban X Year FE: X

**Pre-BIPA Mean of Dep. Var.**
- 515.15

**R-Squared**
- 1.000
• Measure exposure to BIPA with *distance-to-floor variable*:

\[ \Delta b_{jt} = \max \left\{ \tilde{b}_{u(j)t} - \tilde{c}_{jt}, \ 0 \right\}, \]

• Use data on base rates in the pre-period to construct \( \tilde{c}_{jt} \), the monthly payment in the absence of the floor,

\[ \tilde{c}_{jt} = \begin{cases} 
  c_{jt} & \text{if } t \leq 2001 \\
  c_{j,2001} \cdot 1.02^{(t-2001)} & \text{if } t > 2001 
\end{cases} \]

• Use data on floors in the post-period to construct \( \tilde{b}_{jt} \), the counterfactual urban or rural payment floors,

\[ \tilde{b}_{u(j)t} = \begin{cases} 
  b_{u(j),2001} \cdot 1.02^{(t-2001)} & \text{if } t < 2001 \\
  b_{u(j)t} & \text{if } t \geq 2001 
\end{cases} \]
### Premiums-Alternative Specifications

#### Table: Impact of $1 Increase in Monthly Payments

<table>
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<tr>
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<th>(1)</th>
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<tbody>
<tr>
<td>Δb X 2001</td>
<td>-0.301</td>
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<td>-0.314</td>
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<tr>
<td></td>
<td>(0.056)</td>
<td>(0.095)</td>
<td>(0.057)</td>
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<tr>
<td>Δb X 2002</td>
<td>-0.503</td>
<td>-0.352</td>
<td>-0.516</td>
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<tr>
<td></td>
<td>(0.061)</td>
<td>(0.112)</td>
<td>(0.061)</td>
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<tr>
<td>Δb X 2003</td>
<td>-0.444</td>
<td>-0.378</td>
<td>-0.445</td>
</tr>
<tr>
<td></td>
<td>(0.072)</td>
<td>(0.120)</td>
<td>(0.073)</td>
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<tr>
<td>Main Effects</td>
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</tr>
<tr>
<td>County FE</td>
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<td>Year FE</td>
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<td>Additional Controls</td>
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<tr>
<td>Pre-BIPA Payment X Year FE</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban X Year FE</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Pre-BIPA Mean of Dep. Var.</td>
<td>12.10</td>
<td>12.10</td>
<td>12.10</td>
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<tr>
<td>R-Squared</td>
<td>0.71</td>
<td>0.71</td>
<td>0.71</td>
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</tbody>
</table>

Dependent Variable: Mean Monthly Premium ($)

[Back to Premiums Robustness]
## Premium Regressions - Plan Level Regressions

![Table: Impact of $1 Increase in Monthly Payments](image)

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
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<th>(4)</th>
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<tr>
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<td>-0.298</td>
<td>-0.195</td>
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<tr>
<td></td>
<td>(0.056)</td>
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<td>(0.056)</td>
<td>(0.011)</td>
<td>(0.016)</td>
<td>(0.011)</td>
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<tr>
<td>Δb X 2002</td>
<td>-0.502</td>
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<td>(0.008)</td>
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<td>Δb X 2003</td>
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<td>-0.449</td>
<td>-0.537</td>
<td>-0.380</td>
<td>-0.539</td>
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<td></td>
<td>(0.071)</td>
<td>(0.123)</td>
<td>(0.072)</td>
<td>(0.010)</td>
<td>(0.012)</td>
<td>(0.010)</td>
</tr>
</tbody>
</table>

### Main Effects
- County FE
- Year FE

### Additional Controls
- Pre-BIPA Payment X Year FE
- Urban X Year FE

### Pre-BIPA Mean of Dep. Var.
|                  | 12.56 | 12.56 | 12.56 | 12.56 | 12.56 | 12.56 |

### R-Squared
|                  | 0.60  | 0.60  | 0.60  | N/A   | N/A   | N/A   |

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[Back to Premiums Robustness](#)
Figure: Impact of $1 Increase in Monthly Payments

(a) Mean

(b) Min

(c) Median

(d) Max

Unit of observation aggregated to MSA × state × year

Back to Premiums Robustness
Benefits: Average Copays

Figure: Impact of $50 Increase in Monthly Payments

(a) Physician

(b) Specialist
Benefits: Drugs, Dental, Vision, Hearing Aid Coverage

**Figure:** Impact of $50 Increase in Monthly Payments

(a) Drugs

(b) Dental

(c) Vision

(d) Hearing Aid

Back to Benefits
### Benefits Regressions

**Table: Impact of Increase in Monthly Payments**

<table>
<thead>
<tr>
<th></th>
<th>Physician Copay ($)</th>
<th>Specialist Copay ($)</th>
<th>Drug Coverage (%)</th>
<th>Dental Coverage (%)</th>
<th>Vision Coverage (%)</th>
<th>Hearing Aid Coverage (%)</th>
<th>Actuarial Value ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Δb X 2001</strong>*</td>
<td>-0.136 (0.618)</td>
<td>0.402 (0.726)</td>
<td>0.589 (4.396)</td>
<td>3.827 (3.654)</td>
<td>3.622 (4.595)</td>
<td>18.725 (4.424)</td>
<td>0.021 (0.047)</td>
</tr>
<tr>
<td><strong>Δb X 2002</strong>*</td>
<td>-1.544 (0.769)</td>
<td>-2.717 (0.840)</td>
<td>0.180 (4.719)</td>
<td>5.111 (4.513)</td>
<td>3.756 (6.668)</td>
<td>22.721 (5.321)</td>
<td>0.053 (0.049)</td>
</tr>
<tr>
<td><strong>Δb X 2003</strong>*</td>
<td>-1.976 (0.917)</td>
<td>-3.010 (0.986)</td>
<td>3.571 (4.410)</td>
<td>-0.939 (3.664)</td>
<td>1.721 (6.643)</td>
<td>23.712 (5.132)</td>
<td>0.079 (0.044)</td>
</tr>
<tr>
<td><strong>Main Effects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>County FE</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Year FE</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><strong>Pre-BIPA Mean of Dep. Var.</strong></td>
<td>7.28</td>
<td>11.13</td>
<td>74.20</td>
<td>26.11</td>
<td>75.84</td>
<td>44.44</td>
<td>n/a</td>
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<tr>
<td><strong>R-Squared</strong></td>
<td>0.66</td>
<td>0.70</td>
<td>0.83</td>
<td>0.68</td>
<td>0.75</td>
<td>0.85</td>
<td>0.83</td>
</tr>
</tbody>
</table>

*Final column displays the effect of a $1 increase in monthly payments. All other columns display the impact of a $50 increase in monthly payments.*

[Back to Monetized Benefits]
**Benefits Regressions—Additional Specifications**

**Table:** Impact of $50 Increase in Monthly Payments

<table>
<thead>
<tr>
<th>Δb X 2001*</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
<th>(7)</th>
<th>(8)</th>
<th>(9)</th>
<th>(10)</th>
<th>(11)</th>
<th>(12)</th>
<th>(13)</th>
<th>(14)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Δb X 2002*</td>
<td>-1.69</td>
<td>-0.12</td>
<td>0.44</td>
<td>0.46</td>
<td>4.45</td>
<td>0.94</td>
<td>7.84</td>
<td>4.19</td>
<td>3.82</td>
<td>3.77</td>
<td>18.99</td>
<td>18.66</td>
<td>0.07</td>
<td>0.02</td>
</tr>
<tr>
<td>Δb X 2003*</td>
<td>-2.78</td>
<td>-2.14</td>
<td>-3.10</td>
<td>-3.21</td>
<td>3.86</td>
<td>4.92</td>
<td>-0.62</td>
<td>0.73</td>
<td>6.10</td>
<td>1.77</td>
<td>21.86</td>
<td>23.79</td>
<td>0.09</td>
<td>0.10</td>
</tr>
</tbody>
</table>

**Main Effects**

- County FE
- Year FE

**Additional Controls**

- Pre-BIPA Base Payment X Year FE
- Urban X Year FE

| Pre-BIPA Mean of Dep. Var. | 7.28 | 7.28 | 11.13 | 11.13 | 74.20 | 74.20 | 26.11 | 26.11 | 75.84 | 75.84 | 44.44 | 44.44 | 35.95 | 35.95 |
| R-Squared | 0.67 | 0.66 | 0.70 | 0.70 | 0.83 | 0.83 | 0.69 | 0.68 | 0.76 | 0.75 | 0.85 | 0.85 | 0.83 | 0.83 |

*Final column displays the effect of a $1 increase in monthly payments. All other columns display the impact of a $50 increase in monthly payments.*

[Back to Monetized Benefits]
## Plan Availability-Alternative Specifications

**Table:** Impact of $50 Increase in Monthly Payments

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Δb X 2001</td>
<td>-0.021</td>
<td>-0.039</td>
<td>-0.023</td>
<td>0.026</td>
<td>0.046</td>
<td>0.027</td>
</tr>
<tr>
<td></td>
<td>(0.017)</td>
<td>(0.026)</td>
<td>(0.018)</td>
<td>(0.024)</td>
<td>(0.040)</td>
<td>(0.024)</td>
</tr>
<tr>
<td>Δb X 2002</td>
<td>0.014</td>
<td>-0.037</td>
<td>0.019</td>
<td>-0.015</td>
<td>0.059</td>
<td>-0.024</td>
</tr>
<tr>
<td></td>
<td>(0.024)</td>
<td>(0.033)</td>
<td>(0.025)</td>
<td>(0.029)</td>
<td>(0.044)</td>
<td>(0.030)</td>
</tr>
<tr>
<td>Δb X 2003</td>
<td>0.056</td>
<td>0.011</td>
<td>0.061</td>
<td>-0.039</td>
<td>0.005</td>
<td>-0.048</td>
</tr>
<tr>
<td></td>
<td>(0.025)</td>
<td>(0.036)</td>
<td>(0.026)</td>
<td>(0.032)</td>
<td>(0.048)</td>
<td>(0.032)</td>
</tr>
</tbody>
</table>

**Main Effects**
- County FE: X X X X X X
- Year FE: X X X X X X

**Additional Controls**
- Pre-BIPA Payment X Year FE: X
- Urban X Year FE: X X

| Pre-BIPA Mean of Dep. Var. | 0.66 | 0.66 | 0.66 | 0.57 | 0.57 | 0.57 |
| R-Squared                 | 0.91 | 0.91 | 0.91 | 0.80 | 0.80 | 0.80 |

**Dependent Variable:** At Least One Plan HHI

Return to Intensive Margin Figure
Robustness

Are other aspects of plans changing aside from these benefits?

- Measures of plan quality (Dafny and Dranove, 2008)

  1. Measures listed in *Medicare & You* booklet
     - Quality of care, quality of doctor communication from CAHPS, mammogram rate from HEDIS

  2. Unreported quality index
     - Beta blockers, diabetic eye exams, preventive routine exams from HEDIS
Plan Quality

**Figure:** Impact of $50 Increase in Payment Floor

(a) Quality of Care

(b) Doctor Communication

(c) Mammography
Unreported Quality Index

Figure: Impact of $50 Increase in Monthly Payments

Standardized composite of beta blockers, preventive care visits, diabetic eye exams

Back to Benefits Robustness
Model Setup

At a symmetric equilibrium,

- Per-capita risk adjusted payments equal $b \cdot AR(Q)$, where
  $$AR(Q) = \frac{1}{Q} \int_{v_i \geq p^{-1}(Q)} r_i = \mathbb{E}[r_i | v_i \geq p^{-1}(Q)]$$

- Average costs, $AC(Q) \equiv \frac{C(Q)}{Q}$, and marginal costs, $MC(Q) \equiv C'(Q)$.

- Adverse selection: $MC'(Q) < 0$, and advantageous selection: $MC'(Q) > 0$.

- For the purposes of our discussion, we limit our attention to cases where $MC'(Q)$ and $AC'(Q)$ have the same sign.
## Table: Impact of $50 Increase in Monthly Payments

<table>
<thead>
<tr>
<th></th>
<th>Dependent Variable:</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MA Enrollment (%)</td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
<td>(6)</td>
<td>(7)</td>
<td>(8)</td>
</tr>
<tr>
<td>Δb X 2001</td>
<td></td>
<td>0.84</td>
<td>2.26</td>
<td>0.83</td>
<td>-2.96</td>
<td>3.04</td>
<td>-3.22</td>
<td>-1.25</td>
<td>-0.75</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.62)</td>
<td>(0.68)</td>
<td>(0.63)</td>
<td>(1.72)</td>
<td>(1.94)</td>
<td>(1.78)</td>
<td>(0.47)</td>
<td>(0.91)</td>
</tr>
<tr>
<td>Δb X 2002</td>
<td></td>
<td>3.38</td>
<td>5.17</td>
<td>3.65</td>
<td>-0.93</td>
<td>5.34</td>
<td>-1.19</td>
<td>-2.41</td>
<td>-2.76</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.85)</td>
<td>(0.96)</td>
<td>(0.86)</td>
<td>(3.48)</td>
<td>(3.96)</td>
<td>(3.59)</td>
<td>(0.60)</td>
<td>(1.09)</td>
</tr>
<tr>
<td>Δb X 2003</td>
<td></td>
<td>4.72</td>
<td>7.31</td>
<td>5.08</td>
<td>3.76</td>
<td>10.84</td>
<td>3.74</td>
<td>-3.24</td>
<td>-3.25</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.92)</td>
<td>(1.04)</td>
<td>(0.93)</td>
<td>(3.79)</td>
<td>(5.25)</td>
<td>(3.91)</td>
<td>(0.82)</td>
<td>(1.28)</td>
</tr>
</tbody>
</table>

### Panel A: Yearly BIPA Effect

### Panel B: Pooled Post-BIPA Effect

<table>
<thead>
<tr>
<th>Δb X Post-BIPA</th>
<th>3.27</th>
<th>5.95</th>
<th>3.47</th>
<th>0.21</th>
<th>8.18</th>
<th>0.15</th>
<th>-2.68</th>
<th>-2.47</th>
<th>-2.80</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(0.73)</td>
<td>(0.86)</td>
<td>(0.74)</td>
<td>(2.86)</td>
<td>(3.53)</td>
<td>(2.98)</td>
<td>(0.60)</td>
<td>(1.06)</td>
<td>(0.62)</td>
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</table>

### Panel C: Pooled Post-BIPA Effect

<table>
<thead>
<tr>
<th>Main Effects</th>
<th>County FE</th>
<th>X</th>
<th>X</th>
<th>X</th>
<th>X</th>
<th>X</th>
<th>X</th>
<th>X</th>
<th>X</th>
<th>X</th>
<th>X</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year FE</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Additional Controls</td>
<td>Pre-BIPA Base Payment X Year FE</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Urban X Year FE</td>
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<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Pre-BIPA Mean of Dep. Var.</td>
<td>30.53</td>
<td>30.53</td>
<td>30.53</td>
<td>484.48</td>
<td>484.48</td>
<td>484.48</td>
<td>485.25</td>
<td>485.25</td>
<td>485.25</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Pass-Through in a Linear Model

- Basic pass-through FOC,

\[ \rho = \frac{1}{1 - (1 - \theta) \left( \frac{dAC}{dp} \right) - \theta \left( \frac{d\mu}{dp} + \frac{dMC}{dp} \right)} \]

- becomes the following when assuming linear demand and costs:

\[ \rho = \left( \frac{1}{1 - \frac{dAC}{dp}} \right) \left( \frac{1}{1 + \theta} \right) \]
Figure: Impact of $50 Increase in Monthly Payments

Pre-BIPA Mean: 0.03
Figure: Impact of $50 Increase in Monthly Payments

Pre-BIPA Mean: 0.22

Part A Days
Part B Line-Item Claims

**Figure**: Impact of $50 Increase in Monthly Payments

Pre-BIPA Mean: 2.06
## Table: Impact of $50 Increase in Monthly Payment

<table>
<thead>
<tr>
<th></th>
<th>MA Enrollment (%)</th>
<th>MA Risk Adjustment ($)</th>
<th>Mean Premiums* ($)</th>
<th>Implied Pass-Through with Selection (ρ)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
</tr>
<tr>
<td>( \Delta b \times 2001 )</td>
<td>0.84</td>
<td>-2.96</td>
<td>-1.25</td>
<td>-0.300</td>
</tr>
<tr>
<td></td>
<td>(0.62)</td>
<td>(1.72)</td>
<td>(0.47)</td>
<td>(0.056)</td>
</tr>
<tr>
<td>( \Delta b \times 2002 )</td>
<td>3.38</td>
<td>-0.93</td>
<td>-2.41</td>
<td>-0.504</td>
</tr>
<tr>
<td></td>
<td>(0.85)</td>
<td>(3.48)</td>
<td>(0.60)</td>
<td>(0.061)</td>
</tr>
<tr>
<td>( \Delta b \times 2003 )</td>
<td>4.72</td>
<td>3.76</td>
<td>-3.24</td>
<td>-0.450</td>
</tr>
<tr>
<td></td>
<td>(0.92)</td>
<td>(3.79)</td>
<td>(0.82)</td>
<td>(0.071)</td>
</tr>
<tr>
<td>( \Delta b \times \text{Post-BIPA} )</td>
<td>3.27</td>
<td>0.21</td>
<td>-2.68</td>
<td>-0.44</td>
</tr>
<tr>
<td></td>
<td>(0.73)</td>
<td>(2.86)</td>
<td>(0.60)</td>
<td>(0.05)</td>
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</table>

### Panel A: Yearly BIPA Effect

### Panel B: Pooled Post-BIPA Effect

**Controls:** All Panels

<table>
<thead>
<tr>
<th></th>
<th>MA Enrollment (%)</th>
<th>MA Risk Adjustment ($)</th>
<th>Mean Premiums* ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
</tr>
<tr>
<td>\text{Pre-BIPA Mean of Dep. Var.}</td>
<td>30.53</td>
<td>485.25</td>
<td>484.48</td>
</tr>
</tbody>
</table>

*Column (4) displays the impact of a $1 increase in monthly payments, while all other columns display the effect of a $50 increase in monthly payments.*

[Link to Additional Specifications]  [Back to Selection Section]
### Within-Insurer Heterogeneity

**Figure:** Within-Insurer Heterogeneity in Premiums

<table>
<thead>
<tr>
<th></th>
<th>Premiums ($)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>AETNA</td>
<td>36.33</td>
<td>31.49</td>
</tr>
<tr>
<td>CIGNA</td>
<td>17.74</td>
<td>19.14</td>
</tr>
<tr>
<td>Kaiser</td>
<td>20.54</td>
<td>30.38</td>
</tr>
<tr>
<td>Pacificare</td>
<td>23.30</td>
<td>24.49</td>
</tr>
<tr>
<td>United</td>
<td>5.07</td>
<td>11.32</td>
</tr>
</tbody>
</table>
**Within-Insurer Heterogeniety**

**Figure:** Within-Insurer Heterogeniety in Benefits

<table>
<thead>
<tr>
<th>Medical Service</th>
<th>Drug Coverage (%)</th>
<th>Dental Coverage (%)</th>
<th>Vision Coverage (%)</th>
<th>Hearing Aid Coverage (%)</th>
</tr>
</thead>
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<tr>
<td><strong>AETNA</strong></td>
<td>1.00</td>
<td>0.02</td>
<td>1.00</td>
<td>0.70</td>
</tr>
<tr>
<td><strong>CIGNA</strong></td>
<td>1.00</td>
<td>0.13</td>
<td>0.10</td>
<td>0.16</td>
</tr>
<tr>
<td><strong>Kaiser</strong></td>
<td>0.96</td>
<td>0.35</td>
<td>0.96</td>
<td>0.09</td>
</tr>
<tr>
<td><strong>Pacificare</strong></td>
<td>0.79</td>
<td>0.18</td>
<td>0.88</td>
<td>0.37</td>
</tr>
<tr>
<td><strong>United</strong></td>
<td>0.65</td>
<td>0.01</td>
<td>0.41</td>
<td>0.11</td>
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</table>

<table>
<thead>
<tr>
<th>Specialist Copay ($)</th>
<th>Physician Copay ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>Mean</td>
</tr>
<tr>
<td>SD</td>
<td>SD</td>
</tr>
<tr>
<td>AETNA 16.10</td>
<td>10.00</td>
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<tr>
<td>CIGNA 16.61</td>
<td>9.84</td>
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<td>Kaiser 11.30</td>
<td>8.93</td>
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<tr>
<td>Pacificare 7.76</td>
<td>7.18</td>
</tr>
<tr>
<td>United 12.07</td>
<td>10.24</td>
</tr>
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</table>

**Back to Benefit Section**