Adverse Selection and an Individual Mandate: When Theory Meets Practice

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June 3, 2014
Theory has long held that there is a welfare loss from adverse (or advantageous) selection

Important in health insurance markets
- Consumers hold private information
- Regulations restrict price differentiation by health type

One theoretical way to reduce the welfare loss from selection is a mandate that requires both the healthy and the sick to purchase coverage
Individual mandate is a centerpiece of the

- Massachusetts health reform of 2006 and the
- ACA of 2010 (at the heart of Supreme Court challenges)

In this paper, we

- test for selection in Massachusetts individual insurance market
- quantify the welfare impact of the individual mandate from the reduction of adverse selection
Early literature tested for presence of asymmetric information in insurance markets
- Chiappori and Salanie (2000)
- Finkelstein and Poterba (2006)

Small but growing literature on the welfare impact of adverse selection in health insurance markets
- Einav, Finkelstein, Levin (2011) review
- Bundorf, Levin, and Mahoney (2012)
- Handel (2013)
Previous studies focus on welfare impact of adverse selection on the intensive margin (e.g. which plan to choose among employer plans)

- Find small welfare impact: welfare loss of $10 per employee or 3% of total surplus from efficient pricing at Alcoa (Einav, et al., 2010)

Policy relevant estimates may differ

- Welfare impact plausibly larger on extensive margin (whether to have insurance at all) and in individual market
- Empirical challenge: no variations from mandates
- Develop a simple model of the individual health insurance market
- In this framework, we model the individual mandate (tax penalty) as an exogenous shifter in the demand for health insurance
- Capture the welfare effects of the mandate in terms of a small number of empirical moments
- Combine
  - data on insurance coverage, premiums, and average costs
  - with a difference-in-differences estimation strategy
- Allows us to estimate key parameters and the welfare implications of the individual mandate
Outline

- Introduction
- Institutional Background
- Theoretical Approach
- Empirical Approach
- Results
- Robustness
- Conclusion
Institutional Background: Pre-Reform

- **Community Rating Regulations**
  - All consumers charged the same price
  - Baseline Model: Assume common price within a plan

- **Guaranteed Issue Regulations**
  - Offer insurance to all comers
  - Baseline model: Expect selection to be adverse
Institutional Background: Reform

- **Individual mandate: pay-or-play**
  - Consumers that don’t have health insurance that meets minimum coverage criteria must pay a tax penalty of $1,260
  - Mandate is particularly important for individuals who do not have access to employer sponsored health insurance
  - Focus analysis on individual markets

- **Introduction of health insurance exchange markets**
  - Expect lower post-reform markups

- **CommCare program**
  - Free or subsidized health insurance for lower income residents (up to 300% of FPL)
Outline

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Demand for Insurance

- Model builds from Einav, Finkelstein and Cullen (2010)
- Consumer problem:

\[
\max_{H_i} \{ X_i + v(\theta_i) \ast H_i \} \text{ s.t. } Y_i = X_i + P \ast H_i,
\]

- Consumer type \( \theta_i \sim G_\theta \) in the population
- Market demand:

\[
I := \int_{v(\theta)>P} dG_\theta.
\]

- Incorporate individual mandate:

\[
I := \int_{v(\theta)>P-\pi} dG_\theta.
\]

- Market level demand curve: \( P = D(I, \pi) \).
Average cost is a function of market level insurance coverage:

$$AC(I) = \frac{1}{I} \int_{v(\theta) > D(I,0)} c(\theta) \, dG_\theta.$$  

Analogously, the marginal cost curve is given by

$$MC(I) = E[c(\theta)|v(\theta) = D(I,0)].$$
Demand

Premium

D(I,0)

Insurance
Average Cost

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Pre-Reform Equilibrium

Insurance Premium

\[ D(I,0) \]

\[ P^{*,\text{pre}} \]

\[ A \]

\[ AC(I) \]

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Marginal Cost

Premium

D(I,0)

P*,pre

A

AC(I)

MC(I)

Insurance

P*,pre

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Efficient Coverage

Insurance

Premium

$D(I,0)$

$A$

$I^*,\text{pre}$

$P^*,\text{pre}$

$I^*,\text{efficient}$

$AC(I)$

$MC(I)$

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Welfare Loss of Adverse Selection

Insurance
Premium

D(I,0)
A
I*,pre
P*,pre
I*,efficient
AC(I)
MC(I)

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Adverse Selection and an Individual Mandate: When Theory Meets Practice
Individual Mandate: Tax Penalty

Premium

Insurance

D(I,0)  D(I,π)

P*,pre

A

D

AC(I)

MC(I)

π

D

D(I,π)
Post-Reform Equilibrium

Insurance

Premium

D(I,0)

D(I,π)

AC(I)

MC(I)

A

A′

D

D′

P*,pre

P*,post

I*,pre

I*,post

D(I,π)

I*,pre

I*,post

D(I,0)

π

AC(I)

MC(I)

I*,pre

I*,post

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Adverse Selection and an Individual Mandate: When Theory Meets Practice
Welfare Gain from Individual Mandate

Adverse Selection and an Individual Mandate: When Theory Meets Practice
Coverage Under Pre-Reform Markup

Premium

Insurance

$D(I,0)$

$D(I,\pi)$

$P^{*,\text{pre}}$

$AC^{*,\text{pre}}$

$A$

$H$

$D$

$\pi$

$MC(I)$

$AC(I)$
Smaller Post-Reform Markup

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Adverse Selection and an Individual Mandate: When Theory Meets Practice
Post-Reform Equilibrium

Insurance

Premium

D(I,0)       D(I,\pi)

P^{*,pre}_{\ast,pre}  P^{*,post}_{\ast,pre}

\pi

\pi

A′ AC^{*,post}_{\ast,post}

A′ AC^{*,pre}_{\ast,pre}

D(I,\pi)

H′

MC(I)

D

A

H

\Gamma^{*,pre} \Gamma^{*,markup} \Gamma^{*,post}
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**Adverse Selection and an Individual Mandate: When Theory Meets Practice**
Welfare Analysis

- Estimating welfare changes and optimal penalty requires only estimates of pre-reform levels and changes in
  - Insurance Coverage
  - Premiums
  - Average Costs

- Example:

\[
\Delta W_{\text{full}} = (P^*, \text{pre} - AC^*, \text{pre}) \times (I^*, \text{post} - I^*, \text{pre})
\]
\[
- (AC^*, \text{post} - AC^*, \text{pre}) \times (I^*, \text{pre} + (I^*, \text{post} - I^*, \text{pre}))
\]
\[
+ \frac{1}{2}((P^*, \text{post} - \pi) - P^*, \text{pre}) \times (I^*, \text{post} - I^*, \text{pre})
\]
Along with size of penalty, pre-reform levels and changes in coverage, premiums, and average costs allow us to pin down the structural objects of our empirical analysis:
- Demand curve
- Average cost curve

Why do we need 6 moments to pin down 4 structural parameters (intercept and slope of the demand and AC curve)?
- Two additional moments identify the pre-reform and the post-reform markup
Outlines

- Introduction
- Institutional Background
- Theoretical Approach
- **Empirical Approach**
- Results
- Robustness
- Conclusion
Empirical Approach

- Use a difference-in-differences estimation strategy to quantify reform-related changes in coverage, premium, and average costs between the pre- and the post-reform years
  - Compare changes in Massachusetts with changes in other states between the pre-reform and the post-reform years
  - Controls for common national demand and average cost shocks that may shift the demand/average cost curve
  - Construct synthetic control group (Abadie and Gardeazabal, 2003)
    - Coverage, premiums, cost
    - Pre-reform levels and trends
$Y_{st}^k = \gamma^k \ast (MA \ast After)_{st} + \rho_1^k \ast (MA \ast During)_{st} + \rho_2^k \ast MA_s + \rho_3^k \ast After_t + \rho_4^k \ast During_t + \epsilon_{st}^k$

- where $Y_{st}$ is measured at the state-year level and refers to the log of
  - Coverage
  - Annual premium
  - Annual average costs
SNL Financial Database: 2004-2011

- Compiled from National Association of Insurance Commissioners reports
- Detailed data at the firm-market-year level on:
  - premiums,
  - expenditures,
  - enrollment in member-months

- Universe of insurers in the individual market
- Drop insurers that offer Commonwealth Care Plans
National Health Interview Survey (NHIS)

- Allows us to express insurance coverage in percentages
- To match the SNL population, we restrict the sample to individuals 18-64 earning more than 300% of the FPL to avoid
  - Medicaid expansions
  - Commonwealth Care plan expansion
  - Ensure homogeneous tax penalty
Outline

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Impact on Coverage: Group vs. Individual Market

Source: NHIS data
Impact on Coverage: SNL

Health Insurance Coverage in Population

Year

Non-MA  MA

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Adverse Selection and an Individual Mandate: When Theory Meets Practice
### Impact on Coverage: SNL

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\gamma$</td>
<td>MA * After</td>
<td>0.265***</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[0.175, 0.362]</td>
</tr>
<tr>
<td>$\rho_1$</td>
<td>MA * During</td>
<td>-0.030*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[-0.066, 0.003]</td>
</tr>
<tr>
<td>$\rho_2$</td>
<td>MA</td>
<td>0.112*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[-0.010, 0.238]</td>
</tr>
<tr>
<td>$\rho_3$</td>
<td>After</td>
<td>-0.044</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[-0.139, 0.046]</td>
</tr>
<tr>
<td>$\rho_4$</td>
<td>During</td>
<td>-0.003</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[-0.036, 0.033]</td>
</tr>
<tr>
<td>$\rho_{11}$</td>
<td>Constant</td>
<td>0.591***</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[0.467, 0.713]</td>
</tr>
<tr>
<td>Pre-Reform Value (levels)</td>
<td>0.703</td>
<td></td>
</tr>
</tbody>
</table>
Impact on Premiums

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Impact on Costs

<table>
<thead>
<tr>
<th></th>
<th>Coverage</th>
<th>Log Premium</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\gamma_k$ MA*After</td>
<td>0.265***</td>
<td>-0.233***</td>
</tr>
<tr>
<td></td>
<td>[0.175, 0.362]</td>
<td>[-0.286, -0.176]</td>
</tr>
<tr>
<td>$\rho_1^k$ MA*During</td>
<td>-0.030*</td>
<td>-0.012</td>
</tr>
<tr>
<td></td>
<td>[-0.066, 0.003]</td>
<td>[-0.063, 0.036]</td>
</tr>
<tr>
<td>$\rho_2^k$ MA</td>
<td>0.112*</td>
<td>0.700***</td>
</tr>
<tr>
<td></td>
<td>[-0.010, 0.238]</td>
<td>[0.622, 0.779]</td>
</tr>
<tr>
<td>$\rho_3^k$ After</td>
<td>-0.044</td>
<td>0.128***</td>
</tr>
<tr>
<td></td>
<td>[-0.139, 0.046]</td>
<td>[0.072, 0.182]</td>
</tr>
<tr>
<td>$\rho_4^k$ During</td>
<td>-0.003</td>
<td>0.087***</td>
</tr>
<tr>
<td></td>
<td>[-0.036, 0.033]</td>
<td>[0.040, 0.138]</td>
</tr>
<tr>
<td>$\rho_{11}^k$ Constant</td>
<td>0.591***</td>
<td>7.978***</td>
</tr>
<tr>
<td></td>
<td>[0.467, 0.713]</td>
<td>[7.899, 8.056]</td>
</tr>
<tr>
<td>Pre-Reform Value (levels)</td>
<td>0.703</td>
<td>5,871.33</td>
</tr>
</tbody>
</table>
Impact on Coverage: SNL

![Graph showing the impact on coverage with SNL.](image)

- **Log Annual Claim Expenditures per Person**
- **Non-MA** vs. **MA**
## Impact on Coverage: SNL

<table>
<thead>
<tr>
<th></th>
<th>Coverage</th>
<th>Log Premium</th>
<th>Log Claim Exp</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\gamma^k$ MA*After</td>
<td>0.265***</td>
<td>-0.233***</td>
<td>-0.087***</td>
</tr>
<tr>
<td></td>
<td>[0.175, 0.362]</td>
<td>[-0.286, -0.176]</td>
<td>[-0.143, -0.025]</td>
</tr>
<tr>
<td>$\rho_1^k$ MA*During</td>
<td>-0.030*</td>
<td>-0.012</td>
<td>-0.019</td>
</tr>
<tr>
<td></td>
<td>[-0.066, 0.003]</td>
<td>[-0.063, 0.036]</td>
<td>[-0.076, 0.038]</td>
</tr>
<tr>
<td>$\rho_2^k$ MA</td>
<td>0.112*</td>
<td>0.700***</td>
<td>0.761***</td>
</tr>
<tr>
<td></td>
<td>[0.010, 0.238]</td>
<td>[0.622, 0.779]</td>
<td>[0.662, 0.870]</td>
</tr>
<tr>
<td>$\rho_3^k$ After</td>
<td>-0.044</td>
<td>0.128***</td>
<td>0.213***</td>
</tr>
<tr>
<td></td>
<td>[-0.139, 0.046]</td>
<td>[0.072, 0.182]</td>
<td>[0.151, 0.269]</td>
</tr>
<tr>
<td>$\rho_4^k$ During</td>
<td>-0.003</td>
<td>0.087***</td>
<td>0.156***</td>
</tr>
<tr>
<td></td>
<td>[-0.036, 0.033]</td>
<td>[0.040, 0.138]</td>
<td>[0.099, 0.213]</td>
</tr>
<tr>
<td>$\rho_{11}^k$ Constant</td>
<td>0.591***</td>
<td>7.978***</td>
<td>7.808***</td>
</tr>
<tr>
<td></td>
<td>[0.467, 0.713]</td>
<td>[7.899, 8.056]</td>
<td>[7.699, 7.907]</td>
</tr>
<tr>
<td>Pre-Reform Value (levels)</td>
<td>0.703</td>
<td>5,871.33</td>
<td>5,270.64</td>
</tr>
</tbody>
</table>
Empirical Graph Corresponding to Theory

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Translating Empirical Estimates into Welfare

- Use estimates to compute full welfare effects:

\[
\Delta W_{full} = \left(8.68 - 8.57\right) \times 26.5\% \\
- \left(-0.087\right) \times \left(70.3\% + 26.5\%\right) \\
+ \frac{1}{2}(-0.233 - 0.239) \times 26.5\% = 0.051.
\]

- $299 per person (=0.051*$5,870)

- Putting estimates together gives us the welfare change per individual in the individual health insurance market
  - 212,000 people in the non-Medicaid individual market
  - Total welfare gain of $63.5mm per year
  - Total welfare gain equal to 5.7% of insurer medical expenditures
Changes in health insurance coverage
- 4.1% because of removal of adverse selection
- 1% because of smaller post-reform markup

Changes in Welfare
- $241 because of removal of adverse selection
- $59 because of smaller post-reform markup

Population net welfare gain: $51.1mm per year
Optimal Mandate

- Our estimates suggest that universal coverage is optimal.
- The penalty must be sufficiently large such that every consumer buys health insurance.
- The minimal tax penalty is $1,462.
Robustness

- Consider a number of robustness checks
  - Relax linear demand
  - Perceived penalty magnitude (e.g. Ericson and Kessler, 2014)
  - Alternate control group with guaranteed issue included in matching
  - Allow for age bands rather than pure community rating
  - Changes in plan generosity
  - Changes to health care delivery due to reform in MA (Kolstad and Kowalski, 2012)
  - Expand sample to include insurers offering CommCare plans (population under 300% FPL)
  - Incorporate estimates for key parameters from other work on MA reform (Graves and Gruber (2012), Ericson and Starc (2012), Hackmann, et al. (2012))
Consider L-shaped and Inverse L-shaped demand

- Full Welfare Effect
  - Baseline: 5.1%
  - Lower Bound: -1.2%
  - Upper Bound: 11.3%

- Net Welfare Effect
  - Baseline: 4.1%
  - Lower Bound: 0%
  - Upper Bound: 11.3%
### Tax Penalties

<table>
<thead>
<tr>
<th>Tax Penalty</th>
<th>% Tax Penalty</th>
<th>Full Welfare Effect</th>
<th>Net Welfare Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline: 1250</td>
<td>21.3%</td>
<td>0.051**</td>
<td>0.041**</td>
</tr>
<tr>
<td>450</td>
<td>7.7%</td>
<td>0.072**</td>
<td>0.03***</td>
</tr>
<tr>
<td>550</td>
<td>9.4%</td>
<td>0.07**</td>
<td>0.033***</td>
</tr>
<tr>
<td>650</td>
<td>11.1%</td>
<td>0.067**</td>
<td>0.036***</td>
</tr>
<tr>
<td>750</td>
<td>12.8%</td>
<td>0.064**</td>
<td>0.038***</td>
</tr>
<tr>
<td>850</td>
<td>14.5%</td>
<td>0.062**</td>
<td>0.039***</td>
</tr>
<tr>
<td>950</td>
<td>16.2%</td>
<td>0.059**</td>
<td>0.04***</td>
</tr>
<tr>
<td>1050</td>
<td>17.9%</td>
<td>0.056**</td>
<td>0.041***</td>
</tr>
<tr>
<td>1150</td>
<td>19.6%</td>
<td>0.054**</td>
<td>0.041**</td>
</tr>
<tr>
<td>1350</td>
<td>23.0%</td>
<td>0.048*</td>
<td>0.041**</td>
</tr>
<tr>
<td>1450</td>
<td>24.7%</td>
<td>0.045*</td>
<td>0.04**</td>
</tr>
<tr>
<td>1550</td>
<td>26.4%</td>
<td>0.042*</td>
<td>0.039**</td>
</tr>
<tr>
<td>1650</td>
<td>28.1%</td>
<td>0.039</td>
<td>0.038**</td>
</tr>
<tr>
<td>1750</td>
<td>29.8%</td>
<td>0.036</td>
<td>0.037**</td>
</tr>
<tr>
<td>1850</td>
<td>31.5%</td>
<td>0.032</td>
<td>0.035**</td>
</tr>
<tr>
<td>1950</td>
<td>33.2%</td>
<td>0.029</td>
<td>0.033*</td>
</tr>
<tr>
<td>2050</td>
<td>34.9%</td>
<td>0.026</td>
<td>0.031*</td>
</tr>
<tr>
<td>Gl: 1250</td>
<td>21.3%</td>
<td>0.056*</td>
<td>0.044***</td>
</tr>
</tbody>
</table>
Table: Difference-in-Differences Regression Results

<table>
<thead>
<tr>
<th></th>
<th>(1) Coverage</th>
<th>(2) Log Premium</th>
<th>(3) Log Claim Exp</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\gamma_k$ MA*After</td>
<td>0.305***</td>
<td>-0.266***</td>
<td>-0.099***</td>
</tr>
<tr>
<td></td>
<td>[0.205, 0.402]</td>
<td>[-0.319, -0.213]</td>
<td>[-0.157, -0.033]</td>
</tr>
<tr>
<td>$\rho_1^k$ MA*During</td>
<td>-0.012</td>
<td>-0.028</td>
<td>-0.051</td>
</tr>
<tr>
<td></td>
<td>[-0.048, 0.022]</td>
<td>[-0.082, 0.028]</td>
<td>[-0.110, 0.012]</td>
</tr>
<tr>
<td>$\rho_2^k$ MA</td>
<td>0.154**</td>
<td>0.559***</td>
<td>0.609***</td>
</tr>
<tr>
<td></td>
<td>[0.018, 0.301]</td>
<td>[0.497, 0.626]</td>
<td>[0.539, 0.682]</td>
</tr>
<tr>
<td>$\rho_3^k$ After</td>
<td>-0.084*</td>
<td>0.161***</td>
<td>0.225***</td>
</tr>
<tr>
<td></td>
<td>[-0.182, 0.016]</td>
<td>[0.109, 0.214]</td>
<td>[0.159, 0.282]</td>
</tr>
<tr>
<td>$\rho_4^k$ During</td>
<td>-0.021</td>
<td>0.103***</td>
<td>0.188***</td>
</tr>
<tr>
<td></td>
<td>[-0.054, 0.015]</td>
<td>[0.047, 0.157]</td>
<td>[0.125, 0.247]</td>
</tr>
<tr>
<td>$\rho_{11}^k$ Constant</td>
<td>0.549***</td>
<td>8.119***</td>
<td>7.960***</td>
</tr>
<tr>
<td></td>
<td>[0.403, 0.682]</td>
<td>[8.052, 8.180]</td>
<td>[7.887, 8.030]</td>
</tr>
</tbody>
</table>

Pre-Reform Value (levels) 0.703 5,871.33 5,270.64

The bootstrapped 95% confidence interval is displayed in brackets.

Standard errors are clustered at the state level. Abadie weights depend on member month enrollment, an indicator variable that takes on the value of one for guaranteed issue states as well as changes in coverage, relative changes in average costs, and relative changes in premiums between 2004 and 2005.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
Perfect Community Rating Assumption

Table: Average Age in Massachusetts by Market Segment

<table>
<thead>
<tr>
<th></th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2009-2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual</td>
<td>36.9</td>
<td>36.8</td>
<td>37.3</td>
<td>37.1</td>
<td>37.3</td>
<td>0.4</td>
</tr>
<tr>
<td>Small Group</td>
<td>33.1</td>
<td>33.3</td>
<td>33.5</td>
<td>33.7</td>
<td>34.1</td>
<td>1.0</td>
</tr>
<tr>
<td>Mid-Size Group</td>
<td>32.6</td>
<td>33.0</td>
<td>33.2</td>
<td>33.2</td>
<td>33.3</td>
<td>0.7</td>
</tr>
<tr>
<td>Large Group</td>
<td>33.3</td>
<td>33.4</td>
<td>33.7</td>
<td>33.7</td>
<td>34.8</td>
<td>1.5</td>
</tr>
</tbody>
</table>
Measure HMO enrollment via name of insurer. Controlling for HMO enrollment, we find even larger welfare estimates.

Evidence from Mass DHCFP on plan generosity suggests, if anything, more generous coverage.
## Change in the Generosity of Plan Design

### Table: Plan Generosity

<table>
<thead>
<tr>
<th></th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Minimum</td>
<td>Median</td>
</tr>
<tr>
<td>Actuarial Value</td>
<td>0.578</td>
<td>0.694</td>
</tr>
<tr>
<td>Coinsurance</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>PCP Office Visit</td>
<td>$35</td>
<td>$25</td>
</tr>
<tr>
<td>SPC Office Visit</td>
<td>$50</td>
<td>$25</td>
</tr>
<tr>
<td>Inpatient Copay</td>
<td>Deductible</td>
<td>Deductible</td>
</tr>
<tr>
<td>Outpatient Surgery Copay</td>
<td>Deductible</td>
<td>Deductible</td>
</tr>
<tr>
<td>Emergency Room Copay</td>
<td>$200</td>
<td>$100</td>
</tr>
<tr>
<td>Pharmacy Deductible</td>
<td>N/A</td>
<td>None</td>
</tr>
<tr>
<td>Retail Generic</td>
<td>N/A</td>
<td>$10</td>
</tr>
<tr>
<td>Retail Preferred</td>
<td>N/A</td>
<td>$50</td>
</tr>
<tr>
<td>Retail Non-Preferred</td>
<td>N/A</td>
<td>$100</td>
</tr>
</tbody>
</table>

Hackmann, Kolstad, Kowalski

Adverse Selection and an Individual Mandate: When Theory Meets Practice
Welfare Effects using Estimates from the Literature

- Use premium estimates from Graves and Gruber (2012)
- Use demand elasticities from Ericson and Starc (2012)
- Use average cost estimates from Hackmann, Kolstad, and Kowalski (2012)
### Table: Welfare Gains Using Demand Estimates From the Literature

<table>
<thead>
<tr>
<th></th>
<th>Full Welfare Effect</th>
<th>Net Welfare Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline Estimates</td>
<td>0.051</td>
<td>0.041</td>
</tr>
<tr>
<td>Graves and Gruber (2012)</td>
<td>0.035</td>
<td>0.030</td>
</tr>
<tr>
<td>Ericson and Starc (2012): Premiums</td>
<td>0.075</td>
<td>0.088</td>
</tr>
<tr>
<td>Ericson and Starc (2012): Coverage</td>
<td>0.059</td>
<td>0.051</td>
</tr>
<tr>
<td>Hackmann, Kolstad, and Kowalski (2012)</td>
<td>0.125</td>
<td>0.100</td>
</tr>
</tbody>
</table>
Introduction
Institutional Background
Theoretical Approach
Empirical Approach
Results
Robustness
Conclusion
Develop a simple model of the individual insurance market in MA.

Model allows us to analyze the impact of the individual mandate on adverse selection.

Use the model to derive sufficient statistics formulas, which allow us to express the welfare effects and the optimal penalty in terms of a small number of empirical moments.

Use Massachusetts reform to identify these moments and to quantify the welfare effects/optimal penalty.

Findings:
- Welfare gains through the reduction of adverse election: $241 per person ($51.1 million).
- Welfare gains because of smaller post-reform markups: $59 per person ($12.4 million).
- Optimal tax penalty of $1,462 induces universal coverage.
Predictions for the ACA

- Suggests individual mandate (the focus of the SCOTUS challenge) is fundamental to mandate-based reform at the national level
- Suggests that individual mandate enhances welfare due to reductions in adverse selection
- Important limitation: May depend considerably on existing state-level insurance regulation and how states implement exchanges