Monopsony in the Low-wage Labor Market?
Evidence from Minimum Nurse Staffing Legislation

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IRP Seminar
Motivation

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- If employers need to hire more workers, must they raise their wage offers in order to do so?
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- Recently, there has been renewed interest in monopsony models where firms set wages and face an upward sloping labor supply curve.
Motivation: Why care about monopsony?

- Why care? Economists’ predictions about the effects of active labor market policy (e.g., minimum wage hikes) depend on this assumption.
  - Under perfect competition, minimum wage hikes reduce employment.
  - Under monopsony models, not necessarily.
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Debate is hindered (or fueled?) by lack of direct evidence on the empirical relevance of monopsony models: what's the elasticity of the elasticity of labor supply to firms?
Goals of this study

- Manning (2003) on state of literature (3 papers) estimating elasticity of supply to individual firms: “This is all rather depressing: a good estimate of the elasticity of the labor supply curve facing the firm seems very elusive so perhaps there is a very good reason for the lack of research into this area. Progress seems to be dependent on finding a good firm-level instrument.”
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I estimate the elasticity separately for registered nurses and less-skilled nurse-aides to contrast the relevance of monopsony power for different types of workers.
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\[ \max_{L} \pi(L) = R(L) - w(L)L \text{ leads to } \frac{MRT - w}{w} = \frac{\partial w}{w} \frac{L}{\partial L} \equiv \epsilon \text{ (inverse elasticity of labor supply)} \]
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\]

- \( \epsilon > 0 \) implies workers are paid less than MRP. The inverse elasticity is a measure of the extent of monopsony power (‘monopsononistic exploitation’).
Based on this logic, many papers relate firm concentration to wage levels across markets (only valid test if MRP and labor supply are held constant)
Past Empirical Work on Monopsony

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  - e.g., Hurd (1973), Link and Landon (1975).
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  - e.g., Hurd (1973), Link and Landon (1975).

- But ‘effect’ disappears with better controls for market characteristics (e.g., alternative wages, pop. density, etc.)
Sources of Monopsony (2)

- Robinson (1933) says same effects could be seen if LS curve to individual firms is upward sloping b/c “there may be a certain number of workers in the immediate neighborhood and to attract those from further afield it may be necessary to pay a wage equal to what they can earn near home plus their fares to and fro; or there may be workers attached to the firm by preference or custom and to attract others it may be necessary to pay a higher wage. Or ignorance may prevent workers from moving from one firm to another in response to differences in the wages offered by the different firms.”
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- Dynamic models put emphasis on search behavior.
Direct Estimates of LS Elasticity

- Direct estimates of LS curve to firms is hard: correlation between LD & LS shocks lead to inconsistent estimates of $\epsilon$ using observed wage and quantity data. Challenge is to find a firm-specific instrument that affects wages or employment and doesn’t shift labor supply curve.

- Sullivan (1989) studies RN employment to U.S. hospitals over 1979-1985 using caseloads and length of stay variables as an instrument for number of nurses. Finds $\epsilon$ of .79 (.13) over 1 year, .26 (.07) over three years.

- Staiger, Spetz, Phibbs (1999) study RN employment to hospitals over 1990-1992 using legislated increases for RNs at VA hospitals as instruments for wage changes. They find much lower elasticities suggesting $\epsilon$ ranging from 5 to infinity, with a lower bound of the 95% CI of about 2.
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Research Design: Minimum Staffing Legislation for CA Nursing Homes

In CA, AB 1107 is signed into law in 1999 requiring long-term care facilities to employ a minimum (average) number of nursing hours for every patient each day beginning January 1, 2000 (Enforcement to begin April 1st).
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New law changes minimum staffing requirements: raises minimum nursing hours (sum of all hours worked by RNs, LVNs, NAs) per resident day 3.2 in 2000. Old standard (since 1985) requires 3.0 hprd, but double counts licensed-nurse (RN & LVN) hours. In 1999, 99%+ of all firms complied with old standard.
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- Potentially creates exogenous shock to staff levels (e.g., unrelated to changes in patient composition & labor supply shocks) for nursing facilities with hprd < 3.2 in 1999. Facilities already in compliance have no legislatively induced pressure to increase staffing.
The Crux of the Test for Monopsony

- The law should induce relatively large increases in nursing staff for LTC facilities with hprd below 3.2, proportional to how far below the threshold the facility is. These increases may not be correlated with labor supply shocks.
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- Key test for monopsony: Are facilities that need to attract the additional employees they are forced to hire forced to raise wages (relative to their competitors) to do so? If so, suggests LS curve is upward sloping.
Simple Model of Employment floor with Perfect Competition

Perfect Competition - no floor

[Diagram showing a graph with axes labeled N and LS, and a line labeled MRP depicting the relationship between wage (w) and labor supply (N)]

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Minimum Staffing Ratios
Simple Model of Employment floor with Perfect Competition

Perfect Competition - no floor

Perfect Competition - floor

Matsudaira
Minimum Staffing Ratios
Simple Model of Employment floor with Monopsony Power

Monopsony - no floor

- MRP
- MCL
- LS

w0
N0
N

Matsudaira
Minimum Staffing Ratios
Simple Model of Employment floor with Monopsony Power

Monopsony - no floor

Monopsony - with floor

Matsudaira
Minimum Staffing Ratios
IV Estimation Strategy

- Literature suggests general form for labor supply curve to the firm
  \( w_i = f(n_i, X, X_i^*) \), \( X_i \) is firm specific factors (incl. local labor market), and \( X_i^* \) represents actions of other firms (wages and employment).
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- I adopt a simple empirical model to suit current limitations of my data (i.e., no data on \( X_{i}^{*} \):
  \[ w_{irt} = \beta_0 + \beta_1 n_{irt} + \alpha_i + \theta_{rt} + \epsilon_{irt} \].

  - \( \alpha_i \): unobserved, time-invariant determinants of wages (location)
  - \( \theta_{rt} \): arbitrary region specific time effect
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- Instrument change in nurse hours using policy pressure:
  \( GAP_i = \max(3.2 - hprd_{i,9798}, 0) \). First stage is effect of the law on staffing levels:
  \[ \Delta_d n_{ir} = \pi_0 + \pi_1 GAP_i + \gamma_r + u_{ir} \]
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- More flexible: add control for linear trend in \( hprd_{i,9798} \)
Data come from 1982 to 2005 annual financial data (MediCal Cost Reports) for all LTC facilities in California submitted to CA OSHPD. Data includes:

- Basic facility information like type of control, license type, location, etc.
- Number of beds, admissions, discharges, and total patient days (occupancy)
- Financial information — revenue and profit margins
- Hours and wages for detailed employee categories (Supervisors, RNs, LNs, NAs, etc. and non-nursing staff), as well as (overall) turnover information.
- Sample restricted to Skilled Nursing Facilities present 1995 to 2004 (1,082 firms).
Characteristics of LTC Facilities in CA in 1999

<table>
<thead>
<tr>
<th></th>
<th>All</th>
<th>1st</th>
<th>2nd</th>
<th>3rd</th>
<th>4th</th>
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</thead>
<tbody>
<tr>
<td>Number of beds</td>
<td>99.40</td>
<td>90.30</td>
<td>101.9</td>
<td>105.3</td>
<td>100.2</td>
</tr>
<tr>
<td></td>
<td>[49.2]</td>
<td>[41.2]</td>
<td>[44.6]</td>
<td>[52.1]</td>
<td>[56.6]</td>
</tr>
<tr>
<td>Average employees</td>
<td>98.80</td>
<td>78.90</td>
<td>95.2</td>
<td>103.3</td>
<td>117.9</td>
</tr>
<tr>
<td></td>
<td>[47.7]</td>
<td>[34]</td>
<td>[39]</td>
<td>[45.8]</td>
<td>[59.7]</td>
</tr>
<tr>
<td>Total Care Health Revenues ($1000s)</td>
<td>3,812.7</td>
<td>3,137.8</td>
<td>4,003.0</td>
<td>3,999.0</td>
<td>4112.5</td>
</tr>
<tr>
<td>Average Occupancy</td>
<td>87.7</td>
<td>89.2</td>
<td>88</td>
<td>87</td>
<td>86.7</td>
</tr>
<tr>
<td>% Patient days paid by Medicare</td>
<td>5.8</td>
<td>4.6</td>
<td>6.4</td>
<td>5.6</td>
<td>6.4</td>
</tr>
<tr>
<td>% Patient days paid by Medical</td>
<td>62.8</td>
<td>75.8</td>
<td>71.2</td>
<td>64.3</td>
<td>40.1</td>
</tr>
<tr>
<td>% Patient days self-paid</td>
<td>24.8</td>
<td>13.8</td>
<td>16.8</td>
<td>23.5</td>
<td>44.9</td>
</tr>
<tr>
<td>Average direct care nurses</td>
<td>59.9</td>
<td>48.1</td>
<td>58.3</td>
<td>63.7</td>
<td>69.5</td>
</tr>
<tr>
<td>Average number of nursing assistants</td>
<td>39.9</td>
<td>32.7</td>
<td>39.5</td>
<td>43.2</td>
<td>44.2</td>
</tr>
<tr>
<td>Total number of nursing assistants</td>
<td>70.9</td>
<td>59.2</td>
<td>71.5</td>
<td>77.6</td>
<td>75.5</td>
</tr>
<tr>
<td>NAs employed continuously 1yr</td>
<td>23.7</td>
<td>18.9</td>
<td>22.7</td>
<td>25.5</td>
<td>27.5</td>
</tr>
<tr>
<td>RN hours/Total nurse hours</td>
<td>10.1</td>
<td>8.9</td>
<td>10.1</td>
<td>9.8</td>
<td>11.6</td>
</tr>
<tr>
<td>Nurse aid hours/Total nurse hours</td>
<td>66.3</td>
<td>67.7</td>
<td>67.40</td>
<td>66.6</td>
<td>63.4</td>
</tr>
<tr>
<td>Total salary + benefits/total expenditures</td>
<td>61.3</td>
<td>57.3</td>
<td>58.0</td>
<td>60.2</td>
<td>69.9</td>
</tr>
<tr>
<td>Nurse salary/total salaries</td>
<td>61.2</td>
<td>60.1</td>
<td>62.7</td>
<td>62.9</td>
<td>59.2</td>
</tr>
</tbody>
</table>
Geographical Distribution of CA Nursing Homes

Legend

Nursing_Homes_1999

- All
- below
  - 0
  - 1
- California
Distribution of Nursing Hours by Occupation, 1999

- NAs: 67%
- LVNs: 18%
- RNs: 10%
- Mgmt: 3.2%
- Oth: 1.8%

- **1996**
  - Management
  - RNs
  - LVNs
  - Nurse Assts

- **1999**
  - Management
  - RNs
  - LVNs
  - Nurse Assts

- **2003**
  - Management
  - RNs
  - LVNs
  - Nurse Assts

Excludes outside values.
Effect of Minimum Staffing Laws on Nurse Employment

- Staffing law requires 3.2 hours per resident day (sum from RNs, LVNs, and NAs) starting January 1st, 2000 (enforcement starts April 1st).

- Compliance? Citations and fines for non-compliance (extent exercised unknown). At time of passage, 99 percent were in compliance with old standard.

- What effect did this have on staffing levels and the mix of nurses hired?
Density of Hours Per Resident Day in CA LTCF: 1996

1995: 72% below
Density of Hours Per Resident Day in CA LTCF: 1998

1998: 71% below
Density of Hours Per Resident Day in CA LTCF: 1999

1999: 74% below
Density of Hours Per Resident Day in CA LTCF: 2000

2000: 60% below

Number of Facilities

0 25 50 75 100 125

1 2 3 4 5

Number of Facilities

Matsudaira
Minimum Staffing Ratios
Density of Hours Per Resident Day in CA LTCF: 2001

2001: 47% below
Density of Hours Per Resident Day in CA LTCF: 2004

2004: 30% below
Should see relatively large increases in staff levels for LTC facilities with hprd below 3.2 hprd, proportional to how far below the threshold the facility is.
Causal Effect of Minimum Staffing Legislation on Nursing Hours

- Should see relatively large increases in staff levels for LTC facilities with hprd below 3.2 hprd, proportional to how far below the threshold the facility is.

- I first present non-parametric analyses of raw data, and then parametric estimates of first stage: effect of law on hours worked.
Changes in HPRD 1997-98 to 2004
Changes in HPRD 1997-98 to 1999
Changes in Log Annual Hours 1999-2003: Nurse Aids

Change in Hours for Nurse Aides: 1999 to 2003

-1 -0.5 0 0.5 1
Log Difference
2 2.5 3 3.5 4 4.5
1999 HPRD
Change in Hours for Nurse Aides: 1999 to 2003
Trends in Nurse Aid Log Hours by Staffing ‘Decile’

Average Log Annual Hours


1st Decile 3rd Decile 5th Decile
8th Decile 9th Decile 10th Decile

Nurse Aides
## First Stage Effect of Law on NA Employment Change

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<tr>
<td><strong>Dependent Var:</strong></td>
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</tr>
<tr>
<td>Change in Log Annual NA Hours, 1999 to 2003</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GAP$_{9798}$</td>
<td>0.1742</td>
<td>0.1645</td>
<td>0.1686</td>
<td>0.1570</td>
</tr>
<tr>
<td></td>
<td>(0.0390)</td>
<td>(0.0386)</td>
<td>(0.0376)</td>
<td>(0.0370)</td>
</tr>
<tr>
<td>HPRD$_{9798}$ - 3.2</td>
<td>-0.0298</td>
<td>-0.0284</td>
<td>-0.0348</td>
<td>-0.0344</td>
</tr>
<tr>
<td></td>
<td>(0.0216)</td>
<td>(0.0210)</td>
<td>(0.0207)</td>
<td>(0.0200)</td>
</tr>
<tr>
<td>%(Hours RN or LVN$_{9798}$)</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>0.0060</td>
<td>0.0069</td>
<td></td>
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<tr>
<td></td>
<td>(0.0022)</td>
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</tr>
<tr>
<td>GAP$<em>{9798}$ × %(Hours RN or LVN$</em>{9798}$)</td>
<td></td>
<td></td>
<td>-0.0063</td>
<td>-0.0066</td>
</tr>
<tr>
<td></td>
<td>(0.0043)</td>
<td>(0.0044)</td>
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<td>0.0963</td>
<td>0.0014</td>
<td>0.0973</td>
<td>0.0116</td>
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<td>(0.0111)</td>
<td>(0.0676)</td>
<td>(0.0108)</td>
<td>(0.0723)</td>
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<tr>
<td>County Fixed-Effects</td>
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<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.0939</td>
<td>0.1242</td>
<td>0.1041</td>
<td>0.1372</td>
</tr>
<tr>
<td>Partial F</td>
<td>19.91</td>
<td>18.71</td>
<td>12.09</td>
<td>11.34</td>
</tr>
</tbody>
</table>
Trends in RN Log Hours by Staffing ‘Decile’

Registered Nurses

Average Log Annual Hours

8 8.5 9 9.5


year

1st Decile 3rd Decile 5th Decile 8th Decile 9th Decile 10th Decile

Registered Nurses

Matsudaira

Minimum Staffing Ratios
Changes in Log Annual Hours 1999-2003: RNs
### First Stage Effect of Law on RN Employment Change

<table>
<thead>
<tr>
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<th>3</th>
<th>4</th>
<th>5</th>
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</thead>
<tbody>
<tr>
<td>GAP(_{9798})</td>
<td>0.1675</td>
<td>0.1206</td>
<td>0.1786</td>
<td>0.1335</td>
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<td>(0.0802)</td>
<td>(0.0814)</td>
<td>(0.0824)</td>
<td>(0.0849)</td>
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<tr>
<td>HPRD(_{9798}) - 3.2</td>
<td>-0.0377</td>
<td>-0.0493</td>
<td>-0.0304</td>
<td>-0.0400</td>
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<td>(0.0357)</td>
<td>(0.0355)</td>
<td>(0.0378)</td>
<td>(0.0391)</td>
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<tr>
<td>%((\text{Hours RN or LVN}_{9798}))</td>
<td>-0.0065</td>
<td>-0.0094</td>
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<td></td>
<td>(0.0043)</td>
<td>(0.0045)</td>
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<tr>
<td>GAP(<em>{9798}) × %((\text{Hours RN or LVN}</em>{9798}))</td>
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<td>0.0042</td>
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<td>(0.0248)</td>
<td>(0.0888)</td>
<td>(0.0251)</td>
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<td>County Fixed-Effects</td>
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<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>(R^2)</td>
<td>0.0177</td>
<td>0.0189</td>
<td>0.0721</td>
<td>0.0237</td>
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<td></td>
<td>0.0783</td>
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<td></td>
<td></td>
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<tr>
<td>Partial F</td>
<td>4.36</td>
<td>2.27</td>
<td>2.36</td>
<td>1.52</td>
</tr>
</tbody>
</table>

Matsudaira | Minimum Staffing Ratios
Changes in Log Annual Hours 1999-2003: LVNs

Change in Hours for Licensed Vocational Nurses: 1999 to 2003
Changes in Log Annual Hours 1999-2003: All Other

Change in Hours for All Non-nursing Staff: 1999 to 2003
Wage effects and tests for monopsony

- If the labor supply curve to firms is upward sloping, firms forced to hire more workers should have had to raise their wages relative to competitors in order to attract more workers.
Wage effects and tests for monopsony

- If the labor supply curve to firms is upward sloping, firms forced to hire more workers should have had to raise their wages relative to competitors in order to attract more workers.

- Should see relatively large increases in wages for LTC facilities with hprd below 3.2 hprd, proportional to how far below the threshold the facility is.
Wage effects and tests for monopsony

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- Should see relatively large increases in wages for LTC facilities with hprd below 3.2 hprd, proportional to how far below the threshold the facility is.

- I ignore effects for LVNs, as their is no first stage relationship. The relationship for registered nurses is tenuous and sensitive to specification - results may not be very informative.
Changes in Log Wages 1999-2003: Nurse Aids

Change in Wages for Nurse Aides: 1999 to 2003
Changes in Log Wages 1999-2003: RNs

Change in Wages for Registered Nurses: 1999 to 2003

Log Difference

1999 HPRD

Matsudaira
Minimum Staffing Ratios
### IV Results: estimates of $\epsilon$ for NAs

**Dependent Var: Change in Log Total Salary & Wages, 1999 to 2003**

<table>
<thead>
<tr>
<th></th>
<th>Estimation 1</th>
<th>Estimation 2</th>
<th>Estimation 3</th>
<th>Estimation 4</th>
</tr>
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<tbody>
<tr>
<td>$\Delta \log \text{Hours, 2003 - 1999}$</td>
<td>-0.1316</td>
<td>-0.1611</td>
<td>-0.1336</td>
<td>-0.1571</td>
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<tr>
<td></td>
<td>(0.1109)</td>
<td>(0.1191)</td>
<td>(0.1024)</td>
<td>(0.1092)</td>
</tr>
<tr>
<td>$HPRD_{9798} - 3.2$</td>
<td>-0.0109</td>
<td>-0.0128</td>
<td>-0.0105</td>
<td>-0.0120</td>
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<tr>
<td></td>
<td>(0.0143)</td>
<td>(0.0149)</td>
<td>(0.0141)</td>
<td>(0.0146)</td>
</tr>
<tr>
<td>$% (\text{Hours RN or LVN}_{9798})$</td>
<td>-0.0009</td>
<td>-0.0009</td>
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<td>(0.0009)</td>
<td>(0.0010)</td>
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<tr>
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<td>0.1789</td>
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<td>0.1792</td>
<td>0.1393</td>
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<td>(0.0151)</td>
<td>(0.0353)</td>
<td>(0.0141)</td>
<td>(0.0353)</td>
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<td>County Fixed-Effects</td>
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<td>Yes</td>
<td>No</td>
<td>Yes</td>
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</table>
IV Results: estimates of $\epsilon$ for NAs

<table>
<thead>
<tr>
<th>Dependent Var: Change in Log Total Salary &amp; Wages, 1999 to 2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\Delta$ Log Hours, 2003 - 1999</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>HPRD$_{9798}$ - 3.2</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>%(Hours RN or LVN$_{9798}$)</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Constant</td>
</tr>
</tbody>
</table>

For NAs, the inverse elasticity point estimates are ‘wrong-signed’ but not significantly different from zero. Upper end of 95%CI ranges from .057 to .086 across specifications.
### IV Results: estimates of $\epsilon$ for RNs

<table>
<thead>
<tr>
<th>Dependent Var: Change in Log Total Salary &amp; Wages, 1999 to 2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\Delta \log{\text{Hours}}$</td>
</tr>
<tr>
<td>(0.1912)</td>
</tr>
<tr>
<td>$\text{HPRD}_{9798} - 3.2$</td>
</tr>
<tr>
<td>(0.0185)</td>
</tr>
<tr>
<td>$%\text{(Hours RN or LVN}_{9798}$</td>
</tr>
<tr>
<td>(0.0016)</td>
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<tr>
<td>constant</td>
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<tr>
<td>(0.0219)</td>
</tr>
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</table>

County Fixed-Effects: No, Yes, No, Yes
IV Results: estimates of $\epsilon$ for RNs

<table>
<thead>
<tr>
<th>Dependent Var: Change in Log Total Salary &amp; Wages, 1999 to 2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\Delta$ Log Hours</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>HPRD$_{9798}$ - 3.2</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>$%$ (Hours RN or LVN$_{9798}$)</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>constant</td>
</tr>
<tr>
<td></td>
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<tr>
<td>County Fixed-Effects</td>
</tr>
</tbody>
</table>

For RNs, the inverse elasticity point estimates are also ‘wrong-signed’ but not significantly different from zero. Upper end of 95% CI ranges from .127 to .314 across specifications.
### IV Results: estimates of $\epsilon$ for NAs over time

<table>
<thead>
<tr>
<th>Dependent Var: Change in Log Total Salary &amp; Wages from 1999</th>
<th>Years Since Policy</th>
<th>1</th>
<th>2</th>
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<tr>
<td>$\Delta$ Log Hours</td>
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<td>-0.1905</td>
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<td>(0.1806)</td>
<td>(0.1133)</td>
<td>(0.1191)</td>
<td>(0.1273)</td>
</tr>
<tr>
<td>HPRD$_{9798}$ - 3.2</td>
<td></td>
<td>-0.0044</td>
<td>-0.0117</td>
<td>-0.0128</td>
<td>-0.0144</td>
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<tr>
<td></td>
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<td>(0.0143)</td>
<td>(0.0114)</td>
<td>(0.0149)</td>
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<td>constant</td>
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<td>0.1233</td>
<td>0.2191</td>
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<td>0.1420</td>
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<tr>
<td></td>
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<td>(0.0416)</td>
<td>(0.0548)</td>
<td>(0.0353)</td>
<td>(0.0370)</td>
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<tr>
<td>County Fixed-Effects</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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</table>
### IV Results: estimates of $\epsilon$ for NAs by urbanicity

<table>
<thead>
<tr>
<th>Years Since Policy</th>
<th>Urban Counties</th>
<th>Non-urban Counties</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>$\Delta \log$ Hours</td>
<td>-0.1263</td>
<td>-0.1694</td>
</tr>
<tr>
<td></td>
<td>(0.1968)</td>
<td>(0.1473)</td>
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<tr>
<td>HPRD$_{9798}$ - 3.2</td>
<td>-0.0118</td>
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<td></td>
<td>(0.0181)</td>
<td>(0.0196)</td>
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<tr>
<td>constant</td>
<td>0.2317</td>
<td>0.2259</td>
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<td>County Fixed-Effects</td>
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<td>Yes</td>
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<td></td>
<td>Yes</td>
<td>Yes</td>
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<td></td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Tentative conclusions

- Very little evidence for upward sloping supply curves for either NAs or RNs, though RN analysis may be altered by including controls for competitors’ actions.
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- Find smaller elasticity estimates than prior literature on RNs:
  - Sullivan: .79 (.13) over 1 year; .26 (.07) over 3 years for RNs
  - Staiger et al.: 5 (1.5) over 2 years
Other facts make monopsony story hard to let go

- In cross-section, firm-size is positively related to wages
Other facts make monopsony story hard to let go

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- Overall turnover is sensitive to wage levels in FE regression: 10% increase in NA wage reduces turnover by .8 percent
Other facts make monopsony story hard to let go

- In cross-section, firm-size is positively related to wages

- Overall turnover is sensitive to wage levels in FE regression: 10% increase in NA wage reduces turnover by .8 percent

- In cross section, only 11-14 percent of variance in log wages explained by 31 county dummies for RNs; 46-53 percent for NAs.
Limitations

- Changes in average wages capture changes in average tenure
  - Could lead to negative bias if there is a positive wage-tenure profile.
  - May be mitigated by high turnover: most workers are earning starting wages.
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- No consideration of oligopsonistic competition. If competitors raise wages to keep their employees from leaving, firm’s supply curve could shift in. Could bias results towards finding higher inverse elasticity.
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- No consideration of oligopsonistic competition. If competitors raise wages to keep their employees from leaving, firm’s supply curve could shift in. Could bias results towards finding higher inverse elasticity.

- Role of unions? May be small: in 1999, 14% of homes are unionized.
Extensions

- Adding data on hospitals to control for the effect of their wage and employment changes
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- Other minimum staffing legislation may affect RN and LVN employment more. For example, 1985 nursing home legislation in CA established 3.0 hprd standard, but allowed double-counting of RN and LVN hours.
Extensions

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- Other minimum staffing legislation may affect RN and LVN employment more. For example, 1985 nursing home legislation in CA established 3.0 hprd standard, but allowed double-counting of RN and LVN hours.

- Completely different: patient outcomes; patient choice of health care providers.