Presentation of 'Employer Consolidation and Wages: Evidence from the Hospital Industry'

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Outline

Research Question

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What is the effect of hospital mergers on the wages of hospital workers?

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Key Findings

The authors find that hospital mergers lead to decreases in wages for certain categories of hospital workers, particularly nurses and technicians.

Data

- Datasets:
  - CMS Health Care Cost Report Information System (HCRIS)
  - BLS Current Population Survey (CPS) and Quarterly Census of Employment and Wages (QCEW)
  - American Hospital Association (AHA) Annual Survey
  - Mergers and Acquisitions data from Irving Levin Associates
  - Census data for commuting zones
- Sample Period: 2000 - 2010

HCRIS and AHA Annual Survey

- HCRIS:
  - Provides hospital-level financial and operational data
  - Key variables: number of employees by occupation, wages, hospital characteristics
- AHA: Provides detailed information on hospital characteristics, services, and ownership

CPS and QCEW

- CPS: Individual-level data on employment, wages, demographics
- QCEW: Establishment-level data on employment and wages by industry

Mergers and Acquisitions Data and Commuting Zones

- Mergers data from Irving Levin Associates
  - Data on hospital mergers from Irving Levin Associates
  - Key variables: merger date, involved hospitals, market definitions
- Commuting Zones (CZ)
  - Used to define local labor markets
  - Based on commuting patterns from Census data

Empirical Strategy

- Difference-in-Differences (DiD) approach
- Commuting zones whcih experienced a single merger-induced concentration increase
  - Treatment group: CZs with a hospital merger (84 CZ)
  - Control group: CZs without a hospital merger (293 CZ)
- Focus on three occupation groups:
  - Unskilled (e.g., janitors, food service workers)
  - Skilled (e.g., administrative staff, technicians)
  - Nursing and Pharmacy (e.g., RNs, LPNs, pharmacists)

Treatment and Control Hospital Observable Characteristics

	Treated Hospitals	Control Hospitals	Std. Diff.	Treated Hospitals by Quartile of ΔHHI 1st qtl	2nd qtl	3rd qtl	4th qtl
Unskilled wage	$10.94	$10.56	0.175	$11.45	$10.72	$10.55	$10.25
Skilled wage	$16.60	$15.95	0.151	$17.44	$16.39	$15.67	$15.60
Nursing & pharmacy wage	$21.72	$21.74	0.004	$22.13	$21.35	$21.68	$21.03
Total FTEs	1,129	749	0.400	1,310	1,153	945	622
Inpatient discharges	9,452	5,701	0.519	10,815	9,745	7,981	5,461
Beds	219	141	0.528	245	225	191	137
Case mix index	1.383	1.293	0.371	1.396	1.399	1.367	1.299
% Medicare	0.400	0.454	0.357	0.359	0.417	0.429	0.474
% Medicaid	0.124	0.148	0.250	0.113	0.116	0.135	0.170
% Outpatient charges	0.400	0.454	0.397	0.379	0.419	0.409	0.426
One-bedroom rent	$444	$384	0.588	$491	$422	$415	$355
CZ population (millions)	1.068	0.343	1.082	1.614	0.857	0.619	0.193
CZ per capita income	$25,859	$22,830	0.602	$27,629	$25,828	$23,720	$22,635
CZ % unemployment	0.044	0.053	0.342	0.041	0.042	0.048	0.060
CZ % age 65 or older	0.134	0.136	0.180	0.123	0.140	0.136	0.161
Nurse unionization rate	0.159	0.121	0.292	0.223	0.123	0.087	0.143

Notes: Values are for 1998 if available and the first year that a hospital appears in the data otherwise. Std. Diff. reports the standardized difference between the treated and control hospitals.

Merger Counts

Figure 1: Merger Counts, 2000–2010

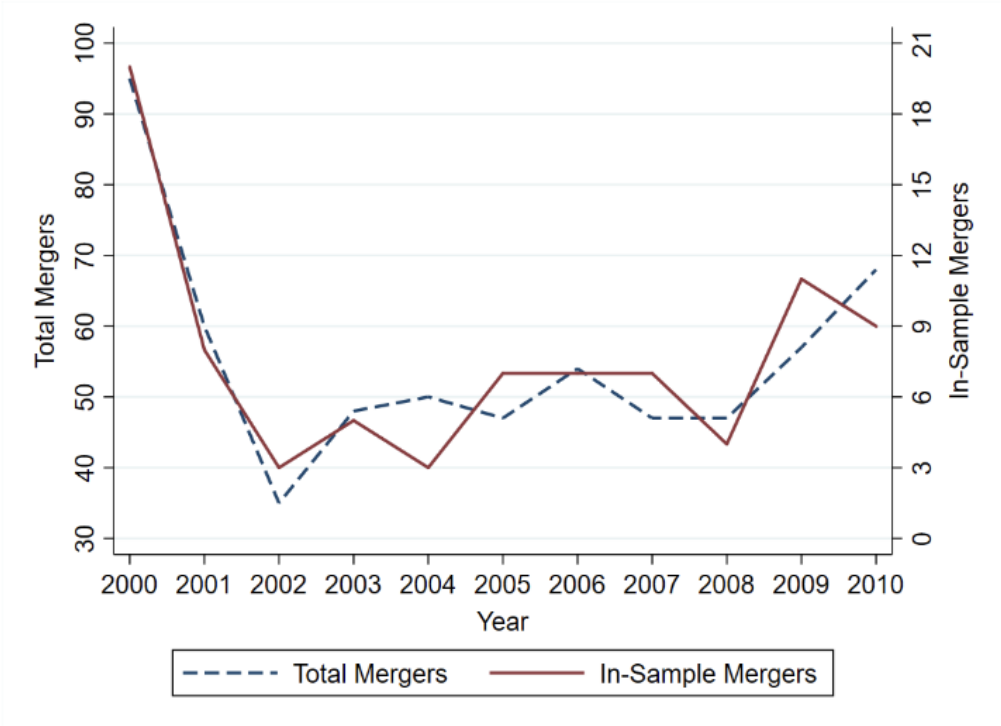


Figure: Number of hospital mergers by year (2000-2010)

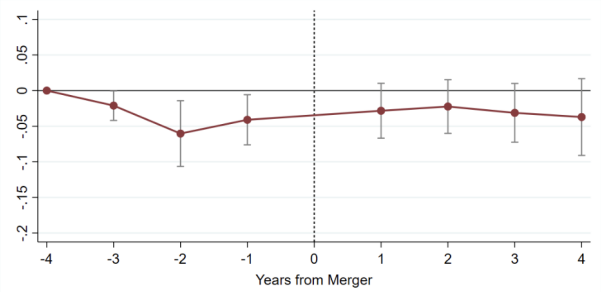
Model

$$ln(wage_{imt}) = \delta_i + \tau_t + \alpha post_{mt} + X_{imt}\beta + \epsilon_{imt} \quad (1)$$

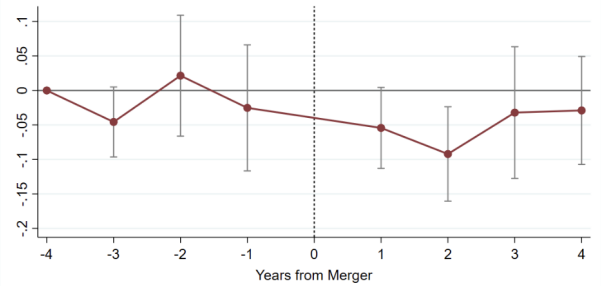
Parallel Trends Check

Figure 2: Leads & Lags Estimates: Top Quartile of ΔHHI Mergers

(a) Unskilled Wage



(b) Skilled Wage



(c) Nursing and Pharmacy Wage

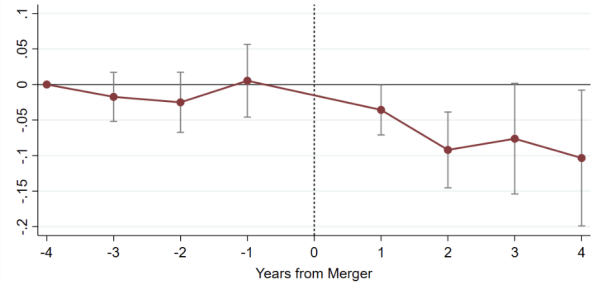


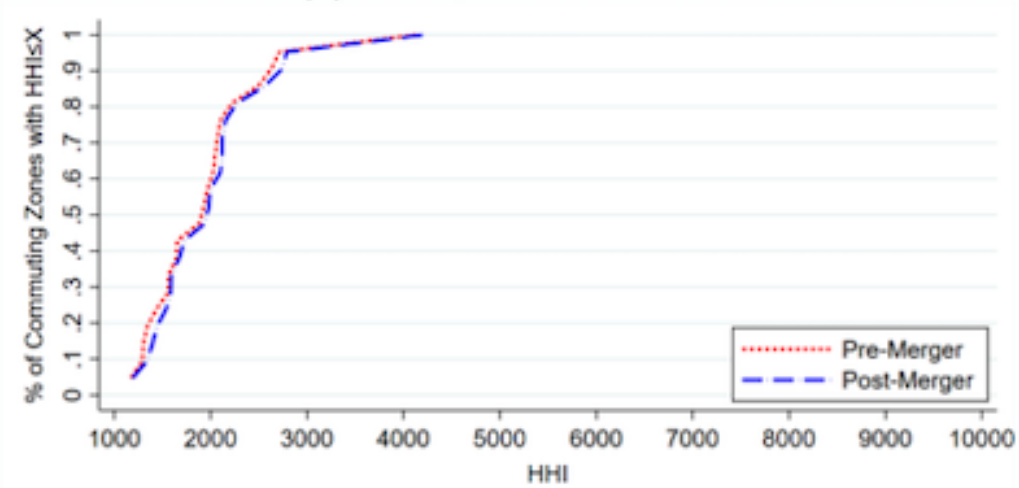
Figure: Wage trend differences (top quartile of concentration)

Difference-in-Differences Estimates

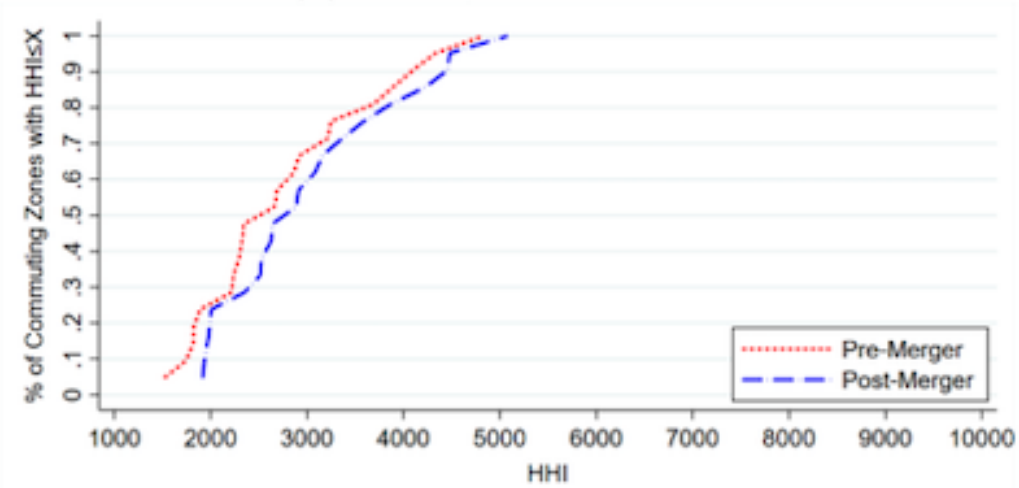
	(1) Unskilled	(2) Skilled	(3) Nursing & Pharmacy
Post	0.005	-0.006	-0.007
	(0.005)	(0.008)	(0.006)
Observations	17,458	17,453	17,328
R-squared	0.913	0.852	0.875
	(4) Unskilled	(5) Skilled	(6) Nursing & Pharmacy
Post × 1st quartile ΔHHI	0.004	0.005	0.002
	(0.006)	(0.010)	(0.009)
Post × 2nd quartile ΔHHI	0.007	-0.022	-0.001
	(0.009)	(0.016)	(0.010)
Post × 3rd quartile ΔHHI	0.007	0.002	-0.019
	(0.008)	(0.021)	(0.014)
Post × 4th quartile ΔHHI	0.002	-0.041**	-0.070***
	(0.014)	(0.019)	(0.022)
Observations	17,458	17,453	17,328
R-squared	0.913	0.853	0.875
H_0: no heterogeneity	0.978	0.105	0.016**

Hospital Employer Concentration in Main Merger Sample

(a) 1st Quartile ΔHHI

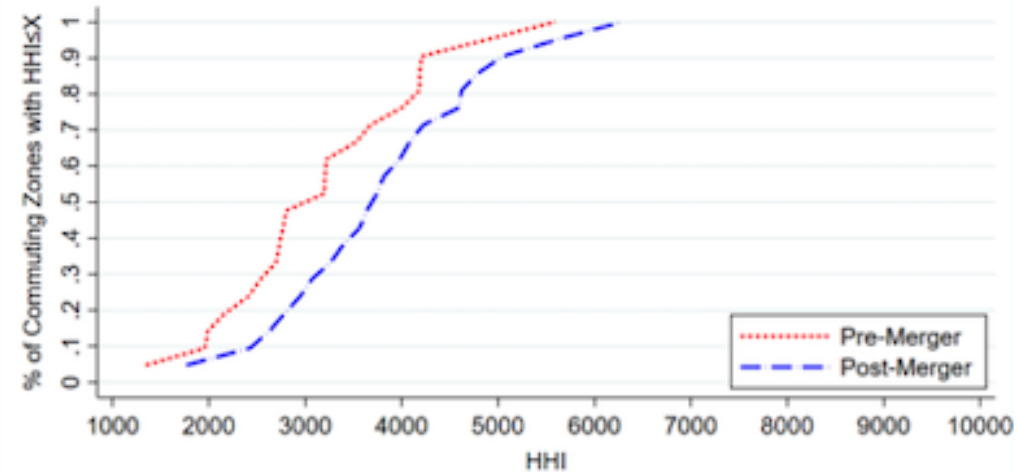


(b) 2nd Quartile ΔHHI

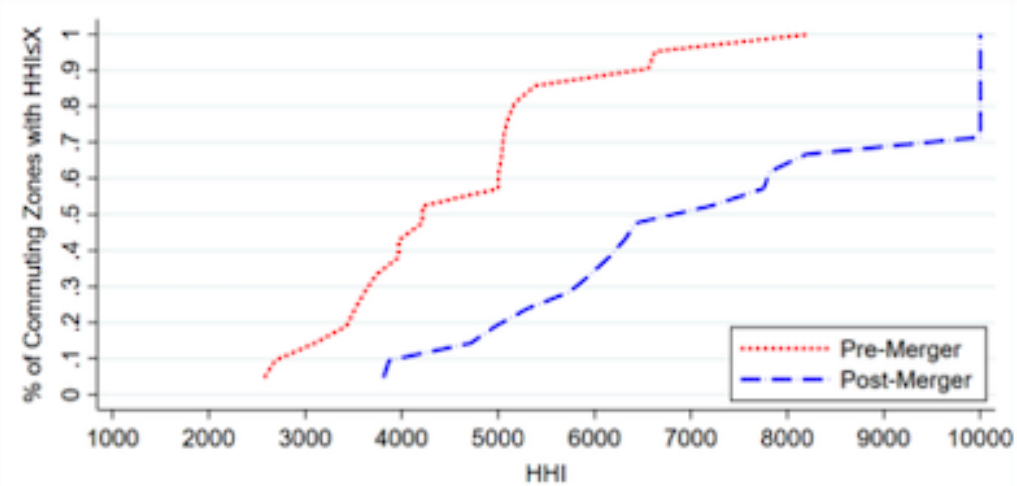


Hospital Employer Concentration in Main Merger Sample

(c) 3rd Quartile ΔHHI

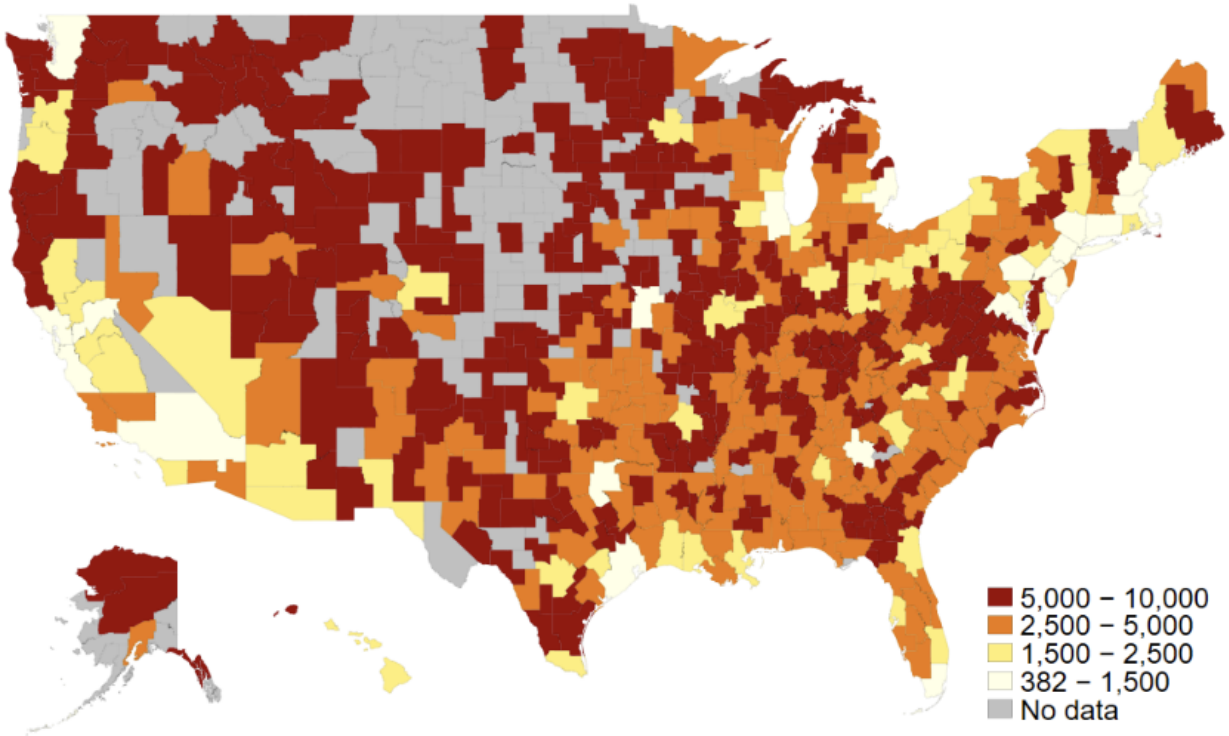


(d) 4th Quartile ΔHHI



Heat Map of HHI Concentration (2012)

(b) HHI by commuting zone, 2012



Cohort-by-Cohort Estimation

	(1) Main Text	(2) Wgt. Avg. of Cohort-by-Cohort
Unskilled:		
Post × 1st quartile ΔHHI	0.004	0.004
Post × 2nd quartile ΔHHI	0.007	0.007
Post × 3rd quartile ΔHHI	0.007	0.007
Post × 4th quartile ΔHHI	0.002	0.001
Skilled:		
Post × 1st quartile ΔHHI	0.005	0.002
Post × 2nd quartile ΔHHI	-0.022	-0.022
Post × 3rd quartile ΔHHI	0.002	0.003
Post × 4th quartile ΔHHI	-0.041	-0.040
Nursing & Pharmacy:		
Post × 1st quartile ΔHHI	0.002	0.002
Post × 2nd quartile ΔHHI	-0.001	-0.001
Post × 3rd quartile ΔHHI	-0.019	-0.018
Post × 4th quartile ΔHHI	-0.070	-0.067

Notes: Column (1) repeats the point estimates from the baseline regressions (equation (1) / Table 3). Column (2) reports weighted averages of cohort-specific estimates (Goodman-Bacon 2019; Callaway & Sant'Anna 2019).

Counterfactuals

- Counterfactual 1: Out-of-market mergers
  - shifts in instutitutional properties of hospitals influence wages
  - ambiguous findings, no significant deviation from main results
- Counterfactual 2: Non-wage compensation
  - CMS Wage Index Files - spending on hospital services would need to rise by 200+ percent to explain wage reductions
- Counterfactual 3: Labor unions
  - high unionization rates meaningfully attenuate wage growth reductions post-merger
- Counterfactual 4: Monoposony
  - No evidence of reductions in employment growth
  - nursing and pharmacy cohort sees *faster* growth in employment in treated markets

Out-of-Market Mergers

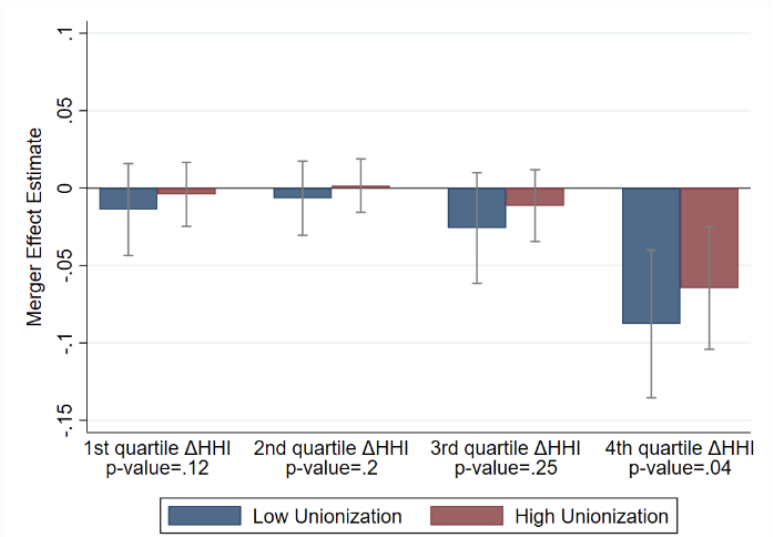
	(1) Unskilled	(2) Skilled	(3) Nursing & Pharmacy
Post	0.002	-0.010	0.004
	(0.008)	(0.011)	(0.008)
Observations	15,402	15,424	15,304
R-squared	0.907	0.849	0.875
	(4) Unskilled	(5) Skilled	(6) Nursing & Pharmacy
Post × 1st quartile HHI	0.008	-0.005	-0.005
	(0.011)	(0.014)	(0.010)
Post × 2nd quartile HHI	-0.006	-0.017	-0.002
	(0.010)	(0.017)	(0.012)
Post × 3rd quartile HHI	-0.010	-0.024	0.029
	(0.012)	(0.027)	(0.021)
Post × 4th quartile HHI	0.011	-0.016	0.001
	(0.016)	(0.028)	(0.024)
Observations	15,402	15,424	15,304
R-squared	0.907	0.849	0.875
H_0: no heterogeneity	0.566	0.901	0.566

Notes: $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.10$. Includes hospital/year FE, plus controls (log rent, log population, log beds, log case mix index, % Medicare, % Medicaid, % outpatient charges, log income, % unemployment, % age 65+). Errors clustered by

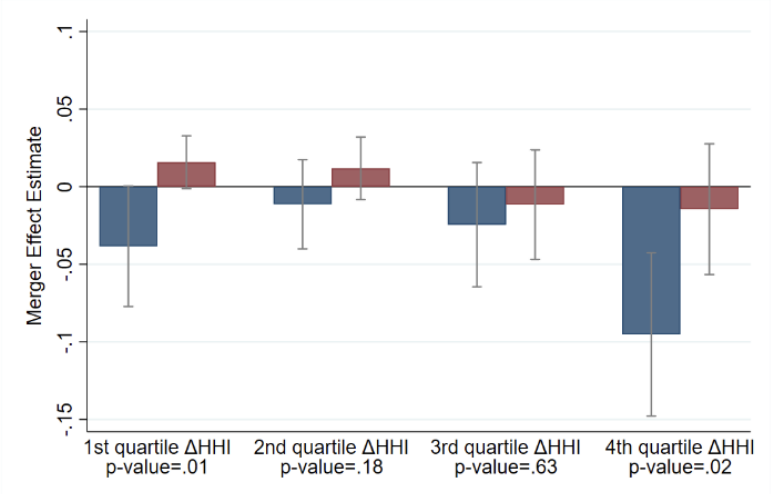
Unionization

Figure 3: Wage Effects and Labor Unions

(a) Nurse Unionization



(b) Right-to-Work Laws



Monopsony

Panel A: Labor Quantity (log FTEs)

	(1) Unskilled	(2) Skilled	(3) Nursing & Pharmacy
Post × 1st quartile ΔHHI	-0.006	0.024	-0.033
	(0.021)	(0.025)	(0.030)
Post × 2nd quartile ΔHHI	-0.011	0.060*	-0.081
	(0.032)	(0.036)	(0.056)
Post × 3rd quartile ΔHHI	-0.002	-0.020	0.078
	(0.022)	(0.055)	(0.061)
Post × 4th quartile ΔHHI	0.045	-0.046	0.187**
	(0.051)	(0.075)	(0.081)
Observations	18,079	18,067	17,885
R-squared	0.959	0.913	0.923

Panel B: Labor Composition (Nursing)

	(4) (log) RN FTEs	(5) (log) LPN FTEs	(6) LPN Share
Post × 1st quartile ΔHHI	0.007	-0.148**	0.001
	(0.015)	(0.062)	(0.003)
Post × 2nd quartile ΔHHI	-0.001	0.038	-0.001
	(0.022)	(0.052)	(0.004)
Post × 3rd quartile ΔHHI	0.020	0.009	-0.005
	(0.041)	(0.079)	(0.005)
Post × 4th quartile ΔHHI	0.074	0.042	-0.005
	(0.065)	(0.133)	(0.007)

Conclusion

- Wage slowdown found for industry-specific workers, particu8larly in markets with large increases in concentration
- Increased labor market power *can* reduce wage growth, though in more defined circumstances than results would suggest
- Merger analysis should be sensitive to merger characteristics, worker types, and labor market definitions
- High-skilled workers face harsher penalties in this context due to less competition for their labor