Replication Output:
Wage Theft, Market Power, and Outsourcing:
The Case of H-1B Workers

Replication Package

February 17, 2026

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1 Figures

1.1 Figure 1: Network Graph of Silicon Valley Outsourcing Relationships

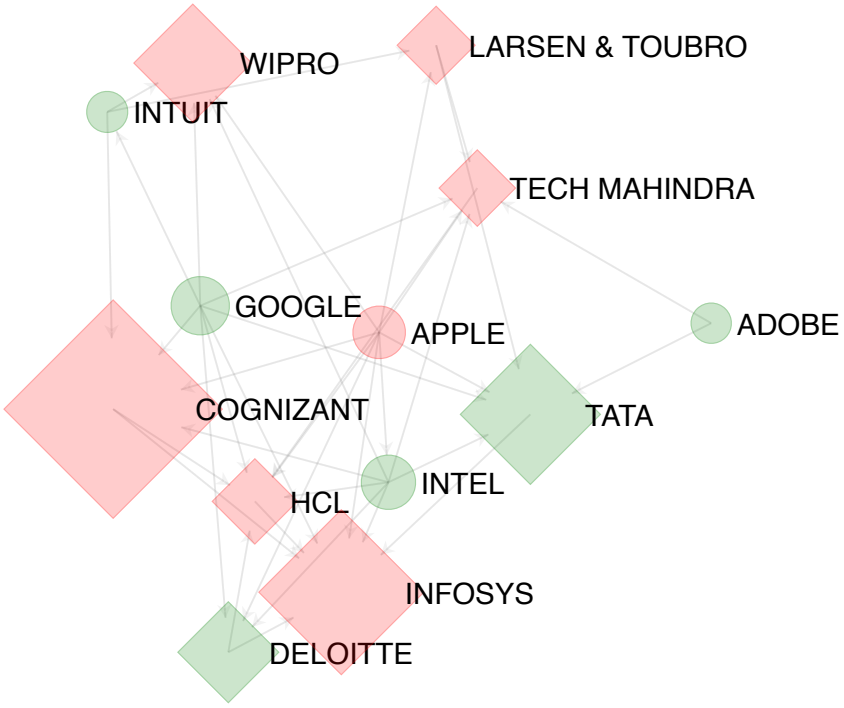
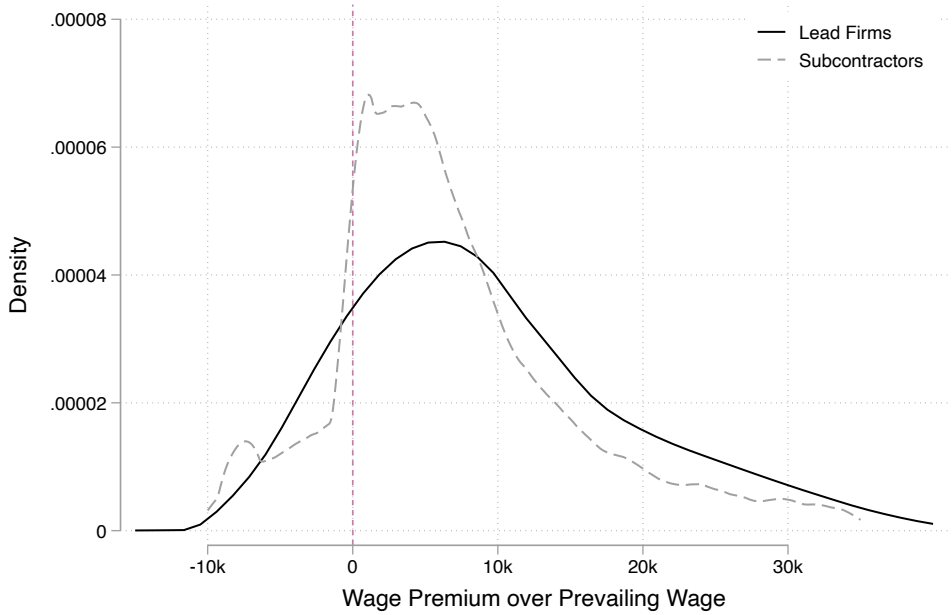


Figure 1: A Network Graph of Silicon Valley Outsourcing Relationships

NOTE. The arrows in this directed graph emanate from lead firms and are directed toward their subcontractor(s). Size is based upon the number of H-1B visas approved from 2009–2020. The largest sponsoring firm, Cognizant, received 170,144 H-1B visa approvals, and the smallest, Adobe, received 2,487.

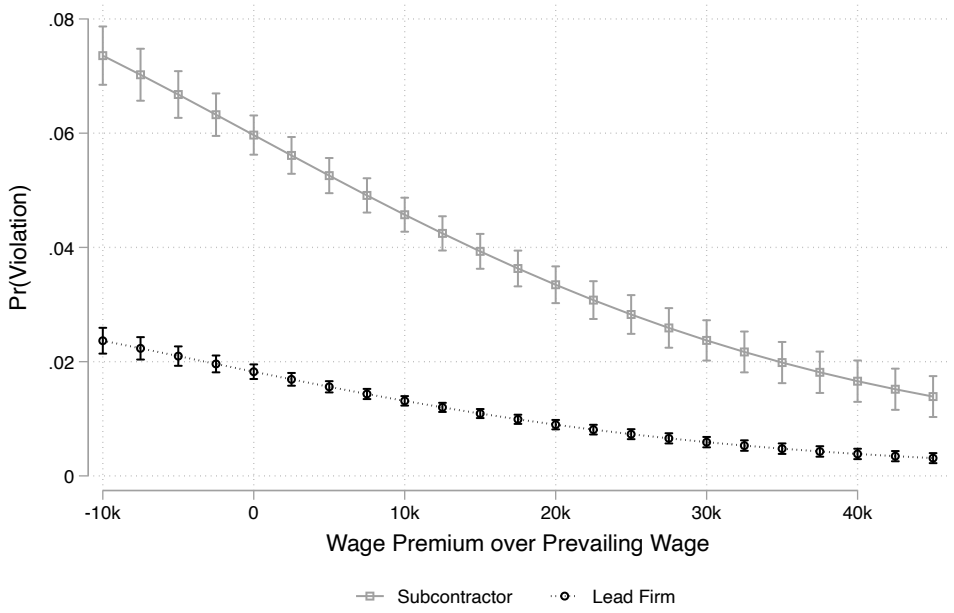
1.2 Figure 2: Wage Premium and Violations

Panel A. Post-2005 Kernel Density Estimate of Wage Premium over Relevant Wage Floor by Subcontractor/Lead Firm Status



NOTE. Epanechnikov kernel with bandwidth = $5000. The vertical line at $0 indicates the relevant prevailing wage for lead firms, or the higher of the relevant prevailing wage or the $60,000 wage floor for subcontractors to avoid additional labor market tests for H-1B-dependent firms that was effective after Fiscal Year 2005.

Panel B. Probability of Violation as a Function of Wage Premium over Relevant Wage Floor by Subcontractor/Lead Firm Status


.08
.06
.04
.02
0
Pr(Violation)
-10k
0
10k
20k
30k
40k
Wage Premium over Prevailing Wage
Subcontractor
Lead Firm

1.3 Figure 3: Average HHI and the Count of Violations

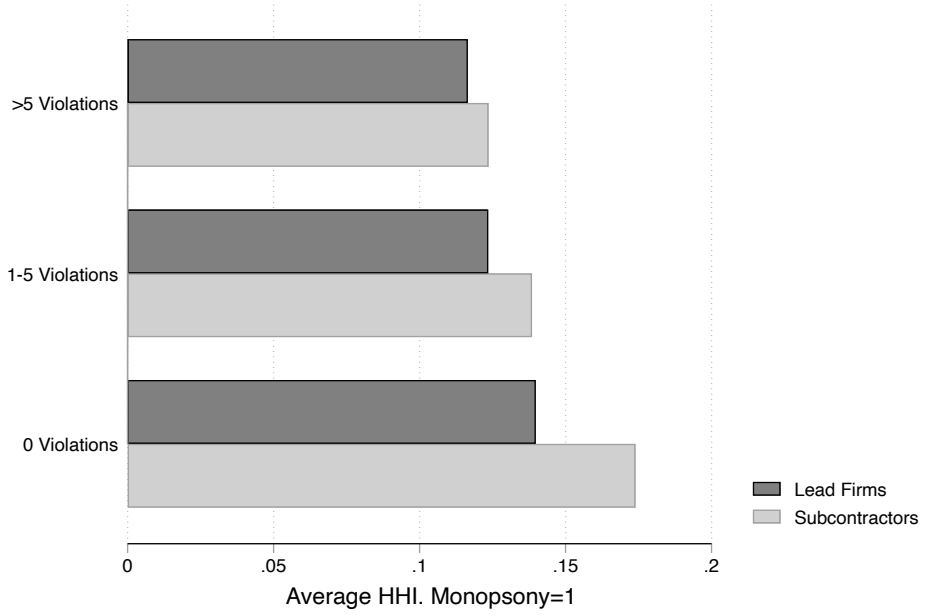


Figure 2: Average *HHI* and the Count of Violations (0, 1–5, > 5)

1.4 Figure 4: Violations Intensity by HHI, Subcontractor Status, and Skill

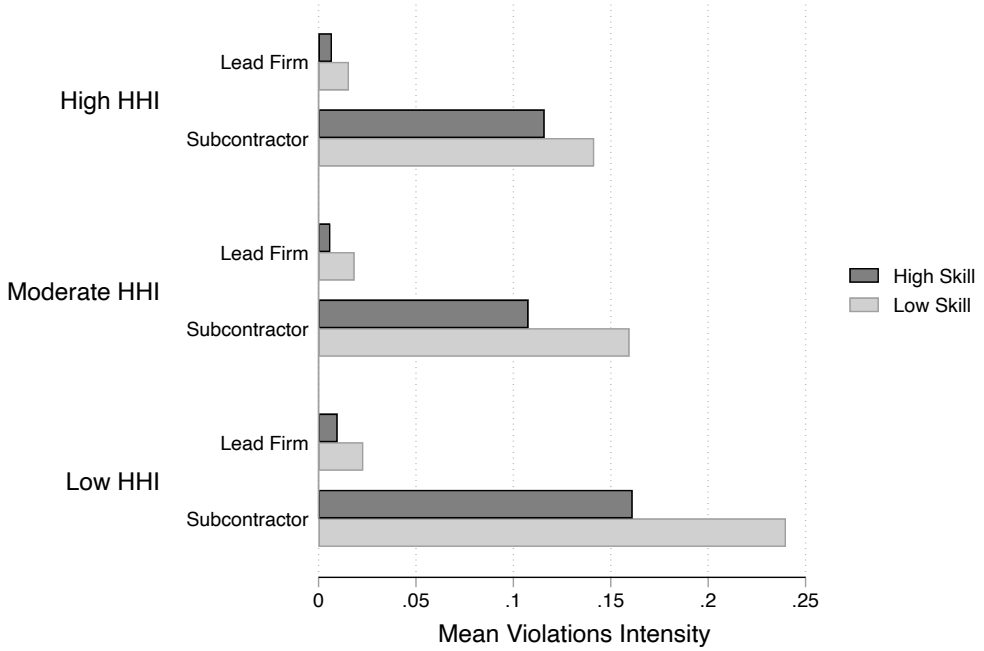


Figure 3: Average Violations Intensity by Labor Market Concentration, Subcontractor Status, and Skill Level

NOTE. We use the Department of Justice merger guidelines as categories for *HHI* (least concentrated = less than or equal to 1000, moderate concentration = between 1000 and 1800, highly concentrated = over 1800), and combine skill levels 1 and 2 into "low skill" and 3 and 4 into "high skill" categories.

1.5 Figure 5: Probabilities a Firm Has a Violation

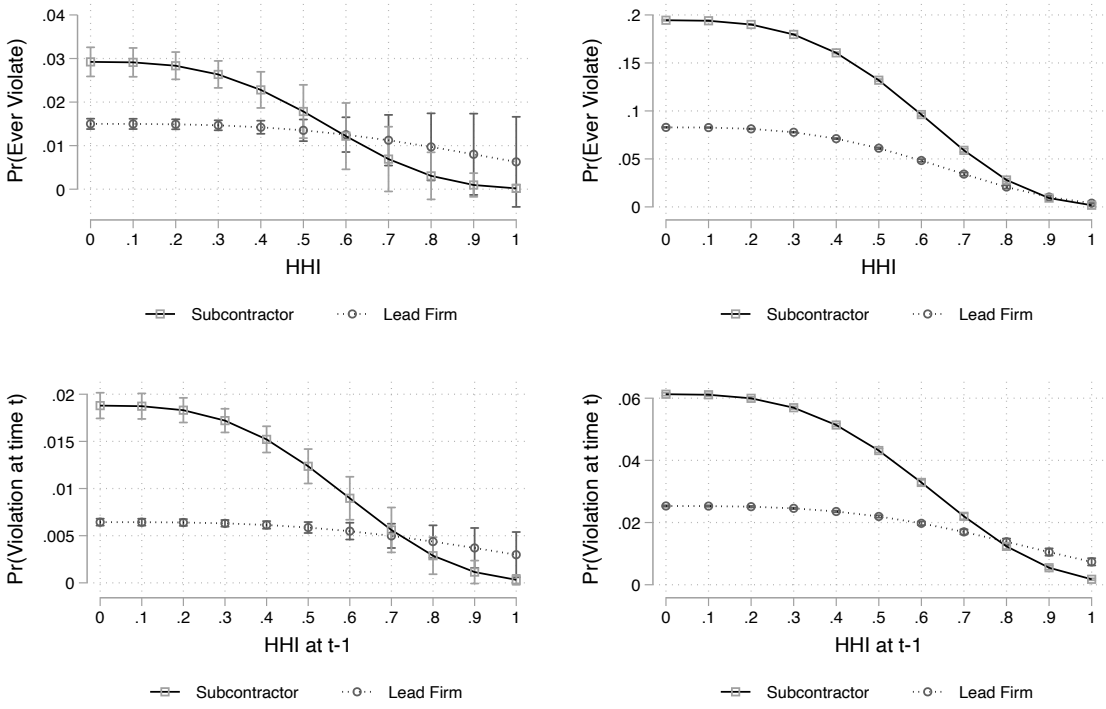


Figure 4: Probabilities a Firm Has a Violation

1.6 Figure 6: Wage-Setting Choices Facing the Monopsonist

Note: Figure 6 is a theoretical model diagram that was manually created and is not reproducible via code. Please refer to the published paper for this figure.

2 Main Tables

2.1 Table 1: Descriptive Statistics

Table 1: Descriptive Statistics

Panel A: Full Sample

	Mean	SD	Min	Max	Median
Violations	0.044	2.118	0.000	485.000	0.000
Violations Intensity	0.023	0.371	0.000	12.788	0.000
% of Cells with any Violations	0.004	0.064	0.000	1.000	0.000
Back Wages	172.945	9570.912	0.000	2159247.490	0.000
Number of H-1Bs	3.509	9.123	0.000	70.000	1.000
HHI	0.142	0.190	0.001	1.000	0.067
Subcontractor	0.071	0.256	0.000	1.000	0.000
Observations	1,353,017				

Panel B: Fixed Effects Sample (Firms with Violations)

	Mean	SD	Min	Max	Median
Violations	2.294	15.200	0.000	485.000	0.000
Violations Intensity	1.104	2.365	0.000	12.788	0.000
% of Cells with any Violations	0.201	0.400	0.000	1.000	0.000
Back Wages	8693.395	68696.008	0.000	2159247.490	0.000
Number of H-1Bs	16.372	23.168	0.000	70.000	4.000
HHI	0.149	0.171	0.001	1.000	0.085
Subcontractor	0.597	0.491	0.000	1.000	1.000
Observations	25,673				

2.2 Table 2: Wages, Skill Levels, and Subcontractor Status

Table 2: Effect of Labor Market Concentration on Wages

	wage	wage	wage	wage	wage	wage
Moderate HHI	-189.8	-728.5	-1465.3	754.1	-11.11	-1347.8
	(136.3)	(918.7)	(1065.4)	(659.7)	(777.9)	(872.9)
High HHI	-2632.7***	-3212.4***	-3132.4***	57.09	-834.8	-3225.4***
	(109.5)	(1208.4)	(1057.2)	(1073.6)	(1311.2)	(1044.9)
Skill Level 2	11712.1***	11756.7***	10395.8***	11406.2***	11547.0***	10155.7***
	(138.5)	(667.3)	(559.5)	(586.3)	(582.2)	(570.3)
Skill Level 3	24628.7***	24775.6***	22426.9***	23513.8***	23809.1***	22068.1***
	(147.6)	(1382.2)	(1155.0)	(1259.5)	(1252.1)	(1143.3)
Skill Level 4	26033.7***	26050.4***	23330.9***	25867.1***	25971.7***	22864.9***
	(214.5)	(1285.2)	(1138.2)	(1272.5)	(1273.1)	(1140.2)
Log(H-1Bs)	387.3***	440.4	-56.94	262.5	299.9	149.8
	(41.32)	(281.0)	(260.4)	(234.7)	(247.0)	(262.9)
Subcontractor	-8504.9***	-8597.4***	-9613.7***	-7847.2***	-7965.0***	-9868.7***
	(140.2)	(987.7)	(1157.7)	(811.4)	(779.3)	(1105.5)
Constant	68799.4***	68941.8***	71204.5***	68404.1***	68593.9***	71293.5***
	(127.6)	(1284.1)	(1266.1)	(995.3)	(1096.2)	(1238.2)
Year FE	N	Y	N	N	Y	Y
Occupation FE	N	N	Y	N	N	Y
Commuting Zone FE	N	N	N	Y	Y	N
Observations	346,020	346,017	346,017	346,017	346,017	346,017

Dependent variable: Wage (dollars). Standard errors clustered by commuting zone in columns 2-6.

Reference categories: Low HHI (¡0.10), Skill Level 1, Lead Firm.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

2.3 Table 3: The Effect of Labor Market Power and Subcontractor Status on Log(1 + Violations per 1000 H-1Bs)

Table 3: THE EFFECT OF LABOR MARKET POWER AND SUBCONTRACTOR STATUS ON LOG(1 + VIOLATIONS PER 1000 H-1BS)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	b/se	b/se	b/se	b/se	b/se	b/se	b/se
HHI	-0.0121**	0.00157	-0.0129*	-0.00622	-0.00342	-0.116***	-0.0535**
	(0.00530)	(0.00389)	(0.00706)	(0.00502)	(0.00393)	(0.0328)	(0.0240)
Subcontractor		0.109***					
		(0.0161)					
SubcontractorXHHI		-0.159***					
		(0.0377)					
Log(H-1Bs)	0.0423***	0.0333***	0.00622***	0.00428***	0.00419***	0.0129***	0.0179***
	(0.00516)	(0.00440)	(0.00141)	(0.00108)	(0.00105)	(0.00419)	(0.00457)
Year	Y	Y	Y	N	Y	N	Y
Occ	Y	Y	Y	Y	Y	Y	Y
CommuteZone	Y	Y	N	N	N	N	N
Firm	N	N	Y	Y	Y	Y	Y
R-Squared	0.01	0.02	0.44	0.51	0.51	0.34	0.34
p	0	0	0	0	0	0	0
k_absorb	718	718	419,706	413,440	413,440	6,266	6,266
N	1,237,750	1,237,750	1,237,741	1,149,944	1,149,944	87,797	87,797

2.4 Table 4: Instrumental Variable: The Effect of Labor Market Power on Log(1 + Violations per 1000 H-1Bs)

Table 4: IV Regression: Effect of Labor Market Power on Log(Violations)

	logviol	logviol	logviol	logviol	logviol	logviol	logviol	logviol
HHI	-0.247***	-0.230***	-0.350***	-0.257***	-0.364***	-0.304***	-0.236***	-0.308***
	(0.0602)	(0.0653)	(0.0746)	(0.0596)	(0.0780)	(0.0923)	(0.0638)	(0.0936)
Log(H-1Bs)	0.0480***	0.0482***	0.0457***	0.0450***	0.0433***	0.0456***	0.0453***	0.0434***
	(0.00622)	(0.00627)	(0.00569)	(0.00561)	(0.00532)	(0.00577)	(0.00565)	(0.00535)
Year FE	N	Y	N	N	N	Y	Y	Y
Occupation FE	N	N	Y	N	Y	Y	N	Y
Commuting Zone FE	N	N	N	Y	Y	N	Y	Y
Observations	1,237,747	1,237,747	1,237,747	1,237,725	1,237,725	1,237,747	1,237,725	1,237,725
Kleibergen-Paap F	17.06	12.97	61.85	21.41	52.90	27.48	15.85	25.93
Hansen J p-value								

Dependent variable: Log(1+1000*(Violations/H1Bs)). IV regression using lagged HHI as instrument.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

2.5 Table 5: Marginal Effects: Changes in Probability

Table 5: Marginal Effects: Changes in Probability

Panel A: Change in Probability a Firm Ever Violates

	(1) Unweighted	(2) Population Weighted
HHI_f	-.01776***	-.1667***
	(.004525)	(.001317)
SUB_f	.01348***	.1094***
	(.001763)	(.0003947)
N	59,188	3,459,214

Panel B: Change in Probability a Firm Violates at t

	(1) Unweighted	(2) Population Weighted
$HHI_{f,t-1}$	-.006738***	-.04446***
	(.00127)	(.000771)
SUB_f	.01154***	.03394***
	(.0007029)	(.0002562)
N	268,500	3,074,987

2.6 Table 6: Probabilities at Critical Values

Table 6: Marginal Effects: Probabilities at Critical Values

	Panel A: Probability a Firm Ever Violates	
	(1)	(2)
	Unweighted	Population Weighted
$SUB_f = 0, \overline{HHI}_f = 0$	.01706	.1002
$SUB_f = 1, \overline{HHI}_f = 0$	.0322	.2272
$SUB_f = 0, \overline{HHI}_f = 1$	.005523	.01591
$SUB_f = 1, \overline{HHI}_f = 1$	.01148	.05344
N	59,188	3,459,214

	Panel B: Probability a Firm Violates at t	
	(1)	(2)
	Unweighted	Population Weighted
$SUB_f = 0, \overline{HHI}_{f,t-1} = 0$	.007038	.02946
$SUB_f = 1, \overline{HHI}_{f,t-1} = 0$	.01962	.06859
$SUB_f = 0, \overline{HHI}_{f,t-1} = 1$	.002977	.007184
$SUB_f = 1, \overline{HHI}_{f,t-1} = 1$	.009219	.0205
N	268,500	3,074,987

3 Appendix Tables

3.1 Appendix Table 1: The Effect of Labor Market Power and Subcontractor Status on Wage and Hour Violations

Table 7: THE EFFECT OF LABOR MARKET POWER AND SUBCONTRACTOR STATUS ON WAGE AND HOUR VIOLATIONS

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	b/se	b/se	b/se	b/se	b/se	b/se	b/se
Violations							
HHI	0.708	1.071	0.444***	1.132	0.589**	0.312*	0.369***
	(0.303)	(0.505)	(0.0622)	(0.594)	(0.157)	(0.211)	(0.0798)
Subcontractor		15.55***					
		(5.168)					
SubcontractorXHHI		0.106***					
		(0.0832)					
Log(H-1Bs)	3.229***	2.835***	1.343***	3.238***	1.243***	1.974***	1.491***
	(0.225)	(0.173)	(0.0198)	(0.218)	(0.0519)	(0.0894)	(0.0566)
/							
Log(alpha)	344.9***	280.8***		477.7***		90.07***	
	(75.96)	(56.48)		(117.3)		(8.780)	
Year	Y	Y	Y	N	Y	N	Y
Occ	Y	Y	Y	Y	Y	Y	Y
CommuteZone	Y	Y	N	N	N	N	N
Firm	N	N	Y	Y	Y	Y	Y
p	.	.	0.000	.	.	.	.
N	1,351,602	1,351,602	25,673	1,256,301	10,349	95,301	15,324

3.2 Appendix Table 2: The Effect of Labor Market Power on Log(1 + Violations per 1000 H-1Bs)

Table 8: Within Firm OLS: DV: Log(1+ 1000*(Violations/H1Bs))

	(1)	(2)	(3)	(4)
	b/se	b/se	b/se	b/se
HHI	-0.0999**	-0.0377	-0.106**	-0.0463
	(0.0451)	(0.0306)	(0.0471)	(0.0315)
log(H1Bs)	0.0200***	0.0213***	0.0182***	0.0195***
	(0.00219)	(0.00229)	(0.00248)	(0.00284)
Year	N	Y	N	Y
Occ	N	N	Y	Y
Firm	Y	Y	Y	Y
R-Squared	0.47	0.47	0.47	0.47
k_absorb	419,706	419,706	419,706	419,706
N	4,746,563	4,746,563	4,746,563	4,746,563

Table 9: Between Firm OLS: DV: Log(1+ 1000*(Violations/H1Bs))

	(1)	(2)	(3)	(4)
	b/se	b/se	b/se	b/se
HHI	-0.141**	-0.0484	-0.167**	-0.0713*
	(0.0706)	(0.0514)	(0.0688)	(0.0420)
log(H1Bs)	0.0602***	0.0638***	0.0507***	0.0540***
	(0.00693)	(0.00718)	(0.00545)	(0.00557)
Year	N	Y	N	Y
Occ	N	N	Y	Y
CommmutingZone	Y	Y	Y	Y
R-Squared	0.03	0.04	0.03	0.04
N	4,746,573	4,746,573	4,746,573	4,746,573

3.3 Appendix Table 3: The Effect of Labor Market Power on Log(1 + Back Wages per 1000 H-1Bs)

Table 10: Within Firm OLS: DV: Log(1+1000*(Back Wages/H1Bs))

	(1)	(2)	(3)	(4)
	b/se	b/se	b/se	b/se
HHI	-0.174**	-0.0395	-0.169*	-0.0416
	(0.0856)	(0.0611)	(0.0893)	(0.0639)
log(H1Bs)	0.0634***	0.0591***	0.0702***	0.0658***
	(0.00732)	(0.00688)	(0.00858)	(0.00774)
Year	N	Y	N	Y
Occ	N	N	Y	Y
Firm	Y	Y	Y	Y
R-Squared	0.35	0.36	0.35	0.36
k_absorb	419,706	419,706	419,706	419,706
N	4,746,563	4,746,563	4,746,563	4,746,563

Table 11: Between Firm OLS: DV: Log(1+1000*(Back Wages/H1Bs))

	(1)	(2)	(3)	(4)
	b/se	b/se	b/se	b/se
HHI	-0.243*	-0.0591	-0.275**	-0.0877
	(0.137)	(0.105)	(0.133)	(0.0913)
log(H1Bs)	0.126***	0.131***	0.116***	0.120***
	(0.0139)	(0.0139)	(0.0133)	(0.0131)
Year	N	Y	N	Y
Occ	N	N	Y	Y
CommmutingZone	Y	Y	Y	Y
R-Squared	0.02	0.03	0.02	0.03
N	4,746,573	4,746,573	4,746,573	4,746,573

3.4 Appendix Table 4: The Effect of Labor Market Power and Subcontractor Status on Log(1 + Back Wages per 1000 H-1Bs)

Table 12: THE EFFECT OF LABOR MARKET POWER AND SUBCONTRACTOR STATUS ON LOG(1+ BACK WAGES PER 1000 H-1BS)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	b/se	b/se	b/se	b/se	b/se	b/se	b/se
HHI	-0.0180*	0.00281	-0.0213	-0.0132	-0.00657	-0.229***	-0.0853
	(0.00961)	(0.00739)	(0.0146)	(0.00910)	(0.00719)	(0.0809)	(0.0641)
Subcontractor		0.201***					
		(0.0329)					
SubcontractorXHHI		-0.248***					
		(0.0880)					
Log(H-1Bs)	0.0863***	0.0688***	0.0211***	0.0178***	0.0171***	0.0477***	0.0535***
	(0.0102)	(0.00858)	(0.00381)	(0.00452)	(0.00432)	(0.00974)	(0.0109)
Year	Y	Y	Y	N	Y	N	Y
Occ	Y	Y	Y	Y	Y	Y	Y
CommuteZone	N	Y	N	N	N	N	N
Firm	N	N	Y	Y	Y	Y	Y
R-Squared	0.01	0.01	0.34	0.42	0.42	0.21	0.21
N	1,237,750	1,237,750	1,237,741	1,149,944	1,149,944	87,797	87,797

3.5 Appendix Table 5: The Effect of Labor Market Power on Log(1 + 1000(Back Wages / Wages Promised))

Table 13: Firm, Occupation Level: Within Firm OLS: DV: Log(1+1000*(Back Wages/Promised Wages))

	(1)	(2)	(3)	(4)
	b/se	b/se	b/se	b/se
HHI	-0.0173***	-0.00821***	-0.0166***	-0.00806***
	(0.00287)	(0.00285)	(0.00302)	(0.00300)
log(H1Bs)	0.0129***	0.0126***	0.0144***	0.0142***
	(0.00125)	(0.00125)	(0.00123)	(0.00124)
Year	N	Y	N	Y
Occ	N	N	Y	Y
Firm	Y	Y	Y	Y
R-Squared	0.34	0.34	0.34	0.34
k_absorb	453,471	453,471	453,471	453,471
N	1,351,775	1,351,775	1,351,775	1,351,775

Table 14: Firm, Occupation Level: Between Firm OLS: DV: Log(1+1000*(Back Wages/Promised Wages))

	(1)	(2)	(3)	(4)
	b/se	b/se	b/se	b/se
HHI	-0.0121**	-0.00211	-0.0161***	-0.00597
	(0.00494)	(0.00346)	(0.00537)	(0.00367)
log(H1Bs)	0.0319***	0.0322***	0.0319***	0.0322***
	(0.00368)	(0.00370)	(0.00372)	(0.00374)
Year	N	Y	N	Y
Occ	N	N	Y	Y
Commuting Zone	Y	Y	Y	Y
N	.008	.0089	.0081	.0091
N	1,351,602	1,351,602	1,351,602	1,351,602

3.6 Appendix Table 6: The Effect of Labor Market Power and Subcontractor Status on Log(1 + 1000(Back Wages / Wages Promised))

Table 15: OLS Regression: Firm-Level, Year, Commuting Zone, and Occupation Defined Labor Market

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se
HHI	-0.00562***	0.0000605	-0.00541***	-0.00249**	-0.00446***	0.000673	0.00689***	0.00487**
	(0.000950)	(0.00191)	(0.00100)	(0.00122)	(0.00127)	(0.00205)	(0.00249)	(0.00238)
Subcontractor	0.0791***	0.0818***	0.0786***	0.0748***	0.0744***	0.0813***	0.0777***	0.0773***
	(0.00333)	(0.0125)	(0.00335)	(0.00334)	(0.00336)	(0.0126)	(0.0121)	(0.0122)
SubcontractorXHHI	-0.108***	-0.106***	-0.108***	-0.105***	-0.105***	-0.106***	-0.104***	-0.104***
	(0.0105)	(0.0312)	(0.0105)	(0.0105)	(0.0105)	(0.0314)	(0.0312)	(0.0313)
log(nbrh1bs)	0.0265***	0.0266***	0.0265***	0.0261***	0.0263***	0.0267***	0.0261***	0.0263***
	(0.000852)	(0.00324)	(0.000840)	(0.000856)	(0.000845)	(0.00327)	(0.00311)	(0.00318)
Year	N	Y	N	N	N	Y	Y	Y
Occ	N	N	Y	N	Y	Y	N	Y
CommuteZone	N	N	N	Y	Y	N	Y	Y
R-Squared	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
N	1,351,786	1,351,602	1,351,786	1,351,602	1,351,602	1,351,602	1,351,602	1,351,602

3.7 Appendix Table 7: Occupation Defined Labor Market Level Analysis

Table 16: OLS Regression: Log(1+1000*(WHD Violations/H1Bs)): Firm-Level, Year, Commuting Zone, and Occupation Defined Labor Market

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se
HHI	-0.760***	-0.712***	-0.778***	-0.409***	-0.227***	-0.732***	-0.332***	-0.162***
	(0.0205)	(0.0665)	(0.0200)	(0.0190)	(0.0197)	(0.0627)	(0.0363)	(0.0337)
log(nbrh1bs)	0.0752***	0.0827***	0.104***	-0.0506***	-0.0989***	0.113***	-0.0464***	-0.0917***
	(0.00408)	(0.0117)	(0.00402)	(0.00426)	(0.00509)	(0.0130)	(0.00797)	(0.0115)
Year	N	Y	N	N	N	Y	Y	Y
Occupation	N	N	Y	N	Y	Y	N	Y
CommutingZone	N	N	N	Y	Y	N	Y	Y
R-Squared	0.08	0.10	0.12	0.35	0.37	0.14	0.38	0.39
N	51,354	51,330	51,354	51,330	51,330	51,330	51,330	51,330

3.8 Appendix Table 8: Industry Defined Labor Market Level Analysis

Table 17: OLS Regression: Log(1+1000*(WHD Violations/H1Bs)): Firm-Level, Year, Commuting Zone, and Industry Defined Labor Market

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se
HHI	-0.108***	-0.0825**	-0.144***	0.0160	0.0436**	-0.155***	0.0521	0.0153
	(0.0177)	(0.0355)	(0.0189)	(0.0176)	(0.0206)	(0.0370)	(0.0380)	(0.0440)
log(nbrh1bs)	0.166***	0.171***	0.164***	0.126***	0.0948***	0.166***	0.131***	0.109***
	(0.00542)	(0.0213)	(0.00521)	(0.00546)	(0.00561)	(0.0199)	(0.0177)	(0.0150)
Year	N	Y	N	N	N	Y	Y	Y
Industry	N	N	Y	N	Y	Y	N	Y
CommutingZone	N	N	N	Y	Y	N	Y	Y
R-Squared	0.07	0.07	0.11	0.11	0.15	0.12	0.12	0.16
N	50,077	50,062	50,077	50,062	50,062	50,062	50,062	50,062

3.9 Appendix Table 9: The Effect of Labor Market Power on Log(1 + Violations per 1000 H-1Bs) (Unweighted)

Table 18: Firm, Occupation Level: Within Firm OLS (Unweighted): DV: Log(1+ 1000*(Violations/H1Bs))

	(1)	(2)	(3)	(4)
	b/se	b/se	b/se	b/se
HHI	-0.0233**	-0.0131**	-0.0227**	-0.0129*
	(0.00927)	(0.00650)	(0.00980)	(0.00706)
log(H1Bs)	0.00576***	0.00593***	0.00594***	0.00622***
	(0.00125)	(0.00130)	(0.00134)	(0.00141)
Year	N	Y	N	Y
Occ	N	N	Y	Y
Firm	Y	Y	Y	Y
R-Squared	0.44	0.44	0.44	0.44
k_absorb	419,706	419,706	419,706	419,706
N	1,237,741	1,237,741	1,237,741	1,237,741

Table 19: Firm, Occupation Level: Between Firm OLS (Unweighted): DV: Log(1+ 1000*(Violations/H1Bs))

	(1)	(2)	(3)	(4)
	b/se	b/se	b/se	b/se
HHI	-0.0176**	-0.00534	-0.0249***	-0.0121**
	(0.00716)	(0.00500)	(0.00792)	(0.00530)
log(H1Bs)	0.0431***	0.0437***	0.0417***	0.0423***
	(0.00532)	(0.00541)	(0.00506)	(0.00516)
Year	N	Y	N	Y
Occ	N	N	Y	Y
Commuting Zone	Y	Y	Y	Y
R-Squared	0	0	0	0
N	1,237,750	1,237,750	1,237,750	1,237,750

3.10 Appendix Table 10: The Effect of Labor Market Power and Subcontractor Status on Log(1 + Violations per 1000 H-1Bs)

Table 20: OLS Regression: Log(1+1000*(WHD Violations/H1Bs)): Firm-Level, Year, Commuting Zone, and Occupation Defined Labor Market

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se
HHI	-0.0102***	-0.00284	-0.0108***	-0.00664***	-0.0126***	-0.00261	0.00721*	0.00164
	(0.00126)	(0.00286)	(0.00134)	(0.00184)	(0.00201)	(0.00270)	(0.00405)	(0.00385)
Subcontractor	0.112***	0.115***	0.110***	0.107***	0.105***	0.113***	0.110***	0.109***
	(0.00415)	(0.0166)	(0.00417)	(0.00418)	(0.00419)	(0.0164)	(0.0162)	(0.0161)
SubcontractorXHHI	-0.169***	-0.166***	-0.167***	-0.162***	-0.160***	-0.165***	-0.161***	-0.159***
	(0.0121)	(0.0377)	(0.0121)	(0.0124)	(0.0124)	(0.0376)	(0.0378)	(0.0375)
log(nbrh1bs)	0.0350***	0.0353***	0.0338***	0.0341***	0.0331***	0.0341***	0.0343***	0.0333***
	(0.00101)	(0.00490)	(0.000982)	(0.00101)	(0.000985)	(0.00466)	(0.00456)	(0.00440)
Year	N	Y	N	N	N	Y	Y	Y
Occupation	N	N	Y	N	Y	Y	N	Y
CommutingZone	N	N	N	Y	Y	N	Y	Y
R-Squared	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02
N	1,237,779	1,237,750	1,237,779	1,237,750	1,237,750	1,237,750	1,237,750	1,237,750

3.11 Appendix Table 11: The Effect of Labor Market Power on Log(1 + Back Wages per 1000 H-1Bs) (Unweighted)

Table 21: Firm, Occupation Level: Within Firm OLS (Unweighted): DV: Log(1+1000*(Back Wages/H1Bs))

	(1)	(2)	(3)	(4)
	b/se	b/se	b/se	b/se
HHI	-0.0481**	-0.0247*	-0.0432**	-0.0213
	(0.0199)	(0.0147)	(0.0195)	(0.0146)
log(H1Bs)	0.0172***	0.0166***	0.0215***	0.0211***
	(0.00324)	(0.00318)	(0.00387)	(0.00381)
Year	N	Y	N	Y
Occ	N	N	Y	Y
Firm	Y	Y	Y	Y
R-Squared	0.34	0.34	0.34	0.34
k_absorb	419,706	419,706	419,706	419,706
N	1,237,741	1,237,741	1,237,741	1,237,741

Table 22: Firm, Occupation Level: Between Firm OLS (Unweighted): DV: Log(1+1000*(Back Wages/H1Bs))

	(1)	(2)	(3)	(4)
	b/se	b/se	b/se	b/se
HHI	-0.0347**	-0.00916	-0.0439***	-0.0180*
	(0.0135)	(0.00944)	(0.0143)	(0.00961)
log(H1Bs)	0.0850***	0.0859***	0.0854***	0.0863***
	(0.00987)	(0.00995)	(0.0101)	(0.0102)
Year	N	Y	N	Y
Occ	N	N	Y	Y
Commuting Zone	Y	Y	Y	Y
R-Squared	0	0	0	0
N	1,237,750	1,237,750	1,237,750	1,237,750

3.12 Appendix Table 12: The Effect of Labor Market Power and Subcontractor Status on Log(1 + Back Wages per 1000 H-1Bs)

Table 23: OLS Regression: Log(1+1000*(Back Wages/H1Bs)): Firm-Level, Year, Commuting Zone, and Occupation Defined Labor Market

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se
HHI	-0.0271***	-0.0118**	-0.0260***	-0.0192***	-0.0258***	-0.00963*	0.00943	0.00296
	(0.00277)	(0.00515)	(0.00297)	(0.00412)	(0.00449)	(0.00537)	(0.00745)	(0.00730)
Subcontractor	0.204***	0.211***	0.203***	0.195***	0.194***	0.210***	0.202***	0.201***
	(0.00919)	(0.0330)	(0.00924)	(0.00924)	(0.00928)	(0.0333)	(0.0326)	(0.0329)
SubcontractorXHHI	-0.261***	-0.257***	-0.263***	-0.251***	-0.250***	-0.259***	-0.248***	-0.248***
	(0.0300)	(0.0853)	(0.0301)	(0.0308)	(0.0308)	(0.0859)	(0.0870)	(0.0876)
log(nbrh1bs)	0.0696***	0.0698***	0.0704***	0.0677***	0.0687***	0.0706***	0.0677***	0.0687***
	(0.00224)	(0.00875)	(0.00222)	(0.00225)	(0.00222)	(0.00897)	(0.00825)	(0.00857)
Year	N	Y	N	N	N	Y	Y	Y
Occupation	N	N	Y	N	Y	Y	N	Y
CommutingZone	N	N	N	Y	Y	N	Y	Y
R-Squared	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
N	1,237,779	1,237,750	1,237,779	1,237,750	1,237,750	1,237,750	1,237,750	1,237,750

4 Replication Notes

4.1 Data and Sample

The analysis uses administrative data on H-1B visa petitions merged with Wage and Hour Division enforcement records. The main estimation sample consists of 1,237,750 observations at the firm-occupation-commuting zone-year level for firms with at least one violation during the sample period.

4.2 Key Variables

- `logviol`: $\log\left(1 + 1000 \times \frac{\text{Violations}_{foct}}{\text{H1Bs}_{foct}}\right)$
- `logbw`: $\log\left(1 + 1000 \times \frac{\text{Back Wages}_{foct}}{\text{H1Bs}_{foct}}\right)$
- `logbwpw`: $\log\left(1 + 1000 \times \frac{\text{Back Wages}_{foct}}{\text{Wages Promised}_{foct}}\right)$
- `HHI`: Herfindahl-Hirschman Index (three-year rolling average), where 1 = monopsony and 0 = perfect competition
- `SUB`: Binary indicator for subcontractor firms (1) vs. lead firms (0)

4.3 Software Requirements

- Stata 16 or higher
- Required packages: `estout`, `reghdfe`, `ppmlhdfe`, `nwcommands`, `ivreg2`, `xtivreg2`
- LaTeX distribution for PDF compilation

4.4 Running the Replication

Execute the master do-file in Stata:

```
do code/00_master.do
```

This will generate all tables in `output/tables/` and figures in `output/figures/`, then compile this document.

Replication package created: February 2026