

# Online Appendix

“Age Discrimination across the Business Cycle”  
By Gordon Dahl and Matthew Knepper

Appendix Figures and Tables

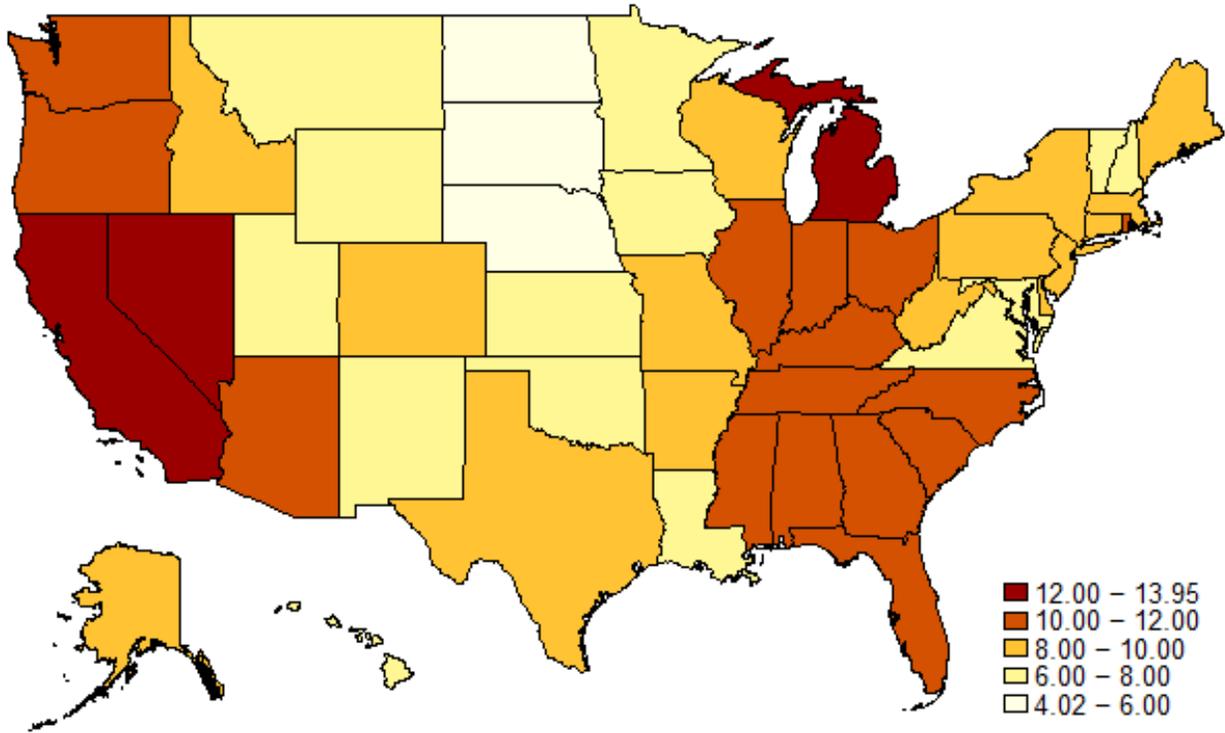


Figure A1: State Unemployment Rates at the Height of the Great Recession

Nonseasonally-adjusted monthly unemployment rates by state in December of 2009, split into quintiles.

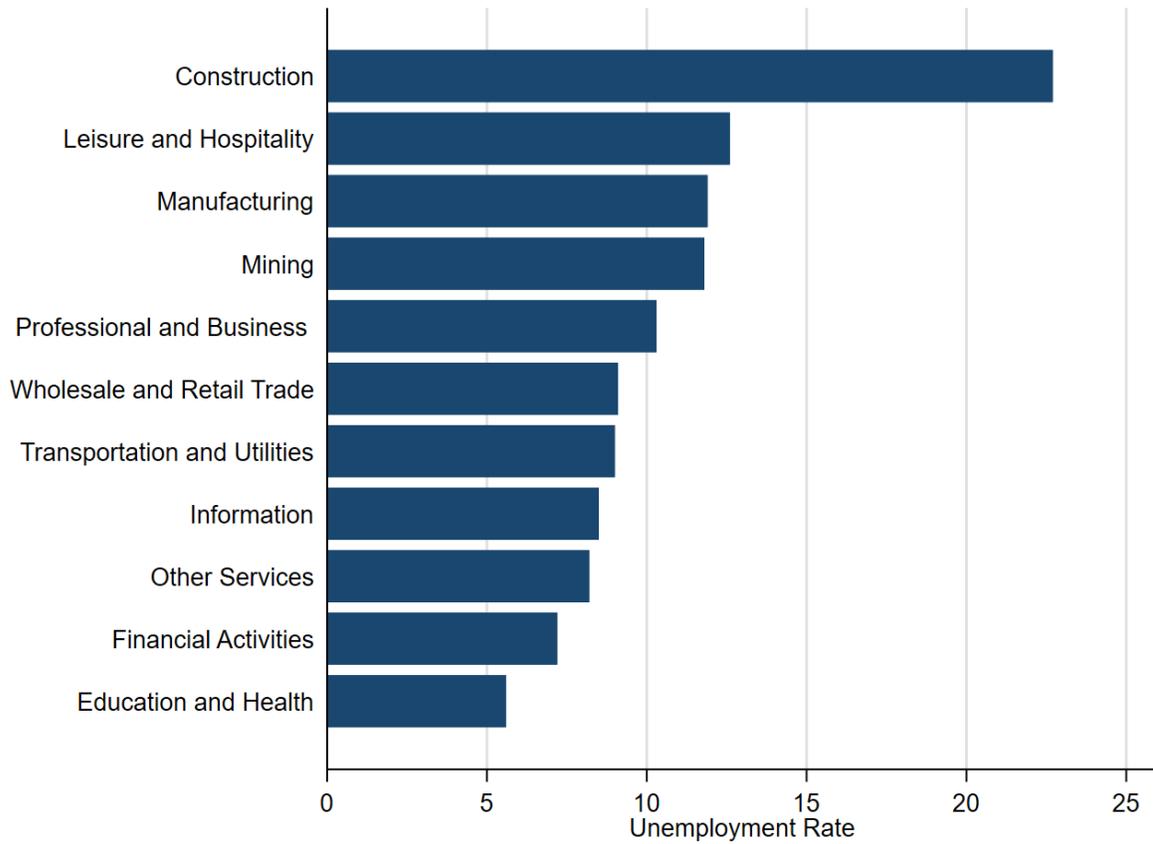


Figure A2: Industry Unemployment Rates at the Height of the Great Recession

Nonseasonally-adjusted monthly unemployment rates by industry in December of 2009.

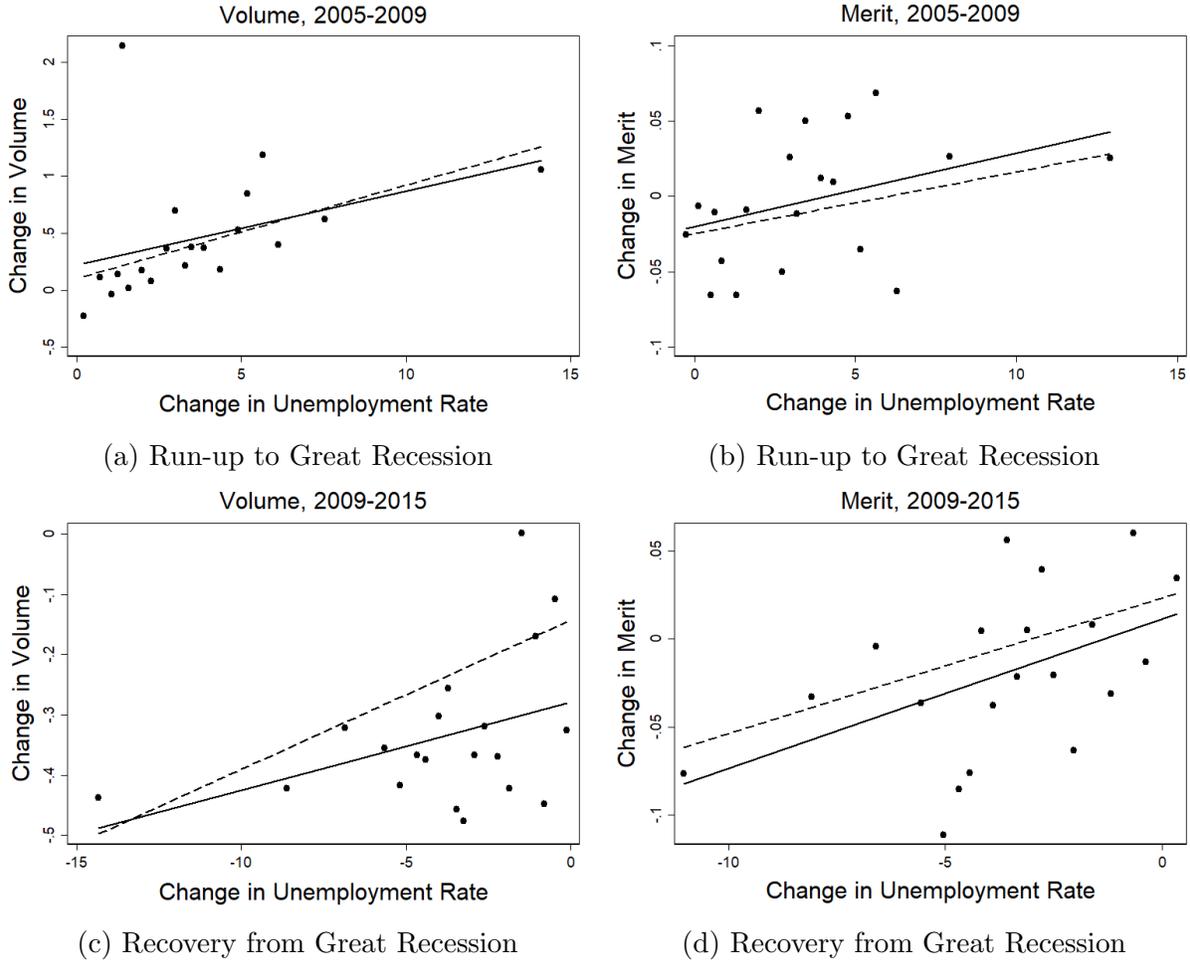


Figure A3: ADEA Charges Across the Great Recession (by State-Industry)

Binned scatter plots with weighted data and 20 equally sized bins are presented. Change in volume is defined as the fractional change in charges relative to the size of each state-industry's labor force. The solid line is the regression line weighted by the size of the state-industry labor force, while the dashed line is unweighted. For the merit graphs, only those state-industries with at least 2 ADEA charges in the pre and post periods are retained. This restriction removes 2.1% and 1.7% of total charges from panels b and d, respectively. Weighted regression line slopes (standard errors) for panels a-d, respectively, are 0.057 (0.018), 0.006 (0.003), 0.014 (0.008), and 0.008 (0.003).

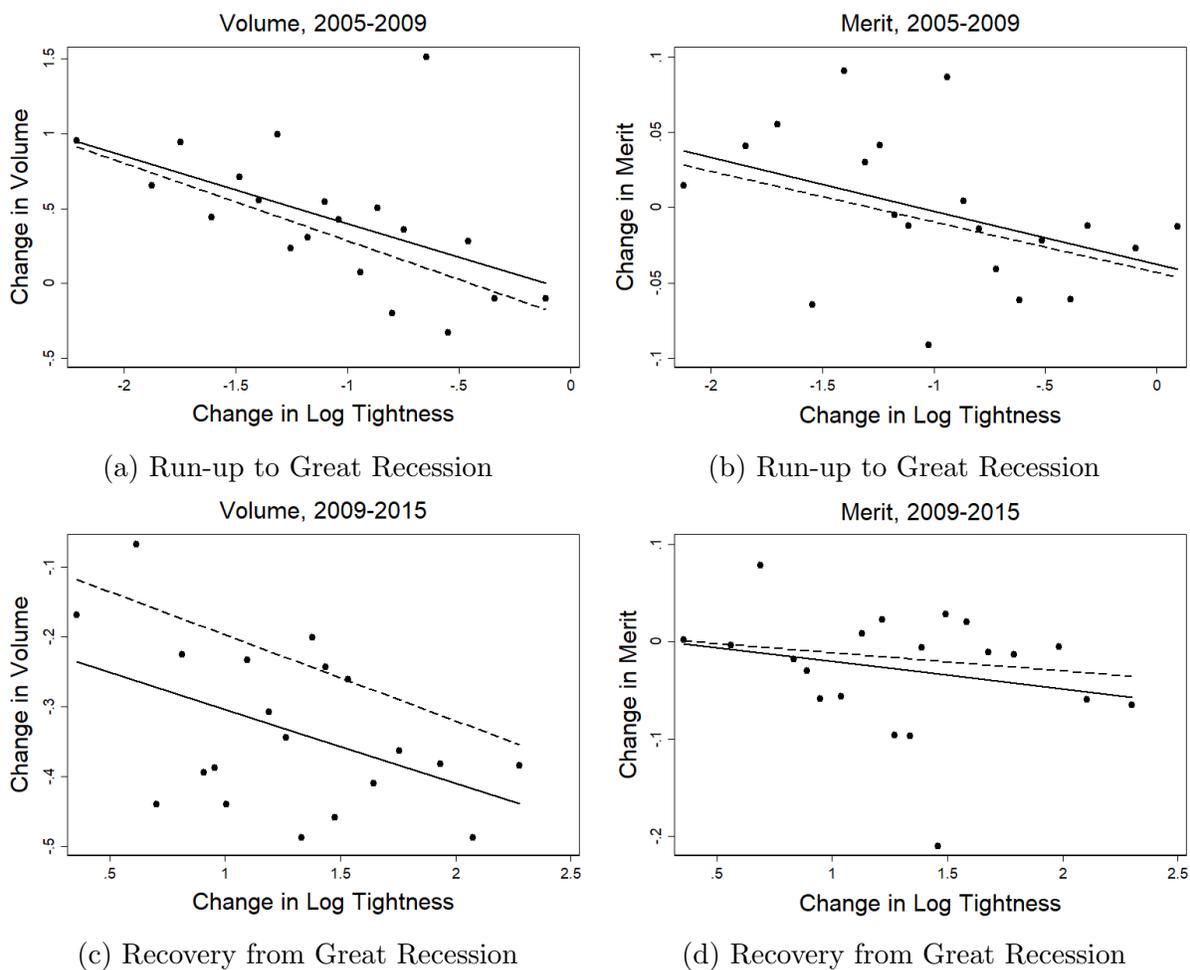


Figure A4: ADEA Charges and Labor Market Tightness (by State-Industry)

Binned scatter plots with weighted data and 20 equally sized bins are presented. Log tightness is defined as log job openings-log unemployment. Change in volume is defined as the fractional change in charges relative to the size of each state-industry's labor force. The solid line is the regression line weighted by the size of the state-industry labor force, while the dashed line is unweighted. For the merit graphs, only those state-industries with at least 2 ADEA charges in the pre and post periods are retained. This restriction removes 2.1% and 1.7% of total charges from panels b and d, respectively. Weighted regression line slopes (standard errors) for panels a-d, respectively, are  $-0.428$  ( $0.093$ ),  $-0.036$  ( $0.017$ ),  $-0.105$  ( $0.053$ ), and  $-0.027$  ( $0.017$ ).



Figure A5: Charges Filed by Firm Size and Claim Quality

The EEOC reports number of employees in the bins used above.

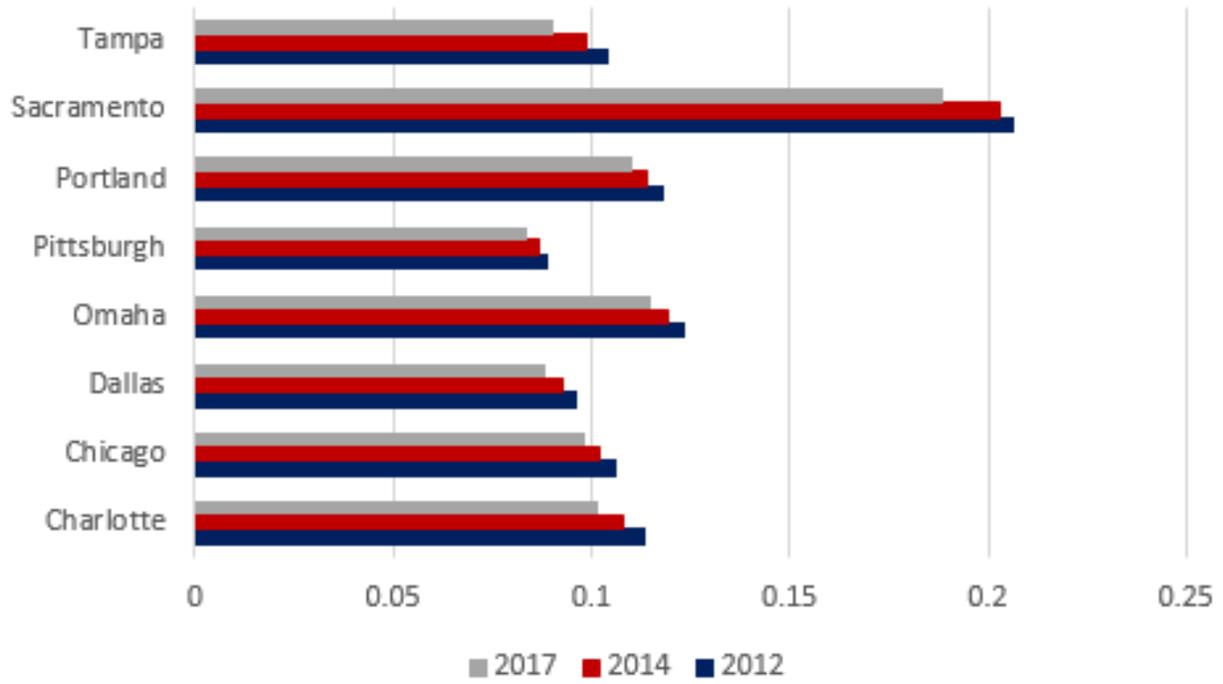


Figure A6: Size of Public Sector, by City and Year

The fraction of each city's workforce that is employed in the public sector based on BEA Regional Employment statistics.

Table A1: ADEA Charges by Type

	Firing	Hiring
<b>Top Basis Categories</b>		
Retaliation	0.287	0.157
Disability	0.234	0.167
Race-Black	0.162	0.179
Sex-Female	0.147	0.097
National Origin	0.088	0.100
Sex-Male	0.056	0.085
<b>Top Issue Categories</b>		
Discharge	1	0.135
Hiring	0.023	1
Terms and Conditions	0.198	0.072
Harassment	0.168	0.031
Discipline	0.115	0.013
Reasonable Accom.	0.059	0.016
Wages	0.040	0.015
Suspension	0.037	0.002
Promotion	0.036	0.037
Demotion	0.023	0.006
Sexual Harassment	0.020	0.004
<b>Worker/Firm Characteristics</b>		
Age	56.0	56.0
White	0.569	0.559
Black	0.241	0.257
Female	0.510	0.370
Legal representation	0.172	0.073
Private firm	0.908	0.757
Charges	67,993	11,602
Claims per charge	4.19	3.24

ADEA firing and hiring charges filed with the EEOC between 2005 and 2015. Only the most prevalent basis and issue categories are shown. Because the number of claims per charge exceed 1, the fraction of all bases and of all issues need not sum to 1.

Table A2: Charge Volume and Unemployment, Full PDL Model

Dep. var. = # of charges	Firing + Hiring		Firing		Hiring	
	Base (1)	PDL (2)	Base (3)	PDL (4)	Base (5)	PDL
unemployment <sub>jst</sub>	1.31*** (0.25)	1.22*** (0.34)	1.21*** (0.23)	1.09*** (0.40)	0.10*** (0.03)	0.13 (0.10)
unemployment <sub>jst-1</sub>		0.08 (0.41)		0.60*** (0.17)		-0.51* (0.31)
unemployment <sub>jst-2</sub>		-0.62 (0.44)		-1.14*** (0.31)		0.52*** (0.16)
unemployment <sub>jst-3</sub>		-0.04 (0.47)		0.17 (0.33)		-0.21 (0.17)
unemployment <sub>jst-4</sub>		0.53 (0.56)		0.44 (0.49)		0.09 (0.14)
unemployment <sub>jst-5</sub>		0.24 (0.30)		0.41 (0.30)		-0.18** (0.08)
unemployment <sub>jst-6</sub>		-0.05 (0.34)		-0.33 (0.40)		0.29 (0.20)
<b>Effect of 1 pp ↑ unemp</b>	<b>20.2</b>	<b>20.8</b>	<b>18.6</b>	<b>18.9</b>	<b>1.51</b>	<b>1.80</b>
Mean(# national charges)	665.0	665.0	568.6	568.6	96.3	96.3
% change	3.0	3.1	3.3	3.3	1.6	1.9
Elasticity	0.21	0.21	0.22	0.23	0.11	0.13
N (state-industry-months)	78,963	78,963	78,963	78,963	78,963	78,963
Polynomial degree		quadratic		quadratic		quadratic
AIC	321,274	321,113	300,064	299,924	139,744	139,682
R <sup>2</sup>	0.469		0.506		0.088	

Industry-state-month level regressions for the volume of cases. The sample period spans 2005-2015. Regression coefficients show the change in charges filed per 100,000 increase in the number unemployed. Observations are weighted by the industry share of employment in each state's labor force. Bolded 'Effect of 1 pp ↑ unemp' is the implied effect of a one percentage point increase in the national unemployment rate on the national monthly number of charges filed. The PDL model estimates the cumulative effect of previous and contemporaneous unemployment on current period charges using a polynomial distributed lag model; the total effect is the sum of coefficients across all lags. The AIC is used to choose the number of lags; while not shown, the BIC chooses the same lag structure. All regressions include state, time, and industry fixed effects. Standard errors clustered at the state level.

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Table A3: Charge Quality and Unemployment, Full PDL Model

Dep. var. = $\mathbb{1}(\textit{merit})$	Firing + Hiring		Firing		Hiring	
	Base (1)	PDL (2)	Base (3)	PDL (4)	Base (5)	PDL (6)
unemployment <sub>jt</sub>	17.6*** (4.62)	-2.6 (21.4)	13.0** (5.78)	-15.0 (17.0)	19.5 (17.4)	15.6 (69.0)
unemployment <sub>jt-1</sub>		22.8 (30.8)		24.9 (30.7)		24.8 (87.4)
unemployment <sub>jt-2</sub>		-13.5 (41.4)		15.2 (55.9)		-107* (53.7)
unemployment <sub>jt-3</sub>		57.1** (22.4)		6.48 (21.6)		234** (98.8)
unemployment <sub>jt-4</sub>		-29.8 (27.0)		-10.2 (27.6)		-100 (62.2)
unemployment <sub>jt-5</sub>		15.9 (22.7)		50.5** (22.0)		-166 (115)
unemployment <sub>jt-6</sub>		-33.5 (36.7)		-60.2* (32.5)		116 (107)
age	0.0015*** (0.0002)	0.0015*** (0.0002)	0.0015*** (0.0002)	0.0015*** (0.0002)	0.0016*** (0.0005)	0.0016*** (0.0005)
female	0.0180*** (0.0024)	0.0180*** (0.0024)	0.0144*** (0.0025)	0.0145*** (0.0025)	0.0301*** (0.0061)	0.0301*** (0.0061)
private	0.0410*** (0.0055)	0.0410*** (0.0055)	0.0413*** (0.0064)	0.0412*** (0.0064)	0.0411*** (0.0094)	0.0408*** (0.0093)
<b>Effect of 1 pp ↑ unemp</b>	<b>0.0012</b>	<b>0.0012</b>	<b>0.0009</b>	<b>0.0009</b>	<b>0.0013</b>	<b>0.0012</b>
Mean(merit)	.167	.167	.172	.172	.141	.141
% change	0.7	0.7	0.5	0.5	0.9	0.8
Elasticity	0.04	0.04	0.03	0.03	0.05	0.05
N (charges)	78,021	78,021	67,988	67,988	11,600	11,600
Polynomial degree		quadratic		quadratic		linear
AIC	67,660	67,654	60,533	60,528	8,431	8,430
R <sup>2</sup>	0.017		0.018		0.042	

Individual level regressions for whether a case is determined to have merit. The sample period spans 2005-2015. Regression coefficients on ‘unemployment’ are multiplied by  $10^{-8}$ . Bolded ‘Effect of 1 pp ↑ unemp’ is the implied effect of a one percentage point increase in a state-industry’s monthly unemployment rate on the fraction of charges found to have had merit. The PDL model estimates the cumulative effect of previous and contemporaneous unemployment on current period charges using a polynomial distributed lag model; the total effect is the sum of coefficients across all lags. The AIC is used to choose the number of lags; while not shown, the BIC chooses the same lag structure. All regressions include state, time, and industry fixed effects. Standard errors clustered at the state level.

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Table A4: Charge Volume and Unemployment, Unweighted

Dep. var. = # of charges	Firing + Hiring		Firing		Hiring	
	Base (1)	PDL (2)	Base (3)	PDL (4)	Base (5)	PDL
unemployment <sub>jst</sub>	1.96*** (0.43)	1.51*** (0.33)	1.75*** (0.41)	1.35*** (0.37)	0.21*** (0.05)	0.16 (0.11)
unemployment <sub>jst-1</sub>		-0.05 (0.30)		0.14 (0.26)		-0.20 (0.17)
unemployment <sub>jst-2</sub>		-0.01 (0.26)		-0.26 (0.23)		0.25* (0.14)
unemployment <sub>jst-3</sub>		0.40 (0.32)		0.44* (0.24)		-0.04 (0.14)
unemployment <sub>jst-4</sub>		-0.25 (0.43)		-0.20 (0.36)		-0.05 (0.13)
unemployment <sub>jst-5</sub>		0.28 (0.22)		0.34 (0.28)		-0.05 (0.09)
unemployment <sub>jst-6</sub>		0.11 (0.37)		-0.03 (0.40)		0.14* (0.08)
<b>Effect of 1 pp ↑ unemp</b>	<b>30.2</b>	<b>30.6</b>	<b>27.0</b>	<b>27.4</b>	<b>3.25</b>	<b>3.32</b>
Mean(# national charges)	665.0	665.0	568.6	568.6	96.3	96.3
% change	4.5	4.6	4.7	4.8	3.4	3.4
Elasticity	0.31	0.32	0.32	0.33	0.23	0.23
N (state-industry-months)	78,963	78,963	78,963	78,963	78,963	78,963
Polynomial degree		quadratic		quadratic		quadratic
AIC	321,274	321,113	300,064	299,924	139,744	139,682
R <sup>2</sup>	0.413		0.434		0.070	

Regressions parallel Table 3, but are unweighted. Standard errors clustered at the state level.

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Table A5: Robustness checks, All ADEA Firing + Hiring Charges

Dep. var. = # of charges	(1)	(2)	(3)	Volume			
				(4)	(5)	(6)	(7)
unemployment <sub>jst</sub>	0.72** (0.35)	1.40*** (0.32)	0.99*** (0.20)	0.70*** (0.21)			
unemployment <sub>st</sub>					3.09*** (0.54)		
unemployment rate <sub>st</sub>						3.01* (1.56)	
emp:pop ratio <sub>st</sub>							-1.28** (0.64)
<b>Effect of 1 pp ↑</b>	<b>11.08</b>	<b>21.55</b>	<b>15.26</b>	<b>10.83</b>	<b>47.59</b>	<b>46.35</b>	<b>-30.50</b>
Mean(# national charges)	651.0	694.3	512.5	644.3	665.0	665.0	665.0
% change	1.7	3.1	3.0	1.7	7.2	7.0	-4.6
Elasticity	0.10	0.23	0.20	0.11	0.49	0.47	-2.76
N	36,261	43,404	75,015	81,561	6,120	6,120	6,120
R <sup>2</sup>	0.400	0.548	0.492	0.333	0.905	0.704	0.693
Dep. var. = 1(merit)	Merit						
unemployment <sub>jst</sub>	36.6** (14.0)	10.3** (4.97)	19.3*** (5.20)	15.4*** (4.01)			
unemployment <sub>st</sub>					2.28** (1.11)		
unemployment rate <sub>st</sub>						0.483** (0.179)	
emp:pop ratio <sub>st</sub>							-0.390*** (0.134)
<b>Effect of 1 pp ↑</b>	<b>0.0024</b>	<b>0.0007</b>	<b>0.0013</b>	<b>0.0011</b>	<b>0.0014</b>	<b>0.0048</b>	<b>-0.0039</b>
Mean(merit)	.181	.155	.169	.165	.167	.167	.167
% change	1.3	0.5	0.8	0.7	0.8	2.9	-2.4
Elasticity	0.06	0.03	0.05	0.04	0.06	0.19	-1.31
N (charges)	35,085	42,936	61,356	77,124	78,027	78,027	78,027
R <sup>2</sup>	0.021	0.016	0.017	0.018	0.017	0.026	0.026
2005-2009Q2 sample	X						
2009Q3-2015 sample		X					
Age 50+ sample			X				
Event date used				X			

See notes to Tables 3 and 4. Columns 1-4 test sensitivity to different time periods, a different age sample, and using the event date in place of the filing date. Column 5 uses the number unemployed at the state-month level instead of the industry-state-month level. Columns 6 and 7 are rate-on-rate regressions at the state level, where the dependent variable is the number of charges divided by the size of each state's labor force and population, respectively, and the regressions are weighted by each state's labor force and population, respectively. The top-panel coefficients show the change in charges filed per 100,000 increase in the number unemployed (employed). Bolded 'Effect of 1 pp ↑ unemp' is the implied effect of a one percentage point increase in the national unemployment rate on the national monthly number of charges filed.

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Table A6: Robustness check, Exclusion of Construction Industry

Dep. var. = # of charges	Volume		
	Firing + Hiring (1)	Firing (2)	Hiring (3)
unemployment <sub>jst</sub>	1.42*** (0.26)	1.31*** (0.24)	0.11*** (0.04)
<b>Effect of 1 pp ↑ unemp</b>	<b>21.9</b>	<b>20.2</b>	<b>1.69</b>
Mean(# national charges)	650.0	555.2	94.9
% change	3.4	3.6	1.8
Elasticity	0.24	0.24	0.12
N (state-industry-months)	72,885	72,885	72,885
R <sup>2</sup>	0.469	0.509	0.088
Dep. var. = $\mathbb{1}(\text{merit})$	Merit		
unemployment <sub>jst</sub>	17.7*** (4.8)	13.7** (5.8)	16.5 (16.3)
<b>Effect of 1 pp ↑ unemp</b>	<b>0.0012</b>	<b>0.0009</b>	<b>0.0011</b>
Mean(merit)	.166	.171	.140
% change	0.7	0.5	0.8
Elasticity	0.04	0.03	0.04
N (charges)	76,263	66,381	11,430
R <sup>2</sup>	0.017	0.018	0.042

See notes to Tables 3 and 4. Columns (1), (2), and (3) show results for combined firing and hiring, firing, and hiring charges, respectively. The top-panel coefficients show the change in charges filed per 100,000 increase in the number unemployed, with regressions by each state-industry's monthly labor force. All regressions include state, time, and industry fixed effects. Standard errors clustered at the state level.

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Table A7: Simple Lag Structure: Volume and Merit

Dep. var. = # of charges	Volume		
	Firing + Hiring (1)	Firing (2)	Hiring (3)
unemployment <sub>jst</sub>	1.30*** (0.29)	1.11*** (0.39)	0.18 (0.14)
unemployment <sub>jst-1</sub>	0.02 (0.47)	0.56*** (0.20)	-0.54 (0.33)
unemployment <sub>jst-2</sub>	0.01 (0.61)	-0.47 (0.42)	0.47 (0.21)
<b>Effect of 1 pp ↑ unemp</b>	<b>20.5</b>	<b>18.6</b>	<b>1.66</b>
Mean(# national charges)	665.0	568.6	96.3
% change	3.1	3.3	1.7
Elasticity	0.21	0.22	0.12
N (state-industry-months)	78,963	78,963	78,963
R <sup>2</sup>	0.469	0.506	0.089
Dep. var. = $\mathbb{1}(merit)$	Merit		
unemployment <sub>jst</sub>	-12.5 (22.3)	-21.4 (18.2)	-1.8 (63.8)
unemployment <sub>jst-1</sub>	30.1 (29.7)	31.6 (30.2)	52.0 (76.8)
unemployment <sub>jst-2</sub>	-2.2 (21.0)	5.2 (29.3)	-31.4 (45.9)
<b>Effect of 1 pp ↑ unemp</b>	<b>0.0013</b>	<b>0.0010</b>	<b>0.0013</b>
Mean(merit)	.167	.172	.141
% change	0.8	0.6	0.9
Elasticity	0.04	0.03	0.05
N (charges)	78,020	67,988	11,600
R <sup>2</sup>	0.017	0.018	0.042

See notes to Tables 3 and 4. Columns (1), (2), and (3) show results for combined firing and hiring, firing, and hiring charges, respectively; the total effect is the sum of coefficients across all lags. The top-panel coefficients show the change in charges filed per 100,000 increase in the number unemployed, with regressions by each state-industry's monthly labor force. All regressions include state, time, and industry fixed effects. Standard errors clustered at the state level.

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$  13

Table A8: Worker Composition and the Increase in Charge Quality

	Log(benefit) (1)	$\mathbb{1}(merit)$ (2)	(3)
unemployment <sub><i>jst</i></sub>	-0.095 (49.3)	17.3*** (4.50)	42.3*** (13.3)
unemployment $\times$ dispersion			-100** (43.1)
dispersion			0.211*** (0.054)
<b>Effect of 1 pp <math>\uparrow</math> unemp</b>	<b>-0.0015</b>	<b>0.0012</b>	<b>0.0007</b>
Mean(dep. var.)	9.28	.167	.172
% change	-0.02	0.7	0.4
Elasticity	-0.001	0.04	0.02
Issue and Basis FEs	X	X	
Discharges only	X		X
N (charges)	9,615	78,021	67,989
R <sup>2</sup>	0.143	0.022	0.022

Regression specifications parallel those of Table 4. Bolded ‘Effect of 1 pp  $\uparrow$  unemp’ is the implied effect of a one percentage point increase in a state-industry’s monthly unemployment rate on the fraction of charges found to have had merit. Column 1 uses the natural log of monetary benefits in discharge cases for which the claimant receives positive compensation. Column 2 adds in fixed effects for the issues and bases included in a case. In column 3, the variable ‘dispersion’ is the quartile coefficient of wage dispersion (mean = 0.315, sd = 0.063), and we evaluate the effect of a 1 pp increase in unemployment at the mean level of industry wage dispersion. All regressions include state, time, and industry fixed effects and controls for age, female, race, and private firm. Standard errors clustered at the state level.

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Table A9: Charge Volume and Unemployment, Females only

Dep. var. = # of charges	<b>Firing + Hiring</b>		<b>Firing</b>		<b>Hiring</b>	
	Base (1)	PDL (2)	Base (3)	PDL (4)	Base (5)	PDL
unemployment <sub>jst</sub>	0.620*** (0.123)	0.583*** (0.130)	0.584*** (0.115)	0.541*** (0.122)	0.035*** (0.010)	0.042*** (0.011)
<b>Effect of 1 pp ↑ unemp</b>	<b>9.55</b>	<b>8.98</b>	<b>8.99</b>	<b>8.33</b>	<b>0.54</b>	<b>0.65</b>
Mean(# national charges)	312.2	312.2	282.7	282.7	29.5	29.5
% change	3.1	2.9	3.2	2.9	1.8	2.2
Elasticity	0.21	0.20	0.22	0.20	0.12	0.15
N (state-industry-months)	78,963	78,963	78,963	78,963	78,963	78,963
Polynomial degree		quadratic		quadratic		quadratic
AIC	254,190	254,135	233,357	233,304	86,635	86,629
R <sup>2</sup>	0.390		0.442		0.053	

Industry-state-month level regressions for the volume of cases. The sample period spans 2005-2015. Regression coefficients show the change in charges filed per 100,000 increase in the number unemployed. Observations are weighted by the industry share of employment in each state's labor force. Bolded 'Effect of 1 pp ↑ unemp' is the implied effect of a one percentage point increase in the national unemployment rate on the national monthly number of charges filed. The PDL model estimates the cumulative effect of previous and contemporaneous unemployment on current period charges using a polynomial distributed lag model; the coefficient reported equals the cumulative effect across all lags and the contemporaneous period. The AIC is used to choose the optimal number of lags, which equals 6 in all cases; while not shown, the BIC chooses the same lag structure. All regressions include state, time, and industry fixed effects. Standard errors clustered at the state level, and correspond to the implied cumulative effect in even-numbered columns.

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Table A10: Charge Quality and Unemployment, Females only

Dep. var. = $\mathbb{1}(\textit{merit})$	<b>Firing + Hiring</b>		<b>Firing</b>		<b>Hiring</b>	
	Base (1)	PDL (2)	Base (3)	PDL (4)	Base (5)	PDL (6)
unemployment <sub>jt</sub>	13.4* (7.16)	12.8* (7.11)	9.69 (8.90)	9.24 (8.87)	17.6 (19.9)	19.8 (26.4)
age	0.0012*** (0.0003)	0.0012*** (0.0003)	0.0012*** (0.0003)	0.0012*** (0.0003)	0.0002 (0.0010)	0.0001 (0.0010)
private	0.0469*** (0.0067)	0.0469*** (0.0068)	0.0511*** (0.0073)	0.0510*** (0.0074)	0.0527*** (0.0151)	0.0523*** (0.0151)
<b>Effect of 1 pp ↑ unemp</b>	<b>0.0009</b>	<b>0.0009</b>	<b>0.0007</b>	<b>0.0007</b>	<b>0.0012</b>	<b>0.0013</b>
Mean(merit)	.171	.171	.173	.173	.153	.153
% change	0.5	0.5	0.4	0.4	0.8	0.9
Elasticity	0.03	0.03	0.02	0.02	0.05	0.05
N (charges)	38,193	38,193	34,649	34,649	4,289	4,289
Polynomial degree		quadratic		quadratic		linear
AIC	33,904	33,903	31,168	31,166	3,426	3,426
R <sup>2</sup>	0.022		0.023		0.077	

Individual level regressions for whether a case is determined to have merit. The sample period spans 2005-2015. Regression coefficients on ‘unemployment’ are multiplied by  $10^{-8}$ . Bolded ‘Effect of 1 pp ↑ unemp’ is the implied effect of a one percentage point increase in a state-industry’s monthly unemployment rate on the fraction of charges found to have had merit. The PDL model estimates the cumulative effect of previous and contemporaneous unemployment on current period charges using a polynomial distributed lag model; the coefficient reported equals the cumulative effect across all lags and the contemporaneous period. The AIC is used to choose the optimal number of lags, which equals 6 in all cases; while not shown, the BIC chooses the same lag structure. All regressions include state, time, and industry fixed effects. Standard errors clustered at the state level, and correspond to the implied cumulative effect in even-numbered columns.

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Table A11: Charge Quality and Unemployment, by Gender and Industrial Gender Mix

	<b>Firing</b>		<b>Hiring</b>	
	(1)	(2)	(3)	(4)
$\text{unemployment}_{jst} \times \mathbb{1}(\text{female}) \times \% \text{female}_j$		-13.8 (28.7)		124** (53.0)
$\text{unemployment}_{jst} \times \mathbb{1}(\text{female})$	-3.6 (5.7)	3.3 (15.9)	-0.8 (13.0)	-65.5** (28.3)
Mean(dep. var.)	.171	.171	.134	.134
N (charges)	66,421	66,421	10,032	10,032
R <sup>2</sup>	0.018	0.018	0.046	0.047

Regression specifications parallel those of Table 4, with the additional controls of  $\% \text{female}_j$ ,  $\text{unemployment}_{jst}$ ,  $\mathbb{1}(\text{female})$ ,  $\text{unemployment}_{jst} \times \% \text{female}_j$ , and  $\mathbb{1}(\text{female}) \times \% \text{female}_j$ .  $\text{unemployment}_{jst}$  indicates the number unemployed in a state-industry-month cell,  $\mathbb{1}(\text{female})$  is a dummy variable for whether the charging party is female, and  $\% \text{female}_j$  denotes the fraction of jobs occupied by women for a given NAICS2 code. All regressions include state, time, and industry fixed effects and controls for age, female, race, and private firm. Standard errors clustered at the state level.

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Table A12: Callback Rates and Labor Market Conditions (Rounds 1-3), Unweighted

Dep. var. = $\mathbb{1}(\text{callback})$	(1)	(2)	(3)
$\text{older}_i \times \text{unemployment rate}_{ct}$	-0.0216** (0.0090)	-0.0204** (0.0090)	-0.0204** (0.0090)
$\text{older}_i$	0.0058 (0.0635)	-0.0006 (0.0635)	0.0009 (0.0632)
$\text{unemployment rate}_{ct}$	-0.0052 (0.0048)	-0.0073 (0.0087)	0.0236 (0.0154)
$\text{public}_{ct}$	-0.3782 (0.2552)		
$\text{older}_i \times \text{public}_{ct}$	1.0236*** (0.3580)	1.0097*** (0.3591)	0.9897** (0.3573)
$\text{public}_{ct} \times \text{unemployment rate}_{ct}$			-0.2021*** (0.0734)
Mean(callback rate)	.116	.116	.116
City FE		X	X
Time FE		X	X
Job postings	3,076	3,076	3,076
Resumes	6,152	6,152	6,152
City-rounds	23	23	23
R <sup>2</sup>	0.010	0.024	0.024

Regressions parallel Table 6, but are unweighted. Standard errors clustered at the city-round level.

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Table A13: Callback Rates and Labor Market Conditions (All 5 Rounds), Unweighted

Dep. var. = $\mathbb{1}(\text{callback})$	(1)	(2)	(3)
older <sub><i>i</i></sub> x unemployment rate <sub><i>ct</i></sub>	-0.0144** (0.0069)	-0.0135* (0.0069)	-0.0134* (0.0070)
older <sub><i>i</i></sub>	0.0403 (0.0534)	0.0338 (0.0522)	0.0348 (0.0516)
unemployment rate <sub><i>ct</i></sub>	-0.0037 (0.0046)	-0.0005 (0.0085)	0.0036 (0.0140)
public <sub><i>ct</i></sub>	-0.3350* (0.1811)		
older <sub><i>i</i></sub> x public <sub><i>ct</i></sub>	0.4622* (0.2578)	0.4682* (0.2505)	0.4547* (0.2469)
public <sub><i>ct</i></sub> x unemployment rate <sub><i>ct</i></sub>			-0.0276 (0.0534)
competing <sub><i>i</i></sub>	-0.0910 (0.0560)		
older <sub><i>i</i></sub> x competing <sub><i>i</i></sub>	-0.0348 (0.0231)	-0.0352 (0.0227)	-0.0352 (0.0227)
competing <sub><i>i</i></sub> x unemployment rate <sub><i>ct</i></sub>	0.0121 (0.0084)	0.0217** (0.0085)	0.0212** (0.0086)
Mean(callback rate)	.102	.102	.102
City FE		X	X
Time FE		X	X
Job postings	5,445	5,445	5,445
Resumes	15,628	15,628	15,628
City-rounds	39	39	39
R <sup>2</sup>	0.006	0.017	0.017

Regressions parallel Table 7, but are unweighted. Standard errors clustered at the city-round level.

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$