

The Lifecycle Effects of Health and Local Unemployment on Job Promotions

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Introduction

- Study **poor economic conditions** + **poor health** on career advancement over lifecycle
- Why important?
 - Promotions cause ~15% of lifecycle wage growth, smaller for women (McCue, 1996)
 - Promotions make us happy/healthy?
 - Negligible effects BUT 2-years after promotion mental health ↓ (Boyce and Oswald, 2012; Johnston and Lee, 2013)
 - Public policies are affected (unemployment payments, disability programs, ...)
 - Personal finance affected (self insurance, self protection, optimal human capital accumulation, ...)
 - Firm contracting affected (compensation packages, ...)

This Paper

1. How does “**poor economic environment**” change the probability of **getting promoted** at the current job?
2. How are **health shocks** affecting income profile during difficult economic times?
3. How are **health shocks** affecting promotion **conditional on living in poor econ.** environment (double whammy)?
4. Analyze by age
5. Gender/race effects?
6. Recession effects?

Recessions and lifecycle income profile

- Over lifecycle \Rightarrow income **hump-shaped** BUT employment risk U-shaped
 - Early careers workers (low HK) \Rightarrow entry level position, high UE risk, high income volatility
 - Mid career workers (higher HK) \Rightarrow promotions & income \uparrow and UE risk \downarrow
 - Older workers \Rightarrow skills obsolete \Rightarrow health worsens \Rightarrow UE risk $\uparrow \Rightarrow$ lower wages in cross section
- **Poor econ. conditions** at critical career (promotion) time \Rightarrow large cumul. effect on income
 - Delays of wage \uparrow due to UE or **delayed promotions**
 - Lower wage \uparrow as promotions come **with lower pay raises** (cuts/temp. furloughs, ...)
 - Changes trajectory of lifecycle profile (steepness, peak, variability, ...)
- **Lay-off expensive/vulnerable** workers (old, sick, wrong skills, etc.)
 - Labor laws weakened in great recession (2007–2009) \Rightarrow [Neumark and Button \(2014\)](#) \Rightarrow maybe true for “industries in decline”?
- Empirical evidence \Rightarrow age discrimination in hiring practices, especially for older women \Rightarrow [Neumark, Burn and Button \(2019\)](#)

Recession + health shocks even worse?

- **Sicker workers** “easier” targets for layoffs/denied promotions **during recessions** ⇒ Neumark and Button (2014) ⇒ bad health amplifies negative income shock
- **Statistical discrimination** in labor markets is widely studied: Phelps (1972); Arrow (1973); Aigner and Cain (1977)
- **Timing** and **type** of health shock matters
 - Example: Young worker who has accident impacted differently than old worker with onset of chronic condition
 - Forsythe (2022) ⇒ during recessions firms more likely to hire experienced workers and lower wages of younger workers

Preliminary results

- **Work-limiting-health** problem does not affect prob. of promotions (in sample of employed indiv.)
- Living in areas w/ **high-local-UE** does not affect promotions
- **BUT** combination of **work-limiting-health** + living in **high-UE** area \Rightarrow \downarrow prob. promotion
 - Different in Germany \Rightarrow [Chadi and Goerke \(2018\)](#) \Rightarrow more labor market security, stricter regulation?
- We use local area variation to highlight effects of **health** + **local UE** on career advancement of different age groups
 - Poor health + exposure to economic conditions is relevant for **30–40 year olds**
 - Younger workers are less affected by **combo** of poor health + recession \Rightarrow despite recessions having stronger negative effects on them
 - Older (50+) workers experience fewer promotions in general, so **health** + **local UE** plays lesser role
 - **Appendix:** No gender/race effect found yet?
 - **Appendix:** Negative effects of **recessions** on promos, but **no extra negative health** effect during recessions \Rightarrow data issues!

Related Literature I

■ Promotions and Job Ladder Movements

- Theory: Gibbons and Waldman (1999, 2006)
- Empirical: Baker, Gibbs and Holmstrom (1994*b,a*)
- Similar to McCue (1996), promotions in our data are highly correlated with wage increases and wage increases themselves are highly auto-correlated \Rightarrow we highlight **health on promotions**

■ Discrimination

- Statistical discrimination in Aigner and Cain (1977) and theoretical discrimination models by Phelps (1972) and Arrow (1973)
- More recent: Blau and Devaro (2007) and Addison, Ozturk and Wang (2014) have highlighted gender based discrimination in promotions
- We focus on **health**, especially during times of an **economic decline**, and exploit **local level variation** in unemployment

■ Health Shocks and Income

- Health and earnings: overview in Currie and Madrian (1999), main focus is disability, e.g., Stern (1989), Kim and Rhee (2022)

Related Literature II

- Panel data studies: investigate the dynamic and temporal effects of disability on earnings (e.g., Charles, 2003; Mok et al., 2008; Meyer and Mok, 2019). McClellan (1998) and McGarry (2004) show changes in self-reported health status are strong predictor for retirement
- International panel data: Disney, Emmerson and Wakefield (2006); García-Gómez et al. (2013); Lundborg, Nilsson and Vikström (2015)
- Endogeneity of health and income: Lindeboom and Kerkhofs (2009) (joint modeling) or exogenous events such as accidents: Dano (2005); Mohanan (2013); Halla and Zweimüller (2013)
- Sickness & future career events: firm level (Flabbi and Ichino, 2001; Audas, Barmby and Treble, 2004; Ichino and Moretti, 2009) or register data (Hansen, 2000; Hesselius, 2007; Andersen, 2010; Markussen, 2012) \Rightarrow
 - sickness and wages \Rightarrow negative corr.
 - sickness and unemployment \Rightarrow positive corr.

■ Lifecycle Aspects

- Patterns of inequality of income and health: Deaton and Paxson (1998); Prados (2018)

Related Literature III

- Wage and promotion dynamics within firms: Gibbons and Waldman (1999); Gibbons and Waldman (2006); Gorry, Gorry and Trachter (2019)
- Lifecycle health effects on employment: Pelkowski and Berger (2004); Prinz et al. (2018)

■ Recessions and Career Effects

- Business cycle effects on employment, wages, health: Ruhm (2000, 2015)
- Great recession papers: Modrek and Cullen (2013); Modrek, Hamad and Cullen (2015); Yagan (2019); Rinz (2021); Forsythe (2022)
- Career mobility during growth and recession periods: Rosenbaum (1979); Blundell et al. (2020)
- We focus on the effects of recessions + health on promotions using household level data + local area unemployment data

■ Recessions and Internal Migration

- Procyclical geographic migration patterns: Saks and Wozniak (2011); Ellis, Wright and Townley (2014); Ulrich-Schad (2015)
- Procyclical patterns of transitioning from UE to employment + employment to non-participation (Krusell et al., 2017)

Related Literature IV

- Closest to our study \Rightarrow Chadi and Goerke (2018): sickness related absences in a German household panel survey on promotions and dismissals
 - Negative link between short-term sickness related absence and promotions
 - Not able to establish causality
 - We find health issues can be linked to lower probabilities of promotions in some circumstances, such as exposure to poor local economic conditions
 - Possible explanation of discrepancy \Rightarrow stronger labor protections in Germany?
 - We focus on macro + health shock connection on promotions

NLSY 79 Data

NLSY79: 1979–2016

- 12,686 individuals who were between 14–22 years old when first surveyed in 1979
- Respondents were 51–60 at the time of their 2016 interviews
- Panel data incl. labor market info, educational attainment, family background, gov't program participation, family life, health issues, assets, income
- Sample includes individuals that are working in period t (long-term UE are thus not included)
- Goal \Rightarrow relate period t info to $t + 1$ promotion probability
- Two samples:
 - 1987–2014 (incl. 2016 promotion info): 69,603 year/indiv. obs.
 - 1994–2014: 50,540 year/indiv. obs.

Key Variables

- Direct questions about **promotions** only available in 1984, 1988–1990, 1996–2016
 - Respondents asked whether they **changed positions** with their current or most recent job
 - If yes, was it **promotion**, demotion, or change at same level?
 - $\approx 70\%$ promotions incl. “higher level duties” \Rightarrow this info not available past 1990 (Pergamit and Veum, 1999)
 - Question whether they “Believe promotion possible within the next two years?”
- Health status and **work-limiting-health problems**
 - “Would health prevent working at a job for pay now?”
 - “Would health limit the kind of work you can do?”
 - “Would health limit the amount of work you can do?”
 - Main variable: “Does the respondent have health limitations?”
- Local area (county) unemployment rate
 - high UE $> 9\%$
 - alternative cutoffs 7, 8, ..., 12% used for robustness checks

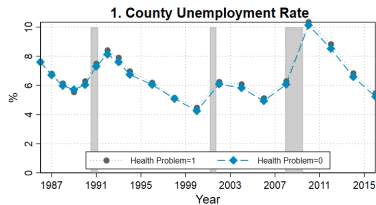
Wave-year age, health	Obs-year* wage, income	Age range	Promo. info available?	Prom(t+1) available?	Recession wave?	Sample ^Δ 1987–2014 Age: 22–57	Sample ^{ΔΔ} 1994–2014 Age: 29–57
1979	1978	14–22	Yes (< 79)	No	No	N/A	N/A
1980	1979	15–23	No	No	1/80–7/80	N/A	N/A
1981	1980	16–24	No	No	7/81–11/82	N/A	N/A
1982	1981	17–25	No	No	7/81–11/82	N/A	N/A
1983	1982	18–26	No	No	No	N/A	N/A
1984	1983	19–27	No	No	No	N/A	N/A
1985	1984	20–28	No	No	No	N/A	N/A
1986	1985	21–29	No	No	No	N/A	N/A
1987	1986	22–30	No	Yes (87–88)	No	6,450	0
1988	1987	23–31	Yes (87–88)	Yes (88–89)	No	6,474	0
1989	1988	24–32	Yes (88–89)	Yes (89–90)	No	6,094	0
1990	1989	25–33	Yes (89–90)	No	7/90–3/91	N/A	N/A
1991	1990	26–34	No	No	7/90–3/91	N/A	N/A
1992	1991	27–35	No	No	No	N/A	N/A
1993	1992	28–36	No	No	No	N/A	N/A
1994	1993	29–37	No	Yes (94–96)	No	5,734	5,732
1996	1995	31–39	Yes (94–96)	Yes (96–98)	No	5,486	5,485
1998	1997	33–41	Yes (96–98)	Yes (98–00)	No	5,308	5,305
2000	1999	35–43	Yes (98–00)	Yes (00–02)	No	4,983	4,980
3/01–11/01							
2002	2001	37–45	Yes (00–02)	Yes (02–04)	No	4,573	4,573
2004	2003	39–47	Yes (02–04)	Yes (04–06)	No	4,428	4,418
2006	2005	41–49	Yes (04–06)	Yes (06–08)	No	4,414	4,409
12/07–6/09							
2008	2007	43–51	Yes (06–08)	Yes (08–10)	12/07–6/09	4,238	4,235
12/07–6/09							
2010	2009	45–53	Yes (08–10)	Yes (10–12)	No	3,901	3,897
2012	2011	47–55	Yes (10–12)	Yes (12–14)	No	3,857	3,852
2014	2013	49–57	Yes (12–14)	Yes (14–16)	No	3,663	3,654
2016	2015	51–59	Yes (14–16)	No	No	N/A	N/A
						Total: 69,603	50,540

Variable	Mean	Std. Dev.	Min.	Max.	N
Received Promo(t+1) Job1-5	0.16	0.37	0	1	69603
Received Promo Job 1-5	0.17	0.37	0	1	56442
Promotion w/ Wage Inc.	0.1	0.31	0	1	49114
Received Promo Job 1	0.15	0.36	0	1	55165
Promo Possible W-in 2 Yrs Job 1-5	0.59	0.49	0	1	40820
Satisfaction at Job 1	1.63	0.68	1	4	69550
Satisfied at Job	0.92	0.27	0	1	69603
Health Prevents Wrk	0.01	0.12	0	1	4829
Health Limits Kind of Wrk	0.05	0.21	0	1	69492
Health Limits Amount of Wrk	0.04	0.18	0	1	69465
Health Limits Wrk	0.05	0.22	0	1	69603
Initial Health	0.04	0.14	0	1	69603
Body Mass Index	27.6	5.75	7.60	89.86	60993
BMI \geq 30	0.28	0.45	0	1	60993

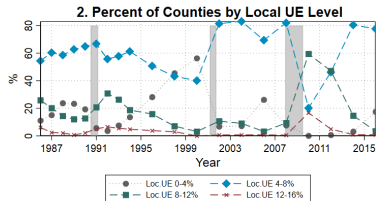
Age of individual	37.87	8.93	22	58	69603
Married	0.56	0.5	0	1	69603
Female	0.49	0.5	0	1	69603
Black	0.28	0.45	0	1	69603
Hispanic	0.17	0.38	0	1	69603
AFQT score percentile	44.54	28.83	0	100	69603
Years of Education	13.33	2.42	1	20	69603
No High School Degree	0.09	0.29	0	1	69603
College	0.23	0.42	0	1	69603
Family Size	3	1.55	1	16	69603
Nr. of New Children from (t-1)	0.06	0.25	0	3	69603
Resides in Urban Area	0.77	0.42	0	1	69603
Employed Job1-5	1	0	1	1	69603
Employed(t+1) Job1-5	0.92	0.28	0	1	69603
Hourly Wage-Job 1 (2010 US\$)	20.06	17.53	0	382.6	69152
Wage/Hour Job1-5 (USD)	20.04	17.56	0	382.6	69603
Wage Income (1,000 US\$)	41.33	38.56	0	341.09	67760
Net Fam. Inc. (USD 1,000)	72.75	96.17	0	1860.04	60337

Tenure years job 1-5	6.56	6.99	0.02	40.38	69603
Union member job 1-5	0.21	0.41	0	1	50180
Has Health Insurance Plan	0.87	0.34	0	1	56654
Employees Job1 (in 1,000)	1.03	7.21	0	100	65974
Employer Job1 Has Mult. Loc.	0.39	0.49	0	1	66809
Recession-v1	0.28	0.45	0	1	69603
Recession-v2	0.22	0.41	0	1	69603
Recession-v3	0.06	0.24	0	1	69603

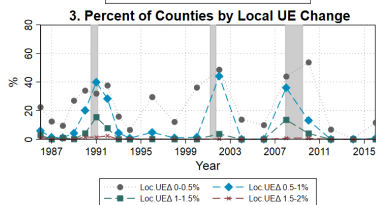
	(1) Sample 1987–2014	(2) Sample 1994–2014	(3) HLWrk =0	(4) HLWrk =1	(5) UE>7	(6) HLWrk +UE>7	(7) UE>8	(8) HLWrk +UE>8
Promotion(t+1) Job1-5	0.16	0.13	0.13	0.11	0.11	0.08	0.11	0.08
Received Promo Job 1-5	0.17	0.14	0.14	0.13	0.10	0.08	0.10	0.08
Promotion w/ Wage Inc.	0.10	0.09	0.09	0.08	0.06	0.05	0.06	0.05
Promotion(t-1)	0.17	0.15	0.15	0.14	0.11	0.11	0.11	0.10
Received Promo Job 1	0.15	0.13	0.13	0.12	0.10	0.07	0.10	0.07
Promo Possible W-in 2 Yrs Job1	0.57	0.57	0.57	0.52	0.53	0.45	0.52	0.44
Satisfaction at Job 1	1.63	1.61	1.61	1.71	1.61	1.76	1.60	1.75
Satisfied at Job	0.92	0.93	0.93	0.89	0.93	0.87	0.93	0.87
Health Prevents Wrk	0.01	0.01	0.00	0.26	0.02	0.31	0.02	0.36
Health Limits Kind of Wrk	0.05	0.05	0.00	0.90	0.06	0.90	0.06	0.90
Health Limits Amount of Wrk	0.03	0.04	0.00	0.70	0.05	0.73	0.05	0.75
Health Limits Wrk	0.05	0.06	0.00	1.00	0.06	1.00	0.06	1.00
Initial Health	0.04	0.04	0.03	0.13	0.04	0.11	0.04	0.11
Body Mass Index	27.61	28.28	28.20	29.64	28.98	30.73	29.06	30.73
BMI > 30	0.28	0.32	0.31	0.41	0.36	0.48	0.37	0.47
Age	37.92	42.00	41.91	43.43	44.47	46.62	44.30	46.46
Married	0.56	0.60	0.60	0.52	0.58	0.53	0.58	0.53
Female	0.49	0.50	0.50	0.61	0.52	0.61	0.52	0.59
Black	0.28	0.29	0.29	0.30	0.30	0.30	0.28	0.28
Hispanic	0.17	0.18	0.18	0.15	0.27	0.20	0.30	0.24



- Healthy/sick live in counties w/ similar local UE

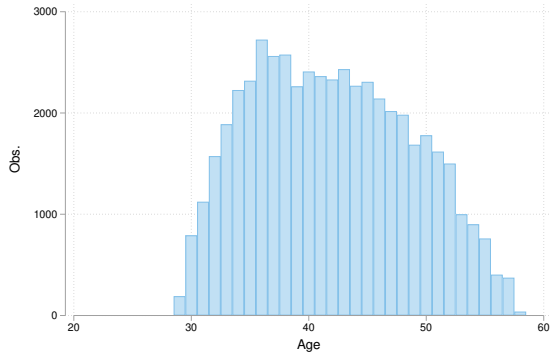
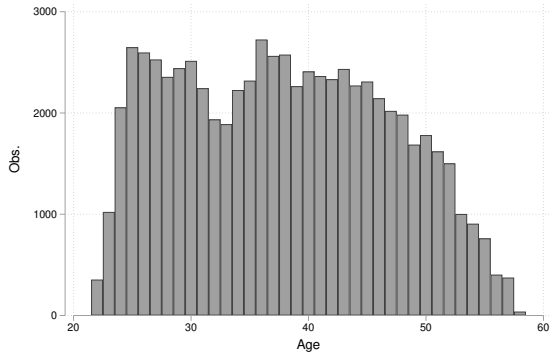


- Fraction of high UE counties ↑ during recession



- Fraction of counties w/ high UE change ↑ during recession

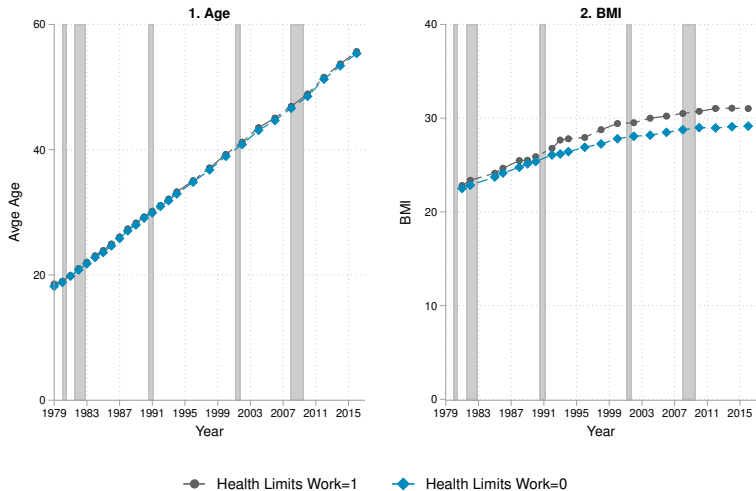
Age distribution in samples



Time trends

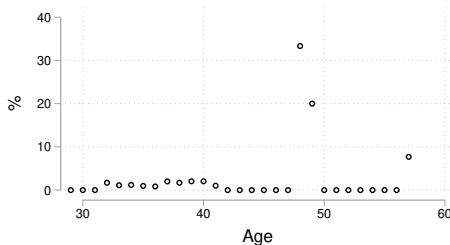


Time trends

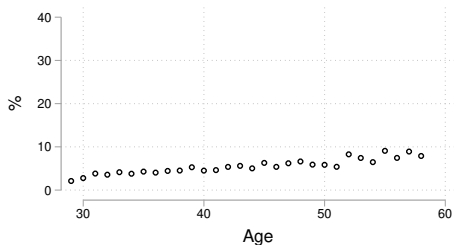


Lifecycle: Health

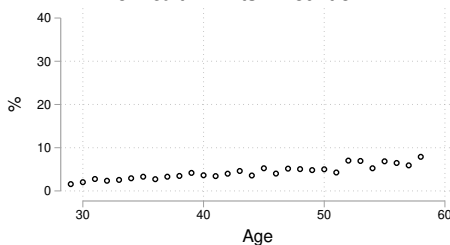
1. Health Prevents Wrk



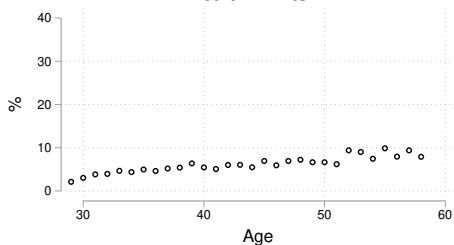
2. Health Limits Kind of Wrk

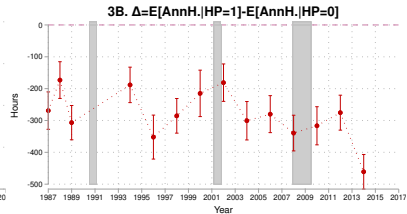
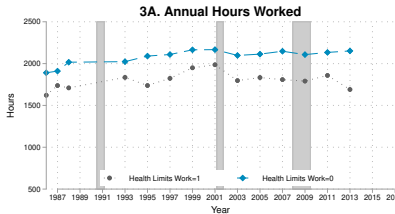
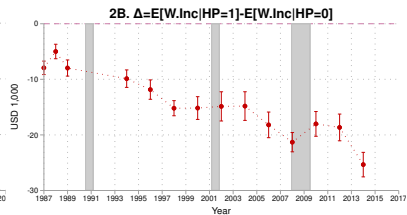
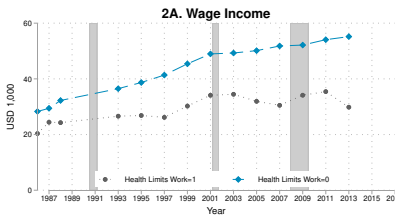
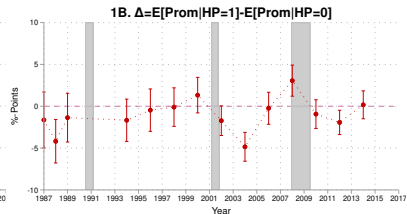
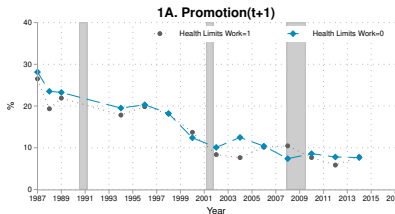


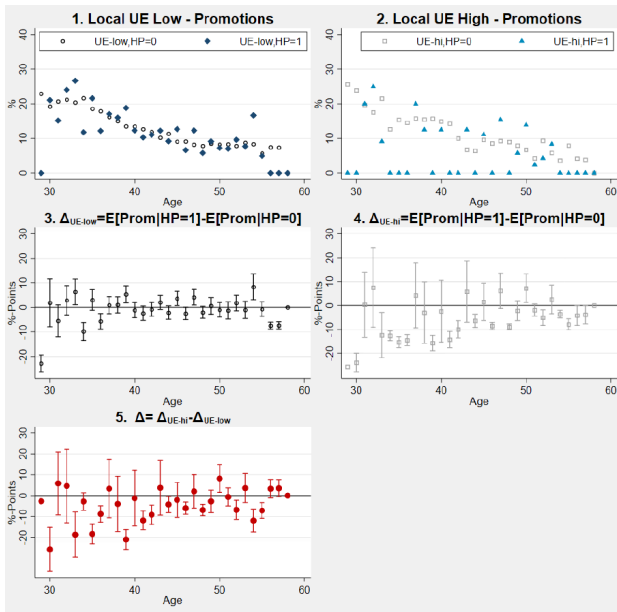
3. Health Limits Amount of Wrk



4. Health Limits Wrk

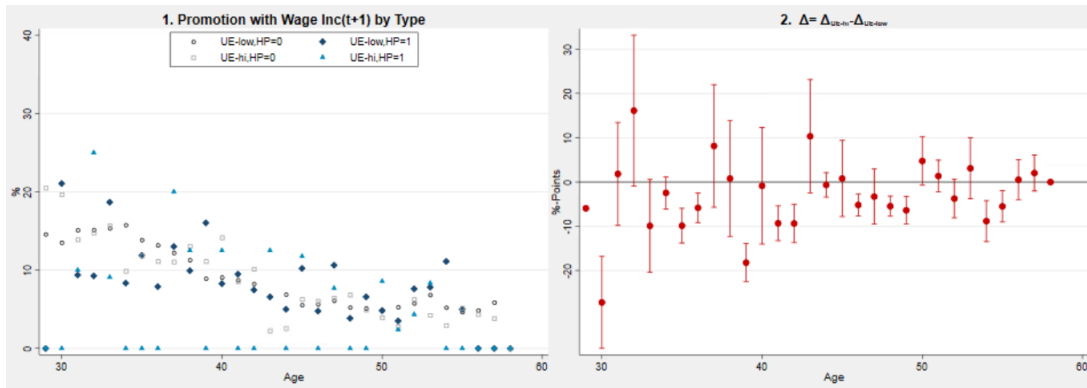




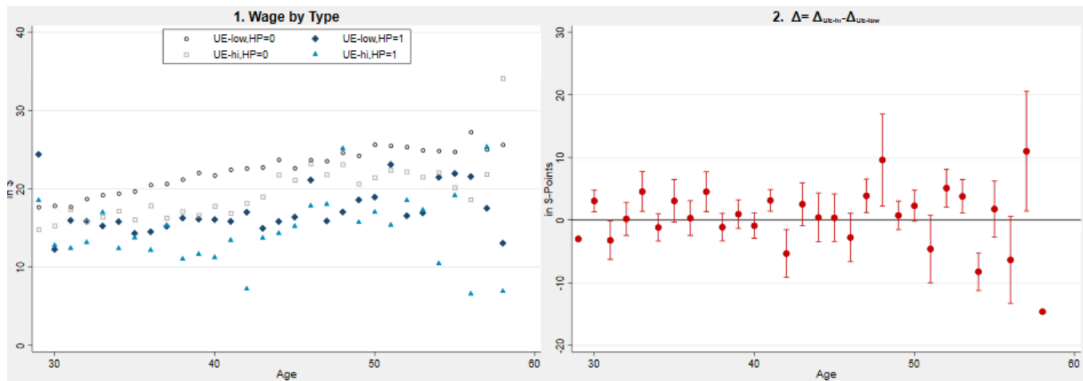


- UE-hi is defined as a county level UE rate of $> 9\%$

Promotions w/ wage increase by type



Hourly wages by type



The Model

Model 1.A: Health \Rightarrow Promotions

$$\text{PROMOTION}_{i,r,t+1} = \alpha + \delta \times \text{HEALT LIMITS WRK}_{irt} \\ + \lambda_1 X_{irt} + \lambda_2 Z_{i,r,t-1} + \eta_r + \tau_t + \iota_i + \varepsilon_{irt},$$

- $\text{PROMOTION}_{i,r,t+1} = 1$ if indiv. i , living in region r , gets promoted from t to $t + 1$ (over next period)
- $\text{HEALT LIMITS WRK}_{i,r,t}=1$ if health limiting work issue
- Controls
 - X_{irt} time varying ind.+HH characteristics (age, education, ...)
 - $Z_{i,r,t-1}$ lagged ind. characteristics (wages, income)
 - η_r region fixed effects
 - τ_t time fixed effects
 - ι_i individual fixed effects
 - ε_{ist} error

Model 1.B: High-UE \Rightarrow Promotions

$$\text{PROMOTION}_{i,c,t+1} = \alpha + \delta \times \text{UNEMP-HIGH}_{ct} \\ + \lambda_1 X_{ict} + \lambda_2 Z_{i,c,t-1} + \lambda_3 C_{ct} + \theta_c + \tau_t + \iota_i + \varepsilon_{ict},$$

- $\text{PROMOTION}_{i,c,t+1} = 1$ if indiv. i living in **county** c , gets promoted from t to $t + 1$ (over next period)
- UNEMP-HIGH_{ct} living in area with **high UE**
- Controls
 - X_{ict} time varying ind.+HH characteristics
 - $Z_{i,c,t-1}$ lagged ind. characteristics (wages, income)
 - C_{ct} county level effects that can change over time
 - η_C county fixed effects

Model 2: Health + High UE \Rightarrow Promotions

$$\begin{aligned}\text{PROMOTION}_{i,c,t+1} = & \alpha + \delta \times (\text{HEALT LIMITS WRK}_{ict} \times \text{UNEMP-HIGH}_{ct}) \\ & + \beta_1 \times \text{HEALT LIMITS WRK}_{ict} \\ & + \beta_2 \times \text{UNEMP-HIGH}_{ct} \\ & + \lambda_1 X_{ict} + \lambda_2 Z_{i,c,t-1} + \lambda_3 C_{ct} + \theta_c + \tau_t + \iota_i + \varepsilon_{ict},\end{aligned}$$

- $\text{PROMOTION}_{i,c,t+1} = 1$ if indiv. i living in **county** c , gets promoted from t to $t + 1$ (over next period)
- $\text{HEALT LIMITS WRK}_{ict} = 1$ if health limiting work issue
- UNEMP-HIGH_{ct} living in area with **high UE**

Model 3: Health + Local Area UE + Age \Rightarrow Promotions

$$\begin{aligned}\text{PROMOTION}_{i,c,t+1} = & \alpha + \delta \times (\text{HEALT LIMITS WRK}_{ict} \times \text{UNEMP-HIGH}_{ct} \times \text{AGE } 25 - 40_{ict}) \\ & + \beta_1 \times (\text{HEALT LIMITS WRK}_{ict} \times \text{AGE } 25 - 40_{ict}) \\ & + \beta_2 \times (\text{UNEMP-HIGH}_{ct} \times \text{AGE } 25 - 40_{ict}) \\ & + \beta_3 \times (\text{HEALT LIMITS WRK}_{ict} \times \text{UNEMP-HIGH}_{ct}) \\ & + \beta_4 \times \text{HEALT LIMITS WRK}_{ict} + \beta_5 \times \text{UNEMP-HIGH}_{ct} + \beta_6 \times \text{AGE } 25 - 40_{ict} \\ & + \lambda_1 X_{ict} + \lambda_2 Z_{i,c,t-1} + \lambda_3 C_{ct} + \eta_c + \tau_t + \iota_i + \varepsilon_{ict},\end{aligned}$$

- $\text{HEALT LIMITS WRK}_{ict} \times \text{UNEMP-HIGH}_{ct} \times \text{AGE } 25 - 40_{ict}$ effect of living in area w/ high UE + prob. of promotion of 25–40 year olds (as opposed to 40+)

Analysis

Model 1.A: Health \Rightarrow Promotions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Health Limits Work	-0.029*** (0.006)	-0.010 (0.006)	-0.007 (0.006)	-0.004 (0.007)	-0.001 (0.007)	-0.001 (0.007)	0.000 (0.007)	-0.000 (0.007)	0.004 (0.007)	-0.006 (0.010)
Observations	69603	69603	69603	50540	47470	44881	41594	41286	38030	22715
R^2	0.000	0.036	0.044	0.028	0.031	0.031	0.057	0.061	0.063	0.060
Region FE	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Initial Health FE	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sample 1994-2014	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Characteristics	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Ind+Occ FE	No	No	No	No	No	No	No	Yes	Yes	Yes
Employed(t+1)=1	No	No	No	No	No	No	No	No	Yes	No
Promo.Possible(t)=1	No	No	No	No	No	No	No	No	No	Yes

Standard errors in parentheses

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

Model 1.B: Local-UE \Rightarrow Promotions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
UE>11.0	-0.027*** (0.006)	-0.001 (0.008)	-0.001 (0.008)	-0.003 (0.008)	-0.003 (0.008)	-0.002 (0.008)	-0.002 (0.008)	-0.002 (0.008)	-0.005 (0.009)	0.004 (0.014)
Observations	69033	69033	69033	50268	47199	44674	41438	41130	37895	22636
R^2	0.000	0.073	0.079	0.072	0.076	0.078	0.097	0.101	0.105	0.117
County FE	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Initial Health FE	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sample 1994–2014	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Characteristics	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Ind+Occ FE	No	No	No	No	No	No	No	Yes	Yes	Yes
Employed(t+1)=1	No	No	No	No	No	No	No	No	Yes	No
Promo.Possible(t)=1	No	No	No	No	No	No	No	No	No	Yes

Standard errors in parentheses

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

Model 2: Health + Local UE \Rightarrow Promotions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
HLWrk \times UE>9.0	-0.021 (0.016)	-0.014 (0.015)	-0.017 (0.015)	-0.034** (0.015)	-0.037** (0.017)	-0.033* (0.017)	-0.033* (0.017)	-0.032* (0.017)	-0.026 (0.021)	-0.026 (0.032)
Health Limits Work	-0.025*** (0.007)	-0.008 (0.007)	-0.007 (0.007)	-0.002 (0.007)	0.000 (0.008)	-0.000 (0.008)	0.002 (0.008)	0.002 (0.008)	0.007 (0.009)	-0.003 (0.012)
UE>9.0	-0.029*** (0.005)	-0.008 (0.006)	-0.008 (0.006)	-0.001 (0.006)	0.000 (0.007)	-0.002 (0.007)	0.004 (0.007)	0.004 (0.007)	0.005 (0.007)	-0.001 (0.011)
Age of individual			-0.024*** (0.003)	-0.004 (0.005)	-0.005 (0.005)	-0.004 (0.006)	-0.005 (0.005)	-0.005 (0.005)	-0.007 (0.006)	0.007 (0.008)
Married			0.007* (0.004)	0.013*** (0.004)	0.012** (0.005)	0.012*** (0.005)	0.011** (0.004)	0.010** (0.004)	0.013*** (0.005)	0.012* (0.007)
Female			-0.013*** (0.004)	-0.002 (0.004)	-0.002 (0.004)	-0.002 (0.004)	-0.002 (0.004)	-0.004 (0.004)	-0.002 (0.004)	0.002 (0.006)
Black			0.010* (0.006)	0.018*** (0.006)	0.017*** (0.006)	0.018*** (0.007)	0.017*** (0.006)	0.016*** (0.006)	0.019*** (0.006)	0.004 (0.009)
Hispanic			0.011 (0.007)	0.024*** (0.008)	0.024*** (0.008)	0.025*** (0.008)	0.023*** (0.007)	0.023*** (0.007)	0.026*** (0.008)	0.032*** (0.011)
AFQT score percentile			0.001*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)
No High School Degree			-0.032*** (0.006)	-0.031*** (0.006)	-0.025*** (0.007)	-0.024*** (0.007)	-0.021*** (0.006)	-0.018*** (0.006)	-0.018*** (0.007)	-0.021** (0.010)
College			0.008 (0.005)	0.005 (0.005)	0.002 (0.006)	0.003 (0.006)	0.005 (0.005)	0.009 (0.005)	0.007 (0.006)	0.015* (0.008)
Resides in Urban Area			-0.002 (0.005)	-0.003 (0.005)	-0.004 (0.005)	-0.005 (0.005)	-0.006 (0.005)	-0.007 (0.005)	-0.005 (0.005)	-0.008 (0.009)
Family Size			-0.002* (0.001)	-0.002* (0.001)	-0.002* (0.001)	-0.003* (0.001)	-0.002 (0.001)	-0.002 (0.001)	-0.002 (0.001)	-0.002 (0.001)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
HLWrk \times UE:4-8.0	-0.010 (0.017)	-0.003 (0.017)	-0.003 (0.017)	-0.009 (0.019)	-0.016 (0.020)	-0.018 (0.021)	-0.019 (0.021)	-0.016 (0.021)	-0.003 (0.023)	-0.034 (0.031)
HLWrk \times UE:8-12.0	-0.010 (0.020)	0.006 (0.020)	0.002 (0.020)	-0.017 (0.021)	-0.030 (0.023)	-0.028 (0.024)	-0.029 (0.024)	-0.024 (0.024)	-0.015 (0.026)	-0.024 (0.039)
HLWrk \times UE:12-16.0	-0.098*** (0.021)	-0.080*** (0.024)	-0.080*** (0.024)	-0.094*** (0.024)	-0.120*** (0.024)	-0.118*** (0.025)	-0.103*** (0.025)	-0.104*** (0.026)	-0.113*** (0.030)	-0.172*** (0.043)
HLWrk \times UE:16-20.0	0.129 (0.121)	0.095 (0.116)	0.093 (0.116)	-0.002 (0.107)	-0.015 (0.106)	0.020 (0.110)	-0.078** (0.033)	-0.076** (0.034)	-0.073 (0.045)	0.000 (.)
UE:4-8.0	-0.027*** (0.004)	-0.004 (0.005)	-0.004 (0.005)	-0.006 (0.006)	-0.004 (0.006)	-0.005 (0.006)	-0.005 (0.006)	-0.005 (0.006)	-0.004 (0.006)	-0.003 (0.009)
UE:8-12.0	-0.048*** (0.005)	-0.012* (0.007)	-0.012 (0.007)	-0.008 (0.008)	-0.007 (0.009)	-0.007 (0.009)	-0.002 (0.009)	-0.002 (0.009)	-0.001 (0.009)	-0.004 (0.014)
UE:12-16.0	-0.054*** (0.009)	-0.017 (0.011)	-0.016 (0.011)	-0.011 (0.012)	-0.010 (0.013)	-0.011 (0.013)	-0.011 (0.013)	-0.011 (0.013)	-0.010 (0.014)	-0.016 (0.022)
UE:16-20.0	-0.070*** (0.017)	-0.065*** (0.020)	-0.064*** (0.020)	-0.058*** (0.022)	-0.051** (0.023)	-0.058*** (0.022)	-0.055** (0.022)	-0.054** (0.022)	-0.059** (0.024)	-0.101*** (0.039)
Health Limits Work	-0.017 (0.015)	-0.007 (0.016)	-0.006 (0.015)	0.004 (0.018)	0.014 (0.019)	0.014 (0.019)	0.017 (0.019)	0.014 (0.019)	0.011 (0.020)	0.022 (0.028)
Observations	69033	69033	69033	50268	47199	44674	41438	41130	37895	22636
R^2	0.002	0.073	0.079	0.073	0.076	0.079	0.098	0.101	0.106	0.117
County FE	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Initial Health FE	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sample 1994–2014	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fixed Characterization	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes

Model 3: Health + Local UE + Age \Rightarrow Promotions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
HLWrk \times UE>9.0	0.079*** (0.022)	-0.006 (0.023)	-0.011 (0.023)	-0.005 (0.023)	-0.001 (0.026)	-0.005 (0.026)	-0.010 (0.026)	-0.010 (0.026)	-0.004 (0.032)	0.044 (0.060)
Health Limits Work	-0.089*** (0.012)	-0.001 (0.013)	-0.002 (0.013)	0.001 (0.013)	-0.000 (0.014)	0.002 (0.014)	0.006 (0.013)	0.008 (0.014)	0.016 (0.016)	-0.007 (0.022)
UE>9.0	-0.103*** (0.006)	-0.011 (0.008)	-0.008 (0.008)	-0.001 (0.008)	-0.002 (0.008)	-0.001 (0.008)	-0.001 (0.008)	-0.001 (0.008)	-0.002 (0.009)	0.001 (0.014)
Hlwk \times UE-Hi>9 \times Age_30L	-0.052 (0.077)	0.124 (0.079)	0.133* (0.076)	-0.106 (0.085)	-0.153* (0.087)	0.000 (.)	0.000 (.)	0.000 (.)	0.000 (.)	0.000 (.)
Hlwk \times Age_30L	0.155*** (0.024)	-0.015 (0.024)	-0.020 (0.024)	-0.164*** (0.034)	-0.147*** (0.031)	-0.180*** (0.032)	0.000 (.)	0.000 (.)	0.000 (.)	0.000 (.)
UE-Hi>9 \times Age_30L	0.169*** (0.012)	-0.007 (0.014)	-0.019 (0.014)	0.056 (0.071)	0.064 (0.074)	-0.066 (0.103)	0.000 (.)	0.000 (.)	0.000 (.)	0.000 (.)
Hlwk \times UE-Hi>9 \times Age_30_34	-0.154*** (0.059)	-0.019 (0.059)	-0.014 (0.060)	-0.049 (0.063)	-0.058 (0.065)	-0.075 (0.072)	-0.106 (0.084)	-0.100 (0.086)	-0.123 (0.099)	-0.290*** (0.091)
Hlwk \times Age_30_34	0.112*** (0.024)	-0.023 (0.024)	-0.021 (0.024)	-0.016 (0.028)	-0.012 (0.028)	-0.009 (0.032)	-0.014 (0.037)	-0.015 (0.037)	0.004 (0.042)	0.049 (0.054)
UE-Hi>9 \times Age_30_34	0.126*** (0.012)	0.008 (0.014)	0.004 (0.014)	-0.003 (0.015)	-0.001 (0.016)	-0.011 (0.018)	0.006 (0.023)	0.004 (0.023)	0.011 (0.024)	-0.042 (0.032)
Hlwk \times UE-Hi>9 \times Age_35_39	-0.171*** (0.046)	-0.089* (0.050)	-0.081* (0.049)	-0.087* (0.049)	-0.091* (0.054)	-0.067 (0.060)	-0.031 (0.065)	-0.031 (0.066)	-0.072 (0.074)	0.011 (0.121)
Hlwk \times Age_35_39	0.093*** (0.019)	0.005 (0.020)	0.009 (0.020)	0.004 (0.020)	0.007 (0.021)	0.002 (0.021)	0.002 (0.021)	-0.001 (0.022)	-0.003 (0.025)	0.004 (0.032)
UE-Hi>9 \times Age_35_39	0.089*** (0.013)	-0.005 (0.014)	0.002 (0.014)	-0.008 (0.015)	-0.004 (0.015)	-0.008 (0.016)	0.006 (0.016)	0.006 (0.016)	0.012 (0.017)	-0.007 (0.025)
Hlwk \times UE-Hi>9 \times Age_40_44	-0.058 (0.052)	-0.021 (0.055)	-0.020 (0.055)	-0.021 (0.058)	0.002 (0.058)	0.012 (0.058)	0.039 (0.054)	0.036 (0.054)	0.068 (0.058)	-0.014 (0.081)

Conclusion

Conclusion

- We study the effects of health problems in combination with economic downturns on career advancement
- We use US panel data that follows a cohort of people over multiple recessions from 1979 (ages 14–22) to 2016 (ages 51–59)
- Work **limiting health issues** significantly decrease probability of promotions **IF** individuals live in high UE counties
- Effect is significant for individuals age 30–40
- **Appendix:** Gender/race effects negligible
- **Appendix:** Negative effects of **recessions** on promotions, but **no extra negative health** effect during recessions \Rightarrow data issues!

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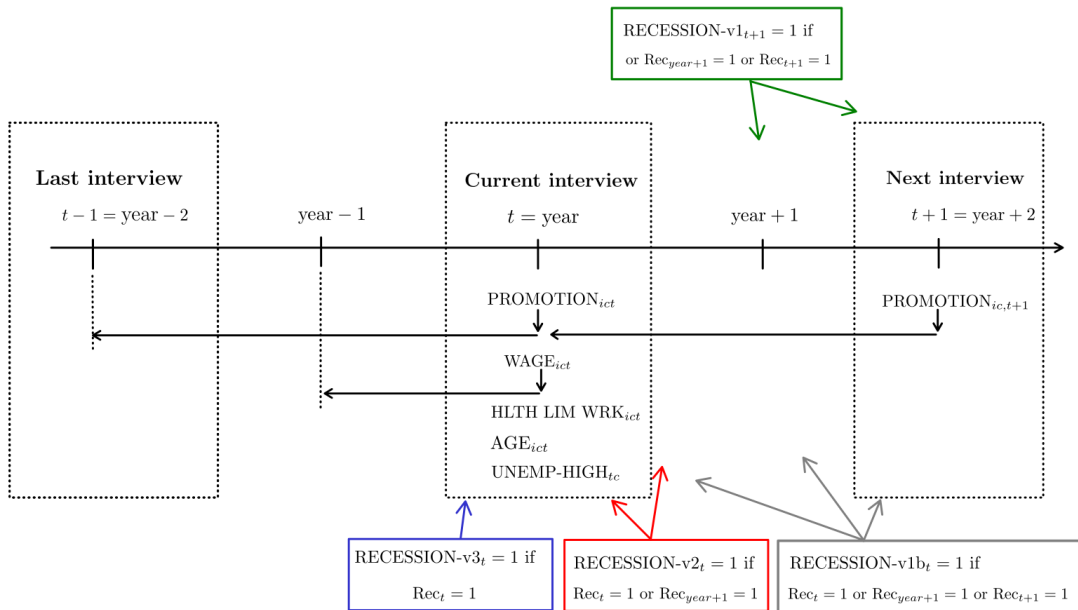
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Supplementary Material



Model: Health + Recession \Rightarrow Promotions

$$\begin{aligned} \text{PROMOTION}_{i,c,t+1} = & \alpha + \delta \times (\text{HEALT LIMITS WRK}_{ict} \times \text{RECESSION}_{t+1}) \\ & + \beta_1 \times \text{HEALT LIMITS WRK}_{ict} + \beta_2 \times \text{RECESSION}_{t+1} \\ & + \lambda_1 X_{ict} + \lambda_2 Z_{i,c,t-1} + \eta_c + \tau_t + \iota_i + \varepsilon_{ict}, \end{aligned} \quad (1)$$

- $\text{PROMOTION}_{ict} = 1$ if indiv. i living in **county** c in year t gets promoted
- $\text{HEALT LIMITS WRK}_{i,c,t} = 1$ if health limiting work issue
- RECESSION_t recession indicator
- $\delta \Rightarrow$ difference in promotion prob. of individual in **high UE area** + **recession**

Health+ Recession \Rightarrow Promotions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
WLWrk \times Recession-v1	0.030** (0.013)	0.025* (0.013)	0.026** (0.013)	0.030** (0.014)	0.035** (0.015)	0.034** (0.015)	0.033** (0.015)	0.031** (0.015)	0.035** (0.017)
Health Limits Work	-0.037*** (0.008)	-0.017** (0.007)	-0.015** (0.007)	-0.012 (0.008)	-0.010 (0.008)	-0.011 (0.008)	-0.010 (0.008)	-0.009 (0.008)	-0.007 (0.009)
Recession-v1	-0.028*** (0.003)	-0.206*** (0.007)	-0.049*** (0.018)	-0.068*** (0.014)	-0.039*** (0.015)	-0.041** (0.016)	-0.051*** (0.013)	-0.052*** (0.013)	-0.052*** (0.014)
Observations	69603	69603	69603	50540	47470	44881	41594	41286	38030
R ²	0.001	0.036	0.044	0.028	0.031	0.031	0.057	0.062	0.063
Region FE	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Initial Health FE	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sample 1994-2014	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Firm Characteristics	No	No	No	No	Yes	Yes	Yes	Yes	Yes
Ind+Occ FE	No	No	No	No	No	No	No	Yes	Yes
Employed(t+1)=1	No	No	No	No	No	No	No	No	Yes
Promo.Possible(t)=1	No	No	No	No	No	No	No	No	No

Standard errors in parentheses

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