

Climate Change and the Growth of Disability

Rolls: Evidence from the Half Century

(Very Preliminary)

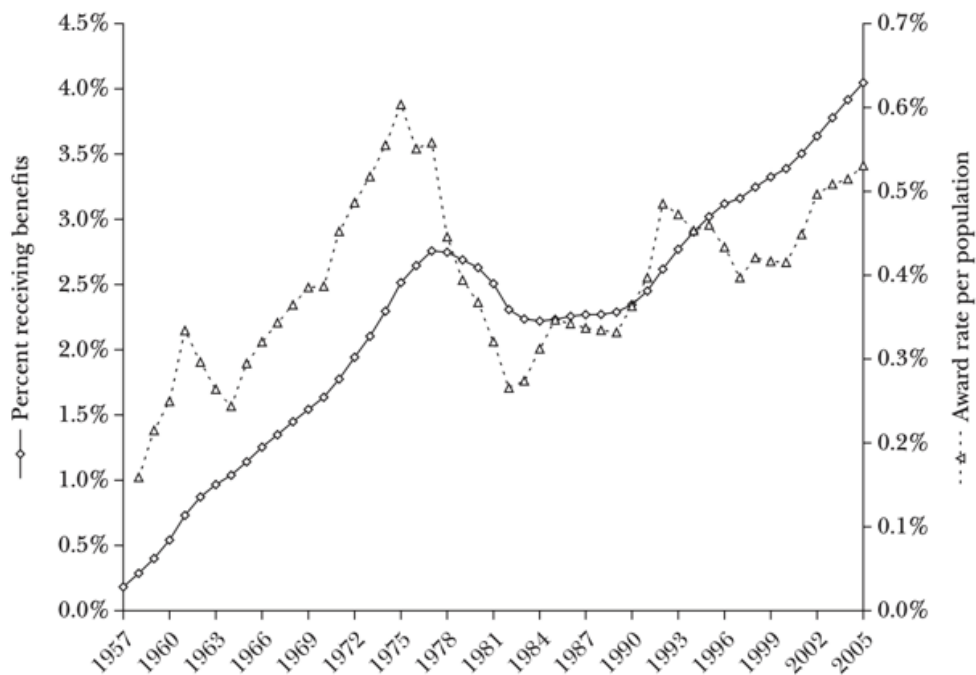
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RQ : Does climate change expand disability insurance(DI) receipt?

Motivation: DI's award rate has increased from 1980 (especially, Congressional deregulation in 1984). DI's fiscal burden reaches \$150B per year (vs. \$30B for UI).

Figure 1
Disability Insurance Recipiency and Award Rates per Adult Ages 25–64,
1957–2005
(excludes dependents)



Source: Social Security Bulletin: Annual Statistical Supplement (various years) and U.S. Census Bureau.

We consider Supplementary Security Income (SSI) as well.

✔ SSDIとSSIの主な違いまとめ

項目	SSDI (社会保障障害保険)	SSI (補足的所得保障)
目的	保険制度 (働けなくなった人の所得補償)	最低限の生活支援 (福祉制度)
対象者	障害がある & 一定の労働歴 (納税歴) あり	障害がある or 65歳以上 & 低所得者
加入条件	社会保障税 (FICA) を納めた労働者	所得・資産が一定以下ならOK (労働歴不要)
資金源	社会保障税 (給与から天引き)	一般財源 (所得税など)
支給額	過去の収入額に基づく (月1,300~3,000ドル程度が多い)	一定額 (2025年は個人943ドル/月が上限)
医療保険の付帯	Medicare (2年後に適用) ↓	Medicaid (即時適用)

• Theory: Health vs. Economics

extreme temperature が health もしくは labor demand/supply を悪化させるのか

✔ Health channel

extreme temperature → mental health ↓ , physical health ↓ , injuries ↑ → apply DI

✔ Economic channel

extreme temperature → hiring ↓ , layoff ↑ , or willingness to work outdoors ↓ → apply DI

Analysis 1: Extreme temperature and DI recipients

Extreme temperature は DI recipients を増加させる

unit: county × year (1970-2019)

Y: log(DI recipients) from Tim Moore (Purdue) 's newly harmonized dataset
(confidential)

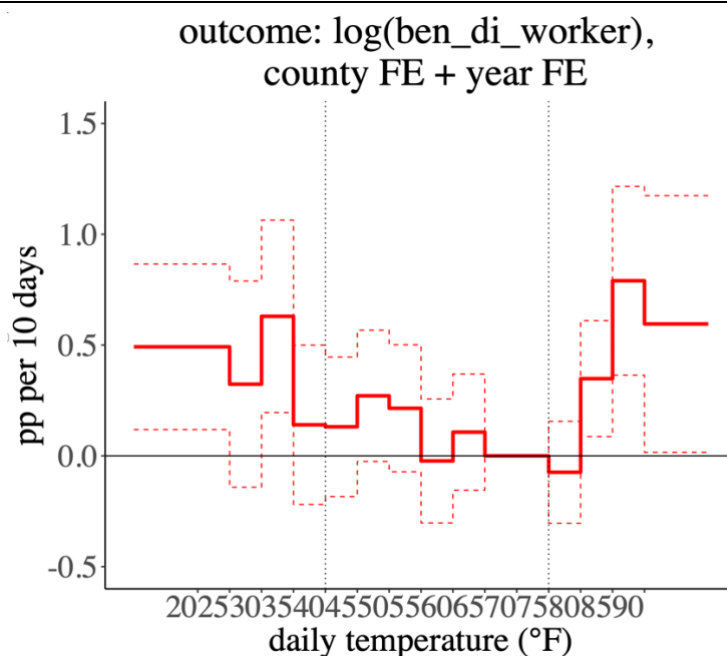
SSI data の有無を先方に問合せ中

X: temperature bins (1-year lag)

controls: rainy days (1-year lag)

weight: identical

errors: clustered by commuting zone



Analysis 2: Extreme temperature and DI (or SSI) applications

unit: state × year × month (2001-2019)

Y: log(DI or SSI applications) or award rate (= DI or SSI awards / applications) from
SSA State Agency Monthly Workload Data

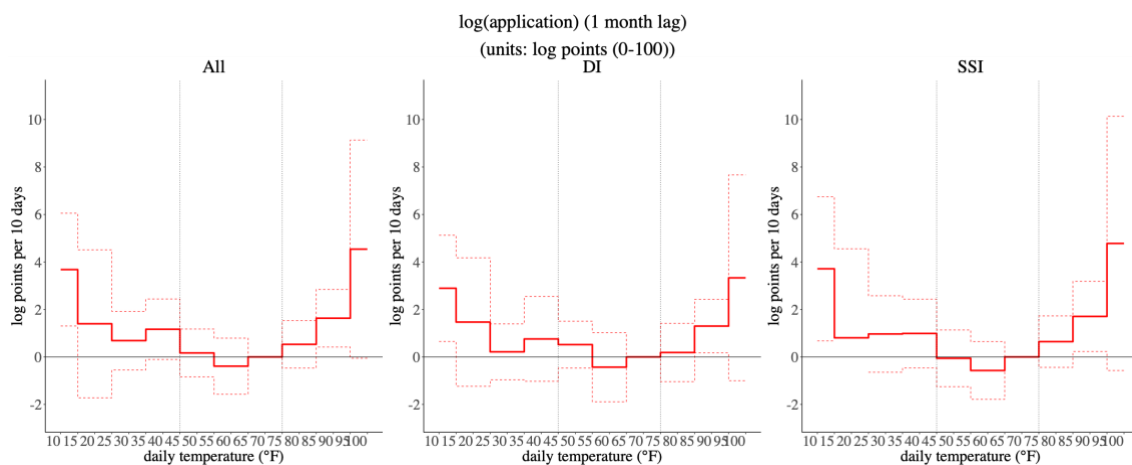
X: temperature bins (1-month lag)

controls: rainy days (1-month lag)

weights: identical

errors: clustered by state

1-1. Extreme temperature は DI (or SSI) application を増加させる



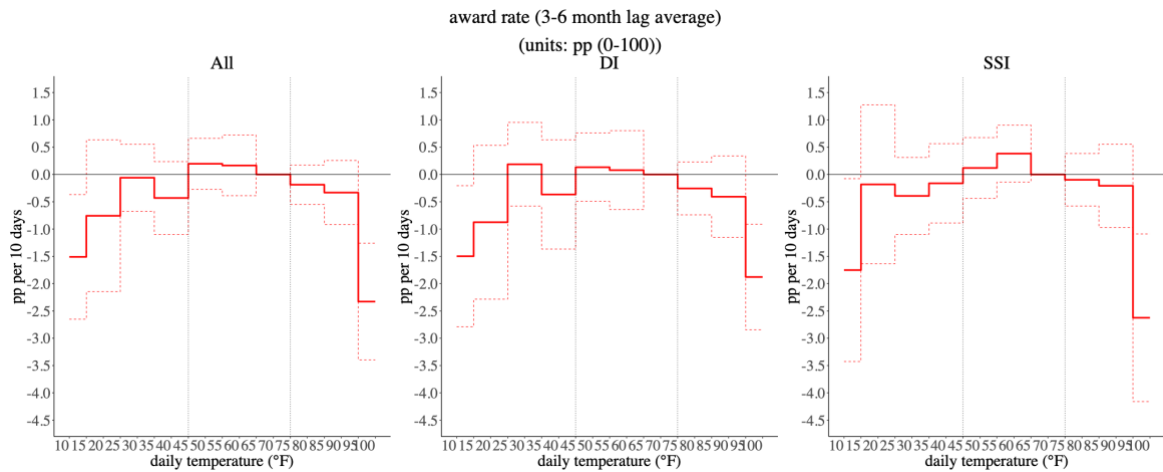
	log(all_apps) state FE (1)	log(di_apps) state FE (2)	log(ssi_apps) state FE (3)	log(all_apps) state-year FE (4)	log(di_apps) state-year FE (5)	log(ssi_apps) state-year FE (6)
hd75_ma0_lag1	1.272**** (0.362)	0.779** (0.365)	1.672**** (0.455)	1.266*** (0.381)	0.815** (0.374)	1.490*** (0.484)
cd35_ma0_lag1	1.456**** (0.390)	1.074*** (0.366)	1.446*** (0.441)	1.591**** (0.385)	1.166*** (0.383)	1.678**** (0.414)
pv of hd	0.1%	3.8%	0.1%	0.2%	3.4%	0.3%
pv of cd	0.0%	0.5%	0.2%	0.0%	0.4%	0.0%
	✓	✓	✓	✓	✓	✓
Observations	11,172	11,172	11,172	11,172	11,172	11,172
Adjusted R ²	0.987	0.984	0.988	0.993	0.990	0.993

Notes: * p<0.1; ** p<0.05; *** p<0.01; **** p<0.001

1-2. Extreme temperature は DI (or SSI) award rate (採用率) を低下させる

→economic channel を示唆！

award rate = awards (3–6 month lag average) / initial applications



	r_award_all_lead3_6	r_award_di_lead3_6	r_award_ssi_lead3_6	r_award_all_lead3_6	r_award_di_lead3_6	r_award_ssi_lead3_6
	state FE	state FE	state FE	state-year FE	state-year FE	state-year FE
	(1)	(2)	(3)	(4)	(5)	(6)
hd75_ma0_lag1	-0.565*** (0.204)	-0.466* (0.248)	-0.668** (0.260)	-0.392** (0.178)	-0.351 (0.232)	-0.402 (0.240)
cd35_ma0_lag1	-0.504** (0.213)	-0.470* (0.235)	-0.471** (0.223)	-0.748**** (0.177)	-0.665*** (0.216)	-0.786**** (0.206)
pv of hd	0.8%	6.7%	1.3%	3.3%	13.7%	10.0%
pv of cd	2.2%	5.1%	3.9%	0.0%	0.3%	0.0%
Observations	10,878	10,878	10,878	10,878	10,878	10,878
Adjusted R ²	0.608	0.609	0.625	0.758	0.733	0.761

Notes: * p<0.1; ** p<0.05; *** p<0.01; **** p<0.001