# Job Loss, Unemployment Insurance, and Health: Evidence from Brazil[1]

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[1]The results presented in this presentation do not reflect the opinions or official positions of the Federal Revenue of Brazil. All datasets containing confidential taxpayer information from the Federal Revenue of Brazil were accessed exclusively through secure servers for the execution of this project. All results have undergone thorough review to ensure that no confidential information is disclosed.

# Job Loss, Health, and Public Policy

Job dismissals $\Rightarrow \downarrow$ earnings (Bertheau et al., 2023; Couch and Placzek, 2010; Jacobson et al., 1993).
$\uparrow$ health and mortality risks (e.g., Sullivan and von Wachter, 2009).

Several studies in the context of **high-income economies** (e.g., Browning and Heinesen, 2012; Eliason and Storrie, 2009 & 2010; Kuhn et al., 2009).

Limited evidence on **public policy** solutions (Ahammer and Packham, 2023; Kuka, 2020).

This paper:

1. New context: large developing country (Brazil).
   - high poverty, crime, and informality levels;
   - less comprehensive social safety nets;
   - universal public healthcare (+ private options).
2. Investigates income losses as key driver.
3. Evidence on the role of unemployment insurance (UI).

Literature Review

# Two-Part Analysis

**Question 1: What are the effects of job loss on the health of individuals and their families?**

Setting:

- *Shock:* mass layoffs in Brazil.
- *Data:* 17-year worker-level data + hospitalization, health insurance, and mortality records.
- *Approach:* one-to-one matching + diff-in-diff/event study around dismissal date.

Main Results:

- $\uparrow \sim$33% prob. of public hospitalization (male workers), and $\uparrow \sim$23% prob. of death (male workers).
- Effects mostly associated with external causes and stress-related conditions.
- External-causes hospitalizations driven by workers with higher predicted income losses.
- Children of male workers more likely to be hospitalized following job loss.
- Roles of labor informality, criminal engagement, and access to private health insurance.

# Two-Part Analysis

**Question 2: Does Unemployment Insurance (UI) mitigate the adverse health impacts of job loss?**

Setting:

- *Shock:* institutional discontinuity in eligibility to UI around dismissal date.
- *Approach:* clean regression discontinuity around UI eligibility cutoff.

Main Results:

- $\downarrow$ prob. of public hospitalization from external causes for older male workers.
- Effects concentrated on window of UI disbursements.

# Institutional Background and Data

# Employment and Health Care in Brazil

**The Brazilian Labor Market:**

- High job turnover: yearly dismissals $> 35\%$.
- High labor labor informality: $\sim 45\%$ of all jobs in 2012 (Ulyssea, 2018).
  - *informal* income mitigates impact of job loss on *formal* income by 10-20%.

  Formal vs. Informal Labor Income
- Main policy supporting displaced workers: unemployment insurance (UI).
  - 3-5 months, $\sim 80\%$ of pre-displacement salary.

**Health Care in Brazil:**

- Universal coverage (SUS), present in 90% of municipalities.
- **Non-elective/emergency care:** $\sim 82\%$ of admissions.
- Supplemental sector: coverage for 24% of population.
- Hospitalizations and deaths evenly divided between "external" and "non-external" causes.

  Proportions by Cause

# Data Sources

**Formal Labor Force:** *Relação Anual de Informações Sociais* - RAIS

- NID (National ID Number); Occupation; Firm; Income; Date of hire/dismissal; Demographics.

**Information on Deaths:** *Sistema de Informação de Mortalidade* - SIM

- Date of death, cause of death (ICD-10).

**Public Hospitalization:** *Sistema de Informação Hospitalar* - SIH

- Period, cause (ICD-10) and cost of admission.

**Private Health Insurance:** *Agência Nacional de Saúde* - ANS

- Period of enrollment, type of enrollment (corporate/individual).

**Addresses and Year of Death:** *Receita Federal do Brasil* - RF

- NID; history of home addresses; year of death.

Merging Observations Across Datasets

## Job Loss, Public Hospitalization, and Mortality

# Sample Selection and Empirical Strategy

**Question 1: What are the effects of job loss on the health of individuals and their families?**

*Sample:* 2006-2014, male and female workers, ages 18-65, full-time.

Descriptive Evidence

*Framework:* **One-to-one Matching + Differences-in-Differences (Event Study)**.

- **Treatment group:** workers displaced from firms due to **mass layoffs**[2].
- **Control group:** non-displaced workers in firms that *did not* experience mass layoffs.
- Observations matched between groups by various worker, firm, and region characteristics.

Sample Balance

*Identifying assumption:* parallel trajectories in the rates of hospitalization and mortality across treatment and control groups in the absence of treatment (job dismissal).

[2] i.e., $> 1/3$ of workforce fired at will within a given year

# Sample Selection and Empirical Strategy

Employment/Income and Public Hospitalization:

$$Y_{it} = \alpha + \gamma Treat_i + \sum_{t=-P}^{T} \delta_t (Treat_i \cdot Time_t) + \sum_{t=-P}^{T} \lambda_t Time_t + \epsilon_{it}$$

Mortality:

$$Y_{it} = \alpha + \sum_{t=0}^{T} \delta_t (Treat_i \cdot Time_t) + \sum_{t=0}^{T} \lambda_t Time_t + \epsilon_{it}$$

Where:

- $Y_{it} \rightarrow$ outcome of interest;
- $Treat_i \rightarrow$ dummy indicating that the worker belongs to the treatment group;
- $Time_t \rightarrow$ dummies for years before/since a worker's layoff date;
- $\varepsilon_{it} \rightarrow$ error term.

# Impacts on Employment and Income

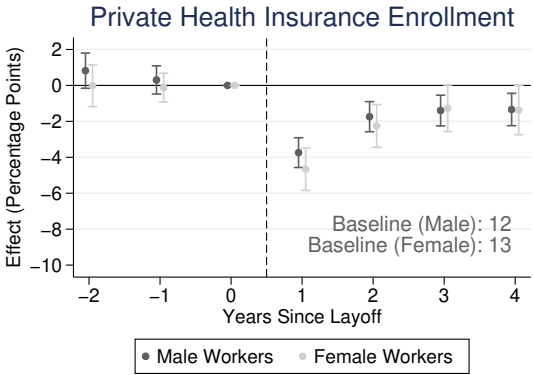


Relative effects:

- Employment: ↓ 30-38% (1st year), ↓ 17-21% (average).
- Income: ↓ 56-60% (1st year), ↓ 36-39% (average).

Estimates Table

# Impacts on Health Insurance Enrollment and Hospitalization





- Relative effects (average): HI enrollment ↓ 28-32%, hospitalization (male workers) ↑ 33%.

  Estimates Table

- Decrease in HI enrollment explains only 3-8% of hospitalization effects.

  Exclusion of Previous Enrolees | HI Mediation

# Impacts on Mortality



- Relative mortality effects: ↑ 54% (1st year), ↑ 23% (average). Estimates Table
- ITT estimates show no pre-trends on individual-level risk of mortality before layoff. ITT Approach
- Cumulative mortality suggests social costs between US$2bi and US$6bi. Social Costs

# Additional Results

**Disaggregated Outcomes (male workers):**

- Effects mostly associated to external causes;
  - e.g., injuries, accidents, and assaults.
- Positive effects on non-external causes associated with stress;
  - e.g., ischemic heart diseases and mental/behavioral disorders due to substance use.

  Dynamic Effects | Results by Disease Subgroups
- Effects unlikely to be explained by criminal behavior. Restricted Sample | Crime Mediation

**Heterogeneity Analysis (male workers):**

- Effects are prevalent across worker characteristics. Heterogeneity by Demographics
- Results insensitive to variation in local labor informality and healthcare infrastructure.

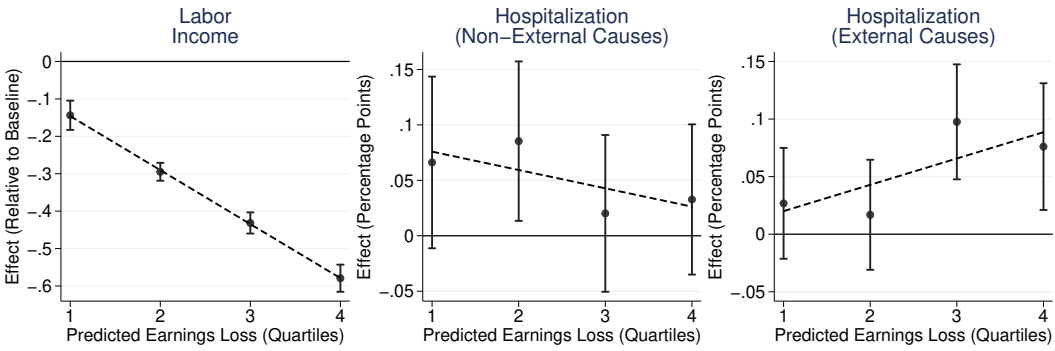
  Additional Heterogeneity

**Spillover Effects:**

- Higher risk of children's hospitalization (external causes). Average Effects | Dynamic Effects

# Mechanisms and Robustness

**Mechanism:** the role of relative income losses.




**Robustness:**

- Results robust to different mass layoff specifications. Tests of Selection
- Strategy robust to methodological concerns with staggered treatment timings. DCdH Estimates

# Attenuating Effects of Unemployment Insurance

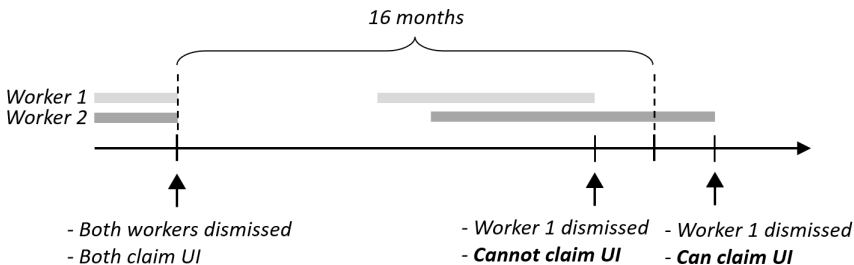
# Question and Setting

**Question 2: Does Unemployment Insurance (UI) mitigate the adverse health impacts of job loss?**

Eligibility to UI:

(i) continuous employment in the 6 months prior to layoff;

(ii) minimum 16-month period between the worker's two most recent layoff dates, in case the worker has claimed UI in the first of these dates.



# Sample Selection and Empirical Strategy

*Framework:* **Regression-Discontinuity Design**

$$Y_{it} = \alpha + \beta D_i + f(X_i) + \epsilon_{it}$$

- $Y_i \rightarrow$ indicator variable for the $i$-th worker's outcome, 1 year after job loss;
- $X_i \rightarrow$ running variable;[3]
- $f(\cdot) \rightarrow$ flexible polynomial regression;
- $D_i \rightarrow$ dummy equal to one for workers who are eligible for UI.[4]

$\beta \rightarrow$ effect of UI eligibility.

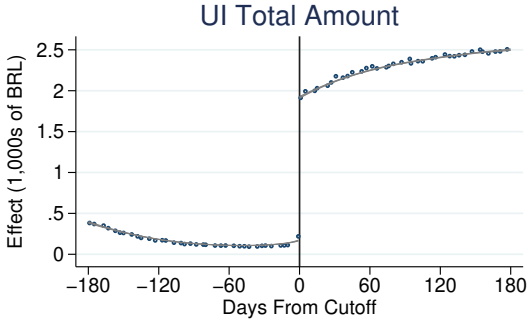
*Sample:*

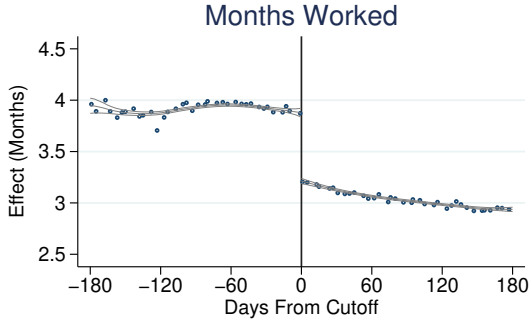
- 2006-2014, male workers, ages 18-65, full-time;
- claimed $\geq 3$ months of UI benefits in previous spell.
- validity tests: Density Tests | Balance on Observables

[3] Diference between most recent layoff date and previous layoff date used to claim UI, standardized such that $X = 0$ at the cutoff required for eligibility (i.e. 16 months between the two most recent layoffs)

[4] $D_i = \mathbb{1}(X_i \geq 0)$

# First-Stage Mechanisms

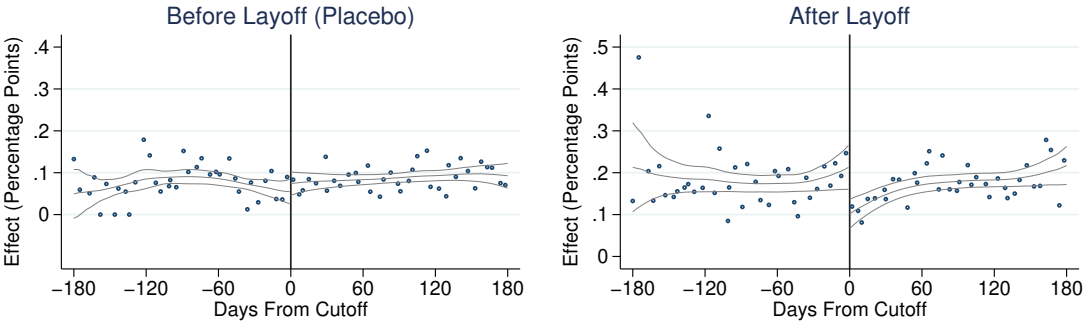



Implied magnitudes, up to 1 year after job loss:

- Months worked:
  $\downarrow$ **16%** rel. to average at cutoff ($0.16 \times 3.93 \Rightarrow \sim \downarrow$ **0.66 months**). Point Estimates

# Impacts on Hospitalizations (External Causes, Older Workers)




Implied magnitudes, up to 1 year after job loss:

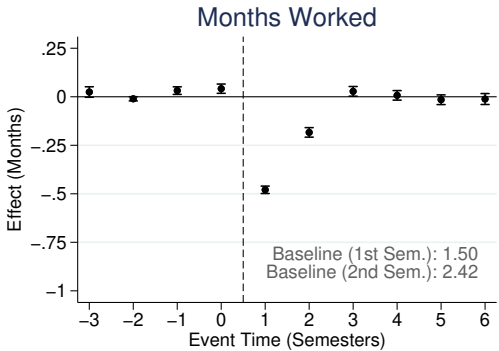
- Prob. of hospitalization (ext. causes, Older Workers aged $> 35$ years): $\downarrow$ **60%** rel. to average at cutoff ($0.6 \times 0.18 \Rightarrow \sim \downarrow$ **0.11 p.p.**). Point Estimates

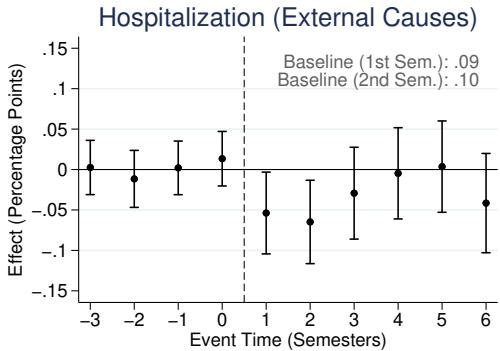
Robustness: Different Specifications Permutation Tests

# Mechanisms and Impact Timing

**Potential mechanisms:** ↑ health investments × ↑ unhealthy behavior × ↓ **financial strain**.

**Impact timing:** effects concentrated in the first year after layoff, matching the approximate timing of UI payments.



# Conclusion

We study the causal effects of job loss and unemployment insurance (UI) on hospitalization and mortality for Brazilian workers.

**Job loss:**

- $\uparrow$ hospitalization and mortality risks for male workers dismissed in mass layoffs, particularly from consequences of external causes;
- External-causes hospitalizations driven by workers with higher predicted income losses;
- Limited roles of labor informality, criminal engagement, or access to private health insurance.

**Unemployment insurance:**

- $\downarrow$ external-causes hospitalizations of older ($>$ 35 years) male workers;
- Effects concentrated on first year after layoff.

While UI transfers offer partial protection, additional policy measures may be necessary to address health risks across all worker groups.

# Thank You!

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# Appendix

## Contribution to Related Literature

Relationship between unemployment (work displacement) and health:

- survey or aggregated data (e.g., Ruhm, 2000; Salm, 2009; Schaller and Stevens, 2011, 2015; Black et al., 2015; Finkelstein et al., 2024).
- population administrative data and mass layoffs/plant closures as a source of exogenous variation (e.g., Eliason and Storrie, 2009; Kuhn et al., 2009; Sullivan and Wachter, 2009; Browning and Heinesen, 2012; Bloemen et al., 2018).

Mitigating effects of unemployment insurance on the health impacts of job loss: Kuka (2020) and Ahammer and Packham (2023).

Impacts of job loss in Brazil on self-reported health with survey data (Giatti et al., 2008) and on children's mental health with a cohort study sample (Fontes et al., 2022).

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**Figure A1 (a)**: Effect of Job Loss on Formal and Informal Labor Market Outcomes

**(a) PNAD Data (Representative)**

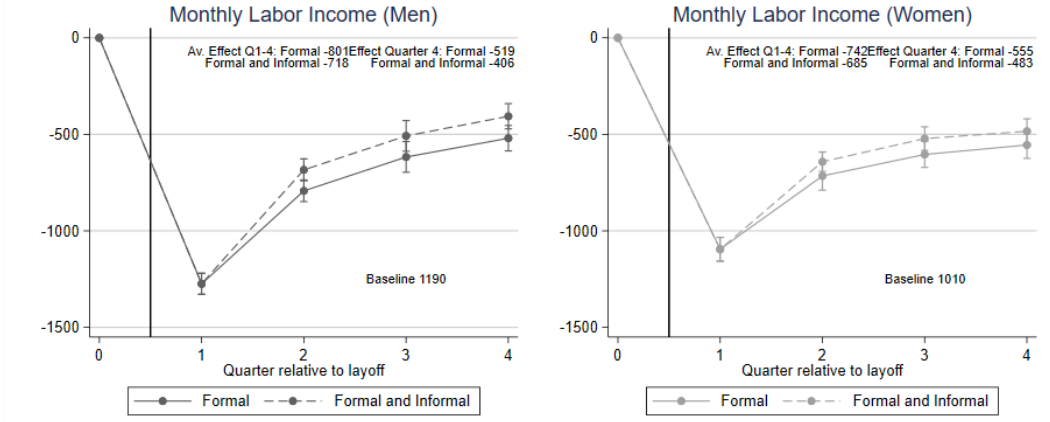

**Figure A1 (b)**: Effect of Job Loss on Formal and Informal Labor Market Outcomes

**(b) CU Data (Low-Income)**

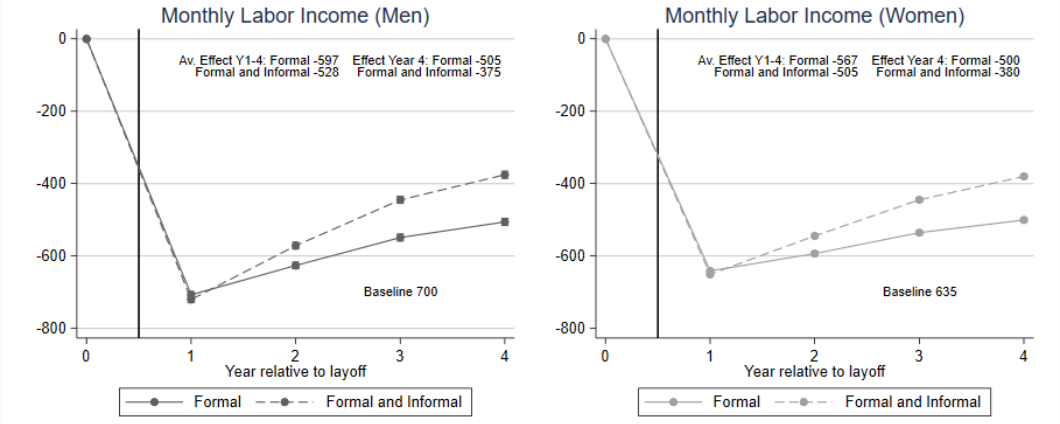


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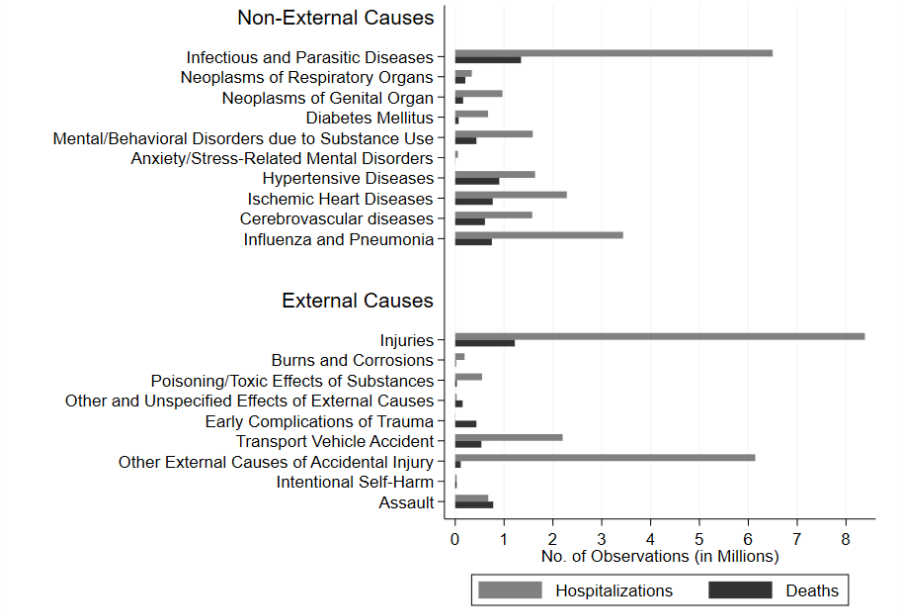
**Figure A2:** Hospitalization and Deaths by Cause

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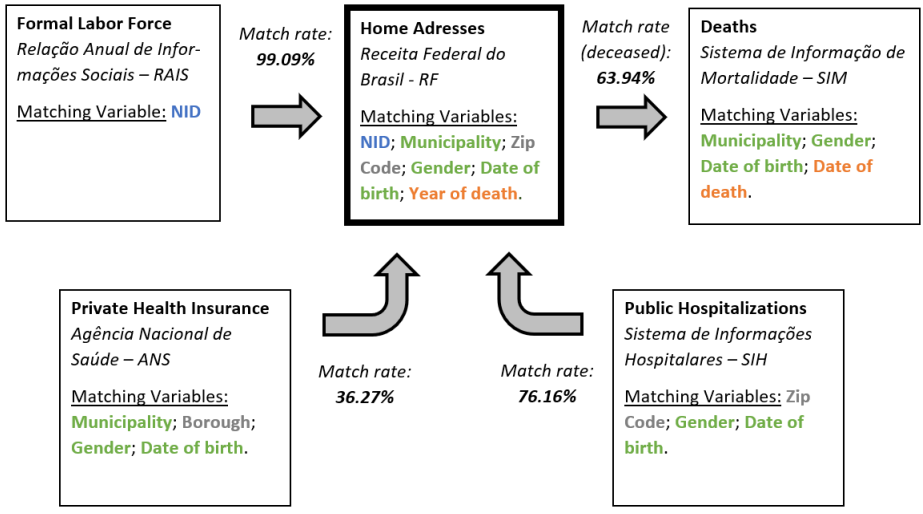
Formal Labor Force
Relação Anual de Informações Sociais – RAIS
Matching Variable: NID
Match rate:
99.09%
Home Adresses
Receita Federal do Brasil - RF
Matching Variables:
NID; Municipality; Zip Code; Gender; Date of birth; Year of death.
Match rate (deceased):
63.94%
Deaths
Sistema de Informação de Mortalidade – SIM
Matching Variables:
Municipality; Gender; Date of birth; Date of death.
Private Health Insurance
Agência Nacional de Saúde – ANS
Matching Variables:
Municipality; Borough; Gender; Date of birth.
Match rate:
36.27%
Match rate:
76.16%
Public Hospitalizations
Sistema de Informações Hospitalares – SIH
Matching Variables: Zip Code; Gender; Date of birth.

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**Table A1:** Summary Statistics, Treated vs. Non-Treated Observations

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
|---|---|---|---|---|---|---|---|---|---|
| | No Restrictions | | | Unique Zip Code/Gend./D.o.B. | | | Unique Borough/Gend./D.o.B. | | |
| | Treated | Non-Treated | Std. Diff. | Treated | Non-Treated | Std. Diff. | Treated | Non-Treated | Std. Diff. |
| **Individual Characteristics** | | | | | | | | | |
| Age | 30.22 | 30.22 | 0.00 | 29.86 | 29.86 | 0.00 | 29.45 | 29.45 | 0.00 |
| Tenure (Months) | 16.85 | 16.86 | -0.00 | 16.54 | 16.52 | 0.00 | 15.99 | 15.97 | 0.00 |
| Educational Level (Years) | 10.85 | 10.88 | -0.01 | 10.92 | 10.99 | -0.03 | 10.86 | 10.87 | -0.01 |
| Income | 1,046.72 | 1,037.78 | 0.01 | 1,046.31 | 1,037.50 | 0.01 | 1,024.09 | 1,015.22 | 0.02 |
| **Municipality Characteristics** | | | | | | | | | |
| Population | 3,526,534.00 | 3,590,280.00 | -0.01 | 3,791,669.00 | 3,859,904.00 | -0.01 | 3,482,639.00 | 3,523,825.00 | -0.01 |
| GDP | 32.51 | 32.92 | -0.02 | 33.31 | 33.63 | -0.02 | 32.99 | 33.09 | -0.01 |
| Gini Index | 0.65 | 0.65 | 0.00 | 0.66 | 0.66 | 0.00 | 0.65 | 0.65 | 0.01 |
| Informality Rate | 0.34 | 0.34 | 0.03 | 0.33 | 0.33 | 0.02 | 0.33 | 0.33 | 0.03 |
| Homicide Rate | 21.03 | 21.42 | -0.03 | 20.15 | 20.53 | -0.03 | 18.60 | 19.06 | -0.04 |
| **Firm Characteristics** | | | | | | | | | |
| Mean Age | 33.99 | 34.06 | -0.02 | 33.94 | 33.96 | -0.00 | 33.83 | 33.90 | -0.02 |
| Mean Tenure (Months) | 33.10 | 29.22 | 0.23 | 32.95 | 29.05 | 0.23 | 32.85 | 29.00 | 0.23 |
| Mean Educational Level | 10.82 | 10.88 | -0.03 | 10.88 | 10.96 | -0.05 | 10.82 | 10.86 | -0.02 |
| Mean Income | 1,361.78 | 1,379.23 | -0.02 | 1,376.74 | 1,396.20 | -0.02 | 1,360.42 | 1,376.96 | -0.02 |
| Firm Size | 836.35 | 997.84 | -0.07 | 901.99 | 1,068.75 | -0.07 | 941.72 | 974.70 | -0.01 |
| **Firm Pre-Treatment Rates** | | | | | | | | | |
| Layoff Rate ($t = -1$) | 0.17 | 0.17 | -0.13 | 0.16 | 0.17 | -0.13 | 0.16 | 0.17 | -0.13 |
| Layoff Rate ($t = -2$) | 0.16 | 0.16 | -0.06 | 0.16 | 0.16 | -0.05 | 0.16 | 0.16 | -0.06 |
| Layoff Rate ($t = -3$) | 0.15 | 0.16 | -0.08 | 0.15 | 0.16 | -0.09 | 0.15 | 0.16 | -0.09 |

Notes: (...)

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**Figure A4**: Hospitalization and Mortality by Employment Status and Age Groups

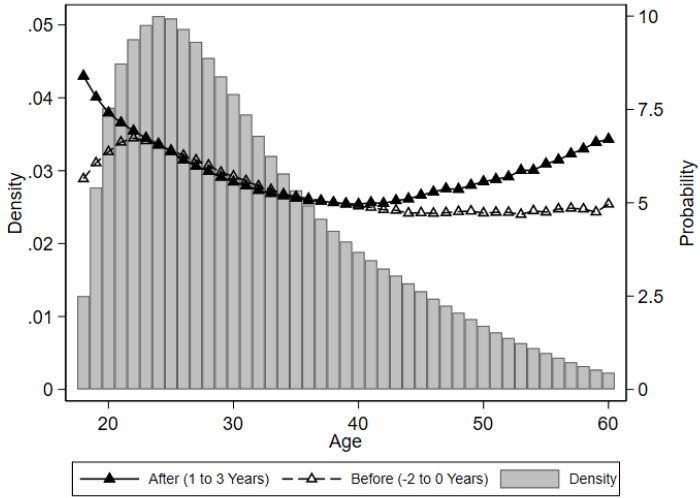


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**Table A2:** Effect of Job Loss on Employment, HI Enrollment, and Hospitalization

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|
| | **Labor Market Outcomes** | | **Prob. of Private HI Enrollment** | | | **Prob. of Public Hospitalization** | | |
| | Prob. of Employment | Labor Income | All Plans | by Plan Type | | Overall | by Cause | |
| | | | | Corporate | Individual | | External | Non-Ext. |
| | Panel A: Men | | | | | | | |
| *Point Estimate* | -14.24*** | -4,092.24*** | -2.4308*** | -2.0018*** | -0.0252 | 0.1049*** | 0.0545*** | 0.0521*** |
| | (0.3634) | (127) | (0.3329) | (0.2904) | (0.0422) | (0.0230) | (0.0134) | (0.0189) |
| Baseline Mean (Treated, $t \leq -1$) | 79.62 | 11,066.82 | 12.8191 | 6.9399 | .4420 | .3123 | .0909 | .2294 |
| Effect Relative to Baseline | -17% | -36% | -18% | -28% | -5% | 33% | 59% | 22% |
| Implied Elasticity to Employment | - | - | 1.05 | 1.64 | 0.29 | -1.94 | -3.47 | -1.29 |
| Implied Elasticity to Earnings | - | - | 0.50 | 0.77 | 0.13 | -0.91 | -1.63 | -0.61 |
| Observations | 2,017,162 | 2,017,162 | 700,014 | 700,014 | 700,014 | 1,411,942 | 1,411,942 | 1,411,942 |
| | Panel B: Women | | | | | | | |
| *Point Estimate* | -16.67*** | -3,204.06*** | -2.3465*** | -2.3280*** | 0.1798** | -0.0099 | 0.0162* | -0.0235 |
| | (0.65) | (123) | (0.4165) | (0.4406) | (0.0812) | (0.0308) | (0.0091) | (0.0294) |
| Baseline Mean (Treated, $t = -1$) | 77.92 | 8,116.96 | 13.8531 | 7.1786 | .9519 | .3105 | .0268 | .2842 |
| Effect Relative to Baseline | -21% | -39% | -16% | -32% | 18% | -3% | 60% | -8% |
| Implied Elasticity to Employment | - | - | 0.76 | 1.52 | -0.85 | 0.14 | -2.85 | 0.38 |
| Implied Elasticity to Earnings | - | - | 0.41 | 0.82 | -0.46 | 0.07 | -1.53 | 0.20 |
| Observations | 1,121,064 | 1,121,064 | 421,120 | 421,120 | 421,120 | 835,772 | 835,772 | 835,772 |

*Notes:* (...)

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# Appendix

## Additional Results

**Figure A5**: Effects on Public Hospitalization by Health Insurance Enrollment Status

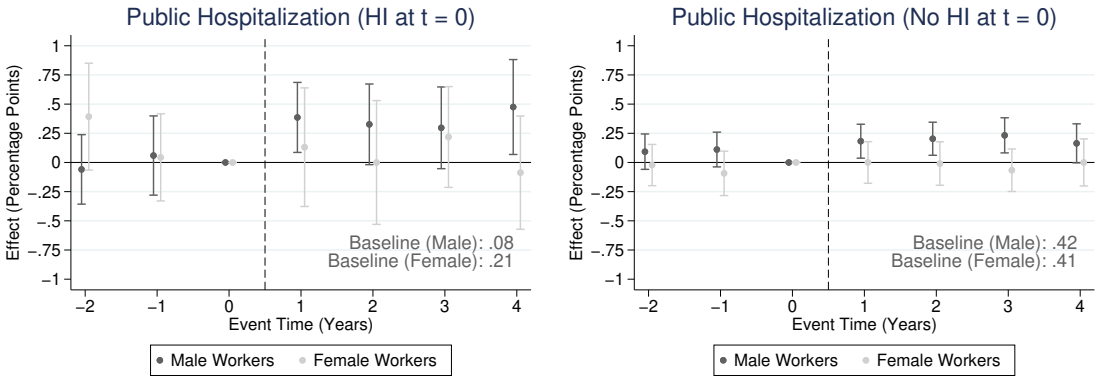


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**Table A3:** Effect of Job Loss on Hospitalization, by HI Status

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| | **HI at $t = 0$** | | | **No HI at $t = 0$** | | |
| | Overall | by Cause | | Overall | by Cause | |
| | | External | Non-Ext. | | External | Non-Ext. |
| | Panel A: Men | | | | | |
| *Point Estimate* | 0.3710*** | 0.1781*** | 0.1806** | 0.1276*** | 0.0574** | 0.0739** |
| | (0.1076) | (0.0626) | (0.0890) | (0.0415) | (0.0229) | (0.0348) |
| Baseline Mean | .1385 | .0297 | .1088 | .4172 | .1241 | .3046 |
| Effect Relative to Baseline | 267% | 600% | 165% | 30% | 46% | 24% |
| Observations | 47,166 | 47,166 | 47,166 | 530,138 | 530,138 | 530,138 |
| | Panel B: Women | | | | | |
| *Point Estimate* | -0.0800 | -0.0545 | -0.0327 | 0.0196 | 0.0170 | 0.0081 |
| | (0.1385) | (0.0646) | (0.1263) | (0.0537) | (0.0174) | (0.0500) |
| Baseline Mean | .2471 | .0872 | .1599 | .3997 | .0281 | .3730 |
| Effect Relative to Baseline | -32% | -62% | -20% | 4% | 60% | 2% |
| Observations | 32,102 | 32,102 | 32,102 | 315,252 | 315,252 | 315,252 |

*Notes:* (...)

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# Appendix

## Mediation Analysis of Private HI

Decomposition of unconditional treatment effects $\beta_t$ (Breivik and Costa-Ramón, 2022):

$$\frac{dY_t}{d\left(Treat \cdot Time_t\right)} = \frac{\partial Y_t}{\partial HI_t} \cdot \frac{\partial HI_t}{\partial\left(Treat \cdot Time_t\right)} + R_t,$$

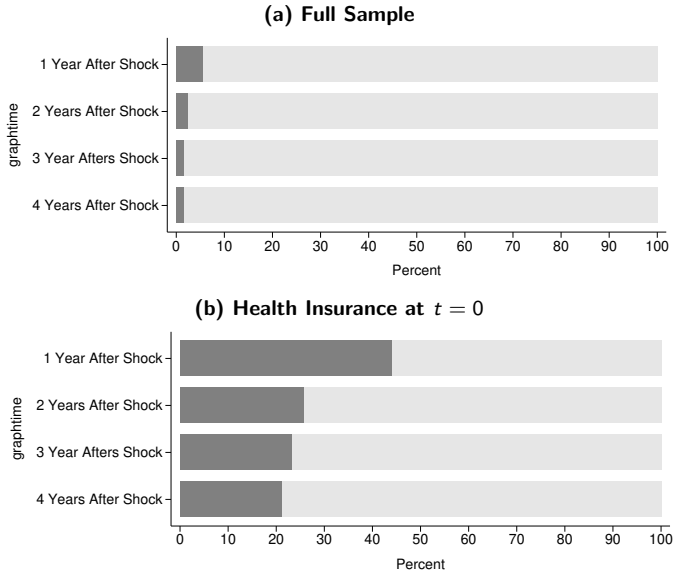
$\partial Y_t / \partial HI_t$ is estimated from the mediator term $\phi$ in:

$$Y_{it} = \alpha + \delta\, Treat_i + \sum_{t=-P}^{T} \beta_t^{HI_1}\, Treat_i \cdot Time_t + \sum_{t=-P}^{T} \lambda_t\, Time_t + \phi HI_{it} + \epsilon_{it}.$$

The remaining terms, $\beta_t^{HI_2} = \partial HI_t / \partial\left(Treat \cdot Time_t\right)$ and $\beta_t = dY_t / d\left(Treat \cdot Time_t\right)$, are estimated with equations from main analysis.

Mediation effect of $HI$ on $Y_t$: $\frac{\phi \times \beta_t^{HI_2}}{\beta_t}$. Remaining, unexplained part: $R_t = 1 - \frac{\phi \times \beta_t^{HI_2}}{\beta_t}$.

**Figure A6**: Mediation Analysis of the Effect of Private HI on Public Hospitalization, Male Workers




Return

**Table A4:** Effect of Job Loss on Mortality

| | (1) | (2) | (3) |
|---|---|---|---|
| | **Prob. of Death** | | |
| | Overall | by Cause | |
| | | External | Non-Ext. |
| | Panel A: Men | | |
| *Point Estimate* | 0.0239*** | 0.0149*** | 0.0090*** |
| | (0.0046) | (0.0030) | (0.0033) |
| Baseline Mean (Untreated, $t \geq 0$) | .1027 | .0659 | .0368 |
| Effect Relative to Baseline | 23% | 22% | 24% |
| Implied Elasticity to Employment | -1.64 | -1.57 | -1.71 |
| Implied Elasticity to Earnings | -0.82 | -0.78 | -0.85 |
| Observations | 2,574,349 | 2,574,349 | 2,574,349 |
| | Panel B: Women | | |
| *Point Estimate* | -0.0036 | -0.0014 | -0.0022 |
| | (0.0056) | (0.0023) | (0.0051) |
| Baseline Mean (Untreated, $t > 0$) | .0362 | .0125 | .0237 |
| Effect Relative to Baseline | -9% | -11% | -9% |
| Implied Elasticity to Employment | 0.56 | 0.68 | 0.56 |
| Implied Elasticity to Earnings | 0.31 | 0.37 | 0.31 |
| Observations | 1,435,819 | 1,435,819 | 1,435,819 |

*Notes:* (...)

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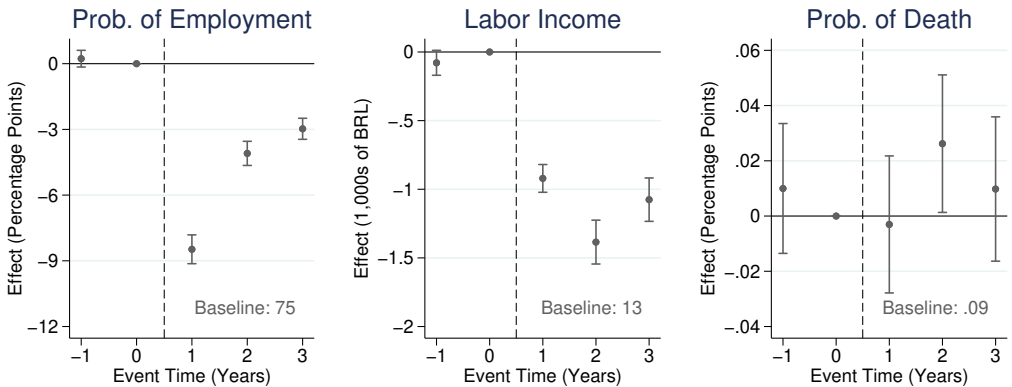
# Appendix

## Additional Results

**Figure A7**: Dynamic ITT Effects of Job Loss on Labor Market Outcomes and Mortality

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# Appendix

## Additional Results

**Calculating Cumulative Mortality:**

Following Deryungina and Molitor, 2019, each year after job loss the change in cumulative mortality $\Delta M_t$ is given by

$$\Delta M_t = \prod_{t=0}^{T}(1 - m_t + \beta_t) - \prod_{t=0}^{T}(1 - m_t)$$

where $\beta_t$ are the annual mortality effects of job loss and $m_t$ is the empirical fraction of the laid-off workers who die in year $t$.

**Calculating Social Costs:**

VSL estimates (Kniesner et al., 2012): $\sim$ US$4mi to US$10mi $\Rightarrow$ total loss: US$8k to US$20k per worker.

287k male workers dismissed (ML), 2006 to 2014 $\Rightarrow$ aggregate losses: $\sim$ US$2bi to US$6bi.

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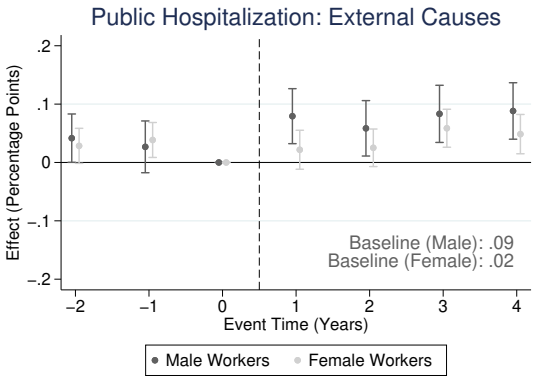
# Appendix

## Additional Results

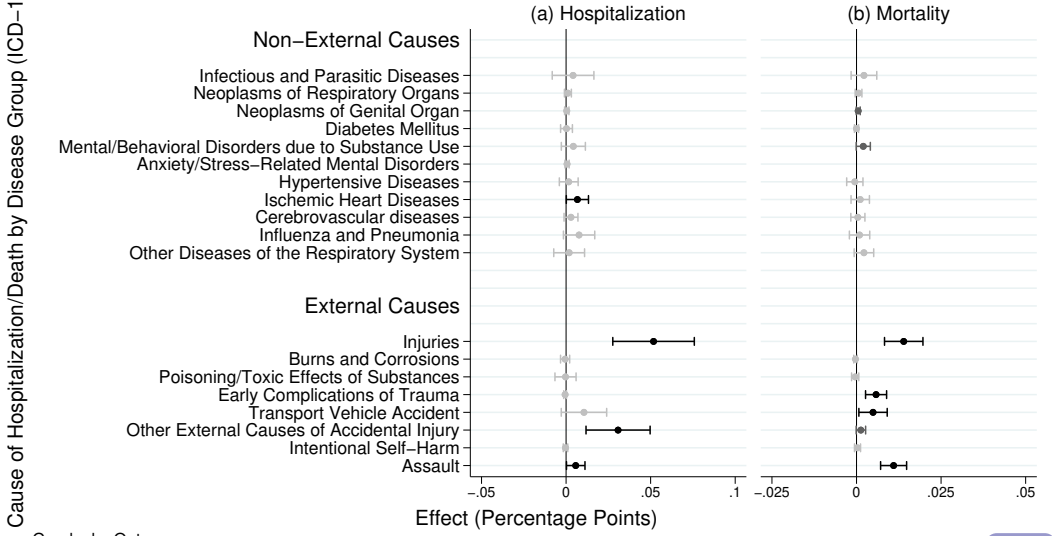
**Figure A8**: Effects on Public Hospitalization, by Category





Return

**Figure A9**: Main Effects of Job Loss, by Diagnosis Groups




Return

**Table A5:** Effect of Job Loss on Hospitalization for External Causes, Restricted Samples

| | (1) | (2) |
|---|---|---|
| | **Restricted Years** | **Restricted Years, Excluding Criminally Prosecuted** |
| | Panel A: Male Workers | |
| *Point Estimate* | 0.0616*** | 0.0910*** |
| | (0.0166) | (0.0244) |
| Baseline Mean (Treated, $t \leq 0$) | .1091 | .1069 |
| Effect Relative to Baseline | 56% | 85% |
| Observations | 1,026,732 | 419,216 |
| | Panel B: Children of Male Workers | |
| *Point Estimate* | 0.0522* | 0.0746* |
| | (0.0310) | (0.0390) |
| Baseline Mean (Treated, $t \leq 0$) | .0570 | .0628 |
| Effect Relative to Baseline | 91% | 118% |
| Observations | 122,878 | 89,152 |

*Notes:* (...)

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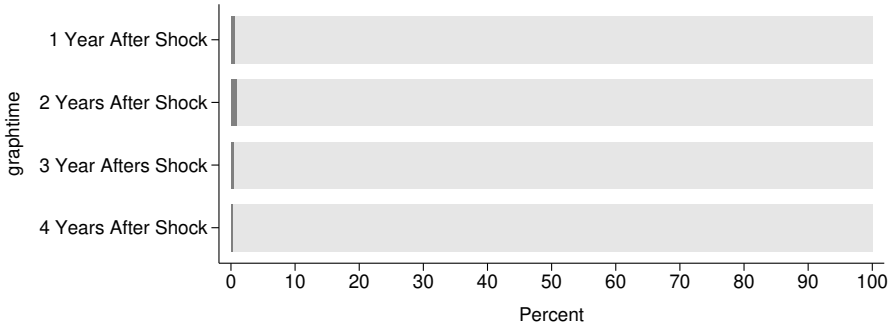
# Appendix

## Additional Results

**Figure A10**: Mediation Analysis of the Effect of Crime on Public Hospitalization, Male Workers




Return

**Figure A11 (a)**: Effect of Job Loss on Hospitalization, by Individual Demographic Quartiles

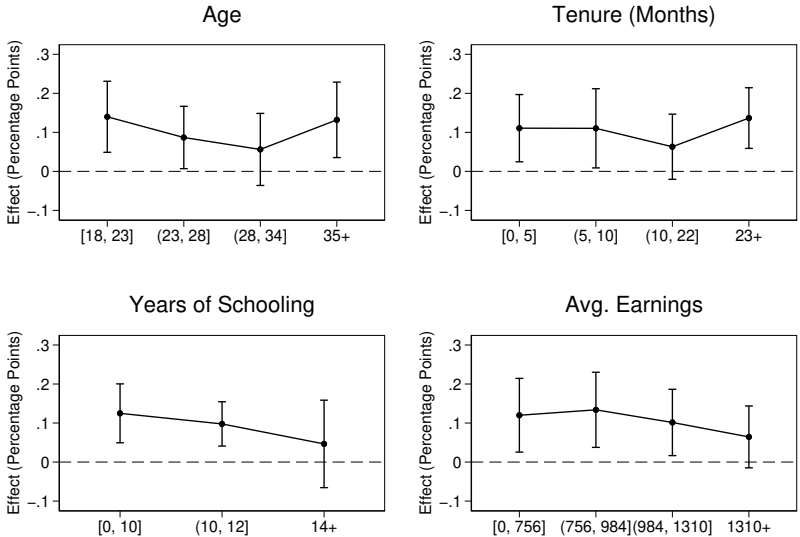



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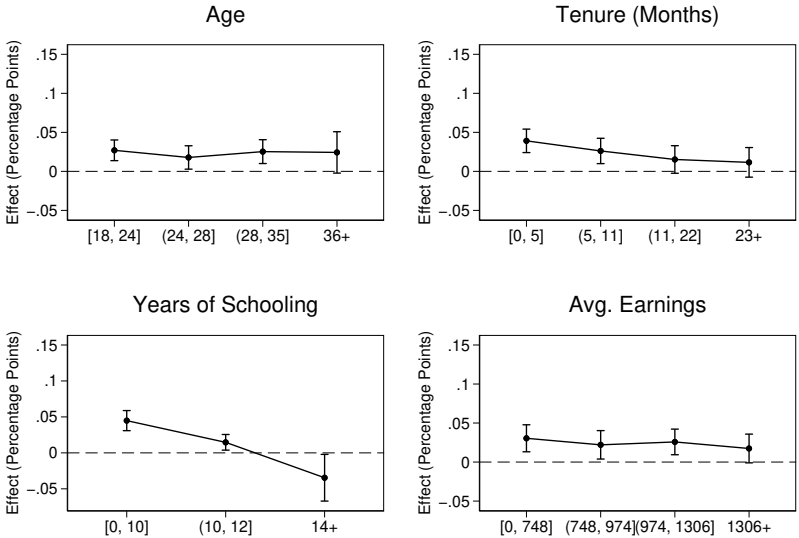
**Figure A11 (b)**: Effect of Job Loss on Mortality, by Individual Demographic Quartiles

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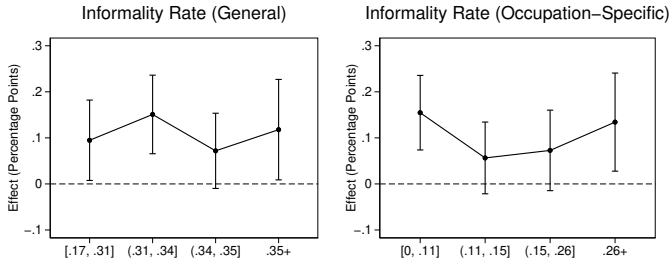
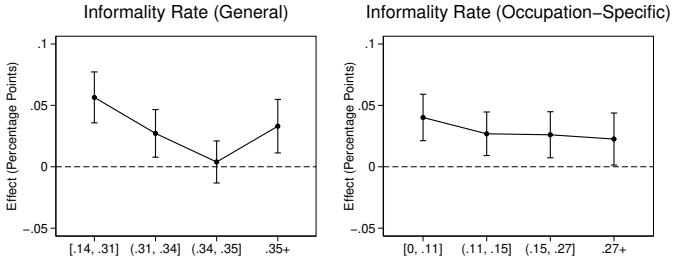
## (a) Hospitalization




## (b) Mortality

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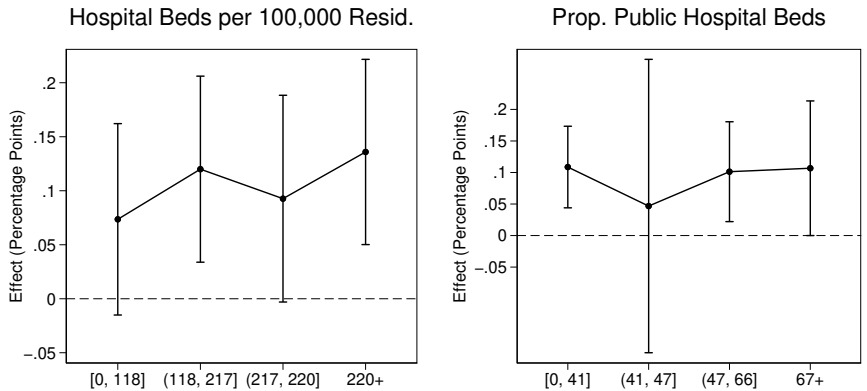
# Appendix

## Additional Results

**Figure A13**: Effect of Job Loss on Hospitalization, by Local Healthcare Characteristics




Return

**Table A6:** Average Effects of Job Loss on Workers' Children

| | (1) | (2) | (3) |
|---|---|---|---|
| | HI | Hospitalization | |
| | Enrollment | Ext. Causes | Non-Ext. Causes |
| | Panel A: Children of Male Workers | | |
| *Point Estimate* ($t = 1$) | -0.4995 | 0.0727** | 0.0156 |
| | (0.8133) | (0.0310) | (0.1136) |
| *Point Estimate* ($t > 1$) | -0.0606 | 0.0337 | 0.0104 |
| | (0.7904) | (0.0283) | (0.0744) |
| Baseline Mean (Treated, $t \leq 0$) | 13.7500 | .0389 | .5374 |
| Effect ($t = 1$) Relative to Baseline | -7% | 186% | 2% |
| Effect ($t > 1$) Relative to Baseline | 0% | 86% | 1% |
| Observations | 123,200 | 179,760 | 179,760 |
| | Panel B: Children of Female Workers | | |
| *Point Estimate* ($t = 1$) | -1.8692*** | -0.0231 | 0.0500 |
| | (0.7159) | (0.0599) | (0.1339) |
| *Point Estimate* ($t > 1$) | -0.0981 | -0.0192 | 0.0461 |
| | (0.7374) | (0.0528) | (0.0968) |
| Baseline Mean (Treated, $t \leq 0$) | 11.7226 | .0577 | .5765 |
| Effect ($t = 1$) Relative to Baseline | -15% | -39% | 8% |
| Effect ($t > 1$) Relative to Baseline | 0% | -33% | 8% |
| Observations | 80,892 | 121,422 | 121,422 |

*Notes:* (...)

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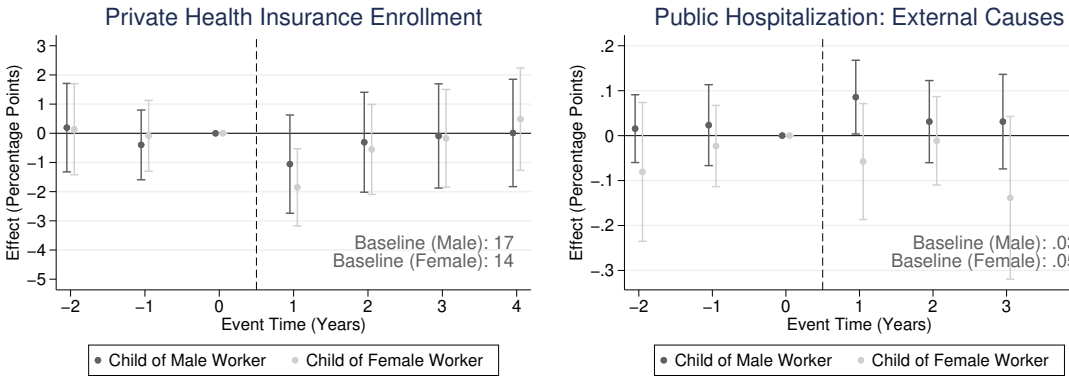
# Appendix

## Additional Results

**Figure A14**: Effects on Children's Health Insurance Enrollment and Public Hospitalizaiton




Return

**Table A7:** Effects of Job Loss on Health Outcomes (Male Workers), Varying Mass Layoff Intensity

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| | Panel A: HI Enrollment | | | | |
| *Point Estimate* | -1.2739** | -0.2807 | -0.1862 | -2.5530*** | -1.4510* |
| | (0.5706) | (0.6725) | (0.8551) | (0.5335) | (0.7421) |
| Mass Layoff Sample | $>$ 50% | $>$ 66% | closure | $>$ 100 workers | $>$ 250 workers |
| Observations | 252,224 | 153,762 | 92,120 | 376,922 | 236,222 |
| | Panel B: Hospitalization | | | | |
| *Point Estimate* | 0.1338*** | 0.1494*** | 0.0419 | 0.1366*** | 0.1077*** |
| | (0.0400) | (0.0527) | (0.0641) | (0.0325) | (0.0415) |
| Mass Layoff Sample | $>$ 50% | $>$ 66% | closure | $>$ 100 workers | $>$ 250 workers |
| Observations | 513,604 | 306,978 | 183,722 | 766,080 | 484,232 |
| | Panel C: Mortality | | | | |
| *Point Estimate* | 0.0294*** | 0.0347*** | 0.0271* | 0.0290*** | 0.0355*** |
| | (0.0086) | (0.0108) | (0.0152) | (0.0074) | (0.0098) |
| Mass Layoff Sample | $>$ 50% | $>$ 66% | closure | $>$ 100 workers | $>$ 250 workers |
| Observation | 735,920 | 438,722 | 259,517 | 1,086,921 | 678,285 |

Notes: (...)

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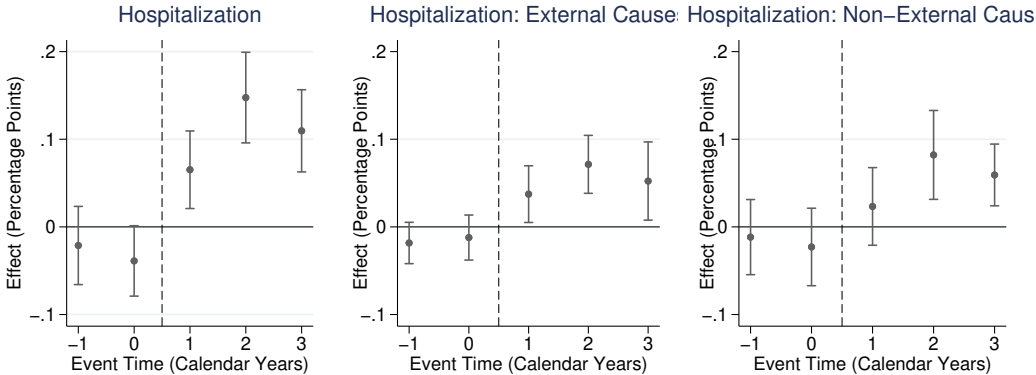
# Appendix

## Additional Results

**Figure A15**: Effect of Job Loss on Hospitalization, Alternative Estimator

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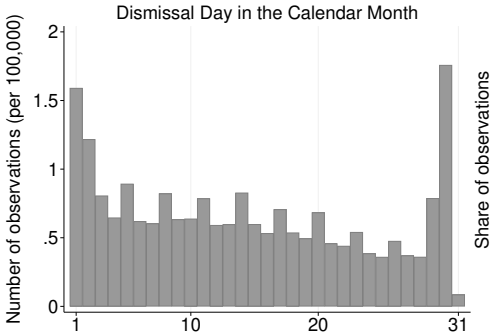
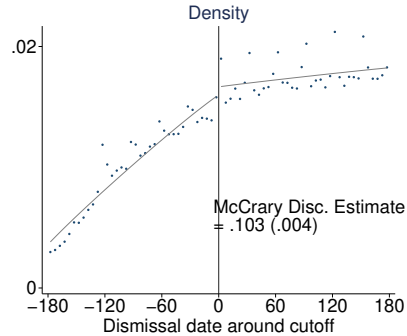
# Appendix

## Additional Results

**Figure A16**: Dismissal Dates Monthly Cycles



# Appendix

## Additional Results

**Figure A17**: Dismissal Dates Monthly Cycles

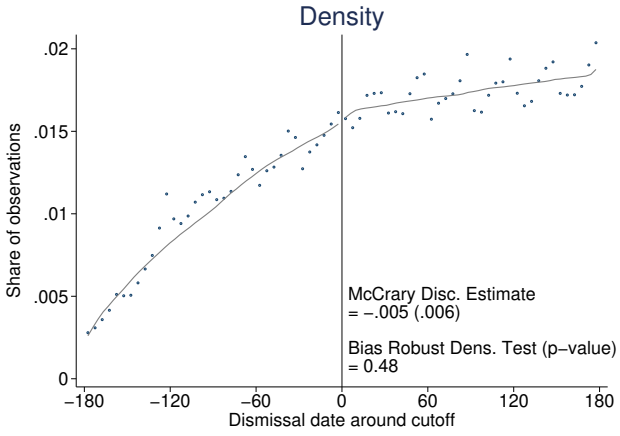



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**Figure A18**: Effect of UI Eligibility, Balance on Covariates


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# Appendix

## Additional Results

**Table A8:** Local Average Effects of UI Eligibility on UI Take-Up, Benefits Claimed, and Labor Market Outcomes

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | Prob. of Take-Up | Total Amount | Labor Market Outcomes | |
| | | | Months Worked | Labor Income |
| *Point Estimate* | 58.1500*** | 1,776.2823*** | -0.6631*** | -741.9075*** |
| | (0.1645) | (5.5358) | (0.0201) | (34.4737) |
| Baseline Mean (at Cutoff) | 7.1397 | 114.1965 | 3.9258 | 5015.0061 |
| Effect Relative to the Mean | - | - | -16% | -14% |
| Observations | 819,198 | 819,198 | 819,198 | 819,198 |

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**Table A9:** Local Average Effects of UI Eligibility on HI Enrollment, Hospitalization, and Mortality

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| | Prob. of HI | Prob. of Hospitalization | | Prob. of Mortality | |
| | Enrollment | Ext. Causes | Non-Ext. Causes | Ext. Causes | Non-Ext. Causes |
| | Panel A: All Workers | | | | |
| *Point Estimate* | -0.1487 | -0.0077 | 0.0128 | -0.0209* | 0.0035 |
| | (0.1711) | (0.0242) | (0.0339) | (0.0126) | (0.0094) |
| Baseline Mean (at Cutoff) | 7.1251 | .1975 | .4134 | .0864 | .0478 |
| Effect Relative to the Mean | -2% | -3% | 3% | -24% | 7% |
| Observations | 360,185 | 558,810 | 558,810 | 819,198 | 819,198 |
| | Panel B: Older Workers ($\geq$ 35 Years Old) | | | | |
| *Point Estimate* | 0.1920 | -0.1094*** | -0.0007 | -0.0184 | 0.0065 |
| | (0.2688) | (0.0365) | (0.0639) | (0.0177) | (0.0182) |
| Baseline Mean (at Cutoff) | 6.2957 | .1816 | .545 | .0751 | .0796 |
| Effect Relative to the Mean | 3% | -60% | 0% | -24% | 8% |
| Observations | 130,691 | 201,538 | 201,538 | 390,706 | 390,706 |
| | Panel C: Younger Workers ($<$ 35 Years Old) | | | | |
| *Point Estimate* | -0.3536 | 0.0494 | 0.0220 | -0.0233 | 0.0013 |
| | (0.2207) | (0.0318) | (0.0389) | (0.0178) | (0.0071) |
| Mean Outcome (at Cutoff) | 7.5943 | .2064 | .3397 | .0966 | .0191 |
| Effect Relative to the Mean | -4% | 23% | 6% | -24% | 6% |
| Observations | 229,494 | 357,272 | 357,272 | 428,492 | 428,492 |

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# Appendix

## Additional Results

**Table A10:** Effect of UI Eligibility on Hospitalization for External Causes (Older Workers), Robustness to Different Specifications

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|
| *Point Estimate* | -0.0585** | -0.0694** | -0.0683*** | -0.0525*** | -0.0726*** | -0.0645*** | -0.0531** | -0.0798** |
| | (0.0234) | (0.0345) | (0.0238) | (0.0195) | (0.0280) | (0.0223) | (0.0206) | (0.0319) |
| Bandwidths (Days) | CCT | 30 | 60 | 90 | CCT | 150 | 180 | CCT |
| Polynomial Order | 0 | 1 | 1 | 1 | 1 | 2 | 2 | 2 |
| Observations | 1,064,201 | 1,064,201 | 1,064,201 | 1,064,201 | 1,064,201 | 1,064,201 | 1,064,201 | 1,064,201 |

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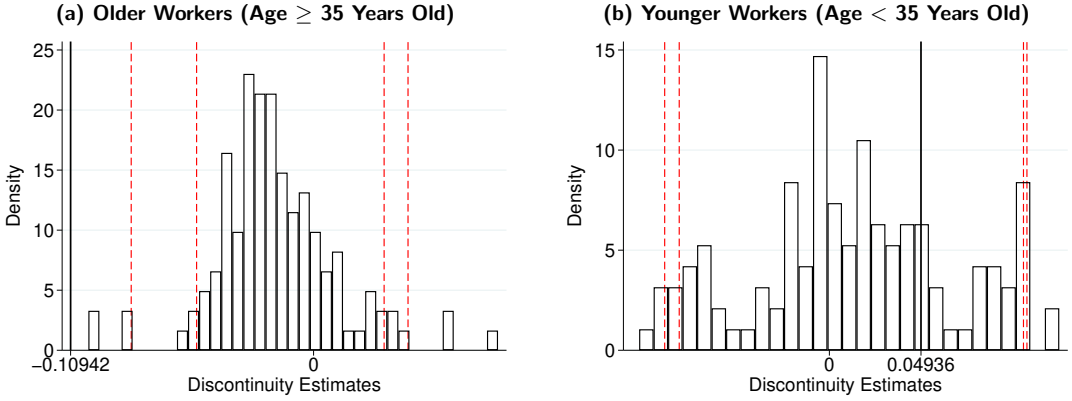
# Appendix

## Additional Results

**Figure A19**: Effect of UI Eligibility on Hospitalization for External Causes, Permutation Test

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