Health Events in the Household – Families and Social Insurance

5th IZA Workshop on Gender and Family Economics: "Families as an Insurance Mechanism" 2nd June 2022

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Health events: Severe illness and subsequent deaths

Among the most devastating shocks households face and a major source of financial risk

Understanding responses to health shocks are key inputs in the optimal design of efficient and equitable social insurance programs

More generally, the way families respond to health events are of interest as a social phenomenon, as they affect every family and represent pivotal episodes that make health particularly salient

How do families respond to adverse health events? Today's talk centers at two topics

<u>Family labor responses as a</u> <u>self-insurance mechanism</u> <u>Behavioral responses to health</u> <u>shocks as a social phenomenon</u>

Insurance against adverse health events

- **Social Insurance** Government intervention in providing insurance against adverse shocks to individuals (Chetty and Finkelstein, 2012)
 - Health, Disability and retirement, work injury

- There is now a wide recognition that most adverse events affect **families** more broadly (this workshop is a proof that)
 - Bereavement, Health shocks, Unemployment

While resources spend on social insurance is positively correlated with GDP, families' financial circumstances are affected by health shocks— even in richer economies

Who, beyond the individual, bears burden of disease?

	Governments	Families	Others
Health Insurance (against medical bills)	Coverage -Full: Beveridge or Bismarckian -Means tested: eg., Medicaid -Partial: eg., Medicare	(Informal) Care Transfers	Private markets -Employer programs -Mandates Loans Medical Bankruptcies Hospitals, NGOs…
Income insurance (against lost earnings capacity)	Survivors Insurance Disability Insurance Sickpay (UI-benefits) (Retirement schemes)	Self-insurance (Added worker effects) Transfers	Private markets -Life insurance -Employer schemes -Collective schemes NGOs

How do families respond to adverse health events?

Empirical Challenges:

Finding the right data and a proper control group

The anatomy of shocks vary

• Severity and anticipation

The insurance environments vary

• Universal vs. Partial social insurance

Family characteristics vary

• Size and composition, education, peers, within household specialization

How do families respond to adverse health events?

<u>Family labor responses as a</u> <u>self-insurance mechanism</u>

Family Labor Supply Responses to Severe Health Shocks: Evidence from Danish Administrative Records*, AEJ:Applied, 2021

Household Labor Supply and the Gains from Social Insurance*, JPubE, 2019

<u>Behavioral responses to health</u> <u>shocks as a social phenomenon</u>

Family Health Behaviors*, AER 2019



*All work is joint with Itzik Fadlon, UCSD *The current presentation replicates graphs from these publications

Environment – Denmark 1980 onwards

- Universal health insurance (Beveridge)
 - Almost all health expenditure covered by government
 - Allows us to concentrate on self-insurance related to income and earnings
- Social Income insurance
 - Temporary Sickpay
 - First 4 weeks fully covered, hereafter UI-benefit level
 - Social Disability Insurance
 - Means tested Disability and Social element
 - 25% of all widows receive DI (effectively survivors benefit)
 - Old age pensions (age 65/67) Early retirement schems (age 60)
 - (UI benefit scheme)

Environment – Denmark 1980 onwards

- Administrative data
 - Death Registry Death dates
 - National Patient Registry (hospital admissions)
 - Exact timing and diagnoses
 - Focus on heart attack and strokes pervasive, sudden and severe (Chandra and Staiger, 2007 and Doyle, 2011)
 - Economic Data
 - All sources of income

earnings, government transfers (old age pensions, DI, welfare, housing assistance, and UI benefit), pay-outs from retirement savings accounts, capital income

• Spousal linkages

Research design

Main outcome of empirical analysis:

The causal effects of mortality and health shocks on spouse's labor supply

Ideal experiment:

- Randomly assign shocks to households and track labor supply responses over time
- compare affected households to ex-ante similar unaffected households
- Same expectations, but different realizations

<u>Quasi-experiment:</u>

- use 30 years of administrative panel data to mimic ideal experiment
- Within a short period of time the timing of a severe health shock or death is as good as random
- Identify treatment effects from timing

Research design

Event studies of two experimental groups

- Treatment group: households that experience a shock in year t
- Control group: households that experience the same shock in year t + Δ
- Estimator: simple differences-in-differences

$$y_{it} = \alpha_i + \beta treat_i + \gamma treat_i \times post_{i,t} + \delta X_{i,t} + \varepsilon_{i,t}$$

Identifying assumption: Parallel Trends

Track the two groups back to five years before the shock to validate the design



The red graph represent Labor force participation for persons who got a heart attack or a stroke in 1995





The red graph represent Labor force participation for persons who got a heart attack or a stroke in 1995



17/06/2022 15



17/06/2022 16







Trade-off in choosing Δ :

Comparability vs. Evaluation Horizon



Trade-off in choosing Δ :

Comparability vs. Evaluation Horizon

We choose $\Delta = 5$

Spousal Labor Supply Responses

Anatomy: Fatal vs. Non-Fatal events



Spousal Labor Supply Responses

Fatal events

Labor force participation

Annual Earnings







Spousal Labor Supply Responses

Fatal events: Do these effects reflect a response to an income drop?



Potential Household Income:

All household income – keeping fixed the surving spouses Earnings and Social disability insurance (t-1)

- Given OECD equivalence scaling
 - An income drop of 29-33pp would not require self-insurance
 - Males drop: **32pp**
 - Females drop: 40pp



Actual Household Income:

All household income – Allowing surving spouses to respond in Earnings and Social Insurance

• Actual drop in HH Income

- Males drop: **31pp** (potential 32pp)
- Females drop: **35pp** (potential 40pp)



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Labor supply works as a selfinsurance mechanism for widows

Spousal Labor Supply Responses

Fatal events: Are labor supply and social insurance substitutes?

Interaction with Social Disability Insurance



Take up of Social DI for Widows

• 25% increase in survivors benefits for widows

Interaction with Social Disability Insurance

Take up of Social DI for Widows



Cross Municipality variation in benefits



Interaction with Social Disability Insurance



Take up of Social DI for Widows

2SLS estimates suggests a

Labor Force Participation elasticity of -.26 with respect to social benefits

Formal social insurance provided to survivors benefit substitutes for labor supply increases

JPubE paper shows how labor supply responses can be translated into a sufficient statistics for welfare improvements by government offering of survivors benefits.

Spousal Labor Supply Responses

Non-Fatal events



Non-fatal health events – own earnings

Labor force participation





Non-fatal health events – Spousal earnings

Labor force participation





Sickpay and DI: Labor market protections for non-fatal shocks

Individual protected against earnings losses following health events

- Temporary: Sickpay
- Permanent: Disability Insurance No scope for spousal responses



Sickpay

Sickpay and DI: Labor market protections for non-fatal shocks

Individual protected against earnings losses following health events

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Main difference to US:

eg. Dobkin et al. (2018)

Sickpay mandates lacking in many states to protect against earnings losses

Consequently, increased credit limitations and borrowing opportunities (consistent with lower earnings) even for people with health insurance



Behavioral response to health shocks as a social phenomenon





Family Health Behaviors

Economic importance

- Health behaviors, broadly defined as any action, investment, or consumption choice that can affect health and mortality risk, are a key input in the production of individuals' health
- These behaviors take a variety of forms including both adverse habits, such as smoking and drinking, and positive actions, such as the consumption of risk-reducing preventive care
- The importance of identifying what determines health-related behaviors, which are notorious for being hard to change, has led to an active literature on a range of potential factors, with some particular focus on financial incentives and health education
- Still, we lack a clear understanding of the channels through which health behaviors and habits evolve over the life cycle

Family Health Behaviors

Every family will eventually experience severe health events They represent pivotal episodes that make health particularly salient

Hence, there could be a role for the family in forming health behaviors, via the flow of information, awareness, and the creation of habits and norms

This leaves a potential for families, and networks more generally, to learn from the events and perhaps improve their health behaviors

Family Health Behaviors

Do severe family health events alter preventive behavior?

Data

Now we augment our data source:

• Medical prescriptions for preventive medications (eg. statins)

To understand the anatomy of the responses, we focus not only on spousal responses, but also preventive behaviors of broader circles of peers:

- Adult children, mothers & fathers inlaw and coworkers
- Investigating the reponses by these peers in various health behavior margins allows us to better understand the mechanisms driving health choices

Family Health Behaviors

Main effects - Spouses



Prime-age spouses

Statin consumption

Cholesterol tests



Family Health Behaviors

Main effects - Children



Children



Older Adult Children (Ages 40-65)

	Spouses' Statin Consumption		Spouses' Cholesterol	Adult Children's Statin Consumption	
	Prime Age	Older	Testing	Younger	Older
	(Ages 25-55)	(Ages 55-85)		(Ages 25-40)	(Ages 40-65)
	(1)	(2)	(3)	(4)	(5)
Time to Shock:					
-4	0.00052	-0.00072	-0.00138	0.00012	-0.00000
	(0.00104)	(0.00158)	(0.00441)	(0.00024)	(0.00065)
-3	0.00026	-0.00063	-0.00114	0.00008	-0.00014
	(0.00096)	(0.00141)	(0.00456)	(0.00023)	(0.00060)
-2	0.00102	-0.00072	-0.00056	0.00015	0.00071
	(0.00079)	(0.00113)	(0.00447)	(0.00020)	(0.00049)
-1	0	0	0	0	0
	0	0	0	0	0
0	0.00386	0.00234	0.03033	0.00067	0.00150
	(0.00095)	(0.00128)	(0.00498)	(0.00023)	(0.00061)
1	0.00511	0.00930	0.02052	0.00173	0.00429
	(0.00134)	(0.00179)	(0.00516)	(.00033)	(0.00089)
2	0.00702	0.01093	0.01100	0.00245	0.00433
	(0.00169)	(0.00219)	(0.00545)	(0.00043)	(.00113)
3	0.01012	0.01036	0.01572	0.00279	0.00765
	(0.00203)	(0.00255)	(0.00570)	(0.00053)	(0.00135)
4	0.01166	0.01230	0.01720	0.00433	0.00799
	(0.00234)	(0.00284)	(0.00624)	(0.00063)	(0.00159)
Гreat	-0.00120	-0.00115	-0.00043	-0.00030	0.00005
	(0.00119)	(0.00187)	(0.00393)	(0.00025)	(0.00075)
Counterfactual at t=4	0.07863	0.22842		0.01180	0.04933
Percent Change	14.83	5.38		36.69	16.20
Counterfactual at <i>t</i> =0			0.12998		
Number of	441 720	667 000	23.33	1 170 287	617 667
Observations	441,720	007,980	214,793	1,1/9,30/	047,007
Number of Clusters	44,302	65,661	20,997	67,460	40,690

Magnitudes

Coworkers

- No biological link
- Salience of the shock

	Close Coworkers		Distant Coworke	ers
		Larger Workplaces	Large Age Gap	Different Occupation
	(1)	(2)	(3)	(4)
Treat x Post	0.01349	0.00143	0.00297	0.00350
	(0.00559)	(0.00330)	(0.00335)	(0.00524)
Counterfactual	0.08442	0.08249	0.06040	0.08871
Percent Change	15.98			
Number of Obs.	49,336	131,488	87,704	53,312
Number of Clusters	3,498	4,057	4,744	4,071

Family Health Behaviors

Where are these effects coming from?

Learning new information

Salience and attention

Learning new information

Stronger response for people at higher risk

Stronger response if there is a biological link

Stronger response if the shock contains more information (age of patient)

Salience and attention

Learning new information

Stronger response for people at higher risk

Salience and attention

Increased awareness of health

Stronger response if there is a biological link

Stronger response if the shock contains more information (age of patient)

Fatal events – treatment effects

Hospital medical observation for conditions that are ruled out



Non-hospital urgent contacts

Learning new information

Stronger response for people at higher risk

Salience and attention

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Increased awareness of health

Response with limited scope for learning

- Response by already tested people
- Males use more radiology if wife had a female-cancer

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Response for fathers and mothers inlaw events

Learning new information

Stronger response for people at higher risk

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Salience and attention

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Response with limited scope for learning

- Response by already tested people
- Males use more radiology if wife had a female-cancer

Response for fathers and mothers inlaw events –**IF THEY LIVE CLOSE**



Family Health Behaviors

Policy Remarks

Policy remarks

- An effective "Nudge": Closing under-utilization gaps in Statins
 - Family health events can close 16% of gap for spouses
 - Family health events can close 42% of gap for children

17/06/2022 61

Policy remarks

- An effective "Nudge": Closing under-utilization gaps in Statins
 - Family health events can close 16% of gap for spouses
 - Family health events can close 42% of gap for children
- **Be careful!!!:** We find evidence that family events divert attention towards the specific diagnosis experienced, eg.,
 - Cancer in the family makes family members focus on own cancer
 - But decreased attention towards cardiovascular disease (following cancer events)
 - Bad if individual risk is higher in this domain

Conclusion

Family health events

- Reveal how families self-insure against adverse events
- Crowd-out between self-insurance and social insurance

Health events in the family represent pivotal episodes that make health particularly salient

- large scope for behavioral change towards improved health behaviors

Mechanism both consistent with both

"learning new information" and "salience and attention"