

# Grandfather and Grandson

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# Motivation

- In SHARE countries,
  - the proportion of grandparents that report to look after their grandchildren ranges from 38 percent in Estonia to 63 in the Netherlands.
  - almost daily: from 1.5 percent in Scandinavian countries to 24 percent in Italy.
  - at least once a week: even in Sweden and Denmark about 17 percent, in Italy 38 percent.
- Increasing share of women participate to the labor market
  - increasing demand of childcare
- Ageing population and increased share of retired seniors
  - increasing supply of childcare

# Motivation

- High value of grandchild care to parents:
  - available off business hours
  - in weekends
  - when needed
  - love / empathy (high quality)
  - it is free
- Grandchild care cons:
  - grandparents are not professional educators
  - reduced socialization with other children
- Cost of childcare to grandparents:
  - childcare has an opportunity cost to grandparents (the value of their time)

# Research question

- Is there also a health cost of grandchild care?
- ... i.e. is grandchild care beneficial or detrimental to grandparents' physical and mental health?
  - dealing with children
    - offers grandparents additional opportunities for physical activity
    - helps maintaining mentally active
    - gives grandparents a "useful role"
  - especially intensive (every-day) care could demand too much energies and physical resources
  - could be stressful if grandparents were totally responsible for their grandchildren
  - divert time and resources from health maintenance (less time to see the doctor, for screening, for meeting friends, for leisure)

# Literature

- early literature on gerontology (Fuller-Thompson & Minkler, 1997, 1999, 2001) focus on custodial grandparents in the US (extremely stressful situation: grandparents replace parents):
  - negative effects on depression
  - on physical health
- effect on grandparents wellbeing (not health, but quality of life):
  - Deaton and Stone (2013): moderate negative effect
- more recent economic literature from China, Taiwan, Europe finds generally small positive effect or no effect
  - Ku et al. (2012) (self-reported health, mobility limitations, depressive symptoms)
  - Chen and Liu (2012) (self-reported health)
  - Grundy et al. (2012) (life satisfaction, mental health, depression)
  - Reinkowsky (2013) (physical and mental health)

# Empirical Issue

- Grandchild care is the result of a process
  - it depends on the probability of having grandchildren, on the number of grandchildren
    - depends on preferences for fertility
    - depends on socioeconomic conditions
  - it depends on the matching grandparent-grandchild
    - there are more grandparents for each grandchild
    - grandparents health and economic conditions
    - grandparents availability (retired or not)
    - proximity
    - quality of the relationship btw grandparents and parents
- Grandchild care is not randomly distributed, rather **grandparents self-select in and are selected for childcare**
- Grandparents who provide childcare are different
  - better physical and mental health

# Solutions in the literature

- Selection on observables: early literature + Deaton and Stone (2013)
  - are there enough observables?
- propensity score matching (Reinkowsky, 2013)
  - not that different from selection on observables
- longitudinal analysis: controlling for baseline conditions (Grundy et al. 2012; Reinkowsky, 2013)
  - but lagged health conditions could be related to the factors which make current health better or worse

# Solutions in the literature

- IV estimates
  - Ku et al. (2012): number of grandchildren and marital status of children
  - Reinkowsky (2013): gender of firstborn child
- Drawbacks:
  - number of grandchildren / children marital status could be non-excludable
    - These instruments base on the assumption, that children do not take the provision of grandchild care by their parents into account, when deciding on their fertility.
  - gender of firstborn child could affect the desire for a second child (relevance) but females provide better guarantees of future support → better health and less stress



# The proposed solution

- Difference-in-differences
  - track grandparents from  $t=1$  to  $t=3$
  - compare trends in health outcomes between two groups:
  - "grandparents" who did not look after their grandchildren in any period (ageing effect)
  - grandparents who did not look after their grandchildren in the first two periods but did in the third period (ageing effect + GC caring effect)

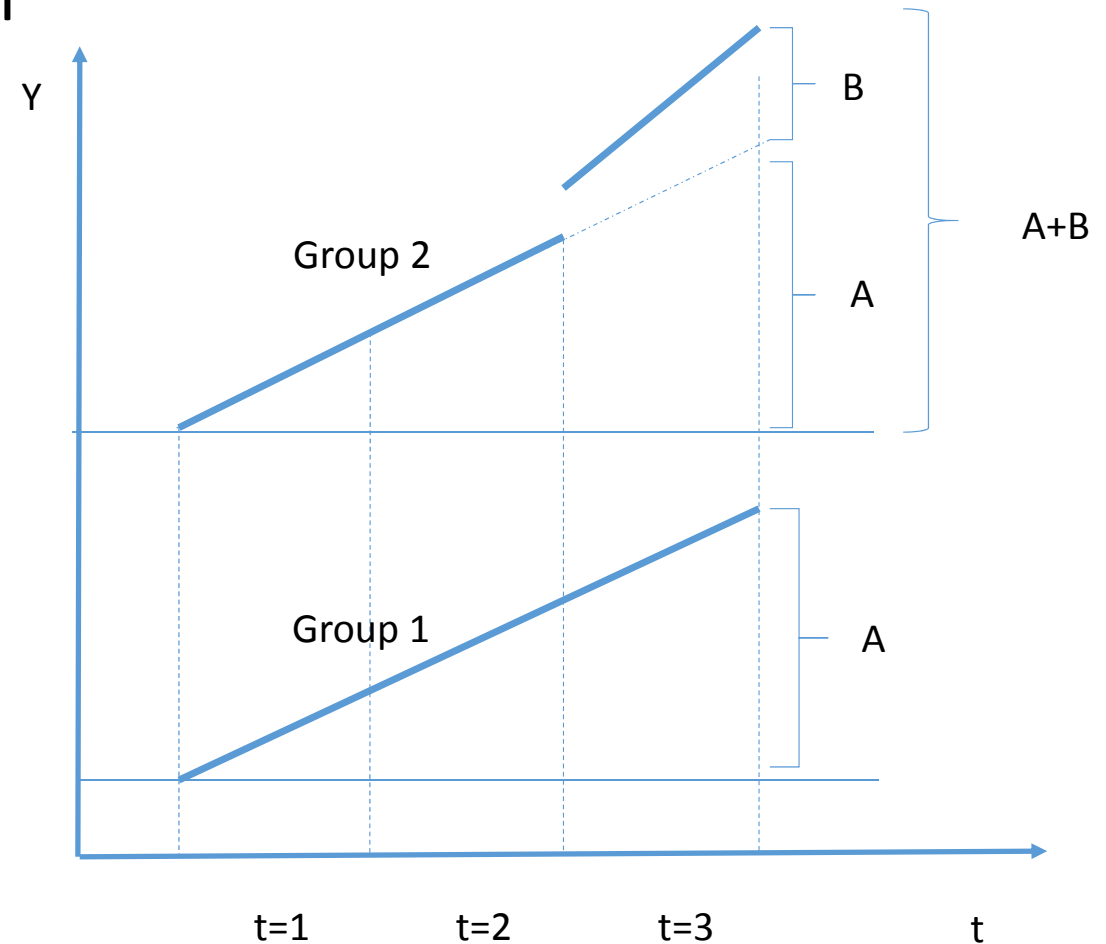
group 1			
group 2			
	t=1	t=2	t=3

# Remark

- group 1 includes:
  - seniors without children
  - seniors with children but without grandchildren
  - seniors with children and grandchildren but that do not look after them
- group 2 includes:
  - grandparents with children and grandchildren (**at least** in period 3) and who look after them (only in period 3)

# The proposed solution

- Whatever are the **time-invariant** characteristics that determine selection into GC care, the DID accounts for them.
- DID estimates
  - do not depend on initial conditions
  - depend on parallel/common trends



# The proposed solution

- Consider the model:

$$y_{it} = \alpha_0 + \alpha_1 L_i + \alpha_2 T_t + \alpha_3 L_i * T_t + X_{it} \beta + \mu_i + \varepsilon_{it}$$

## The proposed solution

$$\begin{aligned} E(y_{it}|L_i = 0, T_t = 1, X) - E(y_{it}|L_i = 0, T_t = 0, X) &= \img alt="blue arrow pointing left" data-bbox="608 248 654 321"/> \text{Trend in Group 1} \\ &= (\alpha_0 + \alpha_2 + X\beta + E(\mu_i|L_i = 0, T_t = 1, X)) - (\alpha_0 + X\beta + E(\mu_i|L_i = 0, T_t = 1, X)) = \\ &= \alpha_2 \end{aligned}$$

$$\begin{aligned} E(y_{it}|L_i = 1, T_t = 1, X) - E(y_{it}|L_i = 1, T_t = 0, X) &= \img alt="blue arrow pointing left" data-bbox="608 521 654 594"/> \text{Trend in Group 2} \\ &= (\alpha_0 + \alpha_1 + \alpha_2 + \alpha_3 + X\beta + E(\mu_i|L_i = 1, T_t = 1, X)) \\ &\quad - (\alpha_0 + \alpha_1 + X\beta + E(\mu_i|L_i = 1, T_t = 1, X)) = \\ &= \alpha_2 + \alpha_3 \end{aligned}$$

The last equality is guaranteed by the fact that  $\mu_i$  is time-invariant and exactly the same persons belong to each group at all times. Overtime differencing eliminates the contribution of the unobservables.

# Common trend assumption

- identification achieved only if trends are common between group 1 and group 2 **if group 2 did not look after grandchildren**
- to provide evidence supporting this assumption, I estimate model (1) only over  $t=1$  and  $t=2$ , when both groups do not look after grandchildren by assumption

# Data

- SHARE (Survey of Health, Ageing and Retirement in Europe)
- representative sample of seniors aged 50 and over
- includes up to 20 European countries plus Israel (11 in the first wave)
- panel composed of three waves
  - wave 1: 2004/05
  - wave 2: 2006/07
  - wave 4: 2011/12
- retrospective data SHARELIFE
  - wave 3: 2009
- detailed information on physical and mental health, household composition, use of time
- retrospective data on family background at age 10

# Variables of interest

- Did you look after grandchildren regularly or occasionally in the past 12 months (or since the last interview)?
  - very precise compared to other surveys
- On average, how often did you look after the children in in the past 12 months (or since the last interview)? Was it...
  - almost daily
  - almost every week
  - almost every month
  - less often



country	look after (full sample)	look after (conditioned on having grandchilds)	look after almost daily (conditioned on having grandchilds)
Austria	0.26	0.43	0.08
Belgium	0.39	0.60	0.10
Denmark	0.40	0.60	0.02
France	0.36	0.54	0.05
Germany	0.30	0.45	0.06
Italy	0.29	0.48	0.24
Netherlands	0.42	0.63	0.02
Spain	0.26	0.39	0.15
Sweden	0.45	0.57	0.02
Switzerland	0.28	0.54	0.04
Czech Republic	0.38	0.48	0.10
Estonia	0.29	0.39	0.06
Hungary	0.35	0.49	0.12
Poland	0.35	0.42	0.16
Portugal	0.28	0.41	0.17
Slovenia	0.32	0.45	0.16

# Samples

- only subjects interviewed 4 times (3 times in the panel) are included
- group 1: individuals who reported to look after grandchilids in NO period
  - (this group includes also individuals who have no grandchilids or no children)
- group 2: individuals who report to look after grandchilids only in period 3

	Male	Female	Total
group 1	6,222	7,371	13,593
group 2	1,494	1,368	2,862
Total	7,716	8,739	16,455

Note: only one subject in the household answers to the question about looking after grandchildren. Her answer is imputed to the partner.

# Data

- outcome variables:
  - dummies:
    - depressed (EURO-D>3)
    - poor self reported health (very bad and bad)
    - any chronic disease
    - any mobility difficulty
    - any difficulty in activities of daily life
    - immediate recall (more than 4 words out of 10)
    - delayed recall (more than 4 words out of 10)
    - overweight or obese
    - smoke
    - any (vigorous) sport activity
    - hospitalized in the past 12 months
    - visit doctor more than 6 times last year
  - continuous:
    - CASP (Wellbeing index ranged between 12 and 48)

# Control variables

- time invariant:
  - education (ISCED level)
  - family background at age 10
  - self-assessed relative ability in maths and language at age 10
- time varying
  - age
  - active vs retired/inactive
  - number of children
  - number of grandchildren
  - number of parents alive
  - married
  - partner's age
  - family income (deciles)

# Results

- to start with: look at simple OLS based on cross section (t=3)

<u>outcome</u>	<u>female</u>	<u>male</u>
depressed	-0.017***	-0.016***
poor health	-0.046***	-0.046***
chronic d.	0.022***	0.015**
mobility	-0.047***	-0.045***
ADL	-0.032***	-0.026***
immediate recall	0.041***	0.044***
delayed recall	0.039***	0.019***
overweight	0.01	0.009
smoke	-0.002	-0.009
sport	0.056***	0.063***
hospital	-0.019***	-0.006
doctor	-0.019***	-0.015**
CASP	0.744***	0.574***

# Results

- Now DID estimates:

# DID Females

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
VARIABLES	depressed	poorhealth	chronicd	mobility	ADL	R1	R2	over weight	smoke	sport	hospital	doctor	CASP
wave 3 (Tt)	0.018*	0.027**	0.013	0.038***	0.033***	0.037***	0.046***	-0.012	0.041***	-0.007	0.010	-0.005	0.257
	(0.011)	(0.011)	(0.010)	(0.010)	(0.008)	(0.011)	(0.011)	(0.009)	(0.006)	(0.012)	(0.010)	(0.011)	(0.157)
group 2 (Li)	-0.012	-0.033*	-0.021	-0.036**	-0.002	-0.003	-0.022	-0.027	-0.022	-0.019	-0.018	-0.037*	0.734**
	(0.020)	(0.019)	(0.022)	(0.018)	(0.010)	(0.016)	(0.019)	(0.025)	(0.018)	(0.020)	(0.012)	(0.020)	(0.303)
group 2 * wave 3 (Li*Tt)	-0.001	<b>-0.048**</b>	0.015	-0.026	<b>-0.029*</b>	0.035	<b>0.079***</b>	-0.001	<b>-0.037***</b>	0.026	-0.010	-0.027	-0.082
	(0.024)	(0.022)	(0.023)	(0.021)	(0.015)	(0.022)	(0.025)	(0.018)	(0.014)	(0.027)	(0.019)	(0.023)	(0.327)
Observations	8,739	8,739	8,739	8,712	8,715	8,739	8,739	8,208	8,700	8,505	8,703	8,604	4,947
R-squared	0.059	0.133	0.119	0.173	0.102	0.284	0.234	0.067	0.072	0.163	0.033	0.114	0.235
Average outcome	0.313	0.359	0.685	0.351	0.125	0.638	0.383	0.522	0.137	0.426	0.142	0.345	37.70
test of common trend (group 2 * wave 2)	<b>0.028</b>	<b>0.006</b>	<b>0.002</b>	<b>0.011</b>	<b>0.004</b>	<b>-0.005</b>	<b>-0.004</b>	<b>0.001</b>	<b>-0.002</b>	<b>0.005</b>	<b>0.028</b>	<b>-0.003</b>	<b>0.140</b>
	(0.026)	(0.023)	(0.024)	(0.021)	(0.013)	(0.023)	(0.029)	(0.019)	(0.011)	(0.030)	(0.020)	(0.024)	(0.360)

# DID Males

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
VARIABLES	depressed	poorhealth	chronicd	mobility	ADL	R1	R2	over weight	smoke	sport	hospital	doctor	CASP
wave 3 (Tt)	0.028*** (0.010)	0.063*** (0.011)	0.028** (0.011)	0.052*** (0.010)	0.047*** (0.008)	0.053*** (0.012)	0.076*** (0.012)	0.004 (0.010)	0.028*** (0.008)	0.013 (0.013)	0.019* (0.011)	0.027** (0.012)	0.125 (0.160)
group 2 (Li)	-0.024* (0.014)	-0.006 (0.018)	-0.024 (0.022)	-0.010 (0.014)	0.005 (0.009)	0.036** (0.017)	-0.008 (0.018)	-0.011 (0.023)	0.023 (0.020)	0.064*** (0.020)	-0.004 (0.012)	0.003 (0.017)	0.164 (0.283)
group 2 * wave 3 (Li*Tt)	0.006 (0.018)	-0.026 (0.023)	0.015 (0.023)	-0.026 (0.019)	<b>-0.041***</b> (0.014)	-0.006 (0.024)	<b>0.042*</b> (0.024)	<b>0.035*</b> (0.019)	-0.015 (0.017)	0.007 (0.025)	-0.019 (0.020)	-0.005 (0.025)	0.399 (0.296)
Observations	7,716	7,716	7,716	7,689	7,692	7,716	7,716	7,422	7,638	7,587	7,665	7,587	4,626
R-squared	0.044	0.128	0.086	0.143	0.067	0.234	0.171	0.034	0.063	0.117	0.041	0.114	0.172
Average outcome	0.159	0.286	0.637	0.210	0.0823	0.601	0.297	0.647	0.195	0.530	0.140	0.277	38.75
test of common trend (group 2 * wave 2)	<b>-0.022</b> (0.020)	<b>-0.030</b> (0.020)	<b>0.020</b> (0.025)	<b>-0.016</b> (0.018)	<b>0.007</b> (0.012)	<b>0.017</b> (0.026)	<b>0.036</b> (0.027)	<b>-0.019</b> (0.019)	<b>-0.006</b> (0.015)	<b>0.033</b> (0.027)	<b>0.006</b> (0.021)	<b>-0.036</b> (0.023)	<b>-0.120</b> (0.310)



# Robustness checks

- How do results change by using alternative definitions of group 1 and 2?
- Alternative group 1
  1. seniors without children
  2. seniors with children but without grandchildren
  3. both sub-sets together
- Alternative group 2
  - people with children and grandchildren **only** in period 3 and who look after them in period 3

Group 1	Group 2	poor health	R2	smoke	N (R2)	common trend
baseline	baseline	-0.043**	0.073***	-0.032**	7,968	ok
no grandchildren (w/ or w/o children)	baseline	-0.025	0.067**	-0.036**	4,878	ok
w/ children but w/o grandchildren	baseline	-0.006	0.066**	-0.029*	3,465	fails for poor health
w/o children	baseline	-0.058*	0.065*	-0.036*	2,682	ok
baseline	grandchildren only in period 3 and grandparenting only in period 3	-0.072***	0.091***	-0.054***	7,455	ok
no grandchildren (w/ or w/o children)	grandchildren only in period 3 and grandparenting only in period 3	-0.063	0.132***	-0.051	4,365	ok
w/ children but w/o grandchildren	grandchildren only in period 3 and grandparenting only in period 3	-0.041	0.131**	-0.046	2,952	ok
w/ children but w/o grandchildren	grandchildren only in period 3 regardless of grandparenting	-0.014	0.098**	-0.107***	3,339	ok

# Issue: time-varying shock

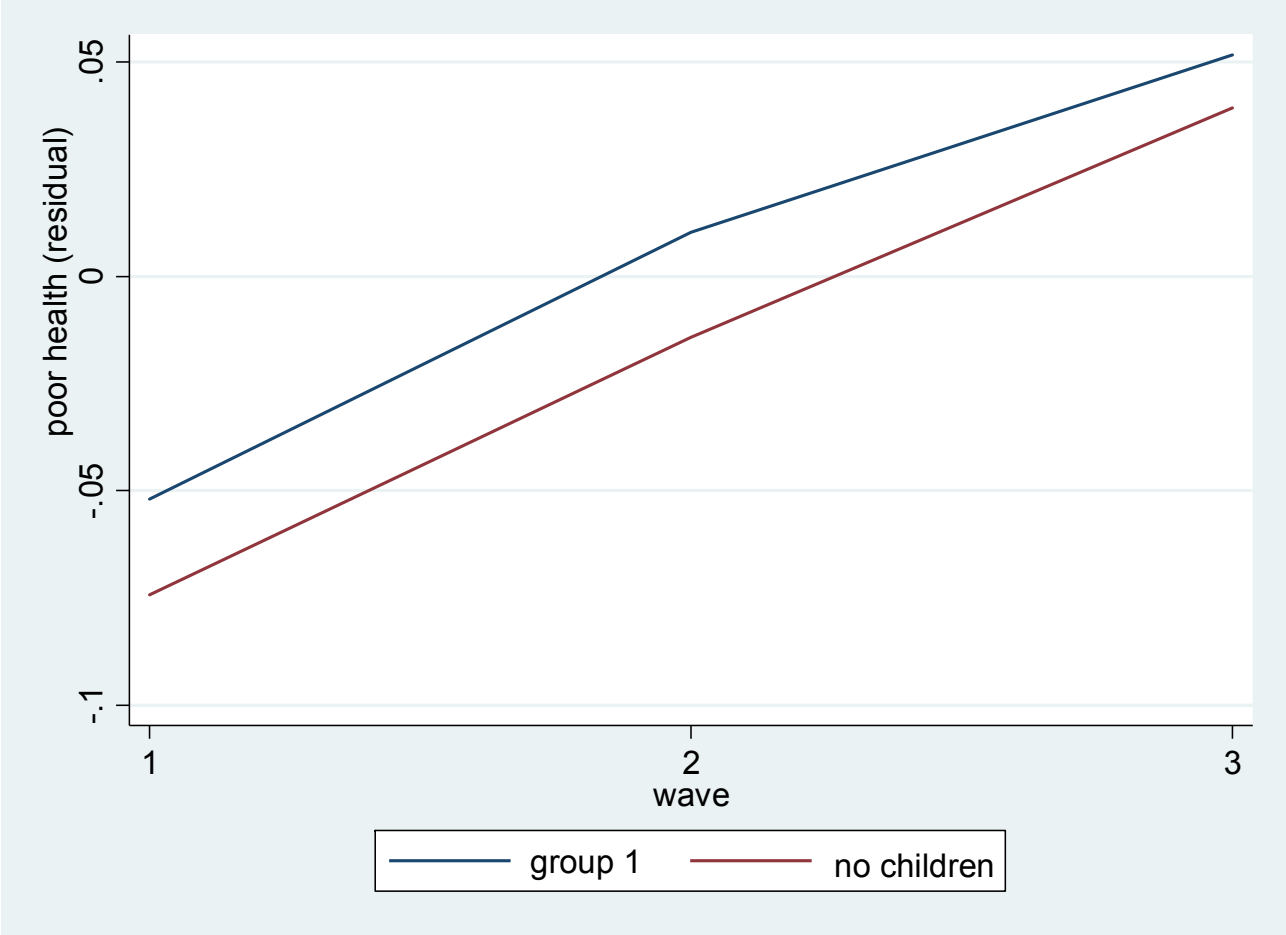
- what if... grandchildren were assigned to grandparents after grandparents have experienced a positive and unexpected health shock?
- or not assigned after a negative shock? (more likely)
- reversed causation: better grandparents' health → grandchild care

# Issue: time-varying shock

- test:
  - consider seniors without children (so that they can't have grandchildren):
    - there is no reason for they have self-selected in this group because of negative health shocks in the third period
    - → among seniors without children, we should not observe systematic negative shocks in the third period beyond the effect of ageing.
  - I check whether the trend of group 1 differs from that of seniors without children
  - there is no significant difference between trends

# Test

Self-reported poor health  
(residual after netting out pre-determined characteristics)



# Issue: retirement

- what if... GC are entrusted to a given grandparent because (or after that) that grandparent has retired?
- if so, is it retirement or GC caring influencing grandparent health?
  - I control for retirement in the model: feasible because I observe retired grandparents in both Group 1 and Group 2.

# Effect of childcare by intensity

- Is the effect of childcare on grandparents' health depending on the intensity of childcare?
- Two levels:
  - at least once a week (i.e. almost daily or almost every week)
  - less often (i.e. almost every month, less often)

# DID Females – high intensity

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
VARIABLES	depressed	poorhealth	chronicd	mobility	ADL	R1	R2	over weight	smoke	sport	hospital	doctor	CASP
wave 3 (Tt)	0.019* (0.011)	0.027** (0.011)	0.015 (0.010)	0.037*** (0.011)	0.033*** (0.008)	0.037*** (0.011)	0.044*** (0.011)	-0.011 (0.009)	0.041*** (0.006)	-0.004 (0.012)	0.012 (0.010)	-0.006 (0.011)	0.283* (0.159)
group 2 (Li)	-0.016 (0.026)	-0.037 (0.026)	-0.018 (0.029)	-0.044* (0.024)	0.016 (0.015)	-0.026 (0.023)	-0.016 (0.026)	-0.025 (0.033)	-0.032 (0.023)	-0.042 (0.026)	-0.017 (0.015)	-0.043* (0.026)	0.908** (0.396)
group 2 * wave 3 (Li*Tt)	0.002 (0.034)	-0.029 (0.031)	-0.009 (0.031)	-0.028 (0.028)	<b>-0.060***</b> (0.020)	<b>0.060*</b> (0.031)	<b>0.057*</b> (0.034)	-0.020 (0.024)	-0.029 (0.018)	0.057 (0.037)	-0.006 (0.024)	-0.006 (0.033)	-0.231 (0.491)
Observations	8,058	8,058	8,058	8,034	8,037	8,058	8,058	7,557	8,019	7,830	8,025	7,929	4,539
R-squared	0.059	0.128	0.121	0.172	0.102	0.279	0.232	0.067	0.075	0.163	0.032	0.113	0.233
Average outcome	0.318	0.371	0.693	0.363	0.131	0.623	0.369	0.527	0.135	0.416	0.146	0.356	37.53
test of common trend (group 2 * wave 2)	<b>0.027</b> (0.038)	<b>-0.021</b> (0.031)	<b>-0.030</b> (0.033)	<b>0.024</b> (0.029)	<b>0.009</b> (0.019)	<b>-0.006</b> (0.031)	<b>0.019</b> (0.040)	<b>-0.034</b> (0.027)	<b>-0.010</b> (0.015)	<b>-0.016</b> (0.041)	<b>0.009</b> (0.027)	<b>0.019</b> (0.034)	<b>0.205</b> (0.487)



# DID Females – low intensity

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
VARIABLES	depressed	poorhealth	chronicd	mobility	ADL	R1	R2	over weight	smoke	sport	hospital	doctor	CASP
wave 3 (Tt)	0.020*	0.025**	0.012	0.040***	0.033***	0.037***	0.046***	-0.013	0.041***	-0.007	0.010	-0.004	0.278*
	(0.011)	(0.011)	(0.010)	(0.011)	(0.008)	(0.011)	(0.011)	(0.009)	(0.006)	(0.012)	(0.010)	(0.011)	(0.158)
group 2 (Li)	-0.011	-0.032	-0.026	-0.028	-0.022**	0.024	-0.029	-0.028	-0.019	0.002	-0.016	-0.034	0.595
	(0.027)	(0.024)	(0.030)	(0.023)	(0.011)	(0.020)	(0.027)	(0.034)	(0.025)	(0.027)	(0.016)	(0.026)	(0.402)
group 2 * wave 3 (Li*Tt)	0.001	<b>-0.072***</b>	0.041	-0.027	-0.000	0.006	<b>0.102***</b>	0.019	<b>-0.042**</b>	-0.007	-0.014	-0.045	-0.049
	(0.031)	(0.027)	(0.033)	(0.028)	(0.020)	(0.027)	(0.033)	(0.023)	(0.020)	(0.037)	(0.027)	(0.030)	(0.378)
Observations	8,040	8,040	8,040	8,013	8,016	8,040	8,040	7,551	8,001	7,806	8,004	7,917	4,536
R-squared	0.060	0.133	0.119	0.173	0.104	0.284	0.238	0.066	0.072	0.166	0.033	0.115	0.227
Average outcome	0.315	0.366	0.693	0.362	0.129	0.631	0.375	0.523	0.137	0.420	0.147	0.350	37.67
test of common trend (group 2 * wave 2)	<b>0.026</b>	<b>0.032</b>	<b>0.033</b>	<b>-0.007</b>	<b>-0.005</b>	<b>0.000</b>	<b>-0.031</b>	<b>0.030</b>	<b>0.006</b>	<b>0.024</b>	<b>0.046*</b>	<b>-0.027</b>	<b>0.090</b>
	(0.033)	(0.031)	(0.033)	(0.029)	(0.015)	(0.031)	(0.040)	(0.024)	(0.016)	(0.040)	(0.028)	(0.032)	(0.493)

# Temporary or permanent?

- Consider two alternative groups
  - group 3: individuals who reported to look after GC in all periods
  - group 4: individuals who reported to look after GC in periods 1 and 2 but not in period 3

group 1			
group 2			
	t=1	t=2	t=3

The diagram is a 2x3 grid. The rows are labeled 'group 1' and 'group 2' on the left. The columns are labeled 't=1', 't=2', and 't=3' at the bottom. The cells for group 1 are all green. The cells for group 2 are green for t=1 and t=2, and white for t=3.

# Temporary or permanent

- group 4 includes the case of GC that grow up and do not need care anymore
  - this is a fully expected outcome. GC might change their behavior even before GC leave. If so, the common trend assumption would be at risk
- group 4 includes the case of parents who are exhausted and decide to stop childcare
  - again, common trend at risk: for these grandparents health decline could be steeper

# Temporary - Females

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
VARIABLES	depressed	poorhealth	chronicd	mobility	ADL	R1	R2	over weight	smoke	sport	hospital	doctor	CASP
wave 3 (Tt)	0.031** (0.015)	0.032** (0.015)	0.035** (0.016)	0.028** (0.014)	0.004 (0.008)	0.030** (0.015)	0.090*** (0.018)	-0.003 (0.013)	0.034*** (0.009)	-0.049*** (0.018)	0.012 (0.013)	-0.014 (0.016)	0.066 (0.199)
group 4 (Li)	0.039* (0.021)	0.035 (0.022)	0.028 (0.023)	0.002 (0.020)	-0.002 (0.011)	-0.031* (0.018)	-0.025 (0.021)	0.023 (0.027)	0.046** (0.019)	-0.023 (0.023)	0.027* (0.015)	0.019 (0.021)	-0.371 (0.311)
group 4 * wave 3 (Li*Tt)	0.014 (0.026)	0.063** (0.025)	-0.035 (0.023)	0.059** (0.024)	0.064*** (0.018)	-0.002 (0.024)	-0.020 (0.027)	-0.034* (0.019)	0.009 (0.013)	-0.035 (0.029)	0.011 (0.024)	0.020 (0.026)	-0.729** (0.343)
Observations	5,046	5,046	5,046	5,037	5,037	5,046	5,046	4,833	5,022	5,001	5,031	5,001	3,066
R-squared	0.081	0.109	0.089	0.102	0.054	0.231	0.169	0.065	0.075	0.095	0.026	0.102	0.221
Average outcome	0.270	0.280	0.683	0.256	0.0653	0.739	0.440	0.578	0.135	0.512	0.133	0.308	38.58
test of common trend (group 4 * wave 2)	-0.001 (0.028)	0.014 (0.025)	0.050** (0.024)	-0.012 (0.026)	0.012 (0.016)	-0.024 (0.028)	-0.069** (0.029)	-0.038* (0.020)	0.011 (0.011)	-0.078** (0.032)	-0.027 (0.025)	-0.035 (0.029)	-1.138*** (0.352)

# Temporary - Males

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
VARIABLES	depressed	poorhealth	chronicd	mobility	ADL	R1	R2	over weight	smoke	sport	hospital	doctor	CASP
wave 3 (Tt)	0.015 (0.015)	0.008 (0.018)	0.035* (0.020)	0.004 (0.016)	0.010 (0.011)	0.005 (0.019)	0.089*** (0.021)	0.046*** (0.016)	0.015 (0.013)	0.022 (0.022)	0.012 (0.019)	0.004 (0.020)	0.007 (0.237)
group 4 (Li)	-0.009 (0.020)	0.043* (0.025)	0.029 (0.029)	0.003 (0.021)	0.000 (0.016)	-0.034 (0.024)	-0.029 (0.024)	0.031 (0.031)	0.038 (0.025)	-0.012 (0.029)	0.015 (0.019)	0.050* (0.026)	0.015 (0.389)
group 4 * wave 3 (Li*Tt)	0.001 (0.026)	0.036 (0.032)	-0.026 (0.031)	0.082*** (0.029)	0.043* (0.024)	-0.011 (0.035)	-0.011 (0.033)	0.008 (0.024)	0.019 (0.019)	-0.043 (0.035)	0.005 (0.032)	0.045 (0.035)	-0.702* (0.419)
Observations	3,204	3,204	3,204	3,183	3,183	3,204	3,204	3,132	3,171	3,168	3,177	3,177	1,965
R-squared	0.054	0.110	0.059	0.092	0.060	0.184	0.143	0.067	0.080	0.070	0.046	0.112	0.158
Average outcome	0.133	0.247	0.687	0.169	0.0726	0.684	0.337	0.670	0.165	0.577	0.157	0.266	39.36
test of common trend (group 4 * wave 2)	-0.027 (0.027)	0.020 (0.032)	0.034 (0.032)	0.047 (0.029)	0.001 (0.019)	0.111*** (0.038)	-0.014 (0.036)	0.024 (0.026)	-0.009 (0.019)	-0.008 (0.039)	-0.051 (0.033)	0.018 (0.032)	-0.419 (0.428)

# Summing up

- Strong evidence of the importance of self-selection and of the risk of finding spurious correlations
- (Some) evidence of a protective role of childcare on grandparents' health, more evident among females
  - for both males and females
    - less difficulty in activities of daily life
    - better delayed recalling
  - among females
    - better self-reported health
    - less smoking

# Summing up

- (Some) evidence of stronger effects for low-intensive childcare
  - same pattern as in the "undistinguished" case, but stronger effects
  - however the high-intensive childcare seems to have a stronger effect on ADL
- (Some) evidence that the beneficial effect is temporary
  - although the common trend assumptions sometimes fails

# Policy implications

Taking results up-front:

- Policies to facilitate grandchild care
  - flexible working hours or part-time for active elderly
- Avoid intensive caring
  - favor a better mix of formal care and care from grandparents in suitable ways
- Offer grandparents brief courses with a few elements of pedagogy and psychology



# Further research

- extend analysis by using the upcoming fifth wave of SHARE
  - better common trend test
  - more opportunities of testing whether the effect is temporary
- More attention to the role of retirement
  - what if... retirement were an outcome of a demand for grandchild care?
    - in this case "the retired dummy" would be a bad control
- Further tests on possible contemporaneous treatments
  - after all there are five years between  $t=2$  and  $t=3$