

MAX PLANCK INSTITUTE
FOR DEMOGRAPHIC RESEARCH

Children's educational attainment and parental mortality in Chile

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BACKGROUND

- Many studies focus on the association between education and mortality, but mainly at the individual level.
- Less is known about the impact of an individual's educational level on their older family members' health conditions and mortality.
- Studies that discuss the mechanism through intergenerational transmission of human capital from the children to the parents, show a positive association between adult children's education and parental longevity and well-being.

BACKGROUND

- Adult children could provide information, financial help, and other forms of support that would improve their parents' health and well-being (Zimmer et al., 2002, 2007, 2016; Torssander, 2013, 2014; Friedman and Mare, 2014; Yahirun et al., 2017; De Neve and Harling, 2007; Elo et al., 2018; Lee, 2018; Lundborga and Majlesia, 2018; Thoma et al., 2021; Potente et al., 2023).
- This is observed especially in societies that experienced educational expansion and are characterized by intergenerational mobility in educational attainment and occupational status.

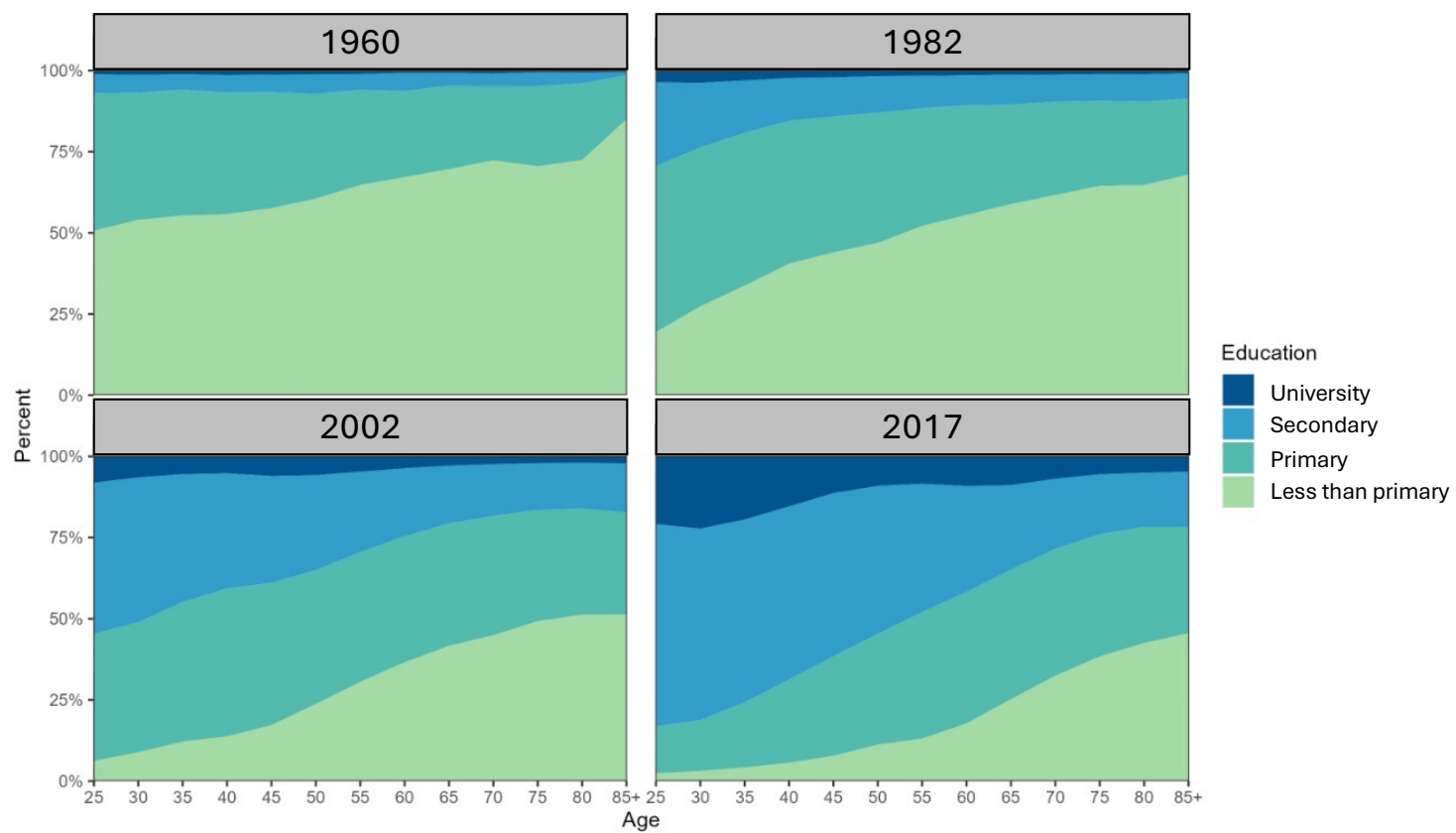
CHILEAN CONTEXT

- Since 1900, Chilean life expectancy has tripled increasing from 23.6 years in 1900 for women and 23.5 for men to 82.1 and 77.3, respectively, in the period 2015-2020.
- This remarkable improvement results from the implementation of public health policies and also explained by the increase in schooling levels and the universalization of education, among other factors (United Nations Development Programme, 2018).

CHILEAN CONTEXT

- Observed shift in educational attainment across cohorts.
- Disparities in education access across generations can be a factor that reinforces intergenerational transfers from adult children who have greater access to education to parents who do not.
- The educational expansion creates an opportunity to explore the association between adult children education and parental mortality.

Chile's education distribution among adults



OBJECTIVE

Given that Chile experiences one of the highest life expectancies in Latin America, and considering the recent educational expansion, we investigate the relation between adult children's education and parental mortality to answer:

Is having highly educated children associated with a lower parental mortality in Chile?

DATA

- First wave of the Encuesta de Protección Social (EPS - Longitudinal Social Protection Survey) conducted in 2002.
- Sample of 17,246 individuals between 25 to 64 ages.

SURVEY QUESTIONS

- "What is your educational attainment?"
 - "Is your mother alive?"
 - "What is your mother's educational attainment?"
-
- With those questions it is possible to estimate **maternal** survival by educational groups, defined by different combinations of parental and children's educational attainment.

EDUCATIONAL CATEGORIES

Low education – Primary school or less

High education – Secondary school or higher

ADULT CHILDREN EDUCATION

		ADULT CHILDREN EDUCATION	
		LOW	HIGH
MOTHER'S EDUCATION	LOW	LL	LH
	HIGH	HL	HH
	UNKOWN	UL	UH

METHODS

- Adult mortality can be estimated from data on the survival status of the respondent's mother by applying the Orphanhood Method (Timaheus, 2013; Moultrie et al, 2013).
- Since the mothers must have been alive when the respondents were born, the duration of their exposure to mortality risk is the age of the respondent (children).
- The survival probabilities are allocated in time and converted into life expectancy at age 60.

METHODS

- The method requires two pieces of data: the proportion of respondents whose mother is alive by five-year age group and the number of births in the year.
- This two indicators allows us to calculate the mean age at childbearing:

$$\bar{M}^f = \frac{\sum_{x=15}^{45} {}_5B_x \cdot (x + 2)}{\sum_{x=15}^{45} {}_5B_x}$$

METHODS

Coefficients for the estimation estimated from a life table (given by the method)

- and the survival probabilities:

$${}_n p_{25} = a(n) + b(n)\bar{M}^f + c(n) {}_5 S_{n-5}$$

proportion of respondents in the age group $n-5$ to n with living mothers

- After, it is necessary to allocate the survival probabilities in time:

$$T = \frac{N}{2} \left(1 - \frac{1}{3} \ln({}_5 S_{n-5}) + \frac{1}{3} \ln \left(\frac{80 - \bar{M}^f - N}{80 - \bar{M}^f} \right) \right)$$

- And finally, convert the survival probabilities into a life expectancy at age 60 using the logit adjustment with Chilean life tables.

RESULTS

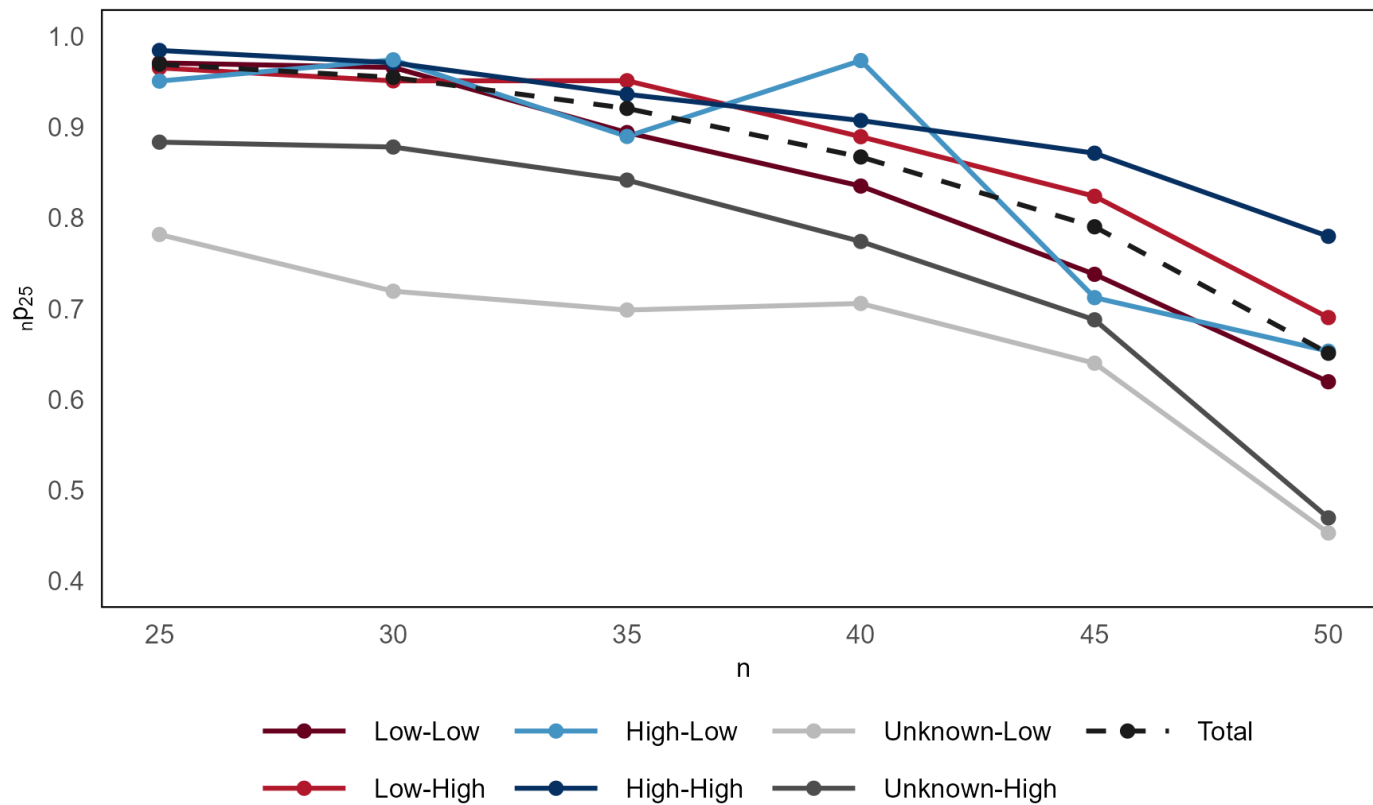
(Descriptives)

Table 3: Children's and mother's educational attainment in Chile, year 2002.

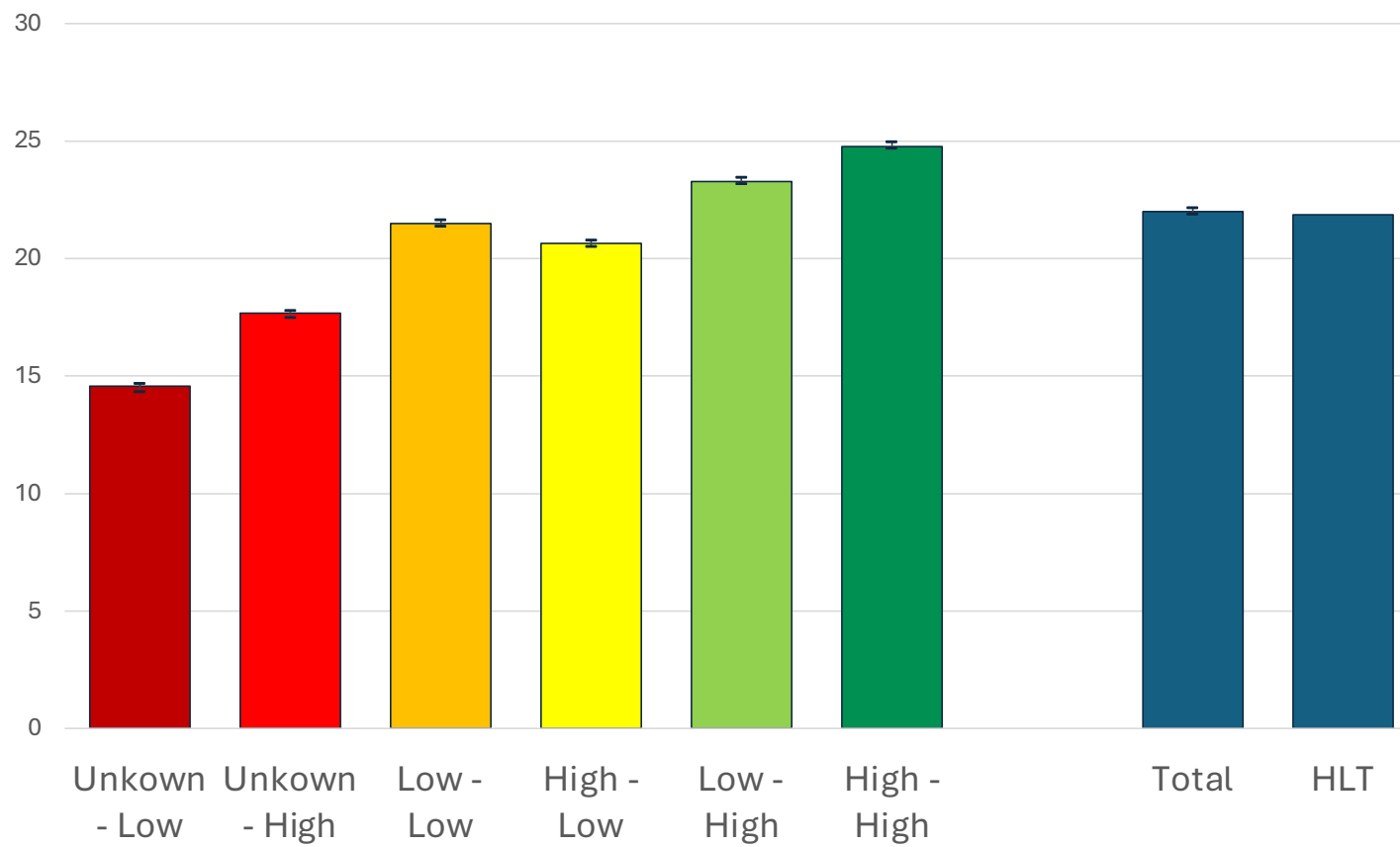
Educational attainment	n	%
Adult children		
Low	6523	37.82%
High	10723	62.18%
Mothers (before imputation)		
Low	9622	55.79%
High	4059	23.54%
Unknown	2528	14.66%
NA	1037	6.01%
Mothers (after imputation)		
Low	10575	61.32%
High	4074	23.62%
Unknown	2597	15.06%
N	17246	

Note: Low: up to primary school, High: secondary school and higher, Unknown: not knowing their mother's education

RESULTS – Females' survival probabilities between 25 and 25+n



RESULTS – Female life expectancy at age 60 in 1990



DISCUSSION

- There is a positive association between adult children educational attainment and maternal survival. Mothers less educated with children highly educated have higher life expectancy than mothers less educated with children with the same level of education.
- This could be due to both a positive effect of the improvement of children's education on mothers and ...
- ... that educational level of the parent's generation (before education expansion) was not so accurate, and those that have children in higher education were already from higher social class groups.

DISCUSSION

- Not knowing the educational attainment of your mother is the worst scenario, maybe because this might be associated with mothers dying at a younger age.
- Limitations are the usual from the application of indirect methods. We are only measuring the mother's mortality of those that survived until a certain age, and that children from mothers in lower educational groups (and usually higher fertility) can be overrepresented. But these biases usually offset.
- In the future, more specific life tables will be used to adjust each of the educational group's survival rates.

Thanks

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