

The Changing Causes of Mortality: Mortality and Education in Andalusia, 2002-2010.



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Introduction

- Educational attainment is an indicator used commonly to assess the influence of socioeconomic circumstances on health.
- Within the demographic or epidemiologic literature are numerous reports of consistent and significant associations between formal educational attainment and individual health outcomes and risks such as mortality, smoking, drug abuse, or accidents. The vast majority of these reports conclude that more highly educated individuals are healthier and live longer. (see for example, Baker et al. (2011), Luy, Di Giulio and Caselli (2011), Lutz (2009), Leinsalu et al. (2009), Deboosere et al. (2009), Mackenbach et al. (2008), Shkolnikov et al. (2006), Khang et al. (2004), Mackenbach et al. (2003), Crimmins and Saito, (2001))



Introduction

- Educational attainment
 - reflects material and other resources of family of origin and the knowledge and skills attained by young adulthood.
 - reflects other physical circumstances which could affect the level attained such as nutrition during pregnancy and childhood, infectious processes, or more directly inabilitating illnesses, genetic factors or abnormalities.
 - is cross affected by other circumstances during the life course, such as occupation, childbearing, income, educational attainment of the couple or family, etc.



Aim

- The aim of this study is to examine, making use of the newly developed Longitudinal Population Register of Andalusia, age- and cause-specific mortality differentials by educational attainment for both men and women, for all the individuals over 35 years old registered in Andalusia within the 2001 Census of Spain, and followed till 2010.



Some characteristics of the LRPA. (1/2)

Some basic information:

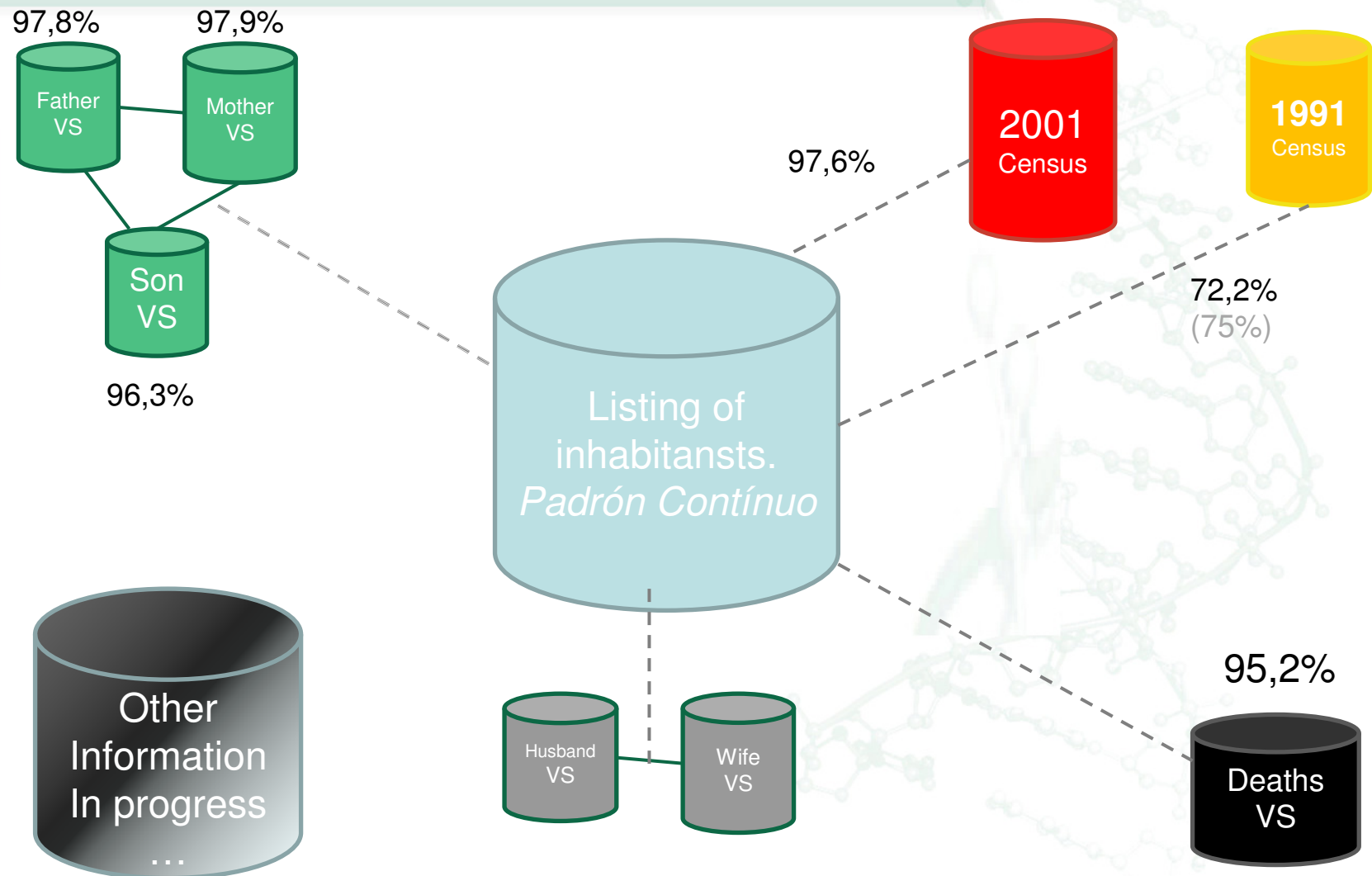
- Andalusia has the lower life expectancy in Spain, and one of the highest levels of unemployment and proportions of illiterate population, especially between elderly women.

Data includes:

- Circa 10 Millions different individuals with at least a demographic event registered at the LRPA from 1996 till now.
- More than 3.5 Millions inter-municipal movements.
- More than 9 Millions changes of Residence.
- More than 1.2 Millions deliveries.
- Circa 1 Millions deaths.
- More that 1.2 Millions individuals who got married.
- And around 7.5 Millions individuals included in 2001 Census.
- Cause of death coding following ICD-10, and WHO GBD.

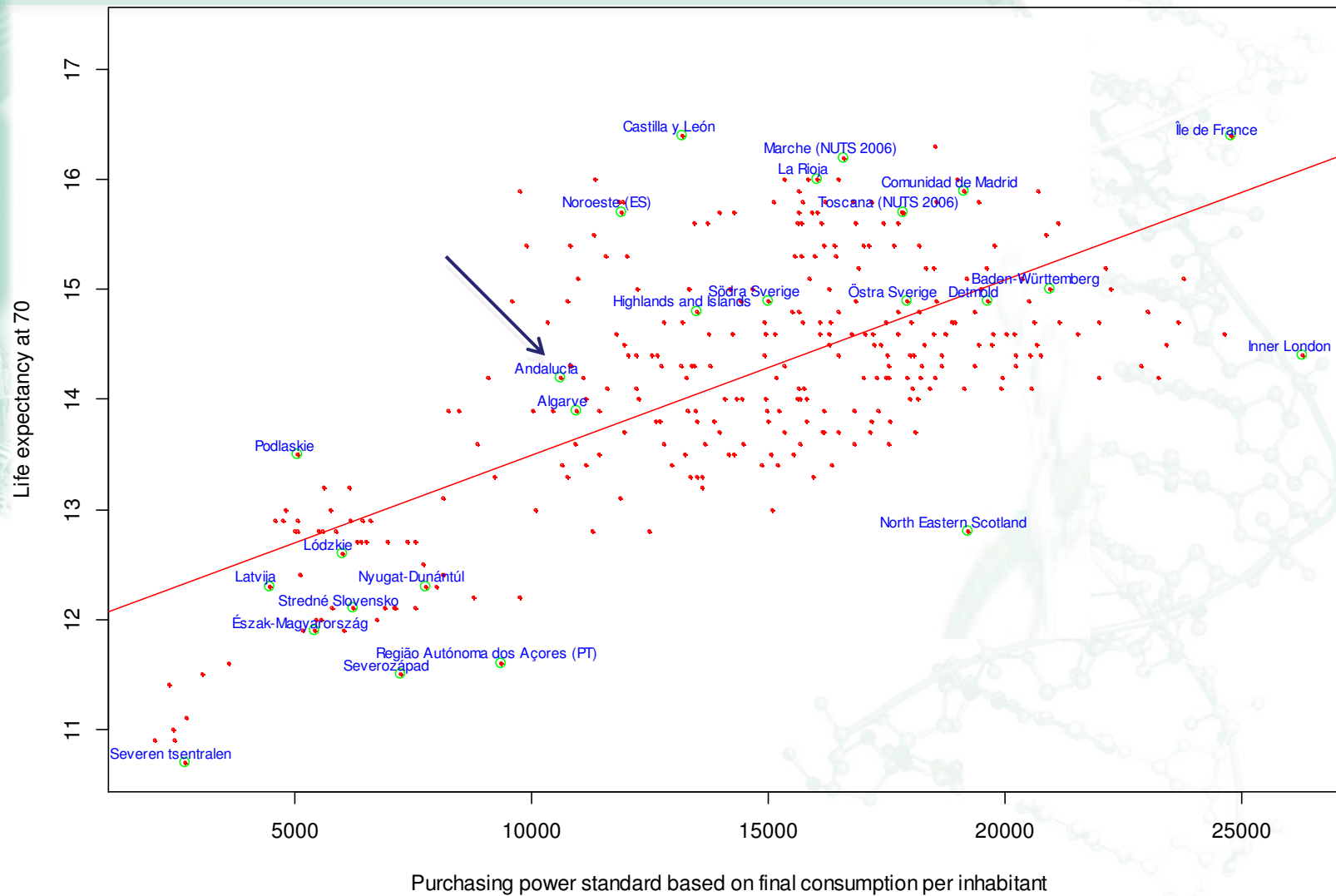


Some characteristics of the LRPA. (2/2)



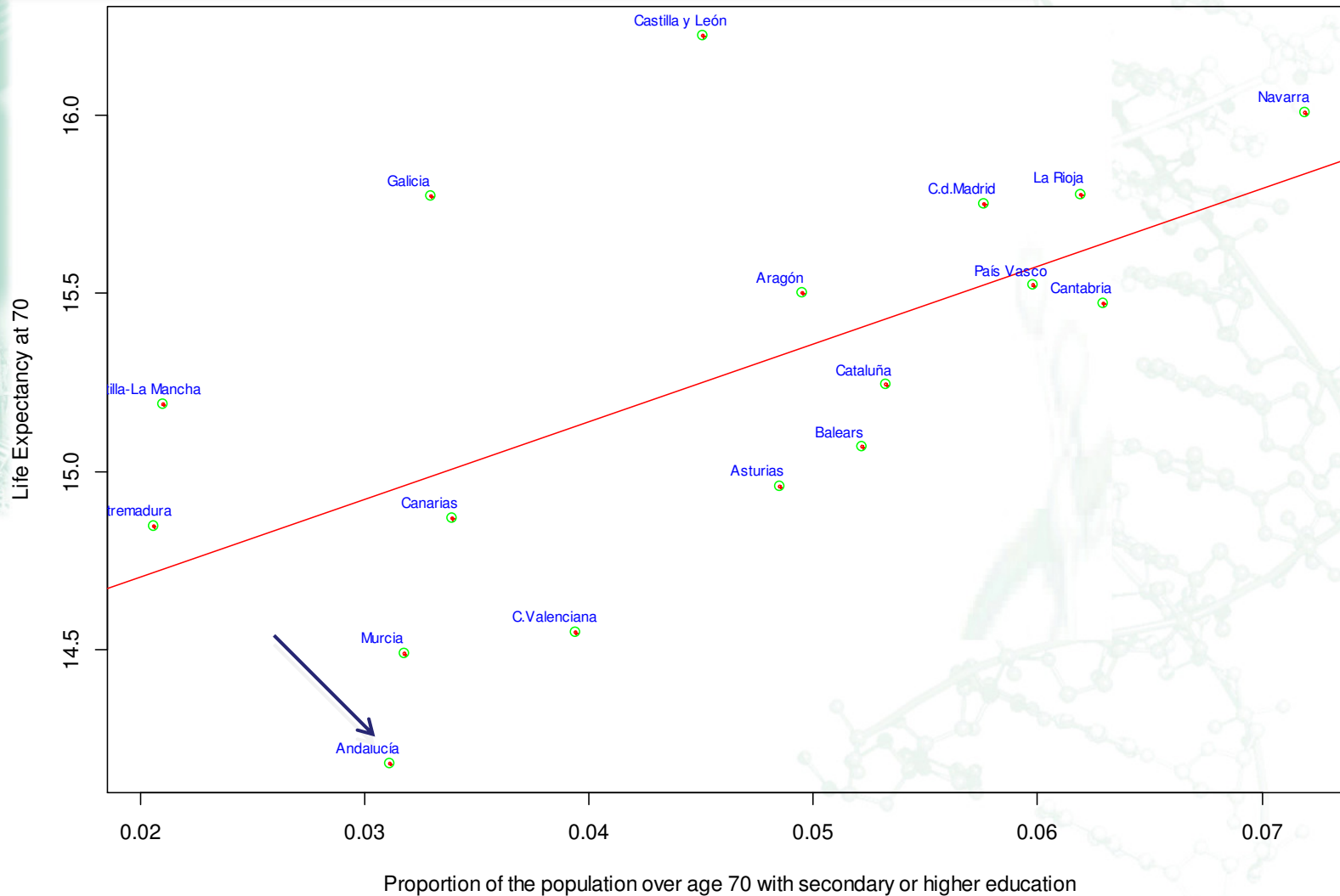


Life expectancy at age 70 and purchasing power standard at European NUTS 2. 2002





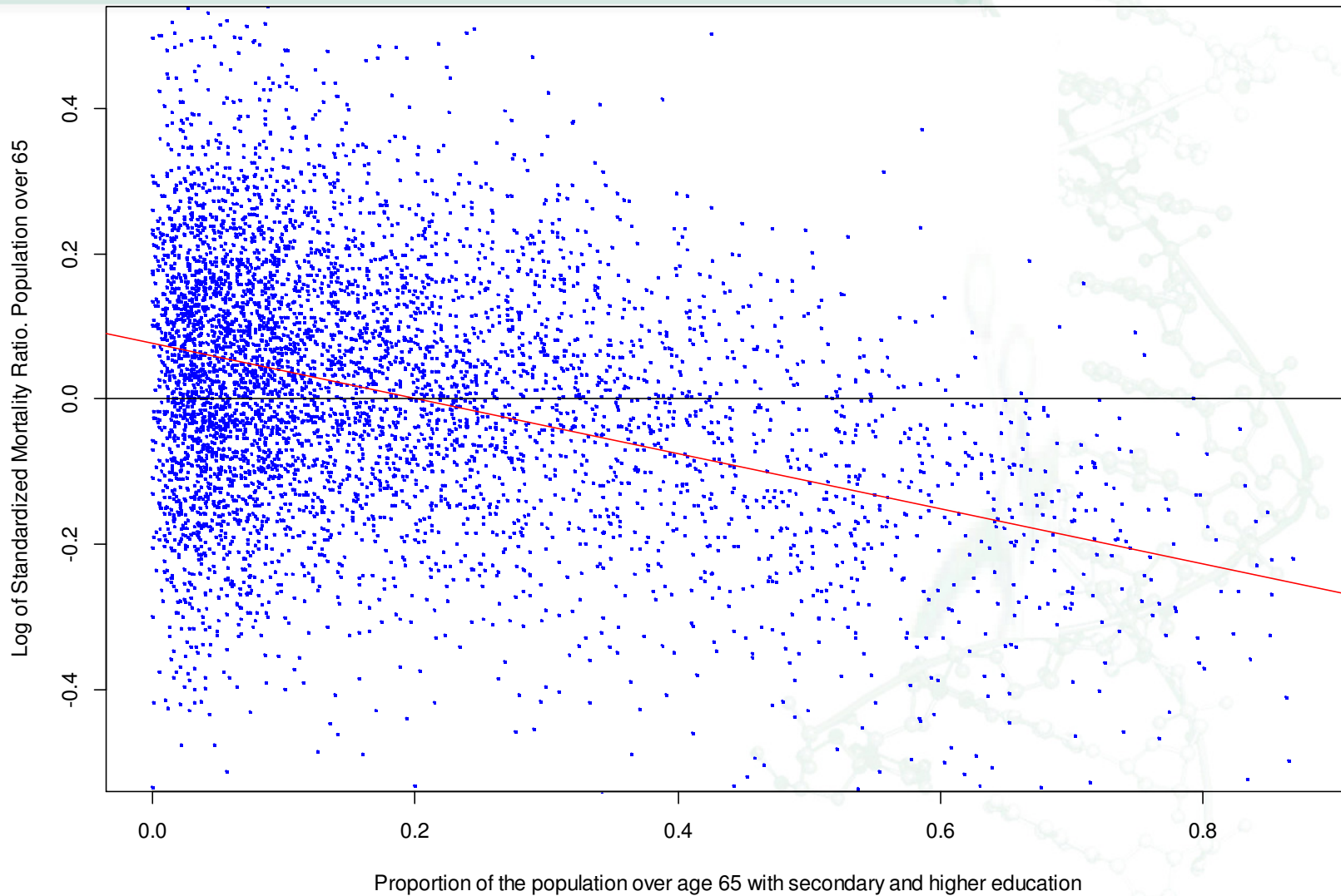
Life expectancy at age 70 by Educational attainment in Spain by Region (2002)





SMR for population over 65 by Educational attainment in Andalusian Census tracks (2002-2010).

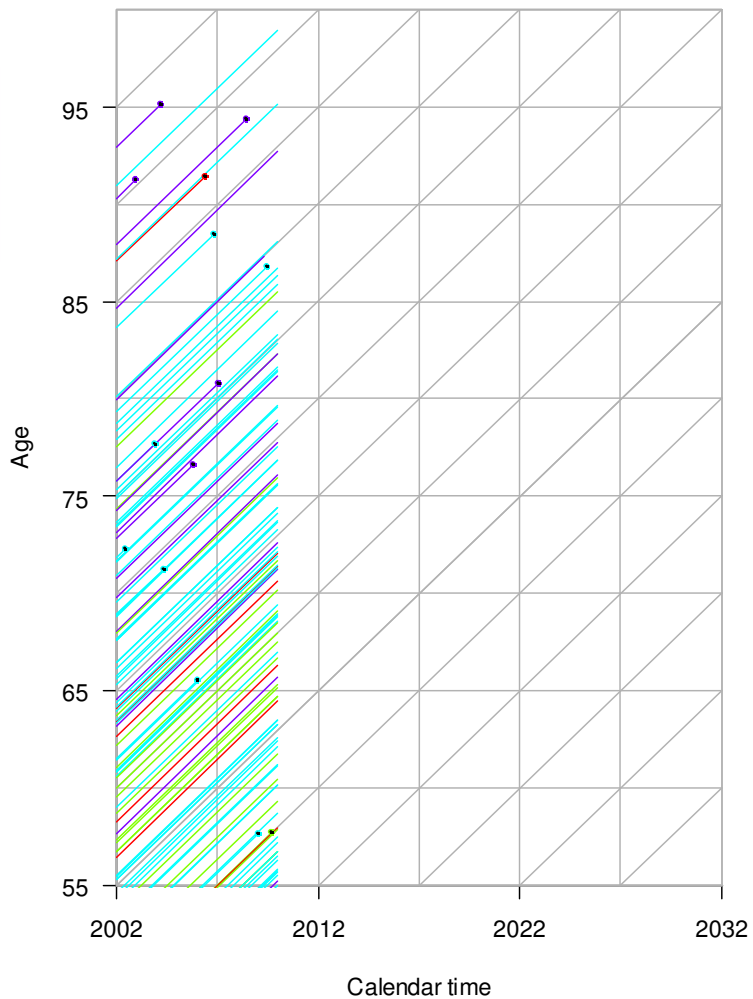
Index: proportion of Medium-high Education



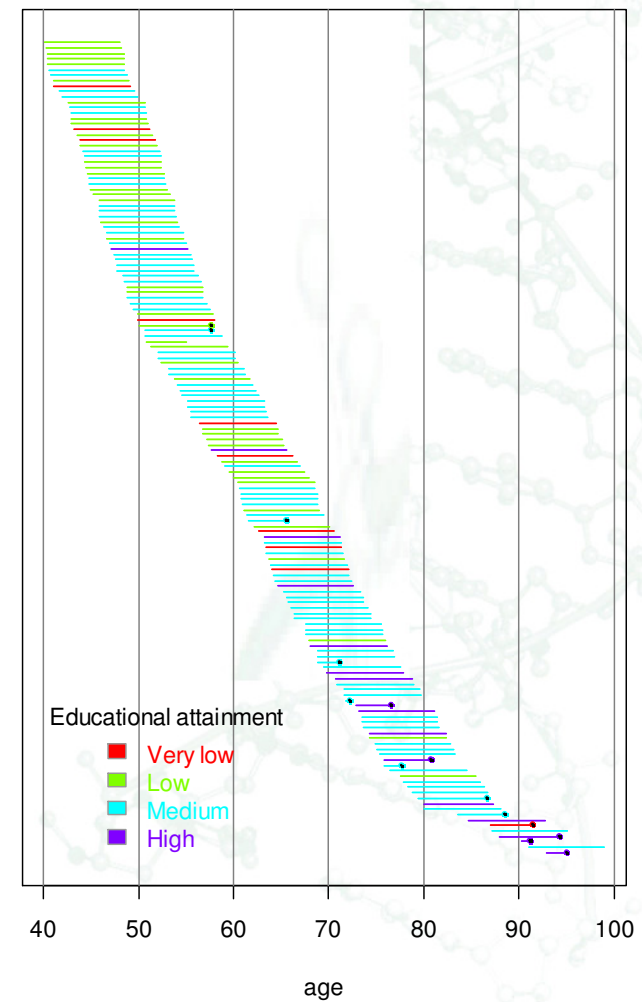


Example of 150 people surveyed in the 2001 Census.

Sample of 150 people surveyed in the 2001 census



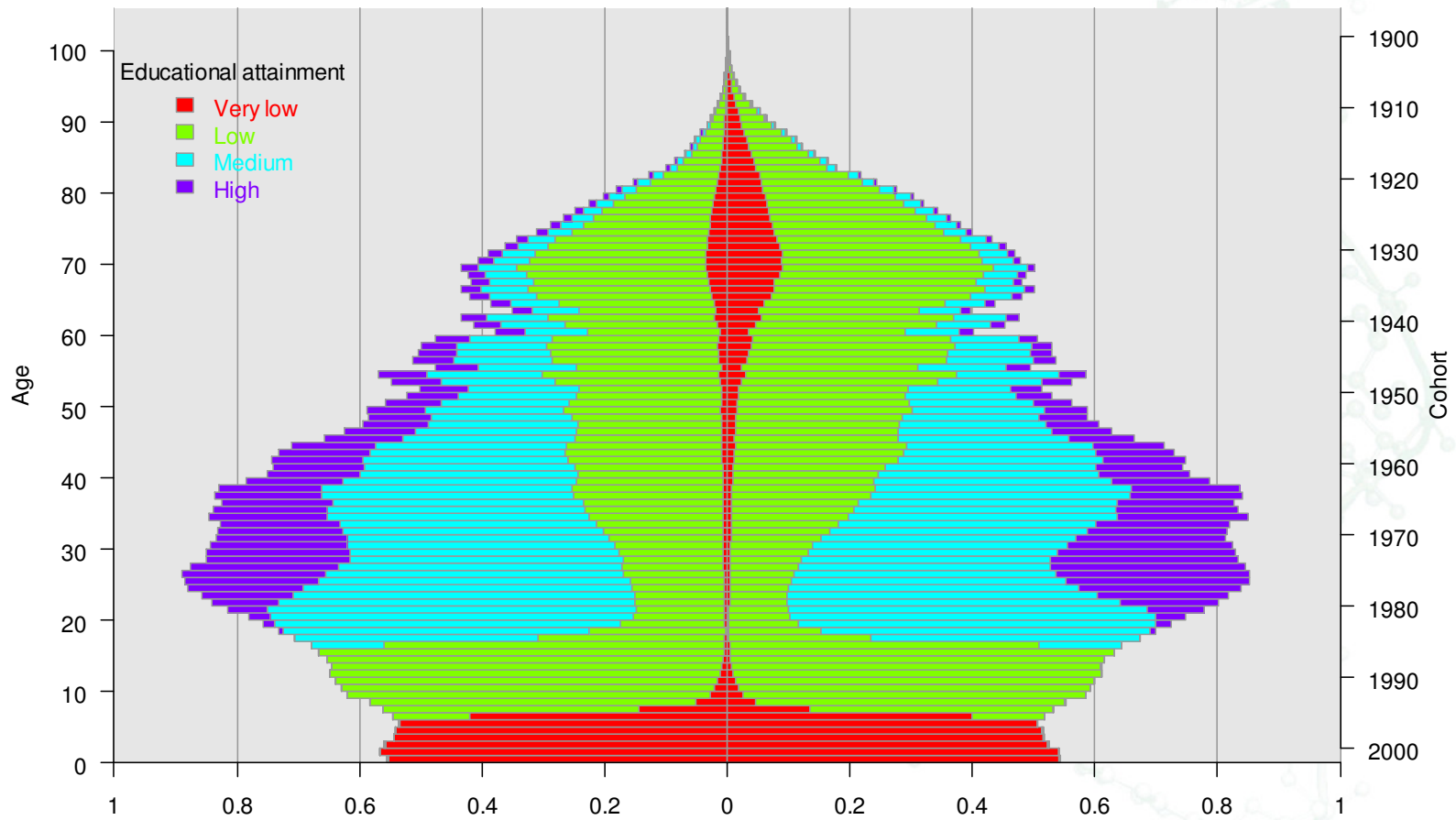
Sample of 150 people order by age at study entry





Population in Andalusia by educational attainment, 2002.

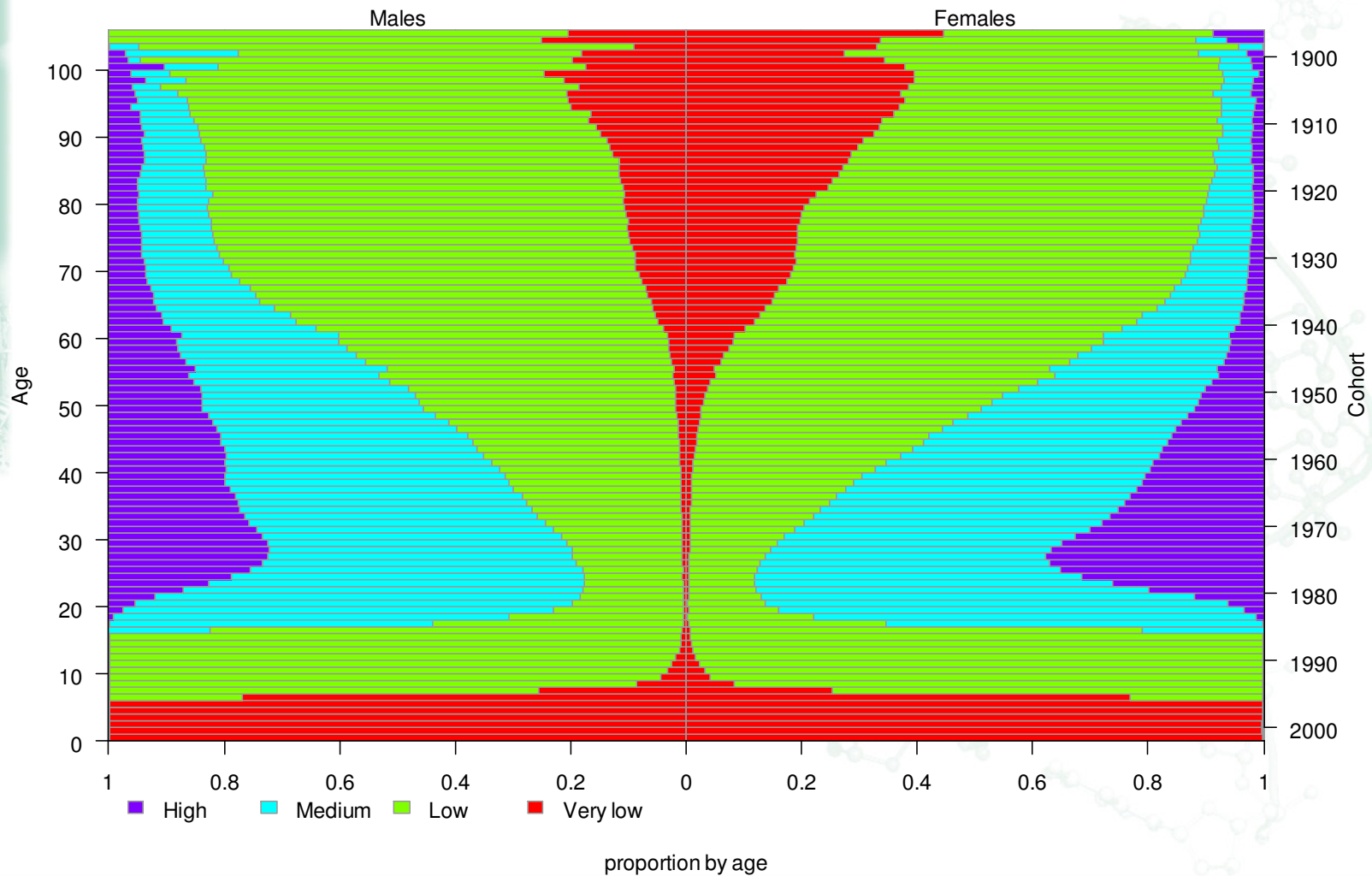
Total Pop = 7.3 (millions)





Prevalence of educational attainment by age and gender, Andalusia, 2002.

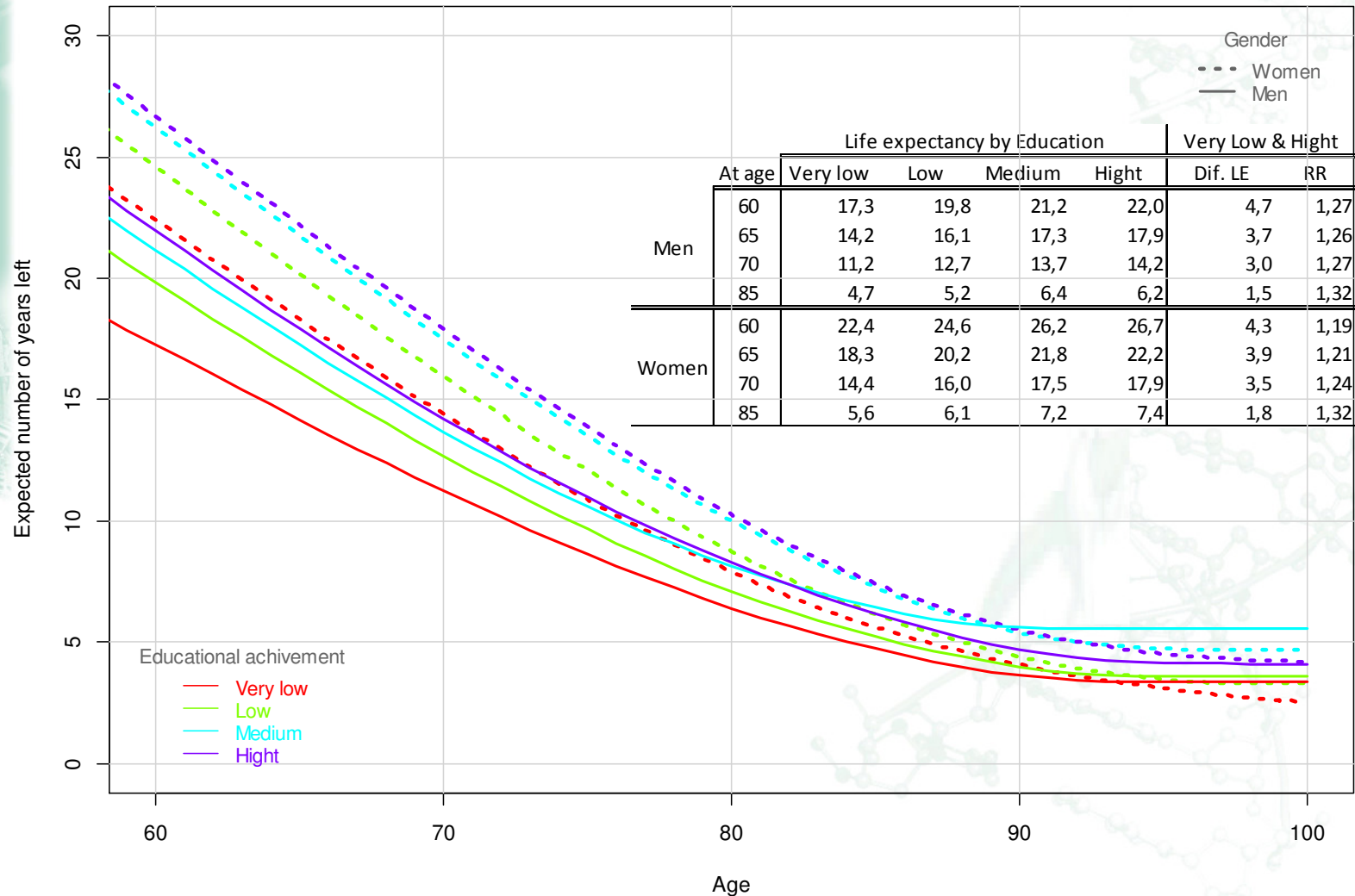
Prevalence by age and sex of education attained. Andalusia, Year 2002





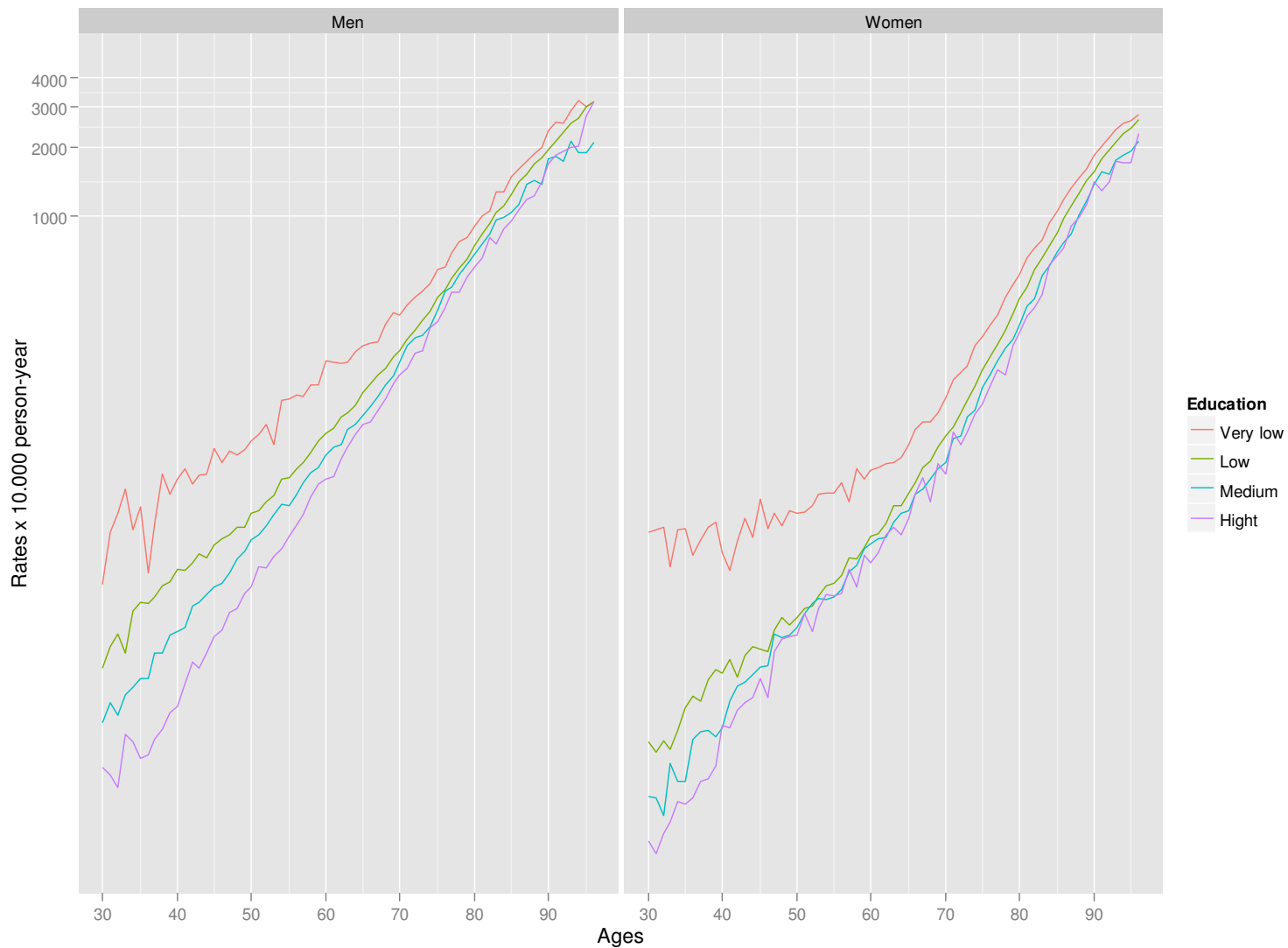
Life expectancy by gender and educational attainment, Andalusia 2002-2010.

Life expectancy: andalusia women_a (1-4)



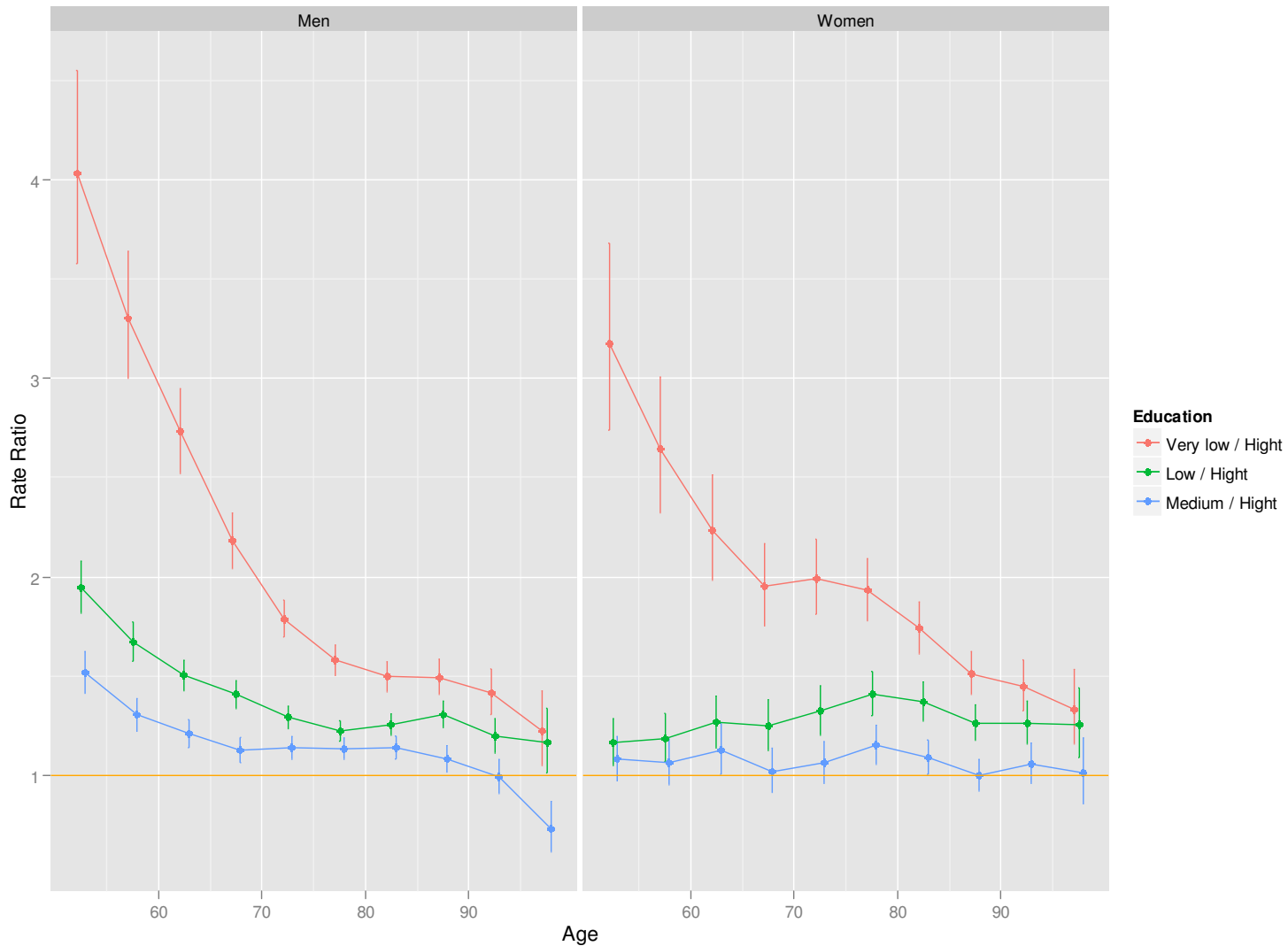


Rates per 10.000 person-year by gender and educational attainment, Andalusia. Census cohort followed from 2002 to 2010.





Mortality Rate Ratio by gender and educational Attainment, Andalusia. Census cohort followed from 2002 to 2010.





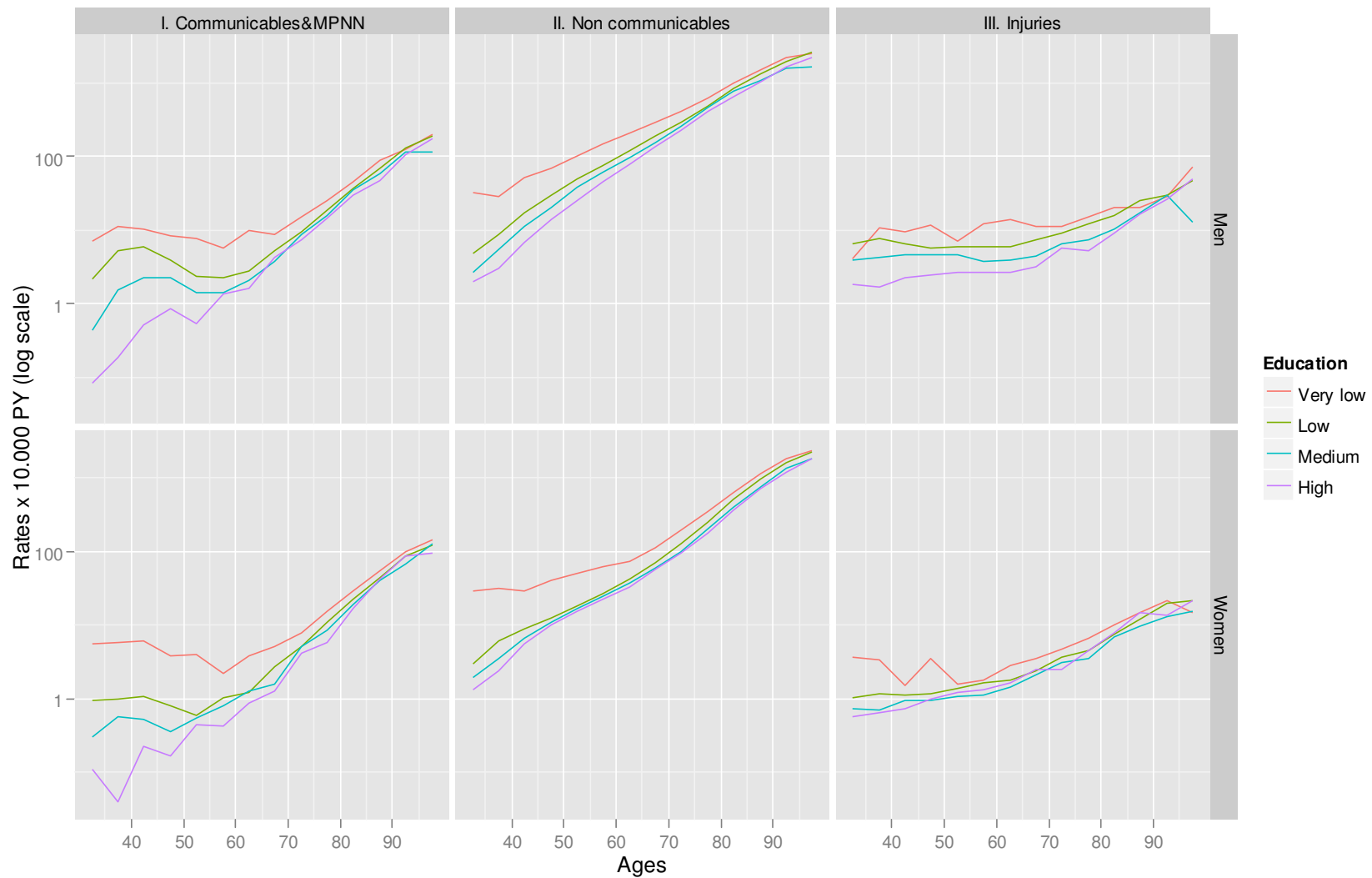
Mortality by cause of death and educational attainment on the population over 34 years by gender. Andalusia 2002-2010

Cause of Death	Female					Male					MSR	
	Crude rate	Adjusted Rate	LCI	UCI	RR	Crude rate	Adjusted Rate	LCI	UCI	RR		
All												
Very low	436,7	138,0	133,1	143,5	2,0	523,7	248,6	239,4	258,4	2,1	1,8	
Low	170,7	89,6	88,6	90,6	1,3	239,7	167,0	165,3	168,7	1,4	1,9	
Medium	40,0	73,0	71,0	75,0	1,1	77,2	138,4	135,7	141,3	1,2	1,9	
High	26,8	69,1	65,3	73,1	1,0	63,6	120,2	116,4	124,2	1,0	1,7	
Communicable												
Very low	18,9	7,3	6,4	8,3	2,7	22,5	13,2	11,6	14,9	3,0	1,8	
Low	6,9	3,7	3,6	3,8	1,4	9,9	7,7	7,4	7,9	1,8	2,1	
Medium	1,6	3,0	2,7	3,3	1,1	3,3	5,5	5,1	5,9	1,3	1,8	
High	0,9	2,7	2,2	3,2	1,0	2,2	4,4	3,9	4,9	1,0	1,6	
Noncommunicable diseases												
Very low	386,7	121,2	118,4	124,1	2,0	467,2	215,2	210,1	220,5	2,0	1,8	
Low	152,5	79,6	79,0	80,2	1,3	213,8	146,4	145,4	147,4	1,4	1,8	
Medium	35,3	64,8	63,6	66,1	1,1	66,8	123,1	121,4	124,9	1,1	1,9	
High	23,3	60,4	58,0	62,8	1,0	56,4	108,1	105,6	110,6	1,0	1,8	
Injuries												
Very low	6,5	3,5	2,8	4,3	1,8	13,5	11,5	9,9	13,2	3,4	3,3	
Low	3,2	2,2	2,1	2,3	1,1	8,2	7,4	7,2	7,7	2,2	3,4	
Medium	1,3	1,7	1,6	1,9	0,9	4,6	5,1	4,8	5,4	1,5	2,9	
High	1,2	1,9	1,6	2,3	1,0	2,7	3,3	3,0	3,7	1,0	1,7	
Ill-defined condition												
Very low	24,6	6,1	5,6	6,7	1,5	20,5	8,7	7,7	9,8	2,0	1,4	
Low	8,2	4,1	3,9	4,2	1,0	7,7	5,5	5,3	5,7	1,3	1,4	
Medium	1,7	3,4	3,1	3,7	0,8	2,5	4,7	4,4	5,1	1,1	1,4	
High	1,4	4,1	3,5	4,8	1,0	2,3	4,4	3,9	4,9	1,0	1,1	

CR: Crude Rate per 10.000; AR: Adjusted Rate per 10000; Lci: Lower CI limit; Uci: Upper CI limit; RR: Relative risk, MSR: Mortality Sex Ratio

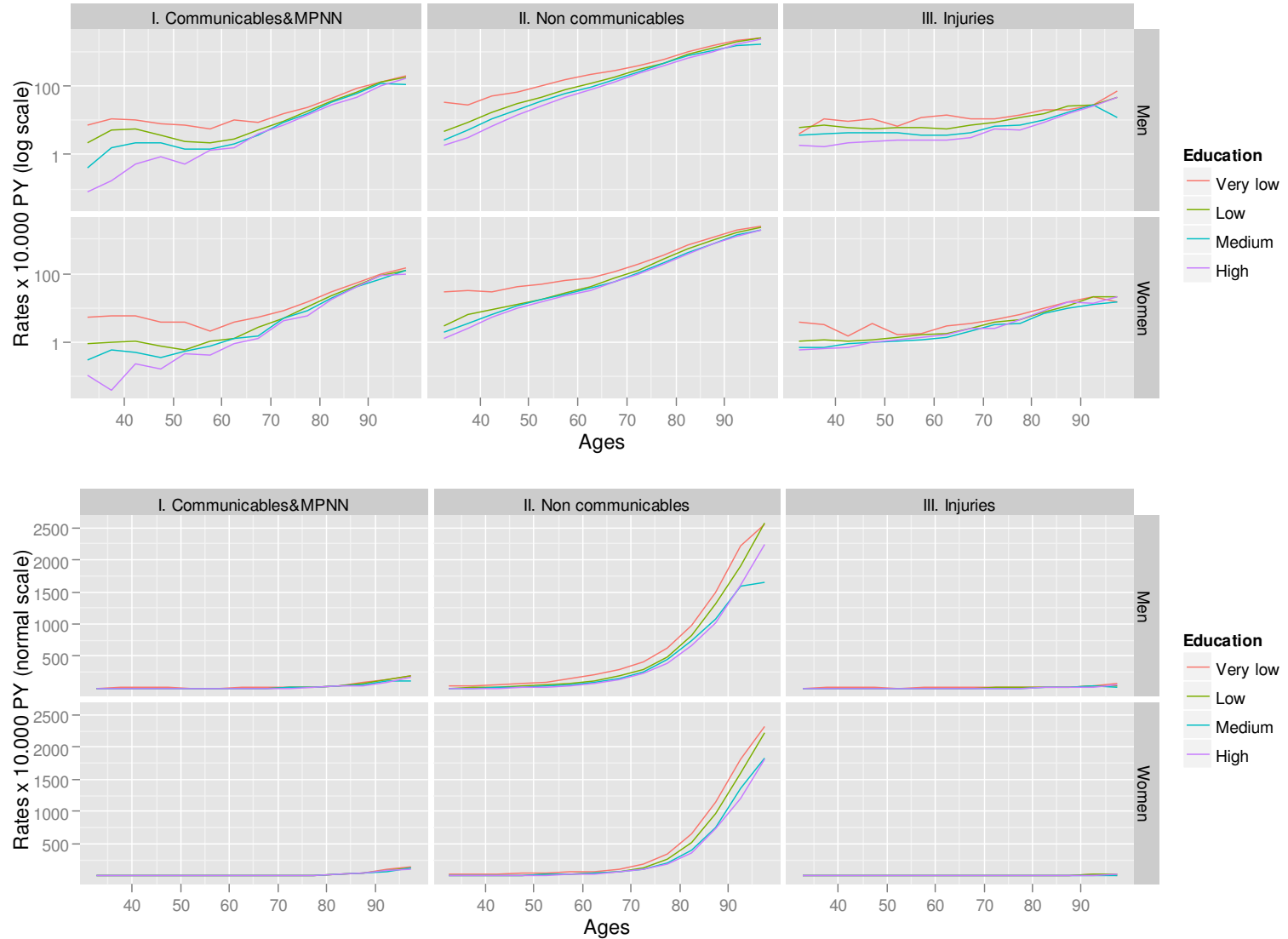


Rates per 10.000 person-year by age, gender, groups of causes of death and educational attainment, Andalusia. Census cohort followed from 2002 to 2010.



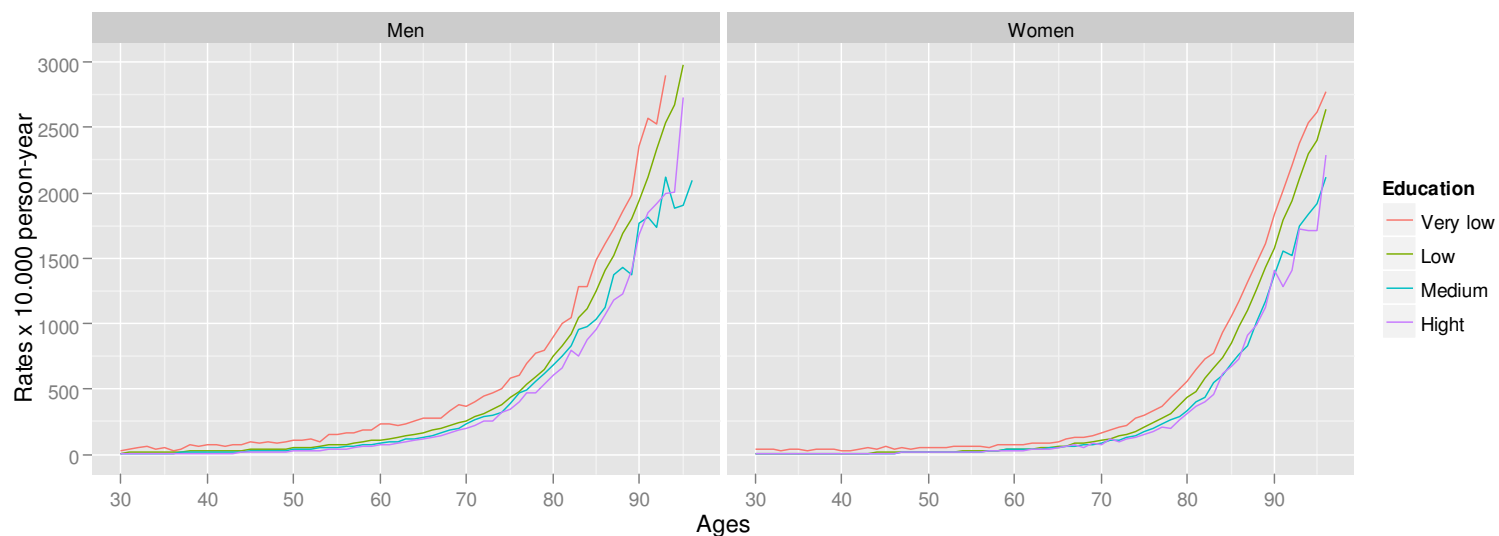
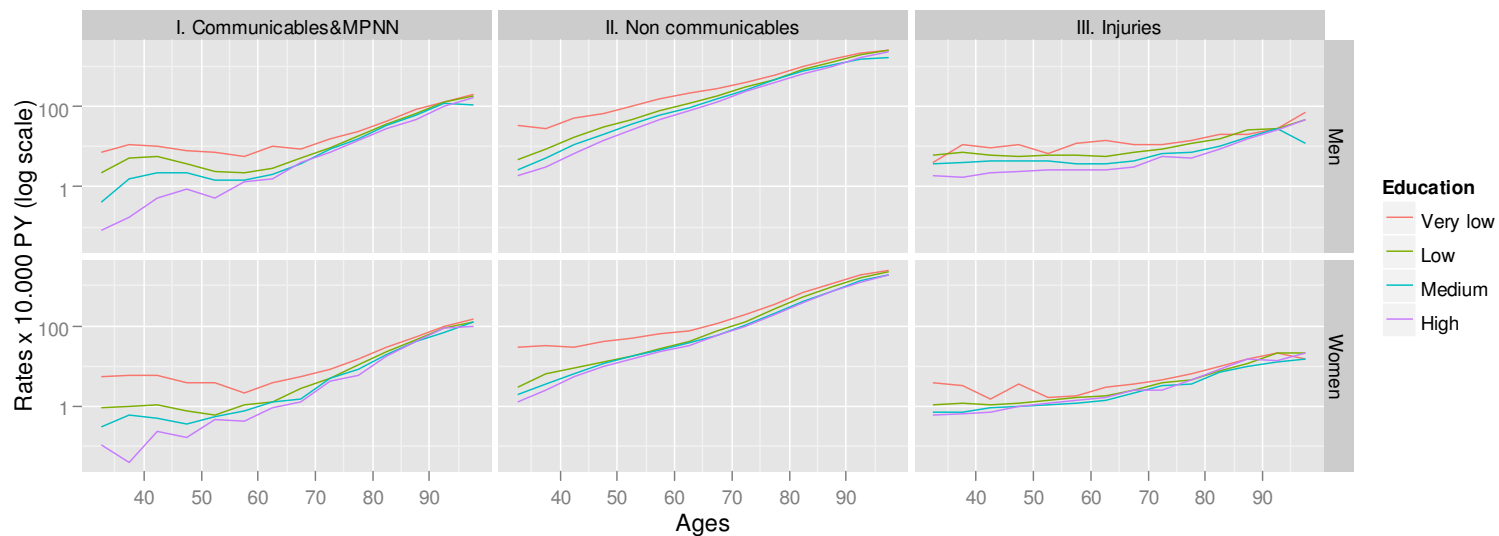


Rates per 10.000 person-year by age, gender, groups of causes of death and educational attainment, Andalusia. Census cohort followed from 2002 to 2010. Two ways of looking to the data.



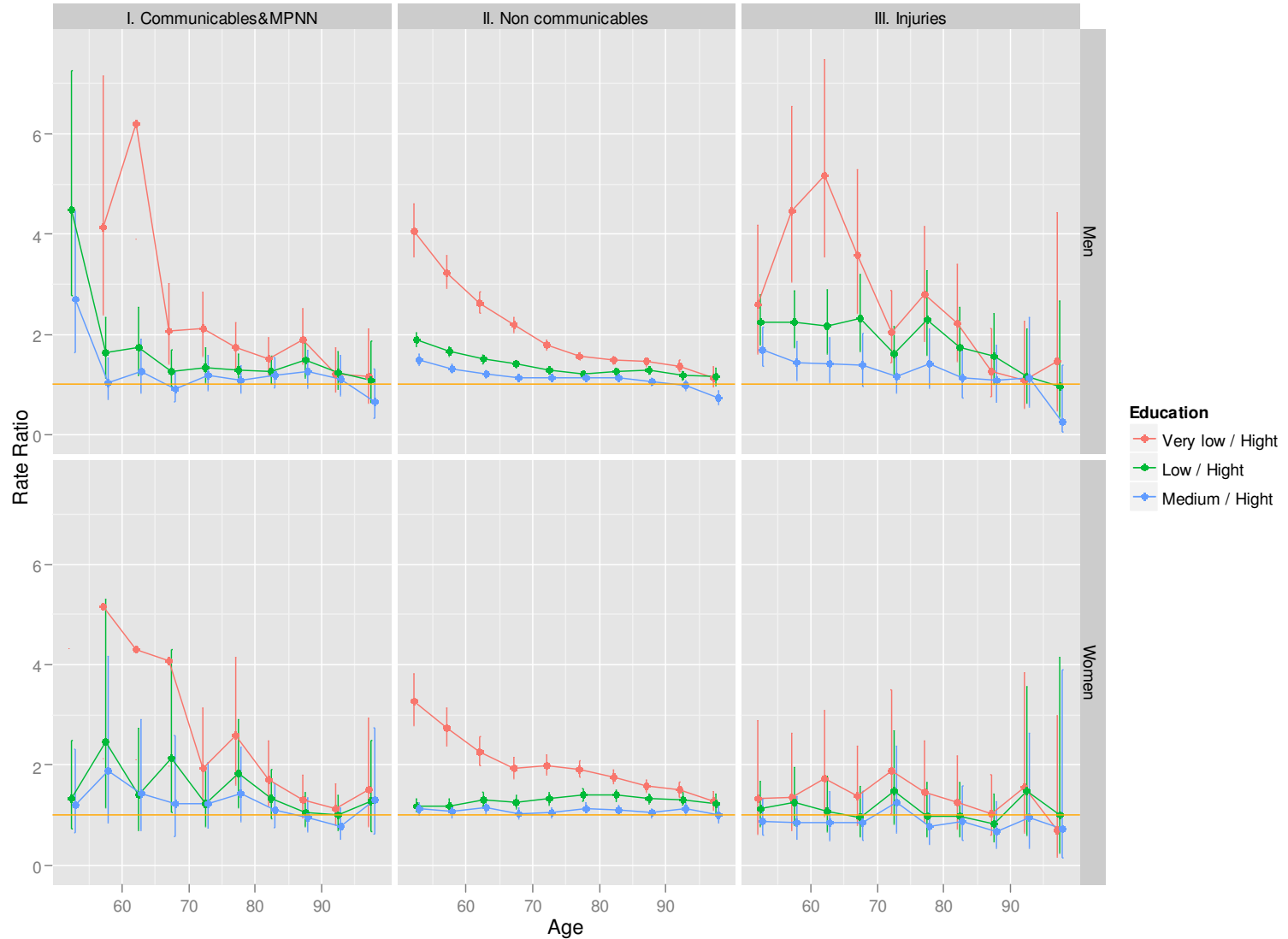


Rates per 10.000 person-year by gender and educational attainment, Andalusia. Census cohort followed from 2002 to 2010. Two ways of looking to the data.



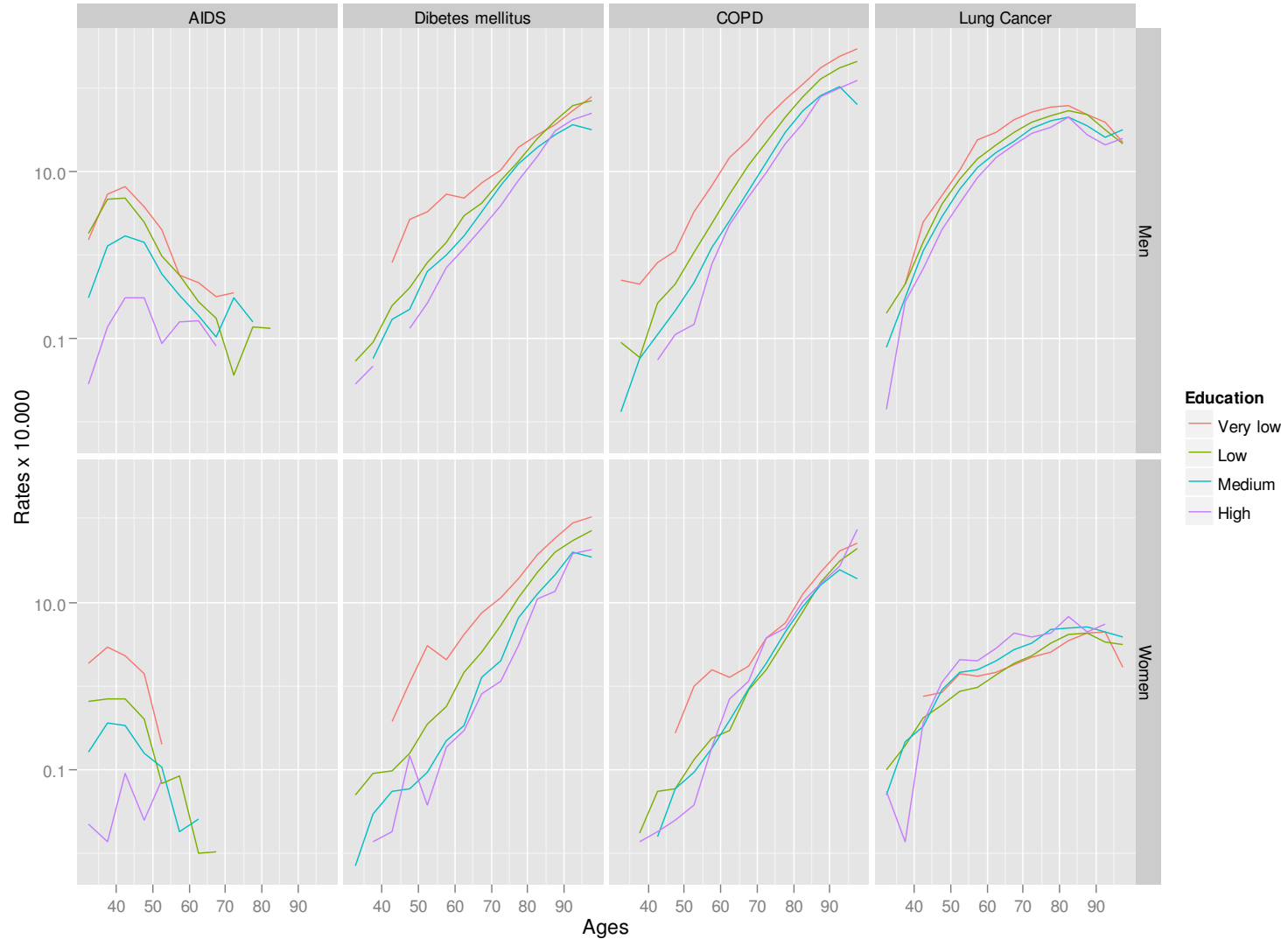
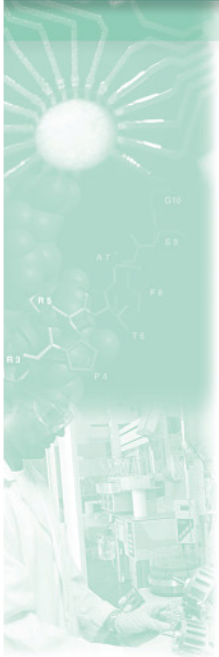


Mortality Rate Ratio by age, gender, groups of causes of death and educational attainment, Andalusia. Census cohort followed from 2002 to 2010. Two ways of looking to the data.



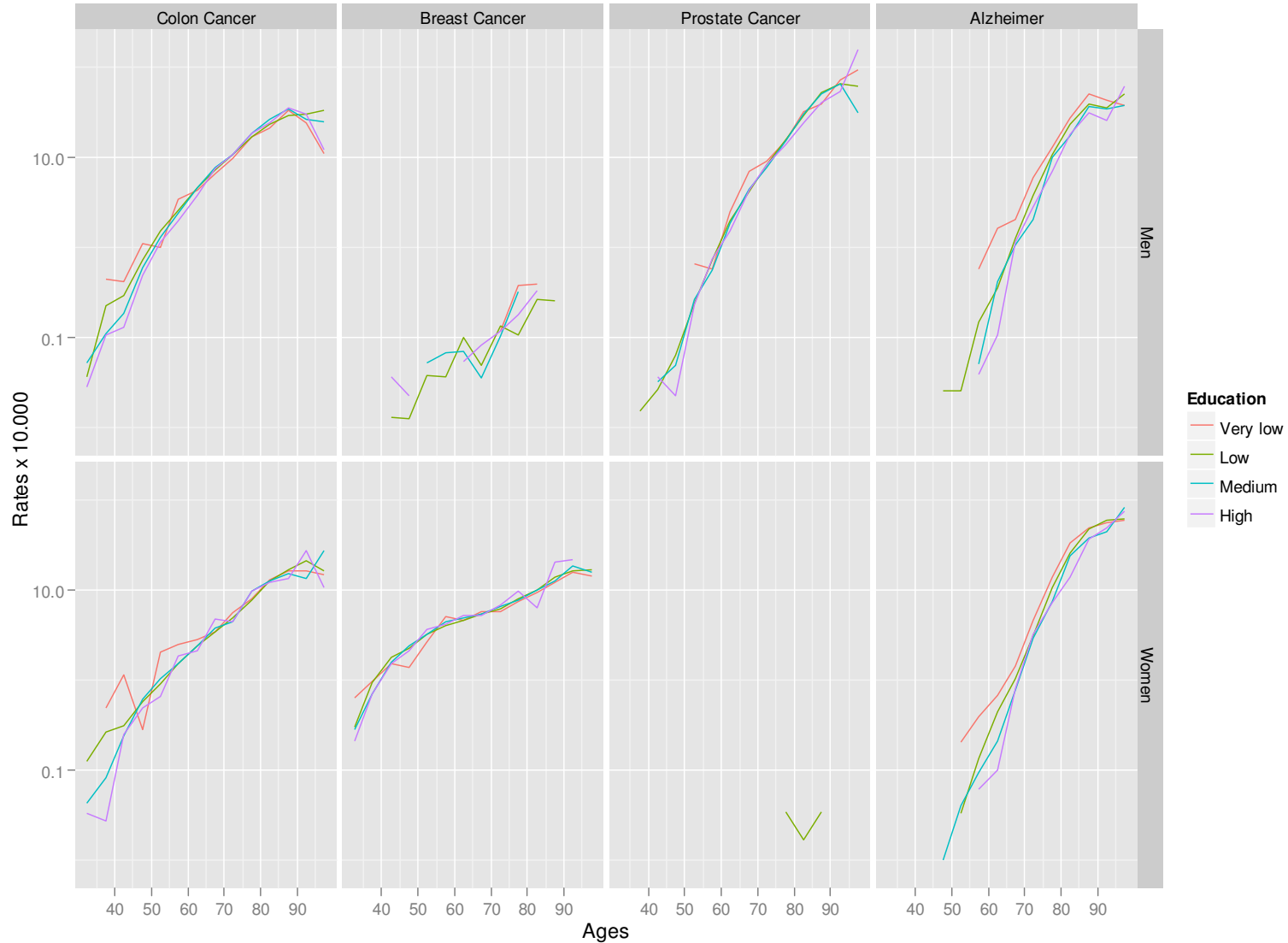


Rates per 10.000 person-year by age, gender, specific causes of death and educational attainment, Andalusia. Census cohort followed from 2002 to 2010. Obvious educational gradient.





Rates per 10.000 person-year by age, gender, specific causes of death and educational attainment, Andalusia. Census cohort followed from 2002 to 2010. Not obvious educational gradient





Conclusions.

- Graded educational differentials in mortality were observed among both sexes with higher mortality rates related to lower educational attainment in most causes of death.
 - Those with a strong educational gradient were more related with life styles (behaviours) or living standards (income or wealth).
 - Those with weak or non existent educational gradient is reasonable to suspect of aetiological environmental or genetic determinants affecting equally to all educational groups but this is more difficult to measure.
- Life expectancy differentials at age 60 between illiterate and highly educated populations differed by 4.7 years for men and 4.3 years for women.
- Key role of changes on Education for life expectancy behaviour in the future.



Thank you.

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