



*Beyond Boundaries*

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Mexico Colloquia  
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# How long do Argentines live and how we die?

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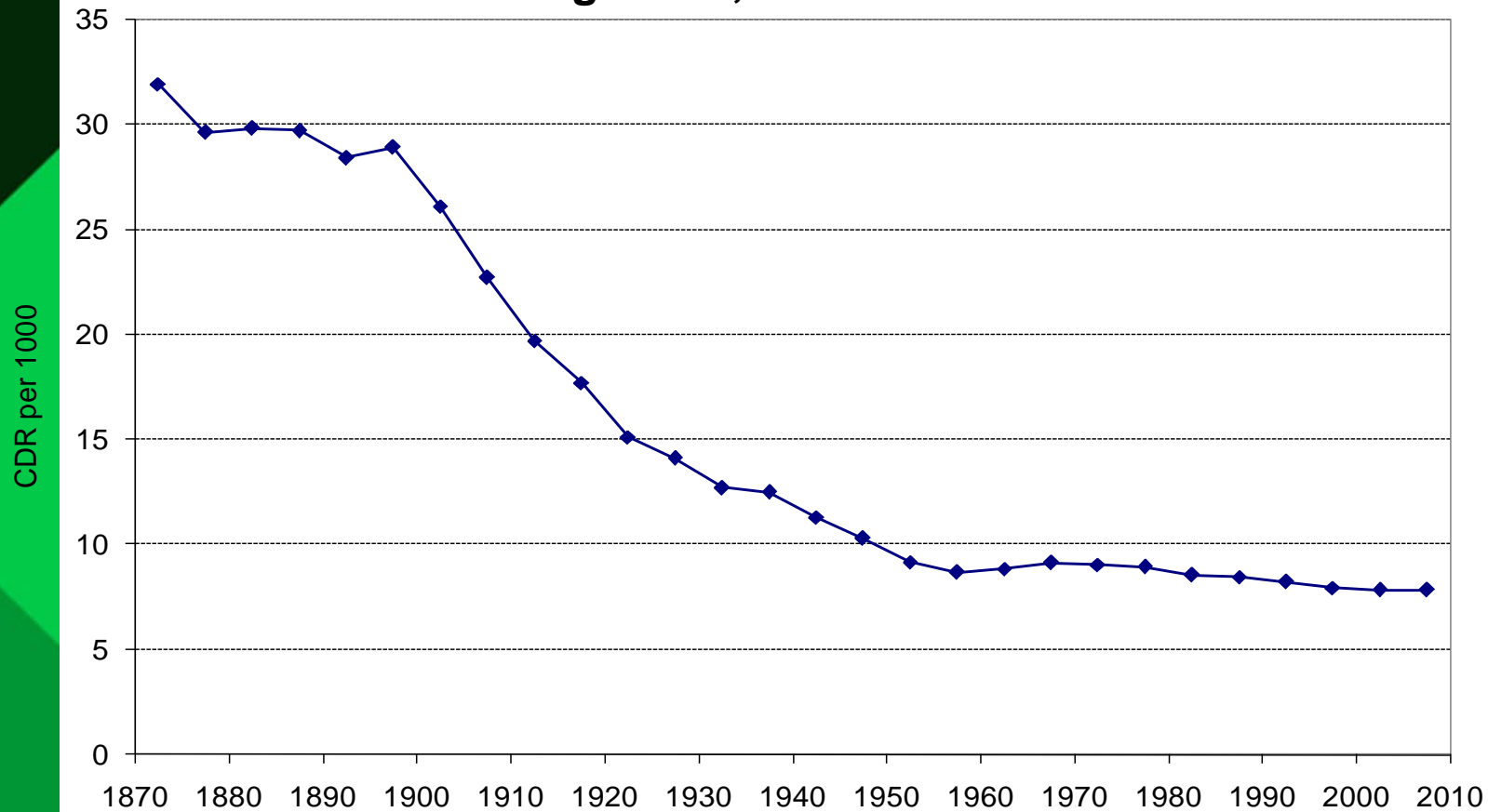
# Structure of the presentation

1. Mortality trends
2. Age and sex differentials
3. Causes of death
4. Regional differentials and socioeconomic determinants
5. Some international comparisons
6. Perspectives and final comments



# Mortality transition in Argentina

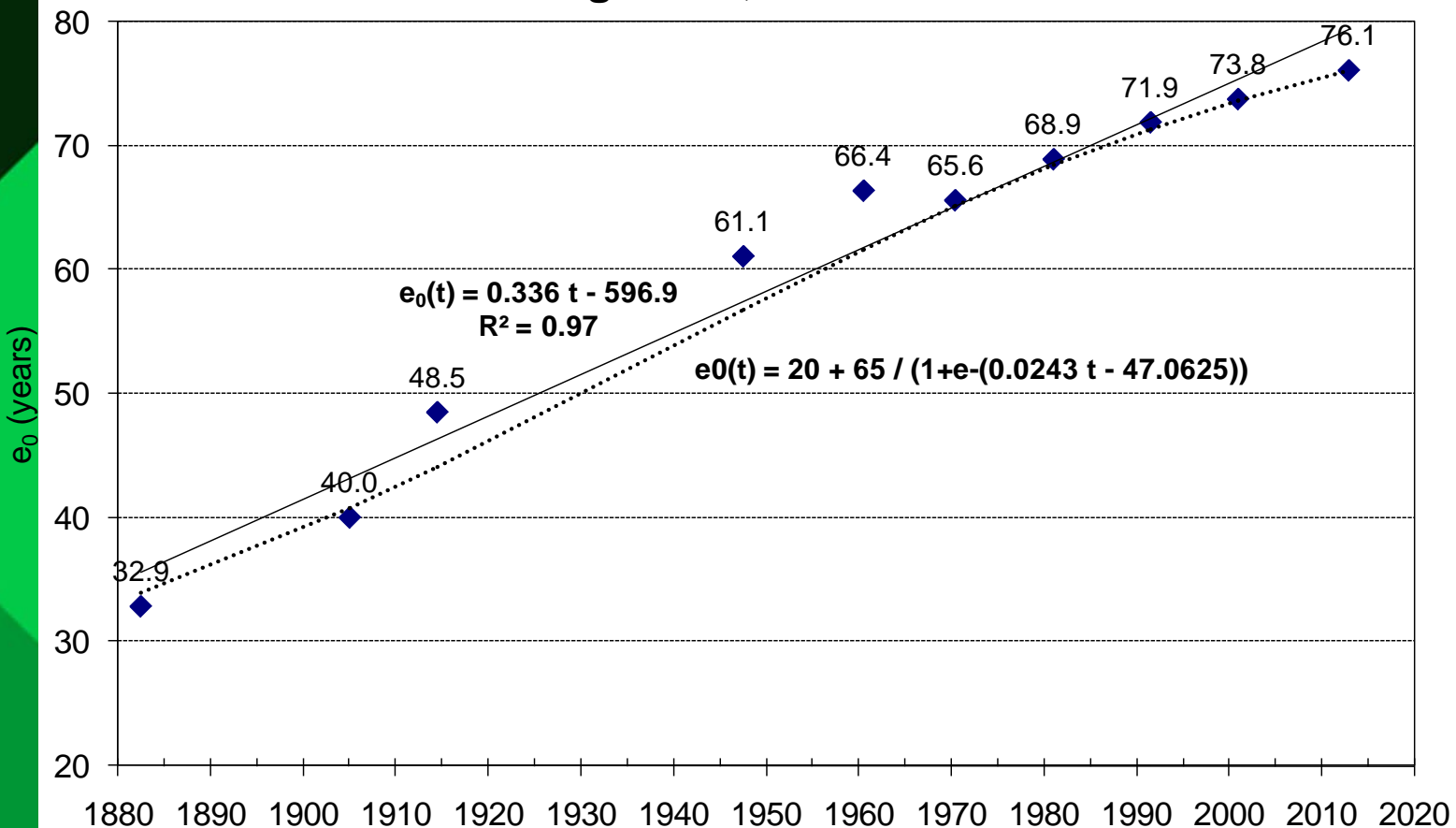
Crude death rates  
Argentina, 1870-2010





# Long term trends in $e_0$

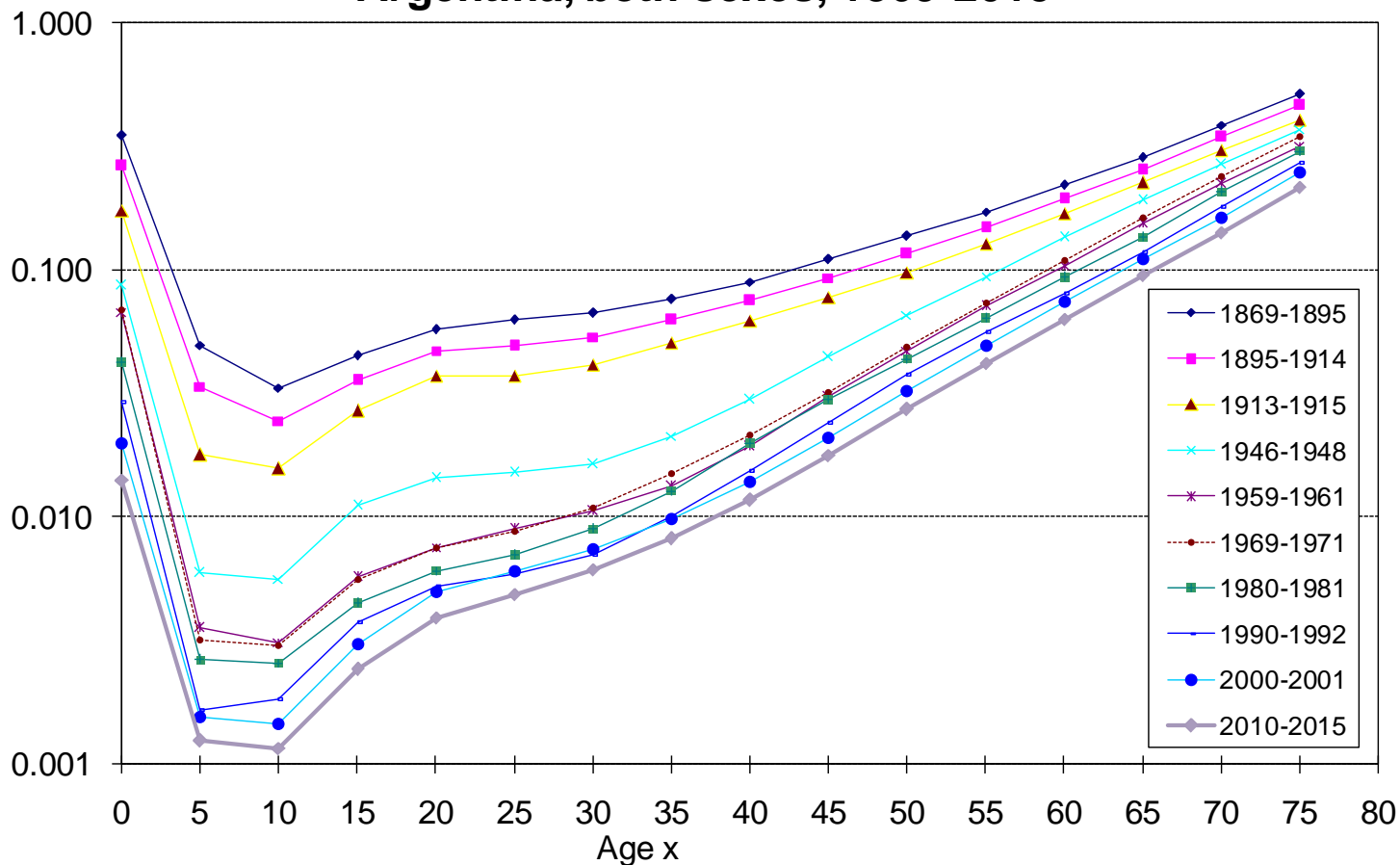
Life expectancy at birth (both sexes)  
Argentina, 1869-2015





# Mortality by age: Trends in Argentina

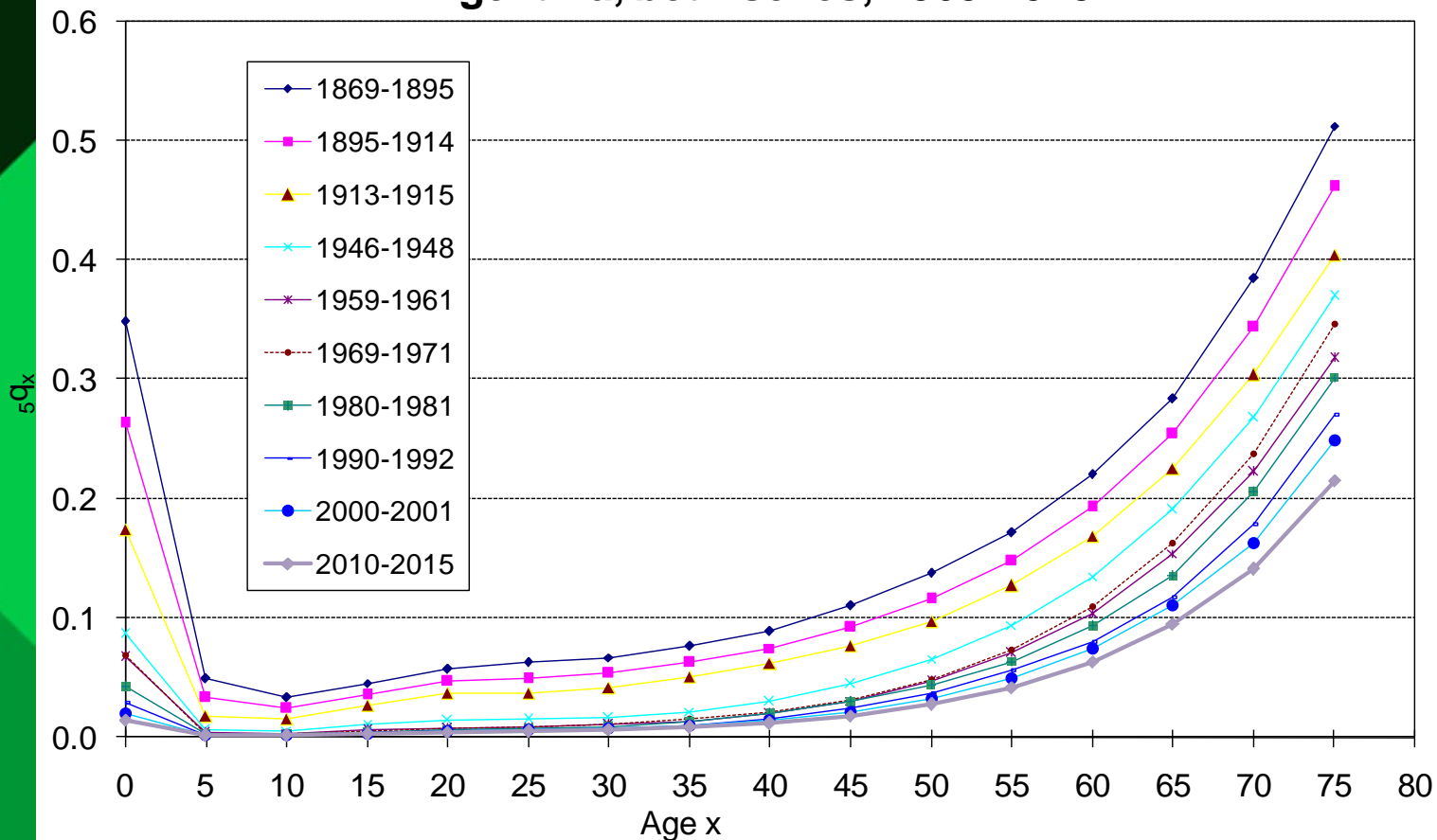
Probability of dying within 5 years from exact age  $x$   
Argentina, both sexes, 1869-2015





# Evolution from "U" to "J"

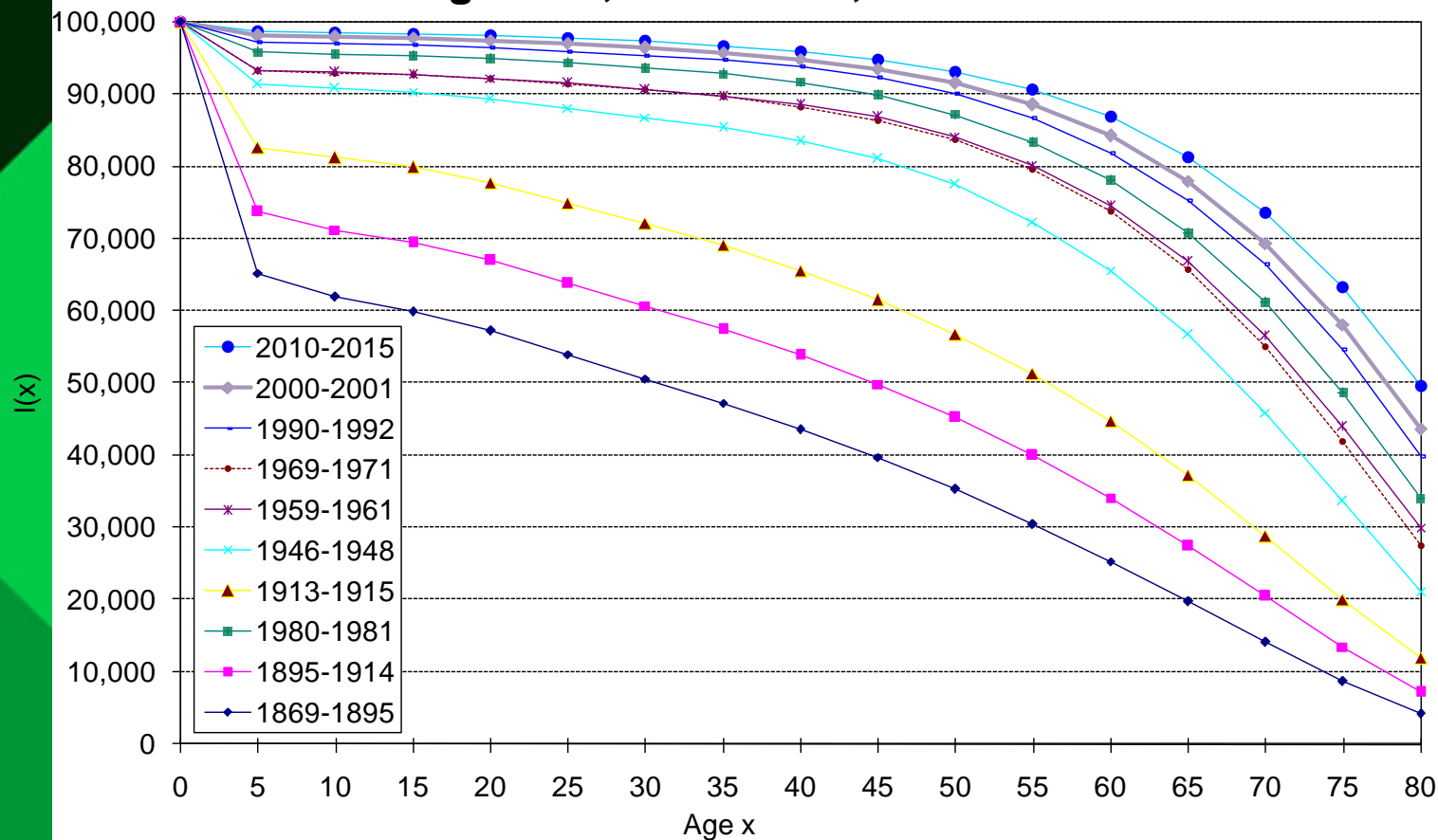
Probability of dying within 5 years from exact age  $x$   
Argentina, both sexes, 1869-2015





# Rectangularization of the survivorship curve

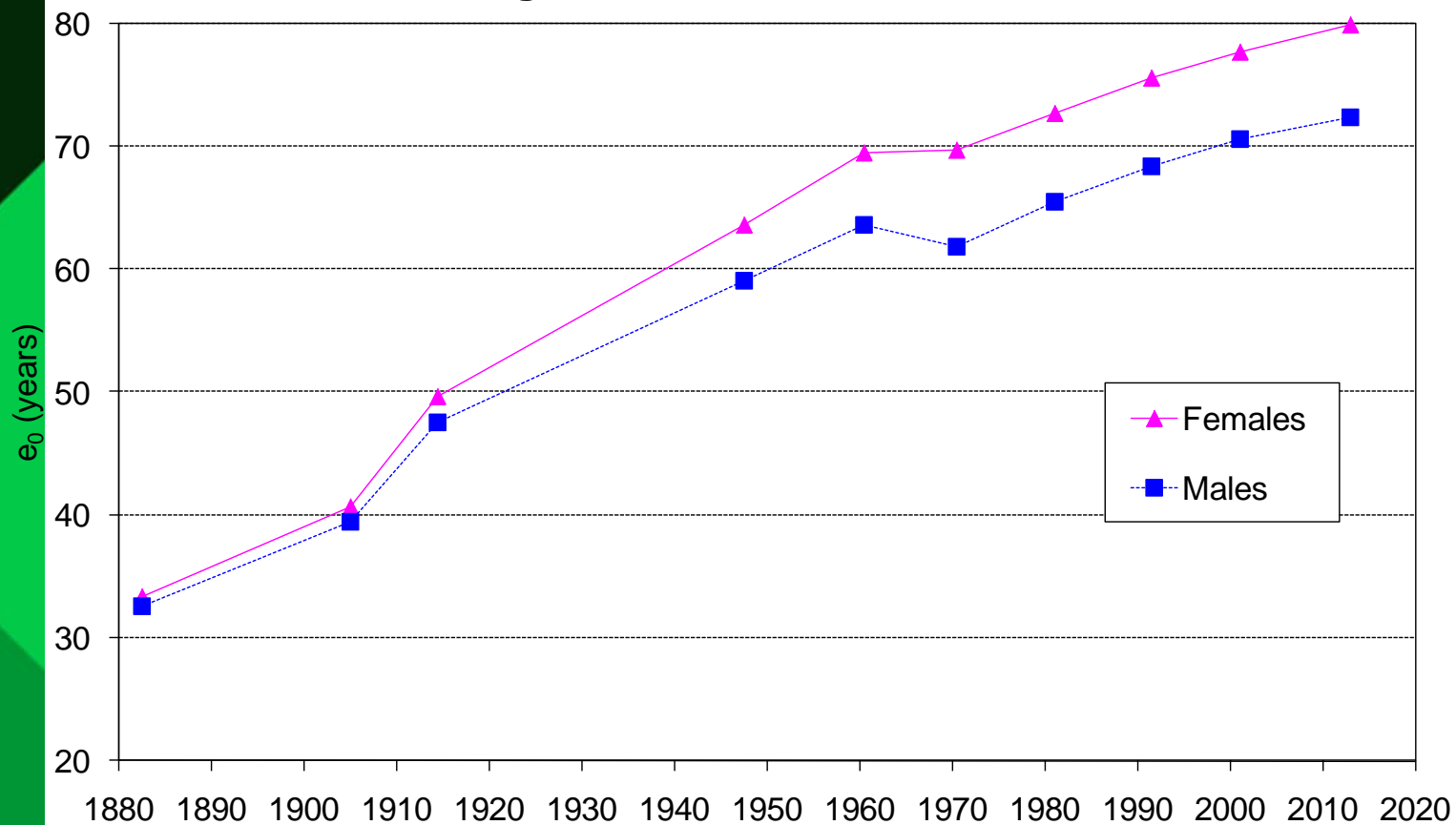
Survivors at exact age  $x$  [ $l(x)$ ]  
Argentina, both sexes, 1869-2015





# Mortality differentials by sex

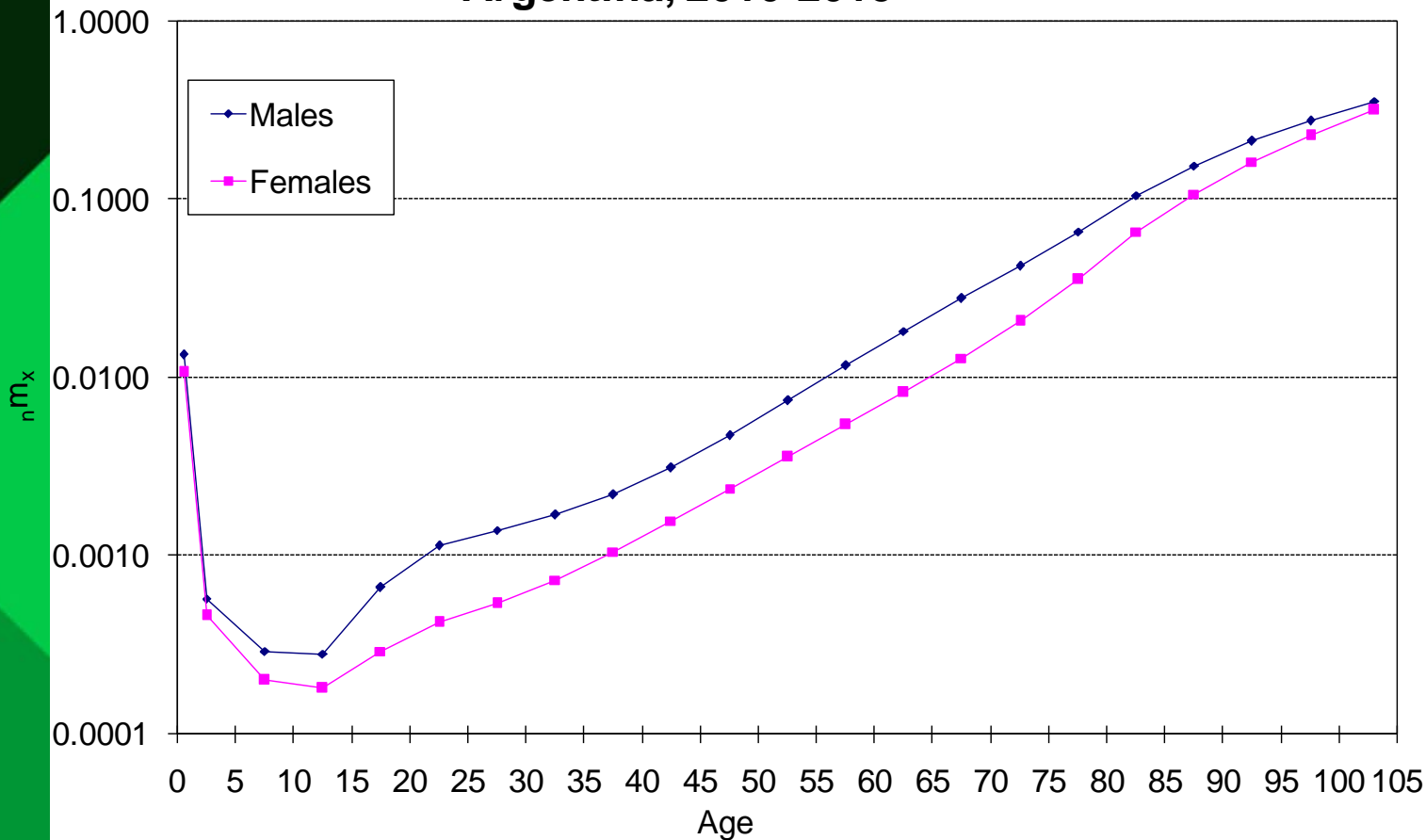
Life expectancy at birth by sex  
Argentina, 1869-2015





# Differentials by age and sex

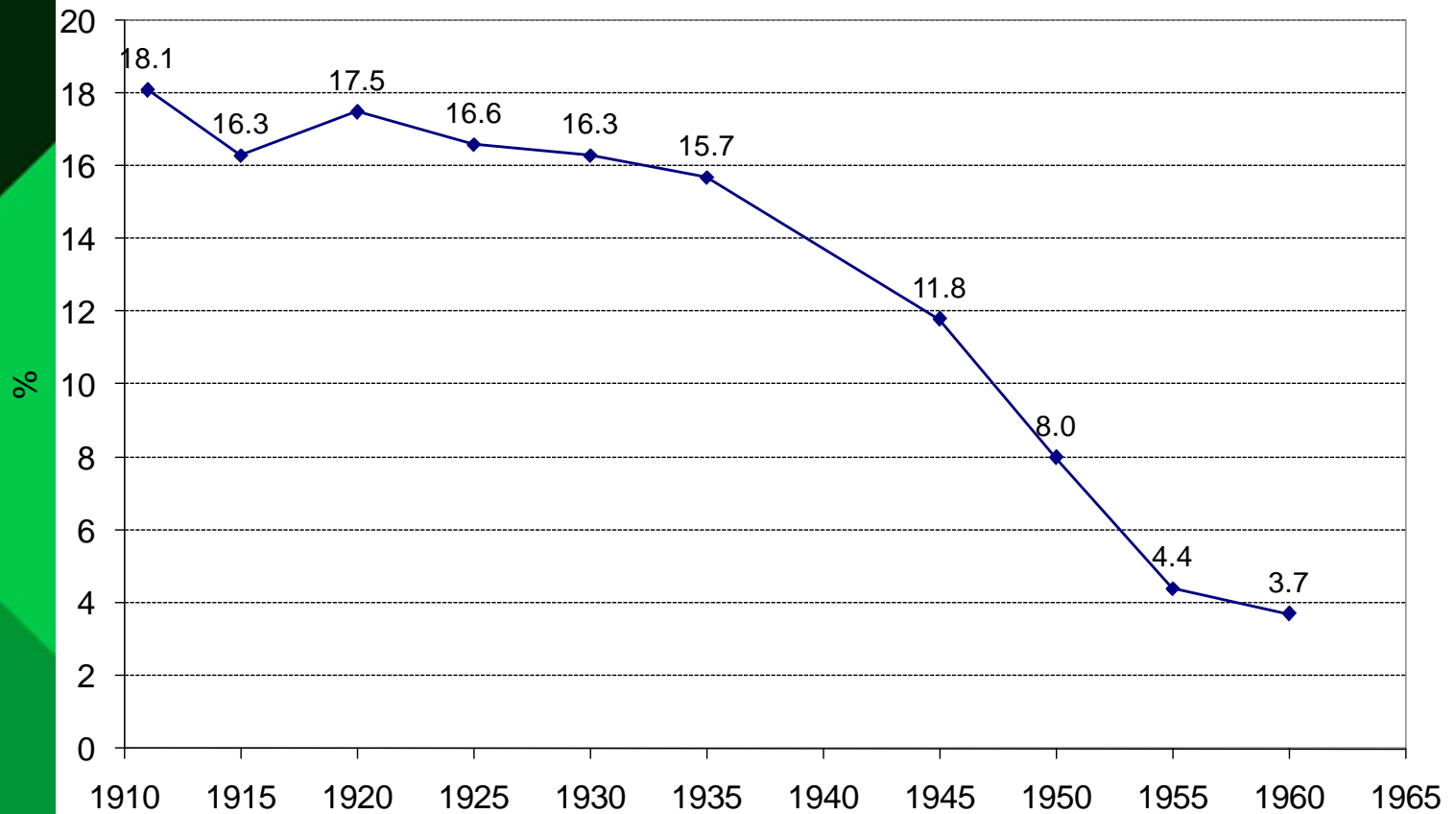
**Mortality rates by age and sex  
Argentina, 2010-2015**





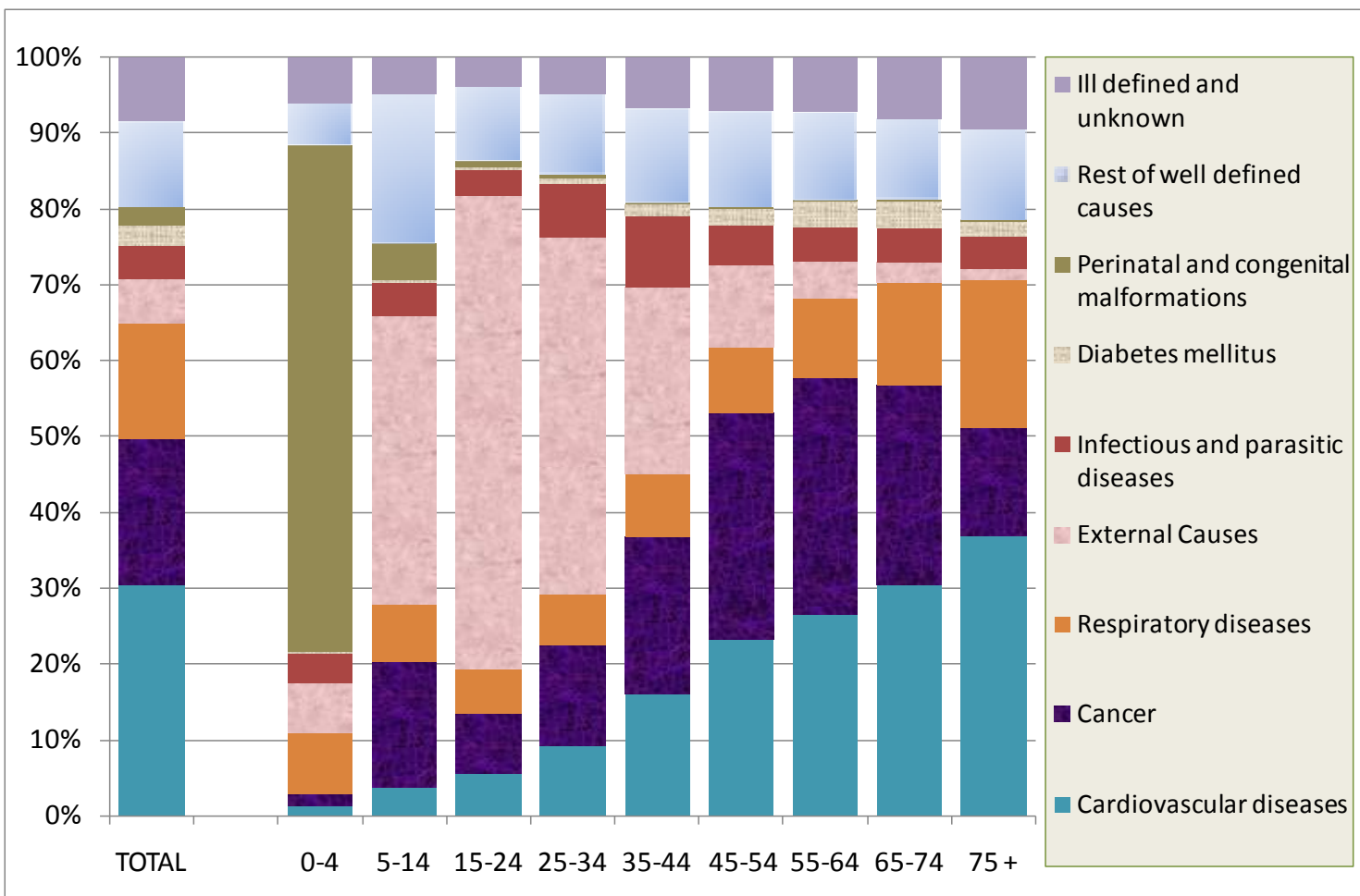
# (Not much) knowledge on trends and causes of death in Argentina

Proportion of deaths due to infectious and parasitic diseases. Argentina, 1911-1960





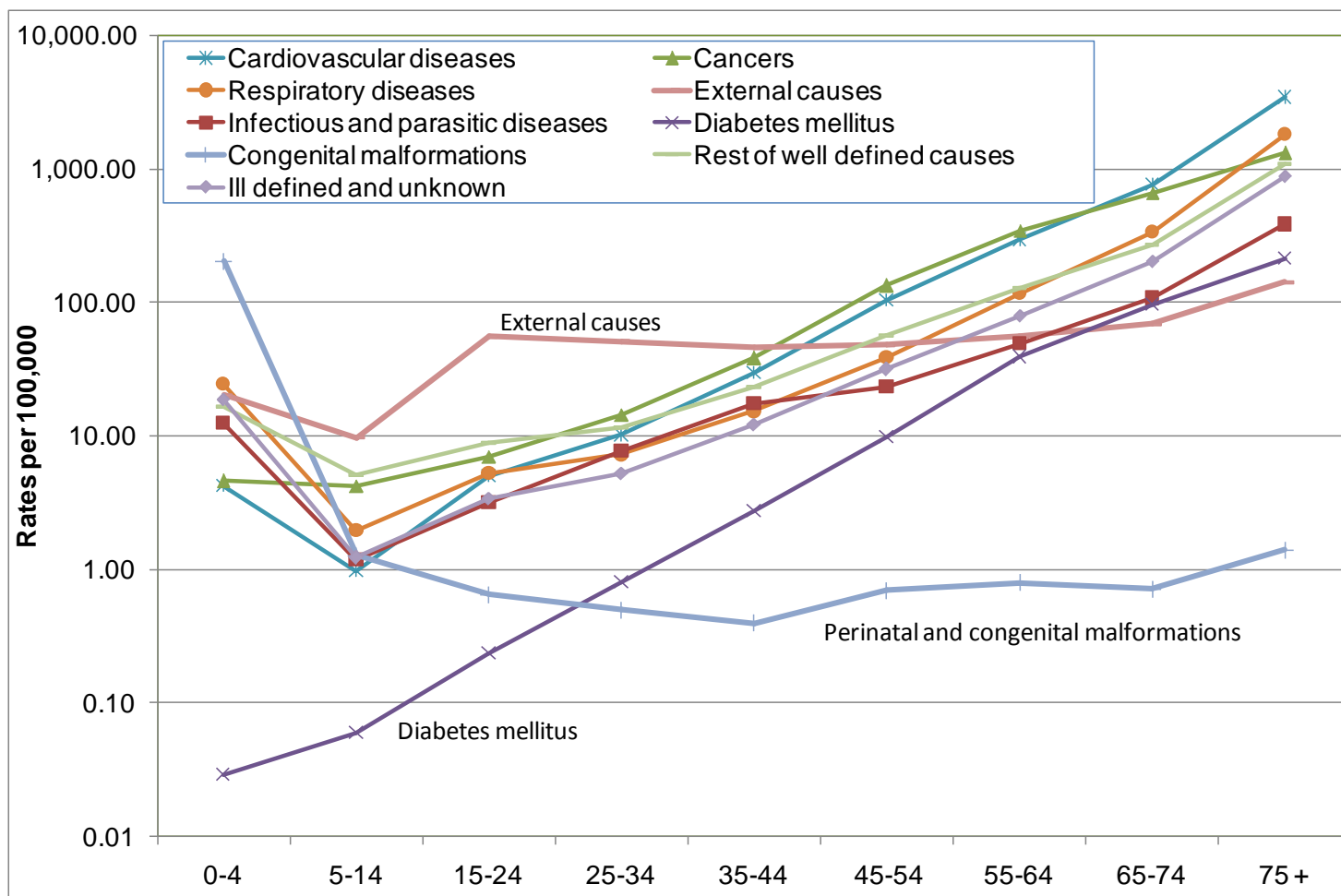
# Distribution of death by causes and age groups Argentina 2010



Note that total distribution is (highly) affected by population's age (and sex) structure.



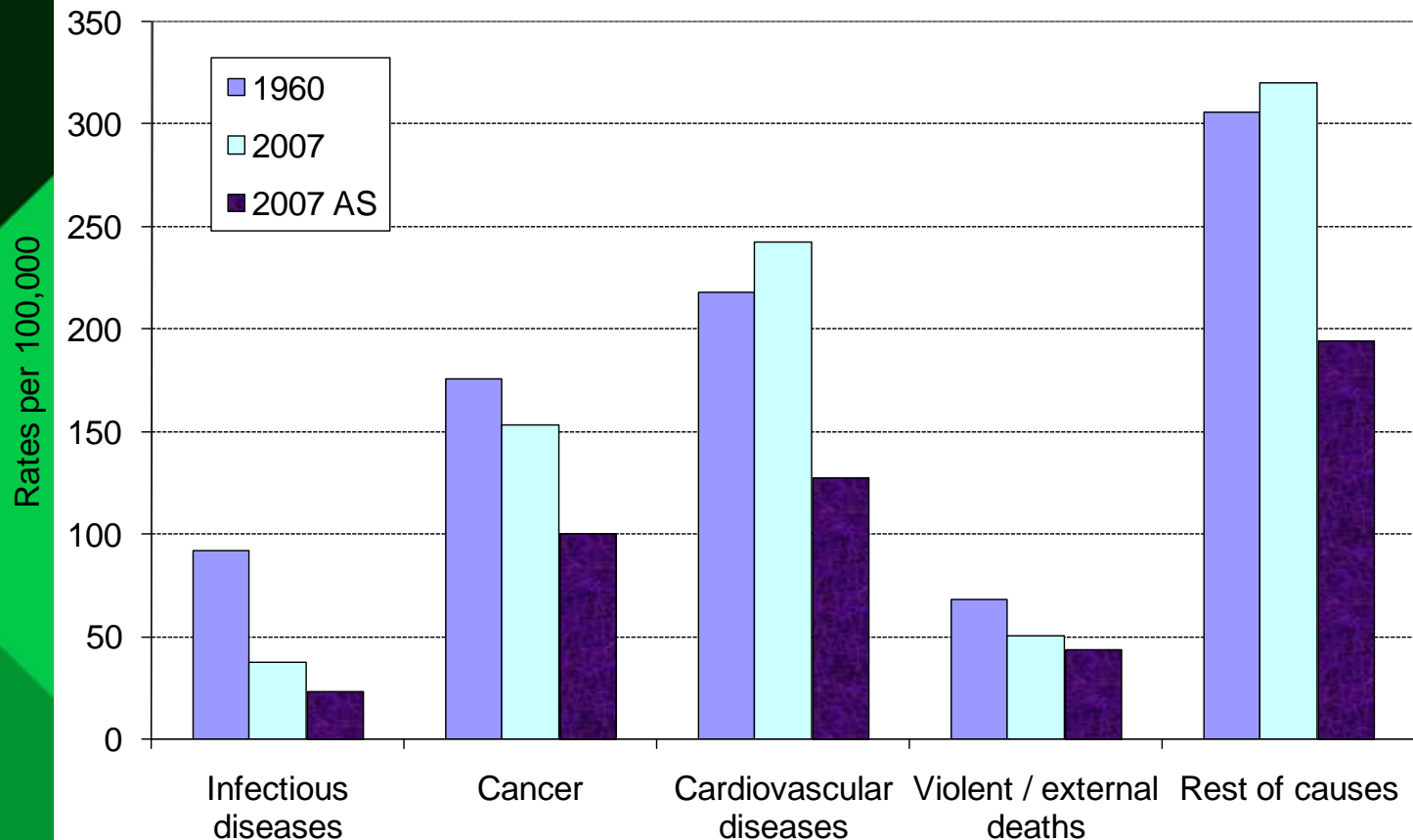
# Mortality rates by causes and age groups. Argentina, 2010





# Mortality by cause and the need for age standardization

Crude death rates by groups of causes  
Argentina, years 1960 and 2007



Note that CDR is (highly) affected by population's age and sex structure. Apparently, mortality stagnates but aging should be taken into account!



# Age standardized mortality by cause Argentina, 1960-2007

Group of causes	ASMR per 100,000		Relative variation	Distribution (%)	
	1960	2007		1960	2007
Infectious diseases	92	24	-74,2%	10,7	4,6
Cancer	176	100	-43,0%	20,5	19,1
Cardiovascular diseases	218	128	-41,4%	25,4	30,2
Violent / external deaths	68	44	-35,5%	7,9	6,2
Rest of causes	306	194	-36,5%	35,5	39,9
Total	<b>860</b>	<b>490</b>	<b>-43,0%</b>	<b>100,0</b>	<b>100,0</b>

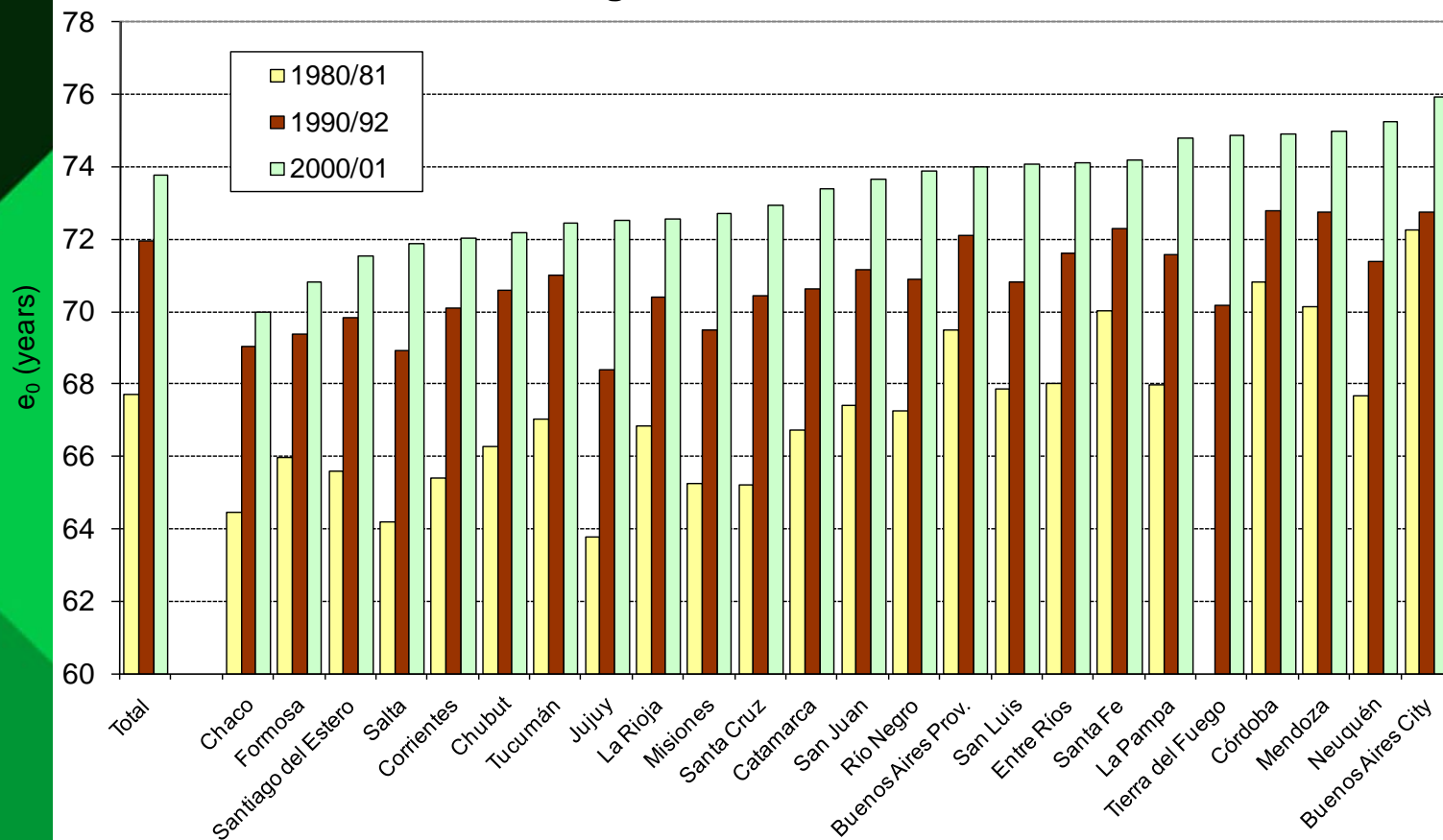
Note: rates for 2007 were standardized based on 1960 age structure (INDEC, 2005a).

**Cardiovascular diseases is the most significant cause (explains 25% of the reduction in the period), as in EU, Japan or USA (Ridsdale and Gallop, 2010)**



# Regional differentials in $e_0$

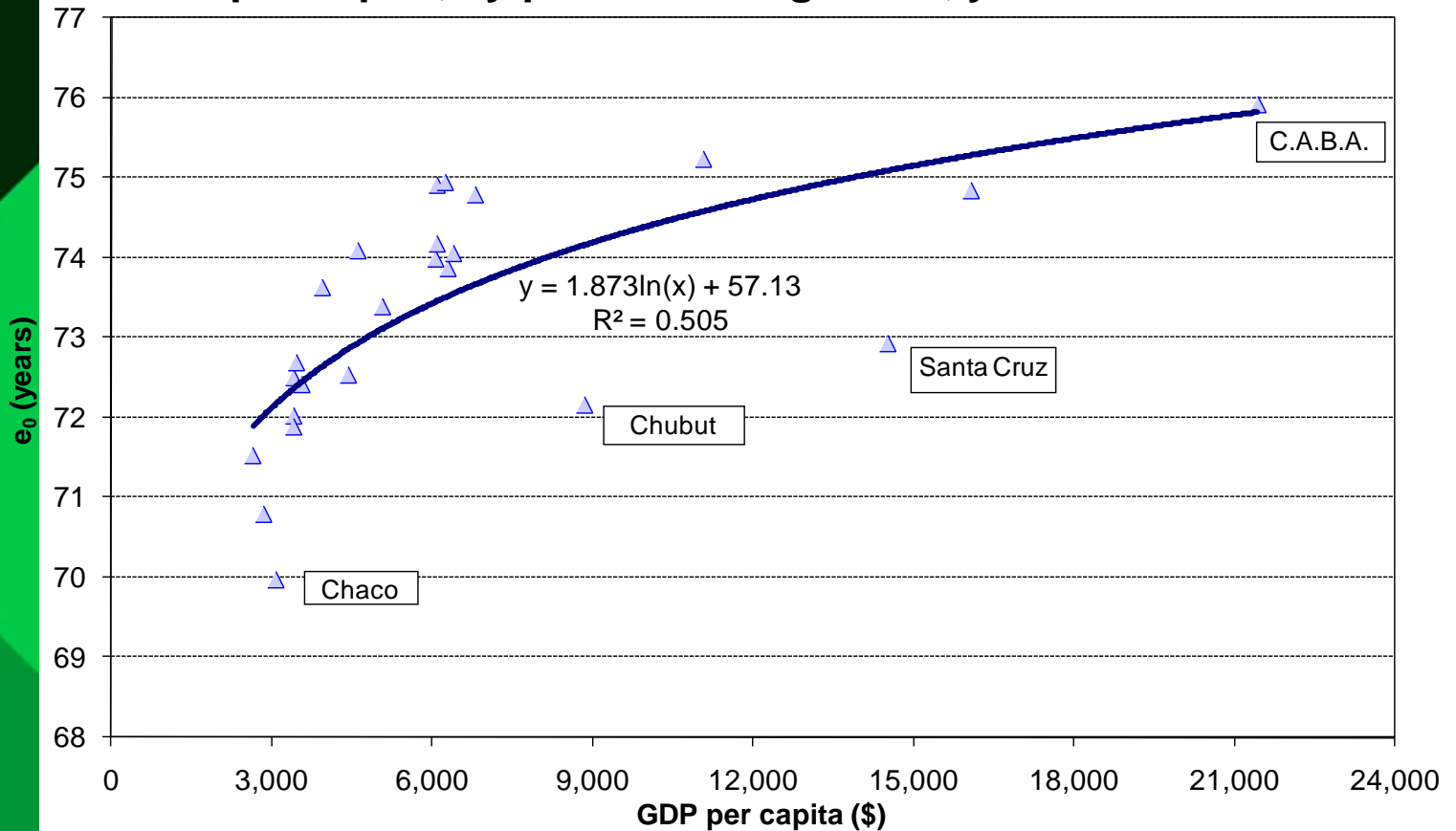
Life expectancy at birth (both sexes) by province and period  
Argentina 1980-2001





# Socioeconomic influences on mortality levels

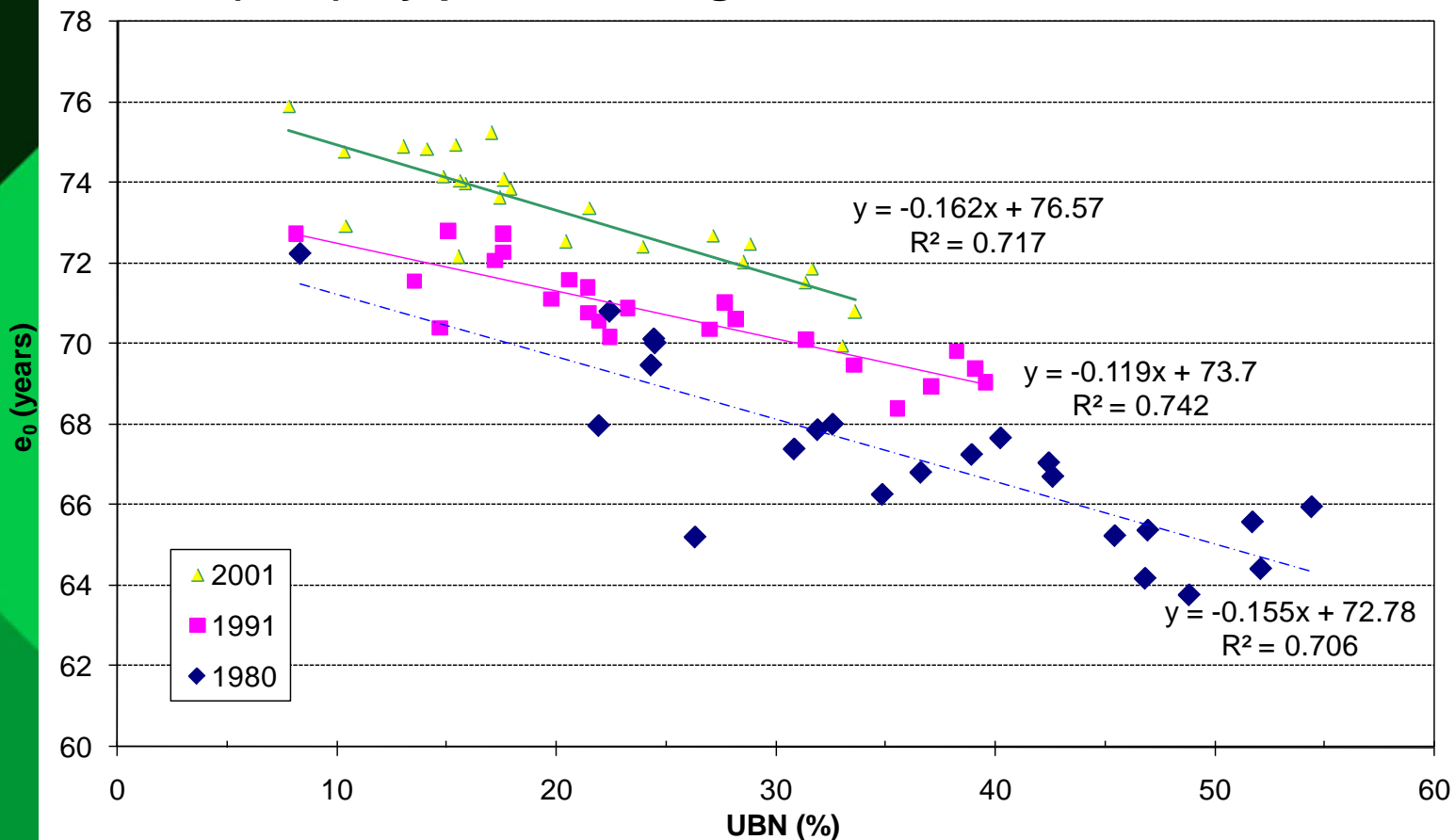
Life expectancy at birth and Gross Domestic Product per capita, by province. Argentina, year 2001





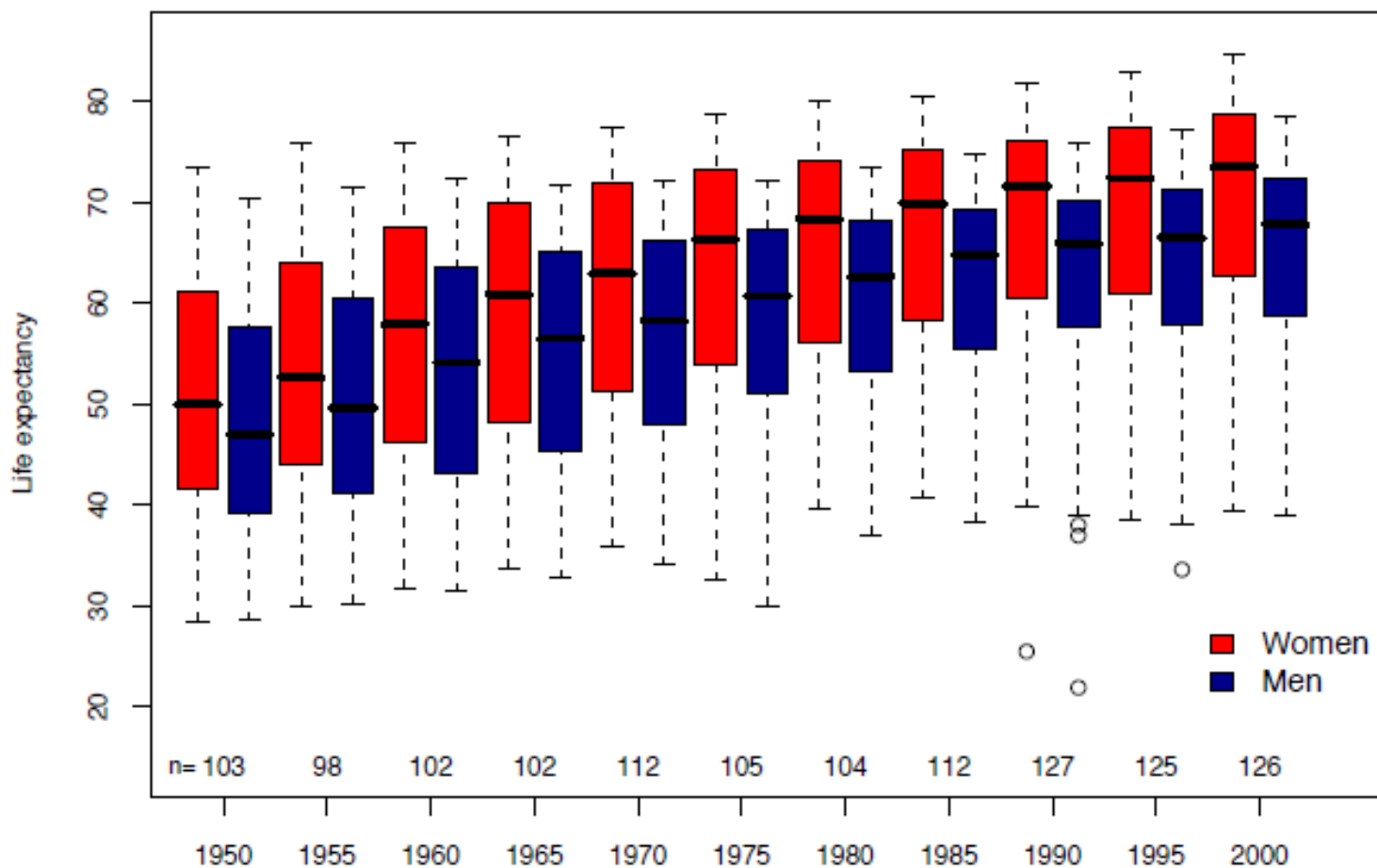
# Trends of aggregate differentials

## Life expectancy at birth and structural poverty (UBN), by province. Argentina, 1980-2001





# The international experience: Significant differences in $e_0$ , 1950-2000





# The relationship between national income levels and $e_0$

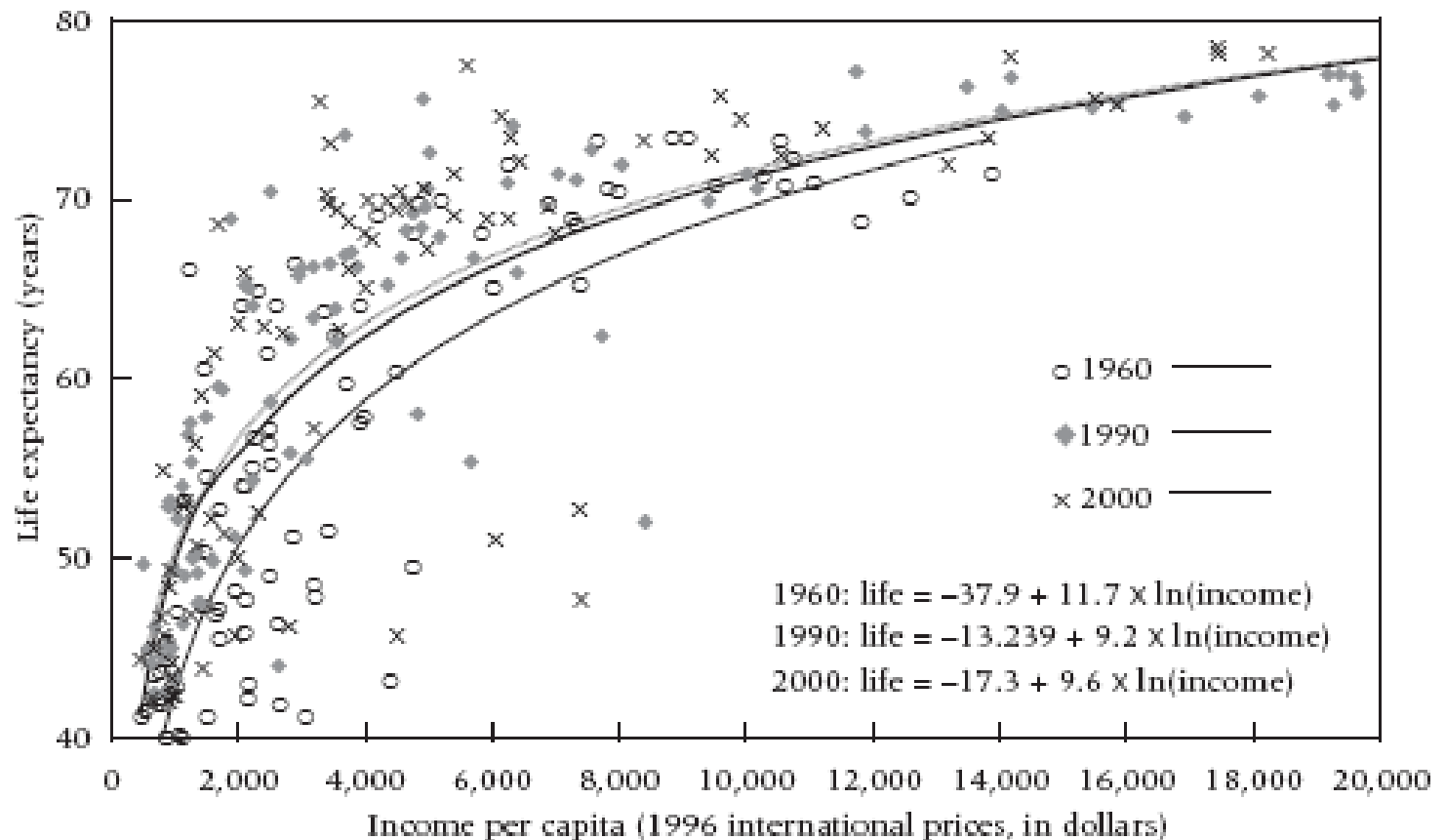
- ❖ Strong and positive in the poorest countries, but not linear: levels in richer countries are less sensitive to changes in income
- ❖ Changing over time:  $e_0$  has increased at all levels of income
- ❖ Controversy about the underlying mechanisms (living standards, public health initiatives, medical practices, personal care), their relative importance and policy implications



# Differentials in $e_0$ by GDP

## "The Preston's curve"

**FIGURE 1** The changing relationship between income and life expectancy: 1960, 1990, and 2000





# Reasons for reaching lower mortality with similar economic levels

- ❖ "Wealth" effect: improvements in quality of life due to accumulated assets
- ❖ Qualitative factor: as time passes by, the same "real" income can "buy" better health
- ❖ "Psycho-social" liberalization: more permissive attitudes, development of welfare states, growth of democracy and equality before the law
- ❖ Biological adaptation: elimination of the most vulnerable sectors of the population



# Life insurance practice: Comparison of life expectancies at different ages by sex

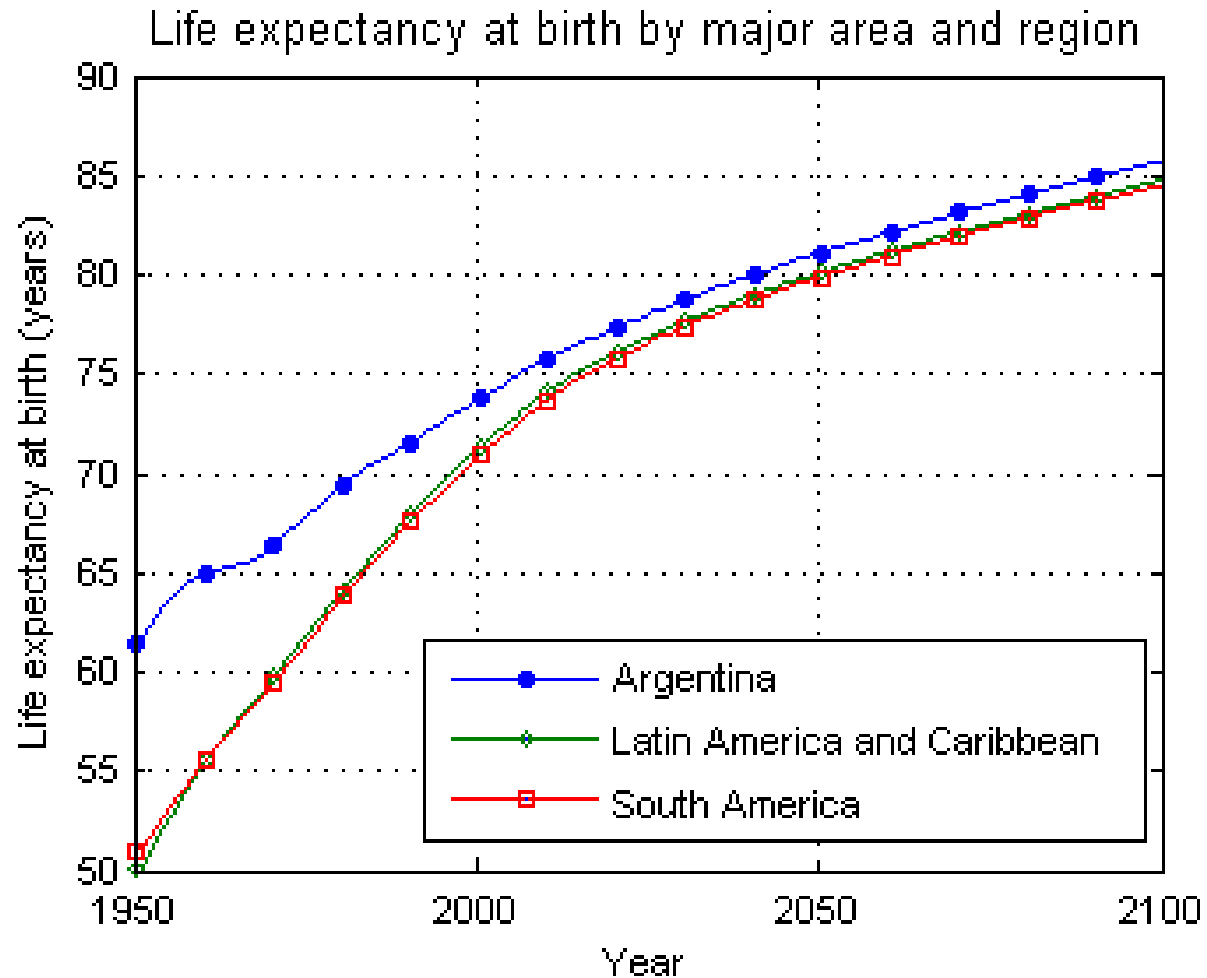
Life Tables: GAM-71, Argentina 1990/92, 2000/01 and 2010/15

Life Table	Life expectancy (years)				
	Males		Females		
	e(15)	e(65)	e(15)	e(60)	e(65)
<b>GAM 1971</b>	<b>60.1</b>	<b>15.1</b>	<b>66.5</b>	<b>23.5</b>	<b>19.2</b>
1990-1992	55.9	13.5	62.8	21.3	17.3
2000-2001	56.8	14.0	64.1	22.4	18.4
2010-2015	58.8	15.2	66.1	23.8	19.7

Note: GAM-71 was the static life table applied (regulated) for estimating costs, selling, and reserving annuities by the individual capitalization regime (1994-2008).



# Trends and perspectives: Will $e_0$ increase forever or there is a biological limit?





# Potential factors for the future development of mortality

## ❖ Positive:

- reduction in levels of deprivation and housing improvements
- public support to improve health, income and expenditure on medical advances
- decline in the prevalence of smoking population

## ❖ Negative

- obesity
- the emergence of new diseases (HIV, SARS)
- resurgence of old diseases (f.i., tuberculosis)

## ❖ Unclear

- modern lifestyles



# Final comments

- After reviewing the diversity of approaches, assumptions and different findings, it is really complex to speculate about longevity prospects in Argentina
- More detailed knowledge of the past pathways is a key element, to which this paper tries to contribute
- Challenges are open... but more and better research should be our commitment!



# Thank you!



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