Hospital expenditure as function of the distance from birth and death

Cislaghi C., Tediosi F., Bartolacci S., Berni R., Forni S.

Regional Health Agency of Tuscany, Italy

CES Paris 2002

Objectives of the study

1. Estimating hospital expenditure:

❑ **by "distance from birth" i.e. age**

❑ **by "distance from death" i.e. the cost of the last months of life**

To distinguish between "age costs" and "death costs"

2. Simulating changes in per capita hospital expenditure in Tuscany at year 2004 according to different demographic and calculation scenarios
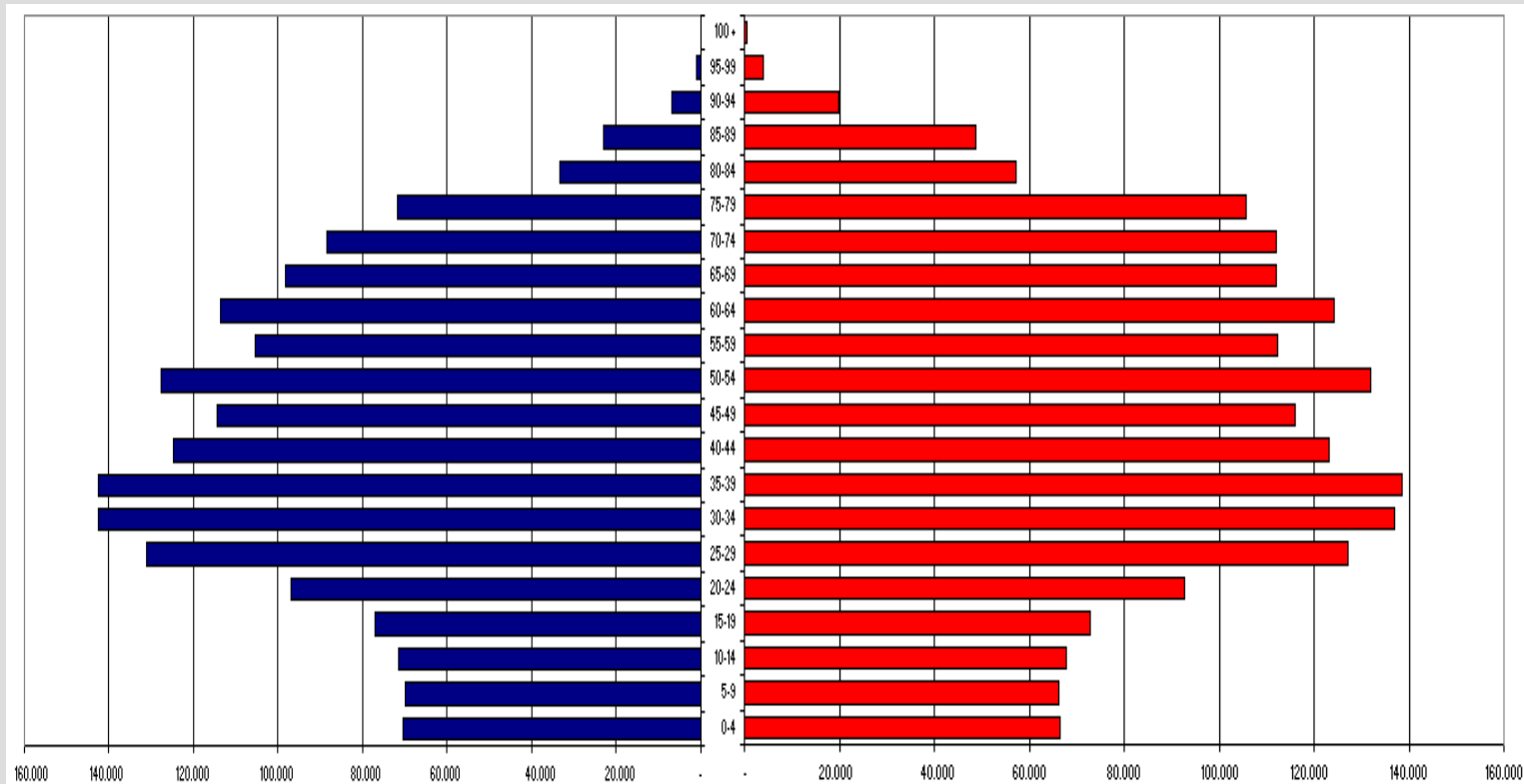
Setting

Health Service of Tuscany Region

❑ **Population: 3.5 millions**

❑ **Old age index 1999: 1.89**

❑ **Old Age index estimated 2010: 2.03**

❑ **Total health care budget in 1999: 3,992 millions €**

❑ **Crude hospitalisation rate: 195 per 1,000**

❑ **Hospital care accounts for almost 43% of total public health care budget**
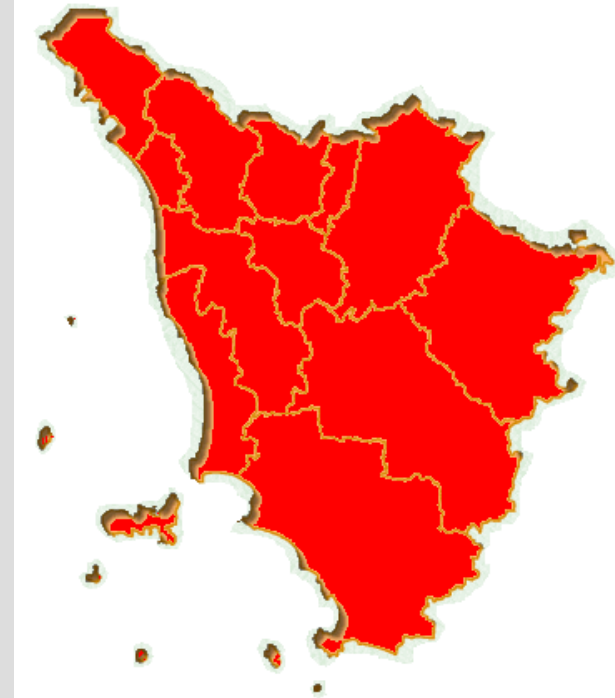
Population structure of Tuscany (year 2000)

Men

Women

CES Paris 2002

Data

❑ **Administrative database of Hospital Discharge Abstracts of residents in Tuscany admitted either in Tuscany or in other Italian Regions and reimbursed by the Regional Health Service in 1997 and 1998**

❑ **Death Abstracts database of causes of deaths in Tuscany in 1998 and 1999**

❑ **Demographic statistics of Italian Institute of Statistics (ISTAT)**

Methods (1)

the per capita "expenditure" (estimated using DRG tariffs) was calculated per:

❑ a group of **deceased** in 1998 and admitted or not in the last year of life

❑ and a group of survivors, those not admitted and still alive at 1st January 2000 or admitted in 1998 and still alive after one year from the admission date

Methods (2)

❑**Hospital Discharge Abstracts were liked – on the basis of fiscal number - to Death Abstracts to distinguish survivors and deceased after hospitalisation in the observation period**

❑**The record linkage of hospital and death abstract databases was 98.8% completed**

Methods (3)

❑**Deceased** were followed up for 12 months before death

❑**Survivors** were followed for the period 1.1.1998 – 1.1.1999

❑**For** each subject DRG tariffs of all hospital admissions were summed up

❑**Data** collected: age, gender, months to death, and cause of death

Methods (4)

A simulation on hospital expenditure in Tuscany at year 2004 was carried out

1. **Estimating the population structure at year 2004 under two hypothesis:**
    - A. with current age specific mortality and birth rates - **there are more elderly because there are proportionally less young**
    - B. assuming a 5 years survival increase (i.e. adopting age specific mortality rates of 5 years older) - **there are more elderly because of the increase in survival**

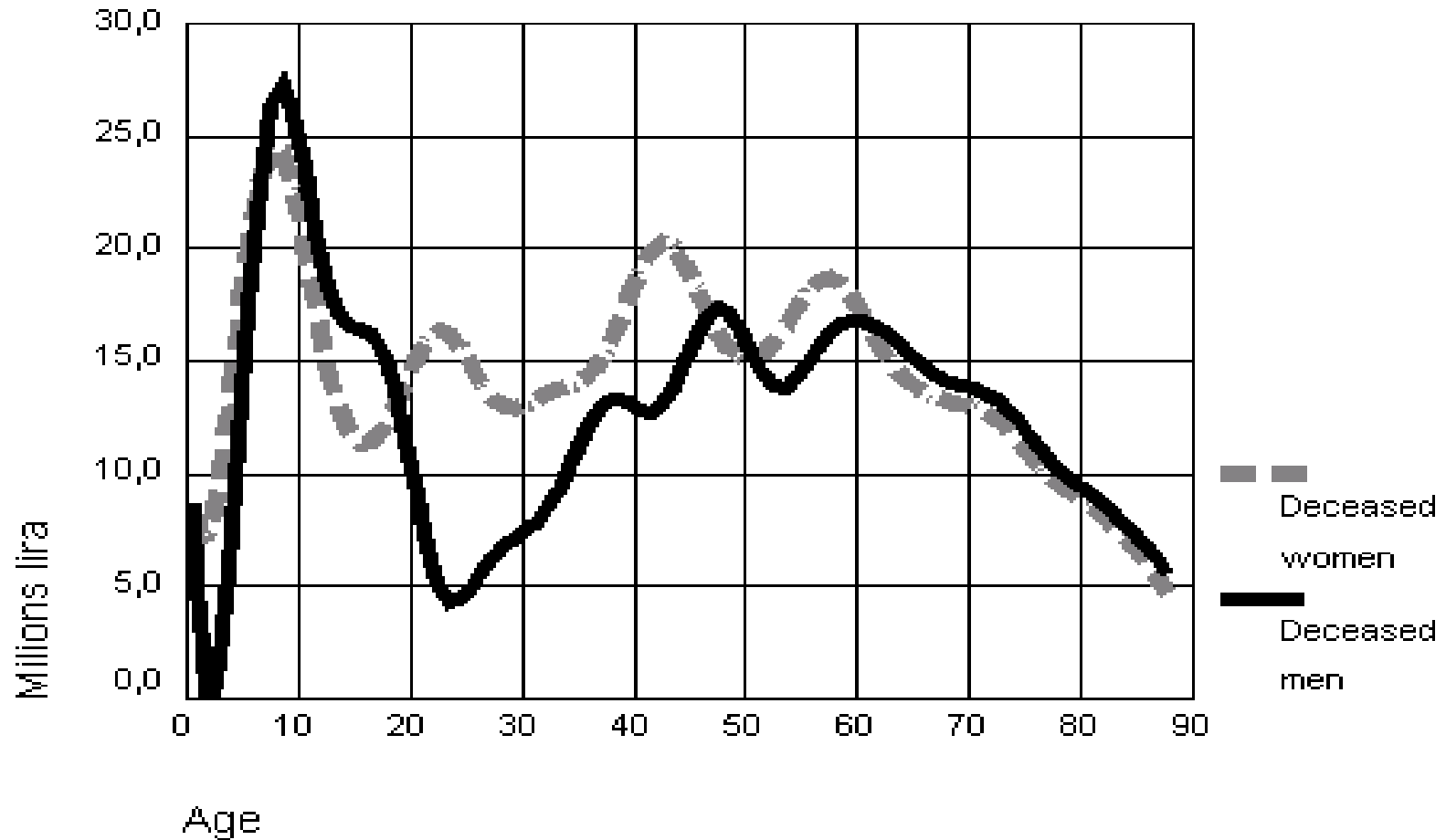2. **Distinguishing or not cost of survivors and deceased**

Results (1)

Economic value of yearly hospital admissions of survivors by age and gender
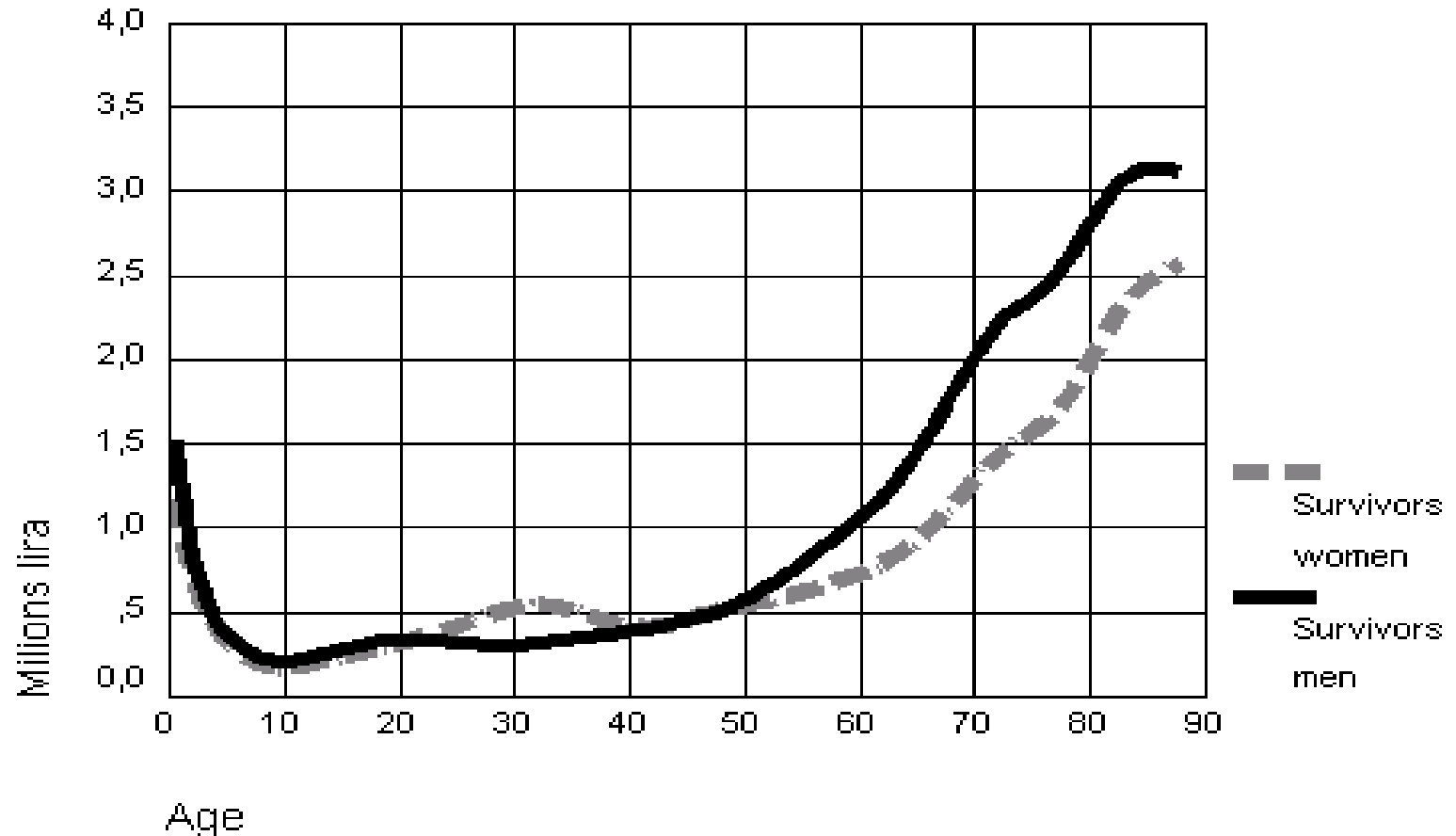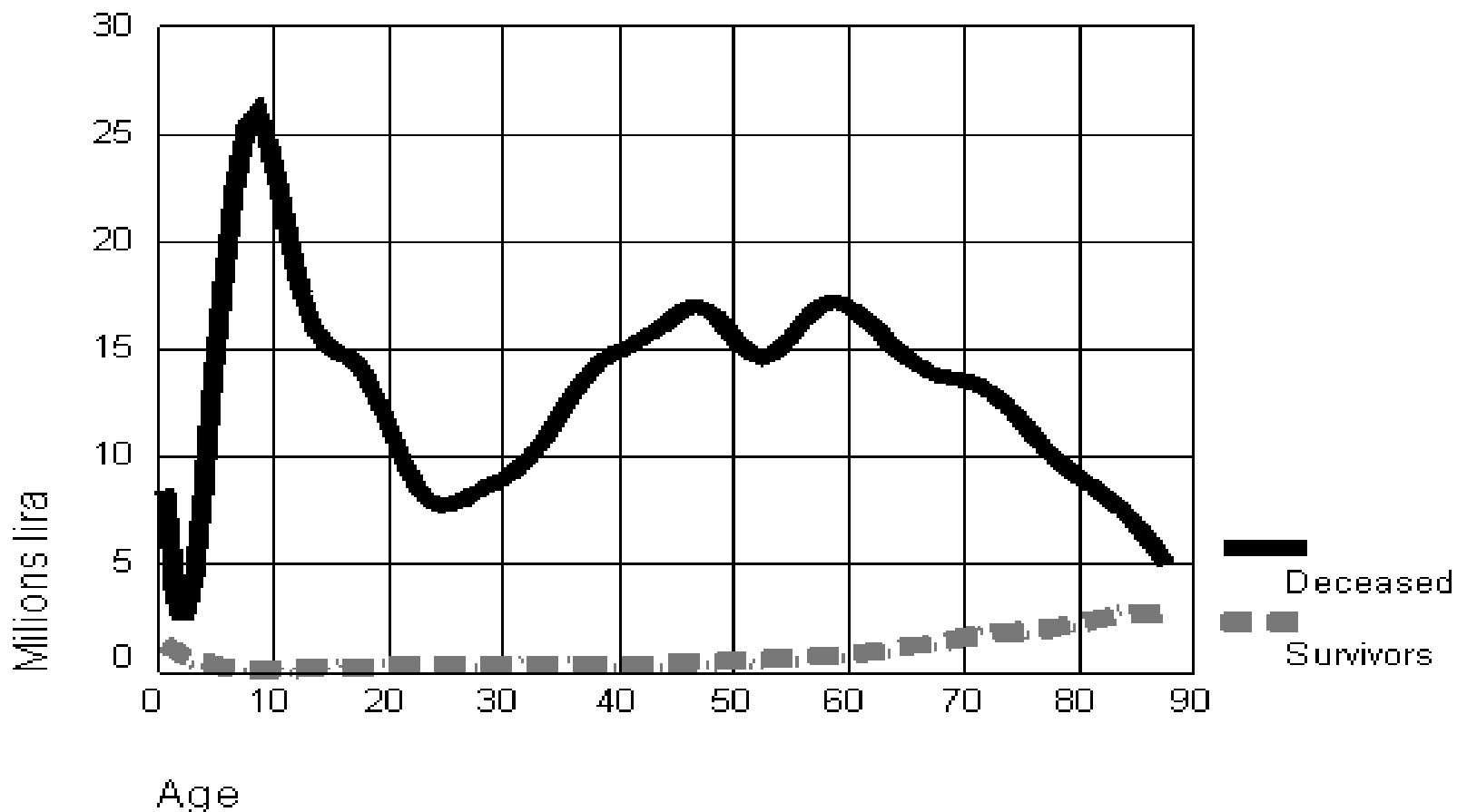
Results (2)

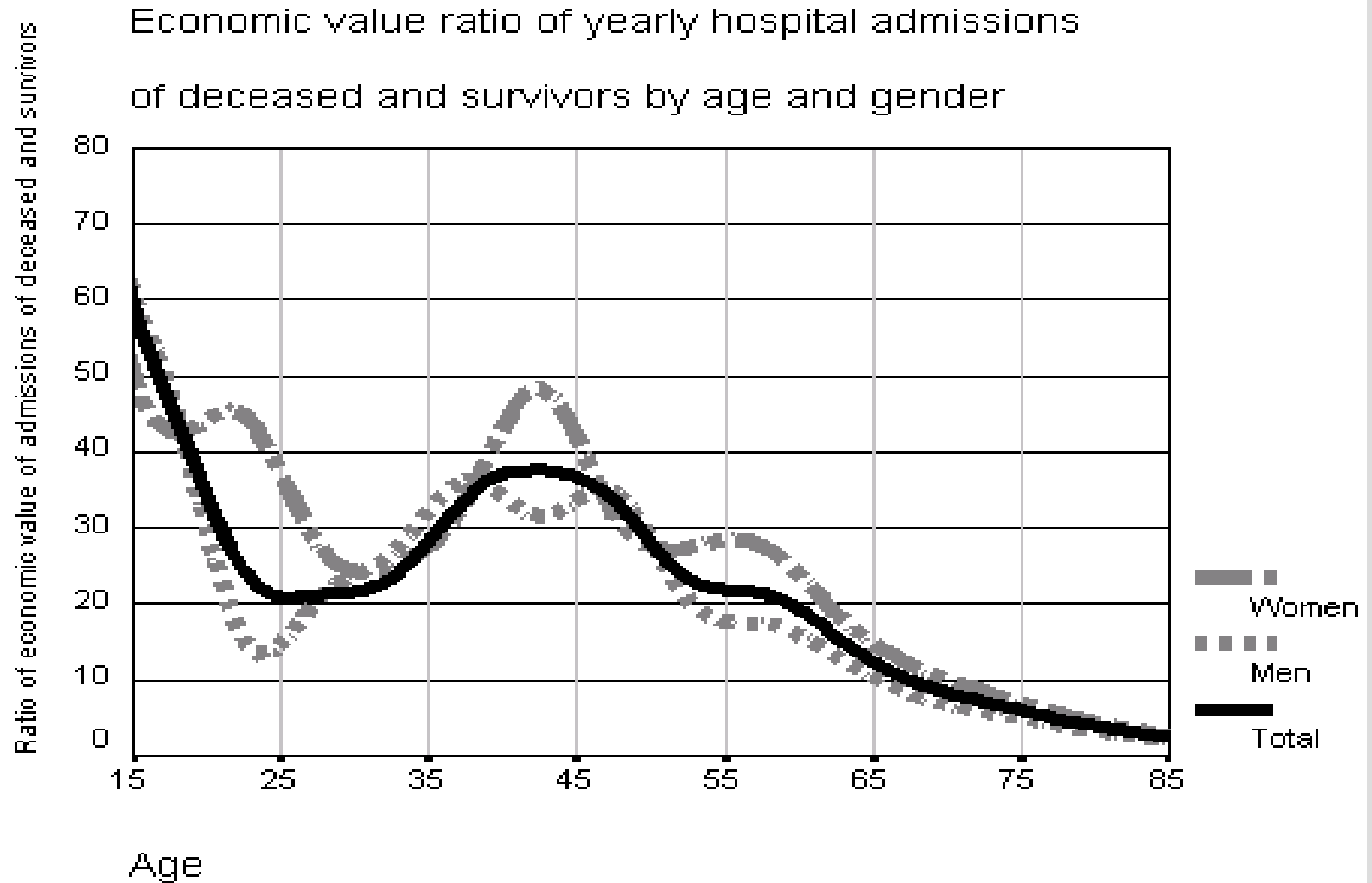Economic value of yearly hospital admissions of deceased by age and gender

Results (3)

Economic value of yearly hospital admissions of deceased and survivors by age
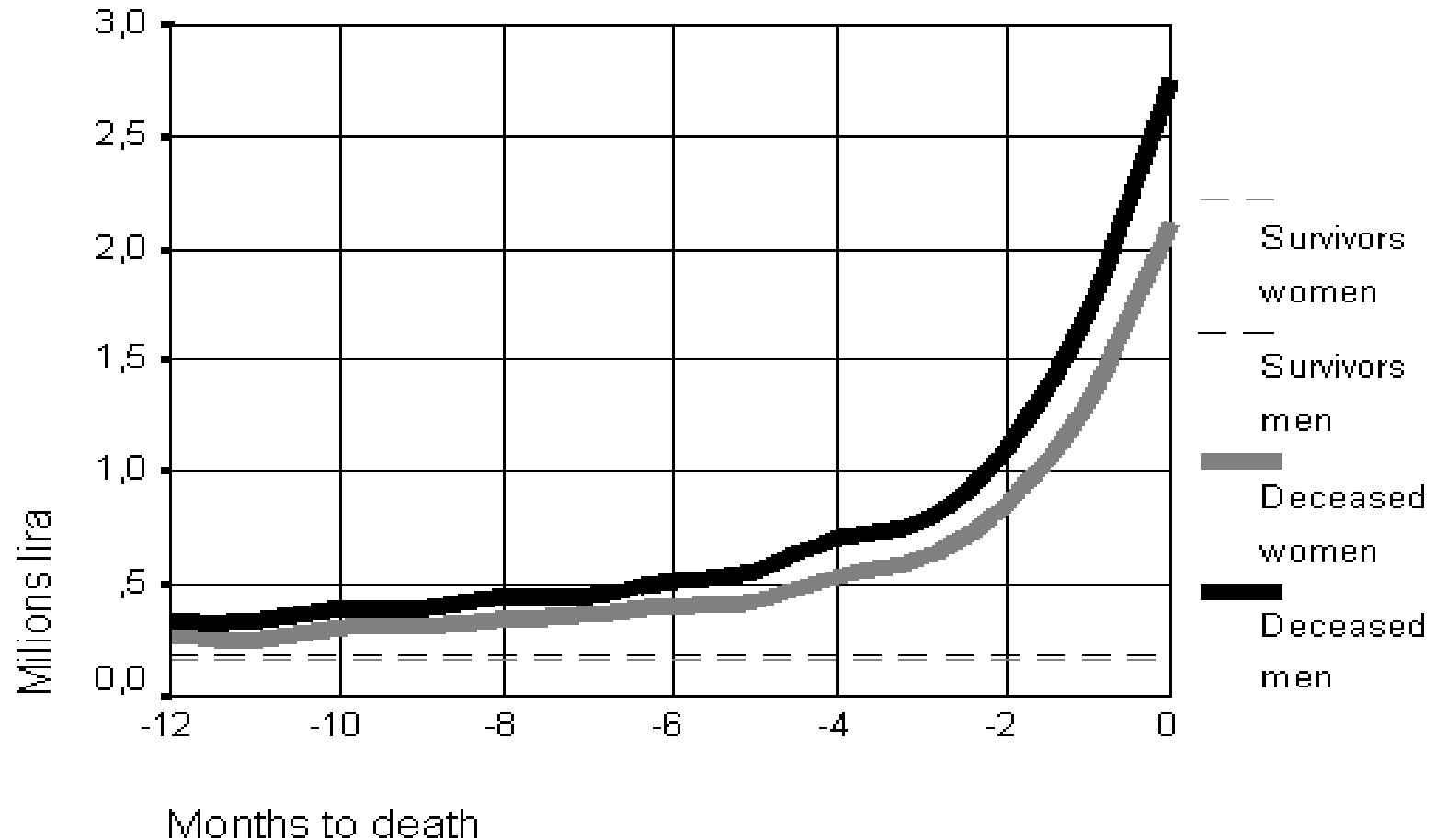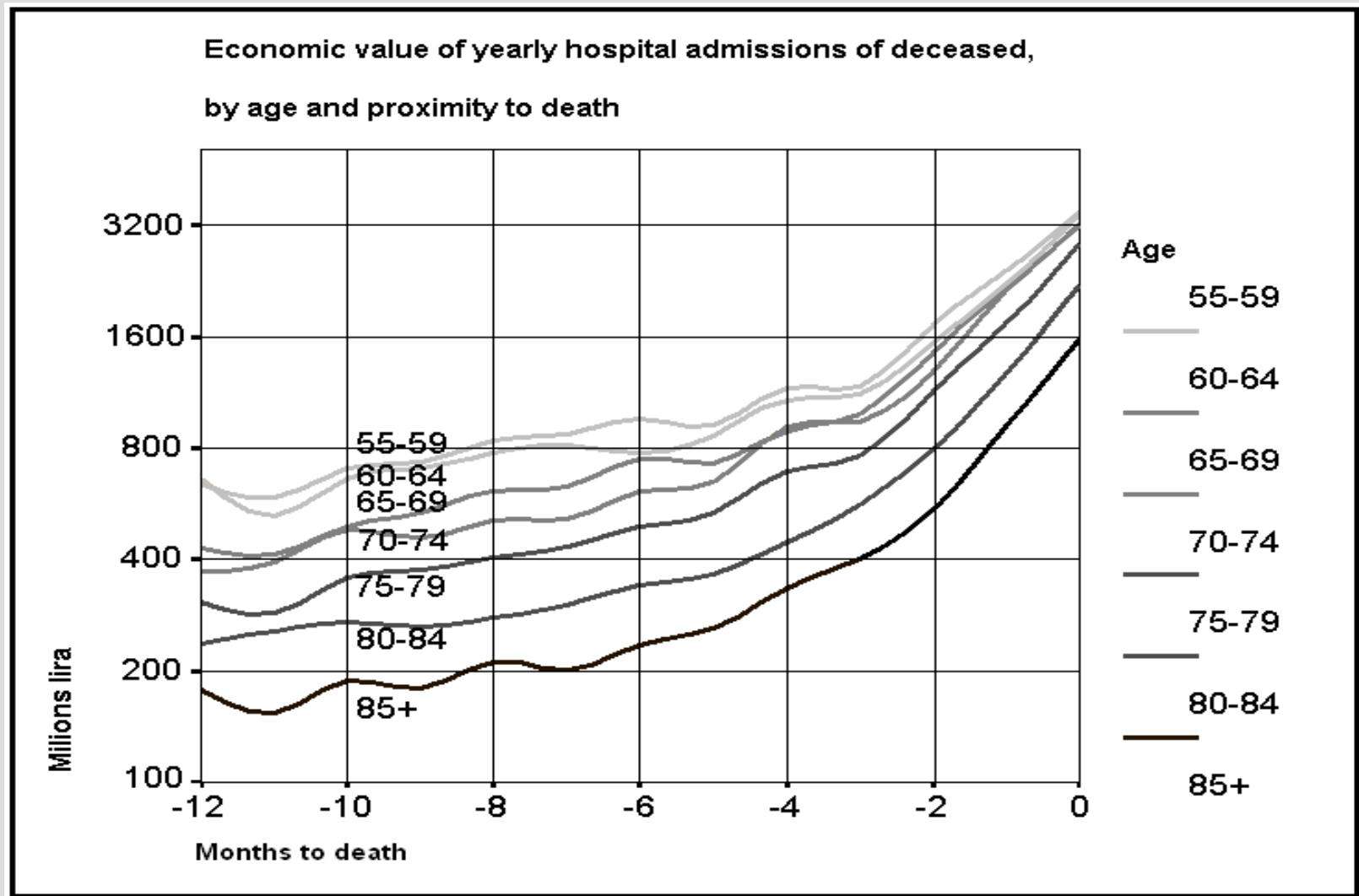
Results (4)

Economic value ratio of yearly hospital admissions of deceased and survivors by age and gender

Results (5)

Economic value of hospital admissions of survivors and of deceased by proximity to death and gender

Results (6)

Economic value of yearly hospital admissions of deceased, by age and proximity to death
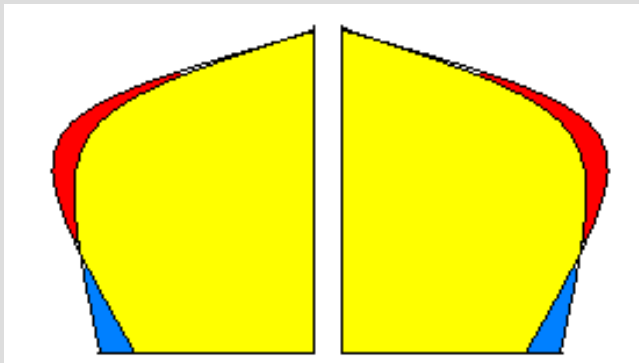
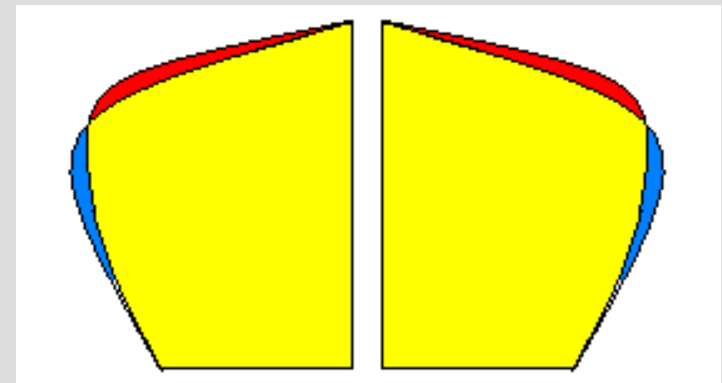# Simulation: hospital expenditure in Tuscany at year 2004

Population structure

Hypothesis A

there are more elderly because there are proportionally less young

Hypothesis B

there are more elderly because of the increase in survival

Simulation results

Per capita hospital expenditure in €		
Population	Deceased and survivors together	Distinguishing survivors and deceased
Year 2000	485	485
Year 2004 Hypothesis A	515	516
Year 2004 Hypothesis B	531	514

Conclusion (1)

➢ **To die is expensive! …Especially if in early ages**

➢ **Age is an important determinant of hospital expenditure, however it is less important if "death costs" are taken into account**

➢ **To predict future hospital expenditure survivors and deceased should be taken separately**

Conclusion (2)

➢ **It would be interesting to work on causes of death, but need to start up from prevalence data instead of mortality ones…and this is not easy**

➢ **Further effort is needed to merge data on hospital expenditure with that on other health expenditure components - e.g. pharmaceuticals, outpatients care.**