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Session 4 – Health and Disability Transition

Transition probabilities to dependency and death in Italy evidence from IT SILC survey

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Introduction

- Aim: Estimation of
  - transition probabilities to dependency and death in Italy
  - life expectancy with and without ADL disabilities
  - Health expectancy inequalities

- Methods: Markov-based multistate life table approach (using IMaCh)

- Data: LC Italian Survey « Statistics on Income and Living Condition (SILC)» 2004-2007

The SILC Survey 2004-2007

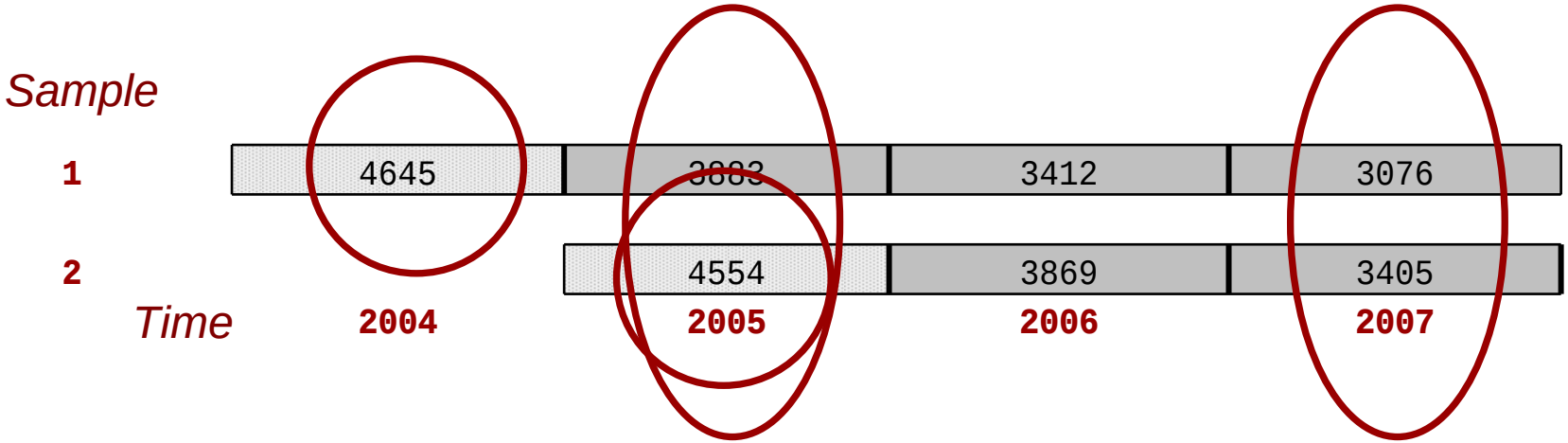
Minimum European Health Module (MEHM)

- **Long term activity limitation**
- **Chronic conditions**
- **Self pervceived health**

Cox B, van Oyen H, Cambois E, Jagger C, Le Roy S, Robine J-M, Romieu I. **The reliability of the Minimum European Health Module**. *International Journal of Public Health* 2009;54(2):55-60.

The Italian LC SILC Survey 2004-2007

55 and over



8437
respondents in 2005

*6481 (**77 %**)*
are followed in 2007

*345 (**4 %**)*
deceded between
2005 and 2007

*1611 (**19%**)*
have not been traced

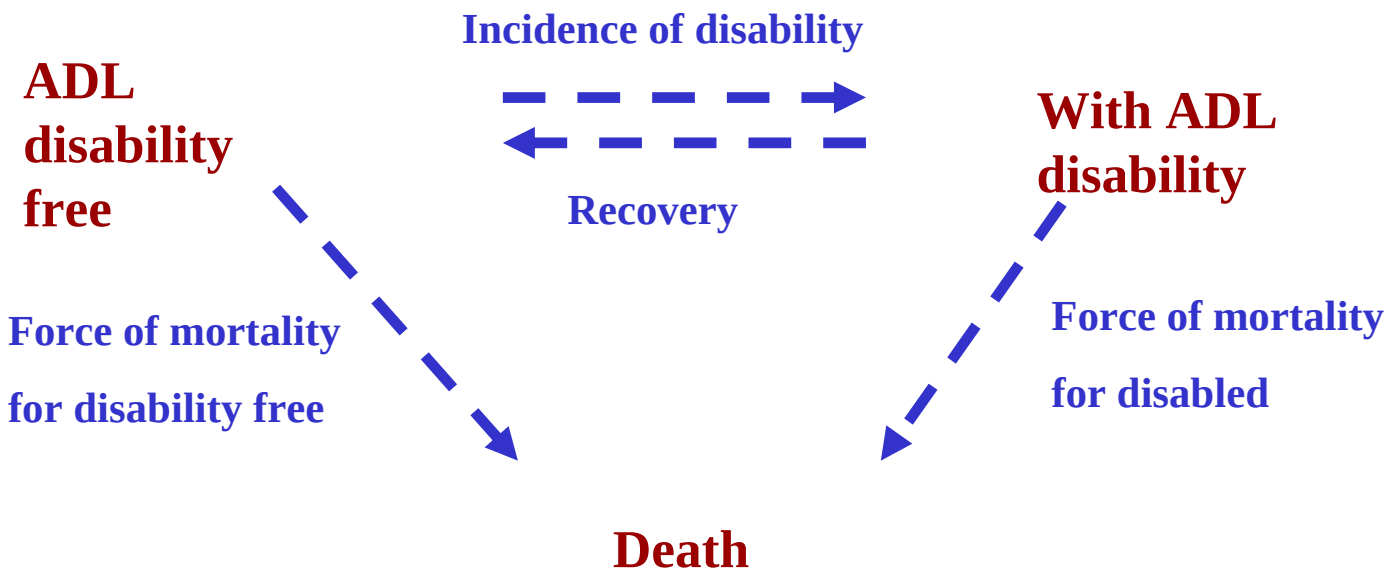
Handling missing data:

- Use only the responding units' data
- *Single imputation* (*S.I.*):
  - fill in a value for each missing value (CART analysis).
- *Multiple imputation* (*M.I.*):
  - replace each missing value with m=3 imputed values, obtaining *3* completed datasets.
  - For each completed datasets, we estimate the p_{ij} applying the IMaCh program.
  - We average the *3* p_{ij} estimates.

Analysis

- No estimation of missing data
- Full health hypothesis for missing individuals
- Full disability hypothesis for missing individuals
- Estimation of missing health status by Multiple Imputation Analysis

Estimation of health expectancy



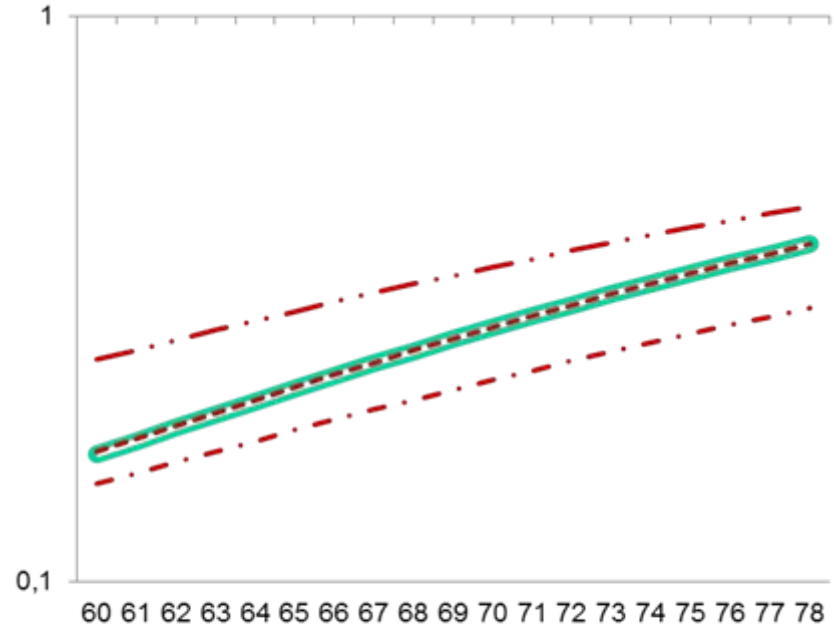
Methods

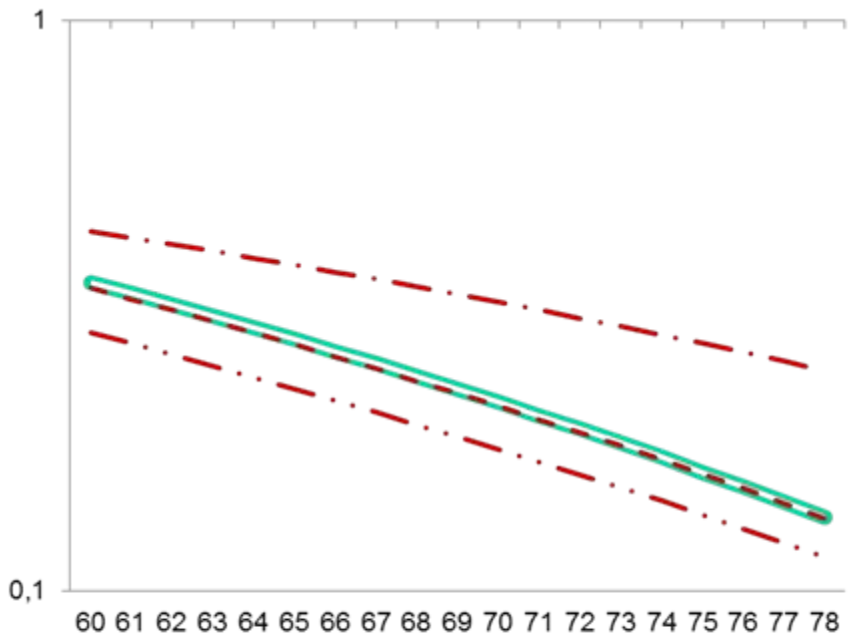
IMaCH (Interpolation of Markov Chains)

$$\ln ({}_hp_x^{ij} / {}_hp_x^{ii}) = a_{ij}(h) + b_{ij}(h) * x$$

${}_hp_x^{ij}$ = probability to be in the state j at time h for an individual of age x and in state i at time 0.

The probability of transition from disability free to disabled doesn't change after the estimation of missing data





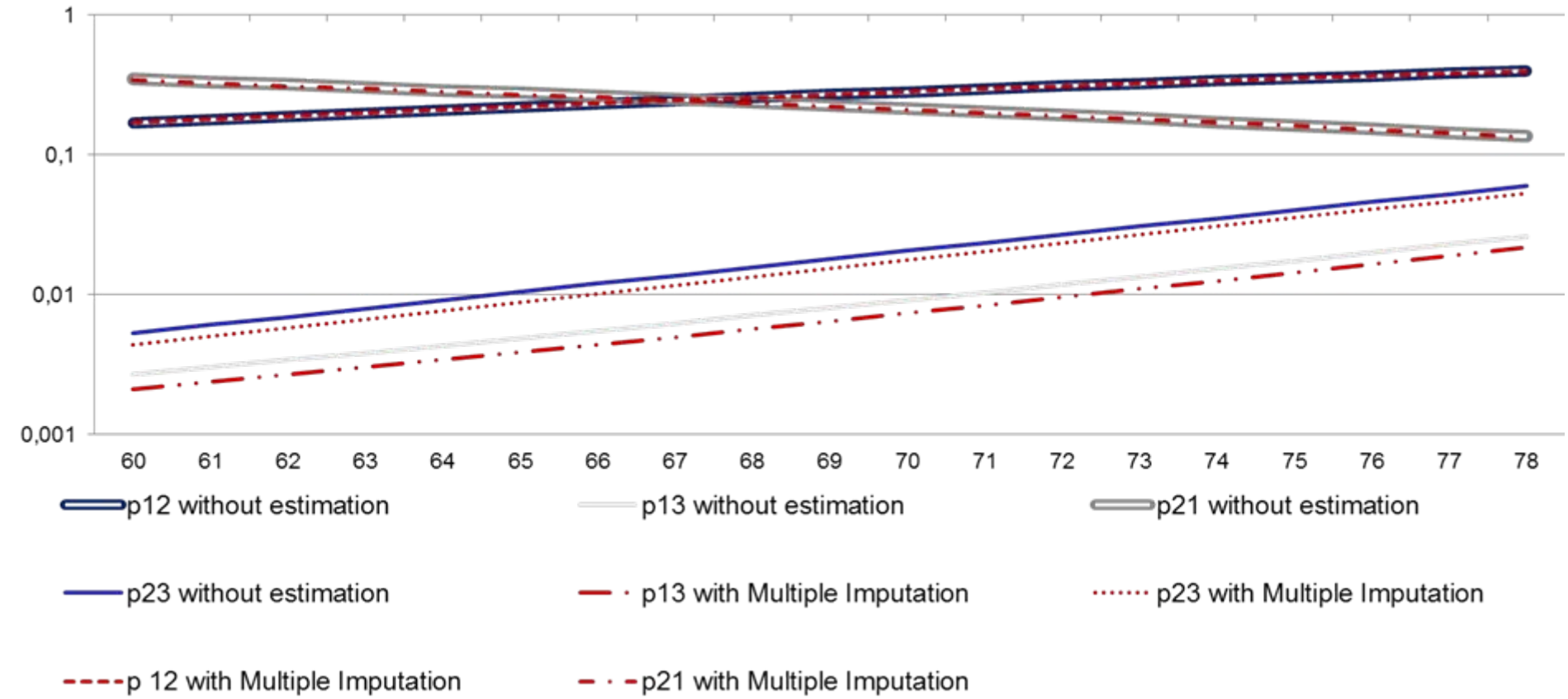
p12 without estimation
p 12 full health hypothsis
p 12 full disability hypothsis
p 12 with Multiple Imputation

8437 individuals

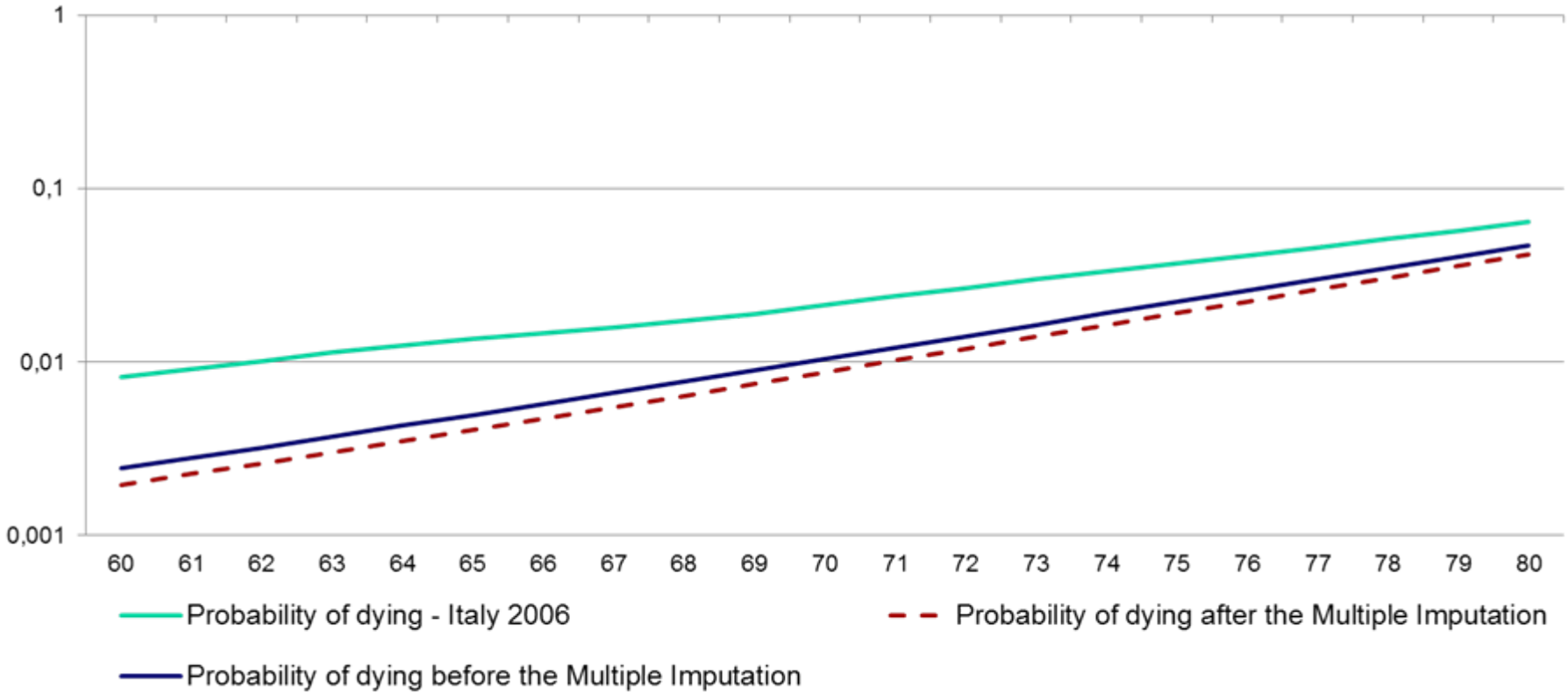
6481 individuals

p21 without estimation
p21 full health hypothsis
p21 full disability hypothsis
p21 with Multiple Imputation

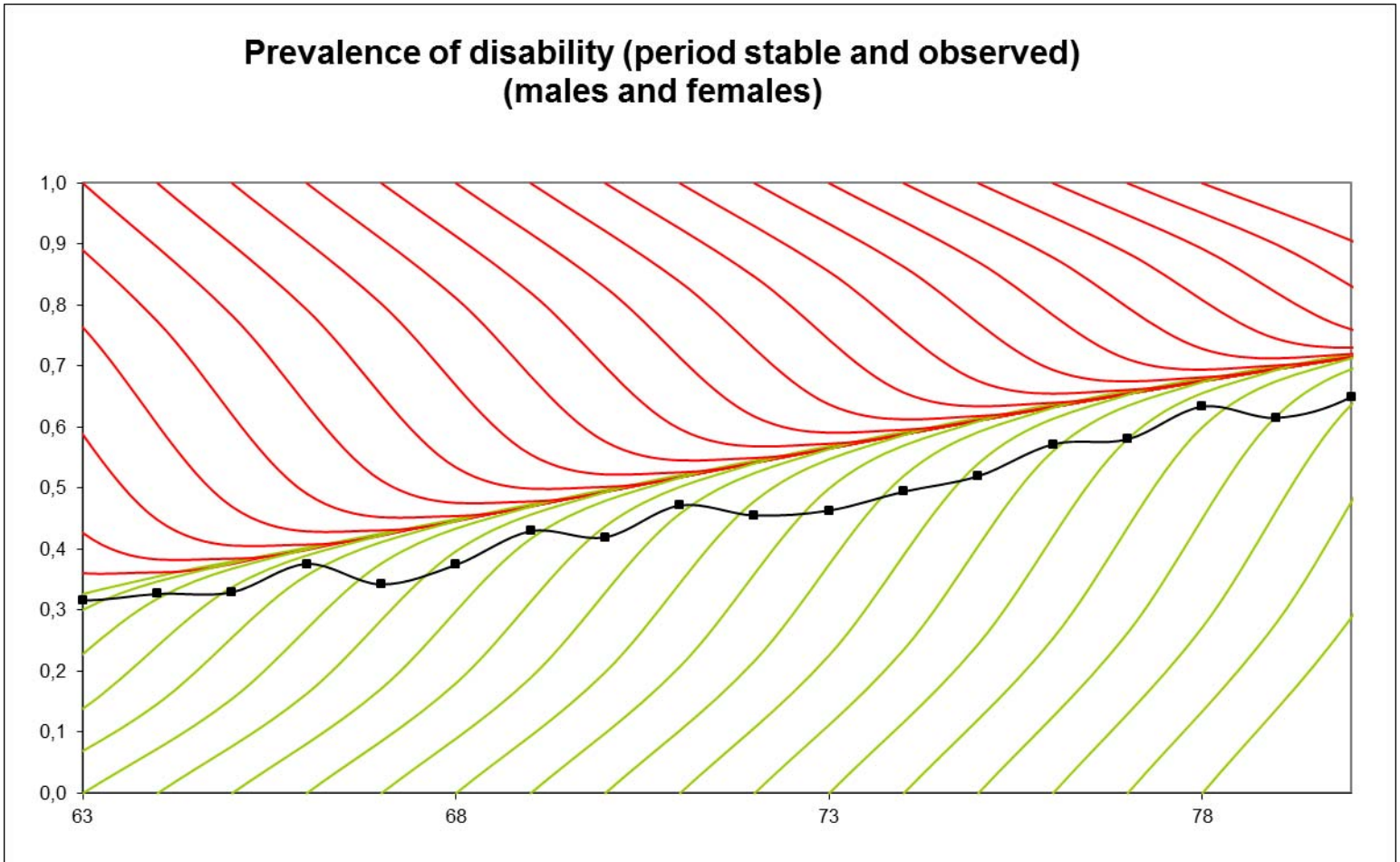
The probability of transition to death is alwais lower after the estimation of missing data



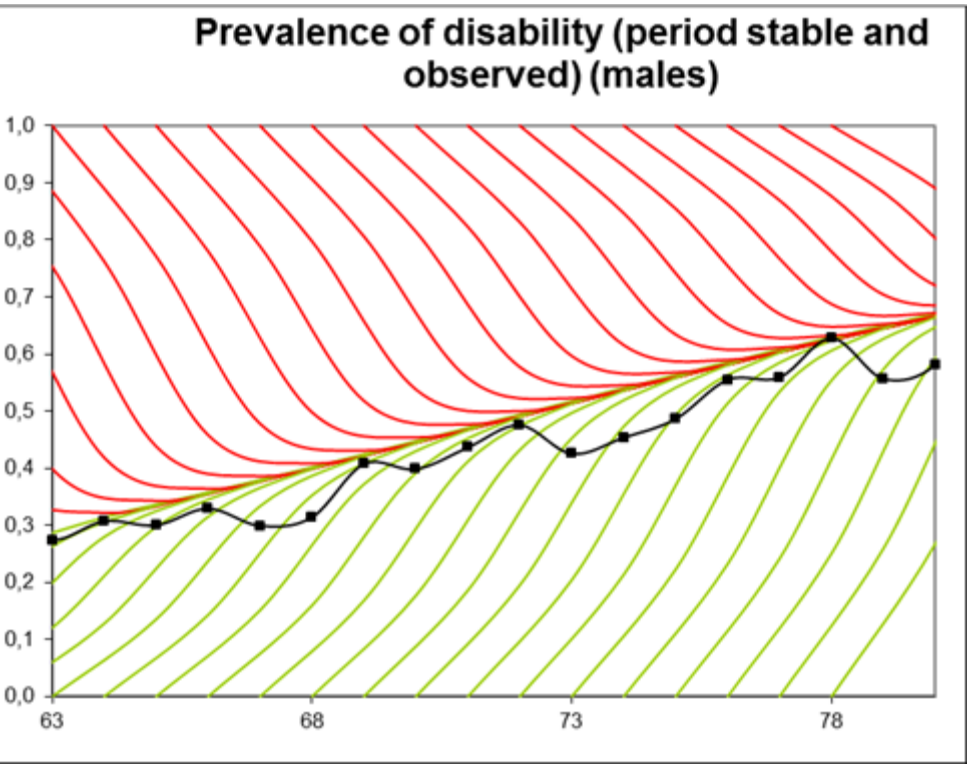
The probability of dying using SILC survey seems to be underestimated

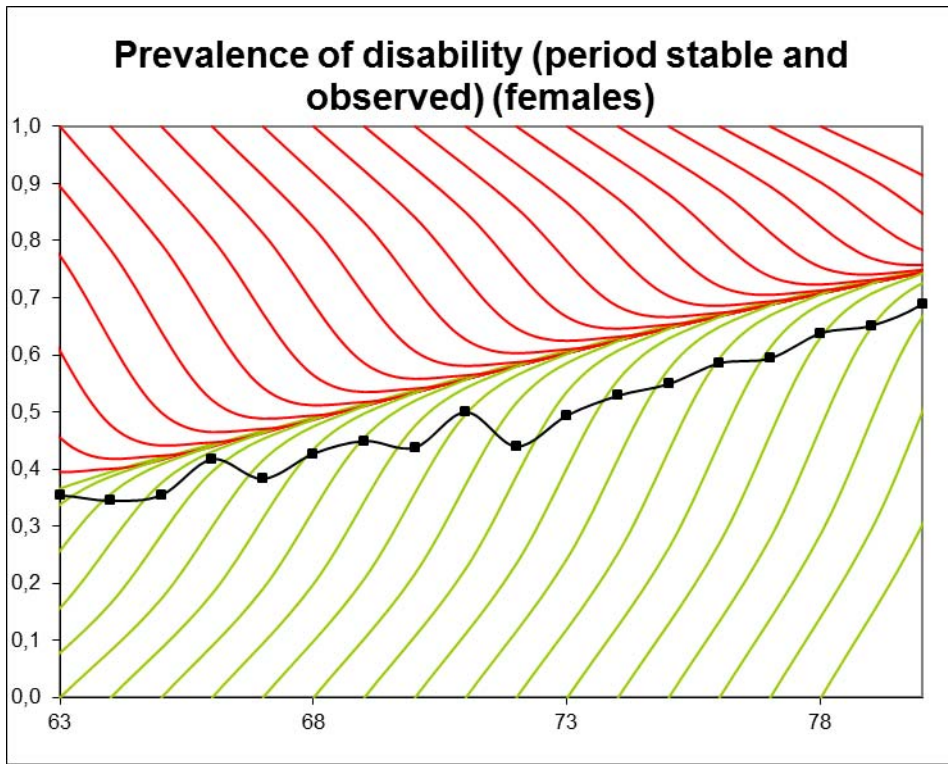


The slope of the stable prevalence of disability seems to be always higher the slope of the cross sectional prevalence



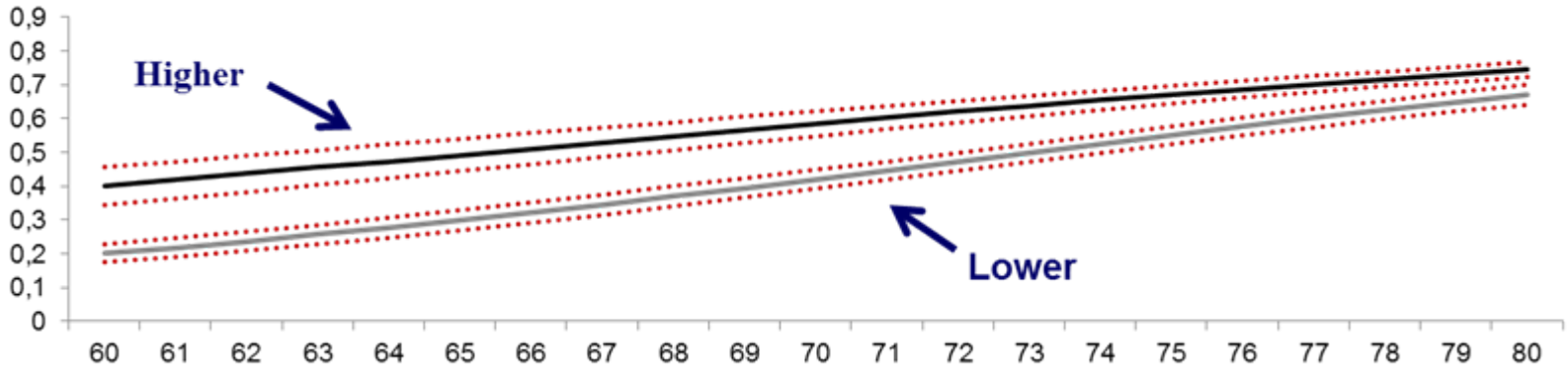
But women seems to accelerate the onset of disability more then men



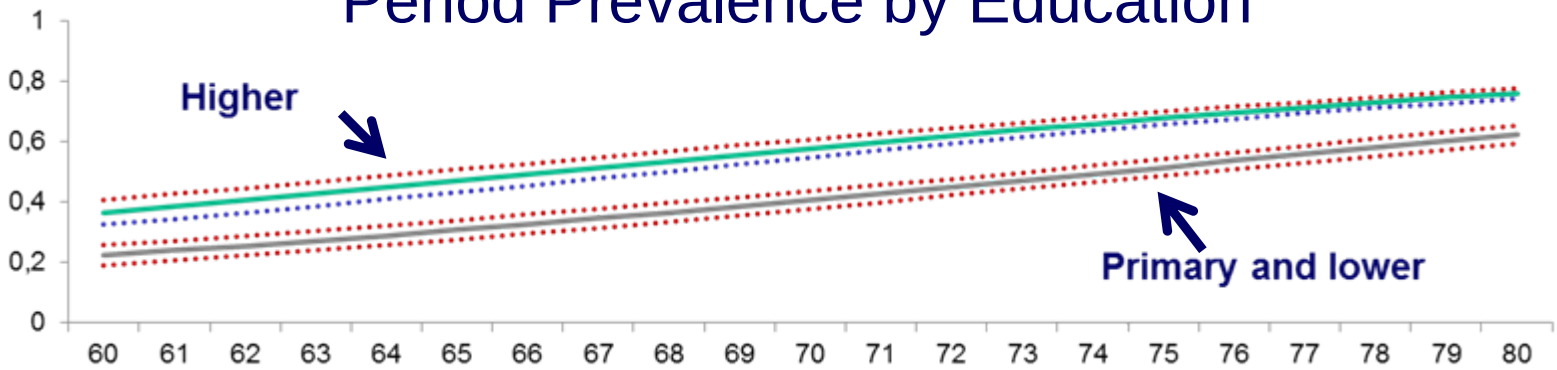


Social factors seems to be stronger then income factors in determining health inequalities at older ages

Period Prevalence by Income



Period Prevalence by Education



Conclusions

- There is no evidence of reduction in ADL disability in Italy in the considered period
- Women seems to accelerate the onset of disability more then men
- Social factors seem influence disability stronger then Economic factors

Further investigations

- Date of birth of 80 and over
- Confirmation of death by vital statistics
- Confidence Interval for the period stable prevalence and for the life expectancy.