



# MODELLING MORTALITY USING LIFE TRAJECTORIES OF DISABLED AND NON-DISABLED INDIVIDUALS IN 19TH-CENTURY SWEDEN

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## INTRODUCTION

The aim of this study is to investigate how disabilities and the experiences of work and family during early adulthood affects subsequent mortality in a historical population. To achieve this aim we combine sequence analysis with event history analyses using digitized parish registers from past Sweden. Previous research including our own studies suggest that disability increased the death risks but little is known about whether there are significant associations between these risks and specific life sequences during young adulthood. Our findings are based on a 19th-century population of both disabled and non-disabled people in the Sundsvall region, Sweden (Figure 1).

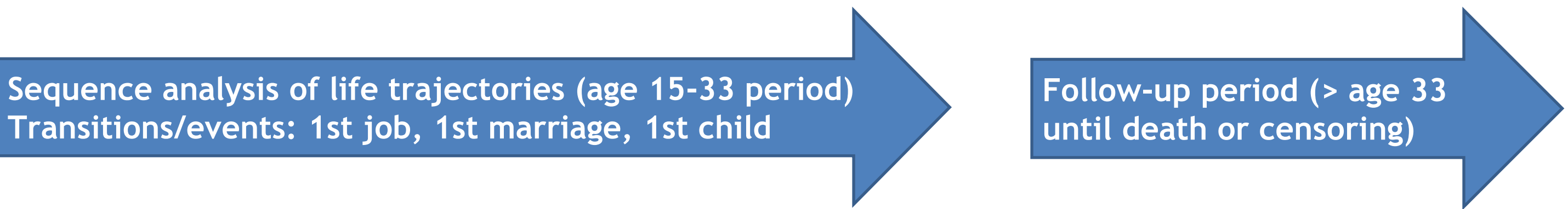
### STUDY DESIGN

#### METHODS:

**First**, the occurrence and type of disability among people, noted at latest on the 15th birthday, is recorded.

**Second**, between the age of 15 and 33 their life trajectories are analyzed using sequence analysis to determine homogeneous groups, given their experience of work and family during young adulthood. Important demographic events that occur in the life of young adults are examined: 1st occupation, 1st marriage and 1st child. These events are recorded yearly and cause the persons' trajectory to change state (Figures 3-4).

**Third**, the groups derived are used as explanatory variables in combination with disability and other variables run in Cox regressions with mortality as outcome (Table 1).



**DATA:** Digitized parish registers stored at the Demographic Data Base (DDB) at Umeå University, Sweden, based on original records of birth and baptism, marriage, migration, death and burial, and annual catechetical examination records. They provide linked individual-level data showing demographic and socio-economic information on parishioners across their lives and also document impairments.

**SAMPLE CRITERIA:** Observations of 15-year-old persons born 1820-1829 or 1850-1859 (**N=4,116**) of whom 74 had impairments before/at the age of 15: *blind* (N=6), *deaf* (N=22), *physically* (N=14) and *mentally disabled* (N= 32) vs. *non-disabled* (N=4,042). All cases selected are required to be observed from age 15 to 33; the transitional phase in life associated with the events under study (1st job, 1st marriage, 1st child).

### RESULTS

- Life trajectory experiences of work and family during young adulthood (15-33 years of age) affected significantly the mortality for men but not for women (Figures 5-6 and Table 1).
- Disability was statistically significant for subsequent mortality for mentally disabled women, but not for other types of disabilities (Figure 2, Table 1).

FIGURE 1: Map of Sweden and the Sundsvall region showing the area under study.

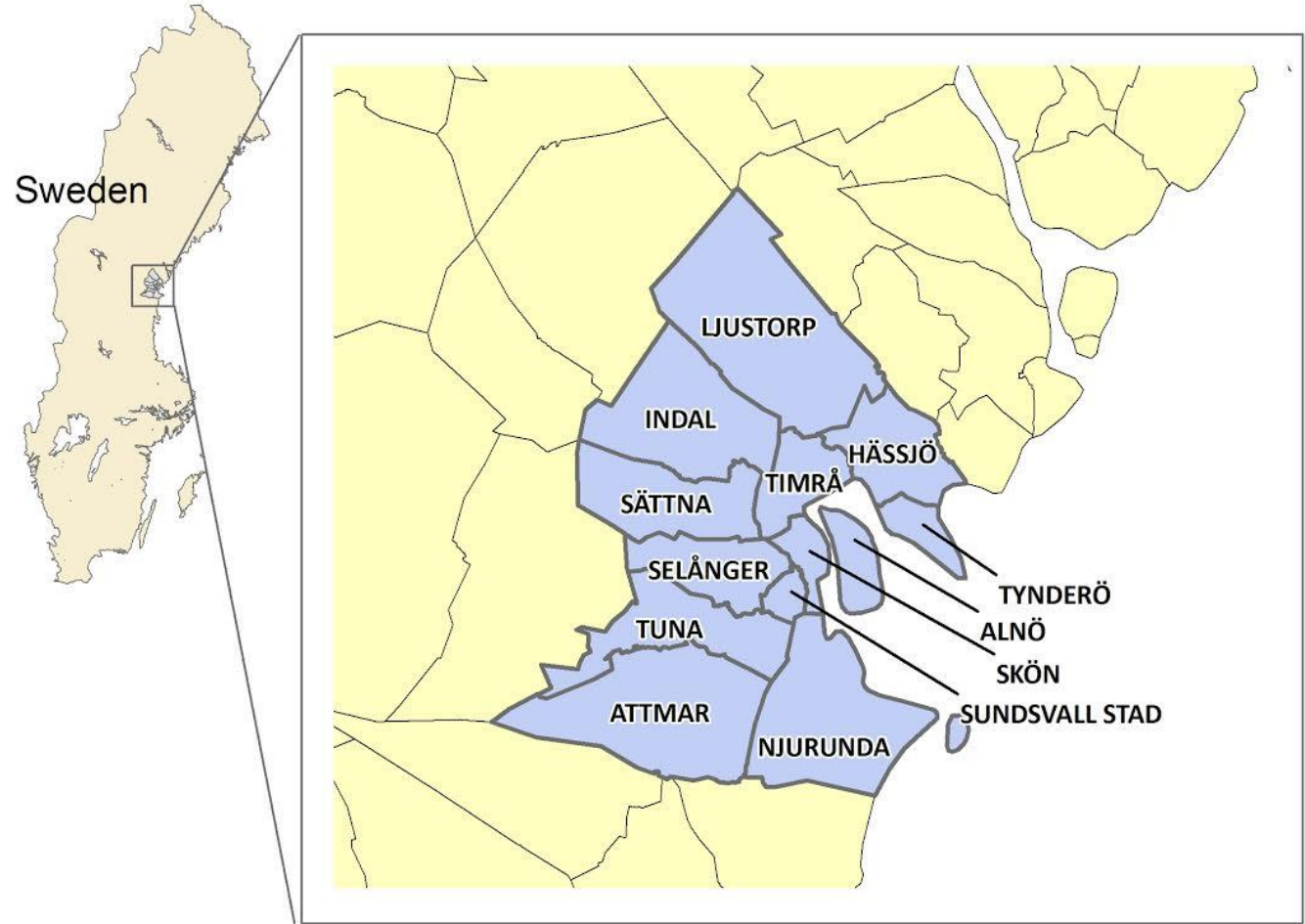


FIGURE 2: Kaplan-Meier curves of the mortality risks by types of disabilities.

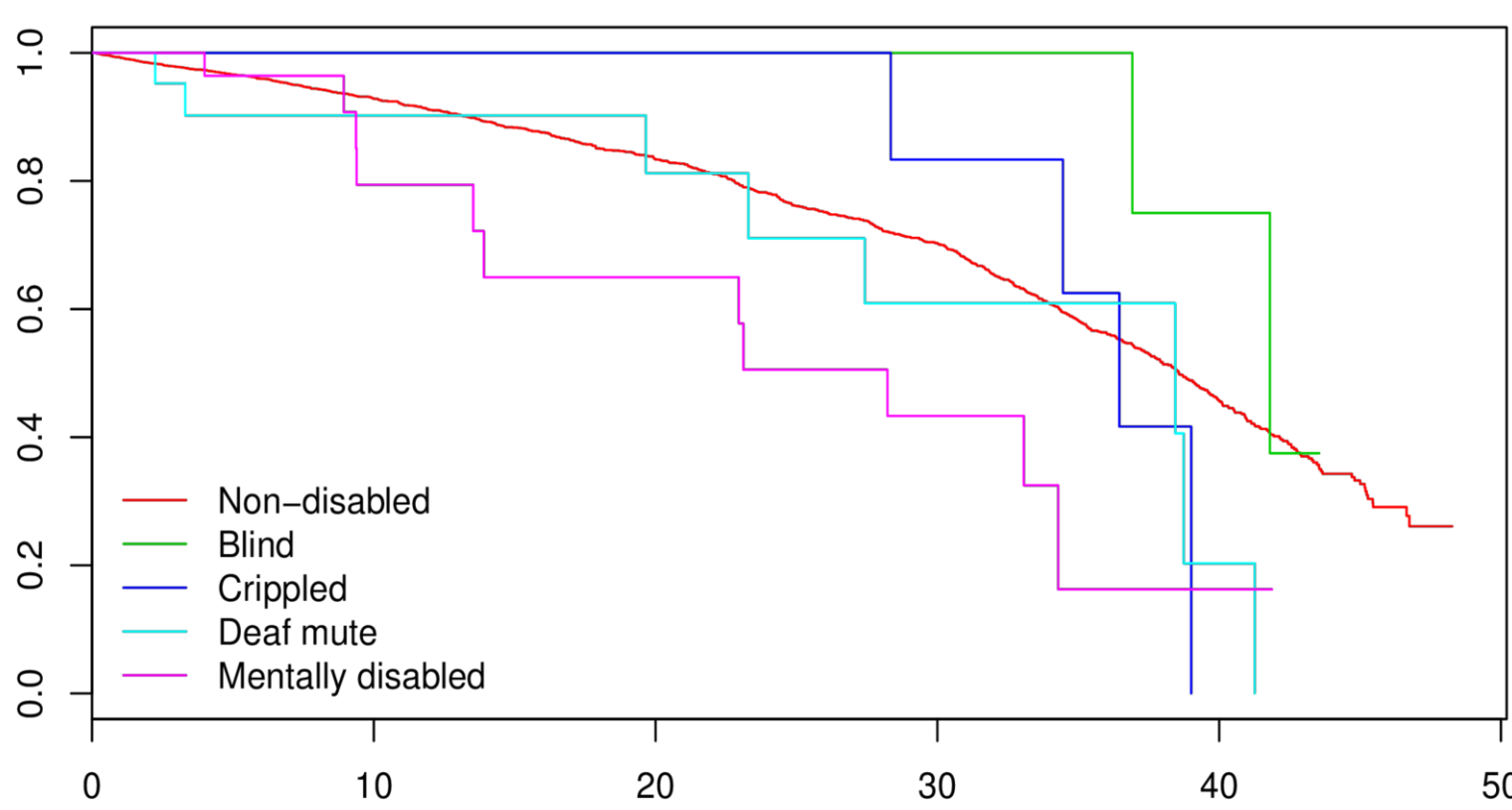


FIGURE 3: Clustered life trajectories, men.  
Type 1: 'Job'  
Type 2: 'Job, marriage, child'  
Type 3: 'Nothing'

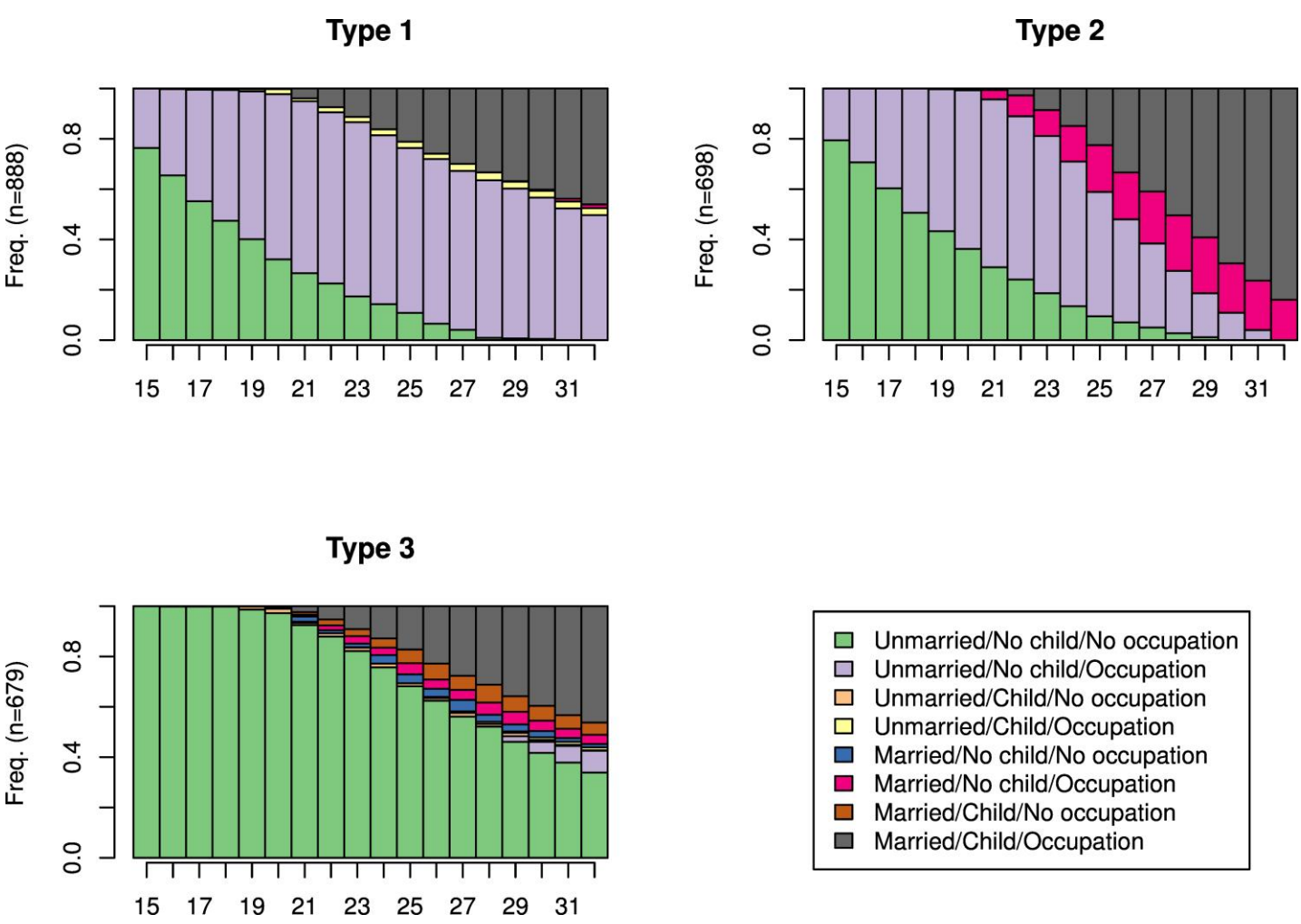


FIGURE 4: Clustered life trajectories, women.  
Type 1: 'Marriage, child'  
Type 2: 'Job, marriage, child'  
Type 3: 'Nothing or late start'

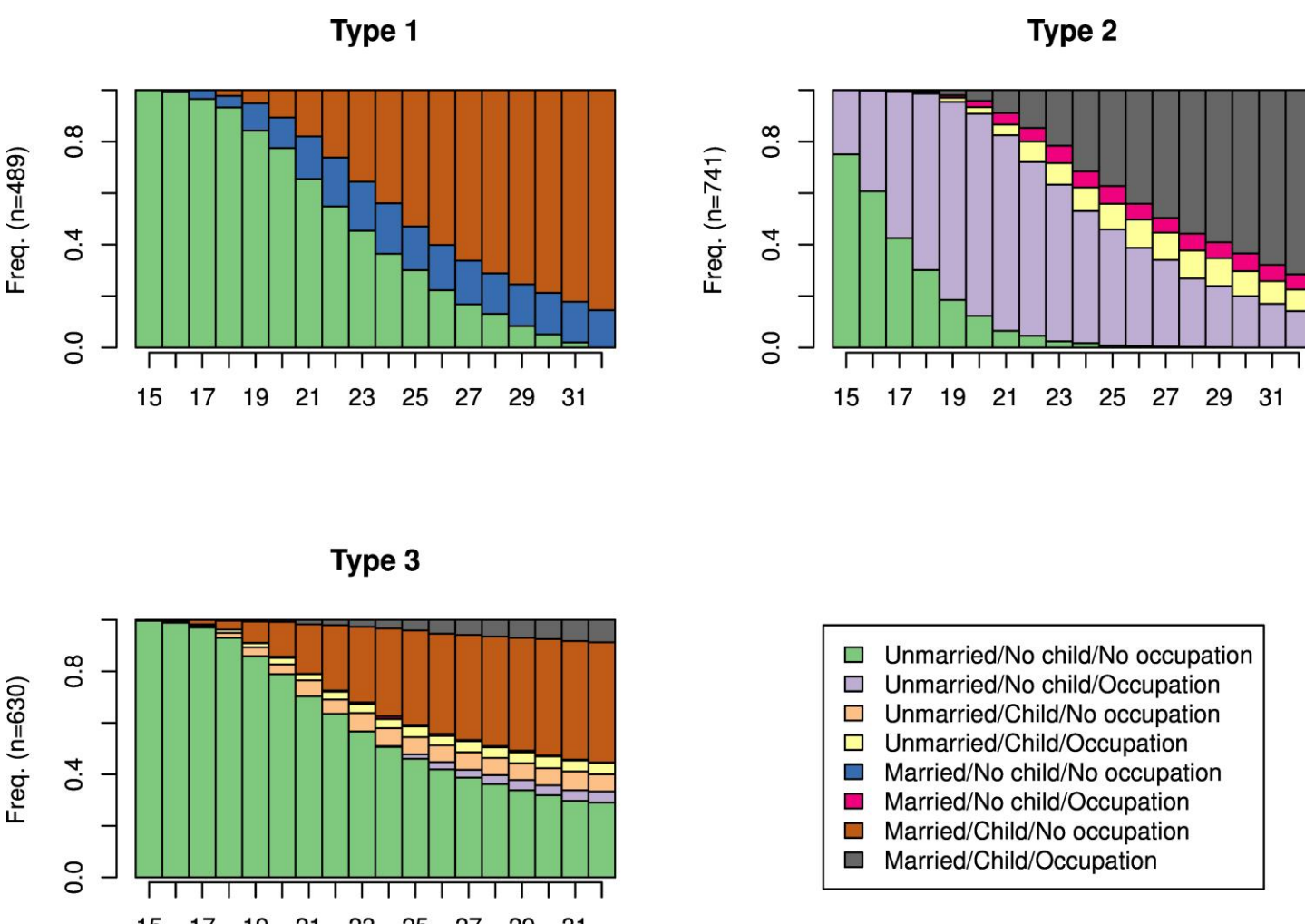


FIGURE 5: Kaplan-Meier curves of the mortality risks by types of life trajectory clusters, **men** (cf. Figure 3).

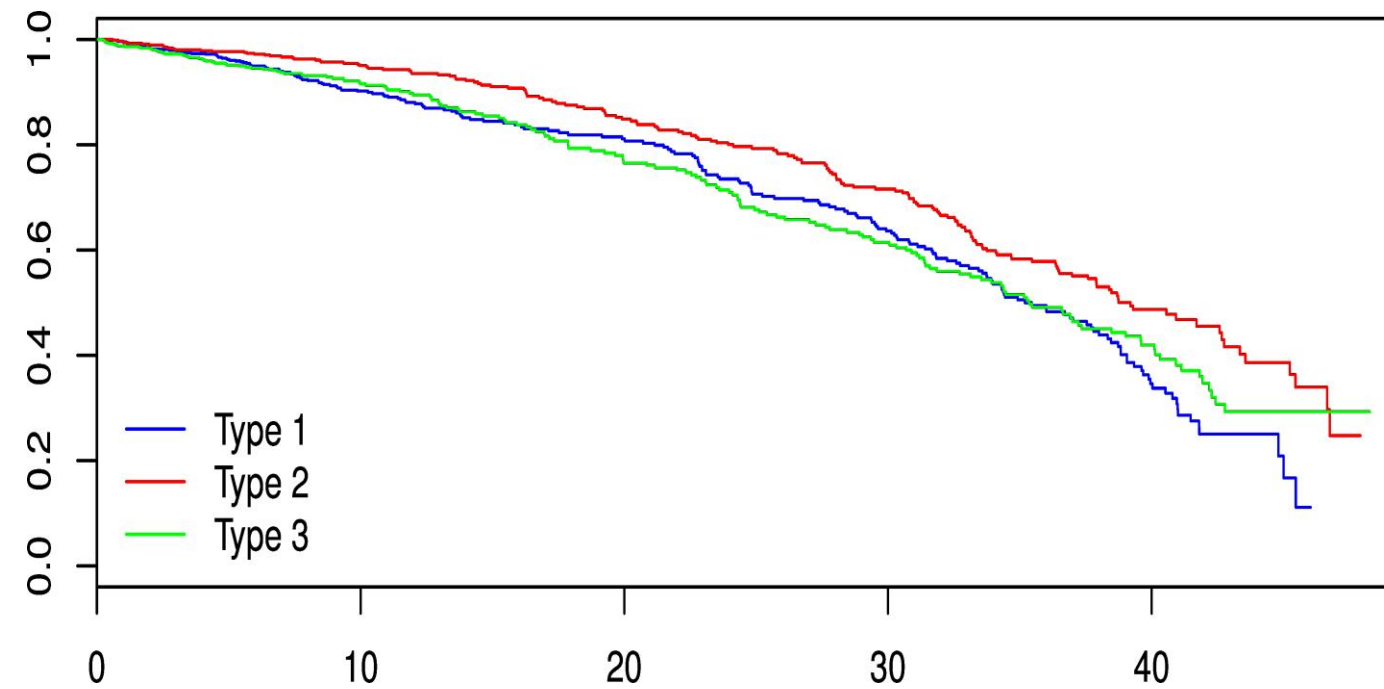


FIGURE 6: Kaplan-Meier curves of the mortality risks by types of life trajectory clusters, **women** (cf. Figure 4).

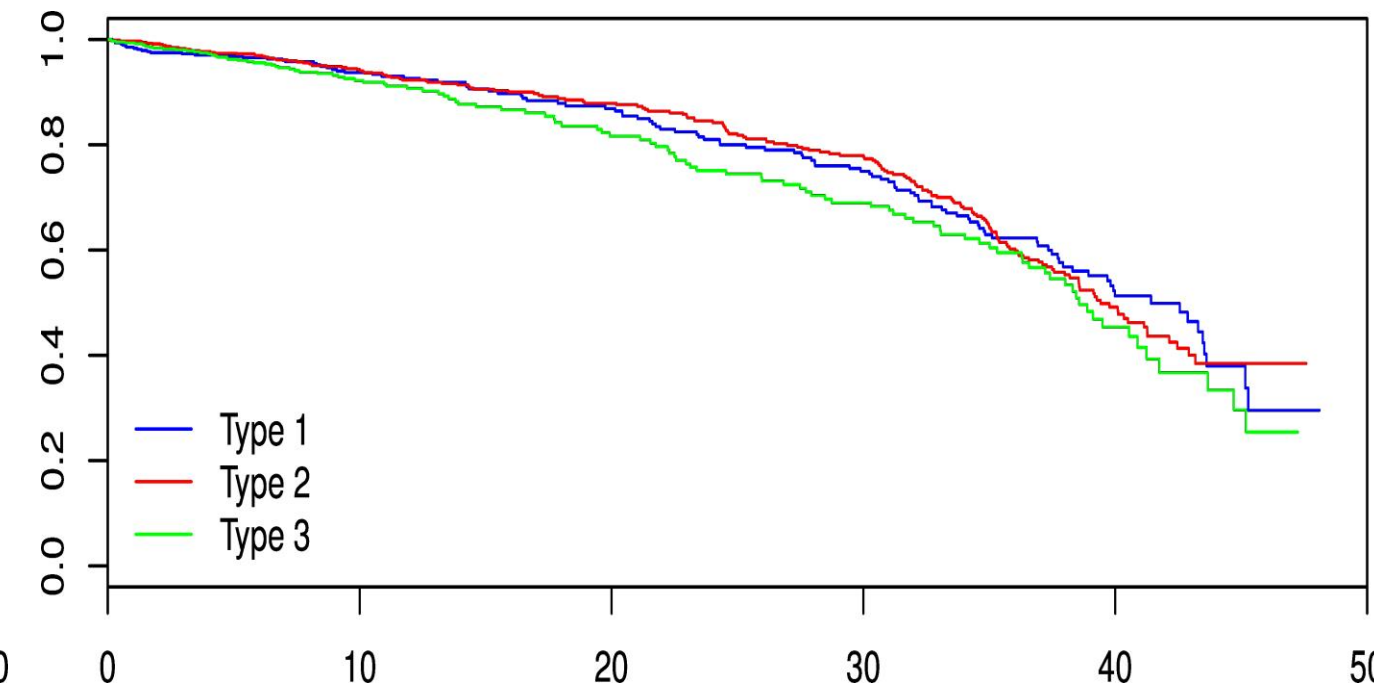


TABLE 1: Cox regression of the propensity to die after the age 33 among the disabled and non-disabled cases under observation. Hazard ratios.

	Men	Women	Men	Women
	Model (1)	Model (2)	Model (3)	Model (4)
Disability groups:				
Non-disabled	1	1	1	1
Other disability	1.064	0.903	1.036	0.883
Mentally disabled	1.516	3.620**	1.446	3.512**
End status:				
Married/Child/Occupation	1	1		
Unmarried/No child/No occupation	1.097	1.115		
Unmarried/No child/Occupation	1.273**	1.097		
Unmarried/Child/No occupation	0.0004	1.167		
Unmarried/Child/Occupation	1.572	1.001		
Married/No child/No occupation	0.596	0.905		
Married/No child/Occupation	1.113	0.882		
Married/Child/No occupation	1.017	1.022		
Men types from SA:				
Men Type 1			1	
Men Type 2			0.689***	
Men Type 3			0.916	
Women types from SA:				
Women Type 1				1
Women Type 2				1.022
Women Type 3				1.203
Parish type:				
Rural	1	1	1	1
Urban/industrial	1.113	1.151	1.112	1.147
Cohort :				
Cohort born 1820-1830	1	1	1	1
Cohort born 1850-1860	1.029	0.813	1.004	0.796
Observations	2262	1854	2262	1854
Note:	*p<0.1;	**p<0.05;	***p<0.01	

### CONCLUDING REMARKS

- That young adulthood trajectories had significant impacts on men's subsequent mortality indicates that they were more sensitive than women to trajectories showing job, marriage and children, often perceived as the desirable or ideal pathway.
- The high mortality risks afflicting mentally disabled women makes them stand out as very vulnerable.
- It should be remembered that:
  - Fragile people may have died before age 33 leaving us with a relatively healthy follow-up population.
  - 'Healthy migrant effects' may have rendered a frail surplus among the non-disabled under study.
  - Higher numbers of disabled persons and death events would add clarification to the findings obtained.

Yet, our results work as a reminder of that disabilities cannot only be associated with disadvantages in people's lives.

### SELECTION OF REFERENCES

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