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*Opportunities of Work and Family in Young Disabled People's Lives. A Comparative Study of Disabled and Non-disabled Young Adults in Nineteenth-century Northern Sweden Using Sequence Analysis*

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## Opportunities of Work and Family in Young Disabled People's Lives

### A Comparative Study of Disabled and Non-disabled Young Adults in Nineteenth-century Northern Sweden Using Sequence Analysis

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**Abstract** This study focuses on young adults with disabilities and their pathways towards work and family in past society. The aim is to explore their life trajectories and compare them to a non-disabled group of people who experienced the same time-space context, represented by the 19th-century Sundsvall region, Sweden. We employ sequence analyses on a series of demographic events that were to occur in the life of young adults: first occupation, marriage and parenthood. We also check for the events of death and out-migration. Disability studies show that disabled people were often subject to stigmatization caused by their impairment and prevailing perceptions about normalcy in society. This would have limited their opportunities of work and family compared to non-disabled persons. Individual-level data consisting of parish registers digitized by the Demographic Data Base (DDB), Umeå University, Sweden, allow sequence analysis that helps to answer the questions of whether and how disability influenced people's life trajectories. We obtain a holistic picture of how their life developed that suggests that disability substantially limited people's opportunities to find job, marry and form a family. This indicates that a stigma was associated with disability beyond the impairment itself and worked to add to disabled individuals' difficulties in both the labor market and marriage market.

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## 1 Introduction: Background, Aims and Rationales

Historical research shows that getting an occupation, marrying and giving birth to children were common events in the transition to adult life for nineteenth-century young people. These events and the ordering and timing of them were governed by contemporary norms in society and encouraged by institutions such as the church and state. For instance, job and employment were to occur in young people's life before they married and established a family on their own, and children were to be expected upon marriage, not before. Across north-western Europe, this pathway was also the result of an economy based on agricultural production. It promoted a life cycle servant system according to which young people were to be hired as maidservants and farmhands in other households than their parents' (Dribe 2000; Lundh 1999; Lundh 2003; Whittle 2005; Harnesk 1990). This made young women and men move between different employers to secure work and income to gather the skills and material resources required to unite a spouse and set up a household. In this way, the servant system worked to structure the opportunities of work and family among young nineteenth-century individuals. Even though most of them followed this expected pathway, little is known about whether individuals with disabilities did. From disability studies we know that they were often subject to a stigma caused by the impairment and prevailing perceptions about normalcy in society (Kudlick 2003; Susman 1994; Oliver 1996; Barnes et al. 2010; Goffman 1972; De Veirman 2015; Haage et al 2016). If disability limited young people's opportunities for work and family, it would become evident from their life trajectories when compared with those of non-disabled individuals.

This study aims to do that and thus it fills in the gap of knowledge we have on past people with disabilities. We provide novel results based on sequence analysis on a series of demographic events that occur in the life of young adults, such as first occupation, marriage and parenthood. All events are consistently compared between disabled men and women and in relation to their non-disabled counterparts, all of whom resided in the Sundsvall region, Sweden. During the 19th century, this region witnessed a fast population growth from about 13,000 inhabitants in the early 1800s to 18,793 in 1840 and to 46,418 inhabitants in 1880 (Alm Stenflo 1994). This growth was due to the expansion of the sawmill industry and a large influx of migrants in combination with the mortality decline.

Accounting for several events and not just one, our sequence analysis and longitudinal data (see Sect. 2) make us obtain a more holistic picture of disabled people's life (Aisenbrey et al 2010; Abbot et al 2000). Only being able to conduct such analysis of individuals with disabilities living 150-200 years ago makes this study special in its approach, as quantitative methods are rare in disability studies and social history. The demographic experiences of disabled people are important to uncover not only because they constitute a minority long hidden in history, but because their life trajectories reflect their living conditions and were also shaped by attitudes that prevailed among the majority population.

## 2 Longitudinal Data and Methods: Definitions of Disabilities, Events and Sequences

The data consist of parish registers, digitized and stored by the DDB at Umeå University, Sweden.<sup>1</sup> These registers are based on original records for parishioners' birth, baptism, marriage, out- or in-migration, death, burial and the catechetical examination records, and they also report occupations. The DDB registers are made up by chosen parishes in Sweden during the 18th and 19th centuries and are linked on an individual level, which gives a demographic description about each parishioner over lifetime (Vikström et al. 2006). The catechetical examination records were collected on yearly basis due to the obligation for the ministers to keep records of the parishioners' knowledge of the catechism and their reading skills, first stated in the Church law of 1686 (Nilsson 2009). In these registers the ministers also made marks of impairments – *lytesmarkeringar* – that indicate disabilities among the parishioners. Those who the ministers labeled disabled are categorized as such in our dataset and analyses (Tab. 1). Those who did not have any of these impairments in the parish registers we regard as non-disabled (Haage 2012). Representing the average life trajectories of the young population in the Sundsvall region, they help us answer whether finding a job or a spouse to marry were less present events in the life of disabled persons.

The dataset consists of observations from 8,874 unique 15-year-old individuals born between 1820 and 1860 out of whom 117 had marks of impairments (Tab. 1). Their impairments were reported before the age of 15 or at the 15th birthday at latest. The reason for chosen young individuals is that they are in the beginning of their transition to adulthood associated with the events under study. We begin to follow them at their 15th birthday to identify the timing and ordering of three events of primary interest to us: first occupation, first marriage and birth of the first child. Events of secondary interest are death and out-migration from the parish. At the longest, all individuals are under study for maximum 18 years (between age 15 and 33), which covers the phase in life when the events of primary concern to us occur.

In this study a sequence is defined as a list of events. As an event gives rise to a new state in the sequence, a sequence can consist of different states. If an event occurs several times in the life trajectory, the sequence is recurrent, but we only consider when an event first happens and treat it as non-recurrent (Abbot 1995; Abbot et al. 1986). Sequence analysis further enables us to detect the states each individual experienced at each time point, which in this study is age (Gabadinho et al 2011). This means that a state describes a person according to certain events at one particular year of his/her life. The length of each state is consequently one year and the whole sequence is maximum 18 years. The first state starts at the 15th birthday and the second state at the 16th birthday etcetera.

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<sup>1</sup> [www.cedar.umu.se/english/ddb/databases/](http://www.cedar.umu.se/english/ddb/databases/)

**Table 1.** Disabled and non-disabled individuals by gender in the dataset (Digitized parish registers, the Sundsvall region, DDB, Umeå University)

Disability category	Men N	Women N	Total N
Blind	9	5	14
Deaf mute	23	13	36
Crippled	19	5	24
Mental disabilities	20	15	35
Multiple disabilities	4	4	8
Summary disabled	75	42	117
Non-disabled	4,385	4,372	8,757
Total summary	4,460	4,414	8,874

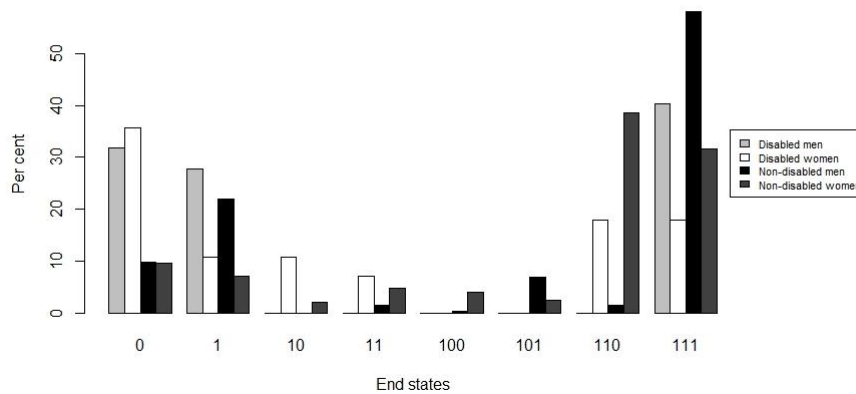
*Notes:* The individuals were born 1820-1860 and 15 years old at start of observation. We use the terms and concepts the ministers used even if some of these words today are derogatory.

### 3 First Findings on how Disability Influenced the Life Trajectories of Young Adults

To find whether and how disabled people's life trajectories differed from non-disabled individuals, we performed the analyses in two steps. First, we explored in which order the events of primary interest to us occurred in the individual life trajectory. Second, the entire sequences were investigated according to disability and gender distributed by age, and also with regard to the two events of death and out-migration from the parish.

Analyzing the order of the events of the life trajectories of people observed over the whole period (18 years) helps to picture the events they experienced (Fig. 1), disregarded the timing between these events. Among both genders the differences between the disabled and non-disabled were statistically significant below the 5 %-level.<sup>2</sup> Figure 1 shows that more than 30 % of the disabled men and women did not experience any of the events under study during the entire observation (state 0). Hence, they did not have any occupation, did not marry or got a child. Among the non-disabled people not even 10 % ended up in that state (0). Far more men than women (both disabled and non-disabled) took up an occupation, but stayed unmarried and childless (state 1). Getting a job, marrying and starting a family with at least one child (state 111) was the most common male trajectory, especially for non-disabled men, 58 % compared to 40 % of the disabled men. Even though a considerable share of the women ended up in the state of 110, which means that they married and gave birth to a child but never hold any occupation during observation, this was particularly the case for non-disabled women, 40 %, and not their disabled sisters, 20 %. Among the latter, about four women in ten represented a life trajectory showing no events at all (state 0). While almost 20 % of the disabled women are found to have experienced the event of giving birth to illegitimate offspring (states 10 and 11) only about 7 % of the non-disabled did.

<sup>2</sup> Pearson's Chi-squared test: P-value < 0.001 for both men and women

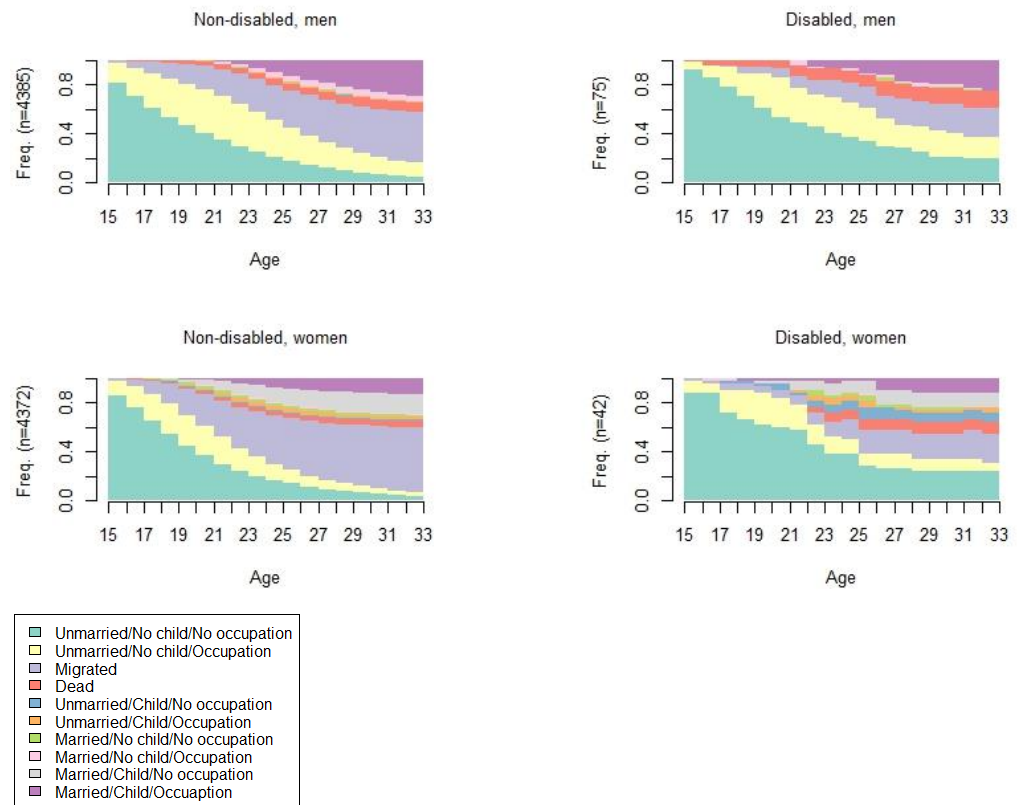


**Fig. 1:** Percentage distribution of entire sequences (end states) for individuals followed across 18 years: a comparison between disabled and non-disabled men and women (Digitized parish registers, the Sundsvall region, DDB, Umeå University)

*Note:* Pearson's Chi-squared test: p-value <0.001. The figure shows the eight most frequent orders of states in the dataset, defined as at least one group in the type has a proportion above 10%. These types are as follow:

0 = No occupation/No marriage/No child	100 = No occupation/Marriage/No child
1 = Occupation/No marriage/No child	101 = Occupation/Marriage /No child
10 = No occupation/No marriage/Child	110 = No occupation/Marriage/Child
11 = Occupation/No marriage/Child	111 = Occupation/Marriage/Child

Sequence analysis further enables a graphical view of the state distributions by time points that displays a general pattern for all individuals' life trajectories by group (Gabadinho et al 2011). Figure 2 shows these distributions by time points (here age) per gender and disability. The proportion of disabled men who did not get any occupation and remained unmarried and did not get any child (green state) is greater than for the non-disabled men. The proportion decreases in a slightly slower pace, and delayed in time, for disabled men, which means that those who left the "green" state and got an occupation did so later in life than did non-disabled men. At the age of 28, the slope for disabled men levels off at about 20% while it for non-disabled men continues to decline. The share of men who got an occupation without experiencing marriage and parenthood (yellow state) is similar despite disability. The only state where the disabled men were proportionally greater than for the non-disabled is that of death (orange state). The development over time for the state equal to having an occupation, being married and forming a family (purple state) shows no large difference between non-disabled and disabled men.



**Fig. 2:** State distribution by time points per gender and disability; a comparison between disabled and non-disabled men and women (Digitized parish registers, the Sundsvall region, DDB, Umeå University)

The differences between disabled and non-disabled women is clearer than among the men. The proportion of women who experienced no occupation, remained unmarried and childless (green state) is greater among the disabled women than their non-disabled sisters. However, women who attained an occupation, marriage and a child (purple state) have a similar trajectory over time despite disability. The two states where the trajectories differed substantially between disabled and non-disabled women are the state equal to getting a child without marriage and occupation (blue state), and the one equal to death (orange state). Among those who migrated from the parish, we find a larger proportion of non-disabled individuals of both genders. In all, the above sequence patterns show more similarities between non-disabled men and women and between disabled men and women respectively. Consequently, disability influenced the life trajectories of both genders.

## 4 Concluding Discussion

The findings of our sequence analyses provide a comparatively complete picture of young disabled individuals as they were beginning to seek their livelihood as adults in 19th-century Sweden. With regard to opportunities for work and family, we find substantial differences between how their trajectories developed when compared to non-disabled individuals. Whereas the latter moved through many events while under observation (from 15 years of age to maximum 33) and experienced these events in the expected ordering (first job, then marriage and parenthood), disabled people did not to the same extent. Even if it was not impossible for them to take up work, which was key to marry and form a family, considerably fewer of them found a job or married a spouse compared to non-disabled people. In all, the sequence analyses provide results that clearly demonstrate that disability limited people's opportunities in both the labor market and marriage market. This is one major conclusion to be drawn; yet another one is that these results would hardly have been obtained without employing sequence analysis. We view this tool as beneficial for identifying the impact disability had on people's opportunities in past society, here to work and family, and for two reasons. First, sequence analysis covers a longer portion of people's pathways than for instance Cox regression models do, in estimating the propensity to experience one single event, such as getting a job or marrying. Second, and although the explanatory power of sequence analysis is limited, it holds a pedagogical advantage in describing individual life trajectories as it does. The outcome is relatively comprehensible, even for scholars less familiar with statistical measures, many of whom are found in the fields of social history or disability studies, for example.

However, why do we come across the above results? Although impairment certainly brought difficulties in life, it must not per se have ruined people's opportunities to find some work and access to income or a spouse to marry. It takes more to explain why these typical events were less present in the life of disabled people. Beside the impairment itself, we argue that a stigma associated with being labeled disabled adds to explain the results. If individuals' appearance, behavior or inability were perceived as deviant according to prevailing perceptions about normalcy in society, this would render them exclusion from social and working life. We think that these labeling circumstances and negative attitudes contribute explanation to the limited opportunities to work and family among the disabled people we study. Less work or no job, cut their income and subsequently the marital prospects, as we have seen from the above sequence analyses. This suggests that disabled individuals accumulated disadvantages over lifetime that is also evident from their higher mortality level during observation compared to non-disabled people.



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## References

### Archival sources:

Demographic Data Base (DDB), Umeå University, Sweden  
Digitized parish registers and catechetical examination records from the following parishes:

Alnö	1803–1894
Attmar	1814–1896 (deficient records 1860–1868)
Hässjö	1814–1901
Indal	1814–1900
Ljustorp	1803–1901
Njurunda	1816–1891
Selånger	1813–1894
Skön	1803–1893 (Skönsmon included until 1883)
Sundsvall	1803–1892
Sättna	1806–1899
Timrå	1803–1895 (incl. <i>mantalsregister</i> 1852–1865)
Tuna	1804–1896
Tynderö	1811–1900

### Literature

- Abbot, A. (1995) Sequence Analysis: New Methods for Old Ideas, *Annual Review of Sociology* 21, 93-113.
- Abbot, A. and J. Forrest (1986). Optimal Matching Methods for Historical Sequences, *The Journal of Interdisciplinary History* 16(3), 471-494.  
DOI: 10.2307/204500
- Abbot, A. and Tsay, A. (2000) Sequence Analysis and Optimal Matching Methods in Sociology. Review and prospect, *Sociological Methods & Research* 29(1), 3-33. DOI: 10.1177/0049124100029001001
- Alm Stenflo, G. (1994) *Demographic Description of the Skellefteå and Sundsvall Regions during the 19th century*. Umeå: Demographic Database.
- Aisenbrey, A and Fasang, A. E. (2010) New Life for Old Ideas: The "Second

- Wave” of Sequence Analysis Bringing the “Course” Back Into the Life Course, *Sociological Methods & Research* 38(3), 420-462.  
DOI: 10.1177/00491241093557532
- Barnes, C. and Mercer, G. (2010) *Exploring Disability. A Sociological Introduction – Second Edition*. Cambridge: Polity Press.
- De Veirman, S. (2015) *Breaking the silence: the experiences of deaf people in East Flanders, 1750-1950: a life course approach*. Dissertation. Ghent University.
- Dribe, M. (2000) *Leaving Home in a Peasant Society. Economic Fluctuations, Household Dynamics and Youth Migration in Southern Sweden, 1829-1866*. Dissertation, Lund University.
- Gabadinho, A., Ritschard, G., Müller, N. S. and Studer, M. (2011) Analyzing and Visualizing State Sequences in R with TraMineR, *Journal of Statistical Software* 40(4), 1-37. DOI: 10.18637/jss.v040.i04
- Goffman, E. (1972) *Stigma. Den avvikandes roll och identitet* (trans. Richard, M). Stockholm: Prisma. English edition: Goffman, E. (1963). *Stigma, Notes on the management of spoiled identity*. Engelwood Cliffs, New Jersey: Prentice Hall Inc.
- Haage, H. (2012) Identifying Disability using Nineteenth Century Parish Registers.” Paper presented at the Workshop on Categories and Concepts in Health, Medicine and Society, Umeå, March 15-17, 2012.
- Haage, H., Häggström Lundevaller, E. and Vikström, L. (2016) Gendered Death Risks among Disabled Individuals in Sweden: A Case Study of the 19th-century Sundsvall Region, *Scandinavian Journal of History*, 41:2, 160-184. DOI: 10.1080/03468755.2016.1155859
- Harnesk, B. (1990) *Legofolk*. Stockholm: Almqvist & Wiksell International.
- Kudlick, C. J. (2003) Disability History: Why we Need Another Other, *The American Historical Review* 108, 763-793. DOI: 10.1086/529597
- Lundh, C. (1999) Servant Migration in Sweden in Early Nineteenth Century. *Journal of Family History*, 24(1), 53-73. DOI: 10.1177/036319909902400104
- Lundh, C. (2003) Life Cycle Servants in Nineteenth Century Sweden – Norms and Practice. Lund: Lunds Papers in Economic History, No 84.
- Nilsdotter Jeub, U. (2009) Parish Records, Digitalised Material from the Demographic Data Base. [http://www.cedar.umu.se/digitalAssets/81/81164\\_p parishrecords.pdf](http://www.cedar.umu.se/digitalAssets/81/81164_p parishrecords.pdf). Accessed December 17, 2015.
- Oliver, M. (1996) *Understanding Disability. From Theory to Practice*. New York: St. Martins Press cop.
- Susman, J. (1994) Disability, Stigma and Deviance. *Social Science and Medicine* 38, 15-22.
- Vikström, P., Brändström, A. and Edvinsson, S. (2006) Longitudinal Databases: Sources for Analyzing the Life Course, *History and Computing* 14, 109-128.
- Whittle, J. (2005) Servants in rural England c.1450 – 1650: hired work as means of accumulating wealth and skills before marriage, in M. Ågren and A. L. Erickson, A. L. (eds), *The Marital Economy in Scandinavia and Britain 1400 – 1900*, pages 89-107, Aldershot: Ashgate.

