Young people's labour market patterns and later mental health: A sequence analysis exploring the role of region of origin for young people's labour market trajectories and mental health

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1. Introduction

In comparison to other European countries, most young people in Sweden experience a relatively fast labour market integration, typically characterised by a rapid school-to-first employment transition (Wolbers, 2007), followed by a few years of employment instability before finding a stable employment (Lorentzen et al., 2018). Yet, for some young people these labour market trajectories are much more precarious. This is of particular concern among young migrants who are in higher risk of severe labour market disadvantages, including long-term unemployment, temporary employments and high dependence on social benefits (Brzinsky-Fay, 2014; Landstedt, Brydsten, & Hammarström, 2016; Lorentzen et al., 2018; Statistic Sweden, 2018; Åslund, Forslund, & Liljeberg, 2017; Åslund & Rooth, 2007). Altogether these early labour market disadvantages can lead to trajectories of long-term labour market instability and labour market marginalisation (; Fuller & Martin, 2011; Kogan & Weiβmann, 2013; Statistic Sweden, 2018). Moreover, as illustrated by the well-established body of literature on mental health risks of precarious employments and unemployment (Dunlavy & Rostila, 2013; Paul & Moser, 2009; Waenerlund, 2013), initial employment experience has been stressed as important event for future mental health status (Brydsten, Hammarström, & Strandh, 2015; Fuller & Martin, 2011; Kogan & Weiβmann, 2013;), in particularly for young adults and migrants getting established in a new country. However, the vast majority of prior research is conducted on the native population or focused on the single transition into the labour market among newly arrived adult migrants (Brzinsky-Fay, 2014; Fuller & Martin, 2011; Kogan & Weiβmann, 2013). Thus, little is known how young migrants' labour market integration unfolds across the life course, which factors that can influence the process and how it, in turn, can be related to mental ill health later in life.

Prior research has demonstrated that migrants tend to suffer more mental health problems than natives (Rostila, 2010; Butler et al., 2015a; Lindström, Sundquist, & Östergren, 2001; Sundquist & Johansson, 1997) and in higher risk of hospitalizations of various types of psychiatric care (Hjern & Allebeck, 2002; Johansson et al., 2012; Manhica et al., 2017). Migrants mental health problems also tend to increase over time (Kirmayer et al., 2011). For young migrants it can mean stressors related to family adoption, disruption of education, loss of family and community social support but also economic deprivation related to migrants' marginalised position on the labour market and discrimination (Butler et al., 2015a; Chou, 2012; Dalgard & Thapa, 2007; De Maio & Kemp, 2010; Helgesson, 2019; Kirmayer et al., 2011). These negative post-migration factors can also be a reason why second-generation migrants tend to show poorer mental health compared to natives (Di Thiene et al., 2015). Because if they have not experienced the social and economic stressors of migration, they might be indirectly affected by their parents' experiences of resettlement or adaption. Additionally, they may also experience cultural conflicts, racism, discrimination and difficulties finding stable employments (Di Thiene et al., 2015; Heath, Rothon, & Kilpi, 2008; Portes, Fernández-Kelly, & Haller, 2009). However, due to the dominance of studies using cross-sectional data or only short follow-up periods, it is relatively unknown how natives, first- and second-generation migrants' labour market trajectories varies across the life course, and to the best of our knowledge, no previous study have examined if these labour market trajectories are related to mental ill health in mid-life. This is what the present study seeks to contribute to by applying a life course approach to labour market integration. The aim of the present study was two-fold. First, to identify typical clusters of labour market trajectories from youth to mid-life (age 20–37) among women and men in Sweden, and analyse the trajectory cluster composition regarding region of origin. Secondly, to examine if the typical labour market trajectories was associated with mid-life mental ill health (age 36–38), controlling for early-life course factors including region of

origin and previous health status.

1.1. Labour market and health in context

Sociological and epidemiological life course theories emphasize the importance of when (timing in age and social position) and where (temporality and social context) of a specific event for future human agency (Elder & Giele, 2009; Kuh et al., 2003). That is, how different labour market disadvantages may influence both present and future labour market pathways, which could cause embodied stress, emotional strain and stress sensitivity leading to mental ill health later in life (DiPrete & Eirich, 2006; Elder & Giele, 2009). In relation to timing in age and social position, this study follows a cohort of young people born in 1978: from when they enter the labour market around age 20 (in 1998) and then yearly until they turn 38 years old (in 2016). By choosing this age-cohort we were able to include native-born, young migrants, and the first wave of second-generation Sweden-born. The composition of the migrant population is very heterogenous but one can identify various waves of arrivals. A first wave of arrivals was from adoptions in the years 1978–1980 (mostly from south-east Asia), then two more subsequent waves, refugees from Iran, Iraq, Lebanon, and Syria after 1985, and refugees from former Yugoslavia (1993–1995). The parents of the second-generation Swedish-born arrived in Sweden during 1960s, mainly labour migrants from the Nordic countries, southern and central Europe. In retrospect, all these young people enter the labour market during relatively good circumstances: the national unemployment level was low, there were a high state focus on youth labour market training and the replacement rate of unemployment benefits was higher and more accessible for youths compared to the decades to come (Magnusson, 2000). Yet, prior studies have suggested that is can take up to 10 years before young migrants find a stable position on the labour market and experience living conditions equal to those of the native-born (Statistic Sweden, 2018; Vogel, Hjerm, & Johansson, 2002), implying that some of the key mechanisms in young people's labour market pathways are still to be identified. Moreover, in correspondence to the contextual setting, the Swedish Social Democratic welfare state system, plays a key role in the constitution of work and working conditions, decrease the family-work conflict as well as maintaining a certain standard of living regardless of labour market integration (Esping-Andersen, 1990). For example, all citizens are entitled to social security in case of sickness and unemployment, subsided health care, education without tuitions and generous student loans for higher education provided by the state. The Swedish welfare state has also been described as family-friendly (Bergqvist and Bergqvist, 1999), creating opportunities for a shared family-work responsibility by universal child support, generous parental leave policies, childcare from the age of one and free school meals throughout compulsory school. Despite these institutionalised efforts and high labour market participation among women, the Swedish labour market has a distinct feature of gender segregation, e.g. women and men are typically found in different occupational positions (vertical gender-segregation) and in different spheres of the labour market (horizontal gender-segregation) (Weeks, 2011). Women's and men's labour market conditions also differ in terms of available full-time employments, working conditions, wages, stress and control, which in turn may influence women and men's opportunities to act and influence their own labour market pathways and mental health (Barrett, 2014; Campos-Serna et al., 2013). Accordingly, in life course research it is important to account for the potential heterogenous effects, such as gender and county of origin, because the average effects often mask the differences that are crucial for identifying the population subgroups where disadvantages accumulate.

2. Methods

This study used longitudinal microdata from Swedish national registers, collected from Statistics Sweden's register of total population

(RTB), the longitudinal integration database for health insurance and labour market studies (LISA) and health registers from the National Board of Health and Welfare. These registers contain sociodemographic, socioeconomic and health indicators for the entire Swedish population, linked through unique personal identity numbers assigned to all residents at birth or at time of migration. With the high validity and low attrition rates in these longitudinal data (Ludvigsson et al., 2011, 2016), we had the opportunity to follow individuals from their labour market entry until mid-life. In this study we selected a sample of young people at the age of 20, living in Sweden in 1998, and followed their labour market transitions across 17 years until mid-life (age 37, in 2015), measured their mental health status (age 36–38, in 2014–2016) and controlled for early-life course factors before they entered the labour market (age 14–19, in 1992–1997).

Only people that were included in the LISA register across 12 time points (i.e. $\geq$ 70% missing values) were included, to ensure coherent sequences. The final sample contained 98 634 individuals (men n = 50590 and women n = 48044). Sensitivity analyses were conducted in which the number of individuals included was altered, mental health outcome was measured across 1, 3, and 5 years, and the regression analysis was stratified by region of origin, without significant changes to the results. Ethical approval for this study was obtained by the ethics committee in Stockholm (no. 017/716–31/5).

2.1. Measurements

Labour market position was assessed by combining different sources of register-based income and other indicators drawn from the LISA-database, coded into a categorical variable representing participants' primary source of income each year. Data was collected from 1998 until 2015. The variable comprised six different states: 'employed', 'unemployed' (including unemployment benefits and labour market activity grants), 'education' (student loan or various forms of educational grants), 'parental leave' (including care's allowance), 'sick leave' and 'NEET'. The various forms of income were compared to a base amount that was calculated and distributed by Statistics Sweden, in order to account for inflation and be consistent with the various forms of social benefits received. For example, a participant was classified as a student if they received 40% of the base amount in total income from student loan (including benefits) and/or were registered at a university. Similarly, a person was classified as employed if the income from wages was equal to the base amount and the indicator for employment status was true. Unemployment, sick-leave insurance and parental leave were measured by the state benefits. Unemployment was defined by having 40% of the basic amount in unemployment benefits and/or having more than sixty days registered unemployment. Parental leave and sickness benefits are based on annual income and is set to approximately 80%. Thus, parental leave and sickness were defined as having greater than 80% of the base amount. Not having an income from education, employment or training (NEET) were regarded as being outside the labour market, which might also include unemployment without receiving unemployment benefits, Military Service compensation or working without paying taxes. When a person occupied more than one state, typically receiving student loan and wage-earnings during the year, they were classified as students if they were registered at a university. Otherwise, maximal source of income (with weightings that reflected the 40% of basic income for studies and unemployment, and 80% of basic income in parental leave and sickness) was used to assess which labour market position the individual was classified in that year.

Mental ill health was operationalised as having spent at least one night in hospital admission for psychiatric care or having a psychiatric diagnosis (ICD-10, code F00-99) from a health centre. Information was drawn from the Hospital Discharge inpatient register and health centres outpatient register, and measured in 2014–2016 (ages 35–38), and in the years 1992–1997 (age 14–19), e.g. five years before labour market exposure to measure potential health selection.

2.2. Covariates

Information on sex, age and region of origin were obtained through the Total Population Register and the migration register. *Region of origin* was coded into 'Sweden' (which include native-born people with two native-born parents), 'Second-generation'(which include native-born Swedes with at least one parents born outside Sweden), 'European countries' and 'Non-European countries'.

Early-life conditions were measured by *parental socioeconomic position* (SEP), which was derived from the available information regarding parents' (including adopted parents) highest level of education and individualised disposable income (Galobardes, Lynch, & Smith, 2007). The data was collected in the years between 1992 and 1997. Highest level of education was grouped into four categories: primary, secondary, post-secondary and unknown (for example, young people arriving in Sweden without their parents), while income was categorized by quartiles. The two measures were then combined into a score and grouped into 'high', 'medium', 'low', and 'unknown' socioeconomic position.

2.3. Statistical analyses

All data analyses were carried out in R, using the TraMineR library (Gabadinho et al., 2011). Descriptive statistics were calculated with Pearson's chi-square and t-tests to assess statistical differences between women and men. Sequence analyses was applied as the main analysis, and performed in four parts. First, individual sequences were constructed using register data to map individual labour market state progressions. A sequence is defined as an ordered list of states across time. In our analysis an individual is only classified as being in one primary state each year and the transition-taking process corresponds to the change from one state into another across time. The order these states occur and the number of transitions between different states can then entail important knowledge for how and when different labour market patterns unfolds across the life course. We adopted a State-Sequence (STS) format to describe each sequence. Once the sequences were constructed, we calculated the entropy and precarity indices for each sequence. Entropy and is a measure of how 'unstable' an individual's labour market trajectory while the precarity improves on this measure by both considering the ordering of the states and the nature of the transitions between these (one distinguishes between 'positive' transitions, i.e. unemployment to employment, and 'negative' transitions, i.e. education into unemployment). Entropy is then defined by:

$$h(p_1, \ldots p_n) = - \sum_{i=1}^{s} p_i \log_2(p_i)$$

And precarity is a measure defined by Ritschard et al. (Ritschard, Bussi, & O'Reilly, 2018) and is based on the complexity index:

$$c(s) = \sqrt{\frac{h(s)nt_s}{\log(n_a) (l_s - 1)}}$$

where $h(s)$ is entropy, n_a is the size of the alphabet, nt_s the number of transitions, and l_s the length of the sequence. The precarity index improves on the complexity by adding *correction factors* $1+ q_s$ which numerically typefies the nature of the transition, and the precarity index is then defined by:

$$prec(s) = \lambda \, a(s_1) + (1-\lambda)c(s)^{\alpha}(1 + q(s))^{\beta}$$

$a(s_1)$ is the 'cost' or degree of precarity of the starting state while λ, α, β are parameters which control the relative importance of the starting state and the respective importance of complexity and the correction. In order to calculate the precarity index, we equated 'employed' and 'education', which were considered as the most positive states, then the 'parental leave' state, followed by 'unemployment' and 'sick leave',

while 'NEET' was considered the most negative state. The individual labour market sequences were aggregated using the R 'Weighted Cluster' library (Studer, 2013), essentially identifying unique sequences and giving these a weight. Then a pairwise 'distance' was calculated between the sequences using Optimal Matching (OM) algorithm (Arpino, Gumà, & Julià, 2018; Sankoff et al., 1983). This is a commonly used method in sequence analysis, which estimates the information "cost" between pairs of sequences in terms of substitution, insertion and deletion of states (Arpino et al., 2018; Sankoff et al., 1983). The calculated cost is roughly the number of changes made to make two sequences equal which uses the transition rates to calculate substitution cost matrix with insertion/deletion costs of 1. Once the distance matrix was calculated, we applied Hierarchical Cluster Analysis (CA) using the Ward linkage. With this technique we clustered sequences by largest possible within group-similarities and between-group dissimilarities forming typical sequences (Arpino et al., 2018; Sankoff et al., 1983). Following previous studies (Aassve, Billari, & Piccarreta, 2007; Landstedt, Brydsten, & Hammarström, 2016), the number of cluster-solutions chosen were theoretically grounded, supported by cluster quality measures, such as the average silhouette width (ASW). Finally, our labour market sequences were assessed as the main exposure in a logistic regression where the outcome was coded as a Boolean variable of whether the individual had been treated for a psychiatric disorder in mid-life or not, while controlling for previous health and early-life course factors. Three models were applied, analysing (1) the bivariate association between labour market trajectories and mental ill health, (2) including origin of birth, and (3) individual early-life course factors. In order to increase comparability between models, average marginal effects were calculated from the results of the logistic regression. Variations on the classification scheme and different distance measures was explored as part of a sensitivity analyses, where we found that the four cluster solutions were relatively robust under small variations. Stratified models on origin of birth was also tested, showing similar results.

3. Results

A total of 98 634 individuals were included in this study, of whom 76.6% were born in Sweden, 13.2% were born in Sweden with at least one parent with origin from another region, 3.8% were European migrants and 6.3% non-European migrants (Table 1). The descriptive characteristics shows no significant difference between women and men regarding early-life course factors but men spend more time in employment than women, and less time in education and on parental leave.

In correspondence to the first part of our aim, Fig. 1 and 2 illustrate the state frequencies of the clusters of labour market trajectories among women and men from age 20 to age 37. Four sequence clusters were identified separately among women and men, and labelled: *early labour market entry* (T1), *late labour market entry* (T2), *continuously unstable position* (T3) and *long-term difficulties* (T4). Beginning with men (Fig. 1.), the most common trajectory is *early labour market entry*, which contain 26 216 men (51.8%), characterised by a short period of labour market instability or education before finding a stable employment throughout the period. A person in this cluster of trajectories spends 15.6 years in employment on average. The *late labour market entry* (33.6%, n = 17 016) is the second most common trajectory and differs from the first in that average men enters the labour market between the ages 25–30, followed by stable employment in the early 30s. The trajectories of *continuously unstable position* (10.1%, n = 5100) and *long-term difficulties* (4.5%, n = 2258) are the least common pathways. From early onset into the labour market, these men have experienced severe labour market difficulties of unemployment and what seems to be precarious or part-time employments, and shorter periods of sick-leave and education. The trajectories differ in that the latter trajectory contain about 11.8 years of no register-based income (e.g. no income from employment, labour market benefits, parental leave, sick-leave or education) and that

Table 1
Descriptive characteristics of the study population, stratified by women and men.

	Women (n = 48044)		Men (n = 50590)		p[a]
	n =	%	n =	%	
Region of origin					
Sweden	36794	76.6	38749	76.6	0.53
Second generation	6348	13.2	6717	13.3	
European countries	1822	3.8	1975	3.9	
Non-European countries	3080	6.4	3149	6.2	
Labour market position, mean (S.E.)					
Employed	9.7	(0.02)	11.9	(0.02)	0.91
Unemployed	0.9	(0.01)	1.0	(0.01)	
Student	4.0	(0.02)	2.9	(0.01)	
Parental leave	1.4	(0.01)	0.1	(<0.01)	
Sick-leave	0.3	(0.01)	0.2	(<0.01)	
NEET[a]	1.3	(0.01)	1.4	(0.01)	
Early-life course factors					
Parental socioeconomic position					
High	12776	26.6	13573	26.8	0.85
Medium	22021	45.8	23079	45.6	
Low	11534	24.0	12145	24.0	
Unknown	1713	3.6	1793	3.5	
Parental marital status					
Married	32656	68.0	34692	68.6	0.04
Single/Other	15388	32.0	15898	31.4	
Parental mental ill health					
No	43483	90.5	45806	90.5	0.85
Yes	4561	9.5	4784	9.5	
Previous mental ill health					
No	46434	96.6	49259	97.4	<0.01
Yes	1610	3.4	1331	2.6	
Mid-life mental ill health					
No	46604	97.0	49284	97.4	<0.01
Yes	1440	3.0	1306	2.6	

[a]Denotes a p-value between women and men.
[b]Not having an income from education, employment or training (NEET).

employment is rare from age 30. Turning to women (Fig. 2.), *late labour market entry* constitutes the most common pathway with 22 296 women (46.4%): spending an average of 6 years in education before entering the labour market, typically delaying family formation and parental leave until mid-30s. This stands in contrast to the *early labour market entry* trajectory, which contain 15 362 women (31.2%), were the majority had an employment at the first time point at age 20. The *early employment entry* also translates into early family formation with parental leave from mid-20s. *Continuously unstable position* is the third largest cluster of trajectories (16.0%, n = 7696). It is characterised by highest level of transition between different labour market states, and the highest level of unemployment and sick-leave. The most severe labour market difficulties are however fond in *long-term difficulties* (5.6%, n = 2690) with an average of 9.9 years with no registered income.

Native-born women and men constitute the majority across all trajectories due to the relatively low share of migrants in the population (Table 2). However, within group descriptive shows that across all groups of origin, 35.2% of the non-European men and 29.7% of the European men are found in *continuously unstable position*, with the corresponding figures of 32.7% and 21.4% among women. Women with origin from European countries (10.8%), non-European countries (10.3%) and second generation (8.2%) is often found in the cluster trajectory of *long-term difficulties*, where the corresponding figures for men is 8.1%, 7.9%, and 6.3%. Native-born women and men spend relatively more time in employment, while second-generation, European-born, and non-European-born spend relatively more time unemployed and without register-based income from employment, education, labour market measures, parental leave or sick-leave (Table 1A, in Appendix). Among foreign-born the entropy instead increased during the first seven years, indicating that young migrants encounter more difficulties as they are trying to establish themselves on the labour market (data not shown in tables). However, the greatest difference in regards

to region of origin is seen among men (Figure 1A in Appendix), where migrants seem to experience great disadvantages finding a stable position in the labour market relative native-born men.

Results corresponding to the second part of our aim is shown in Table 3, demonstrating the association between clusters of labour market trajectories and mental health in mid-life, stratified by women and men, controlling for region of origin and early-life course factors. Results from the unadjusted association showed that people who experienced *continuously unstable position* and *long-term difficulties* across the labour market had a higher risk of mental ill health in mid-life than peers in the *early labour market entry* trajectory. Women with *continuously unstable position* had an 11% (p < 0.05) higher probability of receiving psychiatric care in mid-life than those in the *early labour market entry* cluster, were the corresponding risk is 13% (p < 0.05) higher among men. In the case of *late labour market entry*, no significant difference was found for women relative *early labour market entry*, while for men the probability for mental ill health in mid-life was lower by 1% (p < 0.05). The highest mental health risk in mid-life was for the *long-term difficulties*, with average marginal effects probabilities of 20% (p < 0.05) and 25% (p < 0.05) for women and men respectively. The increased risk remained for all clusters when controlling for region of origin (model 2) and early-life course factors (model 3). However, both women and men showed a slightly decreased risk at 18% (p < 0.05) and 21% in the cluster *late labour market entry* in the fully adjusted model.

4. Discussion

In the present study we followed an age-cohort across 18 years with the aim to identify clusters of labour market trajectories from labour market entry to mid-life (age 20–37) among women and men, analyse the cluster composition regarding region of origin, and examine if these trajectories was associated with mid-life mental ill health (at age 38) controlling for early-life course factors. We identified four clusters, separately for women and men, describing trajectories of a rapid school-to-work transition with stable employment (T1), a long duration of education before entering a stable employment (T2), experiencing early labour market difficulties with precarious transitions between unemployment, education, shorter employments and sick-leave throughout the period (T3) and long-term difficulties with severe labour market exclusion (T4). The gender-specific traits between these trajectories are in line with previous findings (Brzinsky-Fay & Solga, 2016; Lorentzen et al., 2018; Scherer, 2005), showing that women in average have longer duration in education, carries the main family formation responsibility and are more common among precarious or labour market excluding trajectories. Moreover, our findings demonstrate that people with origin from European and non-European countries experience more transitions between different labour market states than natives, and are overrepresented in the *continuously unstable position* and *long-term difficulties* trajectory . A more precarious labour market trajectory was also associated with higher risk of mental ill health in mid-life, regardless of previous mental health status before labour market entry, parental socioeconomic position and parent's mental health and marital status. The highest risk mental ill health in mid-life was found among men (25%, p < 0.05) and women (20%, p < 0.05) experiencing *long-term difficulties'* comparing to *early labour market entry*.

In this study we found support for our hypothesis that early labour market disadvantages could lead to trajectories of long-term labour market instability and labour market exclusion, and that young migrants might be the most vulnerable group. In correspondence with Kogan and colleagues (2013) German study, our findings showed that migrants in average experienced more labour market transitions compared to natives during their first seven years on the labour market. This indicates that young migrants encounter more difficulties than natives as they are trying to establish themselves on the labour market while young people with early employment success had more stable labour market trajectories. These results are in line with previous labour market research
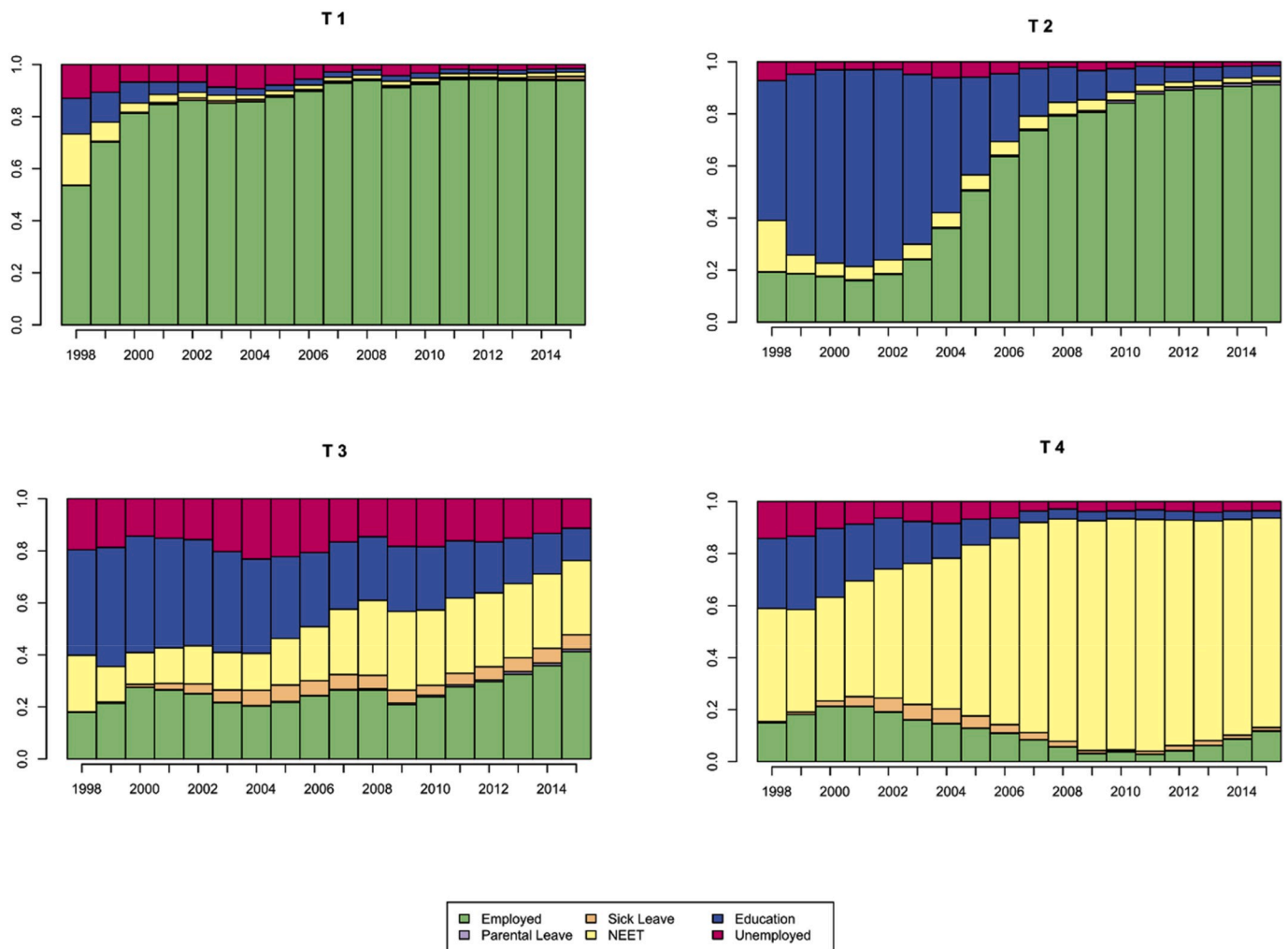
Fig. 1. Density plots of men's state sequences of labour market positions across the life course (age 20–37) clustered in four groups.

conducted on adult migrants, showing that migrants' four initial years on the Canadian labour market influenced both wages and occupational attainment (Fuller & Martin, 2011). However, our finding stress that these initial labour market experiences also are vital for young migrants and second-generation migrants who have been in the country for a longer period of time than newly arrivals, taking part of the compulsory educational system and probably have more language knowledge.

Although the overall features of the trajectories for men and women show similarities, they also reflect differences in the gendered labour market opportunities. As several studies have stressed before (Campos-Serna et al., 2013; Landstedt, Brydsten, & Hammarström, 2016; Magnusson, 2007), these differences are likely to be due to remarkably gender-segregated labour market in Sweden where men are dominating the private sector and manufacturing industry while women are found in public sectors. These differences also reflect how women more often have part-time, low-wage employment, sick-leave benefits and parental leave due to family-work conflicts (Magnusson, 2007). Men in this cohort tended to have more time in employment and fewer transitions between labour market states, as well as less time in education, sick-leave and parental leave than women. Additionally, our results show that migrants show the most precariousness across gender and socioeconomic background. This intersection of "double disadvantages" of ethnicity and gender, is also reflected in the mental health inequality of our findings, showing that young migrant women are more often found in trajectories with long-term turbulence and high level of labour market exclusion, which in turn, showed higher risk of mental ill health.

This association persisted even after accounting for early-life course factors, e.g. having parents with low human-capital as well as having own and parental mental ill health. Labour market disadvantages may have a stronger influence on mental health among migrants than among natives for several reasons. One reason migrants might find themselves in the more disadvantaged trajectories may be the gender- and ethnic labour market polarisation, which have shown that migrants are recruited to lower sections of the labour market, with poorer working conditions, lower wages, temporary employments contracts, and thus in higher insecurity, compared to natives (Vingård & Johansson, 2012). In other words, first- and second-generation women are in higher risk of being recruited to the most disadvantaged labour market sectors that native workers avoid, which may lead mental ill health. Another reason for poor mental health related to precarious labour market pathways and severe labour market exclusion can be the result of poor living standards and poor housing, low social status and lack of social networks (Brydsten, Rostila, & Dunlavy, 2019; Dalgard & Thapa, 2007; Johnson et al., 2017). These factors have been shown as key social determinants of mental health in previous studies (Bhugra & Becker, 2005; Butler et al., 2015b), entailing that migrants' mental health is strongly influenced by social integration into society. Among foreign-born women, early childbirth showed to be an important event for remaining in trajectories of labour market exclusion, which could be related to social isolation, and greater family-work conflict due to high employment instability with short-term employment, inconvenient working hours, economic hardship and low-earnings.
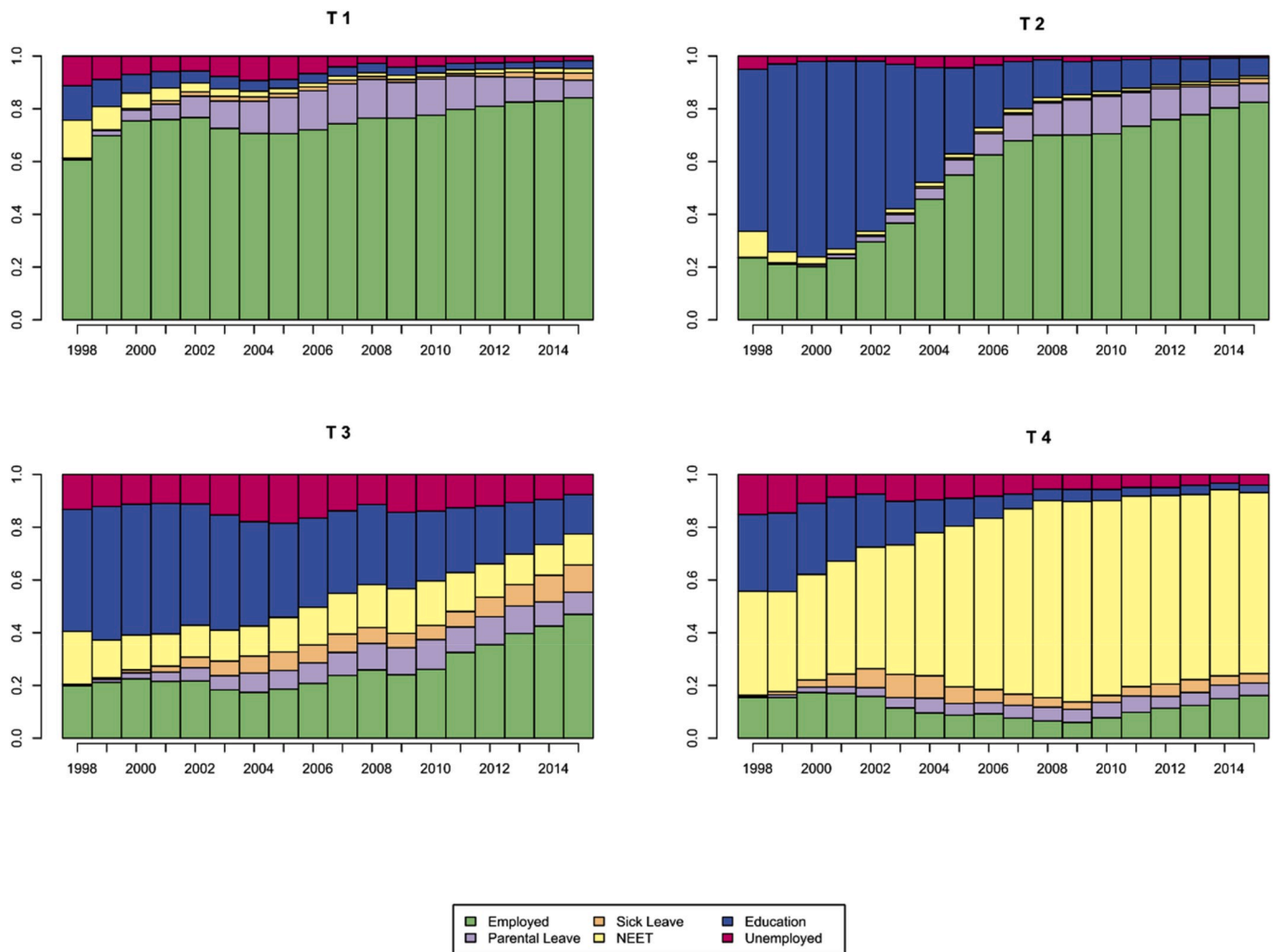
Fig. 2. Density plots of women's state sequences of labour market positions across the life course (age 20–37) clustered in four groups.

Table 2
Cluster membership based on region of origin, for men and women respectively (%, reported within cluster).

	Early labour market entry	Late labour market entry	Continuously unstable position	Long-term difficulties
Women	**T1 (n = 15 362)**	**T2 (n = 22 296)**	**T3 (n = 7696)**	**T4 (n = 2690)**
Sweden	33.0	49.2	13.2	4.50
Second generation	32.1	40.8	18.8	8.22
European countries	24.5	35.0	29.7	10.8
Non-European countries	23.3	31.1	35.2	10.3
Men	**T1 (n = 26 216)**	**T2 (n = 17 016)**	**T3 (n = 5100)**	**T4 (n = 2258)**
Sweden	54.3	34.8	7.3	3.7
Second generation	50.0	31.2	12.5	6.3
European countries	40.6	29.9	21.4	8.1
Non-European countries	32.7	26.7	32.7	7.9

Table 3
Average marginal effects (AME) of cluster membership and mental ill health in mid-life (age 38) and cluster trajectories, calculated from logistic regression results.

Women		Model 1	Model 2	Model 3
		AME (S.E.)	AME (S.E.)	AME (S.E.)
Early labour market entry	T1	Ref	Ref	Ref
Late labour market entry	T2	−0.01 *** (<0.01)	−0.01 ** (0.01)	0.00 (<0.01)
Continuously unstable position	T3	0.11 *** (0.01)	0.11 *** (0.01)	0.11 *** (0.01)
Long-term difficulties	T4	0.20 *** (0.01)	0.20 *** (0.01)	0.18 *** (0.01)
Men		Model 1	Model 2	Model 3
		AME (S.E.)	AME (S.E.)	AME (S.E.)
Early labour market entry	T1	Ref	Ref	Ref
Late labour market entry	T2	0.00 (<0.01)	0.13 *** (0.01)	0.25 *** (0.01)
Continuously unstable position	T3	0.00 (<0.01)	0.13 *** (0.01)	0.25 *** (0.01)
Long-term difficulties	T4	0.01 (<0.01)	0.13 *** (0.01)	0.21 *** (0.01)

Model 1: Bivariate. Model 2: Adjusted for origin of birth. Model 3: Adjusted for model 2 and early-life course factors including parental socioeconomic position, own and parental mental health in childhood and parental marital status.

It is well established that the causal direction of precarious employments and health can go in opposite directions (Janlert, 1997), e.g. that unemployment, labour market measures and poor working conditions can lead to mental ill health and that ill health can lead to unemployment, low-wage employment and poorer working conditions. In accordance with epidemiological life course models (Kuh et al., 2003), poor mental health associated with long-term labour market exclusion and continuously unstable situation trajectories can be viewed as the results of early life course setbacks, where early labour market disadvantages can start a chain of poor mental health and further difficulties finding a new employment and, in turn, leading to mental ill health in mid-life (Ben-Shlomo & Kuh, 2002; Kuh et al., 2003). In other words, finding of the present study, are likely to be the result of accumulation of negative post-migration factors, social and economic disadvantages, distress related to worries of not finding a stable employment and stress related to transitioning between different labour market states leading to poor mental health in mid-life. With the substantial increase of young people in the population being foreign-born or having at least one parent with origin outside Sweden (Statistic Sweden, 2019, Statistic Sweden, 2018), ensuring an effective labour market integration is of high importance to prevent individual poverty, social isolation and mental ill health. Further research is therefore needed to explore the intersectional aspects of gender and ethnicity on the Swedish labour market, how to support first and second-generation migrants initial labour market entry and the mechanism of poor mental health related to labour market difficulties.

4.1. Strengths and limitations

This study covers labour market trajectories of 98 634 individuals, born in 1978, and followed in registers from 1998 to 2016. We choose this age-cohort for two reasons. First, the lower end of our age-spectrum was chosen in accordance with Swedish unemployment benefit system available from age 20. By staring in 1998, we could include first- and second-generation migrants in Sweden from the early 1960s while also avoiding the greatest unemployment rates from the economic crises culminating in 1993 in Sweden. Secondly, the upper end age-spectrum was set at age 38 to represent mid-life, which typically is characterised by a more stable labour market. In 2016, when our cohort is 38, is also the last measure point we currently have available in our data set.

A major strength of this study is the use of well-kept register data available in Sweden, which made it was possible to construct almost complete labour market sequences for the vast majority of young people. However, although this was a longitudinal study which avoided some of the problems with cross-sectional data, there is still a risk that our findings reflect cohort specific effects. For example, due to cohort specific variations in migrant flows from different countries, this age-cohort may reflect the composition of migrants in our cohort in 1998. Therefore, generalisations of our finding to other age-cohorts during different times should be made with some caution. However, even if the population composition and contextual labour market conditions are constantly changing, our findings can entail important understanding of key mechanism related to normative phases of aging, accumulation of disadvantages and a life course perspective on health and wellbeing, equivalent to all age cohorts. In addition, any migrant cohort will be heterogeneous and composed of labour-market migrants and refugees, and the process of integration made more difficult by obstacles into labour market participation.

Another limitation is the arbitrariness of how the sequences are constructed. Labour market position was measured by six categories across 17 years, where each state represented primary source of income. It is a relatively crude measure of individual variations each year. In particular, this measure does not highlight the full complexity of labour market transitions in youth, since many young people tend to occupy several different states over a year. However, compared to cross-sectional studies our longitudinal approach has the strength of capturing some of the individual variance over time. Future studies might benefit by a multichannel sequence analysis approach, which could account for several concurrent labour market positions or other dimensions of family-formation with high impact on current and future labour market positions. The clustering of trajectories is also a matter of choice. The number of clusters chosen in this study was theoretical grounded to represent typical clusters of labour market trajectories, supported by running various diagnostics of cluster membership.

This study used register based mental health as outcome, which is a growing public health issue worldwide causing great social and material hardship for individual and society, and increase the risk of suicide. By using both hospital admission and psychiatric diagnoses from health centres, we strived to capture milder and severer forms of mental ill health. Nevertheless, prior research has shown that migrants are less likely to seek care (Bäärnhielm et al., 2005), implying that mental ill health could be underreported in our sample and that association found in this study could be understated. On the other hand, migrants with mental ill health who initially doesn't receive adequate care might instead end up in hospitalization.

5. Conclusion

The present study contributes to a relatively scarce field of research by investigating how young native, first- and second-generation migrants' labour market integration unfolds across the life course and how these clusters of labour market trajectories was related to mental ill health later in life. Even though most young people in our cohort experienced a rapid unproblematic transition finding a stable employment, our findings stressed that some have severe labour market disadvantages, beginning from their early labour market entry and though the entire study period. Migrants from European and non-European counties was overrepresented in the latter, which also was associated with higher risk of poor mental health in mid-life. Since it was shown that early labour market turbulence can lead to both lock-in effects as well as to health consequences far up in the ages, further efforts should be directed towards equalizing labour market opportunities across gender, ethnicity and socioeconomic background, thus preventing social and economic exclusion from early start in life.

Ethical approval

Ethical approval for this study was obtained from the ethics committee in Stockholm (no. 017/716–31/5), for the research program titled "Social determinants of health among individuals with foreign background: Societal and individual perspectives" (FORTE 2016–07128) with Mikael Rostila as the principal investigator.

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Declaration of competing interest

None.

CRediT authorship contribution statement

Anna Brydsten: Writing - original draft, Conceptualization, Methodology, Validation. **Agneta Cederström:** Methodology, Formal analysis, Visualization, Writing - review & editing. **Mikael Rostila:** Conceptualization, Writing - review & editing, Resources.

Appendix

Table 1A
Mean time spent in labour market position for women and men across region of origin

|	Employed		Unemployed		Student		Parental leave		Sick-leave		Other	
	Mean	(S.E.)	Mean	(S.E.)	Mean	(S.E.)	Mean	(S.E.)	Mean	(S.E.)	Mean	(S.E.)
Women												
Sweden	10.07	(0.02)	0.81	(0.01)	4.02	(0.02)	1.39	(0.01)	0.3	(0.01)	1.05	(0.01)
Second generation	9.08	(0.06)	1.06	(0.02)	3.89	(0.04)	1.29	(0.02)	0.37	(0.01)	1.67	(0.04)
European countries	7.56	(0.11)	1.32	(0.05)	3.83	(0.08)	1.25	(0.03)	(0.33	(0.02)	2.23	(0.08)
Non-European countries	7.05	(0.09)	1.35	(0.04)	3.84	(0.06)	1.18	(0.07)	0.27	(0.02)	2.35	(0.06)
Men												
Sweden	12.51	(0.02)	0.88	(0.01)	2.87	(0.02)	0.05	(<0.01)	0.13	(<0.01)	1.23	(0.01)
Second generation	11.14	(0.07)	1.26	(0.02)	2.86	(0.04)	0.05	(<0.01)	0.19	(0.01)	1.94	(0.04)
European countries	9.42	(0.12)	1.61	(0.05)	2.98	(0.07)	0.06	(0.01)	0.21	(0.02)	2.32	(0.08)
Non-European countries	8.23	(0.10)	1.63	(0.04)	3.1	(0.06)	0.06	(0.01)	0.17	(0.01)	2.45	(0.06)
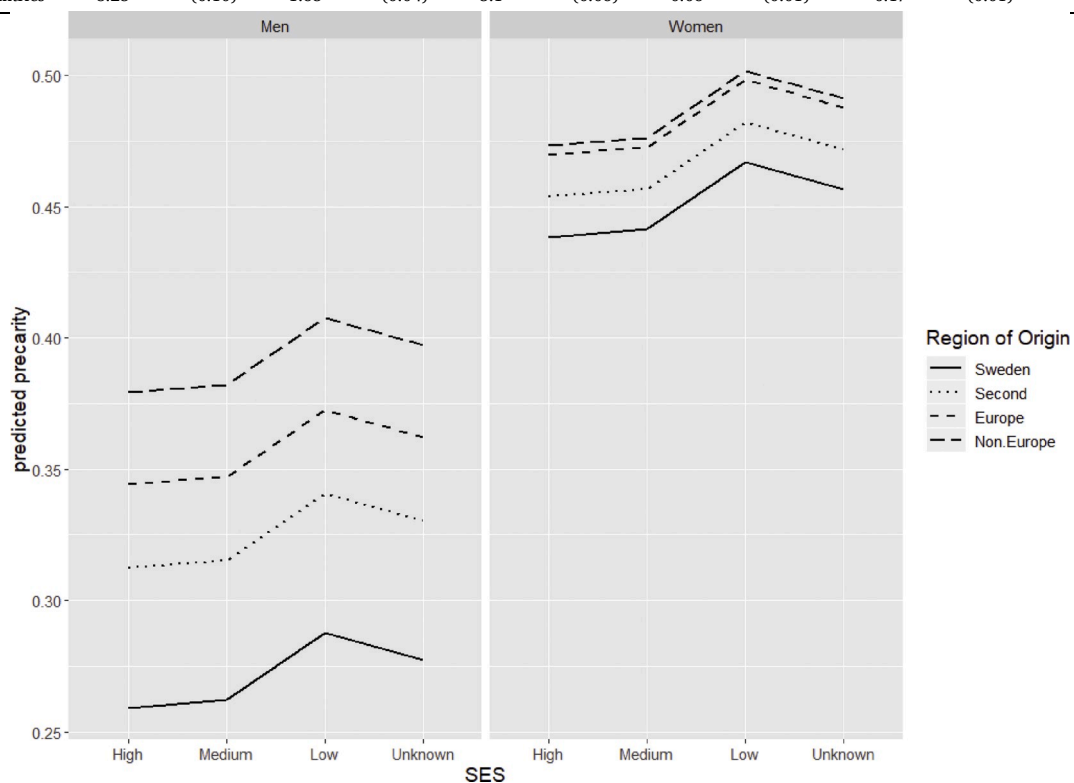
Fig. 1A. Predicted precarity across gender, region of origin and socioeconomic background

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