Double Disadvantage in a Nordic Welfare State: A Demographic Analysis of the Single Parent Employment Gap in Finland, 1987–2018

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The Inequalities, Interventions, and New Welfare State (INVEST) aims at increasing wellbeing of Finnish society during childhood, youth and early adulthood and preventing psychosocial risks compromising such development through innovative interventions. Based on cutting-edge research on the conditions and mechanisms involved at different periods of development, INVEST will evaluate and develop various universal and targeted interventions to improve the efficiency of the current welfare state institutions at critical points of the early life course. INVEST aims at providing a new model for the welfare states that is more equal, better targeted to problem groups, more anticipatory as well as economically and socially sustainable. INVEST is a Flagship project of the Academy of Finland.

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Abstract (250 words)

This study demonstrates how an evolving negative educational gradient of single parenthood can interact with changing labour market conditions to shape labour market inequalities between partnered and single parents. We analysed trends in employment rates among Finnish partnered and single mothers and fathers from 1987 to 2018. In the late 1980s' Finland, single mothers' employment was internationally high and on par with that of partnered mothers, and single fathers' employment rate was just below that of partnered fathers. The gaps between single and partnered parents emerged and increased during the 1990s recession, and after the 2008 economic crisis, it widened further. In 2018, the employment rates of single parents were 11–12 percentage points lower than those of partnered parents. We ask how much of this single parent employment gap could be explained by compositional factors, and the widening educational gradient of single parenthood in particular. We use Chevan and Sutherland's decomposition technique on register data, which allows us to decompose the single parent employment gap into the composition and rate effects by each category of the background variables. The findings point to an increasing double disadvantage of single parents: the gradually evolving disadvantage in educational backgrounds together with large differences in employment rates between single and partnered parents with low education explain the widening employment gap. Socio-demographic changes in interaction with changes in the labour market can produce inequalities by family structure in a Nordic society known for its extensive support for combining childcare and employment for all parents.

Keywords: single mothers, single fathers, single parents, employment, inequality, education, Finland

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1 Introduction

In the 1980s, there was a picture of a Nordic welfare state—Finland—that successfully supported the employment of parents, regardless of gender or family status (e.g., Esping-Andersen, 1999; Nieuwenhuis & Maldonado, 2018). However, Figure 1 shows trends in the employment levels of Finnish single and partnered mothers and fathers from the late 1980s to the late 2010s. In the late 1980s, the employment rates were high for all four groups, and the differences between single and partnered parents were non-existent among mothers and small among fathers, with slightly lower rates for single fathers than for partnered fathers. Following the early 1990s recession, which had marked labour market impacts in general (Kyyrä & Pesola, 2020), resulted in a strong decline in the employment rates of single parents in particular, and the employment gap between single and partnered parents opened up and has remained large ever since. This gap is similar for both mothers and fathers, even though the employment rates of partnered and single fathers were higher than those of their respective mothers. Despite existing research on single parents' employment in Nordic countries (Burström et al., 1999; Nordenmark, 2000 ; Kjeldstad & Rønsen, 2004; Hakovirta, 2006; OECD, 2011, 2020a), no studies have tried to explain this initial growth and puzzling persistence of the single parent employment gap.

<Figure 1 about here>

What can explain these trends? Our main focus is to analyse how changes in the social demography of single parenthood have contributed to the single parenthood gaps in employment in Finland. In particular, we focus on the role of the changing educational gradient of single parenthood. Divergence in family demography has been a central theme of the past two decades of social demographic research (e.g., McLanahan, 2004; Härkönen & Dronkers, 2006; McLanahan & Jacobsen, 2015). An important feature is the uneven

spread of single motherhood, where the prevalence of single motherhood increased more among women with lower levels of education, a trend observed in many countries, including Finland (Härkönen, 2017). Consequently single mothers are increasingly characterised by lower education levels than partnered mothers. This is likely to reflect in their employment rates.

Whether similar developments characterise the social demography of single fathers is largely unknown. Previous research on the demography, employment, and well-being of single parents has been largely limited to single mothers. Even though single mothers continue to constitute the majority of single parents, this almost sole focus overlooks the increasing prevalence of single-father families (Nieuwenhuis, 2020). Similar to single-mother families, families headed by single fathers face higher poverty rates (Chzhen & Bradshaw, 2012; Maldonado & Nieuwenhuis, 2015; Semega et al., 2017; Geisler & Kreyenfeld, 2019); employment will have strong protective effects against poverty in both groups (Misra et al., 2012). However, we know little about employment or changes in the social demography of single fathers; empirical results and theories that focus on single parenthood as single motherhood make them implicitly gendered.

Thus, we ask whether and how the changing educational composition of single parenthood has contributed to the increased and persistent employment gap between partnered and single parents, and whether the patterns are similar for mothers and fathers. We argue that changes in the educational composition of the group of single parents can impact their employment relative to partnered parents through two complementary channels: a compositional effect and an interaction effect. The compositional effect operates through a weakening of the educational profile of single parents relative to partnered parents. We expect that the single parenthood employment gap is the largest among those with low education, owing to an unfavourable labour market, family-unfriendly working conditions, and labour supply disincentives facing the lower educated in particular (Kärkkäinen, 2011; Viitamäki, 2015). Thus, we expect the interaction effect to amplify the compositional effect. Through these two channels, the widening negative

educational gradient of single parenthood may create a double disadvantage for single-parent employment.

In our empirical analyses, we use Chevan and Sutherland's (CS) (2009) decomposition technique on Finnish register data. The advantage of the CS method on standard demographic decompositions (e.g., Dasgupta, 1993) is that it enables us to partition the composition and rate effects of each category of the background variables. This allows us to analyse whether changing single-parent employment gaps within each educational group contribute to the overall employment gap. Our analyses control for the age of the parent and the age of the youngest child, as these can confound the role of educational attainment.

Understanding the underlying causes for the changes in single parent employment gaps in Finland, contributes to the analysis of the broader literature on whether divergence in family demography contributes to social inequality (McLanahan, 2004; McLanahan & Percheski, 2008). It also contributes to the literature on the social demography and well-being of single-father families, and can inform gendered theories of single parenthood by explicitly comparing single mothers to single fathers.

2 Background

This study seeks to understand how the socio-demographic composition of single parenthood has contributed to the emergence, strengthening, and persistence of the single parent employment gap in Finland. Below, we first describe the changing social demography of single parenthood and then move on to consider the theoretical aspects of single parents' employment. Lastly, we discuss the labour market and the policy context of the study.

2.1 The social demography of single parenthood

Single parenthood is still largely a single motherhood. In Finland, mother-headed single-parent households constitute approximately 85% of all single-parent households. The share

of single-mother families of all families with children under 18 years of age increased from 12% in 1990 to 17% in 2000, and was 20% by 2019 (Statistics Finland, 2021). Father-headed single-parent families continue to be a minority, comprising less than 2% of all families with children in 1990 and 3.4% in 2019 (Statistics Finland, 2021).

The large majority of Finnish single motherhood results from separations, and non-union childbearing is a less frequent route to single motherhood (Heuveline et al., 2013; Jalovaara & Andersson, 2018). Consequently, Finnish single mothers are less likely than partnered mothers to have very young children, and the age distributions of Finnish single and partnered mothers are fairly similar (see Table 1). These characteristics are in contrast to the US and the UK, for instance, where single mothers' younger age is one reason why their employment rates are lower than those of partnered mothers (Wu & Eamon, 2011; Ahn, 2012). For fathers, becoming a single parent without a previous union is rare (Capková & Jalovaara, 2020). In our data, single fathers tend to be slightly older than partnered fathers, and they are less likely than partnered fathers to have very young children (see Table 1).

Single parenthood is more common among lower-educated mothers than among higher-educated mothers in many countries, including Finland (McLanahan, 2004; McLanahan & Jacobsen, 2015; Härkönen, 2017). In Finland, this reflects the fact that divorce and separation are more frequent among lower-educated individuals (Jalovaara, 2013) as well as the strong negative educational gradient of births outside coresidential partnerships (Jalovaara & Andersson, 2018; Jalovaara & Fasang, 2015). Similar to many other countries, the educational gradient of single motherhood has fallen over the past decades; it was next to absent in the mid-1980s but began to widen thereafter as the prevalence of single motherhood grew for mothers with medium and especially with low levels of education, while it remained stable among highly educated mothers (Härkönen, 2017). Knowledge of the relationship between education and single parenthood among men is limited although we know that union dissolution is consistently more common among men with lower levels of education (Jalovaara & Kulu, 2018). There is also some evidence that single fatherhood is more common among men with lower education or lower income

(Eggebeen et al., 1996; Brown, 2000; Capková & Jalovaara, 2020; Galarneau, 2005), and that the educational differences in single fatherhood have increased over time (Galarneau, 2005). This was also the case in our study population (Figure 2). While single fatherhood is still rare in Finland, the educational gradient in single fatherhood exists and is strengthening.

<Figure 2 about here>

2.2 Single Parents and Employment

A basic assumption in the standard economic model of labour supply is that parenthood affects mothers' and fathers' employment differently. Motherhood is predicted to decrease a woman's labour supply and the elasticity of the labour supply because having children increases the value of women's time outside paid work (Bargain et al., 2014; Cahuc et al., 2014). Fathers, on the other hand, are less likely to take time off from paid work to care for their children; they may instead increase their work effort, for example, by working longer hours (e.g., Knoester & Eggebeen, 2006; Killewald & Gough, 2013; Petersen et al., 2014). In addition to differential time investments, employers may discriminate against mothers (Correll et al., 2007; Gangl & Ziefle, 2009) but favour fathers (Correll et al., 2007; Bygren & Gähler, 2012).

Research on single parents' employment has been overwhelmingly concentrated on mothers. In general, single and partnered mothers' employment is affected by similar factors. Both are more likely to be employed if they are highly educated and have higher potential earnings, fewer and older children, good access to high-quality child care, and lower incomes from social benefits of other non-work sources of income (e.g. González, 2004; Gornick, 2004; OECD, 2011; Rafferty & Wiggan, 2011; Wu et al., 2011; Ahn, 2012; Steiber & Haas, 2012; Misra et al., 2012). These differences partly explain the differences between single and partnered mothers' employment rates (Wong et al., 1993; González, 2004; OECD, 2011; Wu & Eamon, 2011).

Nevertheless, these factors are important; as sole family breadwinners, single mothers should have higher labour supply incentives than partnered mothers (González, 2004). However, single mothers' labour supply would be more responsive to wage rates and non-work income (Bargain et al., 2014). Single mothers' childcare responsibilities make them more dependent on access to affordable childcare (Connelly & Kimmel, 2003; Misra et al., 2012). It can also reduce their opportunities and willingness to accept job offers with non-typical working hours (Esser & Olsen, 2017; Moilanen et al., 2019) or even reduce employers' willingness to hire them. Finally, because of various, often means-tested, social benefits, single mothers can face stronger employment disincentives (e.g., Thévenon, 2011). However, even at equal social benefit levels, single mothers' labour supply can be more strongly affected by non-work income if their labour supply is more elastic (Bargain et al., 2014).

The factors discussed above suggest that the single-mother employment gap is likely to be larger in the lower educational segments. First, the constellation of different (means-tested) social benefits typically creates stronger employment disincentives for single mothers than for partnered mothers (Thévenon, 2011). Second, mothers with lower levels of education are more often faced with less family-friendly working hours and other conditions (Presser & Ward, 2011). This effect on employment is likely stronger among single mothers, who tend to face more constraints in arranging childcare during irregular working hours (cf. Kjeldstad & Rønsen, 2004). As mentioned above, if single motherhood becomes increasingly concentrated among mothers with low education, these mechanisms can contribute to weaker single-mother employment not only within the educational groups but also at the population level.

Little research has been conducted on how single parenthood affects fathers' employment, and much of the research on single fathers has focused on their caregiving as well as their and their children's well-being (Coles, 2015). Nevertheless, one can draw on perspectives in this research to form expectations of the employment of single fathers. From a microstructural perspective, family status is more important than gender to produce similar effects of single parenthood for women and men alike (Hook & Chalasani, 2008).

Since single parents have fewer opportunities to divide paid and unpaid labour with another parent, the demands on both would be expected to produce similar caregiving and labour supply responses. Indeed, compared to partnered fathers, single fathers have been found to have lower employment, avoid working long or unusual hours, and benefit more from childcare availability in the United States (Hook & Chalasani, 2008), and single fathers are more involved than partnered fathers (Coles, 2015). Both these findings are in line with the microstructural perspective, where fathers adapt to their new family circumstances, both with respect to paid work and childcare.

At the same time, research on single fathering has also discussed whether single fathers differ from single mothers in their childcare and housework involvement. While several studies have found broad support for the microstructural perspective (suggesting little or no difference to mothers), others have suggested that the microstructural pressures of family circumstances are moderated by gender and that single fathers do differ from single mothers in many dimensions of childcare involvement (Hook & Chalasani, 2008; Coles, 2015). On the other hand, partnered fathers may have better opportunities than single fathers for investing in paid work as they can rely on their partners to assume a larger share of childcare and household responsibilities (Killewald & Gough, 2013; Killewald & García-Manglano, 2016). However, increased maternal (full-time) employment, as well as changing gender roles toward more active fathering (Gibb et al., 2014; Koslowski, 2011; Pollmann-Schult & Reynolds, 2017), have been found to depress the fatherhood premium among partnered men (Budig & Lim, 2016; Mari, 2019; Bergsvik et al., 2020), which could reduce the employment difference between single and partnered fathers.

In summary, the responsibilities and constraints of single parenting lead to the expectation that single parents will have lower employment rates than partnered parents, even when compositional differences have been taken into account. We expect these effects to be moderated by education, so that the single parent employment gaps are larger among parents with low education. Although most theoretical accounts of single parents' employment only consider mothers, single fathers' employment can be affected in similar—although not necessarily exactly the same—ways than the employment of single mothers.

2.3 Labour Market and Policy in Finland

The 1990s economic recession caused a major and persistent employment shock and a restructuring of the labour market towards more highly skilled occupations, which led to declining employment opportunities for those with lower levels of education (Asplund & Maliranta, 2006; Hannikainen & Heikkinen, 2006). The 1990s also witnessed an increase in temporary work contracts, particularly among women (Nätti et al., 2005). The aftermath of the 2008 financial crisis further weakened the labour market, which continued to carry the scars of the 1990s recession. The long-term unemployment rate began to increase after the 2008 crisis, and since then, employment has remained at a substantially lower level than in neighbouring countries (Kyyrä & Pesola, 2020).

In general, Finnish family policies are characteristic of the Nordic welfare regime; they aim to promote gender equality in paid and unpaid labour through generous parental leave schemes, strongly subsidised high-quality childcare, and individualised taxation (Esping-Andersen, 1999). A peculiarity in this respect is the popularity of the child home care leave policy, which is a subsidy paid after parental leave to parents whose under-three-year-old child is not in municipal day care (Sipilä et al., 2010). This cash-for-care policy was extended to cover all families with children under the age of three in the 1990s (Hiilamo & Kangas, 2009) and is widely regarded as a key explanation for the comparatively low employment rates of Finnish mothers with young children, and is argued to weaken women's labour market position in general (Sipilä et al., 2010; OECD, 2020b).

Although Nordic countries' generous social benefits reduce single-parent poverty (Brady & Burroway, 2012; Maldonado & Nieuwenhuis, 2015), they can also create employment disincentives. Unemployment insurance schemes, housing benefits, and social assistance benefits may discourage employment if additional earnings do not markedly increase the family income. In Finland, employment disincentives have weakened since the late-1990s (e.g., Laitila & Viitamäki, 2009). Nevertheless, they are estimated to be stronger among single than partnered mothers (unless their partner is also jobless) and can extend to single mothers whose potential earnings are close to the median of women (Kärkkäinen, 2011; Viitamäki, 2015). Although these studies have compared single mothers to partnered

mothers, combinations of benefits and taxation policies may create similar employment disincentives for single fathers. Employment disincentives created by the combination of different (means tested) social benefit schemes are thus likely to be stronger among single than partnered parents, and these differences are likely to be inversely related to the level of educational attainment of the parents.

3 Data and Methods

3.1 Data

We used data formed at Statistics Finland through the linking of a longitudinal population register and registers of employment, educational degrees, and vital events, as well as other register sources. The data cover all persons in Finland who had been registered between 1987 and 2018. The data include annual information on family type and children living in the household, individual economic activity, and monthly data on completed educational degrees beyond compulsory education. The data used in the final analyses (13,399 thousand person years, men and 14,882 thousand person years, women) were limited to parents aged 18 to 49 years who had at least one child aged 1–17 years (mothers) or 0–17 years of age (fathers) living in the same household. Data on persons born outside Finland were excluded because information on their educational histories was often deficient.

Our focus is on mothers and fathers who live with at least one 18-year-old child. A partnered parent is a parent who has a married or cohabiting partner, or registered partner in same-sex couples living in the same household, and a single parent is a parent who is neither married nor co-residing with a partner. Data on cohabiting unions are inferred from dwellings and other registers (Jalovaara & Kulu, 2018).

Mothers with children under 1-year-old children were excluded. Finnish family policies allow paid maternity and parental leave until the child is nine months old, and the great majority of mothers use all of this leave. It is difficult to determine the mother's employment situation during the child's first year, because in most cases (but not all), the mother's situation is recorded as her labour market status before the leave. Focusing on mothers whose youngest child is at least a year old leads to a more accurate picture of mothers' employment.

Employment is a binary variable indicating economic activity status during the reference period, which is the last week of the year. The non-employed include unemployed job seekers, students, pensioners (persons on disability pension in this age group), and others outside the labour force, including homemakers.

Educational attainment is our main compositional variable, which indicates a person's highest level of education completed by the end of the year and was broken down into the following four categories: lower secondary level (9 years, ISCED 0–2), indicating there were no data on degrees beyond this level; upper secondary level (vocational education or academic high school, obtained in two to three years, ISCED 3–4); lower tertiary level (e.g. vocational education following academic high school, or bachelor's degree, ISCED 5–6); and higher tertiary level (master's degree or higher, ISCED 7–8).

The age of the parent and age of the youngest child are the two other compositional variables. The age of the parents was grouped into three categories: 18–29, 30–39, and 40–49 years. The age of the youngest child in the household was collapsed into three categories 1–2 (for mothers) and 0–2 (for fathers), 3–6, and 7–17, reflecting family policies in Finland and its school system: parents of under-three-year-old children are entitled to home care leave and benefit, and children start school the year they turn seven. Most children from age three to six attend day care, especially if they do not have younger siblings. We used the age of the youngest child instead of the number of children as the compositional variable because it has a stronger independent effect on Finnish mothers' employment than the number of children (Statistics Finland, 2014). In cross-sectional data, the age of the parent captures cohort effects as well.

In the decomposition analysis, we compared seven time periods between 1987 and 2018: 1987–1990, 1991–1994, 1995–1998, 1999–2003, 2004–2008, 2009–2013, and 2014–2018. These time periods reflect macroeconomic conditions and labour market trends. The study covers periods of economic upswings and increasing employment (1987–1990, 1995–1998, and 2014–2018), recessions and decreasing employment (1991–1994 and 2009–2013), and periods of stable employment (1999–2003 and 2004–2008).

Table 1 in the results section presents the distributions of yearly observations in categories of the compositional variables in the first and last periods for partnered and single mothers and fathers.

3.2 Method

We used the CS decomposition method (Chevan & Sutherland, 2009) separately for mothers and fathers. Here, we provide a summary of the method, and a more detailed description can be found in the Appendix.

The CS method is an extension of Dasgupta's (1993) or DG decomposition method. In DG, we decompose the employment rate difference between partnered and single parents into the compositional effects of education, the age of the parent, the age of the youngest child, and the rate effect. The rate effect can be interpreted as differences in labour supply or demand, or due to unmeasured compositional factors.

CS allows for additional decompositions of these effects according to the categories of each variable. These composition effects can be partitioned into category composition effects. They discuss the difference in the importance of each category for the employment rate in each group. For example, after accounting for the other factors, if a larger share of employed partnered mothers than single mothers have higher tertiary education, the composition effect in this category is positive. The composition effects are negative for those categories where the situation is the opposite and there are usually category composition effects of both values (Chevan & Sutherland 2009, p. 435).

In Dasgupta's method, the rate effect reflects the (average) difference in behaviours or unmeasured factors once the compositional differences have been accounted for. The CS method attributes the rate effect equally between each variable and between categories. The category rate effects indicate how much the standardised employment rate difference within one category contributes to the crude difference relative to the other categories of that variable. For example, the difference between partnered and single parents' employment rates among those with the lowest education can contribute to the overall difference more than the employment rate difference among the higher tertiary educated. The larger the

difference in employment rates within the category and the larger the category, the bigger the category rate effect.

Compared to the DG method, the CS method provides additional insight into the sources of the single-parent employment gap. In addition to explaining how much of it is due to compositional differences by each background variable, the method reveals where the differences are the most important in the distribution of these variables. The method also identifies the subgroups in which these differences are the most consequential.

4 Results

4.1 Shifts in Socio-Demographic Profiles

Table 1 shows the education, age group, and age of the youngest child distributions among partnered and single mothers and fathers in 1987–1990 and 2014–18. The distributions for each period are presented in Supplementary Tables S1 and S2.

In 1987–1990, single and partnered mothers were relatively similar in terms of their age and educational attainment. There were slightly more single mothers in the youngest age group, and partnered mothers were somewhat more likely to have completed tertiary-level education and less likely to have only lower secondary level education. However, the overall differences were small. Single mothers were more likely than partnered mothers to have school-aged children, which reflects that that single motherhood results primarily from partnership dissolution. The differences between single and partnered fathers were larger during the first period. Single fathers were clearly older than partnered fathers, and the majority of single fathers had school-aged children. Single fathers were, on average, less educated than partnered fathers, and they were more likely to have only lower secondary level education and less likely to have tertiary-level education.

<Table 1 about here>

The largest change between 1987–1990 and 2014–2018 occurred in educational backgrounds. Reflecting the widening educational gradients in single parenthood (McLanahan, 2004; McLanahan & Jacobsen, 2015; Härkönen, 2017), single parenthood has

become increasingly characterised by lower educational attainment, especially among mothers. Although a higher share of single fathers than single mothers have upper secondary level education or less, and the reverse is true for post-secondary education, the education gap is larger between single and partnered mothers than the respective fathers.

The changes in the age of the parents and the age of the youngest child were smaller. The age gap between single and partnered fathers grew somewhat, whereas a slightly larger share of single fathers had co-residing children of preschool age (which was offset by a smaller share of single fathers with school-aged children). There were fewer changes between single- and partnered mothers.

4.2 Trends in Employment Rates

Figures 3a to 3c show trends in partnered and single mothers' and fathers' employment rates by educational attainment, age group, and age of the youngest child, respectively. The corresponding data are presented in Supplementary Tables S3 and S4. In the late 1980s, 84% of partnered and single mothers were employed. Almost all sub-categories had employment rates of at least 80%, with the exception of mothers in the under 30-year-old age group and mothers with children under the age of three. The differences in employment rates between partnered and single mothers were small in most categories, and single mothers' employment rate was 1%–2 % points higher than that of partnered mothers in all educational groups, except the lowest.

<Figure 3 about here>

Employment rates declined in all subcategories in 1991–1994 and continued to remain at a low level in 1995–1998. The decline was the most marked among single mothers with the lowest level of education, with a young child, and those less than 30 years old. In these groups, employment rates collapsed from 79% to 52%, 62% to 37%, and 70% to 38%, respectively. Partnered mothers' employment decline in the same sub-groups was much less remarkable. The decrease was the smallest among single and partnered mothers with higher tertiary degrees, who had employment rates above 85% during the entire

follow-up period. The single mother employment gap grew particularly in the groups which generally had the lowest employment rates.

Partnered mothers' employment began a slow recovery in all groups after bottoming out in 1994–1996. Single mothers' employment also began to recover since then, with one major exception, namely single mothers with the lowest level of education; their employment remained above 50% until the second downturn in the economy in 2008, after which their employment rate declined to 36% in 2016. The last two years of the observation period show an improvement in employment among all mothers, as well as in the lowest educated group. Although single mothers' employment rates increased from 1997 to 2008 in most subgroups, their employment lagged behind that of partnered mothers, with the exception of mothers with higher tertiary degrees. After 2008, the employment gap between single and partnered mothers has widened, most rapidly among mothers with only lower secondary level education.

In the late 1980s, the employment gap between single and partnered fathers was around 5% in most subgroups (Figures 3a–3c). In many sub-groups, single mothers were more likely to be employed than partnered mothers, whereas the opposite was true for fathers. However, similar to mothers, the single-father employment gap increased rapidly during the early-1990s recession. The drop in employment was particularly pronounced among single fathers with only lower secondary level education (from 88% in 1987–1990 to 66% in 1995–1998), of young age, or with young children (in both groups from around 83% to around 58%). After that, employment rates climbed in all subgroups, but the gap between single and partnered fathers remained large, particularly in the aforementioned groups. The financial crisis appeared to hit single fathers more, as the decline in employment rates was stronger among single than partnered fathers with lower or upper secondary level education. Consequently, the single father employment gap was still large (20%) among fathers with lower secondary level education and 10% among upper secondary-level educated fathers, even in 2014–2018, when the economy and employment had begun to recover.

To summarise, employment rates for single mothers and single fathers have been below those of partnered parents since the early 1990s in almost all groups. This

employment gap has been the widest among young mothers and fathers with low education and young children. At the same time, parents' educational profiles have become less favourable. Next, we present the results from the decomposition that shows how these developments contributed to the crude gap in single-parent employment.

4.3 Decomposition Analysis

Figure 4 summarises the results from the decomposition using Dasgupta's (1993) method, in which the employment gap between partnered and single parents was partitioned into the composition effects by each background variable and the rate effect. The lines in each figure show the crude gaps in single-mother and single-father employment, respectively. The single mother employment gap increased from nil and the single father employment gap from 5 percentage points in 1987–1990 to 10 and 12 percentage points, respectively, in 1995–1998. Both decreased thereafter but started to increase after 2008–2009 during the aftermath of the financial crisis, and the single mother employment gap reached 13 percentage points and the single father gap reached 12 percentage points in 2014–2018.

An increase in the rate effect explains the majority of the widening of the single mother employment gap and almost all of the increased single father employment gap. Among mothers, the increasing educational composition effect contributed to the growing single mother employment gap, reaching 5 percentage points in 2014–2018. In the last three periods, the educational compositional effect explained 36%–38% of the crude single-mother employment gap. Although single fathers' changing educational composition contributed to their employment gap as well, this contribution was more restricted than for single mothers, explaining 17% of the crude employment gap in the latest period. Single mothers' age composition contributed to their employment gap (positive effect) and single fathers' age composition reduced their employment gap (negative effect), although in both cases the effects were small. Children of single parents are typically somewhat older than those of partnered parents, which partly reduces parental employment gaps, as seen from the negative age-of-child composition effects.

<Figure 4 about here>

Table 2 presents the results from the CS decomposition into category composition and rate effects by education for mothers and Table 3 for fathers. We focus here on the decomposition by educational categories, as this is our main interest, but the results for all of the background variables are shown in Supplementary Tables S5 and S6.

We first considered the category composition effects among the mothers. There are both positive and negative categories. The positive effects of post-secondary educational levels indicate that these educational groups account for more of the employment of partnered mothers than single mothers. In other words, a larger share of employed partnered than single mothers have post-secondary education, and post-secondary education groups thus account for more of the employment of the former than the latter. Both the positive and negative category effects grow across time periods, reflecting the strengthening of educational divergence in single motherhood. However, the positive effects of post-secondary education have increased, leading to a strengthening of the educational composition effect. In particular, the effect of higher tertiary education increased from 1 to 9 percentage points, while the effect of lower tertiary education increased from 5 to 8 percentage points. The growing gap between the shares of single and partnered mothers who have post-secondary, and especially higher tertiary education, has become increasingly important for the single mother employment gap.

The total rate effect for each period, presented in Figure 4, is divided equally among the three background variables (see Supplementary Tables A5 and A6). Consequently, the rate effect of education is one-third of the total rate effect. The decomposition of the rate effect by educational categories shows in which groups the employment difference between partnered and single mothers matters the most for the crude single mother employment gap. The category rate effect is a function of the employment gaps within each group, as shown in Figure 3, and the size of the group (Table 1). From the early-1990s onward, the rate effect of upper secondary education had the largest category rate effect. Although the employment rate difference (Figure 3) was the largest among those with only lower secondary level education, the larger size of the upper secondary educated group means that it contributed more to the crude gap. Likewise, despite the relatively small employment gap

among lower tertiary educated mothers, the size of this group means that the lower tertiary education rate effect contributes to the crude gap as much as the lower secondary education rate effect does. However, the contribution of the higher tertiary education rate effect was limited.

For fathers, the strengthening of the educational composition effect resulted especially from higher tertiary-level educated fathers, accounting for more of the employment of partnered than of single fathers. Due to their declining numbers, fathers with only lower secondary education now contribute less to the single father employment gap, while the role of fathers with upper secondary level education has increased. Similar to the category rate effects among mothers, fathers with upper secondary level education have, since 2009, had the largest rate effect contribution to the employment gap.

<Table 2 about here>

<Table 3 about here>

The other category composition and rate effects are presented in Supplementary Tables S5 and S6. By age, the largest category rate effects for mothers are in the 30–39-year-old group, and increasingly, in the 40–49-year-old group, and for fathers, in the age group of 40–49 years old. By age of the youngest child, the largest category rate effects are in the group of mothers or fathers with school-aged children. Importantly, the category rate effect of mothers with 1- to 2- year-old children is relatively limited. Despite the large difference in employment rates in this group, the small size of this group means that its contribution to the single mother employment gap is modest.

We have shown how the changing socio-demographic composition—focusing on the educational composition—of single parents has contributed to the single parent employment gap through the changing composition effect, as well as how the increasing rate effect has contributed to these gaps. Overall, the changing rate effect has been more important, especially for fathers, which reflects changing labour supply behaviours and unmeasured compositional factors. Above, we argued that the changing educational composition of single parents has affected the single parent employment gaps not only

directly, through the composition effect, but also through an interaction effect between education and single parenthood, decomposed into category rate effects.

What has been the total contribution of changing educational composition to the increase in single parent employment gaps? Because our decompositions are additive, we can consider the additive contributions of the compositional effects and the (category) rate effects. The crude single mother employment gap grew by 12.3 percentage points, from 0.6% to 12.9 percentage points, from 1987–1990 to 2014–2018. The educational composition effect grew by 4.0% (from 0.7% to 4.7%) during this time, explaining 33% of the change in the crude gap. The CS decomposition distributes (mechanistically) the overall rate effect evenly between the three variables, but the category rate effects indicate the relative contribution of the standardised employment gaps in each category. Attention is drawn to the two lowest educational categories, where single parenthood grew the most (Figure 2), and the crude employment gaps were the largest (Figure 3). The rate effect among those with lower secondary education increased from 0.3 to 0.6, and in the upper secondary education category from 0.2 to 1.8. Together, the increasing rate effect in these two educational categories explains 15% $((0.6 - 0.3) + (1.8 - 0.2)) / 12.3$ of the growth in the single mother employment gap. Thus, changes in these two effects explain approximately half of the increase in the single-mother employment gap.

The single father employment gap grew by 6.5 percentage points, from 5.2% in 1987–1990 to 11.7% in 2014–2018. The change in the educational composition effect explains 22% $((2.0 - 0.6) / 6.5)$ of this increase, which is clearly less than that for mothers. Similar to single mothers, the employment gaps increased particularly in the two lowest educational groups, and the changing rate effects in these groups together accounted for 23% $((0.9 - 0.8) + (2.1 - 0.7)) / 6.5$ of the change. Taken together, these effects account for a similar share of the growth in the single parent employment gap as for single mothers, although the importance of the educational composition effect is less, and the rate effects in the two lowest educational categories are greater among single fathers.

Altogether, changes in the educational compositions of single mothers and fathers have led to a weakening of single parents' employment. The composition effect has been more important for single mothers, reflecting the larger change in their relative educational

profiles. For single fathers, the interaction effect through a shift toward lower educational groups where employment gaps are higher has been relatively more important. In both cases, these changes have contributed to a widening and large employment gap between single and partnered parents.

5 Discussion

We analysed the trends in the employment gap between single and partnered parents in Finland over three decades, from 1987 to 2018. In the late-1980s, the employment rates for Finnish single parents were high; for single fathers, they were close to and among single mothers on par with those for partnered parents. The 1990s economic crisis led to a general decline in employment, but single parents were particularly hard hits, and the gaps between single and partnered parents grew further after the economic downturn in 2008–2009. In 2018, the employment rate of single mothers was 12% lower than that of partnered mothers, and the respective gap among fathers was 11%. This latter development has attracted limited attention, and the reasons for this are not known.

The opening up and persistence of the single parent employment gap coincided not only with two economic crises, but also a more gradual socio-demographic change, in which single parenthood increased particularly among parents with lower levels of education, resulting in a strengthening negative educational gradient of single parenthood. The objective of this study was to analyse the extent to which this socio-demographic development contributed to the employment gap between single and partnered parents. We expected this to happen through two mechanisms, namely a changing compositional effect of a shift in single parents' educational profiles toward educational groups with lower employment rates, and an interaction effect between education and single parenthood in which the single parent employment gaps are the largest in lower educational groups. The change in the educational composition of the group of single parents not only increases the share of single parents in educational groups with lower employment rates in general, but also in the educational groups in which the single parenthood employment gaps are the largest. The growing negative educational gradient of single parenthood thus placed single parents, as a group, at a double disadvantage in the labour market. This family stratification

may be strengthened in the future with increasing job precariousness and intensified skill demands, which push lower-educated persons to the margins of the labour market (Kalleberg & Vallas, 2017).

Our results confirmed the expectations that changes in single parents' educational profiles have placed Finnish single parents at a double disadvantage. In the late 1980s, the differences between single and partnered mothers' educational profiles were small, but in 2014–2018, single mothers had on average lower educational levels than partnered mothers; single mothers were more than twice as likely to have lower secondary level education, and almost half were likely to have a university degree. This composition effect explained one-third of the increase in the single motherhood employment gap. Furthermore, the employment gap between single and partnered mothers is larger in lower and upper secondary education groups than in the post-secondary ones, and the growth in the importance of the employment gaps in the former accounted for an additional 15% increase in the single mother employment gap. The educational gap between single and partnered fathers grew during the observation period as well, but less than that among mothers. The changing composition effect accounted for slightly over one-fifth of the change in the single fatherhood employment gap and the growing single fatherhood employment gap among the two lowest educational groups for another fifth.

The growing negative educational gradient of single parenthood has therefore impacted single parents' employment both through a composition effect and an interaction effect between education and single parenthood, the latter amplifying the former. Less educated people are vulnerable to economic fluctuations (Kjeldstad & Rønsen, 2004). Furthermore, less-educated single parents can face particular employment disincentives due to a combination of low wage offers, temporary work contracts (Nätti et al., 2005), non-standard and inflexible working hours (Moilanen et al., 2019), and various means-tested social benefits (Kärkkäinen, 2011; Viitamäki, 2015). The widening of the single parent employment gap among those with secondary education from the 1990s economic crisis onward suggests a combination of labour market structural changes and employment disincentives. Educational expansion (Härkönen & Sirniö, 2020) which can have made those without post-secondary education a more select group, may also have contributed to

these trends, but is unlikely to be behind the abrupt increase in the employment gap in this group in the early 1990s.

The Finnish cash-for-care policy, which provides compensation for parents of children under the age of three who do not use public childcare, has often been pointed out as a policy that can disincentivize the employment of mothers (Sipilä et al., 2010; OECD, 2020b). The considerable employment gap between partnered and single mothers—and interestingly, between single and partnered fathers—with children under the age of three suggests that this policy can have negative employment effects on single parents in particular. The group of parents of children under three is relatively small, and it therefore accounts for only a small share of the overall single parenthood employment gap; however, the use of long family leaves can have longer-term negative effects on employment and earnings (Thévenon & Solaz, 2013; Gangl & Ziefle, 2015), and there is evidence that long family leaves increase unemployment more strongly for single mothers than for partnered ones (Morosow & Jalovaara, 2019). Nevertheless, it is likely that the single parenthood employment gap reflects not just leave policies but a wider range of employment disincentives and work-life reconciliation challenges, which are relevant, especially in the lower educational groups (Janzen & Kelly, 2012; Kärkkäinen, 2011; Moilanen et al., 2019; Viitamäki, 2015).

Our analysis makes three contributions to research beyond the case of Finnish single parents' employment. First, our results speak to the research on “diverging destinies” (McLanahan, 2004) and the consequences of family bifurcation more specifically. We have shown how the growing educational gaps between single and partnered parents can shape labour market inequalities between these groups, and our results are among the first to quantify the inequality consequences of uneven family change (cf. Bernardi & Boertien, 2017) and the first to analyse the consequences of labour market inequality. Educational divergence in family demographic trends has taken place in several European, North American, and East Asian countries (McLanahan, 2004; McLanahan & Jacobsen, 2015; Härkönen, 2017), pointing to the potential relevance of these findings in other contexts as well. Our findings also suggest that the labour market—and other inequality—consequences of uneven family change can be context-specific (Cohen, 2015). As

discussed above, the wider single parenthood employment gap among lower-educated parents points to policies and workplace settings that can moderate the single parenthood employment gap at different educational levels and, consequently, at the aggregate.

Second, the results speak to the policy challenges of family bifurcation. Welfare state research into single parents' employment and well-being has generally not acknowledged the ongoing socio-demographic changes in single parents' educational composition (Härkönen, 2018). Our findings show that even though the Finnish welfare state has been successful in keeping single-mother families' poverty rates low (Brady and Burroway, 2012; Maldonado & Nieuwenhuis, 2015), it has not lived up to its reputation as a promoter of single parents' employment, despite its broad coverage of childcare and other services that should enhance single parents' labour market opportunities (e.g., Esping-Andersen, 1999; Misra et al., 2012). Our analysis showed that single-parent employment lags behind, particularly in low educational segments, where employment disincentives due to a combination of often-below-median wages and various (means-tested) social benefits are the highest. Family bifurcation has meant that single parents are increasingly concentrated in these educational segments. Policies should acknowledge the challenges created to this underlying socio-demographic change and given that educational divergence in single parenthood has occurred across a large number of countries (Härkönen, 2017), these challenges are unlikely to be limited to Finland only. Future research should further consider the interplay between demographic change and economic and policy contexts in shaping well-being among single parents.

Third and finally, the inclusion of single fathers was a novel feature of our analysis. Although single fatherhood remains relatively rare, it has increased in many Western countries (Eggebeen et al., 2012; Nieuwenhuis, 2020). Similar to single motherhood, single fatherhood is increasingly concentrated in the lower educated groups, contributing to the growing employment gap between single and partnered fathers. Importantly, the employment trends of single fathers follow those of single mothers: the single fatherhood employment gap is very similar to the single mother employment gap, both at the aggregate level and in the sub-groups we observed. The theory of single-parent employment has typically been the theory of single mother employment, with little consideration for single

fathers. These findings are in line with the microstructural theories of single parenthood, which highlight the specific circumstances faced by single parents regardless of gender (Hook & Chalasani, 2008; Coles, 2015). However, even though the single parenthood employment gap is very similar among fathers and mothers, both single and partnered fathers have consistently had higher employment rates than their respective mothers, reflecting persistent gendered patterns in parents' employment. There was the larger rate effect among fathers than mothers, which may suggest either wider differences in labour market behaviour or unmeasured compositional characteristics. These results suggest that we should problematise theoretical approaches to single parenthood, which typically focuses on single mothers, and invite future research into single fathers.

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Table 1 Distributions of partnered and single mothers and fathers (person years) by the compositional variables in 1987–1990 and 2014–2018, by percentage.

	1987–1990		2014–2018		1987–1990		2014–2018	
	Single mothers	Partnered mothers	Single mothers	Partnered mothers	Single fathers	Partnered fathers	Single fathers	Partnered fathers
Educational attainment								
Lower secondary	37	31	13	5	41	31	15	9
Upper secondary	43	42	48	38	40	40	54	50
Lower tertiary	17	22	26	35	14	21	20	24
Higher tertiary	4	5	12	22	5	8	10	17
Total	100	100	100	100	100	100	100	100
Age								
18–29 yrs	18	15	14	10	7	13	4	9
30–39 yrs	48	51	38	44	43	48	32	43
40–49 yrs	34	34	47	46	51	39	64	47
Total	100	100	100	100	100	100	100	100
Age of the youngest child								
1–2 yrs*	11	20	12	23	4	30	4	34
3–6 yrs	25	28	28	30	16	26	20	28
7–17 yrs	64	52	59	47	80	44	76	39
Total	100	100	100	100	100	100	100	100
N (person years)	268,904	1,887,994	372,932	1,581,324	35,749	2,019,420	56,331	1,631,512

*Note: Age of the youngest child included 0-year-old children for fathers (e.g. first category 0–2 years)

Table 2 Category composition and rate effects for education from the Chevan-Sutherland decomposition
1987–1990 to 2014–2018, percentage points, mothers

	1987– 1990	1991– 1994	1995– 1998	1999– 2003	2004– 2008	2009– 2013	2014– 2018
Employment rate, %							
Single mothers	83.0	67.7	65.0	70.1	73.7	73.6	72.3
Partnered mothers	83.6	74.2	75.0	79.8	82.6	84.9	85.2
Crude difference (%- points)	0.6	6.5	10.0	9.7	8.9	11.3	12.9
Total for rate	1.5	6.4	9.0	8.9	8.0	9.0	9.6
Total for composition	-1.0	0.2	1.0	0.8	1.0	2.2	3.3
Composition							
Educational attainment - total	0.7	1.5	2.5	2.9	3.4	4.1	4.7
Lower secondary	-3.5	-3.9	-4.9	-5.4	-5.4	-4.8	-3.8
Upper secondary	-0.9	-0.6	-0.9	-1.9	-3.5	-5.6	-7.5
Lower tertiary	4.5	4.7	5.9	6.8	7.4	7.8	7.5
Higher tertiary	0.7	1.3	2.4	3.5	4.9	6.6	8.5
Rate							
Educational attainment							
Lower secondary	0.3	0.8	0.9	0.8	0.7	0.7	0.6
Upper secondary	0.2	1.0	1.5	1.5	1.3	1.6	1.8
Lower tertiary	0.0	0.3	0.5	0.5	0.4	0.5	0.6
Higher tertiary	0.0	0.1	0.1	0.1	0.2	0.2	0.3

Table 3 Category composition and rate effects for education from the Chevan-Sutherland decomposition
1987–1990 to 2014–2018, percentage points, fathers

	1987– 1990	1991– 1994	1995– 1998	1999– 2003	2004– 2008	2009– 2013	2014– 2018
Employment rate, %							
Single fathers	88.6	73.3	73.9	79.7	82.6	80.1	79.7
Partnered fathers	93.7	83.0	86.3	90.8	92.4	91.0	91.4
Crude difference (%- points)	5.2	9.7	12.4	11.0	9.8	10.8	11.7
Total for rate	5.3	11.2	13.7	12.2	10.4	11.0	11.2
Total for composition	-0.1	-1.5	-1.3	-1.2	-0.6	-0.1	0.5
Composition							
Educational attainment - total	0.6	1.4	1.6	1.5	1.6	1.9	2.0
Lower secondary	-6.4	-4.8	-5.0	-5.3	-5.2	-5.1	-4.3
Upper secondary	-1.7	-2.0	-2.1	-2.7	-3.6	-3.7	-4.7
Lower tertiary	5.8	5.0	5.1	5.5	5.4	5.1	4.6
Higher tertiary	2.9	3.3	3.5	4.1	5.0	5.7	6.3
Rate							
Educational attainment							
Lower secondary	0.8	1.3	1.4	1.2	1.1	1.1	0.9
Upper secondary	0.7	1.8	2.2	1.9	1.6	1.9	2.1
Lower tertiary	0.2	0.6	0.7	0.6	0.5	0.4	0.5
Higher tertiary	0.1	0.1	0.2	0.3	0.3	0.3	0.2

a Employment rates (%) of single and partnered mothers

b Employment rates (%) of single and partnered fathers.

Fig. 1 Employment rates (%) of (a) single and partnered mothers and (b) single and partnered fathers, 1987–2018.

a Proportion (%) of single mothers of all mothers by educational attainment

b Proportion (%) of single fathers of all fathers by educational attainment

Fig. 2 Proportion (%) of (a) single mothers of all mothers and (b) single fathers of all fathers, by educational attainment, 1987–2018

a Employment rates (%) of single and partnered parents by educational attainment

b Employment rates (%) of single and partnered parents by age

c Employment rates (%) of single and partnered parents by age of the youngest child

Fig. 3 Employment

rates (%) of single and partnered parents, by (a) educational attainment, (b) age, and (c) age of the youngest child, 1987–2018

Fig. 4 The crude single parent employment gap, composition effects by background variable, and the rate effect for mothers and fathers

Appendix 1: The Chevan-Sutherland decomposition

Starting from Das Gupta (DG 1993) and using lower case letters to denote partnered mothers and upper case letters to denote single mothers, the difference in employment rates between the groups can be decomposed into three composition effects (of education [I], age [J], and age of the youngest child [K]) and the rate effect (R):

$$t_{...} - T_{...} = [R(\bar{t}) - R(\bar{T})] + [I(\bar{a}) - I(\bar{A})] + [J(\bar{b}) - J(\bar{B})] + [K(\bar{c}) - K(\bar{C})] \quad (1)$$

These effects are the differences in the standardised (for the other three terms) rates between partnered and single mothers. The equations for calculating these terms are given by Gupta (p. 63–66).

The Chevan-Sutherland method (CS 2009) decomposes these effects into effects of each category of each variable. The composition effects are decomposed into category composition effects by estimating the group difference in the standardized rates for each category of the variable. For each group, the standardized rate for each variable is the sum of the standardized rates for each category. The I , J , and K –effects are thus

$$I(\bar{a}) - I(\bar{A}) = \sum_{i..} I(\bar{a})_{i..} - \sum_{i..} I(\bar{A})_{i..} \quad (2),$$

$$J(\bar{b}) - J(\bar{B}) = \sum_{.j.} J(\bar{b})_{.j.} - \sum_{.j.} J(\bar{B})_{.j.} \quad (3),$$

and

$$K(\bar{c}) - K(\bar{C}) = \sum_{..k} K(\bar{c})_{..k} - \sum_{..k} K(\bar{C})_{..k} \quad (4).$$

Because a group difference in the size of one category must be offset by a difference of the opposite sign in at least one other category, there are generally both positive and negative category composition effects (CS, p. 435).

In the DG method, the rate effect applies equally to all background variables. The CS method further attributes the rate effect between the categories of each variable. In the three-factor case, single mothers' standardised rates of categories for variables I , J , and K are

$$R(\bar{T})_{i..} = \sum_{jk} \frac{\frac{n_{ijk} + N_{ijk}}{n_{...} + N_{...}}}{2} T_{ijk} \frac{1}{NV} \quad (5),$$

$$R(\bar{T})_{.j.} = \sum_{ik} \frac{\frac{n_{ijk} + N_{ijk}}{n_{...} + N_{...}}}{2} T_{ijk} \frac{1}{NV} \quad (6),$$

$$R(\bar{T})_{..k} = \sum_{ij} \frac{\frac{n_{ijk} + N_{ijk}}{n_{...} + N_{...}}}{2} T_{ijk} \frac{1}{NV} \quad (7),$$

Similarly, for partnered mothers when T is replaced by t . Because the rate effect applies equally to each background variable, the contribution of each category is obtained by scaling it by the reciprocal of the

number of background variables (NV), and the sums of the standardised category rates are equal for each variable (CS, p. 432). In the case of single mothers,

$$\sum_i R(\bar{T})_{i..} = \sum_j R(\bar{T})_{.j.} = \sum_k R(\bar{T})_{..k} \quad (8),$$

and similarly for partnered mothers when T is replaced by t .

The category composition and rate effects are additive, and their sum equals the crude single-mother employment gap:

$$t_{...} - T_{...} = \left(\sum_{i..} I(\bar{a})_{i..} + \sum_{i..} R(\bar{t})_{i..} + \sum_{.j.} J(\bar{b})_{.j.} + \sum_{.j.} R(\bar{t})_{.j.} + \sum_{..k} K(\bar{c})_{..k} + \sum_{..k} R(\bar{t})_{..k} \right) - \left(\sum_{i..} I(\bar{A})_{i..} + \sum_{i..} R(\bar{T})_{i..} + \sum_{.j.} J(\bar{B})_{.j.} + \sum_{.j.} R(\bar{T})_{.j.} + \sum_{..k} K(\bar{C})_{..k} + \sum_{..k} R(\bar{T})_{..k} \right) \quad (9)$$

which was the equation we used in our decompositions.

Supplementary Tables

Table S1. Distributions of single and partnered mothers (person years) by age, age of the youngest child and educational attainment (%).

		1987– 1990	1991– 1994	1995– 1998	1999– 2003	2004– 2008	2009– 2013	2014– 2018
Single mothers, % of all mothers		12.5	14.6	17.0	18.1	18.4	18.3	19.1
Partnered mothers, % of all mothers		87.5	85.4	83.0	81.9	81.6	81.7	80.9
		100	100	100	100	100	100	100
Single mothers, person years (N)		268,904	311,518	344,350	425,198	403,120	379,198	372,932
Partnered mothers, person years (N)		1,887,994	1,817,655	1,685,843	1,921,448	1,793,150	1,689,586	1,581,324
Age, years %								
Single mothers	18–29	18.0	16.4	14.4	12.9	13.6	14.7	14.2
	30–39	47.7	44.9	44.2	41.8	35.2	34.4	38.4
	40–49	34.4	38.7	41.5	45.3	51.2	50.9	47.4
		100	100	100	100	100	100	100
Partnered mothers	18–29	15.0	12.6	11.0	10.2	10.6	10.6	9.7
	30–39	51.0	47.4	46.2	44.9	41.4	42.1	44.4
	40–49	34.0	40.1	42.8	44.9	48.1	47.3	45.9
	Total	100	100	100	100	100	100	100
Age of the youngest child, years %								
Single mothers	1–2	10.7	12.6	12.1	11.3	11.4	12.5	12.4
	3–6	25.1	24.6	26.7	25.6	24.1	25.8	28.3
	7–17	64.2	62.8	61.2	63.1	64.6	61.8	59.3
	Total	100	100	100	100	100	100	100
Partnered mothers	1–2	20.2	21.0	21.1	20.6	22.0	23.7	23.1
	3–6	28.3	25.9	27.2	27.6	26.5	27.7	29.8
	7–17	51.5	53.2	51.6	51.8	51.6	48.6	47.1
	Total	100	100	100	100	100	100	100
Educational attainment %								
Single mothers	Lower secondary	37.0	31.9	27.7	22.8	18.9	16.2	13.3
	Upper secondary	42.7	44.7	45.0	45.9	46.8	47.1	48.4
	Lower tertiary	16.7	19.2	22.4	25.3	26.5	26.7	26.1
	Higher tertiary	3.6	4.2	4.8	6.1	7.8	10.0	12.2
		100	100	100	100	100	100	100
Partnered mothers	Lower secondary	31.5	24.4	18.0	12.8	9.0	6.7	4.5
	Upper secondary	41.6	43.8	43.6	42.8	41.5	39.2	37.8
	Lower tertiary	22.3	25.8	30.5	34.0	35.6	36.0	35.1
	Higher tertiary	4.6	6.0	7.9	10.4	14.0	18.1	22.3
		100	100	100	100	100	100	100

Table S2. Distributions of single and partnered fathers (person years) by age, age of the youngest child and educational attainment (%).

		1987– 1990	1991– 1994	1995– 1998	1999– 2003	2004– 2008	2009– 2013	2014– 2018
Single fathers, % of all fathers		1.7	2.1	2.5	2.7	2.8	3.0	3.4
Partnered fathers, % of all fathers		98.3	97.9	97.5	97.3	97.2	97.0	96.7
		100	100	100	100	100	100	100
Single fathers, person years (N)		35,749	42,486	45,988	56,661	54,977	54,331	56,471
Partnered fathers, person years (N)		2,019,420	1,945,653	1,779,871	2,010,003	1,885,394	1,780,370	1,631,512
Age, years %								
Single fathers	18–29	6.5	4.7	3.4	3.1	3.8	4.6	4.4
	30–39	43.1	37.6	34.1	31.1	26.4	27.7	32.0
	40–49	50.5	57.7	62.5	65.8	69.9	67.7	63.7
		100	100	100	100	100	100	100
Partnered fathers	18–29	12.9	11.6	10.2	9.8	10.6	10.7	9.4
	30–39	48.4	44.3	43.7	42.9	40.3	41.6	43.4
	40–49	38.7	44.1	46.1	47.2	49.0	47.8	47.3
		100	100	100	100	100	100	100
Age of the youngest child, years %								
Single fathers	0–2	4.1	3.4	3.3	3.3	3.6	3.9	4.0
	3–6	16.2	14.7	14.6	14.4	14.4	17.6	19.6
	7–17	79.7	81.9	82.0	82.3	82.0	78.5	76.4
		100	100	100	100	100	100	100
Partnered fathers	0–2	29.9	31.1	31.2	31.2	33.4	35.6	34.0
	3–6	25.9	23.6	25.1	25.6	24.3	25.2	27.5
	7–17	44.3	45.3	43.7	43.2	42.3	39.2	38.5
		100	100	100	100	100	100	100
Educational attainment %								
Single fathers	Lower secondary	40.5	34.7	29.9	24.8	20.9	18.6	15.3
	Upper secondary	40.3	44.5	47.5	50.5	52.8	53.1	54.3
	Lower tertiary	14.4	15.7	17.1	18.3	19.1	19.7	20.1
	Higher tertiary	4.8	5.2	5.6	6.4	7.2	8.6	10.2
		100	100	100	100	100	100	100
Partnered fathers	Lower secondary	31.2	26.2	21.5	17.3	14.0	11.5	9.1
	Upper secondary	40.1	43.2	45.3	47.3	48.4	48.9	49.5
	Lower tertiary	20.5	21.7	23.2	24.2	24.5	24.6	24.3
	Higher tertiary	8.1	9.0	10.0	11.3	13.1	15.1	17.1
		100	100	100	100	100	100	100

Table S3. Employment rates (%) by educational attainment, age, and age of the youngest child in 1987–2018, single and partnered mothers

	1987–1990	1991–1994	1995–1998	1999–2003	2004–2008	2009–2013	2014–2018
Single mothers							
Total	83.0	67.7	65.0	70.1	73.7	73.6	72.3
Educational attainment							
Lower secondary	78.8	59.3	51.5	52.7	51.0	44.8	37.2
Upper secondary	82.4	66.5	64.0	68.8	72.7	72.3	69.8
Lower tertiary	91.7	80.2	78.6	83.5	86.9	87.5	86.9
Higher tertiary	93.5	87.2	87.7	89.2	89.7	89.5	89.3
Age, years							
18–29	69.7	43.5	38.0	42.8	47.6	48.6	48.1
30–39	84.7	68.9	65.1	69.7	73.0	72.4	71.1
40–49	87.5	76.6	74.2	78.3	81.1	81.6	80.6
Age of the youngest child, years							
1–2	61.9	39.6	36.6	39.3	43.7	47.5	48.5
3–6	80.7	62.2	59.8	65.7	68.5	68.6	68.1
7–17	87.4	75.5	72.8	77.4	80.9	81.0	79.3
Partnered mothers							
Total	83.6	74.2	75.0	79.8	82.6	84.9	85.2
Educational attainment							
Lower secondary	81.2	69.4	65.9	67.8	66.5	63.5	57.8
Upper secondary	81.7	71.1	71.7	76.3	79.0	80.7	80.1
Lower tertiary	88.6	80.7	81.2	85.3	87.7	89.9	90.2
Higher tertiary	92.1	88.4	89.8	91.2	90.8	91.7	92.1
Age, years							
18–29	70.5	51.7	49.0	54.7	60.5	65.4	65.6
30–39	84.2	73.8	74.4	78.8	81.2	84.2	84.5
40–49	88.4	81.7	82.3	86.5	88.7	89.8	90.0
Age of the youngest child, years							
1–2	68.2	54.8	54.9	58.8	63.8	71.8	73.2
3–6	83.5	73.9	75.9	81.5	84.4	86.0	86.3
7–17	89.6	82.0	82.7	87.3	89.7	90.6	90.5

Table S4. Employment rates (%) by educational attainment, age, and age of the youngest child in 1987–2018, single and partnered fathers

	1987–1990	1991–1994	1995–1998	1999–2003	2004–2008	2009–2013	2014–2018
Single fathers							
Total	88.6	73.3	73.9	79.7	82.6	80.1	79.7
Educational attainment							
Lower secondary	86.2	68.7	66.0	69.8	68.9	62.9	59.7
Upper secondary	88.3	71.7	73.3	79.6	83.3	80.3	79.4
Lower tertiary	93.9	82.0	83.4	89.1	91.6	90.8	89.3
Higher tertiary	94.6	92.5	91.3	92.9	92.8	92.1	92.8
Age, years							
18–29	82.4	55.8	57.3	65.7	70.1	63.6	62.5
30–39	89.3	71.8	72.0	78.1	81.2	78.1	78.1
40–49	88.7	75.7	75.8	81.2	83.8	82.1	81.7
Age of the youngest child, years							
0–2	83.2	57.6	59.7	64.2	69.7	68.8	70.1
3–6	88.4	68.7	69.4	76.0	79.4	76.1	77.3
7–17	88.9	74.8	75.3	81.0	83.7	81.6	80.9
Partnered fathers							
Total	93.7	83.0	86.3	90.8	92.4	91.0	91.4
Educational attainment							
Lower secondary	91.8	78.4	79.5	83.6	84.4	80.9	80.0
Upper secondary	92.9	80.7	84.9	89.7	91.5	89.8	90.1
Lower tertiary	96.8	88.5	91.5	95.0	96.2	94.8	95.1
Higher tertiary	97.6	94.7	95.6	96.9	97.1	96.2	96.2
Age, years							
18–29	89.8	71.9	77.2	84.0	86.6	83.9	84.2
30–39	94.6	84.0	87.5	91.8	93.5	92.2	92.2
40–49	93.9	85.0	87.2	91.2	92.7	91.5	92.2
Age of the youngest child, years							
0–2	93.0	80.5	84.8	89.7	91.6	90.0	90.3
3–6	94.2	83.5	87.0	91.3	92.7	91.4	91.9
7–17	94.0	84.6	87.0	91.2	92.8	91.6	92.1

Table S5. Decomposition of the single parent employment gap into category composition and rate effects, mothers

	1987–1990	1991–1994	1995–1998	1999–2003	2004–2008	2009–2013	2014–2018
Employment rate, %							
Single mothers	83.0	67.7	65.0	70.1	73.7	73.6	72.3
Partnered mothers	83.6	74.2	75.0	79.8	82.6	84.9	85.2
Crude difference							
(%-points)	0.6	6.5	10.0	9.7	8.9	11.3	12.9
Decomposition effects							
Total for composition	-1.0	0.2	1.0	0.8	1.0	2.2	3.3
Total for rate	1.5	6.4	9.0	8.9	8.0	9.0	9.6
Composition effects							
Educational attainment	0.7	1.5	2.5	2.9	3.4	4.1	4.7
Lower secondary	-3.5	-3.9	-4.9	-5.4	-5.4	-4.8	-3.8
Upper secondary	-0.9	-0.6	-0.9	-1.9	-3.5	-5.6	-7.5
Lower tertiary	4.5	4.7	5.9	6.8	7.4	7.8	7.5
Higher tertiary	0.7	1.3	2.4	3.5	4.9	6.6	8.5
Age, years	0.5	1.1	1.0	0.7	0.5	0.6	0.7
18–29	-3.7	-2.5	-1.9	-1.8	-2.0	-2.4	-2.4
30–39	2.2	0.7	0.1	0.7	2.8	3.8	3.0
40–49	1.9	2.9	2.9	1.8	-0.3	-0.9	0.1
Age of the youngest child, years	-2.2	-2.4	-2.5	-2.8	-3.0	-2.4	-2.1
1–2	6.4	4.4	4.5	4.9	6.0	7.1	7.1
3–6	2.7	1.2	0.7	1.5	1.7	1.2	1.2
7–17	-11.4	-8.0	-7.8	-9.3	-10.7	-10.8	-10.4
Rate effects							
Educational attainment	0.5	2.1	3.0	3.0	2.7	3.0	3.2
Lower secondary	0.3	0.8	0.9	0.8	0.7	0.7	0.6
Upper secondary	0.2	1.0	1.5	1.5	1.3	1.6	1.8
Lower tertiary	0.0	0.3	0.5	0.5	0.4	0.5	0.6
Higher tertiary	0.0	0.1	0.1	0.1	0.2	0.2	0.3
Age, years	0.5	2.1	3.0	3.0	2.7	3.0	3.2
18–29	0.2	0.4	0.4	0.4	0.4	0.5	0.5
30–39	0.2	1.0	1.5	1.4	1.1	1.3	1.5
40–49	0.1	0.7	1.1	1.1	1.1	1.1	1.2
Age of the youngest child, years	0.5	2.1	3.0	3.0	2.7	3.0	3.2
1–2	0.1	0.5	0.6	0.5	0.5	0.7	0.7
3–6	0.1	0.6	0.9	0.9	0.8	0.9	1.0
7–17	0.4	1.1	1.5	1.5	1.3	1.4	1.5

Table S6. Decomposition of the single parent employment gap into category composition and rate effects, fathers

	1987–1990	1991–1994	1995–1998	1999–2003	2004–2008	2009–2013	2014–2018
Employment rate, %							
Single fathers	88.6	73.3	73.9	79.7	82.6	80.1	79.7
Partnered fathers	93.7	83.0	86.3	90.8	92.4	91.0	91.4
Crude difference (%-points)	5.2	9.7	12.4	11.0	9.8	10.8	11.7
Decomposition effects							
Total for composition	-0.1	-1.5	-1.3	-1.2	-0.6	-0.1	0.5
Total for rate	5.3	11.2	13.7	12.2	10.4	11.0	11.2
Composition effects							
Educational attainment	0.6	1.4	1.6	1.5	1.6	1.9	2.0
Lower secondary	-6.4	-4.8	-5.0	-5.3	-5.2	-5.1	-4.3
Upper secondary	-1.7	-2.0	-2.1	-2.7	-3.6	-3.7	-4.7
Lower tertiary	5.8	5.0	5.1	5.5	5.4	5.1	4.6
Higher tertiary	2.9	3.3	3.5	4.1	5.0	5.7	6.3
Age, years	0.1	-0.5	-0.7	-0.5	-0.3	-0.4	-0.3
18–29	1.2	1.4	1.9	2.1	2.1	1.5	1.2
30–39	1.9	1.4	2.5	4.5	6.3	5.8	4.1
40–49	-3.0	-3.3	-5.0	-7.2	-8.7	-7.7	-5.6
Age of the youngest child, years	-0.7	-2.3	-2.2	-2.1	-1.9	-1.7	-1.2
0–2	20.6	17.3	17.8	19.0	21.1	22.5	22.1
3–6	7.6	5.9	6.8	7.8	6.8	4.8	5.5
7–17	-29.0	-25.6	-26.8	-29.0	-29.8	-28.9	-28.7
Rate effects							
Educational attainment	1.8	3.7	4.6	4.1	3.5	3.7	3.7
Lower secondary	0.8	1.3	1.4	1.2	1.1	1.1	0.9
Upper secondary	0.7	1.8	2.2	1.9	1.6	1.9	2.1
Lower tertiary	0.2	0.6	0.7	0.6	0.5	0.4	0.5
Higher tertiary	0.1	0.1	0.2	0.3	0.3	0.3	0.2
Age, years	1.8	3.7	4.6	4.1	3.5	3.7	3.7
18–29	0.3	0.4	0.4	0.4	0.3	0.4	0.4
30–39	0.8	1.8	2.1	1.8	1.3	1.5	1.5
40–49	0.7	1.6	2.1	1.9	1.8	1.8	1.8
Age of the youngest child, years	1.8	3.7	4.6	4.1	3.5	3.7	3.7
0–2	0.5	1.1	1.3	1.3	1.1	1.1	1.0
3–6	0.3	0.8	1.0	0.9	0.7	0.9	0.9
7–17	1.0	1.8	2.2	1.9	1.7	1.7	1.9