

Finnish women not only have children later in their lives, but now also fewer

Lifetime fertility is the average number of children born to a group of women – for example, women born in the 1970s – over their entire lifetime. As this can be measured accurately only at the end of childbearing ages (e.g. at age 44), it takes a long time before the number of children for women currently at childbearing ages can be accurately estimated.

To study up-to-date, contemporary trends in fertility, the total fertility rate (TFR) is typically used as a substitute for lifetime fertility. The TFR sums up the age-specific fertility rates in one calendar year, and estimates the number of children a group of women would ultimately have if they experienced these rates through their lifetime. Age-specific fertility rates refer to the number of children born to women of a certain age group (i.e. not to the biological ability to have children). Importantly, however, trends in period-based fertility measures like the TFR are known to fluctuate because of temporary changes in fertility timing, even when lifetime fertility remains unchanged (Bongaarts and Feeney 1998). Decreases in TFR could reflect either fertility postponement (so-called “tempo-effects”), actual declines in the lifetime number of children, or both.

The aims of the study

Finland has, together with other Nordic countries, had a relatively high and stable lifetime fertility among the high-income countries: lifetime fertility remained close to two children per woman during the recent decades, while it has continuously declined in many other countries (Zeman et al. 2018). The high fertility levels in the Nordic countries manifested the idea that the generous welfare systems and high levels of gender

- Fertility declined in the 2010s among women of nearly all ages: the long-term fertility decline at younger ages accelerated, and the long-term increase in 30+ fertility stagnated or even turned negative.

- This indicates that the decline is not only reflecting accelerated postponement of childbearing, but also that women’s lifetime fertility will decline.

- Finland is expected to diverge from the other Nordic countries, as its lifetime fertility is likely to fall well below 1.75 children.

- Most of the decline in fertility between 2010 and 2018 is attributed to decreasing numbers of childless women having their first birth, but subsequent childbearing (mainly second and third births) among mothers has also decreased.

equality hinder fertility from falling to very low levels in the long run (Esping-Andersen and Billari 2015; Goldscheider, Bernhardt, and Lappegård 2015).

However, period fertility declined in the 2010s in all Nordic countries which might indicate that the narrative is changing (Comolli et al. 2020). The most pronounced decline occurred in Finland: the TFR dropped from 1.87 in 2010 to an all-time low level of 1.35 in 2019 – well below the European average. An open question is to what extent

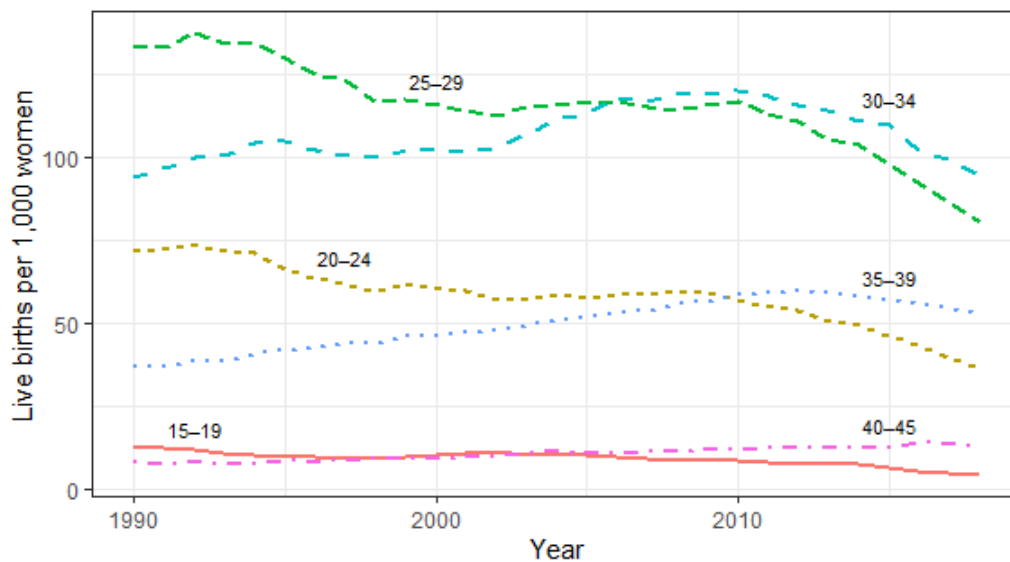


Figure 1: Age-specific fertility rates in Finland in 1990–2018.

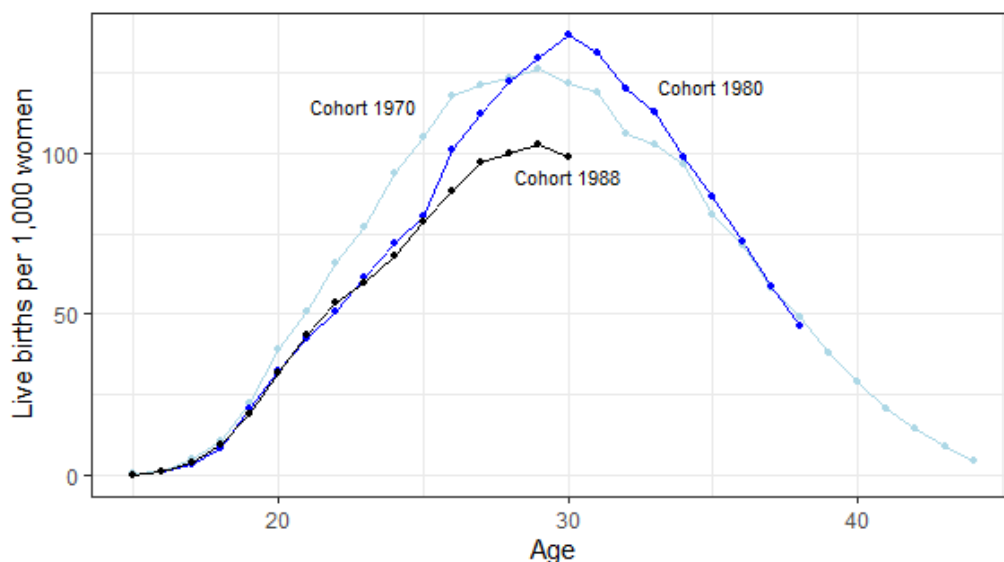


Figure 2: Age-specific fertility rates by cohort, Finland.

the decline in the 2010s is a result of postponement, and to what extent a reflection of declining lifetime fertility.

Despite stable lifetime fertility, fluctuations in the TFR have been fairly common in the Nordic countries in previous decades – for instance, Sweden experienced strong fluctuations in the TFR around 1990 – but previous declines have typically been due to fertility postponement, and recuperation occurred later during the life course (Hoem 2005). Fertility postponement refers

to the decline in childbearing across younger ages, and recuperation refers to fertility increases at higher reproductive ages that compensates for the postponed births at younger ages.

In two new studies, we studied fertility trends between 2010 and 2018 and forecasted lifetime fertility for women still in childbearing ages in Finland (Hellstrand, Nisén, and Myrskylä 2020) and in other Nordic countries (Hellstrand et al. 2021).

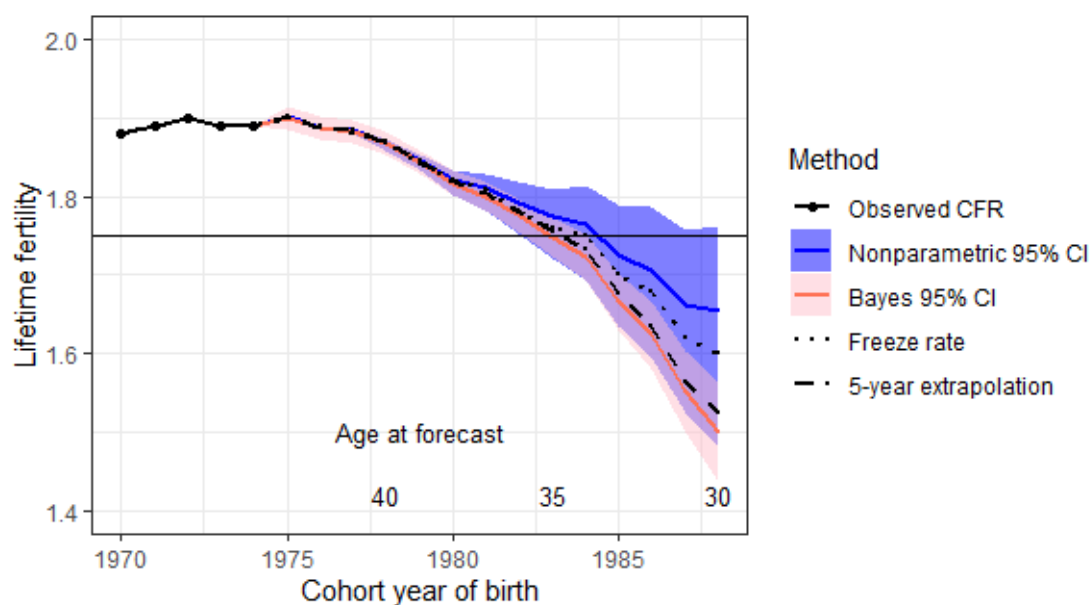


Figure 3: Observed lifetime fertility (CFR) for the 1970–1974 cohorts and forecasted CFR for the 1975–1988 cohorts in Finland. The point estimates of the nonparametric approach yields the development in lifetime fertility if 30+ fertility started to increase like observed in the main pattern in high-income countries during the past decades. The Bayesian method and the 5-year extrapolation method extrapolate the negative trend in 30+ fertility into the future. The freeze rate method yields the development in lifetime fertility if the current age-specific fertility rates would remain unchanged in the future.

The long-term increase in 30+ fertility stagnated

Figure 1 shows the trends in age-specific fertility in Finland between 1990 and 2018. Over this period, fewer and fewer women have had a child in their 20s, and until 2010 childbearing at ages 30+ became more common. However, since 2010 childbearing decreased in all age groups except women aged 40–44. The decline in fertility at ages below 30 accelerated, and the long-term increase in 30+ fertility stagnated or even turned negative.

Childbearing in the age group 30–39 declined for the first time since the 1970s, which indicates that not only is childbearing postponed, but that the lifetime number of children born to women might also be declining. Postponing childbearing to the late 30s or early 40s leaves little scope for fertility recuperation.

The declined age-specific fertility rates are also shown for selected cohorts (groups of women born in a given year) in Figure 2, which illustrates the strong decline at ages 25–29 for the younger cohorts and the

weaker prospects for fertility recuperation: increases in older age fertility would lead to exceptional shapes in cohort age schedules.

Lifetime fertility is likely to decline substantially

Figure 3 shows the forecasted lifetime fertility for women born between 1975 and 1988 in Finland. Various forecasting methods consistently predict that lifetime fertility is likely to decline substantially for the first time in three decades: it is likely to reach levels below 1.75, which is considered the threshold between “low” and “very low” lifetime fertility (Zeman et al. 2018). A confidence interval of approximately 1.45 to 1.75 children reflects the uncertainty in estimating the magnitude of future declines in lifetime fertility. Realized lifetime fertility among women born in the late 1980s will be affected by the conditions to have children in the near future.

The strength of the predicted decline depends on the method used and its modeling assumptions. Even the most optimistic

scenario which allows for strong recuperation at older ages (the upper bound of the confidence interval of the nonparametric method), indicates a decline in lifetime fertility: from 1.9 for the early 1970s' cohorts to around 1.75 for the 1988's cohort. In turn, if the recent negative trend in 30+ fertility were to continue, lifetime fertility could reach as low as 1.45–1.55 for the late 1980s' cohorts. If fertility at ages 30+ remained stable at current levels, lifetime fertility would fall to 1.6.

Declines in first births drive the period fertility decline

Figure 4 shows the decline in period fertility between 2010 and 2018 decomposed into additive age and parity (birth order) contributions in Finland. Most of the decline (75%) is attributed to decreasing first childbearing among childless women, but subsequent childbearing among mothers also decreased moderately. Decreasing second and third childbearing explained 12% and 11% respectively. The first birth decline is most pronounced in the age group 25–29. Yet it is observed also at ages 30+, which echoes the results in Figure 1 showing declines in fertility also at older ages.

These findings indicate that parenthood in Finland might be increasingly foregone

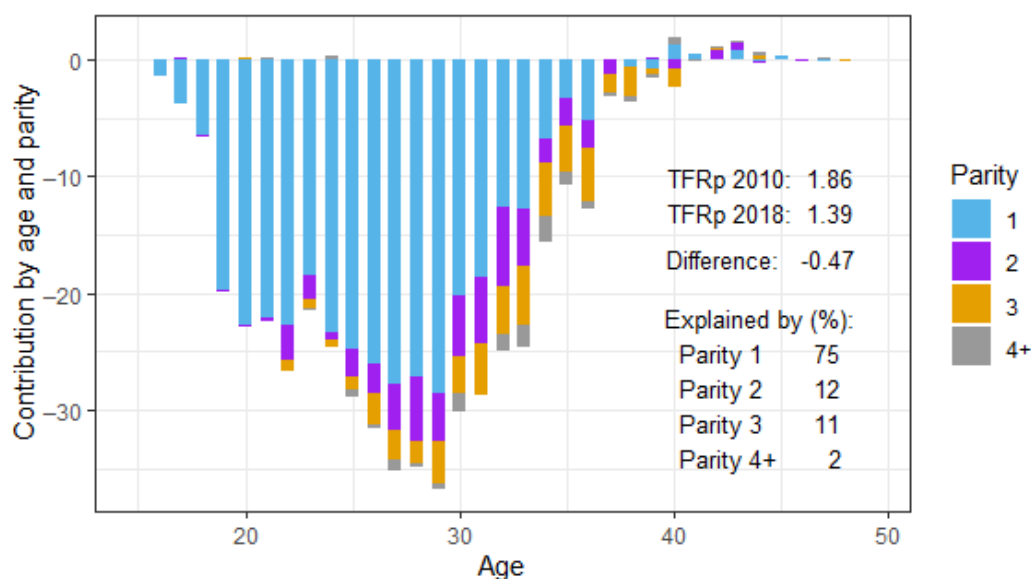
all together, despite already high levels of ultimate childlessness (Kreyenfeld and Konietzka 2017; Jalovaara et al. 2019).

Finland deviates from the other Nordic countries

Figure 5 compares the predicted declines in lifetime fertility in all Nordic countries using the freeze rate approach, which has the most neutral assumptions about future trends. On average across these countries, lifetime fertility is predicted to fall from 2.0 for the mid-1970s' cohorts to 1.8 for the late 1980s' cohorts. Further, Finland, Norway and Iceland are on one trajectory with faster decreasing trends, and Sweden and Denmark on another with weaker predicted declines.

Finland diverges from the other Nordic countries, as its predicted level is much lower. The decline also in other Nordic countries suggests that the longstanding pattern of high and stable lifetime fertility in the Nordic countries may be changing. The weaker declines as predicted for lifetime fertility in Sweden and Denmark correspond to milder declines witnessed also in period fertility in these countries in the 2010s.

Figure 4: Decomposition of the decrease in the age- and parity-adjusted TFR in Finland in 2010–2018 by age and parity.



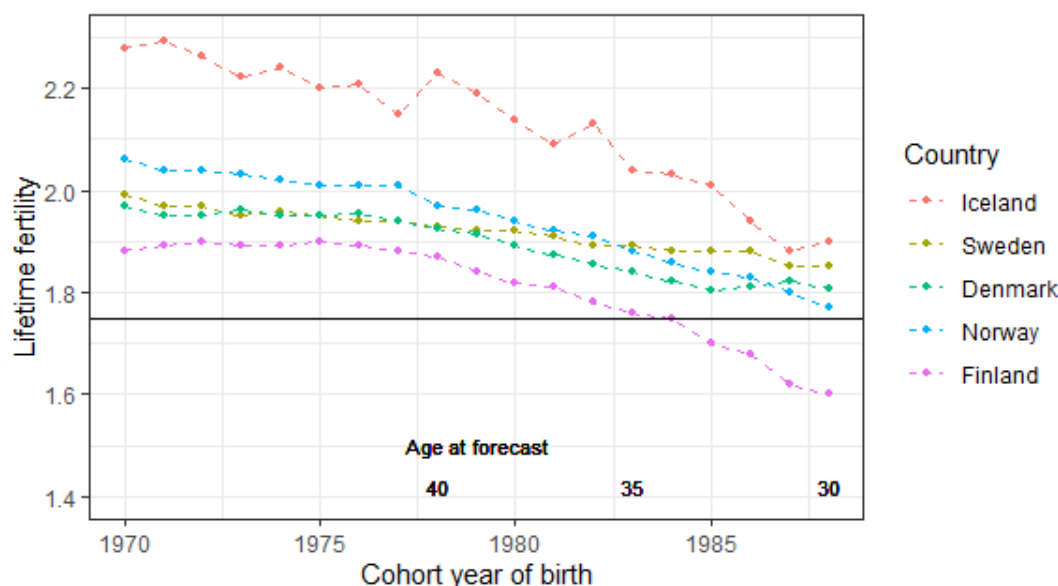


Figure 5: Observed completed lifetime fertility (CFR) for the 1970–1974 cohorts and forecasted CFR for the 1975–1988 cohorts using the freeze rate method, by Nordic country.

Conclusions: Lifetime numbers of children are expected to notably decline for the first time in decades

Previous fluctuations in the period fertility in Finland since the 1970s have been largely due to temporary changes in fertility timing, and lifetime fertility has remained close to two children per woman since the 1940s birth cohort. The strong decline in TFR in the 2010s is different, in that it is not fully attributable to the postponement of childbearing. Instead, the lifetime numbers of children are expected to notably decline for the first time in decades in Finland. This points to an important shift in fertility patterns in Finland.

Moreover, the 2010s fertility decline is consequential more broadly: declines in lifetime fertility are expected also in other Nordic countries, even if to a lesser extent in Sweden and Denmark.

The current low period fertility – 1,37 in 2020 and based on the preliminary statistics 1,46 in 2021 – as well as expected decline in lifetime fertility in Finland is a puzzling phenomenon because the country's previously relatively high fertility has often been attributed to the policy settings promoting work-family reconciliation and gender equality (Andersson et al. 2009). The predicted decline in lifetime fertility

to levels close to 1.6 or lower, places Finland among countries with levels currently observed in Southern and Eastern Europe. These are countries that often lack support for working mothers – in contrast to the family-friendly and “highest low” fertility countries typically found in Northern Europe.

In the recent decade, there have not been any remarkable changes in social policies or setbacks in gender equality developments (Rostgaard 2014), that could explain the fertility decline. Although there is room for improvement in policies targeting family-work reconciliation and gender equality in Finland (see, e.g., Grönlund, Halldén, and Magnusson 2017; Lorentzen et al. 2019), in our view the decline primarily calls for alternative explanations.

The 2010s fertility decline is strongly, but not solely, driven by the postponement and foregoing of parenthood. In terms of lifetime fertility this implies that the already high levels of lifetime childlessness in Finland could rise even further. The fact that fertility in Finland declined in the 2010s across parities suggests that multiple factors are likely to have contributed to the decline.

The current family policies might be insufficient in supporting individuals who hesitate to start a family in today's Finland for

instance because of economic uncertainty. It is relevant to seek to better understand why young adults in Finland do not enter parenthood as often as before and look for ways to support those who wish to do so.

The conditions to have children in the near future will affect the extent to which lifetime fertility will decline. When seeking to support the transition to parenthood, it is important to broadly pay attention to policies (e.g. employment policies) that may have an effect on the possibilities and outlook of this transition. Finally, the current findings also stress the importance of a targeting adjustment in public policy planning towards the accelerated population aging in Finland.

Data and forecasting methods

We used aggregated data from the Human Fertility Database (HFD). To complete the time-series with the most recent years, data were provided also by the Nordic countries' national statistical offices. The data cover the entire female population of the countries.

Lifetime fertility was forecasted using extrapolation-based approaches (Myrskylä, Goldstein, and Cheng 2013; Schmertmann et al. 2014) that have produced high-quality forecasts in other settings (Bohk-Ewald, Li, and Myrskylä 2018). We forecasted fertility for women currently aged 30–43, and lifetime fertility was considered completed at age 44. We also developed a new forecasting method that calculates recuperation patterns seen in historical data without strong assumptions, and applies these patterns to women still at childbearing age.

The research has been funded by the Academy of Finland (decision numbers 321264 for the NEFER project, 332863 for the LOWER project and 320162 for the INVEST flagship) and Strategic Research Council (decision numbers 345130 and 3451).

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Reference:

Andersson, G., M. Rønsen, L. B. Knudsen, T. Lappegård, G. Neyer, K. Skrede, K. Teschner, and A. Vikat. 2009. 'Cohort fertility patterns in the Nordic countries', *Demographic Research*, 20: 313-52.

Bohk-Ewald, C., P. Li, and M. Myrskylä. 2018. 'Forecast accuracy hardly improves with method complexity when completing cohort fertility', *Proceedings of the National Academy of Sciences*, 115: 9187-92.

Bongaarts, J., and G. Feeney. 1998. 'On the Quantum and Tempo of Fertility', *Population and Development Review*, 24: 271-91.

Comolli, C. L., G. Neyer, G. Andersson, L. Dommermuth, P. Fallesen, M. Jalovaara, A. Jónsson, M. Kolk, and T. Lappegård. 2020. 'Beyond the Economic Gaze: Childbearing during and after Recessions in the Nordic countries', *European Journal of Population*.

Esping-Andersen, G., and F. C. Billari. 2015. 'Re-theorizing Family Demographics', *Population and Development Review*, 41: 1-31.

Frejka, T. 2008. 'Overview Chapter 2: Parity distribution and completed family size in Europe: Incipient decline of the two-child family model?', *Demographic Research*, 19: 47-72.

Goldscheider, F., E. Bernhardt, and T. Lappegård. 2015. 'The Gender Revolution: A Framework for Understanding Changing Family and Demographic Behavior', *Population and Development Review*, 41: 207-39.

Grönlund, A., K. Halldén, and C. Magnusson. 2017. 'A Scandinavian success story? Women's labour market outcomes in Denmark, Finland, Norway and Sweden', 60: 97-119.

Hellstrand, J., J. Nisén, V. Miranda, P. Fallesen, L. Dommermuth, and M. Myrskylä. 2021. 'Not Just Later, but Fewer: Novel Trends in Cohort Fertility in the Nordic Countries', *Demography*, 58: 1373-99.

Hellstrand, J., J. Nisén, and M. Myrskylä. 2020. 'All-time low period fertility in Finland: Demographic drivers, tempo effects, and cohort implications', *Population Studies*, 74: 315-29.

Hoem, J. M. 2005. 'Why does Sweden have such high fertility?', *Demographic Research*, 13: 559-72.

Jalovaara, M., G. Neyer, G. Andersson, J. Dahlberg, L. Dommermuth, P. Fallesen, and T. Lappegård. 2019. 'Education, Gender, and Cohort Fertility in the Nordic Countries', *European Journal of Population*, 35: 563-86.

Kreyenfeld, M., and D. Konietzka. 2017. *Childlessness in Europe: Contexts, causes, and consequences* (Springer).

Lorentzen, T., O. Bäckman, I. Ilmakunnas, and T. Kauppinen. 2019. 'Pathways to Adulthood: Sequences in the School-to-Work Transition in Finland, Norway and Sweden', *Social Indicators Research: An International and Interdisciplinary Journal for Quality-of-Life Measurement*, Springer, 141(3): 1285-305.

Myrskylä, M., J. R. Goldstein, and Y. A. Cheng. 2013. 'New Cohort Fertility Forecasts for the Developed World: Rises, Falls, and Reversals', *Population and Development Review*, 39: 31-56.

Rostgaard, T. (2014). [Family policies in Scandinavia \(Report\)](#). Berlin, Germany: Frederick Ebert Stiftung.

Schmertmann, C., E. Zagheni, J. R. Goldstein, and M. Myrskylä. 2014. 'Bayesian Forecasting of Cohort Fertility', *Journal of the American Statistical Association*, 109: 500-13.

Zeman, K., É. Beaujouan, Z. Brzozowska, and T. Sobotka. 2018. 'Cohort fertility decline in low fertility countries: Decomposition using parity progression ratios', *Demographic Research*, 38: 651-90.