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Gender Differences in the Timing and Chances of Parenthood Across Regions

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ABSTRACT

An increasing number of studies have examined fertility variation at the regional level within countries, but this research has largely focused on women. As a result, our knowledge of regional variation in male fertility remains limited. The current study addresses this research gap by examining how the timing and chances of parenthood vary regionally for women and men in four countries in Northern and Western Europe. We hypothesize that gender differences in first-time parenthood may be less pronounced in urban centers, such as the capital regions, and especially among groups with higher levels of education. The study is based on data collected from female and male cohorts born between 1963 and 1970 in Finland, France, the Netherlands, and Sweden. The results largely support our hypotheses, indicating that differences in the age at first birth and in the share of parents between capital and other regions are less pronounced among men than among women in all countries except the Netherlands. Consequently, there are smaller gender differences in first-time parenthood in capital regions across three of the four countries. Furthermore, highly educated women and men living in capital regions are most similar in terms of their age at first birth and the share of parents.

1 | Introduction

A broad motivation for a sub-national regional analysis on fertility is that exploring this dimension may improve our understanding of observed national-level patterns, given that such patterns are averages of regional patterns and may mask significant sub-national variation (see Snyder 2001). Recent studies on women's fertility in Europe illustrate this empirically (Nisén et al. 2025; Wood et al. 2025). A perspective beyond the national level has also has value in light of globalization theories, which predict that affluent regions will become more similar to each other over time, while regional differences in living conditions within countries may even widen (Veltz 2014). Regional variation in fertility within countries may stem from a combination of several factors, including contextual effects of regions, compositional factors such as different educational compositions of regions, as well as selective migration across regions (Basten et al. 2011; Kulu 2013). A number of recent empirical studies have investigated how fertility varies at the regional level within countries (e.g., Campisi et al. 2020; Matysiak et al. 2021; Nisén et al. 2021; Ohlsson-Wijk and Andersson 2022). Previous studies have shown, for instance, that women's fertility is later (Riederer and Beaujouan 2024) and lower (Kulu 2013) in larger settlements and urban areas, and that this tendency is not completely explained by higher average socioeconomic attainment of women living in such regions (Kulu et al. 2007).

Some evidence suggests that, similarly to women, the average age at becoming a father has increased more strongly in the capital regions in the last decades but, unlike in women, the

eventual chances of becoming a parent may be relatively high in both capital regions and peripheral regions (Paavilainen et al. 2016; Schubert and Dudel 2025). However, in general, the previous research on regional patterning of fertility has been focused on women, and the knowledge on men in this respect, as well as on any regional variation in gender differences in fertility, is more limited. The current study fills this research gap by addressing to what extent the timing and chances of becoming a parent vary differently among women and men across sub-national regions in Northern and Western Europe. The timing of parenthood refers to the average age at the birth of a first child, and the chances to the proportion of those who have become parents by the end of their reproductive years. We calculate these measures based on the region of living at this point in life, by focusing on the distinction between the capital and other sub-national regions. We use register and large sample data on cohorts born in 1963–1970 in Finland, France, Netherlands, and Sweden. Our descriptive assessment is motivated by arguments about factors that can affect regional gender differences in parenthood, including the opportunity costs of children, sex ratios, age differences between partners, and the educational composition of different regions.

2 | Background and Hypotheses

Previous research on the gender difference in the level of total fertility across countries and over time has found substantial variation, and demonstrated that this disparity diminished over the course of the demographic transition, from higher fertility rates among men than women in contexts with very high fertility overall (Schoumaker 2017, 2019). Over the transition, reasons leading to a smaller gender difference in fertility, by impacting the number of women and men at reproductive ages (i.e., sex ratio), include a more balanced sex ratio at birth, lower mortality especially of men, less positive population growth rate[1], and more gender-neutral migration (Schoumaker 2019). In societies that have reached low levels of fertility, gender differences in fertility tend to be small: often, the level of men's fertility is similar to or slightly lower than that of women (Dudel and Klüsener 2021; Schoumaker 2017, 2019; Zhang 2010). Furthermore, men tend to be consistently older than women when their child is born: in a study of 17 high-income countries, the age difference was estimated to be two to four years, with some decline over time (Dudel and Klüsener 2021). This is related to trends in couples' age differences (see also Kolk 2015). While men tend to be older than their female partners, a smaller age gap may imply less traditional gender roles and more female bargaining power (Polachek et al. 2015; Rothstein 2012). However, previous studies on gender differences in fertility have focused on the total fertility, paying limited attention to first births. Related studies, however, show that a smaller share of men than women typically ever becomes a parent in high-income countries (Bledsoe et al. 2000; Chudnovskaya and Ueda 2023; Jalovaara et al. 2019; Kravdal 2021; Kreyenfeld and Konietzka 2017; Tanturri et al. 2015) and that men are older than women at the time of a first birth (see, e.g., Nisén et al. 2014; Winkler-Dworak and Toulemon 2007).

First births are an important focus in the contemporary setting, where the postponement of parenthood continues (Human Fertility Database 2022) and depresses the levels of period fertility (Hellstrand et al. 2021; Sobotka 2004). Moreover, childlessness has been on the rise in many countries (Kreyenfeld and Konietzka 2017) and the progression to first birth explains an increasing share of the heterogeneity in cohort fertility levels between countries (Zeman et al. 2018). Previous cross-country studies on gender differences in fertility have advanced our knowledge by studying the total number of children (Dudel and Klüsener 2021; Schoumaker 2017, 2019) and the timing of births of any birth order (Dudel et al. 2023; Dudel and Klüsener 2021). However, an analysis distinguishing between birth orders has the potential to provide more insight on the underlying behavior (Chudnovskaya and Ueda 2023; Kravdal 2021). This is because fertility decision-making typically occurs sequentially and the determinants of having a first child differ from those of progressing to higher parities (Huinink and Kohli 2014; Thomson et al. 2013). Differential distribution of parities can also affect the average timing of births, which highlights the value of a parity-specific analysis.

Several factors can drive gender differences in first-time parenthood at the regional level. First, sex ratios are considered important for differences in fertility between women and men (Dudel and Klüsener 2021; Schoumaker 2019). Studies on childlessness have found that, in recent cohorts, sex ratios have driven stronger increases for men than women (Chudnovskaya and Ueda 2023; Kravdal 2021). In contemporary Europe, female-biased sex ratios at ages 25–34 are more common in regions with higher population density (Gulczyński 2023). Second, fertility with multiple partners is related to gender differences in the level of fertility (Schoumaker 2019). In high-income countries, sequential multi-partner fertility is usually more common among women than men, and may vary regionally within countries (for a review, see Fostik and Le Bourdais 2020; Stannard et al. 2024). Thus, if some women have multiple children with different men who are first-time fathers, while leaving other women unpartnered and childless, this can increase men's chances of becoming parents relative to women's, contributing to a smaller gender difference in this respect within a region[2]. However, the role of multi-partner fertility for gender differences in the timing of first births is less clear.

Third, men could be argued to be less sensitive to regional contextual factors in their fertility behavior than women, given their lower opportunity costs of children, thus leading to weaker regional patterns in both timing and chances of first births for them. However, this would not impact gender differences to the extent that shifts in behavior occur within (intact) different-sex couples. Fourth, gender differences in the timing of births are influenced by age differences between partners (Dudel and Klüsener 2021; Schoumaker 2019), and this can be expected to be true also for first births. This is relevant in a regional perspective, as urbanization is viewed to favor age-homogamous partnerships (McKenzie 2021).[3] Finally, educational composition may play a role for gender differences at the regional level, especially as educational gradients in the timing and chances of parenthood are gendered (Dribe and Stanfors 2009; Nisén et al. 2014) and age homogamy is stronger in couples with higher levels of education (Giuliani 2020).

2.1 | Regional Variation in Men's and Women's Timing of Parenthood

Given the higher opportunity costs of children for women than for men, women's fertility behavior may be expected to be

(more) sensitive to the regional opportunity structure of childbearing (Kulu 2013; Rindfuss et al. 2010). For instance, in capital regions where labor market opportunities are plentiful, especially for the highly educated, women may have the incentive to postpone their childbearing in order to take advantage of these opportunities and establish themselves in the labor market before becoming mothers (Kulu 2013; Riederer and Beaujouan 2024). However, men's fertility has been found to respond to regional levels of aggregate unemployment fairly similarly to women (Kravdal 2002; Kristensen and Lappegård 2022), which does not support the idea of women being more sensitive. Even if both career-oriented women and men are concentrated in urban areas, but career-related goals have a stronger impact on the timing of parenthood for women than men, we would expect to see greater regional variation in the timing of a first birth for women than for men.

However, in high-income societies, the decision to have a child is couple-based (Doepke and Kindermann 2019). This implies that when women's opportunity costs of childbearing are higher, negatively affecting women's fertility, this will also negatively affect their male partners' fertility. Women's incompatibility between family and work could be reduced by men increasing their share of household work, or by couples' outsourcing household services. Still, the increasing involvement of men in household chores could also raise men's opportunity costs, which may also dampen couples' fertility (Huinink and Kohli 2014; Trimarchi and Van Bavel 2018). In sum, once in a couple, women's and men's fertility behaviors are interconnected. As a result, gender differences in the timing of becoming a parent are particularly linked to gender differences in the timing of union formation.

Related to the point on union formation, sex ratios are hypothesized to impact family and fertility behavior in different disciplinary perspectives (e.g., Schacht and Kramer 2016; Schacht and Uggla 2023), but the evidence remains mixed (see, e.g., Pettay et al. 2021; Schacht and Borgerhoff Mulder 2015; Schacht and Smith 2017). There is, however, evidence that sex ratios are relevant to gender differences in the level of fertility (Dudel and Klüsener 2021; Schoumaker 2019), including childlessness (Chudnovskaya and Ueda 2023; Kravdal 2021; Schubert and Dudel 2025). In contemporary Europe, sex ratios in more urbanized regions are typically more female-biased (Gulczyński 2023; Wiest et al. 2013). This is strongly influenced by the provision of higher education and the regional economic structure, and women in present-day Europe being more likely to migrate to urban regions to pursue higher education and find employment that aligns with their qualifications (e.g., jobs in the service sector) (Gulczyński 2023).

The lower availability of men may be expected to delay women living in urbanized regions from finding a partner, whereas the reverse is more likely in less urbanized regions (Pettay et al. 2021). This in turn could be consequential, by leading to a later timing of motherhood in urban regions and a later timing of fatherhood in less urban regions. For instance, in late 19th-century Utah, men living in areas with a male-biased sex ratio had higher age at birth than men living in female-biased locations, while the opposite was true for women (Schacht and Smith 2017). In post-world war II Finland, female-biased migration from rural areas to towns created an 'urban fertility trap', where women who lived in towns with fewer men relative to women entered motherhood at a higher age (Pettay et al. 2021).

Given men's lower opportunity costs of children, we expect less pronounced regional variation in their timing of parenthood (**H1a**). However, sex ratio imbalances can impact women and men similarly, thus contributing to similar regional variation for women and men (**H1b**).

2.2 | Gender Differences Across Regions

Based on H1a and H1b, the higher opportunity costs of children for women, and sex ratio imbalances, can favor a later timing of parenthood in more urbanized regions, especially for women. In less urbanized regions, however, the male-biased sex ratios may delay the entry into fatherhood. If true, this would imply a smaller gender difference in the timing of parenthood in more urbanized regions, such as capital regions, and a larger gender difference in less urbanized regions. Moreover, the age difference between partners can influence gender differences in the timing of parenthood. Urbanization and individualism have been proposed to favor partnerships with more egalitarian gender roles, and a small age difference between partners is considered to be a key indicator of these roles (McKenzie 2021). In historical contexts, smaller age differences were documented in more urbanized areas (Dribe and Stanfors 2017; Pettay et al. 2021; Van de Putte et al. 2009; see however Atkinson and Glass 1985). More broadly, gender egalitarian attitudes (Trimarchi 2022), women's level of education (Giuliani 2020), and couples' socioeconomic status (Dribe and Nystedt 2017) are associated with a smaller age difference between partners. The regional concentration of highly educated and high-earning couples in more urbanized regions may thus also favor a smaller gender age gap in first births.

In addition, women who enter motherhood later are more likely to bear a child with a man of more similar age (Dudel et al. 2023). This may be related to preferences for partner's age, which are considered important in mate selection (Conroy-Beam and Buss 2019). For instance, in Germany, older women had more heterogenous preferences for their partners' ages, with a smaller proportion of older women preferring older men, yet a larger proportion of older men preferred younger women (Skopek et al. 2011). Given the higher mean ages of entering motherhood in more urbanized regions (e.g., Riederer and Beaujouan 2024), a smaller gender difference in the timing of parenthood could thus be expected in such regions.

Based on these considerations, our second hypothesis is that there are smaller gender differences in the timing of parenthood in urban centers, such as capital regions (**H2**).

2.3 | Timing and Chances of Parenthood

At the individual level, the postponement of parenthood can be expected to be less strongly connected to the eventual chances of becoming a parent for men than for women (Kneale and Joshi 2008). This is because men's less strict biological age limits to having children (Schmidt et al. 2012) leave them a longer window to form a (new) union with a younger female partner with whom they can have a child even at a later age. However,

it is unclear whether there is a similar gendered connection between the timing and the eventual chances of parenthood at the population level. This is because the majority of children are born to couples (Andersson 2023), and the postponement of parenthood within (intact) couples may then increase the risk of remaining childless for both partners. Multi-partner fertility, which has been found to be more common among women than men in a high-income country context (see Fostik and Le Bourdais 2020; Stannard et al. 2024), could lessen the link between the timing and eventual chances of parenthood among men, if some older men end up having a first child with a woman who already is a mother.

Furthermore, variation in regional sex ratios can impact the timing and chances of parenthood of one sex, without the opposite sex being affected in the same way (e.g., Schacht and Smith 2017). For instance, in historical Finland, women living in urban communities were more likely to become mothers when there were more men available as partners (Pettay et al. 2021). In historical Utah, men living in locations with a male-biased sex ratio were less likely to be married and had lower fertility than men living in female-biased locations, while the opposite was true for women (Schacht and Smith 2017). Changes in regional sex ratios also contributed to increased levels of childlessness in recent male cohorts in Finland (Schubert and Dudel 2025). Therefore, female-biased sex ratios in more urbanized regions may provide men better opportunities to find a partner with whom to have a child with. This can lead to smaller gender differences not only in timing, but also in the chances, of parenthood in such regions.

Given this background, our third hypothesis is that the timing and chances of parenthood display similar gender patterns across regions (**H3**).

2.4 | Educational and Regional Differences

We contextualize the cross-regional variation in gender differences in first-time parenthood by comparing it with the respective variation across educational groups. Women with higher levels of education typically face higher opportunity costs of children, which leads them to postpone or possibly forgo motherhood more often (Nisén et al. 2025; Vasireddy et al. 2023). Compared to women, men tend to have less pronounced educational differences in timing, combined with a negative educational gradient in childlessness (Vasireddy et al. 2023). All else equal, this results in smaller gender differences in first-time parenthood among the more highly educated groups. In contexts with stronger support for work-family reconciliation, however, highly-educated women are less likely to postpone motherhood (Rendall et al. 2005) and are more likely to enter it eventually (Andersson et al. 2009; Jalovaara et al. 2019). This should weaken the relationship between educational level and the gender differences. Still, shifts in fertility behavior that occur within (intact) couples impact both women and men.

However, the consequences of the reversal of the gender gap in education—that is, more highly educated women on the mating market relative to highly educated men—remain unclear (Van Bavel 2012). If we assume that highly educated women want to partner with highly educated men, singlehood and childlessness among the highly educated women may increase. A recent study, though, shows that, among recent cohorts, women with lower levels of education are *less* likely to form a union than their highly educated counterparts (Sturm and Van Bavel 2024). This pattern mirrors the educational differences in union formation in men (Trimarchi and Van Bavel 2017). Consequently, if the educational gradient in union formation converges between genders, gender differences in the timing and chances of parenthood should also diminish across educational groups. Still, thus far, the evidence is based on country-level analyses. Sub-regional variations in sex-ratios, and in all contextual factors, which are masked in a country-level analyses, could lead to different outcomes regarding educational differences.

Furthermore, age homogamy among couples is typically stronger for the more highly educated groups (for a review, see Giuliani 2020), which should result in a smaller gender difference in the age of entering parenthood in these groups. Highly educated women can be expected to partner with highly educated men, which would decrease the partners' age difference, and also favor a more egalitarian division of paid and unpaid work. Moreover, women with higher levels of education can be viewed to face a shorter (social) age window for having children. Longer enrolment leaves them less (normative) time to find a childbearing partner during their fertile ages, which increases their risk of remaining childless. This argument applies to men to a lesser extent, which is yet another reason to expect a smaller gender difference in the chances of parenthood for the more highly educated. It could also impact timing, as older women tend to have children with men closer to their own age (Dudel et al. 2023). Still, multi-partner fertility is typically more common (in women and) in groups with lower levels education (Stannard et al. 2024), thus rather decreasing the gender difference in the share of parents in these groups.

Taken together, these arguments about gender differences in first-time parenthood across educational groups also highlight the importance of considering the impact of regional educational composition when examining how gender differences manifest across regions. This is especially important given the patterns of internal migration, in which those pursuing higher levels of education—who in present-day Europe are more often women – are concentrated in urban regions (Gulczyński 2023).

Our fourth hypothesis is that variation of the gender difference in parenthood between regions would be of similar magnitude as the respective variation between educational groups **(H4)**.

2.5 | Country Contexts

The present study comprises two Northern (Finland, Sweden) and two Western (France, the Netherlands) European countries, which allows us to describe the regional gender differences in first-time parenthood in different country contexts. Given the limited research on men's fertility outside the Nordic countries, the extension beyond these countries is valuable. The Nordic countries are characterized by lower social inequalities, including gender inequality, than France and the Netherlands (Esping-Andersen 2009; Korpi 2000). They also share distinct regional characteristics, including low population density and relatively strong gender imbalances in their regional populations (Wiest et al. 2013). In all four countries, women currently

achieve higher levels of education than men (Van Bavel 2012; Wiest et al. 2013).

In Finland and Sweden, the mean age at the birth of the first child is lower (2000: 27.4 and 27.9) than in the Netherlands and France (2000: 28.6 and 29.1) (Human Fertility Database 2022). In turn, relatively low level of childlessness is characteristic of Sweden and France: in the 1960s cohorts around 86–87% of women became mothers (Jalovaara et al. 2019; Toulemon et al. 2008; Winkler-Dworak and Toulemon 2007), while in Finland and the Netherlands, only roughly four out of five women did so (Jalovaara et al. 2019; Sobotka 2017).

The difference in the mean age at any birth between fathers and mothers was around 2.7–2.8 years in Sweden and France, and 2.4 years in Finland, in the early 2000s (estimate not available for the Netherlands), which is below the average across 17 high-income countries documented by Dudel and Klüsener (2021). Comparative evidence on the gender difference in the proportion of parents is more limited, but existing studies document lower levels for men, for example, in Sweden 78% of men born in the 1960s became parents (i.e., 8 %-points less than the share in women) (Jalovaara et al. 2019). According to Nordic evidence, the gender gap in childlessness has widened in recent cohorts (Chudnovskaya and Ueda 2023; Kravdal 2021).

As mentioned above, modest educational differences in the timing (Rendall et al. 2005) and chances of parenthood are typical of the Nordic countries, and in more recent cohorts women and men with lower levels of education are less likely to become parents (Jalovaara et al. 2022). This pattern has been attributed to gender equality and supportive family policies (Jalovaara et al. 2019). In turn, women with higher levels of education are less likely to become mothers, while the opposite holds for men, in France and Netherlands (Keizer et al. 2008; Toulemon and Lapierre-Adamcyk 2000; Toulemon et al. 2008).

Finland and Sweden are distinct geographically as they comprise large areas with small populations (Eurostat 2025a). The large northern regions—North and East Finland and Upper Norrland in Sweden—have less than 10 inhabitants per square kilometre. The capital region Stockholm is more densely populated than Helsinki-Uusimaa (318 vs. 169 inhabitants per square km). France has a higher population density, ranging from 67 inhabitants per square km in South-West to 989 in Paris. The Netherlands is very densely populated: South Holland has 1258 inhabitants per square km, and even the most sparsely populated region, Drenthe, has 186 (Eurostat 2025a). In addition, there are relatively strong regional gender imbalances in Northern European countries, at least among young adults (Wiest et al. 2013).

Our fifth hypothesis is that in the sparsely populated but gender equal Nordic countries, gender differences in parenthood are relatively similar across educational groups, while regional differences are more pronounced, as compared to France and the Netherlands (**H5**).

3 | Data and Method

3.1 | Data

This study used aggregated data from male and female cohorts born in the late 1960s in Finland (cohorts 1966–1970), France (cohorts 1963–1968), Netherlands (cohorts 1966–1967), and Sweden (cohorts 1966–1970). With the exception of France, these data were aggregated from individual-level population registers that cover the entire population. In these register data, fertility was measured by official registrations of children to their parents. The French data came from the survey on family and housing (Enquête Famille et Logements, EFL 2011), which was conducted alongside the 2011 French census on a per-cent representative sample of Metropolitan France (Famille et Logements 2011). The survey asked both female and male respondents to provide information about their children[4], which we used for measuring fertility.

The quality of men's fertility data is high in the Nordic registers (see, e.g., Jalovaara et al. 2019; Nisén et al. 2014). In Swedish female cohorts born in the 1960s approximately one per cent of women had a child without a registered father (Chudnovskaya and Ueda 2023). In France, there is good consistency between survey and register data sources for fertility, with a small underestimation in the EFL 2011 for all women's cohorts, most likely due to selection and recall error biases (Brée et al. 2016). Such a bias may affect men's fertility data more, especially for older cohorts born before 1932 (Beaujouan and Solaz 2019). However, this study does not investigate those cohorts. We cannot rule out the possibility that measurement error in men's fertility plays a larger role in France and the Netherlands, but this error is unlikely to account for the main findings because it is not expected to vary systematically between regions.

3.2 | Measures

3.2.1 | *Timing and Chances of Parenthood*

First-time parenthood was assessed in terms of the average age at the birth of a first child (thereafter: age at first birth) for women and men (timing of parenthood) and the proportion of women and men who have become parents (chances of parenthood). Applying a cohort study design, these characteristics were measured between the ages of 42 and 48. The exact age range was 42–46 in Finland and Sweden (in 2012), 42–48 in France (in 2011), and 44–45 in the Netherlands (in 2011). This choice is similar to that of previous studies (Kravdal 2021; Nisén et al. 2014; Schubert and Dudel 2025), which aimed to capture (nearly) complete first birth histories for women and men (see the Limitations section for a sensitivity analysis).

3.2.2 | *Education*

We measure the highest level of educational attainment, along with first-time parenthood and the region of living, at the end of the reproductive life. According to the ISCED 1997 classification, educational attainment is categorized as low (ISCED levels 1–2), medium (ISCED 3–4) and high (ISCED levels 5–6) level (UNESCO 1999).

3.2.3 | *Region*

The regional categorization is based on the Nomenclature of Territorial Units for Statistics (NUTS), an official classification of the European Union (Eurostat 2011). For comparability across countries, we use for Finland (4 regions), Sweden (8 regions) and the Netherlands (12 regions) the NUTS2 level, and

for France (8 regions) the NUTS1 level (Supporting Information S1: Appendix Figure 1). The capital regions consist of Helsinki-Uusimaa in Finland, the Paris region in France, North Holland (including the capital city of Amsterdam) in the Netherlands, and Stockholm in Sweden. Additional analyses measure the level of urbanization of a region by its population density in 2011. This density is calculated using data on population and area for NUTS2-level regions from Eurostat (2025b, 2025c).

3.3 | Method

We calculate the average age at first birth and the proportion of parents within groups of women and men distinguished by different levels of education and regions of living. The analysis focuses on the regional distinction between capital regions and the sex-specific weighted average of other regions within a country. In the case of the age at first birth, the mean is weighted by the number of mothers/fathers. To provide a more nuanced view of regional patterns and an empirical justification of the distinction between capital and other regions, we additionally show results for all sub-national regions according to their level of urbanization (i.e., population density). Gender differences in the two outcomes are assessed by comparing absolute differences between women and men belonging to the same cohorts, living in the same region at the end of their reproductive life, and educated to the same level. Since results for France are based on a random sample, we additionally calculated the confidence intervals of our regional estimates (see Supporting Information S1: Appendix 1).

4 | Results

4.1 | Gender Differences in Four Countries

In all countries and educational groups, the age at first birth was consistently higher and the share of parents lower for men than for women (Table 1). The gender differences in the age at first birth (2.2–2.5 years) and in the share of parents (8–9%-points) were also fairly similar across countries. The gender differences in both outcomes were systematically the largest among the low educated groups, where they were 3.2–3.8 years and 12–15%-points, respectively, across countries. In Finland, France and the Netherlands there was a clear educational gradient in the gender difference in the age at first birth, with the difference being the smallest among the highly educated groups (1.4–1.8 years). In Sweden, the respective difference was more similar across educational groups. In all four countries, there was a clear educational gradient in the gender difference in the share of parents, with the difference being the smallest among the highly educated groups (1–7%-points).

4.2 | Regional Differences in Women and Men

Table 2 shows results accounting for the region of living, i.e., capital region or other regions. In the total population and within educational groups, men and women residing in the capital region had a slightly higher age at first birth than men and women residing in other regions in all four countries. On average, women in both the capital (1.7–2.5 years) and other

TABLE 1 | Age at first birth and the share of parents (in %) by gender and educational attainment in Finland, France, the Netherlands, and Sweden.

	Age at first birth			Share of parents in %		
	Women	Men	Gender diff.	Women	Men	Gender diff.
Finland						
Low	23.9	27.7	3.8	81	65	−15
Medium	25.9	29.0	3.2	81	70	−11
High	28.9	30.8	1.8	82	77	−5
Total	27.3	29.5	2.2	81	72	−9
France						
Low	24.3	27.5	3.2	86	71	−15
Medium	26.1	28.4	2.3	87	79	−8
High	28.7	30.2	1.5	83	78	−5
Total	26.6	28.7	2.2	85	77	−8
Netherlands						
Low	26.7	30.1	3.4	82	68	−14
Medium	28.8	31.2	2.4	83	73	−10
High	31.3	32.7	1.4	77	76	−1
Total	29.0	31.5	2.5	81	73	−8
Sweden						
Low	24.0	27.4	3.4	83	72	−12
Medium	26.4	29.1	2.7	87	79	−9
High	28.8	31.9	3.1	87	80	−7
Total	27.0	29.5	2.5	87	78	−9

TABLE 2 | Age at first birth and the share of parents (in %) by gender, educational attainment, and region of living in Finland, France, the Netherlands, and Sweden.

	Age at first birth								
	Capital region			Other regions			Regional diff.		
	Women	Men	Gender diff.	Women	Men	Gender diff.	Women	Men	Gender diff.
Finland									
Low	24.7	27.9	3.2	23.4	27.6	4.1	−1.3	−0.3	1.0
Medium	26.9	29.6	2.7	25.6	28.9	3.3	−1.3	−0.7	0.6
High	30.0	31.4	1.4	28.4	30.4	2.0	−1.6	−1.0	0.6
Total	28.5	30.2	1.7	26.8	29.2	2.4	−1.7	−1.0	0.7
France									
Low	25.4	28.8	3.5	24.2	27.3	3.1	−1.2	−1.6	−0.4
Medium	26.8	28.6	1.8	26.0	28.4	2.3	−0.8	−0.3	0.5
High	29.7	30.9	1.2	28.5	30.0	1.6	−1.2	−0.9	0.4
Total	27.9	29.7	1.8	26.3	28.6	2.2	−1.5	−1.1	0.4
Netherlands									
Low	27.2	30.7	3.4	26.7	30.0	3.3	−0.5	−0.6	−0.1
Medium	29.2	31.8	2.6	28.8	31.1	2.3	−0.4	−0.7	−0.3
High	32.1	33.5	1.4	31.2	32.6	1.4	−0.9	−1.0	0.0
Total	29.7	32.3	2.5	28.9	31.4	2.5	−0.8	−0.9	−0.1
Sweden									
Low	24.9	27.9	3.0	23.8	27.3	3.5	−1.0	−0.6	0.5
Medium	28.1	30.1	2.0	26.0	28.9	2.9	−2.1	−1.2	0.9
High	30.5	33.1	2.6	28.4	31.5	3.1	−2.2	−1.7	0.5
Total	28.8	30.9	2.1	26.6	29.2	2.6	−2.2	−1.7	0.5
	Share of parents in %								
	Capital region			Other regions			Regional diff.		
	Women	Men	Gender diff.	Women	Men	Gender diff.	Women	Men	Gender diff.
Finland									
Low	78	66.0	−12	79	65	−14	2	−1	−2
Medium	77	68.2	−8	83	71	−12	6	3	−4
High	77	75.7	−1	83	78	−4	6	3	−3
Total	77	71.1	−6	81	72	−9	4	1	−3
France									
Low	79	67.2	−12	87	71	−15	8	4	−4
Medium	82	75.5	−7	87	80	−8	5	4	−1
High	78	75.2	−3	85	79	−6	7	4	−3
Total	80	73.9	−6	86	78	−9	7	4	−3
Netherlands									
Low	84	63	−20	82	68	−14	−2	5	7
Medium	81	71	−10	83	74	−10	2	3	0
High	73	71	−2	78	78	−1	5	6	1
Total	78	70	−9	82	74	−8	3	4	1
Sweden									
Low	80	70	−10	84	72	−12	4	2	−3
Medium	83	76	−7	88	79	−9	5	3	−2

(Continues)

TABLE 2 | (Continued)

	Share of parents in %								
	Capital region			Other regions			Regional diff.		
	Women	Men	Gender diff.	Women	Men	Gender diff.	Women	Men	Gender diff.
High	84	78	−5	88	80	−8	5	2	−3
Total	83	76	−7	88	78	−10	5	2	−3

(2.2–2.6 years) regions had a lower age at first birth than men. Women generally showed a modestly—by 0.4–0.7 years—larger difference in the age at first birth between capital and other regions than men in Finland, France and Sweden, but not in the Netherlands. The respective results for the detailed region of living, not combining other regions into a single category, are shown in Supporting Information S1: Appendix Tables 1–4 and Appendix Figures 2–9.

In terms of the share of parents, there was a pattern similar to the age at first birth in that, in the total population and within educational groups, the share of parents was lower among those living in the capital region than among those living in other regions, with the exception of the low-educated women in the Netherlands (Table 2). In all countries, the share of parents was higher among women than men regardless of whether they lived in the capital (6–9%-points difference) or in another region (8–10%-points difference). However, there was a larger difference in the share of parents between the two types of regions among women than among men overall in Finland (4 vs. 1%-points), Sweden (5 vs. 2%-points) and France (7 vs. 4%-points), but again not in the Netherlands. This pattern held also within educational groups.

4.3 | Gender Differences by Region and Education

The gender difference in the age at first birth and in the share of parents was largest among the low educated groups in both capital and other regions in all four countries (Table 2, upper panel, and Figure 1). However, such variation by education was less pronounced in Sweden. Within educational groups, the gender difference in the age at first birth was smaller among those living in the capital than among those living in other regions in all countries except the Netherlands: this pattern held within all educational groups in Finland and Sweden and among the medium and high-educated in France. This suggests that the regional differences documented above are not explained away by educational composition, that is, the two dimensions (education, region) are independently associated with the magnitude of the gender difference in the age at first birth. However, the magnitude of the regional variation in the gender difference in the age at first was modest as compared to the respective variation by education in all countries.

In terms of the share of parents (Table 2, lower panel, and Figure 1), there was a smaller gender difference among the more highly educated regardless of the region of living—again suggesting independent associations of education and region with the gender difference. Within educational groups, the gender difference in the share of parents was consistently smaller in the capital than other regions in Finland, France and Sweden, but again not in the Netherlands. This again suggests that these regional differences are not explained by differences in educational composition only. As for the age at first birth, the variation in the gender difference by region was modest when compared to the respective variation by education in all countries except Sweden.

The education-specific analysis further revealed that among the highly educated groups, the gender differences in the age at first birth and in the share of parents were larger in Sweden than other countries (Table 1)—regardless of the region of living (Figure 1). In turn, among the low-educated, these gender differences were largest in Finland among the four countries (Table 1), yet, this was not true for capital and other regions (Figure 1). A comparison of the two Nordic countries showed that the country difference in the share of parents (i.e., smaller share in Finland than Sweden became parents; see Table 1) was particularly pronounced among the medium and high educated women who lived in the capital regions. Among men, in turn, the country difference was smallest among highly educated men, while men with medium or low education remained much more often childless in Finland than in Sweden regardless of their region of living.

4.4 | Additional Analyses

The findings on the gender differences across all regions additionally showed that in the Nordic countries these differences were typically smaller in more densely populated regions more generally, in France there was partial evidence for such a general pattern, and no systematic pattern was found in the Netherlands (Figures 2 and 3 and Supporting Information S1: Appendix Figures 2–9). In Finland, the less densely populated the region, the larger the gender gap in both the age at first birth and the share of parents, especially in the total population (Supporting Information S1: Appendix Figures 2–3). In Sweden, notably large gender differences were present in the peripheral northern regions (Supporting Information S1: Appendix Figures 8–9), but in terms of the age at first birth also in the Smålands and Islands in the south.

There was a distinct pattern in the share of parents across all regions in the Nordic countries (Table 3 and Supporting Information S1: Appendix Figures 2–3 and 8–9): among men with low level of education, the share of parents was smallest in the peripheral northern regions, with shares as low as 63% (Finland) and 66% (Sweden). Among low-educated women, the shares of mothers were particularly low both in capitals (80% in

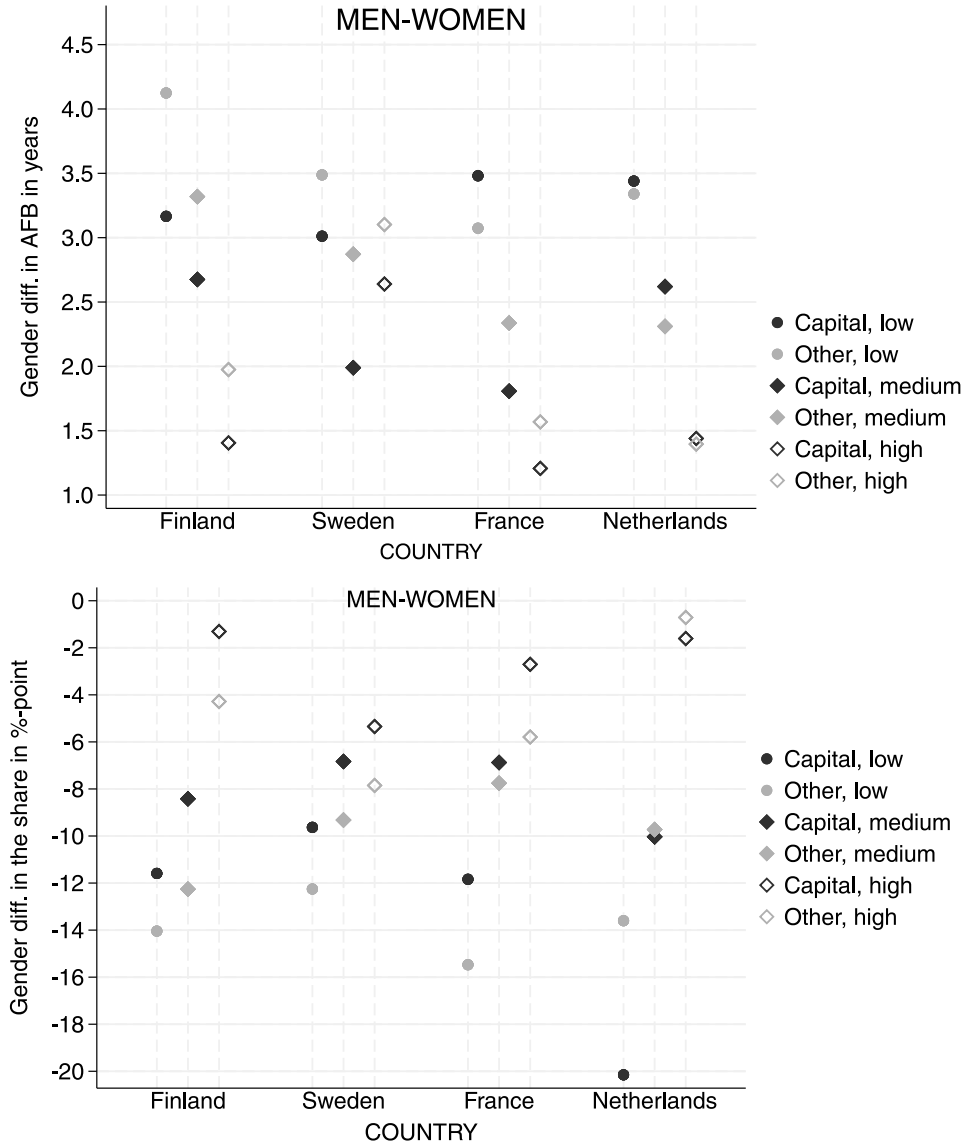

FIGURE 1 | Gender difference in the age at first birth (upper panel) and the share of parents (in %) (lower panel) by gender, educational attainment, and region of living (capital vs. other) in Finland, France, the Netherlands, and Sweden.

Stockholm and 78% in Helsinki-Uusimaa) and in the peripheral northern regions (80% in Upper Norrland in Sweden and 77% in North and East Finland).

In France, the gender differences in the age at first birth and in the share of parents were relatively small in the most urbanized regions (Paris region and North) for all women and men (Figures 2 and 3) and for the medium- to high-educated, but not for the low-educated (Supporting Information S1: Appendix Figures 4–5). The population density of a region was negatively associated with the gender difference in the share of parents, especially in the total population, similarly to the Nordic countries (Supporting Information S1: Appendix Figures 4–5). However, this was not the case for age at first birth. The share of parents was also not particularly low among women and men with low education who lived in the least urbanized regions, as was observed in the Nordic countries. In the Netherlands, there was no systematic variation in the gender differences based on an inspection across all regions, nor if the most densely populated region (South Holland) was contrasted to the rest of the country, instead of North Holland[5] (Figures 2 and 3 and Supporting Information S1: Appendix Figure 6–7).

5 | Discussion

This study examined how regional differences in the timing and chances of becoming a parent vary among men and women in four Northern and Western European countries. The findings for Finland, France, and Sweden—but not for the Netherlands—largely supported our hypotheses, as men displayed smaller differences than women in their timing of parenthood between capital and other regions (**H1a**), and gender differences in the timing were less pronounced in the capital regions in these countries (**H2**). Similarly, consistent patterns were found for the chances of becoming a parent, as in all countries except the Netherlands the regional differences in the share of parents were larger among women than men and the gender difference therein was smaller in the capital regions **(H3)**. However, the gender differences tended to vary less between regions than

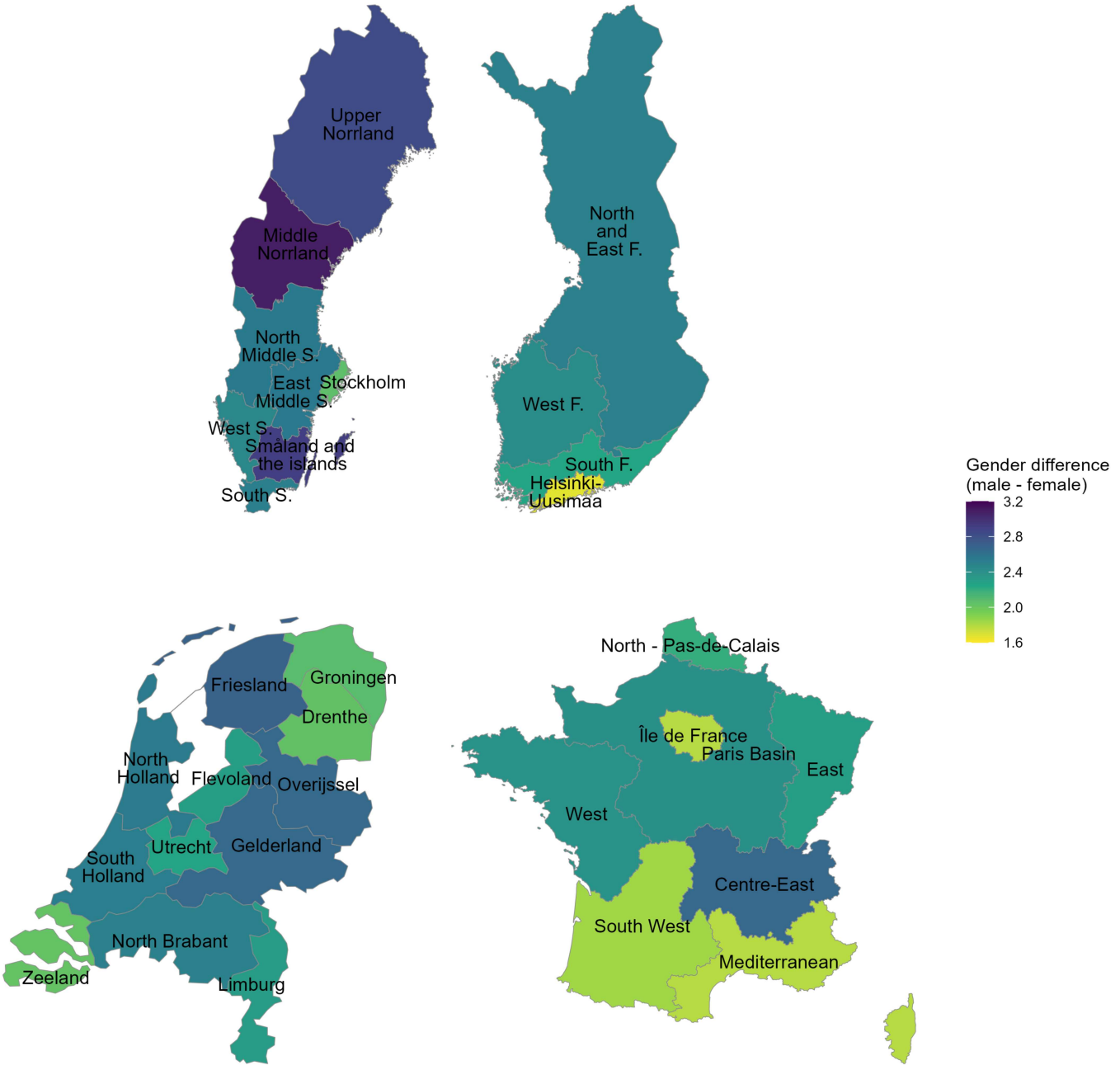

FIGURE 2 | Gender difference in the age at first birth by the region of living in Finland, France, the Netherlands, and Sweden.

between educational groups (**H4**). Gender differences were more pronounced in less-educated groups, though to a lesser extent in Sweden, while regional differences were visible in all countries except the Netherlands, thus partially supporting our hypothesis (**H5**).

These findings show that gender differences in the timing and chances of first-time parenthood are not constant across regions within countries—nor across educational groups. This adds to the prior literature that has highlighted that the extent to which fertility differs between women and men varies over time and across countries, including previous studies focused on gender differences in childlessness (Chudnovskaya and Ueda 2023; Kravdal 2021). Further research is required to distinguish between the reasons for the patterns identified in the current study. Based on previous knowledge, sex ratios and age differences between partners are important. While women's increased childbearing with multiple men has mitigated the trend of increasing gender difference in childlessness at the country level (Chudnovskaya and Ueda 2023; Kravdal 2021), the relevance of multi-partner fertility for gender differences across regions remains an empirical question. It would also be useful to better understand any gender differences in fertility responses to contextual factors.

Our results echo those of Dudel and Klüsener (2021), who showed that the gender difference in the timing of fertility is quite similar across high-income countries. Our findings focused on first births highlight that gender differences in the timing and chances of first-time parenthood vary regionally within countries. Specifically, when men living in the capital regions become parents, their average age is typically more

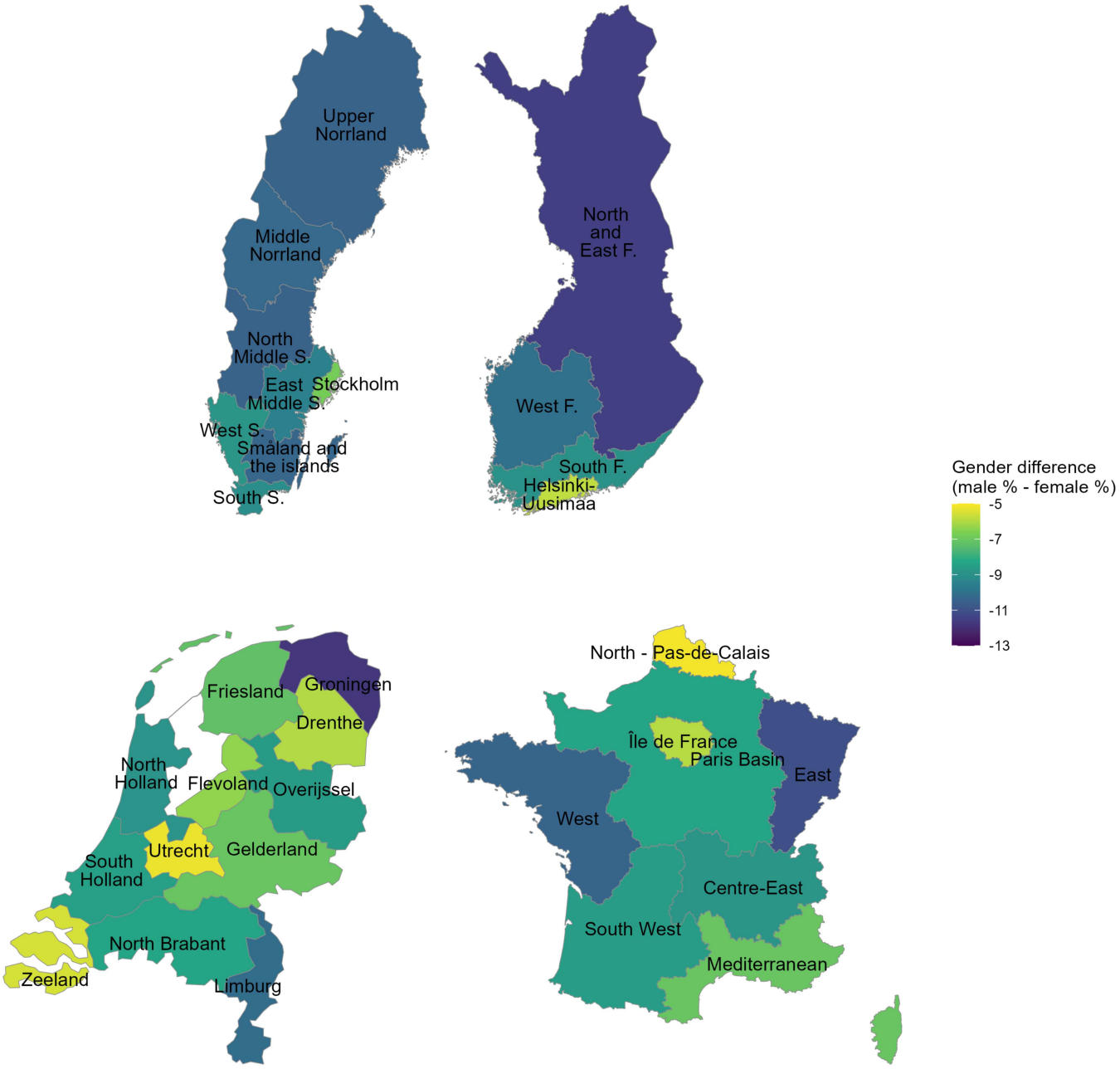

FIGURE 3 | Gender difference in the share of parents (in %) by the region of living in Finland, France, the Netherlands, and Sweden.

similar to that of women than is the case for men living elsewhere—with the exception of the Netherlands. This stems from that, those who live in the capitals have a higher average age at the birth of their first child and they are less likely to be parents than those who live elsewhere, but these regional differences are less pronounced for men than women. However, in Finland and Sweden, for men with low (and to a lesser extent medium) education, those who live in peripheral regions are most likely to remain childless, as shown earlier for Finland (Paavilainen et al. 2016; Schubert and Dudel 2025).

Regional variation in the studied outcomes was found also within educational groups, which suggests that educational composition alone does not explain the regional patterns. Gender differences are particularly small among the more highly educated segments of the population who are concentrated in the capital regions. This can be related to the higher prevalence of career-oriented women, as well as high-earning couples who typically have small age gaps between partners (Dribe and Nystedt 2017), in those regions. Our findings further revealed that higher levels of childlessness among highly educated women in Helsinki-Uusimaa as compared to Stockholm, and higher levels of childlessness of low-educated men across other regions, contributed to the higher levels of childlessness in Finland than Sweden.

The reason for the exceptional case of the Netherlands, which shows results not in line with our hypotheses, may lie in the high population density and small distances between different regions, which enable the movement of people across administrative regional boundaries. According to our findings, in this less regionally dispersed context, gender differences in first-time parenthood vary much more strongly by education than by region.

TABLE 3 | Share of parents (in %) by gender, educational attainment, and the detailed region of living in Finland and Sweden.

Region of living	Educational attainment	Mothers, %	Fathers, %	Population density
Finland				
Helsinki-Uusimaa	Low	78	66	169.4
	Medium	77	68	
	High	77	76	
	Total	77	71	
South Finland	Low	80	67	36.5
	Medium	82	70	
	High	81	79	
	Total	81	72	
West Finland	Low	80	66	23.4
	Medium	83	71	
	High	83	78	
	Total	83	73	
North and East	Low	77	63	6.4
Finland	Medium	84	71	
	High	84	78	
	Total	83	72	
Sweden				
Stockholm	Low	80	70	318.0
	Medium	83	76	
	High	84	78	
	Total	83	76	
East Middle	Low	85	72	100.2
Sweden	Medium	89	79	
	High	89	82	
	Total	88	79	
Småland and	Low	85	74	64.1
the islands	Medium	89	80	
	High	91	80	
	Total	89	79	
South	Low	83	73	40.8
Sweden	Medium	88	79	
	High	87	80	
	Total	87	78	
West	Low	85	74	24.4
Sweden	Medium	88	79	
	High	87	80	
	Total	87	79	
North Middle	Low	83	70	12.9
Sweden	Medium	89	79	
	High	90	80	
	Total	88	78	
Middle Norrland	Low	86	68	5.2
	Medium	87	78	
	High	89	82	

(Continues)

TABLE 3 | (Continued)

Region of living	Educational attainment	Mothers, %	Fathers, %	Population density
	Total	88	77	
Upper Norrland	Low	80	66	3.3
	Medium	88	77	
	High	88	81	
	Total	87	77	

6 | Limitations

The present study has limitations beyond its descriptive character. First, within-country migration across regions may play a role for the findings, and we have limited information to address this issue. We measure the region of living towards the end of the reproductive live, and women and men may have moved from the region in which they lived in their prime reproductive years. Migration and family formation are often closely interrelated life-course steps, while migration becomes less common at higher reproductive ages (Dommermuth and Klüsener 2019; Michielin 2004). Internal migration towards urban centers at older reproductive ages would have needed to be stronger for women than for men—or vice versa—to contribute to our main findings. As mentioned above, at younger reproductive ages, internal migration does impact regional sex ratios (Gulczyński 2023; Wiest et al. 2013).

Second, while the regional classification used here allows for a comprehensive description, it could be argued that future studies may benefit from a more nuanced classification, for instance by municipality or the near spatial area (Schubert and Dudel 2025). However, this would come at the cost of exacerbating any issues related to internal migration in a cohort study design as applied in the present study. Third, in the selection of the study sample, a broader age range needed to be accepted especially for France, as the French data are sample-based and this allowed for a larger study sample size. According to our sensitivity analysis on Finland (not shown), the findings did not change when fertility, education, and region of living were measured at the age of 45 (in 2011–2015), rather than at the age of 42–46 (in 2011). The results were also not specific only to the cohorts born 1966–1970 analyzed, as very similar results were obtained for cohorts born 1971–1976.

7 | Conclusion

To conclude, the present findings provide insights on how men's fertility and gender differences vary across regions in Northern and Western Europe. They underline the notion that studying fertility through the lens of women leads to knowledge gaps (Bledsoe et al. 2000; Zhang 2010). Our findings show that gender differences in the timing and chances of first-time parenthood are not constant across regions: they are particularly small in capital regions, and this cannot be solely attributed to the higher average education levels of the populations living in these regions.

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Conflicts of Interest

The authors declare no conflicts of interest.

Endnotes

[1] Population growth impacts sex ratios in the partner market through different cohort sizes in combination with the age difference between different-sex partners in couples. In aging societies, smaller subsequent birth cohorts can imply a worsening partner market for men, because they typically form unions with a female partner from the later-born smaller cohorts (Dudel and Klüsener 2021; Schubert and Dudel 2025).

[2] In reality, of course, not all unions are formed by individuals from within the same administrative region.

[3] Age differences between partners in different-sex couples can also impact the gender difference in the level of fertility, if sizes of subsequent birth cohorts vary (Dudel and Klüsener 2021; Schoumaker 2019).

[4] They were asked: "Have you had any children? (including adopted or deceased children)". They were also asked to provide the year of birth for each child. We used this information, together with respondents' date of birth, to calculate the age at the birth of the first child. Register data used in the other countries allows to calculate the age at first birth with monthly accuracy.

[5] The official capital Amsterdam is located in North Holland, but the Hague in South Holland is the administrative center. Both regions have a population density of over 1000 inhabitants per square kilometer (see Supporting Information S1: Appendix Table 3 for more details).

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Supporting Information

Additional supporting information can be found online in the Supporting Information section.
Appendix_final.