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**One parent, multiple faces:  
Trends in the socioeconomic profiles of single fathers in Belgium,  
1991-2019**

A dissertation submitted by

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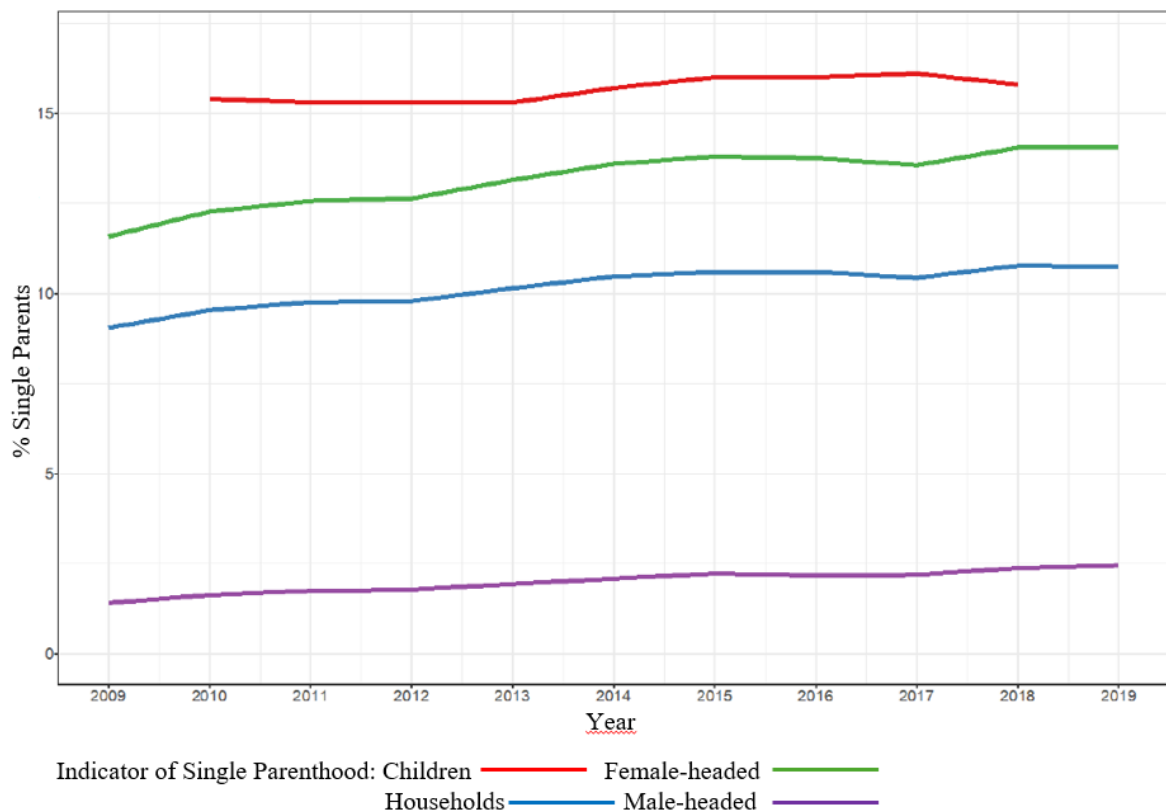
## **Chapter 1**

# **Introduction**

### 1.1. Research problem

Over the last decades, increasing rates of divorce and separation involving children have led to a rise in single-parent households, i.e., households where one parent lives with one or more of their dependent children, without a partner or spouse but possibly with other family members (Duncan & Edwards, 1997). In 2023, single parents accounted for 12.4 % of households with children in Europe (Eurostat, 2024). Single parenthood remains strongly gendered, with most single-parent households headed by women. However, single fatherhood has become increasingly common in recent years (Nieuwenhuis, 2020) as a result of increasing relationship instability, which has led to more single-parent families in general and growing domestic gender equality. Figure 1 shows trends in single parenthood across the 27 EU member states from 2009 to 2019 based on various indicators (Nieuwenhuis, 2020).

**Figure 1.** Trends in single parenthood in Europe, 2009-2019 (Labour force survey data).



Source: Nieuwenhuis, R. (2020). The situation of single parents in the EU.

The first indicator (red line) shows the percentage of children growing up in single-parent households. The second indicator (blue line) represents the share of private households with dependent children headed by a single adult, as a proportion of all households with dependent children. The third and fourth indicators (green and purple lines) show the percentage of all adults with dependent children who are single women and single men, respectively, heading a household with dependent children. All indicators reveal a steady increase in single-parent households over the observed period.

In Belgium, from 2013 to 2023, the share of single-parent households with children headed by a single father increased from 12.8% to 14.4% of all single-parent households (Eurostat, 2024).

The rise of single fatherhood has sparked research interest. Early studies from the 1970s and 1980s, primarily qualitative and US-based, first included the perspective of fathers, which had been historically neglected in family research (Coles, 2015). These initial studies investigated parental satisfaction and child behaviour issues, showing that single fathers fared similarly to, or sometimes better than, single mothers (Ambert, 1982; Defrain & Eirick, 1981). By the late 1980s, quantitative studies with more representative samples began to reveal systematic differences both across and within single-parent households. Much of this research focused on parental involvement, often analysed through microstructural frameworks (e.g., Hook & Chalasani, 2008) or gender-based perspectives (e.g., Downey et al., 1998). In general, these studies, alongside more recent findings, indicate that single fathers tend to fall somewhere between single mothers and married fathers on a continuum: single fathers do similar child-care work as single mothers, but more than married fathers (Nord, 1997). Studies on single parents' characteristics also suggest that single fathers fare better than single mothers in terms of income, education, and poverty yet do worse than married fathers (Bronte-Tinkew et al., 2010; Brown, 2008; Demuth & Brown, 2004; Eggebeen et al., 1996; Hawkins et al., 2006; Livingston, 2013). Moreover, single fathers often differ in family configuration, being more

likely to live with only one child and with generally older children compared to married or non-resident fathers (Brown, 2008).

In Europe, meanwhile, much research was focusing on single mothers and their unique experiences and challenges. Only recently, the focus shifted to the diversity within single-parent families, emphasizing the need to understand trends in single parenthood across Europe (Bernardi et al., 2018). Indeed, despite changes in their demographic and socioeconomic profiles, single-parent families across Europe continue to face high at-risk-of-poverty rates, which have not decreased over time (Nieuwenhuis, 2020). This persistent economic vulnerability is concerning, as it not only affects single parents' well-being, but also jeopardizes their children's future opportunities, perpetuating socioeconomic inequalities across generations. How are socioeconomic inequalities related to contemporary single fatherhood?

Including single fathers in the picture is essential for at least three reasons. First, to better understand the diversity and complexity of contemporary single-parent families. Previous research shows that single-parent families constitute a very heterogeneous group in terms of their socioeconomic characteristics, the pathways into single parenthood, and the coping strategies they adopt (Bernardi & Mortelmans, 2018). However, despite this increasingly recognised diversity of single-parent families, single fatherhood has still been relatively absent from this body of research. Second, to tackle whether single fatherhood may represent a potential step towards greater gender equality, especially when it follows a partnership dissolution. In this case, single fatherhood may indeed represent a move beyond traditional gender norms, which typically see women as primarily responsible for caregiving. Moreover, by reducing the family workload faced by mothers, single fatherhood may support women's participation in the labour market, thereby contributing to their financial autonomy. Finally, recognising the role of single fathers, and thus the heterogeneity of single parenthood, highlights the need for more inclusive policies that reflect the diverse needs and challenges

faced by all single-parent families. But how much do we know about single fathers, their characteristics, and how they differ from those of single mothers?

While single mothers are often the focus of studies on single parenthood, research involving single fathers remains limited. This is partly due to their relatively small numbers compared to single mothers, which often leads to single fathers being underrepresented in surveys. Unlike most previous studies, which rely on survey or regional-level data, this dissertation draws on Belgian population data over almost 30 years (1991-2018). This data, which provides detailed information on the residential status of the entire Belgian population, allowed us to identify single parents and distinguish between single fathers and single mothers.

Overall, this dissertation contributes to the growing body of research on single parenthood by investigating the socioeconomic inequalities related to contemporary single fatherhood in Belgium. It does so by integrating a gender perspective that includes single fathers alongside single mothers; drawing on longitudinal, population data that covers the entire country; and examining both the causes and the long-term socioeconomic consequences of single parenthood. In this way, this dissertation addresses critical gaps in existing research, which has often overlooked single fathers, relied on more limited datasets, or not fully explored the dynamic processes underlying socioeconomic disadvantage (Bernardi & Mortelmans, 2018; Nieuwenhuis & Maldonado, 2018; Tammelin et al., 2018).

## **1.2. Theoretical framework**

Research on single parenthood has generally investigated the dynamics of single fatherhood, as well as differences between single fathers and single mothers, through two primary frameworks: a microstructural explanation (Risman, 1986, 1987) versus a gender-based perspective (Goldscheider, Bernhardt, et al., 2015).

### **1.2.1. Parental resources: a determinant of family outcomes**

The microstructural perspective (Risman, 1986, 1987) posits that greater financial, social, and cultural resources generally support residential parenting by shaping relationship dynamics, which in turn affect the motivations and resources that influence parents' ability and willingness to care for their children. Education, as one of these resources, plays a particularly important role. In fact, while it can provide the means to help couples stay together, it can also offer the tools to navigate the legal complexities of separation, thereby increasing the likelihood of becoming the co-resident parent rather than the non-resident one in the event of union dissolution. Research, indeed, often shows that although single fathers generally have lower levels of education than fathers who are in couples, they tend to be more educated than single mothers (Meyer et al., 2017; Zhan & Pandey, 2004), which may explain some of the differences in their single-parenting experiences.

Greater economic resources also play a pivotal role in enabling parents to successfully take on the single-parent role (Hilton et al., 2001). More income may mean a parent has the resources to fight longer to achieve the desired custody outcome (Meyer et al., 2017), but also greater ability to support the new household. For example, research suggests that inadequate maternal financial resources often contribute to fathers gaining custody of their children (Bemiller, 2008). Furthermore, studies consistently show that noncustodial mothers experience higher levels of poverty than noncustodial fathers (Sousa & Sorensen, 2006), suggesting that poor maternal financial resources may increase the likelihood of fathers becoming co-resident parents.

In contrast with these findings, a second line of research suggests that individuals with fewer resources may be more likely to become single co-resident parents, either due to barriers in forming (new) partnerships or a higher likelihood of relationship breakdown. An insightful study by Harkness (2018) analyses data from 18 waves of the British Household Panel Survey

(1991–2008) to examine how motherhood and the transition to single parenthood relate to different economic outcomes. Her findings point in the direction of a selection effect, with socioeconomically disadvantaged women being more likely to experience single parenthood. Single mothers, for example, are often younger at the time of their first birth and have lower educational attainment compared to women who never experience single parenthood. Even before the birth of their first child, single mothers had lower employment rates and earnings than mothers in couples. This is an important finding, as it highlights the preexisting disadvantages of those who become single parents, suggesting that it is not the condition of single parenthood itself that affects their socioeconomic status, but rather the selection of already disadvantaged individuals into single parenthood (Bernardi & Mortelmans, 2018).

### **1.2.2. The incomplete gender revolution**

Goldscheider et al. (2015) conceptualized the ongoing gender revolution as unfolding in two distinct halves. The first half involves women's increasing entry into the public sphere, marked by their growing participation in the workforce, while the second half sees men increasingly taking on responsibilities traditionally assigned to women within the family sphere. By the 1970s, economic shifts following the post-war period had prompted women in industrialized Western countries to join the workforce on a large scale, making them financial (co)providers for their families. This shift corresponded to a diversification of life course patterns and a decline in family stability (Elzinga & Liefbroer, 2007). Achieving economic independence, indeed, made it easier for women to leave unsatisfactory marriages (Poortman & Kalmijn, 2002) and parent alone if necessary. Rising rates of non-partnered births and divorces significantly contributed to the increase in single motherhood (Heuveline et al., 2003). In response, single mothers took on the dual role of worker and childcare provider.

While the first half of the gender revolution fostered women's economic independence and contributed to the rise of single motherhood, the second half is expected to extend parenting independence to men. Ideally, this shift would see the emergence of gender-equal childcare responsibilities and potentially improve the normalization of single fatherhood. Indeed, beginning in the 1970s, societal expectations regarding men's roles within families began to shift, with fathers increasingly recognised as equal caregivers (Lamb, 2000). Also, in countries where these cultural and normative shifts gained general acceptance, family laws and policies soon reflected these changes. Over time, sole maternal custody by default was replaced by legal arrangements allowing fathers to take on significant childcare responsibilities after separation, contributing to the rise of single fathers.

However, as pointed out by Esping-Andersen (2009) the gender revolution remains incomplete until men's participation in domestic tasks and childcare equals women's involvement in paid employment. So far, the transition from a male-breadwinner model to a dual-earner model has placed a disproportionate double burden on women, who are still expected to balance paid work with traditional housework and childcare. This imbalance is also reflected in parental outcomes, as single mothers continue to make up the vast majority of single parents, despite the growing number of single fathers. While this theoretical perspective has often been used to look at the division of childcare within relationships, the division of childcare outside of relationships is less prominent in this body of literature. This dissertation therewith provides important new insights to the debate on progress in terms of gender equality.

### **1.2.3. Life course perspective: timing, linked lives, and the accumulation of disadvantages**

To further contextualize the experiences of single parents, the life course perspective provides a comprehensive analytical framework. This approach adopts a holistic view of individual trajectories over time, accounting for both continuity and change. It emphasizes

the interplay between stable patterns and life transitions, situating these dynamics within broader social, economic, and historical contexts that shape, constrain, or facilitate individual life paths (Elder, 1995; Elder et al., 2003).

In the case of single parenthood, these principles are especially applicable. First, the transition to single parenthood (whether it occurs early in adulthood, following a divorce, or later in life) along with its timing, duration, and potential cessation (e.g., through repartnering), shapes individuals' opportunities for education, employment, and health outcomes (Bernardi et al., 2018). As highlighted by the authors, these life course implications vary across birth cohorts and national contexts, revealing how historical shifts in union formation, fertility, and custody arrangements have reconfigured the social meanings and consequences of single parenthood. Second, the principle of linked lives underscores how single parenthood is not an isolated experience but one embedded in interdependent relationships (Bernardi & Mortelmans, 2018), particularly with children, eventual former partners, and extended kin. These connections may provide crucial support but can also impose constraints, depending on the resources and norms governing those relationships. Third, single parenthood can trigger the accumulation of disadvantages across multiple life domains, including financial insecurity, housing instability, and mental health challenges (Dinescu et al., 2018). These disadvantages are not uniformly experienced but are shaped by pre-existing inequalities, gender, and policy contexts, and they tend to intensify over time in the absence of adequate support. Thus, adopting a life course perspective provides a more nuanced understanding of single parenthood, highlighting its temporal complexity, structural embeddedness, and the influence of social policy in shaping it. Importantly, it also offers a lens to examine whether socio-economic disadvantage arises as a consequence of single parenthood, or whether it reflects a selection process in which individuals already facing disadvantage are more likely to become and remain single parents (Bernardi et al., 2018).

This dissertation, however, can only apply the life course perspective in a limited way. Particularly, Chapter 2 is based on cross-sectional data, and Chapter 3 follows people over only two years. This means it is not possible to fully examine how earlier life experiences shape the transition into single parenthood and its effects. The analysis primarily focuses on entry into single fatherhood and often limits the sample to cases following separation, to improve interpretability. However, it does not compare across different routes into single fatherhood, such as after the death of the mother. While these routes might lead to different experiences for single fathers, this goes beyond the scope of the dissertation, as even with this dataset the number of cases becomes small when examining less common pathways into single fatherhood. This is a limitation that will be discussed further in the final chapter.

#### **1.2.4. Intersectionality perspective: the intersection of gender and SES**

Intersectionality, as conceptualized by Kimberlé Crenshaw (1989; 1991), offers a critical framework for analysing how multiple, intersecting axes of identity and structural inequality shape the lived experiences of individuals. Moving beyond single-category analyses, this perspective considers how intersecting social identities such as gender, class, ethnicity, socioeconomic status (SES), and other dimensions of social stratification, interact to produce distinct forms of disadvantage, power and oppression (Collins, 2015; Yuval-Davis, 2006). The argument is that individuals who hold multiple marginalized identities experience distinct forms of oppression shaped by a matrix of domination. This matrix is a dynamic and evolving system that varies across time and contexts, reinforcing and sustaining power imbalances between groups (e.g., Few-Demo, 2014; Few-Demo & Allen, 2020).

In the context of single parenthood, an intersectionality perspective helps to better understand how socioeconomic inequalities shape the experiences of single parents. The dissolution of dual-earner households often leads to a sharp decline in financial resources,

compounding the pressures of sole parenting and caregiving. These burdens are not distributed evenly: gender and socioeconomic status intersect to produce unequal exposure to financial strain and limited access to institutional or workplace support. Rather than offering universally accessible solutions, flexible work arrangements tend to benefit those in more privileged positions, thereby reinforcing existing inequalities (Özbilgin et al., 2011).

Both financial and role strain reflect broader patterns of gender inequality, with women disproportionately affected. As Nieuwenhuis and Maldonado (2018) show, single mothers are among the most poverty-prone groups in Europe and face a greater need to increase paid work than single fathers (Thielemans & Mortelmans, 2019). In terms of role strain, gendered parenthood ideologies place heavier expectations on women, who are more likely to adopt intensive, family-focused parenting norms (Vespa, 2009), especially in non-egalitarian families. Socioeconomic status further differentiates the experience of single parenthood: low-income parents are overrepresented in sectors with limited employee-oriented flexibility (Bambra et al., 2008), making it harder to reconcile caregiving and paid work. Moreover, parenthood ideologies are shaped by class and ethnicity, compounding the challenges for socioeconomically disadvantaged groups (Taylor, 2011).

These intersecting axes of inequality generate a clear socioeconomic gradient in both role and financial strain, making it especially difficult for low-income single parents, particularly women, to maintain stability after family dissolution. Intersectionality, therefore, draws attention to how structural inequalities operate simultaneously and interactively, shaping both the pathways into single parenthood and the consequences that follow. This dissertation will focus on how single parenthood intersects with gender: *does heading a single parent household shape men's and women's lives differently?* The second intersection of interest is that of gender

and socioeconomic status: *does single parenthood affect low-SES women differently from high-SES women or low-SES men?*

### **1.3. The Belgian context**

Parenting and childrearing practices in Belgium, as in many Western countries, have undergone significant changes in recent decades. Until the 1990s, the male-breadwinner model, in which fathers were primarily responsible for providing income while mothers managed childcare and household responsibilities, remained dominant. Today, however, fathers and mothers are more likely to share breadwinning roles, with fathers becoming increasingly involved in parenting activities (Matthijs & Vanassche, 2016). These traditional gender roles were similarly reflected in post-divorce or separation arrangements: children almost exclusively co-resided with their mothers, leaving fathers with little involvement in daily childcare. Nonetheless, evolving gender norms have gradually reshaped parenting roles for both men and women following relationship dissolution.

Following these shifts, Belgian family law responded through two major legal reforms. The first reform, introduced in 1995, established a system of joint parental responsibility. This marked an important change from the previous framework, where the parent with primary physical custody (usually the mother) retained exclusive rights to exercise parental authority. Under the new system, both parents were recognised as jointly responsible for decisions regarding their children (Act of 13 April 1995, *Moniteur belge* 24 May 1995). However, this reform did not address the practical arrangements for children's residence after divorce. As a result, children continued to live primarily with their mothers, and fathers remained limited in their parenting time.

In 2006, similar to what had already happened in the United States, after sustained lobbying efforts from fathers' groups, the Belgian legislature introduced a second major reform:

a new equally divided alternating residence system<sup>1</sup>. This model became the default arrangement to be considered when parents could not agree on a residence plan (Act of 18 July 2006, *Moniteur belge* 4 September 2006). Under this new legal framework, if parents fail to reach a mutual agreement, the judge is required to first consider an equal shared residence arrangement (Civil Code art. 374 § 2 al. 2). Still, judges retain discretion to order a different residence arrangement if they considered it more suitable, taking into account the child's best interests, as well as the parents' situations (Civil Code art. 374 § 2 al. 3) (Declerck, 2015). Particularly with regard to the child's best interests, the Belgian legislature emphasizes the importance of considering the needs and expectations of the child. Since 2013, minors have the right to be heard in all family court proceedings concerning the exercise of parental responsibilities, ensuring their perspectives are taken into account when decisions are made about their care and living arrangements (Law of 30 July 2013, *Moniteur belge* 27 September 2013).

These reforms reflect a gradual yet significant adaptation of Belgian family law to the evolving landscape of gender norms and parenting practices. However, the implementation of equal shared residence remains limited in practice. In fact, according to a recent report on child custody arrangements among separated parents in Belgium (Ghesquière, 2024), equal shared residence remains relatively uncommon, applying to only one in five children of separated parents as of 2021. The most common arrangement remains children living solely with their mother, affecting two out of five children in such situations. Unequal shared residence, where children primarily reside with their mother but occasionally spend time with their father (e.g., during weekends or holidays), is also more common than arrangements where children live primarily with their father (16% vs. 6%). These proportions, however, vary across regions,

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<sup>1</sup> Alternate residence, or alternating custody, is a custody arrangement in which the child resides with each parent for similar periods, rather than primarily or exclusively with one parent.

with children of separated parents more likely to co-reside primarily with their father in Wallonia (8%) than in Brussels (5%) or Flanders (4%). In contrast, co-residing exclusively or primarily with the mother is most common in Brussels (68%), followed by Wallonia (62%) and Flanders (42%). Finally, equal shared residence is more prevalent in Flanders (27%), compared to Brussels (12%) and Wallonia (15%).

Alimony provisions in Belgium also reflect evolving gender norms that emphasize individual financial autonomy and shared responsibility after separation, reinforcing the expectation that both partners gain economic independence after divorce. Spousal maintenance is not automatically granted but may be awarded if one ex-spouse faces significant financial hardship as a result of the divorce<sup>2</sup>. In such cases, the court considers factors such as the duration of marriage, the individual incomes and career paths, and whether one partner sacrificed employment opportunities to take on caregiving roles. The amount is capped at one third of the paying ex-partner's income, and since 2007, the payment period is generally limited to the length of the marriage. Only in exceptional cases, such as serious illness or disability, can this duration be extended. Payments are indexed annually and can be revised if circumstances change, for example, due to remarriage or a significant change in income. However, these provisions apply only to married couples. In cases of de facto or legal cohabitation, there is no legal obligation to pay alimony to the ex-partner.

In line with the principle of shared parental responsibility, child support in Belgium is intended to ensure that children continue to receive adequate financial provision from both parents following separation or divorce. In contrast to alimony, child support is mandatory regardless of disparities in parental income or custodial arrangements<sup>3</sup>. It is generally

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<sup>2</sup> <https://www.notaire.be/separation-et-divorce/pension-alimentaire-apres-divorce>

<sup>3</sup> <https://www.notaire.be/separation-et-divorce/les-decisions-relatives-aux-enfants/la-contribution-alimentaire>

provided until the child reaches the age of majority (18 years) but may be extended if the child remains financially dependent, for instance, due to illness, disability, or continued education. The amount of support is typically established through mutual agreement between the parents or, in the absence of such an agreement, determined by the court. Judicial decisions are guided by a standardized reference table (*barème*), which takes into account the income of the non-resident parent, the number of children, and the specific needs of the child. While the *barème* promotes consistency and predictability, courts retain discretion to depart from it in light of individual circumstances, such as healthcare or educational expenses.

Besides these national-level measures, however, Belgium operates within a federal system characterized by significant regional autonomy, with each of its three regions (the Flemish Region, the Brussels-Capital Region, and the Walloon Region) holding increasing governing powers and specific policy portfolios. As part of the progressive federalization of the Belgian state, multiple areas of family policies, such as family benefits, have been devoted to the regional level and are now administered by the respective federated entities. However, despite this decentralization, the core principles guiding these policies remain broadly similar across regions (Merla et al., 2024). For example, although administered at the regional level, family social security benefits in Belgium reflect a welfare model that seeks to ensure income security for all families while providing targeted assistance to those facing greater economic vulnerability. All families are entitled to a basic monthly benefit (“*Groeipakket*”<sup>4</sup> in Flanders, “*Allocations familiales*”<sup>5,6</sup> in Wallonia and Brussels), calculated based on household income and size. Single-parent households, along with all families with children whose income falls below a certain threshold, may receive an additional supplement to child benefits. They may also qualify for broader social assistance measures (such as the

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<sup>4</sup> Flemish Region: <https://www.groeipakket.be>

<sup>5</sup> Brussels-Capital Region: <https://www.famiris.brussels/en>

<sup>6</sup> Walloon Region: <https://www.aviq.be/fr/allocations-familiales>

“*Leefloon*” / “*Revenu d’Intégration Sociale*”), which are accessible to all individuals experiencing economic hardship. So, while the specific income thresholds and benefit amounts may vary slightly across regions<sup>7</sup>, the underlying principle of granting access based on economic conditions rather than single-parent status per se remains consistent across the three regional systems.

Also, Belgium has a well-developed formal childcare system in support of parental employment. Formal childcare typically starts from the age of three months (due to the relatively short duration of maternity leave compared to other European countries) and continues until 2.5 years, when children transition into free, universal kindergarten, as part of the national education system. Although school attendance is only compulsory from age six, enrolment in kindergarten is nearly universal from 2.5 years onwards. However, it is not uncommon for many parents with young children to combine formal childcare with informal support (Teppers et al., 2019). Organized at the level of Belgium’s language-based<sup>8</sup>, childcare services are mainly centre-based (i.e., *crèches*) rather than home-based and can be either subsidized (depending on income) or non-subsidized. To promote inclusivity, subsidized childcare services have to adopt priority criteria depending on parents’ employment status, family status, or socio-economic status, giving priority, for example, to single parents, working parents, and low-income families. In practice, however, priority criteria are not strictly applied, with childcare providers giving preference to families with a more stable or predictable demand (Vandenbroeck et al., 2008; Vandenbroeck & Lazzari, 2014). Thus, in this case as well, despite regional differences in organization and implementation, the

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<sup>7</sup> For example, the basic monthly allowance per child amounts to €180.19 for those born from 1 January 2019 onwards in Flanders, €186.51 for those born from 1 December 2019 onwards in Brussels, and €192.73 for those born from 1 January 2020 onwards in Wallonia.

<sup>8</sup> CommunitiesONE in the French Community, Kind en Gezin in the Flemish Community, and Kaleido in the German-speaking Community.

underlying principle of Belgium's formal childcare system remains universalistic and strongly oriented towards supporting the most vulnerable families.

Despite these provisions, economic constraints continue to shape how parents, and especially single parents, navigate the balance between employment and caregiving. In Belgium, parental leave uptake tends to be limited overall, with women typically taking longer leave periods than men. Single parents, who depend solely on their own earnings, rarely take extended leave due to the financial constraints involved. This is largely because leave benefits are provided like flat-rate payments, which do not fully replace lost income from work. As a result, many single parents continue working or even increasing their hours to manage the demands of their changed family situation (Struffolino & Mortelmans, 2018). Regional differences do emerge, however, in demographic composition, cultural identity, and family-related behaviours.

Belgium is characterized by high divorce rates, with over a third of marriages ending in divorce in 2023, and this trend continues to rise. Among the three regions, Flanders reported the lowest divorce rate (35.5%), followed by Brussels-Capital (39%) and Wallonia with the highest rate (42%)<sup>9</sup>. These regional differences in divorce rates are mirrored by variations in the prevalence of single-parent households. In 2024, Flanders had the lowest proportion of single-parent households (8.3% of all households), while Brussels and Wallonia reported higher shares at 11.6% and 12.2%, respectively<sup>10</sup>. Post-separation living arrangements also show regional variation. Equal shared residence is more common in Flanders, reflecting stronger institutional and normative support for co-parenting. In contrast, Wallonia, while having the highest percentage of children living primarily with their father

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<sup>9</sup> <https://statbel.fgov.be/en/themes/population/partnership/divorces>

<sup>10</sup> <https://statbel.fgov.be/en/themes/population/structure-population/households>

after separation (8%, compared to 5% in Brussels and 4% in Flanders), also exhibits more diverse co-residential outcomes. In Brussels, children of separated parents are more likely to live exclusively with their mother (49%) (Ghesquière, 2024).

These differences may reflect broader cultural and socioeconomic distinctions across regions. Flanders is generally more aligned with dual-earner family models, which may facilitate the higher prevalence of shared custody. In contrast, with its more liberal orientation, appears to support more varied post-separation living arrangements. Finally, Brussels, marked by higher poverty rates and a more diverse demographic, may see more traditional caregiving patterns, where mothers are more likely to stay at home, and children are predominantly in their care.

Taken together, these features make Belgium a particularly interesting context for studying single parenthood and the related socio-economic inequalities, especially single fatherhood, due to its intermediate position within the European welfare systems. On one hand, Scandinavian countries are characterized by more generous, flexible, and gender-equal family policies, while on the other, Southern European countries tend to rely more on the family as the primary safety net (Morel et al., 2012).

Belgium lies between these two models: it combines an overall progressive legal framework that promotes shared parental responsibility with family policies aimed at supporting parental employment and providing assistance, especially to economically vulnerable households. Yet, despite these progressive features, somewhat counterintuitively, traditional behavioural patterns persist: the majority of children co-reside with only one parent following union dissolution (most commonly the mother, although the number of single fathers is increasing). Moreover, the poverty rate among single-parent households in Belgium remains among the highest in Europe (Nieuwenhuis, 2020).

This “contradiction” between progressive policies and traditional parental practices makes Belgium a compelling setting in which to explore the profiles of these families, the mechanisms underlying their socio-economic disadvantage, and the position of single fathers within this broader context. Understanding these dynamics is therefore important to assessing the possible implications for society and developing effective social policies. For instance, do we see that single fatherhood is more evenly spread across social strata in a context where shared responsibility is emphasised? Or do we see that traditional norms lead single fatherhood to still emerge only in situations where single motherhood is not feasible?

#### **1.4. Research questions**

The main aim of this dissertation is to provide a comprehensive analysis of the complexities of contemporary single parenthood, with a particular focus on the socioeconomic inequalities experienced by single fathers (and mothers). To achieve this objective, this dissertation investigates two key perspectives: the socioeconomic characteristics of single-parent families and the socioeconomic consequences associated with single parenthood.

Extensive research on single parenthood has documented the prevalence of single mothers among those with lower levels of education (Härkönen, 2017b; McLanahan, 2004). In contrast, the educational profile of single fathers has been less investigated, with men often underrepresented in research on single parenthood (Poole et al., 2013). The relationship between low educational attainment and high poverty risk has been well-documented, with single mothers often identified as one of the most vulnerable groups in contemporary society (Härkönen, 2017a). If single fathers are similarly represented among the lower educated, they may constitute a particularly vulnerable group too, contrasting with gendered expectations that men are less at risk due to their higher participation in the labour market (McQuillan & Belle, 2001). This would then call for greater attention in family policy decision-making. Therefore,

the primary objective of this dissertation is to investigate whether a similar pattern holds for single fathers. To address this, the first set of research questions this dissertation seeks to address is:

- *What is the educational profile of single fathers?*
- *Has it changed over time?*

These questions are assessed in Chapter 2.

After investigating the educational profile of single fathers, the second objective of this dissertation is to examine the socioeconomic factors that lead to single fatherhood. Single parenthood remains strongly gendered to this day, with women more often assuming the role of primary caregiver and living with their children after divorce or separation, compared to men (Nieuwenhuis, 2020). However, there has been an increase in the number of fathers living with their children after union dissolution in recent years. While socioeconomic characteristics seem to be associated with different child-parent co-residence living arrangements (Goldscheider, Scott, et al., 2015; Kalmijn, 2015), less is known about how these factors affect men and women differently. Understanding these dynamics is essential to disclose the selection mechanisms that shape post-dissolution family arrangements, especially if these mechanisms reinforce existing gender inequalities. This is particularly evident in the selection of disadvantaged individuals into single parenthood, as single mothers, often in lower socioeconomic positions, continue to shoulder the majority of childcare responsibilities, even as fathers increasingly take on caregiving roles. Additionally, this could contribute to a better understanding of how gender inequality relates to single parenthood, as gender inequalities, particularly in the labour market (e.g., reduced job opportunities, gender pay gap) and in partnering (e.g., women's reduced labour market attachment due to caregiving responsibilities), may exacerbate the challenges of single parenthood.

Therefore, the second research question addressed in this dissertation is:

- *To what extent do the combined economic characteristics of both parents determine whether children co-reside with the father or the mother following union dissolution?*

This question is tested in Chapter 3.

Finally, this dissertation aims to investigate what are the economic consequences of entering into single parenthood. Existing literature often highlights the economic burden that women face as they become single mothers following union dissolution, primarily due to their higher likelihood of becoming the main childcare provider and the loss of the partner's income after separation (Mortelmans & Defever, 2018; Poortman, 2000). However, it remains unclear whether men experience similar economic consequences when they become co-resident parents after separation. On the one hand, gender inequalities may affect fathers differently, particularly in their ability to maintain full-time employment while assuming the primary caregiving role after union dissolution, as well as in their chances of finding a new partner. On the other hand, as dual-breadwinner families become more common, the economic consequences of single parenthood may become more similar for both men and women. For example, the loss of an ex-partner's income may negatively affect men as it does for women. Investigating these mechanisms is central to understanding patterns of gender inequality and economic disadvantage in single-parent households. For this reason, this dissertation ultimately asks:

- *Does becoming the co-resident parent after separation have the same consequences for the income of fathers as for mothers?*

This question is investigated in Chapter 4.

In conclusion, by including single fatherhood in the discussion, this dissertation makes several contributions to the literature on single parenthood. First, it provides a more holistic view of how changing family structures are linked to increasing social inequality. Second, it investigates the relationship between gender inequality and single parenthood, emphasizing how gendered expectations and disparities continue to shape caregiving roles and family arrangements. Third, it analyses the economic consequences of single parenthood, offering new insights into how both fathers and mothers experience economic challenges differently after union dissolution. Together, these chapters enhance our understanding of the complex dynamics of single parenthood and its broader implications for contemporary society, through the lens of social inequality.

## **1.5. Methods**

### **1.5.1. Data sources**

The dataset used in this dissertation is part of DEMOBEL, the demographic database of Statbel, the Belgian statistics office (Statbel, 2019), and covers the period from 1991 to 2020. Developed from the National Register, DEMOBEL contains demographic and other microdata that provide an overview of all individuals within households for Belgium's legally recognised population. This database has been supplemented with sociodemographic information from the 1991, 2001, and 2011 censuses, as well as socioeconomic data from fiscal records (IPCAL data) from 2005 to 2018. DEMOBEL is updated every year, and the structure of the population is calculated on an annual basis with January 1st as the reference date. All databases were pseudonymized by coding names and sensitive information to ensure respondent privacy and allow for the secure merging of datasets. Additionally, all files were safeguarded on UCLouvain servers, ensuring stringent data protection throughout.

*Belgian National Register.* The National Register offers comprehensive data on key demographic characteristics of the legally registered population, updated annually as of January 1st<sup>11</sup>. This includes information on individuals' gender, date of birth, marital status, nationality, place of residence (at the statistical sector level), and the size of the household. However, the register does not cover asylum seekers, individuals without legal residency, homeless people, European civil servants, or diplomatic staff (Poulain et al., 2013). This dataset also includes individual and household identifiers, as well as a variable specifying the relationship of each household member to the head of the household (the reference number), such as partner, child, parent, sibling, etc. This allows for the reconstruction of each individual's household and their relationships with the other members, offering a more nuanced understanding of contemporary household structures than the standard household typology used in Belgium (LIPRO) (Van Imhoff & Keilman, 1991). Finally, the longitudinal nature of these data allows for tracking changes in individuals' characteristics over time, such as shifts in household composition, changes in residence, or partnership transitions.

*Belgian Census 1991, 2001, 2011.* The population census has a long history, dating back to its start in 1846 under the initiative of Adolphe Quetelet. Its purpose extended beyond mere population counting, aiming to provide a detailed snapshot of the Belgian population in geographic, socioeconomic, and cultural terms (Statbel, 2024). Initially conducted every 10 years as a traditional census, the methodology underwent a significant change in 1991 when the National Register was used for the first time as a starting base. This shift offered the considerable advantage of collecting data on all citizens, including minority populations, thus enhancing inclusivity. However, the approach also came with drawbacks, such as higher non-

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<sup>11</sup> It is important to note that, since the information is recorded at a single point in the year, there may be a time lag between an actual change in household composition (e.g., when individuals form a new household or move out of an existing one) and when this change is reflected in the data. For the same reason, the data may show “over-coverage” of households that no longer reside in Belgium, as well as “under-coverage” of those that have moved to the country.

response rates and elevated costs. In response to these challenges, the 2001 census discontinued direct population counting, eliminating the need for enumerators and thereby reducing expenses and by 2011, Belgium transitioned to a fully administrative-based census system, relying entirely on existing administrative records. This method further reduced financial costs and minimized the participation burden on citizens. Notably, the 2011 census was the first Belgian census to operate under European-level regulations, marking a new era of harmonized data collection.

Among the various socioeconomic variables available in census data, this dissertation uses educational attainment. Data linking with the National Register was enabled through unique identifiers, ensuring the integration of comprehensive information. Since educational attainment was measured differently across census years, standardization and harmonization were necessary to create a consistent variable for analysis. Finally, despite the high quality of census data overall, a significant share of missing values for educational attainment posed a challenge, requiring careful handling to ensure data reliability (Van Regenmortel & Silvestre, 2019). Several factors contributed to this issue, including unreported compulsory diplomas by French-speaking school authorities, the absence of unrecognised foreign diplomas in the national database, and the limited availability of data on recognised foreign diplomas, which have been reported only by the Flemish Community. Additionally, since the Belgian government does not recognise certain private schools, such as European schools, this information was not included in the administrative sources and was therefore missing from the Census.

*Financial Records (IPCAL dataset).* The IPCAL (calculated personal income tax) dataset is an annually updated, comprehensive record of Belgian individual and household incomes derived from personal tax returns submitted to the Federal Public Service (FPS) Finance. Citizens report their taxable income on returns between May and October following

the income year, and this information, including declared taxable income and specific eligible expenses (e.g., housing bonuses), is processed and delivered to Statbel in mid-June two years post-income year (N+2). IPCAL data allow an analysis at the individual level even in joint declarations, with separate codes for each partner's income. The data variables include an individual identifier, the declaration year (from 2005 to 2018), and individual and household income divided into €5,000 categories. This segmentation includes both individual taxable income and combined household income, with household data incorporating the incomes of any tax dependents. IPCAL data can also be linked to the National Register using unique identifiers, enabling robust longitudinal studies on income trends and socioeconomic status within the population. However, these data also come with some limitations. First, they do not include net disposable household income. Instead, they only report net taxable income, which does not account for financial transfers, benefits, or deductions that affect actual household resources. Second, the data may be biased due to the high number of “zero income declarations”, particularly among individuals living on income transfers from other household members, those employed by international institutions, people working “under the table”, or, in rarer cases, holders of PhD scholarships. The implications of this limitation are discussed in the final chapter of the dissertation (Chapter 5, section 5.4 Limitations).

In each of the empirical chapters, the specific strategies adopted to address the limitations of the data, including the handling of missing values and case selection, are explained in greater detail.

### **1.5.2. Identifying single-parent households in the Belgian register data**

In this dissertation, single parents are defined as *“fathers and mothers who live (i.e., are registered at the same address) with at least one minor child, but neither a partner nor other adults, in the same household”*. This definition refines that of Duncan and Edwards (1997) by

adding an age limit for children living with the parent, excluding single parents co-residing with other adults in multi-unit households<sup>12</sup>, while not systematically excluding single parents with an (ex-)partner, thereby better reflecting contemporary post-divorce/separation family arrangements (Letablier & Wall, 2018).

#### **1.5.2.1. Defining single-parent households**

In doing so, this dissertation employs a new typology of households compositions (Damiens et al., 2023) which refines the existing LIPRO (Lifestyle Projections) classification (Van Imhoff & Keilman, 1991) as provided in the DEMOBEL database. For example, in the case of single-parent households, whereas the LIPRO classification groups them all into a single category, the newly developed typology introduces a more precise distinction between “standard” single-parent families, where the parent lives exclusively with their children, and “complex” single-parent families, where the parent and children live with other adults in the same household. A detailed description of the construction of all household categories is provided by Damiens et al. (2023).

Specifically, within the new typology, single-parent households are reconstructed using existing data on individuals and household characteristics. Key variables include 1) the relationships between household members, allowing all children to be linked to their parents; 2) the sex of individuals, to distinguish between fathers and mothers; 3) the household size, to confirm that the total number of co-resident people in the household consists of one adult parent, their co-resident children, and eventually other adult members. The table below (Table 1) compares the household categories from the LIPRO typology variable with those in the newly created variable.

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<sup>12</sup> As their living arrangements may imply different forms of support and constraints compared to those of single parents living alone with their children, potentially leading to distinct experiences of single parenthood (Bernardi & Mortelmans, 2018).

**Table 1.** Comparison of the distribution of household categories according to different classification, year 2020.

| New household typology                                              |                                     | LIPRO household typology |                                 |                              |                                          |                                       |                        | Other types of private households | Collective households | Total      |
|---------------------------------------------------------------------|-------------------------------------|--------------------------|---------------------------------|------------------------------|------------------------------------------|---------------------------------------|------------------------|-----------------------------------|-----------------------|------------|
|                                                                     |                                     | Living alone             | Married couple without children | Married couple with children | Non-marital cohabitants without children | Non-marital cohabitants with children | Single-parent families |                                   |                       |            |
| Single                                                              | Living alone - Women                | 899,894                  | 0                               | 0                            | 0                                        | 0                                     | 0                      | 0                                 | 0                     | 899,894    |
|                                                                     | Living alone - Men                  | 844,313                  | 0                               | 0                            | 0                                        | 0                                     | 0                      | 0                                 | 0                     | 844,313    |
| Single-parent families                                              | Standard hh - Women                 | 0                        | 0                               | 0                            | 0                                        | 0                                     | 957,281                | 0                                 | 0                     | 957,281    |
|                                                                     | Standard hh - Men                   | 0                        | 0                               | 0                            | 0                                        | 0                                     | 205,842                | 0                                 | 0                     | 205,842    |
|                                                                     | Complex hh - Women                  | 0                        | 0                               | 0                            | 0                                        | 55,186                                | 16,261                 | 0                                 | 0                     | 71,447     |
|                                                                     | Complex hh - men                    | 0                        | 0                               | 0                            | 0                                        | 132,512                               | 4,341                  | 0                                 | 0                     | 136,853    |
| Married couple                                                      | Standard hh - Without children      | 0                        | 1,853,588                       | 0                            | 7,224                                    | 0                                     | 28                     | 458                               | 0                     | 1,861,298  |
|                                                                     | Complex hh - Without children       | 0                        | 53,355                          | 11,926                       | 64                                       | 1,023                                 | 25                     | 293                               | 0                     | 66,686     |
|                                                                     | Standard hh - With children         | 0                        | 0                               | 3,658,851                    | 0                                        | 16,239                                | 260                    | 0                                 | 0                     | 3,675,350  |
|                                                                     | Complex hh - With children          | 0                        | 0                               | 51,721                       | 0                                        | 655                                   | 9                      | 17                                | 0                     | 52,402     |
| Non-marital cohabitants                                             | Different-sex hh - Without children | 0                        | 466                             | 0                            | 521,192                                  | 0                                     | 268                    | 2                                 | 0                     | 521,928    |
|                                                                     | Same-sex hh - Without children      | 0                        | 12                              | 0                            | 0                                        | 0                                     | 326                    | 69,866                            | 0                     | 70,204     |
|                                                                     | Different-sex hh - With children    | 0                        | 0                               | 1,417                        | 0                                        | 1,105,395                             | 672                    | 136                               | 0                     | 1,107,620  |
|                                                                     | Same-sex hh - With children         | 0                        | 0                               | 0                            | 0                                        | 0                                     | 23,923                 | 3                                 | 0                     | 23,926     |
| Three-generational families (grandparent + parent + child + others) |                                     |                          |                                 |                              |                                          |                                       |                        |                                   |                       |            |
|                                                                     | Married couple                      | 0                        | 0                               | 168,108                      | 0                                        | 306                                   | 26                     | 0                                 | 0                     | 168,440    |
|                                                                     | Non-marital cohabitants             | 0                        | 0                               | 97                           | 0                                        | 20,601                                | 6,549                  | 14                                | 0                     | 27,261     |
|                                                                     | Single                              | 0                        | 0                               | 0                            | 0                                        | 1,826                                 | 76,620                 | 0                                 | 0                     | 78,446     |
| Two-generational families (child hhh + parents + others)            |                                     |                          |                                 |                              |                                          |                                       |                        |                                   |                       |            |
|                                                                     | Married couple                      | 0                        | 17,723                          | 0                            | 42                                       | 0                                     | 0                      | 7                                 | 0                     | 17,772     |
|                                                                     | Non-marital cohabitants             | 0                        | 13                              | 0                            | 3,608                                    | 26                                    | 7                      | 923                               | 0                     | 4,577      |
|                                                                     | Single                              | 0                        | 0                               | 0                            | 451                                      | 0                                     | 2                      | 30,680                            | 0                     | 31,133     |
| Other hh types                                                      | Two couples household               | 0                        | 0                               | 10,653                       | 0                                        | 434                                   | 130                    | 0                                 | 0                     | 11,217     |
|                                                                     | Collective hh and institutions      | 0                        | 0                               | 0                            | 0                                        | 0                                     | 0                      | 0                                 | 136,923               | 136,923    |
|                                                                     | Flat-sharing                        | 0                        | 9                               | 0                            | 0                                        | 12                                    | 65                     | 27,409                            | 0                     | 27,495     |
|                                                                     | Brothers and sisters only           | 0                        | 0                               | 0                            | 0                                        | 0                                     | 0                      | 35,626                            | 0                     | 35,626     |
|                                                                     | Other households                    | 413                      | 4,209                           | 129,786                      | 97,724                                   | 137,161                               | 24,418                 | 64,996                            | 0                     | 458,707    |
| <b>Total</b>                                                        |                                     | 1,744,620                | 1,929,375                       | 4,032,559                    | 630,305                                  | 1,471,376                             | 1,317,053              | 230,430                           | 136,923               | 11,492,641 |

Notes: hh = household; hhh = head of the household; standard hh = simple household, only includes the household members needed to define that category; complex hh = complex household, includes related or unrelated household member without changing the category type.

To test the robustness of the findings, the main analyses from each empirical chapter were replicated using the LIPRO classification to identify single parents. Specifically, the effect of education on the probability of becoming a single father over time (Chapter 1), the effect of individual and ex-partner income on the probability of co-residing with children after separation (Chapter 3), and the effect of entering single parenthood on absolute and relative changes in annual equivalized household income (Chapter 4) were re-estimated. The results, which are consistent with those obtained using the newly constructed household-based variable, are presented in Appendix, Figure A1.

In a second step, and solely for the purpose of this dissertation, the definition of single-parent families in the new household typology variable was refined by applying an age limit (under 18) for at least one co-resident child, based on further information about parenthood available in an additional administrative source (the *filiation* dataset). The focus on minor children reflects both legal and practical considerations. Legally, parents have custody and financial responsibilities only for children under the age of majority. From a practical perspective, minor children are more likely to rely on the parent for daily care and co-residence, making this group more relevant for analyses of single parenthood and its socioeconomic implications (Bernardi & Mortelmans, 2018). The *filiation* dataset provides the necessary information to identify and link each parent to all their children, including their key characteristics such as gender, age, and place of residence. This makes it possible to distinguish between co-resident and non-resident children, thereby allowing for a more accurate identification of single-parent families as well as other non-resident parenthood categories (such as single non-resident and partnered non-resident parents). Single parents resulting from a union dissolution are all identified as having been in different-sex relationships. Since the DEMOBEL data are available from 1991 onwards, individuals who

transitioned into single parenthood prior to that year are excluded from the sample, as no retrospective data allow for their identification.

#### **1.5.2.2. Defining partners**

Single parenthood is frequently the result of parental separation or divorce, meaning that children living in single-parent families often have another parent residing in a separate household. In this context, the socioeconomic characteristics of single parents may play a distinct role, not only in the consequences but also in the determinants of single parenthood. It is therefore important to also consider the characteristics of non-resident parents, along with the potential formation of new partnerships following separation, which may also affect the experience of single parents. In this dissertation, the analyses in Chapters 3 and 4 include information on ex-partners, married or cohabiting, and on potential new partners following separation. Partners are defined based on their co-residential status with the single parent and their child(ren). In particular, ex-partners are individuals of the opposite sex to the single co-resident parent who, in the year prior to the transition into single parenthood, were registered in the same household as both the future single parent and their child(ren). Conversely, new partners are individuals of the opposite sex to the single co-resident parent who, in the year following the transition into single parenthood, were registered in the same household as both the single parent and their child(ren). But how are partners identified in the registry data?

As in the rest of the dissertation, the analyses are based on DEMOBEL data, with married partners or legal cohabitants (from 2000 onward) identified via the partner ID. However, given that many Belgian couples (with or without children) cohabit without being formally registered as such, this dissertation incorporates an additional measure of cohabiting partnerships (Damiens et al., 2023). In particular, informal cohabitation is identified by the presence of one unrelated, unmarried, adult (aged 16 or over) living with an unmarried head of the household (also aged 16 or over), in the absence of any other unrelated individuals in the same household.

These individuals are assigned a unique ID, allowing for the identification of informal partnerships, which are then combined into a single variable with married and legally cohabiting partners. The implications of this operationalization are discussed in the final chapter of the dissertation (Chapter 5, section 5.4 Limitations).

### **1.5.2.3. Limitations**

One of the strengths of this dissertation lies in the use of register data, which enables a more precise identification of household composition and offers the possibility to track individuals longitudinally over time. However, some limitations must be acknowledged.

As in previous studies on single parenthood using register data (e.g., Härkönen et al., 2021, 2023; Jaloaara & Fasang, 2019), the definition adopted here is based on the child's place of residence with a parent. Since a child can only be officially registered at one parent's address<sup>13</sup>, this measure may not fully capture actual custody arrangements in cases of divorce or separation. Before May 2017, Belgium has no specific guidelines for registering a child at the address of one parent rather than the other; this decision was left to the parents (if there was no mutual agreement, the decision was made by the judge). Consequently, a child's domiciliation might, for example, remain at the address where they were previously registered, be chosen for financial reasons such as tax deductions or access to social benefits (e.g., unemployment allowances), or be based on other considerations. However, starting from May 2017, children must be registered at the address of the parent with whom they spend most of their time<sup>14</sup>. It is no longer possible to decide otherwise. In addition, in the case of joint custody,

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<sup>13</sup> As of January 1st, 2016, Belgium introduced a national register of dual residence. In this system, the child remains officially registered at the address of one parent, while the other parent may request formal recognition of the child's alternating residence at their own address (Merla et al., 2020). Nevertheless, the data used in this dissertation only capture information about the parent with whom the child is officially registered.

<sup>14</sup> <https://www.droitsquotidiens.be/fr/question/ou-sont-domicilies-les-enfants-si-se-separe>

even if the children are officially registered with one of the parents, the other parent can still obtain half of the tax benefit for their dependent children.

To provide a general sense of whether and to what extent register data reflect post-separation parental living arrangements, an additional check was performed to investigate whether the shares of individuals in different post-separation living arrangements are similar across different data sources. The table below (Table 2) compares descriptive statistics from a recent study on joint physical custody in Europe based on EU-SILC data<sup>15</sup> (Claessens & Mortelmans, 2025) with results derived from Belgian register data. In both cases, the definition focuses on households with minor children (17 years or younger) living with one parent (where the other parent lives outside the household in the EU-SILC, while is no longer living in the same household compared to the previous year in the register data). According to EU-SILC data (first row of Table 2), around one-third of children with separated parents in Belgium live in a joint physical custody arrangement (Claessens & Mortelmans, 2025). Since this form of living arrangement cannot be directly captured through register data (because children can only be registered at one address at a time), a simulation was carried out for this dissertation to estimate the number of parents in shared custody. The original distribution from the register data, shown in the second row of Table 2, assumes all children formerly two-parent households live exclusively with either their mother (76.2%) or their father (23.8%). To align register-based estimates more closely with those derived from survey data, a new variable was created that reclassifies one-third of these single-parent cases as shared custody. This adjustment was implemented using a random selection procedure in Stata<sup>16</sup>, which preserves the original sample size while redistributing parents into three categories: single fathers, single mothers,

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<sup>15</sup> This study uses the 2021 ad hoc module “*Living arrangements and conditions of children in separated and blended families*”.

<sup>16</sup> To randomly identify one-third of single parents as being in shared physical custody, the `runiform()` function in Stata was used to generate a uniform random number between 0 and 1. Parents with a value below 0.33 were classified as “joint physical custody” cases.

and parents in shared custody. What we observe is that the share of single father households is very similar to that obtained by EU-SILC after applying this correction.

While one might wonder whether the child's address in the register, particularly when registered at the father's address, truly reflects the actual place of residence or rather reflects administrative choices, such as tax reductions or continuity with a previous address, the results based on register data show a good overall correspondence with the EU-SILC estimates (Table 2). According to EU-SILC data, around 16% of children from separated families either reside exclusively with their father or spend the majority of their time in the father's household. This figure is consistent with the adjusted estimates derived from the register data. This suggests that even if register data do not exclusively capture single parenthood, they nonetheless reflect the heterogeneity of post-separation living arrangements and caregiving responsibilities within single parent families.

**Table 2.** Living arrangements of children in separated families in Belgium, EU-SILC and register data.

|                                                      | Living arrangements (EU-SILC categories) |                                |                                 |                                |                                     | N      |
|------------------------------------------------------|------------------------------------------|--------------------------------|---------------------------------|--------------------------------|-------------------------------------|--------|
|                                                      | Solo physical custody mother (100%)      | Main residence mother (67-99%) | Joint physical custody (33-66%) | Main residence father (67-99%) | Solo physical custody father (100%) |        |
| EU-SILC data, 2021                                   | 41.30%                                   | 12.50%                         | 30.20%                          | 10.40%                         | 5.50%                               | 847    |
| National Register data, 2018 (original distribution) | 76.20%                                   |                                |                                 | 23.80%                         |                                     | 10,582 |
| National Register data, 2018 (adjusted distribution) | 50.80%                                   |                                | 33.30%                          | 15.80%                         |                                     | 10,582 |

An additional limitation concerns potential selective attrition due to international migration. When individuals move abroad, they are deregistered from the national registers, which can overestimate the number of single parent households. For example, where one parent

emigrates (even temporarily) while the other remains in Belgium with the children, the remaining parent is recorded as single, even if they are still in a relationship. As a result, the prevalence and characteristics of single fatherhood and motherhood may be underestimated, especially if international migration is associated with specific socio-economic profiles. This aspect will be further discussed in the Limitations section of Chapter 5.

Finally, a potential limitation of this dissertation lies in the absence of a regional breakdown in the analyses. While this choice may overlook important subnational variation, it reflects an analytical focus on national-level patterns and structural inequalities, rather than on regional policy effects.

To account for these limitations, robustness checks are incorporated into the analyses presented in this dissertation (for example, by including information on parental proximity or residence situation before separation). This aspect will be further discussed in the Limitations section of Chapter 5.

### **1.5.3. Analytical strategy**

The analytical strategy in this dissertation adopts several methodological approaches, combining descriptive and various regression analysis techniques to examine the socioeconomic characteristics associated with single fatherhood. Descriptive statistics provide an initial overview of key sociodemographic and household characteristics across chapters, setting the context for deeper analysis.

In Chapter 2, multinomial logistic regressions assess the relationship between education and single fatherhood, with interaction terms examining changes over time. Chapter 3 employs linear probability models to test the effect of both paternal and maternal income on the likelihood of co-residing with children post-union dissolution. Finally, Chapter 4 uses time-

distributed fixed effects (TDFE) models to analyse economic shifts around the transition to single parenthood. By incorporating year-specific variables, the TDFE approach captures income changes before and after single parenthood, offering a longitudinal perspective on economic outcomes tied to family structure changes.

All analyses were performed using StataSE 18.

## **1.6. Overview of the three empirical chapters**

The three empirical contributions in this dissertation were written as standalone journal articles, each with its introduction, theoretical framework, data, analytical strategy, results, discussion and conclusion. As such, they can be read independently. All studies are based on Belgian registry data and use the same definition to identify single co-resident parents.

Chapter 2 investigates changes in the socioeconomic profile of single fathers over time, with a particular focus on education. It compares the educational profiles of co-resident single fathers with those of co-resident fathers in couples, non-resident single fathers and non-resident fathers in couples. Chapter 3 examines how economic characteristics (particularly individual and ex-partner income) relate to becoming a non-resident versus a single co-resident parent following union dissolution, for both men and women. Chapter 4 analyses the economic consequences of entering single parenthood for both genders, looking at the changes in the trajectories of various economic outcomes (individual, partner, and household income) before and after the transition to single parenthood. Finally, Chapter 5 concludes the dissertation by discussing the key findings, highlighting the overall contribution of the research, reflecting on its limitations, and offering suggestions for future research.

## **Chapter 2**

# **Trends in the educational gradients of single fatherhood\***

\* This chapter has been considered for publication in the *European Journal of Population* and *European Societies*.

## **2.1. Abstract**

This chapter investigates changes in single fathers' socio-demographic profile in Belgium, using population data across three decades. While previous research has shown that single motherhood is more common among lower socioeconomic strata, single fathers' socioeconomic positions remain insufficiently investigated. Are fathers, like mothers, more likely to be single parents if they are less educated? Has their profile changed over time? Single fatherhood may be more common among the less educated if it reflects educational differences in union dissolution. Conversely, it could be more common among the highly educated if ideational factors, e.g. gender-egalitarian attitudes, play a role. Using Belgian Registers and Census data, this chapter estimates multinomial logistic regression models explaining the likelihood of being a single co-resident father versus other fatherhood categories in 1992, 2002, 2012, and 2020. The findings indicate that lower education is consistently associated with a higher likelihood of being a single father. However, when comparing single co-resident and single non-resident fathers, lower-educated individuals are more likely to fall in the latter category than their higher-educated counterparts, and this difference has grown over time. This suggests that both selection into separation and ideational factors shape single fathers' socioeconomic profile.

## 2.2. Introduction

Over the past several decades in Europe, there has been a significant increase in the number of single-parent families, i.e. families where a mother or a father lives with one or more dependent children without a partner, either on their own or in multi-unit households (Duncan & Edwards, 1997). Today, single parents account for almost 15% of all adults with dependent children (EU-27 average) (Nieuwenhuis, 2020). Extensive research has focused on understanding the changing characteristics of single parents over time, resulting in a consensus regarding their growing heterogeneity in terms of family trajectories, demographic factors, and socioeconomic characteristics (Bernardi & Mortelmans, 2018; Tammelin et al., 2018). When examining educational disparities in the prevalence of single parenthood, though, the evidence is less heterogeneous and shows single parents have, on average, lower levels of education compared to partnered parents. This pattern has been well-documented among single mothers in many Western countries across time (Härkönen, 2017b; McLanahan, 2004). However, evidence regarding the educational gradient of single fatherhood is scarce. To fill this gap, the aim of this chapter is to answer the following questions: *What is the educational profile of single fathers? Has it changed over time?*

Single fathers have received limited attention in past research for at least two reasons. On the one hand, single parenthood is strongly gendered, with women being much more likely to be single parents than men. Due to their relatively small number, there is a lack of representative national samples that would allow for investigating the characteristics of single fathers (Poole et al., 2013). On the other hand, societal expectations regarding men's involvement in the labour market often lead to the idea that single fathers face lower social risks compared to single mothers (McQuillan & Belle, 2001). However, a combination of low education and single parenthood often leads to very high poverty risks for women (Härkönen,

2017a). If many single fathers are lower educated, this situation might apply to men too, which might require specific policy responses. Indeed, while cumulative disadvantage has primarily been studied in relation to women, particularly mothers, emerging evidence suggests that similar processes may affect men as well. Harkness (2022) shows that, although men are less likely than women to reduce their labour supply following parenthood, low-educated men face increasing risks of labour market marginalization over time, especially in contexts characterized by weak employment protection and limited social support. Consequently, as with women, the accumulation of economic disadvantage among single fathers may reflect structural barriers that limit opportunities for stable and well-paid employment over the life course.

To our knowledge, this chapter is the first to focus exclusively on male parents and investigate educational disparities in single fatherhood in Belgium (i) by analysing changes in the educational profiles of single co-resident fathers (ii) and comparing them with those of three other fatherhood categories: partnered co-resident, partnered non-resident, and single non-resident fathers. This is possible thanks to the availability of high-quality longitudinal Belgian population data which allow to precisely distinguish between these four categories. By looking at this issue in the Belgium context, this study also expands this body of research in terms of geographical scope. So far, most studies on single fatherhood have been done in English-speaking or northern European countries (Capkova & Jalovaara, 2020; Coles, 2015; Doucet, 2016; Goldscheider, Bernhardt, et al., 2015). Belgium, which is characterized by high rates of divorce, separation, and nonmarital childbearing, therefore represents a fertile ground for studying single fatherhood.

Using Belgian National Register and Census data first, this study presents descriptive statistics of trends in fathers' demographic and household characteristics according to their parenthood and partnership status (single co-resident, single non-resident, partnered co-

resident, partnered non-resident) at four distinct points in time (1992, 2002, 2012, 2020). Second, this study goes beyond basic socio-demographic profiles by using multinomial logistic regression models to examine the relationship between education and single fatherhood as well as to test how this association has changed over time. This will make it possible not only to provide new insights into the changing diversity of single father families but also to better understand current social inequalities among male parents in Belgium.

### **2.3. Background and hypotheses**

What do we know so far about single fathers? Although most studies on single parenthood refer to single mothers, the recent growth in single parent families headed by men brought interest in single fatherhood to the forefront. This section provides an overview of single fathers' characteristics, the social forces driving their increase, and the role of education in this trend.

#### **2.3.1. Previous studies on single fatherhood**

Studies on the characteristics of single parenthood show that single fathers today are a more heterogeneous group than in the past, especially in terms of family trajectories, demographic characteristics and socio-economic backgrounds (see Bernardi & Mortelmans, 2018). Previously, for example, the most common path to single parenthood in most European countries was through widowhood (particularly for men) and childbirth out of wedlock (especially for women) (Letablier & Wall, 2018). Today, instead, single parenthood is primarily the result of divorce or separation, indicating that the majority of children in single-parent families still has two parents, albeit living with only one most of the time (Bernardi et al., 2018).

Research focusing on single fathers has primarily come from English-speaking countries, where the significant growth in the number and proportion of single father families

already took place in the 1980s (Des Rosiers & Le Bourdais, 1995; Garasky & Meyer, 1996). For example, in the United States, between the 1970s and 1980s, a change in single fathers' characteristics emerged from a select group (generally white, middle-class, highly educated men) to a more heterogeneous population (Greif, 1994) with a significant increase in single father families among never-married men with a mid-level of education (Brown, 2008). Similar trends have been observed in Canada throughout the same timeframe (McQuillan & Belle, 2001). In this context, separation and divorce have resulted as the most common route to single fatherhood, while the share of widowed single fathers has declined. An investigation by Ravanera (2008) on the socioeconomic characteristics of Canadian fathers, based on data from the 2001 Census, added to this view by showing that in absolute terms the majority of single fathers had a high level of education (41%), work full time (80%), had a household income higher than \$50,000<sup>17</sup> (35%), and owned a home or property (59%). When compared to fathers in a couple, though, single fathers faced socioeconomic disadvantages, including lower education levels, a lower rate of full-time employment, lower household income, and a lower percentage of homeownership (Ravanera, 2008).

In Europe, single parent families have become statistically visible since the nineties (Bradshaw et al., 2000). Since then, much research has been done on trends in single motherhood (e.g., Burström et al., 1999; Harkness, 2018; Zagel, 2014), but not in single fatherhood (Tammelin et al., 2018). A recent study based on the last available data from the Labour Force Survey (LFS) looked at the evolving situation of single father families in 27 European countries (Nieuwenhuis, 2020). The findings indicated that single fatherhood is rising in the EU: between 2009 and 2019, the percentage of single men heading a household with dependent children, as a percentage of all adults with dependent children, doubled (from

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<sup>17</sup> Based on Census Family Total Income. Categories: less than \$5,000; \$5000-\$14,999; \$15,000-\$29,999; \$30,000-\$49,999; \$50,000 and more.

1.5% to 3%). Nieuwenhuis (2020) also investigated trends in single fathers' education profiles and revealed that on average, in Europe, the percentage of low-educated and middle-educated single fathers with dependent children declined between 2009 to 2019, and the percentage with a high level of education increased. These descriptive statistics on the composition of single father families, however, do not indicate whether education reduces or increases the risk of single fatherhood from an individual perspective: is a higher-educated father more likely to be a single father than a lower-educated father?

### **2.3.2. Education and the rise in single fatherhood**

The increase in single father families can be attributed to two main trends emerging in the 1970s: the rise in relationship instability and the shift in social norms and gender relations at home and in the labour market (Goldscheider, Bernhardt, et al., 2015). On the one hand, indeed, the dramatic increase in divorce rates across industrialized countries, alongside the increase in cohabitations and their higher likelihood of dissolution compared to marriages (Guzzo, 2014; Musick & Micheltmore, 2018), has led to a rise in family dissolution (Thomson et al., 2019). This, in turn, has resulted in a general increase in both male- and female-headed single parent families.

Besides demographic changes, on the other hand, the growing acceptance of fathers' involvement in childrearing by both women (particularly in dual-career families) and men desiring to take more parental responsibility has led to a greater focus on more egalitarian child custody arrangements (Cancian et al., 2014), facilitating fathers to gain custody of their children (Coles, 2015). The increased involvement of fathers in their children's lives is likely to lead to a relatively more equal distribution of single motherhood and fatherhood, resulting in an increasing number of single father families. This research focuses on how the likelihood of becoming a single father has changed by educational attainment.

### ***Trends in relationship instability***

Contemporary literature is rich in studies showing a negative association between men's education, the risk of divorce (Jalovaara, 2001; Kalmijn et al., 2004; Lyngstad, 2004) and the mechanisms underlying the educational gradient of marital instability (Boertien & Härkönen, 2018; Van Damme, 2020). The results indicate a clear weakening in the positive educational gradient in divorce across Europe over time (Härkönen & Dronkers, 2006); with a reversal in the direction of the initial positive educational gradient in marital disruption in several countries such as the Netherlands (de Graaf & Kalmijn, 2006) and Belgium (Härkönen & Dronkers, 2006; Salvini & Vignoli, 2011; Theunis, Schnor, et al., 2018). This shift reflects broader societal changes in the meaning and accessibility of divorce. When legal, social, and economic barriers to divorce were higher, ending a marriage often required significant individual resources, resources more often held by the highly educated. As those barriers declined, divorce became less dependent on individual resources and more embedded in structural patterns of disadvantage (Härkönen & Dronkers, 2006). Economic stress and precarious living conditions, which disproportionately affect the less educated, can place relationships under greater strain, thereby increasing the risk of separation. In this sense, union dissolution is increasingly shaped by cumulative disadvantage, reinforcing social inequalities across the life course.

Beyond the context of marriage, the existence of a negative educational gradient in separation has been observed in the Nordic European countries. For example, in Norway, the risk of dissolution for couples formed between 1993 and 2010 where both partners are lower educated (primary education) was 2.5 times that of couples where both partners are higher educated (tertiary education) (Wiik et al., 2014). In Finland, a low level of education promotes dissolution in cohabitation for both women and men (Jalovaara, 2013), and children of low-educated mothers are more likely to experience parental separation than children of high-educated mothers (Jalovaara & Andersson, 2018).

The experience of single parenthood is also affected by the likelihood of repartnering for both single fathers and mothers. From a life course perspective, single parenthood has increasingly become a transitional state, with single parents actively participating in the repartner market and often forming new partnerships. However, previous studies have shown that single parents face challenges in repartnering due to reduced attractiveness in the repartner market for individuals with children (de Graaf & Kalmijn, 2003; Pasteels & Mortelmans, 2013). Education plays an important role in this process, as low-educated men and women may experience union instability earlier in life and remain single longer due to fewer repartnering opportunities. For instance, in the United Kingdom, Di Nallo (2019) found that both mothers and fathers with lower levels of education had lower probabilities of repartnering compared to those with higher levels of education. In Belgium, higher-educated fathers tend to repartner more frequently than their less-educated counterparts (Schnor et al., 2017). In France, Buisson and colleagues (2015) combined data from the Family and Housing Survey 2011 and the Census 2011, showing that the duration of single parenthood is longer for parents with lower levels of education compared to those with higher levels of education. These results indicate a disadvantage of less educated parents in repartnering opportunities compared to more educated parents, thus suggesting that they are more likely to remain in single parenthood. This prolonged exposure to single parenthood can, in turn, hinder their economic recovery and contribute to the accumulation of disadvantage over time. Moreover, low-educated fathers may enter single parenthood already facing disadvantages, such as unstable employment or lower earnings, and the recurrence or persistence of single parenthood may further reinforce these disadvantages over the life course (Dannefer, 2003; DiPrete & Eirich, 2006).

Nowadays single fatherhood is mainly the result of union dissolution and the post-separation co-residential agreements. If the increase in the prevalence of single fathers reflects the trends in union dissolution in Western countries, the characteristics of single fathers might

represent those of divorced and separated parents in general, as well as characteristics related to repartnering after union dissolution. For example, lower-educated men may face more unstable relationships and reduced repartnering opportunities, resulting in longer periods in single fatherhood. Thus, it is hypothesized that: *low educated men are consistently more likely to experience single co-residential fatherhood than highly educated men over time (H1).*

### ***Changing parental involvement and custody arrangements***

Changing attitudes towards fatherhood have accompanied changes in living arrangements after union dissolution, with fathers increasingly seeking to be actively involved in taking care of their children after divorce or separation (Fehlberg et al., 2011). However, these trends present significant heterogeneity across education levels. For instance, Ramey and Ramey (2009) found that the amount of time fathers in the United States spent on childcare increased from the mid-1990s, particularly among highly educated parents. Similarly, Sullivan (2014) reported an increase in the paternal educational gradient in the United Kingdom between 1975 and the early 2000s. Overall, within the context of a general increase over time, fathers with higher education showed a faster rate of increase in their time spent on childcare compared to fathers with lower education (Altıntaş, 2013). However, these studies did not consider single fathers in their analyses.

Research focusing on father-child relations after union dissolutions has shown that highly educated fathers are increasingly likely to stay involved in the lives of their children after divorce (Kalmijn, 2015). This may be because highly educated fathers already have greater involvement in childrearing compared to less educated fathers (Sullivan et al., 2014). In addition, highly educated parents may have more knowledge of post-separation custodial arrangements (Ryan et al., 2008) and have greater economic resources to pursue child custody (Juby et al., 2005).

Indeed, research supports the notion that education is linked to custodial arrangements. In the United States, joint physical custody is more common among children whose parents have high educational attainment, while children with less educated parents are more likely to experience sole custody by either the father or mother (Fox & Kelly, 1995; Juby et al., 2005). In line with that, empirical evidence in Europe indicates a positive relationship between parental education and shared care and a negative relationship between parental education and sole custody (Kitterød & Lyngstad, 2012; Sodermans et al., 2013). However, evidence from Belgium shows that men with medium or high levels of education are more likely to live exclusively with their children than low-educated men. In contrast, fathers with lower levels of education are more likely to become non-resident parents or stepparents after repartnering, in contrast to their highly educated counterparts (Schnor et al., 2017).

Hence, single fatherhood might be the result of a push for a more gender-egalitarian division of childrearing tasks. As the highly educated usually have more egalitarian gender role attitudes and are often more involved in the lives of their children (Sullivan et al., 2014), this chapter builds the following competing hypothesis: *highly educated fathers are increasingly more likely to experience single co-residential fatherhood than low educated fathers* [H2].

### **2.3.3. Single fatherhood in Belgium**

Looking at the share of single parent households, Belgium recorded a share of almost 20% of all households with dependent children in 2020 (Eurostat, 2021). Interestingly, this proportion was not only one of the highest in Europe (European average 14%) but also has doubled in the last two decades. In fact, in 2001, single parent households made up 9% of all households with dependent children (Lehmann & Wirtz, 2004). Another interesting trend characterizing single parent families in Belgium in the last decade is the recent increase in single fatherhood. Indeed, while in most European countries the shares of single parents with dependent children

increased for both women and men between 2009 and 2019, in Belgium (and Luxembourg) a distinct pattern emerged as the shares of single mothers with dependent children decreased and those of single fathers with dependent children increased (Nieuwenhuis, 2020). When looking at these figures in absolute terms, EU Labour Force Survey data indicate that the proportion of single fathers has seen a significant increase, rising from less than one in ten single parents in 2001 to nearly one in five in 2019 (Lehmann & Wirtz, 2004; Nieuwenhuis, 2020).

To better understand these trends, we need to look at the changes in family formation and dissolution that occurred in Belgium in the last decades. Starting from the 1970s, there has been a steady increase in the crude divorce rate<sup>18</sup> until the mid-2020s when a reversal in the trend was observed for the first time (Eurostat, 2023b). However, despite the ongoing decline, the figures show in 2021 the Belgian crude divorce rate (1.9 divorces per 1000 persons) was above the European average (1.7 divorces per 1000 persons). Further, the crude marriage rate<sup>19</sup> more than halved from 7.6 marriages per 1000 persons in 1970 to 3.5 marriages per 1000 persons in 2021 (Eurostat, 2023). At the same time, births occurring outside marriage sharply increased<sup>20</sup> and today they account for 52.6% of all live births in Belgium, outnumbering births inside marriage (Eurostat, 2023). Overall, these trends show the continuous evolution of family structures in Belgium, with the rise in single-parent families reflecting high rates of union dissolution and the emergence of non-marital relationships.

However, understanding the emergence of single fatherhood needs to consider also changes in Belgian divorce legislation related to the above trends. The first attempt to regulate custody arrangement among unmarried parents dates back to 1995 when a movement toward

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<sup>18</sup> Crude divorce rate in Belgium on selected years: 0.7 per 1000 persons (1970), 2.0 per 1000 persons (1990), 2.7 per 1000 persons (2010), 2.0 per 1000 persons (2018).

<sup>19</sup> Crude marriage rate in Belgium on selected years: 7.6 per 1000 persons (1970), 6.5 per 1000 persons (1990), 3.9 per 1000 persons (2010), 3.5 per 1000 persons (2021).

<sup>20</sup> Live births outside marriage rate in Belgium on selected years: 2.8 of total live births (1970), 11.6 of total live births (1990), 45.7 of total live births (2010), 52.6 of total live births (2018).

equal parental rights in custody decisions resulted in a law supporting “joint-parenthood”, regardless of the parent's marital status or living arrangements (Senaeve, 1995); but it was only in 2006 that a new divorce law established that joint physical custody is the default arrangement in the absence of parental agreement (Kamer, 2006).

These legislative changes had a significant impact on post-separation parenting behaviours. For instance, in Flanders, sole mother custody<sup>21</sup> following divorce declined notably over time, decreasing from 77.5% of total custody arrangements before 1995 to 52.9% after 2006. In contrast, there was a marked increase in the prevalence of joint physical custody<sup>22</sup>, rising from 9.1% to 33% during the same time, and a slight increase in sole father custody, from 7.9% to 9.3% (Sodermans et al., 2013). Thus, as a result of an evolving legislative framework, fathers have become increasingly involved in their children's lives after union dissolution. This shift may have contributed to a relatively more equal distribution between single motherhood and single fatherhood, leading to an increase in the number of single-father families in the country.

In conclusion, it might be that the biggest changes in union dissolution in Belgium have already taken place within the observation window (1992-2020), whereas the increasing involvement of fathers in childrearing is a more recent phenomenon. Therefore, the first hypothesis is likely to hold more validity in the first year of observation, while the second hypothesis is expected to become more valid over the subsequent years.

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<sup>21</sup> Child(ren) living at least 66% of time with the mother.

<sup>22</sup> Child(ren) living at least 33% of time with each parent.

## **2.4. Methods**

### **2.4.1. Data and sample**

This study uses register-based data, linking information from the Statistics Belgium demographic database DEMOBEL<sup>23</sup> during the years 1992, 2002, 2012 and 2020 with 1991, 2001 and 2011 Belgian Census data. National register data represent an invaluable source for studying single fatherhood because they allow to precisely measure over time whether men are single parents or not, overcoming attrition bias and avoiding problems of small cell sizes. Also, in contrast to other survey data which have information on only one region of Belgium (e.g., DiF - Divorce in Flanders), these data include information on the complete Belgian population. National register data contain basic demographic variables (gender, date of birth, civil status, nationality, date of last change of marital status at the first of the year), and household characteristics (household size, municipality), in addition to the information needed to identify kinship relations between fathers and children (household and filiation identifiers). Census data contain a rich set of socioeconomic variables, including the level of education of individuals at the time of the data collection. Information in the registers refers to the 1st of January of each year, while the information in the Census has been recorded in October. Therefore, using unique individual identifiers, the Census data (1991, 2001 and 2011) were linked to the Register data of the year after (1992, 2002, 2012). For the year 2020, the education information has been linked to data from the latest Census year available (2011).

### **2.4.2. Definition of single fathers**

Defining single parenthood is a thorny issue (see Letablier & Wall, 2018 for a systematic review of definitions). Many aspects must be considered: the age limit of co-residing children, the living arrangements of the family members, as well as the meaning of being “single”.

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<sup>23</sup> For additional information about the DEMOBEL database please visit: [statbel.fgov.be/en/news/demobel-new-demographic-database](https://statbel.fgov.be/en/news/demobel-new-demographic-database)

Studies often include in their definition single men and women living with adult children or other relatives. However, their conditions may diverge from those of single parents with minor children as their needs are different and other co-residing people may contribute to the household economy. In this study, then, the definition of single fathers is restricted to *men co-residing with one or more children at least one younger than 18 years, but not with a partner or other individuals in the same household*. To strengthen confidence in the findings, robustness checks were conducted by including *other people living in the same household* in single fathers' definition. The alternative analyses, presented in terms of average marginal effects (Appendix, Figure A2) are consistent with the main findings regarding the association between educational attainment and fatherhood categories.

#### **2.4.3. Dependent variable: fatherhood type**

Single fathers were identified through a systematic combination of registry data as follows:

- 1) all fathers were identified based on individuals with a parent-child link in the registry data,
- 2) those with at least one minor child were selected,
- 3) the presence of a partner or spouse in the household was determined, and
- 4) fathers were categorized as co-resident or non-resident using the household identifier.

This approach, alongside single co-resident fathers<sup>24</sup>, enabled the creation of three more fatherhood categories: partnered co-resident fathers, partnered non-resident fathers, and single non-resident fathers. All fathers with a current or former partner in the dataset are reported as having been in different-sex relationships.

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<sup>24</sup> The subject of this study is described as “single fathers” instead of “lone fathers” to underline that these fathers, despite being primarily responsible for their children, in most cases have an ex-partner (the other parent of the child).

*Single co-resident fathers* are men co-residing with at least one minor child, but not a partner/spouse, relatives, or other people. Besides co-resident children (at least one minor), they might also have children registered in different households. *Partnered co-resident fathers* are men co-residing with at least one minor child and a partner or spouse and may eventually also have children registered in different households. These fathers can be married or in cohabitation. *Partnered non-resident fathers* are men co-residing with a partner or spouse and who have only children (at least one minor) registered in a different household. These fathers can be married or in cohabitation. Finally, the *single non-resident fathers* are men living alone, with at least one minor child registered in a different household. Including non-resident fathers in the study will help disentangle the different mechanisms related to single fatherhood and provide a more complete picture of paternity in Belgium. Table 1 summarizes the proposed classification.

**Table 1.** Fatherhood categories based on children and partner living arrangements

|                          | <b>Children</b> (at least 1 minor) |                               |
|--------------------------|------------------------------------|-------------------------------|
|                          | Co-resident                        | Non-resident                  |
| <b>Spouse or Partner</b> |                                    |                               |
| No (non-resident)        | Single co-resident father          | Single non-resident father    |
| Yes (co-resident)        | Partnered co-resident father       | Partnered non-resident father |

Note: children can be biological or adoptive. There may be non-resident children also when the father already lives with other children.

Although the data do not allow the identification of joint custody cases (as they provide only one household identifier per person per year), it is assumed that this corresponds to the main residence where the child actually co-resides for most of the year. Based on a linkage of Dutch survey and register data, one recent study shows that most children of separated parents (89%) actually live full-time at the parent's address where they are registered, with a correspondence of 73% for children registered at the father's address (van der Wiel &

Kooiman, 2019). As far as is known, this is the only study that relates survey to register data on the match between the registered address of children of separated parents and their actual residence.

#### **2.4.4. Independent variable: educational attainment**

Educational attainment was measured in different ways in the Belgian Census. In 1991 the educational history of individuals distinguished between diplomas obtained in Belgium and abroad. In 2001, the education variable captured the highest level of educational attainment obtained at the time of data collection. The 2011 Census was the first to adopt the International Standard Classification of Education (ISCED 1997). In this study, all variables were harmonized across years to be comparable and distinguished between three levels of education: low (no diploma, primary and lower secondary school), middle (upper secondary and post-secondary school), and high (university or higher degree). For 2020 information on educational attainment was carried over from the 2011 Census<sup>25</sup>. After linking register data to education, cases with missing values were excluded. This led to the exclusion of 1.7% cases in 1992 (Census 1991), 8.4% in 2002 (Census 2001), 9.7% in 2012 and 0.3% in 2020 (Census 2011), due to missing information on fathers still in education, for whom no information on the level of education attained was available (Census 2011).

The missing values in the educational attainment variable are associated with changes in data collection methodologies over time, gradually resulting in Belgian Census data being exclusively based on available national administrative information<sup>26</sup>. Indeed, despite yielding high-quality results, information that is not available in administrative data sources is also missing in Census data. A study conducted by the Belgian statistical office Statbel (Van

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<sup>25</sup> Census data for the year 2021 have not yet been made available at this time.

<sup>26</sup> For more information visit: <https://statbel.fgov.be/fr/propos-de-statbel/que-faisons-nous/recensement-census/historique-du-recensement-de-la-population-et> and [https://www.census2011.be/info/news2\\_fr.html](https://www.census2011.be/info/news2_fr.html)

Regenmortel & Silvestre, 2019), explains in particular the lack of information on educational attainment in 2001 and 2011. Firstly, in the French-speaking community, some specific compulsory diplomas have not been reported by the school authorities. Secondly, diplomas obtained abroad, for which no recognition request was made or given, are also missing from the national database. Furthermore, information regarding recognised diplomas obtained abroad is only available from the Flemish Community. Finally, a small number of private schools, such as European schools, are not recognised by the Belgian government and, therefore, not available in the administrative sources on which the Census data are based.

In this study, however, the missing cases did not affect the final results (as will be shown later) and after their deletion, the total pooled sample consisted of 851,505 fathers in 1992, 788,220 in 2002, 778,728 in 2012, and 787,864 in 2020 (Table 2). Changes in numbers, therefore, occur because fathers move across categories, enter (birth) or exit (youngest child reaches age 18) the population.

**Table 2.** Sample composition. Fathers with at least one minor child in Belgium, by fatherhood category and year.

|                            | 1992    |       | 2002    |       | 2012    |       | 2020    |       |
|----------------------------|---------|-------|---------|-------|---------|-------|---------|-------|
| <i>Fatherhood category</i> | n       | %     | n       | %     | n       | %     | n       | %     |
| Single co-resident         | 16,595  | 2.0   | 16,971  | 2.2   | 22,978  | 3.0   | 28,880  | 3.7   |
| Partnered co-resident      | 767,921 | 90.2  | 688,716 | 87.4  | 646,783 | 83.1  | 649,283 | 82.4  |
| Partnered non-resident     | 12,621  | 1.5   | 14,454  | 1.8   | 19,998  | 2.6   | 18,928  | 2.4   |
| Single non-resident        | 54,368  | 6.4   | 68,079  | 8.6   | 88,969  | 11.4  | 90,773  | 11.5  |
| Total                      | 851,505 | 100.0 | 788,220 | 100.0 | 778,728 | 100.0 | 787,864 | 100.0 |

#### 2.4.5. Control variables

Demographic and household characteristics were included as control variables in the analysis.

Demographic characteristics included age, measured as a categorical variable (15-29, 30-39,

40-49, 50-59, 60+ years old), marital status (single, i.e. never married<sup>27</sup>, married, widowed, and divorced), and nationality (Belgian or other nationality). Household characteristics considered were the total number of children (minor and adult) and the age of the youngest child. The variable number of children has 4 categories: one, two, three, four or more children (the maximum number of children in the dataset is 13). The variable identifying the age of the youngest child has been coded according to 5 categories describing the age-related development stages of children: age from 0 to 1 (when children are still babies), age from 2 to 3 (the so-called toddler), age from 4 to 5 (when children are in preschool), age from 6 to 12 (children' grade school time), and finally age from 13 to 17 (the teenagers).

#### **2.4.6. Analytical strategy**

Our analyses are performed in two steps. First, using descriptive statistics: i) a comprehensive overview was provided of the main demographic and household characteristics of Belgian fathers for the years 1992, 2002, 2012, and 2020 by fatherhood category (single co-resident fathers, partnered co-resident fathers, partnered non-resident fathers, and single non-resident fathers); ii) the educational profiles of the single co-resident fathers were examined, contrasting them with those of the partnered co-resident fathers, partnered non-resident fathers, and single non-resident fathers across the four points in time. This will help ascertain whether the socio-economic characteristics of fathers in Belgium have changed over the last three decades. Second, multinomial logistic regressions are used to test the association between education and single fatherhood. In doing so: i) separate models were estimated for each year to assess the likelihood of being a single co-resident father versus the other fatherhood categories according

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<sup>27</sup> This category includes both individuals who are single and those who are in cohabiting relationships but have not married.

to educational level; ii) years were pooled, and interaction terms between educational level and year variables were included to test whether this association has changed over time.

All models control for age, nationality, the total number of children and the age of the youngest child. Robust standard errors adjusted for clustering on individuals were adopted, as these are specific for data with repeated observations on individuals. To facilitate the interpretation of the multinomial analyses the results are presented in terms of average marginal effects (AMEs) separately for each year and pooled.

To address the high missingness on the education variable, a range of alternative models were estimated as robustness checks. These include models in which missing values are included as a separate category. The relationship between missingness and the other variables (fatherhood category, nationality, age) was similar in 1992, 2012 and 2020. However, in 2002, a relation was found with the fatherhood category “single non-resident father”, suggesting that other selection criteria are in play. For example, the different ways Census data were collected over time (use of pre-filled questionnaires and enumerators in 1991, use of pre-filled questionnaires but no enumerators in 2001, use of data already available in administrative databases in 2011). Despite that, the findings about trends over time remain unchanged in all years (1992, 2002, 2012, 2020). The results separated by year are presented in terms of average marginal effects (AMEs) in the Appendix, Figure A2. In addition, in order to check for potential differences in disadvantages associated with pathways into single parenthood, a robustness check was performed by replicating the main analyses on a restricted sample including only individuals who became single parents through separation or divorce, and then on a sample including only those who entered single parenthood through widowhood. The results, shown in Appendix Figure A4, are consistent with the main findings. The only difference compared to the original variable emerges in 2020, when divorced single co-resident fathers with low educational attainment show a slight decline in their predicted probability relative to 2012,

resulting in a convergence with the levels observed among those with medium education. Finally, although beyond the scope of this chapter, the Appendix includes the results of the main analyses for mothers to provide a more comprehensive overview (Tables A1-A3, Figures A5-A7).

## **2.5. Results**

### **2.5.1. Descriptive analyses**

#### ***Prevalence and trends in single fatherhood***

Table 2 shows the prevalence of and trends in each of the four fatherhood categories: single co-resident, partnered co-resident, partnered non-resident and single non-resident fathers. Partnered co-resident fathers still represent the vast majority of fathers with at least one minor child in Belgium (around 4 in 5) today. However, their share decreased by almost 10 percentage points between 1992 and 2020, while shares in the other fatherhood categories increased steadily. For example, the share of *single co-resident fathers* almost doubled (from 2% to 3.7%) in the last three decades. Similarly, the percentage of *single non-resident fathers* peaked in 2012 at 11.4% and stood at 11.5% in 2020, while of the percentage of *partnered non-resident fathers* increased from 1.5% in 1992 to 2.4% in 2020. Although these percentages may seem small, they translate into approximately 30,000 single co-resident fathers in 2020, a group of the same size as a medium-large city in Belgium.

#### ***Demographic Characteristics: Profiles in 2020 and Trends Since 1992***

Table 3 shows Belgian fathers' demographic and household characteristics with at least one minor child by fatherhood category (single co-resident, partnered co-resident, partnered non-resident and single non-resident) and year (1992, 2002, 2012, 2020).

On average, single co-resident fathers of the 2020s are 40-49 years old (49%). Their age profile looks like that of the other male parents although single co-resident fathers tend to be older compared to the other fatherhood categories, especially the partnered co-resident ones whose share is mainly distributed between the two age categories 30-39 years (37%) and 40-49 years (43%). In line with earlier findings on single parenthood (Bernardi & Mortelmans, 2018), most single co-resident fathers today are divorced (40%) or without a partner (43%)<sup>28</sup>. Only a small percentage (4.5%) is widowed. Similarly, almost half of single non-resident fathers do not have a partner (48%) or are divorced (41%). However, the marital profiles of the other two father categories are rather different. On the one hand, the majority of partnered co-resident fathers are married (70%). Around one-third are “single”, likely reflecting partnerships in legal cohabitations where the marital status remains registered as “single”. On the other hand, it was observed that partnered non-resident fathers are made up of equal percentages of those single (36%), married (31%) and divorced (33%)<sup>29</sup>. Finally, in 2020, similar percentages of fathers with a nationality other than Belgian are observed among the various fatherhood groups: 8% of single co-resident, 7% of partnered co-resident, 5% of partnered non-residents and 10% of single non-resident fathers.

Table 3 also reveals some emerging trends. Over the years, the proportion of single co-resident fathers has considerably increased among older age groups. Between 1992 and 2020, the share of single co-resident fathers aged over 50 doubled. In contrast, among those aged 30-39, their percentage dropped from 41% in 1992 to 24% in 2012 and then stabilised at 25% in

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<sup>28</sup> The “single” category here includes men who may not have a partner, as well as those who have a partner co-residing in a separate household. Furthermore, we found a percentage of “married” single co-resident fathers. This result reflects the reality of register data, wherein couples who are no longer living together are still legally married/still in the process of divorce.

<sup>29</sup> In this case, the “single” category may represent fathers who entered into a new partnership after separation, while the “divorced” group represents fathers who entered into a new partnership after the end of their marriage.

2020. Similar patterns are observed for all other categories of fathers, reflecting the general trend towards childbearing postponement over the past few decades (Billari et al., 2006).

Consistent with previous studies, single-resident fatherhood resulting from widowhood has consistently reduced over time. In 1992, around one in five single co-resident fathers were widowed. However, by 2012, this proportion had decreased to less than one in ten fathers. In contrast, the proportion of divorced single co-resident fathers showed an upward trend, reaching its highest proportion (48%) in 2012. Furthermore, single co-resident fathers who were never married (“single” category) increased markedly from 6% in 1992 to 42.8% in 2020, so much that they overtook the share of divorced fathers (30.2% in 1992 and 40.2% in 2020). This trend likely reflects the rise in (dissolved) nonmarital unions and applies to all the other fatherhood categories. Since 1992, there has been a decrease in the percentages of fathers with non-Belgian nationality regardless of the fatherhood category. This decrease may be attributed to variations in the migrant population in the dataset. Studies on immigrant fertility have shown that the second generation typically has significantly fewer children compared to the first generation (Sobotka, 2008).

### ***Household Characteristics: Profiles in 2020 and Trends Since 1992***

Overall, partnered co-resident fathers have, on average, more and younger children compared to the other three fatherhood categories. In 2020, 60% of single co-resident fathers have only one child<sup>30</sup>, compared to 46.5% among partnered co-resident fathers, 69% of partnered non-resident fathers and 64% of single non-resident fathers. The majority of single co-resident fathers had school-aged children, with 59% of them having children older than 5 years<sup>31</sup>. Higher proportions were observed among partnered non-resident fathers and single non-

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<sup>30</sup> Total number of children, including both minor and adult children.

<sup>31</sup> Measured as the age of the youngest child.

resident fathers, with 83% and 82%, respectively, having the youngest child aged over 5 years. Compared to these categories, partnered co-resident fathers have younger children on average.

This analysis also reveals stability in the distribution of children's numbers among different fatherhood categories over time. Across all four years (1992, 2002, 2012, 2020) roughly half of single co-resident fathers had only one child, while one in three had two children. Patterns remained stable over time for the other fatherhood categories as well. However, for partnered co-resident fathers the percentages of those with one child and two children are more similar, each around 40%. Among non-resident fathers (partnered or single), instead, over 60% consistently had one child, while the proportion of those with two children consistently remained below 30%. Finally, between 1992 and 2020 the proportion of single co-resident fathers with preschool children (0-5 years old) decreased from 19% to 14%, while the proportion of single co-resident fathers with children in the 6-12 age group increased from 39% in 1992 to 47% in 2020. Similarly, non-resident fathers (both partnered and single) also exhibited lower percentages among preschool children throughout the analysed period, while there were no evident changes over time in the percentages of partner co-resident fathers in relation to the age distribution of their children.

Row percentages are also presented in the Appendix (Table A4) to provide deeper insight into the evolving patterns of fatherhood.

**Table 3.** Demographic and household characteristics of fathers with at least one minor child, by fatherhood category and year (column percentages).

| <i>Fatherhood categories</i>       | <b>1992</b>        |                       |                        |                     | <b>2002</b>        |                       |                        |                     | <b>2012</b>        |                       |                        |                     | <b>2020</b>        |                       |                        |                     |
|------------------------------------|--------------------|-----------------------|------------------------|---------------------|--------------------|-----------------------|------------------------|---------------------|--------------------|-----------------------|------------------------|---------------------|--------------------|-----------------------|------------------------|---------------------|
|                                    | Single co-resident | Partnered co-resident | Partnered non-resident | Single non-resident | Single co-resident | Partnered co-resident | Partnered non-resident | Single non-resident | Single co-resident | Partnered co-resident | Partnered non-resident | Single non-resident | Single co-resident | Partnered co-resident | Partnered non-resident | Single non-resident |
| <b>Demographic characteristics</b> |                    |                       |                        |                     |                    |                       |                        |                     |                    |                       |                        |                     |                    |                       |                        |                     |
| <i>Age</i>                         |                    |                       |                        |                     |                    |                       |                        |                     |                    |                       |                        |                     |                    |                       |                        |                     |
| 15-29                              | 4.3                | 8.3                   | 11.4                   | 7.6                 | 2.4                | 4.0                   | 8.7                    | 4.8                 | 2.7                | 4.1                   | 8.7                    | 5.3                 | 8.4                | 4.7                   | 7.6                    | 4.3                 |
| 30-39                              | 41.9               | 51.0                  | 53.3                   | 49.2                | 30.5               | 44.5                  | 47.6                   | 39.3                | 24.3               | 36.3                  | 34.8                   | 29.2                | 41.3               | 37.3                  | 36.5                   | 28.6                |
| 40-49                              | 43.9               | 34.8                  | 32.4                   | 36.9                | 52.4               | 43.8                  | 40.0                   | 45.1                | 52.6               | 47.4                  | 49.0                   | 48.4                | 36.7               | 42.6                  | 45.6                   | 45.1                |
| 50-59                              | 8.5                | 5.4                   | 2.7                    | 5.5                 | 13.2               | 7.1                   | 3.6                    | 9.7                 | 17.7               | 11.1                  | 7.1                    | 15.0                | 11.9               | 13.8                  | 9.7                    | 18.8                |
| 60+                                | 1.5                | 0.6                   | 0.2                    | 0.8                 | 1.6                | 0.6                   | 0.2                    | 1.2                 | 2.7                | 1.1                   | 0.4                    | 2.1                 | 1.7                | 1.6                   | 0.6                    | 3.2                 |
| Tot                                | 100.0              | 100.0                 | 100.0                  | 100.0               | 100.0              | 100.0                 | 100.0                  | 100.0               | 100.0              | 100.0                 | 100.0                  | 100.0               | 100.0              | 100.0                 | 100.0                  | 100.0               |
| <i>Marital Status</i>              |                    |                       |                        |                     |                    |                       |                        |                     |                    |                       |                        |                     |                    |                       |                        |                     |
| Single                             | 5.6                | 1.3                   | 11.8                   | 10.3                | 11.8               | 5.7                   | 20.3                   | 19.5                | 27.8               | 19.4                  | 32.1                   | 35.6                | 68.8               | 26.9                  | 43.5                   | 47.8                |
| Married                            | 46.0               | 97.8                  | 50.1                   | 43.4                | 31.4               | 92.3                  | 34.5                   | 27.3                | 16.6               | 77.3                  | 25.1                   | 14.9                | 6.1                | 70.4                  | 23.8                   | 10.7                |
| Widowed                            | 18.0               | 0.0                   | 0.1                    | 0.5                 | 13.8               | 0.1                   | 0.1                    | 0.3                 | 7.7                | 0.1                   | 0.1                    | 0.3                 | 2.3                | 0.1                   | 0.1                    | 0.2                 |
| Divorced                           | 30.4               | 0.8                   | 38.0                   | 45.8                | 43.0               | 2.0                   | 45.1                   | 52.8                | 47.9               | 3.3                   | 42.7                   | 49.2                | 22.9               | 2.6                   | 32.6                   | 41.3                |
| Tot                                | 100.0              | 100.0                 | 100.0                  | 100.0               | 100.0              | 100.0                 | 100.0                  | 100.0               | 100.0              | 100.0                 | 100.0                  | 100.0               | 100.0              | 100.0                 | 100.0                  | 100.0               |
| <i>Nationality</i>                 |                    |                       |                        |                     |                    |                       |                        |                     |                    |                       |                        |                     |                    |                       |                        |                     |
| Belgian                            | 89.6               | 90.9                  | 94.0                   | 90.9                | 90.7               | 91.5                  | 94.1                   | 90.4                | 92.1               | 93.0                  | 95.0                   | 89.7                | 95.9               | 95.1                  | 95.6                   | 91.9                |
| Other                              | 10.4               | 9.1                   | 6.1                    | 9.1                 | 9.3                | 8.5                   | 5.9                    | 9.6                 | 7.9                | 7.0                   | 5.0                    | 10.3                | 4.1                | 5.0                   | 4.4                    | 8.2                 |
| Tot                                | 100.0              | 100.0                 | 100.0                  | 100.0               | 100.0              | 100.0                 | 100.0                  | 100.0               | 100.0              | 100.0                 | 100.0                  | 100.0               | 100.0              | 100.0                 | 100.0                  | 100.0               |
| <b>Household characteristics</b>   |                    |                       |                        |                     |                    |                       |                        |                     |                    |                       |                        |                     |                    |                       |                        |                     |
| <i>Number of children</i>          |                    |                       |                        |                     |                    |                       |                        |                     |                    |                       |                        |                     |                    |                       |                        |                     |
| 1                                  | 54.6               | 42.0                  | 66.0                   | 60.7                | 52.2               | 40.4                  | 61.9                   | 58.5                | 54.1               | 42.4                  | 65.7                   | 61.5                | 60.0               | 46.5                  | 69.1                   | 64.0                |
| 2                                  | 33.8               | 41.1                  | 27.7                   | 30.5                | 34.2               | 42.4                  | 30.5                   | 31.5                | 34.7               | 41.6                  | 27.8                   | 29.2                | 32.5               | 39.2                  | 25.4                   | 28.0                |
| 3                                  | 8.8                | 13.0                  | 5.1                    | 7.1                 | 10.2               | 13.5                  | 6.3                    | 7.9                 | 8.5                | 12.6                  | 5.3                    | 7.2                 | 6.0                | 11.1                  | 4.5                    | 6.2                 |
| 4+                                 | 2.9                | 3.8                   | 1.1                    | 1.8                 | 3.4                | 3.6                   | 1.3                    | 2.2                 | 2.8                | 3.5                   | 1.2                    | 2.1                 | 1.5                | 3.2                   | 1.0                    | 1.8                 |
| Tot                                | 100.0              | 100.0                 | 100.0                  | 100.0               | 100.0              | 100.0                 | 100.0                  | 100.0               | 100.0              | 100.0                 | 100.0                  | 100.0               | 100.0              | 100.0                 | 100.0                  | 100.0               |
| <i>Age youngest child</i>          |                    |                       |                        |                     |                    |                       |                        |                     |                    |                       |                        |                     |                    |                       |                        |                     |
| 0-1 year                           | 5.2                | 11.6                  | 6.9                    | 5.7                 | 3.5                | 10.3                  | 6.8                    | 4.5                 | 2.5                | 11.4                  | 5.7                    | 4.2                 | 13.2               | 8.9                   | 3.1                    | 2.4                 |
| 2-3 years                          | 6.2                | 12.8                  | 7.0                    | 8.2                 | 5.0                | 12.4                  | 7.6                    | 7.5                 | 5.1                | 13.7                  | 6.6                    | 7.5                 | 17.6               | 16.8                  | 6.1                    | 6.4                 |
| 4-5 years                          | 7.9                | 11.7                  | 8.7                    | 10.5                | 7.4                | 12.0                  | 8.9                    | 10.5                | 8.5                | 12.8                  | 8.3                    | 10.1                | 10.4               | 12.8                  | 7.8                    | 9.4                 |
| 6-12 years                         | 39.6               | 38.2                  | 43.2                   | 43.9                | 42.5               | 40.2                  | 44.9                   | 46.3                | 43.0               | 37.2                  | 41.7                   | 44.2                | 35.9               | 38.5                  | 44.5                   | 46.3                |
| 13-17 years                        | 41.0               | 25.7                  | 34.3                   | 31.7                | 41.6               | 25.3                  | 31.8                   | 31.3                | 41.0               | 24.9                  | 37.7                   | 34.0                | 23.0               | 23.0                  | 38.5                   | 35.6                |
| Tot                                | 100.0              | 100.0                 | 100.0                  | 100.0               | 100.0              | 100.0                 | 100.0                  | 100.0               | 100.0              | 100.0                 | 100.0                  | 100.0               | 100.0              | 100.0                 | 100.0                  | 100.0               |

### ***Educational Attainment: Profiles in 2020 and Trends Since 1992***

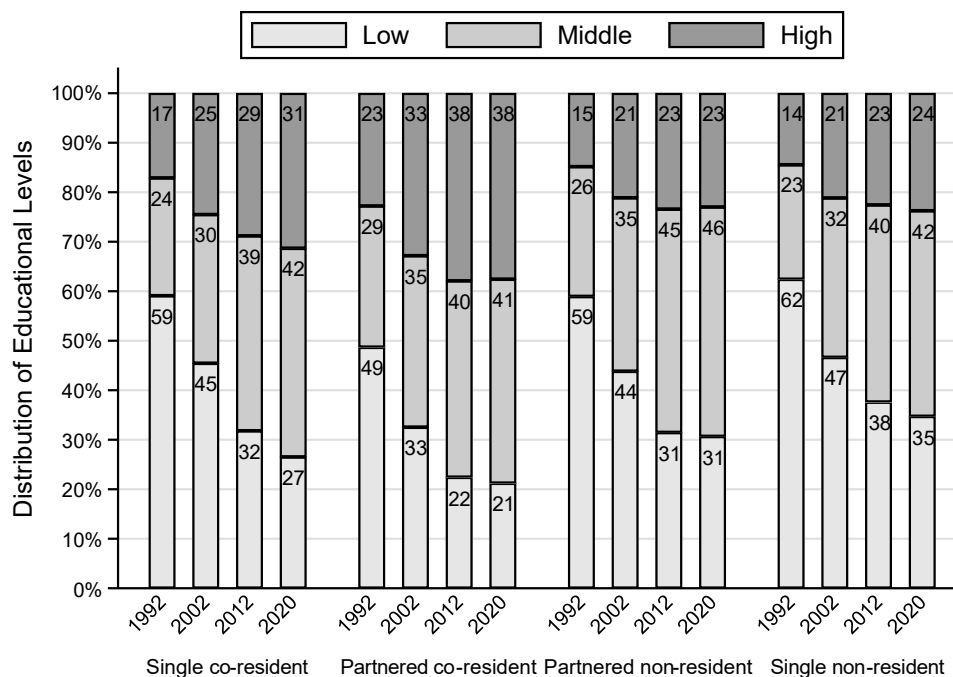
Figure 1 shows the educational profiles of the four fatherhood categories (single co-resident, partnered co-resident, partnered non-resident, single non-resident) from 1992 to 2020.

In 2020, among single co-resident fathers, the largest group consisted of those with a middle level of education, accounting for 42% of the total. The remaining single co-resident fathers were almost equally divided between those with low and high levels of education, representing 27% and 31% respectively. The middle-educated group was also the largest among the other fatherhood categories, reflecting the increasing participation in the school system within contemporary societies. However, partnered co-resident fathers tended to be higher educated (38%) than the other fathers. Conversely, non-resident fathers had the lowest percentages of highly educated individuals (23% among those partnered and 24% among those single) and highest percentages among those with lower levels of education (31% and 35% respectively) (Figure 1).

Shifts in the relative sizes of educational groups over time are remarkable (Figure 1). Between 1992 and 2020, the educational profile of single co-resident fathers completely changed. In the early 1990s, the majority of them were low educated (59%). However, over time, there has been a steady increase among the middle and high educated. The educational profile of partnered co-resident fathers has experienced similar changes. The proportion of low educated shrunk from 49% in 1992 to 21% in 2020 while percentages of middle and highly educated increased. However, these trends seem to have levelled off around 2012, remaining relatively stable in 2020. The educational profiles of non-resident fathers (both partnered and single) have also mainly changed between 1992 and 2012. During this period, there has been little variation in the proportion of highly educated fathers. In contrast, as Figure 1 shows,

middle-educated fathers have nearly doubled, while the proportion of the lowest-educated has decreased by almost half.

**Figure 1.** Percent distribution of educational attainment, by fatherhood category and year.



Overall, it is noteworthy that the educational profile of single co-resident fathers, which was relatively similar to that of non-resident fathers (both partnered and single) in 1992, reversed over time. Today, therefore, single co-resident fathers have a unique educational profile, somewhere in between that of partnered co-resident fathers and non-resident (partnered and single) fathers.

The study now turns to multinomial analysis.

## 2.5.2. Multinomial analyses

Multinomial logistic regression models were used to assess how the likelihood of fathers being partnered co-resident, couple non-resident, or single non-resident rather than single co-resident

differ by educational attainment. Figure 2 shows the average marginal effects (AMEs) of being a single co-resident, partnered co-resident, partnered non-resident, and single non-resident father by educational attainment in 1992, 2002, 2012, and 2020. The estimated regression coefficients are presented in Table A5 in the Appendix. In comparing the probabilities of partnered co-resident, partnered non-resident, and single non-resident fatherhood, *rather than single co-resident fatherhood*, education was found to be significant in all years (see Table A5 in the Appendix). In 2020, the probability of being a partnered co-resident father was, on average, about 6 percentage points higher for individuals with middle education and about 11 percentage points higher for those with high education compared to those with low education. At the same time, it was found that the average marginal effect of education on partnered non-resident and single non-resident fatherhood was negative. This indicates that in 2020, fathers with middle or high education were less likely to be non-resident fathers compared to single co-resident fathers.

Figure 2 indicates education was important also in previous years. For instance, the average marginal effect of education on partnered co-resident fatherhood remained consistently positive in 1992, 2002 and 2012. Conversely, throughout all years, men with middle or high education were significantly less likely to be single non-resident fathers than those with low education. Furthermore, the probability of being a partnered non-resident father was consistently lower for highly educated men than for those with low education across all years (on average about 0.5 percentage points less than single co-resident fathers in 1992, 0.7 percentage points less in 2002, and 1.2 percentage points less in 2012). However, when fathers are middle-educated, partnered, non-resident fatherhood is almost no less likely than among single-resident fatherhood in all years.

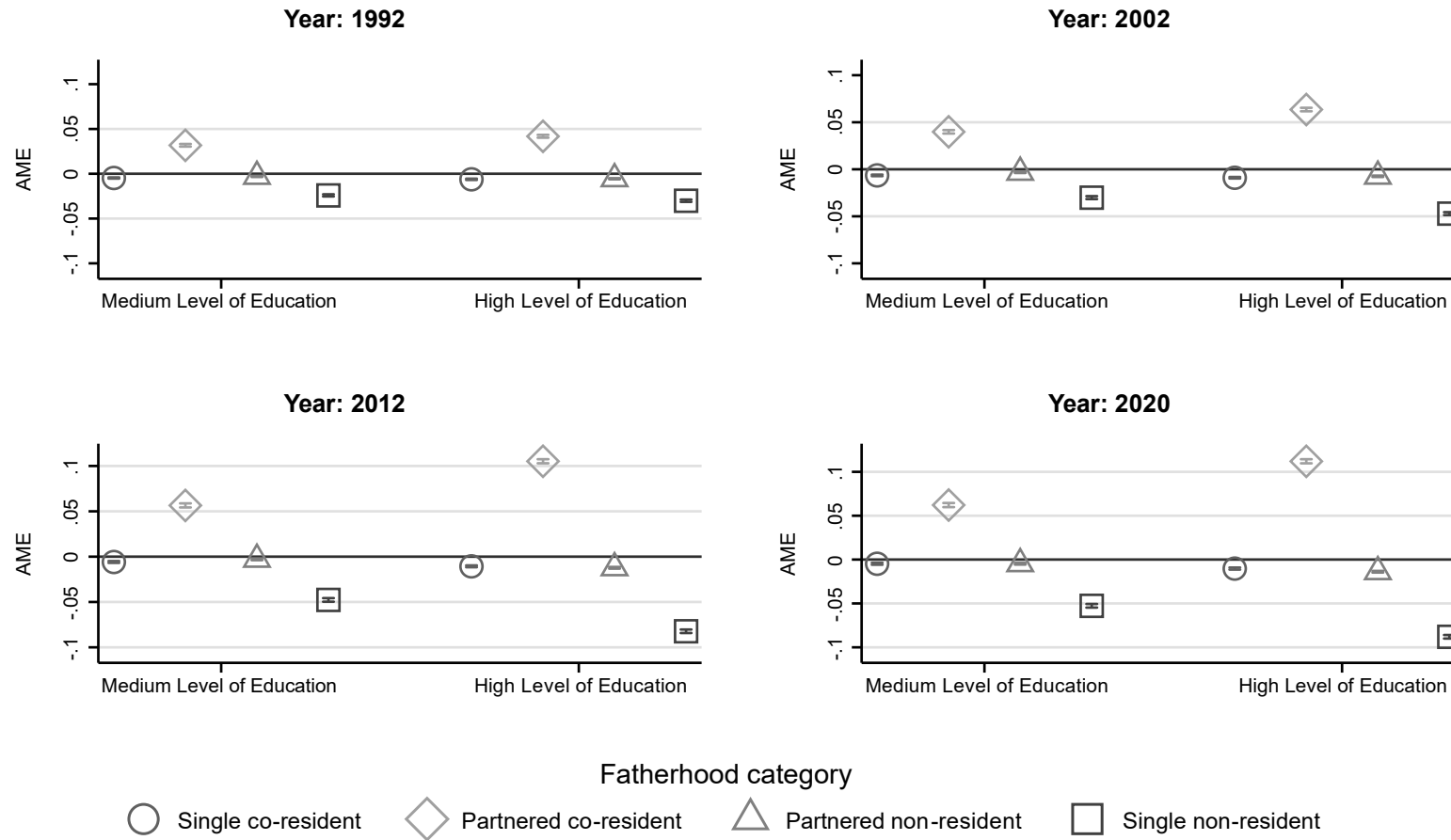
Finally, Figure 3 shows the predicted probabilities from the interaction between year and education across different fatherhood categories, to investigate how the educational gradient has changed over time.

First, when comparing partnered co-resident fatherhood to single co-resident fatherhood, a positive interaction between education and year was observed. This indicates an increasing positive educational gradient over time, which stabilized after 2012. In other words, partnered co-resident fathers have become increasingly more educated compared to single co-resident fathers over time.

Second, Figure 3 presents a distinct pattern for single non-resident fathers. Contrary to partnered co-resident fatherhood, the probability of being a single non-resident father has become increasingly concentrated among the low educated over time, with middle- and high-educated fathers showing comparatively lower probabilities in 2012 and 2020 than in 1992. For instance, the difference in the probability of being a single non-resident father between highly and less educated fathers increased from approximately 4.5 percentage points to around 15 percentage points between 1992 and 2020. These findings indicate a consistent and increasing negative educational gradient in single non-resident fatherhood over time.

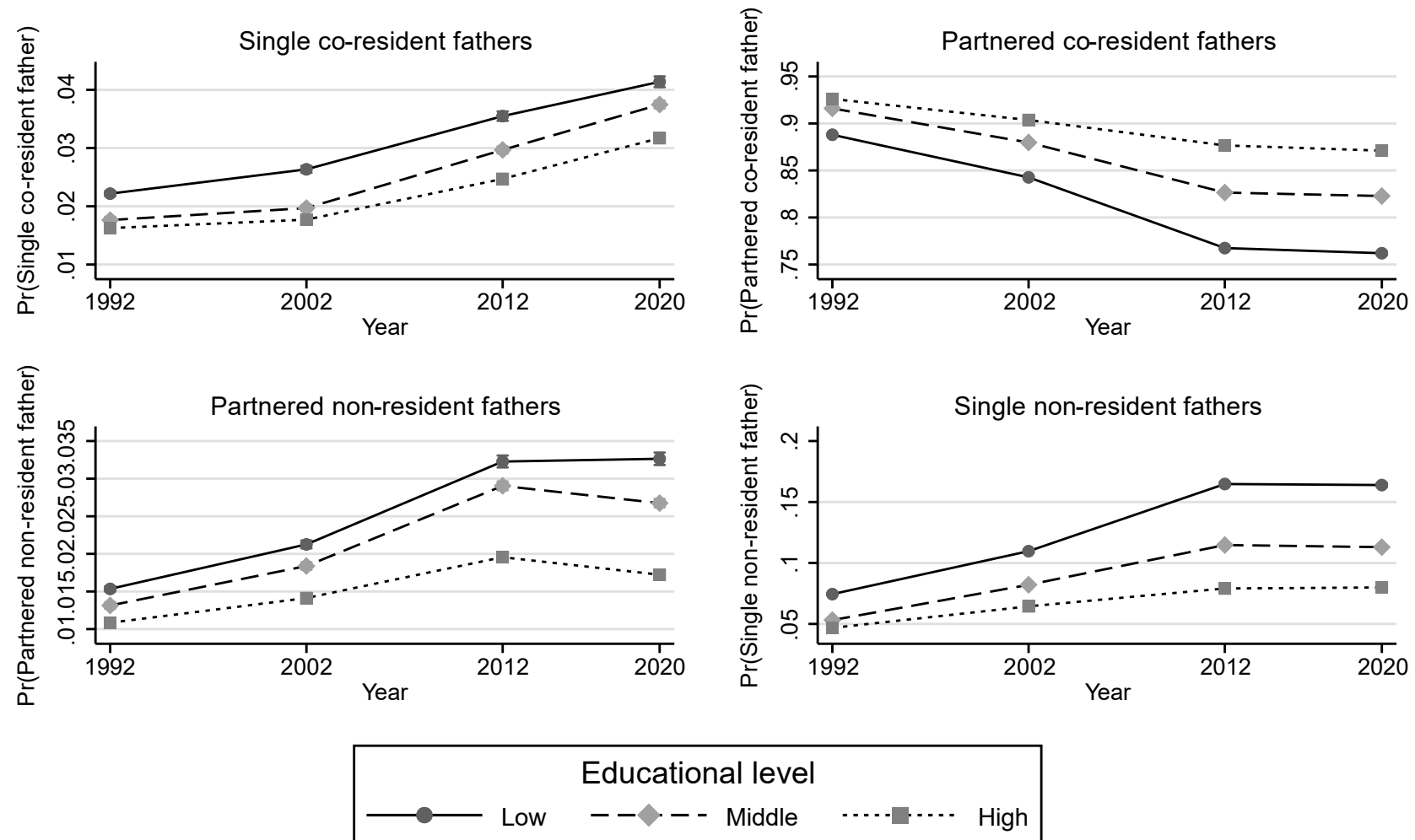
In conclusion, a different pattern emerges for partnered non-resident fathers. Although a negative educational gradient emerges in this category as well, the difference in the probability of being a partnered non-resident father between highly and less educated remains smaller than that observed for single co-resident fathers.

**Figure 2.** Association between educational attainment and fatherhood categories. Average marginal effects (AMEs) 95% conf. interval. Separated multinomial logistic models by year (1992, 2002, 2012, 2020).



Notes: AME=Average Marginal Effects. All models control for age (in categories), nationality, number of children, and age of the youngest child. Confidence intervals are so small they are barely visible. Reference category: lower educate

**Figure 3.** Predicted probabilities of fatherhood categories by educational attainment, over time. (See Figure A8 in the Appendix for Average Marginal Effects)



Notes: Pooled multinomial logistic model with interaction Year#Educational Level. Confidence intervals are so small they are barely visible. Reference category: lower educated.

## **2.6. Discussion and conclusions**

This paper contributes to the existing literature on single parenthood by examining the educational profiles of single fathers in Belgium between 1992 and 2020. While most research has focused on single mothers highlighting the educational disadvantage of this group, this study focused on the educational differences in single fatherhood. The findings underline that single fatherhood is also a possible contributor to inequalities in resources between educational groups.

Two competing hypotheses were developed based on arguments firmly related to education: the increase in relationship instability and the changes towards increasing gender equality in men's and women's roles in the family. The results provide support for both arguments. On the one hand, it was found that single co-resident fathers are becoming consistently less educated over time (H1) when compared to partnered co-resident fathers. Likewise, a visible negative gradient emerged for both partnered and single non-resident fathers. This was expected due to the negative educational gradient in union dissolution. Thus, the socioeconomic characteristics of single fathers reflect those of divorced and separated parents in general. However, single co-resident fathers are consistently more educated over time (H2) when compared to non-resident fathers (especially the single group). This result suggests that conditional on not living with the other parent of the child, education increases the likelihood of becoming a single co-resident father. There are different reasons why this could be the case. Following the trend of gender equality, fathers with a high level of education are more involved in their children's lives (Sullivan et al., 2014) which could lead them to more often push for becoming the co-resident parent as compared to lower educated fathers. Also, higher-educated fathers may have more resources available (both in economic and knowledge terms) to bargain post-separation custodial arrangements with the child's mother (Juby et al., 2005; Ryan et al., 2008) and to stay in the joint home after separation (Theunis, Eeckhaut, et

al., 2018). Education variability used to be still relatively low between 1992 and 2002, but educational differences increased among fathers' groups between 2002 and 2020. However, it is possible that some mechanisms are not captured, as changes may have occurred before the 1990s.

The persistence of educational gradient in single fatherhood, despite growing norms of shared parenting, suggests that structural inequalities continue to shape who becomes and remains a single father. This is particularly true for low-educated men, whose limited socio-economic resources reduce their opportunities to become co-resident parents. These dynamics reflect cumulative disadvantage, where social and economic disparities are not only pre-existing but are reinforced by prolonged exposure to single parenthood, for example, due to greater difficulties in repartnering. From this perspective, single fatherhood could also be considered part of the broader trend of “diverging destinies” (McLanahan, 2004), where demographic trends reinforce socioeconomic inequalities. While this concept has mainly focused on women and children (e.g., Härkönen, 2017a), the results here suggest it also applies to men. The next chapter will explore this further by comparing men and women who become co-residential parents after union dissolution.

Finally, the results show the complexity of within-group differences among single fathers. While men with lower levels of education are more likely to experience union dissolution and transition into single parenthood, it is primarily higher-educated fathers who are more likely to become single co-resident parents. This suggests that education functions not only as a risk factor for family instability, but also as a key resource in post-separation negotiations over residential parenthood. The pathways into single fatherhood are thus multiple and socially stratified, reflecting broader processes of selection and inequality.

This study comes with some limitations that should be noted. First, despite the many advantages of registry data, it remains difficult to capture the complex reality of contemporary

families. The definition is based on information regarding the residence status of the parents and their children. This means that some fathers identified as “single co-residents” may instead be in a couple but living apart or have a partner registered at another address for other reasons. Additionally, there is no information available regarding the physical custody arrangements (joint or sole custody) of fathers and their children. In Belgium, since 2006, children may be registered at the address of both parents, even if parents in shared custody do not do it systematically (Sodermans et al., 2013). However, the register data includes only one residential address per child per year, and it is only since May 2017 that children are registered at the address where they actually spend the majority of their time. To overcome this limitation Claessens and Mortelmans (2021) estimated joint physical custody using information reported by parents in the Belgian tax return. However, parents may choose not to opt for fiscal shared physical custody to benefit more from child-related benefits (Vanassche et al., 2017). Also, the distinction between single co-resident and non-resident fathers may itself reflect socio-economic selection mechanisms. For instance, fathers with greater socio-economic resources may be more likely to remain living in the same house after separation and have their children registered at their address, whereas fathers with lower socio-economic resources may be more likely to move and be classified as non-resident. This potential selection bias could contribute to the educational differences observed between the two groups. If data on custody arrangements were available, we might find that the educational gradient among single co-resident fathers is weaker than observed. This is because higher-educated fathers may be both more likely to obtain shared or primary custody and to have children registered at their address, while lower-educated fathers may be under-represented due to registration practices not reflecting actual caregiving roles. One solution could be to use survey data where single co-resident and non-resident fathers are over-sampled to implement more accurate measures. Second, this study investigates only one of the main socio-economic characteristics (education)

related to single fatherhood. Although education is a multidimensional process itself additional factors, like occupational status or income, should be investigated in future studies.

Despite these limitations, this study provides some evidence of the changing characteristics of single father families in Belgium over time. Male single parenthood is becoming an increasingly common phenomenon. Overall, single fatherhood is increasingly linked to an educational disadvantage, as already found for single mothers (McLanahan, 2004). Does this imply that single father families are at risk of social disadvantage too? Post-separation dynamics are complex and always changing, and family configuration can differ across educational groups. Investigating the factors and conditions that characterize single father families is crucial in understanding the mechanisms related to the reproduction of social inequalities in contemporary societies. Similar scenarios could be expected in those countries with a similar context of gender-neutral custody arrangements and fathers' childcare involvement like Belgium (e.g. the Netherlands). However, in countries with gender neutrality in custody decisions not implemented and less egalitarian domestic gender relations among parents (e.g. Italy) social inequalities between educational groups could strengthen further. To have a complete picture, future research on single parenthood in Europe should give more attention to single father families as they increasingly become more common and diverse.



## **Chapter 3**

### **With the father or the mother?**

#### **Economic determinants of parent-child coresidence after union dissolution\***

\* This chapter is currently in preparation for submission.

### **3.1. Abstract**

This chapter investigates how economic factors (individual and ex-partner income before separation) relate to becoming a non-resident versus a co-resident parent after union dissolution for men and women in Belgium. While much research has focused on factors influencing mothers' child-residence decisions post-dissolution, less is known about what drives fathers to assume resident-parent roles. Theoretical perspectives suggest that shifts in gender roles, evolving legal frameworks, and bargaining dynamics may influence child-parent living arrangements. Belgian administrative data from the National Population Registers and Tax Registers over three years (2017-2019) are used in linear probability models to analyse the economic factors related to post-separation parent-child living arrangements for both fathers and mothers, accounting for the entire Belgian population. Women are generally more likely than men to become co-resident parents after union dissolution, regardless of income level. However, individual income, particularly fathers' income, significantly increases their probability of becoming a co-resident parent, highlighting the greater importance of men's financial resources in these outcomes. Although egalitarian parental roles are increasingly common, economic resources affect parenting arrangements differently for mothers and fathers following union dissolution. These disparities may contribute to gender inequality in caregiving roles and long-term parental involvement.

### **3.2. Introduction**

Over the past decades, the prevalence of children experiencing parental divorce or separation has increased in many Western countries (Andersson et al., 2017). Following parental separation, it was common practice for children to live with their mother, but in recent times, post-dissolution living arrangements have become more diverse, with an increasing number of children co-residing with their father (Nieuwenhuis, 2020), or alternating residence (Hakovirta et al., 2023).

Prior research indicates significant shifts in fathering practices and the public meanings associated with fatherhood, reflecting the emergence of new masculinities, such as “caring” masculinities (Elliott, 2016). The idea of the “new father” has evolved from being primarily a “financial provider” to sharing equal childcare responsibilities with their partner. Contemporary fathers now spend more time with their children than in the past, showing increased engagement even before birth (Miller & Nash, 2017; Schoppe-Sullivan & Fagan, 2020). However, despite these changes, mothers continue to bear the brunt of childcare responsibilities, spending more time on active care and supervision than fathers.

These dynamics are often replicated in cases of separation or divorce, with most children living with their mothers afterwards. Understanding the factors that contribute to these living arrangements and the role of parents' characteristics in shaping post-dissolution family dynamics is crucial for identifying potential selection mechanisms that may be at play, and which could perpetuate gender inequality. Specifically, the selection of disadvantaged mothers into co-residential parenthood after union dissolution may exacerbate gender inequalities, as co-resident mothers, who are often in lower socioeconomic positions, continue to shoulder the majority of childcare responsibilities despite the evolving role of fathers.

Several studies in this domain indeed report vulnerabilities associated with single co-residential motherhood, such as lower levels of education (Härkönen, 2017b; Manning & Brown, 2014; McLanahan & Jacobsen, 2015) and weaker labour market attachment (Ruggeri & Bird, 2014; Zagel, 2014). While similar disadvantages are observed in single-residential fatherhood (Brown, 2008; Coles, 2015; Livingston, 2013), research suggests that single-resident fathers tend to fare better overall compared to single-resident mothers (Bernardi & Mortelmans, 2018). However, it remains less clear what are the factors that lead to co-residential fatherhood compared to those leading to co-residential motherhood after union dissolution. Prior research emphasized the importance of changes in legal custody arrangements and evolving social norms in shaping residential outcomes both in the US (Cancian et al., 2014) and Europe (Sodermans et al., 2013). Socioeconomic factors also seem to be associated with living arrangements, though the effects are not always straightforward. For example, while Goldscheider et al. (2015) found that higher levels of education among fathers, compared to mothers, increased the likelihood of fathers co-residing with their children in the US, in Europe, Kalmijn (2015) observed that maternal employment negatively affected co-residential fatherhood.

Thus, despite these studies expanding beyond the inclusion of only one parent's perspective, more investigation is necessary. Existing research mainly relies on restricted samples, such as survey data or court records, which may not accurately capture children's actual living arrangements when based on court-prescribed arrangements and may introduce potential selection bias in residential fatherhood when based on small sample sizes. Also, studies often include formerly married parents but not separating cohabiting ones. This is important to consider since separated fathers are less likely to have custody of their children than divorced fathers (Zilincikova, 2020). The aim, hence, is to answer the following question:

*To what extent do the combined economic characteristics of both parents determine whether children co-reside with the father or the mother following union dissolution?*

Drawing on Belgian administrative data over 3 years (2017-2019) this study uses linear probability models to analyse the factors related to becoming a non-resident versus a co-resident parent after union dissolution. These data include detailed information about the demographic characteristics of the entire Belgian population, yielding enough cases to study the post-dissolution living arrangements of both mothers and fathers with minor children. First, this chapter considers all parents registered in Belgium, both married and cohabiting, to examine factors influencing the likelihood of children co-residing with either the father or the mother after a union dissolution. Second, this chapter investigates how the characteristics of both parents interact to produce different living arrangements for their children (with the father or the mother) after the union dissolution.

While Chapter 2 highlighted within-group differences among single fathers in terms of educational attainment, this chapter shows that single parents are also diverse with respect to economic resources, specifically individual and ex-partner income. It also accounts for gender differences in economic resources among single co-residential parenthood, further emphasizing the heterogeneity within single-parent families.

### **3.3. Background and hypotheses**

#### **3.3.1. Residential parenthood after union dissolution in Belgium**

Over the past half-century, there has been a steady increase in the proportion of children co-residing with only one parent in many Western countries (Nieuwenhuis, 2020), primarily driven by increasing divorce and separation rates (Letablier & Wall, 2018). Within this overall growth, a specific subgroup has emerged initially in English-speaking countries and more recently across Europe: households where fathers reside with their children following

relationship dissolution (Doucet, 2016). As highlighted by Nieuwenhuis (2020), Belgium has one of the highest rates of fathers living alone with their dependent children (around 3% in 2019) among the 27 European Member States. The author also highlighted a significant shift: within Belgian parents living only with dependent children, in 2019 fathers led one-fifth of households, marking an important increase from around one-sixth in 2009.

A driver behind the rise of fathers living with their children after union dissolution is the increasing proportion of births occurring outside of marriage (Livingston, 2013). This trend has important implications, as children born to cohabiting parents are more likely to experience parental separation compared to those born to married parents (Andersson et al., 2017). Consequently, the prevalence of children co-residing with their fathers following union dissolution mirrors the overall rise in separations. In Belgium, the proportion of children born outside of marriage has rapidly increased over the last four decades, from around 5% in the 1980s to almost 40% in the late 2000s (Kasearu & Kutsar, 2011).

Additionally, changes in the legal framework, moving from sole custody (typically awarded to mothers) towards joint custody, have facilitated fathers living with their children in the aftermath of relationship dissolution (Doucet, 2016). A shift toward a more gender-neutral approach to custody decisions in Belgium first occurred in 1995, and then in 2006 when joint physical custody was legally adopted as the default. However, Belgian law does not provide a clear definition of joint physical custody and may be more closely linked to the concept of parental authority rather than co-residential arrangements (Sodermans et al., 2013).

These changes in family law reflect evolving perceptions of paternal roles, with contemporary society increasingly acknowledging fathers as caregivers beyond their traditional roles as breadwinners (Lamb, 2000). Parenting and childrearing practices in Belgium have changed in recent decades, with fathers becoming increasingly involved in

parenting activities (Matthijs & Vanassche, 2016), while mothers are more actively participating in the labour market. Changing gender norms regarding parenting are also evident in the parental roles of men and women after the dissolution of the relationship. Since the 1990s, children in Belgium are increasingly likely to live part-time with their mother and part-time with their father if their parents separate (Bjarnason & Amarsson, 2011).

### **3.3.2. Determinants of co-residential parenthood**

Empirical research has focused on several determinants of children's living arrangements after parental breakup, including individual characteristics, attitudes, family resources, and children's characteristics. The key interest in this paper is to investigate the roles of absolute economic resources and the bargaining and negotiation processes in determining parent-child living arrangements.

#### ***Gender roles***

Central to the gender revolution theory is the recognition of men's growing involvement in family life, particularly in caregiving roles. As Goldscheider et al. (2015) argue, after the first structural shift in gender relationships resulting from the rise in female labour force participation, a second phase of the gender revolution is underway. This second phase represents a broader cultural and structural redefinition of fatherhood, where fathers are no longer seen as secondary caregivers but as key participants in their children's daily lives and family activities. Changing attitudes towards fatherhood have also coincided with more fathers actively seeking involvement in their children's lives following divorce or separation (Fehlberg et al., 2011). At the same time, the legislative framework has evolved accordingly, opening the door for fathers to gain custody of their children, which was previously granted to mothers by default unless exceptional circumstances were present (Coles, 2015).

Although research shows that post-dissolution living arrangements with children remain predominantly a prerogative for women, there are factors - particularly financial and social resources - related to fathers' likelihood of co-residing with their children. For example, Cancian et al. (2014) show that fathers are more likely to reside with their children if they contribute a higher share of household income, regardless of the household income level (low, medium and high). This points to the direct effect of individual financial capacity. In parallel, other studies find that highly educated fathers are more likely to co-reside with their children after union dissolution compared to their less-educated counterparts (Zhan & Pandey, 2004). This may be because education acts as a proxy for both economic resources (e.g. stable employment) and cultural resources, such as familiarity with legal systems or more egalitarian gender norms. In fact, fatherhood norms increasingly emphasize the equal sharing of childcare responsibilities between men and women in contemporary societies (Bianchi et al., 2006; Coltrane, 1996), and highly educated fathers have been shown to spend more time in childcare and to be more involved with their children after separation than less educated fathers (Dotti Sani & Treas, 2016; Esping-Andersen, 2016; Westphal et al., 2014; Wray et al., 2021). This suggests that education shapes both the capacity and willingness to take on co-residential parenting. Following this, it is hypothesized that *men with a higher level of individual income are more likely to become co-resident parents than men with a lower level of income* (H1a).

However, standard economic theory of the family posits that marriage yields efficiency gains through specialization, with one spouse focusing on labour market and the other on caregiving (Becker, 1993a). Due to men's historically higher market wages, this theory often supports a traditional division of labour within the households, where men prioritize the paid work while women assume primary caregiving responsibilities. Consequently, in a traditional family, it would not be surprising if women, having specialized in caregiving, were more likely

to co-reside with their children after union dissolution, mirroring these pre-separation gendered roles and maintaining continuity in caregiving arrangements (Weiss & Willis, 1985).

Another argument, from a cost-efficiency perspective, is that the arrangement in which the mother continues to reside with the children after union dissolution minimizes the economic disruption caused by separation. Women who have invested significant time in caregiving (often resulting in part-time work or no employment) may encounter higher opportunity costs when considering full-time employment after union dissolution. In contrast, men, who typically have a stronger foothold in the paid labour market, can continue to generate income more efficiently. Therefore, women living with their children post-separation is often regarded as the most cost-effective arrangement in traditional families, as it maximizes the households' overall efficiency by reducing the financial and time costs associated with reallocating caregiving responsibilities. This family arrangement, however, exposes women to a higher risk of poverty due to limited opportunities for them to take part in the labour market effectively. At the same time, men are required to provide considerable financial support (e.g. alimony payments) to ensure that the overall resources of both parents are combined to meet the household needs. Conversely, higher-income women are more likely to have maintained stronger labour market attachment and invested less exclusively in caregiving. For them, becoming the co-resident parent may entail greater opportunity costs in terms of career or earnings loss, making (shared or) non-residential arrangements more feasible or desirable from an economic standpoint. Consequently, it is hypothesized that *women with lower individual incomes are more likely to become co-resident parents than women with higher incomes* (H1b).

What emerges is a complex picture in which intersectionality is at play (Crenshaw, 1991). The interaction between gendered caregiving expectations and socioeconomic resources shapes distinct pathways into co-residential or non-residential parenthood. Women are

generally expected to assume primary caregiving roles, but their possibility to do so depends on their economic position. For example, lower-income mothers may find themselves continuing as co-resident parents not only due to normative expectations but also due to limited alternatives, whereas higher-income mothers may be better positioned to negotiate different residential arrangements, as discussed in the following paragraph. However, the intersection between gender and income may not operate the same way for men and women. For example, for men, having a high income may reinforce traditional norms of the “good father” by demonstrating their ability to provide financially for the household. In contrast, for women, strong labour market attachment may lead to perceptions of being less committed to their children or even as “bad mothers” who prioritize career over caregiving. This asymmetry illustrates how single parenthood affects men and women differently, with SES influencing the opportunities and constraints they encounter in fulfilling parental roles post-separation.

### ***Bargaining and negotiation process***

Decisions regarding post-separation living arrangements are rarely made unilaterally. Instead, they emerge from the interplay of both parents’ resources, preferences, and constraints. This reflects the linked lives principle within the life course perspective (Elder et al., 2003), which highlights how individual trajectories are shaped by interdependent relationships. In this view, custodial outcomes are not simply determined by one parent's characteristics, but by the relative advantage or disadvantage between the two parents, as well as the institutional and legal context in which decisions are made.

The bargaining theory offers a complementary lens for understanding how these relative advantages translate into concrete post-separation outcomes (Bittman et al., 2003; Evertsson & Nermo, 2004; Lundberg & Pollak, 1996). This theory conceptualizes the family as a unit comprising two or more agents, each with preferences that sometimes differ (Lundberg

and Pollak 1996). The greater the resources one partner holds relative to the other, the more likely they are to influence decisions in their favour during negotiations. For example, research shows that higher earnings can help partners negotiate reduced involvement in routine housework (e.g. Bittman et al. 2003; Evertsson and Nermo 2004).

In this framework, parent-child living arrangements may reflect the relative bargaining power of each parent, with the parent holding more power being more likely to secure a favourable outcome. Co-residence is often viewed as the more favourable outcome for parents after separation, as it allows them to maintain daily contact with their children and avoid the emotional pain associated with losing time together (Amato et al., 2010). However, non-co-residence may be seen as a more advantageous option by some parents. For example, parents who have children with more than one partner may face difficulties in balancing family roles, making co-residence less feasible (Bronte-Tinkew et al., 2009; Manning & Smock, 2000). Disadvantages in the workplace or limited financial resources can also lead some parents to see non-residence as a favourable outcome (Correll et al., 2007; Poole et al., 2013). Supporting this model, bargaining power in divorce negotiations is often linked to legal environment, and financial resources which can heavily influence the final parent-child living arrangement (Cohen, 2002). For example, when only the father is legally represented, he is more likely to co-reside with children after separation (Cancian & Meyer, 1998; Cook & Brown, 2005). In terms of financial resources, evidence indicates that when mothers have a higher share of income within the household, all else equal, fathers are less likely to live with children after union dissolution (Cancian et al., 2014). However, the authors also found that fathers with greater income than the mothers are more likely to have shared custody.

Moreover, drawing on the cumulative disadvantage perspective (Dannefer, 2003; DiPrete & Eirich, 2006), lower-income mothers may face persistent structural constraints that

reduce their bargaining power in custody decisions, despite prevailing maternal norms. Conversely, fathers with more economic resources may be better positioned to claim residential parenthood, especially in institutional contexts that emphasize economic self-sufficiency. This accumulation of disadvantage (or advantage) could then play a critical role in determining who becomes the co-residential parent after separation. Thus, it is hypothesized that *the parent with more relative individual income will be more likely to co-reside with children after union dissolution* (H2).

### **3.4. Methods**

#### **3.4.1. Data and sample**

Survey data are often unable to capture detailed parental status changes and residential moves with children after union dissolution, especially for men because of event rareness and attrition bias. Register data provide a unique opportunity to identify this population of separated fathers and mothers with children and the parent-child living arrangements following union dissolution. This study uses information from the National Population Registers (2017–2019), and the Tax Registers (2017) provided by Statbel, the Belgian statistical office. The National Population Registers offer detailed information on the complete Belgian population for the most important demographic variables (e.g., gender, date of birth, nationality, place of residence) and household characteristics (household size, number, age, and gender of children). Information is recorded on January 1<sup>st</sup> of each year. The Tax Registers, based on Belgian personal tax returns, include the vast majority of taxable income. Citizens declare the income of a given year (N) during the assessment year (N+1), between May and October. The Federal Public Service (FPS) Finance collects these incomes in the IPCAL dataset which ultimately provides information on individual income (annual net taxable income on an individual level) (Schrijver, 2020).

Our analysis is based on married or cohabiting different-sex couples with joint children aged 0 to 17 as of January 1, 2017. The final sample only included those couples that separated during 2017, and where one parent co-resided with the children after separation (i.e. in 2018). Separation was defined based on the parents' places of residence in 2018. Specifically, if one parent was no longer co-residing in the same household as in 2017, the couple was considered separated<sup>32</sup>. From the original sample, 8,980 couples were excluded where either the mother or father was no longer registered in 2018 and 2019, and for whom no income information was available (5.6%). This resulted in a final analytic sample of 10,582 men and 10,582 women.

### **3.4.2. Dependent variable: co-residential parenthood status**

The dependent variable is co-residential parenthood status. This measure indicates whether, in the year following union dissolution, parents were non-resident (0) or co-resident (1). A parent was considered a co-resident parent if they lived in the same household as one or more minor children without any other adults. Conversely, a parent was considered a non-resident parent if they co-resided in a different household without the former partner and their children. Although the data do not allow to identify dual residence living arrangements, the proportions of (single) co-resident fathers and mothers for 2018 are in line with those shown by Nieuwenhuis (2020) which are based on 2019 Labour force survey data. Nonetheless, the results regard being a coresident parent, rather than being the sole coresident parent. Hence, being the co-resident parent could also include cases where children spend time with both parents. Nonetheless, being one of the co-resident parents is indicative of considerable involvement in day-to-day childrearing and could be interpreted as such; an issue that will be addressed further in the discussion.

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<sup>32</sup> To ensure accuracy, using the partner ID, it was verified that both the co-resident and non-resident parent either had a new partner or no longer had a partner after separation, thereby excluding cases where the change in residence was for other reasons (e.g., loss of partner due to death).

### **3.4.3. Independent variable: individual income**

Individual income is the key explanatory variable and corresponds to each parent's annual net taxable income received in the year before separation. This measure ranges from €0 to €55,000 (or more) at €5,000 intervals. To analyse different parts of the income distribution, the variable was divided into quartiles, jointly for men and women. In addition to individual income, the ex-partner's income was included, operationalized in the same way as individual income. In robustness checks, an income level measure defined according to income tax brackets<sup>33</sup> was used, and the results remained consistent (see Figure A9 for individual income and Figure A10 for ex-partner income in the Appendix). In addition, to ensure consistency in the results, all analyses were repeated using a selected sample including parents who were still co-residing with their children one year after the union's dissolution (i.e., as of 1<sup>st</sup> January 2019 instead of 1<sup>st</sup> of January 2018). Again, the results (presented in the Appendix, Figure A11 and Figure A12) were consistent with those of the main analyses.

### **3.4.4. Control variables**

Control variables include age and age of the ex-partner in categories (18-29, 30-39, 40-49, 50+ years old), region of residence (Brussels-Capital, Flanders, Wallonia) and nationality (Belgian vs. Other). Since previous research has shown that children's characteristics can also affect co-residential parenthood decisions (Dahl & Moretti, 2008; Goldscheider, Scott, et al., 2015) all the models also include the age of the youngest child living in the household (0-2, 3-5, 6-10, 11-17), total number of minor children living in the household (1, 2, 3+) and gender of children living in the household (Both, Only boys, Only girls). All measures were lagged by one year to ensure parental characteristics were measured before separation and at the time decisions about new family living arrangements might have been made. Finally, a set of dummy variables

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<sup>33</sup> Individual income tax brackets and rates for 2017, published by the Belgium's Ministry of Finance.

(0 = no, 1 = yes) was added to the analysis, which are regarded as possible mediators for the effect of income on the co-residential parenthood status. Previous research consistently shows gender differences in repartnering after divorce or separation, with parents who have co-resident children being less likely to repartner, and women more often becoming the co-resident parent (Ivanova et al., 2013; Leopold, 2018). The first two mediating variables identify whether 1) the parent and 2) their ex-partner had entered a new relationship in the year following separation. Also, after separation, social networks and resources may play an even more important role due to the increased practical and emotional support that parents need (Hank & Buber, 2009; Jappens & Van Bavel, 2012). Since the proximity of social networks and family members facilitates contact and support, the family's spatial location might matter in the child-parent co-residence decision. Thus, the third mediating variable looks at whether the co-resident parent continues to live in the same municipality after the separation. Finally, the fourth variable measures whether the co-resident parent has at least one of their own parents living in the same municipality. Therefore the "no" category also includes cases where both parents are deceased or do not reside in Belgium.

### **3.4.5. Analytical strategy**

First, the demographic, socio-economic, and household characteristics of parents in the year before union dissolution are described, highlighting similarities and differences between fathers and mothers living with children (i.e., the co-resident parents) following union dissolution (Table 1). Linear probability regression models are then used to examine the economic factors (individual and ex-partner income) related to becoming the non-resident versus the co-resident parent after union dissolution<sup>34</sup>. The analysis proceeds in several steps.

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<sup>34</sup> Variance inflation factors (VIF) were computed to assess multicollinearity. All values were below the conventional threshold of 10 (mean VIF = 2.39), indicating no serious multicollinearity, though some moderate collinearity was observed among age-related covariates (individual's age and ex-partner's age).

First, to assess the overall relationships between income factors and co-residential parenthood status, and how these relationships may differ by gender, pooled models are estimated, including an interaction between individual income and gender (Figure 1) and between ex-partner income and gender (Appendix, Figure A13). Separate analyses are then conducted for men (Table 2) and women (Appendix, Table A6) to better understand the gender-specific effects of income on co-residential parenthood status.

### **3.5. Results**

#### **3.5.1. Descriptive analyses**

Table 1 shows summary statistics of the sample and key study variables for fathers and mothers co-residing with their children following union dissolution. These numbers reflect their characteristics in the year before separation. Results are presented separately by gender. Not surprisingly, children were most commonly living with their mother (76.2%), while one in four lived with their father (23.8%).

Looking at the individual characteristics, co-resident fathers were, on average, older than co-resident mothers. For example, nearly half of the co-resident fathers (46.4%) were under 40 years old, compared to most of the co-resident mothers (73.9%) being under 40. Co-residential fatherhood was more common in Flanders, than in other regions, compared to co-residential motherhood (58.6% vs. 53.3%), and less common in the Brussels-Capital Region (5.8% vs. 10.4%). The relatively high rate of co-residential motherhood in the Brussels-Capital Region is reflected in the higher proportion of co-resident mothers of non-Belgian nationality (12.7%) compared to co-resident fathers (5.6%), which may be linked to the region's higher concentration of non-Belgian residents. Also, the differing income distributions are noteworthy: nearly half of co-resident fathers (43.0%) were in the highest income quartile, whereas only 9.5% were in the lowest income quartile. Conversely, one-third of co-resident

mothers (34.6%) were in the lowest income quartile, compared to only 16.6% in the highest income quartile.

Resident mothers were more likely than fathers to have very young children (23.3% vs. 13.6%), while co-resident fathers tended to have older children (56% vs. 46.8% for children older than 6). Also, co-resident mothers often had one child (47.9%), while fathers usually had two or more (58%). This could be due to the greater economic resources necessary to support a larger family. Lastly, the share of co-resident fathers and mothers did not differ according to the gender of their children.

**Table 1.** Descriptive statistics for variables used in the linear probability analysis of children's living arrangements after parental separation.

|                                   | Residential status |             | Total       |
|-----------------------------------|--------------------|-------------|-------------|
|                                   | With father        | With mother |             |
| N of families (%)                 | 2516 (23.8)        | 8066 (76.2) | 10582 (100) |
| <i>Individual characteristics</i> |                    |             |             |
| Age (yrs)                         |                    |             |             |
| 18-29                             | 7.2                | 20.8        | 17.5        |
| 30-39                             | 46.4               | 53.1        | 51.5        |
| 40-49                             | 38.9               | 24.4        | 27.9        |
| 50+                               | 7.5                | 1.8         | 3.1         |
| Region of residence               |                    |             |             |
| Brussels                          | 5.8                | 10.4        | 9.3         |
| Flanders                          | 58.6               | 53.3        | 54.6        |
| Wallonia                          | 35.7               | 36.2        | 36.1        |
| Nationality                       |                    |             |             |
| Other                             | 5.6                | 12.7        | 11.0        |
| Belgian                           | 94.4               | 87.4        | 89.0        |
| Union type                        |                    |             |             |
| Cohabitation                      | 45.0               | 46.2        | 45.9        |
| Marriage                          | 55.0               | 53.8        | 54.1        |
| Income quartiles                  |                    |             |             |
| Lowest                            | 9.5                | 34.6        | 28.6        |
| Second                            | 19.0               | 27.5        | 25.5        |
| Third                             | 28.6               | 21.3        | 23.0        |
| Highest                           | 43.0               | 16.6        | 22.9        |
| New partner                       |                    |             |             |
| No                                | 68.5               | 70.9        | 70.3        |
| Yes                               | 31.5               | 29.1        | 29.7        |
| Same city                         |                    |             |             |
| No                                | 5.9                | 23.2        | 19.1        |
| Yes                               | 94.1               | 76.8        | 80.9        |
| Same city as at least one parent  |                    |             |             |
| No                                | 92.8               | 93.2        | 93.1        |
| Yes                               | 7.2                | 6.8         | 6.9         |

(continued)

**Table 1.** (continued)

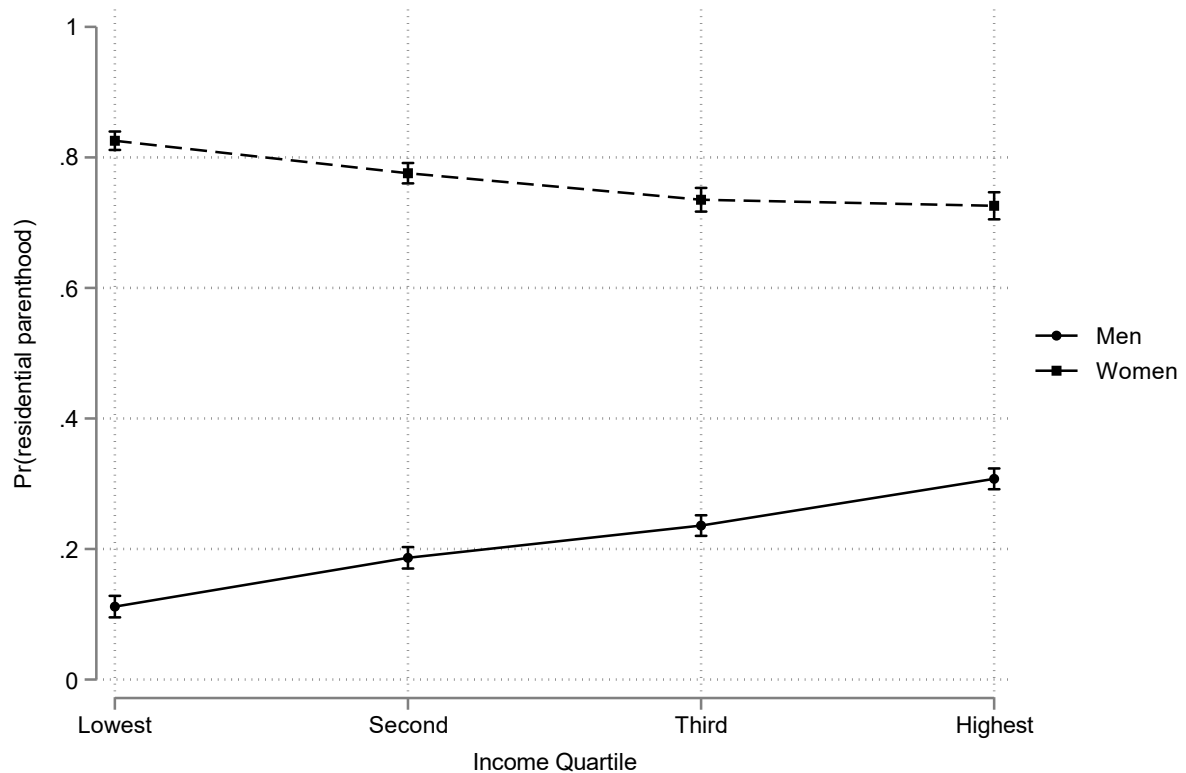
|                                      | Residential status |             |       |
|--------------------------------------|--------------------|-------------|-------|
|                                      | With father        | With mother | Total |
| <i>Children characteristics</i>      |                    |             |       |
| Age of youngest resident child (yrs) |                    |             |       |
| 0-2                                  | 13.6               | 23.3        | 21.0  |
| 3-5                                  | 30.5               | 29.9        | 30.1  |
| 6-10                                 | 37.8               | 31.5        | 33.0  |
| 11+                                  | 18.2               | 15.3        | 16.0  |
| N of minor resident children         |                    |             |       |
| 1                                    | 42.0               | 47.9        | 46.5  |
| 2                                    | 45.6               | 39.9        | 41.2  |
| 3+                                   | 12.4               | 12.3        | 12.3  |
| Gender of resident children          |                    |             |       |
| Both boys and girls                  | 33.5               | 29.9        | 30.8  |
| All boys                             | 34.1               | 36.0        | 35.5  |
| All girls                            | 32.4               | 34.1        | 33.7  |
| <i>Ex-partner characteristics</i>    |                    |             |       |
| Age (yrs)                            |                    |             |       |
| 18-29                                | 16.8               | 12.2        | 13.3  |
| 30-39                                | 56.4               | 46.8        | 49.1  |
| 40-49                                | 25.4               | 34.1        | 32.1  |
| 50+                                  | 1.4                | 6.8         | 5.6   |
| Income quartiles                     |                    |             |       |
| Lowest                               | 25.4               | 20.1        | 21.4  |
| Second                               | 27.3               | 23.7        | 24.6  |
| Third                                | 26.0               | 27.2        | 26.9  |
| Highest                              | 21.3               | 29.0        | 27.2  |
| New partner                          |                    |             |       |
| No                                   | 76.3               | 78.2        | 77.8  |
| Yes                                  | 23.7               | 21.8        | 22.2  |

Note: all characteristics are measured in the year parents are in a couple (2017). The presence of a new partner is measured in the year following separation (2019). Unless otherwise indicated, values are reported in percentages.

### 3.5.2. Multivariable analyses

To get an overview of the gender differences in the relationship between income and co-residential parenthood outcomes following union dissolution, Figure 1 shows the predicted probability of living with children across different individual income quartiles based on estimates using an interaction between income and gender.

**Figure 1.** Effect of individual income on the probability of co-residing with children after separation by income quartile and gender (interaction term). Predictive margins with 95% confidence intervals.



Note: the model includes all control variables.

Women had significantly higher probabilities of being the co-resident parent after union dissolution across all income quartiles compared to men. However, a clear effect of individual income emerged. Men in the highest income quartile had a predicted probability of 30.7%, which is nearly three times higher than that of men in the lowest income quartile, who had a

predicted probability of 11.2%. This suggests that higher-income men are much more likely to live with their children after union dissolution. In contrast, for women, this probability decreased slightly as income increased. For example, women in the lowest income quartile had a predicted probability of 82.6%, while women in the highest income quartile had a slightly lower predicted probability of 72.6%. This 10-percentage point difference suggests that although women are generally more likely to be the co-resident parent, higher income slightly reduces this likelihood.

To test the robustness of these results, the same model was run using the ex-partner's income as the key explanatory variable. The results, presented in Figure A13 of the Appendix, were a nearly identical mirror image with women's probability to co-reside with children declining considerably with higher levels of ex-partners' income.

The results of the linear probability models of co-residence following union dissolution are now presented. Six models were estimated, separately for men (Table 2) and women (Appendix, Table A6). Parental characteristics refer to the year before union dissolution, reflecting the characteristics of the parents at the time the child-parent co-residence decision was made. All models account for clustered standard errors at the couple level.

The first model (Model 1, Table 2) tested the probability of fathers being the co-resident (rather than non-resident) parent by looking at the direct effect of individual income, net of all control variables. The results indicate a positive and statistically significant effect of fathers' individual income on the likelihood of being the co-resident parent, consistent with the findings presented in Figure 1. Specifically, fathers in the highest income quartile were 15.3 percentage points more likely to be co-resident parents compared to fathers in the lowest quartile. The results also reveal a positive association between fatherhood co-residence and age, and a negative effect of the mother's age, other things being equal. Fathers were more likely to be

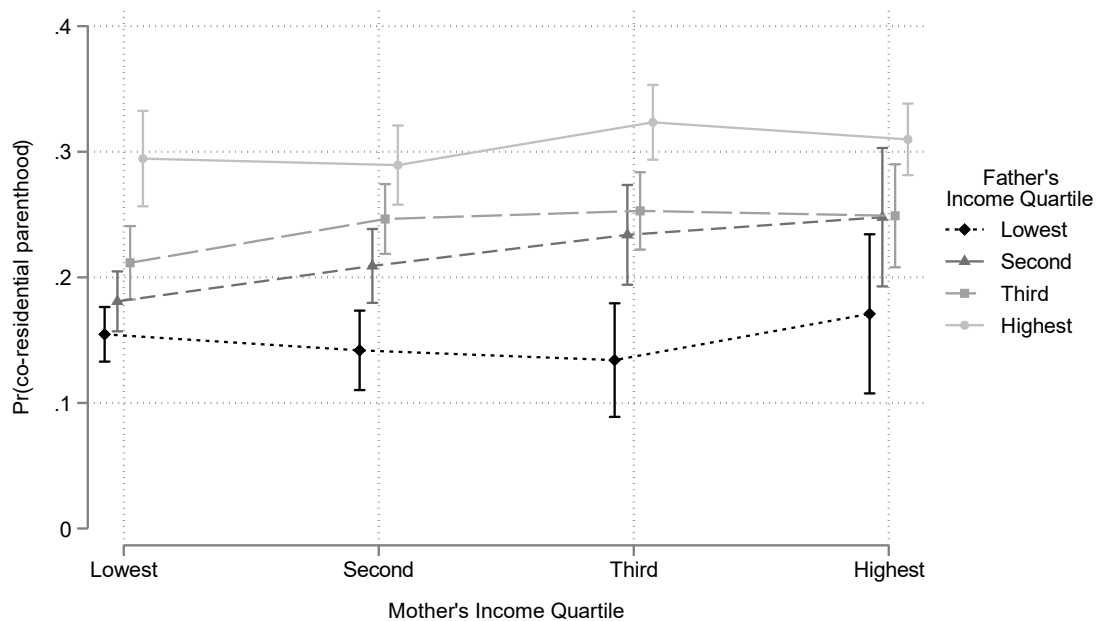
the co-resident parent if living in Flanders and Wallonia compared to those living in the Brussels-Capital region, and if having Belgian nationality. All these effects are significant. Conversely, the type of union (married vs. cohabiting) did not have a statistically significant effect. Regarding children characteristics, fathers were more likely to reside with their children if the children were older or if they had two children (as opposed to one). However, having three or more children showed no statistically significant effect, nor did the children's gender.

Model 2 investigated the effect of the ex-partner's income, i.e. the mother's income, on the probability of the father being the co-resident parent following union dissolution, net of the effect of the father's income. The results show a positive and significant association between higher mothers' income and the probability of fathers being the co-resident parent, consistent with the findings in Figure A13 (Appendix). Additionally, the associations with all other characteristics followed similar trends as in Model 1.

Model 3 incorporates both fathers' and mothers' incomes, to examine how each income source contributes to the likelihood of becoming a non-resident versus co-resident parent. The strong positive association between fathers' income and the likelihood of being the co-resident parent was confirmed, while the effect of mothers' income is weaker when including fathers' income.

Then, Model 4 adds an interaction term between the income variables of the two partners to account for the combined effect of both parental incomes (Thaning & Hällsten, 2020). To facilitate the interpretation of these interactions, Figure 2 shows the size effect and the substantive significance of the results (Bernardi et al., 2017).

**Figure 2.** Effect of individual (father's) and ex-partner (mother's) income on the probability of co-residing with children after separation. Predictive margins with 95% confidence intervals from Model 4. Interaction between individual income quartile and ex-partner's income quartile.



Note: the model includes all control variables.

The analysis indicated that despite the inclusion of interaction terms, the positive association between co-residential status and fathers' income remained statistically significant. Conversely, the relationship between co-residential status and mothers' income became negative and statistically insignificant. Additionally, the model showed some significant interactions, suggesting that the combination of certain income levels of both parents affected the probability of co-residential parenthood. For example, the positive coefficient (0.07) suggested that fathers in the second income quartile with ex-partners in the third income quartile were more likely to be co-resident fathers than couples in the lowest income quartile (reference category). Similarly, fathers in the third income quartile with ex-partners in either the second or third quartiles had increased co-residential probabilities, suggesting that combinations of middle to upper-middle income levels for both parents are associated with

higher chances of the father being the co-resident parent. A more nuanced picture emerges from the interaction terms for fathers in the highest income quartile, where higher income levels among men generally corresponded to an increased likelihood of co-residential fatherhood. However, this effect becomes somewhat more pronounced when women are in the third income quartile, though it is not statistically significant. However, overall, also the interaction results suggest that men's income, rather than women's, matters more in child-parent co-residence decisions after separation.

***The mediating effects of new relationships and social network.*** In order to examine possible mediating effects, additional models were estimated to assess whether entering a new relationship after union dissolution and proximity to social networks account for part of the association between income and child-parent co-residency. To this end, a fifth model (Model 5) was first estimated, incorporating two variables indicating whether the co-resident parent and the ex-partner entered a new relationship in the year following union dissolution. The rationale is that gender differences in repartnering are conditional on the presence of children (Leopold, 2018). As shown in Table 2, for fathers, having a new partner significantly decreased the likelihood of being the co-resident parent (coefficient = -0.03). At the same time, for mothers (the ex-partners), having a new partner increases the likelihood of the father being the co-resident parent (coefficient = 0.03). Single parents resulting from a union, whereby repartnering by either the father or the mother increases the likelihood that the other parent becomes the co-resident parent.

The inclusion of these variables, however, does not affect the coefficients of fathers' and mothers' income. This suggests that, for fathers, financial resources are the primary determinants to co-reside with their children after separation, regardless of the presence of new relationships. While new partnerships may influence parenting dynamics, for example by

sharing the division of childcare responsibilities (Cancian et al., 2014), they do not appear to directly mediate the effect of income on co-residential parenthood. Finally, Model 6 introduces two additional variables to control for the potential effect of social networks on co-residential parenthood. Remaining in the same municipality as before separation has a strong and statistically significant positive effect (coefficient = 0.26) on the likelihood of parents co-residing with their children. This may be due to factors beyond financial resources, such as the ability to keep the house after separation or remain living in the same area, allowing their children to continue attending the same school and maintaining their social connections. Living in the same municipality as at least one parent, on the contrary, does not have a statistically significant effect. Similarly to Model 5, these factors do not affect the main results regarding the association with fathers' and mothers' incomes and post-dissolution living arrangements. This finding further underscores the importance of financial resources for fathers in shaping parental residency decisions after separation. While proximity to social networks, such as living in the same municipality post-separation, might be expected to play a role in easing logistical challenges or providing emotional and informal support, it does not directly affect the likelihood of co-residential parenthood. Fathers' economic capacity remains a central determinant of child-parent co-residency decisions after union dissolution, independent of other potential mediating factors.

***Maternal co-residence.*** The results for the probability of mothers becoming the co-resident parents after union dissolution are presented in the Appendix (Table A6). Like for fathers, income emerges as a significant predictor of co-residential status. However, the direction of the association is reversed. For example, Model 1 tested the direct effect of mothers' individual income on the probability of being the co-resident parent, net of control variables. Contrary to the findings for fathers, a negative and statistically significant association between individual income and maternal co-residence emerged, with mothers in

the highest income quartile 7 percentage points less likely to be the co-resident parent compared to those in the lowest quartile. Model 2 examined the effect of the ex-partner's income, i.e. the father's income. The results show a negative and statistically significant association between fathers' income and the likelihood of mothers being the co-resident parent, suggesting that higher paternal income reduces maternal co-residential chances (coefficient = -0.15). Model 3 included both mothers' and fathers' incomes. The negative effect of fathers' income on mothers' co-residential status remained significant, while the negative effect of mothers' own income was attenuated. Model 4 introduced an interaction term between the two income variables to explore their joint effect. The results confirm that mothers whose ex-partners had higher incomes were significantly less likely to be the co-resident parent, while the effect of mothers' income was no longer statistically significant. No statistically significant interaction effects were found. Model 5 added controls for new partnerships, for both mothers and fathers. The inclusion of these variables did not change the main associations: fathers' income remained a significant and negative predictor of maternal co-residence with children after union dissolution. Finally, Model 6 included indicators for whether the parent remained in the same municipality or near their own parents after separation. These factors did not affect the key results, and the negative association between fathers' income and the probability of mothers being the co-resident parent remained statistically significant.

**Table 2.** Regression analyses for variables predicting parental coresidence with children after union dissolution for men.

|                                                     | Model 1  |      | Model 2  |      | Model 3  |      | Model 4  |      | Model 5  |      | Model 6  |      |
|-----------------------------------------------------|----------|------|----------|------|----------|------|----------|------|----------|------|----------|------|
|                                                     | Coef.    | SD   | Coef.    | SD   | Coef.    | SD   | Coef.    | SD   | Coef.    | SD   | Coef.    | SD   |
| Income quantile ( <i>ref. Lowest</i> )              |          |      |          |      |          |      |          |      |          |      |          |      |
| Second                                              | 0.05***  | 0.01 |          |      | 0.05***  | 0.01 | 0.03*    | 0.02 | 0.03**   | 0.02 | 0.02     | 0.02 |
| Third                                               | 0.09***  | 0.01 |          |      | 0.08***  | 0.01 | 0.06***  | 0.02 | 0.06***  | 0.02 | 0.05***  | 0.02 |
| Highest                                             | 0.15***  | 0.01 |          |      | 0.14***  | 0.01 | 0.14***  | 0.02 | 0.14***  | 0.02 | 0.12***  | 0.02 |
| Ex-partner's income quantile ( <i>ref. Lowest</i> ) |          |      |          |      |          |      |          |      |          |      |          |      |
| Second                                              |          |      | 0.03***  | 0.01 | 0.01     | 0.01 | -0.01    | 0.02 | -0.01    | 0.02 | 0.00     | 0.02 |
| Third                                               |          |      | 0.07***  | 0.01 | 0.03***  | 0.01 | -0.02    | 0.03 | -0.02    | 0.03 | 0.00     | 0.02 |
| Highest                                             |          |      | 0.07***  | 0.01 | 0.03**   | 0.01 | 0.02     | 0.03 | 0.02     | 0.03 | 0.04     | 0.03 |
| Age ( <i>ref. 18-29</i> )                           |          |      |          |      |          |      |          |      |          |      |          |      |
| 30-39                                               | 0.05***  | 0.01 | 0.06***  | 0.01 | 0.05***  | 0.01 | 0.05***  | 0.01 | 0.05***  | 0.01 | 0.04***  | 0.01 |
| 40-49                                               | 0.07***  | 0.02 | 0.08***  | 0.02 | 0.07***  | 0.02 | 0.07***  | 0.02 | 0.07***  | 0.02 | 0.05***  | 0.02 |
| 50+                                                 | 0.11***  | 0.02 | 0.11***  | 0.02 | 0.11***  | 0.02 | 0.11***  | 0.02 | 0.11***  | 0.02 | 0.07***  | 0.02 |
| Ex-partner's age ( <i>ref. 18-29</i> )              |          |      |          |      |          |      |          |      |          |      |          |      |
| 30-39                                               | -0.06*** | 0.01 | -0.05*** | 0.01 | -0.06*** | 0.01 | -0.06*** | 0.01 | -0.06*** | 0.01 | -0.05*** | 0.01 |
| 40-49                                               | -0.12*** | 0.02 | -0.11*** | 0.02 | -0.13*** | 0.02 | -0.13*** | 0.02 | -0.13*** | 0.02 | -0.10*** | 0.02 |
| 50+                                                 | -0.16*** | 0.04 | -0.16*** | 0.04 | -0.17*** | 0.04 | -0.17*** | 0.04 | -0.17*** | 0.04 | -0.13*** | 0.03 |
| Region of residence ( <i>ref. Brussels</i> )        |          |      |          |      |          |      |          |      |          |      |          |      |
| Flanders                                            | 0.05***  | 0.01 | 0.06***  | 0.01 | 0.05***  | 0.01 | 0.05***  | 0.01 | 0.05***  | 0.01 | 0.02     | 0.01 |
| Wallonia                                            | 0.05***  | 0.01 | 0.05***  | 0.01 | 0.04***  | 0.01 | 0.04***  | 0.01 | 0.04***  | 0.01 | 0.02*    | 0.01 |
| Nationality ( <i>ref. Other</i> )                   |          |      |          |      |          |      |          |      |          |      |          |      |
| Belgian                                             | 0.09***  | 0.01 | 0.11***  | 0.01 | 0.08***  | 0.01 | 0.08***  | 0.01 | 0.08***  | 0.01 | 0.08***  | 0.01 |
| Union type ( <i>ref. Cohabitation</i> )             |          |      |          |      |          |      |          |      |          |      |          |      |
| Marriage                                            | -0.01    | 0.01 | -0.01    | 0.01 | -0.01    | 0.01 | -0.01    | 0.01 | -0.01    | 0.01 | -0.01    | 0.01 |

(continued)

**Table 2.** (continued)

|                                                                 | Model 1 |      | Model 2 |      | Model 3 |      | Model 4 |      | Model 5 |      | Model 6 |      |
|-----------------------------------------------------------------|---------|------|---------|------|---------|------|---------|------|---------|------|---------|------|
|                                                                 | Coef.   | SD   | Coef.   | SD   | Coef.   | SD   | Coef.   | SD   | Coef.   | SD   | Coef.   | SD   |
| Age of youngest resident child ( <i>ref. 0-2 years</i> )        |         |      |         |      |         |      |         |      |         |      |         |      |
| 3-5                                                             | 0.07*** | 0.01 | 0.08*** | 0.01 | 0.07*** | 0.01 | 0.07*** | 0.01 | 0.07*** | 0.01 | 0.06*** | 0.01 |
| 6-10                                                            | 0.10*** | 0.01 | 0.10*** | 0.01 | 0.10*** | 0.01 | 0.10*** | 0.01 | 0.10*** | 0.01 | 0.08*** | 0.01 |
| 11+                                                             | 0.11*** | 0.02 | 0.12*** | 0.02 | 0.11*** | 0.02 | 0.11*** | 0.02 | 0.11*** | 0.02 | 0.10*** | 0.02 |
| N of minor resident children ( <i>ref. 1</i> )                  |         |      |         |      |         |      |         |      |         |      |         |      |
| 2                                                               | 0.03**  | 0.01 | 0.03*** | 0.01 | 0.03**  | 0.01 | 0.03**  | 0.01 | 0.03**  | 0.01 | 0.02**  | 0.01 |
| 3+                                                              | 0.02    | 0.02 | 0.03    | 0.02 | 0.03*   | 0.02 | 0.03    | 0.02 | 0.03    | 0.02 | 0.03*** | 0.02 |
| Gender of resident children ( <i>ref. both boys and girls</i> ) |         |      |         |      |         |      |         |      |         |      |         |      |
| All boys                                                        | -0.01   | 0.01 | -0.01   | 0.01 | -0.01   | 0.01 | -0.01   | 0.01 | -0.01   | 0.01 | -0.01   | 0.01 |
| All girls                                                       | -0.01   | 0.01 | -0.01   | 0.01 | -0.01   | 0.01 | -0.01   | 0.01 | -0.01   | 0.01 | 0.00    | 0.01 |
| New partner ( <i>ref. No</i> )                                  |         |      |         |      |         |      |         |      |         |      |         |      |
| Yes                                                             |         |      |         |      |         |      |         |      | -0.03** | 0.01 | -0.01   | 0.01 |
| Ex-partner new partner ( <i>ref. No</i> )                       |         |      |         |      |         |      |         |      |         |      |         |      |
| Yes                                                             |         |      |         |      |         |      |         |      | 0.03**  | 0.02 | 0.03    | 0.02 |
| Same city ( <i>ref. No</i> )                                    |         |      |         |      |         |      |         |      |         |      |         |      |
| Yes                                                             |         |      |         |      |         |      |         |      |         |      | 0.26*** | 0.01 |
| Same city as at least one parent ( <i>ref. No</i> )             |         |      |         |      |         |      |         |      |         |      |         |      |
| Yes                                                             |         |      |         |      |         |      |         |      |         |      | -0.01   | 0.02 |

(continued)

**Table 2.** (continued)

|                                                         | Model 1 |      | Model 2 |      | Model 3 |      | Model 4 |      | Model 5 |      | Model 6 |      |
|---------------------------------------------------------|---------|------|---------|------|---------|------|---------|------|---------|------|---------|------|
|                                                         | Coef.   | SD   | Coef.   | SD   | Coef.   | SD   | Coef.   | SD   | Coef.   | SD   | Coef.   | SD   |
| Interaction Income quantile*Expartner's income quantile |         |      |         |      |         |      |         |      |         |      |         |      |
| Second quantile*second quantile                         |         |      |         |      |         |      | 0.04    | 0.03 | 0.04    | 0.03 | 0.04    | 0.03 |
| Second quantile*third quantile                          |         |      |         |      |         |      | 0.07**  | 0.03 | 0.07**  | 0.03 | 0.06*   | 0.03 |
| Second quantile*highest quantile                        |         |      |         |      |         |      | 0.05    | 0.05 | 0.05    | 0.05 | 0.03    | 0.04 |
| Third quantile*second quantile                          |         |      |         |      |         |      | 0.05*   | 0.03 | 0.05*   | 0.03 | 0.02    | 0.03 |
| Third quantile*third quantile                           |         |      |         |      |         |      | 0.06*   | 0.03 | 0.06*   | 0.03 | 0.04    | 0.03 |
| Third quantile*highest quantile                         |         |      |         |      |         |      | 0.02    | 0.04 | 0.02    | 0.04 | 0.01    | 0.04 |
| Highest quantile*second quantile                        |         |      |         |      |         |      | 0.01    | 0.03 | 0.01    | 0.03 | -0.02   | 0.03 |
| Highest quantile*third quantile                         |         |      |         |      |         |      | 0.05    | 0.04 | 0.05    | 0.04 | 0.04    | 0.03 |
| Highest quantile*highest quantile                       |         |      |         |      |         |      | 0.00    | 0.04 | 0.00    | 0.04 | -0.02   | 0.04 |
| Constant                                                | -0.04   | 0.02 | -0.03   | 0.02 | -0.04   | 0.02 | -0.02   | 0.02 | -0.02   | 0.02 | -0.16   | 0.02 |
| N individuals                                           | 10,582  |      | 10,582  |      | 10,582  |      | 10,582  |      | 10,582  |      | 10,582  |      |

Note: SD = Standard Deviation. Ref. = Reference category.

\*p < .05; \*\*p < .01; \*\*\*p < .001.

### **3.6. Discussion and conclusions**

Although living with the mother remains the predominant arrangement for children following parental separation, the diversity of living arrangements has increased over recent decades, with a growing number of fathers also becoming co-resident parents. The aim of this chapter was to contribute to the literature on post-dissolution parent-child living arrangements decisions, particularly the determinants of whether children co-reside with their mother or father following union dissolution. Using Belgian administrative data, the analysis provides insights into the role of both paternal and maternal characteristics in shaping these living arrangements.

So, how do separating couples organize children's living arrangements? One expectation is that parents will continue to maintain similar parental roles as they did before the separation. Therefore, in families where fathers were already actively involved in their children's lives, they might continue living with their children after separation. Similarly, mothers who were primarily responsible for childcare before separation are expected to remain the co-resident parent afterwards. Another expectation, however, is that the decision is part of a bargaining and negotiation process. Assuming that the preferred outcome for parents is to reside with their children, the parent with greater power in the relationship is likely to achieve this arrangement.

Overall, the findings suggest that it is primarily the fathers' individual income, rather than the mothers' or the combination of both parents' incomes, that affects the decision regarding child-parent co-residence following union dissolution. First, it was found that higher-income fathers were significantly more likely to be co-resident parents compared to their lower-income counterparts, confirming hypothesis H1a, which indicates the relevance of greater absolute economic resources for men in determining co-residential arrangements after union

dissolution. This result remained robust even after introducing additional control variables into the baseline model. In contrast, hypothesis H1b, which posits lower absolute economic resources as determinants of co-residential parenthood for women, was only partially supported. While the baseline model for women (Table A6) showed that lower-income mothers were more likely than higher-income mothers to co-reside with their children, this trend disappeared and became statistically insignificant once other parental characteristics were accounted for.

These findings highlight significant gender inequalities in post-separation parent-child living arrangements. On the one hand, men with greater absolute economic resources are more likely to live with their children, possibly because they may have more gender-equal attitudes (Lomazzi et al., 2018). On the other hand, this could also somehow reflect adherence to traditional social norms, such as the notion of the “good father”, according to which men are expected to demonstrate care and responsibility for their children. Indeed, while “new” fathers express a desire to be highly engaged in their children’s lives, they continue to uphold a strong sense of financial responsibility for their families (Kaufman, 2013). At the same time, for women it often entails a reinforcement of traditional caregiving roles, in which childcare is assumed to be their responsibility (Schmidt et al., 2023), regardless of the financial resources they have available. These patterns reflect a life course perspective, with long-term consequences of union dissolution shaped by pre-existing social conditions. At the same time, intersectionality between caregiving responsibilities and economic resources shape parent-child post-separation living arrangements.

Second, the second hypothesis (H2), which was based on the assumption that the parent with greater relative economic resources would become the co-resident parent, was not fully supported. In fact, the results from the interaction between fathers’ and mothers’ incomes did

not reveal a clear pattern suggesting that bargaining and negotiation processes were related. This leads to the conclusion that, on the one hand, it is the absolute income of men that plays a more significant role in residence decisions, while, on the other hand, other unexamined mechanisms may still be at play. For example, the relationship the children had with their parents before separation may influence the final decision, with the parents who had the strongest relationship with their children becoming the co-resident parents after separation. In this case, as parents with higher education have better relationships with their children (Conger et al., 2010) they might also be more likely to co-reside with them. Another aspect concerns the diffusion of “intensive mothering” as a new standard (Hays, 1996). This societal expectation for mothers to be highly committed to their children while also managing work outside the household has led to conflicting demands that shape maternal identities (Ennis, 2014). Thus, mothers may “self-select” as co-resident parents due to these widely accepted intensive mothering norms.

Taken together, the findings in this chapter underscore how single parenthood is shaped by the intersection of gender and socioeconomic status, rather than by either dimension alone. The fact that men’s absolute income remains a strong predictor of co-residence, while women’s income does not, highlights that gendered norms around caregiving and breadwinning continue to structure expectations and opportunities differently for mothers and fathers. High-income men may be enabled to fulfil the role of the “good father” both by providing financially and by gaining legitimacy as co-resident parents, while low-income men remain excluded from this possibility. Conversely, low-income women often continue to serve as co-resident parents not because they have the resources to do so, but because normative expectations around intensive mothering leave them with little choice. For higher-income women, stronger labour market attachment may make non-residential or shared arrangements more acceptable or feasible, yet also socially penalised. These patterns reveal that single parenthood and post-separation living

arrangements are best understood as outcomes of intersectional processes that combine structural inequalities with embedded cultural norms.

This study does not come without some limitations. First, the study relies on administrative data that although allows to include fathers in the picture, they do not allow to capture the full complexity of family dynamics (i.e. distinguish between sole and joint custody). Shared residence after separation is a growing phenomenon in Belgium (Vanassche et al., 2017). Therefore, it is likely that some of the co-resident parents in the sample opted for shared residence at the time of separation. However, the results of this study highlight the importance of absolute individual resources for fathers in becoming co-resident parents after separation. In contrast, existing research highlights that both parents need greater financial resources to cover the additional costs associated with shared residency (Cancian et al., 2014; Cancian & Meyer, 1998; Poortman & van Gaalen, 2017). This association, however, was not supported by the findings. Second, some high-income fathers may choose to register their children as co-residing for tax deduction purposes. However, since May 2017, Belgian law mandates that separated parents must declare the residence address where the child spends the majority of their time, thereby limiting previous flexibility in determining the child's domicile. Moreover, in cases of equally shared custody (*hébergement égalitaire*), even if the children are officially domiciled with one parent, the other may still be entitled to half of the tax benefit for dependent children. In Wallonia and Brussels, the property tax reduction (*précompte immobilier*) for dependent children may also be shared between both parents. These provisions further limit the scope for potential strategic domiciliation motivated by financial considerations<sup>35</sup>. Third, the data do not allow to investigate other possible related factors, such

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<sup>35</sup> <https://www.droitsquotidiens.be/fr/question/ou-sont-domicilies-les-enfants-si-se-separe>

as subjective factors (e.g. parental preferences and family values), or parental health conditions (Goldscheider, Scott, et al., 2015).

Despite these limitations, the findings have important implications for family policy and child welfare practices. The strong influence of individual economic resources for men on co-residential parenthood decisions after union dissolution suggests that policies aimed at supporting a more equitable share of parenting responsibilities should focus on reducing financial barriers for both parents. Furthermore, the research highlights the need for legal systems to recognise and address gendered disparities when making custody decisions. There may in fact be a bias towards high-income fathers in custody arrangements, which could disproportionately affect lower-income fathers and limit their ability to participate in co-parenting. As custody arrangements involving fathers continue to rise in Europe, future policy initiatives should focus on mitigating the financial barriers that prevent some parents from maintaining regular co-residency with their children.

## **Chapter 4**

# **The gendered economic consequences of forming a single-parent household after separation\***

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#### **4.1. Abstract**

This chapter documents gender differences in income trajectories before and after forming a single-parent household following separation in Belgium between 2005 and 2018. Previous research has shown that the economic consequences of partnership dissolution are less severe for fathers than for mothers because of the greater likelihood for women to live with children after separation than men. However, it remains unclear how economic conditions change when men live with children after partnership dissolution. Combining information from the Belgian National Register and the Tax- over 14 years, this chapter estimates time-distributed fixed effects (TDFFE) models on a sample of 47,496 men and 151,389 women to investigate how the transition into a register single-parent household after separation impacts equivalized household income, as well as other income measures, from 5 years before to 5 years after the event. Overall, there is an economic disadvantage related to becoming a single parent co-residing with children after separation for both men and women. Hence, single fathers are at risk of economic vulnerability, but, after transitioning into a single-parent household, men lose less in terms of partner income and are faster to recover in terms of couple and equivalized household income than women do. Men experience important drops in income after becoming a single parent co-residing with children, but drops in income are greater for women.

## 4.2. Introduction

High-income societies have not yet managed to minimize economic differentials between two-parent and single-parent families. Despite an increase in work intensity among single parents (Nieuwenhuis, 2020) almost half (44.1%) of dependent children living in single-parent families are at risk of poverty or social exclusion in Europe (Eurostat, 2022). Low income often results from lower labour force participation among parents due to increased childcare needs, and a low number of earners in the household as compared to dual-breadwinner households, which are increasingly common.

Existing studies have shown gender disparities in the economic consequences of union dissolution (Hogendoorn et al., 2019; Leopold & Kalmijn, 2016). Particularly, women tend to fare worse than men as they are more likely to obtain custody of their children and lose more partner income after separation as compared to men (Mortelmans & Defever, 2018; Poortman, 2000). However, it is unclear what happens when men co-reside with children after separation. Therefore, this chapter aims to answer the following research question: *Does becoming the co-resident parent after separation have the same consequences for the income of fathers as for mothers?*

Answering this question is relevant to improve the understanding of how economic disadvantages experienced by women are produced, but also to understand men's economic situation as societies might become more gender egalitarian. Single-father households have grown steadily across Europe over the last decade (Nieuwenhuis, 2020). In Belgium, one in five single-parent families is now headed by a man. Studying their economic situation can give us some insight into whether trends towards a more gender-equal division of co-residence after separation or divorce could equalize gender differences in the economic consequences of union dissolution (Mortelmans, 2020).

A large body of research has investigated income changes before and after union dissolution for men and women in general (Harkness, 2018; McManus & DiPrete, 2001; Poortman, 2000; Tach & Eads, 2015). However, the relatively small number of men co-residing with children after separation has often prevented studies from studying their economic situation (Mortelmans, 2020; Ongaro et al., 2009). Some evidence exists that, when compared to fathers in couples, single fathers co-residing with children are less educated, less likely employed and face a disproportionately high risk of poverty (Bernardi et al., 2018). However, in comparison to single mothers co-residing with children, single fathers seem to fare better. They have, for example, older children (which allows them to combine work and childcare more easily) and the time they spend in a single-father household is shorter than for single mothers (Bernardi et al., 2018). As far as is known, only one study provided descriptive evidence on income changes after entering a single-parent household for men. This study showed that men who co-reside with children after union dissolution do experience household income losses (Mortelmans & Defever, 2018; for similar results on poverty see also Thielemans & Mortelmans, 2022).

This study goes beyond these results by estimating gender differences in the effects of transitioning into a single-parent household on equivalized household income and testing their statistical significance. In addition, for the first time, this study documents the pathways through which gender differences in the effects of entering a single-parent household are produced, while also examining the moderating effect of education. The moderating effect of socioeconomic factors has received increasing attention over the last years as it is important for understanding the role single parenthood plays in socioeconomic inequality more generally (Hogendoorn, 2022), but many studies do not look at single fathers (e.g. Ananat & Michaels, 2008; Nylin, 2020), and none at co-resident fathers in particular. Can single fatherhood become an important factor strengthening socioeconomic inequality among men too?

To achieve these goals, this study uses the largest sample to date by pooling different years (2005-2018) of data from Belgian administrative records (the DEMOBEL and the IPCAL datasets). Time-distributed fixed effects (TDFE) models were used to analyse changes in equivalized household income, as well as a range of other income measures, before and after the transition to single fatherhood and single motherhood.

### **4.3. Background and hypotheses**

#### **4.3.1. Gender inequality and single-father households**

The larger consequences of union dissolution for women's household income compared to men's are related to several society-wide gender inequalities. Firstly, women are less often (full-time) employed, have less financially rewarding occupations, and, even if they have the same occupation, earn less than men (England, 2006). Because women earn less than men, on average, they will lose more from a male partner leaving the household than men do when a female partner leaves within different-sex relationships (Harkness, 2013; Radenacker, 2020). This also implies that as dual-breadwinner families become the norm, and if the gender gap in earnings becomes smaller, gender differences in the consequences related to union dissolution are expected to decline (Oppenheimer, 1997). Indeed, McManus and DiPrete (2001) showed how men also lose in terms of equivalized household income when their partner leaves the household, particularly in the United States, a country where dual breadwinner couples are common.

The second feature of gender inequality that affects the consequences of union dissolution is the unequal division of care responsibilities. After union dissolution, children often live with their mothers, which can make it harder for women to remain full-time employed or increase their labour force participation (Mortelmans & Defever, 2018; Poortman, 2000). In addition, finding a new partner can be harder when living with children (Di Nallo, 2019), whereas partner income is another way of increasing household income. We know much

less about the extent to which men's income losses following union dissolution increase as they take on more childcare responsibilities. This chapter, therefore, focuses on fathers who co-reside with their children after union dissolution (referred to as "transitioning into a single-parent household"). The remainder of the literature review discusses the previously addressed mechanisms (own earnings, losses in partner income, and repartnering) from the perspective of men who transition into a single-parent household and compare their situation to women who enter single-parent households.

### ***Mechanism 1: Changes in Own Earnings***

After entering a single-parent household, the need for more income and time increases as access to partner's income and time is reduced. Hence, on the one hand, single parents have incentives to increase employment to compensate for losses in economic resources. On the other hand, single parents could feel pressure to reduce employment to meet increased time demands related to childcare (Uunk, 2004). Which process dominates is likely to depend on individual-level factors, such as job flexibility, earning capacity, access to childcare services, or the ability to outsource childcare. For example, childcare services can reduce time pressures for single parents, and welfare state support can compensate for income losses after separation (van Damme et al., 2009). There can also be constraints on who has the possibility to increase employment, which can be more limited in areas with high unemployment. Increasing work hours can also be complicated within given jobs and might require changing jobs or occupations. Indeed, single parents might look for jobs that allow for better possibilities to combine work and family responsibilities. This calls attention to the importance of looking at earnings trajectories for longer periods after separation, as increased care demands can prevent single parents from upward mobility in the labour market and attaining related increases in earnings in the long term (Nylén, 2020; Radenacker, 2020; Tamborini et al., 2015). Indeed,

many studies find that single mothers increase employment and earnings (before and) after separation, but that they experience long-term earnings penalties as compared to partnered women (Nylin, 2020; Radenacker, 2020; Tamborini et al., 2015; Uunk, 2004; van Damme et al., 2009).

Can we expect similar changes in earnings for men who transition into single-father households? Women are more likely to work in part-time jobs (and less likely to do any paid work) than men (Stier & Lewin-Epstein, 2000). Even though part-time employed individuals might not find a full-time job, men who become single co-resident parents may find it more often challenging to increase their involvement in paid employment since they typically already hold full-time jobs (Nieuwenhuis, 2020). Full-time employed individuals could take on a second job, but time constraints are likely to pose a great obstacle for such strategies to increase income. Hence, men might be less able to increase earnings as compared to women, because they are more likely to have high working hours already. Hence, it is expected that *the transition into a single-parent household, on average, is related to larger increases in earnings for women than for men* (Hypothesis 1).

At the same time, gender norms related to parenting can increase the help that single fathers receive with childcare from people in their environment as compared to the help single mothers receive. An important factor here is the involvement of ex-partners. This chapter focuses on co-residence with children; hence it might be that single fathers more often share custody with their former partners than single mothers and therefore receive more help from ex-partners. Higher levels of help with childrearing might make it easier for men to perform well at work, make more ambitious career choices, and thereby avoid earnings losses in the long run.

### ***Mechanism 2: Loss of Partner Income***

Separation and divorce are the primary pathways through which individuals enter into single parenthood in contemporary societies (Bernardi et al., 2018). As argued by Oppenheimer (1997), women increasingly participate in the labour force, resulting in mothers making substantial contributions to their household income (Blossfeld & Drobnič, 2001). Consequently, when a partnership breaks down (or the partner dies), the loss of partner income has a significant impact on the financial situation of both fathers and mothers in couples where both individuals work (Brewer & Nandi, 2014). However, women experience more pronounced income losses compared to men as they still earn less than men, even when full-time employed (Andreß et al., 2006). It lies within the line of expectation that this mechanism creates similar gender differences in income trajectories after entering single-parent households. This might not be the case if women who earn more than their partner are more likely to live with their children after separation than other women. However, being not aware of empirical evidence in that regard, it is very likely that *the transition to single parenthood has, on average, more negative consequences on partner income for women than men* (Hypothesis 2).

### ***Mechanism 3: Repartnering***

One major way through which individuals can recover from the negative financial effects of partnership dissolution is repartnering (Jansen et al., 2009). A substantial body of research has focused on understanding the mechanisms that explain the role played by children in the process of repartnering, as well as the gender disparities associated with the formation of new partnerships (Beaujouan, 2012; Steele et al., 2005). For example, norms in the repartnering market lead men to find a new partner more often and quicker than women (Poortman, 2007). Having dependent children reduces the time and resources available for parents to dedicate to

seeking a new partner (de Graaf & Kalmijn, 2003), and can affect parents' attractiveness in the repartnering market (Vanassche et al., 2015). In a longitudinal study, di Nallo (2019) found that mothers co-residing with their children show a significantly lower rate of repartnering compared to fathers in the same situation, which could be indicative of unequal gender norms related to whether parenthood is regarded as attractive in the partnering market or not. This would suggest that men's household income recovers more quickly after entering a single-parent household than women's household income. On the other hand, it might be possible that some individuals actively choose not to repartner or co-reside with a new partner, particularly among women in lower-status occupations, for whom the challenges of singlehood are perceived as comparable to those experienced within couple relationships (Bergström et al., 2019).

That said, research has often indicated a positive effect of repartnering for separated women and a negative effect of repartnering for separated men on their equivalized household income (Brewer & Nandi, 2014; Ozawa & Yoon, 2002). This can be explained by the fact that women who experience partnership dissolution usually find new partners who are in a better financial position compared to themselves, while men, who are usually already in a good economic position, often repartner with individuals who are economically less well-off (Mortelmans & Jansen, 2010). Hence, rates of repartnering are likely to favour the recovery of household income for men after entering a single-parent household, but the benefits of repartnering are greater for women, which might compensate for or even outweigh the importance of lower rates of repartnering. Nonetheless, it is hypothesized that, *on average, partner income recovers more quickly for men than for women after the transition into single parenthood* (Hypothesis 3).

### ***Moderating Effects: The Role of Education***

Single parenthood has been argued to contribute to socioeconomic inequalities as people with lower socioeconomic status are more likely to experience separation and enter a single-parent family (Härkönen, 2017; McLanahan, 2004). However, if the consequences of divorce are smaller among lower-educated people, the role of single parenthood could be more limited than expected (Brady et al., 2018). Previous research has come to mixed conclusions in this regard with some studies finding greater consequences among high-SES individuals (Fisher & Low, 2016; Hogendoorn, 2022) and others finding the opposite (Nylin, 2020; Radenacker, 2020), or the middle-educated being affected most (Jansen et al., 2009).

Some of the discrepancies found in previous research relate to the income definition used. Studies focusing on own earnings often find that, in the long run, women with lower levels of pre-separation earnings recover less quickly than women with higher levels of pre-separation earnings (Nylin, 2020; Radenacker, 2020). This could indicate difficulties in finding better jobs or more working hours for women with lower levels of human capital. Studies that also look at partner income and transfer income, however, noted that high-SES women lose more partner income and receive less transfer income than low-SES women, leading to an overall greater effect of separation on high-SES women's household income (Fisher & Low, 2016; Hogendoorn, 2022). Low-SES women appear also more likely to repartner than high-SES women, which could reflect higher levels of need or a less restricted partner market for low-SES women (Di Nallo et al., 2023; Pasteels & Mortelmans, 2017).

Hence, overall, women with lower-SES seem to lose less following separation than high-SES women. However, this conclusion can depend on whether one looks at absolute or relative drops in income. Higher-educated individuals are likely to lose more partner income

in absolute terms after separation because their partners are more likely to be higher educated too. However, it is less clear whether this holds in relative terms too (Endeweld et al., 2022).

Would we expect the same patterns for fathers who co-reside with their children after separation? Previous research has looked at the consequences of separation for men, however, without focusing on co-resident fathers. These studies yield mixed results. For example, Brewer and Nandi (2014) found that fathers with low levels of education are economically vulnerable to divorce, whereas those with higher education levels are more likely to maintain employment and work full-time following separation. Conversely, recent evidence from the Netherlands suggests that divorced fathers with lower education levels may experience economic benefits compared to their highly educated counterparts (Hogendoorn et al., 2019). An explanation for this is that lower-educated parents may be more likely to receive economic benefits, especially in more generous welfare states. However, these studies do not account for whether men and women continue to reside with their children after the dissolution of their partnership.

Co-residence with children is likely to affect the possibilities of increasing or decreasing one's own earnings and the possibilities of repartnering. Similar to high-SES women (Nylin, 2020), high-SES men might have more possibilities to prevent their earnings from being negatively affected by entering a single-parent household, for instance, by outsourcing unpaid labour and childcare. High-SES fathers might also more often have joint custody arrangements or receive help from extended family (Fisher & Low, 2016) which can minimize any negative impact on men's earnings. High-SES fathers are also likely to lose more partner income after separation than low-SES fathers, but this impact might be relatively smaller as compared to women because men rely relatively less on partner income for their economic well-being. Finally, compared to high-SES women, high-SES men might have better

possibilities to repartner related to gender norms regarding the attractiveness of having economic resources, even when fathers co-reside with children (Di Nallo, 2019).

Hence, even though it is expected that high-SES mothers to lose more income after entering a single-parent household than low-SES mothers, SES differences could be smaller among men because men rely less on partner income and because high-SES men are more likely to repartner than low-SES men (in contrast to what has been observed for women in previous research; Di Nallo, 2019). Also here, conclusions possibly differ depending on whether one looks at absolute or relative changes in income after transitioning into a single-parent household. Also, for high-SES men, partner income losses are likely to be large in absolute terms, and the same is to be expected from recoveries in partner income after repartnering, but it is unclear to what extent this holds in relative terms. Hence, it is expected that *the transition to single parenthood will have, on average, more negative consequences on household income for parents with a high level of education compared to those with lower education, but these educational differences are smaller among fathers than among mothers* (Hypothesis 4).

#### **4.3.2. The Belgian context**

In Belgium, around 15% of the households with dependent children are single-parent households; of these, approximately one-fifth are headed by men (Nieuwenhuis, 2020). At the same time, the share of non-resident mothers increased steadily from 15% in 1992 to 23% in 2018 (Zilincikova & Schnor, 2023). Individual data from the European Union Labour Force Survey (EU-LFS) 2019 indicate that Belgium has one of the highest rates of single-father households (around 3%) in Western Europe. At the same time, the European Union Statistics on Income and Living Conditions (EU-SILC) data 2018 indicate that Belgian single parents'

risk of poverty is among the highest in Europe (around 40% vs. EU-27 average of 34%); and increased compared to 2010 (around 34%).

The high poverty risk faced by single-parent households might be explained by contextual factors such as the labour market and social policies (Brady, 2019). Overall Belgium does well in terms of gender equality in the labour market and work-family policies that support parents to work. For example, it has one of the lowest gender pay gaps in Europe (5% vs. 13% of EU-27) (European Commission, 2022). Also, the Belgian welfare regime encourages parents to work by providing over 95% of children from age 3 to school age high quality and affordable childcare, the highest rate among EU-27 countries, which is vital for working parents (European Commission, 2018). However, the structure of the labour market is still gendered. In fact, although the gender employment gap (8%) is rather modest compared to the EU-27 average (11%), part-time work is much more common among women (37,5%) than men (10%) (Eurostat, 2023a).

Belgian family policies remain strongly gendered too. Parents have little incentive to take parental leave in general, but it remains longer for women than for men. However, single parents who can only rely on their own income, seldom take a career break. This is because Belgian leave schemes are based on flat-rate benefits and do not adequately compensate for the loss of income from work. Consequently, most single parents stay in (or enter) the labour market and may increase their working hours to cope with the new family composition (Struffolino & Mortelmans, 2018). Despite this, EU-SILC data show that in-work poverty among Belgian single parents has increased markedly over the last 10 years (Nieuwenhuis, 2020). This may be because single parents are mainly employed in part-time or low-paid positions.

Social allowances for single parents are not that generous. All children living in Belgium are entitled to the so-called “Child Benefit”, the amount of which depends on the child’s age and region of residence. Out of these contextual characteristics, the high levels of part-time employment could be most consequential for the results and might set Belgium apart from other contexts. Given the importance of the partner’s income when studying changes in household income, losses of income might be more limited for men in Belgium who often have partners who work part-time.

#### **4.4. Methods**

##### **4.4.1. Data and sample**

This study uses administrative data from DEMOBEL, the Statistics Belgium (STATBEL) demographic database, and the IPCAL dataset based on tax-register data, over 14 years (2005-2018). DEMOBEL data contain micro-level demographic (gender, age, nationality, civil status) and household (household size, municipality) information on the complete Belgian population since 1991. The database is updated on an annual basis with January 1st as the reference date. IPCAL data contain individual-level total net taxable income information derived from Belgians' annual tax returns from 2005 to 2018. The information reflects the fiscal situation as of the end of the previous year. Finally, data from the 2001 and 2011 Belgian Census is used to include educational-level information in additional analysis, with data being recorded in October of the respective census years. Population register data allow to overcome limitations related to sample sizes when studying single fathers and to precisely measure over time without attrition bias.

This study focuses on formerly partnered men and women in a different-sex relationship who transitioned into a single-parent household following union dissolution during the observation period (2005-2018). Hence, individuals who never lived in single-parent households are excluded from the sample. In addition, to increase the comparability of

trajectories, cases where single parenthood resulted from the loss of a partner or where parents moved in with children more than one year after separation are excluded. In line with the recommendations of Ludwig and Brüderl (2021), those who were already single parents when first observed were also excluded. Note that the sample does not capture cases where individuals separated and repartnered within the same year.

Single parents are defined as those “*fathers and mothers who live (i.e., are registered as domiciled in the same dwelling) with at least one minor child, but neither a partner nor other adults, in the same household*”. In additional analyses available upon request, single parents living with other adults in the same household are included, and this did not alter the results. Single parents might have both biological and non-biological children, or a partner registered at another address. While the data does not allow for the identification of joint custody, studies using population register data commonly define single (or partnered) parenthood by relying on residence information (for example, Härkönen et al., 2021, 2023; Jalovaara & Fasang, 2019). Also, recent findings from the Netherlands indicate that for the vast majority of children from separated parents (89%) the registered address matches the main place of residence (van der Wiel & Kooiman, 2019).

All individuals have at least two observations in the data. In this way, it was possible to examine changes in income over time before and after the transition to single parenthood. Cases with missing information on individual income (4.6%) and partner income (4.8%) were excluded. Missing information might refer to people who did not submit their tax return on time or are no longer in the registers (e.g. due to emigration or death). Together, these restrictions resulted in an analytical sample of 47,496 men (381,084 person-years) and 151,389 women (1,187,316 person-years) who became single parents between 2005 and 2018 (Table 1). The percentages and number of excluded individuals and observations are presented in the

Appendix, Table A7. Table 1 shows that the minimum cell size employed in the main analysis is 23,911 individuals (for men five years after entering a single-parent household).

**Table 1.** Longitudinal sample composition of men and women experiencing single parenthood

|           | Years before and after entering single parenthood |         |         |         |         |         |         |         |         |         |         | Total     |
|-----------|---------------------------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|-----------|
|           | -5                                                | -4      | -3      | -2      | -1      | 0       | 1       | 2       | 3       | 4       | 5       | N         |
| Men (N)   | 25,136                                            | 31,609  | 36,799  | 40,969  | 41,575  | 46,811  | 40,461  | 35,334  | 31,181  | 27,298  | 23,911  | 381,084   |
| Women (N) | 67,615                                            | 85,757  | 105,591 | 124,840 | 132,279 | 147,366 | 130,502 | 116,239 | 103,686 | 92,097  | 81,344  | 1,187,316 |
| Total (N) | 92,751                                            | 117,366 | 142,390 | 165,809 | 173,854 | 194,177 | 170,963 | 151,573 | 134,867 | 119,395 | 105,255 | 1,568,400 |

Note: N= absolute frequency in the data.

#### 4.4.2. Dependent variables: income

Three outcome variables are examined, including total household income to look at overall income effects, as well as individual and partner income to look at the role of various mechanisms producing overall changes in household income. First, individual income (annual net taxable income) is examined. This measure captures the vast majority of taxable income (e.g. work, property, investments, etc.), but not incomes taxed at sources, such as unemployment benefits or family allowances, an issue addressed in the discussion. Individual income was provided as a categorical variable of 5,000 euros intervals. This variable was first converted to continuous by assigning the mid-point income of each interval. For the upper open-ended category, the lowest value (42,500 euros) was adopted. Given the average income in Belgium ranged approximately from 18,000 euros per year in 2016 to 20,000 euros per year in 2021 (*Statbel*, 2023), this income variable is well-aligned with the income distribution in the study context. Nonetheless, robustness checks were performed using a higher upper limit of the income variable, which was available in the more recent years of the observation period; results were very similar (see Appendix, Figure A14). Finally, the natural logarithm of income was also examined to enable the interpretation of coefficients in terms of percentage changes.

Second, partner income is used to observe the economic consequences due to moving out of partners and the potential effect of repartnering as a recovery mechanism after entering single parenthood. Partner income captures the annual individual income of an individual's current co-residential partner, regardless of marital status.

Third, household income includes the total income of all members within the household equivalized according to the "OECD-modified scale" which assigns a value of 1 to the household head, 0.5 to each additional adult and 0.3 to each child (Hagenaars et al., 1994).

In additional analyses (Appendix, Figure A15 and Figure A16), couple's income (the sum of own and partner income) is examined and compared to the results for equivalized household income to see whether other household members (number of children and other adults moving in during t+1 to t+5) could play a role. For single people (individuals without a co-resident or non-resident partner) this measure corresponds to individual income. The operationalization of the four income variables is summarized in the Appendix (Table A8). All income variables are indexed at 2015 prices using the Consumer Price Index (CPI).

Further, gender differences in the likelihood of repartnering up to 5 years after entering single parenthood (0= without a partner, 1= with a partner) are looked at. Having a partner is defined as having a co-residing partner (based on residence information). Also, the proportion of those in poverty (0= above the poverty line, 1= below the poverty line) was estimated to enhance the interpretability of the results (presented in the Appendix, Figure A17). The poverty threshold (60%) was defined in relation to the median national household income of each year, using the equivalized household income variable that was created.

#### **4.4.3. Independent variable: time before/after single parenthood**

The main independent variable in all models identifies the number of years before and after the transition to single parenthood. Eleven categories are created by dividing the pre- and post-

event periods into 1-year intervals starting from five years before the event until five years after the event. Year 0 represents entrance into single parenthood. In the analysis, this event is defined as the first time someone is observed living as the only adult with at least one minor child in the household. A single parent might come from a couple with children that separated or divorced (which is by far the most common route in the sample as shown in the Appendix, Table A7), but cannot be a single person starting to live with children or someone who has become widowed between time  $t_{-1}$  and time  $t_0$ . In other words, all observations in the sample have a partner at the time  $t_{-1}$ , become single parents at the time  $t_0$  and may remain single or live with a new partner from time  $t_{+1}$  onwards. Also, since the variable indicating the presence of children in the household is time-varying, a person who is considered a single parent at the time  $t_0$  may no longer be single at the time  $t_{+1}$  if the youngest co-resident child becomes an adult (18 years old) but will remain part of the sample to monitor the impact of post-separation processes.

#### **4.4.4. Control variables**

Parents' time-varying characteristics known to be associated with changes in economic outcomes, and that precede the entrance into single parenthood in time are as follows: age (ten five-year categories), the number of co-resident minor children (0,1,2,3 or more), and age of the youngest child (four categories).

In a further step, the moderating role of education (low = less than high school diploma, medium = high school or post-secondary diploma, high = bachelor or higher degree) is also investigated. Information on education was only available for the census years 2001 and 2011, and the latest available value for each individual was used. Note that as the level of education information was not available for the entire population (17% of the analytical sample missing) due to the lack of availability in administrative data sources on which the Census data are based,

these analyses were conducted on a restricted sample (N= 1,301,467). The composition and construction of the restricted sample including the education variable are detailed in the Appendix (respectively, Table A9 and Table A10). Table 2 reports the summary statistics for the final sample used to perform the main analyses.

**Table 2.** Sample description

|                                            | Whole Sample |       | Men at T-1 |       | Women at T-1 |       |
|--------------------------------------------|--------------|-------|------------|-------|--------------|-------|
|                                            | % (mean)     | SD    | % (mean)   | SD    | % (mean)     | SD    |
| <b>Economic Outcomes</b>                   |              |       |            |       |              |       |
| <i>Annual individual income</i>            | (22768)      | 11683 | (28307)    | 11262 | (20118)      | 11107 |
| <i>Annual partner income</i>               | (12238)      | 14771 | (20392)    | 11442 | (25642)      | 11766 |
| <i>Annual couple income</i>                | (35007)      | 19087 | (48699)    | 18968 | (45759)      | 18974 |
| <i>Annual equivalized hh income</i>        | (19385)      | 9386  | (23185)    | 9444  | (22057)      | 9541  |
| <i>Log of annual individual income</i>     | (9.82)       | 0.66  | (10.08)    | 0.55  | (9.66)       | 0.68  |
| <i>Log of annual partner income</i>        | (1.55)       | 8.40  | (9.60)     | 1.35  | (9.92)       | 0.89  |
| <i>Log of annual couple income</i>         | (10.24)      | 0.65  | (10.64)    | 0.49  | (10.56)      | 0.52  |
| <i>Log of annual equivalized hh income</i> | (9.68)       | 0.59  | (9.89)     | 0.51  | (9.82)       | 0.54  |
| <b>Individual Characteristics</b>          |              |       |            |       |              |       |
| <i>Age</i>                                 |              |       |            |       |              |       |
| 15-19 years old                            | 0.13         |       | 0.01       |       | 0.22         |       |
| 20-24 years old                            | 1.90         |       | 0.63       |       | 3.36         |       |
| 25-29 years old                            | 7.28         |       | 4.00       |       | 10.80        |       |
| 30-34 years old                            | 16.54        |       | 12.91      |       | 21.51        |       |
| 35-39 years old                            | 24.77        |       | 23.86      |       | 27.93        |       |
| 40-44 years old                            | 25.35        |       | 28.95      |       | 23.47        |       |
| 45-49 years old                            | 16.09        |       | 18.69      |       | 10.29        |       |
| 50-54 years old                            | 6.00         |       | 7.49       |       | 2.20         |       |
| 55-59 years old                            | 1.47         |       | 2.4        |       | 0.22         |       |
| 60+ years old                              | 0.46         |       | 1.05       |       | 0.01         |       |
| <i>Number of resident minor children</i>   |              |       |            |       |              |       |
| No children                                | 11.03        |       | 6.84       |       | 4.44         |       |
| 1                                          | 42.47        |       | 38.86      |       | 42.87        |       |
| 2                                          | 34.69        |       | 40.67      |       | 39.04        |       |
| 3+                                         | 11.81        |       | 13.63      |       | 13.65        |       |
| <i>Age of youngest resident child</i>      |              |       |            |       |              |       |
| 0-5 years old                              | 30.86        |       | 33.70      |       | 43.11        |       |
| 6-10 years old                             | 32.14        |       | 31.80      |       | 29.43        |       |
| 11-17 years old                            | 30.91        |       | 34.50      |       | 27.46        |       |
| 18+ years old                              | 6.09         |       | 0.00       |       | 0.00         |       |
| <b>N person</b>                            |              |       | 41,575     |       | 132,279      |       |
| <b>N person-years</b>                      | 1,568,400    |       |            |       |              |       |

Notes: T-1 = year before entering single-parent household; SD = Standard Deviation.

#### 4.4.5. Analytical strategy

To examine changes over time in the economic outcomes before and after the transition to single parenthood, a set of time-distributed fixed effects (TDFE) linear regression models for panel data is estimated. The TDFE model is essentially a fixed effects (FE) model which includes a set of dummy variables for each year before and after the event. The advantages of this dynamic modelling strategy are manifold: it enables to control for all observed and unobserved confounders that are constant over time, such as the family background (Wooldridge, 2015). Also, unlike standard fixed effects methods, it allows to assess the effect of single parenthood on the economic outcomes for each year around the event. This is particularly relevant to capture either potential *anticipation effects* occurring before the event (e.g. parents may decide to increase the work intensity in preparation for the union dissolution), or *short-term economic changes* after the event followed by a return to prior economic levels (e.g. if parents repartner shortly after entering single parenthood). Thus, for each of the four economic outcomes, the following regression model is estimated:

$$O_{it} = \sum_{p=-s}^s \beta_p F_{it}^p + \beta_2 X'_{it} + A_i + \varepsilon_{it},$$

In this model,  $O$  represents the economic outcome of interest of individual  $i$  at time  $t$ .  $F_{it}^p$  identifies a set of dummy variables where  $p$  is the number of years before and after the transition to single parenthood, while  $s$  identifies the maximum horizon forward and  $-s$  identifies the maximum horizon backwards from the time of the event.  $X'_{it}$  represents a set of time-varying covariates (age, age of the youngest child, number of children),  $A_i$  identifies the individual unobserved time-constant components, and  $\varepsilon$  is the idiosyncratic error term. To test whether there are significant gender-based differences in the economic outcomes related to single parenthood, both in absolute and relative terms, two approaches are employed: 1) estimating TDFE models with an interaction term between the parents' gender and the main

independent variable, and 2) estimating separate TDFE models for each gender while taking the natural logarithm of each independent variable.

#### **4.5. Results**

Descriptive trends for the three income variables (individual income, partner income and equivalized household income) for both genders are presented first. Then, for each variable, absolute changes in income of men and women are estimated based on predictions from time-distributed fixed effects (TDFE) models that control for age, number of co-resident minor children, and age of the youngest co-resident child. Finally, the results are presented in relative terms using the natural logarithm of income as the outcome. These models also include interaction terms between the time before and after the transition to single parenthood and gender. This allows testing for gender differences in economic outcomes post-separation. Note that practically all differences between men and women are statistically significant due to the very large sample size used unless mentioned otherwise. The regression coefficients for the full models, including interaction effects, are provided in Appendix Table A11.

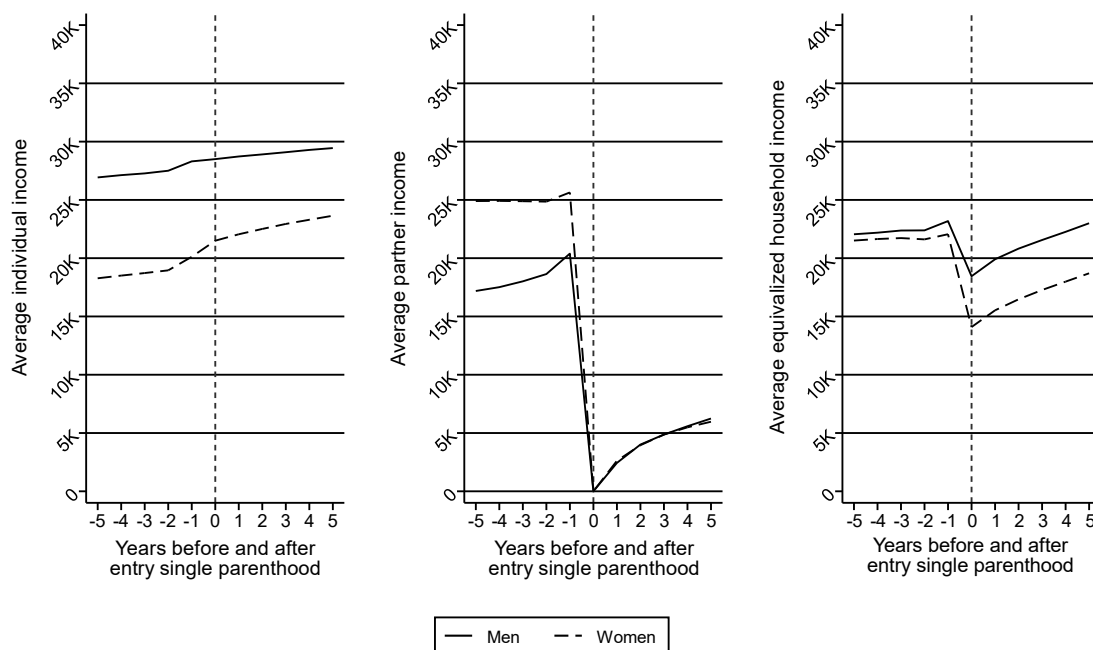
##### **4.5.1. Descriptive analyses**

Time trends for individual, partner, and household income for both men and women are presented first (Figure 1). Overall, the trajectories for each income measure were similar for men and women. For example, the first graph shows a steady increase in individual income over time for both men and women. Similarly, both groups experienced a sharp decline in partner income (second graph) and household income (third graph) at the time of entering a single-parent household, followed by a partial recovery in subsequent years.

Although the patterns were similar, these findings already revealed considerable gender differences in absolute income levels. As shown in the first graph, women earned less than men the year before separation, with an average income of 20,117 euros compared to 28,307 euros

for men, and their individual income remained lower throughout the observed period, even though gender differences became somewhat smaller. The second graph shows that women experienced a more pronounced decrease in partner income at the time of separation, with an absolute difference in income loss of around 26%. However, there was no major gender difference in the recovery of partner income in the five years following separation. Finally, women experienced a greater loss in household income compared to men and recovered more slowly in the following years. Interestingly, it seems that men returned to pre-separation income levels five years after entering a single-parent household, whereas women did not.

**Figure 1.** Descriptive patterns of annual individual income, annual partner income, and annual equivalized household income before and after experiencing single parenthood.



Note: time  $t_0$  is the year of entry into single parenthood (year 0).

#### 4.5.2. Multivariable analyses

Each of these trends is now scrutinized by looking at results from time-distributed fixed-effects (TDFE) models which allow to control for relevant observed characteristics, to control for unobserved time-invariant characteristics and to test gender differences more directly.

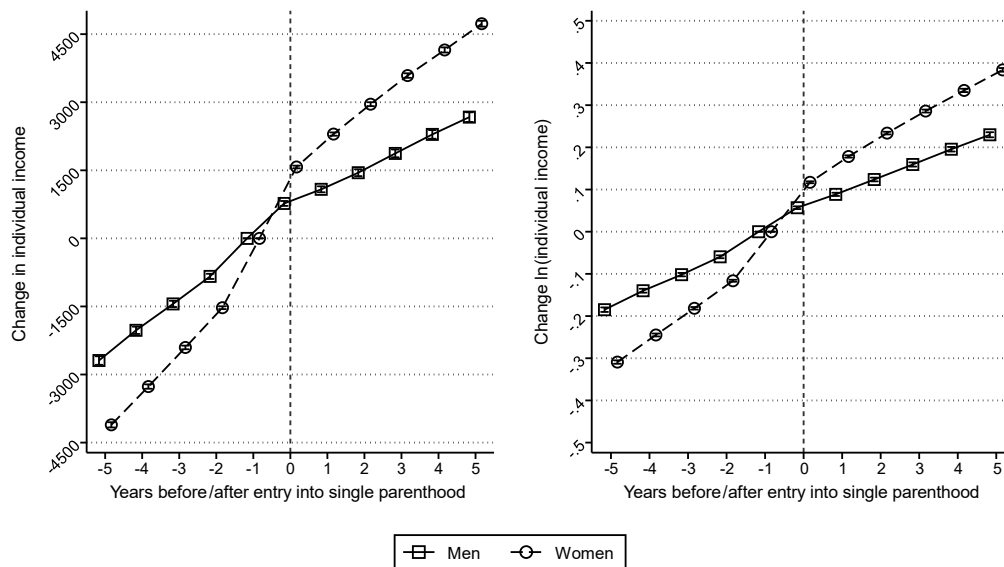
##### *Changes in own earnings*

Becoming a single parent is commonly associated with several changes. These changes (e.g. in working hours, childcare responsibilities, etc.) may affect the capability of both fathers and mothers to attain personal economic resources. For this reason, the first interest is in the gender difference in individual income changes related to the event of single parenthood, i.e. the point at which men and women start living with their co-resident minor children as single persons. Figure 2 displays the changes in annual individual income for men and women experiencing single parenthood during the observation period. Results are based on predictions from the TDFE models and with 95% confidence intervals (barely visible as they are very small) and indicate changes in income as compared to  $t-1$ . Table A11 in the Appendix shows the underlying regression results and indicates how the interaction between gender and time is statistically significant for all time points considered (i.e.  $t-5$  until  $t+5$ ); note that this applies to the results presented later for partner income and household income too.

The results from the TDFE model presented in the first graph confirmed the steady average increase in the annual individual income for both men and women over time. Mothers experienced a greater increase in individual income following the entrance into single-parent households. Increases for women were particularly large between  $t-2$  and  $t=0$ , which may reflect an anticipation effect in response to separation. Absolute changes in income were less pronounced in the fixed-effects models as compared to the descriptive findings because they accounted for time-constant (unobserved) heterogeneity that can upward bias the between-

individuals estimates on which the descriptive findings are based (Wooldridge, 2015). The second graph in Figure 2 shows that results are similar in relative terms, with women earning more than men following entrance into single parenthood.

**Figure 2.** Absolute and relative changes in annual individual income before and after experiencing single parenthood.



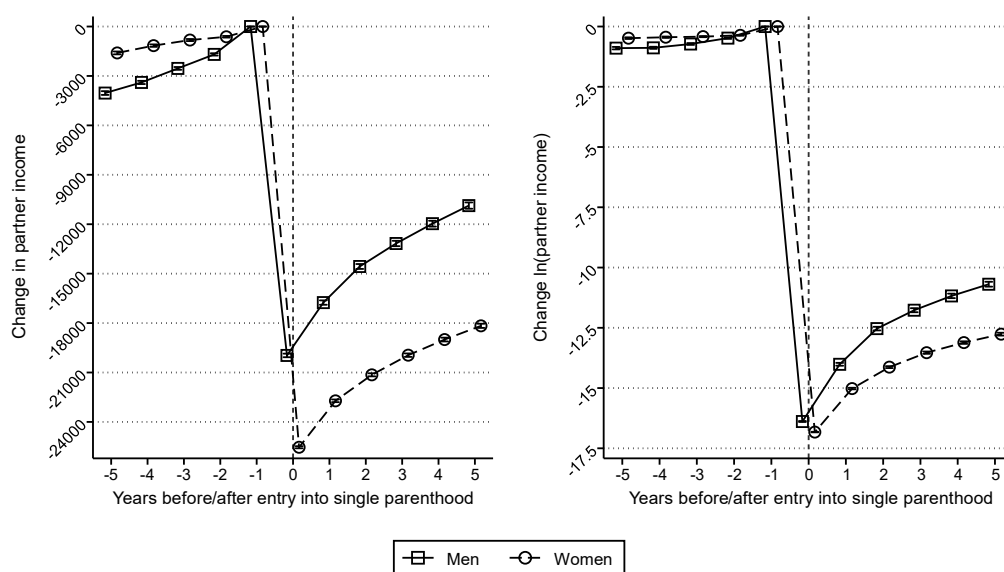
Notes: confidence intervals are so small they fall within the markers. Time  $t_0$  is the year of entry into single parenthood (year 0). Predicted values from time-distributed fixed-effects models including an interaction between gender and years before/after intro into single parenthood.

### ***Loss of partner income and repartnering***

Our second dependent variable is partner income. On the one hand, most single parents lose their partner's income upon divorce or separation. On the other hand, after entering single parenthood, single fathers and mothers might find a new partner who brings an economic benefit to the household and relieves them from supporting it alone. Figure 3 shows that the general trend is similar for men and women (first graph): unsurprisingly, both suffered a substantial economic loss (loss of annual partner income) in the year of entry into single parenthood and this loss was no longer compensated in the years following the event. For instance, women suffered an average annual loss of 25,536 euros in partner income during the

transition to single parenthood (between year -1 and year 0), whereas men experienced a loss of 19,963 euros. The second graph shows how economic losses were worse for women than for men, also in relative terms. Men and women experienced relatively similar drops in partner income in the year entering single parenthood. However, the growth trajectory of annual partner income in the years following the entry into single parenthood (occurring at year 0) was superior for men compared to women (note that all interaction effects of gender with time are statistically significant, see Table A11). This is somewhat surprising, as previous research has shown that women usually have a better income recovery than men following a new union (Ozawa & Yoon, 2002).

**Figure 3.** Absolute and relative changes in annual partner income before and after experiencing single parenthood.



Notes: confidence intervals are so small they fall within the markers. Time  $t_0$  is the year of entry into single parenthood (year 0). Predicted values from time-distributed fixed-effects models including an interaction between gender and years before/after intro into single parenthood.

To better understand this result, the partnership trajectories for men and women before and after entering single parenthood were examined (Figure 4). Previous research has shown that men who have children more often find a new partner following a separation than women

(Di Nallo, 2019), which could help explain why the partner income of single fathers tended to rise at a quicker pace than that of single mothers. Therefore, it was examined whether single fathers tend to form new partnerships before single mothers do also in this study. Indeed, men, who were less likely than women to have a partner before entering single parenthood, repartnered more quickly after the event. However, it should be noted that the rate of repartnering remained low for both men and women.

**Figure 4.** Changes in partnership status of men and women experiencing single parenthood.

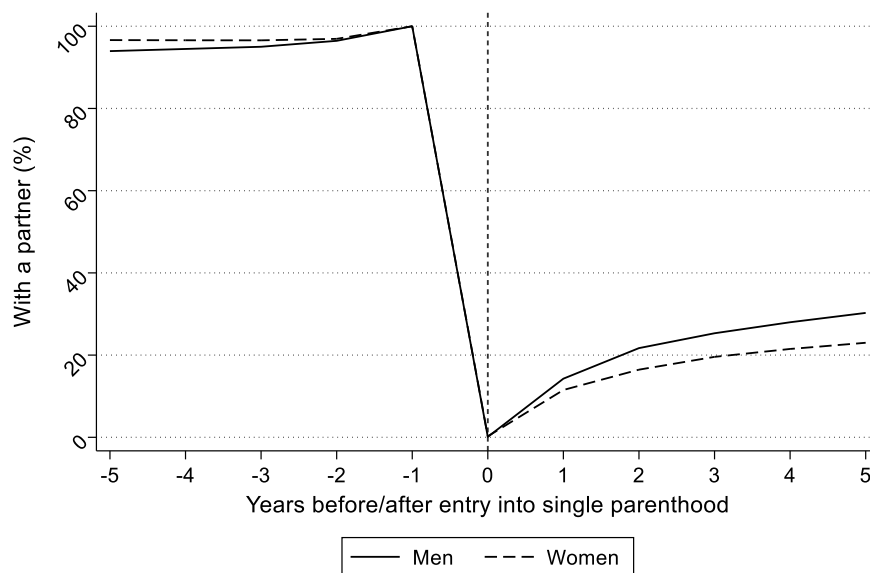
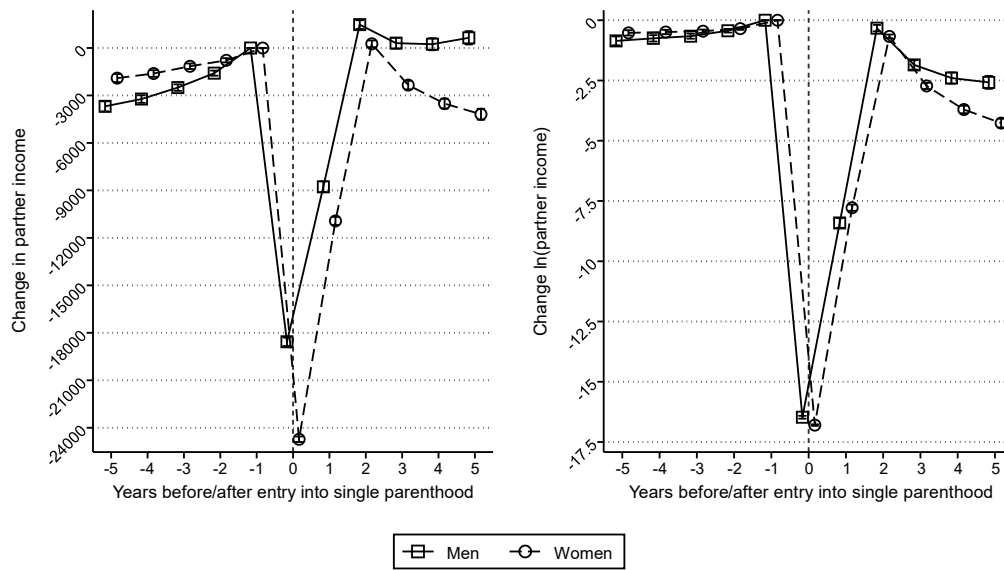


Figure 5 suggests that for those parents who found a new partner within 2 years of entering single parenthood, the partner income returned to the same pre-event levels, both for men and women. This indicates that repartnering could be an effective way to recover income, but that this route appears unavailable for most single parents, and single mothers in particular. In addition, partner income appeared to drop again in subsequent years, suggesting that an important share separated again from their new partners relatively quickly.

**Figure 5.** Absolute and relative changes in annual partner income for individuals repartnering two years after experiencing single parenthood.

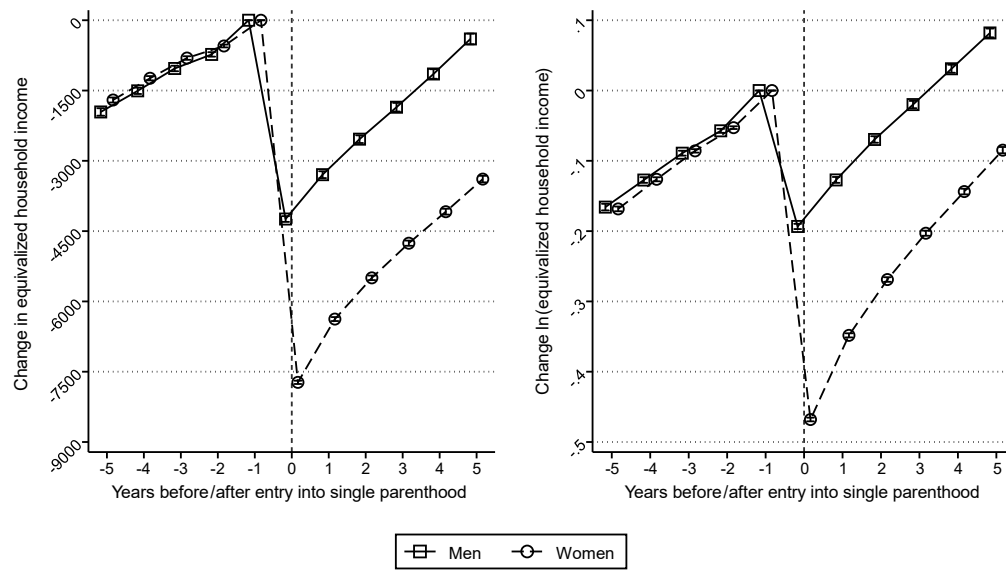


Notes: confidence intervals are so small they fall within the markers. Time  $t_0$  is the year of entry into single parenthood (year 0). Predicted values from time-distributed fixed-effects models including an interaction between gender and years before/after intro into single parenthood.

### *Household income*

Up to this point, it was observed that 1) women experienced greater increases in individual income when compared to men, 2) but at the same time greater losses in partner income and 3) repartnering did not seem to be a common coping strategy for either men or women. However, the emerging picture may be incomplete without accounting for other factors that might affect income such as the number of children living in the household and grandparents (or other relatives/adults) who may move in after entering single parenthood. To account for these factors, and to provide an overall picture, annual equivalized household income is examined in Figure 6.

**Figure 6.** Absolute and relative changes in annual equivalized household income before and after experiencing single parenthood.



Notes: confidence intervals are so small they fall within the markers. Time  $t_0$  is the year of entry into single parenthood (year 0). Predicted values from time-distributed fixed-effects models including an interaction between gender and years before/after intro into single parenthood.

The transition to single parenthood resulted in a drop in annual equivalized household income in the year of entry into single parenthood (between year -1 and year 0) by 4,241 euros for fathers and 7,727 euros for mothers, on average. The first graph of Figure 6 also suggests that household income increased over time after the transition to single parenthood for both genders. However, five years after separation, men appeared to have nearly fully recovered from the initial loss, with only 399 euros below pre-separation levels (year -1), whereas women experienced a slower recovery, remaining 3,389 euros below their pre-separation income. The second graph depicts the relative changes in the log of annual equivalized household income. The relative drop in annual equivalized household income at the mean was almost double for women relative to men when entering single parenthood (between year -1 and year 0), although the gap somewhat narrowed in the following years. Hence, both men and women experienced important drops in household income after entering a single-parent household, but this drop

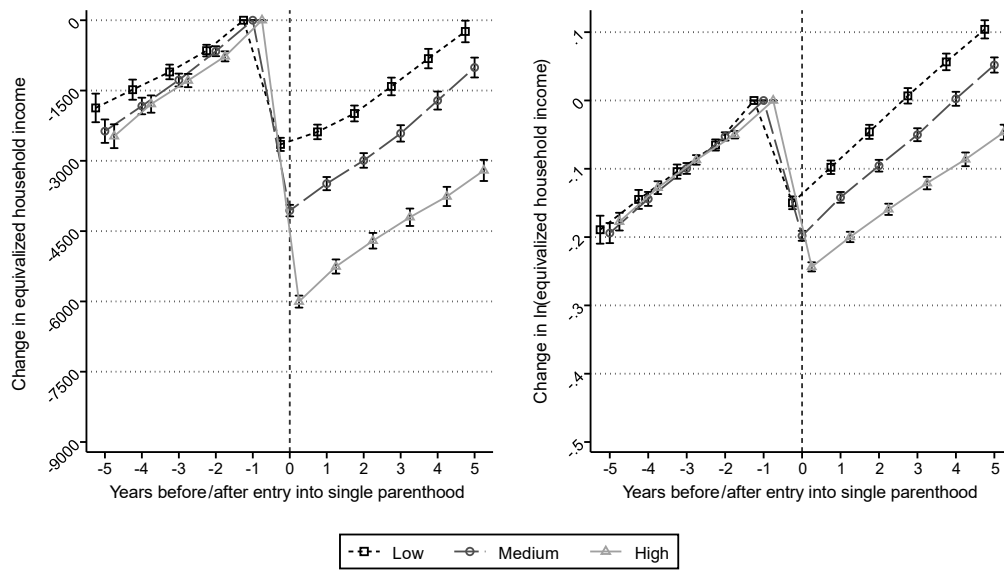
was greater for women who also seemed to take longer to recover their income compared to men.

Although entering single parenthood had negative consequences for the income of both fathers and mothers, overall, it appeared that women's income was impacted more than men's. This is supported by the results of the supplementary analyses on the relationship between poverty and single parenthood, which showed that even five years after the event, women's risk of poverty was double that of men (see Appendix, Figure A17).

### ***The role of education***

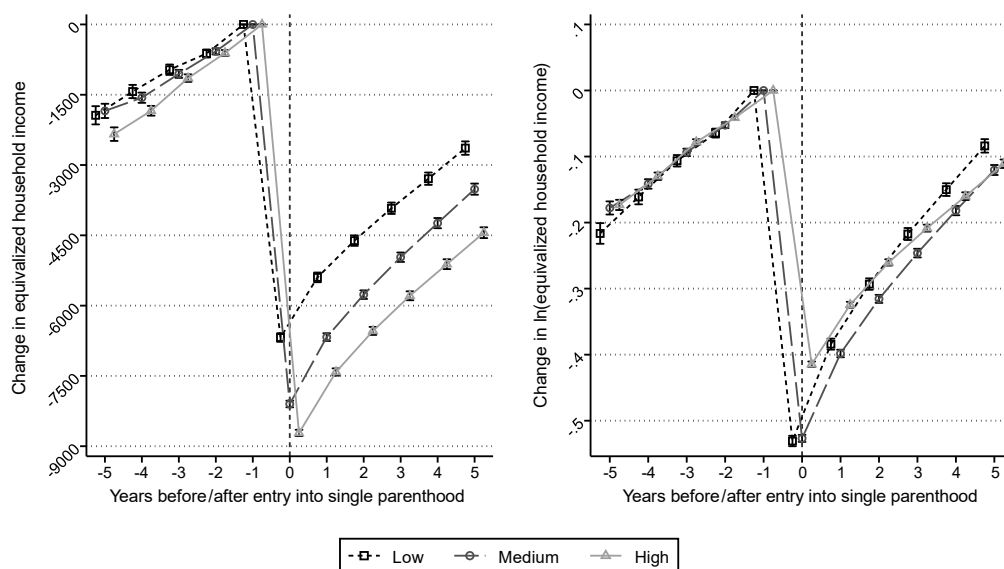
In additional analysis, the potential moderating effect of education on the income outcomes of entering a single-parent household was examined. An interaction term between education and time before and after the transition to single parenthood was used to test differences in education. Figure 7 presents the overall pattern of changes in annual equivalized household income before and after entry into single parenthood for men, both in absolute and relative terms. The graph on the left shows similar patterns across all educational levels: on average, men followed income growth trajectories before entering single parenthood and experienced a decrease in income at the time of the event (year 0), with partial recovery thereafter. However, while less-educated men seemed to fully recover from the income loss within five years after separation, highly educated men suffered greater losses. For example, the average income loss for highly educated men five years after separation was around 3,204 euros compared to the reference year (year -1). In contrast, low-educated men experienced an average loss of around 239 euros. The graph on the right shows that similar results are observed for relative income losses, even though differences in penalties were somewhat smaller across educational groups.

**Figure 7.** Absolute and relative changes in annual equivalized household income before and after experiencing single parenthood by level of education for men.



Notes: whiskers indicate 95% confidence intervals. Time  $t_0$  is the year of entry into single parenthood (year 0). Predicted values from time-distributed fixed-effects models including an interaction between education and time before/after the event.

**Figure 8.** Absolute and relative changes in annual equivalized household income before and after experiencing single parenthood by level of education for women.



Notes: whiskers indicate 95% confidence intervals. Time  $t_0$  is the year of entry into single parenthood (year 0). Predicted values from time-distributed fixed-effects models including an interaction between education and time before/after the event.

Similar patterns were observed when looking at the educational differences in annual equivalized household income changes for mothers in Figure 8. The first graph shows that when entering single parenthood (from year  $-1$  to year  $0$ ), on average, low-educated women experienced an absolute annual equivalized household income loss of 6,681 euros, medium-educated women of 8,098 euros, and high-educated women of 8,717 euros. Moreover, regardless of their level of education, after entering single parenthood women recovered economically over the subsequent 5 years, even if only partially, similar to men. In the second graph, relative changes across educational levels in the logarithm of the annual equivalized household income for women were examined. In contrast to men, the TDFE estimates showed that highly educated women experience a slightly smaller economic loss compared to less educated women when they enter single parenthood (from year  $-1$  to year  $0$ ). This might be because women with lower levels of education depend more on their partner's income compared to women with a higher level of education. However, despite experiencing a greater economic loss compared to highly educated women, low and medium-educated women managed to recover more quickly over time. The regression results presented in Table A12 of the Appendix indicated that, for both men and women, the interaction between education and time was statistically significant for all time points after  $t=0$ , except for higher educated women at  $t+3$  and  $t+4$  (as compared to the time-effect for lower educated women).

To strengthen confidence in the findings, a robustness check was conducted, considering as a proxy for education the average individual income between  $t-4$  and  $t-2$ , categorized into terciles. Findings are reported in the Appendix (Figures A18 and A19) and showed similar patterns to those in the main analyses for both men and women, with greater income losses (in the long run) among high-income men and low-income women.

These results align with prior research, highlighting that highly educated couples who separate have more to lose in terms of economic resources (Bernardi & Boertien, 2016).

However, an exception to this general observation was once looking at income losses in relative terms for women.

#### **4.6. Discussion and conclusions**

The key question posed in the introduction is whether co-residing with children after separation, labelled here as the entrance into a single-parent household, has the same consequences for the income of fathers and mothers. Previous studies have mostly studied gender differences in the economic consequences of separation without focusing on the specific case of co-resident fathers, mostly due to data constraints. Studying this case is interesting as it could give insight into whether the gendered consequences of separation will decrease when fathers increasingly co-reside with children after separation. The answer to this question is mixed.

On the one hand, it was found that both mothers and fathers lose in terms of equivalized household income after the entrance into a single-parent household. This holds for fathers and mothers of all educational levels. This conclusion differs from that of previous research that often found that, on average, men lose relatively little, or might even gain, in terms of equivalized household income following separation. Hence, once focusing on fathers who co-reside with children following separation, their economic situation looks more similar to mothers. On the other hand, it was found that also among the group of parents co-residing with children after separation, women lose more household income than men. This leads to the conclusion that the economic consequences partly rely on the gender-unequal assignment of childrearing responsibilities in society, but that gender differences are unlikely to disappear completely when childcaring responsibilities are shared more equally, unless other gender inequalities are also eradicated, such as those related to gender pay gaps and gender norms regarding partnering.

When people experience single parenthood, their needs often change as (in most cases) they no longer have another person contributing to the household income or sharing childcare responsibilities with them. For single parents, this implies that the need to increase their income to support the family alone increases and the need for time to combine work with childcare activities, especially if the children are still young. The results presented here indicate that there are important differences in how these mechanisms work for men and women. On the one hand, it was found that entering single parenthood results in a greater increase in terms of individual income for women than for men (hypothesis 1), probably due to the need for mothers to compensate for the loss of partner income. At the same time, this suggests that men often already work full-time and might have limited time to increase working hours further, especially with increased childcare responsibilities. In other words, if childrearing constraints are the same for fathers and mothers, also men are exposed to socio-economic disadvantages. On the other hand, women experience worse losses than men in terms of partner income (hypothesis 2). The high involvement of women in part-time positions in the Belgian labour market, which allows them to combine work and childcare responsibilities, could explain this result and also points out the persistence of gender inequalities in childcare in Belgium, with women in couples taking on more childcare than men. Hence, in other contexts where women's employment and earnings are more similar to men's, we might see more equality in household income losses among parents who transition into a single-parent household. Indeed, an interesting question for future research would be to study whether there are contexts where gender differences are minimal among the group of parents co-residing with children following separation.

Our findings did not support the argument that women recover faster than men in terms of household income (hypothesis 3). On the contrary, women experience a more significant economic setback compared to men, which is difficult to recover from even in the long run. In

fact, women are more able to increase their own income over time, but this alone is not enough to compensate for the loss of their partner's income. Additionally, although repartnering has a positive effect on women entering the labour market (Jansen et al., 2009) it was observed that it is a marginal route for household income recovery, available to only a few individuals. In addition, men are slightly more likely to repartner than women, consistent with the findings of Di Nallo (2019), which appears to be the main reason why their household income recovers faster too.

Finally, it was found that, in contrast to higher-educated women, higher-educated men lose more income following the entrance into single parenthood than lower and middle-educated men (hypothesis 4). Hence, single parenthood is likely to be a relatively less important driver of educational inequalities in income among men than among women and contributes to the general impression that family dynamics are more important within social stratification among women than among men.

In interpreting these results, some limitations need to be acknowledged. First, the income measures used in the analyses do not account for the Belgian child allowances, child support, and alimony that single-parent families could benefit from. This information together would give a more accurate picture and better interpretation of the economic conditions of single parents living in Belgium. Such transfer income might reduce gender differences in the effects of entrance into single parenthood, as women, in general, have lower levels of income. It would, however, strengthen the conclusion that higher-educated men lose more in terms of household income than lower-educated men, as the latter would more often benefit from transfer income than the former.

More generally, the analysis only captures one aspect of economic well-being. Even though additional analysis examining poverty was provided, single parents are likely also to

face higher levels of material deprivation and time constraints. Hence, the observation that higher-educated fathers lose more in terms of income than lower-educated fathers does not imply that the latter group is better off after entering single parenthood.

Second, the analysis of education was limited to a subsample of cases observed at two points in time. This may have led to the biased results of the estimates. However, since the analysis focuses on the adult population, the level of education should not vary too much over time. Third, the data do not allow the identification of joint custody events. Likely, many single fathers (but also mothers) in the sample had joint custody arrangements, which could have reduced obstacles towards maintaining earnings and repartnering. However, it was observed that men increase their own earnings less than women following the entrance into single parenthood. Joint custody may make it easier for single fathers to repartner, but the role of repartnering in the conclusions was relatively limited. Hence, it would be expected that the results would also hold in a sample of parents where fathers and mothers have sole custody, with the possible exception of the faster recovery for men following entrance into single parenthood (which is related to repartnering).

Fourth, the contribution focuses on only one segment of single parents, namely those who can financially afford single parenthood or co-residence with children. Parents who are unable to manage the associated costs may choose to remain in an unsatisfactory partnership or decide not to live with their children post-separation. This selection bias may influence the observed economic outcomes, potentially leading to an overestimation of the financial resilience of individuals who become single parents.

Finally, this study focused only on the individual characteristics of men and women experiencing single parenthood. Further research addressing the role of the characteristics of

both parents could help to gain more insight into the mechanisms that lead men to become single parents.

Regardless of these limitations, the findings have relevant implications for understanding the role of single parenthood on gender economic inequalities in Belgium. Particularly, it was highlighted a greater economic disadvantage for women than men to recover economically, likely explained by mechanisms of partner income loss and repartnering strategies. At the same time, household income drops considerably for both men and women when entering single parenthood. Consequently, single fathers should be recognised as an at-risk group as well. Given the recent rise in single-father families, it is hoped that these findings will draw greater attention from policymakers to effectively address the increasing risk of poverty among Belgian single parents (Nieuwenhuis, 2020), both fathers and mothers.



## **Chapter 5**

# **Discussion and conclusions**

## 5.1. Introduction

The socio-demographic profile of single parents has undergone significant changes over recent decades. Until the 1970s, single parents were predominantly young, unmarried mothers or widowed parents, often stigmatized and reliant on state welfare (Bernardi et al., 2018). In contrast, contemporary single parents are more commonly divorced or separated mothers and fathers, many of whom belonged to dual-earner households, reflecting increasingly diverse and dynamic family trajectories. Despite these shifts, single-parent families continue to face a disproportionately high risk of poverty, social exclusion, and material deprivation compared to two-parent households (Riederer et al., 2017). This persistent inequality is deeply concerning, as it threatens not only the immediate well-being of single-parent families but also the future opportunities of their children (McLanahan, 2004).

Among the various changes in single parenthood, the growing proportion of single fathers warrants closer examination. There are at least two issues that this trend calls attention to: first, what factors are driving the rise in single fatherhood and does this represent progress toward greater gender equality in caregiving responsibilities? Second, given that most research on single parents focuses on mothers, does the inclusion of fathers offer a different perspective? Specifically, are single-father families as economically vulnerable as their single-mother counterparts?

This dissertation examined different socio-economic dimensions of contemporary single fatherhood in Belgium to provide a better understanding of its characteristics, determinants, and consequences, contributing to the broader literature on family dynamics and social inequality. Particularly, Chapter 2 assessed how the educational profiles of single fathers have changed over the past three decades, comparing them with other groups of fathers, including partnered fathers and non-resident fathers. Chapter 3 investigated the socioeconomic

determinants (such as individual and ex-partner income) that lead fathers, rather than mothers, to become co-resident parents following a union dissolution. Finally, Chapter 4 analysed the economic trajectories of fathers and mothers experiencing single parenthood for the first time, focusing on changes in individual, ex-partner, and household incomes to assess the economic consequences of this transition.

This concluding chapter synthesizes the dissertation's main findings, highlights its contributions to the literature, discusses its limitations, and proposes directions for future research.

## **5.2. Summary of main findings**

This dissertation seeks to expand the existing literature on single parenthood by incorporating the perspective of fathers. In this sense, it examined the role of socio-economic characteristics in determining single parenthood and its consequences while also investigating whether the recent rise in single fatherhood can be seen as a move toward greater gender egalitarianism. Below is a summary of the main findings that emerged from the previous chapters.

The first empirical contribution of this dissertation (Chapter 2) examines educational disparities in single fatherhood in Belgium by analysing changes in the educational profiles of single co-resident fathers and comparing them with three other categories of fatherhood: partnered co-resident fathers, partnered non-resident fathers, and single non-resident fathers. Drawing on data from the National Register and Census data, multinomial logistic regression models were employed to estimate the likelihood of being a single co-resident father relative to the other fatherhood categories across four-time points: 1992, 2002, 2012, and 2020.

The findings from Chapter 2 suggest that single fatherhood may be a potential driver of inequalities in resources between educational groups, a pattern already well-documented in the literature on single mothers (e.g., Härkönen, 2017; McLanahan, 2004). Specifically, the results

from this study support the hypothesis that single fathers have become consistently less educated over time compared to partnered co-resident fathers, reflecting the broader negative educational gradient associated with union dissolution. In contrast, single co-resident fathers were consistently more educated compared to their non-resident counterparts, particularly those in the single non-resident group. This trend may reflect the positive association between education and paternal involvement in children's lives (Sullivan et al., 2014) which could make more educated fathers more willing to co-reside with their children than fathers with lower levels of education. Additionally, higher levels of education may provide fathers with more resources (e.g., economic and informational), enabling them to negotiate post-separation custodial arrangements more effectively with the child's mother (Juby et al., 2005; Ryan et al., 2008).

Overall, these findings suggest the pivotal role of education in shaping the likelihood of becoming a single father and its implications for reinforcing socio-economic inequalities in single parenthood. In particular, the persistence of the negative educational gradient in single fatherhood reflects how structural inequalities continue to affect who becomes and remains a single father, with lower-educated men facing cumulative socioeconomic disadvantages. Thus, McLanahan's concept of "diverging destinies" (2004) appears to extend to single fathers as well, suggesting that cumulative socioeconomic disadvantages similarly shapes men's family trajectories.

Chapter 3 extends the findings from Chapter 2 by including maternal characteristics in the discussion of factors affecting the likelihood of becoming a single co-resident parent in contemporary societies. Focusing on separating couples with children in Belgium, this chapter examines how income (individual income, ex-partner's income, and their combination) determines whether the father or mother becomes the co-resident parent after union dissolution. Using data from the National Register and Tax Register over three years (2017-2019), linear

probability models were applied to test two potential mechanisms explaining post-separation parent-child living arrangements: one based on absolute economic resources and the other on relative economic resources.

The findings highlight the importance of gendered roles (Becker, 1993b; Esping-Andersen, 2016) over bargaining and negotiation processes (Lundberg & Pollak, 1996) in determining post-separation parent-child living arrangements. Specifically, the father's individual income, rather than the mother's income or the combined incomes of both parents, emerges as the key factor influencing parent-child co-residence outcomes. Higher-income fathers were significantly more likely to be co-resident parents compared to their lower-income counterparts, potentially reflecting more gender-equal attitudes (Wray et al., 2021). In contrast, the results partially support the idea that lower maternal economic resources drive co-residential parenthood, suggesting that women, despite their economic resources, rather tend to replicate traditional caregiving roles (Weiss & Willis, 1985). This gendered pattern points up the role of intersectionality, where the interplay between gender and socioeconomic status shapes distinct opportunities and constraints for men and women in post-separation parenting arrangements. Moreover, the results did not fully support the hypothesis that the parent with greater relative economic resources would be more likely to become the co-resident parent, as the interaction between fathers' and mothers' incomes did not reveal a clear pattern.

These findings underscore the central role of men's economic resources in post-dissolution family arrangements, while also suggesting the possibility of other unexamined factors influencing co-residential parenthood outcomes such as parental involvement preferences and health conditions (Goldscheider, Scott, et al., 2015).

Finally, Chapter 4 investigates whether co-residing with children after separation has similar consequences for the income of fathers and mothers, by analysing their income

trajectories before and after the formation of a single-parent household. Using data from the National Register and the Tax Register over 14 years (2005-2018), time-distributed fixed effects (TDFE) models are used to assess changes in individual, partner, and equivalized household income from five years before to five years after separation.

While existing literature has consistently highlighted an economic disadvantage for single mothers (e.g., Rowlingson & McKay, 2005), this chapter reveals that single parenthood is associated with an income disadvantage for men as well. However, the results indicate that the mechanisms leading to the formation of single-parent households differ between the genders. First, entering single parenthood results in a greater increase in individual income for women than for men. This suggests that mothers likely need to increase their income to support the family independently, while fathers, who often already work full-time may have limited capacity to increase working hours, especially with increased childcare responsibilities. Second, women experience greater losses in partner income compared to men, likely reflecting their higher involvement in part-time positions that allow for a balance between work and childcare and their generally lower earnings relative to men. Third, women experience greater household income setbacks compared to men, suggesting that an increase in individual income alone is not sufficient to offset the loss of partner income. Finally, when examining the moderating effect of education, the results indicate that single parenthood is a relatively less significant driver of educational inequalities in income among men compared to women.

Overall, these results suggest that both men and women face economic vulnerability upon entering single parenthood, positioning single fathers as an at-risk group as well. However, gender differences persist, with women experiencing a greater overall income loss than men.

In conclusion, this dissertation highlights significant gender differences in the socio-economic determinants and consequences of contemporary single motherhood and fatherhood in Belgium. The next paragraph discusses in more detail the overall contribution of this dissertation.

### **5.3. Overall contribution and discussion**

The main aim of this dissertation was to provide a more in-depth understanding of the complexity of contemporary single parenthood, with a focus on single fathers and their socioeconomic characteristics. To date, research on single parenthood has primarily concentrated on mothers, reflecting their higher prevalence and the significant socio-economic disadvantages they often face (e.g., Damaske et al., 2017; Duyulmus, 2015; Härkönen, 2017). However, single fathers represent a small but growing group, whose socio-economic characteristics remain insufficiently studied. This gap is particularly striking, not only because of its potential implications for the well-being of single fathers and their children, but also for understanding the shifting dynamics of parental practices within the broader context of social changes reshaping family life and post-separation family structures. This dissertation contributed to the field of research on single parenthood in several ways.

First, it documents how different micro-level mechanisms affect the experience of single fathers, thus providing insight into the implications for the reproduction of social inequalities in contemporary society. The picture that emerges is complex and multifaceted. By analysing the socio-economic characteristics of single fathers and how they have evolved over time, this dissertation showed that single fathers, like single mothers, are a vulnerable social group. However, the empirical chapters of this dissertation revealed how the various mechanisms studied operate very differently, in terms of both entering single parenthood and its consequences. For example, living arrangement decisions after union dissolution are

primarily driven by absolute income of men rather than that of women or the combination of both parents' incomes. Also, single mothers experience greater declines in household income than single fathers and take longer to recover from these losses over time. Furthermore, single co-residential fatherhood appears to be associated with greater socio-economic resources compared to non-residential fatherhood, indicating a possible selection of more advantaged fathers within contemporary single parenthood, where factors such as education, income, and access to economic resources shape the opportunities and challenges of post-separation parenting. Together, these findings suggest that single fatherhood, like single motherhood, is shaped by and contributes to cumulative disadvantage, as pre-existing inequalities influence both entry into and trajectories within single parenthood over time.

Understanding these dynamics is crucial for designing policies that aim to mitigate inequalities between different family structures. Today, the effectiveness of policies specifically designed for single parents (e.g., child support policies) to improve their conditions and those of their children is increasingly being questioned, particularly in the light of evolving trends in family diversity, repartnering, and joint physical custody, as well as their interaction with means-tested benefits (Nieuwenhuis, 2020). However, universal work-family policies, if effectively implemented, have significant potential to improve the conditions of single parents by reducing income poverty and mitigating socio-economic inequalities. For example, ensuring the availability of flexible, affordable, and high-quality formal childcare services should be a top priority in family policy. Flexible care is especially crucial for parents working nonstandard hours, and even more so for single parents who lack the support of a second caregiver. At the same time, affordability can ease the economic burden on households, particularly benefiting single-parent families, while high-quality care ensures equal opportunities for all children, including those from vulnerable groups. Such policies not only help single parents remain employed but also retain the possibility of accessing well-paid positions. In addition to

investments in formal childhood education and care, income protection policies must also be strengthened. Indeed, while universal, these policies are crucial for single parents to navigate periods of inactivity or unemployment, as they cannot rely on financial support from a partner. Adequate wage replacement is particularly important, as it reduces financial barriers and ensures that low-income families can also benefit from parental leave. Given that fathers typically contribute a larger share of household income, such support plays a key role in encouraging their greater involvement in childcare responsibilities.

Second, this dissertation investigates how different micro-level mechanisms, such as changes in incomes, repartnering, and available socio-economic resources impact men and women differently, thereby contributing to our understanding of gender inequalities in contemporary single parenthood. This is particularly important given the increasingly differentiated socio-demographic and socio-economic profiles of single-parent households today (Bernardi et al., 2018). On the one hand, indeed, some aspects of single fatherhood may reflect a shift towards greater gender egalitarianism (Goldscheider, Bernhardt, et al., 2015). Previous studies have shown that individuals with higher educational attainment are more likely to hold egalitarian attitudes toward gender roles (e.g., André et al., 2013; Lomazzi et al., 2018). Fathers with higher educational attainment and socio-economic resources may not only have the means to provide economically for their children but also a greater willingness to take on caregiving responsibilities. Thus, single fatherhood may reflect shifts in traditional gender norms and the growing acceptance of egalitarian parenting practices.

On the other hand, this dissertation underscores the persistent influence of gender inequalities in shaping single parents' experiences in Belgium. The increasing financial independence of women has made it more feasible for them to negotiate better terms within marriage and after separation. However, certain aspects, such as bargaining the division of childcare or decisions about co-residence with children, remain more challenging for women.

Women constitute the majority of single parents and are substantially more likely to leave or reduce their participation in the labour market due to motherhood. Furthermore, gender inequalities in employment, with mothers disproportionately working in lower-paying jobs due to caregiving responsibilities, continue to reinforce traditional gender roles. Thus, single parenthood shapes men's and women's lives in distinct ways, as gender interacts with socioeconomic status, creating differentiated patterns of advantage and constraint.

These dynamics point to the need for policy interventions aimed at creating a more equitable environment for single parents. Paid parental leave policies, for instance, play a crucial role in fostering gender equality in both caregiving and employment. By encouraging men to take on greater caregiving responsibilities, these policies cannot only improve the long-term conditions of single parents but also facilitate the caregiving roles of single fathers. Research highlights several design features that can increase fathers' uptake of parental leave. For example, the "use it or lose it" provision, whereby the family loses the leave if the father does not take his designated portion. However, even in countries with such provisions (e.g. Iceland, Norway, and Sweden), fathers' take-up remains lower than that of mothers, indicating that achieving gender-equal caregiving requires consistent and comprehensive policy efforts. Key measures include implementing initiatives to challenge traditional gender norms around caregiving, ensuring workplace cultures and organizational practices actively support fathers' leave uptake, and addressing socioeconomic disparities to ensure leave is accessible to fathers across all income groups.

Furthermore, the implementation and accessibility of formal childcare can promote female labour force participation, helping women secure employment, work longer hours, and access better-paid occupations (Akgunduz & Plantenga, 2018; Andringa et al., 2015; Korpi et al., 2013; Olivetti & Petrongolo, 2018). It can also encourage a more balanced sharing of caregiving responsibilities between parents (Hook, 2010). In this way, such policies represent

not only an investment in the future employability of women (should they later become single mothers) but also provide invaluable support to help single parents remain employed and retain the possibility of accessing well-paid positions.

Taken together, work-family policies such as parental leave entitlements, childcare provisions, and financial support can help promote a more equal distribution of caregiving responsibilities, mitigate gender inequalities, and enhance the economic and social well-being of single-parent families.

Reinforcing dynamics that favour gender-egalitarian norms could also make single fatherhood to become more widespread. Following a standard diffusion framework (R. Lesthaeghe & Neels, n.d.; (Ron Lesthaeghe & Surkyn), 2007), the initial rise in single fatherhood has been driven by fathers' increasing demand to remain actively involved in their children's lives after separation or divorce. This shift has prompted legal reforms in many Western countries, challenging the traditional presumption of sole maternal custody by default (Coles, 2015; Livingston, 2013). For single fatherhood to become as common as single motherhood, however, social institutions and family relationships must continue to evolve. If individuals are assumed to rationally evaluate the benefits and costs of their actions, single fatherhood is likely to become more prevalent in contexts where the perceived costs of taking on this role are lower, particularly in environments characterized not only by shifts in women's roles but also by adaptable institutions and partnerships built on equitable arrangements.

Third, this dissertation contributes to the existing literature by using population data to identify and analyse single fatherhood in Belgium over the past 30 years. This is particularly important, as research on single fathers in Europe remains scarce due to the limited availability of comprehensive data. While studies on single fathers have been more abundant in Scandinavian countries (e.g., Capkova & Jalovaara, 2020; Härkönen et al., 2023), where

population data are readily available and used to identify single-father households, these findings are not always transferable to other contexts. Compared to previous studies, the results presented in this dissertation highlight both important similarities and key differences.

For example, the results from Belgium align with those from Finland, in that single fatherhood is associated with an overall educational disadvantage (Capkova & Jalovaara, 2020). However, Belgian data also reveal that single co-resident fathers have an educational advantage when compared to non-resident fathers. It remains unclear, however, whether a similar educational gradient would be observed in Finland, had the data allowed such distinctions. It is possible, for example, that in more gender-equal contexts, where post-separation parenting norms and welfare institutions support father involvement regardless of socio-economic status, the educational gradient in single fatherhood might be weaker, as opportunities for co-residency are more equally distributed across educational groups.

In addition, this dissertation corroborates findings from the UK (Harkness, 2018), showing that mothers in Belgium experience an increase in individual income but a decline in equivalized household income following their transition into single parenthood due to union dissolution. This dissertation, however, adds that while fathers also experience a drop in equivalized household income upon becoming single parents, they recover to pre-separation levels in the longer term. This recovery is not observed among single mothers, again in line with findings from the UK.

Thus, this dissertation confirms the overall association between single parenthood and socio-economic disadvantage observed across Western countries (Nieuwenhuis & Maldonado, 2018). It is possible, however, that in countries like Italy or Greece, where the overall educational gradient of divorce is positive (Härkönen & Dronkers, 2006), and more traditional (post-separation) parental caregiving norms persist (Claessens & Mortelmans,

2025), these results may differ, for example, showing a stronger educational gradient in single fatherhood.

Fourth, the findings presented in this dissertation also contribute to the theories adopted: the microstructural perspective and the gender-based perspective. On the one hand, the results support the microstructural perspective (Risman, 1986, 1987) by showing that single fathers tend to have higher socio-economic resources than non-resident fathers (Chapter 2), and that these resources, particularly income, play a key role in shaping post-separation living arrangements (Chapter 3). This suggests that becoming a single co-resident parent is more likely for those with greater resources, consistent with the idea that parenting roles are partially affected by structural advantages. On the other hand, the findings only partially align with the gender-based perspective (Goldscheider, Bernhardt, et al., 2015). While some shifts toward more gender-equal caregiving practices are evident, particularly among more advantaged fathers, the persistence of gender differences in economic consequences (Chapter 4) and the fact that the majority of single parents are still mothers indicates that the gender revolution remains incomplete (Esping-Andersen, 2009). Taken together, the evidence suggests that both theories capture important elements of the dynamics at play: structural inequalities shape who becomes a single parent, but these processes remain deeply embedded in persistent gender norms and expectations.

It is possible, however, that these findings would differ across alternative pathways into single fatherhood. For instance, fathers who become single parents following the death of a partner may be more socioeconomically advantaged, as single parenthood due to widowhood is often more temporary than other forms (Bernardi & Mortelmans, 2018), potentially reducing long-term economic strain. At the same time, fathers who become single parents after a period of non-residency may have stronger personal motivation and more egalitarian

attitudes toward caregiving. While this dissertation primarily focuses on entry into single fatherhood following separation, future research should examine how different routes into single fatherhood relate to socio-economic status and gendered parenting practices.

In conclusion, by focusing on single fatherhood in Belgium, this dissertation addresses an important gap in the literature, providing new insights into how socio-economic factors, gender norms, and post-separation parenting dynamics interact in a context with distinct family support systems. Importantly, it also underscores the heterogeneity within single-parent families, particularly within single fathers and between single fathers and single mothers. Differences in educational attainment and economic characteristics suggest that single-parent families do not constitute a uniform group, and their experiences and vulnerabilities vary significantly depending on these intersecting factors. In doing so, it contributes to a more comprehensive understanding of the experiences of single fathers and their children within the broader European context.

#### **5.4. Limitations**

This dissertation acknowledges several limitations. As discussed in Chapter 1, a central challenge in research on contemporary single parenthood lies in its definition (Letablier & Wall, 2018). The commonly adopted definition according to which single-parent families are characterized as “a parent living with his/her dependent children, without a spouse/partner, either on their own or in multi-unit households” (Duncan & Edwards, 1997), may appear straightforward but conceals several ambiguities. For instance, it lacks an explicit age threshold for dependent children and encompasses various living arrangements, including parents living alone or co-residing with other adults.

In response to these complexities, this dissertation employs registry data to define single-parent families as precisely as possible. While registry data represent an invaluable

resource for distinguishing between single mothers and fathers and identifying situations of end of cohabitation beyond legal separations, they rely on information about the legal residency of parents and their children. This reliance introduces potential bias, as registered addresses may not always reflect actual living arrangements. For example, children might be registered at a parent's address for fiscal reasons, such as eligibility for child benefits, or due to logistical or administrative convenience, even if they reside elsewhere. Moreover, registry data do not allow to account for shared custody arrangements, as children can only be registered at one address at a time. This limitation means that some parents identified as “single” may actually capture shared residence, a growing phenomenon that further challenges traditional definitions of single parenthood.

In addition, registry data do not allow to account for those parents with potential partners living abroad. As a result, children who appear to live in single-parent households may, in fact, have a non-resident parent living outside Belgium. This limitation may have affected the findings in two distinct ways. On the one hand, it may have led to an overestimation of socio-economically disadvantaged single parents if these cases reflect individuals who emigrate but delay or fail to reunify with their families (typically those with fewer socio-economic resources). On the other hand, the number of single parents with more advantaged socio-economic profiles may also be overestimated if this group includes cases in which one parent temporarily moves abroad (e.g., for work), while the rest of the family remains in Belgium. If so, families may have sufficient resources to maintain two separate residences, making family reunification unnecessary due to the temporary nature of the separation. Further, as previously explained in Chapter 1, the IPCAL data only include net taxable incomes and leave out other important sources of financial support, such financial transfers, family allowances, and undeclared work (e.g., informal or “under the table” jobs). Women are more likely than men to receive these kinds of support, while men are more likely to earn income

from regular, taxable jobs. As a result, the data may underestimate the actual financial resources of single mothers. This can make single fathers look better off in comparison, even if the difference in real income is smaller. In other words, the observed income disparity between single mothers and single fathers may be overestimated. Finally, while the identification of informal cohabitation allows for capturing the full diversity of partnership forms in Belgium, it relies on assumptions about the relationship between unrelated individuals (Damien et al., 2023) and may overestimate non-marital partnerships. This may have led to an overestimation of low-income single-parent households, given that non-marital childbearing is more prevalent among socio-economically disadvantaged groups and that children born within cohabitation are more likely to spend time in single-parent households (Perelli-Harris et al., 2010). As a result, the income gradient in the transition to single parenthood may be overestimated for mothers, due to the overrepresentation of low-income cases, and underestimated for fathers, leading to an overestimation of gender differences in the socio-economic selection into single parenthood.

Another limitation in this dissertation stems from the specific socio-economic variables available in the population data. While this data provides accurate and reliable information on demographic characteristics and residence details, it includes only a limited set of socio-economic indicators. In contrast, survey data typically offers a broader range of variables, such as subjective measures and employment status. Although education and income have been identified as key factors influencing both the likelihood of becoming a single parent and the socio-economic outcomes of single parenthood, other important socio-economic characteristics, such as parental health and employment status, were not directly examined. These factors could offer a more nuanced understanding of the economic dynamics in single fatherhood and single parenthood more generally. Furthermore, the study did not consider subjective elements, such as parental preferences or family values, which may also shape the

decision to become a single parent (Goldscheider, Scott, et al., 2015) and contribute to the broader discussion of gender equality in parental practices.

Each study in this dissertation incorporated a series of robustness checks to address these limitations and ensure the validity of the results. To conclude, despite these limitations, it is important to remember the unique strengths of these data. Specifically, registry data cover the entire population, eliminating the risk of cell-size limitations and enabling the analysis of subgroups that are typically underrepresented in sample-based studies.

### **5.5. Direction for future research**

The picture outlined in this dissertation suggests that the intersection between socioeconomic factors, gender, and family dynamics after union dissolution will remain a central topic in the growing literature on inequality among single-parent households. While this dissertation contributes to this ongoing discourse, it also aims to stimulate further research by highlighting several key challenges.

The first challenge is to address the limitations related to the definition of single-parent households (Letablier & Wall, 2018), as discussed in the previous section, i.e., its boundaries and its ability to capture the complexity of today's dynamic family structures, where an increasing number of children in single-parent families still have two parents. Furthermore, there is currently no standardized definition that can be applied across European countries, making cross-country comparative analyses of single-parent families difficult. At present, this remains a significant challenge due to variations in national data sources and reporting practices (Letablier & Wall, 2018). These gaps highlight the need for further research and the development of a new theoretical framework. Future surveys on family change should be designed to address the issue of small sample sizes of single fathers, ensuring that gender differences are adequately captured and the experiences of both men and women in single

parenthood are adequately represented and analysed (for example, through oversampling), and to adopt a life course perspective, incorporating the principle of linked or interdependent lives. The use of such data would also allow for the inclusion of a greater variety of information compared to register data, such as a broader range of socio-economic variables, as well as personal attitudes and preferences, all of which are essential for gaining a more complete understanding of the experiences and dynamics within single-parent families. This could help uncover persistent or evolving patterns of inequality in single parenthood, investigating how employment trajectories differ between single mothers and single fathers and how these trajectories are influenced by care responsibilities; the extent to which the structure and composition of social networks differ by gender among single parents, and how do these networks contribute to their well-being; and how migrant background further shapes these dynamics.

Second, while this dissertation provides valuable insights into the socio-economic patterns of single fatherhood, a significant challenge for future research is to investigate the broader implications of these patterns, particularly with regard to their long-term effects. For example, one critical question that remains unanswered is how the socio-economic vulnerabilities observed among single fathers may affect the outcomes for their children. Understanding this relationship is essential, as it could reveal whether single fatherhood, like single motherhood (McLanahan, 2004), is inherently a perpetuator of social inequalities, or whether it has contributed to a convergence of resources between family types. Beyond socioeconomic factors, future research should examine the long-term effects of single parenthood on parents' health, with particular attention to how these effects may differ for men and women. While there has been some focus on the relationship between single motherhood and outcomes such as health (Dinescu et al., 2018; Kühn, 2018) and mental well-being (Bull & Mittelmark, 2009; Karunanayake et al., 2021), there is less understanding of how the experience of raising

children alone affects fathers' health. Investigating these gendered differences in the health outcomes of single parents could provide valuable insights into the specific needs of each group and inform policies aimed at improving their well-being and that of their children.

Third, in addition to individual characteristics, future research could benefit from assessing how parental behaviours, particularly paternal involvement in childrearing, interact with shifting perceptions of fatherhood in influencing single fathers' experiences (Churchill & Craig, 2021). The growing cultural shift towards more engaged and participatory fatherhood (Coltrane, 1996), especially in the context of union dissolution (Petren & Ferraro, 2022), has important implications for both the internalized roles of single fathers and external societal perceptions of their parenting abilities. Theoretically, this shift aligns with evolving models of gender roles and parental responsibility, which challenge traditional norms that have historically relegated caregiving primarily to women (Becker, 1993a). By examining the evolving dynamics of fatherhood within the context of single parenthood, scholars can deepen our understanding of how these changing perceptions shape single fathers' identity formation, parenting practices, and relationships with their children. Furthermore, a closer look at the intersection between gender, social expectations, and parental engagement could offer new insights into how fathers, regardless of marital status, can actively engage in caregiving roles and counterbalance the residual societal bias that often limits their perceived parenting capacities.

A fourth challenge lies in the fact that the experiences of single parents are not homogeneous and can vary widely depending on cultural, institutional, and economic contexts. As mentioned earlier, much of the existing literature on single fatherhood has focused on Scandinavian countries, which are characterized by generous family policies and a strong commitment to gender equality. However, there is a noticeable gap in research addressing other European contexts. For example, in Southern European countries (e.g., Cyprus, Greece, Italy,

Spain), family welfare systems are more familialistic, characterised by limited state support and a greater reliance on family networks (Bambra, 2007). In these contexts, traditional gender roles prevail, with women predominantly expected to assume family and caregiving responsibilities. As a result, single fatherhood remains relatively rare in these countries, with the proportion of single fathers still significantly below the European average despite a gradual increase in their numbers over the past decade (Nieuwenhuis, 2020). This could make economic resources even more crucial for single fathers in such contexts, as they may need to compensate for the lack of state assistance by relying on personal financial means to provide for their children, but most importantly, having sufficient financial resources can help challenge traditional gender expectations. In addition, with these resources, fathers may also be better positioned to prove their reliability as caregivers and demonstrate their ability to balance both work and financial responsibilities. It could then be worthwhile to investigate the extent to which socio-economic resources influence the prevalence of single-father families across countries, as well as the role welfare states can play in either mitigating or exacerbating traditional gender roles in single parenthood and their consequences and how these dynamics evolve over time.

In conclusion, the diverse and complex landscape of contemporary single-parent families calls for a more inclusive understanding of single fatherhood within the broader discourse of family studies. This dissertation has emphasised the critical role of socioeconomic factors, gendered disparities, and the structural inequalities that shape the experiences of single parents. Specifically, it has been shown that while the rise in single fatherhood is often attributed to increasing divorce rates, evolving gender norms, and legal reforms promoting shared custody, it is also shaped by socioeconomic factors. Fathers with higher income and educational levels are more likely to become single parents. While this trend suggests some progress toward gender equality, caregiving responsibilities remains predominantly gendered, with mothers

continuing to bear the greater burden of childcare after divorce or separation, often at the cost of their economic well-being. Including single fathers in the research on single parents also revealed significant gender differences in socioeconomic vulnerability. Like single mothers, single fathers experience economic losses upon entering single parenthood and are, on average, less educated compared to partnered fathers. Nevertheless, single mothers face far greater economic vulnerability, underscoring a persistent gendered inequality in economic resources and opportunities within single-parent households.

However, the findings presented in this dissertation represent only the first step in a much broader analysis. Further research is essential to fully address the needs of single parents, both fathers and mothers, as well as to understand the challenges faced by this group, which, regardless of gender differences, remains one of the most vulnerable family types in contemporary society.



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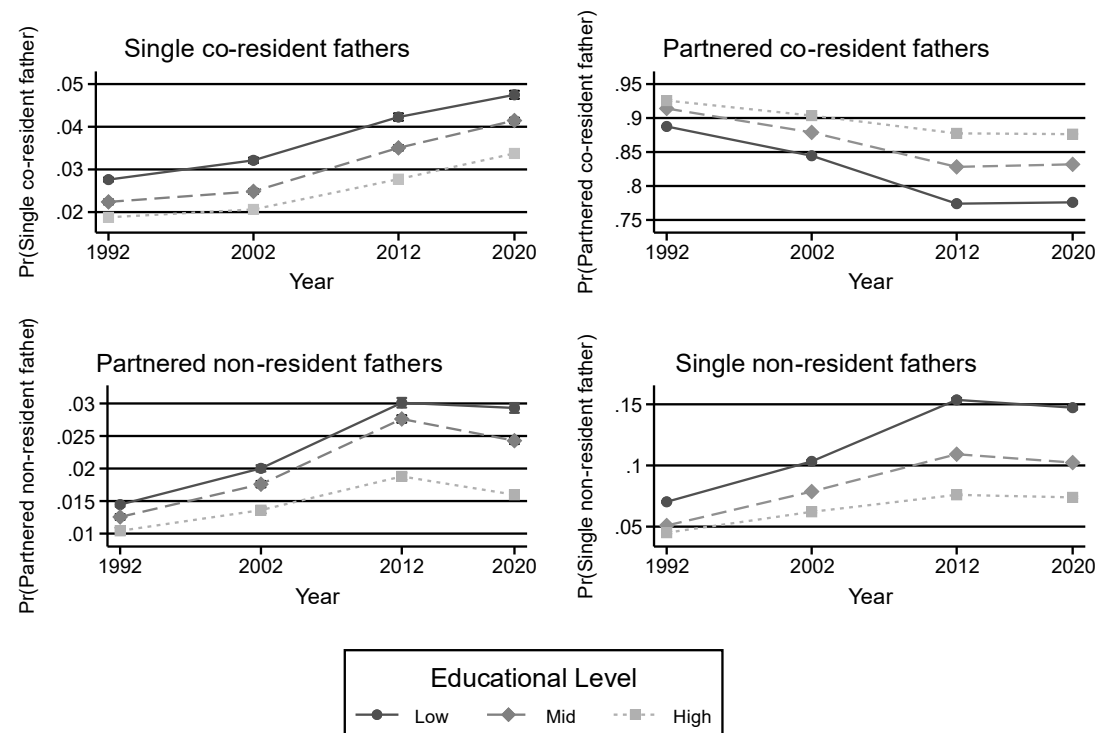
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## Appendix

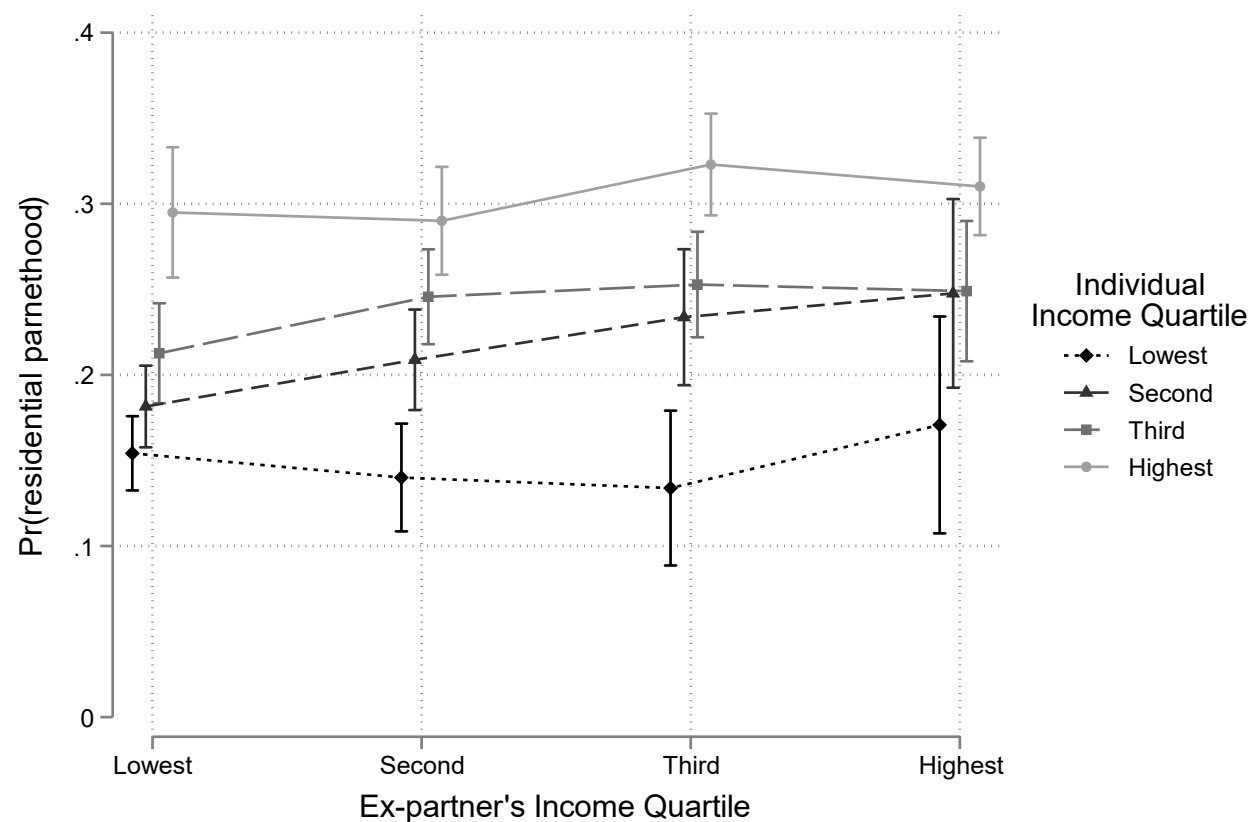
**Figure A1.** Results of the main analysis from chapters 2, 3, and 4 reproduced using the lipro classification to define single parenthood.

*Chapter 2.* Predicted probabilities of fatherhood categories by educational attainment, over time.



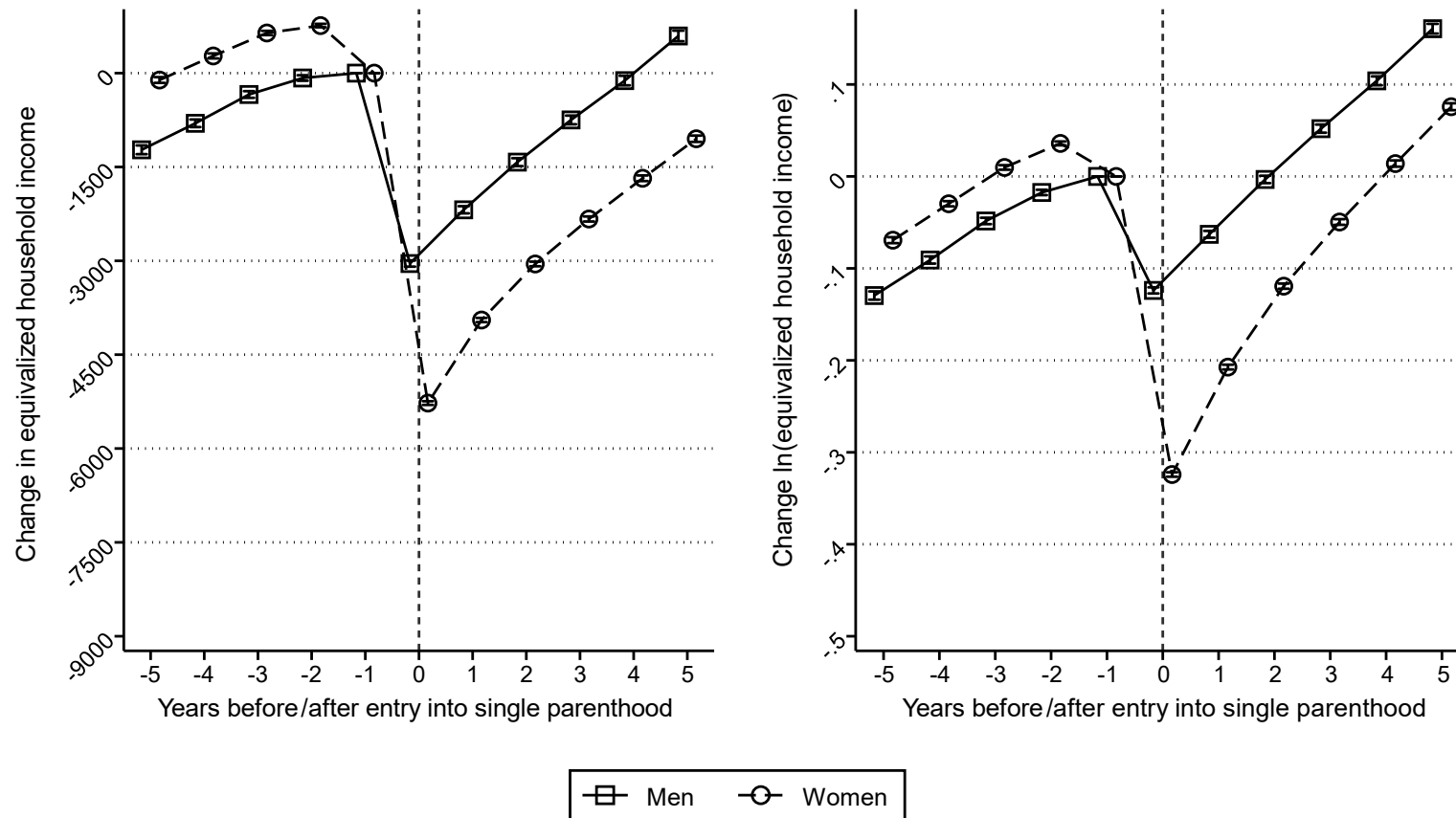
Notes: Pooled multinomial logistic model with interaction Year#Educational Level. Confidence intervals are so small they are barely visible. Reference category: lower educated.

Chapter 3. Effect of individual and ex-partner income on the probability of co-residing with children after separation. Predictive margins with 95% confidence intervals from Model 4. Interaction between individual income quartile and ex-partner's income quartile.



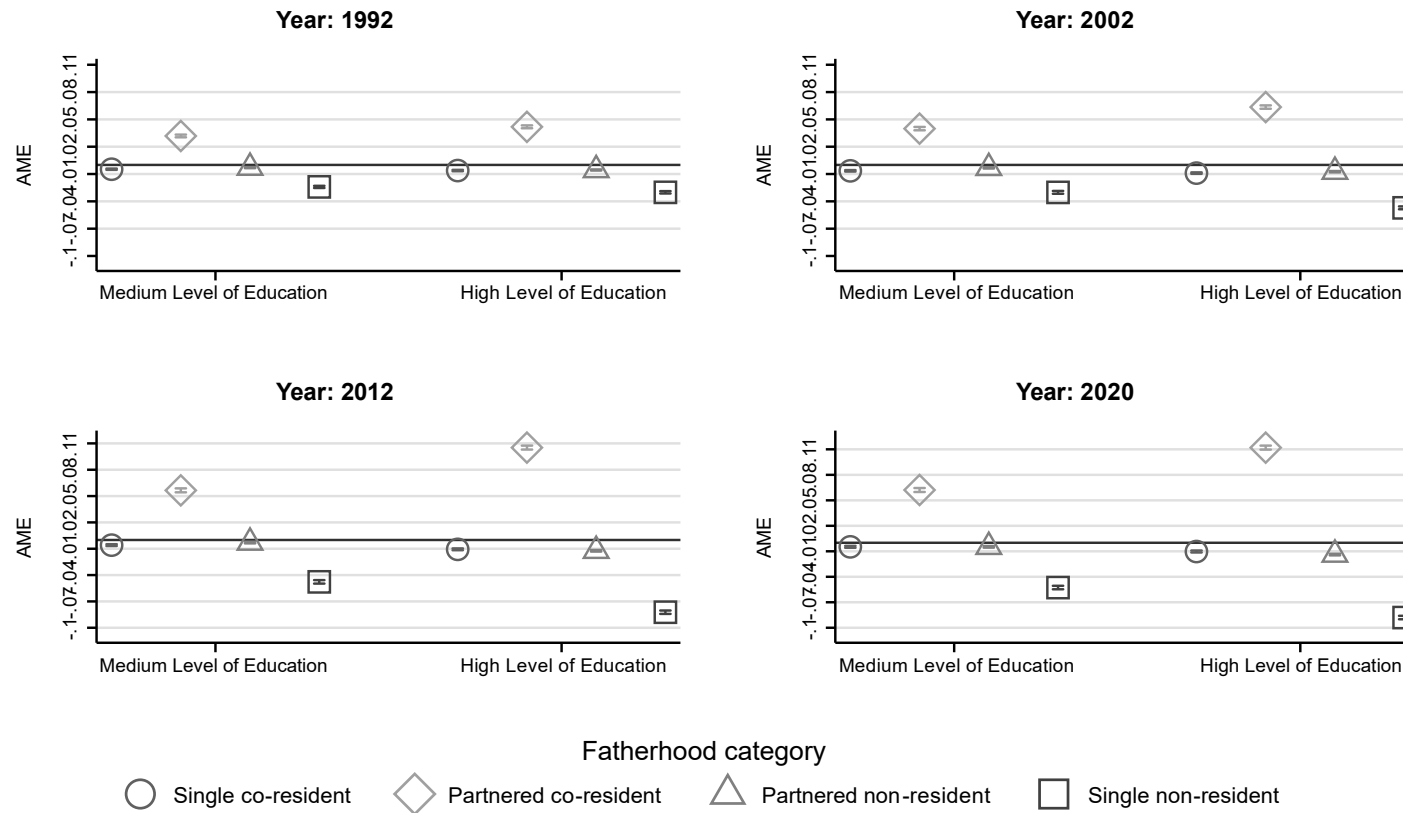
Note: the model includes all control variables.

Chapter 4. Absolute and relative changes in annual equivalized household income before and after experiencing single parenthood.



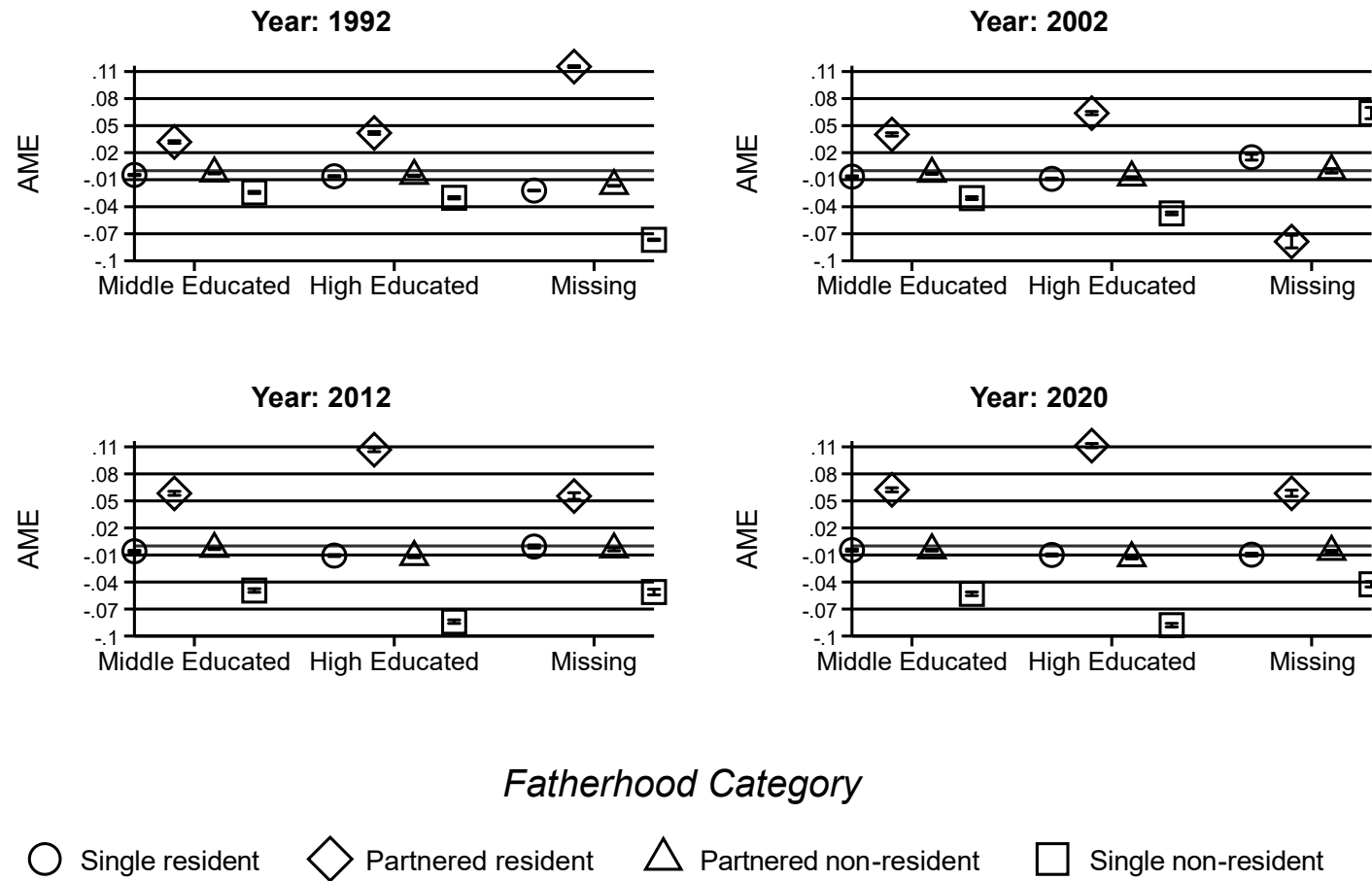
Notes: confidence intervals are so small they fall within the markers. Time  $t_0$  is the year of entry into single parenthood (year 0). Predicted values from time-distributed fixed-effects models including an interaction between gender and years before/after intro into single parenthood.

**Figure A2.** Associations between fatherhood categories and level of education, with “single co-resident fathers” including those living with other household members. Average marginal effects (AMEs) 95% conf. interval. Separated multinomial logistic models by year (1992, 2002, 2012, 2020).



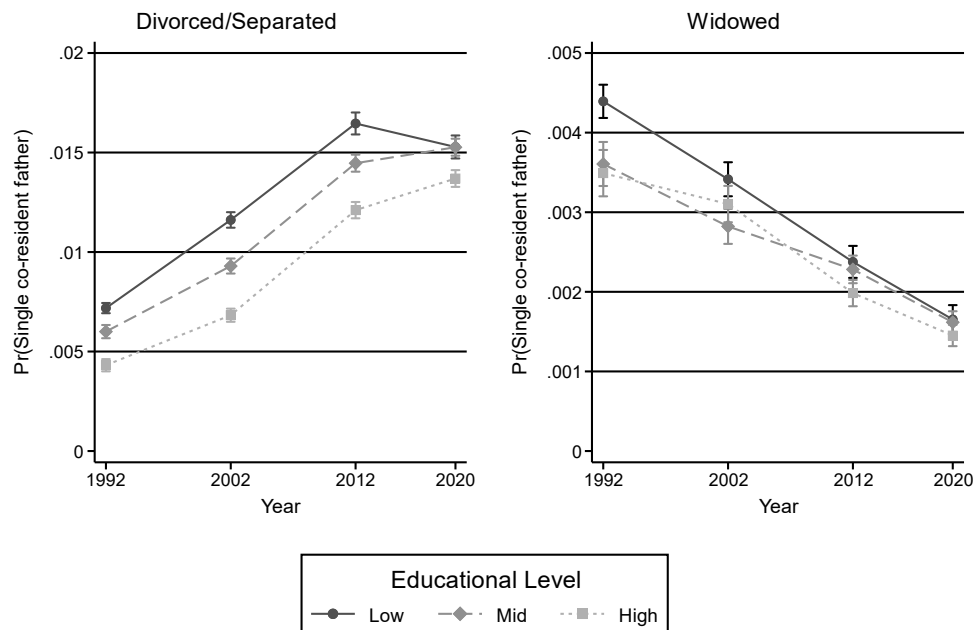
Notes: AME=Average Marginal Effects. All models control for age (in categories), nationality, number of children, and age of the youngest child. Confidence intervals are so small they are barely visible. Reference category: lower educated.

**Figure A3.** Associations between fatherhood categories and level of education, including missing cases (category: Unknown). Average marginal effects (AMEs) 95% conf. interval. Separated multinomial logistic models by year (1992, 2002, 2012, 2020).



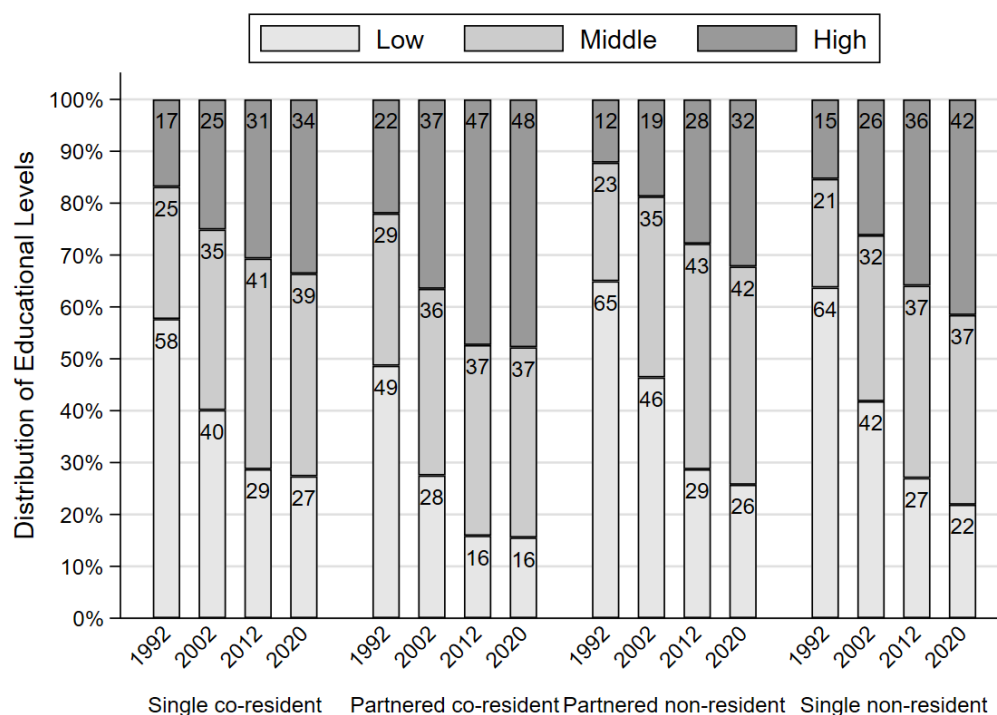
Notes: AME=Average Marginal Effects. All models control for age (in categories), nationality, number of children, and age of the youngest child. Confidence intervals are so small they are barely visible. Reference category: lower educated.

**Figure A4.** Predicted probabilities of single co-residential fatherhood by educational attainment over time. Separated models, by pathway into single co-residential fatherhood: union dissolution and widowhood.

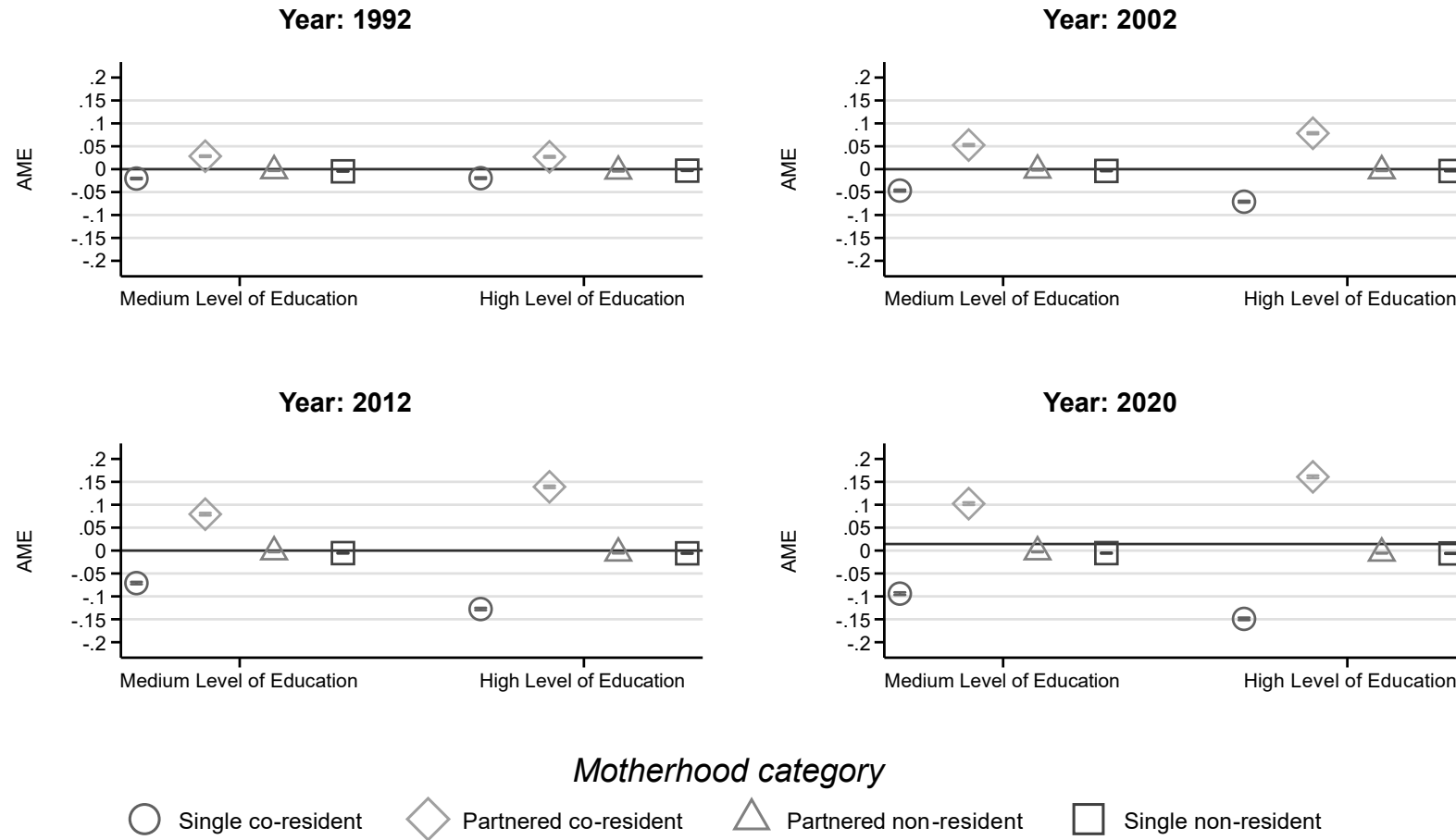


Notes: Pooled multinomial logistic model with interaction Year#Educational Level. Reference category: lower educated. The dependent variable refers to different fatherhood typologies based on children's and partner's living arrangements. The reference category includes all other fathers who are not single co-resident fathers.

**Figure A5.** Percent distribution of educational attainment, by motherhood category and year.

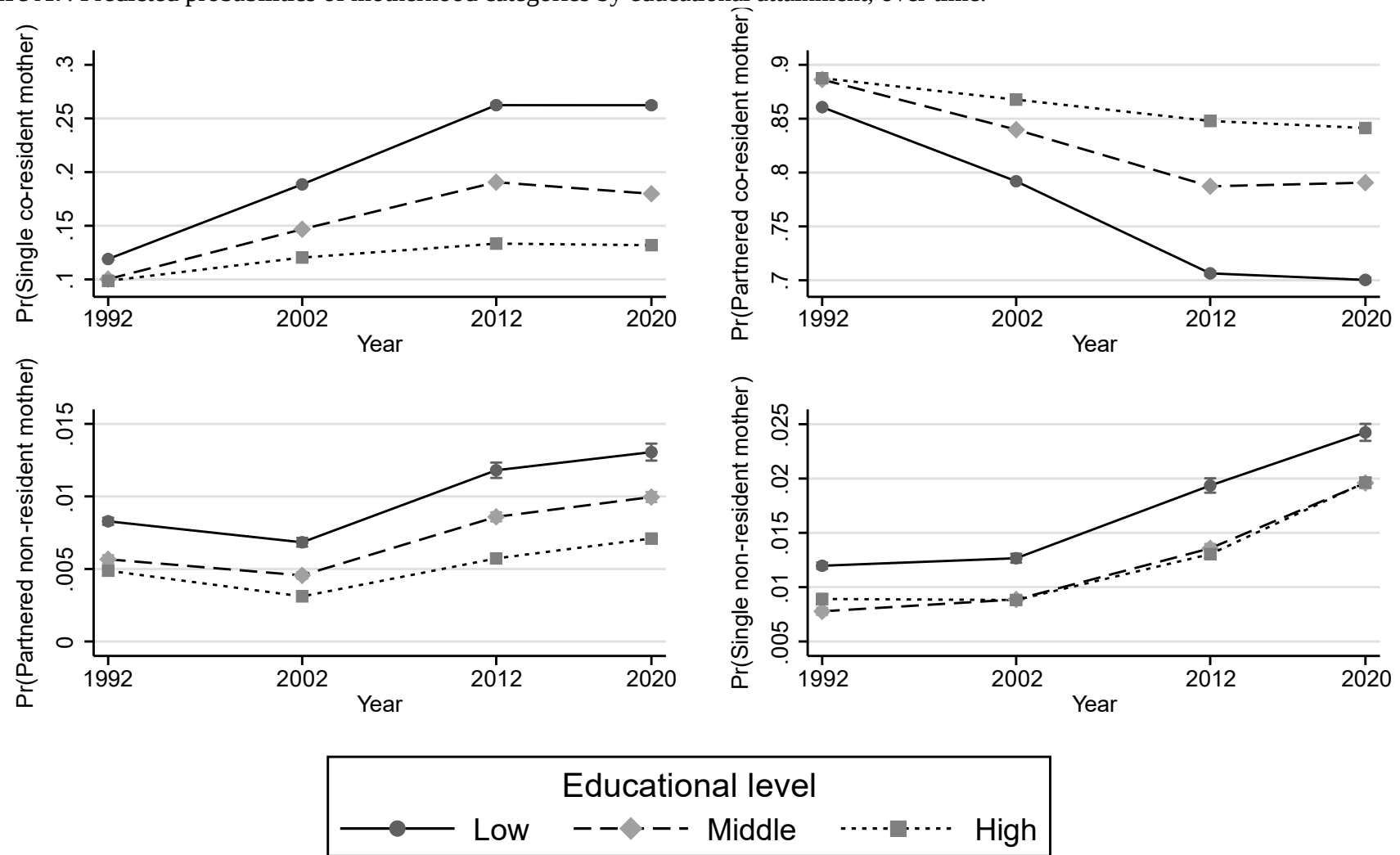


**Figure A6.** Association between educational attainment and motherhood categories. Average marginal effects (AMEs) 95% conf. interval. Separated multinomial logistic models by year (1992, 2002, 2012, 2020).



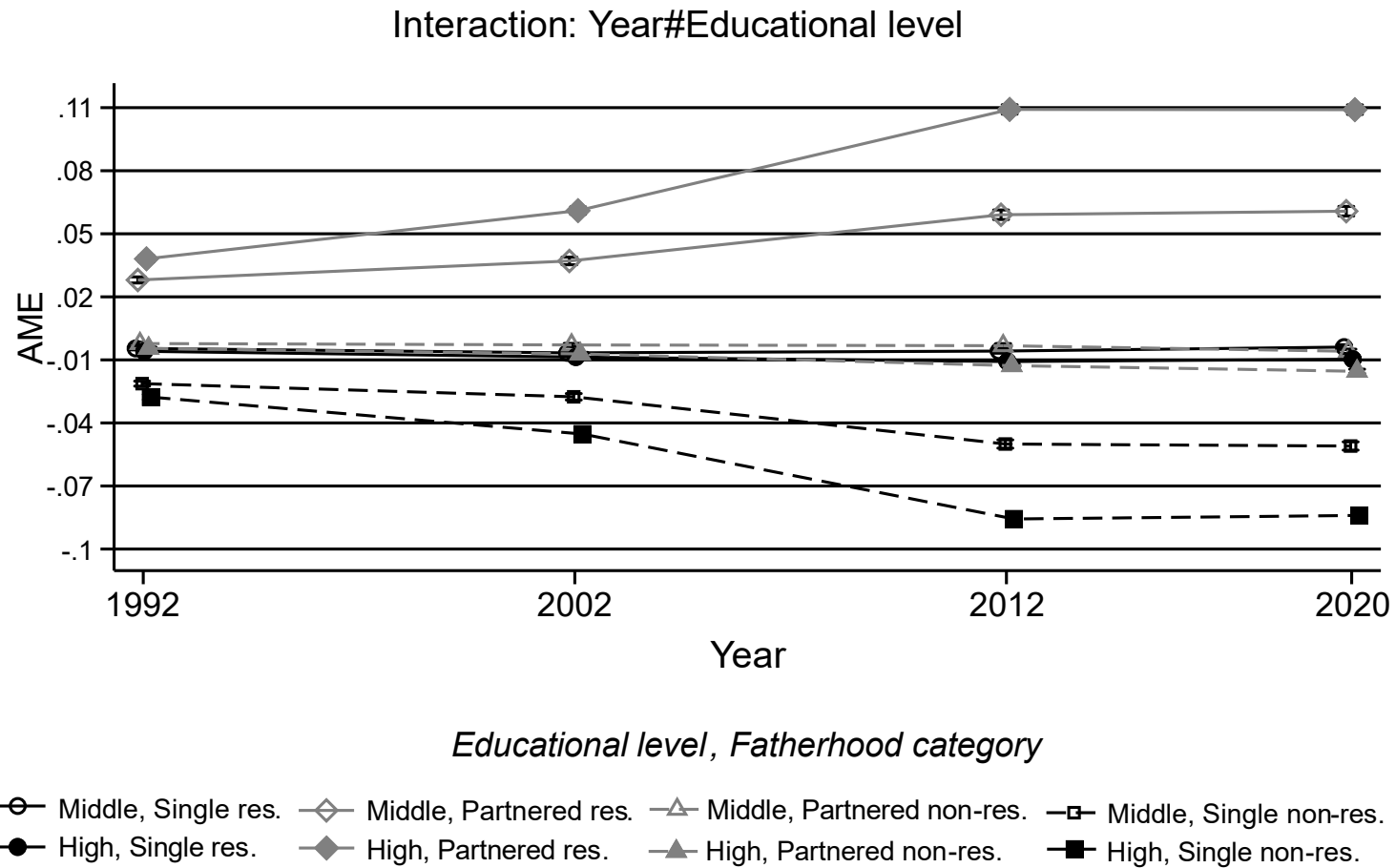
Notes: AME=Average Marginal Effects. All models control for age (in categories), nationality, number of children, and age of the youngest child. Confidence intervals are so small they are barely visible. Reference category: lower educated.

**Figure A7.** Predicted probabilities of motherhood categories by educational attainment, over time.



Notes: Pooled multinomial logistic model with interaction Year#Educational Level. Confidence intervals are so small they are barely visible. Reference category: lower educated.

**Figure A8.** Association between educational attainment and fatherhood categories over time.



Notes: Average marginal effects (AMEs) 95% conf. interval. Pooled multinomial logistic model with interaction Year#Educational Level. Confidence intervals are so small they are barely visible. Reference category: lower educated.

**Table A1.** Sample composition. Mothers with at least one minor child in Belgium, by motherhood category and year.

|                            | <b>1992</b> |       | <b>2002</b> |       | <b>2012</b> |       | <b>2020</b> |       |
|----------------------------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|
| <i>Motherhood category</i> | n           | %     | n           | %     | n           | %     | n           | %     |
| Single co-resident         | 98,298      | 10.9  | 128,956     | 15.0  | 154,433     | 18.0  | 149,768     | 17.8  |
| Partnered co-resident      | 790,726     | 87.3  | 720,881     | 83.6  | 683,091     | 79.8  | 667,877     | 79.3  |
| Partnered non-resident     | 6,847       | 0.8   | 4,232       | 0.5   | 6,556       | 0.8   | 7,455       | 0.9   |
| Single non-resident        | 9,659       | 1.1   | 8,689       | 1.0   | 12,077      | 1.4   | 16,983      | 2.0   |
| Total                      | 905,530     | 100.0 | 862,758     | 100.0 | 856,157     | 100.0 | 842,083     | 100.0 |

**Table A2.** Demographic and household characteristics of mothers with at least one minor child, by motherhood category and year (column percentages).

| <i>Motherhood typology</i>         | 1992               |                       |                        |                     | 2002               |                       |                        |                     | 2012               |                       |                        |                     | 2020               |                       |                        |                     |
|------------------------------------|--------------------|-----------------------|------------------------|---------------------|--------------------|-----------------------|------------------------|---------------------|--------------------|-----------------------|------------------------|---------------------|--------------------|-----------------------|------------------------|---------------------|
|                                    | Single co-resident | Partnered co-resident | Partnered non-resident | Single non-resident | Single co-resident | Partnered co-resident | Partnered non-resident | Single non-resident | Single co-resident | Partnered co-resident | Partnered non-resident | Single non-resident | Single co-resident | Partnered co-resident | Partnered non-resident | Single non-resident |
| <b>Demographic characteristics</b> |                    |                       |                        |                     |                    |                       |                        |                     |                    |                       |                        |                     |                    |                       |                        |                     |
| <i>Age</i>                         |                    |                       |                        |                     |                    |                       |                        |                     |                    |                       |                        |                     |                    |                       |                        |                     |
| 15-29                              | 12.7               | 14.8                  | 11.2                   | 13.3                | 8.9                | 8.1                   | 6.9                    | 6.9                 | 8.5                | 8.3                   | 8.2                    | 7.7                 | 7.6                | 8.7                   | 8.5                    | 6.2                 |
| 30-39                              | 53.4               | 55.5                  | 62.0                   | 53.5                | 47.4               | 53.6                  | 51.3                   | 45.8                | 36.7               | 45.6                  | 38.4                   | 36.6                | 36.1               | 45.9                  | 41.3                   | 38.5                |
| 40-49                              | 30.3               | 26.9                  | 24.2                   | 30.2                | 39.5               | 35.5                  | 39.4                   | 43.2                | 47.3               | 41.5                  | 48.8                   | 48.9                | 45.6               | 39.3                  | 45.1                   | 46.9                |
| 50-59                              | 3.5                | 2.7                   | 2.3                    | 2.9                 | 4.2                | 2.8                   | 2.1                    | 4.0                 | 7.5                | 4.6                   | 4.5                    | 6.6                 | 10.7               | 6.1                   | 5.0                    | 8.3                 |
| 60+                                | 0.1                | 0.1                   | 0.2                    | 0.1                 | 0.1                | 0.0                   | 0.3                    | 0.1                 | 0.1                | 0.0                   | 0.1                    | 0.1                 | 0.1                | 0.1                   | 0.1                    | 0.1                 |
| Tot                                | 100.0              | 100.0                 | 100.0                  | 100.0               | 100.0              | 100.0                 | 100.0                  | 100.0               | 100.0              | 100.0                 | 100.0                  | 100.0               | 100.0              | 100.0                 | 100.0                  | 100.0               |
| <i>Marital Status</i>              |                    |                       |                        |                     |                    |                       |                        |                     |                    |                       |                        |                     |                    |                       |                        |                     |
| Single                             | 14.7               | 1.7                   | 3.2                    | 12.8                | 23.28              | 6.15                  | 8.51                   | 15.07               | 36.7               | 20.22                 | 21.1                   | 30.34               | 49.28              | 28.39                 | 34.9                   | 46.63               |
| Married                            | 34.3               | 96.7                  | 76.8                   | 49.8                | 24.16              | 90.53                 | 48.84                  | 40.61               | 13.23              | 74.76                 | 34.3                   | 18.45               | 9.02               | 67.65                 | 29.63                  | 13.09               |
| Widowed                            | 11.5               | 0.2                   | 0.7                    | 2.2                 | 7.07               | 0.19                  | 0.71                   | 1.35                | 4.28               | 0.2                   | 0.4                    | 0.62                | 2.86               | 0.13                  | 0.35                   | 0.43                |
| Divorced                           | 39.6               | 1.5                   | 19.4                   | 35.3                | 45.49              | 3.13                  | 41.94                  | 42.97               | 45.79              | 4.82                  | 44.2                   | 50.59               | 38.85              | 3.82                  | 35.12                  | 39.85               |
| Tot                                | 100.0              | 100.0                 | 100.0                  | 100.0               | 100.0              | 100.0                 | 100.0                  | 100.0               | 100.0              | 100.0                 | 100.0                  | 100.0               | 100.0              | 100.0                 | 100.0                  | 100.0               |
| <i>Nationality</i>                 |                    |                       |                        |                     |                    |                       |                        |                     |                    |                       |                        |                     |                    |                       |                        |                     |
| Belgian                            | 89.85              | 91.84                 | 95.17                  | 90.96               | 90.56              | 91.83                 | 95.96                  | 91.67               | 91.08              | 93.44                 | 96.31                  | 93.23               | 93.56              | 95.42                 | 96.74                  | 95.04               |
| Other                              | 10.15              | 8.16                  | 4.83                   | 9.04                | 9.44               | 8.17                  | 4.04                   | 8.33                | 8.92               | 6.56                  | 3.69                   | 6.77                | 6.44               | 4.58                  | 3.26                   | 4.96                |
| Tot                                | 10.2               | 8.2                   | 4.8                    | 9.0                 | 9.4                | 8.2                   | 4.0                    | 8.3                 | 8.9                | 6.6                   | 3.7                    | 6.8                 | 6.4                | 4.6                   | 3.3                    | 5.0                 |
| <b>Household characteristics</b>   |                    |                       |                        |                     |                    |                       |                        |                     |                    |                       |                        |                     |                    |                       |                        |                     |
| <i>Number of children</i>          |                    |                       |                        |                     |                    |                       |                        |                     |                    |                       |                        |                     |                    |                       |                        |                     |
| 1                                  | 62.33              | 43.35                 | 61.3                   | 67.16               | 59.65              | 41.54                 | 66.42                  | 60.29               | 62.29              | 44.41                 | 63.94                  | 60.75               | 64.57              | 48.42                 | 64.14                  | 61.5                |
| 2                                  | 28.78              | 40.09                 | 30.5                   | 25.25               | 30.33              | 41.74                 | 26.06                  | 29.77               | 28.56              | 40.71                 | 29.01                  | 30.17               | 27.53              | 38.72                 | 28.83                  | 30.94               |
| 3                                  | 6.93               | 12.63                 | 6.84                   | 5.91                | 7.82               | 13.12                 | 6.07                   | 7.66                | 7.13               | 11.84                 | 5.84                   | 7.39                | 6.17               | 10.33                 | 5.61                   | 6.44                |
| 4+                                 | 1.97               | 3.94                  | 1.37                   | 1.68                | 2.2                | 3.6                   | 1.44                   | 2.27                | 2.02               | 3.04                  | 1.21                   | 1.68                | 1.73               | 2.54                  | 1.42                   | 1.12                |
| Tot                                | 100.0              | 100.0                 | 100.0                  | 100.0               | 100.0              | 100.0                 | 100.0                  | 100.0               | 100.0              | 100.0                 | 100.0                  | 100.0               | 100.0              | 100.0                 | 100.0                  | 100.0               |
| <i>Age youngest child</i>          |                    |                       |                        |                     |                    |                       |                        |                     |                    |                       |                        |                     |                    |                       |                        |                     |
| 0-1 year                           | 5.44               | 11.05                 | 4.88                   | 5.01                | 5.07               | 9.93                  | 4.02                   | 2.97                | 4.91               | 10.86                 | 3.33                   | 1.8                 | 3.13               | 7.75                  | 1.61                   | 0.84                |
| 2-3 years                          | 8.04               | 12.27                 | 4.86                   | 5.3                 | 8.07               | 12.02                 | 2.53                   | 4.34                | 7.64               | 13.07                 | 2.3                    | 3.66                | 7.46               | 15.46                 | 2.2                    | 3.3                 |
| 4-5 years                          | 9.57               | 11.35                 | 7.84                   | 7.64                | 9.94               | 11.75                 | 4.37                   | 7.65                | 9.63               | 12.22                 | 5.35                   | 7.97                | 9.61               | 12.96                 | 5.9                    | 7.98                |
| 6-12 years                         | 42.18              | 38.55                 | 43.49                  | 39.82               | 43.92              | 40.42                 | 38.21                  | 41.6                | 41.94              | 37.9                  | 39.8                   | 44.05               | 43.66              | 39.41                 | 45.45                  | 48.13               |
| 13-17 years                        | 34.76              | 26.78                 | 38.92                  | 42.23               | 32.99              | 25.89                 | 50.87                  | 43.43               | 35.88              | 25.95                 | 49.22                  | 42.52               | 36.14              | 24.41                 | 44.84                  | 39.75               |
| Tot                                | 100.0              | 100.0                 | 100.0                  | 100.0               | 100.0              | 100.0                 | 100.0                  | 100.0               | 100.0              | 100.0                 | 100.0                  | 100.0               | 100.0              | 100.0                 | 100.0                  | 100.0               |

**Table A3.** Relative Risk Ratios (RRR) for single motherhood. Demographic and household characteristics by year (1992, 2002, 2012, 2020) and pooled.

| <i>Motherhood category</i>                  | 1992 (N= 905,530)  |             |                        |             |                     |             | 2002 (N= 862,758 ) |             |                        |             |                     |             |
|---------------------------------------------|--------------------|-------------|------------------------|-------------|---------------------|-------------|--------------------|-------------|------------------------|-------------|---------------------|-------------|
|                                             | Partnered resident |             | Partnered non-resident |             | Single non-resident |             | Partnered resident |             | Partnered non-resident |             | Single non-resident |             |
|                                             | RRR                | ci95        | RRR                    | ci95        | RRR                 | ci95        | RRR                | ci95        | RRR                    | ci95        | RRR                 | ci95        |
| Single resident fathers (ref. category)     |                    |             |                        |             |                     |             |                    |             |                        |             |                     |             |
| <i>Educational Level</i> (ref. = Low level) |                    |             |                        |             |                     |             |                    |             |                        |             |                     |             |
| Medium level                                | 1.256***           | 1.236,1.277 | 0.774***               | 0.729,0.822 | 0.764***            | 0.725,0.806 | 1.429***           | 1.408,1.450 | 0.891**                | 0.831,0.956 | 0.929**             | 0.882,0.979 |
| High level                                  | 1.243***           | 1.220,1.267 | 0.645***               | 0.597,0.697 | 0.902***            | 0.848,0.959 | 1.781***           | 1.753,1.809 | 0.757***               | 0.694,0.826 | 1.099***            | 1.040,1.162 |
| <i>Age</i> (ref. = 15-29)                   |                    |             |                        |             |                     |             |                    |             |                        |             |                     |             |
| 30-39 years                                 | 1.051***           | 1.026,1.077 | 1.011                  | 0.915,1.118 | 0.734***            | 0.679,0.795 | 1.397***           | 1.362,1.432 | 0.797**                | 0.687,0.924 | 0.807***            | 0.729,0.892 |
| 40-49 years                                 | 1.201***           | 1.166,1.236 | 0.598***               | 0.532,0.673 | 0.579***            | 0.528,0.635 | 1.442***           | 1.402,1.484 | 0.435***               | 0.370,0.512 | 0.684***            | 0.613,0.764 |
| 50-59 years                                 | 1.316***           | 1.257,1.378 | 0.478***               | 0.393,0.582 | 0.441***            | 0.379,0.512 | 1.318***           | 1.264,1.374 | 0.186***               | 0.143,0.243 | 0.542***            | 0.464,0.632 |
| 60 or more years                            | 0.882              | 0.714,1.091 | 1.474                  | 0.858,2.535 | 0.557+              | 0.304,1.020 | 1.139              | 0.859,1.510 | 2.286*                 | 1.217,4.294 | 0.864               | 0.393,1.902 |
| <i>Nationality</i> (ref. = Other)           |                    |             |                        |             |                     |             |                    |             |                        |             |                     |             |
| Belgian                                     | 1.360***           | 1.328,1.391 | 2.244***               | 2.002,2.515 | 1.123**             | 1.043,1.209 | 1.099***           | 1.076,1.123 | 2.340***               | 2.002,2.735 | 1.084*              | 1.001,1.174 |
| <i>Number of children</i> (ref. = 1 child)  |                    |             |                        |             |                     |             |                    |             |                        |             |                     |             |
| 2 children                                  | 1.976***           | 1.943,2.008 | 1.165***               | 1.099,1.235 | 0.912***            | 0.865,0.962 | 1.864***           | 1.837,1.891 | 0.969                  | 0.898,1.045 | 1.122***            | 1.064,1.184 |
| 3 children                                  | 2.514***           | 2.445,2.585 | 1.200***               | 1.081,1.332 | 0.966               | 0.878,1.062 | 2.204***           | 2.153,2.256 | 1.079                  | 0.942,1.236 | 1.246***            | 1.140,1.361 |
| 4+ children                                 | 2.796***           | 2.662,2.936 | 0.991                  | 0.799,1.230 | 1.037               | 0.876,1.228 | 2.145***           | 2.059,2.235 | 1.085                  | 0.834,1.410 | 1.462***            | 1.256,1.701 |
| <i>Age youngest child</i> (ref. = 1 year)   |                    |             |                        |             |                     |             |                    |             |                        |             |                     |             |
| 2-3 years                                   | 0.664***           | 0.640,0.688 | 0.653***               | 0.558,0.764 | 0.751***            | 0.659,0.855 | 0.674***           | 0.652,0.697 | 0.406***               | 0.317,0.521 | 0.929               | 0.789,1.093 |
| 4-5 years                                   | 0.517***           | 0.498,0.536 | 0.879+                 | 0.759,1.019 | 0.953               | 0.842,1.078 | 0.512***           | 0.495,0.529 | 0.600***               | 0.481,0.750 | 1.384***            | 1.188,1.613 |
| 6-12 years                                  | 0.418***           | 0.404,0.432 | 1.152*                 | 1.005,1.320 | 1.232***            | 1.102,1.377 | 0.407***           | 0.394,0.419 | 1.372***               | 1.137,1.655 | 1.863***            | 1.617,2.147 |
| 13-17 years                                 | 0.451***           | 0.435,0.468 | 1.574***               | 1.359,1.823 | 1.756***            | 1.555,1.983 | 0.469***           | 0.454,0.485 | 3.243***               | 2.653,3.965 | 3.040***            | 2.618,3.529 |

Notes: 95% confidence interval in second colum. +p<0.10, \* p<0.05, \*\* p<0.01, \*\*\* p<0.001

(continued)

**Table A3.** (continued).

| <i>Motherhood category</i>                  | 2012 (N=856,157)      |             |                        |             |                     |             | 2020 (N=842,083)      |             |                        |             |                     |             |
|---------------------------------------------|-----------------------|-------------|------------------------|-------------|---------------------|-------------|-----------------------|-------------|------------------------|-------------|---------------------|-------------|
|                                             | Partnered co-resident |             | Partnered non-resident |             | Single non-resident |             | Partnered co-resident |             | Partnered non-resident |             | Single non-resident |             |
|                                             | RRR                   | ci95        | RRR                    | ci95        | RRR                 | ci95        | RRR                   | ci95        | RRR                    | ci95        | RRR                 | ci95        |
| Single co-resident fathers (ref. category)  |                       |             |                        |             |                     |             |                       |             |                        |             |                     |             |
| <i>Educational Level</i> (ref. = Low level) |                       |             |                        |             |                     |             |                       |             |                        |             |                     |             |
| Medium level                                | 1.551***              | 1.528,1.574 | 1.006                  | 0.947,1.069 | 0.961               | 0.916,1.008 | 1.776***              | 1.748,1.804 | 1.145***               | 1.078,1.216 | 1.164***            | 1.114,1.216 |
| High level                                  | 2.402***              | 2.365,2.440 | 0.962                  | 0.899,1.030 | 1.321***            | 1.258,1.387 | 2.746***              | 2.702,2.791 | 1.142***               | 1.070,1.220 | 1.595***            | 1.526,1.667 |
| <i>Age</i> (ref. = 15-29)                   |                       |             |                        |             |                     |             |                       |             |                        |             |                     |             |
| 30-39 years                                 | 1.306***              | 1.276,1.337 | 0.601***               | 0.539,0.671 | 0.623***            | 0.575,0.676 | 0.914***              | 0.891,0.938 | 0.514***               | 0.465,0.568 | 0.697***            | 0.646,0.752 |
| 40-49 years                                 | 1.270***              | 1.237,1.304 | 0.358***               | 0.318,0.403 | 0.470***            | 0.431,0.513 | 0.795***              | 0.773,0.818 | 0.268***               | 0.240,0.299 | 0.488***            | 0.450,0.529 |
| 50-59 years                                 | 1.137***              | 1.099,1.177 | 0.176***               | 0.149,0.208 | 0.373***            | 0.333,0.417 | 0.694***              | 0.670,0.718 | 0.109***               | 0.094,0.127 | 0.360***            | 0.326,0.396 |
| 60 or more years                            | 1.189                 | 0.924,1.530 | 0.353*                 | 0.142,0.876 | 0.452*              | 0.219,0.935 | 0.762*                | 0.620,0.938 | 0.121***               | 0.045,0.329 | 0.335***            | 0.185,0.607 |
| <i>Nationality</i> (ref. = Other)           |                       |             |                        |             |                     |             |                       |             |                        |             |                     |             |
| Belgian                                     | 1.223***              | 1.198,1.250 | 2.430***               | 2.132,2.770 | 1.278***            | 1.186,1.376 | 1.172***              | 1.142,1.202 | 1.856***               | 1.628,2.116 | 1.197***            | 1.112,1.288 |
| <i>Number of children</i> (ref. = 1 child)  |                       |             |                        |             |                     |             |                       |             |                        |             |                     |             |
| 2 children                                  | 1.775***              | 1.751,1.799 | 1.189***               | 1.122,1.260 | 1.163***            | 1.113,1.216 | 1.672***              | 1.649,1.695 | 1.159***               | 1.098,1.224 | 1.168***            | 1.125,1.212 |
| 3 children                                  | 2.020***              | 1.975,2.066 | 1.162**                | 1.040,1.298 | 1.280***            | 1.186,1.380 | 2.003***              | 1.955,2.052 | 1.211***               | 1.089,1.346 | 1.216***            | 1.135,1.302 |
| 4+ children                                 | 1.899***              | 1.825,1.976 | 1.019                  | 0.809,1.282 | 1.228**             | 1.060,1.422 | 1.803***              | 1.726,1.884 | 1.352**                | 1.106,1.651 | 0.938               | 0.806,1.090 |
| <i>Age youngest child</i> (ref. = 1 year)   |                       |             |                        |             |                     |             |                       |             |                        |             |                     |             |
| 2-3 years                                   | 0.699***              | 0.677,0.720 | 0.472***               | 0.382,0.583 | 1.381***            | 1.169,1.630 | 0.801***              | 0.772,0.830 | 0.628***               | 0.494,0.797 | 1.687***            | 1.398,2.034 |
| 4-5 years                                   | 0.492***              | 0.477,0.508 | 0.972                  | 0.812,1.163 | 2.604***            | 2.232,3.039 | 0.497***              | 0.479,0.515 | 1.492***               | 1.211,1.839 | 3.317***            | 2.778,3.962 |
| 6-12 years                                  | 0.358***              | 0.348,0.368 | 2.112***               | 1.800,2.478 | 3.941***            | 3.401,4.566 | 0.335***              | 0.324,0.346 | 3.453***               | 2.844,4.192 | 5.092***            | 4.284,6.052 |
| 13-17 years                                 | 0.382***              | 0.370,0.394 | 4.438***               | 3.742,5.263 | 5.684***            | 4.872,6.631 | 0.328***              | 0.316,0.340 | 6.849***               | 5.594,8.385 | 6.648***            | 5.569,7.937 |

Notes: 95% confidence interval in second colum. +p<0.10, \* p<0.05, \*\* p<0.01, \*\*\* p<0.001

(continued)

**Table A3.** (continued).

| <i>Motherhood category</i>                                       | <b>Pooled Years 1992, 2002, 2012, 2020 (N=3,466,528)</b> |             |                           |             |                        |             | <b>Pooled - Interaction Year#Educational Level (N=3,466,528)</b> |             |                           |             |                        |             |
|------------------------------------------------------------------|----------------------------------------------------------|-------------|---------------------------|-------------|------------------------|-------------|------------------------------------------------------------------|-------------|---------------------------|-------------|------------------------|-------------|
|                                                                  | Partnered<br>co-resident                                 |             | Partnered<br>non-resident |             | Single<br>non-resident |             | Partnered<br>co-resident                                         |             | Partnered<br>non-resident |             | Single<br>non-resident |             |
|                                                                  | RRR                                                      | ci95        | RRR                       | ci95        | RRR                    | ci95        | RRR                                                              | ci95        | RRR                       | ci95        | RRR                    | ci95        |
| Single co-resident fathers (ref. category)                       |                                                          |             |                           |             |                        |             |                                                                  |             |                           |             |                        |             |
| <i>Year</i> (ref. = 1992)                                        |                                                          |             |                           |             |                        |             |                                                                  |             |                           |             |                        |             |
| 2002                                                             | 0.609***                                                 | 0.604,0.615 | 0.518***                  | 0.498,0.539 | 0.699***               | 0.678,0.720 | 0.573***                                                         | 0.566,0.580 | 0.522***                  | 0.495,0.551 | 0.669***               | 0.642,0.698 |
| 2012                                                             | 0.448***                                                 | 0.444,0.452 | 0.737***                  | 0.710,0.764 | 0.829***               | 0.805,0.854 | 0.361***                                                         | 0.356,0.366 | 0.651***                  | 0.616,0.688 | 0.739***               | 0.707,0.773 |
| 2020                                                             | 0.460***                                                 | 0.456,0.465 | 0.887***                  | 0.855,0.920 | 1.213***               | 1.179,1.247 | 0.358***                                                         | 0.352,0.363 | 0.721***                  | 0.682,0.762 | 0.927***               | 0.887,0.968 |
| <i>Educational Level</i> (ref. = Low level)                      |                                                          |             |                           |             |                        |             |                                                                  |             |                           |             |                        |             |
| Medium level                                                     | 1.418***                                                 | 1.406,1.430 | 0.939***                  | 0.909,0.969 | 0.945***               | 0.922,0.968 | 1.228***                                                         | 1.209,1.248 | 0.810***                  | 0.763,0.860 | 0.770***               | 0.730,0.811 |
| High level                                                       | 1.979***                                                 | 1.961,1.998 | 0.878***                  | 0.846,0.912 | 1.245***               | 1.213,1.278 | 1.251***                                                         | 1.228,1.274 | 0.709***                  | 0.657,0.766 | 0.897***               | 0.845,0.952 |
| <i>Age</i> (ref. = 15-29)                                        |                                                          |             |                           |             |                        |             |                                                                  |             |                           |             |                        |             |
| 30-39 years                                                      | 1.200***                                                 | 1.186,1.215 | 0.732***                  | 0.693,0.773 | 0.725***               | 0.697,0.755 | 1.169***                                                         | 1.155,1.183 | 0.713***                  | 0.675,0.753 | 0.702***               | 0.674,0.731 |
| 40-49 years                                                      | 1.180***                                                 | 1.163,1.197 | 0.421***                  | 0.396,0.448 | 0.563***               | 0.538,0.589 | 1.148***                                                         | 1.131,1.165 | 0.409***                  | 0.385,0.436 | 0.543***               | 0.519,0.569 |
| 50-59 years                                                      | 1.036***                                                 | 1.016,1.057 | 0.200***                  | 0.183,0.219 | 0.415***               | 0.391,0.441 | 1.014                                                            | 0.994,1.034 | 0.196***                  | 0.179,0.215 | 0.403***               | 0.380,0.428 |
| 60 or more years                                                 | 0.982                                                    | 0.875,1.103 | 0.670*                    | 0.468,0.958 | 0.488***               | 0.347,0.686 | 0.961                                                            | 0.854,1.080 | 0.658*                    | 0.460,0.940 | 0.476***               | 0.338,0.669 |
| <i>Nationality</i> (ref. = Other)                                |                                                          |             |                           |             |                        |             |                                                                  |             |                           |             |                        |             |
| Belgian                                                          | 1.214***                                                 | 1.199,1.229 | 2.162***                  | 2.023,2.311 | 1.166***               | 1.122,1.213 | 1.217***                                                         | 1.202,1.232 | 2.165***                  | 2.025,2.314 | 1.168***               | 1.124,1.215 |
| <i>Number of children</i> (ref. = 1 child)                       |                                                          |             |                           |             |                        |             |                                                                  |             |                           |             |                        |             |
| 2 children                                                       | 1.776***                                                 | 1.763,1.790 | 1.132***                  | 1.098,1.168 | 1.103***               | 1.078,1.129 | 1.781***                                                         | 1.767,1.794 | 1.135***                  | 1.101,1.170 | 1.106***               | 1.081,1.132 |
| 3 children                                                       | 2.081***                                                 | 2.056,2.107 | 1.158***                  | 1.094,1.225 | 1.173***               | 1.126,1.221 | 2.107***                                                         | 2.081,2.134 | 1.167***                  | 1.103,1.236 | 1.185***               | 1.139,1.234 |
| 4+ children                                                      | 2.001***                                                 | 1.958,2.045 | 1.08                      | 0.966,1.208 | 1.133**                | 1.049,1.224 | 2.040***                                                         | 1.996,2.085 | 1.093                     | 0.977,1.222 | 1.151***               | 1.065,1.243 |
| <i>Age youngest child</i> (ref. = 1 year)                        |                                                          |             |                           |             |                        |             |                                                                  |             |                           |             |                        |             |
| 2-3 years                                                        | 0.741***                                                 | 0.729,0.754 | 0.537***                  | 0.486,0.594 | 1.002                  | 0.928,1.081 | 0.738***                                                         | 0.726,0.751 | 0.536***                  | 0.485,0.593 | 0.999                  | 0.926,1.078 |
| 4-5 years                                                        | 0.518***                                                 | 0.509,0.526 | 0.938                     | 0.858,1.025 | 1.695***               | 1.579,1.819 | 0.515***                                                         | 0.506,0.523 | 0.935                     | 0.856,1.023 | 1.689***               | 1.574,1.813 |
| 6-12 years                                                       | 0.381***                                                 | 0.375,0.387 | 1.804***                  | 1.664,1.954 | 2.479***               | 2.320,2.649 | 0.378***                                                         | 0.372,0.384 | 1.796***                  | 1.657,1.947 | 2.467***               | 2.309,2.636 |
| 13-17 years                                                      | 0.406***                                                 | 0.399,0.413 | 3.403***                  | 3.120,3.712 | 3.549***               | 3.307,3.809 | 0.403***                                                         | 0.396,0.410 | 3.385***                  | 3.103,3.693 | 3.527***               | 3.286,3.785 |
| <i>Interaction Year*Educational level</i> (ref.= 1992*Low level) |                                                          |             |                           |             |                        |             |                                                                  |             |                           |             |                        |             |
| 2002*Medium level                                                |                                                          |             |                           |             |                        |             | 1.120***                                                         | 1.097,1.143 | 1.053                     | 0.962,1.153 | 1.166***               | 1.085,1.254 |
| 2002*High level                                                  |                                                          |             |                           |             |                        |             | 1.393***                                                         | 1.362,1.424 | 1.001                     | 0.895,1.120 | 1.212***               | 1.120,1.312 |
| 2012*Medium level                                                |                                                          |             |                           |             |                        |             | 1.270***                                                         | 1.242,1.297 | 1.231***                  | 1.132,1.340 | 1.249***               | 1.164,1.340 |
| 2012*High level                                                  |                                                          |             |                           |             |                        |             | 1.941***                                                         | 1.896,1.988 | 1.336***                  | 1.208,1.477 | 1.468***               | 1.360,1.583 |
| 2020*Medium level                                                |                                                          |             |                           |             |                        |             | 1.365***                                                         | 1.335,1.395 | 1.367***                  | 1.257,1.486 | 1.525***               | 1.424,1.632 |
| 2020*High level                                                  |                                                          |             |                           |             |                        |             | 1.964***                                                         | 1.918,2.011 | 1.513***                  | 1.372,1.669 | 1.784***               | 1.658,1.919 |

Notes: 95% confidence interval in second colum. +p<0.10, \* p<0.05, \*\* p<0.01, \*\*\* p<0.001

**Table A4.** Demographic and household characteristics of fathers with at least one minor child, by fatherhood category and year (row percentages).

| <i>Fatherhood category</i>         | <b>1992</b>      |                     |                      |                   |       | <b>2002</b>      |                     |                      |                   |       |
|------------------------------------|------------------|---------------------|----------------------|-------------------|-------|------------------|---------------------|----------------------|-------------------|-------|
|                                    | Single co-resid. | Partnered co-resid. | Partnered non-resid. | Single non-resid. | Total | Single co-resid. | Partnered co-resid. | Partnered non-resid. | Single non-resid. | Total |
| <b>Demographic characteristics</b> |                  |                     |                      |                   |       |                  |                     |                      |                   |       |
| <i>Age</i>                         |                  |                     |                      |                   |       |                  |                     |                      |                   |       |
| 15-29                              | 1.1              | 91.7                | 1.0                  | 6.3               | 100.0 | 1.3              | 86.7                | 1.7                  | 10.4              | 100.0 |
| 30-39                              | 1.6              | 90.6                | 1.6                  | 6.2               | 100.0 | 1.5              | 89.0                | 1.7                  | 7.8               | 100.0 |
| 40-49                              | 2.4              | 89.5                | 1.6                  | 6.6               | 100.0 | 2.6              | 86.7                | 2.0                  | 8.8               | 100.0 |
| 50-59                              | 3.0              | 89.6                | 1.2                  | 6.3               | 100.0 | 3.8              | 83.3                | 1.9                  | 11.1              | 100.0 |
| 60+                                | 4.8              | 85.6                | 1.8                  | 7.9               | 100.0 | 4.6              | 79.8                | 2.5                  | 13.1              | 100.0 |
| <i>Marital Status</i>              |                  |                     |                      |                   |       |                  |                     |                      |                   |       |
| Single                             | 5.5              | 61.1                | 1.6                  | 31.8              | 100.0 | 3.5              | 70.5                | 2.3                  | 23.7              | 100.0 |
| Married                            | 1.0              | 94.9                | 1.1                  | 3.0               | 100.0 | 0.8              | 95.4                | 0.9                  | 2.8               | 100.0 |
| Widowed                            | 81.9             | 8.8                 | 0.6                  | 8.7               | 100.0 | 78.3             | 13.0                | 0.8                  | 7.9               | 100.0 |
| Divorced                           | 12.5             | 16.8                | 9.7                  | 60.9              | 100.0 | 11.5             | 21.3                | 10.9                 | 56.4              | 100.0 |
| <i>Nationality</i>                 |                  |                     |                      |                   |       |                  |                     |                      |                   |       |
| Belgian                            | 1.9              | 90.2                | 1.6                  | 6.3               | 100.0 | 2.1              | 87.4                | 1.9                  | 8.5               | 100.0 |
| Other                              | 2.3              | 90.1                | 0.9                  | 6.7               | 100.0 | 2.4              | 86.9                | 1.0                  | 9.7               | 100.0 |
| <b>Household characteristics</b>   |                  |                     |                      |                   |       |                  |                     |                      |                   |       |
| <i>Number of children</i>          |                  |                     |                      |                   |       |                  |                     |                      |                   |       |
| 1                                  | 2.4              | 86.7                | 2.2                  | 8.7               | 100.0 | 2.6              | 82.7                | 2.8                  | 11.8              | 100.0 |
| 2                                  | 1.6              | 92.5                | 1.1                  | 4.8               | 100.0 | 1.8              | 90.3                | 1.3                  | 6.6               | 100.0 |
| 3                                  | 1.4              | 94.2                | 0.7                  | 3.8               | 100.0 | 1.7              | 92.2                | 0.7                  | 5.3               | 100.0 |
| 4+                                 | 1.6              | 94.6                | 0.4                  | 3.4               | 100.0 | 2.1              | 91.9                | 0.6                  | 5.4               | 100.0 |
| <i>Age youngest child</i>          |                  |                     |                      |                   |       |                  |                     |                      |                   |       |
| 0-1 year                           | 1.0              | 94.7                | 1.0                  | 3.4               | 100.0 | 0.8              | 93.9                | 1.2                  | 4.1               | 100.0 |
| 2-3 years                          | 1.0              | 94.0                | 0.5                  | 4.4               | 100.0 | 0.9              | 93.1                | 0.4                  | 5.6               | 100.0 |
| 4-5 years                          | 1.4              | 91.8                | 0.9                  | 6.0               | 100.0 | 1.4              | 90.1                | 0.8                  | 7.8               | 100.0 |
| 6-12 years                         | 2.0              | 89.2                | 1.6                  | 7.2               | 100.0 | 2.2              | 86.1                | 1.9                  | 9.8               | 100.0 |
| 13-17 years                        | 3.0              | 87.5                | 2.1                  | 7.4               | 100.0 | 3.4              | 83.4                | 3.0                  | 10.2              | 100.0 |

(continued)

**Table A4.** (continued).

| <i>Fatherhood category</i>         | <b>2012</b>      |                     |                      |                   |       | <b>2020</b>      |                     |                      |                   |       |
|------------------------------------|------------------|---------------------|----------------------|-------------------|-------|------------------|---------------------|----------------------|-------------------|-------|
|                                    | Single co-resid. | Partnered co-resid. | Partnered non-resid. | Single non-resid. | Total | Single co-resid. | Partnered co-resid. | Partnered non-resid. | Single non-resid. | Total |
| <b>Demographic characteristics</b> |                  |                     |                      |                   |       |                  |                     |                      |                   |       |
| <i>Age</i>                         |                  |                     |                      |                   |       |                  |                     |                      |                   |       |
| 15-29                              | 1.9              | 81.3                | 2.3                  | 14.5              | 100.0 | 1.9              | 84.7                | 2.7                  | 10.8              | 100.0 |
| 30-39                              | 2.0              | 86.3                | 2.1                  | 9.5               | 100.0 | 2.6              | 86.1                | 2.1                  | 9.2               | 100.0 |
| 40-49                              | 3.3              | 82.3                | 2.8                  | 11.6              | 100.0 | 4.2              | 81.3                | 2.5                  | 12.0              | 100.0 |
| 50-59                              | 4.4              | 78.1                | 2.8                  | 14.6              | 100.0 | 5.0              | 77.5                | 2.7                  | 14.8              | 100.0 |
| 60+                                | 6.0              | 72.3                | 3.4                  | 18.2              | 100.0 | 6.6              | 70.5                | 3.0                  | 19.9              | 100.0 |
| <i>Marital Status</i>              |                  |                     |                      |                   |       |                  |                     |                      |                   |       |
| Single                             | 3.8              | 74.9                | 2.5                  | 18.8              | 100.0 | 5.2              | 73.8                | 2.9                  | 18.2              | 100.0 |
| Married                            | 0.7              | 95.5                | 1.3                  | 2.5               | 100.0 | 0.8              | 96.0                | 1.2                  | 2.1               | 100.0 |
| Widowed                            | 69.5             | 18.8                | 1.0                  | 10.8              | 100.0 | 71.2             | 17.0                | 1.3                  | 10.6              | 100.0 |
| Divorced                           | 13.0             | 25.0                | 10.7                 | 51.3              | 100.0 | 16.0             | 23.5                | 8.7                  | 51.8              | 100.0 |
| <i>Nationality</i>                 |                  |                     |                      |                   |       |                  |                     |                      |                   |       |
| Belgian                            | 2.9              | 83.4                | 2.6                  | 11.1              | 100.0 | 3.6              | 82.8                | 2.4                  | 11.2              | 100.0 |
| Other                              | 3.1              | 79.1                | 1.7                  | 16.1              | 100.0 | 4.1              | 76.4                | 1.9                  | 17.7              | 100.0 |
| <b>Household characteristics</b>   |                  |                     |                      |                   |       |                  |                     |                      |                   |       |
| <i>Number of children</i>          |                  |                     |                      |                   |       |                  |                     |                      |                   |       |
| 1                                  | 3.5              | 77.3                | 3.8                  | 15.4              | 100.0 | 4.2              | 77.5                | 3.4                  | 14.9              | 100.0 |
| 2                                  | 2.6              | 87.2                | 1.8                  | 8.4               | 100.0 | 3.3              | 86.4                | 1.6                  | 8.6               | 100.0 |
| 3                                  | 2.1              | 89.7                | 1.2                  | 7.0               | 100.0 | 2.6              | 89.3                | 1.1                  | 7.0               | 100.0 |
| 4+                                 | 2.5              | 89.1                | 0.8                  | 7.6               | 100.0 | 2.9              | 89.4                | 0.7                  | 7.0               | 100.0 |
| <i>Age youngest child</i>          |                  |                     |                      |                   |       |                  |                     |                      |                   |       |
| 0-1 year                           | 0.7              | 93.2                | 1.3                  | 4.7               | 100.0 | 0.7              | 95.4                | 0.3                  | 3.6               | 100.0 |
| 2-3 years                          | 1.2              | 91.4                | 0.5                  | 6.8               | 100.0 | 1.1              | 93.5                | 0.5                  | 5.0               | 100.0 |
| 4-5 years                          | 2.1              | 87.2                | 1.2                  | 9.5               | 100.0 | 2.4              | 87.4                | 1.2                  | 9.0               | 100.0 |
| 6-12 years                         | 3.3              | 80.8                | 2.7                  | 13.2              | 100.0 | 4.3              | 79.6                | 2.7                  | 13.4              | 100.0 |
| 13-17 years                        | 4.5              | 76.7                | 4.4                  | 14.4              | 100.0 | 5.6              | 74.1                | 4.2                  | 16.0              | 100.0 |

**Table A5.** Relative Risk Ratios (RRR) for single fatherhood. Demographic and household characteristics by year (1992, 2002, 2012, 2020) and pooled.

| <i>Fatherhood category</i>                  | 1992 (N= 851506)      |             |                        |             |                     |             | 2002 (N=802082)       |             |                        |             |                     |             |
|---------------------------------------------|-----------------------|-------------|------------------------|-------------|---------------------|-------------|-----------------------|-------------|------------------------|-------------|---------------------|-------------|
|                                             | Partnered co-resident |             | Partnered non-resident |             | Single non-resident |             | Partnered co-resident |             | Partnered non-resident |             | Single non-resident |             |
|                                             | RRR                   | ci95        | RRR                    | ci95        | RRR                 | ci95        | RRR                   | ci95        | RRR                    | ci95        | RRR                 | ci95        |
| Single resident fathers (ref. category)     |                       |             |                        |             |                     |             |                       |             |                        |             |                     |             |
| <i>Educational Level</i> (ref. = Low level) |                       |             |                        |             |                     |             |                       |             |                        |             |                     |             |
| Medium level                                | 1.322***              | 1.272,1.373 | 1.042                  | 0.985,1.102 | 0.869***            | 0.833,0.907 | 1.396***              | 1.346,1.448 | 1.121***               | 1.064,1.181 | 0.962+              | 0.924,1.002 |
| High level                                  | 1.462***              | 1.400,1.527 | 0.923*                 | 0.863,0.987 | 0.842***            | 0.801,0.885 | 1.646***              | 1.583,1.712 | 0.985                  | 0.929,1.045 | 0.868***            | 0.831,0.907 |
| <i>Age</i> (ref. = 15-29)                   |                       |             |                        |             |                     |             |                       |             |                        |             |                     |             |
| 30-39 years                                 | 0.868**               | 0.796,0.946 | 1.137+                 | 0.999,1.294 | 0.759***            | 0.684,0.842 | 1.340***              | 1.199,1.499 | 0.979                  | 0.840,1.142 | 0.811***            | 0.721,0.913 |
| 40-49 years                                 | 0.783***              | 0.714,0.859 | 0.688***               | 0.597,0.792 | 0.605***            | 0.540,0.677 | 1.165*                | 1.036,1.309 | 0.549***               | 0.466,0.646 | 0.650***            | 0.574,0.735 |
| 50-59 years                                 | 0.755***              | 0.680,0.838 | 0.412***               | 0.348,0.487 | 0.461***            | 0.404,0.526 | 0.876*                | 0.774,0.991 | 0.319***               | 0.267,0.381 | 0.543***            | 0.476,0.620 |
| 60 or more years                            | 0.468***              | 0.404,0.542 | 0.382***               | 0.296,0.494 | 0.411***            | 0.334,0.505 | 0.733***              | 0.623,0.862 | 0.391***               | 0.305,0.501 | 0.514***            | 0.430,0.614 |
| <i>Nationality</i> (ref. = Other)           |                       |             |                        |             |                     |             |                       |             |                        |             |                     |             |
| Belgian                                     | 1.165***              | 1.110,1.222 | 1.754***               | 1.610,1.910 | 1.098**             | 1.029,1.173 | 1.036                 | 0.984,1.092 | 1.872***               | 1.709,2.049 | 0.959               | 0.906,1.016 |
| <i>Number of children</i> (ref. = 1 child)  |                       |             |                        |             |                     |             |                       |             |                        |             |                     |             |
| 2 children                                  | 1.262***              | 1.215,1.310 | 0.632***               | 0.597,0.669 | 0.651***            | 0.621,0.682 | 1.216***              | 1.171,1.262 | 0.589***               | 0.558,0.623 | 0.650***            | 0.624,0.678 |
| 3 children                                  | 1.358***              | 1.279,1.442 | 0.475***               | 0.430,0.525 | 0.556***            | 0.514,0.600 | 1.146***              | 1.082,1.213 | 0.377***               | 0.342,0.415 | 0.508***            | 0.476,0.542 |
| 4+ children                                 | 1.161**               | 1.057,1.274 | 0.281***               | 0.231,0.343 | 0.439***            | 0.385,0.500 | 0.853***              | 0.782,0.931 | 0.260***               | 0.216,0.311 | 0.398***            | 0.360,0.440 |
| <i>Age youngest child</i> (ref. = 1 year)   |                       |             |                        |             |                     |             |                       |             |                        |             |                     |             |
| 2-3 years                                   | 0.927                 | 0.845,1.016 | 0.561***               | 0.486,0.647 | 1.368***            | 1.221,1.534 | 0.834***              | 0.749,0.928 | 0.312***               | 0.264,0.368 | 1.308***            | 1.165,1.470 |
| 4-5 years                                   | 0.693***              | 0.634,0.759 | 0.722***               | 0.631,0.827 | 1.424***            | 1.274,1.592 | 0.544***              | 0.490,0.603 | 0.435***               | 0.375,0.504 | 1.296***            | 1.159,1.449 |
| 6-12 years                                  | 0.490***              | 0.453,0.531 | 0.944                  | 0.841,1.061 | 1.226***            | 1.110,1.354 | 0.334***              | 0.304,0.366 | 0.755***               | 0.666,0.856 | 1.031               | 0.931,1.141 |
| 13-17 years                                 | 0.385***              | 0.354,0.420 | 0.869*                 | 0.765,0.987 | 0.805***            | 0.723,0.897 | 0.253***              | 0.229,0.279 | 0.796***               | 0.695,0.912 | 0.625***            | 0.561,0.696 |

Notes: 95% confidence interval in second colum. +p<0.10, \* p<0.05, \*\* p<0.01, \*\*\* p<0.001

(continued)

**Table A5.** (continued).

| <i>Fatherhood category</i>                  | 2012 (N=850058)          |             |                           |             |                        |             | 2020 (N=873193 )         |             |                           |             |                        |             |
|---------------------------------------------|--------------------------|-------------|---------------------------|-------------|------------------------|-------------|--------------------------|-------------|---------------------------|-------------|------------------------|-------------|
|                                             | Partnered<br>co-resident |             | Partnered<br>non-resident |             | Single<br>non-resident |             | Partnered<br>co-resident |             | Partnered<br>non-resident |             | Single<br>non-resident |             |
|                                             | RRR                      | ci95        | RRR                       | ci95        | RRR                    | ci95        | RRR                      | ci95        | RRR                       | ci95        | RRR                    | ci95        |
| Single resident fathers (ref. category)     |                          |             |                           |             |                        |             |                          |             |                           |             |                        |             |
| <i>Educational Level</i> (ref. = Low level) |                          |             |                           |             |                        |             |                          |             |                           |             |                        |             |
| Medium level                                | 1.303***                 | 1.262,1.346 | 1.078**                   | 1.030,1.128 | 0.841***               | 0.812,0.871 | 1.246***                 | 1.209,1.284 | 0.944*                    | 0.903,0.987 | 0.772***               | 0.747,0.798 |
| High level                                  | 1.667***                 | 1.609,1.726 | 0.854***                  | 0.811,0.900 | 0.697***               | 0.670,0.724 | 1.575***                 | 1.525,1.626 | 0.712***                  | 0.676,0.749 | 0.626***               | 0.604,0.649 |
| <i>Age</i> (ref. = 15-29)                   |                          |             |                           |             |                        |             |                          |             |                           |             |                        |             |
| 30-39 years                                 | 1.510***                 | 1.379,1.653 | 0.965                     | 0.852,1.092 | 0.759***               | 0.691,0.833 | 1.143**                  | 1.050,1.245 | 0.488***                  | 0.436,0.546 | 0.872**                | 0.795,0.955 |
| 40-49 years                                 | 1.543***                 | 1.404,1.694 | 0.669***                  | 0.586,0.763 | 0.597***               | 0.540,0.661 | 1.169***                 | 1.070,1.278 | 0.282***                  | 0.250,0.317 | 0.834***               | 0.758,0.918 |
| 50-59 years                                 | 1.309***                 | 1.187,1.445 | 0.430***                  | 0.374,0.495 | 0.445***               | 0.396,0.501 | 1.169***                 | 1.066,1.281 | 0.219***                  | 0.193,0.249 | 0.809***               | 0.732,0.893 |
| 60 or more years                            | 0.952                    | 0.840,1.079 | 0.380***                  | 0.316,0.458 | 0.346***               | 0.291,0.412 | 0.863**                  | 0.773,0.963 | 0.179***                  | 0.152,0.210 | 0.765***               | 0.679,0.862 |
| <i>Nationality</i> (ref. = Other)           |                          |             |                           |             |                        |             |                          |             |                           |             |                        |             |
| Belgian                                     | 1.046+                   | 0.995,1.100 | 1.526***                  | 1.407,1.654 | 1.079**                | 1.021,1.140 | 1.095***                 | 1.040,1.152 | 1.365***                  | 1.251,1.489 | 0.749***               | 0.709,0.791 |
| <i>Number of children</i> (ref. = 1 child)  |                          |             |                           |             |                        |             |                          |             |                           |             |                        |             |
| 2 children                                  | 1.247***                 | 1.208,1.286 | 0.648***                  | 0.619,0.678 | 0.656***               | 0.629,0.684 | 1.285***                 | 1.250,1.321 | 0.668***                  | 0.639,0.698 | 0.722***               | 0.700,0.745 |
| 3 children                                  | 1.349***                 | 1.280,1.420 | 0.553***                  | 0.509,0.601 | 0.568***               | 0.530,0.609 | 1.477***                 | 1.408,1.551 | 0.599***                  | 0.550,0.653 | 0.686***               | 0.649,0.725 |
| 4+ children                                 | 1.007                    | 0.925,1.096 | 0.358***                  | 0.304,0.421 | 0.450***               | 0.403,0.503 | 1.121**                  | 1.032,1.218 | 0.426***                  | 0.358,0.507 | 0.554***               | 0.504,0.610 |
| <i>Age youngest child</i> (ref. = 1 year)   |                          |             |                           |             |                        |             |                          |             |                           |             |                        |             |
| 2-3 years                                   | 0.542***                 | 0.489,0.602 | 0.258***                  | 0.223,0.299 | 1.363***               | 1.230,1.510 | 0.613***                 | 0.548,0.685 | 1.135                     | 0.929,1.385 | 0.945                  | 0.837,1.068 |
| 4-5 years                                   | 0.285***                 | 0.258,0.314 | 0.348***                  | 0.305,0.398 | 1.421***               | 1.285,1.572 | 0.246***                 | 0.221,0.274 | 1.646***                  | 1.361,1.990 | 0.817***               | 0.726,0.918 |
| 6-12 years                                  | 0.162***                 | 0.147,0.178 | 0.551***                  | 0.488,0.622 | 1.217***               | 1.113,1.330 | 0.120***                 | 0.109,0.133 | 2.659***                  | 2.216,3.191 | 0.704***               | 0.629,0.788 |
| 13-17 years                                 | 0.129***                 | 0.117,0.143 | 0.678***                  | 0.596,0.771 | 0.804***               | 0.729,0.886 | 0.095***                 | 0.085,0.105 | 3.710***                  | 3.076,4.475 | 0.592***               | 0.527,0.664 |

Notes: 95% confidence interval in second colum. +p<0.10, \* p<0.05, \*\* p<0.01, \*\*\* p<0.001

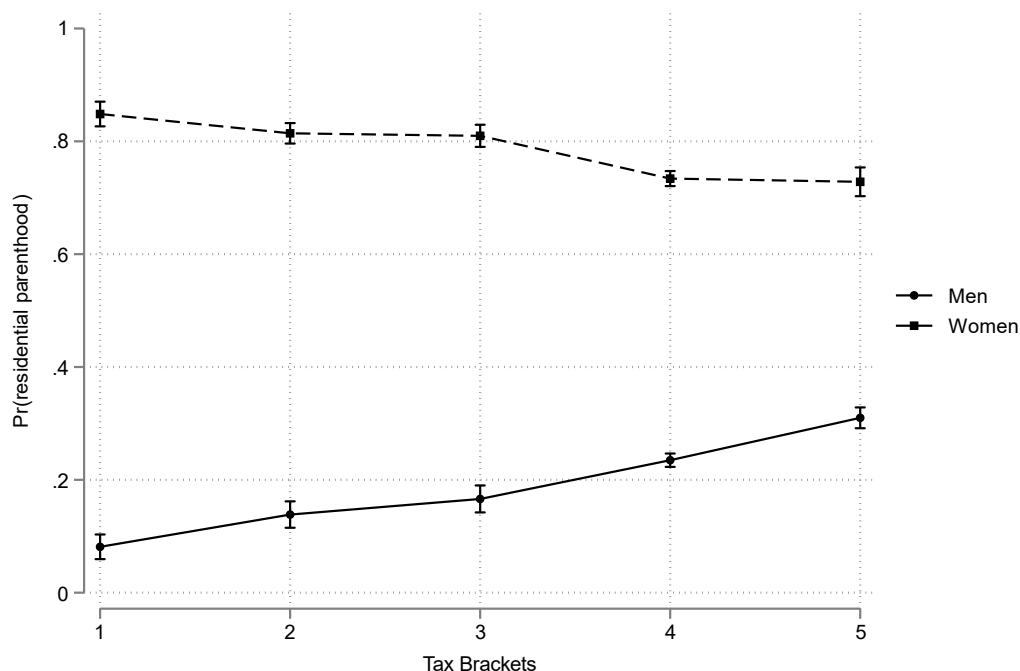
(continued)

**Table A5. (continued).**

| <i>Fatherhood category</i>                                | Pooled Years 1992, 2002, 2012, 2020 (N=3376839) |             |                           |             |                        |             | Pooled - Interaction Year#Educational Level (N=3376839) |             |                           |             |                        |             |
|-----------------------------------------------------------|-------------------------------------------------|-------------|---------------------------|-------------|------------------------|-------------|---------------------------------------------------------|-------------|---------------------------|-------------|------------------------|-------------|
|                                                           | Partnered<br>co-resident                        |             | Partnered<br>non-resident |             | Single<br>non-resident |             | Partnered<br>co-resident                                |             | Partnered<br>non-resident |             | Single<br>non-resident |             |
|                                                           | RRR                                             | ci95        | RRR                       | ci95        | RRR                    | ci95        | RRR                                                     | ci95        | RRR                       | ci95        | RRR                    | ci95        |
| Single co-resident fathers (ref. category)                |                                                 |             |                           |             |                        |             |                                                         |             |                           |             |                        |             |
| <i>Year</i> (ref. = 1992)                                 |                                                 |             |                           |             |                        |             |                                                         |             |                           |             |                        |             |
| 2002                                                      | 0.829***                                        | 0.811,0.847 | 1.222***                  | 1.183,1.261 | 1.315***               | 1.284,1.346 | 0.791***                                                | 0.767,0.814 | 1.171***                  | 1.121,1.224 | 1.241***               | 1.201,1.282 |
| 2012                                                      | 0.547***                                        | 0.535,0.559 | 1.326***                  | 1.285,1.368 | 1.314***               | 1.283,1.345 | 0.525***                                                | 0.509,0.542 | 1.331***                  | 1.272,1.394 | 1.385***               | 1.339,1.433 |
| 2020                                                      | 0.438***                                        | 0.429,0.447 | 1.001                     | 0.970,1.033 | 1.051***               | 1.027,1.075 | 0.446***                                                | 0.433,0.461 | 1.155***                  | 1.102,1.209 | 1.182***               | 1.142,1.223 |
| <i>Educational Level</i> (ref. = Low level)               |                                                 |             |                           |             |                        |             |                                                         |             |                           |             |                        |             |
| Medium level                                              | 1.284***                                        | 1.262,1.307 | 1.041**                   | 1.015,1.067 | 0.859***               | 0.842,0.875 | 1.305***                                                | 1.257,1.355 | 1.074*                    | 1.016,1.135 | 0.897***               | 0.860,0.936 |
| High level                                                | 1.574***                                        | 1.544,1.605 | 0.844***                  | 0.819,0.869 | 0.734***               | 0.718,0.750 | 1.434***                                                | 1.374,1.496 | 0.96                      | 0.899,1.026 | 0.856***               | 0.815,0.899 |
| <i>Age</i> (ref. = 15-29)                                 |                                                 |             |                           |             |                        |             |                                                         |             |                           |             |                        |             |
| 30-39 years                                               | 1.200***                                        | 1.147,1.255 | 0.810***                  | 0.760,0.863 | 0.805***               | 0.767,0.845 | 1.305***                                                | 1.257,1.355 | 0.824***                  | 0.773,0.878 | 0.818***               | 0.779,0.858 |
| 40-49 years                                               | 1.139***                                        | 1.085,1.196 | 0.490***                  | 0.458,0.525 | 0.689***               | 0.654,0.726 | 1.434***                                                | 1.374,1.496 | 0.500***                  | 0.467,0.536 | 0.702***               | 0.667,0.740 |
| 50-59 years                                               | 1.021                                           | 0.970,1.075 | 0.340***                  | 0.315,0.366 | 0.638***               | 0.603,0.675 | 1.305***                                                | 1.257,1.355 | 0.346***                  | 0.321,0.373 | 0.648***               | 0.612,0.685 |
| 60 or more years                                          | 0.750***                                        | 0.702,0.802 | 0.307***                  | 0.277,0.340 | 0.579***               | 0.539,0.623 | 1.434***                                                | 1.374,1.496 | 0.310***                  | 0.280,0.343 | 0.584***               | 0.543,0.628 |
| <i>Nationality</i> (ref. = Other)                         |                                                 |             |                           |             |                        |             |                                                         |             |                           |             |                        |             |
| Belgian                                                   | 1.083***                                        | 1.055,1.112 | 1.617***                  | 1.547,1.691 | 0.871***               | 0.846,0.896 | 1.085***                                                | 1.057,1.114 | 1.617***                  | 1.547,1.691 | 0.871***               | 0.846,0.897 |
| <i>Number of children</i> (ref. = 1 child)                |                                                 |             |                           |             |                        |             |                                                         |             |                           |             |                        |             |
| 2 children                                                | 1.252***                                        | 1.231,1.273 | 0.644***                  | 0.627,0.660 | 0.688***               | 0.675,0.701 | 1.251***                                                | 1.230,1.272 | 0.643***                  | 0.627,0.659 | 0.687***               | 0.675,0.700 |
| 3 children                                                | 1.333***                                        | 1.297,1.370 | 0.515***                  | 0.491,0.539 | 0.618***               | 0.599,0.637 | 1.333***                                                | 1.297,1.369 | 0.511***                  | 0.488,0.535 | 0.614***               | 0.596,0.633 |
| 4+ children                                               | 1.022                                           | 0.978,1.068 | 0.340***                  | 0.310,0.373 | 0.495***               | 0.471,0.521 | 1.022                                                   | 0.978,1.068 | 0.336***                  | 0.308,0.368 | 0.491***               | 0.467,0.517 |
| <i>Age youngest child</i> (ref. = 1 year)                 |                                                 |             |                           |             |                        |             |                                                         |             |                           |             |                        |             |
| 2-3 years                                                 | 0.765***                                        | 0.727,0.805 | 0.394***                  | 0.364,0.426 | 1.125***               | 1.065,1.189 | 0.765***                                                | 0.727,0.804 | 0.409***                  | 0.379,0.442 | 1.126***               | 1.066,1.190 |
| 4-5 years                                                 | 0.411***                                        | 0.392,0.431 | 0.536***                  | 0.498,0.576 | 1.032                  | 0.979,1.088 | 0.410***                                                | 0.391,0.431 | 0.558***                  | 0.520,0.599 | 1.033                  | 0.980,1.089 |
| 6-12 years                                                | 0.237***                                        | 0.227,0.248 | 0.834***                  | 0.782,0.890 | 0.886***               | 0.844,0.931 | 0.237***                                                | 0.226,0.248 | 0.868***                  | 0.815,0.924 | 0.888***               | 0.846,0.933 |
| 13-17 years                                               | 0.188***                                        | 0.179,0.197 | 0.986                     | 0.919,1.057 | 0.636***               | 0.604,0.670 | 0.188***                                                | 0.179,0.197 | 1.017                     | 0.950,1.089 | 0.638***               | 0.606,0.673 |
| Interaction Year*Educational level (ref.= 1992*Low level) |                                                 |             |                           |             |                        |             |                                                         |             |                           |             |                        |             |
| 2002*Medium level                                         |                                                 |             |                           |             |                        |             | 1.079**                                                 | 1.025,1.136 | 1.074+                    | 0.997,1.157 | 1.116***               | 1.054,1.181 |
| 2002*High level                                           |                                                 |             |                           |             |                        |             | 1.128***                                                | 1.067,1.193 | 1.024                     | 0.940,1.116 | 1.021                  | 0.958,1.087 |
| 2012*Medium level                                         |                                                 |             |                           |             |                        |             | 1.173***                                                | 1.111,1.239 | 0.996                     | 0.928,1.069 | 0.927**                | 0.878,0.979 |
| 2012*High level                                           |                                                 |             |                           |             |                        |             | 1                                                       | 1.000,1.000 | 0.837***                  | 0.780,0.899 | 0.804***               | 0.756,0.855 |
| 2020*Medium level                                         |                                                 |             |                           |             |                        |             | 0.927**                                                 | 0.883,0.972 | 0.710***                  | 0.653,0.771 | 0.847***               | 0.803,0.893 |
| 2020*High level                                           |                                                 |             |                           |             |                        |             | 1.067*                                                  | 1.013,1.125 | 0.728***                  | 0.669,0.792 | 0.742***               | 0.699,0.788 |

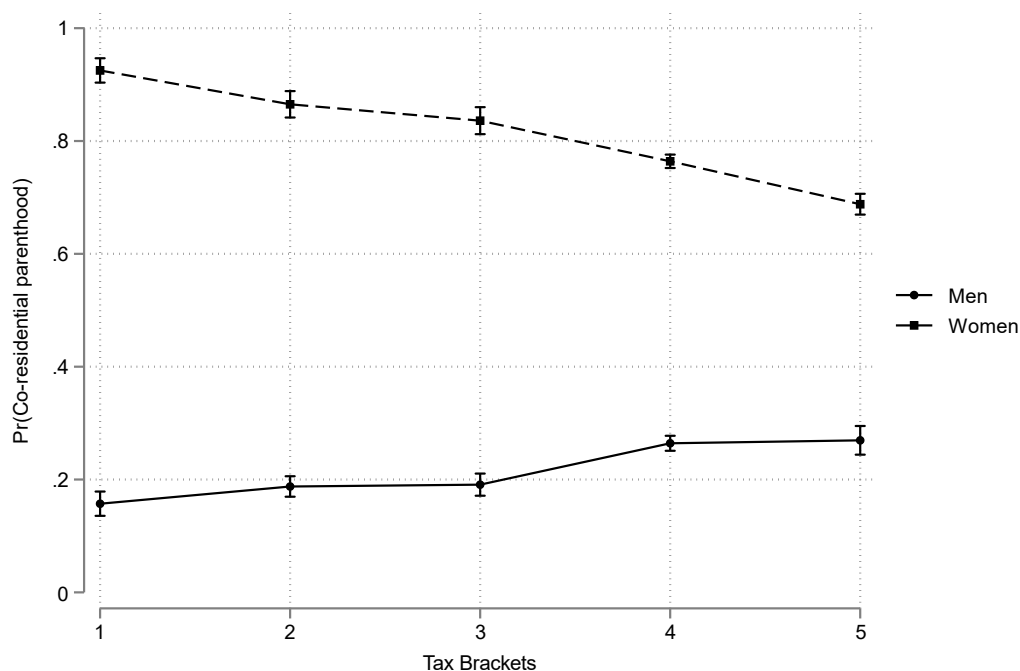
Notes: 95% confidence interval in second colum. +p<0.10, \* p<0.05, \*\* p<0.01, \*\*\* p<0.001

**Figure A9.** Effect of individual income on the probability of co-residing with children after separation by income tax brackets and gender (interaction term). Predictive margins with 95% confidence intervals.



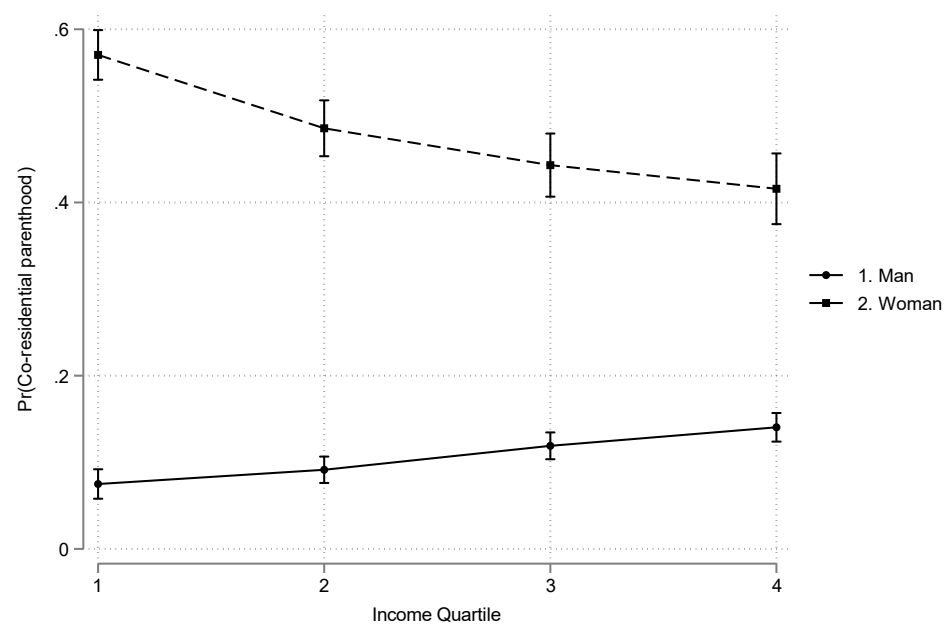
Note: the model includes all control variables.

**Figure A10.** Effect of ex-partner income on the probability of co-residing with children after separation by income tax brackets and gender (interaction term). Predictive margins with 95% confidence intervals.



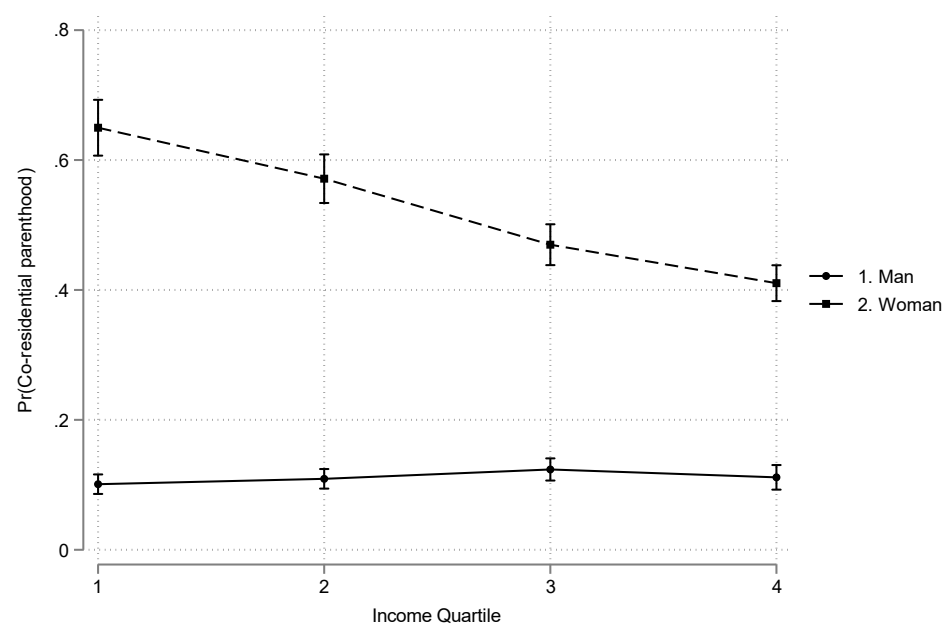
Note: the model includes all control variables.

**Figure A11.** Effect of individual income on the probability of co-residing with children after separation by income quartile and gender (interaction term). Predictive margins with 95% confidence intervals. Selected sample including parents who continued co-residing with their children one year after the union dissolution.



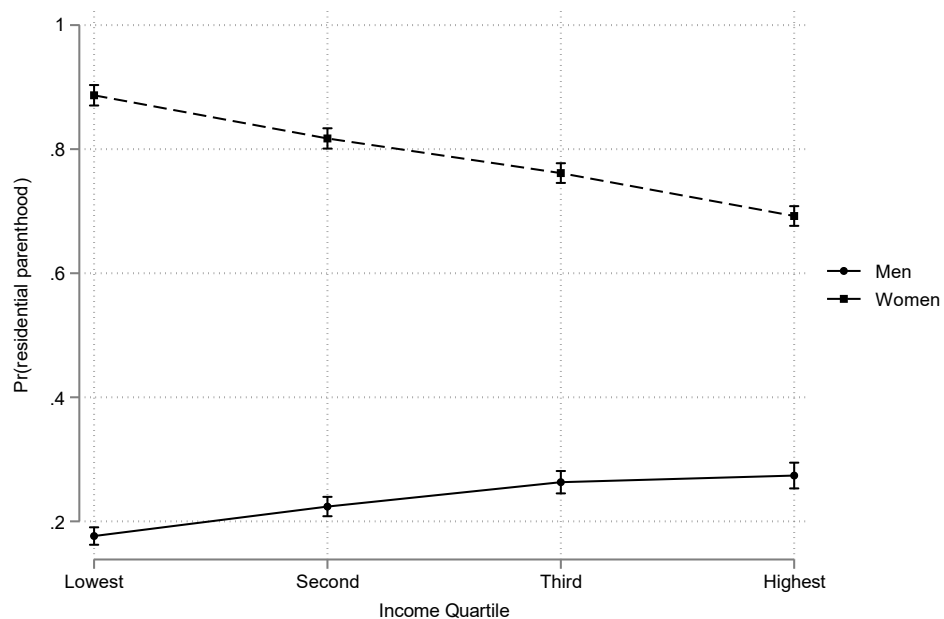
Note: the model includes all control variables.

**Figure A12.** Effect of ex-partner income on the probability of co-residing with children after separation by quartile and gender (interaction term). Predictive margins with 95% confidence intervals. Selected sample including parents who continued co-residing with their children one year after the union dissolution.



Note: the model includes all control variables.

**Figure A13.** Effect of ex-partner income on the probability of co-residing with children after separation by income quartile and gender (interaction term). Predictive margins with 95% confidence intervals.



Note: the model includes all control variables.

**Table A6.** Regression analyses for variables predicting parental coresidence with children after union dissolution for women.

|                                                     | Model 1  |      | Model 2  |      | Model 3  |      | Model 4  |      | Model 5  |      | Model 6  |      |
|-----------------------------------------------------|----------|------|----------|------|----------|------|----------|------|----------|------|----------|------|
|                                                     | Coef.    | SD   | Coef.    | SD   | Coef.    | SD   | Coef.    | SD   | Coef.    | SD   | Coef.    | SD   |
| Income quantile ( <i>ref. Lowest</i> )              |          |      |          |      |          |      |          |      |          |      |          |      |
| Second                                              | -0.03*** | 0.01 |          |      | -0.01    | 0.01 | 0.01     | 0.02 | 0.01     | 0.02 | 0.01     | 0.02 |
| Third                                               | -0.06*** | 0.01 |          |      | -0.03*** | 0.01 | 0.00     | 0.03 | 0.00     | 0.03 | 0.00     | 0.03 |
| Highest                                             | -0.07*** | 0.01 |          |      | -0.03**  | 0.01 | -0.05    | 0.04 | -0.05    | 0.04 | -0.05    | 0.03 |
| Ex-partner's income quantile ( <i>ref. Lowest</i> ) |          |      |          |      |          |      |          |      |          |      |          |      |
| Second                                              |          |      | -0.05*** | 0.01 | -0.05*** | 0.01 | -0.03**  | 0.02 | -0.03**  | 0.02 | -0.03*   | 0.01 |
| Third                                               |          |      | -0.09*** | 0.01 | -0.08*** | 0.01 | -0.07*** | 0.02 | -0.07*** | 0.02 | -0.06*** | 0.02 |
| Highest                                             |          |      | -0.15*** | 0.01 | -0.15*** | 0.01 | -0.14*** | 0.02 | -0.14*** | 0.02 | -0.11*** | 0.02 |
| Age ( <i>ref. 18-29</i> )                           |          |      |          |      |          |      |          |      |          |      |          |      |
| 30-39                                               | 0.05***  | 0.01 | 0.05***  | 0.01 | 0.06***  | 0.01 | 0.06***  | 0.01 | 0.05***  | 0.01 | 0.04***  | 0.01 |
| 40-49                                               | 0.11***  | 0.02 | 0.12***  | 0.02 | 0.13***  | 0.02 | 0.13***  | 0.02 | 0.12***  | 0.02 | 0.09***  | 0.02 |
| 50+                                                 | 0.16***  | 0.04 | 0.16***  | 0.04 | 0.17***  | 0.04 | 0.17***  | 0.04 | 0.16***  | 0.04 | 0.12***  | 0.04 |
| Ex-partner's age ( <i>ref. 18-29</i> )              |          |      |          |      |          |      |          |      |          |      |          |      |
| 30-39                                               | -0.06*** | 0.01 | -0.05*** | 0.01 | -0.05*** | 0.01 | -0.05*** | 0.01 | -0.05*** | 0.01 | -0.05*** | 0.01 |
| 40-49                                               | -0.08*** | 0.02 | -0.08*** | 0.02 | -0.07*** | 0.02 | -0.07*** | 0.02 | -0.07*** | 0.02 | -0.07*** | 0.02 |
| 50+                                                 | -0.11*** | 0.02 | -0.12*** | 0.02 | -0.12*** | 0.02 | -0.12*** | 0.02 | -0.12*** | 0.02 | -0.10*** | 0.02 |
| Region of residence ( <i>ref. Brussels</i> )        |          |      |          |      |          |      |          |      |          |      |          |      |
| Flanders                                            | -0.07*** | 0.01 | -0.06*** | 0.01 | -0.06*** | 0.01 | -0.06*** | 0.01 | -0.05*** | 0.01 | -0.07*** | 0.01 |
| Wallonia                                            | -0.06*** | 0.01 | -0.05*** | 0.01 | -0.05*** | 0.01 | -0.05*** | 0.01 | -0.05*** | 0.01 | -0.05*** | 0.01 |
| Nationality ( <i>ref. Other</i> )                   |          |      |          |      |          |      |          |      |          |      |          |      |
| Belgian                                             | -0.07*** | 0.01 | -0.06*** | 0.01 | -0.05*** | 0.01 | -0.05*** | 0.01 | -0.05*** | 0.01 | -0.05*** | 0.01 |
| Union type ( <i>ref. Cohabitation</i> )             |          |      |          |      |          |      |          |      |          |      |          |      |
| Marriage                                            | 0.01     | 0.01 | 0.01     | 0.01 | 0.01     | 0.01 | 0.01     | 0.01 | 0.01     | 0.01 | 0.02***  | 0.01 |

(continued)

**Table A6.** (continued).

|                                                                 | Model 1  |      | Model 2  |      | Model 3  |      | Model 4  |      | Model 5  |      | Model 6  |      |
|-----------------------------------------------------------------|----------|------|----------|------|----------|------|----------|------|----------|------|----------|------|
|                                                                 | Coef.    | SD   | Coef.    | SD   | Coef.    | SD   | Coef.    | SD   | Coef.    | SD   | Coef.    | SD   |
| Age of youngest resident child ( <i>ref. 0-2 years</i> )        |          |      |          |      |          |      |          |      |          |      |          |      |
| 3-5                                                             | -0.08*** | 0.01 | -0.07*** | 0.01 | -0.07*** | 0.01 | -0.07*** | 0.01 | -0.07*** | 0.01 | -0.07*** | 0.01 |
| 6-10                                                            | -0.10*** | 0.01 | -0.10*** | 0.01 | -0.10*** | 0.01 | -0.10*** | 0.01 | -0.09*** | 0.01 | -0.10*** | 0.01 |
| 11+                                                             | -0.12*** | 0.02 | -0.11*** | 0.02 | -0.11*** | 0.02 | -0.11*** | 0.02 | -0.11*** | 0.02 | -0.11*** | 0.02 |
| N of minor resident children ( <i>ref. 1</i> )                  |          |      |          |      |          |      |          |      |          |      |          |      |
| 2                                                               | -0.03*** | 0.01 | -0.02**  | 0.01 | -0.02**  | 0.01 | -0.02**  | 0.01 | -0.02**  | 0.01 | -0.04*** | 0.01 |
| 3+                                                              | -0.03    | 0.02 | -0.02    | 0.02 | -0.03    | 0.02 | -0.02    | 0.02 | -0.03    | 0.02 | -0.05*** | 0.02 |
| Gender of resident children ( <i>ref. both boys and girls</i> ) |          |      |          |      |          |      |          |      |          |      |          |      |
| All boys                                                        | 0.01     | 0.01 | 0.01     | 0.01 | 0.01     | 0.01 | 0.01     | 0.01 | 0.01     | 0.01 | 0.01     | 0.01 |
| All girls                                                       | 0.01     | 0.01 | 0.01     | 0.01 | 0.01     | 0.01 | 0.01     | 0.01 | 0.01     | 0.01 | 0.01     | 0.01 |
| New partner ( <i>ref. No</i> )                                  |          |      |          |      |          |      |          |      |          |      |          |      |
| Yes                                                             |          |      |          |      |          |      |          |      | -0.10*** | 0.02 | -0.04*** | 0.02 |
| Ex-partner new partner ( <i>ref. No</i> )                       |          |      |          |      |          |      |          |      |          |      |          |      |
| Yes                                                             |          |      |          |      |          |      |          |      | 0.07***  | 0.02 | 0.05***  | 0.02 |
| Same city ( <i>ref. No</i> )                                    |          |      |          |      |          |      |          |      |          |      |          |      |
| Yes                                                             |          |      |          |      |          |      |          |      |          |      | 0.25***  | 0.01 |
| Same city as at least one parent ( <i>ref. No</i> )             |          |      |          |      |          |      |          |      |          |      |          |      |
| Yes                                                             |          |      |          |      |          |      |          |      |          |      | 0.00     | 0.02 |

(continued)

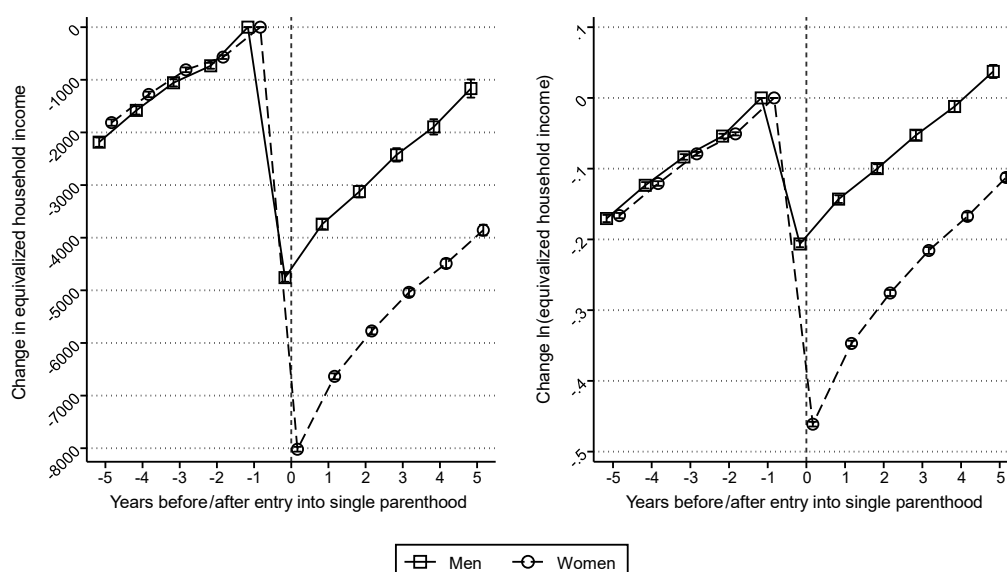
**Table A6.** (continued).

|                                                         | Model 1 |      | Model 2 |      | Model 3 |      | Model 4 |      | Model 5 |      | Model 6 |      |
|---------------------------------------------------------|---------|------|---------|------|---------|------|---------|------|---------|------|---------|------|
|                                                         | Coef.   | SD   | Coef.   | SD   | Coef.   | SD   | Coef.   | SD   | Coef.   | SD   | Coef.   | SD   |
| Interaction Income quantile*Expartner's income quantile |         |      |         |      |         |      |         |      |         |      |         |      |
| Second quantile*second quantile                         |         |      |         |      |         |      | -0.03   | 0.03 | -0.03   | 0.03 | -0.02   | 0.03 |
| Second quantile*third quantile                          |         |      |         |      |         |      | -0.04   | 0.03 | -0.03   | 0.03 | -0.03   | 0.03 |
| Second quantile*highest quantile                        |         |      |         |      |         |      | -0.02   | 0.03 | -0.02   | 0.03 | -0.03   | 0.03 |
| Third quantile*second quantile                          |         |      |         |      |         |      | -0.05   | 0.04 | -0.04   | 0.04 | -0.05   | 0.03 |
| Third quantile*third quantile                           |         |      |         |      |         |      | -0.04   | 0.03 | -0.04   | 0.03 | -0.03   | 0.03 |
| Third quantile*highest quantile                         |         |      |         |      |         |      | -0.04   | 0.04 | -0.04   | 0.04 | -0.04   | 0.03 |
| Highest quantile*second quantile                        |         |      |         |      |         |      | -0.01   | 0.05 | -0.01   | 0.05 | -0.01   | 0.05 |
| Highest quantile*third quantile                         |         |      |         |      |         |      | 0.03    | 0.04 | 0.03    | 0.04 | 0.02    | 0.04 |
| Highest quantile*highest quantile                       |         |      |         |      |         |      | 0.04    | 0.04 | 0.04    | 0.04 | 0.02    | 0.04 |
| Constant                                                | 1.01    | 0.02 | 1.02    | 0.02 | 1.02    | 0.02 | 1.01    | 0.02 | 1.02    | 0.02 | 0.86    | 0.02 |
| N individuals                                           | 10,582  |      | 10,582  |      | 10,582  |      | 10,582  |      | 10,582  |      | 10,582  |      |

Notes: SD = Standard Deviation. Ref. = Reference category.

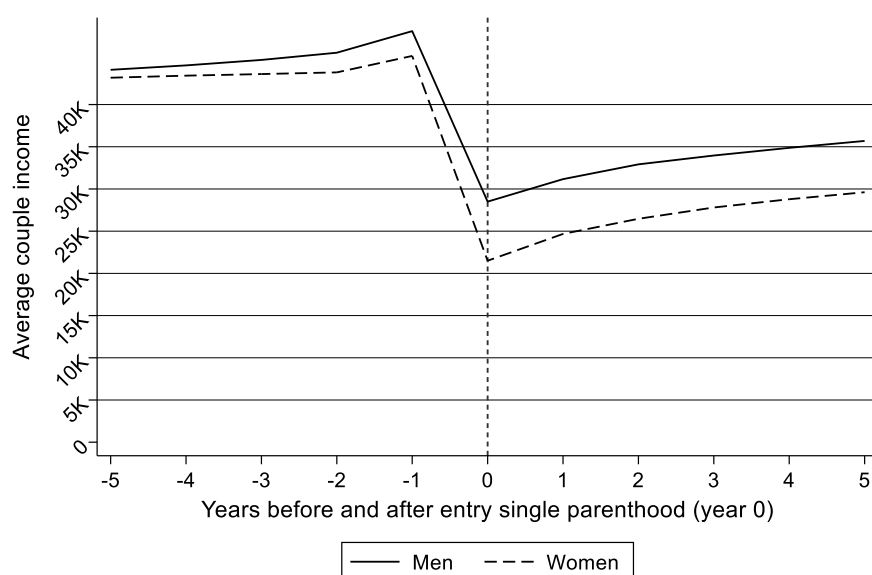
\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

**Figure A14.** Absolute and relative changes in annual equivalized household income before and after experiencing single parenthood. Selected sample on individuals in years where the variable income is categorized up to €55,000.



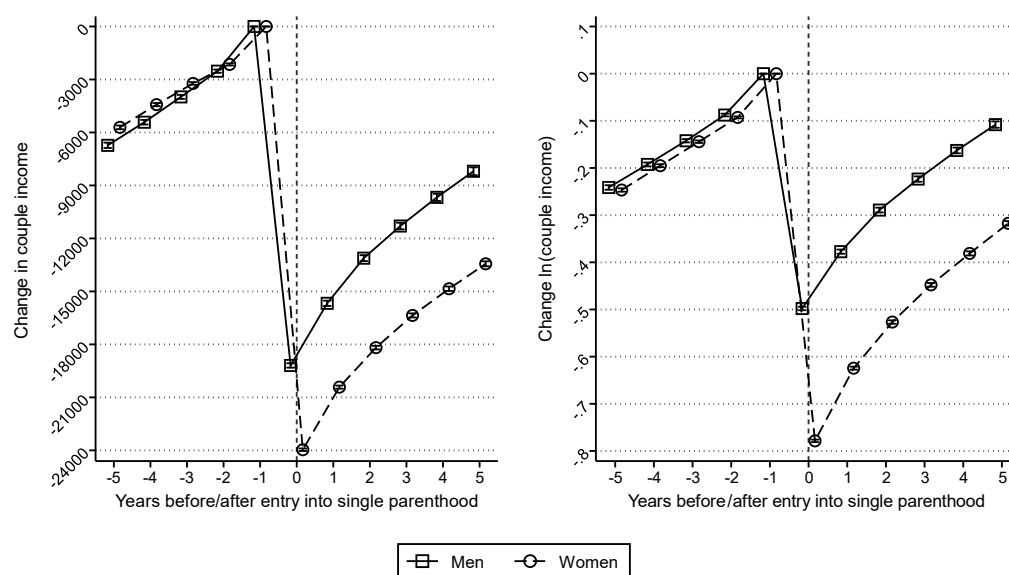
Notes: confidence intervals are so small they fall within the markers. Time  $t_0$  is the year of entry into single parenthood (year 0). Predicted values from time-distributed fixed-effects models including an interaction between gender and time before/after the event.

**Figure A15.** Descriptive patterns of annual couple income before and after experiencing single parenthood.



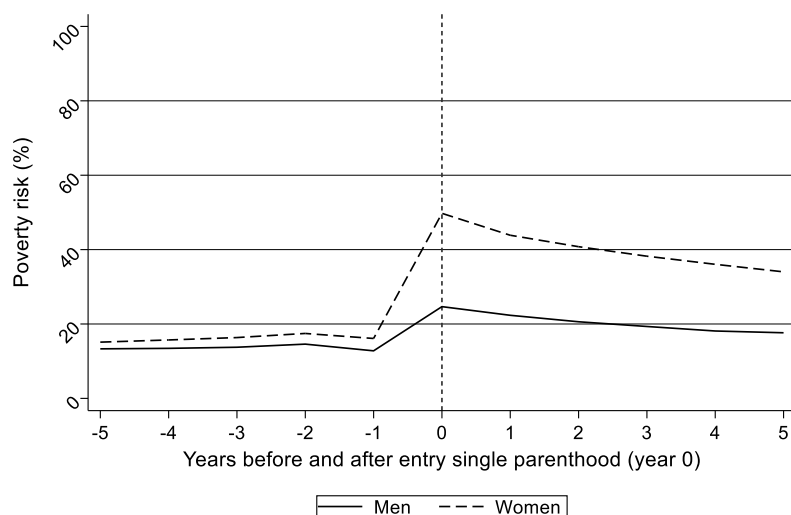
Note: time  $t_0$  is the year of entry into single parenthood (year 0).

**Figure A16.** Absolute and relative changes in annual couple income before and after experiencing single parenthood.



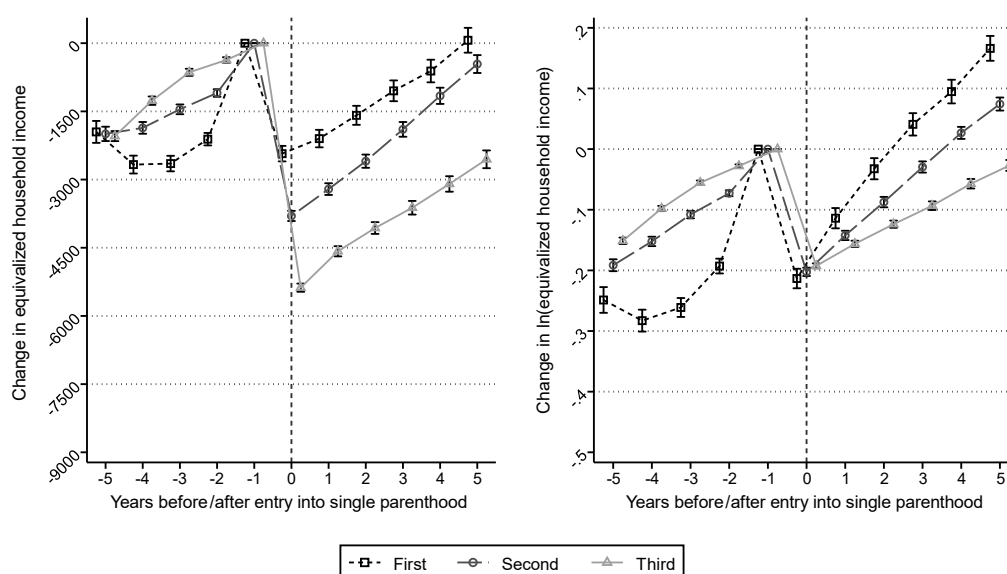
Notes: confidence intervals are so small they fall within the markers. Time  $t_0$  is the year of entry into single parenthood (year 0). Predicted values from time-distributed fixed-effects models including an interaction between gender and time before/after the event.

**Figure A17.** Poverty risk pattern before and after experiencing single parenthood.



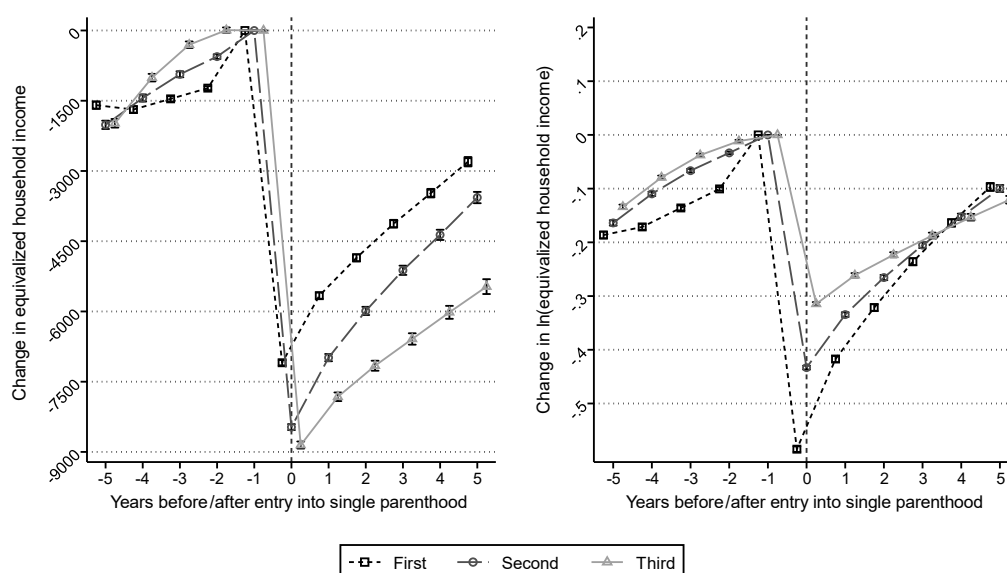
Note: time  $t_0$  is the year of entry into single parenthood (year 0).

**Figure A18.** Absolute and relative changes in annual equivalized household income before and after experiencing single parenthood by level of individual income (categorized into terciles) for men.



Notes: confidence intervals are so small they fall within the markers. Time  $t_0$  is the year of entry into single parenthood (year 0). Predicted values from time-distributed fixed-effects models including an interaction between income terciles and time before/after the event.

**Figure A19.** Absolute and relative changes in annual equivalized household income before and after experiencing single parenthood by level of individual income (categorized into terciles) for women.



Notes: confidence intervals are so small they fall within the markers. Time  $t_0$  is the year of entry into single parenthood (year 0). Predicted values from time-distributed fixed-effects models including an interaction between income terciles and time before/after the event.

**Table A7.** Stepwise sample selection steps.

|                                                                               | Individuals | Observations | Sample reduction<br>from initial sample (%) |              |
|-------------------------------------------------------------------------------|-------------|--------------|---------------------------------------------|--------------|
|                                                                               |             |              | Individuals                                 | Observations |
| Initial sample                                                                | 7,187,181   | 77,909,687   | 100.00                                      | 100.00       |
| Excluding individuals with missing values in individual income                | 6,933,628   | 74,316,022   | 96.47                                       | 95.39        |
| Excluding individuals with missing values in partner income                   | 6,815,125   | 70,788,534   | 94.82                                       | 90.86        |
| Excluding individuals never experiencing single parenthood                    | 535,356     | 3,442,324    | 7.45                                        | 4.42         |
| Excluding individuals already single parents at baseline                      | 285,959     | 2,156,878    | 3.98                                        | 2.77         |
| Excluding individuals without a partner before experiencing single parenthood | 212,291     | 1,672,685    | 2.95                                        | 2.15         |
| Excluding individuals experiencing single parenthood because of widowhood     | 201,309     | 1,586,464    | 2.80                                        | 2.04         |
| Excluding individuals in multi-unit single parent households                  | 198,885     | 1,568,400    | 2.77                                        | 2.01         |

**Table A8.** Operationalization of the economic outcome variables.

| Economic Outcomes        | Original Variable                                                                                                                                                                                   | New Variable (2005-2018)                                                                                                                                                                                                   |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Individual Income</b> | 9 categories, from 0 to 40K+ euro (2005-2006)<br>10 categories, from 0 to 45K+ euro (2007-2010)<br>11 categories, from 0 to 50K+ euro (2011-2015)<br>12 categories, from 0 to 55K+ euro (2016-2018) | <b>From 2500 to 42500 euro</b>                                                                                                                                                                                             |
| <b>Partner Income</b>    | /                                                                                                                                                                                                   | <b>From 0 to 42500 euro</b><br><br>Value 0 assigned to:<br>- single person (man or woman without partner)<br>- single person with partner living in a different hh                                                         |
| <b>Couple Income</b>     | /                                                                                                                                                                                                   | <b>From 2500 to 85000 euro</b><br>Sum of individual and partner income                                                                                                                                                     |
| <b>Household Income</b>  | /                                                                                                                                                                                                   | <b>From 337 to 85000 euro</b><br><br>OECD-modified scale, assigned values:<br>- 1 to the head of the household<br>- 0.5 to each additional household member aged 14+<br>- 0.3 to each child who is 13 years old or younger |

**Table A9.** Longitudinal sample composition of men and women experiencing single parenthood. Restricted sample including education variable.

|           | Years before and after entering single parenthood |        |         |         |         |         |         |        |        |        |        | Total     |
|-----------|---------------------------------------------------|--------|---------|---------|---------|---------|---------|--------|--------|--------|--------|-----------|
|           | -5                                                | -4     | -3      | -2      | -1      | 0       | 1       | 2      | 3      | 4      | 5      | N         |
| Men (N)   | 18,424                                            | 23,685 | 27,664  | 30,934  | 31,970  | 35,108  | 24,402  | 18,062 | 13,273 | 9,834  | 7,258  | 240,614   |
| Women (N) | 51,538                                            | 66,102 | 80,930  | 95,424  | 103,033 | 112,104 | 89,573  | 76,154 | 62,048 | 50,773 | 40,814 | 828,493   |
| Total (N) | 69,962                                            | 89,787 | 108,594 | 126,358 | 135,003 | 147,212 | 113,975 | 94,216 | 75,321 | 60,607 | 48,072 | 1,069,107 |

**Table A10.** Stepwise sample selection steps. Restricted sample including education variable.

|                                                        |             |              | Sample reduction<br>from initial sample (%) |              |
|--------------------------------------------------------|-------------|--------------|---------------------------------------------|--------------|
|                                                        | Individuals | Observations | Individuals                                 | Observations |
| Final analytical sample                                | 198,885     | 1,568,400    | 100.00                                      | 100.00       |
| Excluding individuals with missing values in education | 149,783     | 1,301,467    | 75.31                                       | 82.98        |

**Table A11.** Time-Distributed Fixed Effects Regression Estimates of the Effect of Single Parenthood on Income.

|                                          | Individual income |        | Ln(individual income) |      | Partner income |        | Ln(partner income) |      | Eq. household income |        | Ln(eq. hh income) |      |
|------------------------------------------|-------------------|--------|-----------------------|------|----------------|--------|--------------------|------|----------------------|--------|-------------------|------|
|                                          | Coefficient       | SE     | Coefficient           | SE   | Coefficient    | SE     | Coefficient        | SE   | Coefficient          | SE     | Coefficient       | SE   |
| <i>Age</i>                               |                   |        |                       |      |                |        |                    |      |                      |        |                   |      |
| 15-19 years old ( <i>ref.</i> )          |                   |        |                       |      |                |        |                    |      |                      |        |                   |      |
| 20-24 years old                          | 1521***           | 135.12 | 0.45***               | 0.02 | 11137***       | 254.86 | 6.27***            | 0.21 | 3675***              | 178.32 | 0.18***           | 0.02 |
| 25-29 years old                          | 1330***           | 144.81 | 0.53***               | 0.02 | 16534***       | 273.29 | 8.08***            | 0.22 | 5227***              | 188.66 | 0.23***           | 0.02 |
| 30-34 years old                          | 1559***           | 150.03 | 0.56***               | 0.02 | 19436***       | 283.47 | 8.89***            | 0.22 | 6345***              | 192.88 | 0.28***           | 0.02 |
| 35-39 years old                          | 1789***           | 153.57 | 0.56***               | 0.02 | 20302***       | 289.52 | 9.24***            | 0.22 | 6761***              | 195.46 | 0.29***           | 0.02 |
| 40-44 years old                          | 1830***           | 156.34 | 0.55***               | 0.02 | 19658***       | 293.31 | 9.13***            | 0.22 | 6395***              | 197.43 | 0.28***           | 0.02 |
| 45-49 years old                          | 1728***           | 158.97 | 0.54***               | 0.02 | 17968***       | 296.69 | 8.58***            | 0.22 | 5790***              | 199.16 | 0.26***           | 0.02 |
| 50-54 years old                          | 1329***           | 163.60 | 0.51***               | 0.02 | 16260***       | 303.68 | 7.86***            | 0.22 | 5523***              | 202.77 | 0.24***           | 0.02 |
| 55-59 years old                          | 292               | 178.32 | 0.48***               | 0.02 | 15017***       | 329.02 | 7.22***            | 0.23 | 4862***              | 216.94 | 0.21***           | 0.02 |
| 60+ years old                            | -1290***          | 246.95 | 0.45***               | 0.02 | 14489***       | 420.92 | 6.73***            | 0.27 | 3882***              | 273.17 | 0.18***           | 0.02 |
| <i>Number of resident minor children</i> |                   |        |                       |      |                |        |                    |      |                      |        |                   |      |
| No children ( <i>ref.</i> )              |                   |        |                       |      |                |        |                    |      |                      |        |                   |      |
| 1                                        | 23                | 30.04  | 0.01***               | 0.00 | 2812***        | 59.79  | 2.08***            | 0.04 | -3520***             | 38.78  | -0.14***          | 0.00 |
| 2                                        | -96**             | 34.88  | 0.00                  | 0.00 | 3538***        | 69.76  | 2.30***            | 0.04 | -5200***             | 43.91  | -0.23***          | 0.00 |
| 3+                                       | -421***           | 47.83  | -0.04***              | 0.00 | 2997***        | 94.03  | 2.39***            | 0.05 | -6829***             | 55.15  | -0.34***          | 0.00 |
| <i>Age of youngest resident child</i>    |                   |        |                       |      |                |        |                    |      |                      |        |                   |      |
| 0-5 years old ( <i>ref.</i> )            |                   |        |                       |      |                |        |                    |      |                      |        |                   |      |
| 6-10 years old                           | 63**              | 20.10  | 0.00***               | 0.00 | -79*           | 37.48  | -0.07***           | 0.02 | 466***               | 20.63  | 0.03***           | 0.00 |
| 11-17 years old                          | -12               | 30.98  | 0.00                  | 0.00 | -676***        | 56.27  | -0.15***           | 0.03 | 94**                 | 32.06  | 0.01***           | 0.00 |
| 18+ years old                            | -135*             | 54.18  | -0.01                 | 0.00 | 777***         | 99.05  | 1.40***            | 0.05 | -1067***             | 61.19  | 0.00              | 0.00 |

(continued)

**Table A11.** (continued).

|                                                               | Individual income |        | Ln(individual income) |      | Partner income |        | Ln(partner income) |      | Eq. household income |        | Ln(eq. hh income) |      |
|---------------------------------------------------------------|-------------------|--------|-----------------------|------|----------------|--------|--------------------|------|----------------------|--------|-------------------|------|
|                                                               | Coefficient       | SE     | Coefficient           | SE   | Coefficient    | SE     | Coefficient        | SE   | Coefficient          | SE     | Coefficient       | SE   |
| <i>Years before/after entry single parenthood</i>             |                   |        |                       |      |                |        |                    |      |                      |        |                   |      |
| -5                                                            | -2691***          | 47.88  | -0.18***              | 0.00 | -4038***       | 57.76  | -0.90***           | 0.03 | -1957***             | 40.53  | -0.17***          | 0.00 |
| -4                                                            | -2026***          | 41.20  | -0.14***              | 0.00 | -3394***       | 49.40  | -0.88***           | 0.02 | -1506***             | 34.52  | -0.13***          | 0.00 |
| -3                                                            | -1444***          | 35.17  | -0.10***              | 0.00 | -2542***       | 42.94  | -0.72***           | 0.02 | -1030***             | 29.93  | -0.09***          | 0.00 |
| -2                                                            | -837***           | 29.07  | -0.06***              | 0.00 | -1692***       | 35.00  | -0.48***           | 0.02 | -729***              | 24.14  | -0.06***          | 0.00 |
| -1 (ref.)                                                     |                   |        |                       |      |                |        |                    |      |                      |        |                   |      |
| 0                                                             | 770***            | 27.49  | 0.06***               | 0.00 | -19963***      | 55.31  | -16.39***          | 0.01 | -4241***             | 31.33  | -0.19***          | 0.00 |
| 1                                                             | 1081***           | 33.69  | 0.09***               | 0.00 | -16755***      | 67.41  | -14.01***          | 0.03 | -3295***             | 37.10  | -0.13***          | 0.00 |
| 2                                                             | 1447***           | 38.87  | 0.12***               | 0.00 | -14564***      | 75.88  | -12.53***          | 0.04 | -2538***             | 41.71  | -0.07***          | 0.00 |
| 3                                                             | 1872***           | 43.77  | 0.16***               | 0.00 | -13169***      | 82.92  | -11.77***          | 0.04 | -1856***             | 46.80  | -0.02***          | 0.00 |
| 4                                                             | 2291***           | 48.70  | 0.20***               | 0.00 | -11965***      | 90.03  | -11.18***          | 0.05 | -1147***             | 51.94  | 0.03***           | 0.00 |
| 5                                                             | 2672***           | 54.28  | 0.23***               | 0.00 | -10868***      | 97.74  | -10.69***          | 0.05 | -399***              | 57.90  | 0.08***           | 0.00 |
| <i>Interaction: year b/a entry single parenthood x gender</i> |                   |        |                       |      |                |        |                    |      |                      |        |                   |      |
| -5 year x Women                                               | -1417***          | 53.11  | -0.12***              | 0.00 | 2436***        | 65.48  | 0.41***            | 0.03 | 255***               | 44.97  | 0.00              | 0.00 |
| -4 year x Women                                               | -1239***          | 46.08  | -0.10***              | 0.00 | 2235***        | 57.59  | 0.44***            | 0.02 | 269***               | 39.11  | 0.00              | 0.00 |
| -3 year x Women                                               | -959***           | 39.65  | -0.08***              | 0.00 | 1721***        | 51.01  | 0.31***            | 0.02 | 223***               | 34.38  | 0.00              | 0.00 |
| -2 year x Women                                               | -690***           | 32.82  | -0.06***              | 0.00 | 1071***        | 42.23  | 0.12***            | 0.02 | 180***               | 28.16  | 0.00***           | 0.00 |
| -1 year x Men (ref.)                                          |                   |        |                       |      |                |        |                    |      |                      |        |                   |      |
| 0 year x Women                                                | 804***            | 30.82  | 0.06***               | 0.00 | -5573***       | 63.31  | -0.44***           | 0.01 | -3485***             | 35.55  | -0.27***          | 0.00 |
| 1 year x Women                                                | 1217***           | 37.24  | 0.09***               | 0.00 | -5963***       | 77.14  | -1.01***           | 0.03 | -3082***             | 41.60  | -0.22***          | 0.00 |
| 2 year x Women                                                | 1510***           | 42.13  | 0.11***               | 0.00 | -6576***       | 85.63  | -1.60***           | 0.04 | -2959***             | 46.04  | -0.20***          | 0.00 |
| 3 year x Women                                                | 1715***           | 46.53  | 0.13***               | 0.00 | -6777***       | 92.07  | -1.76***           | 0.05 | -2901***             | 50.80  | -0.18***          | 0.00 |
| 4 year x Women                                                | 1861***           | 50.87  | 0.14***               | 0.00 | -7034***       | 98.10  | -1.94***           | 0.05 | -2938***             | 55.52  | -0.17***          | 0.00 |
| 5 year x Women                                                | 2058***           | 55.70  | 0.15***               | 0.00 | -7299***       | 104.52 | -2.07***           | 0.05 | -2990***             | 60.97  | -0.17***          | 0.00 |
| Constant                                                      | 20479***          | 151.55 | 9.21                  | 0.02 | 2551***        | 282.48 | -1.11              | 0.22 | 20298***             | 193.03 | 9.74              | 0.02 |
| R-squared                                                     | 0.01              |        | 0.04                  |      | 0.47           |        | 0.71               |      | 0.15                 |        | 0.12              |      |

Note: \*p < .05; \*\*p < .01; \*\*\*p < .001.

**Table A12.** Time-Distributed Fixed Effects Regression Estimates of the Effect of Single Parenthood on the Natural Logarithm of Income.

|                                                   | Men                          |         |                                  |      | Women                        |        |                                  |      |
|---------------------------------------------------|------------------------------|---------|----------------------------------|------|------------------------------|--------|----------------------------------|------|
|                                                   | Equivalized household income |         | Ln(equivalized household income) |      | Equivalized household income |        | Ln(equivalized household income) |      |
|                                                   | Coefficient                  | SE      | Coefficient                      | SE   | Coefficient                  | SE     | Coefficient                      | SE   |
| <i>Age</i>                                        |                              |         |                                  |      |                              |        |                                  |      |
| 15-19 years old ( <i>ref.</i> )                   |                              |         |                                  |      |                              |        |                                  |      |
| 20-24 years old                                   | -502                         | 1364.26 | -0.11                            | 0.09 | 2391***                      | 375.10 | 0.15***                          | 0.03 |
| 25-29 years old                                   | 1770                         | 1392.97 | -0.03                            | 0.09 | 3283***                      | 389.35 | 0.19***                          | 0.04 |
| 30-34 years old                                   | 3012*                        | 1400.42 | 0.02                             | 0.09 | 4283***                      | 393.57 | 0.23***                          | 0.04 |
| 35-39 years old                                   | 3761***                      | 1403.73 | 0.05                             | 0.09 | 4710***                      | 395.87 | 0.25***                          | 0.04 |
| 40-44 years old                                   | 3542**                       | 1406.05 | 0.04                             | 0.09 | 4455***                      | 397.51 | 0.24***                          | 0.04 |
| 45-49 years old                                   | 3145*                        | 1407.83 | 0.02                             | 0.09 | 4050***                      | 398.94 | 0.23***                          | 0.04 |
| 50-54 years old                                   | 3104*                        | 1410.02 | 0.01                             | 0.09 | 3940***                      | 402.39 | 0.21***                          | 0.04 |
| 55-59 years old                                   | 2724                         | 1415.44 | -0.01                            | 0.09 | 3277***                      | 418.40 | 0.18***                          | 0.04 |
| 60+ years old                                     | 1918                         | 1430.67 | -0.03                            | 0.09 | 2657***                      | 564.66 | 0.16***                          | 0.04 |
| <i>Number of resident minor children</i>          |                              |         |                                  |      |                              |        |                                  |      |
| No children ( <i>ref.</i> )                       |                              |         |                                  |      |                              |        |                                  |      |
| 1                                                 | -5591***                     | 77.06   | -0.23***                         | 0.00 | -3057***                     | 81.14  | -0.13***                         | 0.00 |
| 2                                                 | -7432***                     | 86.83   | -0.33***                         | 0.00 | -4218***                     | 85.56  | -0.20***                         | 0.00 |
| 3+                                                | -9495***                     | 123.46  | -0.46***                         | 0.01 | -5433***                     | 96.94  | -0.28***                         | 0.01 |
| <i>Age of youngest resident child</i>             |                              |         |                                  |      |                              |        |                                  |      |
| 0-5 years old ( <i>ref.</i> )                     |                              |         |                                  |      |                              |        |                                  |      |
| 6-10 years old                                    | 525***                       | 53.21   | 0.03***                          | 0.00 | 437***                       | 28.00  | 0.02***                          | 0.00 |
| 11-17 years old                                   | 164*                         | 79.06   | 0.01**                           | 0.00 | 181***                       | 42.73  | 0.01***                          | 0.00 |
| 18+ years old                                     | -2186***                     | 126.12  | -0.07***                         | 0.01 | -663***                      | 100.14 | 0.01                             | 0.01 |
| <i>Years before/after entry single parenthood</i> |                              |         |                                  |      |                              |        |                                  |      |
| -5                                                | -1871***                     | 155.57  | -0.19***                         | 0.01 | -1938***                     | 99.05  | -0.22***                         | 0.01 |
| -4                                                | -1481***                     | 109.61  | -0.14***                         | 0.01 | -1431***                     | 72.02  | -0.16***                         | 0.01 |
| -3                                                | -1103***                     | 79.78   | -0.10***                         | 0.01 | -966***                      | 56.75  | -0.11***                         | 0.00 |
| -2                                                | -648***                      | 63.50   | -0.07***                         | 0.00 | -620***                      | 43.72  | -0.06***                         | 0.00 |
| -1 ( <i>ref.</i> )                                |                              |         |                                  |      |                              |        |                                  |      |
| 0                                                 | -2649***                     | 71.63   | -0.15***                         | 0.00 | -6681***                     | 46.98  | -0.53***                         | 0.00 |
| 1                                                 | -2383***                     | 79.38   | -0.10***                         | 0.01 | -5397***                     | 52.76  | -0.38***                         | 0.00 |
| 2                                                 | -1989***                     | 86.24   | -0.05***                         | 0.01 | -4613***                     | 56.91  | -0.29***                         | 0.00 |
| 3                                                 | -1413***                     | 96.04   | 0.01                             | 0.01 | -3922***                     | 62.04  | -0.22***                         | 0.00 |
| 4                                                 | -818***                      | 105.69  | 0.06***                          | 0.01 | -3292***                     | 67.33  | -0.15***                         | 0.00 |
| 5                                                 | -240*                        | 117.54  | 0.10***                          | 0.01 | -2639***                     | 72.97  | -0.08***                         | 0.01 |
| <i>Level of education</i>                         |                              |         |                                  |      |                              |        |                                  |      |
| Low ( <i>ref.</i> )                               |                              |         |                                  |      |                              |        |                                  |      |
| Medium                                            | 567                          | 395.53  | 0.08**                           | 0.03 | 1057***                      | 154.29 | 0.05***                          | 0.01 |
| High                                              | 2813***                      | 605.95  | 0.18*                            | 0.03 | 2103***                      | 202.93 | 0.05***                          | 0.01 |

(continued)

**Table A12.** (continued).

|                                                                           | Men                          |         |                                  |      | Women                        |        |                                  |      |
|---------------------------------------------------------------------------|------------------------------|---------|----------------------------------|------|------------------------------|--------|----------------------------------|------|
|                                                                           | Equivalized household income |         | Ln(equivalized household income) |      | Equivalized household income |        | Ln(equivalized household income) |      |
|                                                                           | Coefficient                  | SE      | Coefficient                      | SE   | Coefficient                  | SE     | Coefficient                      | SE   |
| <i>Interaction: year b/a entry single parenthood x level of education</i> |                              |         |                                  |      |                              |        |                                  |      |
| -5 year x Medium                                                          | -496*                        | 194.45  | 0.00                             | 0.01 | 93                           | 122.70 | 0.04***                          | 0.01 |
| -5 year x High                                                            | -604**                       | 195.79  | 0.01                             | 0.01 | -402***                      | 120.45 | 0.04***                          | 0.01 |
| -4 year x Medium                                                          | -348*                        | 136.57  | 0.00                             | 0.01 | -132                         | 88.74  | 0.02**                           | 0.01 |
| -4 year x High                                                            | -307*                        | 139.04  | 0.02*                            | 0.01 | -411***                      | 87.11  | 0.03***                          | 0.01 |
| -3 year x Medium                                                          | -173                         | 103.12  | 0.00                             | 0.01 | -88                          | 70.20  | 0.01*                            | 0.01 |
| -3 year x High                                                            | -183                         | 104.27  | 0.012**                          | 0.01 | -179**                       | 68.67  | 0.03***                          | 0.00 |
| -2 year x Medium                                                          | -13                          | 82.41   | 0.01*                            | 0.01 | 45                           | 54.79  | 0.01**                           | 0.00 |
| -2 year x High                                                            | -122                         | 82.65   | 0.01**                           | 0.00 | 11                           | 53.43  | 0.02***                          | 0.00 |
| 0 year x Medium                                                           | -1413***                     | 93.15   | -0.05***                         | 0.01 | -1418***                     | 58.72  | 0.00                             | 0.00 |
| 0 year x High                                                             | -3355***                     | 95.21   | -0.09***                         | 0.01 | -2036***                     | 57.53  | 0.12***                          | 0.00 |
| 1 year x Medium                                                           | -1103***                     | 102.76  | -0.04***                         | 0.01 | -1275***                     | 65.81  | -0.01**                          | 0.01 |
| 1 year x High                                                             | -2872***                     | 106.55  | -0.10***                         | 0.01 | -2019***                     | 64.18  | 0.06***                          | 0.00 |
| 2 year x Medium                                                           | -1002***                     | 109.58  | -0.05***                         | 0.01 | -1153***                     | 69.92  | -0.02***                         | 0.01 |
| 2 year x High                                                             | -2716***                     | 114.14  | -0.11***                         | 0.01 | -1927***                     | 68.16  | 0.03***                          | 0.00 |
| 3 year x Medium                                                           | -1002***                     | 119.60  | -0.06***                         | 0.01 | -1044***                     | 74.71  | -0.03***                         | 0.01 |
| 3 year x High                                                             | -2791***                     | 124.47  | -0.13***                         | 0.01 | -1868***                     | 73.10  | 0.01                             | 0.00 |
| 4 year x Medium                                                           | -895***                      | 128.58  | -0.05***                         | 0.01 | -948***                      | 79.14  | -0.03***                         | 0.01 |
| 4 year x High                                                             | -2942***                     | 134.15  | -0.14***                         | 0.01 | -1824***                     | 77.82  | -0.01                            | 0.01 |
| 5 year x Medium                                                           | -769***                      | 140.13  | -0.05***                         | 0.01 | -876***                      | 84.29  | -0.04***                         | 0.01 |
| 5 year x High                                                             | -2965***                     | 145.89  | -0.15***                         | 0.01 | -1805***                     | 82.98  | -0.03***                         | 0.01 |
| Constant                                                                  | 24845                        | 1436.52 | 10.03                            | 0.09 | 20327                        | 412.89 | 9.72                             | 0.04 |
| R-squared                                                                 | 0.12                         |         | 0.12                             |      | 0.17                         |        | 0.16                             |      |

Note: \*p < .05; \*\*p < .01; \*\*\*p < .001.

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