

UNION DYNAMICS IN SAME-SEX AND DIFFERENT-SEX COUPLES: UNDERSTANDING
THE ROLE OF CHILDREN USING POPULATION-LEVEL DATA FROM THE
NETHERLANDS

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Abstract: in this study, we investigate why same-sex couples are generally more likely to divorce than different-sex couples. Using population-level register data, we first show that same-sex couples differ from different-sex couples on a range of observable characteristics, including their age, educational attainment, and family composition, with the largest differences pertaining to childbearing. Next, we estimate a series of Cox proportional hazard models in which we model the relative divorce risks faced by the female same-sex couples, male same-sex couples, and different-sex couples. We show that both female and male same-sex couples are subject to higher unconditional divorce risks than different-sex couples, but these disparities are driven largely by the differences in their observable characteristics. After accounting for these differences, male same-sex couples are found to be more stable than different-sex couples, and the relative hazard risk of divorce faced by female same-sex couples falls by 45%. The presence of young children proves to be a particularly strong mediator of divorce risks, which suggests that the abject differences in family composition across couple types need to be taken into account when comparing their relative stability.

Keywords: administrative data; children; divorce; gay; lesbian; same-sex unions; separation; the Netherlands.

JEL Codes: J12, J13, J16

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INTRODUCTION

Over the last few decades, there have been substantial increases in the numbers of individuals in same-sex relationships and same-sex-parented families (Gates, 2015), coinciding with international shifts towards the social and legal recognition of same-sex unions (Gates, 2015; Reczek, 2020). In response to these significant socio-demographic transformations, social scientists have redoubled their efforts to conduct empirical research that enhances our understanding of how family processes unfold amongst individuals from sexual minorities, and how such processes may align or differ from those experienced by heterosexual individuals (Reczek, 2020).

Parent-child influences have featured prominently in this body of research, with a majority of efforts directed at evaluating the parenting efficacy of same-sex couples compared to different-sex couples. This literature has documented—almost unambiguously—that there are no differences in the outcomes of children raised in same-sex-parented and different-sex-parented families (Boertien & Bernardi, 2019; Rosenfeld, 2010; Watkins, 2018) or slight advantages to being raised in same-sex-parented families (Kabátek & Perales, 2021). However, it is not only parents that affect the lives and wellbeing of children; children can also affect parents' outcomes in multiple ways (Cherlin, 1977; Waite and Lillard, 1991). Despite this, few studies have empirically engaged with the question of whether and how children affect same-sex parents, and whether any influences differ to those exerted over different-sex parents.

In this paper, we address this knowledge gap by focusing specifically on the influence of the presence and characteristics of children on the stability of same-sex and different-sex unions. In doing so, we expand the sparse literature comparing union formation, stability and dissolution in same-sex and different-sex couples. We also contribute to a broader literature on the antecedents of union dissolution by providing more nuanced and detailed analyses of the role of children—including their number, ages, and biological relatedness. To accomplish this,

we leverage internationally unique, population-level linked register data from the Netherlands stretching between 1998 and 2020 ($n=1,894,498$ different-sex couples & 31,915 same-sex couples).

LITERATURE REVIEW

Union dissolution among same-sex and different-sex couples

Despite significant increases in the number of same-sex unions, empirical evidence regarding their stability remains limited with fewer than 20 studies being conducted across the US and Europe (Joyner et al., 2017). Among existing studies, the results have been mixed: while some studies have found similar rates of dissolution between same- and different-sex couples (e.g., Manning, Brown, & Stykes, 2016; Rosenfeld, 2014), others have observed higher levels of instability among same-sex couples (e.g., Andersson et al., 2006; Lau, 2012; Kolk & Andersson, 2020). Dissolution rates also appear to vary by gender, with most studies reporting that female same-sex couples are less stable than male same-sex couples (Andersson et al., 2006; Wiik, 2014; Joyner et al., 2017; Kolk & Andersson, 2020). With notable exceptions, the bulk of existing research has been based on convenience samples or probabilistic surveys where the number of same-sex couples ranged from approximately 100 to 800 (Joyner et al., 2017). This reliance on small, non-probability samples is problematic for at least two reasons. First, the non-representative nature of convenience samples limits the generalizability of previous results. Second, the relatively low numbers of same-sex couples in surveys makes it challenging to analyze subgroups of this population—such as same-sex couples with children.

Compared to traditional social surveys, population register data are much larger, which enables more robust analyses of same-sex couples. Several studies have leveraged this type of data to compare union dynamics between same-sex and different-sex couples. Pioneering research by Andersson et al. (2006) used population-register data from Sweden and Norway spanning the 1993-2002 period to compare the demographic characteristics of married

different-sex couples ($n=222,242$) and same-sex couples in registered partnerships ($n=2,819$). These countries not only featured well-established population register systems, but also were amongst the first to allow same-sex couples to enter registered partnerships (1993 in Norway and 1995 in Sweden). The adjusted risk of divorce among female same-sex couples was 2.3 times that of married different-sex couples. Within same-sex couples, the risk of dissolution was twice as high amongst female compared to male couples. Studies using more recent register data from Sweden (Kolk & Andersson, 2020) and Norway (Wiik, Seierstad, & Noack, 2014) have also documented higher union-dissolution risks amongst female than male same-sex couples. In Norway, for example, Wiik et al. (2014) estimated the divorce risk to be 1.71 times higher for female than male same-sex couples.

In the Netherlands, the country in which the present study is based, only one earlier study has investigated union dynamics in same-sex and different-sex couples. Using tax record data matched with population register data from 1989 to 2000, Kalmijn, Loeve, and Manting (2007) examined how the distribution of household income influenced the risk of union dissolution by couple type. They showed that, for same-sex couples ($n=731$), a more equal distribution of income between partners reduced the risk of union dissolution. Consistent with other studies, they also observed higher rates of union dissolution amongst same-sex couples compared to different-sex cohabiting and married couples ($n=13,142$). However, in these data, female same-sex couples appeared to be more stable than their male same-sex counterparts.

Various factors may explain why union dissolution rates are higher among same-sex couples in some of the earlier studies. At the micro level, the minority stress perspective emphasizes the unique challenges faced by same-sex couples due to the stigma associated with their sexual orientation and/or same-sex relationship (Brooks, 1981; Meyer, 2003). For example, disapproval from family and friends, denial of services, and concealment of one's identity or relationship can strain same-sex relationships (Ketcham & Bennett, 2019). At the

macro level, the inability of same-sex couples to formalize their relationships through institutions like marriage may also introduce instability into their unions (Cherlin, 1978). In addition, couple-specific factors may also contribute to the instability of same-sex unions. As posited by social exchange theory, same-sex couples face fewer legal and social barriers to separation compared to different-sex couples (Kurdek, 1998; 2004). They also derive fewer rewards from being in a same-sex relationship, due to the lack of social validation and acceptance (Lau, 2012). Further, same-sex couples are less homogamous than different-sex couples in terms of age, ethnicity, and economic status (Verbakel & Kalmijn, 2014; Lin et al., 2019; Ciscato, Galichon, & Gousse, 2020). Lower levels of homogamy may indicate differences in attitudes and lifestyles, which then result in greater instability (Teachman, 2002; Phillips & Sweeney, 2006).

Another factor that may contribute to higher dissolution risks among same-sex couples are lower levels of relationship-specific capital. Among married couples, children represent one of the most valuable forms of such capital. Economic theories suggest that children lower the risk of separation by increasing both the attractiveness of the union and the costs of dissolving it (Becker, Landes & Michael, 1977; Becker, 1981). For example, issues of custody and child support may deter married couples from filing for divorce. Meanwhile, sociologists have argued that having children promotes greater role differentiation between couples, thereby increasing the interdependence of couple members and lowering the risks for divorce (Durkheim, 1993; Morgan et al., 1998). It is to the role of children that we now turn to.

The role of children in union dynamics

Empirical studies based on different-sex couples with biological children generally support the notion that children foster union stability (Lyngstad & Jalovaara, 2010; Steele, Kallis, Goldstein, & Joshi, 2005). Nevertheless, this effect is moderated by factors such as the number of children (Hoem & Hoem, 1992; Coppola & Di Cesare, 2008), their age and gender

(Heaton, 1990; Waite & Lillard, 1991; Morgan et al., 1998; Kabátek & Ribar, 2021), and the timing and interval of births (Waite & Lillard, 1991; Berg et al., 2020). Because existing research has focused almost exclusively on different-sex couples with biological children, other pathways to parenthood such as adoption or step-parenthood have rarely been examined (Goldberg & Garcia, 2015). This is a critical gap in scholarly knowledge, as non-biological children may have different effects on union stability than biological children.

In theory, both adoption and step-parenthood may increase the risk of dissolution given the additional strains associated with these processes. Couples wanting to adopt face multiple barriers, such as an undefined and prolonged waiting period for a child, the need to interact with various agencies, and other requirements that must be met prior to the actual adoption (Goldberg, 2010; Golberg and Garcia, 2015). Furthermore, adoption can be quite expensive—for example, its cost ranges from €15,000 to €40,000 in the Netherlands (Mazrekaj, De Witte, & Cabus, 2020). In addition, child characteristics may also be a source of stress for the adoptive couple. This is because adopted children are older, more likely to have experienced abuse and trauma, and more likely to exhibit behavioural issues (Howard & Berzin, 2011; Timm, Mooradian, & Hock, 2011). A disproportionate share of adopted children have a disability, which further exacerbates parenting challenges (Bramlett, Radel & Blumberg, 2007; Teyhan, Wijedasa, & Macleod, 2018). Step-parenthood is also characterized by its own unique challenges, such as dealing with non-residential parents and managing relationships with stepchildren (Ganong and Coleman, 2017).

Whether children exert the same protective effect on same-sex unions as they do for different-sex unions is not yet clear. Early studies in this space have largely been qualitative in nature and/or based on small, non-representative samples. One frequently cited study by Gartrell and co-authors (2006) was based on the National Lesbian Family Study in the US, which tracked 84 lesbian families whose children were conceived via donor insemination.

Qualitative interviews were carried out when the children turned 10 years old and focused on a range of topics, including relationship status. By that time, 30 couples had separated. Remarkably, in 22 out of 30 separated couples, having a child delayed the dissolution of the relationship (Gartrell et al., 2006).

To date, only two studies have leveraged large-scale, nationally representative data to examine the role of children in same-sex union stability. The first was Wiik et al. (2014), who used Norwegian register data to study the dynamics of registered and married same-sex and different-sex couples with common (i.e., biological, adopted, step) children. The authors found that having at least one common child was associated with lower divorce risks for both different-sex and female same-sex couples. The opposite was nevertheless true for male same-sex couples—possibly due to greater stigma against male same-sex parenting, higher barriers to parenthood, or unobserved characteristics affecting the likelihood of divorce (Wiik et al., 2014). Meanwhile, Allen and Price (2020) leveraged three datasets—the *How Couples Meet and Stay Together Survey* (HCWMST), Canada’s Survey of Labor Income Dynamics (SLID), and the US Survey of Income and Program Participation (SIPP)—to document differences in the dissolution rates between same- and different-sex couples with and without children. Across the three datasets, the authors found that the odds of relationship dissolution were higher for same-sex than different-sex couples. Critically, these differences were even greater amongst same- and different-sex couples with children. Amongst couples with children, the estimated odds of dissolution were 2.9 (HCWMST), 14 (SLID), and 4.5 (SIPP) times greater.

The current study

A major limitation common to the two existing studies comparing the effect of children on union dissolution amongst same-sex and different-sex couples is their inability to distinguish among different pathways to parenthood. Due to the small number of same-sex couples with children, both Wiik et al. (2014) and Allen and Price (2020) combined biological children with

adopted and step-children in their analysis. As a result, they failed to capture potentially heterogeneous effects due to different pathways to parenthood on union stability. This is a significant omission, as same-sex couples are more likely to become parents through non-biological means (Kabátek & Perales, 2021). This includes parenting children from a previously dissolved heterosexual relationship and entering parenthood through joint adoption or artificial reproductive technologies (Ganong & Coleman, 2017). While these pathways are also available to different-sex couples, different-sex couples are still much more likely to become parents through biological means. In the Netherlands, for example, a larger proportion of female same-sex couples (20.5%) have stepchildren compared to different-sex couples (13.1%). If pathways to parenthood matter for union stability, then failure to account for these differences may explain the higher dissolution rates among same-sex couples compared to different-sex couples.

Against this backdrop, the present study examines the role of children in the dynamics of same-sex unions. To accomplish this, we leverage unique administrative data from the Netherlands spanning the period 1998 to 2020. Compared with earlier studies, our data features a large number of same-sex couples ($n=31,915$), which allows for detailed within-group analyses of those who had children ($n=8,816$). Furthermore, the data enable us to distinguish not only the number and age of children, but also the various pathways through which same-sex couples become parents (biological children, adopted children, step-children). In doing so, the study makes two distinct contributions to the literature. First, it sheds light on the presence and characteristics of children as a potential explanation for the higher rates of dissolution observed among same-sex couples in much of the literature. Second, it examines whether pathways to parenthood matter for union stability amongst both same-sex and different-sex couples—a topic that has received no empirical attention.

THE DUTCH CONTEXT

The present study is based on data from the Netherlands, a country with a distinctive institutional context pertaining to marriage, divorce and same-sex relations. In this section, we outline some of characteristics of the Dutch institutional system which hold relevance to our analyses.

Marriage and divorce in the Netherlands

As for many other European countries, divorce has existed in the Netherlands since the beginning of the 20th century (Gonzalez & Vitonen, 2009; van Poppel & de Beer, 1993). Up until the 1960s, it was only granted on limited grounds such as adultery, physical violence, and wilful desertion (Boele-Woelki et al, 2003; van Poppel & de Beer, 1993). In 1971, the divorce system was overhauled and the country transitioned to a unilateral, “no-fault” divorce policy. This shift placed the Dutch divorce regime in similar footing with other European countries.

Under the current regime, divorce is granted solely on the basis of the “irretrievable breakdown of marriage” (Dutch Civil Law). Divorce can be requested either by both parties or by a single party. Unlike other countries (e.g., Italy or Australia), a minimum separation period is not required prior to filing for divorce. The entire process takes an average of 35 days for a bilateral divorce, 100 to 120 days for a unilateral but uncontested divorce, and 330 days in contested cases (Ter Voert, 2009). It is estimated that divorce costs about €3,000 on average, but this varies widely depending on the amount of time spent with lawyers, number of court hearings, and other factors (Kabátek, 2019). A divorce becomes effective once the decree has been entered into the civil registry. By law, divorced couples are assigned joint custody of children below the age of 18. However, in 60% percent of divorces, children actually end up living with their mothers (De Graaf, 2005).

Since the 1971 reform, public attitudes towards divorce have shifted quite dramatically. In 1965, only 12% of the population felt that divorce was acceptable for married couples with children. By 1995, this proportion had increased to 45% (de Graaf & Kalmijn, 2006). Attitudes towards divorce in the Netherlands are also more liberal than in other European countries, except for Sweden and Denmark (Rijken & Liefbroer, 2012). The normalization of divorce in the Netherlands coincided with increasing divorce rates. Between 1965 and 1985, the number of divorces grew rapidly, from 0.5 to 2.3 for every 1,000 people. Since then, it has stabilized at around 2 per 1,000 people. In 2017, the Dutch divorce rate was the same as the OECD average of 1.9, and lower than that in the United States (2.9), Sweden (2.4), and Norway (2.0) (OECD Family database, 2020).

Registered partnerships and same-sex unions in the Netherlands

Over the last few decades, public support for same-sex couples and the broader LGBTIQ+ community in the Netherlands has increased considerably. In the 1960s, 36% of the population believed that homosexuals should “not be free to live their lives as they wish” (Kuyper & Vanwesenbeeck, 2009). By 2012, only about 8% of the population agreed with this statement (Smith, Son, & Kim, 2014). Public opinion regarding the rights of same-sex couples have also shifted. Between 1998 and 2005, for example, the share of the population opposing same-sex marriage decreased from 43% to 22% (Kuyper & Vanwesenbeeck, 2009). Similar trends have also been observed regarding social attitudes towards adoption by same-sex couples (Kuyper & Vanwesenbeeck, 2009). Compared to other countries, Dutch attitudes towards same-sex relations are among the most progressive in the world. For example, in a 2016 survey of 18 European countries, the Netherlands ranked second in terms of acceptance of homosexuality (Government of the Netherlands, 2018). A separate survey conducted by the Pew Research Center showed that out of 15 Western European countries, the Netherlands had the second highest rate of support for same-sex marriage (Pew Research Center, 2018).

Consistent with public opinion, Dutch legislation on same-sex relations has become more protective over time. Since the decriminalization of homosexuality in 1971, the Dutch government has promoted LGBTIQ+ inclusive policies. For example, the 1994 General Equal Treatment Act included sexual orientation as one of the areas protected by anti-discrimination legislation. In 1998, the Dutch government introduced a new type of union known as ‘registered partnerships’ that offered same-sex couples a vehicle to formalise their relationships. While this union type was primarily targeted towards same-sex couples, it was also made available to different-sex couples. Legally, the implications of a registered partnership are almost the same as those of a marriage. The only major difference concerns its termination. Unlike for marriages, judicial intervention is not required as long as the couple does not have children below the age of 18. If they do, the partnership can only be terminated by the court after a parenting plan has been established. When there is mutual consent, the partnership can be ended through a signed declaration. Otherwise, a request for dissolution may be filed by one of the parties. One other difference between marriages and registered partnerships relates to international adoptions, wherein couples in registered partnerships are not allowed to submit a joint application.

Following the introduction of registered partnerships in 1998, the Netherlands became the first country to legalize same-sex marriage in 2001. In legal terms, couples in same-sex marriages enjoy nearly all of the benefits provided to different-sex couples. The only major difference relates to issues of parenthood. Unlike different-sex couples, legal parenthood is not automatically conferred to the non-biological parent in a same-sex marriage. Instead, the non-biological parent must file for adoption to become the child’s legal parent. The only exception applies to married lesbian couples who conceived the child artificially through an unknown donor. In this case, the female partner of the biological mother (i.e., the co-mother) is automatically considered the child’s other legal parent.

Since 2001, same-sex marriages have comprised about 70% of formal same-sex unions, whereas registered partnerships account for the remaining 30% (Statistics Netherlands, 2020). As a point of comparison, about 75% of different-sex unions are marriages and 25% are registered partnerships. Since 2003, female unions have accounted for a little over half of formal same-sex unions (Statistics Netherlands, 2020). Overall, same-sex unions amount to just over 2% of all formal unions in the Netherlands (Statistics Netherlands, 2020).

DATA

The aim of this study is to compare the role of children in influencing union instability amongst same-sex and different-sex couples. To accomplish this, the study draws on linked administrative data provided by the Dutch national statistical agency, *Statistics Netherlands*. The cornerstone of our dataset is the municipal register, which contains information on the complete population of the Netherlands for the 1994-2019 period. The information in the register includes each person's unique personal identifier, date of birth, sex, marital history, immigration background, living arrangements, residential history and family relationships (including spousal and parent-child linkages). The data access and release protocols are detailed in the Supplemental Materials.

Identification of same-sex and different-sex unions

The unique personal identifiers allow us to link records of people who are (or were) either married or in registered partnerships. Leveraging information on people's sex (sourced primarily from official birth certificates), we identified 1,894,498 different-sex unions (184,459 partnerships and 1,710,039 marriages), 20,074 male same-sex unions (8,233 partnerships and 11,841 marriages) and 21,352 female same-sex unions (8,025 partnerships and 13,327 marriages). All of these unions began between 1 April 1998 (when registered partnerships were introduced in the Netherlands) and 1 January 2020 (the latest date for which data are available).

Union formation and dissolution

Marital histories in the register data contain the date of union formation (official registration of a marriage or partnership) and, if applicable, union dissolution (divorce or widowhood) for each of the observed unions. To approximate the full duration of relationships, we supplement the marital records with data from residential histories. This allows us to identify the date at which each couple began cohabiting. This information is relevant for our analysis, as same-sex couples tend to cohabit for considerably longer time than different-sex couples before formalizing their relationships by marriage or registered partnership.

Parental status

Our measures of parenthood rely primarily on parent-child linkages and personal residential histories. Leveraging this information, we can determine whether couples co-reside with any children and retrieve these children's characteristics, including their age, sex, adoptive status, and relationship to the couple. A child is defined as an "own child" if *both* spouses are registered as its legal parents and as a stepchild if *only one* of the spouses is registered as its legal parent. Adoptive children include both international and domestic adoptions.

Demographic and socio-economic characteristics

Leveraging the municipal-register data, we construct measures of spousal ages and immigration backgrounds. In addition, personal identifiers allow us to deterministically link relevant information from other registers (including the tax register, education register, and social security register), enabling us to determine the level of education of the spouses and derive couple-specific histories of employment, income, and disability.

Sample selection

Our empirical analyses focus on marriages and registered partnerships that began between 1 April 1998 and 1 January 2020. We exclude unions in which couples started

cohabiting prior to the date that marks the beginning of municipal residential records (October 1994). This is because we are not able to approximate their full relationship duration, including spells of cohabitation.¹

Descriptive statistics: union dissolution rates by couple gender

Summary statistics describing the characteristics of male same-sex, female same-sex, and different-sex couples in our data are presented in Table 1. The average values for male and female same-sex couples are accompanied by stars that indicate whether the observed differences between same-sex and different-sex couples are statistically significant.

First, we compare rates of union dissolution—distinguishing between unions ending in divorce and death. For illustrative purposes, we quantify and present the share of unions that ended in divorce or death in less than 5 years and 10 years from the time of a wedding or partnership formation.² This analysis shows that the share of unions ending in divorce is highest among female same-sex couples (16.4% within 5 years, 30.6% within 10 years), followed by male same-sex couples (10.7% within 5 years, 20.6% within 10 years), and different-sex couples (7.7% within 5 years, 16.6% within 10 years). This pattern of results is consistent with earlier European studies reporting that, of the three couple types, female same-sex couples had the highest dissolution rates followed by male same-sex couples (see e.g., Andersson et al,

¹ This sample restriction affects 22.7% of male same-sex unions, 16% of female same-sex unions, and 5.5% of different-sex unions. The larger proportion of same-sex unions affected by this restriction is attributable partially to the fact that same-sex couples cohabit longer before formalizing their relationships, and partially to the fact that many same-sex couples in long-term *de facto* relationships had to wait for the 1998 legalization of same-sex unions to marry. As a robustness check, we estimated models using the full sample of marriages and registered partnerships that began between 1 April 1998 and 1 January 2020. These models yielded very similar results to those presented in the main text (see Appendix A2).

² This exposition is preferred to unconditional divorce rates because the incidence of same-sex and different-sex unions changes over the period of observation (see Appendix Figure A1). Specifically, the incidence of male same-sex unions is stable, the incidence of female same-sex unions is increasing, and the incidence of different-sex unions is falling. By conditioning on marital duration, we abstract from the confounding influences of these secular trends, thereby making the divorce rates across the three couple types more comparable. By construction, the 5-year and 10-year divorce rates correspond to the subsamples of unions that commenced at least 5 years and 10 years prior to the end of our observation window, respectively.

2006; Wiik et al., 2014). Reflecting differences in spouses' average ages, the share of unions ending by a spousal death is highest among male same-sex couples (3.4% within 5 years, 6.2% within 10 years), followed by female same-sex couples (1.7% within 5 years, 3.2% within 10 years), and different-sex couples (1.2% within 5 years, 2.2% within 10 years). Each of these differences is statistically significant, which confirms that same-sex and different-sex couples are subject to distinct marital dynamics.

Descriptive statistics: differences in parental status by couple gender

It is important to recognize that same-sex and different-sex couples also differ in a range of observable characteristics that have been previously documented to affect union dissolution (Kabátek and Ribar, 2018 & 2021, Lin et al., 2019; Verbakel & Kalmijn, 2014). The most striking differences across couple types pertain to children and childbearing. While 77.9% of different-sex couples have co-resident children (be it own, adoptive, or stepchildren), the same is true for only 46.9% of female same-sex couples and 4.6% of male same-sex couples. The share of couples with stepchildren is 13.1% among different-sex couples, 20.5% for female same-sex couples, and 3.5% for male same-sex couples. The share of couples with adopted children is much lower: 0.2% for different-sex and female same-sex couples and 0.3% for male same-sex couples. Conditional on having children, the average number of children is 2 among different-sex couples, 1.7 among female same-sex couples, and 1.3 among male same-sex couples.

The presence of own children has long been considered a factor that enhances union stability (Heaton, 1990; Waite & Lillard, 1991), whereas the presence of step-children has been found to affect union stability negatively (see Andersson et al., 2006; Manning, Smock, & Majumdar, 2004). Accordingly, the high incidence of own children among different-sex couples should be protective of their unions, whereas the low propensity for own childbearing and relatively high incidence of stepchildren among same-sex couples should be putting their

unions at a higher risk of dissolution. In other words, it is likely that the presence and type of children acts as an intervening variable in the association between couple gender (e.g., same-sex vs. different-sex) and union dissolution. Testing this premise constitutes a key aim of our empirical analyses.

Descriptive statistics: differences in other socio-demographic factors by couple gender

To examine the intervening role of children, it is important to account for differences between same-sex and different-sex couples in other factors that may potentially affect union-dissolution rates. One such factor is union type. Compared to marriages, registered partnerships in many countries (including the Netherlands) are subject to streamlined dissolution proceedings, which makes them more susceptible to be terminated (Kabátek, 2019). Also in this case, we observe large differences between same-sex and different-sex couples: the share of registered partnerships among same-sex couples (36.1% for men and 32.7% for women) is visibly and statistically significantly higher than that of different-sex couples (9.8%). We also observe differences in the average time couples spend cohabiting before entering marriages and partnerships, with male same-sex couples having the longest premarital cohabitation spells (3.5 years on average) and different-sex couples having the shortest spells (2.6 years on average).

Same-sex couples also enter their unions at a considerably older age than different-sex couples. Considering the older spouses, those entering male same-sex unions are, on average, 3.1 years older than those entering female same-sex unions, and 8.4 years older than those entering different-sex unions. The age disparities are less pronounced among younger spouses (0.9 and 5.3 years, respectively). This indicates that male same-sex couples are the least homogamous in terms of their age, whereas different-sex couples are the most homogamous. From the perspective of marital stability, the older ages of same-sex spouses are likely to be protective of their unions, whereas the lower degree of homogamy is likely to be a risk factor

(as shown by Kalmijn et al., 2005, and Kabátek and Ribar, 2018). The age differences across the three groups may be also contributing to the differential union-dissolution rates of same-sex and different-sex spouses.

With regard to immigration background, we observe that spouses in female same-sex couples are more likely to be native Dutch, spouses in male same-sex couples are more likely to have a mixed immigration background, and spouses in different-sex couples are more likely to be both immigrants. The immigration heterogamy of male same-sex couples is also likely placing them at a greater risk of dissolution (Kabátek and Ribar, 2018 & 2021).

In contrast, both higher education attainment and higher income are likely to be protective of same-sex unions (Andersson et al., 2006; Kabátek and Ribar, 2018; Ketcham & Bennett, 2019). Same-sex couples are more likely to be university-educated than different-sex couples. The shares of couples holding at least one university degree are 44.5% for male same-sex couples, 50.9% for female same-sex couples, and 40.1% for different-sex couples.³ Same-sex couples are also more likely to be dual earners. Average income is highest among male same-sex couples (82,880 EUR per year), followed by female same-sex couples (76,230 EUR per year) and different-sex couples (66,990 EUR per year).

MODELLING OF DIVORCE RISKS

The information presented in the previous section yields important insights into the stability of same- and different-sex unions. On the one hand, we observe that both male and female same-sex couples face higher risks of union dissolution than different-sex couples. On the other hand, we see that the three couple types differ on a range of other characteristics that have been previously documented to affect marital stability. Accordingly, if we are to evaluate

³ The group of male same-sex couples also includes a larger share of spouses whose education is unknown (14.4% compared to 7.2% of female same-sex couples and 10.1% for different-sex couples). This is a consequence of their higher age and more diverse immigration background, as education information is unavailable for spouses who completed their education outside of the Netherlands and for spouses who were born before 1965.

whether same-sex couples are inherently more or less stable than different-sex couples, we must account for the confounding influences of these characteristics.

To explore the relative divorce risks faced by same-sex and different-sex couples, adjusted for confounding, we estimate a series of discrete-time event-history models. Drawing on earlier studies by Allen and Price (2020) and Wiik and colleagues (2014), our primary model specification is a Cox proportional hazard model. To assess the sensitivity of our results to the choice of model specification, we also estimate cloglog models (Kabátek and Ribar, 2021) and linear probability models. The key advantage of discrete-time hazard models is that they allow us to jointly model several duration-dependent processes, so that we can control for the duration of unions, the ages of the spouses, and the ages of their children, as well as other time-varying family characteristics. The functional form of a representative model is:

$$h(t|\mathbf{x}_{it}) = h_0(t) \exp(\mathbf{x}_{it}\boldsymbol{\beta}_i),$$

where $h_0(t)$ is the baseline hazard rate, \mathbf{x}_{it} is a set of covariates, and $\boldsymbol{\beta}_i$ the set of corresponding coefficients. The same non-parametric baseline hazard rate is assumed to be applicable to every couple in our analytical dataset, and it is the product of this baseline hazard rate and the exponentiated term $\mathbf{x}_{it}\boldsymbol{\beta}_i$ which constitutes the applicable conditional hazard rate $h(t|\mathbf{x}_{it})$ for couple i , observed at relationship duration t .

To operationalize the model, we discretize our analytical dataset of 1,786,115 marriage/partnership spells, creating a dataset of marriage-year (or partnership-year) observations. The resulting dataset contains 18,643,456 observations. An aspect that distinguishes our approach from other studies (e.g., Chen and van Ours, 2020; Kolk & Andersson, 2020) is that we do not assess relationship duration from the beginning of a given marriage/partnership spell. Instead, thanks to our use of residential histories, we are able to assess relationship duration from the date when the couple first began cohabiting. By doing so, we account for the fact that same-sex couples (particularly male same-sex couples) tend to

cohabit for much longer before formalizing their relationships. This distinction is particularly important for the same-sex couples who entered registered partnerships in 1998. This is because many of these couples would have formalized their unions earlier, had they been legally allowed to do so. If we were to count their relationship durations from the point of partnership registration, we would be effectively comparing their duration dependence with newlywed different-sex couples who were not constrained by the legislation, and who often spent very short times cohabiting before formalizing their relationships.

EMPIRICAL EVIDENCE

The results corresponding to our Cox proportional hazard models presented in Table 2. First, we present the results corresponding to the unconditional model which does not include any control variables. Similar to the results presented in Table 1, both male and female same-sex couples are found to be subject to higher divorce risks than different-sex couples. In column 2, we present the results corresponding to the model that controls for demographic and socio-economic characteristics of the couples. The results show that, compared to the unconditional model, the relative risks faced by male and female same-sex couples fall. The risks faced by male same-sex couples become virtually identical to the risks faced by different sex couples, while the risks faced by female same sex couples remain higher compared to the risks faced by different sex couples. Column 3 shows results corresponding to the saturated model specification, in which we also account for the presence and age structure of children in the household. The results show that the relative risks faced by same-sex couples fall further, with male same-sex couples facing 18% lower hazard divorce risks than different-sex couples, and female same-sex couples facing 51% higher hazard divorce risks than different sex couples. This suggests that female same-sex couples are indeed less stable than the other

two couple types, although the conditional relative risks of divorce faced by female same sex couples are 45% lower than what the unconditional model would predict.

Next, we perform a moderation analysis in which we explore the relative importance of children in determining divorce risks faced by the three couple types. To do so, we re-estimate the saturated version of our Cox proportional hazard model for each couple type separately, and we compare the coefficient estimates corresponding to the three sets of children control variables. The results corresponding to this analysis are summarized in Table 3. Here we show that the presence of any children leads to a large and statistically significant decrease in the relative divorce risks faced by different-sex couples, whereas the same coefficient is smaller and statistically insignificant for both types of same-sex couples. Numbers of own children are significantly decreasing the risks of divorce among female same-sex couples and different-sex couples, and the numbers of stepchildren are significantly increasing the risks of divorce across all three couple types. For female same-sex couples and different-sex couples the relative risks of divorce are also increasing with the age of the youngest child, where's the dependence being stronger for different-sex couples. This suggests that different sex couples are subject to a substantive drop of divorce risks when the child is born, however this protective effect of childbearing diminishes faster as the child grows up. In contrast, same sex couples are less affected by the birth, and the moderate protective effect of childbearing diminishes more slowly as the child grows up.

Next: **Robustness**

TABLES AND FIGURES

Table 1. Summary statistics corresponding to male same-sex couples, female same-sex couples and different-sex couples in the main analytical sample

VARIABLES	Male SSC	SD	Female SSC	SD	DSC	SD
<i>Union dissolution</i>						
Divorced within 5 years from the wedding/RP start, %	10.72***		16.37***		7.74	
Divorced within 10 years from the wedding/RP start, %	20.60***		30.57***		16.61	
Ended in death within 5 years from the wedding/RP start, %	3.36***		1.65***		1.17	
Ended in death within 5 years from the wedding/RP start, %	6.20***		3.17***		2.27	
<i>Children</i>						
Any children, %	4.63***		46.94***		77.94	
Any own children, %	0.99***		28.86***		69.04	
Any stepchildren, %	3.49***		20.49***		13.17	
Any adopted children, %	0.25*		0.21		0.17	
Number of children (non-zero)	1.38***	0.62	1.70***	0.78	2.03	0.89
<i>Union characteristics</i>						
Registered partnership, %	36.15***		32.72***		9.76	
Registered partnership turned into marriage %	4.24***		4.09***		0.99	
Years cohabiting prior to wedding/RP start	3.46***	4.19	2.94***	3.37	2.58	3.24
<i>Age</i>						
Age at wedding/RP start, older spouse	43.55***	11.26	40.41***	10.19	35.19	10.32
Age at wedding/RP start, younger spouse	36.09***	9.52	35.16***	9.17	30.80	9.15
Age difference between the spouses	7.46***	7.30	5.25***	4.79	4.40	4.42
<i>Immigration</i>						
Both spouses native Dutch, %	55.67***		73.85***		60.95	
Both spouses 1 st gen immigrants, %	9.16***		3.47***		14.95	
Both spouses 2 nd gen immigrants, %	0.47***		0.89***		2.21	
Native Dutch and 1 st gen immigrant, %	23.26***		8.28***		9.49	
Native Dutch and 2 nd gen immigrant, %	9.05*		12.28***		8.56	

1 st gen immigrant and 2 nd gen immigrant, %	2.39 ^{***}		1.23 ^{***}		3.84	
<i>Education</i>						
Education - at least one secondary, %	41.06 ^{***}		41.88 ^{***}		49.90	
Education - at least one bachelor %	22.88 [*]		29.54 ^{***}		23.65	
Education - at least one master, %	18.96 ^{***}		18.32 ^{***}		14.35	
Education - at least one PhD. %	2.69 ^{***}		3.04 ^{***}		2.05	
Education - unknown, %	14.41 ^{***}		7.21 ^{***}		10.05	
<i>Employment</i>						
Both spouses not working %	8.24 ^{***}		5.01 ^{***}		10.02	
One spouse working, %	19.30 ^{**}		15.02 ^{***}		18.37	
Both spouses working, %	72.46 [*]		79.96 ^{***}		71.61	
Annual income, in 1,000 EUR	82.88 ^{***}	56.87	76.23 ^{***}	43.50	66.99	47.14
<i>Residential characteristics</i>						
Urbanization (index, 1=lowest, 5=highest)	3.95 ^{***}	1.20	3.64 ^{***}	1.22	3.37	1.30
Living in North Holland, %	31.86 ^{***}		21.58 ^{***}		18.01	
Observations	14600		17343		1754172	

Notes: Summary statistics corresponding to same-sex couples (SSC) and different-sex couples (DSC) who entered marriages or registered partnerships between January 1998 and December 2019. SD: Standard deviation. RP: Registered partnership. Significance stars correspond to p -values from two-sided t -tests of the equality of the means, with the comparison group being different-sex couples. Statistical significance: ^{***} $p < 0.001$, ^{**} $p < 0.01$, ^{*} $p < 0.05$.

Table 2. Odds ratios (standard errors) from Cox proportional hazard models of union dissolution, principal model estimates

	Model 1	Model 2	Model 3
<i>Couple type</i>			
<i>(ref. Different-sex couple)</i>			
Male same-sex couple	1.194*** (0.023)	1.011 (0.020)	0.822*** (0.016)
Female same-sex couple	1.939*** (0.028)	1.778*** (0.026)	1.514*** (0.022)
<i>Child variables</i>			
Any children in the household			0.494*** (0.004)
Number of own children			0.921*** (0.003)
Number of stepchildren			1.169*** (0.004)
Age of the youngest child			1.045*** (0.000)
Baseline controls ^a	No	Yes	Yes
<i>n</i> (couple-year observations)	18,643,456	18,643,456	18,643,456
Pseudo-R ²	<0.001	0.010	0.014

Notes: The analyses use linked administrative register data on same-sex couples (SSC) and different-sex couples (DSC) commenced between 1998 and 2019 in the Netherlands. ^a Spousal age controls (yearly dummies for calendar age of the younger spouse, and a set of yearly dummies for age difference between the spouses), calendar year dummies, registered partnership indicator, immigration background, education attainment, employment dummies, income decile, disability, province of residence, and urbanization dummies. ^b Dummy for couples with children, number of own children, number of stepchildren, and age of the youngest child. Statistical significance: *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

Table 3. Odds ratios (standard errors) from Cox proportional hazard models of union dissolution, models stratified by couple gender

	Male SSCs	Female SSCs	DSCs
<i>Child variables</i>			
Any children in the household	0.798 (0.231)	0.898 (0.048)	0.490*** (0.004)
Number of own children	0.990 (0.213)	0.904* (0.036)	0.921*** (0.003)
Number of stepchildren	1.330* (0.167)	1.125*** (0.031)	1.169*** (0.004)
Age of the youngest child	1.004 (0.011)	1.010** (0.003)	1.045*** (0.000)
Baseline controls ^a	Yes	Yes	Yes
<i>n</i> (couple-year observations)	137,420	149,417	18,356,619
Pseudo-R ²	0.026	0.019	0.014

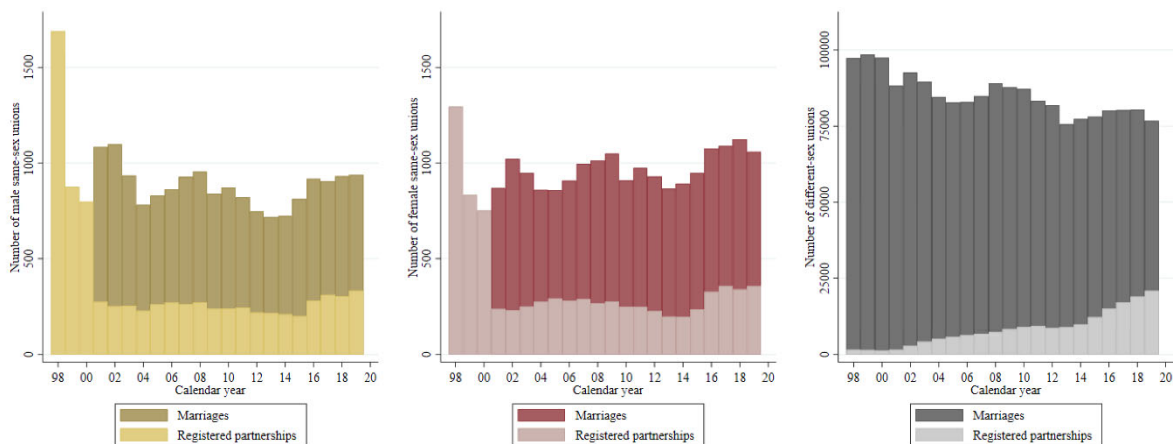
Notes: The analyses use linked administrative register data on same-sex couples (SSC) and different-sex couples (DSC) commenced between 1998 and 2019 in the Netherlands. ^a Spousal age controls (yearly dummies for calendar age of the younger spouse, and a set of yearly dummies for age difference between the spouses), calendar year dummies, registered partnership indicator, immigration background, education attainment, employment dummies, income decile, disability, province of residence, and urbanization dummies. ^b Dummy for couples with children, number of own children, number of step-children, and age of the youngest child. Statistical significance: *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

SUPPLEMENTARY MATERIALS

Dynamics of marriage over the period of observation

For both male and female same-sex couples, we observe an initial spike in the number of union formations at the beginning of the observation period. This suggests that many couples had been waiting for the implementation of registered partnership legislation in 1998 to attain legal recognition. Registered partnerships of same-sex couples became much less common following the introduction of same-sex marriage in 2001, with the majority of newly-formed same-sex unions being marriages. Since then, the annual numbers of new same-sex unions have been relatively stable, rising slightly among female same-sex couples. In comparison, the numbers of new unions among different-sex couples have been steadily decreasing, dropping by approximately 25% over the observation period. This trend is consistent with the gradual deinstitutionalization of marriage (Cherlin, 2004). Interestingly, the number of different-sex partnership registrations is steadily rising, which suggests that couples do value some features of formalized unions more than others.

Figure A1 Number of new male same-sex, female same-sex and different-sex unions over the observation period



Notes: Annual number of new marriages and registered partnerships in the Netherlands, Dutch registry data 1998-2019. Figures exclude new marriages resulting from partnership to marriage transitions.