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Abstract

Characteristics of couples on or about their wedding day and characteristics of weddings have been shown to predict marital outcomes. Little is known, however, about how the dates of the weddings predict marriage durability. Using Dutch marriage and divorce registries from 1999-2013, this study compares the durations of marriages that began on Valentine's Day and numerically special days (dates with the same or sequential number values, e.g., 9.9.99, 1.2.03) with marriages on other dates. In the Netherlands, the incidence of weddings was 137-509% higher on special dates than ordinary dates, on an adjusted basis, and the hazard odds of divorce for special-date marriages were 18-36% higher. Sorting on couples' observable characteristics accounts for part of this increase, but even after controlling for these characteristics, special-date marriages were more vulnerable, with 11-18% higher divorce odds compared to ordinary dates. This relation is even stronger for couples who have not married before.

JEL classification: J1

Keywords: Marriage, divorce, Valentine's Day, commitment, weddings

In selecting the time for the marriage ceremony precautions of every kind have generally been taken to avoid an unlucky month and day for the knot to be tied (Dyer 1881, 36).

Couples preparing for their wedding day must decide about many things, including the day itself. Some couples pick wedding dates on the basis of convenience, while others choose dates because they are romantically significant, memorable, or perceived as lucky or auspicious. Press articles across the globe (e.g., Mascarenhas 2010; Ting 2015; Walker 2011) have reported that Valentine's Day and numerically quirky dates, such as December 12, 2012 (12.12.12) are incredibly popular as wedding dates. However, beyond the admonitions in some old proverbs—"Marry in May, you'll rue the day" (Dyer 1881)—little is known about how the choice of a wedding date might predict subsequent marriage outcomes. As we show, some dates may not be as lucky as couples suppose.

There are solid reasons for suspecting that wedding dates might correlate with marital success. A pair of recent studies indicate that other characteristics of weddings predict later marital outcomes, with expensive weddings and costly engagement rings being associated with less durable marriages (Francis-Tan and Mialon 2015) but with formal weddings and high wedding attendance being associated with more durable marriages (Rhoades and Stanley 2014). These studies complement other family relations research that shows that the characteristics of couples on or about their wedding day, such as negative interactions (Gottman, et al. 1998) and negative automatic attitudes (McNulty, et al. 2013), are highly and sometimes surprisingly effective in predicting subsequent marital distress.

We use 1999-2013 marriage registry data from the Netherlands to document that there were four types of special dates which were associated with exceptionally high numbers of weddings: Valentine's Day and dates with the same, sequential, or mirror numbers for their days, months and years (e.g., 9.9.99, 1.2.03, and 20.08.2008, respectively, using the European

day.month.year format). We next link the marriage data to divorce and other registry data to examine how the characteristics of couples and the durations of their marriages differed between couples who wed on romantically and numerically special dates and those who wed on other dates. We also examine seasonal and weekly patterns in Dutch marriages. Previous research has considered how births are timed to coincide with or avoid particular dates (Levy, Chung and Slade 2011; Almond, et al. 2015) and how birth timing correlates with child and adult outcomes (Buckles and Hungerman 2013); however, to our knowledge, we are the first to study how this type of marriage timing is associated with later outcomes.

Our investigation is most closely related to the recent studies of wedding characteristics and subsequent marriage outcomes but overcomes several limitations of those studies. For example, Rhoades and Stanley (2014) only examined a modest number of respondents (418), while we examine about 1.1 million, providing us with much more statistical power and the ability to disaggregate results by couple characteristics. Francis-Tan and Mialon (2015) analysed a moderately large number of people, but they recruited and surveyed their subjects through an internet tool, possibly leading to a non-representative sample. In contrast, our data cover the entire Dutch population who married. Finally, each of the two studies relied on self-reports of wedding characteristics. Our information on wedding dates comes from administrative registries.

As with the research by Rhoades and Stanley, we believe that this study has implications beyond the wedding or the date itself. In particular, the choice of a wedding date may provide insights into the circumstances of the couple and of their commitment process. Other information about the couple, such as their ages, previous relationship history, and dissimilarity, may also provide insights.

What's in a date?

"We came to the realization that 10/10/10 would probably be the best," he

said, laughing. "It's definitely an anniversary I can't forget and screw up" (groom quoted by Mascarenhas 2010).

"The easiest day for my poor memory to remember was 9-9-09, and we've been doing everything last-minute ever since … It was easy, and both of us can remember it and never forget" (bride quoted by Associated Press 2009).

Putting superstition and numerology aside, it is hard to pin a causal explanation on the wedding date itself. Skeptics might go farther to argue that dates shouldn't matter at all. We see the choice of a particular date as a marker for other aspects of the wedding, characteristics of the couple, and even the progression of their relationship.

Romantically and numerically special dates are clearly desirable. Couples who were interviewed in the press clippings consistently described these dates as being particularly memorable. Experimental evidence shows that the use of specially assigned numbers or numbers derived from numerology increases bettors' enjoyment of and sense of control over gambling tasks (Goodman and Irwin 2006), and lottery players often gravitate to visually and arithmetically patterned number combinations (Potter van Loon, et al. 2016). The popularity of special dates gives further revealed-preference evidence of their desirability.

However, this desirability might be a double-edged sword. The popularity of these dates could increase the demand for venues and drive up the costs of the associated weddings. Francis-Tan and Mialon (2015) found that more expensive weddings were associated with less durable marriages. Additionally, Valentine's Day and numerically special dates are not tied to days of the week. They could thus fall on weekdays when attendance is inconvenient and possibly lower. The popularity of the dates could also reduce the availability of facilities that could accommodate attendees or formal services. Rhoades and Stanley (2014) reported how less attended and less formal weddings were associated with less stable marriages.

While Francis-Tan and Mialon (2015) and Rhoades and Stanley (2014) have given us

associational evidence regarding wedding characteristics and marriage outcomes, the reasons behind these linkages remain an open question. One potential explanation is the extent of social support for the couple—or the couple's perception of social support. Smaller, less-attended, and informal weddings could indicate that the couple has a weak set of social supports or is uncomfortable engaging their social network. Religion could also be a factor, with less religious couples being more open to marrying on non-traditional days. Social support and religion could, in turn, affect subsequent marriage outcomes.

Weddings may also provide insights into relationship processes. Social scientists have theorized about the paths that couples follow to reach the level of commitment involved in a marriage and about the implications that alternative processes have on the durability of the resulting marriages. Family relations researchers have distinguished between internal processes, such as relationship- and dedication-driven processes, which occur over time as couples learn about each other, their compatibility, and the quality of a potential union, and external processes, such as event- and constraint-driven processes, which occur as events happen to couples that change their outlook on their relationship or the desirability of marriage (see, e.g., Surra and Hughes 1997; Surra, Arizzi and Asmussen 1988; and Stanley, Rhoades and Markman 2006; but also see Ogolsky, Surra and Kale 2016 for a description of more complex patterns). These conceptual approaches generally predict that externally-driven processes will produce more vulnerable and less durable marriages, on average, than internally-driven processes. The choice of how and when to wed could be a marker for externally-driven processes.

For example, Rhoades and Stanley (2014) framed their empirical analysis of wedding outcomes within a "sliding versus deciding" model of relationship processess (Stanley, Rhoades and Markman 2006). In this conceptualisation, "deciding" couples' relationships are driven primarily by increasing dedication and couple satisfaction. These couples decide to

marry based on the quality and growth of their relationship—the timing of a wedding would be more likely to follow these internal progressions and less dependent on external concerns. In contrast, "sliding" couples' relationships continue largely because of constraints that accrue that raise the costs of exiting the relationships, especially in the context of cohabitation. These relationships are subject to inertia, even if the quality of the match is low in other ways, which may make the couple more susceptible to external cues, like special dates, or leave them ambivalent about the formality or attendance of the ceremony.

Other theories of commitment processes lead to similar predictions. Attachment theories suggest that people with anxious attachment styles may set lower thresholds for commitment and thus be more susceptible to external considerations, like the opportunity to wed on a special date, than people with secure or avoidant styles (Morgan and Shaver 1999). Couples' attachment styles could, in turn, affect marriage durability.

Rational-choice theorists have advanced investment (Rusbult 1980), exchange (Murstein 1999) and matching and learning (Brien, Lillard and Stern 2006; Rao Sahib and Gu 2013) models of commitment processes that also have internal components, such as the value of the relationship-specific investment, the anticipation of exchange benefits, or the information about the quality of the match, and external components, such as the net costs of a wedding. These models lead to more nuanced predictions. On the one hand, the chance to marry on a special date could increase the net attractiveness of a wedding and lead to quicker and lower-quality marriage commitments, on average, which might increase the vulnerability of the resulting marriages. On the other hand, if couples have to delay weddings in order to hold them on special days, there would be more time for internal processes like investment or information-gathering to operate, and the resulting marriages might be stronger.

Marriage and divorce in the Netherlands

Since 1998, the Netherlands has offered two regulated arrangements for couples who

want to live together: marriage and registered partnership (it also recognises privately-arranged cohabitation agreements between couples and allows couples to cohabitate informally). The two regulated arrangements offer similar legal benefits and protections; the principal difference is that registered partnerships can be dissolved without a court proceeding if the couple is childless. Couples who want to enter either arrangement must first formally register their intention with a municipal authority at least two weeks before the wedding or partnership occurs (*ondertrouw*). The lone exception to the *ondertrouw* is that registered partners can convert their arrangement into a marriage. The formal notice requirements and the effective waiting periods for marriages are more stringent than those of the United States and most other countries and imply that Dutch marriages are less likely to be rushed or result from momentary whims.

The marriage itself requires a civil ceremony, at which point—and more importantly, on which day—the marriage is registered. Religious and secular ceremonies may accompany or follow the civil ceremony, but the civil ceremony and registration almost always indicate the timing of the marriage. There are only a few exceptions. For example, if a wedding occurs off Dutch soil, it is registered when the couple returns to the Netherlands. The wedding date information that we examine comes from the marriage registrations.

Figures from Statistics Netherlands (CBS) indicate that the annual number of different-sex marriages fell from 87,000 in 1998 to 63,000 in 2013, or from a rate of 5.5 to 3.8 per 1,000 inhabitants. New different-sex partnership registrations rose from fewer than 2,000 in 2001 to about 9,000 in 2013. Because of the relatively small number of new partnership registrations, we only consider formal marriage relationships in our analyses.

Marriage dissolution in the Netherlands requires a formal legal proceeding. However, as mentioned, registered partnerships that do not involve children can be ended without such a proceeding. The Netherlands has a unilateral divorce framework in which either partner (or

both) can initiate a divorce and the only allowable grounds are irreparable breakdown of the relationship. From January 1998 until March 2009, couples could also take advantage of a "flash divorce" procedure under which they could convert their marriages into registered partnerships and then almost immediately dissolve the partnerships. Divorces and partnership dissolutions in the Netherlands take effect once they have been recorded in the municipal population register.

An analysis of Dutch couples' self-reports of divorce motivations (de Graaf and Kalmijn 2006a) found that most cited relationship issues, such as growing apart, their partners not providing enough attention, and not being able to talk. More generally, the personal determinants of divorce in the Netherlands seem to be similar to those in other countries (see, e.g., the literature review in de Graaf and Kalmijn 2006b). The rate of divorces was relatively constant at just under 10 per 1,000 couples over the period that we study.

Data

We construct an analysis dataset from the municipal register data (*Gemeentelijke Basis Administratie*) collected by CBS over the period 1999 to 2013. The data cover every person who was at some point registered at one of the Dutch municipalities, and who was therefore (at least temporarily) residing in the Netherlands within the 15-year span of the data. These data include people's marriage histories, including the dates of each wedding and if applicable, the dates of each divorce.

Dates. We focus on four types of special dates: Valentine's Day, same-number dates, sequence dates and mirror dates. The same-number dates share the same number among the day, month and year of the wedding. From 1999-2013 there were 13 such dates, with the first two being 09.09.1999 and 01.01.2001 and the last being 12.12.2012. For the sequence dates, the numbers for the day, month and year of the wedding form an increasing sequence. There were 11 sequence dates, starting with 01.02.2003 and ending with 11.12.2013. The mirror

dates have the numerals of the day and month of the wedding arranged in the same format as the numerals of the year. The first such date was 20.01.2001, and the last was 20.12.2012, totalling 12 mirror dates. Beyond these four types of dates, we also considered "palindrome" dates (dates that begin with one sequence and end with the same sequence reversed, such as 30.11.03) and reverse sequence dates (dates where the numbers for the day, month and year form a descending sequence, such as 03.02.01) but found that these were not popular.

We also examine other temporal characteristics of weddings, including general indicators for the years, months, and days of the week on which they occurred. The indicators for years help us examine general time trends and account for broad institutional and economic changes, like the Global Financial Crisis (GFC). The month indicators allow us to investigate seasonal effects. Days of the week are important not only because some are more convenient or customary than others, but also because Dutch municipal authorities charge different amounts or offer different types of ceremonies on specific days. For example, authorities typically offer a short window on selected weekdays during which couples can marry for free in a simple, civil ceremony and tend to make other low-cost civil ceremonies available on weekdays. The authorities charge premiums, especially for more elaborate ceremonies involving the reservation of a room or hall, on Fridays and weekends.

Beyond this, we account for the public and traditional holidays of New Year's Eve and New Year's Day; Carnival Sunday, Monday and Tuesday; Good Friday; Easter Sunday and Monday; Queen's Day; Liberation Day; Ascension Day; Whit Sunday and Monday; and Christmas Day and the second day of Christmas. Many municipal authorities close on several of these days or require special arrangements for weddings. Also, two of the holidays—New Year's Day in 2001 and Liberation Day in 2005—occurred on same number days. We also include indicators for the days before the Queen's Day, Good Friday and Ascension Day holidays because an initial analysis indicated that they were especially popular wedding days.

Other controls. Besides providing wedding and divorce dates that allow us to measure the temporal incidence and duration of marriages, the data are informative in other ways. First, they record the dates of people's deaths and indirectly indicate, through the absence of information, whether people are still residing in the country. Thus, we can identify the married couples who are at risk for being observed to divorce and control for censoring in the marriage durations. Second, the data record other characteristics about people that we can use as controls in our empirical analyses, including each spouse's birth year and month and two-generation immigration background. In addition, we are able to link the records to other administrative data containing most people's highest attained level of education (*Hoogsteopltab*).[1] Kalmijn and Poortman (2006) and de Graaf and Kalmijn (2006b) found that several of these characteristics were important in predicting Dutch divorces. Third, the data describe the people's household compositions, allowing us to measure whether and how long couples were cohabiting prior to their wedding and whether and when couples had children. Fourth, the marriage histories give us information on whether the wedding is a remarriage for either partner and on the number of previous marriages.

Our descriptive and multivariate analyses examine the specific characteristics of husbands and wives in the couples (e.g., husband's age and wife's age). However, we also use these characteristics to measure couple dissimilarity by applying the Mahalanobis distance formula—a weighted, generalised quadratic formula that transforms the multi-dimensional distances into a univariate metric. To construct the measure, we assume

$$(\mathbf{x}_{1i} - \mathbf{x}_{2i}) \sim dist(\boldsymbol{\mu}, \boldsymbol{\Omega}),$$

where **x** represents individual observable characteristics and subscripts 1 and 2 denote husband and wife, respectively. The differences between spousal characteristics are assumed

[1] The administrative records of educational attainment are incomplete for people born before 1987. Because of this, we only observe educational attainment for 58% of women and 51% of men.

to be drawn from an unspecified distribution with means $\boldsymbol{\mu}$ and variance/covariance $\boldsymbol{\Omega}$. The observable characteristics include age, education level (7-point scale, where the missing education records are replaced by median values), immigration status (dummy indicators for natives, first generation immigrants, and second generation immigrants), and a count measure of preceding marriages. The Mahalanobis distance formula is then

$$MHL_i = \sqrt{\left((\mathbf{x}_{1i} - \mathbf{x}_{2i}) - \bar{\boldsymbol{\mu}}\right)' \mathbf{S}^{-1} \left((\mathbf{x}_{1i} - \mathbf{x}_{2i}) - \bar{\boldsymbol{\mu}}\right)},$$

where $(\bar{\boldsymbol{\mu}}, \mathbf{S})$ are sample analogues of $(\boldsymbol{\mu}, \boldsymbol{\Omega})$.

Sample selection. We apply three criteria to form our analysis dataset. First, we restrict the analysis to weddings that occurred in or after January 1999 because there were no same-number, sequential-number, or mirror-number dates in the years immediately preceding 1999. Also, all our data follow the 1998 enactment of registered partnerships in the Netherlands. We do utilise some earlier data, however, to identify whether the newlyweds were cohabiting prior to their marriage. Second, we only consider marriages between different-sex partners because of the difficulty in classifying husbands and wives in same-sex couples and because of changes in the legal treatment of same-sex marriages in the Netherlands during our analysis period. Third, we drop marriage spells in which either spouse was younger than 18 (the minimum legal marriage age in the Netherlands) or older than 60 years on the wedding day.

Incidence of weddings

There were 5,479 days during our analysis period and 1,124,707 weddings. The 51 special days during this period comprised 1 percent of the total days, but the 32,374 special-day weddings represented 2.9% of the total weddings. Put another way, the average number of weddings on a special day was 635, while the average number on other days was 201. Thus, consistent with press reports from Australia (Ting 2015), the U.S. (Mascarenhas 2010),

and the U.K. (Walker 2011), the special dates were tremendously popular wedding days in the Netherlands. The counts of weddings also show the utility of using registry data. Despite their high daily averages, the percentages of weddings that occurred on Valentine's Day, same-number date, sequence date, and mirror date weddings in the data were only 0.4%, 1.3%, 0.4%, and 0.8%, respectively. Without the large numbers of observations from the registry data, it would be difficult to detect associations.

Figure 1 depicts the average numbers of marriages in our dataset occurring on Valentine's Day (panel 1.a), same-number dates (1.b), sequential-number dates (1.c), mirror-number dates (1.d), and the 30 days preceding and following these dates. On average, at least twice as many weddings occurred on Valentine's Day as on any of the surrounding dates in the month before and after. At least four times as many weddings occurred on the average same-number date as on most of the surrounding dates. There were also substantially higher numbers of weddings on the mirror dates than on the surrounding dates and modestly higher numbers of weddings on the sequence dates.

Aspects of the graphs, such as the low overall occurrence of weddings surrounding Valentine's Day, reveal that seasonal and other considerations also affect the occurrence of weddings. To account for these, we used OLS to regress the log number of daily marriages on the four types of special dates, year effects, month effects, day-of-week effects, and holiday-day effects. Table 1 lists the results in both the standard and exponentiated formats. The exponentiated coefficient estimates indicate that the number of weddings increased 196% on Valentine's Day, 509% on same-number dates, 137% on sequence dates, and 279% on mirror dates relative to other dates after adjusting for other temporal effects.

The estimates from the OLS models reveal that there were other temporal patterns. The coefficients on the year indicators show that the incidence of weddings generally declined from 1999 through 2013, with the exception of a modest uptick in 2007-2009, just

before the start of the GFC. There were also seasonal differences, with the fewest numbers of weddings occurring in January and February and the greatest numbers occurring in the months of May through September. Dutch couples were either unaware or pay little heed to the 19th century English admonition against May weddings. Friday was far and away the most popular day of the week to marry. Next in order were Monday and Thursday, possibly owing to the availability of free and low-cost civil ceremonies on those days. The numbers of weddings were much lower on Sundays and on most of the official holidays, which follows from the limited availability of services from municipal authorities on those days. The days which preceded Good Friday, Queen's Day and Ascension Day proved to be very popular, since the wedding guests were not required to go to work on the day after the celebration.

We used a similar procedure to confirm that our choices of special dates covered the most popular wedding dates. In particular, we estimated OLS regressions of the log daily incidence of weddings like those in Table 1 with controls for years, months, days of the week, and holiday days but omitting the controls for the four types of special days. We next examined the residuals from those regressions to find the highest outliers. Out of the 30 dates with the largest positive residuals, 27 were in our categories, and there were no other obvious date clusters among the 50 dates with the largest positive residuals.

Couple characteristics

We next examine how characteristics of the couples differ across alternative wedding days. Table 2 lists average values of characteristics of couples who married on ordinary days in the first column and on each type of special date in the next four columns. The table also indicates whether the averages for each characteristic for the special dates are statistically different from the averages on ordinary dates.

People who married on special dates were older, more likely to have been born in the Netherlands, more likely to have previously wed, more likely to have children already living

in the household and be less educated than people who married on ordinary dates. Couples who married on Valentine's Day were more likely to have a child within nine months of the wedding (more likely to be expecting a child when they married) than couples who married on ordinary dates. However, this appears to be a seasonal association, as the proportions of "expecting" couples among those who wed on Valentine's Day and in February generally were each just over one fifth. In contrast, couples who married on numerically special dates were less likely to have a child within nine months of the wedding date than couples who married on ordinary dates. Couples who married on numerically special days were more likely to cohabitate than couples who married on ordinary dates or on Valentine's Day. Couples who married on Valentine's Day were more likely to have cohabited for less than one year and less likely to have cohabited for more than two years than couples who married on ordinary days.

Average values for the Mahalanobis distance measures from Table 2 further indicate that spouses who married on each of the special days except mirror days were less similar than spouses who married on ordinary days. High degrees of dissimilarity increase the risk of dissolution, so the differences by type of marriage date indicate that special dates are associated with more vulnerable matches.

Marriage durations

Divorce information in the registries tells us when marriages were dissolved, while other registry data indicate whether the partners were alive and residing in the Netherlands and thus, at risk for being observed to divorce. We used the data to create marriage spell records whose durations either ended with divorce (complete spells) or with right-censoring at the point when a partner died, the couple left the country, or the spell reached the end of our observation window on 31 December 2013 (partial spells).

Marriages that began on most of the special dates were less durable than marriages on

other dates. Figure 2 shows smoothed non-parametric hazard estimates of the failure rates of special- and ordinary-date marriages from 1999-2013 for durations up to 11 years, and Table 3 lists the cumulative failure rates, along with 95% confidence intervals, at selected durations. The hazard and cumulative failure estimates each adjust for the loss of information in the partial spells of marriage durations. The hazard estimates are useful for understanding the duration dependence patterns (how failure risks vary over the course of marriages), while the cumulative failure estimates give a better sense of the absolute magnitudes of the differences.

Estimates from these procedures indicate that marriages that began on Valentine's Day and same-number dates were more likely to fail by substantively and statistically significant amounts at nearly all durations. By their third anniversaries, 6% of Valentine's Day marriages, 5% of same-number-date marriages, and 4% of ordinary-date marriages were predicted to have failed. Calculated another way, the third-anniversary failure rates of Valentine's Day and same-number date marriages were 45% and 30% higher, respectively, than the failure rate of ordinary-date marriages. By their fifth anniversaries, 11% of Valentine's Day marriages, 10% of same-number-date marriages, and 8% of ordinary-date marriages were predicted to fail (excess failure odds of 41% for the Valentine's Day marriages and 28% for the same-number marriages), and by their ninth anniversaries, 21% of Valentine's Day marriages, 19% of same-number-date marriages, and 16% of ordinary-date marriages were predicted to fail (excess failure odds of 36% for the Valentine's Day marriages and 23% for the same-day marriages).

Marriages that began on sequential-number dates were more likely to fail at longer durations than marriages that began on ordinary dates, and marriages that began on mirror dates were little different from ordinary-date marriages.

Multivariate analysis

The different durations of special- and ordinary-date marriages could partly reflect

differences in other characteristics that are mutually associated with marital stability and the choice of a wedding date. The differences in observed characteristics prompted us to estimate multivariate Cox proportional-hazard (PH) models of the hazard probabilities of marital dissolution. The Cox PH model is specified as

$$\lambda_t(t \mid \mathbf{x}, \boldsymbol{\beta}) = \lambda_0(t)\exp(\mathbf{x}'\boldsymbol{\beta})$$

where t denotes the marriage duration and $\lambda_0(t)$ is a non-parametric estimator of the baseline hazard, which is a function of duration t alone. We report exponentiated coefficient results from three specifications in Table 4.

The first column lists estimates from a specification that only includes binary indicators for each of the four types of special days (the relevant comparison is an ordinary day). The estimates indicate that the log odds ratio of the hazard of divorce was 37% higher if the couple married on Valentine's Day, 26% higher if they married on a same-number date, 18% higher if they married on a sequential-number date, but only slightly and not significantly higher if they married on a mirror date.

The second column reports estimates from a specification that accounts for other temporal patterns by including dummy controls for each year, month, day of the week, Dutch public and traditional holiday, and the popular days preceding holidays. When we control for these temporal characteristics, the positive association between a Valentine's wedding and divorce attenuates by about a third while the associations of marriages on the other special dates with divorce strengthen slightly. The change in the coefficient for Valentine's Day occurs mainly because of the inclusion of month controls, which reveal that marriages that start in February are more vulnerable than marriages that start in several other months.

Among the other temporal variables, the year indicators show that the risks of divorce generally decreased until 2006 and then plateaued. The month indicators show that divorce risks were highest for weddings that occurred in January and generally high for those that

occurred in winter and summer but low for those that occurred in the spring and early fall. Marriages were more vulnerable if couples wed on a Monday or Tuesday but more durable if they married on the weekend. Marriages were also at higher risk of divorce if the weddings occurred on Carnival Monday or New Year's Eve but at decreased risk if the weddings were held on Easter Monday, Christmas Day, or the days before Queen's Day or Ascension Day.

The third specification adds controls for characteristics of both spouses, including dummies for their calendar age, educational attainment, number of preceding marriages, pregnancy at the time of marriage, presence of premarital children in the household, birth month, immigration background, birth month coinciding with the wedding month, and a piecewise linear spline formed from the Mahalanobis distance measure with knots at the 25th, 50th and 75th quantiles of its distribution. Instead of reporting the 84 coefficients for the dummy indicators of the husband's and wife's calendar ages, we plot the point estimates and 95% confidence intervals in Figure 3. When we control for personal characteristics, the associations for most of the special days remain significant but attenuate with the log odds ratio of the hazard of divorce being 11% higher if the couple married on Valentine's Day, 18% higher if they married on a same-number date, 13% higher if they married on a sequential-number date, and not significantly higher if they married on a mirror date.

The controls for couple characteristics also attenuate most of the other temporal associations, though the general patterns for the annual trends, seasons, and days of the week remain. The associations for holiday days also become weaker, with the associations for Carnival Monday and Easter Monday losing their significance but with the associations for Christmas, New Year's Eve and the days preceding Queen's Day and Ascension Day remaining significant.

Divorce risks generally fell with the couple's ages at the time of marriage, especially with the wife's age. Divorce risks were also lower if the spouses held higher degrees or if the

wife was a first generation immigrant; however, the risks were higher if the husband was a first generation immigrant. Divorce risks rose if either of the spouses was remarrying and rose even more if either was entering a third or higher-order marriage. Couples who cohabited prior to their wedding—the vast majority of marrying couples in the Netherlands—were more prone to divorce than couples who did not cohabit. However, the risks of divorce decreased with the length of cohabitation. The hazard for divorce increased if there was a child in the household at the time of the wedding but decreased if a child was born in the first nine months of the marriage. The findings for couples' ages, education levels, remarriage, cohabitation status, and prior children are similar to results from other studies (see Amato 2010 for a recent review).

We examined differences in each couple's characteristics through a piecewise linear spline on our dissimilarity index, which allowed the index's association with divorce to vary with the amount of dissimilarity. Dissimilarity of spouses made marriages more vulnerable, and the model estimates show that divorce risks rose across the entire range of dissimilarity.

Lastly, in the spirit of Buckles and Hungerman (2013), we considered whether the spouses' birth months were associated with marriage outcomes. There were no seasonal patterns for the husbands, but we did detect patterns for the wives. Wives who were born in the fall or in January had lower odds of divorce than wives who were born in the summer or in December. Divorce risks also rose if the wife's birth and wedding months coincided.

Sensitivity analyses

Previous research (e.g., de Graaf and Kalmijn 2006b and Kalmijn and Poortman 2006) and our estimates have shown that divorce risks are higher if one or both of the spouses was remarrying or if the couple cohabited prior to marriage. Our descriptive analyses also indicate that couples' marriage and cohabitation histories were associated with the choice to marry on a special day. In sensitivity analyses, we re-estimated the Cox PH marriage duration

models with the full sets of temporal and personal controls separately for these different types of couples. Table 5 reports results from four specifications: a model restricted to couples in which both partners were marrying for the first time, a model for couples in which one or both of the partners were remarrying, a model for couples who cohabited for less than one month prior to marrying, and a model for couples who cohabited longer prior to marrying.

The estimates indicate that weddings on romantically and numerically special dates were particularly strongly associated with divorce risks for first-marriage couples, with Valentine's Day, same-number dates and mirror-number dates having statistically significant coefficients. Same-number date weddings were associated with higher divorce rates for all of the groups, while Valentine's Day weddings were associated with higher divorce odds for all groups except those who were remarrying. Divorce odds were also higher for those marrying on sequence dates, but the associations were not statistically significant for couples in which one or the other of the partners was remarrying or couples who had not cohabited.

Many of the seasonal and day-of-the-week patterns were similar across the groups, as were most of the results for education, immigration status, the presence of premarital children, and couple dissimilarity. However, two other results were distinctive. First, divorce risks were lower for remarrying couples if the couples had cohabited for a year or more—this contrasts with the general findings of higher divorce risks for cohabiters. Second, the birth of a child within nine months of the marriage increased the divorce risks for couples who were not initially cohabiting but reduced the risks for other groups. Pregnancies for non-cohabiting couples may have been less expected and had more characteristics of external commitment events than pregnancies for cohabiting couples.

Finally, there were a handful of other special days—January 1, 2000 (Y2K day); leap year days in 2000, 2004, 2008, and 2012; and nearly sequential number days, such as November 1, 2011 (1.11.11) and February 2, 2000 (2.2.2K)—that were unusually popular

dates for weddings in the Netherlands. Y2K day and the leap year days did not fit with our other special day categories and lacked enough weddings to analyse with precision. Our results are similar when we drop these dates from our set of ordinary dates. For the nearly sequential dates, we have estimated alternative specifications that include these with the exact sequential dates and obtained similar results to those we have reported.

Discussion

Our descriptive and multivariate analyses of Dutch registry data show that Valentine's Day, same-number dates, sequence-number, and mirror-number dates are exceptionally popular wedding dates. The results are consistent with press reports of the surges in the numbers of weddings on these dates in other countries. Our analyses show other expected patterns in the timing of Dutch weddings, with the numbers of weddings being higher in warmer months than colder months and with the numbers being lower on public holidays. One pattern that is different from other countries, including the U.S. and Australia, is that Friday is the most popular day of the week for Dutch couples to marry followed by Monday.

The novel finding of our study is that Valentine's Day, same-number dates, and sequence number dates were not only popular but also associated with statistically and substantively higher risks of divorce. These differences appear in analyses with and without controls for other covariates. In event-history analyses that only account for the baseline duration patterns, the log odds ratio of divorce was 37% higher for Valentine's Day weddings, 26% higher for same-number date weddings, and 18% higher for sequence date weddings than for ordinary date weddings. Some of these differences are attributable to other vulnerabilities of the couples. In particular, couples who wed on special dates tended to have less education, were more likely to have children already living in their households, were more likely to have one or both partners remarrying, and were less similarly matched than couples who wed on ordinary dates. However, even when we control for these characteristics

the log odds ratio of divorce was still 11% higher for Valentine's Day weddings, 18% higher for same-number date weddings, and 13% higher for sequence date weddings than for ordinary weddings. Divorce risks were also slightly higher for mirror-number date weddings than for ordinary date weddings but the differences were not statistically significant.

Our analyses also reveal that other elements of marriage timing correlated with divorce risks. Weddings that occurred in the winter and the middle of summer had higher divorce risks, but those that occurred in the spring and early fall had lower risks. Weddings that occurred on Mondays and Tuesdays also had high divorce risks, while marriages that occurred on Fridays or weekend days had lower risks.

Marrying on a romantically or numerically unique day appears to be an indicator for marriage vulnerability. Although we cannot observe the underlying mechanism, the patterns in the data suggest that some explanations are more likely than others. As we discussed, special wedding dates may be associated with both higher expenses due to the popularity of weddings on the same date and lower attendance due to limited space at facilities. Previous research has found that cost and attendance are each associated with marriage outcomes. However, other temporal patterns in our analysis, including the elevated risks of divorce from Monday and Tuesday weddings when both costs and attendance tend to be low, suggest that attendance is a more relevant characteristic than wedding cost for Dutch couples.

Several alternative theories of relationship processes indicate that externally-influenced commitment processes may produce more vulnerable and less durable marriages than internally-driven processes. Consistent with these predictions, we find that Dutch couples who marry on special days are more vulnerable along several dimensions, including their education levels, their marriage and childbearing histories, and their within-couple dissimilarity. However, within this class of theories, we see some discrepancies with the predictions of the rational-choice models of commitment. Although these models also have

internal and external components, the external components weaken marriages by speeding up the commitment process. As mentioned, the Dutch intention-registration (*ondertrouw*) requirement puts some brakes on couples who might be in rush to marry. Further, we find that couples who wed on special days were older and, at least for the numerically special days, more likely to have cohabited for long periods of time. These results suggest that couples delayed their wedding dates—rather than hastened them—to accommodate special days, which should have led to more durable marriages under the rational-choice models.

Further research is needed to test the wedding-cost and rational-choice explanations more definitively and to distinguish between the many remaining explanations, including those involving wedding attendance, social support, religiosity, and sliding versus deciding behaviour. Although the popularity of romantically and numerically special wedding dates extends beyond the Netherlands, more research is also needed to establish whether the deleterious associations appear in other countries.

We acknowledge the skeptics' concern that "dates shouldn't matter." While their concern is expressed in a positive, "what is" sense, our findings justify also considering the concern in a normative, "what's best" sense. The decision to marry involves choices about whether and when to marry. For some couples, considerations of when to marry, specifically the opportunity to hold a wedding on a romantically or numerically special date, may influence the decision of whether to marry. The normative implication is that decisions about "whether" should precede those of "when."

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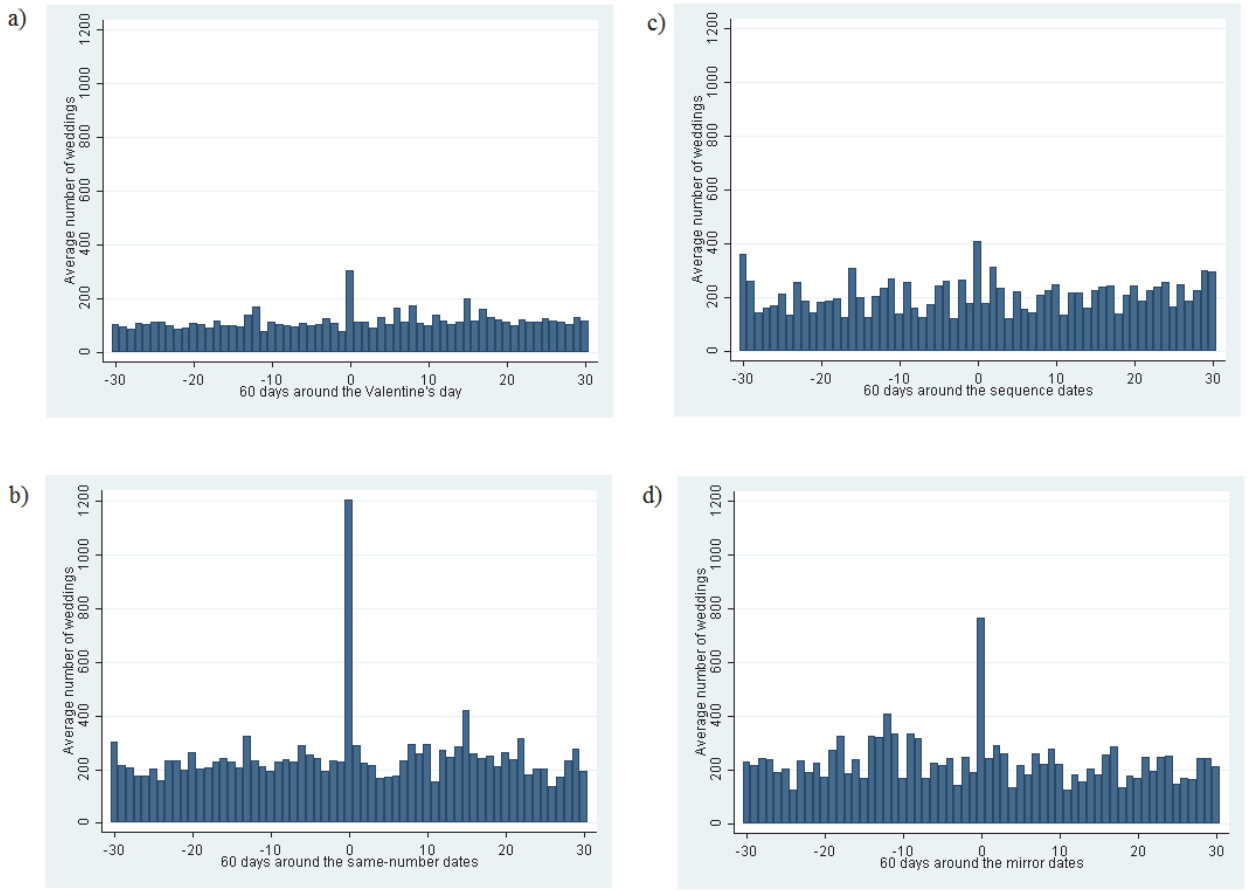
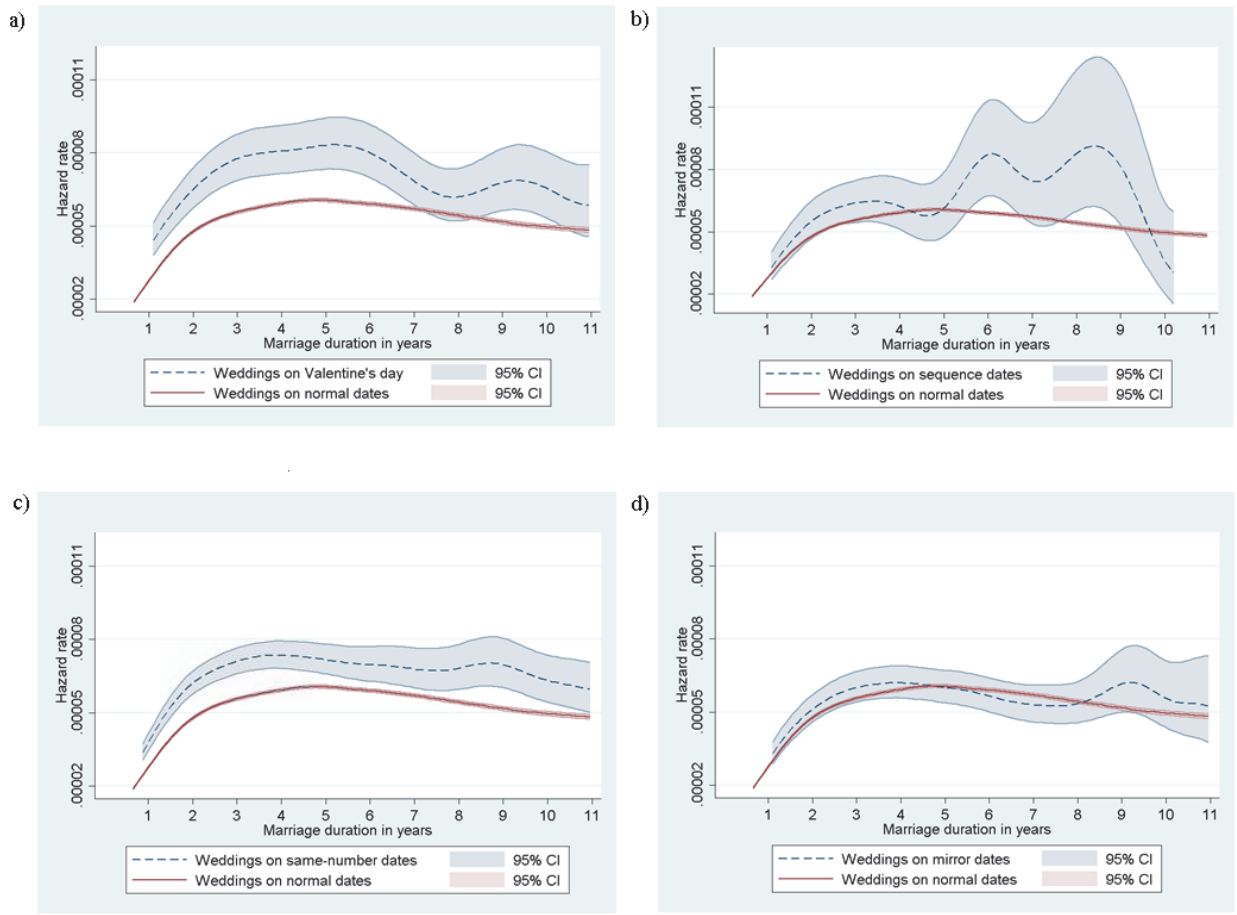
Figure 1. Average daily number of weddings in the 60-day interval around the special dates



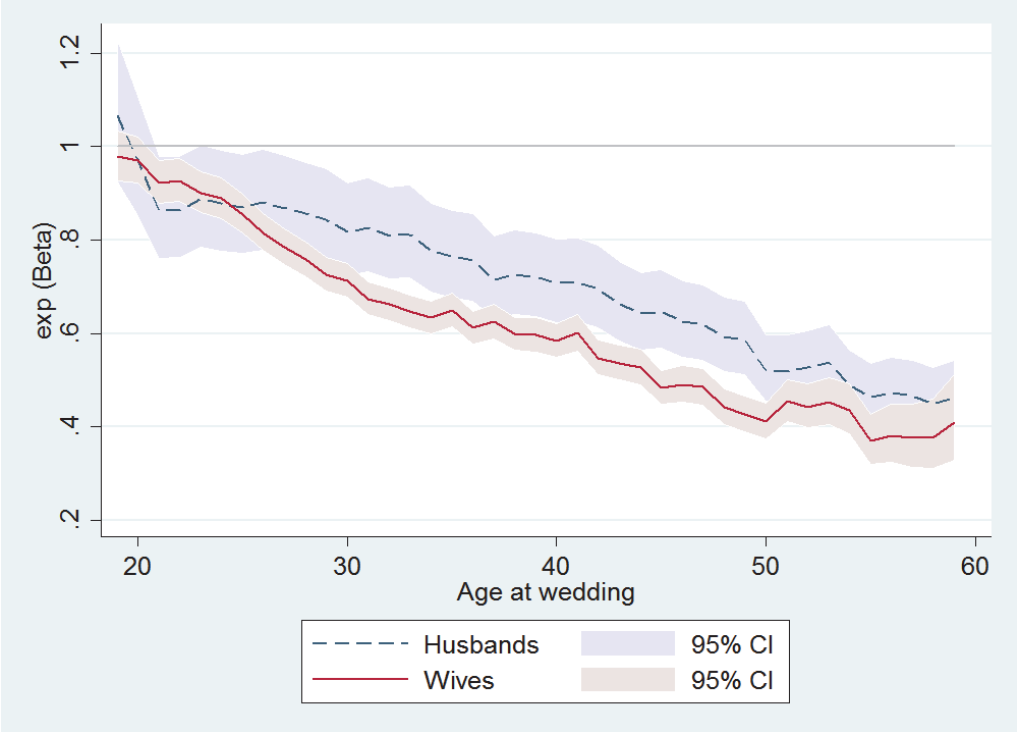
Note: Authors' estimates of the average number of daily weddings in the Netherlands, using information from 1999-2013.

Figure 2. Smoothed non-parametric hazard rates of divorce for marriages started on the four types of special dates and marriages started on ordinary dates



Note: Authors' estimates of hazard rates using linked marriage, divorce, and other registry data for marriages of different-sex couples ages 18-60 in the Netherlands from 1999-2013. 95% confidence intervals indicated by shaded regions.

Figure 3. Exponentiated coefficients for the husbands' and wives' age dummies from the full (third) specification of the Cox PH model of divorce risk in Table 4



Note: Authors' estimates of exponentiated coefficients of dummy indicators of husbands' and wives' ages from the Cox PH model of marriage durations from the third column of Table 4 that used linked marriage, divorce, and other registry data for 1,124,707 marriages of different-sex couples ages 18-60 in the Netherlands from 1999-2013. 95% confidence intervals indicated by shaded regions.

Table 1: Coefficients from OLS model of log daily number of marriages

Variable	Coefficient	s.e.	exp(coefficient)	s.e.
Special dates				
Valentine's Day	1.086***	0.099	2.963***	0.292
Same number dates	1.806***	0.104	6.086***	0.633
Sequence dates	0.861***	0.113	2.365***	0.266
Mirror dates	1.332***	0.108	3.790***	0.408
Year of wedding				
2000	0.034	0.028	1.035	0.029
2001	-0.056**	0.028	0.946**	0.026
2002	-0.040	0.028	0.960	0.027
2003	-0.097***	0.028	0.907***	0.025
2004	-0.163***	0.028	0.849***	0.023
2005	-0.200***	0.028	0.818***	0.023
2006	-0.215***	0.028	0.806***	0.022
2007	-0.211***	0.028	0.810***	0.022
2008	-0.183***	0.028	0.833***	0.023
2009	-0.216***	0.028	0.805***	0.022
2010	-0.248***	0.028	0.780***	0.022
2011	-0.366***	0.028	0.694***	0.019
2012	-0.412***	0.028	0.662***	0.018
2013	-0.678***	0.028	0.508***	0.014
Month of wedding				
February	0.095***	0.026	1.100***	0.029
March	0.191***	0.025	1.211***	0.030
April	0.539***	0.026	1.714***	0.044
May	0.933***	0.025	2.543***	0.064
June	1.026***	0.025	2.789***	0.070
July	0.853***	0.025	2.347***	0.058
August	0.958***	0.025	2.606***	0.064
September	0.997***	0.025	2.710***	0.067
October	0.525***	0.025	1.691***	0.042
November	0.183***	0.025	1.201***	0.030
December	0.331***	0.025	1.392***	0.035
Day of wedding				
Tuesday	-0.280***	0.019	0.756***	0.015
Wednesday	-0.231***	0.019	0.793***	0.015
Thursday	-0.010	0.019	0.990	0.019
Friday	0.998***	0.019	2.712***	0.052
Saturday	-0.307***	0.019	0.735***	0.014
Sunday	-2.684***	0.019	0.068***	0.001
Holidays and pre-holiday dates				
New Year's Day	-1.636***	0.098	0.195***	0.019
Carnaval Sunday	0.160	0.099	1.173.	0.116
Carnaval Monday	0.149	0.099	1.161	0.114
Carnaval Tuesday	0.086	0.099	1.090	0.107
Maundy Thursday	0.364***	0.098	1.439***	0.141

Good Friday	-1.510***	0.098	0.221***	0.022
Easter Sunday	0.218**	0.098	1.243**	0.122
Easter Monday	-2.138***	0.099	0.118***	0.012
Day before Queen's day	0.522***	0.098	1.686***	0.165
Queen's Day	-1.369***	0.098	0.254***	0.025
Liberation Day	-1.167***	0.098	0.311***	0.031
Day before Ascen. Day	1.277***	0.102	3.586***	0.365
Ascension Day	-2.351***	0.102	0.095***	0.010
Whit Sunday	-0.194**	0.098	0.824**	0.081
Whit Monday	-2.616***	0.098	0.073***	0.007
1st day of Christmas	-1.141***	0.101	0.320***	0.032
2nd day of Christmas	-1.247***	0.098	0.287***	0.028
New Year's Eve	-0.159	0.098	0.853	0.084
Constant	4.785***	0.029	119.7***	3.437
Observations		5479		
R-squared		0.904		

Note: Authors' estimates from OLS regressions of the log number of daily marriages in the Netherlands on the listed temporal characteristics, using information for 5475 days from 1999-2013. Within this interval, there were 4 days with no recorded weddings. Due to the log-transformation of the dependent variable, we exclude these days from the sample.

*Significant at 0.10 level **Significant at 0.05 level ***Significant at 0.01 level

Table 2: Average characteristics of couples married on special and ordinary days

Characteristic	Ordinary date	Valentine's Day	Same-number date	Sequence date	Mirror date
Husbands					
Age at wedding	33.96	34.53***	36.20***	35.29***	35.11***
1st generation immigrant	0.17	0.17	0.09***	0.09***	0.08***
2nd generation immigrant	0.08	0.09***	0.09***	0.08*	0.07*
Number of marriages	1.19	1.26***	1.28***	1.23***	1.23***
Education levels					
- unknown	0.47	0.52***	0.49***	0.42***	0.48*
- pre-school	0.01	0.01	0.01**	0.01	0.01***
- primary school	0.02	0.02*	0.02	0.02	0.01***
- secondary school phase 1	0.06	0.09***	0.08***	0.07***	0.06
- secondary school phase 2	0.22	0.22	0.25***	0.27***	0.24***
- higher education, bachelors	0.14	0.09***	0.11***	0.15	0.15**
- higher education, masters	0.08	0.04***	0.04***	0.06***	0.05***
- higher education, PhD	0.01	0.00***	0.01***	0.00**	0.01***
Wives					
Age at wedding	31.02	31.72***	33.26***	32.36***	32.13***
1st generation immigrant	0.21	0.22	0.14***	0.12***	0.11***
2nd generation immigrant	0.08	0.10***	0.09*	0.08	0.08
Number of marriages	1.17	1.27***	1.26***	1.21***	1.21***
Education levels					
- unknown	0.41	0.45***	0.41	0.32***	0.4
- pre-school	0.01	0.01	0.01***	0.01	0.01***
- primary school	0.02	0.03**	0.02*	0.02***	0.01***
- secondary school phase 1	0.06	0.09***	0.09***	0.09***	0.07
- secondary school phase 2	0.24	0.26***	0.29***	0.33***	0.27***
- higher education, bachelors	0.16	0.10***	0.12***	0.18*	0.17*
- higher education, masters	0.08	0.05***	0.05***	0.06***	0.06***
- higher education, PhD	0.01	0.01***	0.01***	0.01	0.01***
Couple-specific characteristics					
Mahalanobis distance measure	1.58	1.74***	1.70***	1.64***	1.59
Premarital children in h'hold	0.28	0.37***	0.41***	0.37***	0.33***
Birth <9 months after wedding	0.15	0.22***	0.09***	0.11***	0.11***
Cohabiting before marriage					
- no cohabitation	0.24	0.23	0.13***	0.13***	0.13***
- cohabiting less than 1 year	0.15	0.21***	0.14***	0.15	0.14***
- cohabiting 1-2 years	0.13	0.13	0.15***	0.16***	0.16***
- cohabiting more than 2 years	0.48	0.42***	0.58***	0.56***	0.57***
Number of observations	1,092,333	4,349	14,879	4,249	8,897

Note: Authors' estimates of average characteristics from marriages of different-sex couples ages 18-60 in the Netherlands from 1999-2013.
*Different from ordinary days at 0.10 level
**Different from ordinary days at 0.05 level
***Different from ordinary days at 0.01 level

Table 3: Kaplan-Meier marriage failure (divorce) rates at selected durations for couples married on special and ordinary dates

Duration	Ordinary date	Valentine's Day	Same-number date	Sequence date	Mirror date
1 year	0.45% (0.44, 0.46)	1.02% (0.76, 1.37)	0.58% (0.47, 0.72)	0.49% (0.31, 0.78)	0.52% (0.39, 0.69)
3 years	3.82% (3.78, 3.86)	5.54% (4.86, 6.32)	4.98% (4.61, 5.38)	4.34% (3.70, 5.10)	4.18% (3.76, 4.64)
5 years	7.92% (7.87, 7.98)	11.19% (10.16, 12.32)	10.13% (9.58, 10.72)	8.52% (7.52, 9.65)	8.53% (7.91, 9.19)
7 years	11.96% (11.88, 12.03)	16.89% (15.56, 18.33)	14.82% (14.10, 15.59)	12.95% (11.57, 14.51)	12.53% (11.75, 13.36)
9 years	15.73% (15.65, 15.82)	21.43% (19.86, 23.12)	19.37% (18.47, 20.31)	17.14% (15.37, 19.11)	16.32% (15.37, 17.33)
11 years	19.30% (19.20, 19.41)	26.32% (24.48, 28.29)	23.73% (22.67, 24.85)	20.99% (18.86, 23.38)	20.15% (19.01, 21.36)

Note: Authors' estimates of Kaplan-Meier failure rates using linked marriage, divorce, and other registry data for marriages of different-sex couples ages 18-60 in the Netherlands from 1999-2013. 95% confidence intervals appear in parentheses.

Table 4: Exponentiated coefficient estimates from Cox PH models of marriage duration

Variables	Baseline		Temporal covariates		Full specification	
	Coefficient	s.e.	Coefficient	s.e.	Coefficient	s.e.
Special dates						
Valentine's Day	1.366***	0.049	1.262***	0.048	1.109***	0.043
Same number date	1.261***	0.029	1.302***	0.030	1.175***	0.027
Sequence date	1.178***	0.065	1.218***	0.067	1.134**	0.063
Mirror date	1.033	0.031	1.044	0.031	1.027	0.031
Year of wedding						
2000			0.986	0.010	0.989	0.010
2001			0.968***	0.010	0.974**	0.010
2002			0.972***	0.010	0.982*	0.010
2003			0.939***	0.010	0.955***	0.011
2004			0.886***	0.011	0.913***	0.011
2005			0.867***	0.011	0.894***	0.011
2006			0.840***	0.011	0.865***	0.012
2007			0.828***	0.012	0.846***	0.012
2008			0.851***	0.013	0.866***	0.013
2009			0.842***	0.014	0.862***	0.015
2010			0.836***	0.016	0.853***	0.017
2011			0.834***	0.021	0.854***	0.022
2012			0.835***	0.034	0.851***	0.035
2013			0.635***	0.098	0.643***	0.099
Month of wedding						
February			0.913***	0.016	0.926***	0.017
March			0.935***	0.016	0.953***	0.016
April			0.833***	0.014	0.874***	0.015
May			0.855***	0.013	0.892***	0.014
June			0.888***	0.013	0.910***	0.013
July			0.970**	0.015	0.944***	0.014
August			0.962***	0.014	0.952***	0.014
September			0.858***	0.013	0.895***	0.013
October			0.846***	0.014	0.879***	0.014
November			0.935***	0.016	0.946***	0.016
December			0.946***	0.016	0.960**	0.016
Day of wedding						
Tuesday			0.961***	0.010	0.986	0.010
Wednesday			0.887***	0.009	0.946***	0.010
Thursday			0.738***	0.007	0.831***	0.008
Friday			0.697***	0.006	0.807***	0.007
Saturday			0.531***	0.006	0.746***	0.009
Sunday			0.495***	0.017	0.664***	0.022
Holidays and pre-holiday dates						
New Year's Day			0.895	0.131	1.033	0.151
Carnival Sunday			1.277	0.270	1.334	0.282
Carnival Monday			1.135**	0.072	1.077	0.068
Carnival Tuesday			0.977	0.060	0.946	0.058

Maundy Thursday	1.085*	0.049	1.067	0.048
Good Friday	1.098	0.088	1.037	0.083
Easter Sunday	0.926	0.227	0.970	0.238
Easter Monday	0.756*	0.120	0.890	0.141
Day before Queen's day	0.804***	0.039	0.863***	0.041
Queen's Day	0.988	0.123	1.074	0.134
Liberation Day	0.952	0.083	1.028	0.090
Day before Ascen. Day	0.712***	0.022	0.793***	0.024
Ascension Day	1.139	0.165	1.290*	0.187
Whit Sunday	0.998	0.244	1.122	0.275
Whit Monday	0.914	0.138	1.144	0.173
Christmas Day	0.730**	0.102	0.784*	0.109
2nd day of Christmas	0.877	0.112	0.948	0.121
New Year's Eve	1.239***	0.075	1.136**	0.069
Education levels, husband				
pre-school			0.926***	0.021
primary school			1.140***	0.018
secondary school phase 1			1.192***	0.012
secondary school phase 2			1.022***	0.007
higher educ., bachelors			0.665***	0.007
higher education, masters			0.576***	0.008
higher education, PhD			0.494***	0.022
Education levels, wife				
pre-school			1.034	0.022
primary school			1.494***	0.021
secondary school phase 1			1.647***	0.015
secondary school phase 2			1.436***	0.010
higher educ., bachelors			0.972***	0.009
higher education, masters			0.883***	0.012
higher education, PhD			0.616***	0.026
Spline of Mahalanobis distance				
Slope 0-25th quantile			1.277***	0.036
Slope 25-50th quantile			1.367***	0.023
Slope 50-75th quantile			1.131***	0.013
Slope 75-100th quantile			1.246***	0.007
1st gen. immigrant, husb.			1.087***	0.010
2nd gen. immigrant, husb.			0.984	0.010
1st gen. immigrant, wife			0.878***	0.008
2nd gen. immigrant, wife			0.989	0.010
Husb. married for 2^{nd} time			1.182***	0.010
Husb. married for 3^{rd} time			1.435***	0.025
Husb. married for 4^{th}+ time			1.410***	0.058
Wife married for 2^{nd} time			1.253***	0.011
Wife married for 3^{rd} time			1.655***	0.030
Wife married for 4^{th}+ time			1.914***	0.074
Cohabiting less than 1 year			1.546***	0.014
Cohabiting 1-2 years			1.332***	0.013
Cohab. more than 2 years			1.278***	0.011
Premarital children in HH			1.410***	0.009

Birth <9 months after wed.			0.913***	0.007
Husband's birth month				
February			0.994	0.013
March			1.007	0.013
April			0.984	0.013
May			0.992	0.013
June			1.001	0.013
July			0.985	0.012
August			1.000	0.013
September			1.007	0.013
October			0.998	0.013
November			0.992	0.013
December			0.991	0.013
Wife's birth month				
February			1.022*	0.014
March			1.024*	0.013
April			1.020	0.013
May			1.019	0.013
June			1.037***	0.013
July			1.040***	0.013
August			1.031**	0.013
September			1.007	0.013
October			1.002	0.013
November			1.015	0.013
December			1.040***	0.014
Wedding in husband's birth month			1.002	0.009
Wedding in wife's birth month			1.031***	0.009
Log likelihood	-1,930,213.2	-1,927,186.7	-1,907,197.6	

Note: Authors' estimates from Cox PH models of marriage durations using linked marriage, divorce, and other registry data for 1,124,707 marriages of different-sex couples ages 18-60 in the Netherlands from 1999-2013. The specification in the third column also includes dummy controls for the husbands' and wives' ages, which are graphed in Figure 3.
*Significant at 0.10 level **Significant at 0.05 level ***Significant at 0.01 level

Table 5: Exponentiated coefficient estimates from Cox PH models of marriage duration, data split by order of marriage and cohabitation status

Variables	First marriages		Remarried		No cohabitation		Cohabiting	
	Coefficient	s.e.	Coefficient	s.e.	Coefficient	s.e.	Coefficient	s.e.
Special dates								
Valentine's Day	1.166***	0.057	1.020	0.063	1.188**	0.090	1.093**	0.049
Same number date	1.199***	0.034	1.132***	0.045	1.161**	0.077	1.151***	0.029
Sequence date	1.146**	0.076	1.073	0.109	1.073	0.159	1.128**	0.068
Mirror date	1.059	0.039	0.982	0.051	1.008	0.082	1.028	0.033
Year of wedding								
2000	0.999	0.012	0.970*	0.017	1.009	0.020	0.983	0.011
2001	0.970**	0.012	0.979	0.018	1.015	0.021	0.961***	0.012
2002	0.998	0.013	0.940***	0.018	1.016	0.021	0.970**	0.012
2003	0.960***	0.013	0.939***	0.019	0.965	0.021	0.953***	0.012
2004	0.920***	0.013	0.902***	0.019	0.893***	0.021	0.926***	0.013
2005	0.907***	0.014	0.873***	0.019	0.828***	0.022	0.925***	0.013
2006	0.893***	0.014	0.828***	0.020	0.752***	0.021	0.917***	0.014
2007	0.850***	0.015	0.850***	0.021	0.784***	0.023	0.879***	0.014
2008	0.866***	0.016	0.878***	0.023	0.816***	0.026	0.895***	0.015
2009	0.860***	0.018	0.876***	0.026	0.925**	0.032	0.855***	0.016
2010	0.850***	0.020	0.864***	0.031	0.939	0.040	0.840***	0.019
2011	0.844***	0.026	0.879***	0.041	1.044	0.057	0.821***	0.024
2012	0.772***	0.038	1.063	0.075	1.212**	0.105	0.788***	0.036
2013	0.573***	0.109	0.829	0.216	1.483	0.417	0.514***	0.095
Month of wedding								
February	0.914***	0.021	0.960	0.028	0.989	0.030	0.910***	0.020
March	0.957**	0.020	0.957	0.027	1.004	0.029	0.941***	0.019
April	0.864***	0.018	0.915***	0.026	0.925***	0.028	0.867***	0.018
May	0.883***	0.017	0.916***	0.024	0.925***	0.027	0.885***	0.016
June	0.908***	0.017	0.926***	0.023	0.906***	0.025	0.912***	0.016

July	0.949***	0.018	0.941**	0.024	0.877***	0.023	0.974	0.018
August	0.957**	0.018	0.953*	0.024	0.891***	0.023	0.983	0.018
September	0.885***	0.016	0.931***	0.023	0.886***	0.024	0.900***	0.016
October	0.869***	0.018	0.914***	0.025	0.919***	0.026	0.876***	0.017
November	0.941***	0.020	0.962	0.027	1.008	0.030	0.934***	0.020
December	0.966	0.021	0.964	0.026	0.976	0.028	0.958**	0.020
Day of wedding								
Tuesday	0.989	0.013	0.978	0.017	0.998	0.019	0.981	0.012
Wednesday	0.932***	0.013	0.970*	0.017	0.945***	0.018	0.953***	0.012
Thursday	0.825***	0.011	0.856***	0.014	0.827***	0.016	0.855***	0.010
Friday	0.797***	0.009	0.845***	0.012	0.822***	0.014	0.809***	0.008
Saturday	0.751***	0.011	0.800***	0.019	0.657***	0.015	0.789***	0.011
Sunday	0.703***	0.028	0.668***	0.043	0.625***	0.026	0.899*	0.054
Holidays and pre-holiday dates								
New Year's Day	1.020	0.179	1.337	0.359	0.934	0.179	1.431	0.329
Carnival Sunday	1.560*	0.396	0.949	0.365	1.142	0.282	2.195*	0.907
Carnival Monday	1.072	0.089	1.066	0.105	1.012	0.111	1.085	0.085
Carnival Tuesday	1.015	0.080	0.836*	0.083	0.903	0.096	0.960	0.072
Maundy Thursday	1.088	0.061	1.031	0.078	1.187**	0.103	1.018	0.053
Good Friday	1.002	0.099	1.037	0.141	0.912	0.153	1.058	0.097
Easter Sunday	1.046	0.273	0.797	0.566	0.910	0.255	1.504	0.758
Easter Monday	1.007	0.194	0.650	0.181	0.778	0.137	0.965	0.365
Day before Queen's day	0.842***	0.050	0.903	0.074	0.870	0.089	0.862***	0.047
Queen's Day	1.114	0.175	0.984	0.202	0.973	0.150	1.002	0.214
Liberation Day	0.963	0.108	1.167	0.162	1.140	0.153	0.933	0.108
Wednesday before Ascension Day	0.804***	0.029	0.797***	0.047	0.800***	0.066	0.799***	0.026
Ascension Day	1.510**	0.243	0.820	0.274	1.090	0.201	1.438	0.339
Whit Sunday	1.332	0.337	0.380	0.381	1.275	0.372	0.840	0.379
Whit Monday	1.069	0.210	1.203	0.285	1.025	0.185	1.614*	0.448
Christmas Day	0.717*	0.125	0.942	0.217	0.840	0.119	0.176*	0.176
2nd day of Christmas	1.064	0.158	0.770	0.193	0.942	0.129	0.991	0.375

New Year's Eve	1.208**	0.101	1.066	0.094	1.042	0.118	1.171**	0.084
Education levels, husband								
pre-school	0.881***	0.028	0.946*	0.031	0.786***	0.025	1.012	0.032
primary school	1.133***	0.024	1.102***	0.025	1.004	0.025	1.183***	0.023
secondary school phase 1	1.210***	0.015	1.125***	0.019	1.126***	0.022	1.204***	0.014
secondary school phase 2	1.028***	0.008	0.991	0.013	0.990	0.014	1.028***	0.008
higher education, bachelors	0.656***	0.008	0.717***	0.017	0.580***	0.014	0.695***	0.008
higher education, masters	0.570***	0.009	0.609***	0.022	0.517***	0.017	0.600***	0.010
higher education, PhD	0.490***	0.024	0.525***	0.056	0.378***	0.040	0.544***	0.026
Education levels, wife								
pre-school	0.985	0.030	1.040	0.031	0.816***	0.025	1.262***	0.036
primary school	1.454***	0.029	1.462***	0.029	1.263***	0.030	1.601***	0.028
secondary school phase 1	1.647***	0.020	1.598***	0.024	1.669***	0.031	1.622***	0.018
secondary school phase 2	1.417***	0.012	1.441***	0.018	1.568***	0.022	1.379***	0.011
higher education, bachelors	0.954***	0.010	1.029	0.022	1.041*	0.023	0.950***	0.010
higher education, masters	0.877***	0.014	0.861***	0.029	0.937**	0.029	0.860***	0.013
higher education, PhD	0.603***	0.028	0.682***	0.074	0.716***	0.066	0.591***	0.028
Spline of Mahalanobis distance								
Slope 0-25th quantile	1.267***	0.038	1.436***	0.140	1.250***	0.083	1.293***	0.041
Slope 25-50th quantile	1.423***	0.025	0.980	0.048	1.848***	0.065	1.228***	0.023
Slope 50-75th quantile	1.132***	0.017	1.330***	0.036	1.221***	0.027	1.134***	0.015
Slope 75-100th quantile	1.209***	0.017	1.244***	0.009	1.286***	0.013	1.190***	0.009
1st generation immigrant, husband	1.050***	0.012	1.138***	0.018	1.197***	0.018	1.075***	0.012
2nd generation immigrant, husband	1.007	0.013	0.911***	0.018	1.318***	0.026	0.933***	0.012
1st generation immigrant, wife	0.841***	0.009	0.942***	0.014	0.930***	0.015	0.888***	0.010
2nd generation immigrant, wife	1.015	0.012	0.917***	0.017	1.173***	0.022	0.956***	0.011
Husband married for 2nd time			1.363***	0.023	1.130***	0.019	1.216***	0.012
Husband married for 3rd time			1.620***	0.034	1.241***	0.041	1.540***	0.032
Husband married for 4th-9th time			1.577***	0.068	1.126	0.083	1.627***	0.082
Wife married for 2nd time			1.428***	0.023	1.255***	0.023	1.285***	0.013
Wife married for 3rd time			1.875***	0.039	1.497***	0.053	1.769***	0.038

Wife married for 4th-9th time			2.139***	0.086	1.425***	0.104	2.291***	0.104
Cohabiting less than 1 year	1.830***	0.021	1.099***	0.016	1.274***	0.024	1.180***	0.010
Cohabiting 1-2 years	1.623***	0.020	0.884***	0.015			1.012	0.008
Cohabiting more than 2 years	1.511***	0.017	0.864***	0.013				
Premarital children in the household	1.484***	0.013	1.267***	0.014	1.745***	0.026	1.312***	0.010
Birth <9 months after wedding	0.948***	0.008	0.787***	0.012	1.071***	0.019	0.864***	0.007
Husband's birth month								
February	0.985	0.016	1.016	0.023	1.056**	0.027	0.974*	0.015
March	1.005	0.015	1.017	0.023	1.026	0.026	1.001	0.015
April	0.978	0.015	1.006	0.023	1.007	0.026	0.979	0.014
May	0.984	0.015	1.016	0.023	1.056**	0.026	0.976*	0.014
June	0.989	0.015	1.044*	0.024	1.068***	0.027	0.984	0.015
July	0.984	0.015	0.981	0.022	1.007	0.024	0.979	0.014
August	0.999	0.015	1.014	0.023	1.032	0.026	0.992	0.015
September	1.022	0.016	0.988	0.023	1.047*	0.027	0.998	0.015
October	1.003	0.016	0.998	0.023	1.004	0.026	1.000	0.015
November	1.000	0.016	0.985	0.023	1.035	0.027	0.978	0.015
December	0.993	0.016	0.997	0.023	1.037	0.027	0.979	0.015
Wife's birth month								
February	1.027*	0.016	1.010	0.024	1.077***	0.028	1.000	0.015
March	1.034**	0.016	1.009	0.023	1.078***	0.028	1.005	0.015
April	1.027*	0.016	1.011	0.023	1.046*	0.027	1.011	0.015
May	1.025	0.016	1.020	0.023	1.071***	0.027	1.005	0.015
June	1.040**	0.016	1.034	0.024	1.064**	0.027	1.024	0.015
July	1.042***	0.016	1.028	0.023	1.071***	0.027	1.020	0.015
August	1.043***	0.016	1.007	0.023	1.048*	0.027	1.022	0.015
September	1.017	0.016	0.985	0.023	1.039	0.027	0.993	0.015
October	1.012	0.016	0.984	0.023	1.054**	0.028	0.982	0.015
November	1.022	0.016	0.998	0.024	1.051*	0.028	0.997	0.015
December	1.023	0.016	1.076***	0.025	1.058**	0.028	1.032**	0.016
Wedding in husband's birth month	1.001	0.011	1.004	0.016	1.006	0.019	1.003	0.011

Wedding in wife's birth month	1.046***	0.012	1.013	0.016	1.025	0.018	1.043***	0.011
Number of spells	857,792		266,915		289,327		835,380	
Log likelihood	-1,284,497		-532,329		-423,992		-1,399,067	

Note: Authors' estimates from Cox PH models of marriage durations using linked marriage, divorce, and other registry data for marriages of different-sex couples ages 18-60 in the Netherlands from 1999-2013. Each specification also includes dummy controls for the husbands' and wives' ages.

*Significant at 0.10 level **Significant at 0.05 level ***Significant at 0.01 level