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# Brakes and drivers of differences and marriages during Advent and Lent from the early 19th to the early 20th centuries in western and central Belgium

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## Abstract – Résumé

***Abstract***

*This paper examines the impact of secularization on marriages during Advent and Lent in two Flemish provinces (West-Flanders and Flemish-Brabant) and Brussels-capital. The evolution of the level of church control of the marriage ban (a measure of the process of secularization) between the early 19th and the early 20th centuries is measured through a daily Lent and Advent (DLA) marriage-index. A low index points to a higher level of church control and a lower level of secularization, while a high index points to a lower level of church control and a higher level of secularization. Sub-samples of civil marriage registers are analysed. Results show that the DLA-indexes are low in the early 19th century but increase slowly and consistently throughout the rest of the 19th century, albeit with geographical variations. Spatial differences can be explained by different socio-economic and cultural characteristics of the regions and the populations. Some common underlying factors across locations are identified: change is driven mainly by less religious municipalities and non-native, skilled and, to some extent, elite brides, but less by the self-employed farmers and fishermen, regardless of gender. We also find evidences of low likelihoods of Lent marriages for elite grooms, but high likelihoods of Advent and Lent marriages for skilled brides, and also to some extent of high likelihoods of Advent marriages for elite brides.*

***Keywords:*** *secularization, first marriage, marriage ban, Advent, Lent, spatial variation, West Flanders, Flemish Brabant, Brussels-capital*

***Résumé***

*Cet article examine l'impact de la sécularisation sur les mariages pendant l'Avent et le Carême dans deux provinces flamandes (Flandre occidentale et Brabant flamand) et à Bruxelles-capitale. L'évolution du niveau de contrôle de l'église sur l'interdiction de mariage (une mesure du processus de sécularisation) entre le début du 19ème et le début du 20ème siècle est mesurée par un indice de mariage quotidien pendant le Carême et l'Avent (DLA). Un indice faible indique un niveau plus élevé de contrôle de l'église et un niveau plus faible de sécularisation, tandis qu'un indice élevé indique un niveau plus faible de contrôle de l'église et un niveau plus élevé de sécularisation. Des sous-échantillons de registres de mariages civils sont analysés. Les résultats montrent que les indices DLA sont faibles au début du 19e siècle, mais qu'ils augmentent lentement et régulièrement pendant le reste du 19e siècle, avec toutefois des variations géographiques. Les différences spatiales peuvent s'expliquer par les différentes caractéristiques socio-économiques et culturelles des régions et des populations. Certains facteurs sous-jacents communs à tous les lieux sont identifiés : le changement est principalement porté par les municipalités moins religieuses et les épouses non autochtones, qualifiées et, dans une certaine mesure, appartenant à l'élite, mais moins par les agriculteurs et les pêcheurs indépendants, quel que soit leur sexe. Nous trouvons également des indications d'une faible probabilité de mariages pendant le Carême pour les mariés d'élite, mais d'une forte probabilité de mariages pendant l'Avent et le Carême pour les mariées qualifiées, et aussi dans une certaine mesure d'une forte probabilité de mariages pendant l'Avent pour les mariées d'élite.*

***Mots-clés :*** *sécularisation, premier mariage, interdiction de mariage, Avent, Carême, variation spatiale, Flandre occidentale, Brabant flamand, Bruxelles-capitale*

## 1. Introduction

This paper examines the impact of secularization (as measured by following the marriage ban during Lent and Advent) on the timing of first marriages in two provinces (West-Flanders and Flemish-Brabant) of the region of Flanders (the northern part of Belgium) and Brussels-capital, from the early 19th to the early 20th centuries. In early modern times, marriage behaviour in Flanders followed the western European marriage pattern (EMP, Hajnal 1965). However, in the middle of the 19th century, a number of typical marital behaviour characteristics associated with the EMP (i.e. relatively high age at marriage, a high proportion never married, and relatively small spousal age differences) started to erode. Changes in marital behaviour occurred due to socio-economic changes related to industrialization and urbanization, and to cultural dynamics, such as secularization. At the individual level, marriage shifted from an 'instrumental' act to a more egalitarian and emotional one, affecting partner preferences, changing the quality of marital relationships, and resulting into the 'familiarization' of marriage (Matthijs 2003, Van de Putte *et al.* 2009). The timing of marriages, in particular its interrelation with religiously restricted periods also changed (Matsuo & Matthijs 2018a/b).

The timing of marriage in relation to religiously restricted periods (in this study Advent and Lent) has important implications for the timing of family formation behaviour as well (Matthijs 2003, Van de Putte *et al.* 2009). This points to, for instance, prenuptial pregnancies and illegitimate births (Reher & Gimeno 2006). Our study aims to contribute to existing empirical research on the timing of marriage by examining long-term historical trends during the 19th century in three areas of western and central Belgium. We study this by distinguishing between levels of compliance with the rule of non-marriage during Advent and/or Lent across different geographical locations, and by examining individual characteristics of bride and groom.

Against this background, the purpose of this paper is twofold: (1) to describe the evolution of secularization through the DLA-indexes, and to gain insight into the explanatory power of this index as a proxy for secularization by calculating the proportion of marriages occurring during the periods of Advent and Lent from the early 19th to the early 20th centuries in three locations in western and central Belgium: the province of West Flanders, the province of Flemish Brabant (contemporary area description), and Brussels-capital; and (2) to examine if and how preferences concerning the timing of marriage are influenced by individual socio-economic, cultural and geographical characteristics.

## 2. Research background

The second half of the nineteenth century and the early twentieth century was characterized by significant social change in Belgium, first mainly in the southern, French-speaking Walloon region, later on also in the northern Dutch-speaking Flemish region. Belgium experienced rapid industrialization and important shifts in economic activities from the primary to the secondary and to some extent to the tertiary sector. Such shifts firstly occurred in the southern part of Belgium, where the large-scale production of coal and steel (e.g. in the industrial cities of Liege and Charleroi, and the area from Mons to Charleroi called 'Borinage' in Hainaut province) took place already in the first half of the nineteenth century (Lesthaeghe 1977, Vanneste 1997). This development also spread to areas like Brussels, Ghent, and Antwerp in the second half of the nineteenth century. Brussels developed substantially because it became the economic, financial, and political centre (Van Leeuwen *et al.* 2019).

A process of secularization can also be observed in that period. Secularization has been defined as reduced compliance with religious rules and customs, the break-

down of religious authority, and a decline in the significance of religious institutions and religious values (Dobbelaere 2002, 2010). In Belgium, the timing of the secularization process mirrors that of the industrialization process: it started initially in the early 19th century in the southern part of Belgium and then expanded, reaching and spreading in the urban areas of the northern part of Belgium (e.g. the cities of Antwerp and Ghent). Secularization was initially pushed by the anticlerical bourgeoisie, rejecting religious authority and disapproving of church influence on political life in towns, thereafter spreading among the lower classes and rural regions (Lesthaeghe 1977). The 19th century was also characterized by the growth of freemasonry and the liberal political party, the growth of socialism and the socialist political party, later on the intensifying competition between political parties, and in general the declining role of religion in people's lives (ibid).

Secularization is a broad concept that comprises changes at different levels: societal, institutional and individual (Dobbelaere 2002). In this paper, the interest is in the impact at the individual level, the reduced compliance with religious rules. Secularization at the individual level has been studied through various measures: via the proportion of the population following Easter duties; via the proportion of the population attending Sunday mass and church funerals (Art 1979); via demographic measures, such as marriages during the religiously closed periods, illegitimate births and premarital conceptions; and indirect measures such as non-Catholic political votes (Lesthaeghe 1977, Art 2004). These measures, for instance, information of religion, language, religious organization have been collected in Population census (Louckx & Vanderstraeten 2015), whereas Sunday mass attendance and absenteeism in Easter ceremonies were collected in parish records (Art 1979, Lesthaeghe 1977). Information on illegitimate births and premarital conceptions can be obtained through birth and marriage civil registration records. Public events such as marriages imply a sequence of approvals involving pre-public announcements to the family, the church, and the wider communities (Monballyu 2006). Because of this public aspect, it is expected that marriage behaviour is guided more by the preferences and expectations of the other members of the family and of the community, which involves the church at the location of marriage. In this context, it is likely that religious marriage ceremonies during restricted periods were discouraged by the church priest.

It is also known that canonical laws (i.e. church rules) on marriage during Advent and Lent are equally applicable in the context of civil marriage since these ceremonies have mostly taken place on the same dates [see similar observations in Ratcliffe (1998, 291 footnote 22)]. Sources such as catechism (Flandrica, Catechismus oft Christelycke Leeringhe, original in Matthijs & Van de Putte, 2001) provide evidence on the role of church regarding Advent and Lent marriages. These church rules were enforced by priest's teachings since they usually did not allow marriage ceremonies during these respective periods in order to prepare for the two important religious periods, Advent and Lent respectively (Breschi & Ruiu 2016, Ruiu & Breschi 2015). Exceptions are considered in special circumstances, such as illegitimacy, prenuptial marriages and remarriages (Alter & Gutmann 2005, original in Neven & Oris 2003, Matthijs & Van de Putt 2001).

Given this context, it is not surprising that the timing of marriage behaviour in Europe has been studied extensively (Bourgeois 1946, Kussmaul 1985, Lesthaeghe 1989, Lesthaeghe & Lopez-Gay 2013, Matthijs & Van de Putte 2001, Ruiu & Breschi 2015, Engelen 2017, Dribe & Van de Putte 2012, Wrigley & Schofield 1981, Van Poppel 1995). These studies operationalize seasonal and monthly measures regarding the occurrence of marriages through standardization of these measures. The idea is that, by standardizing values, it is possible to identify troughs and peaks of marriage events throughout the year, and to examine this in the long term. Some of these empirical studies in Belgium, the Netherlands and Sweden show that historical trends vary by period and across region: peaks in spring and winter (mainly

in May and November), and troughs in March and December or August and September (Dribe & Van de Putte 2012, Lesthaeghe 1989, Lesthaeghe & Lopez-Gay 2013, Engelen 2017).

Such variations in the timing of marriage events are affected by socio-economic and geographic factors, such as types of economic activity, seasonal workloads, occupation categories and rural and urban settings (Kussmaul 1985, Wrigley & Schofield 1981, Dribe & Van Putte 2012, Ruiu & Breschi 2015, 2020).[1] For instance, an analysis for southern Sweden shows that the appearance of peaks in December marriages in the 19th century was driven by variations in work intensity and resource availability across occupational categories. They differ substantially between landed farmers, and semi or landless ones, affecting seasonal marriage patterns among the latter group (Dribe & Van de Putte 2012). They are also related to institutional characteristics such as the renewing time for labour and lease contracts (Van Poppel 1995, Engelen 2017). In the Netherlands, the month of May was the favourite time to marry because workload lessens after the sowing period, and labour and land lease contracts were either renewed or ended. Similar observation is found in the empirical work among Catholics and Lutherans in Alsace (McQuillan 1999). The seasonal workload of agriculture influenced adherence to Advent and Lent in rural areas as the Advent period coincides with a period of rest in contrast to the busier Lent period. Due to a greater workload, the Lent period offered less opportunity and time for marriage anyway and was more conducive to religious observance.

We consider further that there can also be good reasons to marry during the periods of Advent and Lent, for example if a premarital pregnancy is involved (Reher & Gimeno 2006). Previous empirical research also found groom's social class effects: the higher social classes (elite, middle class) did not follow the rules as much as agricultural labourers did (Dribe & Van de Putte 2012, Engelen 2017, Matsuo & Matthijs 2018a). Evidences on brides' social class effects on marrying during Advent and Lent were however less clear. The high level of non-response for the bride's activity status (i.e. 'housewife'), which increased during the 19th century (Matthijs 2003, Van Poppel 2006), likely made it difficult to draw conclusions on this aspect. We can, however, infer from the study by Ruiu and Breschi (2017), that non-native, literate brides were more likely to marry on superstitious dates (e.g. Tuesdays and Fridays were considered to be unlucky days for weddings as well as the 17th day of each month, Ruiu and Breschi 2017, 45). It can be therefore expected that, unlike high class grooms, high class brides were more likely to marry during Advent and Lent periods. In other words, this implies that high class brides are more likely to be prepared and able to ignore the church rules than high class grooms.

As said, the timing of marriage is also affected by Catholic marriage restrictions during the periods of Lent and Advent (Lesthaeghe & Lopez 2013). Lent begins on Ash Wednesday and lasts for forty days, excluding Sundays, before Easter. Advent begins four Sundays before Christmas, coinciding with the period of the Sunday closest to St. Andrew's Day (i.e. November 30) until Christmas day. These features reveal substantial time variations: less steep decline in the period of Lent and also to some extent for Advent (Lesthaeghe 1989, Engelen 2017). Lent and Advent differences are plausible since the former is a time to fast and to refrain from celebrations and luxury which are strongly associated with Lenten vows and beliefs, whereas the latter concerns preparations for Christmas. It is for this reason that people follow the Lent rules more than the Advent ones (Breschi & Ruiu 2016). Engelen (2017) found clear differences between Lent and Advent marriages for the Netherlands, even among high class grooms: the higher occupational classes (e.g. elite, middle class, skilled worker) follow the rules in Lent but comply less in Advent.

[1] One may argue that type of occupation at the time of marriage is less appropriate to measure socio-economic determinants of timing of marriage than parental characteristics from the perspective of resource availability.

Lesthaeghe and Lopez (2013), building on previous work (Lesthaeghe 1989), analysed the level of secularization through the non-observance of, respectively compliance with, the marriage ban during Lent and Advent in all provinces of Belgium, operationalizing them for the months of March and December as proxies of the respective religious periods. Levels of secularization in 19th century Belgium vary geographically, and differ between the French-speaking region, where secularization already started in the early to mid-19th century, and the Dutch-speaking one. Secularization expanded to Flanders later, in the mid-19th century, particularly in the urban areas of Antwerp and Brussels (Lesthaeghe 1977). Our previous analysis for Antwerp (Matsuo & Matthijs 2018a) confirmed this finding: secularization was pronounced in urban areas and in late 19th century. By distinguishing the effects by gender, we illustrated the less compliances on marrying during Advent and Lent among older brides, although it affected less the elite grooms. Our previous study shows social class effects distinguished by gender (i.e. low effects of high-class grooms), but unfortunately could not identify effects of place of origin (also distinguished by gender). Taking a closer look at selected Flemish towns and municipalities (Aalst, Bierbeek and Leuven), Matthijs and Van de Putte (2001) analysed civil marriage registration records, specifying Lent marriages yearly to analyse effects of occupations. The analysis reveals high likelihoods of Lent marriages among remarrying person and those people who are legitimating a child at time of marriage on the one hand, a wide variation across geographical locations on the other hand. The analysis highlights the lower likelihood of Lent marriages in agricultural villages (e.g. Bierbeek, Flemish Brabant) and small towns (e.g. Aalst, East Flanders) than in service-oriented towns (e.g. Leuven, Flemish Brabant). In other words, Leuven, where semi-skilled, artisans grooms resided more, practiced Lent marriages more often than farmers and unskilled grooms marrying in Bierbeek and Aalst. These findings of occupational class align with the empirical results in other areas.

## 3. Research hypotheses

The two main research questions and corresponding hypotheses are formulated based on previous empirical research (see above):

**Research question 1:** What is the timing of first marriage, as observed through the relative incidence of first marriage during Advent and Lent, in the aforementioned regions throughout the 19th century? Do trends differ by geographical location (i.e. city versus non-city)? Do trends differ between Advent and Lent?

• Hypothesis 1a. The relative incidence of first marriage during Advent and Lent is relatively low initially but increases from the mid-19th century onwards due to societal transformations.

• Hypothesis 1b. Indexes are generally higher in the province of Flemish Brabant and in Brussels-capital than in the province of West Flanders. The two former locations have larger sub-groups of the population engaged in the secondary and tertiary sectors, and more urban-based municipalities.

• Hypothesis 1c. Daily Lent and Advent-indexes are generally higher for Advent than for Lent. This is primarily related to the stronger religious adherence to Lent than to Advent. This is also assumed because of seasonal labour activities. For example, the Advent period coincides with winter (i.e. December) when more free time and resources are available, in particular for unskilled workers and self-employed workers engaged in agriculture or fishing.

**Research Question 2:** Is the incidence of first marriage during Advent and Lent influenced by individual socio-economic, cultural and geographical characteristics?

• Hypothesis 2a: The likelihood of first marriage during both Advent and Lent is affected positively by socio-economic and cultural status (i.e. social class of mid-/

semi-skilled, literate, young and/or old age of marriage), by being non-native, and by marriages occurring in cities, and by less religious municipalities.

• Hypothesis 2b: First marriages during the religiously closed period of Advent are less followed by elites, although they tend to respect norms not to marry during Lent.

• Hypothesis 2c**:** There are different socio-economic characteristics between brides and grooms marrying during Advent and Lent. We expect that elites following the rules in Lent are more pronounced for grooms than for brides. We expect that non-native, literate and to some extent elite brides follow less the rules in Lent.

## 4. Data, methods and measures

### *4.1. Data*

We made use of civil marriage registers containing individual data for three locations: the provinces of West Flanders and Flemish Brabant, and Brussels-capital.[2] We restricted our analysis to first marriages and to the historical period of 1800-1913, ending just before the First World War. Only marriages that were the first for both bride and groom were included, so as to preserve the homogeneous behaviour of the first marriage. We evaluated individual records on first marriages for which values on dates and places of both marriages and births were known.[3] Our analysis showed that missing data related mainly to place of birth, particularly in West Flanders.[4] For this reason, we eliminated municipalities where the proportion missing was substantial (i.e. more than 50%) for West Flanders. This means that from the 64 municipalities in the original sample for West Flanders, 17 were removed from the analysis, so only 47 municipalities were retained for analysis.[5] The number of missing cases regarding birth information was small for Flemish Brabant and Brussels-capital, and therefore irrelevant. Consequently, the sub-samples for the three areas consisted of 245,551 (West Flanders, 47 municipalities), 226,984 (Flemish Brabant, 65 municipalities) and 196,673 (Brussels-capital, 19 municipalities) units respectively.

### *4.2. Methods*

The DLA-index that we propose (Matsuo & Matthijs 2018a/b) builds on a methodological study by Lesthaeghe (1989) and Lesthaeghe and Lopez-Gay (2013). They calculated a Marriage Lent and Advent-index (MLA-index) on the basis of percentages of marriage occurring in the months of March and December, divided by 2/12 or the proportion that would be observed without marriage seasonality (ibid. 85), as a proxy for the level of secularization. In line with Matthijs and Van de Putte (2001) we take account of the fact that the Lent period varies every year.

In previous studies, the months of December and March have been used as proxies for Advent and Lent (see e.g. Lesthaeghe 1989). However, while this may be more or less appropriate for Advent, which falls on the same dates every year, the timing of

[2] Brussels capital is a separate administrative entity than Flemish Brabant. However, Brussels capital is part of the data of Flemish Brabant.
[3] Dates and place of birth information were important to derive place of origin (i.e. native/non-native) and age at marriage.
[4] Missingness is also related to the data collection at the municipal level. Some municipalities carried out thorough collection of individual information, while others restricted to key information only (Aelvoet et al 2016).
[5] These 17 municipalities are: Alveringem, Deerlijk, Gistel, Ieper, Handzame, Lauwe, Oostrozebeke, Poperinge, Roselare, Westrozebeke, Verne, Westvleteren, Sint-Eloois-Vijve, Sint-Baafs-Vijve and Sint-Denijs. Given the geographical importance of the municipality, Kortrijk was an exception that was included in the sample even though it had higher thresholds (i.e. missing cases of 60%).

the period of Lent varies quite substantially, depending on the date of Easter. That is why for the calculation of our marriage-index we took account of the actual historical timing of the periods of Lent and Advent. These indexes for Lent and Advent were calculated, respectively, by:

• number of first marriages during Lent / [((number of first marriages during the whole year) / 365)*46]

• number of first marriages during Advent/ [((number of first marriages during the whole year) / 365)*28]

The actual number of marriages taking place in Lent and Advent is divided by the expected event incidence. This implies that the lower the DLA-indexes are, the stronger the compliance with religious rules.

Secondly, DLA-indexes are distinguished by Advent and Lent, and by spatial characteristics. Thirdly, multi-level logistic regression models are used to examine determinants of the occurrence of marriage. Individuals are nested at the municipal level, and three models, corresponding to West Flanders, Flemish Brabant and Brussels-capital, are analysed separately. For the data preparation and analysis, SAS (version 9.4) is used.

### *4.3. Measures*

For the regression models, the dependent variable is a dichotomous outcome variable coded 1 for marriages occurring during the Lent or Advent periods, and coded 0 for all other marriages.

As for socio-economic characteristics, three items were considered: place of birth (native and non-native), place of marriage (city and non-city areas), and social class, i.e. occupational title recoded following Van Leeuwen *et al.* (2002). Regarding social class, it is important to note that the five HISCLASS sub-classes of occupational classification are used in our analysis.[6] Unskilled workers and farm worker are used as a reference category. Occupations that were not properly registered or not available, were categorized as 'unspecified' and were incorporated into the model since they can be an important source of information, especially for brides (Van Poppel *et al.* 2006).[7] Cultural factors are captured through literacy (i.e. recorded as presence of signature in the source) and marital age (i.e. deviation or not from the average age range, see more explanation below), whereas spatial factors are measured by the proportion of Lent and Advent marriages by municipality.[8] As for the presence of a signature, a high proportion of missing cases is observed for West Flanders, and therefore a separate category of missing is created. Age at marriage is reclassified into three categories taking account of spatial (i.e. by municipality) and historical (i.e. by year) contexts distinguished by: married early (i.e. value is lower than 'mean – standard deviation'), married at proper age (i.e. value is in the range of 'mean ± standard deviation'), and married late (i.e. value is above 'mean + standard deviation'). In addition, the historical period (year) is taken into account.

[6] HISCLASS 12 classes are coded from the original description of occupation, and then grouped into five sub-classes (HISCLASS_5): 1. Elite, higher managers and higher professionals (1, 2); 2. Lower mid-class, lower managers, professionals, clerical and sales personnel and foremen (3, 4, 5); 3. Self-employed farmers and fishermen/fisherwomen (8); 4. Skilled workers (medium skilled and lower skilled) (7 and 9); 5. Unskilled workers and farm workers (10, 11, 12).

[7] Van Poppel and others (2006) show the emerging trend of housewives among lower class particularly among farmers. These patterns do not mean that women gained freedom from domestic tasks which, on the contrary, resulted into increased cases of unregistered and unremunerated activities.

[8] This is calculated from the data by obtaining the proportion of Lent and Advent marriages (5% or more) of total marriages by municipality.

# 5. Results

## *5.1. Descriptive statistics*

***• Study sample***

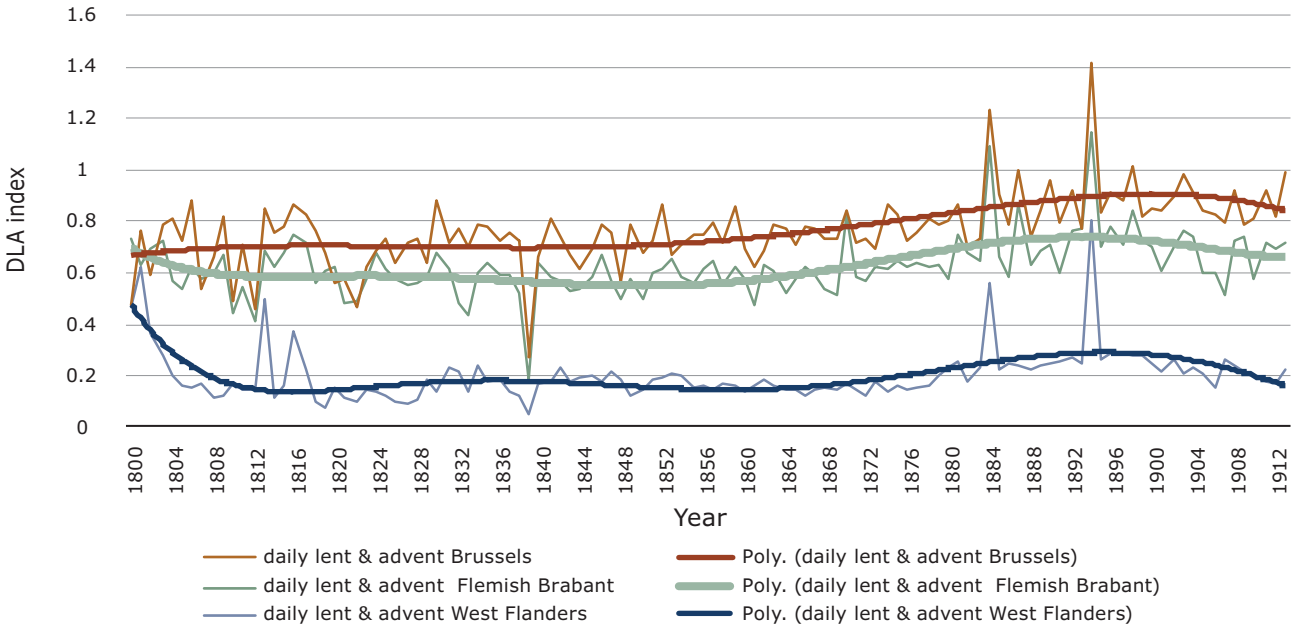
Table 1 shows that during the period being analysed (1800-1913), the proportion of marriages taking place in the periods of Advent and Lent differs across locations. This was 16% in Brussels-capital, 13% in Flemish Brabant, and 4% in West Flanders. The proportion is always higher for the period of Lent than for the period of Advent.

The proportion 'non-native', defined as marrying in a location that is different from one's place of birth, is generally higher for Brussels-capital and, to some extent, Flemish Brabant, than for West Flanders. Gender differences in terms of literacy status are observed too: the proportion literate is generally higher for grooms than for brides. In all three areas, the proportion medium skilled, lower skilled and unskilled workers is higher than that of the elite and the higher and mid-class managers. Municipalities with low levels of religious control are observed more for Brussels-capital and Flemish Brabant than for West Flanders.

***• Daily Lent and Advent-indexes: historical trends***

Figure 1 shows the DLA-indexes. The X-axis is the year of marriage, the Y-axis the DLA-indexes.

**Figure 1: Historical trends of daily Lent and Advent-indexes for first marriages in West Flanders, Brussels and Flemish Brabant, 1800-1913"**



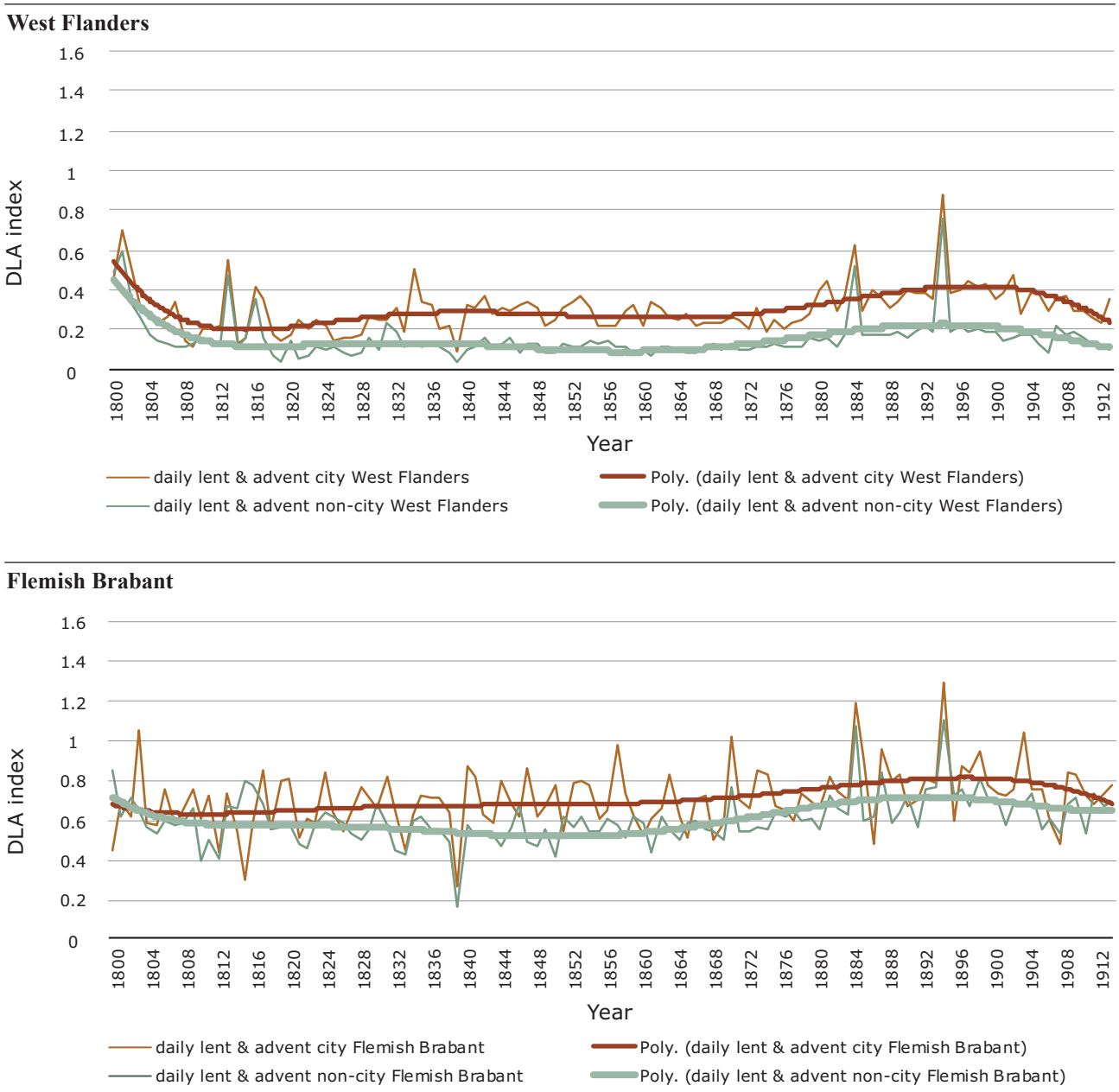

There are three main findings related to our first hypothesis. Firstly, secularization increases in the second half of the 19th century in each locality, as reflected in increasing DLA-indexes. Moreover, and as observed in previous studies (Matsuo & Matthijs 2018 a/b), a stagnating pattern can be observed for the early 20th century, suggesting that levels of secularization did not increase anymore. Next, clear spatial differences are observed with secularization being more apparent in Brussels-capital and to some extent in Flemish Brabant. This reflects the fact that Brussels-capital and Flemish Brabant are less agricultural and more urban than West Flanders.

**Table 1: Sample characteristics (%) in West Flanders, Brussels and Flemish Brabant, 1800-1913**

| | West Flanders | Brussels | Flemish Brabant |
|---|---|---|---|
| | N=245,551 | N=196,673 | N=226,984 |
| lent and advent | 4.22 | 16.39 | 12.99 |
| lent | 2.47 | 10.03 | 7.62 |
| advent | 1.75 | 6.35 | 5.38 |
| non-native bride | 26.25 | 60.52 | 31.69 |
| missing bride | 22.00 | 0.69 | 0.90 |
| non-native groom | 41.62 | 68.54 | 52.64 |
| missing groom | 21.70 | 0.58 | 0.74 |
| city status municipalities | 33.26 | N.A. | 21.25 |
| literacy bride | 31.20 | 67.02 | 61.14 |
| missing for literacy bride | 43.35 | N.A. | N.A. |
| literacy groom | 37.21 | 77.7 | 71.08 |
| missing for literacy groom | 42.63 | N.A. | N.A. |
| less religious areas | 41.27 | 98.76 | 92.02 |
| Groom's occupational class categories : | | | |
| elite. higher managers and professionals groom | 1.26 | 3.07 | 1.64 |
| lower mid-class. lower managers. professionals. clerical and sales personnel and foremen groom | 3.53 | 9.16 | 3.76 |
| self-employed farmers and fisherman groom | 10.10 | 3.97 | 29.32 |
| skilled works (medium skilled and lower skilled) groom | 21.17 | 35.25 | 20.69 |
| unskilled worker and farm workers groom | 32.40 | 22.91 | 30.95 |
| unclassified status groom | 31.54 | 25.64 | 13.64 |
| Bride's occupational class categories : | | | |
| elite. higher managers and professionals bride | 1.33 | 5.40 | 12.24 |
| lower mid-class. lower managers. professionals. clerical and sales personnel and foremen bride | 0.82 | 3.74 | 1.14 |
| self-employed farmers and fisherman bride | 6.31 | 3.25 | 24.57 |
| skilled works (medium skilled and lower skilled) bride | 20.95 | 25.71 | 11.48 |
| unskilled worker and farm workers bride | 25.12 | 19.60 | 25.89 |
| unclassified status bride | 45.47 | 42.31 | 24.68 |
| Groom's marital age range : | | | |
| early | 8.22 | 9.71 | 10.47 |
| average | 64.13 | 76.43 | 75.01 |
| late | 6.15 | 13.30 | 14.13 |
| missing | 21.51 | 0.56 | 0.39 |
| Bride's marital age range : | | | |
| early | 8.69 | 11.13 | 11.62 |
| average | 63.80 | 74.16 | 73.32 |
| late | 6.14 | 14.03 | 14.56 |
| missing | 21.37 | 0.67 | 0.50 |

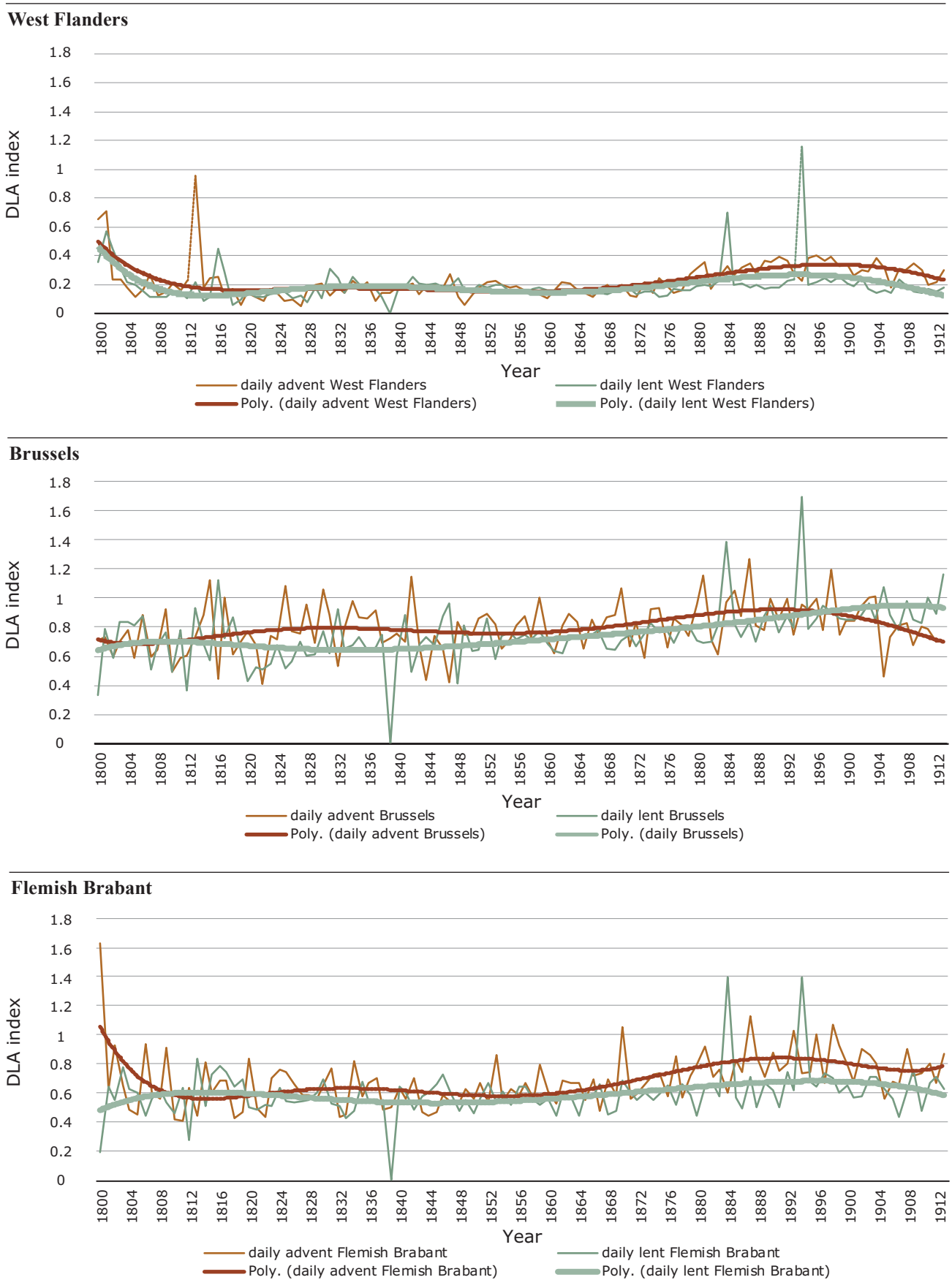
Secondly, spatial DLA-indexes (Figure 2) differ, due to area-specific labour activities and levels of religious adherence. These differences remain substantial in West Flanders and to some extent in Flemish Brabant, where non-city DLA-indexes catch up with city ones. This means that secularization also gains strength in the non-cities in these two areas.

**Figure 2: Historical trends on daily Lent and Advent-indexes for first marriages and spatial characteristics in the province of West Flanders, province of Flemish Brabant 1800-1913**




Also in line with our hypothesis, and as shown in Figure 3, indexes are generally higher for Advent than for Lent until 1880, demonstrating that adherence to religious rules on Advent is less than that for Lent. This trend can be observed consistently for all areas, except for the increasing indexes for Lent in Brussels-capital during the late 19th century. After 1880, values for Lent almost equal those for Advent in Brussels-capital.

**Figure 3: Historical trends of daily Advent indexes vesus daily Lent indexes in West Flanders, Brussels and Flemish Brabant, 1800-1913"**



## *5.2. Model results*

We present the results of the hierarchical models, examining the likelihood of marrying during the restricted periods of Advent and Lent in Table 2, controlling for bride's and groom's socio-economic, cultural characteristics, and geographic features. Table 3 a/b specify the likelihood of marrying during Advent or Lent. Since this is a hierarchical model, the effects of the random intercept reflect these likelihoods across municipalities in each of the three areas.

***• Spatial and socio-economic characteristics***

In all three areas, marriages occurring in less religious municipalities are more likely to take place in Advent or Lent (*OR*=4.642 (*p*<.0001) in West Flanders and OR= *5+ (p*<.0001) in both Flemish Brabant and Brussels-capital). In addition, marrying in a city increases the likelihood of marrying in the period of Advent and Lent compared to marrying in non-city areas in West Flanders (*OR*=1.554, *p*<.0001).

We assumed that the likelihood of the first marriage taking place during the periods of Advent and Lent would be affected by socio-economic status (i.e. higher for the middle classes and the literate ones) and by place of birth (i.e. higher for non-native status). In West Flanders, in comparison to unskilled workers and farmers grooms (reference category), the likelihood of marrying during Advent and Lent is generally lower for self-employed farmers and fishermen, and skilled workers (*OR*=0.866, *p*=0.004 for self-employed; *OR*=0.865, *p*<.0001 skilled). Evidence for brides slightly differs though: likelihoods are also lower for self-employed farmers and fisherwomen (*OR*=0.855, *p*=0.017), but interestingly, are higher for skilled workers (*OR*=1.163, *p*<.0001). . In Brussels-capital, consistently across gender, self-employed farmers have lower likelihoods (*OR*=0.916, *p*<.0.024 for groom, and *OR*=0.904, *p*=0.022 for bride) compared to unskilled workers and farmers. In Flemish Brabant, as was the case for other locations, self-employed farmers and fisher grooms and brides have low likelihoods (*OR*= 0.965, *p*<0.056 for groom[9], and *OR*=0.953, *p*=0.021 for bride), whereas elite and skilled brides have high likelihoods to marry during Advent and Lent (*OR*=1.059, *p*=0.024 for elite; *OR*=1.064, *p*=0.008 for skilled). In line with Dribe and Van de Putte (2012), Matthijs and Van de Putte (2001), and Ruiu and Breschi (2017), these occupational class effects by gender reveal various contextual characteristics. This points to socio-economic characteristics of the region and the population, including different labour activities and types of occupational categories, and for cultural characteristics. The fact that elite and skilled brides behave differently than elite and skilled grooms is also related to the differing social class backgrounds between brides and grooms.

Next, the effect of non-native status is location- and gender-specific too. Non-native brides have a higher likelihood of marrying during Advent and Lent than native brides, and this effect is the strongest in West Flanders (*OR*=1.172, *p*<.0001). A higher likelihood for non-native grooms is also only observed for West Flanders (*OR*=1.096, *p*<.0001). It is plausible that native brides marrying in their own birth town follow local customs when the municipality is more religious.

***• Role of marital ages during Lent and Advent***

Regarding marital age, we assumed that marriage during Lent and Advent is particularly associated with the prenuptial pregnancies that are likely to happen among younger couples (Reher *et al.* 2006). The effects of marital age, both young and old, are strong in West Flanders. Younger brides and grooms (i.e. lower than mean minus standard deviation) are both more likely than average ones (i.e. within the range of one standard deviation from the average in their respective municipalities – the reference category) to marry during restrictive periods (*OR*=1.238, *p*<.0001 for groom, OR =1.199, p<.0001 for bride). Moreover, older brides and grooms in West Flanders

[9] We note that the groom's effect is just not significant.

are also more likely to marry during these periods. In other words, those who marry early or late have a high risk of marrying during Advent and Lent.

***• Likelihoods of marriage during Advent or Lent***

In the final sub-section, we show distinct differences of determinants between Lent and Advent. In the descriptive statistics in Figure 3, we find that DLA-indexes are higher for Advent than for Lent until 1880, for all locations. This implies that Advent rules were increasingly less complied during this period, while these were less the case for Lent rules. After 1880, the values for Lent become almost the same, and later even higher as the ones for Advent, particularly in Brussels-capital.

Location-specific effects emerge even more when distinguishing by religious period. Large effects for less religious municipalities are identified for both Advent and Lent in the three areas, but city effects are only found for West Flanders. Interestingly, higher likelihoods of both Advent and Lent marriages for non-native brides in West Flanders (Advent *OR*=1.126, *p*=0.0002; Lent *OR*=1.196, *p*<.0001) are confirmed. The same effect of being a non-native bride is found for Lent marriages in Brussels capital (*OR*= 1.069, *p*<.0001) Flemish Brabant (*OR*=1.088, *p*<.0001), in addition to non-native grooms in West Flanders (*OR*=1.142, *p*<.0001). Limited effects are found for literacy status though: literate grooms in Flemish Brabant are more inclined to marry during Advent, but follow the Lent rules.

Social class differences are also observed differently between the two religious periods. For instance, lower likelihoods of marrying in Advent are found for skilled grooms in West Flanders (*OR*=0.793, p<.0001) and self-employed farmer grooms in Brussels-capital (*OR*= 0.885, *p*=0.041). Class differences are observed for brides too. We observe low likelihoods of marrying during Advent for self-employed farmer and fisher brides in West Flanders (*OR*=0.693, *p*=0.001)[10], but high likelihoods for skilled brides high in West Flanders (*OR*=1.213, *p*<.0001). In the case of Flemish Brabant, this high likelihood is also found for elite brides (*OR*=1.099, *p*=0.012).

Our results on Lent marriages illustrate even more class differences between grooms and brides. Likelihoods to marry in Lent are low for high and mid class grooms in comparison to unskilled workers and farm workers. These groups are skilled and self-employed farmers and fishermen in West Flanders (OR=0.836, p=0.006) , but are also elite grooms in Brussels-capital (OR=0.887, p=0.014)[11]. The fact that social class effects on likelihood of marriages in Lent are relatively low among high and mid class grooms suggest that religious control was still present to some extent. These findings are largely in line with other previous work (Matthijs & Van de Putte 2001, Ruiu & Breschi 2015, Engelen 2017, Matsuo & Matthijs 2018a). Evidences for brides are different though. We find low likelihoods to marry in Lent for self-employed farmer brides in Brussels-capital (OR=0.892, p=0.038), but high likelihoods for skilled brides in West Flanders (OR= 1.119, p=0.014)[12] .

Finally, high likelihoods are found for those who do marry at average age at marriage. For Advent in West Flanders, high likelihoods are found for both old and young age brides and grooms; high likelihoods of Lent marriages are also found for young brides and grooms in Brussels-capital and Flemish Brabant. However, the similar trend (i.e. marrying at either early or later than average age) was not found for Advent marriages in Brussels-capital and Flemish Brabant.

[10] We note the similar evidence of Flemish Brabant (OR=0.944, p=0.059) but the relationship is just not significant.
[11] We also note the similar effect of Flemish Brabant but the relationship is just not significant (*OR*=0.883, *p*=0.062).
[12] Here we also note the similar evidence among skilled brides in Flemish Brabant. However, the relationship is just not significant (*OR*=1.055, *p*=0.068).

**Table 2: Marriages in Advent and Lent period and effects of socio-economic, cultural and spatial characteristics in West Flanders, Brussels and Flemish Brabant, 1800-1913**

| | West Flanders | | | | Brussels | | | | Flemish Brabant | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Effect | Estimate | StdErr | Probt | OR | Estimate | StdErr | Probt | OR | Estimate | StdErr | Probt | OR |
| Intercept | -4.337 | 0.047 | <.0001 | 0.013 | -3.804 | 0.151 | <.0001 | 0.022 | -3.818 | 0.056 | <.0001 | 0.022 |
| year | 0.001 | 0.000 | 0.032 | 1.001 | -0.004 | 0.000 | <.0001 | 0.996 | -0.002 | 0.000 | <.0001 | 0.998 |
| non-native bride. RC: native bride | 0.159 | 0.025 | <.0001 | 1.172 | 0.051 | 0.014 | <.0001 | 1.053 | 0.055 | 0.014 | <.0001 | 1.056 |
| non/native bride missing | 0.134 | 0.086 | 0.116 | 1.144 | 0.129 | 0.098 | 0.187 | 1.138 | 0.010 | 0.080 | 0.902 | 1.010 |
| non-native bridegroom. RC: native bridegroom | 0.091 | 0.025 | <.0001 | 1.096 | 0.016 | 0.015 | 0.269 | 1.016 | 0.003 | 0.013 | 0.792 | 1.003 |
| non/native bridegroom missing | 0.121 | 0.089 | 0.172 | 1.129 | 0.135 | 0.105 | 0.199 | 1.145 | 0.199 | 0.085 | 0.020 | 1.220 |
| city | 0.441 | 0.035 | <.0001 | 1.554 | | | | | -0.009 | 0.023 | 0.710 | 0.991 |
| literate bride. RC: non-literate bride | -0.061 | 0.035 | 0.081 | 0.941 | -0.017 | 0.017 | 0.298 | 0.983 | -0.006 | 0.017 | 0.700 | 0.994 |
| literate bride missing | -0.013 | 0.080 | 0.872 | 0.987 | | | | | | | | |
| literate bridegroom. RC: non-literate bridegroom | -0.042 | 0.036 | 0.250 | 0.959 | -0.004 | 0.018 | 0.819 | 0.996 | 0.000 | 0.017 | 0.981 | 1.000 |
| literate bridegroom missing | -0.040 | 0.083 | 0.632 | 0.961 | | | | | | | | |
| less religious area | 1.535 | 0.027 | <.0001 | 4.642 | 2.132 | 0.149 | <.0001 | 8.428 | 1.967 | 0.052 | <.0001 | 7.151 |
| bridegroom's occupational class. RC: unskilled & farmer worker | | | | | | | | | | | | |
| elite | -0.010 | 0.094 | 0.916 | 0.990 | -0.060 | 0.039 | 0.121 | 0.942 | -0.055 | 0.051 | 0.285 | 0.947 |
| lower mid-class | -0.030 | 0.059 | 0.609 | 0.970 | -0.011 | 0.024 | 0.638 | 0.989 | -0.020 | 0.035 | 0.564 | 0.980 |
| self-employed famer/ fisherman | -0.144 | 0.050 | 0.004 | 0.866 | -0.088 | 0.039 | 0.024 | 0.916 | -0.036 | 0.019 | 0.056 | 0.965 |
| skilled | -0.146 | 0.033 | <.0001 | 0.865 | -0.013 | 0.017 | 0.420 | 0.987 | 0.000 | 0.019 | 0.985 | 1.000 |
| unclassified | -0.036 | 0.045 | 0.423 | 0.965 | 0.000 | 0.018 | 0.998 | 1.000 | -0.032 | 0.022 | 0.133 | 0.968 |
| bride's occupational class; RC: unskilled & farmer worker | | | | | | | | | | | | |
| elite | 0.119 | 0.097 | 0.219 | 1.127 | 0.005 | 0.033 | 0.871 | 1.005 | 0.057 | 0.025 | 0.024 | 1.059 |
| lower mid-class | -0.070 | 0.123 | 0.571 | 0.932 | -0.001 | 0.035 | 0.986 | 0.999 | -0.042 | 0.060 | 0.484 | 0.959 |
| self-employed famer/ fisherwoman | -0.157 | 0.066 | 0.017 | 0.855 | -0.101 | 0.044 | 0.022 | 0.904 | -0.048 | 0.021 | 0.021 | 0.953 |
| skilled | 0.151 | 0.035 | <.0001 | 1.163 | -0.009 | 0.019 | 0.616 | 0.991 | 0.062 | 0.023 | 0.008 | 1.064 |
| unclassified | 0.086 | 0.035 | 0.014 | 1.090 | -0.028 | 0.017 | 0.113 | 0.973 | 0.013 | 0.019 | 0.500 | 1.013 |
| bridegroom's marital age: RC average | | | | | | | | | | | | |
| early | 0.214 | 0.038 | <.0001 | 1.238 | 0.042 | 0.022 | 0.049 | 1.043 | 0.049 | 0.021 | 0.018 | 1.051 |
| late | 0.151 | 0.046 | 0.001 | 1.163 | 0.029 | 0.020 | 0.145 | 1.029 | 0.027 | 0.019 | 0.171 | 1.027 |
| missing | 0.089 | 0.113 | 0.427 | 1.094 | 0.002 | 0.102 | 0.987 | 1.002 | 0.182 | 0.101 | 0.071 | 1.199 |
| bride's marital age: RC average | | | | | | | | | | | | |
| early | 0.182 | 0.037 | <.0001 | 1.199 | 0.015 | 0.020 | 0.451 | 1.015 | 0.058 | 0.020 | 0.003 | 1.060 |
| late | 0.129 | 0.046 | 0.005 | 1.138 | -0.006 | 0.019 | 0.761 | 0.994 | -0.006 | 0.019 | 0.752 | 0.994 |
| missing | -0.064 | 0.119 | 0.591 | 0.938 | 0.093 | 0.092 | 0.314 | 1.097 | 0.045 | 0.095 | 0.635 | 1.046 |
| covparm | 0.022 | 0.007 | 0.001 | | 0.008 | 0.003 | | | 0.008 | 0.002 | <.0001 | 1.008 |
| -2 Log Likelihood | 79625.4 | | | | 174468 | | | | 172111 | | | |

**Table 3a: Marriages in Advent period and effects of socio-economic, cultural and spatial characteristics in West Flanders, Brussels and Flemish Brabant, 1800-1913**

| | West Flanders | | | | Brussels | | | | Flemish Brabant | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Effect | Estimate | StdErr | Probt | OR | Estimate | StdErr | Probt | OR | Estimate | StdErr | Probt | OR |
| Intercept | -5.164 | 0.069 | <.0001 | 0.006 | -4.481 | 0.203 | <.0001 | 0.011 | -4.753 | 0.084 | <.0001 | 0.009 |
| year | 0.000 | 0.001 | 0.829 | 1.000 | -0.001 | 0.000 | 0.002 | 0.999 | -0.002 | 0.000 | <.0001 | 0.998 |
| non-native bride, RC: native bride | 0.119 | 0.039 | 0.002 | 1.126 | 0.024 | 0.021 | 0.263 | 1.024 | 0.004 | 0.021 | 0.850 | 1.004 |
| non/native bride missing | 0.079 | 0.131 | 0.543 | 1.083 | -0.134 | 0.156 | 0.390 | 0.874 | -0.086 | 0.121 | 0.475 | 0.917 |
| non-native bridegroom, RC: native bridegroom | 0.021 | 0.038 | 0.586 | 1.021 | -0.010 | 0.022 | 0.649 | 0.990 | 0.003 | 0.019 | 0.864 | 1.003 |
| non/native bridegroom missing | -0.018 | 0.136 | 0.894 | 0.982 | 0.125 | 0.158 | 0.428 | 1.133 | 0.242 | 0.124 | 0.051 | 1.274 |
| city | 0.384 | 0.049 | <.0001 | 1.468 | | | | 1.000 | -0.029 | 0.030 | 0.335 | 0.971 |
| literate bride, RC: non-literate bride | -0.079 | 0.053 | 0.133 | 0.924 | -0.025 | 0.025 | 0.307 | 0.975 | 0.009 | 0.025 | 0.715 | 1.009 |
| literate bride missing | -0.108 | 0.126 | 0.392 | 0.898 | | | | 1.000 | | | | 1.000 |
| literate bridegroom, RC: non-literate bridegroom | -0.020 | 0.055 | 0.711 | 0.980 | -0.032 | 0.027 | 0.239 | 0.968 | 0.072 | 0.026 | 0.006 | 1.075 |
| literate bridegroom missing | 0.080 | 0.129 | 0.535 | 1.083 | | | | 1.000 | | | | 1.000 |
| less religious area | 1.420 | 0.041 | <.0001 | 4.135 | 1.820 | 0.201 | <.0001 | 6.175 | 1.884 | 0.080 | <.0001 | 6.578 |
| bridegroom's occupational class, RC: unskilled & farmer worker | | | | | | | | | | | | |
| elite | 0.016 | 0.141 | 0.910 | 1.016 | 0.037 | 0.057 | 0.518 | 1.038 | 0.038 | 0.073 | 0.597 | 1.039 |
| lower mid-class | 0.017 | 0.088 | 0.844 | 1.017 | 0.014 | 0.037 | 0.697 | 1.015 | -0.003 | 0.051 | 0.947 | 0.997 |
| self-employed famer/ fisherman | -0.069 | 0.076 | 0.364 | 0.933 | -0.122 | 0.060 | 0.041 | 0.885 | -0.035 | 0.028 | 0.202 | 0.965 |
| skilled | -0.232 | 0.051 | <.0001 | 0.793 | 0.003 | 0.025 | 0.909 | 1.003 | 0.007 | 0.028 | 0.811 | 1.007 |
| unclassified | 0.030 | 0.067 | 0.657 | 1.030 | 0.039 | 0.027 | 0.148 | 1.040 | 0.005 | 0.032 | 0.882 | 1.005 |
| bride's occupational class; RC: unskilled & farmer worker | | | | | | | | | | | | |
| elite | 0.035 | 0.153 | 0.821 | 1.035 | -0.033 | 0.050 | 0.515 | 1.052 | 0.095 | 0.038 | 0.012 | 1.099 |
| lower mid-class | -0.245 | 0.200 | 0.221 | 0.783 | 0.027 | 0.053 | 0.618 | 1.055 | -0.014 | 0.089 | 0.879 | 0.987 |
| self-employed famer/ fisherwoman | -0.366 | 0.108 | 0.001 | 0.693 | -0.050 | 0.066 | 0.450 | 1.068 | -0.058 | 0.031 | 0.059 | 0.944 |
| skilled | 0.193 | 0.054 | <.0001 | 1.213 | 0.050 | 0.029 | 0.080 | 1.029 | 0.059 | 0.035 | 0.085 | 1.061 |
| unclassified | 0.083 | 0.053 | 0.117 | 1.087 | 0.056 | 0.027 | 0.036 | 1.027 | 0.086 | 0.027 | 0.002 | 1.090 |
| bridegroom's marital age: RC average | | | | | | | | | | | | |
| early | 0.242 | 0.057 | <.0001 | 1.273 | -0.042 | 0.034 | 0.212 | 1.034 | -0.089 | 0.033 | 0.006 | 0.915 |
| late | 0.190 | 0.070 | 0.006 | 1.210 | 0.042 | 0.029 | 0.150 | 1.030 | 0.056 | 0.028 | 0.050 | 1.057 |
| missing | -0.049 | 0.175 | 0.780 | 0.952 | 0.159 | 0.148 | 0.282 | 1.159 | 0.285 | 0.140 | 0.042 | 1.330 |
| bride's marital age: RC average | | | | | | | | | | | | |
| early | 0.160 | 0.057 | 0.005 | 1.173 | -0.083 | 0.032 | 0.009 | 1.032 | -0.031 | 0.030 | 0.314 | 0.970 |
| late | 0.173 | 0.069 | 0.013 | 1.189 | 0.007 | 0.029 | 0.811 | 1.029 | 0.006 | 0.028 | 0.845 | 1.006 |
| missing | 0.120 | 0.182 | 0.511 | 1.127 | 0.043 | 0.141 | 0.760 | 1.152 | 0.160 | 0.134 | 0.233 | 1.174 |
| covparm | 0.036 | 0.012 | 0.001 | | 0.004 | 0.003 | 0.068 | | 0.003 | 0.002 | 0.031 | 1.003 |
| -2 Log Likelihood | 40663.2 | | | | 92815 | | | | 93748 | | | |

**Table 3b: Marriages in Lent period and effects of socio-economic, cultural and spatial characteristics in West Flanders, Brussels and Flemish Brabant, 1800-1913**

| | West Flanders | | | | Brussels | | | | Flemish Brabant | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Effect | Estimate | StdErr | Probt | OR | Estimate | StdErr | Probt | OR | Estimate | StdErr | Probt | OR |
| Intercept | -4.924 | 0.060 | <.0001 | 0.007 | -4.544 | 0.216 | <.0001 | 0.011 | -4.331 | 0.072 | <.0001 | 0.013 |
| year | 0.001 | 0.000 | 0.003 | 1.001 | -0.005 | 0.000 | <.0001 | 0.995 | -0.002 | 0.000 | <.0001 | 0.998 |
| non-native bride, RC: native bride | 0.179 | 0.033 | <.0001 | 1.196 | 0.067 | 0.018 | <.0001 | 1.069 | 0.085 | 0.018 | <.0001 | 1.088 |
| non/native bride missing | 0.169 | 0.109 | 0.121 | 1.184 | 0.272 | 0.117 | 0.020 | 1.312 | 0.077 | 0.100 | 0.443 | 1.080 |
| non-native bridegroom, RC: native bridegroom | 0.132 | 0.032 | <.0001 | 1.142 | 0.029 | 0.018 | 0.112 | 1.029 | 0.006 | 0.017 | 0.713 | 1.006 |
| non/native bridegroom missing | 0.216 | 0.113 | 0.055 | 1.242 | 0.128 | 0.129 | 0.323 | 1.137 | 0.140 | 0.109 | 0.199 | 1.150 |
| city | 0.444 | 0.046 | <.0001 | 1.560 | | | | | 0.010 | 0.029 | 0.739 | 1.010 |
| literate bride, RC: non-literate bride | -0.048 | 0.045 | 0.295 | 0.953 | -0.010 | 0.020 | 0.627 | 0.990 | -0.018 | 0.021 | 0.401 | 0.983 |
| literate bride missing | 0.058 | 0.101 | 0.569 | 1.059 | | | | | | | | 1.000 |
| literate bridegroom, RC: non-literate bridegroom | -0.057 | 0.047 | 0.225 | 0.945 | 0.015 | 0.023 | 0.520 | 1.015 | -0.049 | 0.022 | 0.026 | 0.952 |
| literate bridegroom missing | -0.113 | 0.105 | 0.280 | 0.893 | | | | | | | | 1.000 |
| less religious area | 1.568 | 0.034 | <.0001 | 4.797 | 2.245 | 0.214 | <.0001 | 9.439 | 1.906 | 0.068 | <.0001 | 6.725 |
| bridegroom's occupational class, RC: unskilled & farmer worker | | | | | | | | | | | | |
| elite | -0.021 | 0.122 | 0.861 | 0.979 | -0.120 | 0.049 | 0.014 | 0.887 | -0.124 | 0.067 | 0.062 | 0.883 |
| lower mid-class | -0.065 | 0.079 | 0.410 | 0.937 | -0.020 | 0.030 | 0.507 | 0.980 | -0.030 | 0.044 | 0.498 | 0.970 |
| self-employed famer/ fisherman | -0.179 | 0.064 | 0.006 | 0.836 | -0.047 | 0.048 | 0.332 | 0.954 | -0.032 | 0.024 | 0.181 | 0.969 |
| skilled | -0.072 | 0.042 | 0.088 | 0.931 | -0.016 | 0.021 | 0.432 | 0.984 | -0.006 | 0.024 | 0.784 | 0.994 |
| unclassified | -0.084 | 0.058 | 0.150 | 0.920 | -0.027 | 0.022 | 0.222 | 0.973 | -0.055 | 0.027 | 0.043 | 0.946 |
| bride's occupational class; RC: unskilled & farmer worker | | | | | | | | | | | | |
| elite | 0.180 | 0.122 | 0.139 | 1.197 | 0.028 | 0.041 | 0.488 | 1.029 | 0.017 | 0.032 | 0.602 | 1.017 |
| lower mid-class | 0.052 | 0.153 | 0.733 | 1.054 | -0.028 | 0.043 | 0.513 | 0.972 | -0.062 | 0.076 | 0.418 | 0.940 |
| self-employed famer/ fisherwoman | -0.020 | 0.082 | 0.803 | 0.980 | -0.114 | 0.055 | 0.038 | 0.892 | -0.036 | 0.026 | 0.164 | 0.964 |
| skilled | 0.113 | 0.046 | 0.014 | 1.119 | -0.040 | 0.023 | 0.082 | 0.961 | 0.053 | 0.029 | 0.068 | 1.055 |
| unclassified | 0.084 | 0.045 | 0.065 | 1.088 | -0.071 | 0.021 | 0.001 | 0.931 | -0.047 | 0.024 | 0.047 | 0.954 |
| bridegroom's marital age: RC average | | | | | | | | | | | | |
| early | 0.183 | 0.049 | <.0001 | 1.201 | 0.090 | 0.026 | 0.001 | 1.094 | 0.134 | 0.026 | <.0001 | 1.143 |
| late | 0.113 | 0.060 | 0.062 | 1.120 | 0.016 | 0.024 | 0.516 | 1.016 | 0.001 | 0.025 | 0.966 | 1.001 |
| missing | 0.180 | 0.143 | 0.208 | 1.197 | -0.110 | 0.129 | 0.395 | 0.896 | 0.066 | 0.132 | 0.615 | 1.069 |
| bride's marital age: RC average | | | | | | | | | | | | |
| early | 0.189 | 0.048 | <.0001 | 1.209 | 0.076 | 0.025 | 0.002 | 1.079 | 0.110 | 0.025 | <.0001 | 1.117 |
| late | 0.089 | 0.060 | 0.137 | 1.093 | -0.014 | 0.024 | 0.559 | 0.986 | -0.014 | 0.025 | 0.581 | 0.987 |
| missing | -0.200 | 0.153 | 0.191 | 0.819 | 0.115 | 0.112 | 0.307 | 1.121 | -0.053 | 0.124 | 0.667 | 0.948 |
| covparm | 0.031 | 0.010 | 0.001 | | 0.010 | 0.004 | 0.011 | | 0.013 | 0.003 | <.0001 | |
| -2 Log Likelihood | 53264 | | | | 127340 | | | | 120333 | | | |

## 6. Discussion and conclusion

The 19th century was the age of industrialization, urbanization and certain aspects of secularization. This trend is reflected in changes in marriage behavior such as an increase in the proportion of marriages taking place during the restricted periods of Lent and Advent. The purpose of this paper was to examine the occurrence of marriages in these periods, and to study the determinants, i.e. the socio-economic, cultural and geographic drivers. Daily Lent and Advent-indexes were calculated, taking account of the exact historical timing of the Lent period. The analysis is performed on the basis of historical civil marriage registers in western and central Belgium (West Flanders, Flemish Brabant and Brussels-capital) throughout the 19th century. Our results are largely in line with our hypotheses. In the first place, the analysis points to decreasing compliance with religious rules, in particular over the course of the second half of the 19th century, in the three areas. DLA-indexes do increase gradually, meaning that more marriages were taking place during Advent and Lent, pointing to reduced compliance with religious rules. However, substantial spatial differences (city versus non-city) remain. In general, spatial effects on the timing of marriage are present: non-compliance with rules in cities and in less religious municipalities. Strong social class effects are also present but not entirely in the expected direction because of clear area differences in addition to different class effects between brides and grooms. For instance, we find evidences of low likelihood to marry during Lent for elite grooms, but high likelihoods to marry during Advent and Lent for skilled brides and also to some extent, to marry during Advent for elite brides. Also, strong effects for non-native brides are confirmed, but not consistently for non-native grooms. Reduced compliance of young brides is found in all locations, possibly associated with prenuptial pregnancies (Reher & Gimeno 2006). Compliance with rules is higher for Lent than for Advent, at least until the 1880s, except for Brussels-capital, where Lent marriage levels even surpass Advent marriage levels in the beginning of 20th century.

These findings are largely in line with previous research. The increasing proportion of marriages during Advent and Lent is in line with case studies for Antwerp (Matsuo & Matthijs 2018a) and all provinces in Belgium (Lesthaeghe & Lopez-Gay 2013), showing increasing levels of secularization during the 19th century. Also, the strong effects of living in less religious municipalities and living in cities (confirmed in West Flanders) on marrying during Advent and Lent are in line with other findings (Matthijs & Van de Putte 2001, Matsuo & Matthijs 2018a/b). The fact that compliance for Lent is stronger than for Advent reconfirms other studies (Matthijs & Van de Putte 2001, Ruiu & Breschi 2015, Engelen 2017). The same applies to occupational class effects of grooms in particular for Lent marriages, where the higher social classes (i.e. elite, middle class) do not follow the rules as much as agricultural labourers do (Dribe & Van de Putte 2012). This suggest that religious control prevailed in western and central Belgium during the 19th century, demonstrating the continuous strong church position.

There are several contributions of this paper to the previous research. First, the DLA index used in this paper considered the precise timing of Advent and, more importantly, the varying timing of the Lent period. Also, this precise timing allowed us to measure the level of secularization that increased during the second half of 19th century, but also its stagnation at the beginning of 20th century. Secondly, the paper studied the occurrence of marriages in these religious closed periods, and the socio-economic, cultural and geographic drivers in the under-explored Central and Western Belgium (i.e. West Flanders, Flemish Brabant and Brussels-capital). Our analysis identified that these changes are driven by, in addition to the self-employed farmers and fishermen regardless of gender, but also

by less religious municipalities and by non-native, skilled and to some extent elite brides. The evidence of low likelihoods of Lent marriages for elite grooms aligns with previous research findings (Dribe & Van de Putte 2012, Engelen 2017), but our research additionally identified another dimension: high likelihoods of Advent and Lent marriages for skilled brides, and high likelihoods of Advent marriages for elite brides, although with geographic specificity.

The above results must be kept in perspective though. While the analysis showed increasing secularization during the 19th century, apparently secularization reaches a plateau in the beginning of 20th century (see also further empirical evidence of 20th century by Wattelar & Wunsch 1967). The start of the First World War (1914-18) and the relatively short observation period since the first transition in 1880, makes it difficult to evaluate this development throughout the 20th century (our analysis stops in 1913). Also, on the one hand Belgium encountered the erosion of the so-called European marriage model, shifting from late and less marriage to early and more marriage model during the study period. On the other hand, there are less marriages during Advent and Lent that may be related to prenuptial pregnancies and are avoided due to the spread of fertility control techniques and knowledge (Van Bavel 2004).

Although our analysis showed the strength of secularization from the mid-19th century and thereafter, it could not examine the effects of changes in socio-economic factors (i.e. decreases in the importance of the agrarian labor force, or declining women's labor force participation) on the likelihoods of marriages during Advent and Lent. We could not fully explain increasing and stagnating levels of secularization. Against this background, increasing digitized big data on historical demographic records certainly opens up great opportunities for data access, data standardization and actual research. This can be achieved by linking longitudinal records from historical population census, parish and civil registers in order to make extensive use of changes in individual and familial socio-economic, spatial and demographic characteristics. Such developments are important for the cross-national and cross-regional historical and demographic research.

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