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The Influence of the Liturgical Calendar on the Seasonality of Conception in Early Modern Poland and Silesia

Wpływ kalendarza liturgicznego na sezonowość poczęć w nowożytnej Polsce i na Śląsku

Abstract

In the article, I discuss the seasonality of marriages, conceptions and first conceptions in early modern communities from the territory of present-day Poland. I looked for the influence of the Catholic liturgical calendar there. The source basis was the data published so far in the literature. The analysis shows that church restrictions forced the faithful to marry in the months immediately before Lent and Advent. This resulted in an increase in post-marital sexual activity during the period when abstinence was recommended. This conclusion weakens the notion that the Catholic Church controlled the daily lives of early modern Polish inhabitants.

Abstrakt

W artykule omówiono sezonowość małżeństw, poczęć i pierwszych poczęć w społecznościach nowożytnych z terenu obecnej Polski. Poszukiwano w niej wpływu katolickiego kalendarza liturgicznego. Podstawę źródłową stanowiły dane opublikowane dotychczas w literaturze. Z analizy wynika, że restrykcje kościelne zmuszały wiernych do zawierania małżeństw w miesiącach bezpośrednio przed Wielkim Postem i adwentem. Skutkowało to wzrostem poślubnej aktywności seksualnej w okresie, w którym zalecana była wstrzemięźliwość. Wniosek ten osłabia przekonanie o kontrolowaniu przez kościół katolicki życia codziennego mieszkańców nowożytnej Polski.

Keywords

liturgical calendar, conception seasonality, marriage seasonality, parish registers, church regulations, sexual abstinence, Lent, Advent

Słowa kluczowe

kalendarz liturgiczny, sezonowość poczęć, sezonowość małżeństw, księgi parafialne, przepisy kościelne, wstrzemięźliwość seksualna, Wielki Post, adwent

Introduction

In the feature-length film *The Meaning of Life* (Terry Jones, 1983)[1] the famous comedy group Monty Python featured a scene depicting two families. The skit is of interest as a satire on the behavior of representatives of two faiths—Protestants and Catholics—that operate on the following contrasts: lack of birth control/birth control, high/low fertility, poverty/affluence. There is also the question of the frequency of sexual relations in marriage. The question of how far the models shown were in line with past reality can be answered in various ways. The first approach may be to determine a theoretical model based on church rules. The second is to reconstruct customs on the basis of narrative texts.[2] The third way is through the statistical analysis of mass sources.[3] The last two methods actually serve to validate the results of the first.

The aim of this work is to conduct a comparative analysis of the seasonality of conception in various early modern communities, and thus to try to answer the question of how it reflected denominational specificity, and therefore whether and how it was influenced by the liturgical calendar. The principal point of reference will be Catholic communities, as it was they whose church regulations were the most strict, and by implication, unambiguous.

The need for such research is dictated by certain shortcomings of Polish studies fundamental to the issue of seasonality of conception in early modern times.First, as a general introduction to the issue, the text by Edmund Piasecki and Ryszard Wrona treats religious factors very superficially,[4] while many works omit them entirely. Secondly, in the latest textbook on the demography of the Polish-Lithuanian

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[1] *Monty Python's The Meaning of Life*, dir. Terry Jones, United Kingdom: Universal Pictures, 1983.

[2] See e.g., Piotr Guzowski, "W poszukiwaniu gospodarki protestanckiej," in *Studia nad reformacją*, eds. Elżbieta Bagińska, Piotr Guzowski, and Marzena Liedke (Białystok: Uniwersytet w Białymstoku, 2010), 111–35.

[3] See e.g., Cezary Kuklo, "Czy reformacja wpłynęła na struktury demograficzne rodziny i jej funkcjonowanie w epoce staropolskiej?," *Czasy Nowożytne* 31 (2018): 55–71.

[4] Edmund Piasecki and Ryszard Wrona, "O sezonowości urodzeń," *Materiały i Prace Antropologiczne* 95 (1978): 155–72.

Commonwealth,[5] as well as some monographs,[6] one may come across the somewhat perplexing notion that the Catholic Church recommended sexual abstinence to the faithful in Advent. According to Agnieszka Liczbińska, the impact of this order was still huge in the 19th and 20th centuries, although neither the authors nor the data she cites suggest anything of the sort.[7] On the other hand, historians have also expressed opinions to the contrary. Zbigniew Kuchowicz, for example, stated that abstinence from intercourse during fasting periods was widely ridiculed in the 17th century, and by the following century had been completely forgotten.[8]

Sources and Method

The seasonality of vital statistics in demographic studies is defined as the distribution of events in each distinct sub-period. The reference point can be months, quarters and half-years. The inclusion of the latter two categories remains in practice an extension of fundamental procedures.

A standard seasonality study for the early modern era is performed using an aggregate method on the basis of the corresponding one from three sets of parish registers (baptisms, marriages, funerals).[9] The data obtained are organized in a statistical series that includes years and months. Theoretically, it is important to opt for a continuous register, but it is also possible to successfully carry out research on intermittently broken series. Much more crucial for the reliability of the result seems to be the mass scale of the figures obtained, which makes it possible to ignore random fluctuations.

The other important factor is the long period of observation, which lends itself to division into sub-periods (usually centuries, half centuries, quarters or decades), which makes it possible to observe changes over time. It is also necessary when

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[5] Cezary Kuklo, *Demografia Rzeczypospolitej przedrozbiorowej* (Warszawa: Wydawnictwo DiG, 2009), 352.

[6] E.g., Konrad Rzemieniecki, "Ludność parafii radzionkowskiej 1801–1850," *Przeszłość Demograficzna Polski – Poland's Demographic Past* (hereafter: *PDP*) 23 (2002): 46; Mateusz Wyżga, *Parafia Raciborowice od XVI do końca XVIII wieku. Studium o społeczności lokalnej* (Kraków: Księgarnia Akademicka, 2011); 155; Piotr Rachwał, *Ruch naturalny ludności rzymskokatolickiej w Lubelskiem w świetle rejestracji metrykalnej z lat 1582–1900* (Lublin: Wydawnictwo Katolickiego Uniwersytetu Lubelskiego, 2019), 245; Piotr Miodunka, *Społeczność małych miast południowej Małopolski od końca XVI do końca XVIII wieku* (Kraków: Universitas, 2021), 419.

[7] Grażyna Liczbińska, *Lutherans in the Poznań Province: Biological Dynamics of the Lutheran Population in the 19th and Early 20th Centuries* (Hamburg: Verlag Dr. Kovač, 2015), 113, 117.

[8] Zbigniew Kuchowicz, *Wpływ odżywiania na stan zdrowotny społeczeństwa polskiego w XVIII wieku* (Łódź: Uniwersytet Łódzki, 1966), 145.

[9] Although these sources are widely used, historians point out a number of problems with them; see Thomas H. Hollingsworth, "The Importance of the Quality of the Data in Historical Demography," *Daedalus* 97 (1968): 416–25.

studying small localities with a small number of events per year. In their influential work, Michael Fleury and Louis Henry stated that the seasonality of births in towns with fewer than 500 residents should be analyzed in 100-year periods, in villages with 500 to 1,500 residents in 50-year periods, and only in larger communities should they be analyzed in 20-year periods. According to Fleury and Henry, the monthly distribution of weddings should always be studied in 100-year periods.[10] In practice, these guidelines are rarely used.

Outside sub-periods for the seasonality of conceptions/births (C/B[11]) one can also distinguish between the first (1C) and subsequent (2nC) children in a family. For this, however, we must abandon the aggregative method and use at least the reduced reconstruction of families, which has a reputation among researchers for being both "the most perfect"[12] and the most labor-intensive. In addition to more effort, it also requires less broken sources. In order to determine without confusion which birth was the first, the series of registers must not have gaps. In principle, we should also have unbroken marriage registers parallel to the registration of baptisms. In practice, however, 100% of events were not recorded anyway. Presumably for this very reason, with isolated exceptions,[13] historians abandon this procedure.[14]

As a rule, the baptisms of second and subsequent children from multiple pregnancies, since they result from one and the same conception, should be excluded from the seasonality of births study. On the other hand, out-of-wedlock and premarital conceptions should be included separately;[15] the former, as in no way related to the monthly distribution of marriages, and the latter, as influencing rather than determined by it. Typically, studies of birth seasonality do not take gender into account in the belief that there is no correlation.[16]

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[10] Michel Fleury and Louis Henry, *Nouveau manuel de dépouillement et d'exploitation de l'état civil ancien* (Paris: Éditions de l'Institut National d'Études Démographiques, 1965), 103–105.

[11] In my work I use the following abbreviations: births—B, conceptions—C, first conceptions—1C, second and subsequent conceptions—2nC, marriages—M.

[12] Witold Kula, *Problemy i metody historii gospodarczej* (Warszawa: PWN, 1963), 427–28.

[13] Cezary Kuklo, "Funkcjonowanie społeczności parafialnej na tle analizy rejestracji chrztów parafii Trzcianne 1600–1654," in *Społeczeństwo Staropolskie*, ed. Andrzej Wyczański, vol. 3 (Warszawa: PWN, 1983), 214–15; Krystyna Górna, "Sezonowość ruchu naturalnego ludności ewangelickiej w parafii Rząśnik w latach 1794–1874," *Śląski Kwartalnik Historyczny Sobótka* 4 (1984): 570; Edmund Piasecki, *Ludność parafii bejskiej (woj. kieleckie) w świetle ksiąg metrykalnych z XVIII–XX w. Studium demograficzne* (Warszawa–Wrocław: PWN, 1990), 106; Rzemieniecki, "Ludność parafii," 47.

[14] Unfortunately, seasonality studies using family reconstructions are not always published; see, e.g., Konrad Kołodziejczyk, "Rodzina w parafii Nowy Korczyn w drugiej połowie XVIII wieku na podstawie ksiąg metrykalnych (część 1)," *PDP* 38, no. 3 (2016): 55–78, https://doi.org/10.18276/pdp.2016.3.38-03.

[15] Maciej Henneberg and Jerzy Kozak, "Sezonowość urodzeń w wiejskiej populacji dziewiętnastowiecznej: parafia Szczepanowo (woj. bydgoskie. Pałuki)," *Przegląd Antropologiczny* 42, no. 1 (1976): 20, 23.

[16] Ibidem, 20. In fact, such attempts are unsuccessful, see, e.g., Górna, "Sezonowość," 569.

Historiography usually studies the seasonality of vital statistics according to a discernible, although unsignaled, pattern. Authors writing on the subject first describe the opinions in the existing literature. They then report their own results using a line or bar chart, sometimes just a table.[17] Next, they indicate the months with the largest and smallest values, and list the factors they believe influenced this and not that shape of the resulting line. Some researchers follow up their chart with a reference to similar studies in other areas.

The research material for this study was taken from Catholic community studies published to date.[18] For the area of present-day Poland, these are villages in the parishes of: Lublin (Bochotnica, Bystrzyca, Dys, Krasienin, Konopnica, Niedrzwica, Piotrawin, Ratoszyn, Serniki, Targowisko, Wojciechów B and M

[17] The bar chart is used very occasionally; see Miodunka, *Społeczność*, 387–90, 417–18, 462, 464–65, who used it to illustrate the seasonality of conceptions, and deaths, but abandoned the use of any chart with marriages.

[18] Stanisław Waszak, "Dzietność rodziny mieszczańskiej i ruch naturalny ludności miasta Poznania w końcu XVI w. i w XVII wieku," *Roczniki Dziejów Społecznych i Gospodarczych* 16 (1954): 324–25, 331–38, 343–45; Emilia Brodnicka, "Ludność w parafii Wieleń nad Notecią w drugiej połowie XVIII w.," *PDP* 2 (1969): 198–200, 211–13; Bohdan Puczyński, "Ludność Brzeżan i okolicy w XVII i XVIII w. Część II: Ruch naturalny ludności," *PDP* 5 (1972): 19–20, 38–39; Gertruda Gralla, "Urodzenia i zgony w parafii Ziemięcie w pow. gliwickim w latach 1651–1970," *Przegląd Antropologiczny* 40, no. 2 (1974): 371; Janina Gawrysiakowa, "Badania demograficzne w parafii Bochotnica Kościelna," *PDP* 8 (1975): 99–103; Stanisław Borowski, "Procesy demograficzne w mikroregionie Czacz w latach 1598–1975," *PDP* 9 (1976): 115–30; Cezary Kuklo, "Próba analizy demograficznej rejestracji metrykalnej ślubów parafii Trzcianne w I połowie XVII w.," *PDP* 13 (1981): 105; Kuklo, "Funkcjonowanie," 203; Anna Siłuch, "Rejestracja metrykalna ślubów w parafii Ostrów Mazowiecka w XVII w.," *PDP* 14 (1983): 84–85; Górna, "Sezonowość," 569–570; Piasecki, *Ludność*, 105, 107; Maciej Górny, "Rejestracja metrykalna parafii Szaradowo z XVIII wieku," *PDP* 18 (1990): 131–32. Cezary Kuklo, *Rodzina w osiemnastowiecznej Warszawie* (Białystok: Dział Wydawnictw Filii Uniwersytetu Warszawskiego, 1991), 78–80, 108–12; Teresa Krotla, "Ludność parafii bielawskiej w latach 1766–1830 (na podstawie ksiąg metrykalnych)," *Śląski Kwartalnik Historyczny Sobótka* 46, no. 4 (1991): 421, 430; Ryszard Wójtowicz, "Z badań nad rozwojem demograficznym ludności parafii Siołkowice w latach 1766–1799," *Śląski Kwartalnik Historyczny Sobótka* 46, no. 4 (1991): 409–14; Mieczysław Kędelski, *Rozwój demograficzny Poznania w XVIII i na początku XIX wieku* (Poznań: Wydawnictwo Akademii Ekonomicznej, 1992), 29, 78; Jerzy Spychała, "Śluby w parafii Strzelce Opolskie w latach 1766–1870," *Acta Universitatis Wratislaviensis. Historia* 117 (1995): 10; Maciej Górny, "Metryki chrztów z parafii smoguleckiej. Część 1: Lata 1592–1618," *Genealogia* 5 (1995): 109–40; Maciej Górny, "Metryki chrztów z parafii smoguleckiej. Część 2: Lata 1619–1652," *Genealogia* 6 (1995): 91–132; Maciej Górny, "Zawarcie małżeństwa na wsi pałuckiej w XVIII wieku. Parafia szaradowska," *Genealogia* 7 (1996): 71; Karolina Korenda, "Chrzty w parafii Pszczew w latach 1632–1667," *Rocznik Lubelski* 27, no. 2 (2001): 74; Rzemieniecki, "Ludność parafii," 32–33, 47; Karolina Korenda, "Rejestracja metrykalna parafii Pszczew z XVII wieku," *PDP* 24 (2003): 55, 61; Małgorzata Żmijewska, *Ludność parafii tyskiej od 1749 roku do połowy XIX wieku w świetle ksiąg metrykalnych. Studium demograficzno-społeczne* (doctoral thesis, Katowice: Uniwersytet Śląski, 2007), 62, 136; Kuklo, *Demografia*, 299, 301, 351, 353; Wyżga, *Parafia*, 150–55, 187–90; Anna Miesiąc-Stępińska and Konrad Rzemieniecki, "Ludność katolicka i ewangelicka Kępna w XVIII wieku," *PDP* 30 (2011): 59–60; Konrad Rzemieniecki, "Ludność rzymskokatolickiej parafii Koropiec w latach 1704–1775," *PDP* 36 (2014): 32, 34; Rachwał, *Ruch*, 184–85, 809–14, 839–43, 862–74, 928–37, 983–88; Miodunka, *Społeczność*, 389, 417.

1701–1800), Lesser Poland (Bejsce B 1746–1967; Raciborowice B 1675–1795, M 1604–1795), Podlasie (Choroszcz B and M 1756–1800; Trzcianne B 1600–1654, M 1611–1650), Ruthenia (Brzeżany B 1688–1800, M 1641–1800; Koropiec B and M 1711–1775); Silesia (Bielawa M 1766–1800; Radzionków B and M 1811–1850; Siołkowice M 1766–1799; Strzelce Opolskie M 1766–1800; Tychy B and M 1749–1800; Ziemięcie B 1651–1800); Greater Poland (Czacz B and M 1601–1800; Pszczew B 1632–1667, M 1632–1693; Smogulec B 1592–1652; Szaradowo B and M 1721–1800; Wieleń nad Notecią B and M 1760–1800), Sieradz voivodeship (Kępno B and M 1711–1800); towns and semi-urban parishes: Lublin region (semi-urban parishes: Chodel, Kamionka, Kazimierz, Końskowola, Kurów, Lubartów, Markuszów, Opole, Wąwolnica M 1701–1800), Mazovia (Ostrów Mazowiecka M 1601–1700), Podlasie (Choroszcz M 1756–1800), southern Lesser Poland (Pilzno B 1669–1784, M 1665–1784; Przecław B 17th–18th c., M 1618–1680; Wojnicz B 1676–1787, M 1675–1787), Silesia (Strzelce Opolskie M 1766–1800), Ruthenia (Brzeżany B 1688–1800, M 1641–1800), Greater Poland (Wieleń nad Notecią B and M 1760–1800); and the following cities: Lublin (B 1612–1638, 1771–1800), Poznań (B and M 1577–1660, 1717–1792), Warsaw (B and M 1700–1799).

In order to control for changes in the seasonality of conceptions over time, the largest database available for the territory of former Poland was used, covering parishes from the area of today's Lublin Voivodeship published by Piotr Rachwał[19] (table 1).[20]

In compiling the data, efforts were made to make the range of choices as broad as possible and to cover the earliest possible period. The lower limit inevitably had to be the second half of the 16th century as it was the point when parish registers were first introduced. However, as the quality and condition of the sources improved with time, much of the material covers the 18th century. The possibility for analyzing registration beyond the traditionally-understood early modern era was also not discounted, on the basis that later years represent a continuation of ongoing processes (population change, secularization, urbanization, and growing awareness of family planning). Second, 19th-century registers and their compilation lend themselves to greater scrutiny, as they consider more variables.[21]

In contrast, variables whose impacts were sought to be avoided were climatic and some cultural factors. Indeed, studies in larger areas have revealed significant differences in the seasonality of vital statistics depending on geographical location,[22]

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[19] In printed form: Rachwał, *Ruch*, 747–1021—available online at https://ksiegimetrykalne.pl/dane (accessed April 3, 2023).

[20] There are some ambiguities and difficulties associated with the issue of changing seasonality, to which I am not yet able to offer satisfactory solutions, so I only address this topic in passing.

[21] For example, the marital status of the betrothed; see Rzemieniecki, "Ludność parafii," 33.

[22] Micaela Martinez-Bakker et al., "Human Birth Seasonality: Latitudinal Gradient and Interplay with Childhood Disease Dynamics," *Proceedings: Biological Sciences* 281, no. 1783 (2014): 1–8.

e.g., the temperature,[23] the amount of light[24] or workload.[25] Therefore, the material was taken from a restricted area, covering the borders of contemporary Poland.[26] However, it comes from communities with different ethnic, cultural and economic backgrounds. It was divided into regions (Greater Poland, Podlasie, etc.) and by type (village, town, city).

In order to apply the relevant comparative method to demography in particular, it was necessary to use the seasonality index. The formula in its standard version is:

$$S1_i = \frac{\Sigma_i}{\Sigma} \times 1{,}200 = \frac{\Sigma_i}{\overline{x}} \times 100$$

where:
$S1_i$—Type 1 seasonality index for the i-th sub-period (given month); Σ_i—sum of events for the i-th sub-period; Σ—sum of events for the entire period (year); $\overline{x}$—average of events over the entire period.

Thus, the average ($\overline{x}$) is equated to 100, and the sum of events for the entire period (Σ) is equated to 1,200. However, this procedure is problematic in that, with a hypothetical situation in which there were exactly the same number of events on each consecutive day, the graph would not be perfectly flat. The resulting fluctuation would be caused by the varying length of the months. This is because the average ($\overline{x}$) is the sum of all the events (Σ) divided by the number of subperiods (12), rather than multiplied by the fraction corresponding to the ratio of the sum of the days in a given month to the total number of days for the entire year.

To eliminate this minor but distorting effect from the graph, in place of the average ($\overline{x}$), conversion factors (k_i) are introduced into the above equation calculated according to the formula:

$$k_i = \Sigma \frac{t_i}{t}$$

where: k_i – conversion factor for the i-th subperiod; t_i – number of days in the i-th subperiod; t – number of days in the entire period (to account for fluctuations due to leap years, it is assumed that $t_{II} = 28.25$, and $t = 365.25$).[27]

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[23] David A. Lam and Jeffrey A. Miron, "The Effects of Temperature on Human Fertility," *Demography* 33, no. 3 (1996): 291–305.

[24] Tomas A. Wehr, "The Durations of Human Melatonin Secretion and Sleep Respond to Changes in Daylength (Photoperiod)," *The Journal of Clinical Endocrinology and Metabolism* 73, no. 6 (1991): 1276–80.

[25] Gabriele Ruiu and Marco Breschi, "Intensity of Agricultural Workload and the Seasonality of Births in Italy," *European Journal of Population* 36, no. 1 (2020): 141–69.

[26] The exceptions are the parishes of Brzeżany and Koropiec, located in the Kingdom of Poland in the early modern era, which are now in Ukraine.

[27] See e.g., Darrett B. Rutman, Charles Wetherell and Anita H. Rutman, "Rhythms of Life: Black and White Seasonality in the Early Chesapeake," *The Journal of Interdisciplinary History* 11,

However, a more accurate method is widely used.[28] It uses the daily average for the month ($\overline{x}_i$), which is calculated according to the equation:

$$\overline{x}_i = \frac{\Sigma_i}{t_i}$$

We can then calculate the seasonality index by multiplying by 1,200 and dividing by the sum of the daily averages for the entire period ($\Sigma\overline{x}_i$), using the equation:

$$S3_i = \frac{\overline{x}_i \times 1,200}{\Sigma\overline{x}_i}$$

In practice, the difference between the rates calculated by methods *S*2 and *S*3 is actually negligible. It is more of an issue to compare either of them with those obtained by method *S*1, which lowers the values for February (May in the case of conceptions). In some cases, depending on which way is chosen, it may seem that the intensity of the occurrence was higher or lower in that month than in January. For example, for marriages in the 18th century in Warsaw, it would be 177 to 165 (*S*1) or 173 to 177 (*S*3).

Consequently, all the data extracted from the literature were recalculated according to the *S*3 procedure considered the most accurate. This necessity caused problems, as the methods of presenting the research vary. Only for some of the parishes[29] were tables shown recording events in each year separately, allowing the change in seasonality to be tracked accurately using moving averages. For the majority, for which absolute numbers are given, this was done by decade, less often by other periods or collectively. The hardest to use are the works in which the indices alone are given, sometimes with no indication of the method used to calculate them,[30] or they are not given at all, leaving the reader with only the graph and its interpretation.[31]

It is not so clear, however, whether it is more problematic to be economical in presenting data, which limits reproducibility, or to be generous with it. After all, it turns out that multiplying the numbers written out also increases the likelihood of error.[32]

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no. 1 (1980): 30–31; Edward A. Wrigley and Roger Schofield, *The Population History of England 1541–1871: A Reconstruction* (Cambridge, MA: Harvard University Press, 1981), 287.

[28] Its use is also recommended in instructional texts: Kuklo, *Demografia*, 162; Dariusz K. Chojecki, "O programowaniu w środowisku R na przykładzie algorytmu obliczeniowego dla sezonowości zjawisk metoda średnich jednoimiennych okresów," *PDP* 35 (2014): 76.

[29] Czacz, Ostrów Mazowiecka, Poznań, Radzionków, Trzcianne, Warszawa, Wieleń nad Notecią and the Lublin voivodeship. Similarly, transcriptions of parish registers can be used, Górny, "Metryki. Część 1": 109–40; Górny, "Metryki. Część 2," 91–132.

[30] E.g., for the parish of Radzionków: Rzemieniecki, "Ludność parafii," 32, 47.

[31] E.g., Elżbieta A. Puch, "Dynamika biologiczna polskich społeczności wiejskich z różnych systemów ekologiczno-kulturowych w XVIII i XIX wieku," *Przegląd Antropologiczny* 56 (1993), 1–2: 16, 20; Kuklo, "Funkcjonowanie," 214.

[32] For instance, in a table showing the seasonality of baptisms in the parish of Czacz from 1600 to 1975, there were as many as 69 inaccuracies between the author's stated and recalculated

Seasonality rates for conceptions are obtained by shifting the rates calculated for baptisms by 9 months. The difference between the day of birth and the first sacrament is ignored due to the widespread failure to state the former in the registers and the fairly strict adherence to the requirement to baptize children *cum primum* ("as soon as possible") – in order to avoid death without having been cleansed of original sin.[33] During the 18th and 19th centuries, an extension of the above difference was observed in the cities, but in practice, even in Warsaw, the largest city in the Polish-Lithuanian Commonwealth, 90% of children were baptized within their first week.[34] However, this still remains an assumption that potentially reduces the credibility of the conclusions.[35]

The Liturgical Calendar

Part of the theoretical model mentioned in the introduction that regulated vital statistics was the liturgical calendar, more specifically, the norms pertaining to sexuality and marriage that it entailed. Canon law prohibited Catholics from marrying during the periods of Lent including the octave of Easter and Advent until the feast of Epiphany (6 January).[36] The Roman Catechism, however, recommended sexual abstinence during times of special prayer ("Deum orandi, et obsecrandi causa" – "when the Lord God is prayed to" / "when the Lord God is prayed to more diligently")[37] with 2 instances specified.

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annual totals of events; see Borowski, "Procesy," 115–22. The decision to categorize the data by decade does not eliminate the problem. Tables showing the seasonality of births and marriages for 19th-century Toruń have a total of 35 inaccuracies; see Agnieszka Zielińska-Nowicka, *Przemiany struktur demograficznych w Toruniu w XIX i na początku XX wieku* (Toruń: Wydawnictwo Adam Marszałek, 2012), 374–77, 402–4.

[33] Bolesław Kumor, "Przepisy prawne w sprawie chrztu dzieci w XVI–XVIII w.," *PDP* 9 (1976): 49–52.

[34] Kuklo, *Rodzina*, 104–8.

[35] Skepticism about it was expressed by, e.g., Radosław Poniat, "Rodzina miejska," in *Rodzina i jej gospodarstwo na ziemiach polskich w geografii europejskich struktur rodzinnych do połowy XX wieku*, eds. Piotr Guzowski and Cezary Kuklo (Białystok: Instytut Badań nad Dziedzictwem Kulturowym Europy, 2019), 347.

[36] The Council of Trent reiterated the earlier ban, putting a curse on those who questioned it: Sobór Trydencki, Sesja 24: I/B, 11; I/C, 10, in *Dokumenty Soborów Powszechnych*, vol. 4, eds. Arkadiusz Baron and Henryk Pietras (Kraków: WAM, 2004), 718–19, 730–33.

[37] *Catechismus, ex decreto Concilii Tridentini, ad parochos* (Romae: in aedibus Populi Romani, apud Paulum Manutium, 1566), 396; *Katechizm albo nauka wiary i pobożności krześcijańskiej*, trans. Walenty Kuczborski (Kraków: Drukarnia Mikołaja Szarfenbergera, 1568), 262: "kiedy Panu Bogu modlić się mają"; *Katechizm Rzymski, to jest nauka chrześcijańska* (Kraków: Drukarnia Franciszka Cezarego, 1643), 235: "kiedy się pilniej Panu Bogu modlić mają." (Translated from the original Polish.)

Firstly, the 3 days preceding the Eucharist. Granted, people were encouraged to take communion as often as possible on Sundays and holidays as the fulfillment of the Third Commandment,[38] but practice may have deviated from this. In view of this, only the Easter Eucharist was prescribed.[39]

Secondly, Catholics should refrain from "matrimonial business" ("sprawa małżeńska") during Lent ("saepius vero cum sollemnia Quadragesimae ieiunia celebrantur").[40] There were 2 translations of the Roman Catechism into Polish in the early modern era.[41] Walenty Kluczborski's translation reflected the above recommendations accurately ("And more often they are to repeat the same when the Forty Day Fast comes"),[42] while in the one produced at the behest of Primate Stanisław Karnkowski, only "fasting" ("also while fasting") appears instead of forty days Lent,[43] which could lead to an overbroad interpretation. Church commandments outside the period leading up to Easter also ordered fasting on ember days and the eve of feasts.[44] The fasting days of the week, on the other hand, varied territorially. A Polish translation of Robert Bellarmine's catechism specified "Fridays according to provincial custom, and on no Saturday should meat be eaten."[45]

Also unclear is the phrase on abstinence at prayer time. Generally, Sundays and holidays were set aside for special prayer,[46] the schedule for which also varied from region to region.

Removing all of these dates from the standard calendar would reduce the number of days in the year when procreation was permitted to about 318 (87% of the year, excluding Lent), 202 (55%, excluding all fast days) or even 146 days (40%, excluding fasts and holidays),[47] which, it would seem, should have had a significant impact on the demographic potential of Catholic communities. Analysis of the impact of

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[38] *Catechismus*, 450; *Katechizm albo nauka*, 300; *Katechizm Rzymski*, 263.

[39] *Catechismus*, 275; *Katechizm albo nauka*, 185; *Katechizm Rzymski*, 157. (Translated from the original Polish.)

[40] *Catechismus*, 396.

[41] Tadeusz Gogolewski, "Bibliografia polskich przekładów katechizmu rzymskiego," *Collectanea Theologica* 24, nos. 1–4 (1953): 284–85.

[42] *Katechizm albo nauka*, 262: "A częściej toż powtarzać mają, kiedy Post święty czterdziestny przyjdzie." (Translated from the original Polish.)

[43] *Katechizm Rzymski*, 235: "także i o poście." (Translated from the original Polish.)

[44] Petrus Canicius, *Summa doctrinae Christianae* (Venetia, 1558), 55.

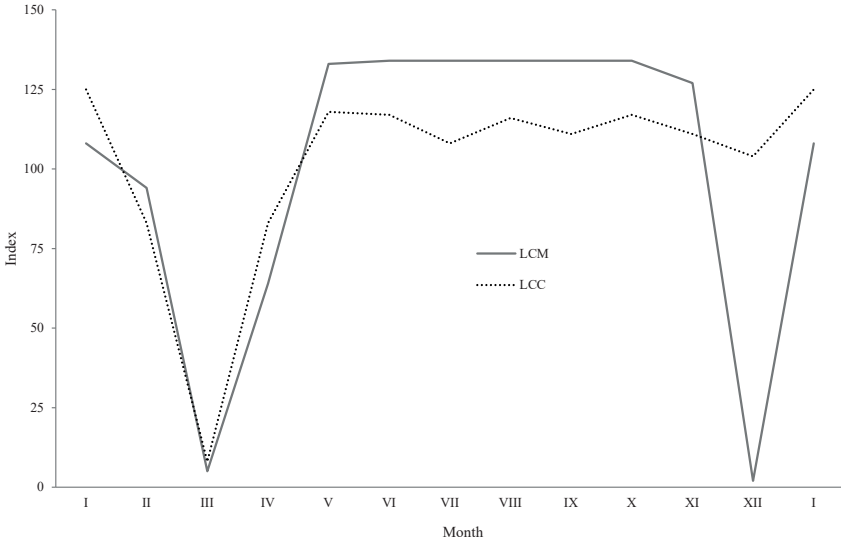
[45] Robert Bellarmin, *Summariusz nauki chrześcijańskiej*, trans. Marcin Szyszkowski (Kraków: Drukarnia Andrzeja Piotrowczyka, Typologia K.J.M., 1611), 28: "piątki wedle zwyczaju prowincyjej, a w żadną sobotę mięsa nie jeść." (Translated from the original Polish.)

[46] *Catechismus*, 451–52; *Katechizm albo nauka*, 300; *Katechizm rzymski*, 263–64.

[47] Own calculations based on Bronisław Włodarski, *Chronologia polska*, 2nd ed. (Warszawa: Wydawnictwo Naukowe PWN, 2013), 344–345; Izabela Skierska, "Kalendarz świąteczny na średniowiecznym uniwersytecie," *Roczniki Historyczne* 76 (2010): 27–75, 58–63.

the liturgical calendar on the seasonality of conceptions and marriages is rendered possible because it theoretically excluded March and December. Other fluctuations can be considered marginal (figure 1).

Figure 1. Monthly distribution of days allowed for weddings and procreation



Notes: LCM—distribution of days on which weddings could be performed; LCC—distribution of days not subject to the abstinence recommendation—Lent, ember days, Sundays, major holidays and fasting days of the week (Fridays and Saturdays) were excluded. To compensate for fluctuations caused by moving feast dates, seasonality indexes were calculated for collectively considered calendars for the period 1600–1699. The list of holidays was taken from the Cracow academic calendar as a sample.

Source: Włodarski, *Chronologia*, 344–45; Skierska, "Kalendarz," 58–63.

What is not entirely clear is the source of the view, prevalent in Polish historiography, regarding the doctrine of abstinence in Advent in early modern times. We do not find traces of it in the cited documents relating to the Council of Trent. They do not even mention fasting before Christmas. Perhaps there was an extension of the ban on marriage[48] or the ancient and early medieval guidelines.

[48] This may be suggested by the fact that in making this statement Mateusz Wyżga referred to a text that only refers to the prohibition of marriage; see Wyżga, *Parafia*, 155; Kuklo, "Próba," 102. Grażyna Liczbińska, on the other hand, cited a number of monographs, including one that does not examine the seasonality of conceptions at all, but only of marriages; see Grażyna Liczbińska and Ewa Nowak, "Reproductive Behavior in the Lutheran Urban Family from Historical Poland (the Parish of St. Peter from Poznań, the Second Half of the Nineteenth Century)," *The History of the Family* 20 (2014), 1: 123; Sabina Rejman, *Ludność podmiejska Rzeszowa w latach 1784–1880* (Rzeszów: Wydawnictwo Uniwersytetu Rzeszowskiego, 2006), 163.

In different variants, they banned procreation also before Christmas and Pentecost, on Mondays, Wednesdays, Thursdays and Saturdays. As a rule, however, these were recommendations of specific authors, and not universally binding norms.[49] The only older Polish regulations limiting marital life – the 1423 statutes of Bishop Jastrzębiec – only mention limiting sexual activity during pregnancy, menstruation and before the churching of women.[50] The French expert on Christian writings, Jean-Louis Flandrin, further argues that the Church's teaching clearly softened at the close of the Middle Ages, and theologians then even stopped requiring abstinence during Lent.[51]

Vital Events

The Seasonality of Conceptions

The monthly distribution of conceptions in the early modern era was remarkably even. Therefore, researchers are cautious about the results and sometimes refrain from acknowledging seasonality.[52] However, for most of the parishes under study, the pattern followed similar lines (see figures 2.1–2.3). As a rule, the peak of conceptions[53] was in May or June. In cities and towns, this high figure often continued into July, while in the countryside it tended to decline immediately for the remainder of the summer and sometimes into fall. A renewed increase in conceptions often began as late as fall, so that in winter there was again a higher rate, sometimes comparable to the spring peak.[54] The figures below (figures 2.1–2.3) show seasonality graphs arranged according to the above rules for rural, town and semi-urban communities, respectively.

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[49] Karlheinz Deschner, *Krzyż Pański z Kościołem. Seksualizm w historii chrześcijaństwa*, trans. Marek Zeller, 2nd ed. (Gdynia: Uraeus, 1994), 273; Jean Delumeau, *Grzech i strach. Poczucie winy w kulturze Zachodu XIII–XVIII w.*, trans. Adam Szymanowski (Warszawa: Instytut Wydawniczy PAX, 1994), 300, 309; Uta Ranke-Heinemann, *Eunuchy do raju. Kościół katolicki a seksualizm*, trans. Marek Zeller (Gdynia: Uraeus, 1995), 142; Reay Tannahill, *Historia seksu*, trans. Grzegorz Woźniak (Warszawa: Książka i Wiedza, 2001), 153.

[50] "Statuta Alberti Jastrzębiec Episcopi Cracoviensis, Cracoviae anno 1423 edita," ed. Udalricus Heyzmann, in *Starodawne Prawa Polskiego Pomniki*, vol. 4 (Kraków: Sumptibus Academiae Literarum, 1875), 74; Adam Krawiec, *Seksualność w średniowiecznej Polsce* (Poznań: Wydawnictwo Poznańskie, 2000), 75.

[51] Jean-Louis Flandrin, "Sex in Married Life in the Early Middle Ages," in *Western Sexuality. Practice and Precept in Past and Present Times*, eds. Philippe Ariès and André Béjin (Oxford: Blackwell, 1985), 120, 124.

[52] Liczbińska and Nowak, "Reproductive," 128.

[53] In some parishes, the highest peak occurred in January (Kępno—village), February (Choroszcz, Wieleń—village), September (Ziemięcie 1751–1800), October (Tychy) or December (Kępno—town).

[54] Choroszcz, Czacz, Poznań, Przecław, Pszczew, Trzcianne, Wieleń nad Notecią (even higher).

Figure 2.1. Seasonality of conceptions in rural areas

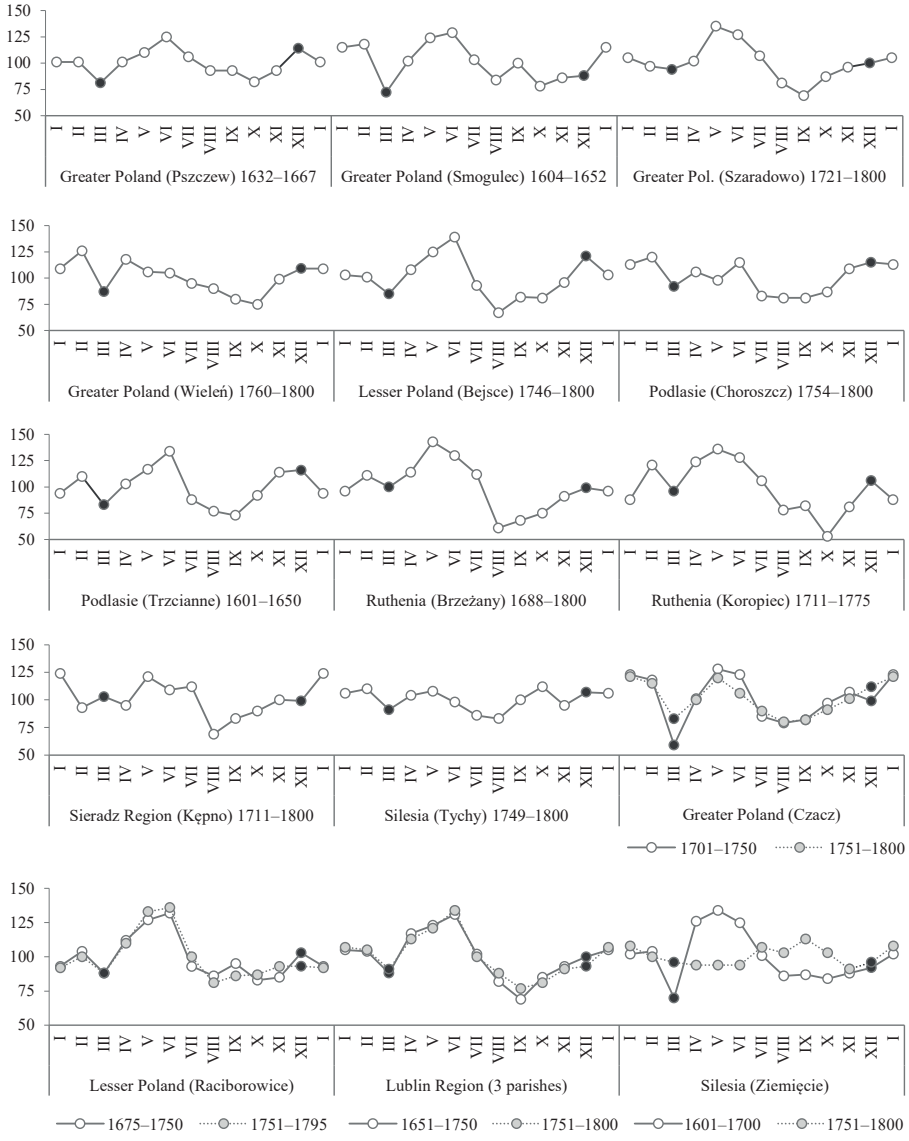


Figure 2.2. Seasonality of conceptions in towns and semi-urban parishes

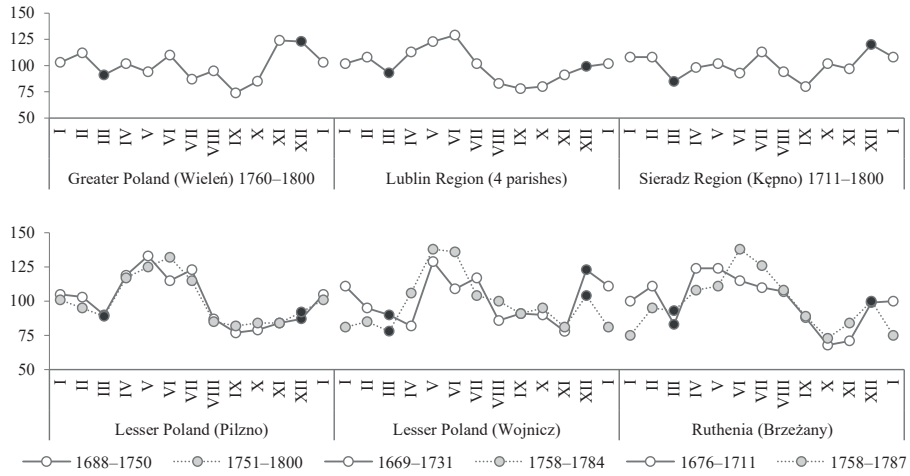
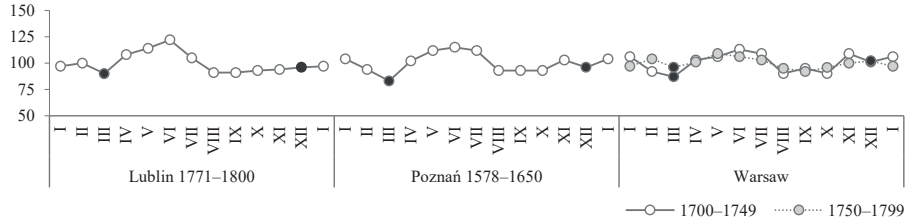


Figure 2.3. Seasonality of conceptions in cities



Note: lowest Σ = 937.

Source: as in footnote 19.

A common feature of these graphs is also the comparatively low rates for March. This occurrence is most often attributed precisely to the influence of the liturgical calendar. According to this assumption, spouses were supposed to be more willing to exercise sexual abstinence during the period corresponding to Lent. Only the more religious parishioners must have abstained from intercourse,[55] or would have limited it rather than giving it up entirely, since in fact the March rate still often remained around the average, although the decline compared to February is usually noticeable.

[55] For a similar conclusion, see Flandrin, "Sex," 124.

There are two problems with this model. First, this pattern is not repeated for the corresponding December Advent, although according to some historians we should expect this to happen.[56] It is true that for some locations there is a noticeable slight decrease compared to November, but for other places the trend is quite the opposite, and the December rate is sometimes one of the highest of the year. An answer to this problem could be found in the different statuses of Lent and Advent due to the greater importance of Easter, as well as the more pious nature of the preparations for it. Some studies suggest the ranking of the second period was lower in the public perception.[57] However, since December abstinence is not seen in either religious documents or seasonality graphs, it seems that this view should be abandoned.

In order to examine how the potential impact of the liturgical calendar changed over time, a statistical study was conducted on a larger sample of data for the area of present-day Lublin Voivodeship (table 1). Thirty-one parishes were included, with data for at least three sub-periods (1581–1650, continuing for 50 consecutive years until 1800) and with a total of at least 1,000 baptisms. Years in which at least one month was blank were excluded as potentially incomplete. The models compare the chance (odds ratio) of conception in March or December for successive sub-periods with respect to the 1581–1650 interval. In the second model, a variable was added as the logarithm of the number of baptisms in the parish to control for its magnitude.

Analysis of the results leads to the conclusion that the change over time is negligible. The probability of conception in March in subsequent sub-periods increases slightly.[58] For December, we can find no such pattern. The effects are of no significance, and even if saliences appear, they are easy to obtain with so many observations.[59]

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[56] Rzemieniecki, "Ludność parafii," 46; Liczbińska, *Lutherans*, 113, 117. Kuklo, *Demografia*, 352; Rachwał, *Ruch*, 245; Miodunka, *Społeczność*, 419.

[57] Grzegorz Myśliwski, *Człowiek średniowiecza wobec czasu i przestrzeni (Mazowsze od XII do poł. XVI wieku)* (Warszawa: Krupski i S-ka, 1999), 381–84.

[58] Cezary Kuklo, following Pierre Chaunu, explains this development by a shift away from Catholic asceticism starting in the 16th century, Kuklo, *Demografia*, 352; Pierre Chaunu, *Cywilizacja wieku Oświecenia*, trans. Eligia Bąkowska, 2nd ed. (Warszawa: Państwowy Instytut Wydawniczy, 1989), 101–2. Perhaps it should be viewed in the context of the de-Christianization trend cautiously signaled by Daniel Olszewski for the early 19th century; see Daniel Olszewski, *Przemiany społeczno-religijne w Królestwie Polskim w pierwszej połowie XIX wieku. Analiza środowiska diecezjalnego* (Lublin: Wydawnictwo Towarzystwa Naukowego Katolickiego Uniwersytetu Lubelskiego, 1984), 207–25, 266–69.

[59] Many thanks to Dr. Radosław Poniat for his assistance with this section.

Table 1. Change in the intensity of March and December conceptions over time in Lublin Voivodeship from 1581 to 1800

	Model 1		Model 2	
variable	odds ratio	confidence interval	odds ratio	confidence interval
		March conceptions		
(intercept)	0.07***	0.07–0.07	0.11***	0.09–0.13
1651–1700	1.15***	1.09–1.20	1.12***	1.07–1.18
1701–1750	1.17***	1.12–1.22	1.14***	1.08–1.19
1751–1800	1.21***	1.16–1.27	1.17***	1.12–1.23
nL [log]			0.96***	0.94–0.98
		December conceptions		
(intercept)	0.09***	0.09–0.09	0.11***	0.09–0.13
1651–1700	1.00	0.96–1.05	0.99	0.95–1.04
1701–1750	1.04**	1.00–1.08	1.03*	0.98–1.07
1751–1800	0.99	0.95–1.03	0.98*	0.94–1.02
nL [log]			0.098**	0.97–1.00
number of parishes = 31				
Σ = 345,434				

Note: statistical significance levels: ***0.001, **0.1, *0.5.

Source: Rachwał, *Ruch*, 747–1021—available online at https://ksiegimetrykalne.pl/dane (accessed April 3, 2023).

Secondly, the relatively low March rates are also characteristic of illegitimate conceptions.[60] If we stick to the above model, this fact would have to mean that during Lent people also refrained from intercourse, which anyway was seen as sinful in Christian morality. Whether this should apply to both consensual adultery and sexual violence remains to be seen. Dariusz Prucnal's study of Lublin in 1612–1638 revealed only that reduced March rates corresponded to both situations in which only

[60] Łąka 1664–1800, Raciborowice 1675–1795, Szczepanowo 1832–1874, Lublin 1612–1638: Ewa M. Ryguła, "Urodzenia pozamałżeńskie w parafii św. Mikołaja w Łące w latach 1664–1914," *PDP* 38, no. 2 (2016): 21, https://doi.org/10.18276/pdp.2016.2.38-01. Mateusz Wyżga, "Urodzenia pozamałżeńskie w podkrakowskiej parafii Raciborowice w XVII–XVIII wieku w świetle ksiąg metrykalnych," *PDP* 29 (2010): 159; Henneberg and Kozak, "Sezonowość," 20; Dariusz Prucnal, "Dzieci nieślubne w Lublinie w latach 1612–1638 (w świetle ksiąg chrztów parafii p.w. Michała Archanioła)," in *Rodzina i gospodarstwo domowe na ziemiach polskich w XV–XX wieku. Struktury demograficzne, społeczne i gospodarcze*, ed. Cezary Kuklo (Warszawa: Wydawnictwo DiG, 2008), 312. The occurrence persisted for a long time in Poland. Research in the late 1920s and early 1930s on data more accurate than early modern parish registers showed it for both Roman and Greek Catholics, as well as Orthodox and, to a lesser extent, Protestants; Piasecki, Wrona, "O sezonowości," 160.

the mother was recorded with an illegitimate child, and those in which both parents appeared.[61] In addition, it remains unclear to whom these moral restraints could apply: whether it was those notable for their piety, who would observe abstinence during Lent, but outside of it would have no problems with sexual relations also outside of marriage, or instead those who did not observe the pre-Easter restrictions in this aspect anyway, but who preferred to put off adultery as a greater sin to other months. This could have been accounted for, for example, by the *fornicatio* of engaged people, for which social consent was greater.[62]

Alternatively, biological factors can be suggested. Research on the female body confirms the impact on fertility not only of current energy status, but also of the overall energy balance, which adjusts to diet.[63]

During the pre-Easter period, Catholics were subject to a strict fast that limited the number of meals on weekdays, and abstinence on Sundays. Throughout the period, there was a ban on eating meat.[64] Particularly significant may have been the prolonged restriction on meat consumption, although in the early modern era it was not a daily part of the diet in other months either for the numerous population strata represented in the parish registers.[65] In addition, a low March rate is also observed in communities that do not consume meat regularly.[66]

Additionally, this period coincided largely with pre-harvest scarcity of food ("przednówek") that limited dietary options even for those who were not willing to adhere strictly to the fast. However, Cezary Kuklo noted that the pre-harvest period in itself is not the best explanation, since the noticeable increase in conception in April was not accompanied by greater access to food products.[67]

The Seasonality of Marriages

The monthly distribution of weddings is a much better-identified occurrence, but more importantly, more easily identified. While strict control of procreation was beyond the capabilities of even the most highly evolved parish administrations,

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[61] Prucnal, *Dzieci*, 313.

[62] Tomasz Wiślicz, *Upodobanie. Małżeństwo i związki nieformalne na wsi polskiej XVII–XVIII wieku. Wyobrażenia społeczne i jednostkowe doświadczenia* (Wrocław: Chronicon, 2012), 38–39, 44.

[63] Peter T. Ellison, Claudia R. Valeggia, and Diana S. Sherry, "Human Birth Seasonality," in *Seasonality in Primates: Studies of Living and Extinct Human and Non-Human Primates*, eds. Diane K. Brockman and Carel P. van Schaik (Cambridge: Cambridge University Press, 2005), 384.

[64] Zbigniew Kuchowicz, *Leki i gusła dawnej wsi. Stan zdrowotny polskiej wsi pańszczyźnianej w XVII–XVIII w.* (Warszawa: Ludowa Spółdzielnia Wydawnicza, 1954), 30. In Silesia, fasting was less strict: Czesław Nowiński, *Żywienie służby w folwarkach biskupstwa wrocławskiego w drugiej połowie XVII wieku* (Opole: Instytut Śląski w Opolu, 1968), 43.

[65] Kuchowicz, *Wpływ*, 115.

[66] Ester L. Rizzi and Gianpiero Dalla-Zuanna, "The Seasonality of Conception," *Demography* 44, no. 4 (2007): 706.

[67] Cezary Kuklo, "Rodzina w miastach i miasteczkach," in *Rodzina i jej gospodarstwo*, 98.

priests had the real power to refuse to bless a wedding during Advent and Lent. Cases of individual dispensation were absolutely exceptional and posed problems due to the fast limiting the possibilities for celebration.[68]

However, research on non-Catholic communities not covered by the religious ban on marriage in the weeks before Easter and Christmas shows that the situation was not necessarily one of refusal. Indeed, the Lenten marriage taboo persisted for quite a long time among Anglicans, Huguenots,[69] and Protestants in other regions of Europe.[70] In part, this can be explained by the conservatism of the clergy, but there is no doubt that it was mainly governed by cultural customs.

The departure from the "Catholic model of seasonality of marriage" with the flattening out of declines in March and December[71] only in some cases, such as Puritan New England,[72] was closely synchronized with the ushering in of the Reformation. This process was mostly staggered and can be observed at least until the 20th century. On the other hand, the modernization of the demographic regime was associated with a decline in the concentration of weddings in the months convenient within the calendar of agricultural work, so generally in the period after the sowing of crops.[73] This serves to indicate a decline in the percentage of the population working in agriculture, hence it was generally higher in cities[74] than in the countryside.

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[68] Kuklo, *Rodzina*, 90.

[69] Cressy, "The Seasonality," 7.

[70] Zielińska-Nowicka, *Przemiany*, 375–76; Theo Engelen, "What the Seasons Tell Us: The Monthly Movement of Marriages, Economic Modernization, and Secularization in the Netherlands, 1810–1940," *Historical Life Course Studies* 4 (2017): 172.

[71] Ron Lesthaeghe proposed MLA-index tools to study this occurrence: "Marriage seasonality, moral control and reproduction in Belgium (1600–1900)," *IPD-working* 4 (1989): 2–16.

[72] Cressy, "The Seasonality," 10.

[73] Engelen, "What the Seasons," 166. This is best seen when the marital status of the betrothed is included in the seasonality charts. Remarriages were more clustered in May and June than first weddings, reflecting the stronger economic compulsion for widowers and widows to augment their households before the heaviest field work, Wójtowicz, "Z badań," 409; Rzemieniecki, "Ludność parafii," 33. The interpretation of Maciej Górny, who sees in the significant share of remarriages outside spring and fall a specific nonconformism resulting from the freedom caused by the better economic status of widows and widowers, "Zawarcie," 71–2, seems unconvincing. In communities with a different economy, such as fishing, such a peak does not occur: Marion R. Hardy, "The Seasonality of Marriages and Baptisms in Some Devon Seafaring Parishes," *Local Population Studies* 106 (2021): 15.

[74] The presence of this peak in cities can be explained in part by the agricultural nature of the smaller towns, the inclusion of suburban villages within the urban parish, the rural origin of one of the betrothed, or the practice of marrying in the city among rural people temporarily residing in the city, e.g., as laborers; see Jan Baszanowski, *Przemiany demograficzne w Gdańsku w latach 1601–1846* (Gdańsk: Wydawnictwo Uniwersytetu Gdańskiego, 1995), 202.

Figure 3.1. Seasonality of marriages in rural areas

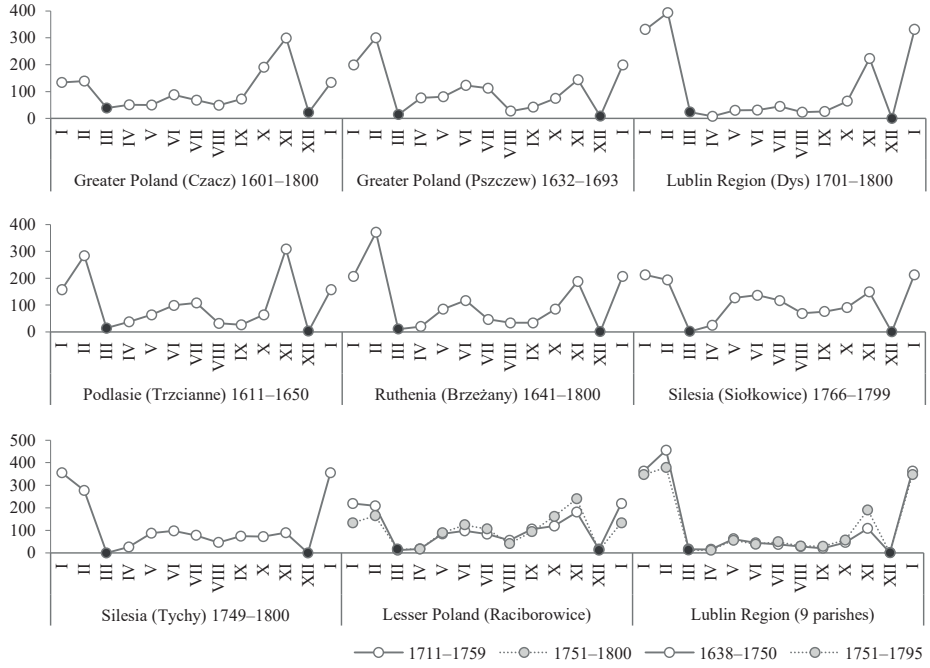


Figure 3.2. Seasonality of marriages in towns and semi-urban parishes

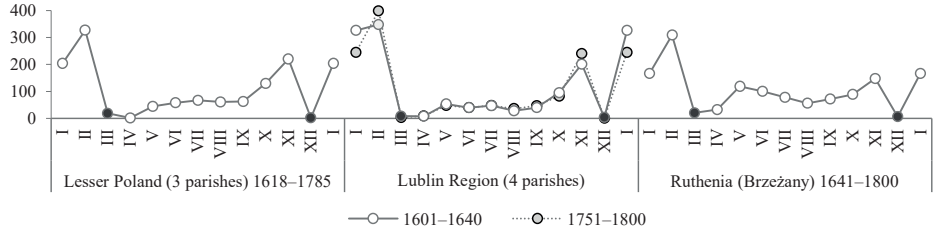
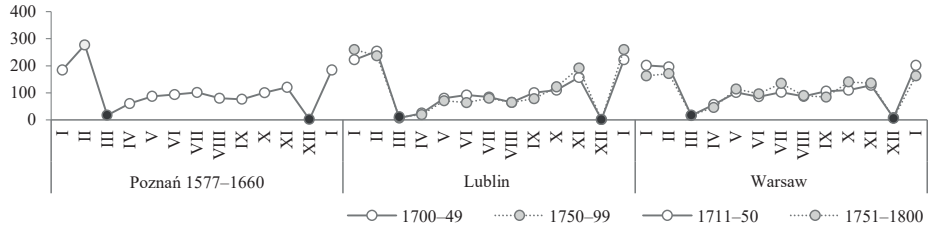


Figure 3.3. Seasonality of marriages in cities

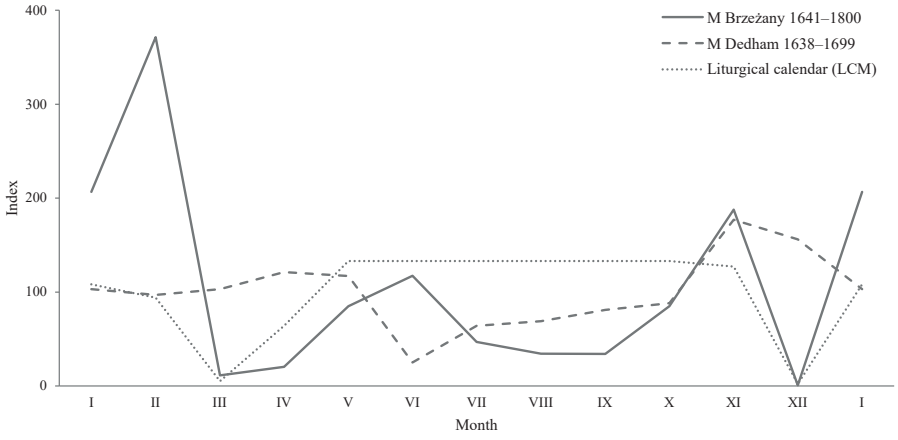


Note: lowest Σ = 846.

Source: as in footnote 19.

The graphs above (figures 3.1–3.3) show that the influence of the liturgical calendar was extremely pronounced in both rural and urban areas. It manifested itself in insignificant and often zero rates for the corresponding Lent and Advent months of March and December. Weddings, however, were not evenly distributed across the other months (in a manner similar to the LCM line). The distribution was determined by a number of factors that valued the fall and winter months at the expense of the summer months. We might expect that removing the influence of the liturgical calendar from the Brzeżany parish would align it in this regard with the Puritan region of Dedham, Massachusetts, which, despite the absence of March and December drop-offs, maintains low summer rates and high rates from fall to spring (figure 4).

Figure 4. Seasonality of marriages in the Roman Catholic parish of Brzeżany and the Puritan region of Dedham in the 17th and 18th centuries vs. the liturgical calendar



Note: Brzeżany Σ = 1,649; Dedham Σ = 2,217.

Source: own calculations based on Puczyński, "Ludność," 19; Cressy, "The Seasonality," 5.

It is worth noting that there is a significant overlap between the graphs of the seasonality of marriages and the "farming and financial calendar of Polish peasants," reconstructed by Piotr Guzowski from entries in the court books for the villages of Trześniowa and Wary from the 15th to 17th centuries. As in figures 3.1–3.4, we can see minimum values around Lent, Advent and late summer, maximum values for the beginning of the year and elevated values in May, June and fall.[75]

[75] Piotr Guzowski, "Kalendarz gospodarczy i finansowy kmieci polskich na przełomie średniowiecza i czasów wczesnonowożytnych," in *Człowiek wobec miar i czasu w przeszłości*, eds. Piotr Guzowski and Marzena Liedke (Kraków: Avalon, 2007), 40–1.

Counterintuitively, this similarity seems to support the researcher's objection to explaining the observed seasonality solely by the dominance of the church's temporal reckoning.[76] Indeed, in both cases the obvious influence of the liturgical calendar was similar – it limited activity around Lent and Advent. In the remaining months, village life was shaped according to other factors, primarily by work arrangements.

For marriages, the liturgical calendar excluded March and December. The decision to marry was therefore postponed until the remaining late fall and winter months. In practice, this meant a significant cluster of marriages before penitential periods (November, January and February). This observation is significant because of the widely acknowledged effect of the seasonality of weddings on the seasonality of conceptions.

The Seasonality of First Conceptions

One of the characteristics of pre-industrial societies was the very short period between marriage and the birth of the first child. This was due not only to limited options for contraception and family planning, but also to the belief that fertility was closely intertwined with marriage. This was expressed, on the one hand, in religious principles, which made offspring the primary goal of marriage, and on the other, in customs. Studies on the population of early modern England have shown the prevalence of permitting sexual contact between the betrothed before the wedding ceremony.[77] Premarital conceptions have also been observed among members of other faiths, as a result not only of intercourse between engaged couples, but also of forcing marriage.[78] In the second case, the instigator of the pressure may have been the woman pursuing her matrimonial strategy or the local community forcing the adulterer or rapist to marry his more or less voluntary partner.[79]

In his article from over 40 years ago, Edmund Piasecki wrote, "Any analysis that does not weed out the effect of the seasonality of marriages on the seasonality of births cannot contribute much to the issue at hand (it only confirms the existence of the seasonality phenomenon)."[80] The plea of the demographer is rarely heeded in the domestic backyard.

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[76] Ibidem, 42–5.

[77] Edward A. Wrigley et al., *English Population History from Family Reconstitution 1580–1837* (Cambridge: Cambridge University Press, 1997), 194–95.

[78] Kuklo, *Rodzina*, 207; Cezary Kuklo, "Czy społeczeństwo polskie w dobie oświecenia regulowało liczbę dzieci w rodzinach?," *Roczniki Dziejów Społecznych i Gospodarczych* 51/52 (1991/1990): 40.

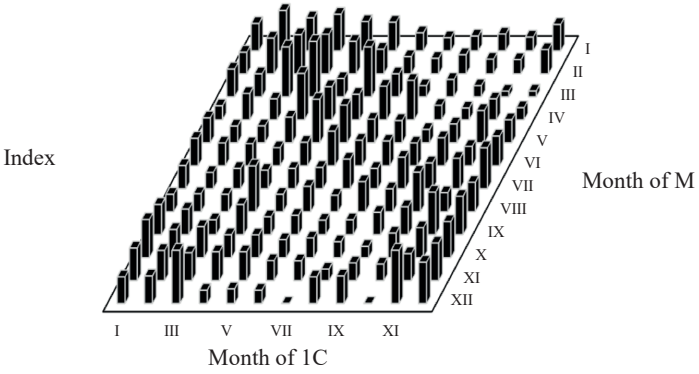
[79] Tomasz Wiślicz, *Zarobić na duszne zbawienie. Religijność chłopów małopolskich od połowy XVI do końca XVIII wieku* (Warszawa: Neriton, 2001), 141; Wiślicz, *Upodobanie*, 71–4.

[80] Piasecki and Wrona, "O sezonowości," 155, repeated in Piasecki, *Ludność*, 104. (Translated from the original Polish.)

The absolute exceptions in Polish historiography besides Piasecki himself include Cezary Kuklo and Konrad Rzemieniecki. Their studies on the seasonality of first conceptions in their works, however, vary[81] and thus do not make it possible to answer all the questions I would like to ask. This is because it is impossible to obtain the data needed to reconstruct the seasonality of second and subsequent conceptions from either the Bejsce or Trzcianne parish studies.

Cezary Kuklo stated that he would limit his study "only to tracing the first conceptions in marriage. This is because it is difficult to find interrelationships, let alone interdependencies between the date (time) of marriage and subsequent (apart from the first) conceptions."[82] From my point of view, the situation appears different. It seems to me that it is the seasonality of first conceptions that is less interesting, since the prevalence of short protogenetic periods[83] must have associated it closely with the seasonality of marriages.

Figure 5. The effect of the seasonality of marriages on the seasonality of first conceptions in the parish of Bejsce in 1746–1967



Notes: the graph was produced following the procedure used in Nonaka et al., "Effects," 707, but using the *S*3 indicator; Σ = 4,645.

Source: own calculations based on Piasecki, *Ludność*, 107.

[81] The study for Trzcianne cannot be repeated. This is because we do not know the seasonality rates for first conceptions. What is more, the total number of events included was probably only 170; see Kuklo, "Funkcjonowanie," 214–15.

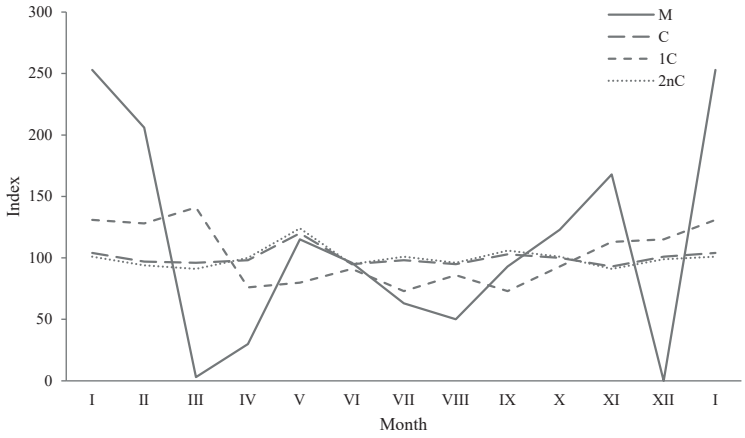
[82] Ibidem, 214–215. (Translated from the original Polish.)

[83] The average protogenetic intervals for Old Polish communities are relatively long (e.g., Bejsce—25.7 months, Nowy Korczyn—18.1, Warsaw—14.4), but an analysis of the distribution allows us to conclude that the median and determinant should be much lower. Thus, the most common breaks were short; Konrad Kołodziejczyk, "Rodzina w parafii Nowy Korczyn w drugiej połowie XVIII wieku na podstawie ksiąg metrykalnych (część 2)," *PDP* 39 (2017): 66–72, https://doi.org/10.18276/pdp.2017.39-04. Additionally, averages may be inflated by unrecorded miscarriages and stillbirths common in young women; Kuklo, *Demografia*, 338–39.

This relationship is illustrated in the graph below (figure 5). The height of the cuboids shown on it corresponds to the relative intensity of conceptions of first children (1C) depending on the month of marriage (M). The resulting shape shows that regardless of the wedding season, the highest accumulation of first conceptions occurred within a calendar quarter from that moment. For half of the sub-periods, the peak of conceptions occurred in the same month as the wedding or in the month following. Also of note is a certain concentration of conceptions in the months preceding marriage.[84] For all sub-periods (except for December, which recorded a negligible number of events—22 over the entire period), the pattern follows a similar path, yielding a regular shape similar to that obtained for Catholic Canada in the 17th and 18th centuries.[85]

It seems that that more questions arise from the graph of the seasonality of second and subsequent conceptions. This is because we can acknowledge the negligible influence of the rhythmicity of intergenetic periods (disrupted further, for example, by the death of an infant that characterized the pre-industrial period).[86] The exclusion of first conceptions from the study thus serves the function of eliminating the influence of marriage seasonality by giving us a graph without it.

Figure 6. Seasonality of vital events in the parish of Radzionków between 1801 and 1850



Note: C – Σ = 4,865; 1C – Σ = 468; 2nC – Σ = 4,397; M – Σ = 992.

Source: own calculations based on Rzemieniecki, "Ludność parafii," 32, 47.

[84] On the prevalence of premarital conception, see Wiślicz, *Upodobanie*, 71.

[85] Kay Nonaka et al., "Effects of Maternal Birth Season on Birth Seasonality in the Canadian Population During the Seventeenth and Eighteenth Centuries," *Human Biology* 62, no. 5 (1990): 707.

[86] Kuklo, *Demografia*, 193.

Only the data for the Radzionków parish in the first half of the 19th century give us the opportunity to analyze such a graph (figure 6). It turns out that the conception distribution was only slightly distorted by first births. This leads me to conclude that the influence of the seasonality of marriages on the corresponding regularity of births was limited, depending on the share of first births overall, which in this case amounted to about 9.6%.[87]

However, this influence has features that are quite pronounced and, above all, quite unexpected. First, the inclusion of the seasonality of first conceptions has a flattening effect on the overall graph,[88] which manifests itself in a decrease in amplitude from values of 33 (for 2nC) to 27 (for C) or an absolute deviation from 5.5 to 4.6 (for 1C: $A = 68$, $D = 21.4$). This means that the liturgical calendar has weakened the prominence of the remaining factors.

Secondly, also noticeable for the parishes of Bejsce and Trzcianne, the link between the preferred months for marriages and the peaks of conception assumes a very distinct pattern. In general, most first children were conceived in late fall and winter. However, a certain shift is noticeable, which, incidentally, is to be expected. Increases in conceptions follow increases in marriages. Only the January peak in first-child conceptions is preceded by a lack of marriages in December. Thus, these are the aftermath of the many November and January marriages.

More interesting are the rates of first conceptions during penitential periods. Indeed, both March and December first conceptions prove to be plentiful. The former even represent an annual peak. This occurrence contrasts with the commonly observed earlier rule manifested in relatively low March rates. Moreover, while the overall graph remains ambiguous as to whether the monthly distribution is indicative of fluctuations in sexual activity, opportunities for procreation, or its success, there is no doubt that the graph showing the seasonality of first conceptions reveals real "honeymoons." In Trzcianne, they occurred most often in February, November and March, while in Bejsce they fell in December and April, and in Radzionków in March, January and February. In each of these parishes, post-wedding sexual activity during Advent and Lent was high.[89]

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[87] Likewise, in the parishes of Bejsce (1746–1967)—10.3%, Rząśnik (1794–1874)—13.5%; Piasecki, *Ludność*, 106; Górna, "Sezonowość," 570.

[88] Therefore, conclusions for first conceptions should not be drawn from the overall graph; see Agnieszka Zielińska-Nowicka, "Zagadnienia sezonowości ruchu naturalnego w parafii rzymskokatolickiej Świętego Jana Chrzciciela w Toruniu w latach 1793–1914," *Rocznik Toruński* 34 (2007): 86.

[89] Agnieszka Zielińska-Nowicka explained the December and January increase in first conceptions observed in Toruń's reconstructed families also as a consequence of marriages before Advent. However, she did not show a seasonality graph, Zielińska-Nowicka, *Przemiany*, 144. The Protestant parish of Rząśnik breaks free from the norm in the 19th century. There, the March seasonality rate for first conceptions is the lowest in the year ($\Sigma_{III} = 26$ to the highest $\Sigma_X = 39$; $\Sigma = 386$), Górna, "Sezonowość," 569–70.

Thus, where we expected the impact of the liturgical calendar to be strongest, we found the opposite. And if the general assumption of a negative effect of the Lent diet on fertility is correct, it means that the March indicators that we obtained are on the low side.

Conclusion

The findings of our study on the impact of the liturgical calendar on the seasonality of conceptions turned out to be, firstly, not immediately obvious, and secondly, often contrary to explanations offered in Polish historical studies.

It would appear that the assertions regarding the significant influence of the liturgical calendar on the seasonality of conceptions in the early modern era should be scaled down. I found no evidence of abstinence during Advent, either in the documents related to the Council of Trent or in the general graphs. On the contrary, sexual activity in December was high. By contrast, March rates, which were generally reduced but remained around average, can be explained by the observance of abstinence, not so much in terms of sex, but in terms of food, as well as the limited dietary possibilities in the run-up to Easter, independent of religious stipulations.

The impact of marriage seasonality tightly regulated not only by church regulations (the prohibition of weddings in Advent and Lent), but also by the agricultural calendar (the preference for late fall and winter months) proved to be limited and even flattened out the overall graph of conception seasonality. This is surprising, since demographers usually link a flattening out of the monthly distribution of vital events with volitional factors.[90]

Alluding to Kazimierz Piesowicz's view,[91] that while in a "feudal society" the weekly reckoning was the vehicle for the clergy's supreme domination over the people, the monthly reckoning was clearly out of the clergy's control. The clergy were able to maintain compliance with the ban on marriage during Lent and Advent, but the effect of these regulations on the sexual activity of the faithful was counterproductive. The unavailability of weddings in the convenient months of March and December was made up for with a one-month advance, which, due to the short protogenetic periods characteristic of the pre-industrial era, made the time when sexual abstinence was required into de facto "honeymoons."

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[90] John Demos, *Circles and Lines: The Shape of Life in Early America* (Cambridge: Harvard University Press, 2004), 13.

[91] Kazimierz Piesowicz, "Rachuba czasu w społeczeństwie feudalnym i kapitalistycznym," in *Między feudalizmem a kapitalizmem. Studia z dziejów gospodarczych i społecznych. Prace ofiarowane Witoldowi Kuli*, ed. Ryszarda Czepulis-Rastenis (Wrocław: Zakład Narodowy im. Ossolińskich, 1976), 388–89.

In view of this conclusion, however, we should remain cautious due to the source base, which was limited to a handful of parishes. I hope that with this paper I will at least encourage researchers to take into account the seasonality of first and subsequent conceptions in future monographs, which would allow this thesis to be proven.

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The Influence of the Liturgical Calendar on the Seasonality of Conception in Early Modern Poland and Silesia

Summary

There is a belief in Polish historiography that in the past, Church regulations had a strong limiting influence on the vital statistics of Catholic communities. This paper focuses on the liturgical calendar—the injunction of sexual abstinence during Lent. A study was carried out, with the use of statistical methods, on parish records from the Early Modern Period hitherto published (meta-analysis), from the area of today's Poland, to verify the above statement. Careful analysis of the seasonal distribution of births, marriages and first conceptions made it possible to argue against this claim. The relatively low number of conceptions in March can be explained by decreasing fertility due to fasting and food scarcity. Although some historians suggest that a similar decline in procreation before Christmas is to be expected, it cannot be confirmed. Furthermore, the influence of the marriage seasonality on the conception seasonality had an opposite effect to that intended. The prohibition of weddings during Advent and Lent forced Catholics to conduct the ceremony in the period preceding the fast. In the pre-modern era, during which reproduction started immediately after the founding of the family, it meant an increase in sexual activity during the period when the Church ordered abstinence.

Wpływ kalendarza liturgicznego na sezonowość poczęć w nowożytnej Polsce i na Śląsku

Streszczenie

W polskiej historiografii utrzymuje się przekonanie o silnym, ograniczającym wpływie przepisów kościelnych na ruch naturalny społeczności katolickich w przeszłości. W pracy skupiłem się na kalendarzu liturgicznym – nakazach wstrzemięźliwości seksualnej w Wielkim Poście. Przy wykorzystaniu metod statystycznych przeprowadziłem badanie na pozyskanych z dotychczasowych publikacji (metaanaliza) danych metrykalnych z epoki nowożytnej, z obszaru dzisiejszej Polski, w celu zweryfikowania powyższego twierdzenia.

Uważna analiza wykresów sezonowości urodzeń, ślubów i poczęć pierwszych dzieci w rodzinie pozwoliła przedstawić argumenty przeczące temu twierdzeniu. Stosunkowo niska liczba zapłodnień w marcu może być tłumaczona spadkiem płodności na skutek obniżenia jakości diety przez post i przednówek. Chociaż niektórzy historycy nakazują się tego spodziewać, nie da się stwierdzić spadku aktywności prokreacyjnej przed Bożym Narodzeniem. Wpływ sezonowości małżeństw na sezonowość poczęć dawał natomiast efekt odwrotny od zakładanego przez Kościół. Zakaz ślubów w adwencie i Wielkim Poście zmuszał katolików do zawierania ich w okresie poprzedzającym post. W przednowoczesnym reżimie demograficznym, w którym do prokreacji przystępowano od razu po założeniu stadła, oznaczało to wzmożenie aktywności seksualnej wtedy, kiedy Kościół nakazywał wstrzemięźliwość.

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