

A DEMOGRAPHIC STUDY OF THE FAMILY IN A PROTOINDUSTRIAL TOWN, BASED ON 18TH- CENTURY WIELICZKA (POLAND)^[1]

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Abstract: Based on thorough studies of Wieliczka's parish registers and the 1788 census, the most relevant ratios for the protoindustrial population are presented. The results are compared with other towns and cities of the Polish-Lithuanian Commonwealth and in Europe, in order to present the characteristics of a mining town in comparison with other centers. Building on the results, it will be possible to determine whether Wieliczka can be characterized as a Western European town.

Keywords: family, demographic structures, household, mining town, historical demography

Historická demografie, 2024, 48:1: 1–34

DOI: 10.21104/HD.2024.1.01

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Introduction

Even though studies focusing on the population of the 18th-century Polish-Lithuanian Commonwealth (henceforth, Commonwealth) have been carried out for almost 70 years, they have yet to create a clear picture of society at that time.^[2] The household and family models along with the biological sensitivity and procreation characteristics proved to differ greatly between villages, small towns and big cities (Guzowski – Kuklo, 2021). Typical features of the Commonwealth's population can be distinguished on the basis of research to date.

[1] This work came about as a result of the research project 2018/29/N/HS3/00711 entitled: *Ludność miasta Wieliczki w latach 1591–1788. Studium historyczno-demograficzne protoindustrialnego miasta górniczego*, financed by the National Science Centre.

[2] The oldest study on families was published by Stanisław Waszak and discussed the 16th- and 17th-century Poznan family (Waszak, 1954). More studies were done at the end of the 1960s (Brodnicka, 1969; Borowski, 1969). Further works on the nominative method were not published until 20 years later (Górna, 1987). Only at the beginning of the 1990s did research in the field start to speed up. It is important to underline that it was Cezary Kuklo who, in 2016, emphasized that the majority of the 19th-century studies were on small towns and urban-rural parishes (Kuklo, 2016a).

In big cities such as Warsaw or Torun, marriages lasted for about 13.5 years, the fertility rate was nearly 11 and the age of women at their first marriage was 22.2. Almost 12.5% of first children were born out of wedlock with the first offspring not arriving until over 16 months later (Kukło, 1991; Zielińska, 2012). In smaller towns such as Nowy Korczyn, Pilzno, Wojnicz, Wielń nad Notecią and Brzeżan,^[3] marriages are estimated to have lasted for almost 18 years, the fertility rate was nearly 8.5 and the age of women at their first marriage was 22. Almost 12% of children were born out of wedlock with the first offspring arriving after 18 months (Kołodziejczyk, 2016; Kołodziejczyk, 2017; Guzowski, 2013; Kukło, 2018; Miodunka, 2021; Brodnicka, 1968; Brodnicka, 1970; Puczyński, 1971; Puczyński, 1972; Puczyński, 1974). To present a wider view, the populations of the following villages and village parishes were also analyzed: Bejsce, Bogucice, Czacz, Dębowiec, Krasne and Raciborowice. The length of marriages in these locations was on average 23 years, while the fertility rate was 7.5 and women married at the age of 20. The out of wedlock birth rate was 10 and the first child was not born before 24 months had passed (Guzowski, 2021; Borowski, 1969; Pankiewicz, 2013; Piasecki, 1990; Siebel, 2012; Wyzga, 2011).

None of the papers, however, used the same method to further investigate the question. Therefore, more universal rates should be employed to analyze family structures in a household. While the Commonwealth towns were dominated by nuclear families, bigger cities had a significantly higher rate of single-person households and villages with multiple-person families.

Despite the long history of research, no analysis of protoindustrial towns has thus far been carried out (Clarkson, 1989; Kriedte – Medick – Schlumbohm, 1981; Kriedte – Medick – Schlumbohm, 1993; Mendels, 1972; Ogilvie, 1993; Ogilvie – Cerman, 1996; Wall, 1987; Söderberg – Jonsson – Persson, 2003). Populations associated with early forms of industry may differ significantly when taking into consideration the demographic perspective demonstrated in the previous patterns. This could be due to several reasons, such as work stability not based on seasonality, place of work outside the household, or the attraction of migration, which makes people more eager to move away from the family home and meet more single migrants, boosting the chance of finding a partner faster. Another reason could be the number of options for developing social networks, as salt-works were based on the regular transport of raw materials outside the mine, which significantly intensified traffic in town.^[4]

One of the main efforts of Polish historical demographers, especially in recent years, has been to place the pre-partitioned Commonwealth population within the demographic models already known in Western Europe. The European geography

[3] Before the First partition of Poland (the Commonwealth), most urban centers did not exceed 1,000 inhabitants (Szczygieł, 2016; Kukło, 2021: 43).

[4] Increased trade in the majority of towns was on market and fair days.

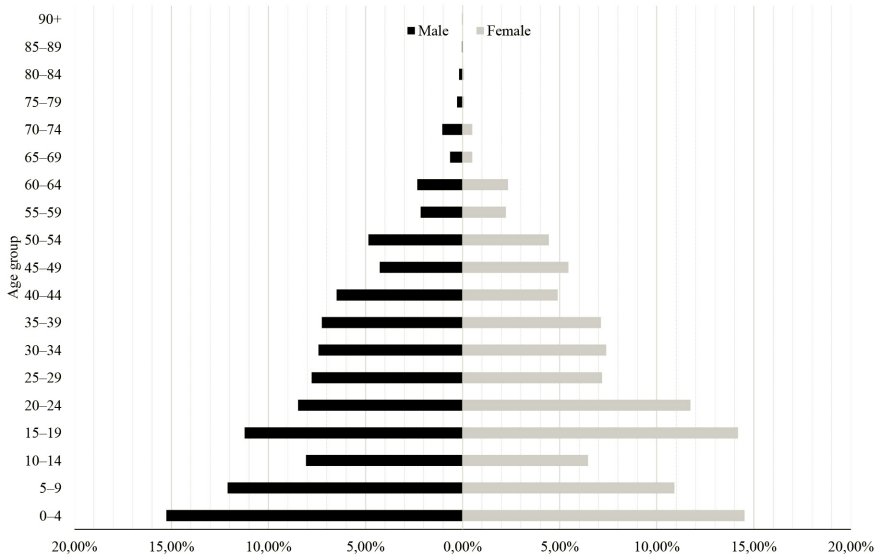
of family forms would not have been discussed if not for three people, John Hajnal, Peter Laslett and Mikolaj Szołtysek. Hajnal divided Europe along a line which went from St Petersburg to Trieste (Hajnal, 1965). Laslett suggested a household division system (Laslett, 1972), and Szołtysek contributed by working on databases, including his own, the CEURFAMFORM, and analyzed each region of the Commonwealth to demonstrate the great diversification of the areas situated between Germany and Russia that still needed additional research (Szołtysek, 2015b).

This article focuses on the protoindustrial population as well as on its demographic behaviors in relation to other Eastern and Western European populations. The idea is to incorporate it into the discussion on the European model of marriage (Hajnal, 1982; Laslett, 1988; Szołtysek, 2008; Lynch, 1991; Letsch, 2017; Wrigley et al., 1997; Bengtsson – Mineau, 2008), for example by evaluating behaviors related to natural fertility present in Wieliczka. Additionally, the work aims to determine whether the town includes features that would allow it to be classified as Western. Last but not least, it aims to distinguish possible features typical for protoindustrial towns with large-scale employers, such as mines.

Wieliczka – local context

In the early modern period, Wieliczka salt mine generated significant revenue for the state treasury. For centuries, the town, located a few kilometers south of Krakow, was an important place on the map of the Commonwealth. At the beginning of the 18th century, Wieliczka had a population of around 1,000 inhabitants (Piotrowicz, 1990: 158; Wojas, 1990: 193–194). From 1702, it was the site of troop movements during the Great Northern War. Both the Swedish and Polish armies sought to occupy the town and benefit financially from the salt. Due to a lack of construction works to shore up the mines, some houses collapsed, while others were burned down by numerous fires in the town. In addition, the epidemic of 1709–1710 exacerbated the economic crisis in the city. Successive rulers of the country tried to grant tax concessions, which by mid-century had resulted in an improvement in the economic condition of the town, and some stabilization. The last significant demographic crisis in Wieliczka was the famine in the 18th century that occurred in the whole of Lesser Poland between 1736 and 1737. This was followed by a slow rebuilding of the city's demographic potential over the following years. An important date in the town's history is 1772, when, as a result of the First Partition of Poland, Wieliczka came under Austrian rule for nearly a hundred and fifty years. The first years of Austrian rule in the town are directly linked with an influx of German, Hungarian and Czech officials, who took up positions in the malthouse and town (Walczy, 1996: 123). This contributed to an increase in migration to Wieliczka and the areas surrounding it. In 1788 there were 3,519 people living in the town (Piecbara, 2019).

FIGURE 1. AGE PYRAMID OF THE INHABITANTS OF WIELICZKA, 1788



Source: St Clement Parish Census, Wieliczka.

Based on the results in figure 1, it can be concluded that Wieliczka's population was of a progressive type, according to Sundbärg's classification (Holzer, 1999: 144). It was a growing society, with births outnumbering deaths (Kuklo, 2009). Figure 1 shows an increase in the number of women and men between the ages of 15 and 19; this is due to the arrival of servants and journeymen who had come to the town to learn a craft. The population of the town in the modern period was practically homogeneous. In 1525, King Sigismund I the Old, under pressure from Christian merchants, banned Jews from settling in Wieliczka (Krasnowolski, 2015: 247). In later years, the prohibition was continuously upheld, but the mine tenants, aware of the financial and mercantile capabilities of the Jewish population, cleverly circumvented these formal prohibitions (Zacny, 1997: 106). This is confirmed by the presence of four Jewish families living in the town in 1788. On the basis of information provided in the 1788 census, in which 75% of the homesteaders had their occupation and professions recorded, 35% were mining families and 10% were made up of day laborer and farmhand families. 11% were families of clerks and administrators and a further 19% were families of craftspeople. Of these, most were coopers, ropemakers, metalsmiths and carpenters. The remaining 25% were families of bailiffs, as well as widows and widowers. The majority of the town's inhabitants were employed by the mine, while the rest of the town's population not employed there engaged in crafts and trade around it (for more Pieczara, 2019: 91-102).

Sources

The main source was parish registers from the Parish of St Clement in Wieliczka. The handwritten documents date back to the 16th century. This article, however, is based on 18th century data (for more on Wieliczka's certificates, see Pieczara, 2017). The parish registers are considered well-kept, with its control factors fully falling within the set standards. The birth rate per married couple calculated on the basis of the number of baptisms per married couple for the period under research was 4.5.^[5] Another rate that was calculated on the number of baptisms per death was 1.15. This demonstrates a minimal natural increase but still falls within the set norms (Kuklo, 2009: 176–178). The masculinity rate was the last used in the evaluation and also fall within the range, with a result of 107.

Another important source of data is the 1788 census.^[6] The evaluation methods proved that the data were highly accurate and it was therefore used in the research. The Whipple index was 100.9 and its modified form, i.e., the ABCC index, was 99.77. The Myers index, however, did not show any important concentrations of numbers in the age ranges of the inhabitants (Bello, 2012; A'Hearn – Baten – Crayen, 2009; Pardeshi, 2010).^[7]

Methods

The nominative technique, i.e., family reconstitution, was principally used during preparation of this article (Dupâquier, 1984: 37; Fleury – Henry, 1976; Henry, 1980; Imhof, 1977; Kuklo, 2009: 174; Maynes, 1979; Terrisse, 1975; Wrigley et al. 1997: 12–17).^[8] The technique relies on assigning all the demographic events reported in the books to married couples.^[9] Information on the reconstitution method dates back to the end of the 1950s (Kuklo, 2009: 174–175) and is believed to be of high value. Papers based on this method still enjoy considerable interest (Kuklo, 2009: 175–176; Kuklo, 2019). All the Wieliczka baptism records for the years 1699–1788 and marriage records for the years 1706–1788 were examined. After analyzing the registers from the early 18th century, the year 1746 proved to be particularly valuable, as this was when the first death records started to be kept. In order to use the available materials to their fullest, a division into two

[5] By the end of the late feudal era, the correct rate should be 4.5 births per married couple (Kuklo, 2009: 11–31).

[6] St Clement Parish Census, Wieliczka.

[7] It is worth mentioning at this point that the WI calculated for the 1791 data for the inhabitants of Warsaw was 260 for men and 245 for women, while for the inhabitants of Krakow it is 167 for men and 176 for women (Pieczara, 2019: 87–89).

[8] It is also called “Henry’s method” in honor of its creator.

[9] The database was developed in Microsoft Excel.

half-centuries was used, making 1746 the dividing point. The method is considered very useful for attempting to reconstruct, develop and break up a family (Szołtysek, 2003: 119–143; Kopczyński, 1998: 13–17; Kuklo, 1991; Kuklo, 2009: 174–194). It is a long process in which, based on information found in parish registers (date of marriage, date of birth, length of marriage, length of widowhood, number of births and more), issues of fertility, mortality, as well as kinship and marriage strategies can be addressed. The process of reconstructing Wieliczka's families began by determining the cohort of marriages contracted between 1706 and 1788.^[10] For the selected cohort, an effort was made to establish all demographic events occurring within them. For the study of Wieliczka families, Microsoft Excel was used in which a database was created, into which all the information contained in the marriage certificates was entered (Mandemakers – Dillon, 2004; Pellier, 2005; Schofield, 1992: 75–79; Winchester, 1992).

The most important data normalizing further work include the date of marriage, the man's personalities (last name and first name), and the woman's first name. Other data, such as the woman's family name, dates of birth, marital status, locality of origin or personalities of the nupturients' parents, are used in the subsequent precise determination of individual families. Next, all baptismal records covering the years 1706–1792 were entered into the Excel database. Naturally, most of them are impossible, finding baptismal records of people getting married between 1706 and 1724, but the method has its uses anyway, for example, in the case of researching fertility issues. The last items entered into the database are death certificates from 1746–1792. Having all the data in the Excel database, it is necessary to organize the surnames alphabetically and begin the process of matching the events to the family resulting from the marriage. Each family gets its own unique number. It should be noted that in the method, the most important role is played by two dates, i.e. the date of marriage and the date of the end of family observation, which is equivalent to the date of death of the first spouse. Once the work proper is completed, a division is made that allows precise analysis, by family length. A division should be made into two main groups. The first is closed families, for which the date of marriage and the date of death of the first spouse are known. The second is open families, for which the date of marriage is known, but in the database, the death of the first spouse was not found. In research, an additional term is used, i.e., complete family, that means a closed family in which, during the marriage, the woman lived to the age ending her ability to procreate (49 years) with the same partner. As a result, 1,733 families were reconstructed, i.e., 194 complete families, 577 closed families and 961 open families (for more about types of closed families Kuklo, 2016: 47).

The extended technique of family reconstitution was used as the second method. This is a compromise between the vast possibilities offered by the nominative

[10] All time caesuras are consistent with the beginning of registration in the 18th century.

technique and its restrictions resulting from a possible lack of sources. Many challenges were faced when collating family cards and attempting to identify each family member (Giesztorowa, 1979; Siebel, 2012: 274). Modifications to last names, using a middle name instead of the given name, or spelling errors in last names when entering the data into the books posed a challenge and lengthened the reconstruction process. Also, the constant migrations and similarities in the personal data influenced the process. Many challenges were faced when working on the data that could have greatly distorted the final results due to the small group under research.^[11] For the reasons above, the reconstituted families were compared to the information kept in the census, focusing on the families existing in 1788.

More precisely, two databases were combined. The first was created by analyzing the census, i.e. more than 3,500 people, and the second database used using the family reconstitution method, for families living in the second half of the 18th century. The challenges described brought about the two following effects: first, even though a new database was created, it is impossible to verify many of the concepts created on the basis of the nominative technique; while the second, and more important, challenge was that the data from the census allowed the supplementation of information on children whose baptism certificates were not found, as well as on those children that had a baptism certificate but were not mentioned in the census, which indicated their death certificate was missing from the books under discussion or that they had left the household at a young age. An important difference between the databases is the fact that no other child with a similar or misspelled name had previously been searched for. Only the unambiguous data were considered. Also, childless marriages that had not previously been taken into consideration when analyzing families were included in the study. Due to a lack of sources from the 1790s, it is not possible to estimate the migration rate into Wieliczka. It is, however, interesting that more than 20% of the families inhabiting the town in 1788 had not originated from there, i.e. baptismal certificates for the founders of these families have not been found. The use of such a research method made it possible to learn about the effectiveness of the method of family reconstitution based on open families, as well as to fill in source gaps due to metric gaps.

Peter Laslett's method for the family structure and composition analysis was used when collecting material for the paper (Laslett, 1972; Hammel – Laslett, 1974; Kuklo, 2009: 150–152). His family classification method is often used in papers on demography, mainly due to its measurability, which allows for a few towns to be compared according to the same criteria.

[11] The existing problems were discussed as early as the 1970s (Åkerman, 1977).

Results

First and foremost, it is important to stress the impossibility of reconstructing all Wieliczka's families using only certificates (for more on old Polish families and the study of them Giesztorowa, 1979: 159–175; Bogucka, 1983; Wyrobisz, 1986: 308), the reason being a lack of clear division between the town and villages in the Wieliczka parish as well as migration, which hinders or prevents the continuation of research in this period (Wyźga, 2019). Therefore, the reconstitution method applies to those families that did not migrate but spent the majority of their lives in one place.^[12] The vast majority of the material gathered concerns only partially reconstituted families, for whom all the metrical data could not be established.

First births (proto-genetic gap)

In historical demography, premarital conception is defined in the following two ways: the first, most often used by Polish researchers, says that a child born 266 days after marriage was conceived before the wedding (Kukło, 2009: 348; Górna, 1987: 200; Spychała, 2001: 9; Daszkiewicz-Ordyłowska, 2001: 77; Siebel, 2012: 282; Zielińska, 2012: 232). The second, the French model, adopts 243 days for the calculation (Henry, 1980: 107; Kukło, 2009: 348; Kukło, 1991: 207; Zielińska, 2012: 231).^[13] There is one more model, used by Piotr Miodunka to describe the subject in small towns in southern Lesser Poland.^[14] To allow for later comparison of the results, the data are presented according to both definitions, with an emphasis on the greater reliability of those prepared in line with the French method.^[15] First births are by far the most likely to constitute a statistical error due to insufficient elaboration on the upper cap of the gap between getting married and giving birth to the first child. It is possible to wait 8, 10 or 12 years for a first child; however, a married couple leaving town and coming back after a few years is more probable. Should two or three cases occur when, according to the rules, the child arrived after 120 or 290 months, it will be included into the arithmetic mean calculation, even if it seems unbelievable. In order to present the contrast between the assumed scheme, differences between the median and the average

[12] Excluding, for example, daily and economic migration (Kopczyński, 1998: 17–18).

[13] The period of 240 days was assumed in the research on the inhabitants of Nowy Korcz (Kołodziejczyk, 2017: 69).

[14] The author assumed a period earlier than 253 days for premarital conception. For an explanation of the criteria used (Miodunka, 2021: 364).

[15] It must be emphasized that pregnancy lasts 266 days (Bręborowicz, 2005: 56). However, from the medical perspective, the method used for establishing the due date is by calculating the duration of pregnancy from the 1st day of the last menstrual period. For more on the Naegele rule (Kieller et al., 1995).

are presented in a supplementary table (Table 2). The study presented data for all the reconstituted families, i.e., open, closed and complete, in which the first child was born within 7 years of the marriage date.

TABLE 1. FIRST BIRTHS OCCURED WITHIN 7 YEARS OF THE WEDDING DATE, WIELICZKA 1706-1788

Period	1706-1716	1717-1726	1727-1736	1737-1746	1747-1756	1757-1766	1767-1776	1777-1788
Number of families	197	160	199	210	205	202	228	239
Premarital conceptions – 243 days [%] (266 days [%])	8% (11%)	11% (13%)	10% (16%)	7% (11%)	8% (12%)	7% (11%)	8% (12%)	15% (22%)
Average – months	25.2	21.9	20.0	21.9	22.3	22.6	20.2	16.0
Median – months	22.1	13.7	12.3	14.3	13.5	15.0	12.6	11.7

Source: AMCK, Liber Natorum et Copulatorum Wieliczka, files 5, 11, 21; Liber Natorum Wieliczka, file 24; Liber Copulatorum Wieliczka, sig file. II/3, II/4, II/5, II/6.

Note: The first period includes 11 and the last one consists 12 years.

TABLE 2. DIFFERENCE INTERVAL BETWEEN MARRIAGE AND FIRST BIRTH BASED ON A SEVEN-YEAR CONTROL PERIOD AND WITHOUT LIMITATION AS TO FAMILIES RECONSTRUCTED BASED ON THE FAMILY RECONSTITUTION METHOD, 18TH-CENTURY WIELICZKA

Period	1706-1716	1717-1726	1727-1736	1737-1746	1747-1756	1757-1766	1767-1776	1777-1788
Difference in average expressed in months	3.1	5.5	3.4	5.0	3.4	1.8	3.0	0.7
Difference in median expressed in months	0.7	0.9	0.3	0.3	0.9	1.1	0.1	0

Source: AMCK, Liber Natorum et Copulatorum Wieliczka, files 5, 11, 21; Liber Natorum Wieliczka, file 24; Liber Copulatorum Wieliczka, files II/3, II/4, II/5, II/6.

Note: The first period consists of 11 and the last one consists of 12 years.

Based on the data in Table 1 and 2, it can clearly be concluded that the median values are not sensitive to extreme numbers and the values based on the collated average were in a few cases close to a difference of 20%. Tables 1 and 2 show the time between marriage and the birth of the first child was on average 21.3 months, with the median not exceeding 15 months. The longest gap before the birth of the first child was in the first period, i.e., 1706-1716, a period of Plague in Wieliczka, which could have resulted in physiological problems conceiving, or putting off the

decision to have a child.^[16] The shortest gap was in 1777–1788, when Wieliczka, which was located within the Kingdom of Galicia and the borders of Lodomeria (also known as Austrian Galicia or Austrian Poland), attracted many migrants who started their families there. The shorter time could also have been associated with lowered stress, which arrived with the Austrians.^[17]

The credibility of the results was demonstrated by comparing the most important data with the results obtained for the reconstituted families of 1788. It was not possible to find baptism certificates for a few women during the process of the reconstitution studies; the information could be retrieved from the census only. The most common problem was a spelling error made by the priest on the baptism certificate. However, the woman's age given in the census limited the birth date search scope to 3 years.

Correlating the data gathered through family reconstitution with the data on population allowed for the partial validation and correction of the results shown in Tables 1 and 2. The main advantage of the extended family reconstitution method is the invariability. It is certain that the families under research existed at the final point of the observation, in contrast to the family reconstitution method and indicating the exact time the family closed or continued in the case of open families, which is not always clear. Therefore, it can be concluded that in the case of first births occurring up to 7 years after the wedding, the results for the second half of the 18th century are similar to those of the families in 1788. The results differ greatly when compared to all the first births. The difference resulted from finding the “lost”^[18] birth certificates of the first children, and therefore the gap between the wedding and the birth of the first child was reduced by half. Using the extended family reconstitution method, it was possible to establish that the first child was born after 20 months, on average,^[19] which was actually a little bit shorter than the data acquired by the family reconstitution method.

No significant differences in the average and the median of the data shown in Table 3 prove focusing on the first births occurring after 7 years from the wedding date to be of minimal importance. This is confirmed by the fact that analysis of “all” the baptism certificates found with no control period used may seriously distort the actual results.^[20]

[16] Studies on the impact of stress and malnutrition on fertility is available in the English-language literature (Bongaarts, 1980; Menken – Trussell – Watkins, 1981; Tanner, 1965).

[17] There was an increase of the number of children born out of wedlock in Pilzno after 1722, which could be related to the Austrian garrison present in the town (Miodunka, 2021: 421).

[18] Certificates were not found at the stage of applying the family reconstitution method due to, e.g., a different spelling of the last name.

[19] The median was ≥ 15 months.

[20] The longest averaged difference was more than 5 months.

TABLE 3. COMPARISON OF THE INTERVALS BETWEEN MARRIAGE AND FIRST BIRTH IN FAMILIES RECONSTRUCTED USING THE EXTENDED FAMILY RECONSTRUCTION METHOD WITH AND WITHOUT THE USE OF THE SEVEN-YEAR CONTROL PERIOD, THE SECOND HALF OF THE 18TH CENTURY

Period	1747–1756	1757–1766	1767–1776	1777–1788
Difference in average	0.0	0.0	1.4	0.5
Difference in median	0.9	1.1	0.1	0

Source: AMCK, Liber Natorum et Copulatorum Wieliczka, file 5, 11, 21; Liber Natorum Wieliczka, file 24; Liber Copulatorum Wieliczka, sig file II/3, II/4, II/5, II/6; Census of St Clement parish in Wieliczka.

Marital fertility

A detailed fertility analysis allows for an in-depth study of the Wieliczka inhabitants' procreation behaviors. An important aspect is to establish whether the female residents made any attempts to limit their fertility (for more on the fertility studies in other regions see: Waszak, 1954: 357; Borowski, 1969; Borowski, 1975; Piasecki, 1990; Makowski, 1992; Zielińska, 2012; Kuklo, 1991: 195–203; Kuklo, 1987; Kuklo 1990/1991; Kuklo, 2019: 303–305; Flandrin, 2015: 261–264). It is, therefore, important to establish whether the model presented is closer to results that indicate the use of birth control practices or if it is closer to natural fertility.^[21] It is assumed that natural fertility was common on the territory of the Commonwealth until the end of the 18th century (Giesztorowa, 1976: 260; Kuklo, 1991: 197; Kuklo, 2009: 333–335). Cohort analysis results were used to demonstrate the issue (Cieślak, 1992: 150).

Table 4 proves the fertility rate to be highest for women aged 20–24 who had married in the same age bracket. It shows the first years of marriage to be the most effective in terms of procreation. Low rates indicating a small number of offspring may suggest possibly conscious actions to hinder procreation. It is interesting that younger females, despite their age at the time of their wedding, were not more fertile than the older women. This may suggest that premarital conception was not the main reason for getting married. What is more, the group saw a visible gap in childbearing after having the first, or possibly the second, child. By extending the period between pregnancies, the fertility rate of the youngest married females was lower in the second age group (20–24) than in the first one immediately after the wedding (15–19) as well as in the subsequent group (25–29). This allows for

[21] Natural fertility could be achieved by the human population “should no conscious efforts be made to limit the number of births” (Kuklo, 2009: 334; Kuklo, 1990/1991). The issue has raised strong criticism and discussions among researchers (Kuklo, 2009: 334–335; Szołtysek, 2006: 10–12; Flandrin, 2015: 264–267, 285–290; Miodunka, 2021: 429).

the conclusion that young married women who were mothers could use birth control methods (Flandrin, 2015: 310–316). Such behavior influenced the offspring already born, who could enjoy better living conditions.^[22]

TABLE 4. AGE-SPECIFIC FERTILITY RATES ACCORDING TO THE AGE AT MARRIAGE, WIELICZKA, 1706-1788.

Age at marriage	Age						
	15–19	20–24	25–29	30–34	35–39	40–44	45–49
15–19	319	299	312	228	136	31	–
20–24	–	376	340	259	180	116	10
25–29	–	–	361	288	232	147	66
30–34	–	–	–	353	222	188	17
35–39	–	–	–	–	118	133	250
40–44	–	–	–	–	–	–	–
Average	319	337	338	282	178	123	86

Source: AMCK, Liber Natorum et Copulatorum Wieliczka, sig file 5, II, 21; Liber Natorum Wieliczka, file 24; Liber Copulatorum Wieliczka, sig file II/3, II/4, II/5, II/6.

Birth intervals

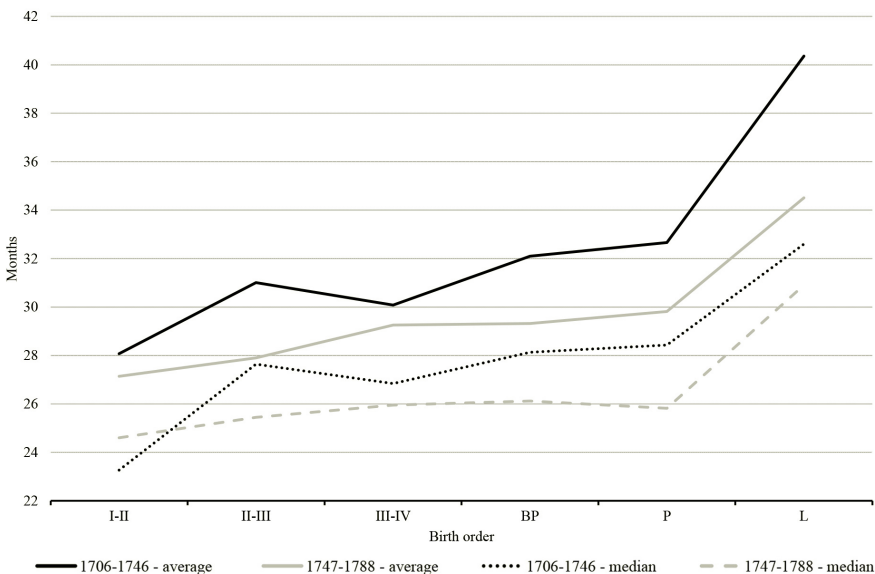
Analysis of the average birth interval is as important as the previously discussed data on protogenetic intervals. Learning the gap between births allows for a better understanding of the behaviors and procreation practices in 18th-century Wieliczka.^[23] Natural reasons for potential family size was closely connected to women’s age and, therefore, their procreation capabilities. Another factor to be taken into consideration is economic conditions. This could have contributed to an informed delay in having another child (Anderton, 1989; Van Bavel, 2004; Okun, 1995; Cinnirella – Klemp – Weisdorf, 2012). The Wieliczka family consisted of 5–6 children on average. Based on death certificates it was established that in the second half of the 18th century, almost 58% of boys and 51% of girls died before reaching the age of 5. Therefore, the period between subsequent births must be established. In 1706–1788, in Wieliczka, the average period was 30.6 months, while the median shows 27 months. The difference of 120 days calculated on the

[22] In the academic world, there is still debate on the influence of breast feeding as a method of birth control (Kuklo, 2016b: 21; Flandrin, 2015: 69). For more in the medical literature (Jackson – Glasier, 2011; Fabic – Choi, 2013; Panzetta – Shawe, 2013: 136–138).

[23] The length of the birth intervals was affected by factors including physical and mental fatigue, eating habits, duration of breastfeeding, the length of life of the previous child, and the frequency of intercourse or miscarriages (Kuklo, 1991: 212; Piasecki, 1990: 114–115; Zielińska, 2012: 246; Guzowski, 2014: 24).

basis of the same source data makes it necessary to approach the data in two ways, i.e., with an analysis of the arithmetic average and the median. Articles on the matter are mainly based on the average (Kuklo, 1991: 211–217; Zielińska, 2012: 244–249; Spychała, 2001: 35–37; Daszkiewicz-Ordyłowska, 2001: 92–93; Siebel, 2012: 305; Kołodziejczyk, 2016: 74–79), which is known to be sensitive to extreme values, and thus the results are certainly overestimated.^[24] Due to the problem presented, large families with at least 6 children will be analyzed and then followed by comparison between the three first and last birth intervals (Kuklo, 2009: 339–340).

FIGURE 2. THE AVERAGE BIRTH INTERVAL FOR FAMILIES WITH 6 OR MORE CHILDREN IN THE SELECTED PERIOD, 18TH-CENTURY WIELICZKA



Source: AMCK, Liber Natorum et Copulatorum Wieliczka, files 5, 11, 21; Liber Natorum Wieliczka, file 24; Liber Copulatorum Wieliczka, file II/3, II/4, II/5, II/6.

Note: BP – before the penultimate; P – penultimate; L – last.

Figure 2 shows the gradual extension of the interval between subsequent births. This is especially visible when analyzing the gap between the penultimate and the last birth. Additionally, the data was given for three periods, using both the arithmetical average and the median. It must be underlined that in the first part

[24] Median value (in years) has also been given in the work of Edmund Piasecki (Piasecki, 1990).

of the period, the difference between the birth intervals depending on the way of its calculation (average, median) was 3.3. to 7.8 months, and for the second part between 2.4 and 4 months. This proves the necessity to compare data using both the methods, as applying only one may seriously distort the actual image. A model emerges from the figure, showing that the interval in the earlier period was slightly longer than in the later one. We can therefore cautiously conclude that the inhabitants of Wieliczka made unsuccessful attempts to limit the size of their families. It is noticeable, however, only when analyzing the length of birth interval before the birth of the last child (Kukło, 2018: 34–35; Kukło, 1991: 217; Kołodziejczyk, 2017: 75–78; Miodunka, 2021: 427–429).

Marriage duration

The main factor influencing marriage duration was the death of one of the spouses. In Wieliczka, the death dates are given starting from 1746; therefore, no marriages entered into or dissolved before the date could be taken into consideration in the research. No marriages lasting 0–19 years were found in 1717–1726, none of 0–9 years was found in 1727–1736 and in 1737–1746 no short-term marriages (up to 4 years) were encountered. No full data could be recovered for the following marriage length: 20–24 and 25–29. An opposite pattern was noticed in 1747–1788, where no long-term marriages were recovered. Despite such limitations, the remaining couples were identified (see Table 5).

TABLE 5. PERCENTAGE OF DISSOLVED RELATIONSHIPS IN RECONSTRUCTED WIELICZKA FAMILIES BY THE DATE OF MARRIAGE

	1717–1726	1727–1736	1737–1746	1747–1756	1757–1766	1767–1776	1777–1788 (1792)
Total	31.61%	51.20%	63.72%	62.73%	47.20%	31.95%	16.13%
No. of marriages*	174	209	226	220	214	241	186

Source: AMCK, Liber Natorum et Copulatorum Wieliczka, files 5, 11, 21; Liber Copulatorum Wieliczka, files II/3, II/4, II/5, II/6; Liber Mortuorum, files III/1, III/2, III/3, III/4; St Clement Parish Census, Wieliczka.

Note: * Number of reconstructed marriages in the database.

After many studies which included both the certain and the probable death certificates of one of the spouses, it was found that in 18th-century Wieliczka about 4% of the marriages lasted 0–4 years, 7% lasted 5–9 years, 9% lasted 10–14 years, 8% lasted 15–19 years, 10% lasted 20–24 years, 8% lasted 25–29 years, 4% lasted 30–34, 3% lasted 35–39 years and only 1% lasted more than 40 years. The remain-

ing 45% of marriages were undetermined. The findings allow the conclusion that a 15-year marriage was most common in 18th-century Wieliczka.^[25] The option of a better and less frequently chosen approach is census analysis and employing the extended family reconstitution method. This allows us to analyze the reconstructed families present in 1788 and show the marriage structure according to its duration. Although the families were ongoing at the end of the observation, the results make it possible to understand the potential structure of family groups according to their duration.

TABLE 6. MARRIAGE DURATION IN THE RECONSTITUTED FAMILY IN 1788, WIELICZKA

Marriage duration in 1788	Number of marriages	% of the marriages
0–4	121	20%
5–9	119	20%
10–14	150	25%
15–19	84	14%
20–24	60	10%
25–29	39	6%
30–34	15	2%
35–39	7	1%
40–44	6	1%
>45	1	0%
Total	602	100%
No data	21	–
Average duration	13 years	–

Source: AMCK, Liber Natorum et Copulatorum Wieliczka, files 5, 11, 21; Liber Copulatorum Wieliczka, files II/3, II/4, II/5, II/6; St Clement Parish Census, Wieliczka.

Based on the data shown in Table 6 we can see that 20% of the 1788 families lasted for at least 20 years. This casts considerable doubts as to the higher values in the marriage groups with longer duration that appeared in the in-depth analysis.

[25] The shortest documented marriage lasted 16 days. On January 22, 1769, Szymon Kowalski married Franciszka Kisielowa. On 7 February 1769 she was widowed (the cause of death remains unknown). She was pregnant on her wedding day and on July 31, 1769, she gave birth to two sons, Albert and Ignacy Józef. The longest well documented marriage was of Michał Miłkoła and Jadwiga Kuchcionka. The wedding took place on November 4, 1719, and lasted until June 15, 1771, with the death of the husband. His wife died after a further four years. The couple had 6 children. See also: Archives of the Metropolitan Curia in Krakow (henceforth AMCK), Liber Natorum et Copulatorum Wieliczka, file 5, p. 1547; Liber Natorum et Copulatorum Wieliczka, file 11, p. 65, 169; Liber Mortuorum, file III/1.

The fact that a total of 60% of the relationships lasted over 10 years is also relevant. The remaining 40% of the couples who stayed together for 9 years or less were mainly young couples. Taking all the above into consideration, it was concluded that the average marriage duration of 13 years for Wieliczka can be adopted as a good starting point for further studies. It should be noted that the number of marriages changed every year. The median for 20 years was 83 marriages with an average of 96, while the median for 10 years was 100 with an average of 97. In order to calculate a more quantifiable duration of marriages in Wieliczka, it is necessary to observe marriages up to their termination. Therefore, future research will address the question of families living in the late 18th and early 19th centuries. Only then, will the answer of how many years the open families that appeared in the 1788 census lasted be known.

Maternal mortality

The reason for the premature end to marriages, especially those of short duration, should be sought in sudden events. Periods of epidemics and economic crisis must have had an adverse effect on the human body, even on those in their prime. 18th-century Wieliczka did not, however, face any major crisis in the second half of the century. Therefore, causes of deaths must have been different. For men, these were certainly accidents and their aftermath. For women, however, this could be childbirth and the postnatal period as they were both highly risky for females (Kukło, 1991: 95–96; Żołądź-Strzelczyk, 2010; Kurowska, 2015; Ziomek, 2016; Kowalczyk, 2011: 61). Thus, maternal mortality seems worth studying as a frequent cause of death. It should be emphasized that the analysis concerns only women whose children were baptized. In the absence of an annotation about the baptism of the child, the death of the woman cannot be taken into account. The problem is common in the Old Polish period. One of the main reasons for postnatal complications could certainly have been the level of hygiene and inadequate medical care (Lebrun, 1997: 132). There were at least five doctors in Wieliczka, three of whom were associated with the salt mining industry. Their engagement in additional activities cannot be ruled out, though. What is more, the town had one pharmacy, located in its market square.^[26] Most crucially, in 18th-century Wieliczka there was a midwife, Marianna Setkowa, who assisted women with their deliveries (she died in 1792).^[27] The subject has been given little attention in the existing papers and those created are mainly based on parish records rather

[26] St Clement Parish Census, Wieliczka, see also (Noga, 2016: map 1.13: *Wieliczka, plan miasta w obrębie fortyfikacji, 1784–1785*).

[27] She was the only woman whose name appeared on the certificates. In the census, however, she was entered under the name of Anna, with no information on her profession mentioned. St Clement Parish Census, Wieliczka, p. 8.

than an in-depth case analysis, for example based on the family reconstitution method (Kołodziejczyk, 2017: 88). To learn more about this aspect, the birth dates of the last children in families that were ongoing between 1747 and 1788 with the mother's year of death were compared. As a result, 45 cases of women dying within a maximum of 42 days of their delivery date were identified.^[28] Application of the perinatal mortality rate (6.75) showed only 7 deaths caused by perinatal complications per 1,000 births.^[29] It is impossible to establish without doubt whether Wieliczka's doctors provided medical care to the women during childbirth or afterwards, or whether Setkowa, the midwife, was present at the majority of the deliveries. The results do, however, allow us to state that the female inhabitants of Wieliczka were in a better situation after their delivery than women in other towns of the Commonwealth.

Inhabitants and household structures

The 1788 town population is classified as progressing, according to the Gustav Sundbärg classification system (Holzer, 1999: 144). It was, therefore, a growing society, with the number of deaths lower than births.^[30] The census shows an increase in the number of young men and women aged 15–19, who had come to the town to start work in service or learn a trade. Almost 65% of the population was in the productive age range. There were 326 houses occupied by 10 people on average, with a median of 9.5 and a deviate of 6.4. This indicates Wieliczka's industrial character and that it was inhabited by small, mining families, and bigger ones, usually tradespeople. Typically, households comprised 3–5 people and according to the census, the biggest families were of the town councilor, the smith and the doctor. There were also many people living in a shelter, the monastery and the church. From the above we can conclude that one household included an average of 4.7 people and over 80% of the households had 6 or fewer residents. The data allow us only to imagine what the family structure looked like. To provide for more accurate information, Peter Laslett's classification method should be used (Laslett, 1972).

[28] According to the World Health Organization, it is 42 days (World Health Organization, 2010: 155; Kuklo, 2009: 312–313). It is worth mentioning that in the international discussion, studies propose that due to living conditions, mainly in poorly developed territories, perinatal mortality should be extended to three months (Høj, 2003: 995–1000).

[29] With the adoption of the 60-day period, the rate was 7.33 (Kuklo, 2009: 312).

[30] This is confirmed by the Wieliczka parish record books, available at the Metropolitan Curia in Krakow: AMCK, Liber Natorum et Copulatorum Wieliczka, files 5, 11, 21; Liber Mortuorum, files III/2, III/3, III/4 (see also Pieczara, 2019: 91–92).

TABLE 7. STRUCTURE OF WIELICZKA HOUSEHOLDS (P. LASLETT'S CLASSIFICATION METHOD)

Place	Year	Number of households	% household types acc. to P. Laslett's classification method				
			I	II	III	IV	V
Wieliczka	1788	743	0.9	3.0	82.6	12.7	0.8

Source: St Clement Parish Census, Wieliczka.

Table 7 proves the dominance of nuclear families and a very small number of single-person households. In addition, a thorough analysis indicated that 89% of the heads of the household were males aged 41, and the remaining 11% were females aged 48. What is more, the average number of residents in the male-run household was 4.85 and in the female it was 3.49.

The age at marriage and voluntary celibacy

Another reliable source of data allowing for the demographic analysis of Wieliczka in the broader perspective is the age of spouses-to-be and the proportion of never-married females. A comparison group of 240 marriages was chosen from the 1788 census marriage certificates. Based on these, it was established that 94% of grooms were older than their brides. On average, the husband was 4.95 year older, and the median was 5 with a standard deviation of 4.45. This is a strong indication that Wieliczka was a patriarchal society (Gruber – Szołtysek, 2016). Employing the *Singulate Mean Age At Marriage* (SMAM) analysis helped to establish the average age for men and women at their first marriage, and who got married or remarried up to the age of 50. The SMAM analysis is limited to the population living in a restricted period of time, in this case in 1788. Upon analysis, the average age for men at their first marriage was 27.6 and women 24.0. The matter of females (females after the age of 50) who had decided to live in voluntary celibacy is difficult to establish (Foreman-Peck, 2011; Lynch, 1991). Full data on the status of each person in a household was not always kept for Wieliczka.^[31] The effect of comparing females from the census with the available certificates revealed that barely 2% of Wieliczka-born women alive in 1766 stayed single throughout their lives.^[32]

[31] There is no information on whether Franciszka, aged 36, Konstancja Ruczkowska's sister, was unmarried or a widow, like her sister. There is no doubt she was not a wife, as such information was meticulously entered on the census. The oldest known spinster was 48 and the two oldest bachelors were 60. See St Clement Parish Census, Wieliczka, p. 14.

[32] Assuming that women with unknown marital status were also spinsters, the voluntary celibacy rate is 5%. In this case, however, the women had migrated to the town and therefore it is not possible to establish whether they were spinsters or widows.

Discussion

Identifying the demographic situation in Wieliczka in comparison to other towns within the Commonwealth territory is possible only when the relevant data are compared. The summarization starts with first births.

TABLE 8. COMPARISON OF THE LENGTH OF PROTOGENETIC INTERVALS WITH THE PROPORTION OF PREMARITAL CONCEPTIONS IN COMMONWEALTH TOWNS IN THE SECOND HALF OF THE 18TH CENTURY

Place	Premarital conception in %	Protogenetic interval in months
Warsaw	12.1–15.4	13.9–14.4
Torun	10.5	15–21
Pilzno	5.8	–
Nowy Korczyn	13.7	17.6
Wojnicz	14.3	15.2
Krasne	–	34
Bejsce	–	25
Raciborowice	9.7	33
Villages in the Nowy Korczyn parish	–	18.1
Wieliczka	9.5	20.3

Source: AMCK, *Liber Natorum et Copulatorum Wieliczka*, files 5, 11, 21; *Liber Natorum Wieliczka*, files 24; *Liber Copulatorum Wieliczka*, files II/3, II/4, II/5, II/6; Kołodziejczyk, 2017: 71; Kukło, 191: 209; Zielińska, 2012: 468; Miodunka, 2021: 365; Rejman, 2006: 177; Piasecki, 1990: 235; Wyzga, 2011: 174.

The data in Table 8 show fewer premarital conceptions in Wieliczka than in other towns and cities of the Commonwealth. As far as the gap between the marriage and the first birth is concerned, Wieliczka's is longer. The last period under analysis witnessed the lowest average in the whole of the 18th century, i.e., 16 months (Table 1). Comparing Wieliczka to other European towns also shows interesting results. The rate for Gubin, a Prussian town at that time, was about 9.2 (Kurowska, 2010: 72), while in small Silesian towns, i.e., Strzelce Opolskie and Bogucice, the rate was 17.1% and 17.5% respectively (Spychała, 2001: 10; Siebel, 2012: 282). For the Czech towns Domažlice, Budyně nad Ohří and Komín, the rate was 12.8–17.5, and for Jablonec nad Nisou it was 22% (Kukło, 2021: 65; Dokoupil et al. 1999: 49). In bigger French cities in the second half of the 18th century, the rate was 14% for Caen and 17–20% for Rouen (Kukło, 2021: 65). When comparing the Wieliczka results with those of European cities, the rate for Wieliczka should be considered fairly low, with the only similar level noted in the Prussian city of Gubin.

Another matter that needs analyzing is marital fertility which, together with the death rate for children and adults, is one of the determinants of population development (Kuklo, 2021: 73–74). Due to a lack of sufficient data for the Polish territory, only three Commonwealth towns/cities are shown in comparison to nine European ones.

TABLE 9. AGE-SPECIFIC FERTILITY RATES IN SELECTED EUROPEAN TOWNS

Place	Years	Women's age in years						
		15–19	20–24	25–29	30–34	35–39	40–44	45–49
Nowy Korczyn	1751–1800	353	390	356	278	184	83	15
Warsaw	1740–1769	459	469	408	381	276	121	60
Warsaw	1770–1779	382	413	316	293	217	61	133
Wieliczka	1706–1788	319	337	338	282	178	123	86
Argenteuil	1740–1770	460	554	521	478	360	147	–
Beauvais	1780–1789	536	559	498	418	285	117	5
Brno	1710–1769	555	486	466	408	332	265	153
Jablonec nad Nisou	1750–1799	413	488	483	411	342	192	33
Kutná Hora	1730–1755	497	487	376	342	256	142	42
Lucerne	1786–1795	583	503	466	349	296	144	27
Meulan	1765–1789	480	515	465	385	283	115	13
Rouen	1760–1792	536	488	443	345	229	82	7
Wangen	1740–1789	462	535	487	423	331	128	7
Verdun	1770–1789	573	500	420	329	214	95	10

Source: AMCK, *Liber Natorum et Copulatorum Wieliczka*, files 5, 11, 21; *Liber Natorum Wieliczka*, file 24; *Liber Copulatorum Wieliczka*, files II/3, II/4, II/5, II/6; Kuklo, 2021: 74; Brabcová, 2001: 91; Kuklo – Łukasiewicz – Leszczyńska, 2014: 77–78; Horák, 2008: 74–75.

Data comparison acquired for Wieliczka with those for Nowy Korczyn and Warsaw (Table 9) proves that women from Wieliczka gave birth to fewer children during their most fertile age, i.e., 15–29 (Kołodziejczyk, 2016: 69–70; Kuklo, 1991: 199). Table 2 shows higher birth rates for Wieliczka's women at the ages of 40–44 and 45–49, which result from later marriage, at the ages of 35–39. In almost all the early groups, i.e., 15–39 years old, the results for Wieliczka's women were the lowest. This may indicate greater awareness and birth control practices by women in Wieliczka than among those from Warsaw or Nowy Korczyn (Kuklo, 2019: 305–306). When comparing Wieliczka to the European cities, there is a significant difference, which can indirectly authenticate the highest sexual awareness among the female inhabitants of the mining town. The total fertility rate is a supplement to the matter.

TABLE 10. TOTAL MARITAL FERTILITY RATE IN CHOSEN EUROPEAN TOWNS IN THE 18TH CENTURY

Place	Marriage period	Total fertility rate
Nowy Korczyn	1751–1800	8.30
Warsaw	1740–1769	10.87
Warsaw	1770–1799	9.07
Wieliczka	1706–1788	8.32
Argenteuil	1740–1770	12.60
Beauvais	1735–1779	12.99
Břevnov	1720–1759	12.96
Brno	1710–1769	12.17
Budyně nad Ohří	1700–1749	10.11
Domažlice	1700–1749	12.23
Jablonec nad Nisou	1700–1749	11.47
Komín	1700–1759	12.81
Kutná Hora	1730–1755	10.71
Lucerne	1786–1795	11.84
Meulan	1765–1789	11.28
Rouen	1760–1792	10.65
Wangen	1740–1789	11.87
Verdun	1770–1789	10.71

Source: AMCK, *Liber Natorum et Copulatorum Wieliczka*, files 5, 11, 21; *Liber Natorum Wieliczka*, file 24; *Liber Copulatorum Wieliczka*, files II/3, II/4, II/5, II/6; Kuklo, 2021: 76; Brabcová, 2001: 91; Kuklo – Łukasiewicz – Leszczyńska, 2014: 77–78; Horák, 2008: 74–75.

An interesting picture of the European cities in comparison to the Commonwealth's total fertility rate emerges from Table 10. The lowest fertility rate can be seen in the towns/cities in Commonwealth territory. Despite theoretical consideration, it is worth noticing that there were, on average, three children fewer in Wieliczka than in the majority of the European cities. Further discussion should focus on a comparison of the intervals between subsequent births. As giving birth to each following child was somehow connected to the life of the previous one, it is by no means very difficult to be compared in a precise way. Importantly, there are multiple factors influencing procreation that are impossible to take into consideration in the study. These are, for example, the customs of a particular couple, their diet, physical fatigue, miscarriages or stillbirths. However, the problem affects all towns and cities; therefore, the results can be considered reliable. The issue should be considered as one of many factors affecting the general demographic situation of the society under study.

TABLE 11. COMPARISON OF AVERAGE BIRTH INTERVALS IN EUROPEAN FAMILIES

Place	Period	Inter-birth interval in months, shown by arithmetic mean					
		I-II	II-III	III-IV	BP	P	L
Nowy Korczyn	1751-1800	24.0	25.1	26.8	27.1	25.1	29.6
Warsaw	1740-1769	22.3	23.9	23.2	25.6	27.1	32.4
Warsaw	1770-1899	22.6	25.7	23.5	25.3	27.3	29.3
Wieliczka	1747-1788	27.1	27.9	29.3	29.3	29.8	34.5
Brno	1710-1769	22.0	24.6	26.2	-	-	34.5
Domažlice	1750-1799	19.8	23.9	25.0	-	-	32.1
Geneva	1770-1772	16.4	19.6	21.0	25.6	31.0	32.4
Rouen	1730-1789	18.8	19.6	21.3	23.4	25.3	27.8

Source: AMCK, Liber Natorum et Copulatorum Wieliczka, files 5, 11, 21; Liber Natorum Wieliczka, file 24; Liber Copulatorum Wieliczka, files II/3, II/4, II/5, II/6; Kołodziejczyk, 2016: 69-70; Kuklo, 1991: 217; Kuklo, 2009: 344; Poulová, 2007: 67; Horák, 2008: 68.

Note: BP – before the penultimate; P – penultimate; L – last.

Table 11 shows the longest average interval between subsequent births for Wieliczka. There are two aspects worth discussing: the first is the length of gap between the last birth, which was three years, while the second is the interval between the penultimate and last birth, which comes to five months. Such an observation allows us to state, once again, that women from Wieliczka may have made a conscious effort to limit their number of children.

Another aspect allowing us to learn more about family life in the Commonwealth is the length of marriage. It would seem simple to analyze, but research papers seldom provide a precise division between first and subsequent marriages. Therefore, it is safer to compare general outcomes and provide an average length of marriage.

TABLE 12. THE LENGTH OF MARRIAGE IN SELECTED COMMONWEALTH LOCATIONS IN THE SECOND HALF OF THE 18TH CENTURY

Place	Average length of marriage in years
Warsaw	10–15
Torun	13–16
Wieliczka	13
Nowy Korczyn	19
Wieleń nad Notecią	14
Wojnicz	20
Raciborowice	26
Villages from Krasne parish	25
Villages from Nowy Korczyn parish	17

Source: AMCK, *Liber Natorum et Copulatorum Wieliczka*, files 5, 11, 21; *Liber Natorum Wieliczka*, file 24; *Liber Copulatorum Wieliczka*, files II/3, II/4, II/5, II/6; Kołodziejczyk, 2017: 81; Rejman, 2006: 196; Kuklo, 1991: 181; Brodnicka, 1968: 190; Miodunka, 2021: 410; Wyźga, 2011: 174; Zielińska, 2012: 489–491.

A certain dependency can be seen in Table 12. Marriage length in large, economically well-developed cities, i.e., Warsaw and Torun, is about 13–14 years. In the smallest towns, this extends to at least 18 years, while in villages marriages lasted for about 23 years. Even though Wieliczka’s population was over 3,500, it fits the characteristics of a big city very well.

The last question, focused on families, concerns maternal mortality. Significantly, the mother’s death contributed to the early death of the newborn (up to 4 weeks) or the infant (up to 1 year). Looking closer into the subject, two main causes of death can be identified: direct causes related to the course of pregnancy and indirect causes resulting from birth complications, such as infections. Even though the phenomenon is well-recognized, it seldom becomes a subject of study. The Modern Period is believed to have seen a high mortality rate in childbirth; however, there are still no reliable data to support the stance.

When doing such research, it is necessary to use registers with death data or reconstruct families and compare them to the time of the woman’s death and the time she gave birth to her last child. The inhabitants of Wieliczka, which throughout the era faced regular accidents in mines as well as sinkholes under their houses, were well-acquainted with the potential dangers deriving from a lack of basic hygiene. Upon comparing the results obtained in Wieliczka, i.e., 7 (6.75) deaths per 1,000 births with the other places, the above thesis can be considered probable.

TABLE 13. MATERNAL MORTALITY RATE IN SELECTED EUROPEAN CITIES

Place/ Country	Observation period	Perinatal mortality rate
Nowy Korczyn	1751-1800	13
Warsaw	1804-1805	15-17
Krasne	1786-1863	17
Wieliczka	1747-1788	7
London	1747-1795	12
Rouen	1750-1792	9
Berlin	1758-1774	12
Edinburgh	1770-1779	8
Geneva	1770-1772	13

Source: AMCK, Liber Natorum et Copulatorum Wieliczka, files 5, 11, 21; Liber Natorum Wieliczka, file 24; Liber Mortuorum, files III/1, III/2, III/3, III/4; Beauvalet-Boutouyrie, 1999: 165; Kuklo, 2009: 312-313; Kuklo – Łukasiewicz – Leszczyńska, 2014: 180; Kołodziejczyk, 2017: 89.

The data in Table 13 show a difference in the outcomes for Wieliczka in comparison with other locations. It clearly indicates a relatively low, even rare, mortality rate among women during childbirth. It must be noted that despite the restricted number of the comparative group and still poorly recognized cases, the results for Wieliczka indicate a much lower occurrence of such deaths. This leads to the conclusion that women enjoyed better conditions in the difficult postpartum period.

To look at the problem from a broader perspective, i.e., the presentation of the family as a part of a household, comparing the results according to Peter Laslett's classification seems to be the most accurate.^[33]

Table 14 shows the outcome of research on household types according to P. Laslett's classification. The places presented constitute only a part of the European research, but the idea was to highlight various parts of the continent. When comparing towns of the Commonwealth, the number of single-person households in Wieliczka (I) was minimal versus the numbers obtained for Krakow or Warsaw. The difference is substantive. The way of life and work which was in a way imposed by the mine might not be adequate for people running a home alone. Additionally, Table 14 shows the nuclear family to be dominant in Wieliczka (III). The last type to be discussed is the extended family (IV). It was noticed that more than a half of the single parents or parents stayed in the household after handing it down to a son. When comparing the numbers to those for Europe, the proportion of nuclear families was highest in Wieliczka. A similarly low number of single households

[33] For a broader comparison of Wieliczka with the other towns (Pieczara, 2019: 101).

was recorded in Benimaclet, Corngilio and Mishino; however, in both Italy and Spain, the number of extended families was high, i.e., 13.8 and 17.4% respectively. The highest number, 72.6% of all households, was recorded in Mishino. Presenting these results aimed at showing the great variety of household structures around the continent. However, a comparison of all the models proves that Wieliczka is more similar to Western than Eastern Europe.

TABLE 14. HOUSEHOLD STRUCTURES IN SELECTED CITIES OF THE COMMONWEALTH USING PETER LASLETT'S CLASSIFICATION

Place/ Region (Country)	Years	Total number of households	Household classification [%] as per P. Laslett				
			I	II	III	IV	V
Warsaw	1791	4,122	25.0	1.7	66.3	6.1	0.9
Krakow	1791	1,159	18.5	5.9	67.0	7.2	1.4
Wieliczka	1788	743	0.9	3.0	82.6	12.7	0.8
Kłobuck	1791	210	1.1	6.2	78.4	9.6	4.7
Olkusz	1791	126	11.9	–	79.4	7.9	0.8
Benimaclet (Spain)	1788	254	0.8	3.1	70.5	11.8	13.8
Geneva (Switzerland)	1798	No data	8.0	10.9	69.7		11.4
Corngilio (Italy)	1808	No data	0.8	4.1	60.3	17.4	17.4
Gratallops (Spain)	1792	196	5.1	0	66.2	15.8	12.9
Gubio (Italy)	1800	No data	8.2	7.4	65.2	16.3	2.9
Guillaumes (France)	1788	225	4.0	4.9	49.3	27.1	14.7
Mishino (Russia)	1814	No data	0.8	0	7.0	11.7	72.6
Reims (France)	1802	No data	19.0	5.0	67.0	8.0	0.5
Schleswig-Holstein (Germany)	1803	No data	5.2	1.2	71.2	14.1	8.3
Urvaste (Estonia)	1797	No data	2.7	0.6	41.2	15.5	40.0

Source: St Clement Parish Census, Wieliczka; Kuklo, 1998: 77–82; Kuklo, 2000: 161–165; Fauve-Chamoux, 2006; Kuklo – Łukasiewicz – Leszczyńska, 2014: 145; Viazzo – Dionigi, 1990: 461–482; Szołtysek – Zuber-Goldstein, 2009; Dubert, 2003: 75–102; Roigé, 1988; Roigé i Ventura, 1989; Szołtysek, 2015b: 610.

The last part of the results falls well into the discussion on the marriage model which has appeared in demographic papers for nearly 60 years. Economic historians study this aspect to determine the economic success of North-West Europe (De Moor – Van Zanden, 2010). The division of Europe suggested by John Hajnal demonstrated similar demographical behaviors in Poland, Russia and Hungary (Hajnal, 1965). All these places were characterized by an average age at marriage of 26 for men and a younger age of around 21 for women. Currently, publications

concerning the territory of the Commonwealth are proving the work of Hajnal to be highly simplified (Szołtysek – Zuber-Goldstein, 2009; Szołtysek – Gruber, 2016; Szołtysek – Poniak – Gruber, 2018; Szołtysek, 2015b).

TABLE 15. AGE AT FIRST MARRIAGE BY SEX. TERRITORY OF THE COMMONWEALTH

Place of wedding	Years	Males	Females
Wieliczka	1750–1788	27.6	24.0
Warsaw (Holy Cross)	1770–1799	29.0	21.8
Torun	1793–1800	25.5	22.2
Brzeżany (Catholics)	1784–1800	26.0	20.9
Nowy Korczyn	1751–1800	26.1	22.1
Pilzno	1770–1786	22.6	20.7
Wojnicz	1778–1787	24.2	20.1

Source: St Clement Parish Census, Wieliczka; AMCK, Liber Natorum et Copulatorum Wieliczka 1706–1790; Kuklo, 1991: 175; Zielińska, 2012: 367; Kuklo, 2009: 279; Miodunka, 2021: 381.

Note: In the case of Wieliczka it was possible to employ the SMAM method.

Table 15 compares the age of fiancés at the moment of marriage.^[34] It is important to notice that apart from Warsaw and Torun, the results show towns located in the south of the country (Ogórek, 2022: 167). The numbers show that bachelors living in Warsaw were the oldest at their first marriage, whereas the oldest spinsters marrying for the first time lived in Wieliczka. In the European analysis, the most important variable allowing for a comparison of different regions is the age of the females. There are two important terrain analysis models worth mentioning. One is by Mikołaj Szołtysek, who divided the Commonwealth into 12 regions and then classified these into four groups (West, East 1, East 2 and East 3) (Szołtysek, 2015a: 121–122; Szołtysek, 2015b: 114–123). The map analysis, with clusters and regions marked, leaves no doubt that Wieliczka should fall within category 6, i.e., West. The man’s average age at marriage is lower by 0.3 years and the woman’s is 18 months higher. Therefore, it can be concluded that the time preceding marriage was spent by both fiancés living in Wieliczka and doing paid work, which allowed them to set up their own independent household after marriage.

The second model is by Tracy Dennison and Sheilagh Ogilvie and discusses the issue of the European marriage model (Dennison – Ogilvie, 2013: 8–10).

[34] For more on women’s age at marriage on the territory of the Commonwealth (Ogórek, 2022).

The three following data were taken into consideration: the age of spinsters on their wedding day, the proportion of never-married women and the proportions of household complexity (for more on the matter Pieczara, 2019: 87–89). The authors gave data for whole countries and for regions within them. Once the data are compared, similarities and differences on a larger scale can be seen and analyzed. The comparison proved dissimilarities between Wieliczka and the territories of Hungary and Russia, where the age of women at their first marriage was at least 4 years higher and the proportion of complex households was lower by at least 15% in the case of Hungary and 30% in the case of Russia. In comparison to Western European countries, women from Wieliczka share many traits with those from the south of France and the north of Spain, along with the proportion of complex households, which is similar to the Netherlands. The third variable, which was never-married women, was much lower than that observed in the Western-European countries. This was the only factor which made it impossible for Wieliczka to be considered as demonstrating the stereotypical Western European marriage pattern.

Conclusion

All the results in the paper allow us to conclude that Wieliczka presented features of a Western European town. It was a young, developing society, presenting a progressive type according to Sundbarg's classification. It was dominated by nuclear families of, on average, five people. The average age of bachelors was 27.6 and of spinsters 24.0. In the perspective of the results known for the Polish lands, statistically, women married late and the gap before having their first child was usually 20 months. The fertility of women aged 15–29 was not high, which is consistent with the average number of people in one household. When analyzing birth intervals, a long gap until the last child was noticed, which can be related to a failure to limit the size of the family. On the other hand, higher scores were recognized in the 40–49 group of women, which was the result of marrying at a late age, i.e. 35–39 years. A relatively short marriage length, which was calculated to last 13 years, can be linked with deaths or migration, which might still be an unexplored feature of protoindustrial Wieliczka and other similar towns. Note that these results are presented for open families lasting in 1788. In order to know the exact duration of most marriages, the observation would have to be extended even to 1850. In the article, methodological issues are also presented, pointing to the need to adopt a control period when reconstituting families, especially when seeking the baptism of the first child. Without this, the results can often come out strongly inflated. Other questions still to be answered are the low proportion of fatalities in childbirth, which could be derived from the potential care received by the female residents of Wieliczka. In the future, it may be extremely helpful to have other articles providing good comparative material,

as at the moment, there are few studies for this period. The latter seems baffling due to a lack of similar proportions in the Western European towns studied. The question arises as to whether that could be a feature typical for a protoindustrial town with large-scale employers, such as, in this case, the mine and all the crafts associated with it. These are potentially further components, characteristic of a mining town community, which could therefore stand out from the other towns in the Commonwealth or the heart of Central Europe. In order to explore the subject, 19th-century Wieliczka needs to be studied and the hypothesis confirmed or rejected. To make the comparison possible, one must wait for other works on 18th-century protoindustrial towns to be able to draw broader conclusions.

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