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# The proto-industrial family and the perspectives of its demographic research in the 18<sup>th</sup> and the first half of the 19<sup>th</sup> century (an example of the village Stružinec in north-eastern Bohemia)

**Słowa kluczowe:** protoindustrializacja; rodzina; demografia historyczna; rekonstrukcja rodzin; Stružinec; XVIII w.; XIX w.; Czechy

**Keywords:** proto-industrialisation; family; historical demography; reconstruction of families; Stružinec; 18<sup>th</sup> century; 19<sup>th</sup> century; Bohemia

**Abstract:** Proto-industrialization is an interesting phenomenon that has been discussed for more than half a century. The most disputed part of this theory is the demographic aspects. The submitted article focuses on research opportunities of the proto-industrial family in the 18<sup>th</sup> and 19<sup>th</sup> centuries; the research focuses on Stružinec u Lomnice nad Popelkou, a village in north-eastern Bohemia. Only a comprehensive study of demographic indicators makes it possible to establish the basic differences between the family in proto-industrial and agriculture-based areas.

#### Introduction

When Franklin F. Mendels, an American historian finished his research into the population of Flanders in the 17<sup>th</sup> and 18<sup>th</sup> centuries, he could hardly imagine that

his established notion of proto-industrialization would resonate with the historical community as late as in the 2020s. According to him, proto-industrialization was involvement of rural workforce in domestic proto-industrial manufacturing, which supplied supra-regional markets not bound by guild restrictions. This led to regional differentiation and specialisation in village craft and agrarian farming. Areas in which handcrafted and sweatshop manufacturing was developing from the 16<sup>th</sup> to the 18<sup>th</sup> centuries could – under certain conditions – develop further to become centres of industrial production. Mendels identified the fundamental similarity of proto-industrial areas to areas of later industrial production in specific demographic characteristics and an overall different population development. In his research of Flanders, Mendels concluded that the region enjoyed – just like other industrial regions – rapid population growth caused by the earlier economic security and thus possibly a lower age of the betrothed, thereby prolonging a woman's childbearing years. The birth rate was increased while the same level of mortality remained approximately the same as in agrarian areas.<sup>1</sup>

While the original thesis was later revised by the author himself, as he saw the proto-industrial period as part of the industrialisation process, he promoted a wideranging and decades-long debate.<sup>2</sup> It is not this paper's goal to evaluate or even revise the theory of proto-industrialization itself, but to try to capture the fundamental indicators that may define the so-called proto-industrial family from a historicaldemographical perspective. Research into family has a long tradition in Europe and Bohemia but this in no implication that the subject has been exhausted; quite the opposite<sup>3</sup>. Interdisciplinary approaches, which are now virtually the fundamental area of scientific work, reveal further insights into an issue that, by its very nature, defines society itself.

<sup>&</sup>lt;sup>1</sup> The dissertation was not published in full until 1981, see F.F. Mendels, *Industrialization and Population Pressure in Eighteenth-Century Flanders*, New York 1981; idem, *Proto-Industrialization: The First Phase of the Industrialization Process*, Journal of Economic History 32 (1972), pp. 241–261.

<sup>&</sup>lt;sup>2</sup> In the Czech environment, this discussion was summarised in Český časopis historický, see M. Myška, Proto-industrializace. Čtvrtstoletá bilance jednoho historiografického paradigmatu, Český časopis historický 92 (1994), no. 4, pp. 759–774; Š. Nekvapil Jirásková, Protoindustrializace a možnosti studia populačního vývoje v oblasti severovýchodních Čech, Český časopis historický 113 (2015), no. 1, pp. 25–49.

<sup>&</sup>lt;sup>3</sup> Most recently summarised in Š. Nekvapil Jirásková, Protoindustriální společnost. Populační chování a životní strategie venkovského obyvatelstva severovýchodních Čech v 18. a 19. století, Pardubice 2019, pp. 15–46.

In Central Europe, the areas of north-eastern Bohemia, the Eagle Mountains, Kłodzko, the Silesian foothills of the Giant Mountains, Lusatia, northern Moravia and Silesia, are undoubtedly among the most important proto-industrial regions, largely oriented towards textile production. While this is nothing new for Czech researchers, it needs to be said that not all of these specific areas have received sufficient attention.<sup>4</sup> Partial research into the regions gives evidence of a different and very extensive population development, but it is not always possible to determine the extent of the specific reproductive behaviour of the population, or how older patterns of behaviour, characteristic of a particular ethnicity, could have affected it.

A long-term interest in proto-industrial areas, specifically the demographic aspects<sup>5</sup> that shaped families in these areas over the long period between the 18<sup>th</sup> and the 19<sup>th</sup> centuries, drew the most pronounced distinctions between proto-industrial and predominantly agriculturally oriented areas. Research has focused primarily on the number of marriages and fertility, but the issue of the changing family size over

<sup>&</sup>lt;sup>4</sup> L. Kárníková, Vývoj obyvatelstva v českých zemích 1754–1914, Praha 1965; A. Klíma, Manufakturní období v Čechách, Praha 1955; idem, Industrial Development in Bohemia 1648-1781, Past and Present 11 (1957), no. 1, pp. 87-99; idem, The Role of Rural Domestic Industry in Bohemia in the Eighteenth Century, The American Journal of International Law 57 (1963), no. 3, pp. 566–587; idem, Agrarian Class Structure and Economic Development in Pre-Industrial Bohemia, Past and Present 85 (1979), no. 1, pp. 49-67; idem, Economy, Industry and Society in Bohemia 17th-19th centuries, Praha 1991; M. Myška, K charakteristice výrobních vztahů a forem v předení lnu ve slezsko-moravské "proto-industriální oblasti" v 16. až v polovině 18. století, Časopis Slezského muzea 33 (1984), pp. 253–270; idem, Opožděná industrializace. Lnářský a bavlnářský průmysl na Frýdecku a Místecku od počátků tovární výroby, Trutnov 1991; idem, Proto-industriální železářství v českých zemích. Robota a jiné formy nucené práce v železářských manufakturách, Ostrava 1992. Nověji J. Čechura, Broumovsko 1615–1754: nový rozměr evropské protoindustrie, Časopis Národního muzea – Řada historická 164 (1996), no. 1–4, pp. 61–88; idem, Der korporative Rahmen der Proto-Industrie im Broumover Gebiet: die Weberzunft (1614–1682–1754), Prager Wirtschafts- und sozialhistorische Mitteilungen / Prague Economic and social history papers 3 (1997), pp. 5–20; Z. Martínek, Etnografický atlas Čech, Moravy a Slezska III. Řemeslná, domácká a manufakturní výroba a obchod v Čechách v letech 1752–1756, Praha 2000; M. Myška, Soumrak domáckého průmys*lu v Těšínském knížectví*, Těšínsko 56 (2013), no. 3, pp. 1–8.

<sup>&</sup>lt;sup>5</sup> Š. Nekvapil Jirásková, Mezigenerační transfer majetku v protoindustriální oblasti severozápadních Čech v 18. a první polovině 19. století, Východočeský sborník historický 33 (2018), pp. 29–53; eadem, Protoindustrializace; eadem, Protoindustriální společnost; L. Nekvapil, Š. Nekvapil Jirásková, Kmotrovství v "protoindustriálních" oblastech východních Čech v polovině 17. století, Východočeský sborník historický 38 (2020), pp. 23–50.

time and the effects of lifestyle on the mortality rates should be brought to the foreground.

#### Family reconstruction

In this article, based on the example of Stružinec u Lomnice nad Popelkou,<sup>6</sup> the focus is on fundamental issues which help reconstruct population behaviour and family formation in north-eastern Bohemia in the 18th and the first half of the 19th century. The description of the population behaviour of people of Stružinec relies on anonymous excerpts of data from the registry of the parish office of Lomnice nad Popelkou.<sup>7</sup> This method is subsequently used to reconstruct families, which allows to trace the fates of the inhabitants of Stružinec.8 This is a time-consuming process in which, based on the information (date of marriage, date of birth and death of fiancés, length of marriage, length of widowhood, number of children and all the information about them, etc.), the researchers literally reconstruct individual families. This method is not very efficient but researchers can work with accurate data. The accuracy, however, is much higher than in classical demographic processing by means of gathering data anonymously. Originally, family reconstruction was done in research into a population's fertility but it can also be fully used in studies of mortality, social mobility and migration. Despite the time required and the limited size of the examined sample, the essential advantage of this research method is possible reconstruction of the fates of specific persons, even those from a group of residents who practically did not leave behind any personal items which could be used as resources (like diaries, correspondence, etc.). These residents had a lower social status but nevertheless represented a majority of the population.<sup>9</sup> The presented research

<sup>&</sup>lt;sup>6</sup> For the history of the manor of Lomnice nad Popelkou and the village Stružinec, see Š. Nekvapil Jirásková, *Protoindustriální společnost*, pp. 78–83.

<sup>&</sup>lt;sup>7</sup> Státní oblastní archiv v Zámrsku, Sbírka matrik Východočeského kraje, Farní úřad Lomnice nad Popelkou, sig. 4974–5007, 5697–5701, 6820–6823; A.B. Máka, *Matrika obce Stružinec*, Polná 1901.

<sup>&</sup>lt;sup>8</sup> L. Henry, Anciennes familles genevoises. Étude démographique XVI<sup>e</sup>–XX<sup>e</sup> siècle, Paris 1956; idem, Manuel de démographie historique, Geneve–Paris 1967; L. Henry, M. Fleury, Des registres paroissiaux à l'histoire de la population. Manuel de dépouillement et d'exploitation de l'état civil ancien, Paris 1956. The Czech researcher was presented with this method in E. Maur's study, Na okraj francouzských metod historickodemografického bádání, Historická demografie 2 (1968), pp. 72–83.

<sup>&</sup>lt;sup>9</sup> Based on the research of the registers of births and deaths, the inventory of souls, land regis-

is based on a study of reconstructed family ties, with marriages contracted between 1700 and 1849 as the basis, from which a database of nearly 800 family certificates was created.<sup>10</sup>

In the 18<sup>th</sup> and the first half of the 19<sup>th</sup> century, the social stratification underwent transformation in the rural areas, resulting from strengthened non-farming strata of the population that took place in the 18<sup>th</sup> century.<sup>11</sup> However, this phenomenon is not typical of only the Czech lands; is has been identified in a number of other European regions.<sup>12</sup> This change in the society was affected by demography, the property structure, the type of agrarian economy and an additional source of livelihood.<sup>13</sup>

The population of Stružinec, the researched site, included 15 large farmsteads<sup>14</sup> and seven small households with very little land, not big enough for them to grow enough crops for sustenance in the mid-17<sup>th</sup> century.<sup>15</sup> The Thirty Years' War left ten estates desolate.<sup>16</sup> A century later, 13 farmsteads and 13 small farms were recorded. Eight houses and 12 small houses were recorded as completely landless.<sup>17</sup> In 1803, there were 27 farmsteads, 36 small farms and 24 landless houses. Thirty years later, the percentage of farmsteads decreased by 5%. Small farms decreased by 27%. On

<sup>13</sup> M. Cerman, E. Maur, *Proměny*, pp. 737.

ters, books and publications of A.B. Máka, an MS Excel database of residents of Stružinec was created, from which individual family ties were reconstructed. Unless otherwise specified, the presented data is based on this database and the results of the author's own calculations.

<sup>&</sup>lt;sup>10</sup> All available information was added to these marriages. For the families at the end of the studied period, relevant data was traced back to as late as 1899. With regard to the examined indicators, maximum effort was always made to use the biggest possible number of cases (family certificates).

<sup>&</sup>lt;sup>11</sup> Older works of F. Kutnar, Dějinný pohled na vesnické společenské vrstvy, Český lid 36 (1949), pp. 97–102; J. Svoboda, Ke studiu sociálního rozvrstveni venkovského lidu v Čechách v druhé polovině 18. století, Československý časopis historický 5 (1957), s. 447–473; newer: M. Cerman, E. Maur, Proměny vesnických sociálních struktur v Čechách 1650–1750, Český časopis historický 98 (2000), no. 4, pp. 737–774; A. Velková, Proměny venkovské společnosti v letech 1750–1850, Český časopis historický 105 (2007), no. 4, pp. 809–857.

<sup>&</sup>lt;sup>12</sup> J. Kocka, Weder Stand noch Klasse. Unterschichten um 1800, Bonn 1990; V. Weiss, Bevölkerung und soziale Mobilität. Sachsen 1550–1880, Berlin 1993.

<sup>&</sup>lt;sup>14</sup> Of these 15 farmsteads, three were newly populated.

<sup>&</sup>lt;sup>15</sup> Národní archiv Praha (further NA Praha), Berní rula, Hradecko, inv. č. 11, sign. 12, fol. 1197–1198.

<sup>&</sup>lt;sup>16</sup> Four farmsteads, one small farms and four landless houses were listed as desolate.

<sup>&</sup>lt;sup>17</sup> NA Praha, Tereziánský katastr, Bydžovsko, inv. č. 52 (sv. XIV K–R), fol. 1197–1198.

the other hand, there was an increase in the number of landless houses by 32%.<sup>18</sup> This progressive increase in the number of craftsmen – practicing a craft became an additional source of income – and the expansion of small houses with small gardens or without land, directly correlates with the earlier research pinpointing transformation of purely agricultural villages into villages of both estates living off the land as well as houses whose inhabitants made their living by practicing a craft.<sup>19</sup>

## Female fertility and the family size

The period in question was a time of great social change, marked by the beginning of the demographic transition in Europe. The old demographic regime, which was typical of a pre-industrial society, was characterised by unrestrained marital fertility. The new demographic regime had lower birth rates and reduced mortality rates, which could have led to population growth. In the 19<sup>th</sup> and the early 20<sup>th</sup> centuries, high infant mortality was a significant limitation with a significant impact on the population's dynamics.<sup>20</sup> There is no presumption of deliberate restriction of fertility in the Czech lands in the period in question, although contraceptive methods had already been known.<sup>21</sup>

In the old demographic regime, marriage and procreation were the most important moments in an individual's life. In the 18<sup>th</sup> and the first half of the 19<sup>th</sup> century, a vast majority of children were born within wedlock which fundamentally stabilised

<sup>&</sup>lt;sup>18</sup> Státní okresní archiv Semily, Fond Farní úřad Lomnice nad Popelkou, inv. č. 12, kart. 12 (Liber status animarum parochiae lomnicensis pro anno domini 1803); inv. č. 13, kart. 13 (Popis všeho lidu v kolátorství lomnickém v roce 1833).

<sup>&</sup>lt;sup>19</sup> E. Janoušek, Několik demografických dat z české vesnice na počátku 19. století, Historická demografie 2 (1968), pp. 67–71.

<sup>&</sup>lt;sup>20</sup> More on the issue of the demographic transition: M. Livi Bacci, Populace v evropské historii, Praha 2003, pp. 112–113; E. Maur, Počátky demografického přechodu v Evropě, [In:] Jakou Evropu ohlašovala bitva u Slavkova?, eds. S. Raková, Ch. Lequesne, Praha 2006, pp. 125–137. Long-term and detailed research into this issue: L. Fialová, Změny ve vývoji plodnosti v českých zemích za demografické revoluce, Historická demografie 15 (1991), pp. 143–189; eadem, Charakter demografické reprodukce před demografickou revolucí, Demografie 46 (2004), no. 4, pp. 234–237. Newer: E. Maur, Demografický přechod (demografická revoluce), [In:] Základní problémy studia moderních a soudobých dějin, eds. J. Čechurová, J. Randák et al., Praha 2014, pp. 713–731.

<sup>&</sup>lt;sup>21</sup> A. Šubrtová, Kontracepce, aborty a infanticidia v pramenech k předstatistickému období, Historická demografie 15 (1991), pp. 9–46. Newer on this issue: J. Čechura, Sex v době temna. Sexuální život na českém jihu v prvním století Schwarzenberků (1660–1770), Praha 2015.

the birth rate.<sup>22</sup> A widespread use of contraceptive methods that would influence the growth dynamics cannot be assumed, the population growth was directly affected by the number of marriages and fertility, the interbirth intervals and the length of a woman's reproductive period. It is necessary, however, to consider possible death of one of the partners which could have significantly affected the length of this period. Unregulated fertility should thus be directly dependent on a marriage's duration.

Research into fertility is based on marriages in which, from today's perspective, more children were born, and the fact that marriages lasted at least five years. This approach is entirely appropriate in attempts to detect a general trend. However, studies of specific communities aimed at identifying certain specifics call for purely qualitative research which offers a much more realistic view. For this reason, longlasting marriages were not favoured but rather, all married couples were analysed, regardless of the duration of the marriage or the number of children. A qualitative angle of the issue offers a much better chance of understanding the gradual transformation of the functioning and the size of a family over a long time while preserving the knowledge of people's individual destinies which should also be a priority.

Throughout the whole studied period, marital fertility remained at a very high level in Stružinec, which suggests that the population's fertility was intentionally unconstrained.<sup>23</sup>

The fertility rate and the subsequent size of the families quite clearly reflect the then mentality and – to a great extent – the pressure put on newly married women. It was expected for a marriage to be blessed with the birth of a healthy offspring as soon as possible, ideally a son. In a number of cases, the bride was already pregnant on the wedding day. Although this attitude towards what is perceive as normal in familial coexistence is understandable, the desire of the partners and the pressure of the environment to start a family as soon as possible oftentimes had fatal consequences.

A number of tragic cases have been found as the examined period is fairly long. One instance in particular illustrates the then mentality and the tendency to 'waste' life. Terezie Kobrlová, daughter of a farmer from Stružinec, married Jan Otmar, a carpenter, in November 1845. It was the first marriage for both partners who were both 25 when they married. Terezie's first pregnancy ended tragically when

<sup>&</sup>lt;sup>22</sup> The proportion of illegitimate children was generally 5–15%.

<sup>&</sup>lt;sup>23</sup> For further research into fertility in the area, see Š. Nekvapil Jirásková, *Protoindustrializace*, pp. 39–46.

in February 1847, her baby girl was stillborn. Fourteen months later, Jan Nepomuk came into the world. He was, however, very weak and died on the following day. Eleven months later, a daughter named Marie was born, reaching only the age of two months. Sixteen months after the birth of the baby girl, in September 1850, Terezie, then at the age of thirty, gave birth to her fourth child, a stillborn boy. Terezie herself died a few days later as a result of exhaustion. In a marriage that lasted less than five years, Terezie gave birth four times. Each birth was separated by a minimal interbirth interval (typical length was usually in the range of 22–24 months at the time). Even with today's knowledge and standard of medicine, this case is hard to understand. Terezie Otmarová's life story seems all the more tragic in the context of the subsequent marriage of her childless widower who grieved for his first wife for less than four months.<sup>24</sup>

The average number of children in the families all over the country was six to nine. This figure is valid for quantitative research but to understand the familial life on a 'local' level, detailed research is needed, as the family has been a living organism rather than a static unit. This is yet another reason why, even after reconstructing families, it is impossible to say what one specific family looked like at a particular point in time, i.e. who was physically present.<sup>25</sup>

The number of children in a family was examined based on the age of the newlyweds and the length of the marriage, taking this information as indicators that directly influenced a woman's fertility period. Just as it was the national average, the local couples had on average six to nine children. It was not exceptional for couples to have many more offspring, though.

Families were most likely to have nine or more children when the woman married between 20 and 24 years of age. The parents with the biggest number of children were Marie and Václav Vavrovi, who married in November of 1808. They both lived in Stružinec before they married. Marie was from a large farmer's family with nine children. Václav was a second-born son of a small farmer. At the time of his marriage, he was a small householder and a shoemaker. Their marriage lasted 47 years and Marie bore 15 children within twenty years, bringing her first child into the world 11 months after the marriage, when she was 22. The inter-pregnancy intervals ranged from 11 to 24 months, with the shortest after the previous baby died six

<sup>&</sup>lt;sup>24</sup> Eadem, *Protoindustriální společnost*, pp. 134–135.

<sup>&</sup>lt;sup>25</sup> The best case is when the record-keeping materials from each year are available, like inventories of the subjects (serfs) and the status animarum.

months after birth. Only six children reached adulthood. Both partners died in 1856. Marie outlived Václav by only 21 days.<sup>26</sup> This was indeed a unique case, although in the studied period large families were a norm.

If attention is paid to the number of children in a family in connection to a marriage's duration, some formula, by which the length of the marriage determines the number of children, cannot be fully accepted. On the contrary, the 18<sup>th</sup> century witnessed a trend where fewer children were born in marriages lasting over 45 years than to couples who spent much less time together. In the first half of the 19<sup>th</sup> century, the link between the number of children and the marriage's duration became tangible, with the maximum number of children born to couples living together for 50 or more years. In the time from 1700 to 1849, a considerable transformation of the ratio of families based on the number of their member can be identified. The only category that did not change in the 18<sup>th</sup> and the first half of the 19<sup>th</sup> century was the number of childless married couples. There were 11 of them, representing 10% of all the cases.

The category of 'small' families, with a maximum of two children, saw the most significant change. While in the 18<sup>th</sup> century these families accounted for around 30% of the cases, in the 19<sup>th</sup> century this share grew by more than 10%. The change came at the expense of medium-sized families of three to six children, whose numbers declined during the second half of the 18<sup>th</sup> and the first half of the 19<sup>th</sup> century. However, this situation did not translate into an overall decrease in born children; on the contrary, married couples who had more than eight children were becoming more common.

Although childless couples were something anomalous and unwanted in the then society, these marriages need to be examined as a biological fact. This group of nuclear families is the only one that did not change in a century and a half. Childless couples represented 10–11% of the cases throughout the period in question. This phenomenon presents us with the other side of population trend research. It is accompanied by the issue of celibate people who did not marry before the age of 50, died unmarried, or were not married in their fertile period, thus they did not directly affect the population growth.<sup>27</sup> In regard to the scale of celibacy, involving

<sup>&</sup>lt;sup>26</sup> Ibidem, pp. 143–144.

<sup>&</sup>lt;sup>27</sup> This, of course, does not mean that these people did not live in a consensual union and had an illegitimate child. However, these cases were so rare that they did not affect the population trend, with more than 95% of children being born within wedlock.

around 5% of men and 10% of women,<sup>28</sup> the statistics need to account for people who entered long-term marriages which, for various reasons, were childless. They represented a considerable group that should not be overlooked. Although methods of contraception were known, it cannot be assumed that these couples were childless voluntarily or intentionally. What complicated starting a family was mainly health problems. This resulted mainly in a break of familial continuity, inability to pass on family assets to the next generation and, last but not least, the uncertainty about who would take care of the couple when they get old.

Nevertheless, 90% of the families had at least one child, therefore the purpose of marriage was fulfilled. However, the lack of a rational attitude to the immediate health of the mother (from a contemporary point of view), to the economic potential of the family, and on the other hand, strong emphasis placed on having many children, is typical of a 'traditional' society, fixated on the future generations, regardless of the effects on the current generation.

Notably, in the period in question, this approach was not entirely irrational. There was no safety net for the sick or the old who were no longer professionally active and could not take full care of themselves. This system of assistance was supplanted by the next generation whose fate was, however, greatly influenced by the then mortality rates. Due to high infant and child mortality rates, a substantial proportion of children died before they reached adulthood and thus were unable to participate in providing the safety net. Moreover, in proto-industrial areas oriented towards the proto-industrial cottage industry, all family members worked. Thus, the higher number of births appears to have been quite logical during the early modern period and the first half of the 19<sup>th</sup> century.

Some researchers believe<sup>29</sup> that this attitude was upheld even by single mothers. The idea that a single mother would ensure that she is taken care of in her old age – when she is no longer capable of taking care of herself – by having an illegitimate offspring is, at least in the Czech and Moravian context, unacceptable. Given that infant and child mortality rates were very high throughout the researched period, it

<sup>&</sup>lt;sup>28</sup> L. Fialová, Příspěvek k možnostem studia sňatečnosti v českých zemích za demografické revoluce, Historická demografie 9 (1985), pp. 89–121; Š. Nekvapil Jirásková, Protoindustriální společnost, pp. 118–120.

<sup>&</sup>lt;sup>29</sup> D. Sabean, Unehelichkeit: Ein Aspekt sozialer Reproduktion kleinbäuerlicher Produzenten. Zu einer Analyse dörflicher Quellen um 1800, [In:] Klassen und Kultur. Socialanthropologische Perspektiven in der Geschichtsschreibung, Hg. R.M. Berdhal, Frankfurt am Main 1982, pp. 54–76, here pp. 69–71.

could not be assumed that the birth of one offspring would 'ensure' that the mother would be taken care of at an old age. Should she be inclined towards this form of security, she would have to have more children. It was common, practice, however, that a woman would give birth to one or two illegitimate children who were often subsequently legitimized.<sup>30</sup>

#### Mortality rates in the youngest generation

The size of families was influenced by death much more than it is the case now. We tend to suppress any thoughts of death and we consider premature death a tragedy. In the past, however, death was considered a regular part of life and premature deaths – especially of children – were thought of as a sad but relatively common event, shaped the family.<sup>31</sup> This is why this section of the paper is about infant and child mortality, which most significantly influenced the mortality rates of the time.<sup>32</sup> Any change in the mortality of the youngest population was immediately reflected in the overall composition of the deceased.

In the 18<sup>th</sup> century, the mortality rates of individuals below 15 years of age amounted to at least 50%. The 1750s and the 1770s were an exception with greater mortality among individuals aged 50+ than aged 15 to 49. The highest rate of child mortality ever was recorded in the second decade of the 19<sup>th</sup> century when it accounted for more than 70% of all the deaths. The reason was recurring smallpox epidemics. The 1820s and the 1830s saw a decline in the number of infant deaths with the mortality of the lowest age group dropping to approximately 50% in the 1830s. It took decades before child mortality got back to this level in the late 19<sup>th</sup> century. In the 1840s and the 1850s, the selected location was badly affected by the epidemiological situation. Later, a gradual decline in the proportion of deaths among children aged 0–14 was recorded which corresponded with a nationwide trend.

Considering how strongly infant mortality influenced the overall population, it is necessary to examine the individual age categories reflecting a significant change in

<sup>&</sup>lt;sup>30</sup> A. Velková, Krutá vrchnost, ubozí poddaní? Proměny venkovské rodiny a společnosti v 18. a první polovině 19. století na příkladu západočeského panství Šťáhlavy, Praha 2009, p. 361; Š. Nekvapil Jirásková, Protoindustriální společnost, p. 188.

<sup>&</sup>lt;sup>31</sup> *Fenomén smrti v české kultuře 19. století*, eds. H. Lorenzová, T. Petrasová, Praha 2001.

 $<sup>^{32}</sup>$   $\,$  The created reconstruction of families allows to study mortality rates until the end of the 19th century.

the proportion of infant mortality and the mortality of children aged 1–4. The mortality rate for children under five years of age accounted for more than 60% of the deaths. The lowest infant mortality rate ('only' 30.7%) was recorded in the 1770s. The next age category, 1–4, was plagued by 35.5% of deaths. However, this should be attributed to the impact of the adverse 1860s and the famine in the early 1870s with not only records of high intergenerational mortality but also a lower number of births and marriages. These two decades were the only time when a negative rate of natural increase was identified in the location.<sup>33</sup>

In the Habsburg Monarchy, infant mortality was the highest when compared to other European countries. The infant mortality rate between 1819 and 1899 was 247‰ with no major fluctuations. It often did not correlate with the overall mortality trend, as it was not primarily affected by the epidemiological situation.<sup>34</sup> It is generally assumed that the rate should be attributed to the natural immunity of breastfed children. Poor sanitation and care had a much worse impact. Infants died very often of complications from gastrointestinal diseases, following weaning and introduction of food supplements.<sup>35</sup>

The infant mortality rate amounted to 201‰ in the researched period but it changed significantly over the decades. The biggest number of deaths of children under one year of age was recorded in the 1760s. At that time, 313 babies out of 1,000 died. This tragic statistic was the result of fewer births and a higher number of deceased infants, which began to manifest itself as early as the mid-18<sup>th</sup> century. The level of infant mortality was the lowest in the 1830s, for which there is a nationwide comparison available. The situation in Stružinec was markedly more favourable, with 133 babies dying out of 1,000 whereas it was 261 out of 1,000 on a national level.<sup>36</sup>

<sup>&</sup>lt;sup>33</sup> Š. Nekvapil Jirásková, *Protoindustriální společnost*, p. 153.

<sup>&</sup>lt;sup>34</sup> L. Sinkulová, Dějiny československého lékařství. II. díl od roku 1740–1848, Praha 1965, pp. 19–20.

<sup>&</sup>lt;sup>35</sup> On this issue, see e.g., M. Lenderová, T. Jiránek, M. Macková, Z dějin české každodennosti. Život v 19. století, Praha 2009. Specific research, see e.g. L. Dokoupil, L. Nesládková, Úmrtnost kojenců a mladších dětí v českých zemích na sklonku feudalismu, Historická demografie 11 (1987), pp. 141–157; R. Lipovski, Dětská úmrtnost v populacích měst Frýdku a Místku v éře demografického přechodu od starého k novému reprodukčnímu režimu, Historická demografie 31 (2007), pp. 21–48; P. Mužík, Kojenecká a dětská úmrtnost v Domažlicích v letech 1690–1830, Sborník archivních prací 30 (1980), no. 1, pp. 229–243; O. Nováková, Úmrtnost kojenců a mladších dětí v 19. a 1. pol. 20. století, Demografie 45 (2003), no. 3, pp. 177–188.

<sup>&</sup>lt;sup>36</sup> Even when compared to purely agricultural areas or the urban environment, infant mortality rates in Stružinec were the lowest. For more, see Š. Jirásková, *Vývoj obyvatelstva farnosti Zde*-

The infant mortality rate was influenced by the proto-industrial nature of the studied location, as women did not have to discontinue breastfeeding due to strenuous field work to the extent women living in fertile agricultural locations did where people's livelihoods depended solely on this type of production. Although the proto-industrial cottage industry was equally challenging, it did not have a prevailing seasonal nature. Although the significantly dustier environment was not good for either the children or the adults, the natural immunity acquired from breastfeeding and a subsequent introduction of food supplemented diet might have affected infant mortality rates in the studied location. The consequences of long-term poor hygiene in people's dwellings became apparent later – over one's lifetime.

Since the beginning, a study of the causes of death faces several obstacles, significantly affecting research into historical demographics. One of the major problems is the record-keeping of the diseases which is highly inaccurate; the identification of individual diseases had varied over a long time. The generic and schematic naming of the causes of death was due to the parish priests' lack of knowledge and inaccurate information about the illnesses, which the family shared at a time when the ill one's condition deteriorated so rapidly that it was impossible to contact the priest in time.<sup>37</sup> Nevertheless, it is very important to focus on the causes of death that were not quite common in a population dependent on another source of livelihood. The most common cause of death, characterized by general convulsions, was eclampsia. In most cases, the condition was recognised in the paediatric population but seizures were not uncommon in adults, either.<sup>38</sup> Overall, a quarter of all the deceased died of seizures in the studied location in the period in question. In the first half of the 19<sup>th</sup> century, it was more than 40%. The vague diagnosis can be found in virtually every registry of deceased persons across the Czech lands, but its occurrence decreased

chovice v letech 1790–1899, Historická demografie 36 (2012), no. 1, pp. 65–114, here pp. 96– -98; B. Kuprová, Vývoj obyvatelstva na panství Škvorec na přelomu 18. a 19. století (Diplomová práce, Univerzita Karlova, Přírodovědecká fakulta), Praha 2013, p. 73; L. Dušek, Obyvatelstvo Budyně nad Ohří v letech 1701–1850. Historickodemografická studie, [In:] Ústecký sborník historický, Ústí nad Labem 1985, pp. 222–224.

<sup>&</sup>lt;sup>37</sup> More about the causes of death and their definitions in L. Sinkulová, *Dějiny*, p. 77; J. Stříteský, *Zdravotní a populační vývoj československého obyvatelstva*, Praha 1971, pp. 42–43. For a newer take on the issue, see D. Tinková, *Zákeřná Mefitis. Zdravotní policie, osvěta a veřejná hygiena v pozdně osvícenských Čechách*, Praha 2012.

<sup>&</sup>lt;sup>38</sup> This wording was often the only option for a priest who was to record the cause of death but did not have enough knowledge to clearly identify the cause.

as medical diagnostics improved. Lung diseases played a much greater role in the research,<sup>39</sup> representing 12.2% of the cases. Lung diseases were most common in the third quarter of the 19<sup>th</sup> century when 16% of people died of a lung disease, which is significantly more than in the agrarian areas.<sup>40</sup> I believe that this was due to poor sanitary conditions in homes, caused by in-home textile production and no way of separating work from living space. An environment with high levels of dust was harsher on people than purely agrarian areas where most work was done outside. Small rooms, which accommodated work and all the family activities, could become the locations of pulmonary diseases. Interestingly, deaths from lung diseases were more frequent among women, with the ratio between the child and adult population (15+) at 46:54%. Long-term exposure to poor hygiene in homes where the children spent most of their lives significantly affected individual vitality and increased mortality rates in the child age category. This is evidence of a tragic fate of families in which the child had better chances of surviving infancy<sup>41</sup> but in-home textile production put a much greater strain on the human body than in families where agriculture was the main source of livelihood. These negative health impacts can be classified as phenomena specific to proto-industrial areas.

<sup>&</sup>lt;sup>39</sup> Included in this category is bronchitis, pneumonia or what was then called 'záducha'. This term is used to mean asthma and chronic obstructive pulmonary disease in this paper.

<sup>&</sup>lt;sup>40</sup> For example, in the parish of Zdechovice, from 1790 to 1899, this cause was recorded in 7% of the deaths. In the manor of Škvorec in the late 18<sup>th</sup> and the early 19<sup>th</sup> century, it was 2.3%, and in the 1850s and the 1860s, it was 11.8% of cases. See Š. Jirásková, *Vývoj obyvatelstva*, p. 102; B. Kuprová, *Vývoj obyvatelstva*, p. 80.

<sup>&</sup>lt;sup>41</sup> Most recently, the issue of infant survival has been studied from the perspective of the socalled grandmother theory. For more, see J. Horský, J. Havlíček, *Testování "hypotézy babiček": Historicko-demografická perspektiva*, Historická demografie 41 (2017), no. 2, pp. 189–211; M. Pražáková Seligová, *Rozbor domácností na Hornopolicku v roce* 1771 *z hlediska přítomnosti babiček*, Historická demografie 42 (2018), no. 2, pp. 177–210; A. Velková, *Přítomnost babiček v předindustriálních rodinách a jejich možný vliv na plodnost dcer (na příkladu panství Šťáhlavy na přelomu 18. a 19. století)*, Historická demografie 41 (2017), no. 2, pp. 213– -234. Foreign research was most recently summarized by S.N. Chapman, J.E. Pettay, V. Lummaa, M. Lahdenpera, *Limits to Fitness Benefits of Prolonged Post-reproductive Lifespan in Women*, Current Biology 29 (2019), pp. 645–650; S.C. Engelhardt, P. Bergeron, A. Gagnon, L. Dillon, F. Pelletier, *Using Geographic Distance as a Potential Proxy for Help in the Assessment of the Grandmother Hypothesis*, Current Biology 29 (2019), pp. 651–656.

#### Conclusion

This paper is a small contribution to a discussion on the proto-industrial family as a phenomenon that deserves more attention. Bearing in mind the specificity of these areas, the research focuses on demographic indicators, which provide detailed information on the formation of a family, its size, development over time, and which clearly highlight the contrast with agricultural regions.

The existing studies show that young people entering into marriage could start a family at a younger age than their peers in the agricultural or the urban regions. With this in mind, women lived through most of their childbearing period in marriage which resulted in a higher number of births. Matrimonial fertility remained at relatively high levels throughout the studied period, a typical feature of a population with intentionally unconstrained fertility. The offspring came into the world at regular yet increasingly long intervals as the number of children grew. Although a typical family would have 5–6 children, during the studied period a difference can be spotted between the second half of the 18<sup>th</sup> and the first half of the 19<sup>th</sup> century. The number of children in a family increased since the turn of the centuries, with growing numbers of families with at least eight children. High marital fertility is considered an essential feature of the old demographic regime, as it was limited only by biological factors (a reason that can be considered natural). The studies have definitely not confirmed the reasoning of some foreign researchers that fertility in proto-industrial areas could have declined intentionally, and thus the idea that population growth was linked to more pronounced migration.

Studying mortality in this specific area has produced interesting and twofold results. The first result shows that the mortality rate of children under one year of age, i.e. the infant mortality rate, was in Stružinec in the 19<sup>th</sup> century significantly lower than was the nationwide average. Infant mortality rates may have been influenced by the proto-industrial nature of the location because women did not have to interrupt breastfeeding for strenuous field work as much as women in fertile farming locations where the livelihood was mostly dependent on plant production only. There is no need to discuss the difficulty of proto-industrial cottage industry, although it was a year-round job, not affected by the overwhelming seasonal fluctuations. Field work required immediate involvement of women as workforce, regardless of the child's age or needs. Although the significantly dustier environment in the households where people were involved in domestic textile production was not good for children or adults, the natural immunity acquired from breastfeeding and the later introduction of food supplements may have influenced the lower infant mortality rate. The effects of long-term poor sanitary conditions became apparent over the course of a lifetime. This leads us to the second result: Stružinec had a higher incidence of deaths caused by lung diseases.

In the early 18<sup>th</sup> century, the inhabitants of Stružinec could be classified mainly as large and small farmers who owned enough land to support their families and house-holds. It was not until the 18<sup>th</sup> century that a stratum of small householders emerged, whose members owned a house with a small garden or a house without any land. The first half of the 19<sup>th</sup> century witnessed a shift in the village's social structure – the class of householders became the most numerous; they owned over a half of the local real estate. Most of them made a living from textile production, i.e. practicing a craft, as encouraged by the owners of the manor since the late 18<sup>th</sup> century.

This proto-industrial cottage industry engaged most household members, so a numerous family meant enough workforce. Since the late 18<sup>th</sup> century, there was an increasing number of families with at least eight children. Moreover, the lower infant mortality rate in Stružinec contributed to maintaining a higher number of family members. The behaviour of the inhabitants of Stružinec, which corresponds with a population of uncontrolled natural fertility, contributed to the dynamic population development of the area. Because of the lifestyle and strong work ethic in the domestic textile production, it is possible that the uncontrolled natural fertility could have been intentional. However, this is an individual factor that cannot be captured in the context of historical demographic research.

The proto-industrial family is an interesting phenomenon that has not received enough attention in the Czech environment. The research primarily focused on the rate of women's marriages and their fertility in the selected areas. Given the very exhaustive heuristics and the time-consuming process method of reconstructing families, absolutely imperative to answering even basic questions, it is a mistake to focus only on the milestones of starting a family. The same attention should be paid to the end of life, the length of which may have been directly influenced by a specific source of livelihood in the studied locations. This extensive processing offers much better interpretative possibilities, crucial for understanding the functioning of a family in proto-industrial areas in the 18<sup>th</sup> and 19<sup>th</sup> centuries.

#### Résumé

# The proto-industrial family and the perspectives of its demographic research in the 18<sup>th</sup> and the first half of the 19<sup>th</sup> century (an example of the village Stružinec in north-eastern Bohemia)

Proto-industrialization is an interesting phenomenon that has been discussed for more than half a century. The most disputed part of this theory is the demographic aspects; the research focuses on Stružinec u Lomnice nad Popelkou, a village in north-eastern Bohemia to point out the most important parameters of research of family coexistence in proto-industrial areas. Connecting quantitative and qualitative research was the primary starting point. In addition to the shift in social strata in the 18<sup>th</sup> and 19<sup>th</sup> centuries, the research also focuses on the transformation of the family size and the aspects that directly affected it. Research into mortality sheds light on several key specificities, like lower infant mortality rates as compared to agricultural areas or nationwide data. At the same time, however, both children and adults would die from various lung diseases caused by in-house production. It is therefore necessary to focus not only on issues related to female fertility and family size, but also on the causes of death with specific characteristics, while establishing the differences between proto-industrial areas and agricultural-oriented locations.

# Appendices

Woman's age		Numl	ber of o	childre	en per	family		Total	Number	Average number		
at marriage	0	1-2	3-4	5-6	7-8	9-10	11+	births	of families	of children per family		
1700-1749												
15-19	-	1	4	2	-	-	-	29	7	4.1		
20-24	-	2	2	5	5	-	3	109	17	6.4		
25-29	1	1	6	4	-	1	_	53	13	4.1		
30-34	1	1	1	1	-	_	_	11	4	2.75		
35-39	-	1	-	-	-	-	-	2	1	2.0		
40-44	2	-	-	-	-	-	-	-	2	_		
45+	1	-	-	-	-	-	_	-	1	_		
Total	5	6	13	12	5	1	3	204	45	4.5		
1750-1799												
15-19	1	1	1	3	1	1	5	97	13	7.5		
20-24	1	7	11	10	6	7	3	250	45	5.6		

Table 1. Number of children in a family by the bride's age in 1700–1849

Woman's age		Numł	per of c	hildre	n per	family		Total	Number	Average number		
at marriage	0	1-2	3-4	5-6	7-8	9-10	11+	births	of families	of children per family		
25-29	-	-	3	7	3	2	1	103	16	6.4		
30-34	2	2	5	1	-	-	-	25	10	2.5		
35-39	1	1	-	1	-	-	-	8	3	2.7		
40-44	2	2	-	-	-	-	-	3	4	0.75		
45+	4	-	-	-	-	-	-	-	4	_		
Total	11	13	20	22	10	10	9	486	95	5.1		
	1800–1849											
15-19	3	7	4	3	8	5	10	266	40	6.65		
20-24	1	13	22	14	13	10	10	490	83	5.9		
25-29	6	8	10	11	4	4	-	180	43	4.2		
30-34	1	5	5	3	1	-	-	48	15	3.2		
35-39	2	6	3	-	-	-	-	18	11	1.6		
40-44	2	1	-	-	-	-	-	1	3	0.33		
45+	5	-	-	-	-	-	-	-	5	_		
Total	20	40	44	31	26	19	20	1 003	200*	5		

 $^{\ast}$  Two families are not included in this research sample, as they probably left immediately after getting married.

Marriage		Numl	per of o	childre	n per	family		Total	Number	Average number		
duration	0	1-2	3-4	5-6	7-8	9–10	11+	births	of families	of children per family		
						1	700-1	749				
0-4	1	1	-	-	-	-	-	1	2	0.5		
5-9	1	3	2	-	-	-	-	13	6	2.2		
10-14	1	-	5	-	-	-	1	18	6	3.0		
15-19	-	-	-	1	1	-	-	13	2	6.5		
20-24	-	-	1	1	1	-	-	13	3	4.3		
25-29	-	-	1	2	-	-	-	14	3	4.7		
30-34	1	-	3	4	2	-	2	69	12	5.75		
35-39	-	-	-	1	-	1	-	15	2	7.5		
40-44	1	-	-	1	-	-	1	18	3	6.0		
45-49	-	-	-	1	-	-	-	6	1	6.0		
50+	-	1	-	1	-	-	1	8	2	4.0		
Total	5	5	12	12	4	1	3	188	*42	4.5		
						1	750-1	799				
0-4	8	5	-	-	-	-	-	7	13	0.5		
5-9	2	1	6	-	1	-	-	30	10	3.0		
10-14	1	-	3	6	-	-	-	44	10	4.4		
15-19	-	3	3	5	1	-	1	62	13	4.8		
20-24	-	-	4	1	1	1	1	50	8	6.25		
25-29	-	-	2	1	1	2	3	70	9	7.8		
30-34	-	1	-	2	1	3	-	48	7	6.9		

Table 2. The number of children in a family by the duration of a marriage in 1700–1849

Marriage		Numł	per of c	childre	n per	family		Total	Number	Average number	
duration	0	1-2	3-4	5-6	7-8	9-10	11+	births	of families	of children per family	
35-39	-	2	-	4	3	2	2	95	13	7.3	
40-44	-	-	-	1	-	2	1	35	4	8.75	
45-49	-	-	1	2	1	-	1	33	5	6.6	
50+	-	-	1	-	1	-	-	10	2	5.0	
Total	11	12	20	22	10	10	9	484	*94	5.1	
1800-1899											
0-4	3	8	2	-	-	-	-	19	13	1.5	
5-9	4	12	7	1	-	-	-	49	24	2.0	
10-14	3	2	3	5	-	-	-	42	13	3.2	
15-19	2	6	6	2	5	2	-	95	23	4.1	
20-24	3	-	1	7	3	4	1	113	19	5.9	
25-29	1	5	6	4	4	4	4	162	28	5.8	
30-34	1	1	5	5	3	2	2	114	19	6.0	
35-39	-	2	3	2	5	4	3	134	19	7.1	
40-44	1	2	6	1	3	2	1	88	16	5.5	
45-49	2	2	2	2	2	1	4	96	15	6.4	
50+	-	-	1	2	1	-	4	69	8	8.6	
Total	20	40	42	31	26	19	19	981	*197	5.0	

\*Seven families are not included in this research sample, as there is not any relevant data about them.







Chart 2. The evolution of the composition of the deceased by age groups in 1668–1899



Chart 3. Individual age categories in child mortality in 1668–1899



Chart 4. Infant mortality in 1720–1849 (in ‰)

\* L. Kárníková, Vývoj obyvatelstva, p. 338.

The Course of Death	1784-	-1799	1800-1849		1850-1899		1784-1899			
The Causes of Death	Total	%	Total	%	Total	%	M	F	Total	%
Infectious	19	13.0	105	10.8	102	7.5	89	137	226	9.2
Tuberculosis	-	-	34	3.5	138	10.2	91	81	172	7.0
Pulmonary	13	8.9	92	9.5	197	14.5	137	165	302	12.2
Intestinal	1	0.7	2	0.2	43	3.2	24	22	46	1.9
Brain	-	-	11	1.1	62	4.6	33	40	73	3.0
Seizures/eclampsia	56	38.3	394	40.7	253	18.7	367	336	703	28.5
Gynaecological	-	-	-	-	1	0.1	-	1	1	0.04
Cardiac	-	-	-	-	16	1.2	8	8	16	0.65
Ascites	23	15.8	52	5.4	34	2.5	49	60	109	4.4
Death by old age	4	2.7	83	8.6	160	11.8	115	132	247	10.0
Tabes dorsalis	1	0.7	45	4.6	128	9.4	91	83	174	7.0
Weakness	-	-	38	3.9	52	3.8	51	39	90	3.6
Others (e.g. cancer, kidney disease, fever etc.)	11	7.5	86	8.9	149	11.0	120	126	246	10.0
Unspecified	15	10.3	26	2.7	1	0.1	12	30	42	1.7
Accidents and suicides	3	2.1	1	0.1	19	1.4	19	4	23	0.9
Total	146	100	969	100	1 355	100	1 206	1 264	2470	100

Table 3. The causes of death in 1784–1899

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