

Urban Infant Mortality and Religion at the end of the 19th and in the early 20th century – the case of Ekaterinburg, Russia

Abstract

Modern demographers analyse regional and other infant mortality differentials as important factors behind the current life expectancy of Russian citizens (Kumo, 2017). Historically, however, the Russian Empire is simply displayed as one block with high infant mortality rates (Klüsener et al, 2014). Also with respect to cultural background factors, Russia is often perceived as religiously homogeneous with the Orthodox Church dominating the country. In reality, Russia has a long history of coexisting religious traditions. This includes both provinces with a majority of Catholics, Muslims, Buddhists or shamanistic populations as well as territories characterized by religious diversity and significant minority religions. Our project studies minority religious groups in the Urals, a province by the Ural Mountains stretching into Asia. While no territory can claim to be truly representative of this mega-country, we believe that this centrally located province is well suited to show some of the Russian variety, including differential infant mortality among the followers of minority religions, which is the topic of this article. We employ church record microdata to study Catholics, Jews and Old Believers in the main metal producing city of Ekaterinburg.¹

Keywords: Infant mortality, Historical demography, Religion, Russian Empire, Urals, minorities

Introduction

The infant mortality rate (IMR) is an important measurement in itself, but researchers also use it as a proxy for measuring economic and social conditions and developments. For a general overview, also relating IMR levels to wars and conflicts, cf (Abouharb, 2007). Currently, most countries experience IMR rates showing that under one per hundred children born die during their first year, but historical levels of up to 30 percent were common. The IMR has been found to vary with such factors as gross national product per capita, expenditure for health services, social class and status, education levels, place of residence, size of domicile, language spoken and religion our main target variable. A recent overview ranked Russia with the highest European infant mortality rate in 1910 (Klüsener et al, 2014). Due to its size, the Russian Empire was more comparable with a continent than with a country, so the study of regional and local differentials is of crucial importance, for it allows the researcher to look beyond national averages. However, spatial and other differential analyses of infant mortality in Russia are underrepresented among international historical demography studies. This paper focuses on infant mortality in the late 19th to early 20th century Ekaterinburg city, the major urban centre in the Asian part of the Urals region. In formal geographic terms, it is located in between Europe and Siberia, but since the natural borders are to the west, Ekaterinburg oblast' or county belongs topographically with Siberia.

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Regrettably, a comprehensive historiography about infant mortality has not yet been written, neither on the global nor on the national Russian level. There is, however, an overview of the history of infant mortality in the Nordic countries, which is relevant not least due to the similarly cold climate (Edvinsson et al, 2008). These authors conclude that the infant mortality decline was complicated with a web of causes involving geographic differences, social strata, ethnic factors, traditions, literacy, official campaigns and individual efforts. The interdependency between the factors make it difficult to explain differences between countries and regions. Especially, the knowledge represented by physicians, midwives and other women as agents of change could play a decisive role, making it difficult to find high correlations between infant mortality rates and economic factors, population density or other aggregated quantitative variables. Individual level and statistical data with information about childrearing practices is regrettably scarce, which is why we must also rely on qualitative explanatory material in this research. During the nineteenth century, both the levels of infant mortality and its development differed among the Nordic countries. Within these countries, there were large regional differences that often crossed national borders. Authorities and medical personnel came to see the high infant mortality as a problem during the eighteenth and nineteenth centuries. Knowledge about infant care practices was initially published in English medical circles in the early eighteenth century, gradually reaching peripheral areas and eventually including ethnic minorities. A particularly important element in the literature was the stress on the benefits of consistent breastfeeding. Artificial feeding characterized most of the areas with the highest infant mortality. For reasons of economy, distance, culture and language some groups were stragglers in the infant mortality decline, but after they joined the general development they caught up and are today among the groups with the lowest infant mortality.

Until recently, the Nordic region was too religiously homogeneous to establish any effect on infant mortality from belonging to different religious groups. On the other hand, a relationship between religion mortality is well established in other parts of Europe. Already in 1902, Johannesen, a Norwegian professor of paediatrics, published graphs of infant mortality by country in Western and Central Europe, showing how most Catholic countries had higher infant mortality than most Protestant nations (Johannesen, 1902). This can be further exemplified in the study of German-French border areas, where Catholics and Protestants traditionally had similar differences in levels of infant mortality (McQuillan, 1999). Based on a study of Catholics, Jews and Protestants in the Netherlands, the main hypothesis suggested in order to explain religious differences in child mortality, was with lifestyle and social isolation of religious minorities (van Poppel, 1992, van Poppel et al, 2002). The relatively high historical IMR in Catholic regions in Europe has been linked to their rather limited breastfeeding practices (Thorvaldsen, 2008), while the low infant mortality level among Jews in Venice has been explained with cultural differences in attitude concerning the acceptance of high IMR as something natural (Derosas, 2010). The even higher levels among Orthodox Russians have been studied by many, for instance in connection with the Finnish midwives bringing contagion after working in St Petersburg (Moring, 1998). In this article, we analyse infant mortality in early 20th century Ekaterinburg based on individual level vital events registered in baptismal and burial lists.

Russia was far from just a religiously homogeneous entity dominated by the Orthodox Church. In reality, it has a long history of coexisting religious traditions, including provinces with majority Muslim, Catholic, Buddhist, or shamanistic populations, while other regions, such as the Urals, had significant minorities adhering to other religious societies than the Orthodox Church. Pre-revolutionary Ekaterinburg was an industrial city in the Middle Urals, just east of the mountain range, with marked ethnic and religious diversity. While the majority were ethnic Russians and belonged to the Russian Orthodox Church, there were communities of Old Believers, Muslims, (Polish) Catholics, (German) Lutherans and Jews, cf table 1.

Table 1. Religious denominations in Ekaterinburg

According to the Russian official medical statistic, Perm Gubernia [province] had the highest infant mortality in late 19th to early 20th century Russia. These were part of health reports collected and published by the Gubernia's health professionals, based on reports from the local doctors who met regularly – at least annually. In 1895, the infant mortality rate in Perm Gubernia reached 425 per 1000 born compared to a national mean of 270. In distinction to most contemporary European data, urban infant mortality was lower than rural – 371 and 427 correspondently (Kornilov, 2014, p. 81). IMR also varied between different uyezds (districts). See Table 2.

Table 2. Infant mortality rates in Perm Gubernia per 1000 born in 1895 by uezd [sub-province]

At the time, Ural medical experts attributed high infant mortality to starving parents who could not produce healthy and strong babies and unfavourable life conditions especially harmful for pregnant women and mothers with new born babies (Sokolov & Grebenshchikov, 1901, p. 30). More realistically, others blamed lack of breast-feeding; 37.7% of the region's mothers did not breastfeed their children at all. 62.3% of those who did breastfeed would start adding cow's milk a few days or weeks after delivery, easily causing infant mortality from gastrointestinal disorders (Soyuz dlya bor'by s detskoj smertnost'yu, 1915, 6–7). These estimates did not consider distinctions between rural and urban populations, nor ethnic, religious or other social characteristics of the people observed. This article analyses infant mortality among parents belonging to three different religious minorities in late 19th to early 20th century Ekaterinburg city: Catholics, Jews and the Old Believers, represented by ethnic Poles (mostly), Jews and Russians respectively. As a background, we shall also use some data on one of the Ekaterinburg Russian Orthodox Church parish. We start with a brief description of the ethno-historical, medical and religious landscape and of the source material – the paper is mainly based on church book data from the period 1898–1917. Next, we shall analyse the independent factors behind infant mortality, such as religion.

Geographic and Religious Context

The relationship between religion and infant mortality is well established in the historiography. A main hypothesis suggested to explain religious differences in child mortality is with lifestyle and relative social isolation of religious minorities (van Poppel et al, 2002). While there have been several research efforts made on infant mortality in late 19th to early 20th century Russia (Andreev & Kvasha, 2002; Kvasha, 2003; Avdeev, 2010) and in its regions including the Urals (Golikova, 2012; Kornilov, 2014), none

considered urban populations. Urban mortality studies are also relatively rare in the international literature, but for examples see Derosas (2010) on Italian Venice, Edvinsson (1992) on Sundsvall in Sweden and Mølmann (2004) on Hammerfest in Norway. Infant mortality among Russian religious minorities has never been studied either, but became possible by our pioneering use of nominative data from the Urals ministerial registers. The usual, previous approach has been to aggregate data from the source material without considering individual or family characteristics.

Geography and hygienic facilities

The Urals region has a long history as a multiethnic and multireligious area. Its colonization by the Russians started in the late sixteenth century together with territories further east, and since then these territories received substantial streams of immigrants. Economic reforms of the late nineteenth century and the Stolypin agrarian reform of the early twentieth century initiated the first immigration wave, which brought thousands of peasants from western and central Russia into Asia. Ural metal producing plants attracted engineers and technicians from Russia's western provinces and abroad. As a result, the Urals became an ethnically and religiously diverse territory and is currently home to representatives of more than 50 ethnic groups among a population of four million in Sverdlovsk oblast', the county like contemporary administrative unit east of the Ural Mountains. The oblast' is located in the middle of the Eurasian continent, with Ekaterinburg as its capital on 56°5' N / 60°4'E. Tsar Peter the Great in 1723 founded Ekaterinburg as a metal producing plant on the bank of the Iset' river, still a stream in the city centre. Its wealth boomed when rich gold deposits were discovered in the mid nineteenth century. The city needed engineers and managers and since there were not enough Russian specialists, foreigners were brought in to fill the vacancies. The Ural metal plants employed many Europeans, either exiled prisoners of war or workers contracted by the state, who composed the nucleus of the Lutheran and Catholic communities. These had developed into established religious institutions by the late nineteenth century.

In the late nineteenth century, the Ekaterinburg factories started to produce water turbines and steam engines. Its enterprises got electricity from the thermal electric power station placed in the middle of the city. By 1904, the city had 49 industrial factories and more than 300 small handicraft establishments and shops. The three largest private enterprises were a mechanical plant producing steam engines, a cloth factory and a brewery. All these businesses together with a population of about 56,000 at the start of the twentieth century needed water. Despite the projects planned as early as 1884 and regularly reconsidered by the city's authorities, a public water supply system was not introduced until 1925 due to financial problems, revolutions and Civil War. Meanwhile, professional water carriers (62 in the early twentieth century) transported water to the city in wooden barrels from several water springs. Some houses had private water supply – wells and large tanks installed on the roof to collect rainwater or keep water brought in buckets (Mikitiuk & Iakhno, 2014, p. 131–134). Elsewhere in the Russian Empire, it has been proved with individual level data that use of unboiled surface water in the households could increase infant mortality (Jaadla & Puur, 2016).

Modern sewage was introduced even later and until then the industrial waste water

was sent into the city's main river Iset'. Most houses had a small annex with privy where the waste fell into the cesspool. When full, a zolotar' would bring his horse-drawn cart and scoop the contents of the sump into a barrel. The barrels were emptied in a specially designated place outside the city (Mikitiuk & Iakhno, 2014, p. 135–139).

Medical services

Ekaterinburg's medical services, including access to doctors' assistance, improved by the end of the 19th century due to the zemstvo's² activities. The city had 27 doctors and paramedics to serve 37,420 citizens in 1888 (Pamyatnaya knizhka, 1889, p. 29; 80–81), thus the citizens to doctor ratio was 1386. This was rather favourable compared to 6451 in European Russia and better than the average in Britain during the same period (Hlopin & Jerisman, 1898, p. 225). There were seven hospitals equipped for 328 patients, eight midwives, a dentist and four pharmacies. Overall, there were 9061 persons seeking documented medical help in Ekaterinburg in 1888. Despite the fact that the number of doctors in Ekaterinburg was 40% less than in Perm, the province capital, the death rate among hospitalized patients was similar in both cities – around 7%. In addition, there were many private doctors in the city and several nongovernmental medical institutions and societies, founded by doctors and supported by philanthropists. The most active were the Ural Medical Society, the Ekaterinburg committee of the Russian Red Cross and the Society for fighting tuberculosis (Mikitiuk & Iakhno, 2014, p. 95).

Children started to receive vaccination against smallpox before 1888 from a specially employed vaccinator. In 1888, he vaccinated 1015 children against smallpox. (Pamyatnaya knizhka, 1889, p. 29; 80–81). To target the high infant mortality in Ekaterinburg, the zemstvo initiated the first city's maternity home foundation in 1877, sponsored by local philanthropists. One doctor employed by the zemstvo, N. Russkikh attained national fame for fighting child and infant mortality. While working as a doctor in Ekaterinburg, he studied European experiences from diminishing infant and child mortality and in 1902 cofounded the Society for fighting child mortality in Russia, institutionalized in St. Petersburg in 1904. He also edited the journal Protection of maternity and infants. In general, Ekaterinburg had an elaborate network of medical facilities that surpassed most other Russian cities in both quality and quantity (Mikitiuk & Iakhno, 2014, p. 103).

Table 3. Statistics on medical facilities, doctors and paramedics in Perm and Ekaterinburg towns and districts in 1888

Religious groups in Ekaterinburg

The more than 90 percent Orthodox in the city according to the 1897 population census were overwhelmingly ethnic Russians, which was also the case for the four percent Old Believers. The 0,7 percent Catholics were mostly of Polish origin, while the same proportion of Jews came from diverse places, mostly from within Western Russia. In addition, there were some persons with roots in other European countries, employed at the Ural plants with family members, adding to the well-established Protestant congregation. Due to their multigenerational history in the Urals, we consider them

² Zemstvo – self-government elected county level institution was introduced in 1865 to manage local affairs, such as road building and maintenance, improvement of economic development, oversee medical services and sanitation, public education and other socially important activities.

locals, and hence their demography is not analysed in this article.

The Catholic community

According to the church records, most Ural Catholics hailed from the western parts of the Russian Empire, i.e. present-day Poland, as well as Belorussia, Ukraine, and Lithuania, at the time regions with high proportion of Polish population. However, a notable proportion of the Catholics were second or third generation descendants of those who had arrived earlier.

A majority of the Ekaterinburg Catholics belonged to the upper class due to their occupations and social status – they were *dvoriane* – a nobility status they had either inherited or received for state service while still in the West. The second and third biggest groups were peasants and *meshchane* – townspeople. Many of the Catholics were employed as engineers or state civil servants. Implementation of the 1905 Decree on Religious Tolerance strengthened the Catholics' status as a religious community. The Roman Catholic Church in Russia received relative freedom with permission to accept new converts, including spouses and children previously baptized into Orthodoxy. Thus, Ekaterinburg's Catholics were able to expand their charitable and other activities as the number of parishioners continued to grow and reached about a thousand in 1913. After Russia entered World War I, the congregation of St. Anna Church doubled in size due to the arrival of refugees and prisoners of war. According to the burial records, Austro-Hungarian prisoners of war experienced high death rates over the course of the next two years due to scurvy and other diseases (Glavatskaya & Borovik, 2016).

The revolutionary events of 1917 followed by the Russian Civil War led to the repatriation of the Ural Polish Catholics to the newly independent Poland, so from that time on, the Catholic community grew smaller due to outmigration. According to the 1920 census, there were 1082 Poles in Ekaterinburg, and even if not all of them were Catholics, it is likely they made up the bulk of the Catholics registered as parish members during the 1920 survey, ran in preparation for the offensive against religious institutions in Soviet Russia. Ekaterinburg's Catholic community, like other religious institutions, lost its church property during the atheist campaign in the early 1920s. The communist authorities closed St. Anna Church in 1930 and dissolved the Catholic community (Glavatskaya, 2015).

The Old Believers

The Old Believers separated from the official Russian Orthodox Church in protest against the church reforms introduced by Patriarch Nikon of Moscow between 1652 and 1666. The Old Believers continue liturgical practices that the Russian Orthodox Church maintained before the implementation of these reforms and consider the reformed Russian Orthodox Church as heretics, including former Russian Tsars. The Old Believers manifested their distinct religiosity following pre Patriarch Nikon habits from the early 17th century: men do not shave their beards, prefer to wear old-fashioned clothes, do not consume imported such products as potatoes and tobacco, do not accept any message from the state authorities, and consider these to be the devil's servants. They also maintain the pre-reform rituals with long liturgy, using books and icons either produced before the schism in 1666 or made in pre-reform style. In addition, they maintain

traditions of communal peasants' support even when living in the city. The state persecuted the Old Believers, who went underground and escaped to remote areas – the Russian North and Siberia. With metal production mushrooming in the Urals, this became an attractive place for the Old Believers, and many metal plants employed them. As a result, the Urals became one of Russia's centres of Old Believers. There were different soglasiia [factions] among them: popovtcy had their own priests, while bezpopovtcy – the priest less had lay religious leaders. In this article, we analyse a priestless community of Chasovennoe soglasie [Chapel faction] in Ekaterinburg. This parish estimated up to 1,000 members had their own St. Nikolas Chapel for common prayer located in the Orthodox Church of Ascension parish in the Southern part of Ekaterinburg.

Many of Ekaterinburg's Chasovennye Old Believers came from the commercial and industrial settlement Shartash, some 5 km outside Ekaterinburg, an Old Believers centre since the eighteenth century. Most of the first Ekaterinburg merchants and industrialists descended from Old Believers' families in Shartash. They also played a leading role in the city's municipal administration until the mid-nineteenth century, when the state initiated a new wave of persecutions, weakening the Old Believers' position and influence. Ekaterinburg's population grew rapidly, while its proportion of Old Believers steadily declined (Kljukina-Borovik, 2000). Implementation of the 1905 Decree on Religious Tolerance once more strengthened the status of Ekaterinburg's Old Believers. One visible advantage from the reform was that they took on the registration of vital events in their own church books. In principle, the police should register them until 1906, but we have not found any protocols.

The Jewish community

Most of the Russian Jewish population originated from the partition of Poland, when its eastern territories became part of the Russian Empire. However, the Jews were not allowed to settle beyond the Settlement Pale (basically Belarus and Ukraine) until the early nineteenth century. The first Jews arrived in Ekaterinburg after the new legislation on their military conscription was introduced in 1827. Until then, the Jews payed taxes to avoid military service. The new regulation forbid that practice and the Jews were obliged to send conscript into the army. Most of them were conscripted already at the age of 10 to 12 years and sent to the military schools as cantonists or had to stay with Russian peasant families until they were 18 years old, when they were obliged to join the army for 25 years until their military service was over. Most boys were pressed to abandon their religion and be baptized into the Russian Orthodox Faith soon after conscription. Not many could withstand the pressure. There was a school for cantonists in Perm and one of regiments placed in Ekaterinburg had over 116 Jewish soldiers. They managed to contract a soldier Rabbi, rented a room for communal prayer and had a separate burial ground in 1854. Some of the soldiers had wives and children, so all together there were 130 Jews in Ekaterinburg. However, all the Jewish soldiers were sent away from Ekaterinburg by the end of 1850s. According to the 1860 survey, there were not a single Jew in the city and according to the 1873 city census, there were eight male and five female Jews in Ekaterinburg. The permanent Jewish population settled in Ekaterinburg between the late 1870s and the early 1880s. Some of them were the so called 'Nikolaevskie soldaty' – the retired soldiers, who according to Nikolai the First's law earned the right to settle beyond the Settlement Pale after finishing their 25 years long military service. There were also

artisans, persons with college education, professional doctors, pharmacists since the Russian State abolished the restrictions on migration and place of residence for the Jews holding these professions. Jewish migration to the Urals and Ekaterinburg facilitated by a wave of pogroms swept across the Western part of Russian Empire – mainly contemporary Ukraine in 1881–1882 (Klier, 2011). According to the 1887 city census, there were 238 Jews (120 men and 118 women) in Ekaterinburg (Simanov, 1889, p. 60–61, 79). By the end of the nineteenth, there was a Synagogue, a Rabbi, a mikva for ritual bathing and a cemetery in the city. According to the all-Russian census Ekaterinburg's Jewish community reached 303 with 153 men and 150 women in 1897. Most of them: more than 77% of the men and more than 70% of the women were literate. Many of Ekaterinburg's Jews, both men and women were occupied in clothes production (21%), polygraphy (13%), tools, watch and toys production (13%), jewellery, painting and luxury item production (7%). Implementation of the 1905 Decree on Religious Tolerance strengthened the status of Ekaterinburg's Jewish community. They took on the registration of vital events in their own church books from 1906. Before that the Perm' city Rabbi living some 600 km away from Ekaterinburg did the registration.

In the early 20th century, Ekaterinburg's Jewish community grew rapidly due to migration from the western provinces, i.e. contemporary Poland, Ukraine, Byelorussia and Lithuania due to the series of pogroms, especially after the implementation of civil rights in 1905, which allowed the establishment of nationalistic, often anti-Semitic organizations. World War I and the revolution abandoned the Settlement Pale and brought yet another wave of Jewish refugees from the front line into the Urals. The new generation of migrants differed from the Ural Jews, due to their high level of religiosity and adherence to the Jewish habits from the Settlement Pale, including distinct clothes and haircuts, long ago abandoned by the city's Jews. The Ekaterinburg Jewish community and wealthy families of Jewish origin established several institutions to help the refugees: an employment bureau, a housing agency, credit foundations for small business start-ups, a society for the support of the poor, free medical services, as well as free kosher dining and bathing (Antropova & Oshtrakh 2002).

Sources and methods

Our empirical focus is on vital events registered on the individual level in the church books of the three above-mentioned religious minority communities: Catholics, Jews and Old Believers. In addition, we have a control sample from Orthodox church records. Tsar Peter the Great ordered the general registering of vital events in church books [Metricheskie knigi] from 1722. During the next century, the state extended the obligation to keep ministerial records to religious leaders of any officially recognized religious congregation – for the Catholics in 1826 and for the Jews in 1835. They should keep dual copies, one to be preserved in the local community and another to be sent to the Synod state archive in Sankt Petersburg. The church books had three parts – about baptisms, about marriages and about burials. After the Catholic Church in Ekaterinburg received independent status in 1886, separated from the vast gubernia, the Catholic priests in principle registered all vital events connected with baptisms, marriages and burials of their parishioners in the St. Anna church books. This registration of vital events took place until the October Revolution in 1917 all over the Russian Empire; while some kept up registration until 1919 and even 1925.

We found local church books in the State Archive of Sverdlovsk oblast' (GASO) covering the period 1889–1919 for the Catholics; 1906–1917 for the Jews and 1907–1919 for the Old Believers. While there is hope to find central copies of church books for both Catholics and Jews for the earlier years in the Sankt Petersburg and Perm archives, there will likely be no information on the vital events of the Old Believers before 1906. Searching for such source material requires more resources than we so far dispose of.

Despite the existence of relevant monographs, no literature on infant mortality among the Russian Orthodox Church members allow for easy comparison. The method of calculating rates has been different from the standard international approach, since they measure infant mortality as a fraction of all deaths, including adults. One author claims such infant mortality rates up to 41,7 % in late 19th century Perm province, declining to 32,7 % soon after 1900 (Golikova, 2012). Comparable rates from our material vary around 5,7 % for the Catholics, 8,7 % for the Jews and 15,8 for the Old Believers – the three groups' average was 8,4 %. The Russian Orthodox Church community had a much higher proportion of infant deaths (38,1 %), but figures computed in this way are too heavily influenced by fertility levels and the population's age composition to be comparable with international results. Instead, we use data from the Church book of Ascension Church of Ekaterinburg, while the full Russian Orthodox Church database is still extensive work in progress. Thus, we calculated mortality rates relative to the number of babies baptized in the Russian Orthodox parish of Ekaterinburg's Church of Ascension, in order to compare ethnoreligious minorities with the Russian Orthodox majority based on local statistics for at least one parish, see table 4.

The registration of burials in the church books provides names, death date and the age of the deceased. In the case of children aged under 16, there is also information about the parents: their names, social status, place of origin and marital status. That allowed us to check the accuracy of the information on infants' age as registered by the priests during the burial ceremony. Registration completeness may vary between communities. Otherwise, we identified buried infants who were not entered in the baptism records. However, record linkage is not completed for the 1735 buried Orthodox infants. See table 4. As can be expected in a rapidly growing city with heavy in-migration, there is far from overlap between the burials of the infants and their baptisms. The city's population doubled from 1897 to 1913, mostly explained by in-migration (Chashchin, 2009). With functioning railway transport this means that even a baby which died a month old could have been baptized on the way to Ekaterinburg. We have not included the non-baptized burials in the number of children born, if we did, especially the IMR of the Jews and the Catholics would be even lower. Without nominative censuses, it is difficult to prove to what extent baptized children remained in Ekaterinburg, and did not die elsewhere, but the rapid population growth indicates that most in-migrants stayed. A more difficult question is the extent to which parents buried their dead infants. Our impression is that especially the in-migrating Jews and Catholics were dependent upon their religiously based social networks, that hiding an infant death would be difficult in the densely populated urban area, and that the burial fees were low and could be waived. The variation found in IMR levels make us sceptical that IMR in and of itself can be used source-critically. We shall return to other factors that can explain their low infant mortality below.

Table 4. Number and proportion of deceased infants whose records in the burial lists could be linked to the baptismal lists.

We have transcribed data from the church books for the Catholics, Jews and Old Believers with all together 1113 entries (699, 220 and 194 correspondently) and run statistical analyses. There is no data on stillborn children in any of the religious denominations. The registration of the stillborn varies from country to country (Klüsener et al., 2014). In spite of thorough checking we have only found stillbirths registered in the Orthodox church books. In the case of the religious minorities, we have found neither stillborn nor babies who died after a few hours or during the first day, which could have been interpreted as stillborn. The priests had to register only the sacraments performed, and burial service was to be performed only for the baptized, which is why in case a baby died before baptism there was no records left in the church book. Our general impression from qualitative sources is that neither people nor priests cared much about the stillborn. Since we had both baptismal lists with birth dates and death dates in the church book we could check how accurate the priests reported the infants' ages. According to our controls, the ages were correct for 75% of the Jews, 86% of the Old Believers and 70 % for the Catholics. The rest were correct to the nearest month. There was just one Catholic baby whose age in the burial list had to be corrected due to a bigger inconsistency. However, the corrections did not affect the results.

Levels of infant mortality

We shall concentrate on the analysis of infant mortality among the three religious minorities, with some side glimpses to child mortality up to the 5 year old and employing comparative data on the Orthodox majority. 132 infants died between 1898 and 1919 in all three religious minority communities combined. While we have enough cases to produce reliable results about the general levels of infant mortality in each religious group, we would need more cases in order to split the burials also by age in months, season of death, cause of death etc. We can still perceive some trends with respect to these factors, however. Figure 1 displays infant mortality in absolute and relative numbers for the Orthodox majority and the three minorities where data was available for the period 1898 to 1919.

Figure 1. Infant Mortality in Ekaterinburg by denomination

Measured per 1000 births figure 1 shows that Ekaterinburg's Jews had the lowest rates, while the Old Believers had the highest – two times the average among the three minorities. See Table 5, which in addition shows that the infants born to Catholic parents in most years had infant mortality rates on a par with the Jews, but that annual rates for the Catholics could be lower. While infant mortality among the Old Believers was high in comparison with the other minorities, it was significantly better than IMR in the neighbouring Russian Orthodox parish, where the parents lost every third infant born between 1906 and 1917 and where nearly half the infants died in some years. See Table 5. Being part of a religious minority, also gave advantages to the Old Believers' infants over their co-ethnic but Orthodox peers.

Table 5. Infant mortality rates per 1000 born, per religion among the three minorities and in one Orthodox parish in Ekaterinburg 1906 to 1917.

These results are in line with the aggregate IMR level for the uyezds reproduced in Table 2. The minorities' annual IMR are based on too few cases to speculate about the causes for annual variation, and the details have not been tabulated here.

When cause of death is specified, stomach related diseases dominated the infant mortality pattern for all three minorities, with respiratory diseases not far behind among the Catholics and Jews. The latter cause was not noted for any Old Believer's child, which may be explained by their reluctance to call the doctor, but rather ordinate some traditional remedy which could cause diarrhoea. As can be expected, relatively more infants died from stomach related diseases during the warm months, but there are also a few cases during the winter. See figure 2, where the first and the last part of the winter are shown separately.

Figure 2. IMR by season and denomination (in absolute numbers and %)

There were also a couple of infants allegedly dying from meningitis, and some noted as dying from unspecific causes such as "weakness". Neonatal mortality (during the first month of life) was markedly higher among the Old Believers' children (although under half the level of Orthodox neonatal deaths), and these seldom died when between four months and one year old. Overall, over one quarter of the infant mortality was neonatal when we include the Orthodox babies. This may be interpreted as the result of traditional, fatalistic thoughts that many babies were born weak and would die sooner rather than later. The deaths were spread out more evenly over the neonatal and post-neonatal months for the Jewish and Catholic children. See Figure 3.

Figure 3. Neonatal and post-neonatal infant mortality rates in the early 20th century Ekaterinburg by denomination

Otherwise, the distinction between neonatal and postnatal mortality brings little extra information, the deaths during the first and later months were distributed quite proportionately between the different religious groups, including the orthodox, but the Jews and the Catholics had very few burials of infants aged under one month. For some reason, infant deaths peaked for Jewish children aged 3 months and Catholic children aged half a year. See figure 4. The priest wrote the age as number of months and days, but it could still be due to age heaping around the 3 months and 6 months marks if the parents expressed the deceased baby's age as "half year old" etc. We made corrections after checking, considering the age in whole months.

Figure 4: Infant mortality rates by age in months and denomination

The 6 months death peak for the Catholics can alternatively be explained by the introduction of supplemental food to mothers' milk. In case of the Jewish babies, the peak around 3 months could be explained by hard conditions of life for both mothers and babies during migration and lack of experience to keep babies warm in the severe Ural weather, for the most of them had fled from the mild climate in Ukraine. As can be seen from figure 2, there was a relative increase of infant mortality among the Jewish babies during the winter. 14 out of 35 children born out of wedlock to female members of the religious minority congregations died during infancy. This gives infant mortality rates on a par with the highest Orthodox (45 %) for the Old Believers and nearly on the general 1/3 level for the Catholics. Two out of three Jewish infants born out of wedlock died, likely a signal that these mothers were not well integrated into the Jewish society.

However, the data set is too small to make further interpretations.

Discussion

Our microdata shows that infant mortality rates among the religious minorities were low compared to the ethno-religious Orthodox majority in Ekaterinburg city in the decade leading up to World War I, and that the latter experienced lower infant mortality than did their co-ethnics in the surrounding countryside. This was despite all the polluting industries and the late introduction of adequate water supply. Belonging to an ethnically non-Russian religious minority increased the chances of infant survival. On the background of the pogroms in the Russian Empire, this is a paradox: to be an infant Jew in early twentieth century could for a change be an advantage in the survival process. Thus, Ekaterinburg's Jewish infants were as privileged as their Jewish peers in den Hague (van Poppel et al, 2002).

This corresponds well with West European findings on religious minorities who had lower infant mortality, one explanation being that social isolation lowered their exposure to infectious diseases (van Poppel et al, 2002). However, such isolation can hardly explain the favourable rates for the Catholics and Jews in early twentieth century Ekaterinburg, since especially the Catholics were well integrated into the city's society. Except for the Muslims, there were no ethnic quarters in the city and children attended the same schools. It more likely helped that Ekaterinburg's Catholic and Jewish populations had relatively high levels of education already in 1897. According to the 1897 census aggregates, 87 % of Catholic men and 81 % of Catholic women in Ekaterinburg were literate, while only 29,2 %, of ethnic Russian men and 10,7 % women could read and write. Ekaterinburg's Jewish population also had a high level of literacy: 77 % for men and 70 % for women. (Troinitckii, 1904). Many Catholics and Jews belonged to the middle classes, and were likely the first to benefit from the efforts of the doctors – their social and often ethnic peers to improve infant care and survival, just like was previously found for Sweden (Brändström, 1984).

We suggest several additional explanations:

- The Jewish rules about a long breastfeeding period (24 months and more if a baby is weak) and high hygiene standards sanctified by their religious law (Talmud, Kethuboth: 60a; 2 Makk, 7:27) improved the babies' survival rates.
- The Catholics had higher social status among all the religious groups (Glavatskaya, Borovik, Bobitskii, 2016, p. 73) and used some of their relative wealth for spacious domiciles, better water supply and other conveniences.
- The high literacy levels among the Catholics and Jews gave access to information about baby care, nutrition and medicine; The Old Believers being an isolated group due to their eschatological expectation were less exposed to the diseases than the Russian Orthodox majority.
- We could not establish any direct connection between migration and infant mortality.

As shown above, the immigrating Jews and Catholics had lower infant mortality than the local Russian Orthodox and Old Believers. However, immigration may still have affected infant mortality indirectly. There were only two Jewish and three Catholic babies

born out of wedlock who died between 1906 and 1914. One of the Jewish women was local, the other came from Samara. The Catholic babies were born to single women who immigrated to Ekaterinburg from the western Russian provinces. The majority of the illegitimate infants among the religious minorities that died during that period in Ekaterinburg, belonged to the Old Believers. Their mothers in most cases were young peasant girls sent to Ekaterinburg from the surroundings to work as servants and got pregnant, just like previously shown for female servants in Paris. Being uprooted from their families, they apparently could not care adequately for the new-born (Moch, 1992). Their babies died from diarrhea and *rodimchik* – a general Russian term for all kinds of infant weakness.

While doctors and midwives were available in Ekaterinburg, not all parents asked for their help. According to the burial records, the parents' religion mattered for the decision about whether to seek a doctor's help or not. In the case of Jews and Catholics, professional doctors certified their infants' deaths with official diagnosis stated in the church books. The Old Believers in only two cases had a doctor's statement registered in the church book. In other cases, the death would often be put as *rodimchik*. A high level of literacy among the Catholics and Jews made them eager to seek professional help, and the doctors were their social and often ethnic peers. The Old Believers literacy level was not high, and they had negative attitudes towards innovations in general and doctors in particular.

A certain trend was detected with respect to the causes and timing of infant deaths. Figure 5 shows how stomach related illnesses peaked during the summer and respiratory diseases during the winter months. While we have too few cases to also split them by religious society, we discern a trend that most Jewish and Catholic infants died from respiratory diseases in the winter or from diarrhoea during the warm months. Old Believers' infants died from diarrhoea.

Figure 5: Infant mortality rates by causes and denominations – relative numbers.

That supports the historiography about the positive effect of breastfeeding on infant survival mentioned above. The Jewish women apparently saved their babies by breastfeeding them longer. However, they could not protect them from the respiratory diseases in the cold and unstable Ural weather, which the Jewish mothers migrating from Ukraine were not accustomed to, and so Jewish children experienced somewhat higher mortality once their long breastfeeding period was over. According to the data in the church books, half of the Old Believer's children and 45 % of the Catholic children who died between 1906 and 1914, died in their infant period. For those who survived infancy, their chances to survive until the age of five and even more to reach age ten increased. The Jewish children had higher chances to survive during their first year, but many died between age one and five. A likely explanation is that Jews practiced breastfeeding for a long time as is prescribed by Jewish law. However, older children could have been exposed to diseases on the way to the Urals, for the Jewish community consisted of migrants who had escaped from the Russian western provinces. We have found evidence that long-term breastfeeding was unusual or at best inconsistent among the ethnic Russian population in the Urals. The infant mortality among the Catholics was lower than we

expected based on results from Western Europe, but can be explained by their high status and literacy levels in Ekaterinburg.

We shall end with two hypotheses about the Catholics and the Jews respectively. Why did the former religious group have lower infant mortality than Catholics in Central and Western Europe? In addition to high literacy levels and social status, can the reason be that migration had severed the ties between the Ekaterinburg Catholics and their ancestors so that suboptimal infant care practices which have been shown to correlate grandmothers' and their daughters' infant mortality were not inherited from generation to generation? The IMR level of the Jews increased during World War I. If this is not only a random effect due to small numbers, can the reason be stress during difficult years? There was no evidence about pogroms in Ekaterinburg during World War I, however, the Civil War broke out in Russia following the 1917 Revolution, and increased the level of hostility against the Jews generally, and made it more difficult to escape from persecution when Ekaterinburg Bolsheviks failed to defend the city and it was taken over by the White Guard.

Summary

Historical studies of infant mortality are rarer in Russia than in Western Europe, and even less has been done on urban places or different religious groups within the Russian Empire. This article studies the levels of infant mortality in the early twentieth century among the three immigrating religious minorities to Ekaterinburg: the Catholics, the Jews and the Old Believers. Our aim has been to look at minorities in order to see if high levels of infant mortality were as general as the historiography indicates, and we find this not to be the case. The study is based on microdata about the baptized and the buried transcribed from the church records during the period 1898 to 1919. Consistent with findings from Western Europe, the Jews had the lowest infant mortality, before the War at levels under 10 %, which we explain with their strict rules about breastfeeding and cleanliness as well as high literacy rates. The Catholics had similar levels of infant mortality, which was unexpected due to their relatively high IMR levels in the West, but is consistent with their high social status and high literacy levels for both men and women. The Old Believers had clearly higher infant mortality than the two other minorities, but less than half the infant mortality rate found for the control group in one of the city's Orthodox parishes. On the one hand this Russian ethnic minority stayed away from medical expertise and innovations that could enhance their children's survival chances, on the other they were to some degree isolated from the general Russian germ environment and had their own institutions providing basic social care. Future research will need to add data for similar groups elsewhere in Russia particularly to compensate for the problem of small numbers, make comparative analysis between the Catholic majorities in Western and Eastern Europe and minorities in the East and study to what degree stress during World War I could cause increased infant mortality, for instance among the Jews.

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Table 1. Religious denominations in Ekaterinburg

Source: 1897 census aggregates.

Denomination	1897			
	Male	Female	Sum	%
Orthodox	18534	21211	39745	91,8
Old Believers	766	1024	1790	4,1
Catholics	167	156	323	0,7
Lutherans	167	176	343	0,8
Muslims	386	292	678	1,6
Jews	150	153	303	0,7
Other	23	34	57	0,1
Total	20205	23075	43280	100

Table 2. Infant mortality rates in Perm Gubernia per 1000 born in 1895 by uezd
Source: Kornilov (2014, 81).

Uezd	per 1000
Kungur	521
Kamyshlov	476
Irbit	475
Ekaterinburg	410
Verkhotur'e	348
Average in Perm Gubernia	425

Table 3. Statistics on medical facilities, doctors and paramedics in Perm and Ekaterinburg towns and districts in 1888

Source: Pamjatnaja knizhka (1889, 29; 80–81).

Medical services	Perm'	Perm' uezd	Ekaterinburg	Ekaterinburg uezd
Population	34997	190608	37420	337958
Doctors and paramedics	43	50	27	62
Number of citizens per doctor	813,9	3812,2	1385,9	5450,9
Hospitals	10	18	7	23
Number of patients	28701	32615	9061	91744
Mid-wives	14	2	8	7
Doctors and paramedics	2		2	
Vaccinators	1	2	1	15
Children vaccinated against smallpox	416	958	1015	10303
Pharmacists	6		4	1

Table 4. Number and proportion of deceased infants whose records in the burial lists could be linked to the baptismal lists.

Source: Own database transcriptions and counts from the church records.

	Catholic (03.1898–09.1919)	Jews (02.1906–12.1917)	Old-believers (01.1907–10.1917)
Infants, N	51	44	33
Found in Baptismal lists, N	34	28	29
Found in Baptismal lists, %	66.7	63.6	87.9

Table 5. Infant mortality rates per 1000 born, per religion among the three minorities and in one Orthodox parish in Ekaterinburg 1906 to 1917.

Source: Own database transcriptions and counts from the church records.

Years	Catholic			Jews			Old-believers			Minorities: total and average			Orthodox		
	births	deaths	<i>IMR</i>	births	deaths	<i>IMR</i>	births	deaths	<i>IMR</i>	births	deaths	<i>IMR</i>	births	deaths	<i>IMR</i>
1906	22	0	0	26	0	0				48	0	0	197	76	386
1907	25	0	0	27	2	74	29	5	172	81	7	86	244	84	344
1908	40	2	50	41	3	73	26	4	154	107	9	84	253	82	324
1909	37	4	108	39	2	51	16	3	188	92	9	98	257	117	486
1910	36	2	56	30	1	33	17	1	59	83	4	48	339	111	327
1911	40	6	150	48	4	83	18	1	56	106	11	104	266	103	387
1912	44	3	68	43	3	70	17	3	176	104	9	87	263	101	384
1913	51	4	78	33	2	61	21	7	333	105	13	124	261	83	318
1914	28	2	71	36	1	28	17	1	59	81	4	49	240	91	379
1915	74	3	41	36	7	194	17	4	235	127	14	110	266	73	274
1916	110	4	36	68	10	147	14	2	143	192	16	83	228	73	320
1917	103	5	49	68	8	118	17	2	118	188	15	80	246	75	305
Total	610	35	57	495	43	87	209	33	158	1314	111	84	3060	1077	352

Figure 1. Infant mortality in Ekaterinburg by denomination.

Source: Own database transcriptions and counts from the church records.

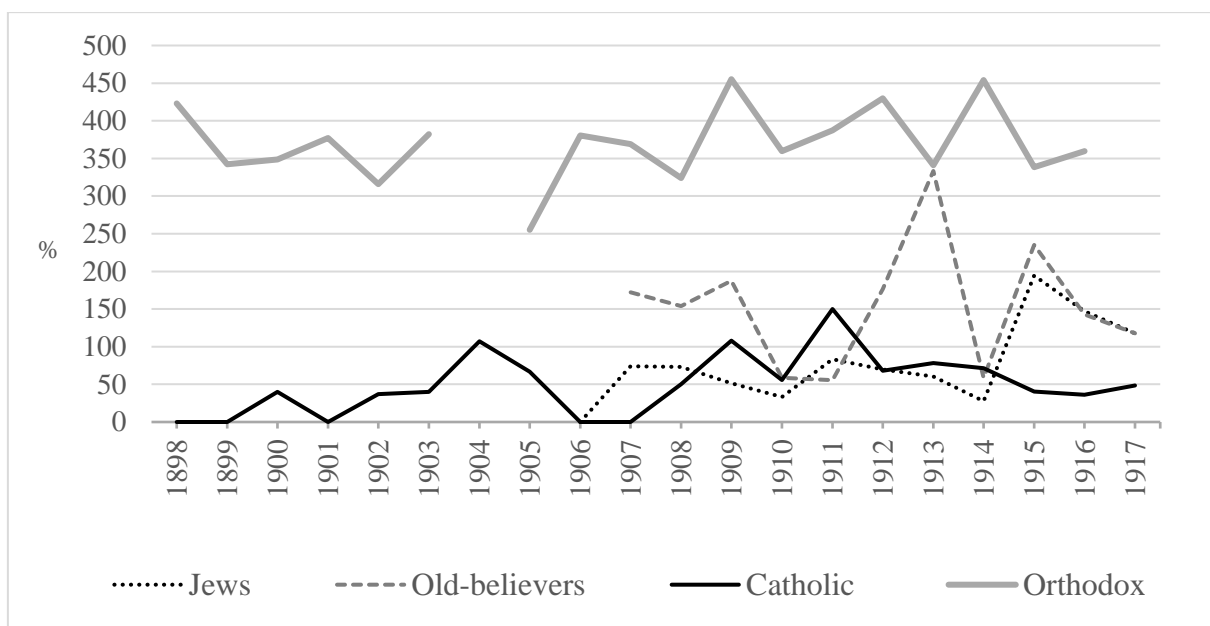


Figure 2. IMR by season and denomination in absolute numbers (histograms) and % (curves).

Source: Own database transcriptions and counts from the church records.

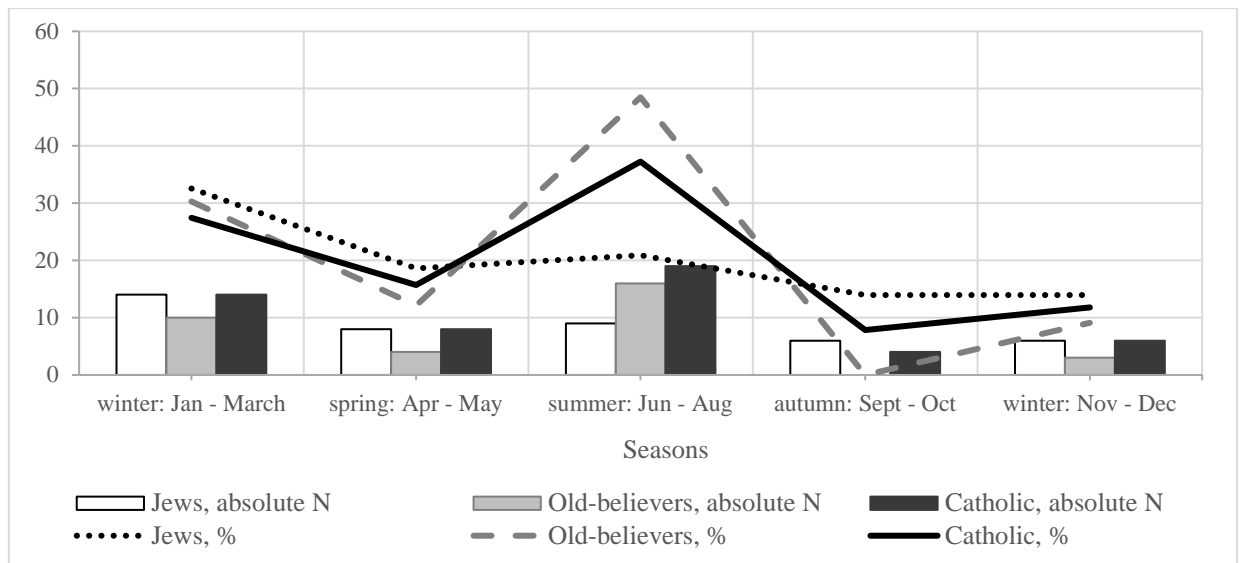


Figure 3. Neonatal and post-neonatal infant mortality rates in early 20th century Ekaterinburg by denomination.

Source: Own database transcriptions and counts from the church records.

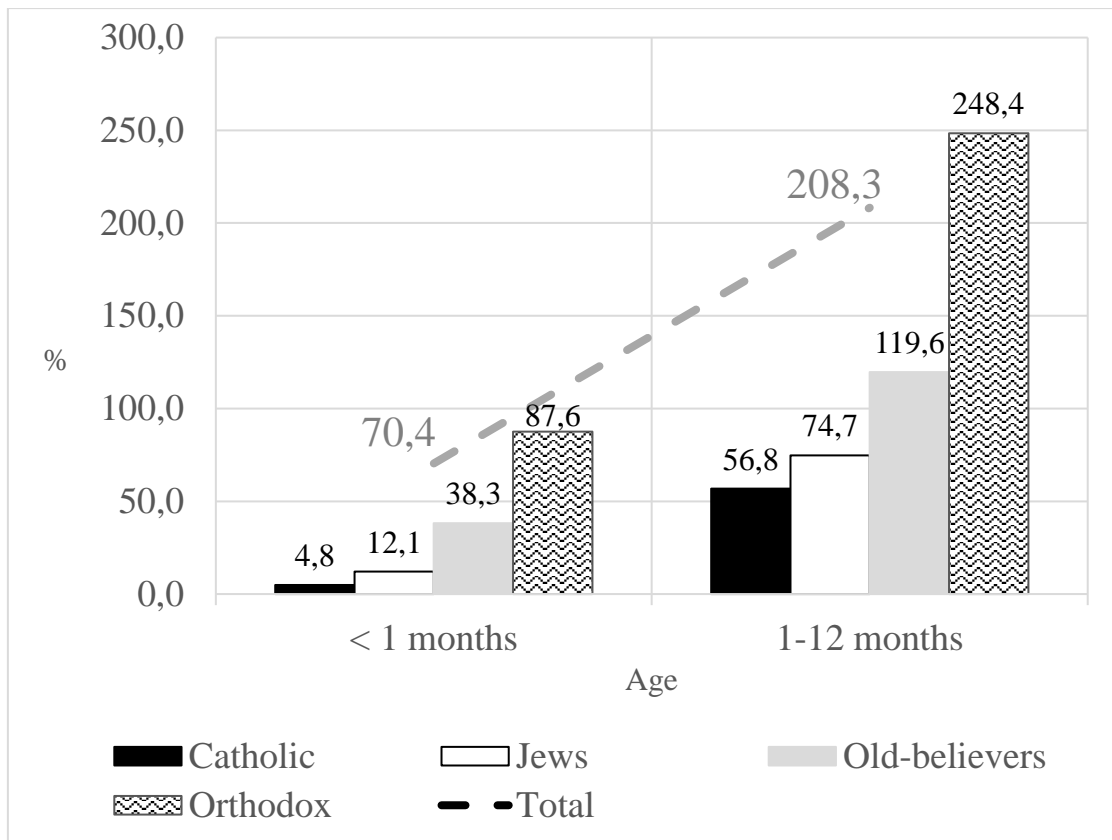


Figure 4. Infant mortality rates by age in months and denomination.
 Source: Own database transcriptions and counts from the church records.

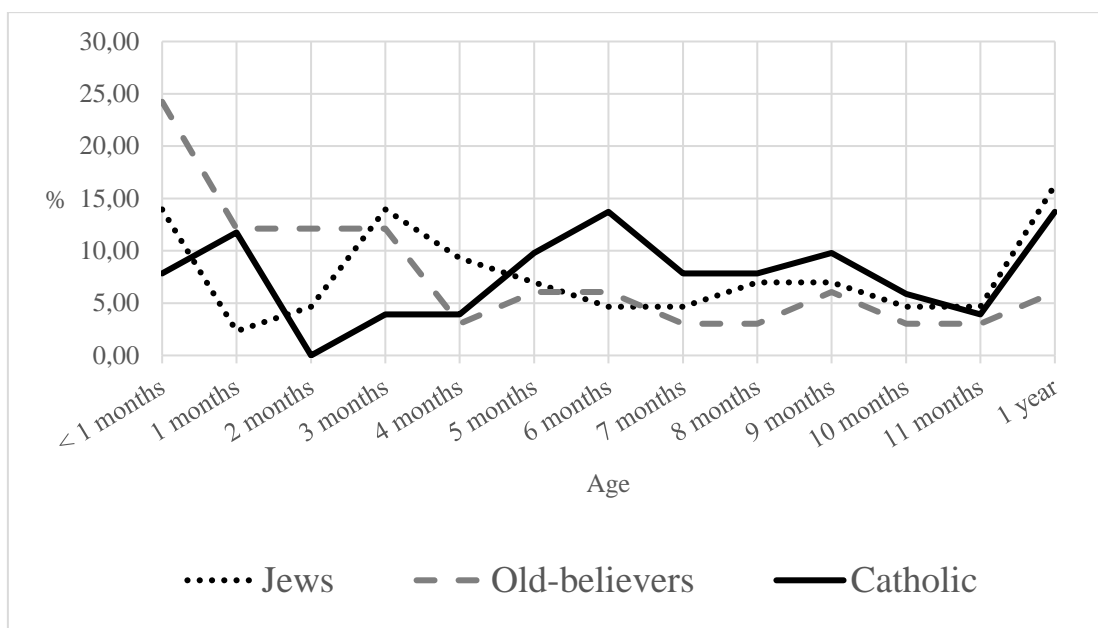


Figure 5. Infant mortality rates by causes and denominations – relative numbers.

Source: Own database transcriptions and counts from the church records.

