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A JEWISH PALIMPSEST (DEMOGRAPHY, SOCIETY, MEMORY): FROM EAST-CENTRAL EUROPE TO ISRAEL IN THE NINETEENTH AND TWENTY-FIRST CENTURIES

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The Quality of Vital Registration of the Jews in East-Central Europe in the Nineteenth Century

Abstract: Vital records are one of the main sources providing insight into the demographic past. For most of the nineteenth century, however, the degree of under-registration of vital events among Jews was much higher than among non-Jews. These omissions undermine the credibility of demographic data on fertility and mortality published in contemporary statistical yearbooks. The analysis shows that the male-to-female ratio at birth aggregated on a regional level reveals the highest under-registration among Jews in the Russian Empire, including Congress Poland, until World War I. On the other hand, Prussian registration covers the Jewish population most completely and already in the 1820s shows no signs of under-registration. Despite the general low quality of registration systems, records from selected individual towns still pass quality tests. Top-down imposition of the registration duties, corporatism, defective legal regulations, bureaucratic inefficiency and personal characteristics of civil registrars were the main reasons for under-registration.

Keywords: vital registration, vital statistics, historical demography, demography of Jews, sex ratio at birth, under-registration.

Słowa kluczowe: akta stanu cywilnego, ruch naturalny, demografia historyczna, demografia Żydów, wskaźnik maskulinizacji, braki w rejestracji.

Introduction

The historical demography of the Jews in east-central Europe has relatively infrequently been the subject of study.[1] Although the Jews constituted the largest minority in this territory, the extent of research on the Jewish population is disproportionately small. One of the main reasons for this, apart from the natural inclination of historians toward demographic majorities, is the poor quality of the sources. As early as the 1930s, Witold Kula, in his doctoral dissertation, noted that "it is known that to this very day in the central voivodeships [of interwar Poland] it is possible, especially among the Jewish population, to be born, live for a few or even several years, and die without any trace in the registers."[2] This observation was confirmed by research in the interwar period, yet in regard to the nineteenth century, rather than statistical analyses, it reflected common knowledge[3]—common, at least, among historians and demographers.

The aim of this study is the statistical verification of the hypothesis of incomplete vital registration of the Jews from its introduction in each of the states which partitioned the Polish-Lithuanian Commonwealth until the end of World War I. By "incomplete" registration I mean not only deviation from the norm, but also significantly different from the under-registration levels of the Christian majority. The issue of incomplete registration is universal and still valid to some extent for contemporarily produced registers, even in states with highly developed statistical agencies.[4] The question of the quality of sources is of particular importance for historical demography, which relies on documents produced for the purposes of the institutions at a given time, rather than advanced statistical analyses in which present day researchers are interested. In this study, the main body of sources upon which I rely comes from the former lands

[1] I would like to thank Michael K. Schulz and Bartłomiej Majchrzak for their suggestions made while I was writing this article, Stanley Diamond and Ami Elyasaf for sharing with me a part of the data from Piotrków Trybunalski and Drohobych, the editors and reviewers of *Studia Judaica* for their support in completing this paper, as well as Karen Forth for improving the English version of this paper.

[2] Witold Kula, *Demografia Królestwa Polskiego w latach 1836–1846* (Poznań–Wrocław, 2002), 132. All quotations from Polish and Russian texts are author's own translation.

[3] Stefan Szulc, "Statystyka urodzeń ludności żydowskiej w miastach," *Miesięcznik Statystyczny* 6 (1923), 1:28–31; id., "Dokładność rejestracji urodzeń i zgonów," in Edward Szturm de Sztrem (ed.), *Zagadnienia demograficzne Polski* (Warsaw, 1936), 133–152.

[4] Thomas Bryan, Robert Heuser, "Collection and Processing of Demographic Data," in Jacob S. Siegel, David A. Swanson (eds.), *The Methods and Materials of Demography* (Amsterdam, 2004), 46.

of the Polish-Lithuanian Commonwealth. In addition, I have extended it with data referring to Bohemia, Moravia, Hungary, as well as the south of the Pale of Settlement[5] and the west of the Prussian State—i.e. those territories which were not a part of the old Poland. The underlying assumption motivating such a vast territorial scope is the dynamic nature of the phenomenon under study and its dependence on local institutions and the general extent of integration of the Jews. The hypothesis is verified with data aggregations[6] on two levels. Firstly, I analyze the data on a regional level retrieved from the contemporary, periodically published statistical journals. Secondly, I retrieve data directly from a selected series of the vital records and aggregate it on the level of individual locations. The shifting perspective allows me to quantify differences in the registration quality within regions, between them, and assess the efficiency of their statistical administration, offices, and persons responsible for registration. After all, individual civil registrars and individuals subjected to registration were also participants in the whole registration process, as they had an active influence on the execution of the state regulations imposed by higher-ranking state clerks. The analyses featured in this paper are based, first of all, on the information on the sex ratio at birth, which is fairly constant and independent of cultural factors.[7] In addition, the paper outlines the ideological context and main reasons for the low registration quality of the vital records—legal, religious, and social conditions of interactions in the triangle between an individual, a registrar, and the state governance

[5] The Pale of Settlement consisted of the lands of the Russian partition of the Commonwealth (with exception of Congress Poland) and, in addition, Bessarabia and south-eastern provinces (*guberniya*s) of Ukraine: Chernihiv, Kherson, Taurida, Yekaterinoslav, and Poltava. Jakób Kirszrot, *Prawa Żydów w Królestwie Polskim. Zarys historyczny* (Warsaw 1917), 119.

[6] Data aggregation is a procedure of calculation of parameters (statistics) summarizing basic characteristics of the dataset—such as proportions, means, or medians—allowing the researcher its quick description and comparison of its subsets. Such a parameter may be represented by the sex ratio at birth (proportion), a typical delay of registration (mean); the dataset may consist of extractions from vital records or statistical yearbooks, which in turn may be divided into subsets of decades, geographic regions, or places. In the context of historical demography, data aggregation is often used as a basic analytical method of the data extracted from vital records, which has not been linked into time series (e.g. by matching marriage records with birth records of the children born from this marriage) suitable for the family reconstitution method.

[7] Frank Hobbs, "Age and Sex Composition," in Siegel, Swanson (eds.), *The Methods and Materials*, 133.

system. Detailed comparison of these interactions in each state discussed, however, requires additional research based mainly on qualitative sources.[8]

Examination of the statistical yearbooks, as well as numerous series of vital records, confirms the hypothesis of a significantly lower quality of the registration of the Jewish population compared to the non-Jewish one. Vital registration covered the Jews in a much poorer manner than the remaining part of the population not only in central Poland, as Kula suggested, but also in the entire nineteenth-century east-central Europe. For many years, Jews could remain out of the sight of the registrars in Congress Poland, Galicia, as well as the Russian Empire. The notable exception is the Kingdom of Prussia, including the districts of Poznań and Bydgoszcz (the western partition of Poland), where available data is not sufficient to question the overall efficiency of the local registration system at least from the 1820s. Still, even in the central and eastern territories of the Commonwealth, with generally low levels of registration quality, some places, e.g. Cherkasy, Częstochowa, and Yekaterinoslav, may stand out. Responsibility for complete or, more often, incomplete registration depended on non-permanent factors—officials, legal solutions, and cultural disparities between Jews and non-Jews—so the quality varied in time and space. Under favorable circumstances, local registration systems were able to provide the data of sufficient quality. Historical demographers, therefore, need not give up further research.

Under-registration in the birth, marriage, and death records obviously leaves its imprint on demographic statistics derived from those sources. Omissions in entries regarding births and deaths, for instance, affect measurements of fertility and mortality. Delays between a religious and secular marriage increase measures of the mean age at marriage and proportion of "illegitimate" children. Despite the considerable size of the phenomenon, its consequences for the demographic study of the Ashkenazi Jewry were not always appreciated. Awareness of the errors did not prevent the state administrations of the time from publishing statistical yearbooks. The flawed data, in turn, made its way without any

[8] Examples for such in-depth qualitative research are: Eugene M. Avrutin, *Jews and the Imperial State: Identification Politics in Tsarist Russia* (Ithaca, 2010); Michał Szulc, "Jüdische Staatsbürger in der bürokratischen Alltagspraxis der Staats- und städtischen Behörden in Westpreußen seit dem Erlass des Emanzipationsediktes am 11. März 1812 bis in die 1840er-Jahre," in Irene A. Diekmann (ed.), *Das Emanzipationsedikt von 1812 in Preußen: Der lange Weg der Juden zu "Einländern" und "preußischen Staatsbürgern"* (Berlin–Boston, 2013), 167–198.

critical assessment into historiography. Inaccurate mortality and fertility rates of the Jewish population were (re)published by early statisticians, among others, Jacob Lestschinsky (Jakub Leszczyński), and consequently by Usiel Schmelz, Sergio Della Pergola, ChaeRan Y. Freeze, and most recently by Zvi Eckstein, Maristella Botticini, and Anat Vaturi,[9] who used the flawed data to support the thesis of the low infant mortality rates or the very early onset of the demographic transformation of the Jews.

Low quality of the vital registration was well evident already for the nineteenth-century officials. As Artur Markowski has shown, as early as in the 1820s, the Government Commission of Justice (Komisja Rządowa Sprawiedliwości) of Congress Poland diagnosed the overwhelming malfunction of the vital registration system of the Jews. The Commission blamed not only the Jews themselves, but also the officials responsible for their registration and verification. The actions aimed at improving the situation undertaken at that time did not bring about any changes.[10] The same Commission stated in 1840 that "the books of vital records are often verified a few years after their completion," and that "registrars maintaining the vital records in many respects commit deficiencies in these documents against the legislation, while officials responsible for revising vital records contribute to concealing these deficiencies."[11] Chronic shortcomings of the registration did not escape the attention of statisticians and publicists in the Russian Empire. Mistakes and omissions were assumed to be common and intrinsic aspects of the registration.[12] Yet these were only statisticians of interwar Poland who undertook to

[9] Jacob Lestschinsky, *Probleme der Bevölkerungs-Bewegung bei den Juden* (Padova, 1926); Usiel Oskar Schmelz, *Infant and Early Childhood Mortality among Jews of the Diaspora* (Jerusalem, 1971); Sergio Della Pergola, *La trasformazione demografica della diaspora ebraica* (Torino, 1983), 54; ChaeRan Y. Freeze, *Jewish Marriage and Divorce in Imperial Russia* (Hanover–London, 2002), 53–54; Maristella Botticini, Zvi Eckstein, Anat Vaturi, "Child Care and Human Development: Insights from Jewish History in Central and Eastern Europe, 1500–1930," *Economic Journal* 129 (2019), 2637–2690.

[10] Artur Markowski, *Między wschodem a zachodem. Rodzina i gospodarstwo domowe Żydów suwalskich w pierwszej połowie XIX wieku* (Warsaw, 2008), 115. The correct reference of Markowski's source is: Archiwum Główne Akt Dawnych [henceforth: AGAD], collection: Centralne Władze Wyznaniowe, call no. 1448.

[11] *Zbiór przepisów administracyjnych Królestwa Polskiego. Wydział Sprawiedliwości* (Warsaw, 1866), part 1, vol. 4, pp. 31, 41.

[12] Avrutin, *Jews and the Imperial State*, 54–61; Markowski, *Między wschodem a zachodem*, 118; Grigorij Samojlovič Vol′tke, "Metrikacija, metričeskie knigi i svidetel′stva," in Avraam Jakovlevič Garkavi, Lev Izrailevič Kacenel′son (eds.), *Evrejskaja ènciklopedija Brockhausa i Efrona* (Sankt-Peterburg, 1911), 10:925–927; Sergej Aleksandrovič Novosel′skij, *Smertnost' i prodolžitel'nost' žizni v Rossii* (Petrograd, 1916), 145–146.

estimate the extent of under-registration. Pioneering research by Stefan Szulc and Izaak Bornstein on the sex ratio at birth and delays in registration has confirmed that the Jewish population was beyond the reach of the local administration. Between the wars, the variation of the quality indicators within the country clearly delineated eastern, central, southern, and western voivodeships,[13] thus reflecting former partitions of Poland and suggesting longevity of the relations between citizens and officials formed early in the nineteenth century.

Studies on vital records have been revived in recent decades on the wave of interest in the social history of the Jews. They confirm the key role of the inter-partitional differences in registration, pointing to multiple and varying reasons for its inefficiency. Artur Markowski, who based his paper on sources of the Government Commission of Inner Affairs (Komisja Rządowa Spraw Wewnętrznych) and of the civil registration offices from the Augustów voivodeship, viewed "backward civilization" as responsible for under-registration, when compared to the registration in Galicia and Prussia. He stressed the importance of the registrars, voivodeship, and state administration for the formation of birth, marriage, and death records.[14] Agnieszka Zielińska and Katarzyna Filipowska have confirmed the completeness of the vital registration in Prussia in their studies on Toruń and Wolsztyn, respectively.[15] On the other hand, Janina Gawrysiakowa, in her study of vital records from the Lublin voivodeship, has challenged the overall impact of administrative regulations on the registration quality. For her, the main causes of under-registration were the individual attitudes of the registrars, the relative novelty of vital registration as a legal institution, related fees, frequent travels of Jews, as well as force majeure, such as wars and plagues.[16] Eugene M. Avrutin

[13] Szulc, "Dokładność," 135; id., "Statystyka," 28–31; Izaak Bornstein, "Z zagadnień statystyki ruchu naturalnego ludności żydowskiej w Polsce," *Sprawy Narodowościowe* 10 (1936), 1–2:47–56.

[14] Markowski, *Między wschodem a zachodem*, 114–117; cf.: id., "Akta stanu cywilnego jako źródło do dziejów migracji ludności żydowskiej na Białostocczyźnie w latach 1918–1939," in Marek Kietliński, Wojciech Śleszyński (eds.), *Repatriacje i migracje ludności pogranicza w XX wieku. Stan badań oraz źródła do dziejów pogranicza polsko-litewsko-białoruskiego* (Białystok, 2004), 246.

[15] Agnieszka Zielińska, *Przemiany struktur demograficznych w Toruniu w XIX i na początku XX wieku* (Toruń, 2012), 131–133; Katarzyna Filipowska, "Rodzina żydowska w Wolsztynie w latach 1875–1914 na podstawie akt stanu cywilnego," *Kwartalnik Historii Żydów* 250 (2014), 405.

[16] Janina Gawrysiakowa, "Rejestracja ruchu naturalnego ludności żydowskiej w Lubelskiem w XIX w.," *Przeszłość Demograficzna Polski* 16 (1985), 80–105.

and Barbara Stępniewska-Holzer point to social corporatism as the factor undermining trust in the officials in the Russian Empire and increasing the distance between an individual and the state.[17]

This study intends to fill the gap in the demographic history: provide systematic assessment of the quality of the vital registration systems between and within key regions of east-central Europe and attempt to explain its differences in the local, legal, and social context.

Legal and ideological context

Beginning from the second half of the eighteenth century, Prussia, Austria, and Russia started gradually introducing reforms in the spirit of the Enlightenment and reconstructing relations between the state and its subjects. To improve the tax and military potential of the population, the authorities sought to gain a better understanding of its geographical distribution, as well as the religious, professional, and age structure. In this process, capability for the direct control of the state subjects was a necessary condition, allowing the state to control its subjects' place of living, right to travel, and compliance with obligations to the state.[18] Achieving the control was not possible without introducing instruments for the unambiguous identification of each person at every stage of his or her life. The states which partitioned the Polish-Lithuanian Commonwealth enforced new tools of identification: an obligation to adopt a permanent (last) name, periodic censuses, and vital registration.

In the long run, the new administrative order turned subjects of the state into citizens. The need for self-identification became an obligation to the state involving considerable, often burdensome duties, yet it turned to be a privilege. Censuses and vital records in the aforementioned states were used for army recruitment, tax collection, and limitation of the right to change the place of living. Enlightened absolutism aimed to subjugate the family—earlier controlled by the laws of Judaism—to state law, for instance, by imposing a lower age limit for marriage.[19] In addition, in

[17] Barbara Stępniewska-Holzer, *Żydzi na Białorusi. Studium z dziejów strefy osiedlenia w pierwszej połowie XIX w.* (Warsaw, 2013), 102; Avrutin, *Jews and the Imperial State*, 7–8.

[18] Ibid., 56.

[19] Jerzy Michalewicz, *Żydowskie okręgi metrykalne i żydowskie gminy wyznaniowe w Galicji* (Kraków, 1995), 33; Szulc, "Jüdische Staatsbürger," 192–193; Avrutin, *Jews and the Imperial State*, 22; Markowski, *Między wschodem a zachodem*, 111; see also Prussian law on

the Habsburg Empire, tools for personal identification, mainly family lists, were used until the mid-nineteenth century to limit growth of the Jewish population and, at least in theory, forced a part thereof, which did not comply to the legal requirements on education, wealth, language proficiency, to live in celibacy or leave the country.[20] At the same time, personal identification became a part of emancipation. In Galicia and Prussia it was an integral part of the reforms for civil equality. Even in the Russian Empire, where Jews never achieved equal status, the possibility for self-identification meant acquiring personal identity toward the state and, over time, increasing their ability to negotiate their own legal position: active involvement in administrative processes, better control over private property, exemption from military service, and rights to travel beyond the place of registration.[21]

Despite the authorities' efforts to efficiently manage all subgroups of the population, Jews belonged to those who, to a large extent, evaded the reach of personal identification systems. They constituted a highly mobile, culturally separate group, ruled by traditional, independent social institutions mediating between a secular state or local authorities (collective taxation, kahals, courts).[22] In each partition of the Polish-Lithuanian Commonwealth, vital registration was introduced gradually, in stages reflecting the degree of Jewish integration, state policies, and the administration's capability to enforce the law.

The first attempts to impose statistical control over birth, marriages, and deaths of the Jews in the Commonwealth were introduced during the Four-Year Sejm as a part of the activity of the Civil-Military Commissions of Public Order (Komisje Porządkowe Cywilno-Wojskowe). Catholic clergy played an important role in these attempts by providing experience in population registration, as well as a ready infrastructure.[23] The archives of the Commissions contain lists of "metrical" records (*metryki*) of circumcised boys, born girls, marriages, and burials from 1790 for a few places.[24]

lower age limit for marriage: Christian Friedrich Koch (ed.), *Allgemeines Landrecht für die preußischen Staaten* (Berlin, 1862), 2:23.

[20] On Galicia cf.: Artur Eisenbach, *Emancypacja Żydów na ziemiach polskich 1785–1870 na tle europejskim* (Warsaw, 1988), 221–222. On Bohemia cf.: Jan Boháček et al. (eds.), *Soupis židovských rodin v Čechách z roku 1793* (Praha, 2002), 1:11.

[21] Avrutin, *Jews and the Imperial State*, 53.

[22] Michalewicz, *Żydowskie okręgi*, 32; Avrutin, *Jews and the Imperial State*, 7–10.

[23] Cezary Kuklo, *Demografia Rzeczypospolitej przedrozbiorowej* (Warsaw, 2009), 60.

[24] For Kępno and Praszka in the Wieluń Land, and Chrzanów, Janów, and Żarki in the Kraków Voivodeship. AGAD, collection: Komisja Porządkowa Cywilno-Wojskowa ziemi

The entries were not made on an on-going basis, but in a batch at the end of the year. Although the Commissions routinely prepared these lists as annexes to censuses of the Christian population, they can only rarely be found attached to the censuses of the Jews. Most likely, drawing lists of "metrical" records for the Jews was not a part of the Commissions' typical activity—alternatively, parish priests or estate administrators on whom the obligation was imposed had difficulties in obtaining the required information from Jewish communities.

Vital registration of the Jews in the lands of the Polish-Lithuanian Commonwealth was introduced permanently by the partitioning states. Early forms of registration were imposed by the extension of the General Privilege from 17 April 1750 in the lands of the First Prussian Partition. The privilege required Jewish communities in Prussia to report births, marriages, and deaths on a monthly basis. The reports in tabular form were supposed to be sent to the Chamber of War and Estates (*Kriegs- und Domänenkammer*), regional offices of royal administration, by the community elders rather than by the persons directly involved: parents, newlyweds, or deceased's family.[25] Therefore, these were not vital records in the later meaning of the term as they rather served the state as a tool for controlling changes in the population of protected Jewish families (*Schutzjudenfamilien*), and not for confirmation of rite, personal identity, or marital state. In reality, however, Jewish communities did not report the lists on a regular basis.[26] Proper vital registration was introduced with the Edict of Emancipation of 1812. Introducing the registration in one bill along with the obligation to adopt last names and rules for granting citizenship was an ideological statement. According to the Edict's authors, birth, marriage, and death records were an integral part of equaling the civic rights of Jews and Christians.[27] In the territory of the Prussian Partition which temporarily became a part of the Duchy of Warsaw (1807–1815), the returning Prussian authorities introduced their own regulations with delay. In the Posen District (*Regierungsbezirk Posen*), law on registration

wieluńskiej i powiatu ostrzeszowskiego, call no. 64/1, ff. 263–265, call no. 64/3, ff. 747–749; Kamila Follprecht (ed.), *Ludność żydowska województwa krakowskiego w czasie Sejmu Czteroletniego. Spisy z powiatów krakowskiego, ksiąskiego, lelowskiego i proszowskiego z lat 1790–1792 ze zbiorów Archiwum Państwowego w Krakowie* (Kraków, 2008), 85–87, 152, 575–577.

[25] Selma Stern, *Der preussische Staat und die Juden*. Vol. 3: *Die Zeit Friedrichs des Großen*, part. 2: *Akten* (Tübingen, 1971), 236.

[26] Geheimes Staatsarchiv Preußischer Kulturbesitz, collection: II. HA Generaldirektorium, Abt. 9, Tit. LXVII, Sekt. 1, call no. 12, ff. 243–244.

[27] Cf. Szulc, "Jüdische Staatsbürger," 172–175.

modeled on the Edict of Emancipation was implemented in 1817, while in the Bydgoszcz District (*Regierungsbezirk Bromberg*) in 1823. In Prussia, clergy did not participate in the process of registration of vital events. Until 1847, this burden fell on the Police, subsequently on the courts, and finally—from 1874—on the dedicated civil registrars.[28]

In Galicia, the requirement of registering births, marriages, and deaths of the Jews was introduced as early as in 1784.[29] The evidential nature of the records, however, was not strictly defined. Reforms of the 1860s and 1870s brought important changes. The December Constitution of 1867 introduced equal rights for all religious groups and, at the same time, stressed that religious marriages had no legally recognized implications, thus marking separation of the state law from the religious one. In the following year, the Roman Catholic Church was deprived of the responsibility for supervising the civil registry of the Jews, in addition the records acquired legal evidential value for the state administration and courts. From 1875, the duty of registering events was taken from the rabbis and handed to dedicated registrars selected through a hiring process. Anyone could apply for the position, but in case of equal skills of the candidates, rabbis and *shammashim* had priority.[30] Despite introducing equality of rights for all religious groups, the vital events were registered separately for each one until the end of the period under study. The Habsburg Empire still had to rely on religious structures and authorities in order to sanction secular civil responsibilities.

In a large part of central Poland, which came under Russian control after the partitions, vital registration of the Jews was introduced only after the foundation of the Duchy of Warsaw. The new law was based on the modern—considering the times—Napoleonic Code from 1808. According to it, records pertaining to the Jews were registered along with other religious groups by clergy or municipal officials (mayors).[31] In

[28] Paweł Gut, "Przepisy o rejestracji ruchu naturalnego ludności żydowskiej w Prusach w latach 1847–1874," in Mieczysław Jaroszewicz, Włodzimierz Stępiński (eds.), *Żydzi oraz ich sąsiedzi na Pomorzu Zachodnim w XIX i XX wieku* (Warsaw, 2007), 308–312; Ludwig von Rönne, Heinrich Simon, *Die früheren und gegenwärtigen Verhältnisse der Juden in den sämmtlichen Landestheilen des Preußischen Staates: e. Darst. u. Revision d. gesetzl. Bestimmungen über ihre staats- u. privatrechtl. Zustände, mit Benutzung d. Archive d. Ministerien d. Inneren u. d. Justiz* (Breslau, 1843), 59–63.

[29] Michalewicz, *Żydowskie okręgi*, 33–34.

[30] Ibid., 34–35.

[31] *Kodex Napoleona Xięstwu Warszawskiemu* […] *podany* (Warsaw, 1810), 5–15; *Dziennik Praw* [Księstwa Warszawskiego] (1809), vol. 1, no. 9, pp. 196–199.

Congress Poland, the law on vital registration of the Duchy of Warsaw was replaced with a new Civil Code from 1825 and detailed executive regulations issued five years later. A two-stage registration system was introduced then. Mayors or, in the case they faced an excess of duties, dedicated municipal officials carried out the function of civil registrars. Subjects of the registration had to, however, attend first the community rabbi in order to perform initial registration of the ritual in his own book, and only then attend the civil registrar.[32] The reforms also introduced separate registration of the Jews, thus changing their nature from civil to religious one. In cases when no civil personnel was available, Catholic clergy was allowed to take over the role.[33] Replacement of the Napoleonic Code with the Civil Code of Congress Poland was a step back in the legislation. The change in the procedure order is symptomatic of the approach. Whereas the Napoleonic Code required the entry to be registered in the state approved books before the ritual, the reform of 1825 swapped the order. The only one significant reform of the vital registration introduced in Congress Poland later on was the legal act of 1868 imposing Russian as the language of documents but maintaining their form.[34] Aleksander Wielopolski's reforms from 1861–1862 brought equality for the Jews in many social and political aspects, yet they did not encompass the registration system.[35] In the lands of Congress Poland and Galicia several religious groups, including Jews, were registered separately up until the end of 1945, when religious divisions in the registration system were finally lifted.[36]

Vital registration of the Jews was launched in the Russian Empire as late as 1835. Introduction of the registry was a part of the general trend of limiting traditional functions of the kahals and imposing state tasks on the rabbis. Unlike in the previously discussed countries, the reforms were not aimed at achieving equality for the Jews. On the contrary, they reinforced societal divisions. The statute on the organization of the Jews from 1804 enforced the use of fixed last names both for "convenient protection of

[32] Markowski, *Między wschodem a zachodem*, 106.

[33] *Dziennik Praw* [Królestwa Polskiego] (1826), 11:18; *Dziennik Praw* [Królestwa Polskiego] (1830), 13:149. Cf. Jan Mironczuk, "Żydzi w okręgu bożniczym w Ostrołęce w świetle księgi ślubów z lat 1830–1843," *Kwartalnik Historii Żydów* 225 (2008), 67; Bartłomiej Majchrzak, *Prawa Żydów w Królestwie Polskim, 1815–1864* (PhD thesis in progress, Taube Department of Jewish Studies, University of Wrocław).

[34] Kirszrot, *Prawa Żydów*, 223–241.

[35] Eisenbach, *Emancypacja Żydów*, 481–507.

[36] "Prawo o aktach stanu cywilnego," *Dziennik Ustaw* 1945, no. 48, item 272.

their property and settlement of disputes"[37] and for regulation of their social estate. In addition, the statute lifted judicial privileges of the rabbis and subordinated them to local state authority.[38] While the statute from 1804 reduced the role of rabbis to religious authority, the statute from 1835 imposed on Jewish communities several secular duties.[39] Rabbis had to keep the vital register and dissipate information among regular Jews on their responsibilities toward the state; kahals were to draw up the lists of army recruits and hand over to the authorities any Jews violating secular law. Thus, a kahal became an agent between the state and its subjects, while vital registration served as a supportive tool to maintain a divided society with limited access to privileges.[40] The law from 1853 specified the procedures for making birth, marriage, and death entries,[41] but its overall social function remained unchanged until the fall of the Russian Empire.

The analysis of the registration quality in a cross-country perspective provides insights into the efficiency of the reforms. On the one hand, the quality reflects the extent to which secular officials and rabbis were able to place the population under their control; on the other hand, the extent to which individuals felt they had to comply with state and civic duties, among others, possession of documents.

Sex ratio at birth as a quality measure

The sex ratio at birth—expressed by the number of live births of males per one hundred live births of females—is the most objective measure of the quality of vital registration.[42] The ratio maintains stability regardless of demographic changes, culture, and social structures of the studied subgroup of humans. Accordingly, in the countries of western and northern Europe, where the statistical system efficiently covered the whole population, the sex ratio at birth remained in the nineteenth and the twentieth

[37] *Polnoe sobranie zakonov Rossijskoj Imperii* (Sankt-Peterburg, 1830), series 1, vol. 28, p. 731.

[38] Ibid., p. 736.

[39] *Polnoe sobranie* (1836), series 2, vol. 10, part 2, pp. 319–320.

[40] Stępniewska-Holzer, *Żydzi na Białorusi*, 102–105; Avrutin, *Jews and the Imperial State*, 35.

[41] *Polnoe sobranie* (1854), series 2, vol. 28, part 1, p. 185.

[42] Irena Gieysztorowa, "Od metryk do szacunków ludności," *Kwartalnik Historii Kultury Materialnej* 12 (1964), 2:283–298; Jan Paradysz, "Współczesna demografia regionalna i kilka wniosków z niej wypływających dla innych badań w mikroskali," *Przeszłość Demograficzna Polski* 26 (2005), 167–189.

centuries within a very narrow interval of 104 to 107, only occasionally deviating from it.[43] Medical research on the course of pregnancy shows that a slight excess of male over female sex appears already at the zygote stage and partially compensates for higher mortality of male fetuses during later stages of pregnancy and male infants afterward. Relatively small deviations in the sex ratio at birth originate both from the probability theory, according to which the observed parameter may be to some extent different from the normal level,[44] as well as from external conditions. Better living standards, warmer weather, demographic transition positively contribute to survival rates of male fetuses and increase of the male-to-female ratio at birth. On the other hand, natural catastrophes or terrorist attacks, by increasing level of stress, contribute to the mortality of male fetuses and decrease of the male-to-female ratio at birth. Surprisingly, both world wars led to temporary increase of the ratio, despite the stress they induced. Biological channels through which environmental conditions affect fetal life are still not fully understood.[45] In any case, these conditions caused deviations limited to a very narrow interval, not comparable with the one observed in the sources on the Jewry in east-central Europe. If the measured sex ratio at birth statistically significantly[46] exceeded the standard ratio of 104–107, the causes should be attributed to incorrect data rather than to radically different, but naturally occurring characteristics of the population.

[43] The research regards France, England, Wales, the Netherlands, Germany, and Scandinavia, see Anouch Chahnazarian, *Historical Trends in the Sex Ratio at Birth* (Hopkins Population Center Working Paper Archive, 1990), https://pdfs.semanticscholar.org/e421/6bf4682e0d48204371002211ae6622a60720.pdf [retrieved: 15 Sept. 2020]; Henrik Møller, "Change in Male:Female Ratio among Newborn Infants in Denmark," *The Lancet* 348 (1996), 828–829; Katja Bromen, Karl-Heinz Jöckel, "Change in Male Proportion among Newborn Infants," *The Lancet* 349 (1997), 804–805; Ralph Catalano, Tim Bruckner, Kirk R. Smith, "Ambient Temperature Predicts Sex Ratios and Male Longevity," *Proceedings of the National Academy of Sciences of the USA* 105 (2008), 6:2245.

[44] Paradysz, "Współczesna demografia," 175.

[45] Francesco Scalone, Rosella Rettaroli, "Exploring the Variations of the Sex Ratio at Birth from an Historical Perspective," *Statistica* 75 (2015), 2:213–226; Catalano, Bruckner, Smith, "Ambient Temperature," 2244–2247; Misao Fukuda et al., "Decline in Sex Ratio at Birth after Kobe Earthquake," *Human Reproduction* 13 (1998), 8:2321–2322; Ralph Catalano et al., "Sex Ratios in California Following the Terrorist Attacks of September 11, 2001," *Human Reproduction* 20 (2005), 5:1221–1227; Dirk Bethmann, Michael Kvasnicka, "War, Marriage Markets, and the Sex Ratio at Birth," *Scandinavian Journal of Economics* 116 (2014), 3:873–874.

[46] Cf. footnote 52 for the method of stating statistically significant differences.

In the case of the Jewish population, both sexes were not equally omitted in the registration. In birth records, girls were more often omitted. Still, the correct sex ratio at birth does not indicate completeness of the registration, as the correctness may be illusory, meaning that the disincentives against making birth entries affected girls as much as boys. Therefore, we have the possibility to reject the zero hypothesis (sex ratio at birth is correct), but not to confirm it. In other words, completeness of the records cannot be confirmed statistically, it may be, however, stated that there are no reasons to assume that it is incomplete.

Most officials and statisticians of the nineteenth century were probably not aware that the sex ratio at birth may be used to control quality of their work, even if they measured the surprising prevalence of male birth. The nineteenth century was dominated by the myth that the high male-to-female ratio at birth among the Jews, exceeding standard proportion of 104–107 to 100, was natural.[47] The general prevalence of male over female live births was observed in the records as early as the beginning of the eighteenth century and interpreted as "Economy of Nature" became a stimulus for the early development of the probability theory.[48] The unusual—higher than standard—prevalence of male Jewish births in the statistics drew the attention of researchers already at the beginning of the nineteenth century. The extent of the prevalence was perceived as probable, originating from cultural differences rather than from under-registration. In 1826, Karl Friedrich Burdach,[49] a professor of anatomy at the University of Dorpat (Tartu), linked the excess of (registered) male births with a "lack of moral education" of the Jews. Two years later, Johann Daniel Hofacker[50] attempted to explain the disproportions by very early marriages contracted by women. For him, early marriages should be a role model for ageing aristocrats hopelessly waiting for a male heir. Both authors, who considered Jews as "weak" and "powerless," were surprised by the high male-to-female ratio of their children, which was mistakenly associated

[47] Avrutin, *Jews and the Imperial State*, 78–79.

[48] John Arbuthnot, "An Argument for Divine Providence, Taken from the Constant Regularity Observed in the Births of Both Sexes," *Philosophical Transactions of the Royal Society of London* 27 (1710), 186–190.

[49] Karl Friedrich Burdach, *Die Physiologie als Erfahrungswissenschaft* (Leipzig, 1826), 1:533.

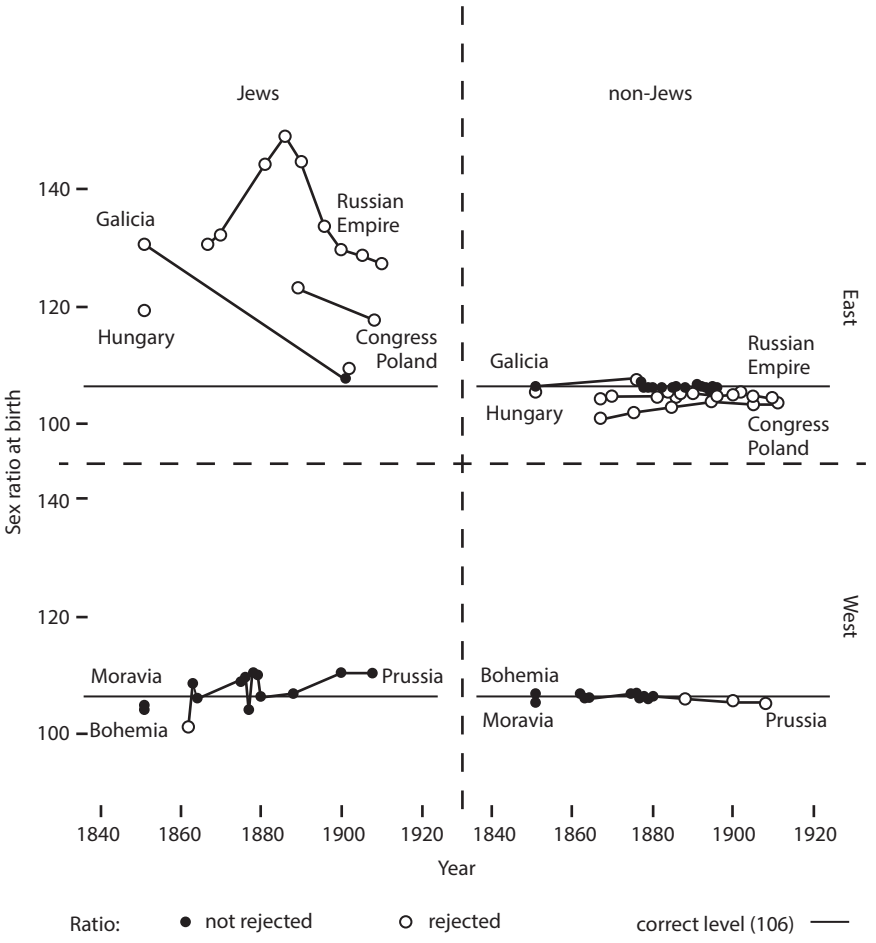
[50] J[ohann] D[aniel] Hofacker, *Über die Eigenschaften, welche sich bei Menschen und Thieren von den Eltern auf die Nachkommen vererben, mit besonderer Rücksicht auf die Pferdezucht* (Tübingen, 1828), 63–64.

by them with masculine vitality. Kazimierz Ostaszewski-Barański,[51] the head of the statistical office in Lviv, while studying data from his town, related the high registered proportion of male live births among the Jews to better living conditions decreasing the mortality of male fetuses. "It is well known that even among the poorest classes, pregnant Israelites care about themselves much better than other women, who, because of poverty, sometimes even deliberately try to trigger miscarriage or take away vitality from the fetus right from its beginning"—wrote Ostaszewski-Barański in 1894. He avoided the antisemitic rhetoric of Burdach and Hofacker. In the case of Lviv, living conditions could indeed be responsible for the slight excess of male births. However, they could not be the factor on the scale of whole east-central Europe. All three aforementioned authors shared a trust in statistics as a science which prevented them from questioning the whole statistical system.

Regional perspective

Because the order of births by sex is random, the sex ratio at birth measured for a small number of observations is a subject of random deviations. The study of the larger populations reduces the randomness and helps unambiguously identify non-random deviations from the standard level, for instance, those originating from flawed birth registration. Data required for such studies is provided by the nineteenth-century statistical yearbooks with aggregated summary-based reports on birth, marriage and death records from individual locations. The wide territorial scope of the yearbooks has particular importance for research covering complete, but small populations living in large territories, like the Prussian Jewry. In such cases, the research perspective of an individual town, presented in the further part of this paper, is subject to a large margin of error. Editors of the yearbooks did not always decide to include in them cross-tabulations of crude number of births by sex and parents' religion. The most complete data is available for the second half of the nineteenth century, especially for Prussia and the Russian Empire (Graph 1). The earliest data comes from 1851 when the first statistical yearbook of the Habsburg Empire with required cross-tabulations was published. Data from the later period

[51] Kazimierz Ostaszewski-Barański (ed.), *Wiadomości statystyczne o mieście Lwowie* (Lwów, 1894), 3:88.



Graph 1. Sex ratio at birth in east-central Europe, 1851–1910.

Note: Data from the Russian Empire covers fifty European provinces excluding Congress Poland and Finland. Data from Prussia encompasses the whole state, including Poznań and Bydgoszcz Districts. Non-Jewish population refers to the local Christian majority: Lutherans in Prussia, Roman Catholics in Congress Poland, Bohemia, and Moravia, and the Russian Orthodox Church in the Russian Empire. Data for Galicia, labeled as "non-Jews," refers to the total population.

Source: see the section "Data sources for graphs" of the bibliography.

comes from a series of statistical yearbooks for Prussia, Galicia, Congress Poland, and the Russian Empire. Four panels of the graph group the data by conventional division between eastern and western countries and by the religious groups (Jews and non-Jews). Each panel features a horizontal line marking the sex ratio at birth most commonly accepted by biologists (106). The points represent individual measurements of the ratio. The measurements marked in white are those which deviate from the biological ratio to the extent that needs to be interpreted, from a statistical point of view, as indicating under-registration. The measurements marked in black are those which most likely do not deviate significantly from the biological ratio and there are no reasons to assume they are incorrect and, accordingly, that the overall vital registration in that year and country was incorrect.[52]

Despite source deficiencies, for example, chronological limitations of the data from Hungary, Bohemia, and Moravia to just one year (1851), available information clearly indicates three phenomena. First, for most of the nineteenth century the vital registration of the Jews in eastern Europe was incomplete. The sex ratio at birth there ranked between 120 and 145, i.e. levels much exceeding the level 106 observed in countries with complete registration. The difference is statistically significant, researched populations are large enough, and the deviations from the standard are sufficiently recurrent to rule out that the results being a matter of chance. In the worst years for the vital registration, officials omitted at least 36% of births in the Russian Empire (in the 1880s), at least 12% in Congress

[52] Because of the random order in births of boys and girls, the measurements of sex ratio at birth taken for small populations (or their samples) may vary to some extent. In populations with complete registration system, the sex ratio at birth will naturally centered around the level of 106 (alternatively between 104 and 107). Due to randomness, some measurements may yield slightly higher or lower results, yet there is no *statistical difference* between them and the biological norm. In order to state under-registration of births, I have compared the sex ratio at births in the populations under study (with *unknown* registration quality) with the range of levels yielded by 95% of measurements taken from populations with the same size and *complete* registration. If the sex ratio at birth observed in the populations under study exceeded this range, I assumed the ratio to be significantly statistically different from the biological norm (106) and most probably (with 95% confidence) indicative of incomplete registration. Statistics (parameters) exceeding beyond the centered around of 95% (a so-called confidence interval) is typically assumed by statisticians as sufficient to reject the null hypothesis (in case of this study: the vital registration was complete). For an introduction to the concept of statistical difference between proportions and confidence intervals, see for instance: David S. Moore, George P. McCabe, Bruce A. Craig, *Introduction to the Practice of Statistics* (New York, 2009), 487–502. For the discussion of the concept in the context of the sex ratio at birth, see: Paradysz, "Współczesna demografia," 167–189.

Poland (the same decade), and at least 23% in Galicia in the 1850s. These are minimal estimates arising from the tendency to omit girls more often than boys. The estimates need to be increased by an unknown proportion of omitted births in which girls and boys were in correct proportions.

Beginning from the 1880s, collection of the vital statistics in the European part of the Russian Empire[53] and Congress Poland started to improve slowly, but it remained incomplete at least until the end of World War I. In 1851, vital registration was incomplete in Galicia and Hungary, yet in the decades to come it gradually improved and reached levels ahead of the registration in the Russian Empire (see a further part of the paper).

A second phenomenon emerging from the regional analysis is a very clear division into two groups of countries in Europe. In eastern Europe (upper panels of the graph), officials controlled the non-Jewish population better than the Jewish one. The sex ratio at birth among the non-Jews remained at levels which do not allow for the detection of under-registration or at the levels of 100–104, slightly lower than the standard. Among the Jews in Galicia, Congress Poland, and the Russian Empire, girls were more often omitted, whereas among the non-Jewish population of these countries, it was boys whose registration was more often omitted. As a consequence, the ratios jointly aggregated for both Jewish and non-Jewish populations from statistical yearbooks from Congress Poland (1867–1911) and Galicia (1877–1883) balance out and give the impression of being correct. The high male-to-female ratio within a small group of Jews (about 10 per cent of total population) in joint calculations levels out slightly below the standard male-to-female ratio within the non-Jewish majority. For instance, according to the statistical yearbook of Congress Poland from 1889, the ratio equaled 123 for the Jews, 104 for the non-Jews, and consequently 106 for total population, i.e. allegedly at the standard level.[54] This example also shows the situation when correctness of the sex ratio at birth is a matter of chance rather than complete vital registration.

The third conclusion arising from the regional analysis of the sex ratio at birth is that it generally remained at the correct level within western countries (bottom panels of Graph 1, where most of the points

[53] By the European part of the Russian Empire I understand fifty western provinces (*guberniya*s) excluding Congress Poland and Finland. Data for some provinces is not available.

[54] *Trudy Varšavskogo statističeskogo komiteta* (Warsaw, 1892), 7:97, 103.

are black). Proportions of male to female births in Moravia, Bohemia, and the Kingdom of Prussia[55] do not provide a reason to question the completeness of the vital registration both of the Jews and the non-Jews. Only at the beginning, in the 1860s, when *Preussische Statistik* started to be published, did the sex ratio at births of relatively small Jewish population of Prussia deviate from the natural range of 104–107.

For Prussia, correctness of registration did not mean its completeness. According to Prussian law, only those with the status of citizen were subject to registration. Other Jews who lived in Prussia, so-called foreigners, were excluded from the duty of registration.[56] The law remained in force until 1874, when secular civil registration covering all residents was introduced, regardless of their religion or citizenship status. As a result, birth, marriage, and death ratios in Prussia regard only better-off Jews, who could demonstrate sufficient wealth to obtain the status of citizen. Meanwhile, disadvantaged Jews remained excluded from the statistics. In 1871, three years before the introduction of secular civil registration, the share of foreigners who remained excluded from vital registration and vital statistics was 3% in the Province of Posen, 25% in the Province of Silesia, and 14% in the Provinces of East and West Prussia.[57]

Local perspective

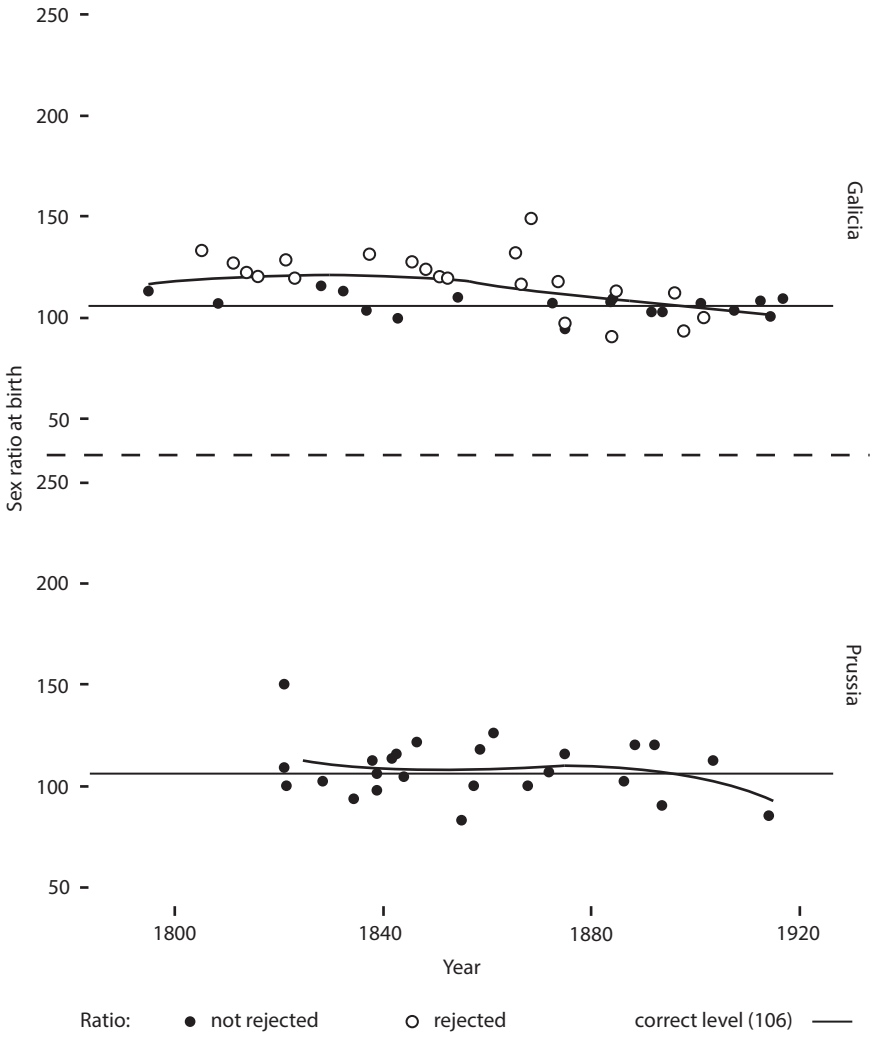
Data collected directly from the vital records in selected towns enables analysis free of chronological limitations imposed by the availability of statistical yearbooks. It provides insights into trends of the sex ratio at birth right from the introduction of the vital registration until the end of World War I. Chronological extension, however, comes at the expense of accuracy, as individual locations encompass territory and population of a limited size. Graphs 2 and 3, each consisting of two panels, show data from selected towns in the partitioning countries.[58] Individual points in the graphs represent a measurement of the sex ratio at birth from a place

[55] With the exception of data for 1862.

[56] Rönne, Simon, *Die früheren und gegenwärtigen Verhältnisse*, 59–63.

[57] Calculations based on: Bruno Blau, *Die Entwicklung der jüdischen Bevölkerung in Deutschland von 1800 bis 1945* (manuscript ED 128/1 held at the Institut für Zeitgeschichte–Archiv, New York, 1950), 37, 58.

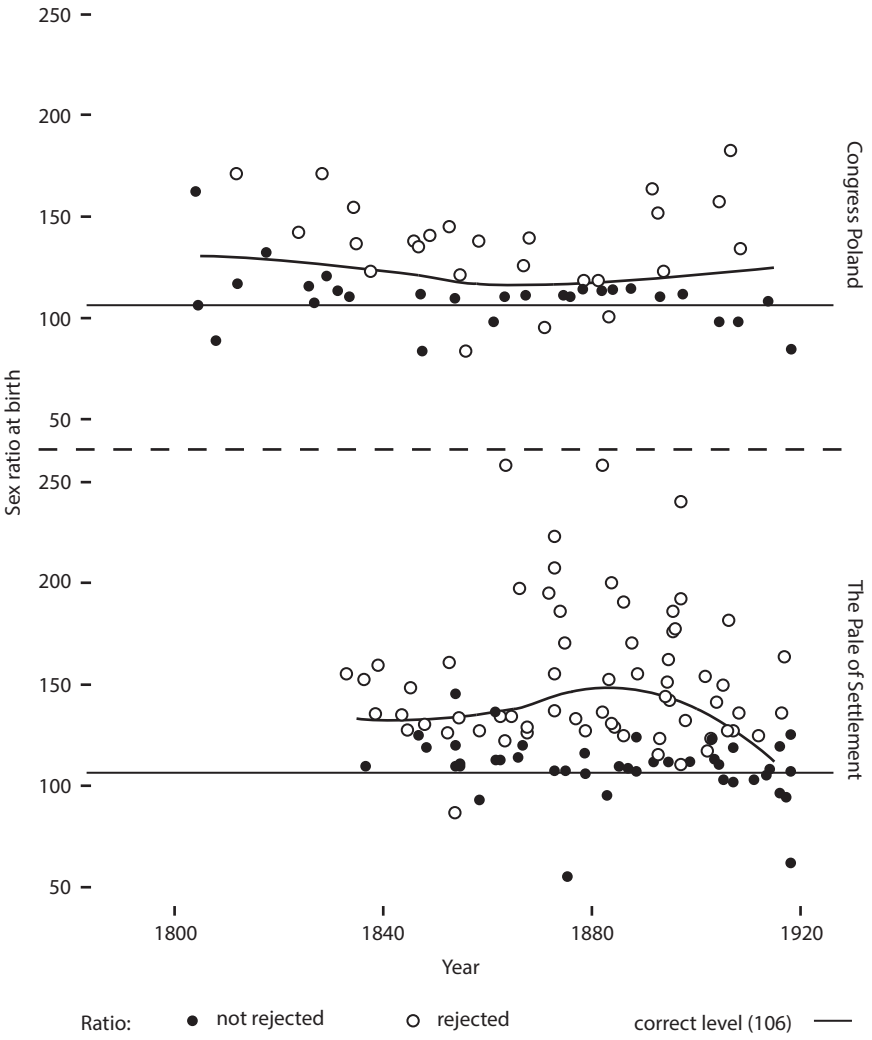
[58] A complete list of places and years for which the data was available is indicated in Graphs 4 and 5, as well as in the section "Data sources for graphs" of the bibliography.



Graph 2. Sex ratio at birth in Galicia and Prussia (data from selected places), 1791–1920.

Note: data aggregated by decade and jittered within a decade.

Source: see the section “Data sources for graphs” of the bibliography.



Graph 3. Sex ratio at birth of the Jewish population in Congress Poland and the Pale of Settlement (data from selected places), 1808–1920.

Source: see the section "Data sources for graphs" of the bibliography.

aggregated over a decade. As in Graph 1, white points represent measurements statistically different from the standard sex ratio at birth.

Despite the lower accuracy of the results, the local perspective stands in line with the regional approach discussed earlier. Trends in a series of observations clearly indicate that vital registration in the Kingdom of Prussia cannot be said to be incomplete. The sex ratio at birth remains constant and at a standard level. All observations taken for Prussian towns, including the earliest ones from the 1820s, deviate within the margin of error. Unlike in Prussia, trends of the sex ratio at birth in Galicia, Congress Poland (the Duchy of Warsaw until 1815), and the Pale of Settlement in the Russian Empire suggest significant under-registration right from the introduction of the vital registry. The ratio improved with time only in Galicia, where at the end of the nineteenth century in some towns the trend reversed, and boys started to be omitted more often. The reform of the vital registration offices—introduced in Galicia in the 1870s—improved registration of male births and, as a result, revealed earlier the existing inefficiency in the registration of female births. In Congress Poland and the Russian Empire, there were no major reforms of the vital registration system. New legislation, such as the regulations from 1853 in the Russian Empire or introduction of resident books in 1865 and making Russian the official language in Congress Poland in 1867, did not change the trends. The male-to-female ratio at birth in these countries remained at high levels, and only in the last analyzed decade (1911–1920) in the Pale of Settlement did it draw near to the standard level.

Graphs 4 and 5 show a series of observations for individual towns aggregated by decade. As in the earlier graphs, observations indicating an incorrect sex ratio at birth are marked in white. Accordingly, observations for which there is no sufficient reason to assume they are incorrect are marked in black.

Analysis of whole regions or several combined places (Graphs 1–3) reflects the general condition of vital registration without providing insight into individual towns. Meanwhile, even in the areas with a generally defective registration system, there are still some towns where the sex ratio at birth remained at standard levels for several decades. Such towns were located in both Congress Poland (Częstochowa from the 1830s to 1880s) and in the Pale of Settlement. The ratio in Cherkasy remained at a standard level for half a century, from the 1870s until World War I; in Yekaterinoslav for at least forty years, from the 1860s till the end of the nineteenth

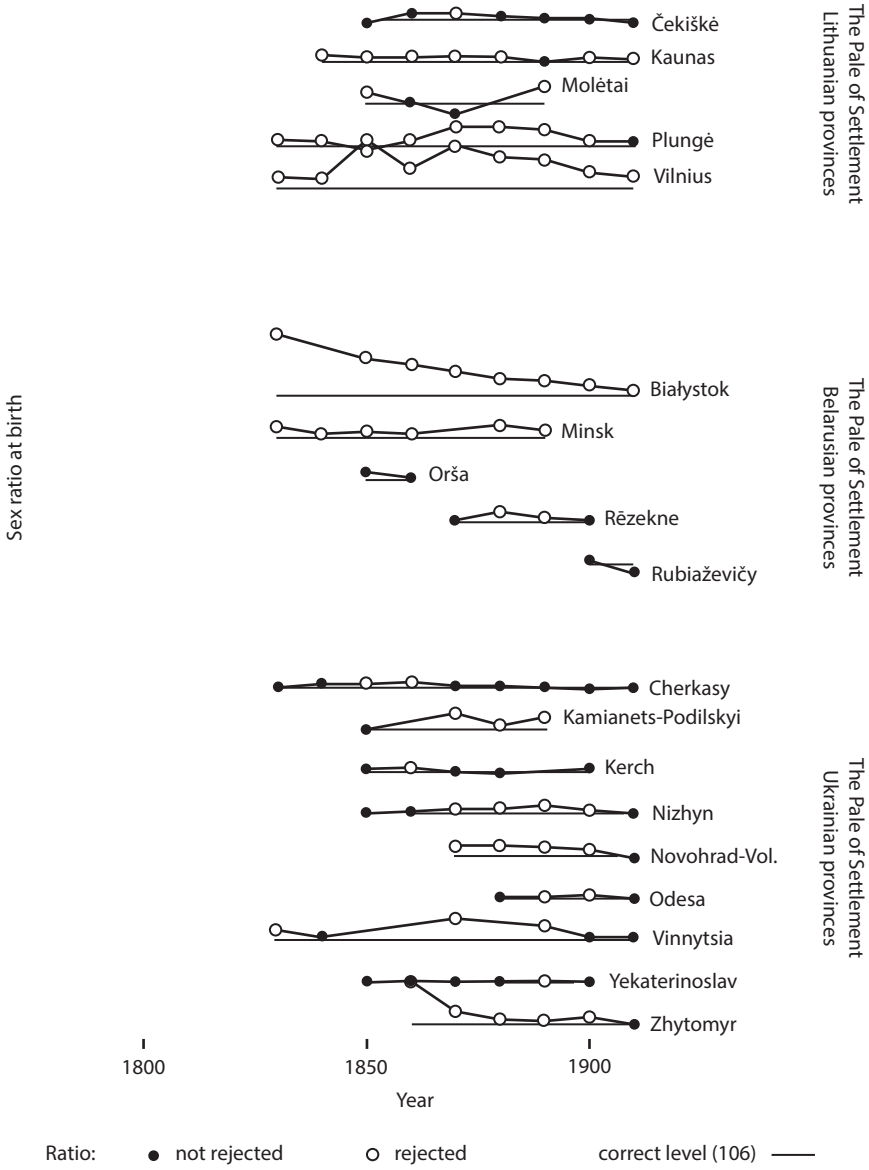
century. The ratio in other towns, e.g. Plungė, Zhytomyr, or Novohrad-Volynskyi, gradually improved and only in the 1910s did it decline to the standard level. Regularities in trends indicate the importance of the local administrative environment, relationships between Jewish community, civil registrars, and local governmental officials for the formation of the registration processes. In some places, the vital registration system operated efficiently despite general, regional trends.

Vital registration was incomplete, in particular, in the Lithuanian and Belarusian provinces of the Pale of Settlement. The sex ratio at birth was incorrect in all researched cities in the region: in Kaunas, Minsk, and especially in Vilnius and Białystok. The results look better for smaller towns of the region, e.g. Čekiškė and Rēzekne. Data from individual towns of Lithuania and Belarus confirm Barbara Stępniewska-Holzer's opinion that kahals in smaller towns had more opportunity to watch over the duties of the residents.[59] On the other hand, the registration in some large cities of the Ukrainian provinces, such as Yekaterinoslav, Cherkasy, or Odesa, seems to be complete or almost complete. These territorial differences are hard to explain solely on the basis of the collected data. It might be that the administrative system of the quickly urbanizing south of the Pale of Settlement—the destination area of many Jews from northern provinces—worked more efficiently than in Lithuania and Belarus. The relatively poor economic condition in the northern provinces[60] may have also negatively contributed to the completeness of registration. Many of the quickly developing towns in the nineteenth century in southern Ukraine were founded only after these lands were annexed by Russia in an earlier century. For constantly incoming immigrants proving the right to settle and reside in these towns probably required accurate documentation. The influx of the officials themselves[61] was important as well, since they formed new administrative structures free from local traditions rooted in the times before the introduction of the registration.

[59] Barbara Stępniewska-Holzer, "Badania nad rodzinami żydowskimi w białoruskich guberniach strefy osiedlenia w XIX wieku," *Roczniki Dziejów Społecznych i Gospodarczych* 60 (2000), 169.

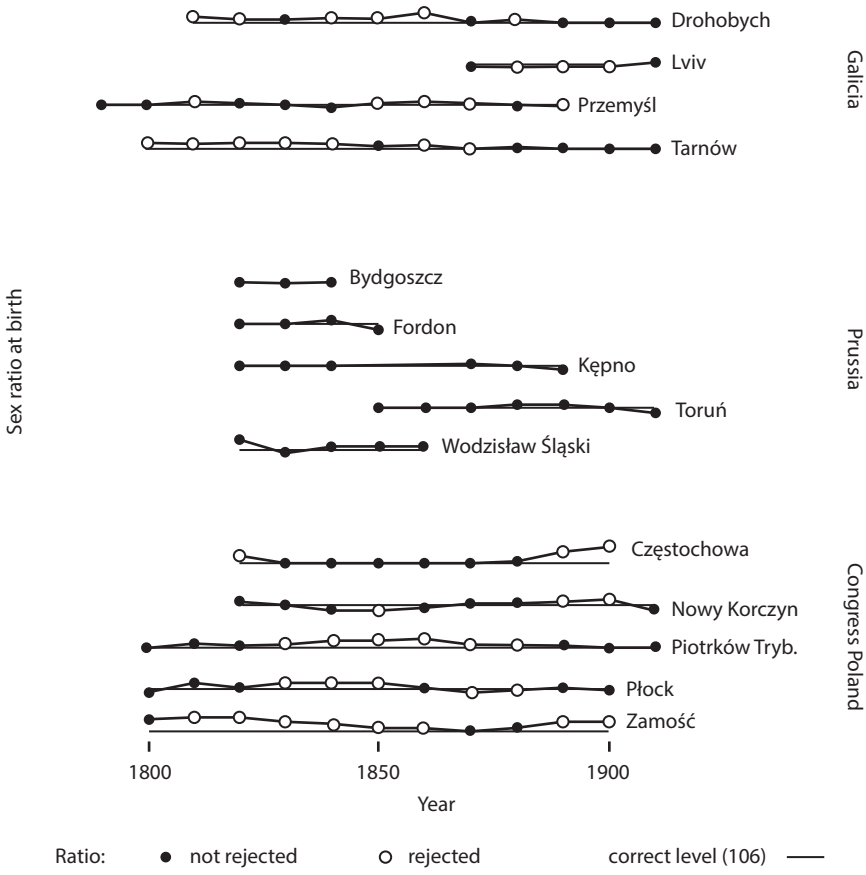
[60] Judith Kalik, *Movable Inn: The Rural Jewish Population of Minsk Guberniya from 1793 to 1914* (Warsaw–Berlin, 2018), 48; Shaul Stampfer, "Patterns of Internal Jewish Migration in the Russian Empire," in Yaacov Ro'i (ed.), *Jews and Jewish Life in Russia and the Soviet Union* (Portland, 1995), 31; Stępniewska-Holzer, *Żydzi na Białorusi*, 93.

[61] Patricia Herlihy, *Odessa Recollected: The Port and the People* (Boston, 2018), 122.



Graph 4. Sex ratio at birth of the Jewish population in selected places of the Pale of Settlement, 1836–1920.

Source: see the section “Data sources for graphs” of the bibliography.



Graph 5. Sex ratio at birth of the Jewish population in selected places of Galicia, Prussia, and Congress Poland, 1791–1920.

Source: see the section "Data sources for graphs" of the bibliography.

Additional indicators of registration quality

In addition to the sex ratio at birth, the birth-marriage and birth-death ratios are also often applied when checking registration quality. Contrary to the sex ratio at birth, the two latter ratios are inaccurate. While the proportion of male to female births is determined mostly by biological factors and—provided that the vital registration is complete—deviates only in a limited range (roughly ±1.4%), the birth-marriage and birth-death ratios do not have one standard level.

Even during the relatively stable period for fertility and nuptiality prior to the demographic transition, the birth-marriage ratio may vary depending on mortality, migration, and remarriage patterns.[62] In places with correct registration in the Polish-Lithuanian Commonwealth, the ratio varied between 4 and 5 for towns and villages, respectively. In early-modern towns in western Europe it may have been as low as 3.1.[63] The birth-marriage ratio may have values varying within the range of as much as ±25%, yet still remains at levels not indicative of under-registration. In the conditions of quickly progressing nineteenth-century modernization, demographic transition, and increasing migration, the proportion of births to marriages might have dynamically changed in trends which are hard to explain based solely on the data provided in the vital registry. Changes in the family formation patterns may have been a factor as well. In the case of the Jewish population, lawfulness of divorce (opening the way for a new marriage and additional children) was one such factor of increasing importance in the course of the nineteenth century.[64]

Deviations in the birth-marriage ratio may be indicative of under-registration only when they are extreme. Most of the Jews in Galicia contracted solely religious marriages (known as "ritual" in sources) without fulfilling the obligation to register them in accordance with secular law. Joseph II, aiming to enlighten the Jews, introduced marriage tax, requirements to abandon traditional clothing for persons under thirty and compulsory education (replaced in 1806 with a state exam in religion). In addition, the Jews of Lviv were forbidden to marry a person from outside the town. In the first half of the nineteenth century, these first restrictions were

[62] Edward A. Wrigley, Roger Schofield, *The Population History of England 1541–1871: A Reconstruction* (London, 1981), 190–191; Paradysz, "Współczesna demografia," 188.

[63] Kuklo, *Demografia Rzeczypospolitej*, 178.

[64] Freeze, *Jewish Marriage*, 147.

replaced by new ones, motivated by military interest, among others by the prohibition to marry before reaching the recruitment age of twenty to twenty-one.[65] Contracting a marriage in sole accordance with Halakhah, without complying with the state law, allowed Galician Jewry to avoid the restrictions. The wave of "newlyweds" who passed through civil registration offices in Lviv in 1914–1915 confirms that the practice continued even after most of the restrictions had been lifted. Marriage records at the beginning of World War I, as a proof of marital status, helped wives to obtain family benefits in case their husbands were drafted into the army.[66] Perhaps it might have also been useful in the mass exodus to Vienna.[67] Thanks to the unusual situation, several hundreds of marriages were registered, which would otherwise remain unregistered for many years to come or even not detected at all.

Vital registration in Galicia is far from providing reliable insights into birth, marriage, and death ratios. Marriage records covered only a fraction of contracted marriages, and many entries they contained were registered with undefined delays, often taking several years. For instance, in 1826 in entire Galicia there were only 137 marriages registered per 2122 new families officially added to the register.[68] In Przemyśl and Tarnów (Graph 6), the birth-marriage ratio ranked within the range of 15–25. If these values are to be compared with the maximum standard birth-marriage ratio suggested by Irena Gieysztorowa,[69] as few as 20–33% marriages were registered at best. In the worst decade in Przemyśl, the 1850s, there were 60 birth entries per one marriage entry. A lower birth-marriage ratio, closer to the correct one observed in Przemyśl at the turn of the eighteenth and the nineteenth centuries, resulted from the delayed registration of marriages contracted much earlier. Nonetheless, still only a part of marriages was registered on an ongoing basis. Similarly in Tarnów, the number of marriage entries increased significantly after the reforms of the civil registration offices at the turn of the 1870s and the 1880s. Marek J. Minakowski and Anna Lebet-Minakowska have suggested a slightly different approach to the

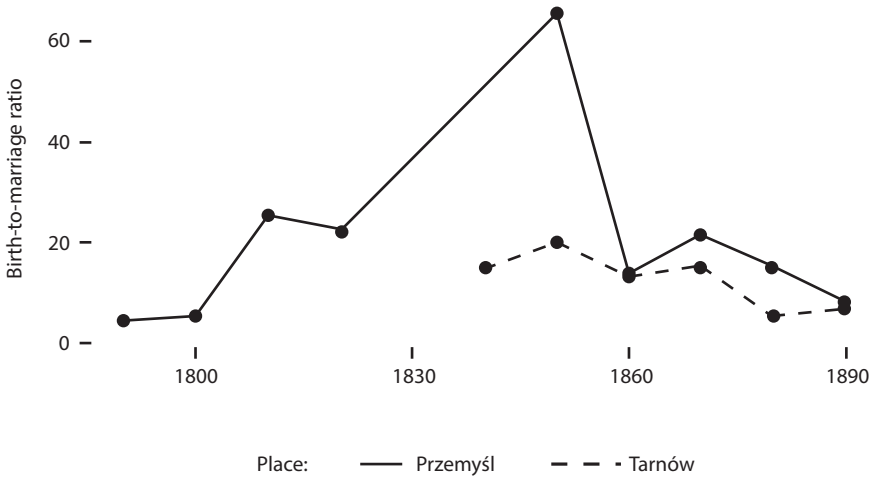
[65] Michalewicz, *Żydowskie okręgi*, 38–39.

[66] Konrad Wnęk, Lidia A. Zyblikiewicz, Ewa Callahan, *Ludność nowoczesnego Lwowa w latach 1857–1938* (Kraków, 2008), 139.

[67] Mass migration of the Jews from Galicia to Vienna is discussed in: David Rechter, "Galicia in Vienna: Jewish Refugees in the First World War," *Austrian History Yearbook* 28 (1997), 113–117.

[68] Majer Bałaban, *Dzieje Żydów w Galicji i w Rzeczypospolitej Krakowskiej, 1772–1868* (Lwów, 1914), 73–76.

[69] Irena Gieysztorowa, *Wstęp do demografii staropolskiej* (Warsaw, 1976), 242–244.



Graph 6. Birth-to-marriage ratio of the Jewish population in Przemyśl and Tarnów, 1791–1900.

Source: see the section "Data sources for graphs" of the bibliography.

estimation of the extent of under-registration of marriages. Their results, nonetheless, are compatible with my findings. Relying on proportions of "illegitimate" children, i.e. born to parents who married only before a rabbi, they estimated that between 1861 and 1875 just 25–40% of all marriages in Kraków were officially registered.[70]

Preference to avoid the duty of marriage registration in accordance with secular law continued until the fall of the Habsburg Empire. The consequence was—according to Majer Bałaban—"chaos" which extended beyond marriage records. Lack of civil marriage was a factor that often prompted parents to skip registration of their children's births. Those who were registered, in turn, were classified as "illegitimate," which made and still makes research on illegitimacy in Galicia impossible. "Illegitimate" children, when grown up, and often state officials themselves, often used paternal last names, instead of maternal ones, as the law required. This further contributed to administrative "chaos," especially through hindering the identification of young males and their recruitment to the army.[71]

[70] Marek Jerzy Minakowski, Anna Lebet-Minakowska, "Jewish Birth and Marriage Registrations in 19th-Century Cracow and What They Reveal about the Dynamics of Ritual Marriage," *Przeszłość Demograficzna Polski* 40 (2018), 184.

[71] Bałaban, *Dzieje Żydów*, 75; Michalewicz, *Żydowskie okręgi*, 37.

Similarly, the birth-death ratio does not have one biologically determined level. It is assumed that before the demographic transition—when the overall population growth was very slow—the ratio should typically be one.[72] During the nineteenth century, the birth-death ratio increased due to better health conditions, lower mortality, as well as a fertility decline. Because of the general increasing trend of population growth, the ratio increased as well. There is, however, no universal formula for the increase, as it strongly depended on local demographic conditions and migration patterns. In some towns, especially in economic crisis and suffering depopulation due to the industrialization of neighboring regions, the ratio could fall under one. The possibility of considerable changes in the birth-death ratio, even with a well-functioning administrative system, makes it unsuitable for the precise assessment of under-registration, especially in the case of the mobile Jewish population undergoing rapid population growth in the nineteenth and at the beginning of the twentieth century.

Interpretation of the relationship between the number of birth and death records is further hindered by mutual correlation of both book entries. Persons who deceased without having their births registered were often registered only in the death records. Such instances related especially to infants, the age group with the highest mortality. "It was stated that the civil registrars, when registering the death record prior to the birth record of a deceased, omit recording their birth"— reported the Government Commission of Inner Affairs in 1840.[73] If the registrars considered registration of the birth of the already deceased infant as unnecessary, then quite likely many parents assumed that recording the death of an infant without birth record is redundant and that they preferred to bury such an infant without both documents. As Janina Gawrysiakowa observed, in the Lublin Province the secret burials of infants made official statistics "worthless."[74] As the Minakowskis show, even half of the infants deceased in Kraków before reaching the age of two months did not leave any trace in the vital registry.[75] The practice of burying children without death record or, for convenience, registering them as stillborn, continued in the interwar period.[76] Such a practice was also observed in the Russian Empire by Sergey Novoselsky, who wrote in 1916: "extremely low mortality rates of the Jewish

[72] Gieysztorowa, *Wstęp*, 242–244.
[73] *Zbiór przepisów administracyjnych*, 45.
[74] Gawrysiakowa, "Rejestracja ruchu," 75–76.
[75] Minakowski, Lebet-Minakowska, "Jewish Birth," 182–183.
[76] Bornstein, "Z zagadnień," 52.

population in Russia must be treated carefully due to higher, mentioned above, extremely unsatisfactory registration of births and deaths of the Jews."[77] Because death is easier to hide when it occurred in the first days after birth, it is assumed that neonatal mortality (till the twenty-eighth day of life) may be often used as an indicator of under-registration in death records rather than of the mortality rate itself.[78] Since mortality rates are typically highest among infants,[79] deficiencies in their registration have an impact on the measurements of crude death rates.

Correlation between the completeness of birth and death records demands from the researcher that he or she treat statistical yearbooks claiming low mortality rates of the Jews with caution. Although there is no way to question the completeness of both death records and birth records (through the male-to-female ratio), low death rates of the Jews in Galicia, Congress Poland, and the Russian Empire should be interpreted primarily as a potential result of under-registration rather than the better physical condition of a given population. Currently, there is no research on the mortality of the Jews in Eastern Europe of the nineteenth century featuring critical evaluation of its credibility in terms of completeness of sources.[80]

The tombstones preserved to this day cannot be a reliable source for the verification of completeness of death records. Until the nineteenth century, most tombstones were made of non-durable wood. Many of them were made of a few simple joint boards of rather symbolic meaning. Only persons in a better situation could afford stone tombstones[81] and apparently even they tended to economize on tombstones for infants. Comparison of the death records with currently standing tombstones in the cemetery in Kromołów shows that out of eighty persons who died of cholera in the winter of 1848, only four persons have still standing stones.

[77] Novosel′skij, *Smertnost′*, 145.

[78] Tommy Bengtsson, "Mortality and Social Class in Four Scanian Parishes, 1766–1865," in Tommy Bengtsson, Cameron Campbell, James Z. Lee (eds.), *Life under Pressure: Mortality and Living Standards in Europe and Asia, 1700–1900* (Cambridge–London, 2004), 123–124.

[79] Ansley J. Coale, Paul Demeny, Barbara Vaughan, *Regional Model Life Tables and Stable Populations* (New York, 1983), 24–25.

[80] Such evaluation is not to be found in: Della Pergola, *La trasformazione demografica*, 54; Freeze, *Jewish Marriage*, 53–54; Botticini, Eckstein, Vaturi, "Child Care," 2637–2690.

[81] Jan Paweł Woronczak, "Relacje komunikacyjne w epigrafice hebrajskiej (Na materiale inskrypcji z cmentarza żydowskiego w Kromołowie)," *Litteraria* 27 (1996), 205; Marcin Wodziński, "Tombstones," in Gershon Hundert (ed.), *YIVO Encyclopedia of Jews in Eastern Europe*, http://www.yivoencyclopedia.org/article.aspx/Tombstones [retrieved: 15 Sept. 2020].

Missing stones cannot be explained by burial in a mass grave, as it was forbidden by the Halakhah.[82]

Another quite rarely applied indicator of completeness of vital registry is measurement of delay of registration. The method is rarely used as it requires detailed review of entry contents—comparison of the date of an event with the date of its registration. So far, Jewish communities of Lublin and Piotrków Trybunalski have been researched by this method. In both communities, births with no corresponding records made right away are registered only if they turned out necessary for other administrative purposes. Introduction of resident books in 1865 in the towns of Congress Poland revealed the scale of under-registration. In Lublin and Piotrków Trybunalski several hundred additional records were registered only in that year. They included children who were often born even several years earlier, i.e. exactly as said Witold Kula quoted in the introduction to this article.[83]

Causes of under-registration

What were the reasons for under-registration in the vital records of the Jews in east-central Europe? The quality of the registration was the sum result of institutional relations between Judaism and a state. The relations were formed not only by legal regulations but also by the attitude of officials and applicants. The origins of overwhelming under-registration in Galicia, Congress Poland, and the Russian Empire can be traced in traditional Judaism, the level of Jewish integration, as well as corporative or direct ideas of governing the citizens.

For the Jews, mass registration of the population introduced at the turn of the eighteenth and the nineteenth centuries was a suspicious novelty, which—contrary to non-Jewish communities—did not originate from internal reform. For the Protestants, introduction of vital registration was an integral part of the Reformation often initiated personally by its leaders: Urlich Zwingli in 1526 in Zurich, Henry VIII of England in 1538, and John Calvin in 1541 in Geneva. The Roman Catholic Church introduced the register in 1563 on the wave of the Counter-Reformation

[82] Jan Paweł Woronczak, "Przestrzeń cmentarza żydowskiego: Kromołów, Biała, Wielowieś," *Annales Silesiae* 30 (2000), 83.

[83] Gawrysiakowa, "Rejestracja ruchu," 104–105; Tomasz M. Jankowski, *Ludność żydowska Piotrkowa Trybunalskiego, 1808–1870* (Wrocław, 2014), PhD thesis, Department of History, University of Wrocław, 120.

during the Council of Trent. In a short time, the use of registers started to spread throughout the lands of the Polish-Lithuanian Commonwealth.[84] For the followers of the Russian Orthodox Church, vital registration was introduced by Peter I in 1722 and became fully accepted by the end of the eighteenth century.[85] As a consequence, registration of baptism, marriage, or burial for Christians was an integral part of a religious rite sanctioned by Church law. On the other hand, vital registration was forcefully imposed on the Jews based on the interest of the state and not of the Jewish community.

The Christian practice of registering baptisms, marriages, and burials—taken over by the absolutist states from the Church administration—did not fit into Jewish practices even after its secularization. In the Christian traditions, both actual baptisms, marriages, and burials, as well as their registration were performed by the same person, a priest of the parish to which a family belonged. In the case of Jews, each rite which was to be registered later was performed by a different person—circumcision by a *mohel*, marriage by a rabbi, burial by members of *chevra kadisha*.[86] The entry in the registration books was made by a state appointed rabbi or a secular official. Contrary to the hierarchical churches with strong regional structures, especially Catholic and Orthodox ones, in Judaism formal hierarchical power was notable among kahals, but not spiritual authority. Internal divisions among Jews, freedom to choose one's "own" rabbi and synagogue were undermining the secular—though rooted in ecclesial hierarchy—system of vital registration. Moreover, there was no tradition of celebrating birthdays and writing down the age of the deceased on tombstones, hence remembering the exact date of birth was of lesser importance.[87]

Governments—not always aware of such fundamental conceptual and cultural differences—in their efforts to bring the Jewish population under control swung between granting full civic equality and corporatism. It seems that legislators were facing a dilemma as to whether Jews should be taken under the direct power of the state, on the same conditions as the remaining (Christian) population, or whether to rely on well-established specific structures of power, in the case of the Jews: rabbis and kahals.

[84] Kuklo, *Demografia Rzeczypospolitej*, 97.
[85] Avrutin, *Jews and the Imperial State*, 33.
[86] Michalewicz, *Żydowskie okręgi*, 35; Avrutin, *Jews and the Imperial State*, 35–36.
[87] Ibid., 37.

The question was how to efficiently break down the barriers between an individual and the state and build mutual trust between them. The Kingdom of Prussia decided to go the first route in a radical way in which rabbis were excluded from the process of birth, marriage, and death registration. Beginning with the Edict of Emancipation, state offices were solely responsible for these state duties: the police, courts, and from 1874 on civil registration offices (in the full meaning of the word "civil," i.e. together with the general population, independently of religion). The Prussian authority achieved success (visible in Graphs 1–5) thanks to the synergy between efficient administration—with officials often, at least in West Prussia, favorably inclined toward new Jewish citizens[88]—and the susceptibility of a relatively small Jewish population to integration.[89]

The opposite path in building relations with citizens was taken by the Russian Empire, which decided to cede civil duties to a group of specific religious institutions. Beginning from the 1820s, Nicholas I began systematically submitting the synod of the Russian Orthodox Church to his will. Standardization of the Orthodox vital registration and the enforcement of the secular duty of collecting statistical data upon bishops in the 1830s became an important part of the submission process.[90] The rules of registration of birth, marriage, and death records, introduced in 1835, formed the relation between the state, rabbis, and followers of Judaism in a similar way. The power of the tsars was sufficient to extend control over a part of rabbis. Their majesty, however, was not sufficient to build religious esteem. So-called "state" or "crown" rabbis, who were appointed to perform vital registration in the Russian Empire, were perceived by the Jews as regular officials. These rabbis, as alumni of disregarded state yeshivas in Zhytomyr and Vilnius, were considered ignorant of Halakhah.[91] In local communities, they held a much lower position than regular rabbis or parish priests. Instrumentalization of traditional institutions of Judaism aroused distrust among subjects of registration and those who registered. According to Barbara Stępniewska-Holzer, who researched censuses from the first half of the nineteenth century from Belarus, officials of the Jewish communities "were not interested in providing exact data regarding the

[88] Szulc, "Jüdische Staatsbürger," 193.

[89] Zielińska, *Przemiany struktur*, 82; Filipowska, "Rodzina żydowska," 403.

[90] David W. Edwards, "The System of Nicholas I in Church-State Relations," in Robert L. Nichols, Theofanis George Stavrou (eds.), *Russian Orthodoxy under the Old Regime* (Minneapolis, 1978), 164–167.

[91] Freeze, *Jewish Marriage*, 98–100.

size of the population, its professional, age, and sex structure. They were aware that all these reports, news, and censuses were of no use to them. Moreover, they were convinced that all this activity may have negative consequences for them."[92]

Ideology was not the only reason for corporatism. Practical aspects were of no lesser importance: inefficiency of the administrative system, underfunding of offices, and inadequate education of officials also played a role. From the beginning of the 1870s, the Tsar's Ministry of Internal Affairs occasionally considered the following legal steps undertaken by Congress Poland in secularization of the vital registration of the Jews: to hand over the registration to the police or municipalities in order to increase the quality of the records. These plans were never put into practice due to the limited availability of administrative capacities and complete lack of understanding of Jewish tradition among the officials.[93] Maintaining state rabbis and *status quo* was for the Ministry the lesser of two evils, while the improvement of qualifications and increasing their number seemed to be tasks impossible to undertake.

The Ministry of Internal Affairs of the Russian Empire was wrong in perceiving Congress Poland as a model for reforming vital registration. Partial secularization—entrusting registration of the Jews to municipal officials, recording the events of birth and death instead of circumcision, naming daughter, and burial—did not result in increased completeness of the registry in Congress Poland. The case of Galicia—where even after the introduction of equal rights for the Jews and in-depth reform of the vital registration in 1875, the quality of the birth, marriage, and death books improved even though they were still maintained mainly by rabbis—shows that secularization or abandoning corporatism were not the only key to improvement; building general trust toward state officials had a major impact as well.[94]

In addition to the progressing integration of the Jews and growing confidence in state institutions, details in legal solutions were also of great importance. Regulations on the period allowed for the registration of the event had a disciplining effect. Countries allowing shorter delays are distinguished by a higher quality of registration. Prussian law was the

[92] Stępniewska-Holzer, *Żydzi na Białorusi*, 9.

[93] Avrutin, *Jews and the Imperial State*, 72.

[94] Sascha O. Becker et al., "The Empire Is Dead, Long Live the Empire! Long-Run Persistence of Trust and Corruption in the Bureaucracy," *The Economic Journal* 126 (2016), 40–42.

most restrictive. According to the instruction to the Edict of Emancipation, events of birth, marriage, divorce, and death occurring in urban areas had to be reported within 24 hours, while those occurring in rural areas within three days.[95] From 1875, in Galicia there were eight days to report the event.[96] Until 1825, in Congress Poland events had to be reported "immediately," and later within eight days.[97] The Russian Empire had the least restrictive regulations in force. The law of 1853 stated that the registry books should be drawn up in duplicate, one for private use of the rabbi, another, general one, to be deposited in the municipal or local council (*duma*) archive. An entry to the private book had to be made at the event of circumcision, naming a daughter, marriage, and burial. Based on this entry, the corresponding entry was supposed to be made in the duplicate book within a month. As a consequence, in the case when a boy was born, the rabbi had even up to 39 days to make an entry (or forget about it). The contents of private and general books were reviewed for cross-compliance,[98] though not for under-registration. Nonetheless, it is difficult to indicate clearly whether regulations regarding the permissible delay in registration were the cause of the under-registration, or perhaps just reflected the potential of the state apparatus, which the legislators were aware of.

The delay in registration of the event depended on legal regulations, but also on the level of urbanization. Difficulties in reaching the capital town of a region, where the civil registration office was based, could contribute to the delay in registration or even mean it never took place. The poorly urbanized provinces beyond the Pale of Settlement in the Russian Empire were especially affected by this problem.

Several legal solutions which were supposed to ease the process of registration and personal identification actually reduced its quality. Contrary to the Kingdom of Prussia and Congress Poland, civil registrars (rabbis) in the Russian Empire and Galicia were not obliged to collect signatures under the entry. As a result, registration was not dependent on the personal presence of the persons mentioned in the document. In addition, in the Russian Empire it was allowed to substitute birth records with other documents issued by the police and institutions of social estates (resident

[95] Rönne, Simon, *Die früheren und gegenwärtigen Verhältnisse*, 59–63.

[96] S. Weinstock, *Najnowszy podręcznik metrykalny* (Lwów, 1903), 7–12.

[97] *Kodex Napoleona*, 7; *Dziennik Praw* [Królestwa Polskiego] (1825), 10:57; *Dziennik Praw* [Królestwa Polskiego] (1830), 13:156.

[98] *Polnoe sobranie* (1854), series 2, vol. 28, part 1, p. 185.

books, tax censuses, attestations). Such a practice was legalized in 1889 and only partially abolished by the act of 1900 stating that replacement documents may be recognized only by court decision.[99]

The Civil Code of Congress Poland from 1825 introduced a regulation which made a particular contribution to under-registration. It allowed burials to take place only after a registrar could "assure himself about the incidence of death," not earlier, however, than 48 hours after it occurred.[100] The provision, meant to prevent burying people in a state of apparent death, stood in contradiction with the law of Judaism, according to which the deceased must be buried on the day of death or, if that is not possible, the next day.[101] One of the ways to avoid secular consequences of fulfilling the Jewish law was not to report the death to the registrar, which, most likely in case of infants, had very limited legal consequences. In the Russian Empire, the obligatory holding period for bodies was as long as three days. Furthermore, registrars had to eyewitness the dead body only in cases when the death was sudden or resulted from violence.[102]

The personality of a registrar, level of his education, personal attitude toward Jews, professional commitment, and workload constituted additional important factors influencing the quality of registration. Diligence in maintaining the books, accuracy in the entries, mainly the age of a deceased person and delay between the event and its registration are helpful in assessment of registrars' work. Such data needs to be aggregated based directly on the registry books, as it was not published in statistical yearbooks. Detailed analysis of the records from Kraków, Suwałki, and Piotrków Trybunalski indicates a strong correlation between the changes of persons employed as registrars and quality of the vital registration. The local and hard to predict factor of the professional ethos of an individual state official seems to be the key explanation why even in the Russian Empire and Congress Poland there were places with flawless vital registration.[103] Engaging additional officials in processing the data had a detrimental effect on its quality. Research on the total population

[99] Vol′tke, "Metrikacija," 925–927.

[100] *Dziennik Praw* [Królestwa Polskiego] (1825), 10:78. Cf.: *Dziennik Praw* [Królestwa Polskiego] (1847), 38:60.

[101] Jakub Goldberg, "Bieda oraz dobroczynność Żydów polskich w dawnej Rzeczypospolitej," *Kultura i Społeczeństwo* 43 (1999), 1:7.

[102] *Polnoe sobranie* (1836), series 2, vol. 10, part 2, p. 320.

[103] Minakowski, Lebet-Minakowska, "Jewish Birth," 182; Markowski, *Między wschodem a zachodem*, 114; Jankowski, *Ludność żydowska*, 26.

of Congress Poland shows that inclusion of municipal and communal officials in data collection diminished its credibility, in particular with regard to the number of registered male births. When the data, on the other hand, was delivered to the statistical office directly by the registrars, it was more complete, the male-to-female ratio lower and closer to the correct one.[104] The role of witnesses was of similar importance. In places where the entry was made based solely on the statement of the witnesses, under-registration was higher when compared to those places where events were reported directly by the family.[105]

More complete registration of male births in all countries discussed may have several reasons. Religious aspects and relevance of birth certificates in the later stages of a child's life played an important role here. Birth certificates were obligatory for military recruitment, which obviously concerned only males. A proof of the place of birth, the place of official residence, or affiliation to social estate was necessary for admission to schools, to which girls were more rarely sent. Moreover, the event of naming a girl, which was formally registered in birth records in the Russian Empire and Galicia, did not have to be attended by any representative of local kahal. In the case of girls, there was also no need to count their exact age as they did not celebrate *bar mitzvah*.[106] Differences in fines for deficiencies in vital registration established in the Russian Empire reflected the lesser importance of girls' records. According to the instruction of 1840, the fine for mistakes in boys' birth records was 15 rubles, while mistakes in girls' birth records were valued at half the price, at 7.5 rubles.[107]

In the discussion on the origins of under-registration in vital records, additional basic reasons, such as preference to avoid registration fees, sicknesses and wars, need to be considered.[108] These are, however, circumstances which affected Jews and Christians to a similar extent and cannot explain *per se* differences observed in the countries under study.

[104] Benedykt Bornstein, *Analiza krytyczna danych statystycznych dotyczących ruchu naturalnego ludności b. Królestwa Polskiego* (Warsaw, 1920), 4–18.

[105] Markowski, "Akta stanu cywilnego," 260.

[106] Freeze, *Jewish Marriage*, 59; Bornstein, *Analiza krytyczna*, 5; Avrutin, *Jews and the Imperial State*, 78; Maciej Walesiuk, "Naturalny ruch ludności miasta Białegostoku w latach 1865–1914 – analiza akt metrykalnych katolickich, żydowskich, prawosławnych i ewangelickich," *Białostocczyzna* 53 (1999), 1:90.

[107] Avrutin, *Jews and the Imperial State*, 36.

[108] Stępniewska-Holzer, "Badania nad rodzinami," 169–170; Gawrysiakowa, "Rejestracja ruchu," 105; Markowski, *Między wschodem a zachodem*, 104.

Conclusions

The evidence gathered in this paper stands in line with the general opinion outlined by Krzysztof Zamorski, stating that "for the lands under the influence of German and Austrian administration we have relatively high quality data beginning roughly from the mid-nineteenth century. . . . On the other hand, statistical data for the lands under Russian influence is incomparably poorer."[109] When speaking of the data specifically regarding the Jewish population, even more caution needs to be taken. Vital registration in the Kingdom of Prussia was usually flawless right from its introduction. In other partitioning countries, however, the registration quality of the Jews was much worse, even when compared to non-Jewish records. In Galicia it improved in the 1870s, but in the Russian Empire and Congress Poland it remained defective at least until the end of World War I. As a result, statistics, such as birth, marriage, and death ratios, aggregated by contemporary officials based on these sources are defective as well. Statistical offices in Prussia and Galicia faced particular shortcomings, not encountered in the lands "under Russian influence." Until 1874, German administration registered only Jews who held the status of citizen, omitting numerous "foreign" Jews. Galician administration was not successful in the registration of Jewish marriages, most of which were registered with years-long delay, if at all.

The overall level of under-registration in the analyzed sources is hard to estimate. Additional, individual demographic sources to which vital records could be compared are rarely available. This narrows down research possibilities to analyses which may rely exclusively on vital records. Sex ratios at birth—the proportion of male to female births—indicates that the extent of under-registration in the Russian Empire reached its peak in the 1870s, when at least 30–40% of births were omitted from the registry. Estimation of the under-registration in death records seems to be even more challenging. It should be assumed that infants without birth records were often deprived of death records. State law requiring burial after the period prescribed by the Halakhah further reinforced avoidance in making

[109] Krzysztof Zamorski, "Transformacja demograficzna w Europie Środkowej w XIX w. Wewnętrzne podobieństwa i różnice," *Przeszłość Demograficzna Polski* 19 (1994), 28–29. Cf.: Julian K. Janczak, "Statystyka ludności Królestwa Polskiego (1830–1844)," *Przeszłość Demograficzna Polski* 16 (1985), 25–34; id., "Statystyka ludności Królestwa Polskiego w drugiej połowie XIX w.," *Przeszłość Demograficzna Polski* 19 (1994), 46–63; Markowski, *Między wschodem a zachodem*, 118.

death records. Causes of under-registration are to be found not only in the details of the regulations but also in the general incompatibility of Judaism with methods of vital registration derived from Christian practices. Perhaps the most important conclusion of the research is the high variability of registration quality within each region under study. As a consequence, despite general deficiencies of the sources, identification of individual places with temporarily correct vital registration is still possible. Future demographic research on the Jewish population, especially regarding fertility and mortality—statistics which under-registration particularly affected—should focus on carefully selected locations. Demographic research on entire regions, especially relying on data collected by contemporary statistical offices in the majority of east-central Europe, is stained with "original sin," lack of reliability.

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4. Data sources for graphs

GRAPH 1

Dviženie naselenija v Evropejskoj Rossii (1872), 4–5; (1879), 6–7; (1887), 20–21; (1890), 14–15; (1895), 14–15; (1899), 14–15; (1906), 14–15; (1914), 14–15; (1916), 14–15. *Statystyka porównawcza Królestwa Polskiego* (Warsaw, 1876), 56–57. Bornstein, *Analiza krytyczna*, 25. *Trudy Varšavskogo statističeskogo komiteta* (1892), 7:97–103; (1895), 13:162; (1910), 39 (part 1):42. *Rocznik Statystyki Galicji* 1 (1887), 35. *Tafeln zur Statistik der Österreichischen Monarchie. Neue Folge* 1 (1856), tab. 3, 18. *Preussische Statistik* (1867), 10:13–28; (1881), 61:VIII–IX; (1890), 107:XIV; (1902), 169:XV; (1909), 220:XIX.

GRAPHS 2–6

Białystok: 1835, 1839, 1846, 1848, 1855–1866, 1869, 1881, 1888–1902, Archiwum Państwowe w Suwałkach 204/13, 17, 24, 26, 32–42, 44, 51, 57, 59; Walesiuk, "Naturalny ruch," 89.

Bydgoszcz: 1823–1847, Archiwum Państwowe w Bydgoszczy [henceforth: APB] 378/1.

Čekiškė: 1857, 1862–1914, Lietuvos valstybės istorijos archyvas [henceforth: LVIA] 728/1, 1226/1.

Cherkasy: 1837–1860, 1864, 1867–1869, 1874–1877, 1884–1886, 1894–1895, 1898, 1902–1904, 1912–1913, 1915–1916, Deržavnyj arxiv Čerkas′koï oblasti 387/1/1, 5–8, 10, 11, 16, 20, 22, 25, 30, 931/1/3072a, 3097a, 3126a, 3370, 3397, 3650, 3754, 3860, 3878, 3886, 3907, 4237, 4271, 4329, 4368.

Częstochowa: 1826–1905, Archiwum Państwowe w Częstochowie 58/8–13, 16, 23, 27, 31, 35, 42, 43, 48, 53, 58, 63, 67, 72, 77, 82, 87, 92, 97, 102, 107, 108, 111, 115, 118, 120, 126, 130, 131, 135, 140, 141, 149, 154, 160, 161, 167, 171, 176, 181, 185, 190, 195, 200, 204, 208, 213, 214, 217, 222, 226, 230, 235, 240, 243,

247, 248, 253, 257, 265–267, 272, 277, 278, 283, 288, 294, 295, 301, 307, 313, 323, 329, 333, 335, 340, 346.

Drohobych: 1816–1869, 1877–1915, Archiwum Główne Akt Dawnych 300/0/138–155, 163, 1765–1767, 1973–1974, 2109, 2111, 2249–2250, 2395–2396, 2563–2566, 2830–2832, 3013, 3071, 3154, Centralnyj deržavnyj istoryčnyj arxiv Ukrainy u Lvovi 701/1/36–39.

Fordon: 1823–1852, APB 380/2, 4, 19, 24, 27, 29.

Kamianets-Podilskyi: 1854–1855, 1857, 1875, 1877–1879, 1882, 1888, 1890, 1892, 1895–1896, Deržavnyj arxiv Xmelnyc′koï oblasti f227/1d/458, 492, 518, f277/1/13, 15–16, 17, 20, 24–26, 29, 32–33.

Kaunas: 1842–1843, 1849–1850, 1855, 1858–1863, 1865–1869, 1871–1893, 1895, 1901, 1906, 1910, 1911, 1913–1914, LVIA 1226/1/150–174, 1003–1012, 1293–1297, 1299, 1302, 2002, 2011, 2020, 2022, 2025, 2028.

Kępno: 1825–1847, 1874–1891, Archiwum Państwowe w Poznaniu 696/123, 126, 129, 132, 133, 137, 138, 141, 142, 146, 147, 151, 152, 155, 156, 159, 160, 163, 164, 167, 170, 173, 174, 177, 180, 183, 3577/1, 4, 7, 10, 13, 15, 18, 24, 27, 30, 33, 36, 39, 43, 47, 51, 55, 59, 63.

Kerch: 1857–1875, 1877, 1882–1884, 1901, Deržavnyj arxiv v Avtonomniy Respublitsi Krym 142/1/15–23, 129, 166.

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Molėtai: 1854–1855, 1857–1865, 1867–1872, 1892–1894, LVIA 728/1/39, 133, 280, 354, 355, 431, 517, 529, 545, 553, 561, 566, 569, 572, 580, 682, 778, 864, 1485, 1492, 1497.

Nizhyn: 1854–1885, 1887–1889, 1891–1894, 1896–1905, 1909–1918, Deržavnyj arxiv Černihivs′koï oblasti 1333/1/3, 4, 1333/1/5–8, 10, 13–27, 679/10/1244, 438, 1249/1/440–53.

Novohrad-Volynskyi: 1874–1898, 1900–1905, 1907–1911, Deržavnyj arxiv Žytomyrs′koï oblasti [henceforth: DAŽO] 67/3/598–607.

Nowy Korczyn: 1826–1835, 1875–1911, Archiwum Państwowe w Kielcach 2476/0/1, 3, 4, 6, 7, 9, 11, 13, 14, 16, 18–21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 46, 49, 51, 53, 55, 56, 58, 60, 62, 64, 66, 68.

Odesa: 1885–1889, 1891–1895, 1897, 1903, 1916–1919, Deržavnyj arxiv Odes′koï oblasti 39/5/11, 12, 27, 36, 44, 59, 63, 67, 71, 75, 83, 107a, 157, 160, 164a, 174.

Orša: 1860, 1862, 1870, NHABM 2410/1/24, 30, 41.

Piotrków Trybunalski: 1808–1917, Archiwum Państwowe w Łodzi 340/1, 7–13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 34, 1626/42, 44, 45, 47, 49, 51, 53, 58, 68, 69; Archiwum Państwowe w Piotrkowie Trybunalskim 333/25–59, 73, 76, 80, 87–90, 96, 206, 210, 213, 218, 235.

Płock: 1808–1901, Archiwum Państwowe w Płocku 175/1–35, 53–61, 63–65, 67, 68, 70–72, 74, 75, 79, 90, 99.
Plungė: 1836, 1838–1842, 1844, 1847–1849, 1854–1860, 1863–1870, 1872–1875, 1882, 1887–1893, 1899–1913, LVIA 728/1/48, 122, 198, 285, 359, 419, 502, 708, 712, 716, 720, 724, 727, 735, 741, 745, 750, 768, 776, 1226/1/1269, 1920, 1921, 1922, 1925–1927, 1929, 1936, 1937, 1939, 2032, 2033.
Przemyśl: 1791–1827, 1853–1900, Archiwum Państwowe w Przemyślu 1924/1–12.
Rēzekne: 1871, 1879, 1882, 1884, 1887, 1889–1892, 1895–1897, 1899–1900, 1902, Latvijas Valsts vēstures arhīva 4361/2/1, 7, 4, 10, 11, 14, 5024/1/255, 5024/2/563, 577, 583, 588, 589, 592, 595.
Rubiaževičy: 1904–1905, 1907, 1912, NHABM 1226/2/36, 38, 40, 45.
Tarnów: 1808–1810, 1815–1897, 1900–1903, Archiwum Narodowe w Krakowie, Oddział w Tarnowie 276/1–16, Archiwum Narodowe w Krakowie 526/4/1–8.
Toruń: 1851–1914, Zielińska, *Przemiany struktur*, 367.
Vilnius: 1837–1841, 1844–1846, 1855–1856, 1859, 1861, 1866, 1870, 1873, 1875, 1883, 1888, 1891, 1896, 1903, 1907, 1912, 1915, LVIA 728/2/1, 4, 9, 13, 17, 75, 110, 126, 224, 300, 728/3/28, 76, 106, 130, 1063, 1423, 1448, 728/4/4, 104, 154, 216, 257.
Vinnytsia: 1840–1841, 1873, 1896, 1910, 1912, 1916, Deržavnyj arxiv Vinnyc′koï oblasti 903/3/1, 11, 17, 903/5/40–41.
Wodzisław Śląski: 1830–1874, Archiwum Państwowe w Katowicach, Oddział w Raciborzu 118/3, 5.
Yekaterinoslav: 1860–1905, Deržavnyj arxiv Dnipropetrovs′koï oblasti 193/3/123–125, 128–129, 131–133, 136, 139, 141, 142, 144, 608–612.
Zamość: 1810–1812, 1814–1902, Archiwum Państwowe w Lublinie 647/0/1/1–22, Archiwum Państwowe w Zamościu 788/0/1, 4, 6, 7, 10, 12, 16, 788/1.1/1–5, 21, 22, 788/2.1/19, 20.
Zhytomyr: 1863–1867, 1872–1878, 1887–1888, 1896–1897, 1905–1906, 1918, DAŽO 67/3/458, 460–462, 519, 565–566, 573–574.

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