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# CHILD CARE AND HUMAN DEVELOPMENT: INSIGHTS FROM JEWISH HISTORY IN CENTRAL AND EASTERN EUROPE, 1500–1930<sup>\*</sup>

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Economists increasingly highlight the role that human capital formation, institutions and cultural transmission may play in shaping health, knowledge and wealth. We study one of the most remarkable instances in which religious norms and childcare practices had a major impact: the history of the Jews in central and eastern Europe from 1500 to 1930. We show that while birth rates were about the same, infant and child mortality among Jews was much lower and accounted for the main difference in Jewish versus non-Jewish natural population growth. Jewish families routinely adopted childcare practices that recent medical research has shown as enhancing children's well-being.

Economists increasingly highlight the important role that human capital formation, institutions, cultural transmission and religious norms may each distinctively play in shaping human development along the fundamental dimensions of health, knowledge and wealth. More specifically, in recent years economists have been studying the role of nature (i.e., intergenerational transmission of genes) versus nurture (i.e., intergenerational transmission of cultural values and parental investment in children's cognitive skills and education) in affecting demographic patterns (e.g., health, life expectancy) and economic outcomes (e.g., educational attainment, occupational choice, labour outcomes, income and wealth levels and inequality) over the long run. Our article contributes to this debate through the lens of a remarkable historical laboratory: the economic history of the Jewish people in central and eastern Europe from 1500 to 1930. As is well known, these regions in the early modern and modern times became the centre of Jewish life and Judaism and, in turn, contributed to Jewish economic prosperity and intellectual achievements all over the world up to these days.

In our study we keep the geographic territories of Germany–Austria and Poland–Lithuania as constant as possible throughout the period and we divide the period under consideration into two subperiods: (*i*) 1500–1800, which marks approximately the beginning and the end of the Polish–Lithuanian Commonwealth; (*ii*) 1800–1930, during which political borders changed a

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lot, the Industrial Revolution reached its fully fledged stage and large-scale migrations of Jews out of central and eastern Europe occurred.

The key population trends emerging from our study are as follows: the total populations in Germany–Austria and Poland–Lithuania grew at almost a constant rate of about 0.43% from 1500 to 1930 (see Tables 1–5 in Section 2). In contrast, the Jewish population growth rate was much higher in both regions and even more so in Poland–Lithuania, where it was 1.37% for the entire period and exceptionally high relative to any other population at that time.<sup>1</sup> Circa 1500, there were only 10,000 to 15,000 Jews in Poland–Lithuania—less than 2% of world Jewry and only 0.13% of the total population in Poland–Lithuania. From the 12th to the 15th centuries most Jews arrived in Poland–Lithuania from Germany–Austria. The Jews in Poland–Lithuania and Germany–Austria shared the same religious, educational and cultural background. In 1880, there were 4.7 million Jews in the former Poland–Lithuania, who accounted for about 61% of world Jewry (7.6 million) and over 15% of the total population in Poland–Lithuania. Circa 1500, there were only 40,000 Jews in Germany–Austria and, by 1880, their number had reached 760,000 (1.35% of the total population in the area).

The rapid and spectacular growth of the Jewish population in Poland–Lithuania in the early modern and modern periods has attracted a lot of interest in the past and recently has generated a heated debate following the argument by Sand (2009) that the Jews in Poland–Lithuania may have originated from the descendants of the Khazars (living in the areas around the Caspian Sea) converted to Judaism during the 8th century and arriving in Poland from the East. There is a vast historical literature that disproves this hypothesis and in this article we will show that, even if it were possible, the movement westward of Jews into Poland–Lithuania cannot be compared in scale to the migration of Jews from Germany–Austria eastward into Poland–Lithuania.

We investigate the main engines for this exceptional Jewish population growth. Our main argument is that the exceptional growth of the Jewish population in Poland–Lithuania in the early modern and modern periods can be explained by (*i*) comparatively lower infant and child death rates among Jews and (*ii*) Jewish migration from Germany–Austria. More specifically, based on existing demographic data we collected from a variety of sources, we show that the comparatively lower infant and child mortality rates among Jews account for the main difference (about 70%). The key insight and main contribution of our work is that once Judaism became a 'literate religion' (Botticini and Eckstein, 2005, 2007, 2012) whose core norm required parents to invest in their children's education, infant and childcare as well as enhancing their offspring's cognitive skills became focal activities of Jewish households. The basic idea is as follows: because Jewish parents could not know in advance which of their infants had higher endowments of cognitive skills and physical strength (which affected children's survival), they put a lot of care and effort into improving the health and survival of all their newborn children—thus generating comparatively lower infant and child mortality rates.

We then present an extensive summary and discussion of infant and childcare among Jews and non-Jews based on a critical assessment of historical evidence related to religious norms and practices. We analyse these religious/social norms and practices in light of modern medical knowledge. Whenever possible, halachic norms (i.e., norms according to Jewish religious law) are complemented with historical and contextual arguments.<sup>2</sup> Despite the risk implicit in generalising,

<sup>&</sup>lt;sup>1</sup> The natural growth rate is defined as births minus natural deaths, thus not including death caused by wars and population growth from immigration.

<sup>&</sup>lt;sup>2</sup> Halakha (or halacha) refers to the collective body of Jewish religious laws derived from the Written and Oral Torah. It consists of biblical laws or 'commandments' (*mitzvot*), as well as the vast body of rabbinic laws and rulings written in

the problematic nature of the sources, and the question of whether religious norms determined everyday practice, we do our best to describe general trends and show that childcare practices, which were already adopted in earlier periods by the Jews, are now known by medical knowledge to be particularly effective in lowering infant mortality. For example, the Talmud requires 24 months of breastfeeding, allows the use of contraception to enable breastfeeding for a lengthy period, recommends the use of one source of breast milk and advises mothers to breastfeed their infants immediately following the birth of the child. These and other rules that were strengthened during the medieval and early modern periods were usually not common among the Christian communities in Germany–Austria, Poland–Lithuania and the rest of Europe—not even in the United States where a vast Jewish migration from Europe occurred later.

The article is organised as follows. Section 1 relates our work to the relevant strands of literature. Section 2 summarises the key trends in Jewish and total populations from 1500 to 1930. Section 3 provides data on birth and death rates, clearly distinguishing between infant and child mortality rates versus adult death rates. Section 4 compares infant and childcare norms and practices of Jews and non-Jews from the Talmudic era up to the modern period. Section 5 summarises our main findings and provides directions for future research.

#### 1. Contributions to the Literature

Our analysis of the economic consequences of the distinctive Jewish parental investment in infant and childcare delivers novel insights to the recent research agenda in economics and psychology that studies the development of cognitive and non-cognitive skills and, more broadly, human development. Much of the existing literature in economics on parental investment in children's human capital in very early ages is directly related to the hypothesis of Heckman (2006) on the decreasing rates of return to investment in education by age. Kautz et al. (2014) have recently provided a survey of this literature including a review of contributions from other disciplines (e.g., psychology).<sup>3</sup> These works have as their fundamental pillar the hypothesis that cognitive and non-cognitive skills development is a dynamic process that begins very early in life. The foundations for adult success are then laid down early in life, with quality parenting through nourishment, stimulation, attachment, encouragement and support becoming the true engines of child advantage, and not the traditional measures of income and wealth commonly used in policy discussions. Along these lines, a recent work by Baten et al. (2014) has shown the negative long-term impact of infant and early child malnutrition on cognitive skills (numeracy) and labour market outcomes in Britain during the Industrial Revolution period. Using contemporary data, Falk and Kosse (2016) present evidence showing that breastfeeding duration is a valid measure of the quality of early childhood environment. In a sample of preschool children and young adults, they find that longer breastfeeding duration is associated with higher levels of patience and altruism as well as lower willingness to take risk, and the observed pattern persists into adulthood.

Our contribution to this research agenda stems from providing unique and long-term (five centuries) evidence on the link between infant and early childcare among different populations and the subsequent cognitive-enhanced demographic and economic impact. More specifically, we provide a comparative analysis of social and religious norms relating to infant and early

the Mishnah (compiled by Rabbi Judah HaNasi at the end of the 2nd century) and the Talmud (the Jerusalem one and the Babylonian one) compiled between the 4th and the 5th centuries.

<sup>&</sup>lt;sup>3</sup> Within this literature, the most relevant works for our study are Wolpin (1997) and Cunha *et al.* (2010, 2013).

childcare between Jews and non-Jews over a long period of time—from the Talmudic era (circa the 3rd to the 6th centuries) to modern times. We then show that Jewish religious norms and best practices of taking care of infants and young children coincide with those that nowadays medical knowledge recognises as crucial to reduce infant and child mortality and to stimulate and nurture higher cognitive and non-cognitive achievements.

Our work presents novel findings for the research agenda that studies the pivotal role of cultural transmission and institutions in shaping economic opportunities and outcomes.<sup>4</sup> More broadly, we contribute to the research agenda on the engines of long-run economic growth and human development. Economists increasingly highlight the important role of lower infant mortality for population growth and the demographic transition in the early stages of high growth of per-capita income mainly during the 19th century.<sup>5</sup> Independently, most economic growth theories and empirical research have focused on the accumulation of human capital.<sup>6</sup> The novel contribution of our study stems from using the laboratory of Jewish history between 1500 and 1930 to investigate the key insights of this literature on long-run human development. In particular, we show that the unique trajectory of the Jewish people from 1500 to 1930 resulted from the interplay of Jewish distinctive investment in infant and childcare and the specific legal systems of property rights in productive assets and institutions regulating the access to occupations and sectors.

The demographic history of the Jews in early modern and modern eastern and central Europe may also offer novel insights for the vast economic literature pioneered by Becker (1960) and Becker and Lewis (1973) studying the children's quality versus quantity trade-off.<sup>7</sup> However, as we will show in detail in the subsequent sections, the number of births among the Jewish and non-Jewish populations in early modern and modern eastern and central Europe were about the same. This seems to indicate that Jews did *not* reduce the quantity of children to enhance their quality. The crucial difference between Jewish and non-Jewish families was the number of *surviving* children, with the one for Jews being much higher than the one for non-Jews, and this will be the critical difference that our work intends to elucidate.

A fourth strand of literature to which we contribute is the economics of religion. Social scientists have always been fascinated by the study of religion and by the influence religious values and norms may have on human behaviour. In the past two decades, economists have become increasingly intrigued by the nexus between religion and economic outcomes.<sup>8</sup> Our study contributes to this growing literature by linking the key features of Judaism to the unique demographic and economic traits that have shaped the history of the Jews in the early modern and modern periods in central and eastern Europe that formed the centre of Judaism and Jewish life.

Finally, our work contributes to the economic history literature in a global perspective. In fact, if someone were to spin a historical globe for the date 1492, he or she would find a Jewish

<sup>&</sup>lt;sup>4</sup> E.g., North (1990); Mokyr (1990, 2002, 2009); Bisin and Verdier (2001); Glaeser *et al.* (2004); Fernández *et al.* (2004); Greif (2006); Acemoglu *et al.* (2002); Doepke and Zilibotti (2008, 2017, 2019); Mokyr and Voth (2010); Tabellini (2010); Alesina *et al.* (2013); Spolaore and Wacziarg (2013); Michalopoulos and Papaioannou (forthcoming).

<sup>&</sup>lt;sup>5</sup> E.g., Eckstein *et al.* (1999); Galor and Moav (2002).

<sup>&</sup>lt;sup>6</sup> E.g., Lucas (1988); Romer (1990); Barro and Lee (2015).

<sup>&</sup>lt;sup>7</sup> See Doepke (2015) for a recent survey of the literature on the trade-off between quality and quantity of children.

<sup>&</sup>lt;sup>8</sup> This literature is rapidly growing. A recent survey by Iyer (2016) offers a more comprehensive review of this literature than the one we can present here. The most recent and most closely related works relevant for our article are Becker and Woessmann (2009); McCleary (2011); Voigtländer and Voth (2012); Cantoni (2015); Anderson *et al.* (2017); Becker and Pascali (2019); Grosfeld *et al.* (forthcoming)

community in almost every city in the Iberian Peninsula, central Europe, Italy, and the Ottoman Empire. If someone does the same for every century from 1492 until today, he or she would discover that the locations in which the Jews have dwelled, and their distribution in urban centres, have dramatically expanded and changed across these five centuries. Thus, the understanding of the changes in Jewish population growth, migration and occupational distribution inevitably requires the study of the economic and demographic history of almost any location in the world. As such, in addition to its intrinsic interest, the study of the history of the Jewish people from 1500 to 1930 enables a deeper understanding of the economic history of all the societies that the Jews encountered in their worldwide diaspora. We have illustrated this unique feature of Jewish history in Botticini and Eckstein (2005, 2007, 2012) for the period from 70 to 1492. For the period between 1500 and 1930, which we cover in this article, this distinctive mark becomes even more significant. As such, our work sheds new light on some striking patterns in Jewish economic and demographic history at a pivotal period during which the geographical discoveries in the New World, the growing urbanisation prior to the Industrial Revolution and, later, the impressive industrialisation during the modern era completely transformed the subsequent centuries in human history.

In Botticini and Eckstein (2005, 2007, 2012), using the tools of economic analysis applied to history, we showed that the unique norm within Judaism (established during the first century CE) imposing a duty on fathers to educate their sons at a very early age had a profound and long-lasting impact on Jewish economic and demographic history in the subsequent 15 centuries. In a nutshell, the enforcement of that religious norm in a rural world of almost universal illiteracy endowed the Jews with a comparatively higher human capital, which later helped them select into skilled and profitable occupations in locations where urbanisation and the expansion of trade increased the demand for literate people (e.g., the Muslim Empire during the 8th to the 12th centuries and western Europe during the Commercial Revolution in the early Middle Ages). On the other hand, a proportion of Jewish farmers in the agrarian subsistence economics of the first millennium could not afford the religious norm of learning to read with no economic returns and they made the choice of converting. This novel way of studying Jewish history through the lens of economic theory enabled us to challenge and uproot several commonly held views regarding some remarkable patterns in Jewish occupational distribution and demography.

Parental investment in children's education, though, is only one, although a major, component in children's overall well-being. Infant and childcare includes many other equally important aspects such as breastfeeding, wet-nursing, nutrition, hygiene, medical care, transmitting values, motivation, and nurturing in general, which in turn may affect infant and child mortality rates, morbidity, cognitive and non-cognitive abilities, and subsequent child and adult development. In our earlier work, we did not study these crucial aspects, mainly because of the lack of high-quality data on some key variables. In this article, we take a huge leap and show that since early times, Jews had also a distinctive way of taking care of their infants and children with regards to these other fundamental dimensions pertaining to breastfeeding, nutrition, hygiene, medical care and nurturing in a broader sense. In turn, lower infant and child mortality became the 'lever' of the spectacular Jewish population growth in early modern times, whereas their earlier investment in infant and childcare coupled with the investment in children's education became the 'lever' of their economic prosperity.



#### Fig. 1. Germany-Austria and Poland-Lithuania ca. 1700.

*Source*. The map has been prepared by Dima Kolotilenko starting from and adapting these digital maps: "Europe Main Map at the Beginning of the Year 1700" (available at https://www.euratlas.net/history/e urope/1700/index.html); "Interactive World History Atlas since 3000 BC: year 1700" (available at https://geacron.com/home-en/?&sid=GeaCron40731).

# 2. Jewish and Total Populations in Poland–Lithuania and Germany–Austria, 1500–1930

How did the Jewish communities in central and eastern Europe demographically develop in the four and a half centuries from 1500 to 1930? Which were the key patterns and trends in comparison with those in the local non-Jewish populations?

First, we split this vast geographical area into Germany–Austria and Poland–Lithuania. Second, we divide the period under consideration into two subperiods: (*i*) the period from 1500 to 1800 (see Figure 1), which roughly covers the three centuries before Jewish emancipation, the partitions of the Polish–Lithuanian Commonwealth and the Industrial Revolution—three centuries during which Poland–Lithuania became the centre and home for the majority of world Jewry; and (*ii*) the period from 1800 to 1930 (see Figure 2), during which demographic data is even more abundant but many political changes make the definitions of the political borders quite problematic.





*Source*. The map has been prepared by Dima Kolotilenko by starting from and adapting the digital file 'The Map of central and eastern Europe in 1900' (available at http://easteurotopo.org). The map and website are owned by Hap Ponedel whom we gratefully acknowledge and thank for letting us use his digital file).

Years	Jewish population (thousands)	Total population (thousands)	Share of Jewish over total population (%)	Annual growth rate of Jewish population (%)	Annual growth rate of total population (%)
1500	40	16,000	0.25	_	_
1600	35-40	18,000-20,000	0.20	0.00	0.11-0.22
1650	60	16,000-17,000	0.35	0.81	-0.230.32
1700	110	19,000-20,000	0.55	1.21	0.34
1750	128	26,265 <sup>a</sup>	0.49	0.30	0.32-0.38

Table 1. Jewish and Total Populations in Germany–Austria, 1500–1750.

*Source.* **1500** Jewish population: Toch (2003, p. 13); Total population: Rabe (1989, p. 27); Whaley (2012, vol. 1, p. 50). **1600** Jewish and total populations: Battenberg (2001, p. 10); **1650** Jewish population: Battenberg (2001, p. 33); Bell (2008, p. 48); Total population: Schormann (2001, p. 269); Whaley (2012, vol. 1, p. 633). **1700** Jewish population: Israel (1985, p. 170); Battenberg (1990, part 2, pp. 1–2); Battenberg (2001, p. 32); Total population: Battenberg (2001, p. 32). **1750** Jewish population: Thon (1908, p. 5 for the year 1776); Israel (1985, p. 303); Hartmann (1995, p. 348 for the year 1796); Total population: Kolb (1875, p. 36 for the year 1786); Hartmann (1995, p. 348 for the year 1796). <sup>a</sup>Total population in 1786.

Years	Jewish population (thousands)	Total population (thousands)	Share of Jewish over total population (%)	Annual growth rate of Jewish population (%)	Annual growth rate of total population (%)
1816	214	21,989	0.97	_	_
1825	245	24,804	0.99	1.50	1.34
1834	270	27,064	1.00	1.08	0.97
1843	309	29,748	1.04	1.50	1.05
1852	329	31,693	1.04	0.70	0.70
1861	353	33,652	1.05	0.78	0.67
1871	383	36,323	1.05	0.82	0.76
1880	437	40,218	1.09	1.50	1.13
1890	467	44,639	1.04	0.67	1.04
1900	497	50,626	0.98	0.62	1.26
1910	539	58,451	0.92	0.81	1.44
1925	564	63,181	0.90	0.30	0.52
1933	503	66,022	0.76	- 1.43	0.55

*Source.* Bennathan (1966, p. 95, table 5); Blau (1950, p. 276, table 54). *Notes:* For the borders of Germany see Appendix A.

Table 3. Jewish and Total Populations in Austria, 1785–1934.

Years	Jewish population (thousands)	Total population (thousands)	Share of Jewish over total population (%)	Annual growth rate of Jewish population (%)	Annual growth rate o total population (%)
1785	70	7,724	0.90	_	_
1830	106	11,065	0.96	0.92	0.80
1857	172	13,006	1.32	1.79	0.60
1869	246	14,128	1.74	2.98	0.69
1880	319	15,180	2.10	2.36	0.65
1890	371	16,144	2.30	1.51	0.62
1900	413	17,587	2.35	1.07	0.86
1910	442	20,546	2.15	0.68	1.55
1934	308	17,433	1.77	-0.30	-0.15

*Source.* **1785–1900**: Thon (1908, pp. 5–6, 8 table 1). **1910** Jewish population: Haas (1912, p. 149); Total population: *Österreichische Statistik*, Neue Folge (1912, vol. 1, p. 36). **1934**: *American Jewish Year Book* (1935, vol. 37, p. 360, table 8); Vobecka (2013, for Bohemia, p. 47, table 4.1; for Moravia, p. 219).

*Notes*: For the borders of Austria see Appendix A. In this table Austria includes the Austrian Republic (the country after World War I), Bohemia, Moravia and Silesia (part of Czechoslovakia).

Fable 4. Jewish and Tota	Populations in Poland	<i>d–Lithuania</i> , 1500–1764.
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Years	Jewish population (thousands)	Total population (thousands)	Share of Jewish over total population (%)	Annual growth rate of Jewish population (%)	Annual growth rate of total population (%)
1500 <sup>a</sup>	10-15	7,500	0.13	_	_
1550	55	8,500 <sup>b</sup>	0.65	2.6-3.4	0.11-0.22
1648	185	11,000	1.68	1.24	0.26
1660	163	8,000-9,000	1.81-2.03	-1.05	-2.0
1764 <sup>c</sup>	750	14,000	5.36	1.5	0.4-0.5

*Source.* Jewish population: Weinryb (1972, p. 320); Stampfer (1997, pp. 263–67); Kupovetsky (2015). Total population for the years 1500, 1648, 1772: Gieysztorowa (1968, table 1; 1981, p. 430, table 1); Jezierski and Leszczyńska (2003, p. 41, table 2.1); for the year 1550: Kuklo *et al.* (2014, p. 49, table 2); for the year 1660: Kuklo (2009, p. 212). <sup>a</sup>The date of 1500 is approximate. The estimates available are for the end of the 15th century.

<sup>b</sup>The figure refers to the second half of the 16th century.

<sup>c</sup>The figures refer to the years 1764/1765.

	Jewish popula	wish population (thousands) Total population (thousands)					
	Former Poland	l Russian		"New" (Pre-	Share of Jewish	l	
	Lithuania +	Empire outside	"Old" (Pre-	partitioned	over total	Annual growth	Annual growth
	Pale of	Pale of	partitioned	Poland + Pale	population	rate of Jewish	rate of total
Year	Settlement <sup>a</sup>	Settlement	Poland)	of Settlement) <sup>b</sup>	(%) <sup>c</sup>	population (%)	population (%)
1800	1,066	9	15,751	19,735	6.77	1.00	0.33
1834	2,176	27	19,198	24,784	11.33	2.09	0.58
1850	2,811	41	21,402	27,740	13.13	1.60	0.68
1865	3,599		24,527	32,324	14.67	1.54	0.91
1880	4,702	155	30,520	40,710	15.41	1.78	1.46
1897	5,764	315	39,799	53,106	14.48	1.20	1.56
1926	5,	037	64	,305	7.83	-0.46	0.66
1939	5,	377	75	,715	7.10	0.50	1.26

Table 5. Jewish and Total Populations in Poland–Lithuania, 1800–1939.

Source. 1800 Jewish population: Jahrbuch für die amtliche Statistik des Preussischen Staates (1883, p. 74, table 4); Rosenfeld (1914, p. 140); Silbergleit (1930, p. 7, table 5; pp. 18–19, table 9); Kupovetsky (2015, table 3). Total population: Rashin (1956, pp. 28-29, table 10); Gieysztorowa (1968, table 2); Zamorski (1989, p. 45, table 1, p. 46, table 2). 1834 Jewish population: Silbergleit (1930, pp. 18–19, table 9); Kemlein (1997, p. 58, table 2); Himka (1999, p. 26, table 1). Total population: Jahrbuch für die amtliche Statistik des preussischen Staates (1883, p. 74, table 4); Rashin (1956, pp. 28–29, table 10); Zamorski (1989, p. 45, table 1, p. 46, table 2); Guesnet (1998, p. 31, table 1). 1850 Jewish population: Silbergleit (1930, pp. 18-19, table 9); Kemlein (1997, p. 58, table 2); Himka (1999, p. 26, table 1). Total population: Jahrbuch für die amtliche Statistik des preussischen Staates (1883, p. 74, table 4). Rashin (1956, pp. 28–29, table 10); Gieysztorowa (1968, table 2); Zamorski (1989, p. 45, table 1). 1865 Jewish population: Rosenfeld (1914, p. 142); Silbergleit (1930, pp. 18–19, table 9); Kemlein (1997, p. 58, table 2). Total population: Jahrbuch für die amtliche Statistik des preussischen Staates (1883, p. 76, table 4); Rashin (1956, pp. 44-45, table 19); Zamorski (1989, p. 69, table 12A); Guesnet (1998, p. 31, table 1). 1880 Jewish population: Silbergleit (1930, pp. 18-19, table 9); Zamorski (1989, p. 69, table 12A). Total population: Jahrbuch für die amtliche Statistik des preussischen Staates (1883, p. 76, table 4); Rashin (1956, pp. 44-45, table 19); Zamorski (1989, p. 45, table 1); Guesnet (1998, p. 31, table 1). 1897 Jewish population: Silbergleit (1930, pp. 18–19, table 9); Zamorski (1989, p. 69, table 12A). Total population: Jahrbuch für die amtliche Statistik des preussischen Staates (1883, p. 76, table 4); Rashin (1956, pp. 44-45, table 19; ); Zamorski (1989, p. 69, table 12A); Guesnet (1998, p. 31, table 1). 1925 Lienfeld (1931, vol. 33, pp. 283, 315); Eberhardt (2003, p. 40, table 2.14); Jezierski and Leszczyńska (2003, p. 357, table 84). 1939 Linfield (1941, vol. 43, p. 668); Lorimer (1946, pp. 241-242, table 22A); Tolts (2015, table 1).

<sup>a</sup>These figures refer to the number of Jews in the territories of the former Poland-Lithuania as well as in the "non-Polish" areas of the Pale of Settlement.

<sup>b</sup>These figures refer to the total population in pre-partitioned Poland as well as in the "non-Polish" areas of the Pale of Settlement.

<sup>c</sup>The share of Jews over the total population is calculated using the figures in the column "old" for the total population.

The population estimates are based on existing secondary sources, most of which calculated the Jewish population based on the number of Jews who were members of an established community and subject to community taxation rules until the end of the 18th century. Meanwhile, during the 19th century almost all population data were based on national censuses.

Yet, to understand Jewish population dynamics in central and eastern Europe in the early modern and modern times, it is first important to know the origins of German and Polish Jewry prior to the 16th century.

#### 2.1. The Origins of German and Polish Jewry, 800–1500

The Jewish communities in Germany circa 1500 were the descendants of Jewish immigrants from Italy and southern France settling in German locations during the reigns of Charlemagne (771–814) and Louis the Pious (814–40). In 1238 Jews lived in about 90 towns and villages, whereas by 1348 there were already more than 1,000 Jewish communities in Germany. The

first half of the 14th century until the Black Death marks the high point of Jewish settlement in medieval Germany, with a geographical dispersion not seen again until the 19th century.<sup>9</sup>

The dominance of professions related to trade and commerce among the early Jewish immigrants led them to settle in new towns and urban centres. The main occupations of German Jewry from the second half of the 10th century onward included shopkeeping, local trade, long-distance commerce, toll collection, minting and money changing. In addition, the Jews could and did own land, which they cultivated as orchards and vineyards by means of Christian tenants and agricultural labourers. Many German Jews also became heavily engaged in lending money at interest.<sup>10</sup> As in other locations in Europe, the settlement of Jews in medieval Germany was regulated by local privileges that stated their legal status and the type of economic activities in which they could engage.<sup>11</sup> Throughout the Middle Ages, Jewish scholars in Germany continued to develop *halacha* (Jewish law).<sup>12</sup>

With the increase in anti-Jewish incidents, growing taxation by the authorities, followed by repeated episodes of temporary expulsion, Germany ceased to be a destination for Jewish immigration at some point, and in fact there began a net outflow of Jews. Although there was never a total expulsion of Jews from Germany, some Jews migrated first to Italy and, later, eastward to Bohemia, Silesia and Poland. A large number of emigrants joined the German colonisation movement whose destination were Polish cities (see below). Later, the violent episodes concomitant with and in the aftermath of the Black Death of 1348–9 destroyed most of the German Jewish communities, led to accelerated migration eastward and brought to Poland Jewish emigrants, along with their religious, cultural, and social values and traditions. This laid the foundation for the rise of the large and prominent Ashkenazi Jewish communities in Poland in subsequent centuries.<sup>13</sup>

During the first decades of the Polish kingdom in the 11th century, some small Jewish colonies were established to serve the needs of itinerant Jewish traders. In the mid-12th century, following the rise of towns, the Polish kingdom became attractive to both German and Ashkenazi Jewish immigrants. The Jews, like others, were attracted mainly by the burgeoning economic opportunities. The first permanent communities, though small, were probably established in the 12th century by wealthy Jews who worked for the Polish kings as minters, bankers and commercial agents. From the second half of the 13th century onward, Ashkenazi immigrants, who were part of the large-scale migration from German-speaking lands eastward, established organised communities modeled on the Ashkenazi diaspora.<sup>14</sup>

There is ample evidence of the Ashkenazi roots of Polish Jewry. Both diasporas had a common core of religious practice called *Minhag Ashkenaz*. They had similar burial practices, as it can be seen from a comparison between the oldest remaining Jewish tombstones in Poland and the typical late medieval Ashkenazi sepulchral forms. The new communities accepted the Ashkenazi rabbinic authority and consulted often with Ashkenazi rabbis via *responsa* (literally, 'replies'). Both early settlers and early settlements had German-sounding names, and both

<sup>10</sup> Baron (1952, vol. 4, ch. 20 and 22); Toch (2003, 2005, 2012); Ben-Sasson *et al.* (2007).

<sup>14</sup> Rosman (1990, p. 36); Weinryb (1972, p. 27); Bell (2008, p. 55); Atlas Historii Żydów Polskich (2010, p. 32); Zaremska (2011, p.116).

<sup>&</sup>lt;sup>9</sup> Toch (2005, 2012, 2018); Botticini and Eckstein (2012, ch. 7, pp. 186–90).

<sup>&</sup>lt;sup>11</sup> Teller (2010, pp. 112–13), Botticini and Eckstein (2012, ch. 8).

<sup>&</sup>lt;sup>12</sup> Grossman (1975, pp. 177–78); Stow (1992, p. 90, 172–73).

<sup>&</sup>lt;sup>13</sup> Baron (1952, vol. 4, ch. 22); Toch (2005, 2012); Ruderman (2010, p. 30); Zaremska (2011, p. 116).

diasporas spoke a common medieval Judeo-German dialect, an early form of the evolving Yiddish language.<sup>15</sup>

In 1264, the Jews received their first charter of privileges, the Statute of Kalisz, which granted the Jews freedom of worship, trade and travel, exempted them from city and church courts, and placed them under the jurisdiction of the ruler or his representative, who would benefit from Jewish contributions to the treasury. Unlike in the German empire where Jews held the status of serfs of the treasury, the Polish charter established the Jews as an urban group, gave them rights parallel to other urban newcomers and integrated them within the economic and social life of Polish towns. As minters, bankers, moneylenders, merchants, tax farmers and toll collectors, lessees of royal salt mines, administrators, and royal creditors, Jews began to play a prominent role in the royal and national economies. In 1453, King Casimir the Jagiellon granted the Jews of Poland a detailed charter that strengthened their physical security, religious freedom, and economic rights, and formally recognised the structure of Jewish autonomy. Although the charter was canceled in 1454 due to the opposition of the nobility, it was reconfirmed later by the early modern kings of the Polish–Lithuanian Commonwealth.<sup>16</sup>

By 1500, the Jewish community in Poland–Lithuania numbered between 10,000 and 15,000 individuals dwelling in about 100 small communities. The Jews paid the poll tax to the Polish kingdom and were free to travel, change residence, swear and sue in court, bear arms and own homes and businesses; in principle, they were allowed to deal in any commodity and could sell retail as well as wholesale. They enjoyed a status parallel to that of the burgher estate, and their occupational structure developed according to the economic and political changes in Polish cities.<sup>17</sup> Polish Jews at this time lived in mostly urban communities and while their self-government combined Jewish tradition with Polish influences, they became religious ethnic corporations recognised by law and protected by the monarchy and later by the nobility.<sup>18</sup> The community (*kehila*) had a board (*kahal*), which usually consisted of affluent merchants connected to the developing rabbinic elite. The board imposed taxes and collected them and maintained a synagogue, ritual bath house (*mikveh*), cemetery and a Jewish court of law. It is in this economic, social, and political context that the Polish Jewish community began to grow and expand eastward.

What about the Khazarian origin of Jews in central and eastern Europe? There is evidence that Jews lived in a small area of eastern Europe located at the north end of the Black Sea. Around the 7th century, the Khazarian kingdom expanded and its Jewish subjects reached the Caspian Sea. The Khazarian Jews settled in the cities, but there is no evidence of a large Jewish community in the kingdom at that time. With the destruction of the Khazarian kingdom in 965–9, the Jewish settlements near the Caspian Sea ceased to exist; Jews partly mixed with the non-Jewish population and partly escaped or migrated to neighbouring areas including eastern Europe and especially Kiev.<sup>19</sup>

<sup>15</sup> Bartal (2005, p. 16); Ruderman (2010, pp. 30–31); Wodzinski (1996). Sources from the 14th and 15th centuries mention places with names using the middle-high-German diminutive suffix *lin*, while series of appellations mention names with the Germanic element *man*. For more details, see Beider (2001, pp. 184–198; table and map at pp. 212–213). <sup>16</sup> Teller (2010, pp. 114–116); Zaremska (2011, p. 133).

<sup>17</sup> Horn (1974); Rosman (1990, p. 37); Lukowski (1991, p. 78); Guldon (2000).

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2647

<sup>&</sup>lt;sup>18</sup> Ruderman (2010, p. 86).

<sup>&</sup>lt;sup>19</sup> Dubnow (2000, vol. 1, pp. 1–6). For evidence of the Jewish presence in Kiev, see Kulik (2010, vol. 1, pp. 189– 213), and Meir (2010). Kiev was centrally located on a commercial crossroad and thus it must have attracted Jewish settlers from the Byzantine Empire, the Crimea, Persia, and the Caucasus. In his famous travel itinerary during the late 12th century, the Jewish traveler Benjamin of Tudela (1840, p. 164) mentioned Kiev as a great city. The oldest written document that mentions Jews in Kiev is the so-called Kievian Letter from circa 930. For more information on the Kievian Letter, see Golb and Pritsak (1982). Ashkenazi scholars mentioned rabbis from Rus, such as Rabbi Moses of

It has not been decisively proven that the Kievan community had Khazarian roots, and furthermore, the hypothesis that the Khazars converted to Judaism has been based on only a few unreliable written sources. Even if the Khazars did convert to Judaism and later migrated to the area known as the Kievan Rus, no evidence of a separate community that maintained its own traditions has been found. In contrast, other non-Ashkenazi Jewish groups, such as Karaites and the Sephardic Jews, did preserve their religious practices and culture for centuries within the Jewish communities of eastern Europe.<sup>20</sup>

Furthermore, even if a large Jewish community with Khazarian origins did exist at the beginning of the 11th century, it was most likely destroyed with the rest of Kiev during the Mongol siege in 1240.<sup>21</sup> The Jews returned to Kiev and lived under Tatar-Mongol rule (1240–1320). With the annexation of the city by the principality of Lithuania (1320), the Jews were granted rights that ensured their safety and their property. During the reign of Withold (1392–1430), the Jews of Lithuania were granted privileges. At the end of the 14th century, Karaite Jews from the Crimean community settled in Troki and other Lithuanian towns. In the Tatar raid on Kiev in 1482, many Jews were formed in Lithuania in the 15th century under the influence of the Karaite center in Constantinople. In 1495, the Jews of Lithuania were expelled by Alexander Jagiellon and most of them moved back to the Crimea region.<sup>22</sup>

To sum up, there is *no* evidence of a large non-Ashkenazi Jewish migration to Poland from the east. There is some possibility, though no concrete evidence, of a minor Jewish migration to Poland–Lithuania following the Mongol invasions during the 13th century. Some migration westward, as well as the presence of non-Ashkenazi Jews in small settlements on the eastern Polish frontier during the 15th century, cannot be dismissed either. Nonetheless, these movements were insignificant and random and left no genetic or linguistic traces. Hence, Jewish migrations westward cannot be compared with the Jewish migration from German lands eastward. It was these immigrants who set the foundation for the subsequent spectacular demographic growth of the Jewish community in central and eastern Europe—a community that continued the Ashkenazi traditions.<sup>23</sup>

<sup>21</sup> Rosenthal (2015, p. 488). While it is known that some of refugees from the Jewish community, mostly Karaites, migrated to the Crimean Peninsula and established Karaite settlements, we have no evidence of substantial migration to the west that had a demographic impact. On the contrary, there was probably an eastward migration from Poland in response to the policy of Russian Prince Daniil Romanovich (1259) and his son, who invited Germans, Jews, Poles and other foreigners to settle in Kiev to economically revive the city.

<sup>22</sup> Slutsky (2007); Akhiezer (2015).

 $^{23}$  Rosman (1991, p. 32). See also Elhaik (2013) and his critics in Stampfer (2014). There are at least 12 DNA studies that disprove the Khazar theory. See, for example, the study by Costa *et al.* (2013) of Ashkenazi DNA, which found no significant evidence of Khazar influence. For a discussion of the lack of Turkic linguistic influence see Kulik (2014, pp. 105–43).

Kiev who was one of the pupils of the tosafist Jacob Tam (d. 1170). Although sources are scarce, it is probable that this medieval non-Ashkenazi community included both Rabbinic and Karaite Jews. Zaremska (2011, p. 77) tends to rule out the existence of the Karaite community.

 $<sup>^{20}</sup>$  For an analysis of Arabic sources, see Gil (2011). For an analysis of all literary and non-literary sources, see Stampfer (2013). No material evidence has been found for the conversion of the Khazars to Judaism or for the existence of a sizeable Jewish community in the kingdom. Since the late 18th century, the hypothesis of the Khazars' conversion to Karaite Judaism has attracted interest, but has never been decisively proven. For a concise examination of this theory and its history, see Shapira (2007), Toch (2018) and the references therein.

#### 2019] JEWISH CHILD CARE AND HUMAN DEVELOPMENT

#### 2.2. Jewish and Total Populations in Germany–Austria, 1500–1930

Table 1 presents our estimates of Jewish and total populations in Germany-Austria from 1500 to 1750. Historians' most recent estimates indicate that, in 1500, there were approximately 40,000 Jews (or perhaps somewhat less) within a total population of 16 million in Germany–Austria. By the end of the 16th century, the Jewish population slightly shrank and the Jews constituted a mere 0.2% of the total population. Consistent with the view of most historians, we maintain that the main explanation for this reduction was the immigration of Jews from Germany–Austria to Poland–Lithuania.<sup>24</sup>

It is interesting and surprising that by the end of the Thirty Years War, between 1600 and 1650 the Jewish population in Germany–Austria increased by more than 50%, whereas the total population reduced by about 15%. According to various estimates, war-related deaths account for a 15–20% reduction in the total population. The Jewish population of Germany–Austria was less affected by the war partly because there was some migration of Jews from Poland–Lithuania to Germany–Austria in the wake of the Khmelnitsky Uprising in 1648.<sup>25</sup>

The key fact emerging from Table 1 is that the Jewish population of Germany–Austria was stagnant during the 16th century, whereas it grew by more than by 1% per year during the 17th century, mainly during the second half. While the total population collapsed during the Thirty Years War in the mid-17th century, the Jewish population remained stable. During the first half of the 18th century, it experienced a moderate growth rate of 0.3% per year, which is below the growth rate of the non-Jewish population. However, by the mid-18th century the Jewish population amounted to 0.5% of the total population—twice what it had been in 1500.

Regarding the period between 1800 and 1930, Europe's geopolitical maps underwent major changes during the last 30 years of the 18th century, as well as in 1815 following the Congress of Vienna (see Figure 2). In 1871, the German states were united to form the German Empire or the Second Reich, also known as the Kaiserreich, which lasted until 1918.

Table 2 presents the Jewish and total populations of Germany for the period 1800–1930 within the borders of 1934, that is, after the restoration of the Polish state. The estimates include areas of Germany that were parts of Germany–Austria for the earlier period and exclude areas of Germany that were not part of Germany–Austria during the period from 1500 to 1800 approximately (see Appendix A for details on the geographical borders we use in our data analysis). Meanwhile, Table 3 shows the Jewish and total populations of Austria, including Bohemia and Moravia. In the subsequent discussion, we consider jointly Tables 2 and 3 for the analysis of the total population in the entire Germany–Austria area.

The starting point in both Tables 2 and 3 is the year 1816, when the borders became more stable and the calculations can be based on the population censuses of the 19th century. Based on multiple sources described in Appendix A, we estimate the number of Jews in Prussia and the other German states in 1816 to be about 214,000 and the total population about 21.989 million.<sup>26</sup> In 1871, the Second Reich conducted the first imperial census and the population numbers are more accurate; interestingly, they fit the patterns of change and the levels of the earlier estimates.

<sup>&</sup>lt;sup>24</sup> The estimates are based on Maimon and Guggenheim (1987) and Maimon, Breuer and Guggenheim (1995, 2003), which provide demographic information on over 1,000 Jewish communities. The total is based on Rabe (1989). See also Friedman (1983, p. 34) and Toch (2003).

<sup>&</sup>lt;sup>25</sup> See Whaley (2012, vol. 1, p. 633) for a summary and review of these estimates. He mentions that the different estimates depend on the geographical focus of the demographic studies, i.e. whether the focus is on the German borders of 1871–1914 (the Second Reich) or on those of the early Reich. Schormann's (2001, fn. 26) estimate refers to the early Reich. More information is also provided in Battenberg (2001, pp. 32–33).

<sup>&</sup>lt;sup>26</sup> In the calculations, we subtract the provinces of Posen and West Prussia.

Until 1880, the Jewish population grew at a slightly higher rate than the total population and increased from about 1-1.15% of the total population. From 1880, the Jewish population growth rate was significantly lower than that of the total population, and by 1933 their share amounted to only 0.76% of the total population, whose numbers are based on the census of 1933.<sup>27</sup>

Starting from the census of 1880 following the introduction of universal conscription, the population figures for both the Jewish and total populations become more reliable. In 1830, the Jews in Austria amounted to almost 1% of the total population—as many as in Germany. From that time onwards, the Jewish population growth rate in Austria until the end of the 19th century was much higher than that of the Jews in Germany, and also much higher than the total population growth rate. Remarkably, the Jews in Austria amounted to 2.3% of the total population.

In 1934, there were 191,408 Jews in the territory of Austria that had become smaller following the defeat in World War I, out of a total population of 6,759,062.<sup>28</sup> According to the 1930 census data, in the former Austrian regions, which were now part of the new state of Czechoslovakia, there were 76,301 Jews out of a total population of 7,109,376 in Bohemia and 41,250 Jews out of a total population of 3,565,010 in Moravia and part of Silesia.<sup>29</sup> Overall, there was a significant reduction in the Jewish population in Austria during the period after World War I.

#### 2.3. Jewish and Total Populations in Poland–Lithuania, 1500–1930

We divide the demographic history of Poland–Lithuania into two periods: 1500–1764 and 1764– 1930. With regard to the first period, the year 1500 marks the first attempts by historians to estimate the size of the Jewish population in Poland, whereas the first Jewish census in Poland– Lithuania was carried out in 1764–5. The second period begins after the Jewish census and the partitions of Poland–Lithuania (1772–95) between Prussia, Russia and Austria, and ends with the outbreak of World War II, well after the establishment of the Second Republic of Poland in 1918 (see Figures 1 and 2).

By around 1500, the Jewish population in Poland amounted to 10,000–15,000. A number of leading historians including Rosman (1991, p. 40) propose this estimate after a careful analysis of tax collection data. The year 1648 marks the beginning of a decade of wars, including the Khmelnitsky Uprising, which caused serious damage to the Polish economy, reduced its population, and resulted—among other things—in a temporary interruption of the rapid growth of the Jewish population in Poland.

Table 4 provides estimates of the Jewish and total populations of the geographic region of Poland–Lithuania as defined above. Comparing the existing studies, we propose an estimate of 10,000–15,000 for the number of Jews in Poland-Lithuania circa 1500, whereas the estimate for total population based on recent studies amounts to 7,500,000 people.<sup>30</sup>

 $<sup>^{27}</sup>$  We exclude Galicia that was annexed from Poland because it is included in the figures for Poland. Apart from Galicia that accounted for 70–80% of Austrian Jewry, the regions of Moravia and Bohemia also had sizeable Jewish communities. Until 1850, general censuses were conducted by the military in Austria and the data from these censuses is not always reliable.

<sup>&</sup>lt;sup>28</sup> American Jewish Year Book (1935, vol. 37, p. 360, table 8).

<sup>&</sup>lt;sup>29</sup> Vobecka (2013, p. 47, table 4.1; p. 219).

<sup>&</sup>lt;sup>30</sup> The figures for 1500 are based on the estimates of Weinryb (1972), Stampfer (1997) and Kupovetsky (2015), who mainly relied on fiscal registers that mention the existing Jewish communities. The earliest of these registers is the Coronation tax register of 1507, which lists 54 communities: 29 in Great Poland, 10 in Mazovia, 10 in Red Russ and 5 in Lesser Poland (Horn, 1974, pp. 11–15). A number of scholars have complemented the information in these registers. For example, Schiper (1932) and Baron (1971; 1976, p. 207) estimated the Jewish population circa 1500 to be about 30,000. Among other studies, Samsonowicz (1985, p. 36) reported 89 communities (excluding Silesia) and estimated the

In the two and a half centuries between 1500 and 1764, the Jewish population of Poland– Lithuania grew extremely fast—amounting to about 0.13% and 5.36% of the total population in 1500 and 1764, respectively. The highest growth occurred at the beginning of the 16th century with the documented migration of Jews from Germany. It is interesting to note that during the period of the wars between 1648 and 1660, the Jewish population decreased by 1%, but the total population decreased by 2%.<sup>31</sup> At the end of the first period in which we have split our analysis, the special Jewish census of 1764–5 provides the most important milestone for estimating the Jewish population of Old Poland, amounting to 750,000 people.<sup>32</sup>

When considering the subsequent period (1764–1930), one of the most significant geopolitical events affecting Poland–Lithuania and the populations residing in this vast area were three partitions occurring in 1772, 1793 and 1795 (see Figure 2). As an outcome of the Congress of Vienna, the former Jewish population of Poland–Lithuania now belonged to other countries as follows: (*i*) the provinces of Posen and West Prussia were subject to Prussia; (*ii*) Galicia was under Austrian rule; (*iii*) the Pale of Settlement were regions within the Russian Empire where Jews were permitted to continue to reside; and (*iv*) Congress Poland was subject to the Russian Empire, but was not formally part of the Pale of Settlement even though Jews were residing there. Table 5 presents the estimates of the Jewish and total populations of Poland–Lithuania consisting of the four aforementioned areas after the partitions based on the existing historical and demographic studies.

The Jewish population in the Pale of Settlement (including the Kingdom of Poland) amounted to 811,000 people in 1800—with 9,000 Jews in other parts of Russia outside of the Pale. This estimate includes the Jews in Galicia (201,277 in 1803) and the 45,000 Jews in Posen in 1800 (see Appendix A for more details). The second column shows two numbers for the total population until 1897: 'old total population' and 'new total population'. The former figure includes only those territories that were part of pre-partition Poland.<sup>33</sup> Remarkably, the Jewish population growth rate exceeded the total population growth rate until 1880, when the Great Migration to the United States started. At that time, the share of the Jews over the total population in the 'old' Polish-Lithuanian territories reached 15.4%, which was the highest share of Jews in eastern

<sup>33</sup> Rashin (1956, pp. 44–45, table 10). The provinces included in the 'old total' are Vilna, Vitebsk, Grodno, Kovno, Minsk, Mogilev, Podolia, Volhynia and Kiev. We also add Courland, which had been subject to Poland–Lithuania prior to the partitions.

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2651

Jewish population of Poland at 4,500. Guldon (2000) presented the longest list, which consisted of 106 Jewish settlements established in Poland before 1507. However, since many of those communities were only temporary, his list is not a reliable basis for calculating the Jewish population. For a critique of Guldon's list, see, for example, Zaremska (2011, pp. 241–42). In contrast to Schiper and Baron, Weinryb (1972, pp. 309–11) provided a much lower estimate of 6,000–8,800 Jews in the Kingdom of Poland and an unknown number in Lithuania, and estimated a total number of 10,000 Jews. Stampfer (1997, pp. 263–67) supports Weinryb's figure.

<sup>&</sup>lt;sup>31</sup> Contrary to the significant Jewish population decline reported by contemporary chroniclers as a result of Khmelnitsky Uprising (over 100,000 killed and hundreds of communities destroyed), Stampfer (2003, pp. 218–22) shows that the number of Jewish casualties was in fact much lower, most likely in the range of 18,000–20,000. Kupovetsky (2015, table 1) agrees with Stampfer's assessment of the losses and estimates that 163,000 Jews were living in Poland-Lithuania after the period of the wars in 1660.

<sup>&</sup>lt;sup>32</sup> Using this census as a starting point, Mahler (1958, ch. 1, and pp. 45–46) made two major corrections. First, he added 6.35% to the Jewish population figures to account for children under the age of one who were not included in the census itself. Second, he also augmented the total figures by a factor of 20% to compensate for the underreporting due to tax evasion. While the original 1764 census data reported a Jewish population of 587,658 people (430,009 in Poland and 157,649 in Lithuania), with Mahler's corrections this figure increases to 750,000. Stampfer (1989) supported Mahler's argument pointing out that the data including Mahler's corrections correspond well to the data and the annual Jewish population growth rate during the 19th century. Further support to Mahler's corrections comes from Kalik's (2009) study on the Jewish poll tax lists. After examining the newly discovered tax lists for Crown Poland for the period 1717–64, Kalik estimated a difference of 21.28% between actual and potential tax, which is close to the correction factor suggested by Mahler and corroborated by Stampfer.

Europe ever. After 1880 and until 1930, the total population growth rate exceeded the Jewish population growth rate, but it was not as high as the Jewish population growth rate prior to the Great Migration period.

Population data for 1897 is based, among other sources, on the most comprehensive survey of the Russian territories implemented in that year. This survey is a milestone for demographic research in general, as well as for the economic and social history of the Jews in the 19th century. From this survey (and from other sources) the Jewish population in the Pale of Settlement and in the Kingdom of Poland in 1897 amounted to 4,899,327 people. This figure is the outcome of our estimation method that is explained in detail in Appendix A. Finally, the figures for 1925 and 1939 are based on different sources but similar methodology and should be highly accurate as these are based on relatively new and well conducted censuses.

# 2.4. Summary of the Key Demographic Trends

Based on the estimates presented above, a number of conclusions emerge from the analysis of the Jewish and total populations of Germany–Austria and Poland–Lithuania for the period between 1500 and 1800.

- (i) The total populations of Germany–Austria and Poland–Lithuania grew at similar natural rates of 0.18% and 0.23%, respectively. The ratio of the total population of Poland–Lithuania to that of Germany–Austria remained relatively constant (about 0.55) throughout the period. The Thirty Years War in Germany–Austria and the wars of 1648–60 in Poland–Lithuania had a significant negative impact on the total population growth rate over those 300 years; adjusting for the negative impact of these wars, the natural total population growth rate was about 0.3–0.4%.
- (ii) The Jewish population of Poland–Lithuania grew at the exceptionally high rate of about 1.37% annually, whereas the Jewish population of Germany–Austria grew by only 0.66% per year. Yet, both Jewish communities grew much faster than the corresponding total populations.
- (*iii*) Circa 1500, the ratio of the Jewish population of Poland–Lithuania to that of Germany– Austria was 0.25. By the end of that century, however, the Jewish population in Poland– Lithuania was twice as large as that in Germany–Austria and, by 1650, three times as large.
- (iv) During the Thirty Years War, the total population of Germany–Austria declined dramatically, whereas the number of Jews remained almost constant. During the period of the wars in 1648–60, the total population in Poland–Lithuania declined at twice the rate of the Jewish population dwelling there.
- (v) If birth, death and conversion rates were identical between the Jewish populations in Germany–Austria and Poland–Lithuania, then net migration from Germany–Austria to Poland–Lithuania must have continued throughout the period and at a particularly high rate during the 16th century. There are various references to Jewish migration from Germany–Austria to Poland–Lithuania until 1648, but the much higher Jewish population growth rate in Poland–Lithuania than in Germany–Austria continued from 1660 to 1760 (Kupovetsky, 2015). This potentially reflects a small yet continuous flow of migrations of Jews from Germany–Austria to Poland–Lithuania.

#### 2019] JEWISH CHILD CARE AND HUMAN DEVELOPMENT

(vi) If the hypothesis outlined in (v) holds true, it is possible to argue that the annual natural Jewish population growth rate from 1500 to 1800 was 1% and the average net migration rate from Germany–Austria to Poland–Lithuania was 0.35–0.37%. Hence, the average Jewish population growth rate in Poland–Lithuania was 1.35–1.37% and in Germany–Austria was 0.63–0.65%. Yet, the widening difference in levels of Jewish population during the late 18th century implies that the natural Jewish population growth rate in Poland–Lithuania at that time was potentially slightly above 1%.

Similarly, based on the estimates presented above, a number of conclusions emerge from the analysis of the Jewish and total populations of Germany–Austria and Poland–Lithuania for the period between 1800 and 1930.

- (i) The Jewish population of Poland–Lithuania grew at an almost constant rate of 1.35% until 1880, when growth slowed down and later became negative at the beginning of the 20th century. The change in 1880 was mainly the outcome of the Great Migration of Jews from Poland–Lithuania to the West and, in particular, to the United States. The low Jewish population growth rate after 1900 indicates both a reduced natural growth rate and migrations away from Germany–Austria and Poland–Lithuania.
- (*ii*) The Jewish population in Germany–Austria grew at a rate of somewhat more than 1%, which was close to that of the Jewish population in Poland–Lithuania.
- (iii) The total population of Poland–Lithuania grew at a rate of less than 1% prior to 1900 and, subsequently, at a rate above 1%. The total population of Germany–Austria grew at a rate of about 1% until the beginning of the 20th century, whereas subsequently this growth rate slowed down.
- (iv) The share of the Jewish population over the total population in Poland–Lithuania, which amounted to about 6% in 1800, reached a stunning peak of 15.4% in 1880 and then fell to just above 7% by 1930. In contrast, Jews in Germany–Austria constituted about 0.6% of the total population in 1800, about 1.3% by 1880 (and above 2% in Austria alone), and less than 1% by 1930.
- (v) The year 1880 was clearly a turning point when the Jews of eastern Europe began migrating to the West and, primarily, to the United States. However, migration to western European countries had begun even earlier following the Napoleonic wars and Jewish Emancipation in the western and central European countries.

# 3. Jewish and Non-Jewish Birth and Death Rates, 1500–1930

In the previous section we documented (*i*) the higher Jewish population growth rate relative to the non-Jewish population in Poland–Lithuania and Germany–Austria from 1500 to 1880 and (*ii*) the continuously increasing proportion of the Jews over the total population in these regions despite the Great Migration from central and eastern Europe to the West during the 19th century. We now address the fundamental question of which were the factors behind these striking Jewish demographic patterns in the early modern and modern times.<sup>34</sup>

2653

<sup>&</sup>lt;sup>34</sup> An exhaustive list of primary and secondary sources we surveyed to collect data on birth and death rates is provided in Appendix B.

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THE ECONOMIC JOURNAL

As is well known, population growth rate is determined by the difference between birth and death rates, as well as by immigration and religious conversion rates.<sup>35</sup> Unfortunately, there are scant reliable data on births, deaths, immigration and conversion for both Jews and non-Jews in Germany–Austria and Poland–Lithuania prior to the 19th century. Yet, leading scholars have painstakingly searched for data to document as accurately as possible the exceptional Jewish population growth in Poland–Lithuania during this period. Based on anecdotal evidence and population growth rates, Ruppin (1940, p. 76) proposed the following estimates for birth/death rates (per 1,000 people) among 'world Jewry' during the early modern and modern periods:

1650–1750	45/40	_
1750–1800	40/30	
1800–1850	40/25	
1850–1900	35/20	

These Jewish natural population growth rates are consistent with our observation on Jewish population growth rates of about 1.4% in Poland–Lithuania between 1750 and 1900.

For the period between 1500 and 1764, Weinryb (1972, pp. 319–20) proposed a Jewish birth rate for Poland–Lithuania of 55–60 per 1,000 and a death rate of fewer than 40 per 1,000 people, which yields a natural rate of increase of 1.5–2%.<sup>36</sup> These birth rates seem to be above natural birth rates reported in most studies on European countries during the same period, which are typically in the range of 40–35 per 1,000. DellaPergola (1983, pp. 58–9, fig. 3) estimated Jewish birth and death rates in Poland–Lithuania using data from Galicia. According to his estimates, there were 40 deaths and 50 births per 1,000 during the period 1650–1750. Jewish death rates then began to decline, reaching about 13–15 per 1,000 during the 1920s, whereas Jewish birth rates began to decline circa 1870 reaching about 20 per 1,000 during the 1920s. Based on these figures, DellaPergola (1997, 2001, 2010) maintained that the demographic transition started much earlier (about 70–100 years earlier) among Jews than among non-Jews. In a recent study, Vobecka (2013) advanced the same argument for the Jews in Bohemia.

Acknowledging this range of estimates regarding birth and death rates, to evaluate the natural population growth rates of Jews and non-Jews for the period 1500–1930, we follow the insights of the demographic transition literature on northern, central and eastern Europe in which industrialisation began during the late 19th century and divide the period into four stages.<sup>37</sup>

#### Stage 1

It is the *Malthusian period* before the demographic transition during which birth and death rates were constant, and modest population growth rates were further reduced due to epidemic cycles

 $^{35}$  In the 19th century, Jewish migration rate from Europe was higher than non-Jews (Kuznets, 1975, pp. 39–51, tables I–V), which reinforces the argument regarding the difference in birth and death rates between Jews and non-Jews.

<sup>36</sup> Weinryb (1972, pp. 319–20). Weinryb based his estimates of the death rate on data collected by Wettstein from the *pinkas* of the Jewish burial society in Cracow for the period 1543–1790. The data are problematic since they do not include the deaths of children up to the age of 13 or 14. However, Weinryb was able to locate data on deaths, including the deaths of children, in the *kehilla's* records for the end of the 18th century. The number of deaths was twice that registered in the Jewish burial society records. During the period 1543–90, the average number of deaths was 37–38 per 1,000 excluding children. Doubling this number to account for children, Weinryb obtained 74–76 deaths. Thus, the total number of Jews in 1578 was 2,080 (Weinryb, 1972, p. 320). Dividing 2,080 by 74–76 yields 36 deaths (about 40) per 1,000. Weinryb's estimate of the birth rate at 55 to 60 per 1,000 is not based on data from Poland–Lithuania but rather on the situation in underdeveloped countries in Asia, Africa and the Middle East, which in his view are comparable to the situation in Poland–Lithuania during the early modern times.

<sup>37</sup> See Coale (1987) and the references therein cited for the development of the demographic transition literature and Vobecka's (2013) discussion of the stages.

		Births		Deaths		Natural increase	
Years	Place	Jewish population	Total population	Jewish population	Total population	Jewish population	Total population
1777-1800	Galicia <sup>a</sup>	36.5	35.4	20.2	25.4	16.5	10.0
1824-73	Posen	35.3	41.1	22.2	30.0	13.1	11.1
Average		35.9	38.3	21.2	27.7	14.8	10.6

Table 6. Births, Deaths and Natural Increase (per 1,000) for the Jewish and Total Populationsin Poland–Lithuania (Galicia and Posen), 1777–1873.

Source. von Bergmann (1883, p. 136); Budzyński (1993, vol. 1, p. 108, table 7). <sup>a</sup>Data from nine cities.

"Data from nine cities.

and wars. For Germany–Austria this period ended in about 1800, whereas in Poland–Lithuania it continued for a few additional decades.

#### Stage 2

It is the *early demographic transition period* that began just before the Industrial Revolution and was characterised by the same constant birth rates as before, but declining death rates. For Germany–Austria and Poland–Lithuania, this period ended in about 1870, as well-documented and acknowledged by demographers of eastern and central Europe.

The *modern demographic transition period* is split into two stages until 1930: *Stage 3* 

From about 1870 to 1910 it is the main period of transition to modernity during which fertility rates declined, mortality rates further declined and population growth rates increased.

#### Stage 4

Stage 4 from about 1911 to 1930 is the period in which relatively low and stable birth and death rates typical of modern industrial societies emerged.

The main underlying assumption of the demographic transition literature is that during stage 1, almost all eastern European countries, including Poland–Lithuania and Germany–Austria, were at the so-called Malthusian equilibrium, in which the natural population growth rate, i.e., the rate in a 'normal environment', was less than 0.5. The term 'normal environment' refers to a historical context in which population growth is not affected by severe epidemics or wars. Prior to 1800, total population growth rates in both Germany–Austria and Poland–Lithuania were about 0.2% and the differences with respect to the natural population growth rate are mainly due to the wars of the 17th century, as well as to repeated bouts of local epidemics.

# 3.1. Birth and Death Rates

We begin our analysis by first presenting and discussing birth and death rates for Jews and non-Jews. As already mentioned, it is challenging to find these data for many locations. For Poland–Lithuania, Table 6 presents the best evidence we could collect for a comprehensive comparison of birth and death rates for Jews and non-Jews in Galicia at the end of the 18th century and in Posen at the beginning of the 19th century.

The data from Galicia is representative of the whole region since Galician average birth and death rates for both Jews and non-Jews are comparable to those of a 'normal environment' in Poland–Lithuania during stage 1 of the demographic transition. Although this was a period of political partitions in which large parts of the original Polish–Lithuanian Commonwealth were divided up among its neighbours, the socioeconomic conditions of the Jewish communities

		Births		Deaths		Natural increase	
Years	Place	Jewish population	Total population	Jewish population	Total population	Jewish population	Total population
1822-64	Prussia	35.3	39.8	20-25	29.3	14.85	10.5
1863-9	Hessen	29.5	34.5	18	24.5	11.5	10.0
1869	Bohemia	29.5	37.2	16.80	27.6	12.7	9.6
Average		31.4	37.2	18.35	27.1	13.0	10.0

 Table 7. Births, Deaths and Natural Increase (per 1,000) for the Jewish and Total Populations in Germany–Austria, prior to 1870.

*Source.* For Prussia 1822–1864, Lestschinsky (1926, p. 26, table 8). The calculation for Prussia in 1840–1864 is also based on Silbergleit (1930, pp. 14–15, table 8). For Hesse, see Schmelz (1996, p. 108, table 3.1; p. 112, table 3.5). For Bohemia, see Vobecka (2013, p. 92, table 7.5; p. 105, table 8.4).

remained unchanged throughout most of the period—with Jews living mainly in urban centres. Moreover, medical knowledge and the socioeconomic relations between Jews and non-Jews remained basically unchanged until the second half of the 19th century. The main exceptions were the periods of the Thirty Years War in Germany and the wars in Poland–Lithuania during the mid-17th century.

The main conclusion to be drawn from Table 6 is that Jews and non-Jews had almost the same birth rate of about 35(+/-3) per 1,000, whereas the average death rates were 20.2 and 25.4 per 1,000 for the Jewish and total populations, respectively. It should be noted that these birth and death rate estimates for the Jewish population are much lower than those proposed by Ruppin (1940), Weinryb (1972) and DellaPergola (1983). However, the rate of Jewish population growth of about 1.5% is somewhat above what we found for Jews in Poland–Lithuania over that period as shown in Tables 1 and 3. For the total population, the 1% growth rate is higher than the overall numbers we found for Germany–Austria and Poland–Lithuania prior to 1800. Yet, these figures are consistent with other estimates of average birth and death rates prior to the demographic transition from Germany and Sweden as reported in the main existing sources.<sup>38</sup> The most well-known case, documented in Eckstein *et al.* (1984, Table 1), is that of pre-industrial Sweden from 1759 to 1869, where the average birth rate was 32.5 per 1,000 inhabitants, the infant death rate was 189 per 1,000 births, and the non-infant death rate was 19.7 per 1,000 inhabitants. Consequently, the total death rate was 24.5 per 1,000.

For Germany–Austria before 1870, Table 7 presents birth and death rates.<sup>39</sup> The figures for Germany are very close to those of Sweden prior to 1870. Hence, the figures we report earlier for Poland–Lithuania are within the statistical confidence intervals of the rates for Sweden and other regions.

From Tables 6 and 7 we conclude that, at the end of the 18th century, the average Jewish and non-Jewish population natural growth rates were 1.5% and 1%, respectively. The latter figure

<sup>&</sup>lt;sup>38</sup> See the most recent graphs (including data for Germany after 1820) in https://ourworldindata.org/wp-content/uplo ads/2013/05/ourworldindata.demographic-transition-5-countriesi.png.

<sup>&</sup>lt;sup>39</sup> Vobecka (2013) reconstructed Jewish birth rates during 1793–1849 based on population growth rates and reported death rates. Based on his estimates, average Jewish birth and death rates are 32.99 and 23.48, respectively, giving a 0.95 natural Jewish population growth rate. For total population, Fialová *et al.* (1990) estimate average birth and death rates at 41 and 32.14 during 1800–50, i.e., a 0.88 natural growth rate. The difference in the average natural increase is negligible, but the pattern of lower Jewish fertility and mortality rates is clear.

		Births		Deaths		Natural increase	
Years	Place	Jewish population	Total population	Jewish population	Total population	Jewish population	Total population
1882-1910	Galicia	39.80	44.30	21.50	29.20	18.3	15.10
1896-1904	E* Russia	35.15	49.40	17.15	31.65	18.0	17.75
1876-1910	Prussia	23.25	36.45	15.40	21.65	7.8	14.80
1870-1909	Hesse	23.90	33.10	16.00	20.90	7.9	12.30
1880-1910	Bohemia	20.00	34.35	15.35	23.90	4.65	10.45

 

 Table 8. Births, Deaths and Natural Increase (per 1,000) for the Jewish and Total Populations in Poland–Lithuania and Germany–Austria, 1870–1910.

*Source.* For Galicia, European Russia, and Prussia see Kuznets (1975, pp. 63–64, table 6) and Wróbel (1994). For Hesse, see Schmelz (1996, p. 108, table 3.1; p. 112, table 3.5). For Bohemia, see Vobecka (2013, p. 92, table 7.5; p. 105, table 8.4).

Notes: E\* Russia = European Russia.

is somewhat higher than the Swedish rate of 0.8% but is nonetheless within the confidence interval.<sup>40</sup>

Considering stage 3 of the demographic transition (the period 1870–1910), it is well known that it was characterised by a decline in both birth and death rates, resulting in a substantial increase in population growth rates. This major demographic change occurred in parallel with the process of industrialisation and increased urbanisation and immigration both within Europe and from Europe to the Americas. For old Poland–Lithuania, we use the data available for Galicia and European Russia. Table 8 indicates that Jewish and total population's birth rates were somewhat higher than those shown in Table 6, whereas death rates were lower for both populations, thus generating higher natural population growth rates, particularly for the total population. Thus, during the period of early industrialisation, eastern European locations had entered stage 3 of the demographic transition. Jews had a somewhat higher population growth rate than the total population, but the difference is small.

For Germany–Austria, during stage 3 of the demographic transition the data in Table 8 shows lower birth and death rates for both the Jewish and total populations. Thus, the rate of population growth in Prussia, Hesse and Bohemia was about 0.7% for the Jewish population and 1.3% for the total population. The explanation for this divergent pattern lies in the fact that while the death rate among Jews was much lower than among non-Jews, the Jewish birth rate had declined significantly. This pattern is consistent with DellaPergola's (1992, 2001) argument that in Germany, the demographic transition occurred earlier in the Jewish population than in the total population. Indeed, Table 8 shows that there was a significant drop in Jewish birth rates at the beginning of the 20th century in all three regions, which rapidly lowered the Jewish population growth rate to less than 1%. In contrast, the total population experienced higher birth rates (close to 35 per 1,000) whereas its death rates dropped, as one would expect in stage 2 of the demographic transition. As a result, total population growth rate remained higher than 1%.

During stage 4, which began around 1910, modern medicine became more available and industrialisation reached its peak in eastern and central Europe following World War I. As Table 9 illustrates, for Jews living in Poland one observes a decline in the birth rate to about 29 per 1,000 and a decline in the death rate to about 14 per 1,000. As a result, the rate of natural increase for Jews was about 1.4%—almost equal to what it had been during the late 18th century.

 $<sup>^{40}</sup>$  The standard deviation of the net growth rate is about 7.4–7.6, which is suggestive of very large fluctuations in birth and death rates across time and locations.

	Place	Births		Deaths		Natural increase	
Years		Jewish pop.	Total pop.	Jewish pop.	Total pop.	Jewish pop.	Total pop.
1921-30	Poland	28.8	33.5	14.3	17.60	14.5	15.9
1911-25	Prussia	14.7	26.0	13.4	14.50	1.3	11.5
1914–32	Hesse	11.0	18.5	15.5	13.25	-2.5	5.25
1926-30	Bohemia	8.2	18.7	14.9	14.30	-6.7	4.4

 

 Table 9. Births, Deaths and Natural Increase (per 1,000) for the Jewish and Total Populations in Poland–Lithuania and Germany–Austria, 1911–30.

*Source.* For Jews in Poland, Marcus (1983, p. 173, table 25). For the total population in Poland, Jezierski and Wyczański (2003, p. 361, table 90). For Prussia, Kuznets (1975, pp. 63–64, table 6). For Bohemia, Vobecka (2013, p. 92, table 7.5; p. 105, table 8.4). For Hessen, Schmelz (1996, p. 108, table 3.1; p. 112, table 3.5).

For both the total population and the Jews in Poland, the end of World War I marked the beginning of stage 4 of the demographic transition, during which birth rates declined less than death rates and the rate of natural increase reached 1.6%.

With regard to Germany–Austria, Table 9 indicates that Jewish birth and death rates in Prussia were very close to those of both Jews and the total population during the modern period. However, Jewish birth rates were somewhat less than 15 per 1,000 and deaths were somewhat more than 13 per 1,000, such that Jewish population growth was slightly positive (0.13%). For the total population, the birth rate of 26 per 1,000 was higher than the Jewish one, whereas death rates were similar. Hence, the rate of natural increase for non-Jews was above 1%. For Hessen and Bohemia, the shift was similar and the rate of natural increase for Jews became negative.

To sum up, the key observation regarding Jewish and non-Jewish birth and total death rates over this period is that in both Poland–Lithuania and Germany–Austria until World War I, Jewish birth rates were similar to those of the total population, but death rates were lower. Natural growth rates among Jews were higher and close to 1.5% on average until the Great Migration period of 1880. The fundamental question is then: what were the reasons for the lower Jewish death rates?

#### 3.2. Infant and Child Mortality Rates

The view that lower infant mortality during the early modern and modern periods is the main explanation for the high rate of natural increase among the Jews of Poland–Lithuania is commonly accepted among historians and demographers.<sup>41</sup> Baron (1976, pp. 203–4) estimated that infant and child mortality was much lower among the Jews than among the general population. This, in addition to lower adult mortality, led to an increase in the proportion of Jews in the population of Poland–Lithuania.

DellaPergola (1997, 2001) attributes the Jewish population increase that began during the late 18th century to early improvements in morbidity and mortality levels. According to the demographic transition model he proposed in his study, the Jews experienced the demographic transition earlier than the rest of the population—and this, in turn, resulted in lower child mortality. Derosas (2003, p. 11) prefaces his study of child mortality among Jews in Venice with the comment that Jews were known for lower mortality rates already in the late 18th century. He cites Italian scientist and abbot Giuseppe Toaldo (c. 1787), who discovered that 'only' one-fifth of Jewish newborns died during the first year of life. Also Schmelz (1971), one of the leading scholars on this topic, relied on the explanation based on the demographic transition as the main

<sup>41</sup> See Hundert (2004, p. 24) for a review of the relevant literature.

driver for the reduction in Jewish mortality rates. The data he collected from both primary and secondary sources exhibit overwhelmingly lower Jewish infant and early child mortality rates.<sup>42</sup>

The data we present here support the historians' arguments and, to the best of our knowledge, present the most up-to-date picture of infant mortality among Jews and non-Jews in eastern and central Europe during the early modern and modern periods. Again, we analyse the data according to the four stages of the demographic transition outlined above. We aggregate the data for Poland–Lithuania and Germany–Austria in view of the similarity between the two regions and the lack of extensive data on each location separately. This enables us to calculate the impact of lower infant mortality among Jews on their rate of natural population growth rate prior to, and during, the 19th century.

Civil registers recording births, marriages, and deaths were not common in most European countries prior to the 19th century. However, some demographic data are available from registers maintained by religious institutions. It has been estimated that in early modern western Europe, as many as a quarter of all babies died within the first year and another quarter before they reached adulthood. According to Zemon-Davis (1995, pp. 12, 225), between one-third and one-half of children born in 17th-century Europe did not reach the age of ten. In early modern England, the infant mortality rate was around 150–200 per 1,000 live births (Wear, 1995, p. 215). In London, deaths exceeded births and its population would have decreased if not for migration from the countryside. In 1764, 49% of all recorded live births in London ended in death by the age of two and 65% by the age of five (Matthews Grieco, 1991, p. 39). As for continental Europe, France before 1750 had over 200 infant deaths per 1,000 live births, Denmark in the period 1645–99 had 206 per 1,000, and Geneva in the period 1580–1739 had 296 per 1,000. According to Wyczański (1991, p. 24), in Europe 20–30% of children died in the first year of their lives, 75% reached the age of 15, and only 50% reached adulthood. Of course, death rates varied across regions and over time. In general, the urban population was at higher risk than the rural population.

In comparison with western Europe, there are even fewer sources of data available on infant mortality in early modern Poland-Lithuania. According to the examined death registers and graves, most of the deaths involved children in the age group defined as infants (under the age of one). Infant mortality was clearly very high and the figures are likely to be even higher since many of the deaths among children, especially newborns, were not recorded. The typical Polish family during the early modern period had four to five children. An average married couple had nine live births, but only four children reached adulthood. According to Tyszkiewicz (1981, 1983), more boys were born (105 boys for 100 girls), but more boys died in their infancy. Families with many children were more common in the countryside, especially among country gentry and well-off peasants. In urban areas the average family had two to three children. In the early modern period, the conditions in the Polish countryside deteriorated and child mortality rates increased. Although more children were born, fewer survived. During the 16th to 18th centuries, the average Polish family dwelling in a noble estate had 3.6 to 4.2 children. The earliest census that provides reliable data on infant mortality in early modern Poland was carried out in 1777. According to the census data and other available data for this period, it is estimated that infant mortality in Poland during the 17th and 18th centuries was about 350 per 1,000 live births. Child mortality up to the age of 15 was 550 and up to adulthood was 650 per 1,000 live births.<sup>43</sup>

2659

<sup>&</sup>lt;sup>42</sup> Schmelz (1971, pp. 13–25, table 1; pp. 28–33, table 3).

<sup>&</sup>lt;sup>43</sup> Data for this entire paragraph comes from Furtak (1937, p. 43), Koczerska (1975, p. 122), Gieyszterowa (1979, p. 169), Tyszkiewicz (1981, pp. 189–190; 1983, p. 172), Bartnicka (1992, p. 41) and Salmon-Mack (2012, p. 93). For more information on sources, see Żołądź-Strzelczyk (2010, 2015).

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	Infant and child mortal bir		
Age at death	Jewish population	Total population	Percentage difference
Just before or at birth	24	29	- 17
From birth to 1 year old	146	200	- 27
Total until 1 year old	170	229	-26
1–3 years old	91	107	- 15
3–5 years old	33	47	- 30
Total 1–5 years old	124	154	-20
Total from birth to 5 years old	294	383	- 23

Table 10. Infant and Child Mortality Rates per 1,000 Live Births among Jews and non-Jews in<br/>the Province of Posen, 1819–63.

Source. The calculations are based on von Bergmann's data (1883, p. 158 and Appendix F after p. 260).

		Infant mortality rates			
Years	Location	Jewish population	Total population	Percentage difference	
1819-63	Posen	170	229	-26	
1867–9	European Russia	154	272	-43	
1851	Bohemia	162	257	-37	
1851	Moravia	163	226	-28	
1822-40	Prussia	129	174	-26	
1819-70	East Prussia	136	208 <sup>a</sup>	-35	
1819-70	Westphalia	96	140 <sup>a</sup>	-31	
1857-70	Baden	186.5	275	-32	
	Average	150	223	-33	

Table 11. Infant Mortality Rates per 1,000 Live Births among Jews and non-Jews in<br/>Poland–Lithuania and Germany–Austria, 1819–70.

*Source.* For Posen, von Bergmann (1883, p. 158 and Appendix F after p. 260). For the total population in Russia between 1867 and 1869, Mitchell (2003, p. 122, table A7). For the rest of the data, Schmelz (1971, pp. 15–25, table 3). Wherever Schmelz provided data for two denominations (i.e., Catholics and Protestants), their average is calculated. <sup>a</sup>The figure refers to the non-Jewish population.

Unfortunately, there is little data on infant and child mortality prior to the 19th century that can facilitate a comparison between Jews and non-Jews for the entire Poland–Lithuanian area. One of the best sources of data is for the province of Posen, which was part of the Polish–Lithuanian Commonwealth until the partitions. In 1793, Posen came under the control of Prussia and its birth and death rates continued at levels that resembled those which we maintain are characteristic of stages 1 and 2 of the demographic transition. Looking at the data for the province of Posen between 1819 and 1863, Table 10 presents some striking findings: Jewish infant and child mortality per 1,000 live births was much lower than that of the total population. In fact, it was 27% lower for infants up to the age of one and 20% lower for children aged one to five. Child mortality among Jews was significantly lower for all ages and, on average, from birth to 5 years old it was 23% lower.

Similarly striking, for the province of Posen and for other areas prior to 1870, Table 11 shows infant mortality rates of 150 and 223 per 1,000 live births for the Jewish and the total populations, respectively. Therefore, according to this data Jewish infant mortality prior to 1870 was lower by about 73 per 1,000 live births—that is, 33% lower—than infant mortality in the total population. If we take the commonly held view that prior to the demographic transition the live birth rate

		Infant mortality rates		
Years	Location	Jewish population	Total population	Percentage difference
1870–1904 <sup>a</sup>	European Russia	133	265.0	-50
1878	Bavaria	152	296.0	-49
1871-3	Baden	182	277.5	-34
	Average	155.6	279.5	-44

Table 12. Infant Mortality Rates per 1,000 Live Births among Jews and non-Jews in<br/>Poland–Lithuania and Germany–Austria, 1870–1910.

*Source.* For the total population of Russia between 1870 and 1894, Mitchell (2003, p. 122, table A7). For the rest of the data, Schmelz (1971, pp. 15–25, table 1).

<sup>a</sup>The data refer to the years 1870-1897 and 1900-1904.

		Infant mortality rates		
Years	Location	Jewish population	Total population	Percentage difference
1926	Soviet Union	57	174	-67
1926-30	Poland	64	160 <sup>a</sup>	-60
1927-30	Lithuania	36	158	-77
1926-30	Latvia	43	93	-54
1921–9	Carpatho-	109	181	-40
	Russia			
1921-9	Bohemia	58	168	-66
1921-9	Moravia	69	168	-59
1920-9	Hessen	49	83	-41
1925-9	Bavaria	42	124	-66
	Average	58.5	145.4	-60

Table 13. Infant Mortality Rates per 1,000 Live Births among Jews and non-Jews in<br/>Poland–Lithuania and Germany–Austria, 1911–30.

Source. Schmelz (1971, pp. 15–25, table 1).

<sup>a</sup>The figure refers to the non-Jewish population.

was about 35 per 1,000 (see Table 6), then the lower infant (age 0 to 1) death rate is equivalent to saying that the birth rate was higher by 7.3%, or an additional 2.5 births per 1,000.

The lower Jewish infant death rate would then account for half of the difference in the natural population growth rate between the Jews and the total population. If we take the survival rate to age five from Table 11, we obtain a number of surviving children higher by 9%, which accounts for 70% of the higher rate of Jewish natural population growth that we estimate to be prior to 1870 at about 0.45% (see Table 6).

Interestingly, lower infant mortality among Jews is traceable in a single city with extant data, such as 19th-century Torun (Zielińska, 2012). There, the Jewish infant mortality rate was 19.1–28% until the 1880s, and Jewish child mortality was 48.8–126.8 per 1,000 live births between 1871 and 1914. Among different Catholic parishes, the average was around 113 infant deaths per 1,000 live births between 1790 and 1800, rose to 290–330 deaths per 1,000 live births in the period of urban development between 1861 and 1870 and decreased to 144–192 in different parishes in the first decades of the 20th century.

As for stages 3 and 4 of the demographic transition, Tables 12 and 13 show that Jewish infant mortality rates were again significantly lower than those for non-Jews and the percentage difference was even higher than in the earlier periods. In eastern European regions prior to 1920,

the rates are similar to those of stage 1 of the demographic transition. It is also worth noting that infant death rates decreased earlier in Germany–Austria than in other regions.

Remarkably, the same patterns persisted even in the early 20th-century United States, as shown in the studies by Condran and Kramarow (1991) and Condran and Preston (1994), which represent the most up-to-date demographic analysis of child mortality among Jews in comparison to the total population up to 1920, when modern medical services became widely available. Condran and Kramarow's main contribution is their analysis of the 1910 U.S. census that sheds light on the massive wave of immigration to the United States during the late 19th and early 20th centuries and provides individual and household-level information on the respondents. They defined ethnic groups using census information on mother tongue or place of birth, or a combination of the two.<sup>44</sup> Their goal was to identify the covariates of child mortality and behavior of Jewish households relative to other ethnic groups. They focused on the cities with the largest Jewish populations—that is, New York, Chicago and Philadelphia. The census data indicate that the rate of child mortality among Jewish immigrants was higher than that of native-born whites but *lower* than that of other immigrants, such as Italians and Poles.

The dependent variable in their regression is an index of child mortality developed by Trussell and Preston (1982), whereas the covariates are several independent variables that are meant to capture the main hypotheses suggested by demographers to explain infant mortality. The control variables include the following: ethnic group dummies, length of residence, naturalisation, ability to speak English, husband's occupation, home ownership, husband's employment, mother's literacy and labour force status, and overall fertility. Although most of the covariates have the right sign and many are significant, the multivariate regression analysis is unable to eliminate the Jewish mortality advantage. That is, the dummies for Jews and Jewish East Europeans have large and significant negative coefficients of -0.35 and -0.27, respectively (native-born white is the default group), indicating that Jews had 27-35% lower child mortality conditional on behavioral variables and other indicators. In addition, it should be emphasised that only for Jews does the infant mortality decrease with the number of years since immigration. For all ethnic groups the fact that the mother worked increases infant mortality, yet for Jews it had no significant impact. Finally, Condran and Kramarow (1991, pp. 251-3) argue that 'the data do not support the notion that scientific medicine was an important determinant of low Jewish mortality. The explanation for their low mortality rate in the early twentieth century should reflect the fact that the Jews had mortality advantages in Europe well before the turn of the century and in Eastern Europe at mid-nineteenth century that were certainly unrelated to medical advances or their earlier adoption by Jews'.

Subsequently, Condran and Preston (1994) study the behavioral aspects of infant and child mortality. To this end, they compare the data on French Canadians and Jews using the data from the 1910–17 census. The rates of infant mortality were found to be 173.3 per 1,000 live births for French Canadians and 53.5 per 1,000 live births for Jews.<sup>45</sup> The most striking evidence they found was the difference in the prevalence of breastfeeding and whether mothers stayed at home before and after birth.

Quite strikingly, the data we presented in this section on Jewish infant and child mortality rates in eastern and central Europe in the early modern and modern periods are similar to those

<sup>&</sup>lt;sup>44</sup> Their sample includes all Jewish immigrants who reported Yiddish as their mother tongue. Poles, like Jews, were identified exclusively by their mother tongue. Italians, in contrast, were those born in Italy and whose mother tongue was Italian while the Irish were identified as those born in Ireland, regardless of their mother tongue.

<sup>&</sup>lt;sup>45</sup> Condran and Preston (1994, p. 175, table 8.1).

presented by Condran and Kramarow (1991), as well as to some data for the United States and Europe, and in particular New York, Amsterdam, London, Rome and Florence prior to 1910.<sup>46</sup> According to their results, Jews in all locations had infant mortality rates that were lower by between 20% and 60%—similarly to what we presented in Tables 9–13 for Germany–Austria and Poland–Lithuania during the early modern and modern periods. During the period 1885–9, the infant death rate per 1,000 live births in the United States was 81 for Jews and 167 for the general population. These figures are similar to those for Frankfurt (Appendix A).

These findings beg the question of which were the underlying driving forces behind this significant differential between Jewish and non-Jewish infant and child mortality rates in the early modern and modern periods. Was it 'nature' (genetic factors) or 'nurture' (cultural values, religious norms and social customs)?

#### 4. Childcare among Jews and Non-Jews in Historical Perspective

The comparatively lower infant mortality rate among Jews documented above has received much attention among demographers and historians (e.g., Schmeltz, 1971, p. 37; Hundert, 1986, p. 19; Zielińska, 2012, p. 217). They maintained that childcare practices and other factors that influenced the environment in which Jewish infants and young children were born and raised accounted for the lower Jewish infant and child mortality rates. According to Condran and Preston (1994, pp. 176–8), the studies of the Jewish and non-Jewish populations in the United States during the period 1900–30 indicate that three main factors likely determined lower infant and child mortality rates among Jews: (*i*) a higher level of parental devotion manifesting itself in mothers staying at home rather than working, continuous breastfeeding for longer duration, low rates of desertion by fathers and smaller percentage of single mothers; (*ii*) a higher level of food hygiene due to the practice of frequent hand-washing and cleaner food at the table; and (*iii*) higher access and acceptance of medical knowledge.

These comparatively lower rates raise numerous questions. The most important one pertains to the historical roots of the unique behaviour patterns among Jewish immigrants in the United States prior to the accumulation of medical knowledge in the late 19th century and the first half of the 20th century. In particular, we will focus on the practice of breastfeeding since among historical demographers there is consensus that breastfeeding is a key factor in determining infant mortality (Quandt, 1995, p. 131; Lokke, 2002, p. 128).<sup>47</sup>

Our main hypothesis is that social and cultural norms that were shaped by religion were pivotal in influencing the way Jews and non-Jews took care of their infants and children. Hence, we examine the main religious norms and known practices related to, and indicating the importance of, early childcare among Jews from the biblical and Talmudic periods to early modern and modern times. While avoiding generalisations and distinguishing between descriptive and prescriptive sources, we use various available sources to discuss childcare rules and practices related to childbirth, postnatal care, breastfeeding, contraception, marriage and remarriage.

<sup>&</sup>lt;sup>46</sup> Condran and Kramarow (1991, pp. 225–27, table 1).

<sup>&</sup>lt;sup>47</sup> For a detailed comparison of norms and practices pertaining to breastfeeding among Jews and non-Jews in the Polish-Lithuanian Commonwealth during the early modern and modern periods, see Vaturi (forthcoming).

#### 2664

### 4.1. Childcare Norms in Biblical and Talmudic Sources

The ideal of fulfilling a child's basic physical, emotional, spiritual, social and intellectual needs is deeply rooted in Judaism. This is evident in biblical references to the importance of childrearing, motherly love and a father's responsibility. The Bible imposed a commandment to procreate on men and suggested that the fruitfulness of a family is proof of God's blessing. It prescribed special care for a newborn, and emphasised the importance of breastfeeding and its priority over all other domestic duties of a woman. Following the theological concept that all God's creations had purpose, the Bible related to the female breast as having been created for breastfeeding. It viewed milk-producing breasts as a blessing and dry breasts (and a miscarrying womb) as the greatest curse. Consequently, if a woman could not nurse her baby, the Bible allowed for the employment of a wet-nurse to fulfil the infant's nutritional needs and prescribed to treat her with respect.<sup>48</sup>

During the first five centuries of the first millennium, the Talmudic literature followed in the footsteps of the biblical approach. It praised procreation and discussed a child's needs, legal status, rights and health. It stated that a man who did not marry and had no children was committing a sin of omission and could be considered dead.<sup>49</sup> The Talmudic tradition of 'the sanctity of life' led to a closer watch over children, whereas its emphasis on father's duty to educate his son created a greater awareness of the parent-child relationship (Ta-Shma, 1991, pp. 265–6).

Although the specific term 'child welfare' was probably not used until the time of the Geonim in the last two centuries of the first millennium, the idea itself seems present in the Talmudic rulings regarding children.<sup>50</sup> For example, the Talmud allows a desecration of Sabbath if the care of a newborn or a nursing lying-in mother demands it. Furthermore, Talmudic discussions of childcare, divorce, breastfeeding, remarriage, education or child custody suggest a notion that a child's welfare was above the interests of the father and mother (Shochetman, 1977, p. 290).

While elaborating on the mandatory care to be provided to infants (e.g., *Shabbat* 147b), the Talmud lists three major principles in nurturing their development, as reflected in the advice given by a nanny of Abaye (one of the Amoraim sages during the fourth century):

The care and development of the infant requires first that he be bathed and anointed with oil, later, when he grows older, that he be given eggs and dairy products; and when he grows older still, that he be given the freedom to play with toys.

(Mishnah, Yoma 78)

That is, personal hygiene, proper nutrition and developmental play have been set at the core of infant and childcare among Jews since early times.

Following the Bible, the Jewish sages and rabbis whose debates and rulings produced the Jewish law code (*halacha*) also elaborated about breastfeeding and emphasised its importance as the best possible source of nourishment for infants. To ensure the mother's commitment, the Mishnah granted the nursing mother some special privileges, and made breastfeeding one

<sup>50</sup> Mature newborn: one with fully developed nails and hair. The relevant passages are in Mishnah, *Yevamot* 80b; *Sabbath* 129a, 129b.

<sup>&</sup>lt;sup>48</sup> The biblical passages (from the King James version) prescribing such norms are *Deut*. 11:18; *Proverbs* 1:8; *Genesis* 49:25, 1:28, 9:7, 49–22; *Ezekiel* 16:4; *Numbers* 11:12; *Samuel* 1: 12–17, 21–23; *Hosea* 9–14; *Exodus* 2: 7, 9; *Psalms* 127:3. See also Feldman (1917, p. 180).

<sup>&</sup>lt;sup>49</sup> Talmudic saying based on the lament of barren Rachel in *Genesis* 30:1. See Schenker (2011, p. 343). According to Beit Shamai, a man was obligated to have a minimum of two sons. Beit Hillel ruled that the minimum was one son and one daughter (Mishnah *Yevamot* 6, 6).

of a woman's duties to her husband. The Talmud expressed the most positive attitude towards breastfeeding and stated that it was natural for a woman to nurse her child (Eidelman, 2006, p. 39). It discussed the qualities of breast milk, patterns of breastfeeding and the status of the breastfeeding mother. For example, the Babylonian Talmud ruled that the work obligations of the nursing mother should be reduced to preserve the quantity and quality of milk, and stated that mother's diet should not include foods that might affect her milk. The Jerusalem Talmud prescribed that a baby must nurse every hour of the day, and at night it should nurse from the breast of its mother until the morning. Furthermore, the Tosefta prescribed that the nursing woman should not be allowed to do other jobs, to get engaged or to get married, since the baby has a right to nurse all day.<sup>51</sup>

One of the most discussed aspects of breastfeeding during the Talmudic period was the period of nursing. While Rabbi Joshua spoke about a long duration, even up to five years, and Hillel's disciples ruled for 18 months, the Talmud in general prescribed that a baby should nurse for 24 months. Although the sages acknowledged that a completely healthy child could be weaned before, they stated that weaning children before they reached two years might cause a risk to their health.<sup>52</sup>

The child's best interest was also the driving force behind halachic rulings ensuring the provision of breast milk for every baby. The school of Hillel ruled that if the mother refused to nurse the infant, she could be forced to do so, and a husband could compel his wife to nurse the baby. Moreover, it recommended that if a woman was ill, had died or her status prevented her from nursing, then a wet-nurse was to be hired. The nurse herself must be given abundant food and could not nurse more than one child. Rulings in the Tosefta permitted heathen wet-nurses to be employed. It was customary to give the child to a wet-nurse in the parents' own house, and the Mishnah further required that a heathen wet-nurse would nurse the baby in the domain of the baby's father to minimise the risk that the baby could be hurt.<sup>53</sup>

Childcare—understood as the provision of best nutrition and care—played a central role also in the halachic rulings concerning procreation and contraception. In general, Jewish religious laws expressed the idea that nursing and caring for a baby was more important than the commandment to procreate for men and a new pregnancy. Breastfeeding, including the provision of breast milk and care for its quality and quantity, was so important that it became one of the three cases in which the use of mechanical prevention of pregnancy was permitted: <sup>54</sup>

Three [categories of] women may use an absorbent in their marital intercourse. A minor, a pregnant woman and a nursing woman... A pregnant woman because [otherwise] she might cause her fetus to degenerate into the shape of a sandal fish. A nursing woman, because [otherwise] she might have to wean her child prematurely and this would result in his death.

(Talmud, Yevamot 12b)

<sup>51</sup> Preuss (1993, p. 405). The relevant passages are: *Kethuboth* 60b; *Jerusalem Talmud Berachot* 3a, 9, 14d; *Kethuboth* 5:5, 9, and *Nidah* 2, 4; *Sotah* 4:3.

<sup>52</sup> *Kethuboth* 60a, 60b; *Jerusalem Talmud Niddah* 1, 49b; *Berachoth* 10a, *Yomah* 75a, *Yevamot* 75a. R. Eliezer R. Joshua said: [He might be breast fed] even for four or five years. If however, he ceased after the twenty-four months and started again he is to be regarded as sucking an abominable thing (unkosher insect). A breastfeeding period of three years is mentioned in the book of Maccabees (*Second Maccabees* 7:27).

<sup>53</sup> Feldman (1917, p. 178) and Preuss (1993, p. 408). The relevant passages are: *Kethuboth* 59b, 60b; *Yevamot* 42a, b; *Tosefta, Niddah* 2:4, 5. Orphan babies were often nursed by neighbourhood women in turn or were fed with milk and eggs, which were considered the second-best source of nutrition for infants.

 $^{54}$  'Absorbent' translates the Jewish word *Moch*—a female barrier contraceptive device, usually made of hackled wool or flax. Although breastfeeding was known to have a contraceptive effect, the risk of pregnancy was recognised.

The rabbis understood that while a new pregnancy would reduce the quality and quantity of the mother's milk, it could cause premature weaning and thus endanger the baby. They were probably aware of the fact that lactation only reduced the possibility of a new pregnancy (especially during the first three months), but did not eliminate it, and hence allowed mechanical contraception during lactation to preserve the mother's ability to nurse. Although it was not stated explicitly, by fostering a prolonged period of breastfeeding and supporting it with contraception, the rabbis had created a mechanism of spacing between children and thus contributed to each child's welfare. Nowadays, medical knowledge recognises that there is a connection between long birth intervals and low infant mortality.<sup>55</sup>

A child's best interest also seems fundamental in halachic rulings regarding remarriage. Scholars and rabbis feared that a newly married woman would devote more attention to the new husband than to the baby, thus causing harm to his or her development. The rabbis also worried that the stepfather might not provide for the sustenance of the child. Hence, the halacha prohibited a nursing mother from remarrying until the baby reached the age of 18 or 24 months. This prohibition was also relevant in the case of pregnant or nursing widows.<sup>56</sup>

Similarly, a child's welfare was crucial in halachic laws regarding a replacement of breastfeeding mother or wet-nurse. The argument was that an infant who was already used to breastfeeding from the mother ('knows her'), should not be given to a wet-nurse because of 'the danger to the baby'. It is not clearly stated whether the danger was due to the change of milk, the risk that the baby might refuse to suck from a woman he or she was not used to, or the separation from the mother and her care. The age when infants could recognise their mothers by smell and taste and might refuse to be nursed by other women was set at 50 days after birth. Furthermore, the idea of remaining with one wet-nurse was reinforced by the ruling that if a baby was nursed by another woman, then he or she cannot be given back to the mother, and by forcing a divorcee to continue nursing if the baby already 'knows her'.<sup>57</sup>

In addition to ruling on early childcare, the scholars and rabbis of the Talmud also acknowledged that childhood was a distinct and dynamic phase in human life. Parents or the community were considered responsible for providing children with not only food, clothing and protection but also with education suitable to their age and cognitive development (Botticini and Eckstein, 2005, 2012).<sup>58</sup>

To sum up, in many laws resulting from the debates and rulings in the Talmud, a child's welfare seemed more important than the mother's. Moreover, in addition to ruling on children's nutrition, the halacha had provisions to ensure the child's emotional and cognitive development in different stages of childhood. Finally, children's education was considered of paramount importance to nurture and transmit values according to which Jewish children were expected to live and to grow into adulthood.<sup>59</sup>

<sup>55</sup> See Lithell (1981) on the connection between a long birth interval and low infant mortality. Modern research into the causes of the rapid decline in infant mortality in England and Wales during the period 1861–1921 showed that the decline in fertility increased intervals between successive births, which in turn helped to reduce infant mortality (see, for example, Woods *et al.* (1989)). With regard to parental responsibility, see, for example, *Kiddushin* 30b and Dorff (2012, p. 33).

<sup>56</sup> Zimmerman (1999, p. 54).

<sup>57</sup> Shochetman (1977, p. 291). The relevant passages are: Yevamot 42a, b; Kethuboth 59b, 60a; Tosefta; Niddah 2, 4; Kethuboth 5:5.

<sup>58</sup> The relevant passages are in *Shabbat* 152, 119; *Kethuboth* 49; *Sukkah* 42; *Shabbat* 121. See Aries (1962) and Kraemer (1989, pp. 70–71).

<sup>59</sup> The relevant passages are in *Sukkah* 42; *Shabbat* 121.

#### 2019] JEWISH CHILD CARE AND HUMAN DEVELOPMENT

#### 4.2. Childcare Norms and Practices during the Middle Ages

In general, Jewish scholars and rabbis in the Middle Ages continued to elaborate on the approaches to childcare as prescribed in the Bible and the Talmudic literature. On the one hand, the commandment to procreate was regarded as a central religious obligation of a man, and one was considered pious if he had children. On the other hand, the birth of a child and childcare were seen as essential to a woman's life. The sources reveal that although men were not present during the actual act of delivery and they related to the issues of pregnancy and labour indirectly in discussions of various *halakhot*, they did know a lot about pregnancy and the process of childbirth. In their remarks regarding early childcare, the concern for the infant remained a central issue.<sup>60</sup>

Among the Jewish communities living in western and central Europe during the Middle Ages, pregnancy was generally viewed as a dangerous period. Thus, a pregnant woman was expected to undergo a number of checks by a midwife and to care for the fetus's needs as soon as she felt first movements in her womb. Facilitating the birth of a child justified the desecration of Sabbath. Immediately after the birth, the umbilical cord was ligatured and cut, and the baby was bathed, rubbed with salt and wrapped in swaddling clothes. A mother and her baby were usually taken care of by other women during the first few days after labour. The birth of a child was an important family and communal event. The birth of a boy was celebrated during the ceremony of circumcision, which, due to its importance, was carried out in a specially prepared synagogue.<sup>61, 62</sup>

As for breastfeeding, medieval Jewish scholars maintained that breast milk remained crucial to a child's survival. They also accepted the halachic ruling of 24 months as the minimal period of breastfeeding, and it seems that this ruling was observed at least when mothers nursed their own children. In some unusual cases, children were nursed for even longer, until the age of four or five, and some were weaned early and given food prepared especially for them. The 24-month rule was prescribed for both boys and girls, although in practice there might have been differences. Furthermore, special care for a nursing mother was extended during the twelfth century by one of the most famous scholars in Judaism, rabbi Moshe ben Maimon (Rambam), who ruled that 'As long as a woman is nursing a child, her husband must add wine and other things to her maintenance that are beneficial for her milk'.<sup>63</sup>

Rabbis in the Middle Ages continued the Talmudic policy regarding the hiring of wet-nurses. They ruled that a wet-nurse should be brought to a mother's home, and despite some exceptions this was the prevailing practice. One of the major disagreements among Jewish scholars regarded the employment of a non-Jewish wet-nurse. Their rulings varied, probably depending on time and place, but the majority emphasised the need to supervise Christian wet-nurses to ensure the physical and emotional well-being of the baby and limit his or her exposure to non-kosher diet or Gentile traditions. Although medieval sources frequently mention wet-nurses and provide a

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2667

<sup>&</sup>lt;sup>60</sup> Baumgarten (2005, pp. 42–52, 69, 73).

<sup>&</sup>lt;sup>61</sup> Not much is known about the profession of midwife or their training in those days. A midwife, also called 'a wise woman', was the most important assistant during the pregnancy and labour. They did not have formal training. From the descriptions regarding midwifes, the profession seemed to be important and respected. In medieval Jewish Europe, employing Christian nurses as midwives was a common practice (Baumgarten, 2007, pp. 121–125).

<sup>&</sup>lt;sup>62</sup> Rashi, *Genesis* 49, 25; Levin (1987, pp. 3–38); Baumgarten (2000, p. 67; 2005, p. 85, p. 86 fn. 227, pp. 97, 98, 156); Feldman (1917, p. 176); *Sabbath* 66b. Many books have been written describing the ritual (Baumgarten, 2005, pp. 97–98)

<sup>&</sup>lt;sup>63</sup> Baumgarten (2007, p. 128); Rambam, *Ishus* 21:11. In Christian society, girls were probably weaned six months earlier than boys (Matthews Grieco, 1991, pp. 45–47). Sages' rulings may suggest that (*i*) either it was important to keep to the 24-month period or (*ii*) that the sages were trying to eliminate the practice of favoring boys.

lot of details regarding the terms of their employment, it is not possible to assess to what extent medieval Jewish families hired non-Jewish wet-nurses.<sup>64</sup>

When discussing wet-nursing, Jewish scholars expressed deep concern for the baby's health and welfare and applied the Talmudic view that a change of a milk source might endanger a baby and thus parents should avoid changing wet-nurses. Consequently, the prevailing practice was that if a wet-nurse was hired, her contract was for a prolonged period during which she had to avoid pregnancy. An unmarried wet-nurse had to swear that she would not marry and a married wet-nurse had to swear that she would not get pregnant. Again, wet-nurses were allowed to breastfeed only one baby at a time.<sup>65</sup>

The problem arising from a new pregnancy and the changes of a milk source was also relevant to the discussions of contraception. While Jewish scholars usually dismissed the possibility of abstention during the breastfeeding period, some argued that nursing women must use some form of contraception to prevent an additional pregnancy to protect the life of the infant. One of the towering scholars in medieval Europe, Rabbenu Tam (12th century), stated that 'a nursing woman must use some form of contraception, to ensure the life of her living child, who was dependent on her for his/her nourishment.' Consequently, contraception was allowed within the frame of a family, but it is not possible to assess how widespread this practice was. When used, it helped to establish a birth interval, which in turn likely reduced the rate of infant mortality.<sup>66</sup>

In medieval Ashkenaz, many Jewish early childcare practices were quite similar to those of the local Christian population. For example, breastfeeding was part of Christian norms and the period of nursing was similar in Jewish and Christian families. Moreover, the Catholic Church exempted nursing women from fasting on Lent probably to secure their lactation abilities and to protect the infant. Still, it seems that Jewish scholars discussed early childcare more frequently and minutely than contemporary Christian laws, which mentioned breastfeeding mostly when discussing its contraceptive effects leading to disapproval of non-procreative sexual intercourse with a nursing woman.<sup>67</sup> As in Jewish early childcare, Christian norms described a new pregnancy as 'corrupting and poisonous' to breast milk and thus dangerous to the breastfeeding infant. Yet, in contrast to the contraceptive measures allowed by Jewish rabbis, the Church generally recommended sexual abstinence or placing the child with a wet-nurse, so that the husband would not seek out another woman. Of course, in practice, besides common employment of wet-nurses, Christian women and men did use various contraceptive methods.<sup>68</sup>

Church legal codes mentioned the care of pregnant mothers differently than it was in the Jewish sources. For example, the idea of reducing a pregnant woman's work load was not codified. Today it is known that pregnant women from peasant families who continued with a heavy work load were at risk of giving birth to an underweight baby with a low chance of survival during the first month. In fact, a low birth weight resulting from the mother's malnutrition or heavy work during pregnancy (especially in the field during the summer) was an important factor in high infant mortality rates.<sup>69</sup>

<sup>69</sup> Lithell (1981, p. 184).

<sup>&</sup>lt;sup>64</sup> Preuss (1993, p. 408); Goldin (2004, p. 29–30); Baumgarten (2007, pp. 133, 139–42).

<sup>&</sup>lt;sup>65</sup> For examples from medieval responsa see Baumgarten (2007, pp. 129–30).

<sup>&</sup>lt;sup>66</sup> Baumgarten (2007, pp. 145, 147). See the discussion above on contraception in biblical and Talmudic sources.

<sup>&</sup>lt;sup>67</sup> Brundage (1988, p. 182); Benedictow (1989, p. 246); Salmon-Mack (2012, p. 191). The contraceptive powers of lactation were not fully understood. For example, it was not known that frequent breastfeeding is necessary to prolong the contraceptive effect of breastfeeding (Lunn *et al.*, 1980; Konner and Worthman, 1980).

<sup>&</sup>lt;sup>68</sup> Crawford (1981, p. 52); Brundage (1988, pp. 182, 186); Jacquart and Thomasset (1988, p. 72); Wiesner (2000, p. 85).

2019]

In his famous book published in 1962, *Centuries of Childhood*, Aries maintained that during the Middle Ages childhood was not recognised as a distinct phase in human life, which emerged only with the development of the modern concept of a family emphasising parental love. Also, according to Aries, the medieval civilisation in Europe had no idea of education, and parents facing high infant and child mortality rates tended to view their surviving offspring as little adults. The decrease in child mortality rates in the 19th century led to an increase in affection toward and interest in children, and standardised schooling fostered the production of childhood culture. Subsequently, scholars have criticised some of Aries' most famous arguments and have shown that, in contrast to his view, there was a concept of childhood in the Middle Ages. While some scholars have pointed to some similarities in medieval and contemporary parental treatment of their children. In comparison with Jewish sources, in medieval Christian Europe there was special treatment for children, especially in the infant stage, but it was not as structured and child-oriented as in Jewish laws and practice, which promoted the well-being of a child and valued childhood for its own sake.<sup>70</sup>

#### 4.3. Childcare Norms and Practices during the Early Modern Period

Information on norms regulating childcare and breastfeeding in the early modern Jewish communities of central and eastern Europe comes from halachic books and legal codes, as well as from *responsa* and *sifrei musar*. In the discussions regarding marriage patterns, breastfeeding, mother's privileges or divorce, those sources generally continued the Biblical and Talmudic rulings and practices concerning childcare while accommodating them to the eastern European social and economic environment.<sup>71</sup>

In its discussion of remarriage, the legal code Shulchan Aruch followed the halachic law known as *meyaneket chavero* and ruled that a widow could not remarry within 24 months from the birth of her child even if she gave the child to a wet-nurse (and even if the wet-nurse committed to a period of two years) or weaned it earlier. However, while recognising that a child brought up in a two-parent household has a better life outcome than one brought up by a widow, it suggested some ways to help women to remarry.<sup>72</sup>

The same legal code also continued to advocate breastfeeding as the best source of nutrition. It ruled that 24 months is the minimum period of breastfeeding, whereas five years is the maximum. Furthermore, it reaffirmed the Talmudic principle called 'knowing her' according to which a child of nursing age who 'knows his or her mother' is not to be given to another woman, since the trauma of separation might harm the child. Additionally, it adhered to the rulings of the Talmudic literature and to Rambam's aforementioned ruling, and advocated special care for nursing mothers as a source of breast milk. Also, when discussing divorce, the Shulchan Aruch emphasised the child's best interest: <sup>73</sup>

<sup>&</sup>lt;sup>70</sup> Aries (1962, especially p. 411); Kanarfogel (1985); Goldin (1989, 2004); Ta-Shma (1991); Cunningham (1995); Orme (1995, 2001, especially p. 274).

<sup>&</sup>lt;sup>71</sup> Yosef Karo's Shulchan Aruch was first published in 1563 and printed in Venice in 1565.

 $<sup>^{72}</sup>$  A widow or a divorcee must wait 90 days before she remarries so that she makes sure she is not pregnant (ShulchanAruch, *Even HaEzer*, 13). Regarding a man, Shulchan Aruch advised that one should remarry to continue to procreate and ensure the survival of at least one son and one daughter (Shulchan Aruch, *Hilkhot Pirya Urviya* 1:5). Regarding the ways to help widows remarry see Shulchan Aruch, *Even HaEzer* 13.

<sup>&</sup>lt;sup>73</sup> For a discussion of the duration of breastfeeding, see also Steinberg (2003).

A divorcee is not provided food, even if she is breastfeeding her child, but he gives her, in addition to her hire, things that the child will need, [such as] clothes and food and drinks and ointment and things like that, but a pregnant [divorcee] gets nothing.

(Shulchan Aruch, Even HaEzer 82:6).

How did Jewish and non-Jewish norms and practices compare in the early modern period when it comes to infant and childcare? We compare them in light of modern medical knowledge. We consider five factors that we maintain contributed to the relatively lower infant and child mortality rates among Jews: (*i*) postnatal isolation and 'in-home' wet-nurse, (*ii*) remaining with one source of breast milk, (*iii*) first feeding, (*iv*) weaning, and (*v*) family support (kest) and some marriage patterns.

#### (i) Postnatal Isolation and In-Home Wet-Nurses

Modern medical science shows that non-exposure to an unfamiliar environment preserves infant's immunity and contributes to his or her healthy development. For the first weeks after birth, newborns are protected by antibodies received through the placenta (IgG). Those antibodies are conditioned by the environment the mother lives in and are responsive only to the microorganisms to which she has been exposed.<sup>74</sup> Thus, the transplacental immunity protects the baby from familiar germs, especially some viral infections, but it is not sufficient to fight unknown germs to which the baby is exposed with a change of environment.

Consequently, in addition to other side effects, moving babies from their mothers' environment, for example to a wet-nurse's house, may endanger them with infections en route and by exposing them to new surroundings.<sup>75</sup> Although it is impossible to estimate how many infants died due to their immune systems being attacked by a change in the environment in which they lived and how many died simply of negligence, based on current medical knowledge one can speculate that a community which observed postnatal isolation and preferred to employ 'in-home' wet-nurses had a lower rate of infant mortality than a society used to sending their babies to a new environment right after birth.

*Jews*. In Jewish society in Poland–Lithuania, the halachic positive approach to breastfeeding was generally accepted, whereas giving birth and childcare remained the central elements of a woman's life and her primary religious purpose. During the vulnerable postnatal period, the new mother and the newborn were usually well taken care of, and, when possible, they stayed home for four weeks until the ceremony of Shabbat Yeziat ha-Yoledet. However, when a mother died, when she could not or refused to breastfeed, or sometimes when the mother was a widow and wanted to remarry or had to plan in advance her next pregnancy, a wet-nurse was hired. Since finding a Jewish wet-nurse was rather difficult, the legal code Shulchan Aruch allowed the baby to be breastfed by a Gentile woman, but simultaneously added a strict rule to bring a wet-nurse to the mother's home for supervision. Consequently, the Jews preferred to employ in-home wet-nurses and tried to avoid sending their babies to a wet-nurse's house, which was a more common practice among Christians.<sup>76</sup>

<sup>&</sup>lt;sup>74</sup> Chandra (1978); Matthews Grieco (1991, p. 43).

<sup>&</sup>lt;sup>75</sup> A study of 15th-century Florence showed that the mortality of children sent out to nurse by their families hovered around 17.9% (Matthews Grieco, 1991, p. 42).

<sup>&</sup>lt;sup>76</sup> For example, popular behavior manuals promoted a positive image of a woman who prays to become a mother and to breastfeed, and stated that a woman who gives birth, nurses her babies and provides for all their needs follows the way of the Creator and deserves eternal life (Fisher 2005, pp. 199–212 and Chovav 2009, pp. 154, 164). During this time, the

Although there are no statistical data on Gentile wet-nurses employed in Jewish houses in Poland–Lithuania, the fact that the practice prompted harsh opposition from both the Catholic Church and the Polish authorities, suggests that it was quite common. This practice continued despite the Church's repetitive attempts to impose fines on Jews hiring Christian wet-nurses, indicating that Jewish parents considered wet-nursing an important way of securing the best nutrition for their infants. Furthermore, the recognition of the Jewish authorities for the practice in face of the laws and prohibitions issued by the Polish Parliament and the king, suggests that the practice was viewed as necessary to continue. Hence, in light of modern medicine, it seems that the halachic rule and the consequent practice not only protected babies from negligence but incidentally also reduced the exposure of the infant to pathogens en route and to germs of a new environment. Thus, it might have contributed factors to comparatively lower infant mortality rates among Jews in Poland-Lithuania.<sup>77</sup>

*Christians*. In early modern Christian Europe, a mother who could produce her own milk was expected to breastfeed. However, while lactation was perceived as hindering new pregnancy and the Church continued to condemn non-procreative intercourse and contraception, many middle and upper-class women sent their babies to wet-nurses and thus could avoid abstinence. In his 15th-century pedagogical treaty, German priest Konrad Bitschin complained that, in his time, more and more mothers did not want to nurse their babies and gave them to wet-nurses to satisfy their sexual drive. Sending babies for nursing offered a solution not only to devote Christians or in the obvious case of a mother's death, but also to those who wanted to guarantee the economic strength of the family with as many children as possible and to wives of merchants and artisans who wished to return to work for economic reasons. Hiring an 'in-home' wet-nurse was usually practiced by the rich families that often abandoned maternal breastfeeding for the sake of shortening birth intervals and increasing fertility rates. Urban families typically sent their infants to wet-nurses in rural households.<sup>78</sup>

Wet-nursing was most common in France, where its popularity continued until the late 19th century. There, most of the babies were sent to the wet-nurse's house and their mortality rates reached 70–80% depending on the region. High mortality rates also occurred among infants in early modern England, where it was common to send babies from the large cities to nearby

mother was usually visited by other women from her family or neighbourhood, who often brought her presents, helped with household chores and ate with her. Even if a woman got up from bed earlier, she and the baby were usually waited upon by other women during the first few days after labour (Baumgarten, 2005, pp. 86, 156). The postnatal rituals and isolation period are known from the late medieval German communities, but they were attested in early modern Polish sources as well (Baumgarten, 2007, p. 105; 2008; Chovav, 2009, p. 171). The mother was absent during the ceremony of circumcision (Chovav, 2009, pp. 176–77). In Christian society, the attitude towards remarriage was rather ambivalent, and hiring a wet-nurse was not related to the subject. Moreover, according to Wiesner (2000, p. 91), the law in the early modern period might also make remarriage of a widow less attractive by stipulating that a widow could lose all rights over her children through remarriage, including the right to see them. Jewish women were permitted to nurse only their own baby on Sabbath (Kalik, 2016). According to Baumgarten (2005, p. 184), also in medieval times Jewish mothers did not send their babies to a wet-nurse's home so as to be able to supervise the nursing.

<sup>77</sup> The Church fought against the Jewish employment of wet-nurses because they had to be brought to, and often lodge in, Jewish homes (Lipski, 1737, pp. 73–7). Müller (1978, pp. 111–15) mentions that Jews hired wet-nurses despite Church prohibitions. For royal legislation, see Dubnow (1925, p. 121, no. 512) and *Statut Krakowskiej Gminy Żydowskiej* (2005, para. 91:75). For the related resolutions of the Council of Lithuania see Dubnow (1925, p. 35, no. 145). For the related resolutions of the Council of Four Lands see Halperin (1945, pp. 483–7). Relevant information can also be found in Fildes (1986, p. 200; 1988), Salmon-Mack (2012, p. 189).

<sup>78</sup> Other views of breastfeeding as physically debilitating or dangerous for the mother were rarely expressed. Despite church rulings, different contraceptive methods were used. Still the extent of the practice during the early modern period is unknown (Arnold, 1980, pp. 151–2). Demographers have estimated that, on average, one out of ten births entailed maternal death (Flandrin, 1976, ch. 10). For more information on maternal death rates among Christians, see Matthews Grieco (1991, p. 34), Keeble (1994, p. 169), and Wiesner (2000, p. 87).

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2671

villages. In 18th-century north Germany (e.g., Hamburg), where infants were usually breastfed by their mothers, high mortality rates were common for foundlings who were sent away to wetnurses. In Poland, the sources before 1750, such as pedagogical treatises and herbalia, usually advised mothers to breastfeed their babies:

Ladies mothers, especially those of good families [aristocrats] would make good, if they nursed and bring up their kids by themselves.

(Mikolaj Rej, 1956, p. 32)

They also recommended using a wet-nurse in case of problems but did not advise bringing her home.<sup>79</sup>

Although it is impossible to estimate the popularity of wet-nursing among Christian families in the early modern period, the information preserved in contemporary sources shows that burghers in pre-modern Polish cities hired wet-nurses much less frequently than in France. Examples also suggest that those who could hire a wet-nurse were usually from noble or rich burgher households and, in contrast to France, they usually brought her home to live with them and function as a nanny. The upper classes also observed postnatal isolation and ended it with a celebrated visit to the church called 'churching'.<sup>80</sup> In contrast, hiring a wet-nurse or isolating the mother and the newborn were not common among poor rural households, which constituted the majority of the Polish–Lithuanian population. For women in the countryside it was popular to nurse foundlings sent to them by urban households or to leave their babies with other mothers in the family or village and to go in search of employment as wet-nurses.<sup>81</sup>

#### (ii) Remaining with the One Source of Breast Milk

Modern research has found evidence linking an increase in infant mortality to the switching of wet-nurses. For example, examining the cases of infants sent to wet-nurses from a sample of wealthy Florentine families in the early 15th century, Herlihy and Klapisch-Zuber (1985) discovered that the number of deaths was directly related to the switching of wet-nurses. The frequent deaths of infants following the replacement of the wet-nurse suggest that this practice posed a serious threat to infant welfare.<sup>82</sup> Hence, one can argue that maintaining the same wet-nurse would increase a child's chances of survival.

*Jews*. As mentioned above, the legal code Shulchan Aruch reinforced the Talmudic opposition to switching the woman nursing a baby 'if [he/she] knew her'. To avoid a change of milk source or abrupt weaning resulting from a new pregnancy, Jewish women in early modern Poland–Lithuania were allowed to use contraceptive measures. Furthermore, hiring of a wet-nurse was permitted before the baby 'knows his mother' and came with the commitment for a prolonged period of employment in which the employee was prohibited from getting pregnant. Accordingly, rich families which employed wet-nurses to help the new mothers be ready for the next pregnancy, or women who attempted to get permission for remarriage, tended to hire single women for a long period even before the birth of their children in order that the infant would "know" his

<sup>&</sup>lt;sup>79</sup> Only in the nursing houses for foundlings infant mortality was higher (Corsini, 1991). For more information on wet nursing in France see Sussman (1982). In the south Germany, e.g., Bavaria region, the babies were weaned at birth and fed with pap (Rej, 1956, p. 32; Knodel and van de Walle, 1967; Dembińska, 1980, p. 485; Knodel, 1977).

<sup>&</sup>lt;sup>80</sup> Żołądź-Strzelczyk (2002, p. 114; 2010); Kuklo (2009, p. 330). In the post-Tridentine period, baptism was usually carried out within a few days after birth. If not, it could be celebrated together with 'churching' (Hemperek, 1982).

<sup>&</sup>lt;sup>81</sup> Hrdy (1992) shows the mortality rate among the biological infants of wet-nurses to be quite high.

<sup>&</sup>lt;sup>82</sup> Herlihy and Klapisch-Zuber (1985, pp. 136–45); Baumgarten (2007, p. 127).

or her wet-nurse before he/she got used to the mother. Although the halacha did not specify the kind of dangers posed to the child when changing wet-nurses, its application limited such practice and, therefore, might have contributed to the lower infant mortality among Jews in Poland–Lithuania.<sup>83</sup>

Christians. In early modern Europe, though switching wet-nurses was known to affect a child's willingness to nurse, there was no religious law forbidding this change. On the contrary, in some cases a change of nursing woman was recommended, e.g., during menstruation. Due to the belief that breast milk was a transformed menstrual blood and that any loss of blood alters or even 'poisons' a woman's breast milk, children were often taken from the breast if their wet-nurse menstruated. Consequently, many Christian children had two, three, four and even more wetnurses in their early years. In Poland, even in the late 18th century, the physician Weichardt wrote that a wet-nurse should not breastfeed during her menstrual period because 'babies that nursed during that time often got sick'. He recommended that a replacement wet-nurse should be found for that short period, or the baby should be given whey (which is the liquid remaining after milk has been curdled and strained; also known as milk serum or milk permeate) with eggs, which we know was often too heavy for the immature digestive system of the baby.<sup>84</sup> A change of wet-nurse was recommended also in case of pregnancy. This was due to the belief that the needs of a developing fetus changed the quality of the breast milk. Also, when the wet-nurse got sick or when the infant became sick, a wet-nurse was replaced because of the probable corruption of her breast milk.85

#### (iii) First Feeding

According to modern medical knowledge, an infant is born with a passive immunity resulting from the IgG antibodies, which are small enough to cross the placenta barrier and thus help to protect the fetus (and later the newborn) from microorganisms and some viruses familiar to the mother's body. To develop his or her own immune system, a newborn needs among others a boost of IgA antibodies, which can be found in the 'first milk' produced by the breast at the end of pregnancy, which is known as colostrum. Concentrated and easy to digest colostrum has as much as 20 to 40 mg/ml of IgA antibodies and contains a range of antimicrobial factors as well as factors that may impact the immune system, e.g., the iron-binding antimicrobial protein lactoferrin, antibacterial enzyme lactoperoxidase and lysozyme. Moreover, colostrum contains leukocytes and growth factors that may affect neonatal intestinal development and provides a source of energy which may impact IgG absorption in the newborn and stimulate effective immune response.<sup>86</sup>

Although very important, the benefits of yellowish, thick and sticky milk were unknown until the modern times, and for thousands of years in various cultures 'a mistrust of colostrums' deprived many infants of important immunities and exposed many mothers to the risk of mastitis, also known as milk fever.<sup>87</sup> In the light of modern medical knowledge we know that before the invention of advanced formula, a newborn nursed with colostrum, which usually lasts for the first two to four days after birth, had a better chance of survival than an infant left hungry or fed

<sup>&</sup>lt;sup>83</sup> Salmon-Mack (2012, pp. 95, 97).

<sup>&</sup>lt;sup>84</sup> Weichardt (1782, pp. 48–51); Żołądź-Strzelczyk (2002, p. 118; 2015).

<sup>&</sup>lt;sup>85</sup> Weichardt (1782, pp. 48–51); Salmon-Mack (2015, p. 190).

<sup>&</sup>lt;sup>86</sup> Hurley and Theil (2011). For more information on immunological qualities of colostrum and breast milk, see World Health Organization (1990, pp. 31–32).

<sup>&</sup>lt;sup>87</sup> Matthews Grieco (1991, p. 52).

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in other ways. Consequently, breastfeeding with colostrum could be one of the important factors contributing to lower infant mortality.

*Jews*. The postpartum period was recognised as a vulnerable time for both the infant and the mother and thus special attention was directed to their diet and hygiene. New mothers were generally advised to observe a proper diet and avoid physical movement, as well as breastfeed their babies. Already in the Talmud we can find examples of putting a newborn on the mother's breast, sometimes even before the cord was cut. According to Baumgarten (2005, p. 200), although it is not possible to ascertain when Jewish mothers in Ashkenaz started to breastfeed their offspring, they did not follow the recommendation to abstain from nursing the infant for the first eight days after birth which sporadically appeared in Sephardic sources. According to Chovav (2009, p. 171), Jewish mothers in Poland–Lithuania were advised not to breastfeed for the first ten hours, during which the newborn was probably given a kind of purge to expel meconium. It is known that in Talmudic times newborns were given the so-called children's herbs (*asube januka*) to make them vomit and clean their mouths in preparation for breastfeeding. Hence, Jewish newborns who were immediately nursed by their mothers in the first two to four days after birth did benefit from the colostrum.<sup>88</sup>

*Christians*. In medieval and early modern Europe, the opinion of the ancient Greek physician Soranus was commonly accepted. He wrote that after birth the baby should be nursed by a wet-nurse and not by the mother for at least 20 days, because 'mother's milk... is heavy, cheesy, hard to digest... it comes from a sick and disturbed body'. Moreover, Soranus stated that the first food should be given to the baby only after two days from birth and in-between recommended warm honey since, in his opinion, it was the best way for cleaning the digestive system and caused neither gas nor constipation. Only afterwards could the baby be given milk.<sup>89</sup>

According to the first important pediatric publication by Metlinger in the mid-15th century, the mother's milk was not good for the infant during the first two weeks after labour; moreover, after the baby received honey as a laxative he/she should be wet-nursed. As a result of such medical advice and the belief that the milk should be liquid, most infants in early modern western Europe were taken away from their mothers for hours or even days to be washed, swaddled and fed by other women while their mothers rested. Also, mothers were usually not allowed to feed their newborns until the colostrum had changed colour (three to four days) or even until they had been ritually cleansed (about 40 days after birth) (Matthews Grieco, 1991, pp. 24–30). This long delay in first nursing deprived the newborns of the benefits of colostrum and thus seriously hindered the development of babies' immune systems. It also put the mother at risk of milk fever, exposed the baby to unclean feeding instruments and often caused the loss of the newborn's sucking instinct.<sup>90</sup>

Turning our attention to central and eastern Europe, in the early 18th century, German physician Etmuller was the first to object to the prevailing practice and to recommend, though unsuccessfully, placing babies on their mother's breast during the colostrum period.<sup>91</sup> The real change in the attitude towards colostrum occurred *only* in the modern period. In Old Poland, it was also

<sup>&</sup>lt;sup>88</sup> Chovav (2009, p. 171); Zibadi *et al.* (2013, p. 135). For types of purges commonly in use for newborns between 1500 and 1800 see Koletzko *et al.* (2002, p. 5, table 1). See also the passage in *Sabbath* 123a.

<sup>&</sup>lt;sup>89</sup> The writings of the Greek physician Soranus of Ephesus (2nd century CE) determined European Christian medical opinion concerning women's diseases, pregnancy and infant care for nearly 15 centuries (Wickes, 1953, p. 154; Żołądź-Strzelczyk, 2002, pp. 119–20).

<sup>&</sup>lt;sup>90</sup> Bartolomeo Metlinger (born after 1440) published the book *Ein Regiman der jungen Kinder* in 1473. See also Matthews Grieco (1991, p. 30).

<sup>&</sup>lt;sup>91</sup> Wickes (1953, pp. 332–40). *Etmuller Abridged* was published around 1703 and translated into English in 1712.

widely believed that colostrum was impure and harmful to the baby. Consequently, breastfeeding usually started a few days after birth. For the first few days, newborns were usually given honey instead of mother's milk. In the 16th century, the authors of the popular Polish herbals, Hieronim Spiczyński and Marcin Siennik, taught that 'on the day the baby was born, it should not be given mother's milk, but rather only someone else's milk'. The reason for it was that at that time, women, especially those doing nothing, have colostrum, i.e., siara or other impure, thick stuff, which is very unhealthy to the baby. It was not until the end of the 18th century that a few lonely voices advised nursing with colostrum, not so much for its nutritional value but to cause the vomiting of meconium. These recommendations advised that mother's breast should be served right after some rest after the pain, i.e., two hours after the delivery of the baby. Moreover, because mother's milk was still very liquid and whey-like, it was considered the best medicine to expel the meconium and cause bowel movements in the baby.<sup>92</sup>

#### (iv) Weaning

Today, the World Health Organization and UNICEF recommend exclusive breastfeeding for six months followed by breastfeeding combined with complementary foods until the age of two. Introduction of complementary food in the first four months of life is not recommended as it harms the infant.

In light of modern medical knowledge and research in developing countries, which points to the benefits of prolonged, regular and frequent breastfeeding, it has been established that not only continued but also intense breastfeeding was also the best source of nutrition for the infant in the past. It increased an infant's chances of survival and proper development, and lowered the risk of intestinal infections and gastric illness, which in the past centuries often ended in infant death. Furthermore, modern medicine shows that intense and exclusive (or almost exclusive) breastfeeding strengthens the contraceptive powers of lactation and thus may help to establish longer birth intervals. Birth spacing, in turn, is known to have a positive impact on child mortality rates.<sup>93</sup>

*Jews*. As we documented above, Jewish religion rules and social norms recommended prolonged and intense breastfeeding. If a widow or divorcee stopped breastfeeding earlier than the prescribed 24 months, it was usually viewed as suspicious and possibly related to mother's desire to remarry. Hence, unmarried (either because widow or divorcee) mothers with means usually preferred to hire a wet-nurse in advance and avoid both sudden weaning and suspicions related to it. Despite the rule of nursing for 24 months, married women sometimes weaned a child earlier, usually around the age of 18 months. In such cases, special food was prepared for the weaned baby.

*Christians*. In early modern Europe, breastfeeding was generally recommended until the age of two, but other foods were usually introduced much earlier. In the 16th century, solid foods were served to a baby around seven to nine months of age, and later it was reduced to the age of two to four months. The earlier a baby was given solid foods, the more it was exposed to contaminated food and risk of diseases, such as diarrhoea, scurvy, rachitis and others. The first solid foods were usually a pap (flour or bread soaked in water or milk sometimes mixed with an egg) or panada (cereals cooked in broth).

<sup>92</sup> Żołądź-Strzelczyk (2002, pp. 119, 120); Musiał-Morsztyn et al. (2014, p. 62).

<sup>&</sup>lt;sup>93</sup> Hanson and Winberg (1972); Berens and Labbok (2015).

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In Old Poland, babies were usually breastfed until the age of one. Additionally, before weaning they were served mixtures such as mush of bread cooked in milk with sugar and egg or bread mashed in milk, goat milk with water, and various kinds of barley. Such food was usually given through a linen that babies could suck on, or from a cow horn. In villages, babies were often given some premasticated food. In 1534, the known Polish physician Falimirz advised that a baby should be given pieces of bread with sugar so that it could get used to regular food. According to physician Weichardt's complaints, babies in 18th-century Poland were pre-maturely exposed to other foods and weaned.<sup>94</sup>

Polish mothers were advised to breastfeed less frequently. Falimirz recommended to breastfeed babies only two to three times a day and not for too long, so that the baby would not get full. Weichardt claimed that the child should be fed only when hungry and not every time he or she cried. In his opinion, a wet-nurse should get the baby used to eating at specific times. Regarding weaning, Weichardt stated that it should be gradual and its time 'should not be determined ahead, because one child is weaker than the other and hence needs permission to suck longer the wet-nurse's breast'.<sup>95</sup>

#### (v) Family Support and Marriage Patterns

Historically, kin members have been the major source of economic support and insurance against negative shocks. Studies on the influence of grandparents on child mortality in historic population have shown that matrilineal grandparents were usually more ready to assist young couples and that the survival of the maternal grandmothers contributed to a decrease in infant mortality risks. In general, despite its importance, historically familial support was voluntary. Yet, in Jewish eastern European culture the matrilineal parental support to young couples was institutionalised and this turned into one of the factors that might have contributed to the comparatively lower infant mortality rates among the Jews in Poland–Lithuania during the early modern period.<sup>96</sup>

Jews. The Jewish pattern in eastern Europe, dating from at least the 17th century, was for young couples to establish their first household in the home of the wife's family. Kest is a Yiddish term used for a period of family support to young couples after marriage, during which the groom—preferably 'the scholar, the diligent, promising yeshivah student'—lived with the bride's family and pursued Torah study, whereas the bride usually received training in the family business, as preparation for becoming a worker or a partner in it, or learnt a craft or a trade, or helped with some agricultural work. Kest often lasted up to three years and involved grandparents' help with new children. According to Goldberg (1997), as many as 25% of Jews could afford this arrangement. In some cases, the prenuptial agreements, which included the dowry, also included kest, which could be lengthened to attract the best suitor. The groom became a member of an extended family which usually included three generations under one roof.

Because of the kest system, maternal grandparents played a dominant role in the lives of their grandchildren. This Jewish model of marriage and family support was praised in the past as

<sup>&</sup>lt;sup>94</sup> Żołądź-Strzelczyk (2002, pp. 119, 143); Musiał-Morsztyn *et al.* (2014, p. 62). Falimirz (1534) was also the author of the popular work *On Herbs and Their Potency*.

<sup>&</sup>lt;sup>95</sup> Weichardt (1782, p. 69); Żołądź–Strzelczyk (2002, pp. 119-21). At this frequency, the contraceptive effect of lactation was reduced and many breastfeeding women got pregnant.

<sup>&</sup>lt;sup>96</sup> Voland and Beise (2002); Kemkes-Grottenthaler (2005, p. 219).

reflecting the best of what the institution of marriage had to offer. According to Hundert (2004, p. 24), the practice of kest was one of the reasons for the lower child mortality among the Jews.<sup>97</sup>

An important notion that originated from Hasidei Ashkenaz and was reinterpreted by eastern European Jews according to their own frame of reference, was that the acts of children affect the heavenly status of parents. They believed that a child's good deeds are credited to the parents in this life or in the afterlife. Furthermore, a child's misdeeds cause suffering to the parents: 'that is all nothing comparing to the discomfort and suffering that one has in the next world because of unsuccessful children' (Fram, 2006, p. 51). Jewish fathers invested in raising pious sons, since the actions done by a son after his father's death were believed to constitute an atonement for the soul of the father.<sup>98</sup> Moreover, the parents were credited in the afterlife if their children were good parents to the next generation. Thus, Polish–Jewish parents invested in their children as well.

Already in medieval Ashkenaz, marriage was viewed as a socioeconomic covenant between the parents of each side, who were also responsible for matchmaking, and 'the creation of a material basis for the young couple'. Among Polish Jews, the religious ideal was early marriage, especially among the elite, although it is not known whether such early marriages were the general rule. It was difficult to meet the 'necessary qualifications' for marriage, which meant the creation of a new economic unit, which would slowly become independent. The age of 16 was considered a proper age for a girl to marry and 18 for a boy. In general, most Jews married at a relatively young age (late teens) for a variety of reasons: to enable young men to fulfill the commandment of procreation, to channel sexuality to legitimate outlets and to offset low life expectancy and high infant mortality rates.<sup>99</sup>

Remarriage was a common phenomenon among the Jews. Marriage was an ideal state for a man and a legitimate framework for sexual activity. Thus, although for women a third marriage was forbidden, there was no prohibition of remarrying for a man. In terms of infant mortality, it should be emphasised that remarriage not only contributed to higher birth rates but also reduced extramarital sexual activity and, hence, reduced the number of children born out of wedlock, who had a lower chance of survival than legitimate offspring. Furthermore, the life expectancy of children who lived with only one parent was lower than that of children who lived with two. Thus, it can be assumed that a society emphasising the need to remarry, like the Jewish communities in central and eastern Europe, might have a lower infant mortality than a society with an ambivalent attitude towards remarriage, like the Polish Christian society, in which the average marriage in pre-industrial towns lasted ten to 15 years.<sup>100</sup>

*Polish Christians*. According to Augustyniak (2014, p. 309), in the early modern period most of the rural households in Poland were so-called open families, which were characterised by early marriage (18 for a boy and 14–16 for a girl), and in which the couple lived with the parents after

<sup>98</sup> In the modern period, this attitude developed into the idea that among Jews, 'a child's obligation to his parents is discharged by acting toward his own children, when he is grown, as his parents acted toward him' (Benedict, 1949, p. 348). See also Slonik (1577, no. 102) and Horowitz (1701) as quoted in Fram (2006, pp. 52, 53, respectively).

<sup>99</sup> Katz (1959, p. 7); Goldberg (1999, p. 174); Baumgarten (2005, p. 53). In Polish historiography, the common view is that Jews got married earlier than Poles: the average groom was 17 years old and the average bride was 16 years old (Kuklo, 2009, p. 283). In Kraków around 1595, one had to be at least 20 years old (married or not) before conducting business independently (Dubnow, 1925, no. 32, year 1623). Poor girls were considered ready for domestic service at the age of 12 and for marriage at the age of 15 (Dubnow, 1925, no. 128, p. 32, year 1628). See also Freeze (2016). Some research shows that in smaller communities in 18th century the average age of marriage was 20–24 (Goldberg, 1997, p. 23).

<sup>100</sup> Kuklo (1990); Kamecka and Kuklo (2003). In the 17th century, it was only 10 years (Waszak, 1954, p. 285).

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2677

<sup>&</sup>lt;sup>97</sup> Goldberg (1999, p. 173).

marriage. In urban areas, wealthy families were usually limited to just parents and unmarried children. There was no defined institution of kest in Polish Christian society. According to Bogucka (2004, p. 35), among the middle and lower classes the average age of marriage was relatively high, probably over 20 for men. In the case of women, the age of marriage may have been significantly lower, probably between 15 and 20. Social historians claim that noblewomen married before the age of 20, and daughters of wealthy magnates got married earlier than gentry's girls. Often, there was a considerable age difference between the bride and groom. Families were patriarchal and marriage was a sacrament.<sup>101</sup>

By the end of the 18th century, the average age at first marriage in Poland was 25–29 for a man and 20–24 for a woman.<sup>102</sup> During the period 1740–99, men in Warsaw were nearly 29 years old when they first got married, which was similar to the situation in western Europe. However, women in Warsaw got married at the age of 22–23, which was much younger than in western Europe. In central Poland, the average family was relatively small, typically consisting of parents with children and sometimes a member of the older generation or a cousin. According to Hundert (1989, p. 85), this practice was different among the Jews who tended, unlike their neighbors, to live in multifamily dwellings.

#### 4.4. Childcare Norms and Practices during the Modern Period

In general, the positive attitude towards childcare remained one of the pillars of Jewish life in eastern Europe during the modern period. A survey of the *responsa* from that time reveals that the above-described Talmudic rule known as *meyaneket chavro* was still very much discussed and people found it difficult to obey. In many cases, women were sent to rabbis to obtain their opinions and rulings and would ask for permission to marry the man they were already engaged to, or a couple might ask for permission to live together in violation of the ruling in the Shulchan Aruch. It is worth mentioning that the fact that many couples requested permission to stay together means that there were rabbis who allowed them to marry in the first place.<sup>103</sup>

One of the reasons for the tendency towards leniency on *meyaneket chavero* appears to be the shortening of the breastfeeding period in the surrounding society. There were rabbis who recognised that the breastfeeding period had gotten shorter, but nonetheless insisted that people comply with the ruling of *meyaneket chavero*. For example, *Hatam Sofer* argued that the rule must be obeyed because there were still children who needed 24 months of breastfeeding and the rule protected them.<sup>104</sup> Furthermore, 19th-century rabbis explained that the ruling should continue to be obeyed because its intention is to guarantee that the infant, and not a new husband, will enjoy the mother's full attention and thus goes beyond merely breastfeeding.

By the end of the 18th century, there were clear differences between Jewish marital patterns in the German-speaking lands and in the Polish–Lithuanian Commonwealth. Western grooms and brides were older than young couples in eastern Europe, where pre-mature marriage became more and more popular among the elite. In most of the documented cases of early marriage among the elite, the young couple lived with the maternal parents who provided financial support while the groom continued Talmud study in the yeshiva (academy of higher learning). In 19th-century

<sup>104</sup> According to DeMause (1974, p. 34), while at the beginning of the 17th century it was 24 months, in the 18th and 19th centuries the nursing period lasted usually only 15 months. See also Chatam Sofer, *Even HaEzer* 1: 34.

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2678

<sup>&</sup>lt;sup>101</sup> Koczerska (1975, p. 32); Wolski (2005, p. 304); Kuklo (2009, p. 283).

<sup>&</sup>lt;sup>102</sup> Kuklo (2009, pp. 278–279).

<sup>&</sup>lt;sup>103</sup> Anzi (2015, pp. 4, 6).

eastern Europe, remarriage was a common phenomenon among Jews and constituted one of the characteristics of Jews as a population group: Jews married younger, remarried more often and lived longer than members of other groups. In the mid-19th century, almost all Jewish adults were married, but a high percentage of them were married not for the first time.<sup>105</sup>

Between 1867 and 1910, in comparison with other population groups, Jews had the highest percentage of marriages involving at least one remarrying partner, as well as marriages between widows and widowers. Religious legislation encouraged widows to remarry. Although the rulings of the Shulchan Aruch prohibiting a widow to marry a third time were generally obeyed, the *responsa* reveal that modern rabbis tended to look for ways to permit it. One of their motivations for permitting such marriages was to ensure the care of orphans based on rabbis' unquestioned assumption that fatherless children are endangered. It can thus be assumed that in case of widows, the practice of remarriage contributed to the welfare of otherwise fatherless children and to lower child mortality. During the 19th century the practice of early marriage was abandoned. In the second part of the century there was a general rise in the age of marriage among Jews.<sup>106</sup> Jewish marital age and remarriage patterns became similar to those in Christian society. Jewish widowers became less inclined to choose a widow as a mate, although Jewish widows continued to marry widowers rather than bachelors. On the other hand, Christian widowers were inclined to choose previously unmarried women for a second marriage.

In modern western Europe, one of the most significant discoveries in childcare was that colostrum is actually beneficial to the baby. Although in 1719 Pierre Dionis recommended colostrum as more nutritious than regular breast milk, the attitude of mothers to breastfeeding after labour did not change until the mid-18th century following the observation of Hunter (1750)—that feeding babies after labour reduces the risk of milk fever—and the publication of Cadogan's *Essay Upon Nursing and Management of Children*. The change and simultaneous return to maternal breastfeeding among the middle and upper-classes were probably among the factors that contributed to the decrease in child mortality after 1750. However, only at the end of the 19th century it was understood that colostrum could equip the infant with some immunity and prepare it for more substantial nourishment.<sup>107</sup>

In Poland, the question of whether the baby should be nursed by his mother during the first 24 hours appeared in 18th-century treatises, but the attitudes changed gradually, first among doctors, later among midwives and finally among women themselves. By the end of the 18th century, the physician Weichardt still claimed that during the first 24 hours a newborn baby should not be given any food except for sugar with manna (semolina) or syrup with manna. Subsequently, a medical dictionary (*Dykcyonarz powszechny medyki, chirurgii*, 1788) advised that if the baby had no problems during the delivery, he or she should be given a bit of mother's milk (after the mother has rested for about two hours) to cause vomiting of meconium. However, if the newborn seemed weak it should be given a few drops of sweetened and warm wine. Furthermore, it suggested that mothers should not breastfeed their babies during the milk fever and instead newborns should be fed with fresh goat's milk mixed with water.<sup>108</sup>

<sup>105</sup> Stampfer (1988, pp. 98, 104; 2010, pp. 9–21).

<sup>106</sup> Stampfer (1988, pp. 87, 104, 105; 2010, pp. 21, 23).

<sup>&</sup>lt;sup>107</sup> Matthews Grieco (1991, p. 47). Paul Ehrlich (1854–1915) was probably the first to discover that mother's milk passes immunity in 1892.

<sup>&</sup>lt;sup>108</sup> Weichardt (1782, p. 316). In the 15th century, Konrad Bitschin advised that a baby be fed with human milk, preferably the mother's, rather than wine, which testifies to the persistence of this problematic practice (Arnold 1980). On this matter, see also Dembińska (1980, p. 487) and Żołądź-Strzelczyk (2002, pp.110, 124).

Śniadecki (1867, p. 57) was the first to recommend nursing with colostrum because it 'has lactating advantages and helps to expel meconium'. Only at the end of the 19th and beginning of the 20th century new publications described the first milk as having more proteins, fat and leucocytes than regular human milk, and Polish doctors agreed that the newborn should be breastfed within four to eight hours after delivery. Together with the decrease in the number of still births and progress in medical knowledge, the feeding with colostrum contributed to the population growth in Poland–Lithuania. In Poznan, for example, between 1870 and 1910 the average intelligentsia family had 3.8 children, and a craftsman's family had 4.1 children while simple workers had 4.7. In the second half of the 19th century the number of women who died during delivery decreased gradually. During the 19th century marriage and family became more institutionalised. For example, Prussian law of 1873 set the minimum marriage age for men at 21 and women at 16. In Poznan the average groom was 25–29 years old, while his bride was 20–29 and usually three years younger than him. With industrialisation and urbanisation, Polish women gained chances of professional work and became more independent within the family.<sup>109</sup>

There are not many comparative studies on Polish and Jewish childcare. One of the important studies to confirm the differences in general attitude towards childcare is the one by Benedict (1949), who examined the practice of swaddling in Poland and Ukraine in the early 20th century. He maintained that the Jewish idea of swaddling is to provide the baby with warmth and comfort rather than to 'harden it', which was the attitude in Poland and Russia.<sup>110</sup> His research shows that Jewish babies were usually swaddled on a soft pillow and in most areas the bindings were wrapped relatively loosely around the baby and his little featherbed. In strongest contrast to the experience of the Gentile child, swaddling is part of the child's induction into the closest kind of physical intimacy. Benedict juxtaposed the Jewish approach towards swaddling with the general Polish, Ukrainian and Russian attitudes according to which (*i*) the baby was fragile and needed the support provided by the bindings, and (*ii*) swaddling should be used to harden baby's legs. Furthermore, he emphasised that the Poles also believed that swaddling prevented the baby from touching the dirty and shameful parts of his or her body, while Russian mothers swaddled the baby to prevent it from hurting himself.

#### 4.5. Summary and Discussion

Modern medical knowledge regarding the impact of childcare on infant mortality and child wellbeing has changed dramatically since the late 19th century. Only at the beginning of the 20th century medical knowledge became widely accepted and the practices of breastfeeding changed. Nursing with colostrum as well as intense and exclusive breastfeeding became most common.

Our analysis of primary and secondary sources shows that Jewish childcare norms, based on religious rules from the Talmudic period and developed throughout the Middle Ages and early modern period, were much closer to modern medical knowledge than those of contemporary Christian society. Jewish religious norms stated that infants' and children's well-being should be at the center of the family; consequently, Talmudic debates and rulings prescribed norms and recommended practices for taking care of infants and children. What is striking is that centuries later, these norms and practices have been scientifically confirmed by contemporary medical

<sup>&</sup>lt;sup>109</sup> Michałowicz (1920); Kramsztyk (1896); Żyromski (2000, pp. 175, 183).

<sup>&</sup>lt;sup>110</sup> Benedict (1949, p. 347).

2019]

knowledge to be clearly beneficial for physical growth and for the development of cognitive and non-cognitive skills of children.

The key insight from our earlier work (Botticini and Eckstein, 2005, 2007, 2012) and our current research is that when children's education became the main religious norm among Jews during the Talmudic period, Jews also began developing a unique body of norms and practices related to infant and childcare, and followed them throughout the subsequent centuries up to today. The unexpected demographic outcome of this radical change in religious norms was that centuries later, the Jews in central and eastern Europe had much lower infant and child mortality rates in comparison with the local non-Jewish population. This in turn was the engine for the spectacular Jewish population growth during the early modern and modern periods in what had become the economic, cultural, and religious center of the Jewish world, that is, central and eastern Europe.

# 5. Concluding Remarks and Future Research

In this article we document the exceptionally high Jewish population growth rate (almost 1.4%) in Poland–Lithuania from 1500 to 1880. Later, it declined due to migration to western Europe and the Americas. The total population of Poland–Lithuania grew at much lower rates and reached that of the Jews only after 1880. We also provide evidence that the Jewish population in Germany–Austria before 1800 grew at more than twice the rate of the total population, though at a much lower rate than the Jewish population in Poland–Lithuania. The main evidence presented indicates that until the early 19th century, the difference in the rates of growth between the Jewish populations in Poland–Lithuania and Germany–Austria was due to migration to the East. It seems reasonable to assume that the natural growth rates of Jews in Poland–Lithuania and Germany–Austria were about the same due to similar religious and social norms of raising children and general economic conditions; hence, most of the difference was likely due to migration and conversion until 1880.

We also document the much lower infant and child mortality rates among Jews than the local populations. The difference accounts for more than half of the difference in the rates of population growth between the two groups. Since socioeconomic and demographic characteristics cannot fully explain the differences in infant mortality between Jews and non-Jews, we examine religious norms and practices, as well as lifestyle differences. In light of contemporary medical knowledge, Jewish religious norms along with breastfeeding and childcare practices generated a unique demographic pattern for the Jews—lower infant and child mortality rates, which in turn brought a huge Jewish population growth in central and eastern Europe during the early modern and modern period. These rules were deeply rooted in Judaism throughout the ages and were standard practice for Ashkenazi Jews in Poland–Lithuania and Germany–Austria.<sup>111</sup>

One of the puzzling questions that emerges from the analysis is why the Jewish community grew so rapidly in Poland–Lithuania but not in Germany–Austria. Future research should focus on

<sup>&</sup>lt;sup>111</sup> Interestingly, today Orthodox Jewish families in Israel have, on average, 6–7 children (completed fertility). Thus, in terms of surviving children their rates are even higher than the ones during the 19th century and before. The norms and rules regarding infant and childcare are generally the same as they were centuries ago, although early weaning or avoidance of breastfeeding do not endanger the baby as they did in the past. Yet, family incomes today are, on average, higher. Orthodox Jews in contemporary Israel may be poor by contemporary Israel's standards but not in comparison to the average incomes prevailing during the 19th century in eastern Europe. This may explain the higher rates of infant and child survival, and hence, the larger family size of contemporary Orthodox Jewish families in Israel compared to the ones in early modern and modern eastern and central Europe.

this puzzle. A possible explanation is related to differences in property rights between Germany– Austria and Poland–Lithuania and the role of the Jews in the Polish manorial economy. While Germany–Austria abandoned feudalism prior to 1500, in Poland–Lithuania a unique feudal system ('secondary feudalism') developed during the 16th century in which nobles (*szlachta*) had full property rights and a monopoly on the means of production, as well as the legal and military authority to protect their property. The Jews in Poland–Lithuania became part of the manorial system. They were successful as leaseholders and operators of noble properties and monopolies and their demographic growth in Poland–Lithuania was not limited by the feudal system. Our next research project will study this fascinating topic in depth.

To sum up, understanding the engines of human development and the mechanisms for achieving health, knowledge and wealth is a central issue in economic research. Our work contributes to this fundamental issue by showing, through the unique lens of Jewish history from 1500 to 1930, how the interplay between the distinctive Jewish parental investment in childcare and heterogeneity in institutional settings played a pivotal role in shaping the remarkable trajectory of the Jews in terms of demographic growth, economic prosperity and intellectual achievements. It can thus offer previously unexplored insights and lessons for current debates on how to make a society prosper and grow.

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Additional supporting information may be found in the online version of this article:

Appendix A. Sources and Methodology for Section 2 Available upon request from the authors or on Zvi Eckstein's website http://www1.idc.ac.il/Faculty/Eckstein/jewish\_history\_1500.html. Appendix B. Sources and Methodology for Section 3 Available upon request from the authors or on Zvi Eckstein's website http://www1.idc.ac.il/Faculty/Eckstein/jewish\_history\_1500.html.

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2683

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