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Famine in the Kingdom of Poland in the Mid-19th Century, Exemplified by the Augustów Governorate

Głód w Królestwie Polskim w połowie XIX wieku na przykładzie północnych powiatów guberni augustowskiej

Abstract

The article discusses the demographic consequences of crop failures in the north-eastern districts of Augustów Governorate in late 1845 and early 1846. It also raises the question of assessing the reliability of the sources that recorded vital statistics in the Russian partition, which revealed many inconsistencies in the registration of deaths, and notes the need for a critical approach when using them. Also highlighted was a wave of famine-induced emigration of peasants and the need for further and in-depth research into demographic crises in mid-19th century Polish lands.

Keywords

famine, demographic crisis, emigration, Augustów Governorate, Kingdom of Poland, 19th century, historical demography

Abstrakt

W artykule omówiono demograficzne skutki nieurodzaju w północno-wschodnich powiatach guberni augustowskiej na przełomie 1845 i 1846 roku. Zwrócono uwagę na kwestie oceny wiarygodności źródeł notujących ruch naturalny w zaborze rosyjskim, wykazujących wiele niedociągnięć w rejestracji zgonów, i podkreślono konieczność krytycznego podejścia przy ich wykorzystaniu. Wyeksponowano falę emigracji włościan wywołaną przez głód oraz konieczność dalszych i pogłębionych badań nad kryzysami demograficznymi na ziemiach polskich w połowie XIX wieku.

Słowa kluczowe

głód, kryzys demograficzny, emigracja, gubernia augustowska, Królestwo Polskie, XIX wiek, demografia historyczna

Introduction

Demographic crises, particularly famine related, are a relatively infrequent topic for Polish historiography. This may come as a surprise, given the relatively early foundations of Polish historians, who had already made the first attempts at research in the interwar period.¹ The need to do more research had already been identified by classics of Polish historiography such as Witold Kula² and Juliusz Łukasiewicz.³ Despite this, relatively few works addressing this issue have appeared to date. The issue of demographic crises was addressed by Cezary Kukło in his monograph on the Warsaw family in the 18th century,⁴ and later in his textbook on historical demography.⁵ Also worth mentioning is Konrad Wnęk's work on the climate in Galicia, in which he drew attention to the interesting aspect of how meteorological and atmospheric factors affect harvests and the dynamics of prices and mortality.⁶ An exception among Polish historians is Piotr Miodunka, who has recently conducted extensive research on famine in Polish lands in the 17th–19th centuries.⁷

Polish historiography's state of research contrasts with global output. Even in the early days of historical demography, the issue of crises, with particular focus on those associated with crop failure, was of special interest.⁸ Neglect is

¹ See Jan Szewczuk, *Kronika klęsk elementarnych w Galicji w latach 1772–1848* (Lwów: Kasa im. J. Mianowskiego. Instytut Popierania Polskiej Twórczości Naukowej, 1939).

² Witold Kula, *Problemy i metody historii gospodarczej* (Warszawa: PWN, 1983), 639–54.

³ Juliusz Łukasiewicz, "Wpływ urodzajów na poziom życia społeczeństwa polskiego w latach 1820–1860," in *Nędza i dostatek na ziemiach polskich od średniowiecza po wiek XX*, ed. Janusz Sztetyło, (Warszawa: Semper, 1992), 183–92.

⁴ Cezary Kukło, *Rodzina w osiemnastowiecznej Warszawie* (Białystok: Dział Wydawnictw Filii Uniwersytetu Warszawskiego w Białymstoku, 1991).

⁵ Cezary Kukło, *Demografia Rzeczypospolitej przedrozbiorowej* (Warszawa: Wydawnictwo DiG, 2009), 249–61.

⁶ Konrad Wnęk, *Dzieje klimatu Galicji w latach 1848–1913* (Kraków: Historia Jagellonica, 1999).

⁷ See Piotr Miodunka, "Kryzysy demograficzne w Małopolsce w końcu XVII i pierwszej połowie XVIII wieku. Zarys problematyki," *Przeszość Demograficzna Polski – Poland's Demographic Past* 37, no. 4 (2015): 7–37, <https://doi.org/10.18276/pdp.2015.4.37-01>; idem, "Kryzysy żywnościowe a anomalie klimatyczne od XVII wieku do połowy XIX wieku na przykładzie Małopolski," *Historyka. Studia Metodologiczne* 46 (2016): 209–27. In the above articles, the author cites detailed literature on famine research and the relationship between demographic crises and climate. See also idem, "Famines in the Manorial Economy of Eighteenth-Century Poland," *Rural History* (2022): 1–20.

⁸ Fernand Braudel, *Kultura materialna, gospodarka i kapitalizm XV–XVIII wiek. Struktury codzienności* (Warszawa: Państwowy Instytut Wydawniczy, 2019), 69; Robert William Fogel, *The Escape from Hunger and Premature Death, 1700–2100: Europe, America and the Third World* (Cambridge: Cambridge University Press, 2004), 5–6.

evidenced by the absence of Polish lands in the most recent summary of famines in European history.⁹

This article therefore aims to enrich the existing body of knowledge on famine in Polish lands by examining the negative impact of crop failures occurring in the Augustów Governorate in late 1845 and early 1846 on the demographic dynamics of the local population. No less important will be to raise awareness of the need for a critical approach to the sources which record the vital statistics in the Russian partition, which exhibit many shortcomings in their record-keeping.

Sources and methodology

For the purpose of the study, we used marriage ($N = 342$),¹⁰ birth ($N = 1,691$)¹¹ and death ($N = 967$)¹² records from Daukšai Parish in 1840–1850, deposited in the collection of the Central Historical Archives of Lithuania (Lietuvos valstybės istorijos archyvas – LVIA).

Daukšai was a medium-sized parish in the Kalwaria deanery, located 20 kilometers northeast of Kalwaria, the district capital. Its population in 1835 was 2,913 residents.¹³ The area of the Kalwaria district was largely forested, the land was not the most fertile, and due to the high proportion of clay, the soil was particularly difficult to cultivate during summer droughts or heavy rains. Local agriculture was underdeveloped, and the main crops were rye, oats and potatoes.¹⁴ The local peasants, as in the entire Kalwaria and the neighboring Mariampol districts, were predominantly Lithuanian.¹⁵

Data collected and published by other researchers were also used as comparative material and additional conclusions for other regions of the Kingdom of Poland,

⁹ Guido Alfani and Cormac Ó Gráda, eds., *Famine in European History* (Cambridge: Cambridge University Press, 2017).

¹⁰ Lietuvos valstybės istorijos archyvas (hereafter: LVIA), 1236/2/39; LVIA 1236/2/44.

¹¹ LVIA 1236/2/61; LVIA 1236/2/43.

¹² LVIA1236/2/41.

¹³ Julian Janczak, “Ludność parafii Królestwa Polskiego w 1835 roku,” *Przeszłość Demograficzna Polski – Poland’s Demographic Past* 20 (1997): 230.

¹⁴ Filip Sulimierski, Bronisław Chlebowski, and Władysław Walewski, eds., *Słownik geograficzny Królestwa Polskiego i innych krajów słowiańskich*, vol. 3 (Warszawa: nakładem Filipa Sulimierskiego i Władysława Walewskiego, 1882), 712; Irena Kostrowicka, *Produkcja roślinna w Królestwie Polskim (1816–1864). Próba analizy ekonomicznej* (Warszawa: Szkoła Główna Planowania i Statystyki, 1961), 117.

¹⁵ Julian Janczak, “Struktura społeczna wsi w Królestwie Polskim,” *Acta Universitatis Lodzianensis. Folia Historica* 45 (1992): 48.

so that some aspects of the article have the character of a meta-analysis. These include data on deaths during this period in rural parishes in the Lublin region,¹⁶ the Kowal parish in Kuyavia¹⁷ and the Bejsce parish in Kielce region.¹⁸

Qualitative sources, which include the files of the Government Commission for Internal Affairs, deposited in the Central Archives for Historical Records in Warsaw, will also be helpful in attempting to answer the first of the goals. Although Polish lands in the middle of the 19th century were affected by various demographic crises, the most important reference to a famine in the Augustów Governorate in 1845 can be found in an archival document intriguingly titled, “Exodus of local residents to America.”¹⁹ Despite its presence in historiography as a famine-induced example of a surprisingly early desire to emigrate to America,²⁰ these events have so far received scant attention. The issue of famine in the region has been mentioned a couple of times in the literature to date.²¹

In order to assess the demographic impact of the crisis, the dynamics of vital statistics in Daukšai Parish will be analyzed. Where the famine becomes apparent is in the sudden increase in the number of deaths compared to previous years. Cormac Ó Gráda, one of the most respected experts on the historic study of famine, defined it as a deadly occurrence caused by a lack of food.²² Therefore, to assess the scale and impact of the food crisis, the most effective method is to analyze demographic indicators such as mortality and fertility. This is because famine also manifests itself

¹⁶ Piotr Rachwał, *Ruch naturalny ludności rzymskokatolickiej w Lubelskiem w świetle rejestracji metrykalnej z lat 1582–1900* (Lublin: Wydawnictwo KUL, 2019). Data were used from the following parishes: Abramowice, Bochotnica, Bychawa, Bychawka, Bystrzyca, Czerniejów, Częstoborowice, Dys, Fajslawice, Garbów, Gołab, Karczmiska, Kielczewice, Kijany, Klementowice, Konopnica, Krasienin, Krężnica Jara, Krzczonów, Łańcuchów, Matczyn, Mełgiew, Niedrzwica, Piotrawin, Ratoszyn, Rudno, Serniki, Targowisko, Wilkołaz, Wilków, Włostowice, Wojciechów, Wysokie, Zemborzyce, Żyrzyn.

¹⁷ Alicja Drozd-Lipińska, ed., *Umieralność mieszkańców wsi kujawskiej w latach 1815–1914 na tle zmian społeczno-gospodarczych i przemian elementów klimatu na przykładzie parafii Kowal* (Toruń: Wydawnictwo Naukowe Uniwersytetu Mikołaja Kopernika, 2021).

¹⁸ Edmund Piasecki, *Ludność parafii bejskiej (woj. kieleckie) w świetle ksiąg metrykalnych z XVIII–XX w. Studium demograficzne* (Warszawa–Wrocław: Wydawnictwo Naukowe PWN, 1990).

¹⁹ Archiwum Główne Akt Dawnych (Central Archives for Historical Records, hereafter: AGAD), Komisja Rządowa Spraw Wewnętrznych (Government Commission for Internal Affairs, hereafter: KRSW), 6679.

²⁰ Witold Kula, Nina Assodobraj-Kula, and Marcin Kula, introduction to *Listy emigrantów z Brazylii i Stanów Zjednoczonych 1890–1891* (Warszawa: Muzeum Historii Polskiego Ruchu Ludowego, 2012).

²¹ Jerzy Szumski, *Uwłaszczenie chłopów w północno-wschodniej części Królestwa Polskiego 1846–1871* (Białystok: Prymat, 2002), 28, 51, 75–6, 86–7, 94–5, 97–8; Stanisław Śreniowski, *Studia nad prawem i stosunkami agrarnymi Królestwa Polskiego 1831–1864* (Warszawa: Książka i Wiedza, 1963), 64–67, 145; Witold Jemielity, “Ambona w Księstwie Warszawskim i Królestwie Polskim dla ogłoszeń cywilnych,” *Prawo Kanoniczne* 43, nos. 1–2 (2000): 212.

²² Cormac Ó Gráda, “Making Famine History,” *Journal of Economic Literature* 45, no. 1 (March 2007): 5.

in a decline in births and marriages. However, these “lost births” can be offset by a compensatory baby boom after the disaster has ended.²³ To verify the hypothesis of crop failure as the cause of the demographic crisis, we will use data on prices recorded in Warsaw²⁴ and Königsberg²⁵ of rye and potatoes, both of which were the main staple food of the rural population. Based on the price movement it is possible to detect the years of poor and good harvests.²⁶ Trade and the economy of the Augustów Governorate were linked to both cities; moreover, prices in Warsaw, which was the main commercial center of the Kingdom of Poland, should reflect quite well the shortage or surplus of food in the remainder of the country.²⁷

Another method for assessing the impact of the demographic crisis will be to evaluate the sex ratio at birth, understood as the proportion of the number of male live births to the number of female live births. It is assumed that under natural conditions the male-to-female ratio is about 105–107 boys per 100 girls.²⁸ The usual explanation is assumed to be cultural factors, such as a preference for boys, which contributes to the increased mortality of girls during infancy and childhood.²⁹ Nevertheless, many works on modern populations indicate the influence of various environmental stresses on the variation in birth masculinization rates.³⁰ This is due to the fact that male fetuses place a much greater burden on the mother’s body, and are therefore more likely to miscarry during periods of deteriorating living standards.³¹ The usefulness of sex ratio at birth as a method for estimating the impact of crises on historical populations has recently been demonstrated using the example of a Slovak rural community in the 19th and early 20th centuries.³² All calculations and graphs were made using MS Excel and RStudio.

²³ *Ibidem*, 23.

²⁴ Robert C. Allen, *warsaw.xls*, accessed November 14, 2022, <https://www.nuffield.ox.ac.uk/people/sites/allen-research-pages>; *idem*, “The Great Divergence in European Wages and Prices from the Middle Ages to the First World War,” *Explorations in Economic History* 38 (2001): 411–47.

²⁵ Alfred Jacobs and Hans Richter, *Großhandelspreise in Deutschland von 1792 bis 1934* (Hamburg: Hanseatische Verlagsanstalt, 1935), 56.

²⁶ Łukasiewicz, “Wpływ,” 186.

²⁷ Szumski, *Uwłaszczenie*, 41–2; Stanisław Siegel, *Ceny w Warszawie w latach 1816–1914* (Poznań: Poznańskie Towarzystwo Przyjaciół Nauk, 1949), 96–101.

²⁸ Kuklo, *Demografia*, 178.

²⁹ For a summary of a discussion on the sex ratio of children in historical times, see Francisco J. Beltrán Tapia, and Mikołaj Szoltysek, “‘Missing Girls’ in Historical Europe: Reopening the Debate,” *The History of the Family* 27, no. 4 (2022): 619–57.

³⁰ See Ralph Catalano et al., “Exogenous Shocks to the Human Sex Ratio: The Case of September 11, 2001 in New York City,” *Human Reproduction* 21 (2006): 3127–31.

³¹ Robert L. Trivers and Dan E. Willard, “Natural Selection of Parental Ability to Vary the Sex Ratio of Offspring,” *Science* 179 (1973): 90–2; William H. James, “Hypotheses on the Stability and Variation of Human Sex Ratios at Birth,” *Journal of Theoretical Biology* 310 (2012): 183–86.

³² Ján Golian and Grażyna Liczbińska, “The Influence of Extreme Exogenous Shocks on the Sex Ratio at Birth: A Study of the Population of Detva (Upper Hungary), 1801–1920,” *Romanian Journal of Population Studies* 16, no. 2 (2022): 27–51; Grażyna Liczbińska and Agnieszka Sobkowiak,

Results

Table 1 shows the gauge of basic indicators for assessing the quality of vital records for the parish of Daukšai in 1840–1850. It is assumed that to consider the registration reliable, the proportion of deaths of infants and children aged 0–5 to the rest of the deaths in the population should be about 30% and 50%, respectively. Another indicator is the ratio of births to marriages, which, depending on whether we are studying an urban or rural community, should be around 4.0–5.0, respectively. In addition, the ratio of births to deaths is used, which should be around 1.0 or slightly higher. The male-to-female ratio of newborns is also often used, which should fluctuate between 105–107 boys per 100 girls.³³

Table 1. Ratio of number of births to number of marriages (B/M), ratio of number of deaths to number of marriages (D/M), Sex Ratio at Birth (SRB), percentage of deaths in age categories 0–1 and 0–5

B/M	B/D	SRB	0–1	0–5
4.94	1.75	98	18.41%	41.88%

Source: “Primary sources” in bibliography.

The B/M indicator is within the limits acknowledged in the literature, but a glance at the values assumed by the other indicators suggests an underestimation of death registration. Representatives of the Augustów Governorate at the time were already complaining about the tardiness and shortcomings of priests in fulfilling their duties as civil registrars.³⁴ In addition, the male-to-female ratio for newborns also has a lower value than that accepted in the literature. Due to the impact of environmental stresses on its values, an assessment of its variability will be made later in the article.

The impact of the famine on the population can be seen in the conventional demographic indicators, as can be seen in the graphs showing the vital statistics dynamics in Daukšai Parish based on Loess regression curves.³⁵ Death and birth

“Did the Sex Ratio at Birth Reflect Social and Economic Inequalities? A Pilot Study of the Province of Poznań, 1875–1913,” *Przeszość Demograficzna Polski – Poland’s Demographic Past* 42 (2020): 95–121, <https://doi.org/10.18276/pdp.2020.42-04>.

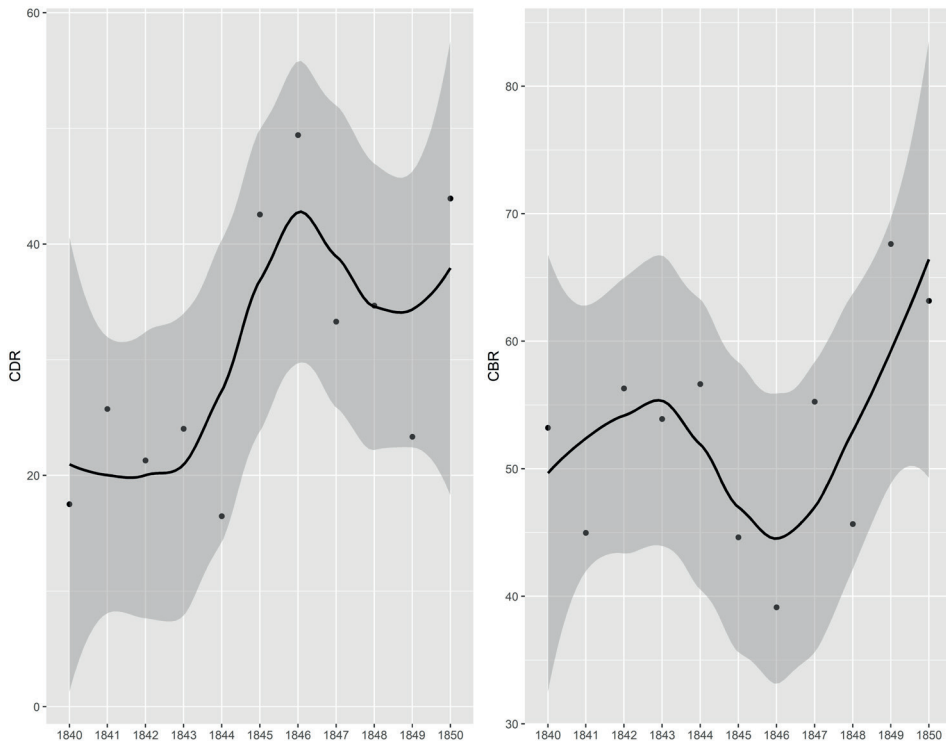
³³ Kuklo, *Demografia*, 176–78; Grażyna Liczbińska, “Diseases, Health Status, and Mortality in Urban and Rural Environments: The Case of Catholics and Lutherans in 19th-Century Greater Poland,” *Anthropological Review* 73 (2010): 25.

³⁴ Witold Jemielity, “Akta stanu cywilnego w Księstwie Warszawskim i Królestwie Polskim,” *Prawo Kanoniczne* 38, nos. 1–2 (1995): 177.

³⁵ See Radosław Poniat, “O możliwości wykorzystania regresji LOESS w analizie szeregów czasowych,” *Przeszość Demograficzna Polski – Poland’s Demographic Past* 38, no. 2 (2016): 103–15, <https://doi.org/10.18276/pdp.2016.2.38-04>.

rates remained relatively stable until 1844. Of note is their relationship to each other at the onset of the crisis in late 1845 and early 1846, when the death rate exceeds births. The situation repeats itself in 1847 and the following years, but this time with an indication in favor of births. Thus, the post-crisis offset growth is clearly visible.

Figure 1. Values of Crude Death Rate (CDR) and Crude Birth Rate (CBR), Daukšai Parish



Source: “Primary sources” in bibliography.

The literature has already highlighted the problem of under-reporting deaths, especially of children, in the Russian partition. The introduction of civil registration at the beginning of the 19th century was a significant qualitative change in their recording,³⁶ but in later years the shortcomings in the mortality statistics in the Kingdom of Poland are still apparent.³⁷

³⁶ Rachwał, *Ruch*, 261.

³⁷ Grażyna Liczbińska and Kamila Stachura, “The Problem of Accuracy of Historical Sources. Mortality in the Polish Territories under Russian Rule,” *Romanian Journal of Population Studies* 7, no. 2 (2013): 5–20; Rachwał, *Ruch*, 264.

Such an issue could be ignored by assuming that vital statistics analysis, even if some deaths among younger members of the population are not included, shows anticipated fluctuations in mortality and fertility at the onset of famine. However, the use of methods used in paleodemography³⁸ to calculate the values of life tables will enable us not only to demonstrate the negative impact of famine on further life expectancy, but also to present ways to re-estimate the gaps in parish registers.

Life tables are an extremely good method for studying mortality and living standards, and are also useful for comparisons between populations. The prerequisite for their use, however, is a broad and reliable source base.³⁹ For historical populations, the problem is often the lack of adequate data on population structure by age and sex, which are used to build a standard life table. An alternative solution may be to resort to methods used in the biology of prehistoric populations,⁴⁰ where researchers measure life expectancy based on the distribution of the deceased by age bracket. The following tables show the results by period before, during and after the famine.

Table 2. Fraction of deaths in the 0–1 and 0–5 age categories in the Augustów Governorate (per 1,000 people), based on recorded (empirical) number of children and corrected number of children (CORR)

Period	Period	0–1	0–1 CORR	0–5	0–5 CORR
Before the famine	1840–1844	18.24	30.08	40.07	52.38
During the famine	1845–1846	12.50	31.03	38.64	52.40
After the famine	1847–1850	23.41	35.48	41.73	50.62

Source: “Primary sources” in bibliography.

The data in the tables show two important issues. First, it is evident that there is a difference in the fraction of deaths between the raw data taken from the source and those corrected using the methods used in paleodemography. The corrected

³⁸ Maciej Henneberg, “Proportion of Dying Children in Paleodemographical Studies: Estimation by Guess or Methodical Approach,” *Przeгляд Antropologiczny* 43, no. 1 (1977): 106–14; see also: Alicja Budnik, *Uwarunkowania stanu i dynamiki biologicznej populacji kaszubskich w Polsce. Studium antropologiczne* (Poznań: Wydawnictwo Naukowe UAM, 2005); Liczbińska and Stachura, “The Problem.”

³⁹ Jerzy Holzer, *Demografia* (Warszawa: Polskie Wydawnictwo Ekonomiczne, 2003), 225–47.

⁴⁰ György Acsádi and János Nemeskéri, *History of Human Life Span and Mortality* (Budapest: Akadémiai Kiadó, 1970); See also Grażyna Liczbińska, “Infant and Child Mortality among Catholics and Lutherans in Nineteenth Century Poznań,” *Journal of Biosocial Science* 41, no. 9 (2009): 661–83. Janusz Piontek, “Średniowieczne cmentarzysko w Słaboszewie koło Mogilna. Analiza wymieralności,” *Przeгляд Antropologiczny* 43 (1977): 37–53.

results take on values consistent with those accepted in the literature. Second, the negative effect of the crisis years of 1845–1846 on infant mortality rates and life expectancy compared to the other two periods is clear. The effects of the famine can also be seen from the development of the sex ratio at birth in Daukšai.

Table 3. Changes over time in the values of infant death rates in the Augustów Governorate (per 1,000 live births); empirical (IMR) and corrected number of children (IMR CORR)

Period	Period	IMR (empirical)	IMR (CORR)
Before the famine	1840–1844	68.62	139.90
During the famine	1845–1846	135.24	336.06
After the famine	1847–1850	136.3	244.40

Source: “Primary sources” in bibliography.

Table 4. Values of life expectancy at birth in the Augustów Governate based on empirical data e_0 (empirical) and with corrected number of children e_0 (CORR)

Period	Period	e_0 (empirical) stationary population	e_0 (CORR) stationary population	e_0 (empirical) stable population	e_0 (CORR) stable population
Before the famine	1840–1844	28.84	23.45	40.31 ¹	34.94 ¹
During the famine	1845–1846	30.72	24.41	25.81 ²	19.95
After the famine	1847–1850	26.05	22.48	29.56 ³	25.83

¹ Population growth, $r = 13.9$, value adapted for the Kingdom of Poland, 1831–1840; derived from Wyczański et al., *Historia Polski w liczbach*, 103.

² Population growth, $r = -6.0$, value adapted for the Kingdom of Poland, 1847–1848; derived from Wyczański et al., *Historia Polski w liczbach*, 103.

³ Population growth, $r = 4.4$, value adapted for the Kingdom of Poland, 1851–1860; derived from Wyczański et al., *Historia Polski w liczbach*, 103.

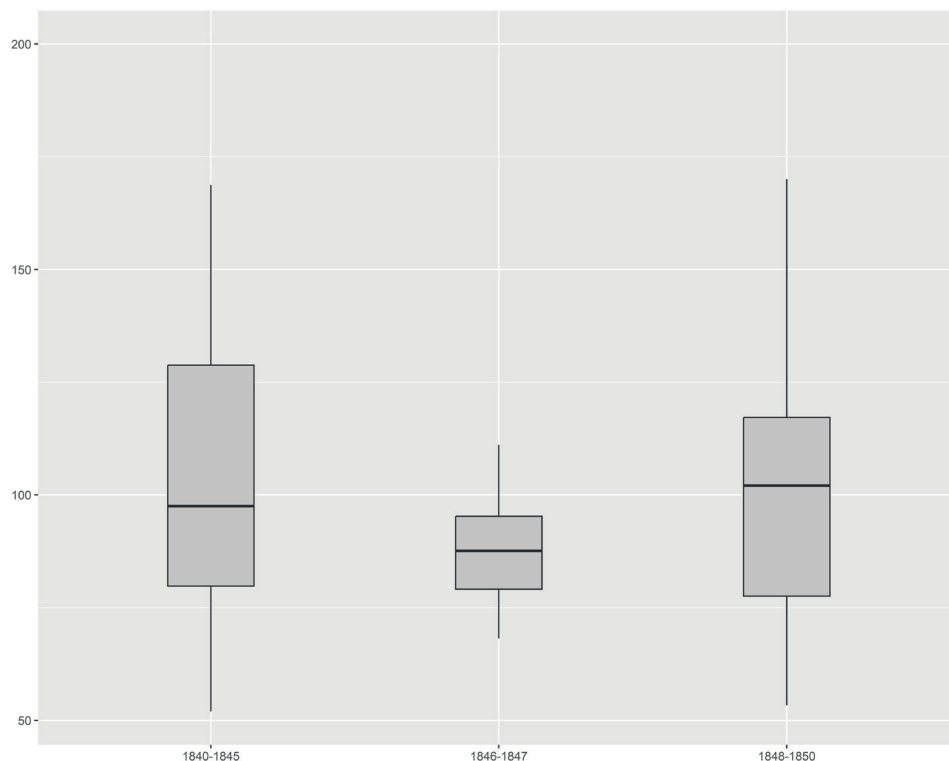
Source: “Primary sources” in bibliography.

Table 5. Coefficients of Sex Ratio at Birth (SRB)

Period	Mean	SD	95%CI
1840–1845	105.71	32.18	94.56–116.86
1846–1847	99.65	42.63	84.88–114.42
1848–1850	104.17	38.57	90.80–117.53

Source: “Primary sources” in bibliography.

Figure 2. Boxplot of Sex Ratio at Birth (SRB) in Daukšai Parish (quarterly data)



Source: “Primary sources” in bibliography.

The years 1840–1850 have been divided into three sub-periods, which aim to show the sex ratios at birth before and during the crisis, the period immediately following the crisis, and the subsequent years in which there was a compensatory increase after the famine. According to the theory of the impact of environmental stresses on the sex ratio, there should be a decrease in male live births in the years following the crisis. Such a scenario has been shown, for example, in economic downturns⁴¹ or natural disasters such as earthquakes.⁴² Importantly, the negative effect of famine on the sex ratio is also proven.⁴³

⁴¹ Ralph Catalano, “Sex Ratios in the Two Germanies: A Test of the Economic Stress Hypothesis,” *Human Reproduction* 18 (2003): 1972–75.

⁴² Kohta Suzuki et al., “Effects of the Great East Japan Earthquake on Secondary Sex Ratio and Perinatal Outcomes,” *Journal of Epidemiology* 26 (2016): 76–83.

⁴³ Shige Song, “Does Famine Influence Sex Ratio at Birth? Evidence from the 1959–1961 Great Leap Forward Famine in China,” *Proceedings. Biological Sciences* 279, no. 1739 (2012): 2883–90.

A similar occurrence is clearly evident from the data in figure 2 and table 5. Due to the use of quarterly data, SRB values are subject to wide fluctuations, as can be seen from the outcome of the standard deviation and confidence interval measurements for the three sub-periods. Characteristically, however, the result for the 1845–1846 period is much lower compared to the two neighboring periods, which take average values within the biological norm. This allows us to infer the negative effect of famine on the sex ratio at birth. The Kruskal-Wallis test did not show statistically significant differences; this is most likely due to too small a sample. Nevertheless, a decrease in the sex ratio below the biological level is evident precisely during the period of environmental stress in the form of famine, which is consistent with the theoretical basis.

Studies indicate neglect or abandonment—and in extreme cases even cases of infanticide—of female newborns in rural European communities during the deterioration of living conditions in the early modern period and even during the 19th century.⁴⁴ In turn, qualitative sources suggest favoritism of male children in terms of access to education, food or even care over girls in Polish lands as well.⁴⁵ These speculations have recently been substantiated by the results of a meta-analysis, which indicate a distortion of the sex ratio of children in favor of boys in some populations of historical Europe, including the areas of Central and Eastern Europe.⁴⁶ Therefore, the apparent reduction in the male-to-female sex ratio at birth in the period immediately following the onset of famine confirms the usefulness of the sex ratio study method as an indicator of the vulnerability of historical populations to environmental stresses.

In order to confirm the famine nature of the demographic crisis, linear regression models were run, with the crude death rate in Daukšai as the dependent variable and the independent variable the price of rye in Warsaw in model 1, the price of potatoes in Warsaw in model 2, the price of potatoes in Königsberg in model 3, and their relationship to each other in model 4. The famine was usually accompanied by an increase in food prices, and although it did not necessarily entail increased mortality,⁴⁷ when both occur simultaneously a famine can be said to have occurred.

⁴⁴ Beltrán Tapia and Szołtysek, “Missing,” 625–26, 636.

⁴⁵ *Ibidem*, 631.

⁴⁶ Mikołaj Szołtysek, Bartosz Ogórek, Siegfried Gruber, and Francisco J. Beltrán Tapia, “Inferring ‘Missing Girls’ from Child Sex Ratios in Historical Census Data,” *Historical Methods. A Journal of Quantitative and Interdisciplinary History* 55, no 2 (2022): 111.

⁴⁷ See Jean Michel Chevet and Cormac Ó Gráda, “Crisis: What Crisis? Prices and Mortality in Mid-nineteenth Century France,” in *When the Potato Failed. Causes and Effects of the ‘Last’ European Subsistence Crisis, 1845–1850*, eds. Cormac Ó Gráda, Richard Paping, and Eric Vanhaute (Turnhout: Brepols, 2007), 247–66.

Table 6. Coefficients of linear regression models

	Model 1	Model 2	Model 3	Model 4
Intercept	2.0040	8.8140	8.9450	20.4000
B	67.1280**	1,997.9460**	10.0650*	761.2340**
F	21.2500	18.5700	5.2510	11.6300
R ²	0.7025	0.6735	0.3685	0.5638

* p < 0.05

** p < 0.01

Source: “Primary sources” in bibliography; Allen, warsaw.xls; Jacobs, Richter, Großhandelspreise, 56.

The crude death rate reacts most strongly to fluctuations in the price of rye, which is not surprising, given that this crop was the most widely grown in the Augustów Governorate and throughout the Kingdom of Poland, also being one of the main trading commodities in the country.⁴⁸ Overall, however, the mortality reacts positively to fluctuations in food prices, which allows us to confirm the hypothesis of the occurrence of famine in the Augustów Governorate in 1845.

Discussion

The results shown here are more of a pilot study, but it seems that supplementing them with a larger number of parishes could only strengthen the argument of a significant demographic crisis in the northeastern counties of the Augustów Governorate. The extent of the famine can be seen from the fact that events there were reported by national public opinion. In 1847, in the pages of the journal *Roczniki Gospodarstwa Krajowego*, it was written that “in the past two years of crop failure, when famine was particularly severe for the latter, this very class [of farmhands and crofters] made the most noise and spread the news, perhaps exaggerated, of a famine in the northern part of the Augustów Governorate.”⁴⁹

This crisis was not an isolated case within the Kingdom of Poland, or even Europe. For many European countries, the mid-19th century was a period of excess mortality caused by the potato blight and poor grain harvests.⁵⁰ Its most dire effects were felt in Ireland, which faced mass emigration and the deaths of as many as

⁴⁸ Kostrowicka, *Produkcja*, 79–80.

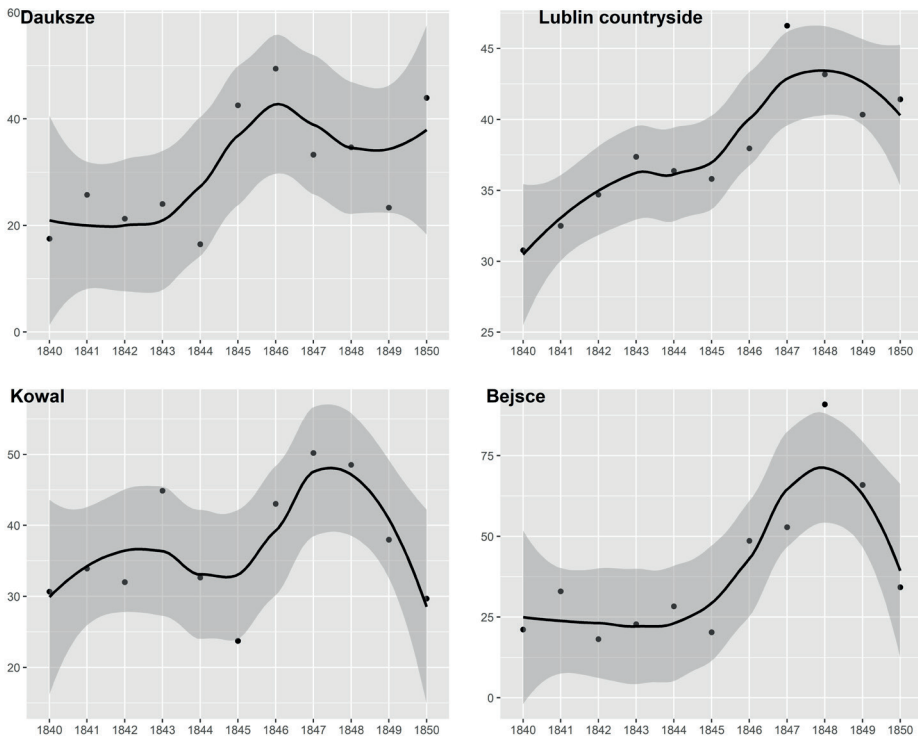
⁴⁹ A.G., “Kilka słów o północnych powiatach gubernii Augustowskiej,” *Roczniki Gospodarstwa Krajowego* 10 (1847), 2: 286. (Translated from the original Polish.)

⁵⁰ Eric Vanhaute, Richard Paping, and Cormac Ó Gráda, “The European Subsistence Crisis of 1845–1850. A Comparative Perspective,” in *When the Potato Failed: Causes and Effects of the ‘Last’ European Subsistence Crisis, 1845–1850*, eds. Cormac Ó Gráda, Richard Paping, and Eric Vanhaute (Turnhout: Brepols, 2007), 15–40.

a million people. Losses in the rest of the continent were incomparable, but a noticeable increase in deaths and decline in births also occurred in countries where potato cultivation was more prominent, such as Belgium, the Netherlands and Prussia.⁵¹ A marked increase in mortality between 1844 and 1846 was also seen in the Estonian Governorate of the Russian Empire.⁵²

Unfortunately, there is a lack of demographic data from Polish lands that can be compared with other regions in Europe. Unquestionably, the crisis did not spare Poland, and based on the literature to date, it can be assumed that its scale was significant.

Figure 3. Values of Crude Death Rate (CDR) in Daukšai Parish, and for comparison respectively, rural parishes in the Lublin Governorate, Kowal Parish (Kujavia) and Bejsce Parish (Kielce Governorate) in 1840–1850



Source: “Primary sources” in bibliography; own calculations based on Rachwał, Ruch, 50, 54 1025–1239; Drozd-Lipińska, *Umieralność*, 294, 310; Piasecki, *Ludność*, 19, 78.

⁵¹ Ibidem, 26–28.

⁵² Martin Klesment and Kersti Lust, “Short-Term Economic Stress and Mortality Differentials in Rural Estonia, 1834–1884,” *Scandinavian Economic History Review* 69, no. 1 (2021): 1–19.

The chart above shows a comparison of the trend in the crude death rate calculated by Loess regression over the same period in Daukšai, the rural parishes of Lublin Region, Kowal Parish in Kuyavia, and the parish of Bejsce in Kielce region, which allows us to cover virtually the entire territory of the Kingdom of Poland. For the Lublin region, the demographics were more acutely affected by the subsequent years of the disastrous decade of 1845–1855, especially the regularly recurring waves of cholera epidemics.⁵³ A similar situation occurred in Kuyavia, although here a sharp increase in mortality is noticeable as early as 1846. Among the local population in the late 1840s and early 1850s, there was also a noticeable decline in the crude birth rate and natural increase due to demographic crises caused mainly by crop failures and repeated recurrences of cholera.⁵⁴ An interesting case is that of Bejsce, where the impact of crop failures and potato blight can be clearly seen as early as 1846. Piasecki also mentioned, as in the case of Kuyavia and Lublin Region, the severe impact of the cholera epidemic on population demographics in 1848 and in the 1850s.⁵⁵

A noteworthy consequence of the famine in the Augustów Governorate was the outbreak of a wave of emigration in the population of its northeastern districts. It is all the more interesting because at that time, apart from Ireland and Scotland, there were no major migrations caused by famine in Europe.⁵⁶

The first mention of turmoil among local residents appeared in reports written to the Government Commission for Internal and Clerical Affairs by Augustów Civil Governor Benon Benedict Tykel in the late summer and autumn of 1845, when he reported on a rumor that had been spreading among the residents of Kalwaria District. The rumor was that the Prussian government was recruiting subjects from the Kingdom of Poland to be settlers to America. Initially, the exodus was to include only “lodgers and squatters,” who, together with their families, would constitute the majority of people attempting to cross the border.⁵⁷ This group of the population was traditionally characterized by high mobility, since its main source of income was earnings from seasonal work. In addition, the share of the landless population in the social structure of villages in the Lithuanian districts of the Augustów Governorate was quite high.⁵⁸ Therefore, it is not surprising that they were the first to express their desire to emigrate. In time, however, farmers also began to appear among the emigrants.⁵⁹

⁵³ Rachwał, *Ruch*, 68–270, 341–342.

⁵⁴ Drozd-Lipińska, *Umieralność*, 142–176.

⁵⁵ Piasecki, *Ludność*, 329–330.

⁵⁶ Vanhaute, Paping, and Ó Gráda, “Subsistence Crisis,” 27–28.

⁵⁷ AGAD, KRSW 6679, 1.

⁵⁸ Szumski, *Uwłaszczenie*, 79–87.

⁵⁹ AGAD, KRSW, 19.

Officials suspected that the willingness of peasants to abandon their land to migrate to America may have been fueled by emigration brokers. Also accused of spreading rumors were priests, who allegedly, during their sermons, urged the faithful to emigrate.⁶⁰ All attempts to establish this fact, however, led to the conclusion that the villagers were only leaving “because of the widespread shortages and with the intention of improving their lot, which is unpleasant due to crop failures.”⁶¹ The reason for the wave of emigration in the Augustów Governorate was famine, which pushed entire families to flee.

Witold Kula, drawing on the research of French historians who were contemporaries of his time, had already hinted at increased social unrest as a result of food shortages.⁶² One of the common consequences of crop failures was an attempt to escape famine by migrating.⁶³ The best-known example of this occurrence, but also rather extreme, is Ireland during the time of the Great Famine in the mid-19th century. Irish agriculture was largely dependent on potato cultivation. The outcome of the potato blight was not only a record high mortality rate compared to other historic famines, but also the extraordinarily sweeping scale of emigration.⁶⁴

Although crop failures did not always result in such large waves of refugees, numerous case studies confirm the underlying mechanism. In Finland, following a very poor harvest in 1866–1868, the authorities saw a much higher than usual increase in vagrancy. Agricultural laborers who were no longer able to support themselves in their hometowns fared worst. A wave of destitute people migrating for work surged across the country at the height of the famine.⁶⁵

The exodus of the Augustów Governorate population when faced with famine is therefore not an unusual occurrence. Fear of famine was one of the greatest anxieties for Europeans.⁶⁶ Although pre-industrial rural communities depended on the vagaries of nature and thus constantly lived in fear of crop failure or epidemics, people never became accustomed to the fear of the threat of death. Paradoxically,

⁶⁰ Ibidem, 44–45, 69.

⁶¹ Ibidem, 19–20.

⁶² Kula, *Problemy*, 668.

⁶³ Guido Alfani and Cormac Ó Gráda, “Famines in Europe. An Overview,” in *Famine in European History*, eds. Guido Alfani and Cormac Ó Gráda (Cambridge: Cambridge University Press, 2017), 23.

⁶⁴ Cormac Ó Gráda, *Black '47 and Beyond. The Great Irish Famine in History, Economy, and Memory* (Princeton: Princeton University Press, 1999), 104–114; Cormac Ó Gráda, “The Next World and the New World. Relief, Migration, and the Great Irish Famines,” *The Journal of Economic History* 79, no. 2 (2019): 330–32.

⁶⁵ Kari Pitkänen, “The Road to Survival or Death? Temporary Migration during the Great Finnish Famine in the 1860s,” in *Just a Sack of Potatoes? Crisis Experiences in European Societies, Past and Present*, ed. Antti Häkkinen (Helsinki: Suomen Historiallinen Seura, 1992), 97–98.

⁶⁶ Jean Delumeau, *Strach w kulturze zachodu, XIV–XVIII wiek*, trans. Adam Szymanowski (Warszawa: Wydawnictwo PAX, 1986), 154–58.

the fear seemed to become stronger with the increasing prevalence of death, and thus the sense of impermanence.⁶⁷ “Collective fear can also lead to aberrant and suicidal behavior, divested of a proper appraisal of reality,”⁶⁸ wrote Jean Delumeau, who introduced the concept of fear into historical research. This conclusion may be the key to explaining the success of the emigration rumor spreading in Augustów Governorate. However, would the rural population be able to drop everything and put their faith in a rather murky piece of hearsay? Florian Znaniecki explained that under ordinary conditions, peasant communities were able to do a good job of evaluating the events they observed. “The peasant is an astute observer in the sphere of his normal surroundings, because perceptiveness is a condition for practical success.”⁶⁹ If this is the case, the rumor must have been very well grounded in local customs, as was its interpretation. However, famine causes disruption in social life. In a situation where people are ready to migrate because of the misery caused by crop failure, gossip can create even more community disorganization and consequently contribute to emigration to escape it. As Znaniecki wrote, “However, when a new and hitherto unknown occurrence comes under the spotlight of public opinion, the old mechanism immediately fails. Observation reveals shortcomings, a fact becomes distorted by old thinking habits; interpretation is a work of blind luck, and genuine criticism is impossible, since there is no readymade standard for what is plausible and what is implausible. In particular, if such a new fact arises, and the rumor goes beyond the inner circle of the community, the disorganization of public opinion is complete. Any ridiculous rumor can be let loose, and it will be widely accepted. The reason for this is not only the inability to get to the source of the rumor and the difficulty of verifying it, but also the widespread mental attitude of the peasant who, having found himself outside his normal environment, looks at the world as an unlimited sphere of unfathomable opportunities.”⁷⁰

Eventually, Governor Tykiel was able to find the origin of the emigration rumor. In his last reports to the Government Commission for Internal Affairs, he reported the discovery of two Prussian citizens who were allegedly persuading peasants on the border between Prussia and the Kingdom of Poland to emigrate for America.⁷¹ The direction of migration toward Prussia and the rapid spread of the emigration rumor were a natural consequence of brisk border trade and the smuggling of goods across the borders.⁷²

⁶⁷ Ibidem, 18–31.

⁶⁸ Ibidem, 15.

⁶⁹ Florian Znaniecki and William I. Thomas, *Chłop polski w Europie i Ameryce*, vol. 1 (Warszawa: Ludowa Spółdzielnia Wydawnicza, 1976), 136. (Translated from the original Polish.)

⁷⁰ Ibidem, 136–37. (Translated from the original Polish.)

⁷¹ AGAD, KRSW, 98.

⁷² Szumski, *Uwłaszczenie*, 92–3.

The wave of migration from the Augustów governorate is undoubtedly an interesting phenomenon due to being the first source-certified mention of attempted emigration from the Kingdom of Poland to America, and thus may warrant further in-depth research.

Final remarks

There is every indication that Polish lands were not spared the demographic crisis that afflicted various parts of Europe in the mid-19th century. It seems that the famine in the Augustów Governorate in late 1845 and early 1846 was one of its earliest local episodes. Various references in the literature suggest that a similar fate befell the Radom Governorate at the time,⁷³ a question that would, however, require examination of the civil records there.

Based on currently available research results, the subsequent years of the disastrous decade of 1845–1855, during which there was periodically a negative natural increase, are much more disastrous in terms of population across the Kingdom of Poland.⁷⁴ The devastating impact of the blight on the cultivation of potatoes was reported by Irena Kostrowicka, who proved that average yields dropped steadily in the late 1840s and early 1850s.⁷⁵ Several years ago, Piotr Miodunka highlighted the need for more extensive research on the demographic crisis in Polish lands in the mid-19th century.⁷⁶ According to the latest findings, this was a watershed moment, as the escape from the long-term impact of cyclical famines and epidemics made it possible to initiate unfettered positive changes in the secular trend of Polish society's biological standard of living.⁷⁷ Undoubtedly, this period deserves further in-depth research, the most important aspect of which should be to broaden the analysis to include a larger sample and other areas of Polish lands,⁷⁸ as well as to take into

⁷³ Śreniowski, *Studia*, 64–5.

⁷⁴ Andrzej Wyczański, Cezary Kukło, Juliusz Łukasiewicz, Andrzej Jeziński, Cecylia Leszczyńska, and Jan Berger, eds., *Historia Polski w liczbach. Ludność. Terytorium* (Warszawa: Zakład Wydawnictw Statystycznych, 1994), 103; Łukasiewicz, "Wpływ," 189.

⁷⁵ Kostrowicka, *Produkcja*, 28–29.

⁷⁶ Miodunka, "Kryzysy żywnościowe," 221–22.

⁷⁷ Michał Kopczyński, "Agrarian Reforms, Agrarian Crisis and the Biological Standard of Living in Poland, 1844–1892," *Economics & Human Biology* 5, no. 3 (2007): 458–70. Łukasz Sobechowicz, "Biologiczny standard życia w Królestwie Polskim przed uwłaszczeniem. Wysokość ciała rekrutów w latach 1835–1866" (doctoral thesis, Warsaw: University of Warsaw, 2022), 87–103; Bartosz Ogórek, "Wysokość ciała poborowych górali podhalańskich i żywieckich w długim XIX stuleciu," in *Conditio humana. Studia z dziejów biologicznego standardu życia na ziemiach polskich*, ed. Michał Kopczyński (Warszawa: Oficyna Wydawnicza Mówią wieki, 2020), 57–87.

⁷⁸ Bartosz Ogórek "Wiek zawierania pierwszych małżeństw przez kobiety w Polsce w XVII–XIX wieku. Metastudium," in *Jednostka, rodzina i struktury społeczne w perspektywie historycznej. Księga jubileuszowa dedykowana Profesorowi Cezaremu Kukłowi z okazji 45-lecia pracy naukowej*, eds. Piotr Łozowski and Radosław Poniak [Białystok: Instytut Badań nad Dziedzictwem

account climate factors,⁷⁹ making it possible to better understand their impact on the crop failures and potato blight that occurred during this period.

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Kulturowym Europy, 2022], 172) recently noted the fact that many parts of the Polish lands have not been recognized in studies by domestic historical demographers.

⁷⁹ Guido Alfani and Cormac Ó Gráda “The Timing and Causes of Famines in Europe,” *Nature Sustainability* 1 [2018]: 283–288 highlighted the link between periods of particularly intense famines in preindustrial Europe and climate cooling; see also Miodunka, “Kryzysy żywnościowe,” 209–227.

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Famine in the Kingdom of Poland in the Mid-19th Century, Exemplified by the Augustów Governorate

Summary

Demographic crises in Polish lands, especially in the period from 1845 to 1855, are still an insufficiently researched issue. This article succeeds in proving the occurrence of famine in the northeastern districts of the Augustów Governorate on the basis of observations on the dynamics of vital statistics and changes in the prices of rye and potatoes in Warsaw and Königsberg. Famine in the Augustów Governorate was also corroborated by narrative sources, which mentioned increased peasant emigration caused by crop failure. The usefulness of sex ratios at birth for studying demographic crises was also demonstrated.

A comparison with the current available literature points to severe short- and long-term effects of population crises in Polish lands in the mid-19th century, although this issue certainly requires further detailed research.

Głód w Królestwie Polskim w połowie XIX wieku na przykładzie guberni augustowskiej

Streszczenie

Problem kryzysów demograficznych na ziemiach polskich, zwłaszcza w latach 1845–1855, wciąż pozostaje niedostatecznie przebadanym zagadnieniem. W niniejszym artykule udało się udowodnić wystąpienie głodu w północno-wschodnich powiatach guberni augustowskiej na podstawie obserwacji dynamiki ruchu naturalnego oraz zmian w cenach żyta i ziemniaków w Warszawie i Królewcu. Nieurodzaj w guberni augustowskiej został poświadczony również w źródłach narracyjnych, które wzmiankowały o wzmożonej emigracji chłopskiej, wywołanej nieurodzajem. Wykazano użyteczność wskaźników proporcji płci przy urodzeniu do badania kryzysów demograficznych. Porównanie z dostępną obecnie literaturą wskazuje na dotkliwe krótko- i długoterminowe skutki kryzysów demograficznych na ziemiach polskich w połowie XIX wieku, choć problem ten bez wątpienia wymaga dalszych szczegółowych badań.

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