Causes of Death in 19th-Century Ukraine. Parish Registers, Data Quality, and Source-Critical Analysis

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Causes of Death in 19th-Century Ukraine

Parish Registers, Data Quality, and Source-Critical Analysis

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ABSTRACT

This article examines parish registers as the primary source of mortality registration in 19th-century Ukraine and evaluates their potential and limitations for historical-demographic database construction. Drawing on Orthodox and Protestant parish registers from Left-bank and Southern Ukrainian territories of the Russian Empire, the study demonstrates that until the late 1830s these records rarely contained systematic information on causes of death and were characterized by substantial inconsistencies in age reporting, gender registration, and coverage of neonatal mortality. Based on an empirical analysis of more than 5,600 individual death records incorporated into the Ukrainian Mortality Database 19 (UMB19), the article identifies a clear institutional turning point around 1838, after which the recording of causes of death became more regular and increasingly standardized, though still dependent on the diligence and practices of individual clergy. Quantitative indicators such as age heaping and distorted sex ratios reveal persistent problems of underregistration, particularly of women and infants, while also allowing the identification of parish registers that meet minimum quality thresholds for inclusion in historical databases. The article further shows that 19th-century mortality statistics produced by ecclesiastical and civil authorities were entirely derivative of parish registers and therefore reproduced their structural biases. By outlining concrete criteria for source selection and data quality assessment, and by documenting the practical challenges of coding and standardizing historical causes of death, this study contributes to the methodological integration of Ukrainian materials into comparative European research on mortality and population history.

Keywords: Parish registers, Mortality, History of Ukraine, 19th Century, Historical demography, Database

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1 INTRODUCTION: THE (NATIONAL) CONTEXT OF THE DEVELOPMENT OF CAUSE-OF-DEATH STATISTICS

Mortality in 19th-century Ukraine remains weakly integrated into comparative European demographic research, not because of a lack of sources, but due to persistent uncertainties regarding their structure, quality, and analytical reliability. Throughout most of the 19th century, the only systematic and large-scale registration of deaths in Ukrainian territories was conducted through parish registers maintained by Orthodox, Protestant, Catholic, Jewish and Muslim clergy. These records formed the empirical foundation of all subsequent ecclesiastical and civil mortality statistics. Yet their internal consistency, completeness, and suitability for database-based analysis vary considerably across regions, confessional groups, and chronological phases. Without systematic source criticism and explicit methodological controls, the use of these materials risks reproducing the biases embedded in the original registration practices.

Against this background, a data-oriented approach grounded in explicit evaluation of source quality is essential for the meaningful use of parish registers in historical-demographic research. Rather than treating these records as neutral repositories of demographic facts, it is necessary to assess how institutional regulations, clerical practices, and local conditions shaped the recording of deaths, ages, gender, and causes of death. This article adopts such an approach by examining parish registers not only as historical sources, but also as datasets whose analytical value depends on demonstrable criteria of accuracy, coverage, and standardization. Its central aim is to establish the conditions under which causes of death recorded in these sources can be used as analytically reliable historical-demographic data and integrated into comparative research.

To move from general source criticism to systematic analysis, it is necessary to treat parish registers simultaneously as historical documents and as structured datasets. This requires explicit criteria for evaluating their analytical reliability, including the consistency of age reporting, the completeness of gender registration, and the regularity with which causes of death were recorded. On this basis, the Ukrainian Mortality Database 19 (UMB19) was constructed as a research tool designed to capture both the informational potential and the limitations of parish registers. Rather than smoothing inconsistencies or retrospectively correcting the data, the database preserves the original structure of the sources while applying transparent rules of standardization and selection, thereby enabling controlled comparative analysis across regions, confessions, and time periods.

To address these questions in a systematic manner, the article combines institutional analysis, source criticism, and data-oriented procedures. The first section reconstructs the normative framework and recording practices that shaped the registration of deaths in Ukrainian lands during the 18th and 19th centuries, with particular attention to regional and confessional variation. The second section examines parish registers as historical-demographic sources, focusing on their structural heterogeneity, recording conventions, and implications for the analytical use of causes of death. Building on this foundation, the construction of the UMB19 is discussed, including selection criteria, coding principles, and indicators of data quality designed to assess the reliability of the underlying records. The subsequent section situates the Ukrainian material within existing research on mortality and causes of death, not as a standalone historiographical survey, but as a framework for evaluating the possibilities and limits of comparative analysis. The article concludes by outlining the conditions under which parish-register-based cause-of-death data from Ukraine can be meaningfully integrated into broader European historical-demographic research.

2 A BRIEF HISTORY OF THE INTRODUCTION OF METRIC BOOKS IN UKRAINE

The registration of causes of death in these territories emerged and developed as a result of the appropriation of certain Catholic Church practices from Central and Western Europe, though with some temporal lag. In part of these regions, such practices were introduced under the influence of the Council of Trent (1545–1563), which mandated the establishment of special registers of births, marriages, and

deaths. From the late 16th century, these decisions were gradually adopted by Catholic churches in the Polish–Lithuanian Commonwealth. However, the population of the Ukrainian voivodeships of the Commonwealth was predominantly Orthodox and belonged to the Kyiv Metropolis.

The spiritual leader of this metropolis, Metropolitan Petro Mohyla, compiled a *Trebnyk* (Euchologion) in 1646 — a major liturgical book containing rules and descriptions of church sacraments. This work is considered a clear manifestation of the occidentalization of Kyiv Orthodoxy, one aspect of which was the proposal to initiate systematic registration of baptized individuals (Skochylias, 2009, pp. 26–28). The Trebnyk had a substantial impact on the unification of church life and the modernization of ecclesiastical practices. It was published in relatively large print runs for its time. The final pages of the book contained an appendix with a detailed description of population registers (*metrykal books*) that Mohyla proposed to introduce in every parish. There were to be four types: a book for recording baptisms, a book for marriages, a register of the parish's current population, and a book for recording deaths (Mohyla, 1996, pp. 425–430).

Despite the recommendation to maintain death records in every parish church, this was not implemented in practice. Scholars usually attribute this to the premature death of Petro Mohyla in 1647 (Skochylias, 2009). However, we argue that the true reason lies in the lack of interest from both parish priests and the secular administration of the time. For the Ukrainian territories under the Polish–Lithuanian Commonwealth, as well as for the Cossack Hetmanate — which emerged on part of Ukrainian lands following the 1648 uprising — death registration was not a relevant concern. Taxation was based on households rather than individuals, and social status was recorded according to the head of the household. Although in rare instances metrical books were maintained, such as in several Orthodox churches in Lviv, records of death were typically absent (Skochylias, 2009).

This early episode of registration attempts is important for our study as it illustrates that systematic recording of vital events required direct state intervention. In this region, death registration became an element of state policy at the beginning of the 18th century, when the Hetmanate was an autonomous political entity within the Russian Empire and the Kyiv Metropolis had been subordinated to the Moscow Patriarchate. The administrative logic of *Cameralism* and the construction of a centralized absolutist monarchy demanded thorough accounting and control of resources, including population, which was considered one of the empire's key assets.

A particularly significant development was the subordination of the church to the state. In 1721, a key element of administrative governance in the newly established Russian Empire became the Holy Governing Synod (hereafter: Synod) — the supreme state institution of ecclesiastical administration. Its creators, including influential Kyiv religious figures such as Feofan Prokopovych, formulated the Synod's founding document, the "Spiritual Regulation" (*Dukhovnyi reglament*) (Collis, 2012). This document incorporated numerous ideas from the Kyiv religious tradition, including the requirement to maintain metrical books in three parts, the third of which recorded the deceased.

At that time, the church was losing its autonomy and becoming part of the imperial bureaucracy, enabling the state to place greater demands on parish priests, who effectively became civil servants. Consequently, from 1722 onward, the practice of maintaining metrical books gradually became universal across the empire (Dmytrenko, 2016). These records remained virtually the sole source for tracking population dynamics until the early 20th century. After 1917, the responsibility for this function was gradually transferred to newly established civil registry offices. Initially, these offices operated using church-confiscated metrical books and later introduced their own recordkeeping systems.

It is important to note that the 1722 initiative pertained exclusively to the Orthodox population. The registration of Lutheran and Evangelical populations in the Russian-ruled parts of Ukraine was also carried out primarily through metrical books. The compilation of these books began in the late 18th century, which was associated with the colonization of Southern Ukraine by settlers from Northern Europe. In theory, Protestant churches were also subject to imperial legislation and were thus obliged to maintain metrical registers. However, the regulation of their record-keeping was less strict, and oversight was delegated to the Collegium of Justice for Livonian, Estonian, and Finnish Affairs in Saint Petersburg, which lacked the capacity to enforce compliance effectively.

At the beginning of the 19th century, by decree of Emperor Alexander I, the Lutheran and Evangelical Churches were united into a single Evangelical-Lutheran Church, headed by a bishop and a General Consistory. In 1832, the Evangelical-Lutheran Church of the Russian Empire received formal legal

status with the ratification of a new church statute. This statute explicitly required the maintenance of metrical books and prescribed sanctions for clergy who failed to comply. Oversight was assumed by the newly established Evangelical-Lutheran General Consistory of the Russian Empire, which promptly required each church to send one copy of its metrical records to the central office. As a result, most Protestant metrical books began to be kept systematically from 1833 onward.

Thus, during this period, metrical books represented the only widespread form of primary death registration and recording of causes of death. In the 19th century, statistical interest in such data also grew within the Russian Empire. Relevant statistical departments of the Ministry of Internal Affairs and the Russian Academy of Sciences published aggregate mortality tables organized by eparchies and provinces. In the first half of the 19th century, these tables primarily reflected data on the Orthodox population. Information on men was categorized into five-year age groups, while data on women were usually presented in aggregate form without age breakdowns.

From the second half of the 19th century onward, demographic statistics diversified: they began to include non-Orthodox populations, introduced one-year age groupings, and gave rise to local (*zemstvo*) mortality statistics. Additional data emerged concerning specific aspects of mortality, such as deaths from violence or smallpox, and the development of medical statistics also gained momentum. Since the Ukrainian provinces were located in the "European part" of the empire, they were included in this statistical system.

However, a crucial caveat must be emphasized: all of this statistical information was ultimately based on the same metrical books. In various ways and through different institutional channels, information on the vital events within parishes was collected. Clergy submitted reports to eparchial authorities, police administrations, and local government bodies. These reports were summarized and processed in different formats, yet the foundational source remained the metrical register and the cleric's recording practices.

This reliance had significant implications. The church recorded the performance of sacraments rather than demographic events. As a result, stillbirths and infants who died before baptism were not included in the statistics. Moreover, the religious culture was profoundly patriarchal and paid less attention to women, leading to systematic underreporting of female deaths — an inaccuracy that was reflected in the resulting statistical data (Ptukha, 1928, pp. 9–11).

3 SOURCE CHARACTERISTICS

3.1 NORMATIVE AND INSTITUTIONAL FRAMEWORK OF PARISH REGISTRATION

The tradition of parish registration in Ukrainian lands during the 18th and 19th centuries developed at the intersection of several distinct institutional and cultural regimes. Unlike in many Western European states, where the registration of mortality was closely linked to fiscal, military, or medical-police concerns, death in the society of the Hetmanate and in Ukrainian territories within the Polish-Lithuanian Commonwealth long remained outside the sphere of systematic administrative accounting. Taxation practices were based on households or land units rather than on individuals, which substantially reduced any practical interest in recording deaths as such (Skochylias, 2009). This institutional configuration is analytically significant, as it helps explain why death registration in Ukrainian parish registers developed unevenly and produced records that are structurally ill-suited for uncritical statistical aggregation.

A programmatic model for the registration of ecclesiastical rites, including deaths, was proposed in the *Trebnyk* of Metropolitan Petro Mohyla (1646). However, these prescriptions were primarily normative and theological in character and did not lead to the emergence of a stable and systematic practice of mortality registration. Within the Kyiv Metropolis, records of death remained fragmented and strongly dependent on local parish traditions, reflecting a broader early modern logic in which death was understood first and foremost as a ritual event rather than a statistical one (Mohyla, 1996, pp. 425–430).

Figure 1 *Mortality registration in Orthodox parish registers of the early 18th century: The ideal instruction and its practical implementation*

instruction (1724)

Часть 3. О умершихъ.

No. мужеска.	No. женска.	Числа умертвія.	Кто именно померли.	Лѣта. мужеска.	Лѣта. женска.	Какою болѣзнію.	Кѣмъ исповѣданы и пріобщены.	Гдѣ погребены.

Table for "Part 3. On the Deceased
| No | Date of Death | Name of the Deceased | Age | Cause of Death | Confessed and Communed | Place of Burial |

Sourse:
"The godly woman Agafia Klymykha did pass away, and having received confession and holy communion, was laid to rest with pious rite."

Example of implementation (1726)

Source: Polnoe, 1830, VII, pp. 266–267; Central State Historical Archive of Ukraine in Kyiv (CSHAK), fond 127, opis 1020, sprava 12.

The situation began to change after the incorporation of Ukrainian territories into the Russian Empire and the inclusion of parish registration within the framework of state administration. Synodal regulations issued in 1722–1724 introduced standardized templates for parish registers and formally required the recording of causes of death (Polnoe, 1830, VII, pp. 266–267). In practice, however, these requirements were largely declarative. They were not accompanied by effective mechanisms of supervision or sanctions for non-compliance, resulting in a persistent gap between normative prescriptions and actual recording practices. Figure 1 illustrates how the formal existence of recording instructions coexisted with uneven parish-level compliance, resulting in structurally incomplete and heterogeneous mortality records.

Only in the early 19th century, with the introduction of printed parish register forms from 1808 onward and especially following the Senate instruction of 1838, did imperial authorities begin to demand more consistent and disciplined record-keeping. Even then, implementation across Ukrainian provinces remained uneven. Left-bank Ukraine, the southern regions, and former territories of the Polish–Lithuanian Commonwealth followed different trajectories of adaptation to imperial norms, shaped by confessional composition, regional administrative traditions, and local social practices. As Figure 2 illustrates, increased formal standardization reduced some forms of inconsistency but did not eliminate structural heterogeneity in recording practices.

Figure 2 *Mortality registration in Orthodox parish registers in the 19th century: The instruction and its practical implementation*

instruction (1838)

Метрической книги на 1838 годъ
Часть третія, о умершихъ.

Счетъ умершихъ. No. муже-ска.	Счетъ умершихъ. No. жен-ска.	Мѣсяцъ и день. Января.		Званіе, имя, отчество и фамилія умершаго.	Лѣта умершаго. Муже-ска.	Лѣта умершаго. Жен-ска.	Отъ чего умеръ.	Кто исповѣдывалъ и пріобщалъ.	Кто совершалъ погребеніе и гдѣ погребены.
1	—	20	22	Александръ Качевскій, отставный Коллежскій Ассесоръ.	46	—	Отъ такой-то болѣзни, к. т. отъ горячки.	Священникъ N.	Священникъ N N съ дьячкомъ N N и пономаремъ N N, въ имѣніи покойнаго, деревнѣ Камкѣ.
				Подпись пр	нч	та	погребавшаго.		
2	—	24	26	Степанъ Мироновъ, Рыбинскій мѣщанинъ.	35	—	Отъ удара.	По внезапной смерти не былъ исповѣдываемъ и пріобщаемъ св. Таинъ.	Священникъ N N, съ дьячкомъ N N и пономаремъ N N, на приходскомъ кладбищѣ.
				П о	д	п	и с ъ.		
—	1	25	28	Деревни Сапушкина крестьянина Василья Аввакумова жена Наталья Іовлева.	—	28	Отъ родовъ.	Села Загубина Священникъ Симеонъ.	Священникъ N N, съ дьячкомъ N N и пономаремъ N N, на приходскомъ кладбищѣ.
				П о	д	п	и с ъ.		

Example of implementation (1898)

Source: (Polnoe, 1839, XIII, p. 23); example of an Orthodox parish register (deaths), accessed via FamilySearch (https://www.familysearch.org).

3.2 RECORDING PRACTICES AND STRUCTURAL HETEROGENEITY OF PARISH REGISTERS

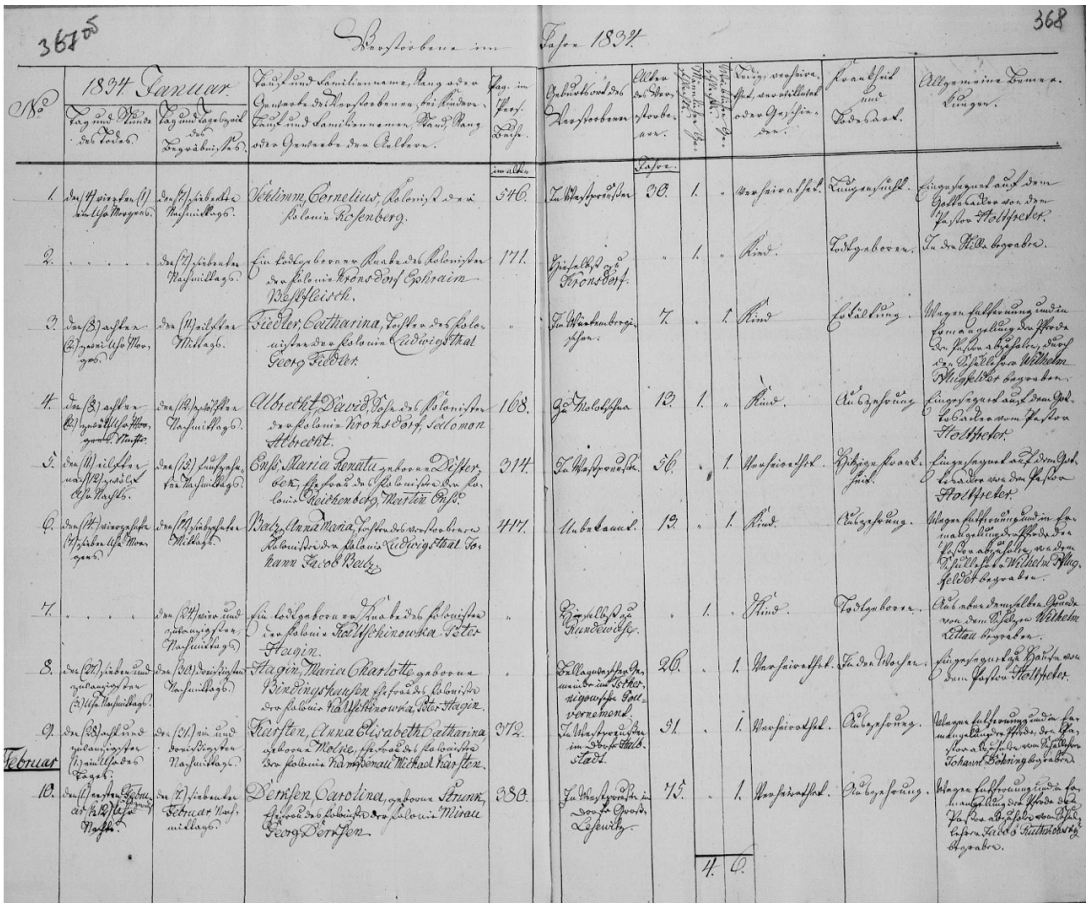
Despite the existence of standardized templates, parish registers of the Orthodox population in Ukrainian provinces of the 18th and early 19th centuries do not constitute a homogeneous source. In most cases, they were kept in handwritten form, using paper procured and assembled by parish clergy themselves. The format of entries, the arrangement of columns, and the completeness of information depended heavily on the education, skills, and diligence of individual priests, as well as on local conditions of parish life (Dmytrenko, 2016).

These registers frequently contain missing ages at death, unstable column structures, or entries in which several characteristics were combined into free-text descriptions. Columns formally designated for specific variables, including causes of death, were often left blank. Such practices were not necessarily perceived by contemporaries as violations of regulations; rather, they reflected prevailing understandings of death as a moral and ritual event, not an administrative datum.

The situation was different for the Protestant population of southern Ukraine. Parish registers of Lutheran communities, which began to be kept systematically in the context of late 18th- and early 19th-century colonization, generally display a higher degree of structural order. This was related to centralized oversight by consistories, the practice of mandatory duplication of records, and the relatively higher level of administrative and medical training among pastors (Chyruk, 2016; Meshkov, 2017). At the same time, even early Protestant registers (1833–1835) contain incomplete or aggregated entries, indicating that institutional standardization was gradual rather than immediate.

Accordingly, parish registers in Ukrainian lands should not be treated as a unified statistical series, but rather as the product of multiple coexisting recording regimes shaped by social, confessional, and regional contexts. This structural heterogeneity defines both the analytical potential and the limitations of the source. Figure 3 illustrates a recording regime in which a relatively stable structure and consistent column layout allow recorded causes of death to be treated, with appropriate caution, as analytical variables rather than purely narrative descriptions.

Figure 3 *Mortality registration in Lutheran parish registers (1834)*



Source: Parish register of the Lutheran colony of Grunau, accessed via FamilySearch (https://www.familysearch.org).

3.3 CHRONOLOGICAL DYNAMICS OF MORTALITY RECORDING: BETWEEN RITUAL AND STATISTICS

Throughout the 18th century and into the early 19th century, death entries in Orthodox parish registers were oriented primarily toward documenting the fact of burial and the performance of the funerary rite. Causes of death were rarely recorded, and age at death was often approximate or entirely absent. This practice did not result from clerical negligence, but rather corresponded to a social logic in which death was understood as a sacred event rather than as an element of demographic accounting.

Exceptions were cases of so-called "bad death," such as suicide, drowning, death in fires, or death by lightning. In these situations, the cause of death acquired particular significance because it directly affected the possibility of Christian burial and the performance of the rite (Zamura, 2014). Thus, the recording of causes of death served primarily a normative and moral function, rather than a descriptive or medical one.

After 1838, the frequency with which causes of death were recorded gradually increased in most Ukrainian provinces, reflecting shifting administrative priorities and a growing statistical interest on the part of the state. This process, however, was neither uniform nor synchronous. In Orthodox parishes, more detailed entries appeared slowly and often retained a descriptive character, whereas in Protestant communities causes of death were recorded more regularly and with greater specificity already from the 1830s. As a result, Ukrainian materials allow one to trace not only general imperial trends but also pronounced internal differences between confessional and regional contexts.

3.4 CAUSES OF DEATH: SOCIAL MEANING AND LIMITS OF INTERPRETATION

Causes of death recorded in parish registers cannot be treated as medical diagnoses in the modern sense, nor do they constitute clinically reliable data. In Orthodox parishes, they were usually determined on the basis of visible symptoms or reported by relatives of the deceased, which led to the prevalence of generalized or symptomatic formulations. Such entries reflect socially embedded perceptions of illness and death rather than an underlying nosological structure.

In Protestant communities, where pastors often possessed basic medical training, causes of death were recorded in a more detailed and internally consistent manner, particularly with regard to infectious diseases (Chyruk, 2016; Chyruk, 2022). Even in these cases, however, recorded causes of death remain products of limited diagnostic knowledge and local interpretive frameworks. They do not provide a direct representation of morbidity patterns, but they do offer valuable evidence for the study of epidemic crises, traumatic mortality, and broad structural shifts in causes of death.

From a medical perspective, the informational value of such records is necessarily constrained. Their analytical usefulness lies elsewhere: when carefully contextualized and appropriately aggregated, recorded causes of death can function as historically meaningful variables for demographic analysis, including comparative research. In this respect, modern classificatory systems such as ICD-10 and its historical adaptations serve here only as reference frameworks for grouping and comparison, not as instruments of retrospective diagnosis.

Accordingly, causes of death recorded in parish registers can be used for historical-demographic analysis only under explicitly stated methodological constraints and with careful attention to their interpretive limits — a point already emphasized in classical works of historical demography (Ptukha, 1928).

3.5 DATA QUALITY: AGE, SEX, AND UNDERREGISTRATION OF MORTALITY

Systematic data quality issues constitute an inherent characteristic of parish registers as historical-demographic sources. One of the most visible phenomena is age rounding, which reflects not so much recording error as the limited social knowledge of age in traditional societies. The concentration of ages at multiples of five or ten can be quantitatively assessed using Whipple's Index and employed as an indicator of source reliability. The Whipple index for most metrical books from the time is rarely below 240, classifying them as highly inaccurate (Serdiuk, 2015). In this sense, age heaping should be understood not merely as a technical deficiency of the source, but as an expression of broader social practices of age reporting.

Another major issue concerns the underregistration of women and infants. The Orthodox practice of recording baptisms rather than births resulted in the systematic omission of children who died before baptism. This structural feature of registration practices disproportionately affects infant mortality and complicates any attempt to reconstruct early-life mortality patterns. Distorted sex ratios observed in parish registers thus signal fundamental limitations of the source and require careful interpretation.

At the same time, such deviations should not be interpreted unambiguously as evidence of underregistration alone. Research on "missing girls" in historical populations has demonstrated that gender imbalances may also result from discriminatory practices, including unequal care, selective reporting, or differential social valuation of male and female children (Beltrán Tapia & Raftakis, 2022; Beltrán Tapia & Szołtysek, 2022). From this perspective, distorted sex ratios may reflect not only institutional biases of registration, but also underlying gendered patterns of survival and social behavior.

In the case of 19th-century Ukrainian parish registers, however, the available evidence does not allow for a clear distinction between statistical underregistration and active gender discrimination. The sources themselves provide limited resolution with regard to practices of care, reporting, or burial differentiated by sex. Orthodox parish registration was oriented toward the performance of religious rites rather than toward systematic demographic accounting, which structurally increased the likelihood that infants — regardless of sex — would be omitted from the records. While gendered patterns of care and survival cannot be excluded, they cannot be directly reconstructed from the registers alone.

For this reason, deviations in sex ratios are treated here primarily as indicators of registration bias and source limitations rather than as direct evidence of discriminatory practices. At the same time, the possibility that both mechanisms — underregistration and gendered discrimination — operated simultaneously is explicitly acknowledged. In this sense, secondary sex ratios serve not as definitive measures of gender relations, but as diagnostic tools for assessing the analytical reliability and interpretive boundaries of parish-register-based mortality data (Podhorna, 2019; Podhorna, 2023).

The possibilities of correcting such underregistration through external sources are, however, limited. For 19th-century Ukraine, alternative materials that could potentially inform infant and female mortality — such as aggregated diocesan reports, gubernial statistical yearbooks, or medical-police statistics — are fragmentary, uneven in coverage, and compiled at levels of aggregation that preclude direct linkage with parish-register microdata. Moreover, these sources were themselves based, at least in part, on the same ecclesiastical registration practices and therefore tend to reproduce similar structural biases.

As a result, no independent source exists that would allow for a systematic numerical correction of underregistration at the level of individual deaths. External materials can be used only for contextual validation and plausibility checks — for example, to assess whether observed mortality patterns fall within ranges reported by contemporaneous aggregated statistics — but not to reconstruct "missing" deaths retrospectively. In this sense, the problem of underregistration must be addressed analytically rather than corrected numerically, through explicit diagnostic indicators and cautious interpretation.

In assessing the reliability of the parish registers used in this study, we therefore relied on a set of simple but informative demographic indicators that allow for a first-level evaluation of data quality without shifting the focus away from the analysis of causes of death. In particular, secondary sex ratios and the ratio of recorded deaths to marriages (D/M) were used as diagnostic tools to identify potential distortions in mortality registration. These indicators do not provide a comprehensive validation of the registers, but they offer a transparent way to assess whether the recorded demographic patterns are broadly consistent with expectations for pre-industrial populations.

The results indicate that, for the core datasets analyzed here, secondary sex ratios remain within ranges compatible with relatively balanced registration of male and female individuals, while D/M ratios display temporal stability that is difficult to reconcile with large-scale omission of deaths. At the same time, deviations observed in specific parishes or periods highlight the heterogeneous quality of parish registers and underscore the necessity of register-by-register evaluation. Other commonly used indicators of register reliability — such as age-specific frequencies for children aged 0–1 and 0–5, proportions of stillbirths, or the ratio of births to marriages — were considered but are not presented here, as their systematic application would require a separate analysis focused on fertility and birth registration practices, which lies beyond the scope of the present article.

Accordingly, the indicators employed in this study should be understood not as definitive tests of completeness, but as practical instruments for identifying registers where the analysis of causes of death is analytically defensible. This approach allows for a balance between methodological transparency and analytical focus, ensuring that discussions of data quality remain directly connected to the substantive results presented in the article.

3.6 SOURCE CRITICISM AS A PRECONDITION FOR DATABASE-BASED RESEARCH

Taken together, these characteristics demonstrate the necessity of combining classical source criticism with a data-oriented approach. Ukrainian parish registers are not "deficient" or marginal in a comparative perspective; rather, their complexity reflects the social, confessional, and institutional specificity of the region. Recognizing this complexity makes it possible not only to define the limits of the source, but also to integrate Ukrainian materials into broader European studies of mortality without stripping them of their historical meaning. Recognizing this complexity is essential for defining both the analytical limits of parish registers and the conditions under which they can be used in database-based historical-demographic research.

4 DATABASE DEVELOPMENT: CONSTRUCTION AND DESCRIPTION

To operationalize the combination of source criticism and data-oriented analysis discussed above, we are developing the UMB19. The database consists of a table of individual death records in .xlsx format and includes the following variables: date of death, month of death, year of death, name, age, sex, cause of death, block of death cause, settlement, and religious affiliation. The database has been constructed to reflect the features of the original sources as fully and accurately as possible. It is maintained in English, with standardized entries, interpretations and explanations of symbols and definitions, and translations of disease names. This structure reflects the minimum set of variables required to evaluate both the informational content of the records and their analytical reliability for cause-of-death analysis.

Given the characteristics of the sources — varied handwriting styles, cursive scripts, errors, faded ink, and lacunae — the database is compiled manually by the authors, without the use of OCR or other automated text-recognition tools. While this slows down the data collection process, it ensures the highest possible accuracy and quality. This approach allows explicit control over interpretative decisions made during data entry and reduces the risk of systematic misclassification introduced by automated procedures.

When determining the causes of death, we relied on ICD-10 as a classificatory reference framework, but did not assign ICD codes directly to individual records. Instead, a common name of the disease was selected and entered into the table (in this way, variant names were standardized. For example, tuberculosis covered both "phthisis" and "consumption"). For obsolete disease names, reference guides were used. Thus, "nervous fever" was classified as typhus, and the German word "Auszehrung" as tuberculosis. Sometimes the cause of death was established conditionally, based on symptoms recorded in the parish registers. For example, "white throat" and "Halsbräune" were identified as diphtheria. "Dysentery", which occurred concurrently with deaths from cholera, was also classified as cholera. This strategy was adopted to avoid imposing modern nosological categories onto historical descriptions while still enabling controlled standardization across heterogeneous recording regimes. Such cases were explicitly marked during coding and treated as analytically weaker observations in subsequent interpretation.

In an adjacent column (block of death cause), recorded causes were grouped into analytically broad categories: airborne infections, intestinal infections, infectious and parasitic diseases, injuries, cardiovascular diseases, neoplasms, kidney diseases, vitamin deficiencies. Neonatal convulsions of unknown etiology were marked separately. If the cause of death could not be identified for some reason, it was labeled as "other". This aggregation was designed to preserve comparability while minimizing the loss of historically meaningful distinctions.

The Lutheran settlements included in UMB19 emerged in the context of late 18th- and early 19th-century colonization of southern Ukraine. These communities were established under centralized administrative oversight, with consistorial supervision and regularized record-keeping practices. As a result, their parish registers differ structurally from Orthodox records and provide a contrasting

institutional regime for evaluating cause-of-death registration. As a result, their parish registers differ structurally from Orthodox records and provide a contrasting institutional regime for evaluating cause-of-death registration within the same database framework.

As of now, the database includes 5,683 individual death records, comprising materials from one Orthodox parish and several Lutheran communities, with coverage periods varying by locality. The death records from the Orthodox parish of Trinity Church in Chernecha Sloboda (present-day Sumy Oblast, Ukraine) reflect the structure and limitations of the parish register — particularly the presence of gaps in specific years. At the same time, they allow for comparative analysis of mortality recording practices before and after the 1830s and facilitate research on various demographic characteristics of Orthodox mortality patterns.

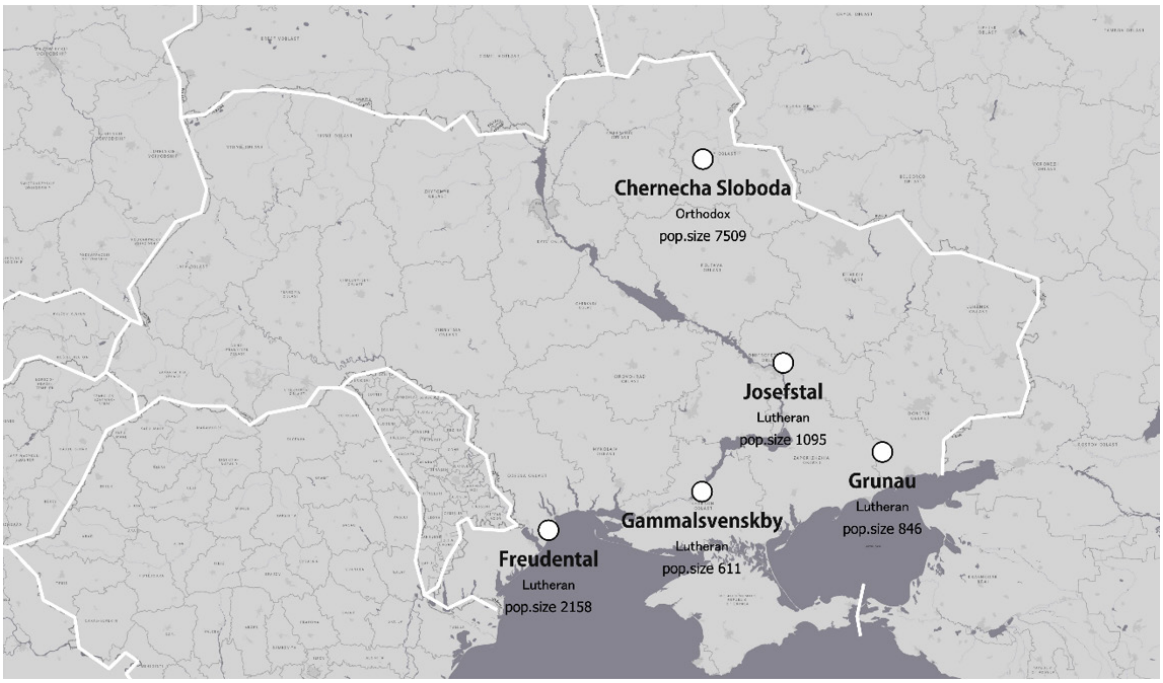
In total, UMB19 currently includes 5,683 identified individual death records, of which 1,661 originate from an Orthodox parish (Chernecha Sloboda, 1783–1844) and 4,022 from Lutheran communities in southern Ukraine (1782–1914). Coverage periods vary by locality, reflecting differences in record survival and registration practices.

Additionally, the Grunau parish contains 4,989 anonymous death entries (i.e., without personal names) for the period 1833–1885, while the Freudenthal parish has 4,061 entries lacking a specified cause of death. These datasets are currently preserved in a separate structure and may be supplemented and integrated in the future.

The locations of the settlements whose materials are represented in the database, as well as their population figures as of 1885, are shown on the map (Map 1). Map 1 situates the database geographically and highlights that UMB19 brings together distinct regional and confessional settings, a feature that is analytically relevant for assessing comparability.

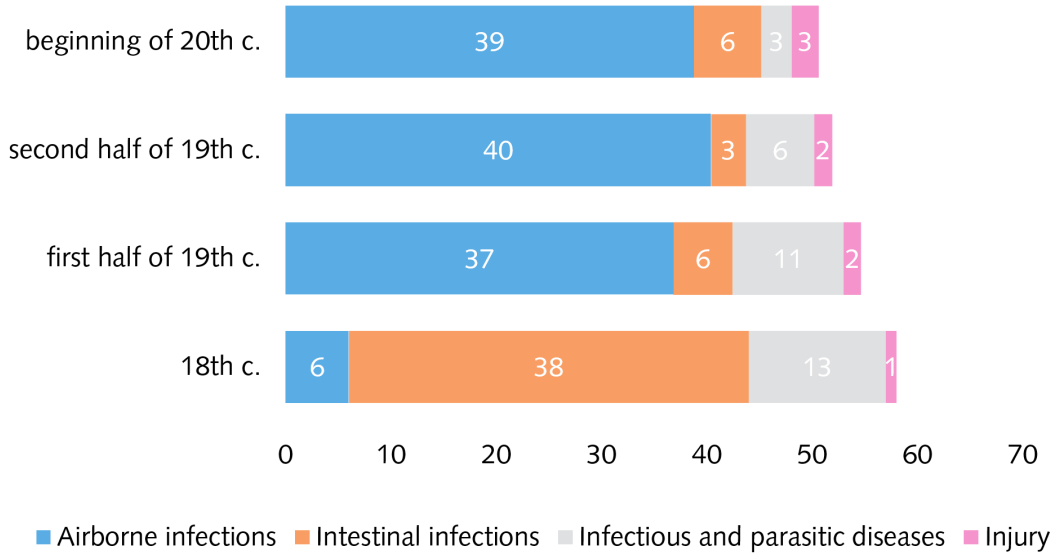
The database materials demonstrate a transition from the predominance of intestinal infections to airborne infections in the 19th century compared to the 18th century. Thereafter, the shares of airborne and intestinal infections remained relatively stable, with airborne infections predominating. At the same time, the proportion of deaths attributed to infectious and parasitic diseases gradually decreased, while the share of injuries increased, although it remained marginal overall (Figure 4). Figure 4 thus illustrates that such patterns become analytically meaningful only where recording practices meet minimum reliability thresholds, highlighting the importance of explicit criteria in the selection and use of parish registers for database-based analysis.

Map 1 *Location of settlements from database UMB19 and their population size on the 1885*



Source: Author's reconstruction based on a modern map of Ukraine.

Figure 4 *Causes of death by disease category over time, % — Lutheran colonies, Southern Ukraine*



Source: Author's calculations based on parish register data.

Figure 4 also demonstrates that the strategy of selecting sources for analyzing causes of mortality was sufficiently successful, as it allowed the identification of differences between various categories of causes of death and the tracking of temporal changes. At the same time, the peculiarities of cause-of-death coding made it possible to identify only slightly more than half of the mortality cases. A number of diseases remained unidentified due to problems with reading as well as matching the causes of death recorded in the documents with specific diseases. Nevertheless, such cases constitute a negligible percentage. The majority of unidentified causes of death are related to the so-called "eclampsia," which dominated infant mortality and for which there is currently no consensus regarding its etiology. The remaining unidentified causes of death are associated with identification problems made by the authors of the sources (in the "cause of death" field in the sources, the entry "unknown" often appeared).

The construction of UMB19 therefore provides not only a technical framework for analysis, but also a basis for reassessing existing research on mortality and causes of death. Against this background, the following section reviews previous research not as an exhaustive historiographical survey, but as a point of reference for evaluating how different analytical strategies have addressed similar source constraints.

5 RESEARCH ON CAUSES OF DEATH IN 19TH-CENTURY UKRAINE

Research on causes of death in 19th-century Ukraine has developed unevenly, reflecting both the specific trajectory of historical demography in Ukraine and the heterogeneous nature of available sources. Two features are particularly important for understanding this field. First, work based on primary parish register data remains relatively limited for the 19th century, especially for the Orthodox population (Serdiuk & Voloshyn, 2019). Second, where causes of death have been analyzed more systematically, this has often been possible either because the sources come from confessional settings with more consistent recording practices (notably some Protestant communities) or because scholars have relied on aggregated statistics rather than on critically assessed primary entries.

5.1 DATABASE-BASED RESEARCH: LUTHERAN SETTLERS AND THE ANALYTICAL USE OF RECORDED CAUSES OF DEATH

The most developed strand of Ukrainian research that works directly with recorded causes of death is based on database-driven processing of Lutheran parish registers from the southern regions. In the dissertation on Lutheran colonies in southern Ukraine, causes of death were not treated as isolated anecdotes but as variables enabling the reconstruction of mortality dynamics over a long period, including crude death rates in general and for selected categories of disease (Chyruk, 2016). This

approach made it possible to identify crisis years and major outbreaks of infectious disease between 1832 and 1916. One of the central findings concerns the exceptional severity of the scarlet fever epidemic of 1841, which — within the population covered by the Lutheran parish registers and the analytical framework of this study — resulted in higher recorded mortality than the cholera outbreak of 1848 or the typhus epidemics associated with the Crimean War. Within the recorded causes, airborne infectious diseases emerged as the leading category, accounting for 38% of all registered deaths. The dissertation also traced changes in life expectancy across the 19th century, indicating a substantial increase over time, alongside shifts in the composition of recorded causes, including a late 19th- and early 20th-century decline in infectious and parasitic diseases and a pronounced surge among males in the 1860s (Chyruk, 2016).

The analytical potential of such database-based work becomes particularly visible in studies focused on epidemic mortality during the initial years of the Swedish migration to southern Ukraine. Because the mortality records for the parish of Gammalsvensky (present-day Kherson region) in 1782–1783 contain evidence of an episode of extremely high lethality — commonly interpreted as a major epidemic, plausibly plague — these data have supported more methodologically explicit forms of analysis. One study examined causes and dates of death using factor and cluster analysis, challenging the view that the settlers' deaths reflected unrelated causes and instead suggesting a single dominant factor explaining most of the variation (Chyruk, 2022). The one-factor model accounted for 62.5% of the variation and brought together recorded "causes" such as pneumonia, typhus, dysentery, edema, and putrid fever (and, to some extent, diarrhea and scurvy), interpreted as consistent with symptomatic descriptions of plague in the regional context. Cluster analysis further suggested that a substantial share of clustered deaths involved individuals who had previously lived in the same settlements and, in many cases, within the same households, indicating a plausible link to close contact and infection transmission (Chyruk, 2022). This line of inquiry was extended through a network-based analysis of interpersonal contacts among the migrants, which argued that disease spread followed pre-existing patterns of social interaction and geographic proximity from the migrants' former place of residence, producing delayed transmission interpreted as a form of "social quarantine" (Chyruk, 2023).

Taken together, these studies demonstrate that recorded causes of death can be used analytically — especially in the context of database construction — when their internal structure is examined, when category formation is made explicit, and when the interpretation is grounded in the social and epidemiological context of recording. At the same time, their very success also highlights a broader issue in Ukrainian research: such work has been more feasible in confessional contexts where the recording regime is comparatively consistent, whereas analogous research on 19th-century Orthodox populations remains more fragmentary.

5.1.1 RESEARCH BASED ON ORTHODOX PARISH REGISTERS: FRAGMENTARY EVIDENCE AND PARISH-LEVEL ANALYTICAL LIMITS

Due to the specific trajectory of historical demography in Ukraine, the mortality of the Ukrainian population in the 19th century has been studied only fragmentarily using primary sources such as parish registers, particularly for Orthodox communities (Serdiuk & Voloshyn, 2019). The only research project explicitly devoted to mortality among the Orthodox population is the ongoing dissertation by Anastasiia Podhorna, developed in the context of studying the history of smallpox vaccination. Podhorna analyzes mortality patterns in several parishes of the Romny district of Poltava province (present-day Sumy region), focusing on mortality levels, the structure and seasonality of child mortality, and transformations over the 19th century associated with the emergence of modern medicine, disease prevention, and vaccination campaigns. Although the dissertation is still in progress, interim findings have already been published (Podhorna, 2019; Podhorna, 2023).

Mortality among Lutheran populations in the German colonies of southern Ukraine has also been addressed within broader studies of community history and everyday life; in particular, Meshkov analyzes demographic aspects as part of a wider investigation of the Black Sea Germans' lifeworld (Meshkov, 2017). While the analytical aims and methods differ from explicitly database-centered studies, this literature contributes to understanding mortality patterns within confessional and regional settings where parish registration practices were shaped by specific institutional arrangements.

5.2 PARADOX AND CONTEXT: STRONGER MORTALITY RESEARCH FOR 18TH-CENTURY UKRAINE

Paradoxically, a larger body of mortality-related research exists for 18th-century Ukraine than for the 19th century. Although parish registers from this earlier period do not record causes of death, scholars have used them to estimate life expectancy, mortality rates, and seasonal or age-specific mortality patterns. Such analyses are typically embedded within broader historical-demographic studies of particular religious communities (Voloshyn, 2005), social groups (Dmytrenko, 2016), urban populations (Voloshyn, 2016), regional populations (Voloshyn, 2023), or the demography of childhood (Serdiuk, 2018). The only monographic study specifically devoted to death and mortality in this context is by Olena Zamura. Beyond a cultural history of death, Zamura employs detailed parish-register analysis for several communities to examine patterns of reproduction, mortality characteristics, and accidental deaths (Zamura, 2014). This literature is important for two reasons: it shows that Ukrainian scholars have long worked with parish registers as demographic sources, and it highlights how the absence (or instability) of recorded causes of death in earlier registers shaped the questions researchers could credibly ask.

5.3 METHODOLOGICAL INFLUENCES AND EUROPEAN COMPARATORS

Ukrainian mortality studies have been influenced primarily by the Russian translation of the seminal work by Louis Henry and Alain Blum (1988) and by Cezary Kuklo's synthesis on the demography of the Polish–Lithuanian Commonwealth (Kuklo, 2009). In recent years, Ukrainian demographic historians have increasingly drawn on Polish methodological experience because of similarities in historical context, the nature of record-keeping systems, and the types of research questions posed. For the 19th century, one of the most frequently cited works in this comparative vein is that of Grażyna Liczbińska (2009). These influences matter not simply as background readings but because they also shape expectations regarding what constitutes reliable use of parish-register data, including how researchers approach source criticism, category construction, and comparability.

5.4 STUDIES BASED ON AGGREGATED STATISTICS AND THE CONTINUING RELEVANCE OF PTUKHA'S CRITIQUE

Finally, mortality in 19th-century Ukraine has also been studied using aggregated data such as annual diocesan reports, gubernial police records, and statistical yearbooks. In this article, we intentionally refrain from analysing such statistical material in detail. Nevertheless, it is important to note that for certain years and institutional settings, aggregated statistics provide information on violent and accidental deaths by province as well as recorded causes of death among prisoners, military personnel, and civilians. At the same time, substantial work remains necessary to construct a coherent picture from these materials, and such work must begin with rigorous external and internal source criticism tailored to the Ukrainian context. Among broader synthetic historical-demographic works, the most significant and still undervalued study remains Mortality in Russia and in Ukraine by Mykola Ptukha, a founding figure of Ukrainian historical demography (Ptukha, 1928). Written a century ago, the book remains notable for its methodological critique of approaches to measuring mortality and life expectancy (both average and projected) in the Ukrainian provinces. Ptukha examined registration shortcomings, identified problematic aspects of 19th-century statistics, calculated adjusted mortality rates and life-expectancy indicators, and compared them with contemporary global values. His findings suggested that average and projected life expectancy in Ukraine during the 19th and early 20th centuries was higher than in the Russian provinces, though he refrained from offering explicit explanations for this disparity. In this respect, the work remains largely descriptive, yet it provides a coherent general picture of mortality trends and aligns well with methodological standards of European demographic research of its time (Fihel, 2011, pp. 28–56).

6 CONCLUSIONS

This article has demonstrated that causes of death recorded in 19th-century Ukrainian parish registers can serve as a meaningful object of historical-demographic analysis only when they are approached through a combination of systematic source criticism and data-oriented methods. Rather than treating parish registers as transparent repositories of demographic facts, the study shows that recorded causes

of death were produced within specific institutional, confessional, and social regimes of registration. These regimes fundamentally shaped both the analytical potential of the data and the limits of their interpretation.

One of the central conclusions concerns the persistent gap between normative prescriptions and actual recording practices. Although imperial regulations formally required the recording of causes of death from the early 18th century onward, consistent implementation remained uneven well into the 19th century. As demonstrated in this article, this discrepancy has direct consequences for database construction and analysis: the analytical validity of mortality data depends not on the formal existence of regulatory frameworks, but on demonstrable compliance and internal consistency at the level of individual parish registers.

A second key conclusion relates to the structural heterogeneity of parish registers across confessional contexts. Orthodox and Protestant recording regimes differed substantially in the frequency, specificity, and stability with which causes of death were documented. These differences cannot be treated as marginal noise or resolved through retrospective standardization without a loss of historical meaning. Instead, confessional affiliation must be recognized as an integral component of how mortality was recorded and categorized, shaping both comparability and interpretation.

The analysis further demonstrates that data quality issues — such as age heaping, distorted sex ratios, and the incomplete registration of infant deaths — should not be understood merely as technical imperfections. Rather, they function as indicators of underlying social and institutional practices. Quantitative diagnostics, including Whipple's Index, secondary sex ratios, and ratios of deaths to marriages, are most productive when used not as definitive tests of completeness, but as tools for identifying registers in which the analysis of causes of death is analytically defensible. At the same time, the findings underscore the interpretive limits of such indicators: observed deviations may reflect registration bias, but they may also be compatible with broader patterns of gendered survival documented in other European contexts.

These conclusions are grounded not only in conceptual argumentation, but also in the concrete experience of constructing and working with the UMB19, which serves as an empirical testing ground for the methodological principles advanced in this article. Database-based approaches substantially enhance the analytical use of parish registers when they are explicitly anchored in source criticism. Techniques such as factor, cluster, and network analysis make it possible to move beyond the purely descriptive use of recorded causes of death and to reconstruct epidemic dynamics and patterns of transmission. At the same time, the results confirm that technical sophistication cannot substitute for conceptual clarity. Without explicit attention to how causes of death were defined, recorded, and transformed into analytical categories, database-driven research risks reproducing the very distortions it seeks to overcome.

Taken together, these findings demonstrate that the principal contribution of this article lies in the methodological integration of classical source criticism with database-based analytical procedures applied to parish-register data. In this sense, 19th-century Ukrainian parish registers constitute a valuable and analytically rich source for the study of mortality and causes of death, provided that their use is grounded in a transparent and critically informed methodological framework. An additional implication of this approach concerns data accessibility and reproducibility. The UMB19, constructed in accordance with the methodological principles outlined here, is intended to function not only as an internal research tool, but as a reusable dataset capable of supporting cumulative and comparative research in historical demography. By making the conditions of registration explicit rather than treating them as noise, this article shows how Ukrainian materials can be integrated into broader European debates on mortality while retaining their historical specificity.

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