THE SOCIAL-DEMOGRAPHIC ANALYSIS OF CEMETERY DATA: PARTICULARITY AND RESULTS

Arūnė Liucija Arbušauskaitė[1], Natalija Juščenko[2]

Klaipėda University (Lithuania)

ABSTRACT

Usually, monuments epigraphs keep a lot of personal and social information about a buried person. This general information may help to better understand the community or residents of a specific area. This is especially true in the case of Klaipėda region and its native population. The results of analysis of survived epigraphs of old Evangelico-Lutheran cemeteries in Klaipėda region are presented in this article. The research was done using social statistical methods, which are usually used to characterize social community. The obtained results allow modeling the stratification organization of former population.

KEY WORDS: *Klaipėda region, cemetery, epigraphs of monuments, social-demographic analysis.*

JEL CODES: Z12 − religion.

Introduction

Research object. The basis of empirical research consists of epigraphs of gravestones, monuments and crosses fixed in Evangelico-Lutheran cemeteries of Klaipėda region during expeditions of 2012−2013. Cemeteries for this analysis were selected in a few stages, estimating the proportion of the number of objects / burials and records fixed in the particular cemetery. In the course of correlation of fixed objects and fixed epigraphs and upholding of their variety, empirical sample consisting of 42 cemeteries was obtained, where in 3070 objects were fixed including almost a thousand of epigraphs; 941 of them were suitable for statistical analysis. That is, all indicators necessary for research were fixed in it. An epigraph of the gravestone most often consists of two parts: metrics and epitaph of the buried[3]. The metrics of the buried is quantitative data; therefore, classical formal statistical methods may be applied for research of them.

Information, which can be read in metrics of gravestones, is of two forms. On one hand, it is possible to indicate history of the very cemetery according to it: since when and until when it was being buried in it, since when it has not been used. This information may help approve some historical assumptions (it has particular importance in the historical framework of Evangelico-Lutheran cemeteries of Klaipėda region). In fact, there is dominating opinion that long period of non-usage of the cemetery often results in disappearance and devastation of it.

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[1] Arūnė Liucija Arbušauskaitė − Klaipėda University, Institute of Baltic Sea Region History and Archaeology, Senior research fellow, Dr., population of Klaipėda region, forced migration, problems of identity and heritage
E-mail: arbusharune@gmail.com
Tel.: +370 46 398 804

[2] Natalija Juščenko − Klaipėda University, Computer sciences Department, lecturer, Dr., information systems, data analysis
E-mail: natalija.juscenko@ik.ku.lt
Tel.: +370 46 398 828

[3] The gravestone epigraph most often starts by stereotypic references „czion ilsisi pakajuje...“; „hier ruhet in Gott...“, etc.; on the other side of the cross or monument, usually farewell / wish words „<...> ilsekis pakajuje“, „iki wel susimatymo“, etc. can be found. In this research, these epitaph inscription of ethical or religious character can be understood as escorting texts and do not have any meaning.

On the other hand, statistic estimation of data fixed in metrics (names, surnames, lifetime (it shows lifetime duration), marital status, sometimes – profession and even tragic fates of some families) reflects social information on buried people. It can be valuable for research of demographic and social processes.

Research purpose and tasks

The research purpose is to formulate hypotheses on demographic and social processes of Klaipėda region in the period of XIX-XX centuries based on results of survey of epigraphs of the old Evangelico-Lutheran cemeteries in Klaipėda region.

Tasks are as follows:

- To estimate dynamics of intensity of functioning of Evangelico-Lutheran cemeteries of Klaipėda region.
- To carry out analysis of empirical estimators of data on metrics of epigraphs in order to form assumptions about socio-demographic indicators of population.

Research methods. Bibliography analysis, statistical analysis, socio-demographic analysis.

1. Scientific novelty and relevance

Only a few scientific publications, wherein data of metrics of records / epigraphs are researched applying mathematical methods, can be found in scientific literature. One of such examples is the article of Sattenspiel, Stoops (Sattenspiel Stoops, 2010), wherein hypotheses about impact of seasonal flue epidemics on dynamics of population numerosity of Columbia city (USA) in XX century were formed on the basis of statistical analysis of epigraphs metrics data. Comprehensive statistical analysis of epigraphs metrics in the cemetery of the Great Smoky Mountains National Park was made in the Lott's work (Lott, 2000).

In Lithuania, various surveys of cemeteries of Klaipėda region / Lithuania Minor have been appearing in recent decades; however, they are more of descriptive character. The authors do not know the ones using statistical analysis in the research of cemeteries of Klaipėda region.

The existing situation could be explained by a few facts. On one hand, arrays of epigraphs data accumulated by scientists most often are stored in paper format what impedes their qualitative analysis (Juščenko et al., 2012); on the other hand, it is often unclear how exactly these data represent population as disappearance of cemeteries does not allow estimating data disappeared from academic horizon. However, in particular cases, data survived in epigraphs are the only information source about population that existed in past. This statement stands for Klaipėda region where other sources of social and demographic data did not survive due to historical circumstances.

2. Research results

As it was mentioned before, metrics data may provide information of two levels: knowledge about the very cemetery and knowledge about the buried.

2.1. Information on cemeteries

Surveyed Evangelico-Lutheran cemeteries of Klaipėda region formed at the end of XIX century – beginning of XX century. It is the most general description. In order to speak about the concrete cemetery, it would be necessary to look for some bibliography or visual information which almost does not exist[4]. From the cemetery array researched by us, we can say the exact date when the cemetery was situated only in one case: after the death of Gotlieb Gabriel Funck, the landowner of Norkaičiai, a cemetery was situated not far away from his estate in a small wood in 1848. At the leaf of the cemetery's gate, a stone is dug dated on 1848.

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[4]   When speaking about sources, it can be stated here that one of the most important and useful sources for the survey could be the church register books of the population state (records of baptising, marriage and death). However, due to historical collisions, we almost do not have survived sources of similar character, with rare exceptions, in Klaipėda region.

Family members and honourable foresters are buried next. The last burial in them was in 1925. It is one the most beautifully maintained cemeteries in Klaipėda region.
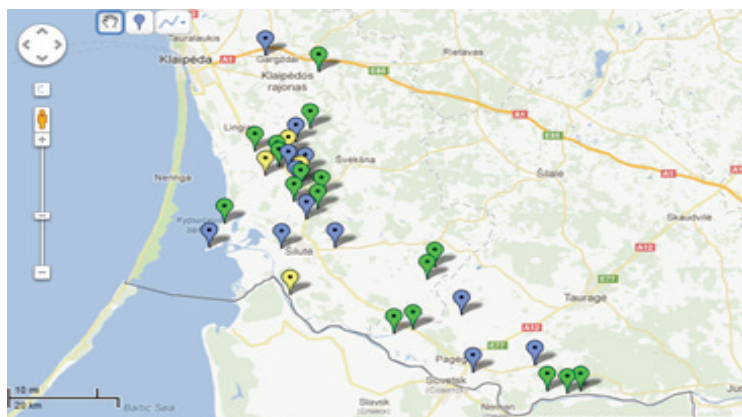

Figure 1. The map of surveyed cemeteries

While speaking about founding or closure of cemeteries in this survey, we use the year of the earliest or latest burial inscribed in gravestone metrics. We clearly perceive that the year of the first and the last burial in devastated cemeteries may be *de facto* another as well. However, the lack of data forces us to use the information that we possess estimating *a priori* their relativity.

According to the date of the first burial fixed in the survey, we have obtained the following image: 1835 (Katyčiai) – 1917 (Dėgliai). It comprises the period of 82 years. The histogram of the first year of burial (Fig. 2) shows that intensity of appearance of new cemeteries was uneven, i.e. most of appeared cemeteries belong to the period from 1869 to 1883.
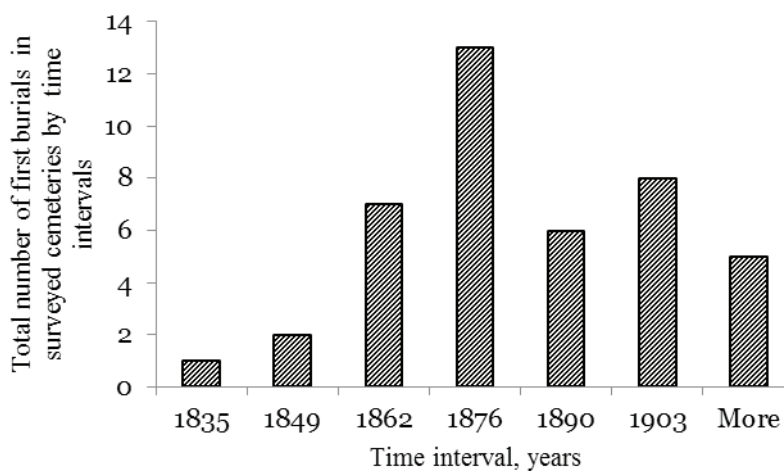

Figure 2. Histogram of years of first burials in surveyed cemeteries

The years of the last burials deploy in the interval from 1912 (Plaškiai) to 2011 (Mantvydai I). In such a way, the last burials of surveyed cemeteries distribute in the period of 100 years. As in the case of the first burial, the number of the last burials distributes unevenly in the mentioned period (Fig. 3). The second "closure wave" of the surveyed cemeteries reflects the fact that there is big silence gap between 1966 (Dvyliai) and 2002 (Čiūteliai) in the surveyed cemeteries. Knowing forced migration of native residents, this silence gap just approves again the fact that the correlation "community – cemetery – historical breaks" is very strong.
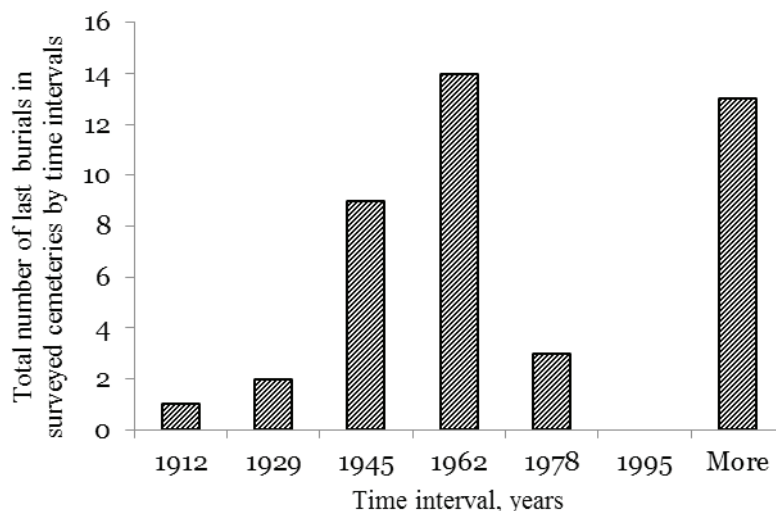
Figure 3. Histogram of years of last burials in surveyed cemeteries

Looking through dates of the end of activity of these cemeteries, the eye notices involuntarily the dates that are historically meaningful ones for residents of Klaipėda region. They are – the First World War, ripping off the region from Germany, the end of the Second World War and finally – the end of the fifth decade when there was massive emigration of native residents of the region to Germany. Particularly around 1960, the major number of Evangelic Lutheran cemeteries of Klaipėda region stopped functioning. Here are examples of surveyed arrays: cemetery of Rudynai (1853−1961), Bajorai (1915−1959), Baltupėnai (1890−1960), Laugaliai (1860–1958), Rukai (1878−1959), Lenkai (1892−1955), Šakininkai (1870−1952), Užlėkniai (1845−1956), both cemeteries of Vilkmedžiai and a number of others.
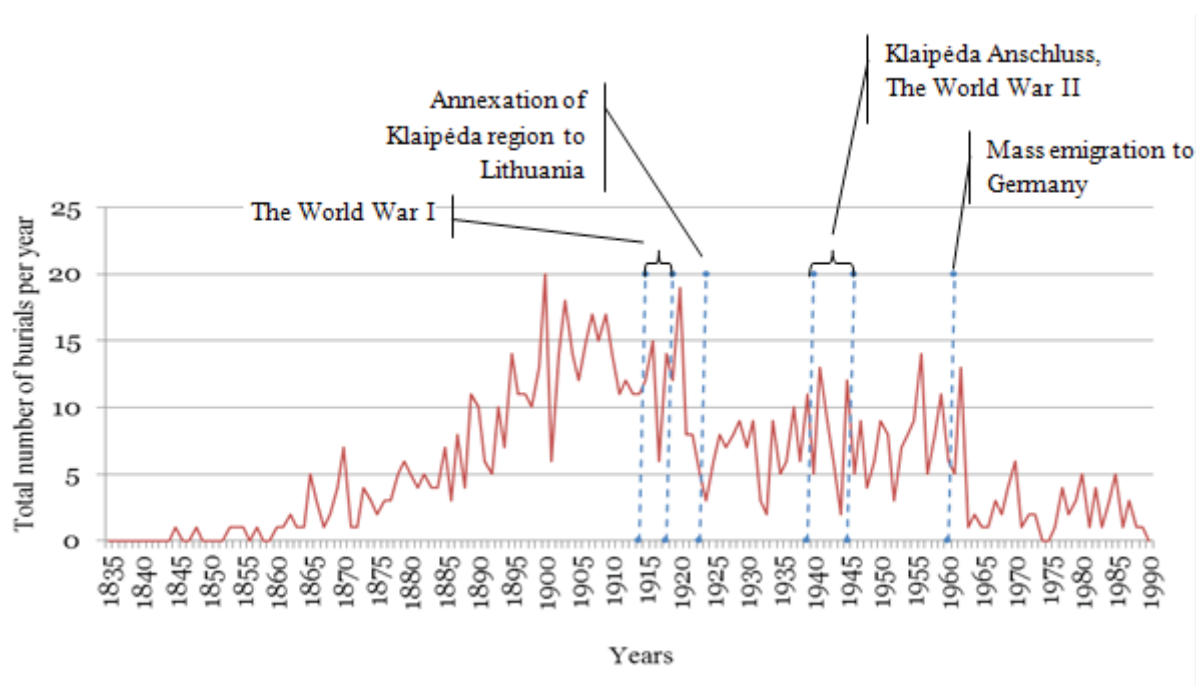

Figure 4. Time series of total number of buried people per year in surveyed cemeteries

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Similar results have been received after analysis of intensity of burials in all surveyed cemeteries in the analyzed period (Fig. 4).

Comparison of the first and the last burials shows us how long cemeteries were functioning. The notable are those where of age is counted over 100 years and more. They are: cemeteries of Ažpurviai (1855−1955), Girininkai (1891−2006), Katyčiai (churchyard, 1835−2002), Kukorai (1900−2003), the First Mantvydai (1873−2011), Vytuliai (1865−1996), Sakūtėliai (1887−2011), the First Petreliai (1873−2008) and some others. The age of many of these cemeteries was prolonged by burials in our time. We can find the group of cemeteries that were functioning shortly, not longer than 50 years. They are: cemeteries of Virkytai (1899-1949), Šyšgiriai (1889−1939), Akmeniškiai (1904−1941), Šventvakariai (1894−1943), Muižė (1865−1929), Mažiai (1889−1918) and some others.

Results of survey of data on the beginning and the end years of functioning of cemeteries and these on burial intensity allowed formulating unexpected conclusions about reasons of disappearance of epigraphs. In fact, there is dominating opinion that long period of inactivity of cemeteries often condition the level of disappearance and devastation. For verification of the assumption, dependence of percentage of epigraphs survival on the first burial year of the cemetery, on the last burial year of the cemetery and on cemetery functioning duration was described in the scatter diagrams and values of correlation rate of array pairs of the mentioned data were calculated. Received results prove that percent of survival of epigraphs does not depend at all on either "age" of cemeteries or duration after their closure or duration of the functioning.
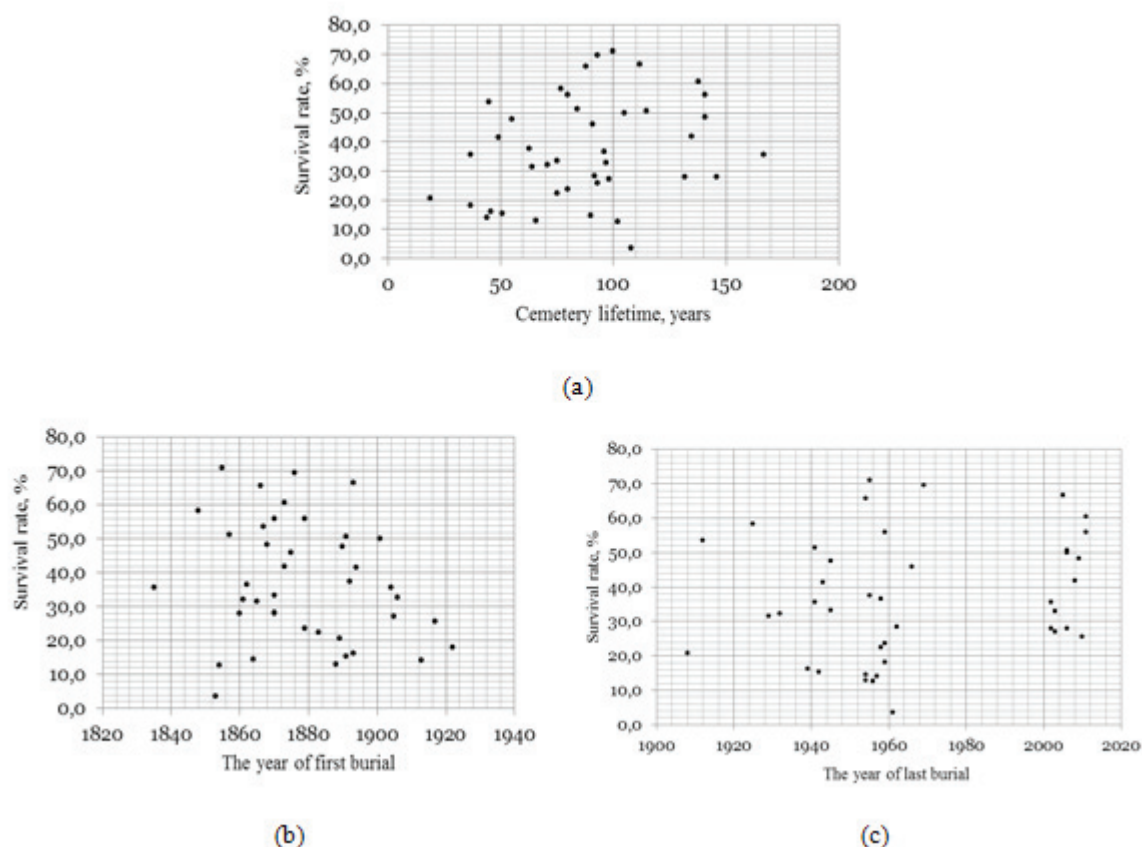

(a)

(b)

(c)

Figure 5. The scatter diagrams of dependence of gravestones epigraphs survival rate on cemetery lifetime (a), the year of the first burial (b), and the year of the last burial (c).
Evaluated correlation coefficient values are 0.28 (a), -0.21 (b), 0.18 (c)

2.2. Information on the buried

To describe the buried person we shall use established already socio-demographic indicators, including name/s, surname/s, birth data (full), death date (full), if indicated – profession, and location of living or origin. Full birth/death date means: day, month and year. Very meaningful indicator is a person's name; the gender of the buried can be often identified only according to it.

When analyzing the most characteristic social distribution – distribution of the buried persons according to their age and gender, we can determine only static state. Not one skeptic could come to the question – why such analysis is needed if normal/common statistics of residents exists and it is possible to find the number of residents of a particular location and structure of their age/gender. Here the questioner refers to indisputable assumption that all people are mortal and socio-demographic structure of the death has to correspond to still living part of the society. Such assumption shall be correct only in the case if we have "normal and reliable" statistics on living people and if people do not move anywhere, do not change their living places and spend all their life in the location they were born. However, a human is migrating object of calculation; therefore, he can be calculated in the given space and in the given moment. Such section is instantaneous statistical one. And, by the way, we have to acknowledge that we do not have too much statistics about residents of Klaipėda region as well. We discuss about content of historical cemeteries of Klaipėda region in this survey. It is as much local as absolute. By the way, survived records in the metrics frequently are the only historic evidence and reminder that such a person lived. It is one more encouragement to apply methods researching the living society for "the death society".

Therefore, the total number of the identified buried in 42 cemeteries is 941 persons. They distribute according to the gender as follows: 480 males and 461 females. The number of children of both genders under 18 years is 181. Distribution of the buried according to the age groups is described in the Fig. 6.
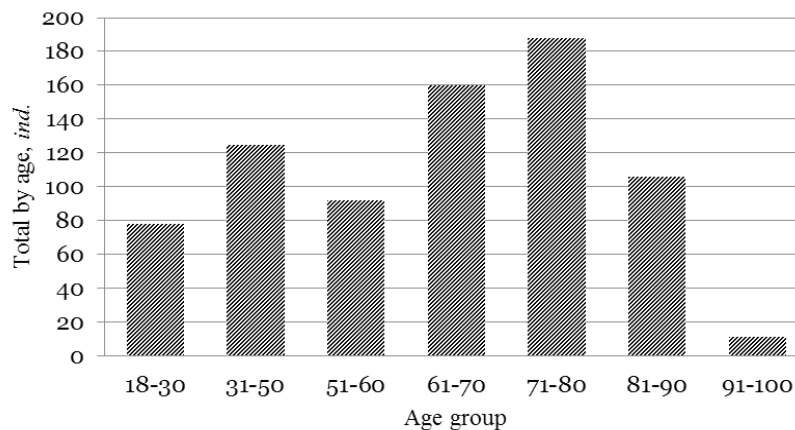

Figure 6. Burials in 10-year age groups

Unexpectedly for us, elementary distribution of the buried according to the age and gender turned into the lifetime indicator. Data on the person's age during his death obviously show (Fig. 7, 8) that mortality of men in the age of 60−70 years is higher than that of women of the same age; higher number of women die having reached the boundary of 80−90 years. We almost cannot find a male having reached the age of 100 years but there are 10 females in the centenarian sample.
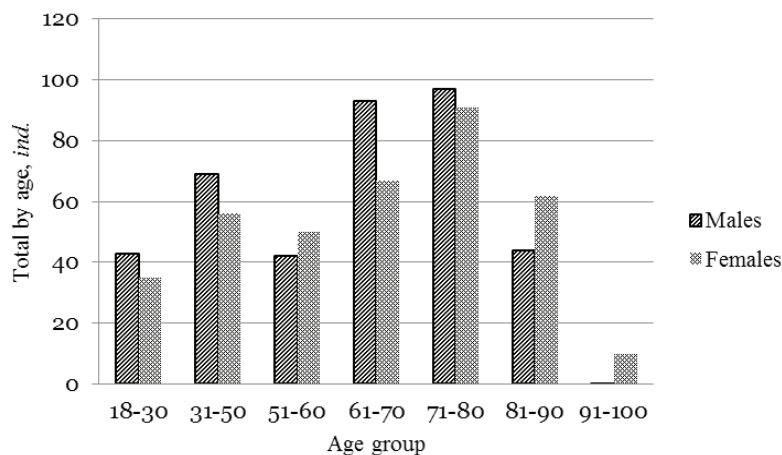
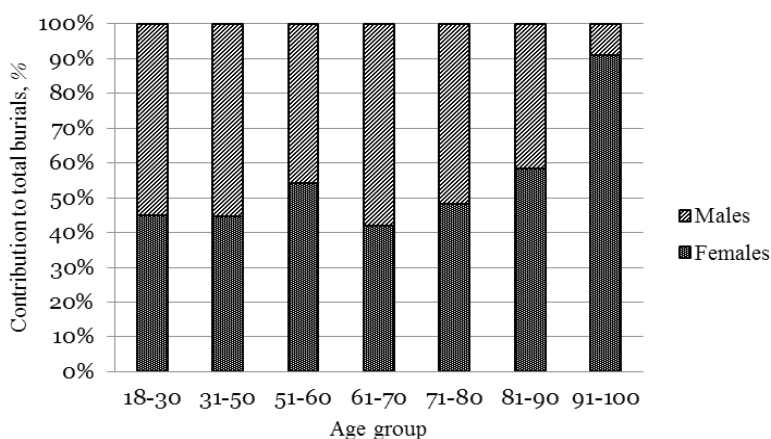*Figure 7.* Burials in gender and 10-year age groups

Figure 8. Distribution according to gender in total burials in 10-year age groups

Very interesting tendency is fixed in the cemetery wherein burials were also after 1960 (Fig. 9, 10). There 12 such cemeteries in the massif surveyed by us. Burials of 67 males and 93 females evidently show that only elder/older people and children remained from native residents of the region in post-war years. After comparison of the buried after 1960, it can be seen that there is no males of young and working age at all as well as babies. [Of course, additional information could be obtained from analysis of birth metrics.] In female group, distribution according to the gender is not as controversial.
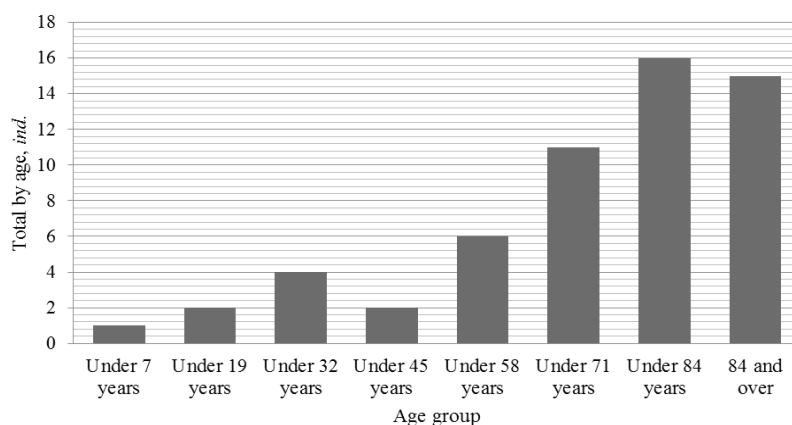

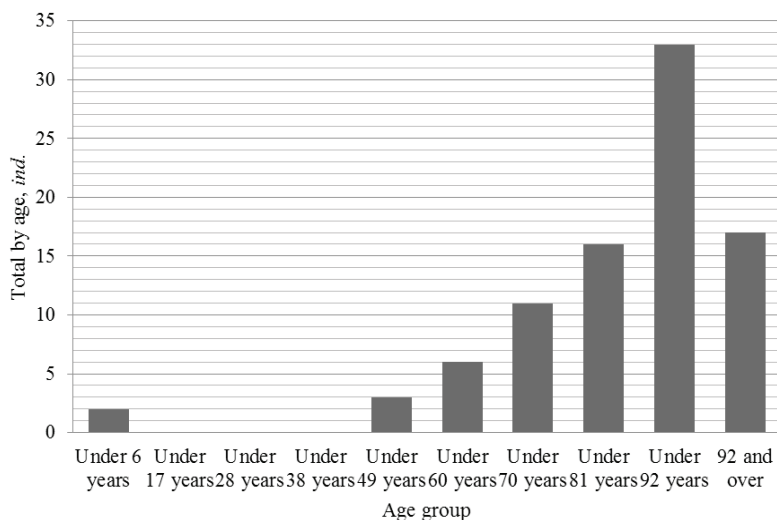*Figure 9.* Burials of males after 1960 according to the age groups

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Figure 10. Burials of females after 1960 according to the age groups

Graves of children/infants must be mentioned separately. In each cemetery, children's graves stand out visually by their form and size (most often the gravestone's length is up to 1 m). Usually children are buried in groups in the cemetery. In such groups, there is almost never any information about buried children. Therefore, information about children is the least. Even if some information is found that children are buried in the same grave with adults, they are not mentioned separately. Common records are as such: <...> *czion ilsisi mano sanareliai ir mano kudikiai*; *czion ilsisi pakajuje mano mylimi kudikei* <...>, etc. Occasionally, names of dead children are indicated, e.g., Merchant H. Steppat is buried in one grave with his wife Anna geb. Lepenies and yet *su trimis dukrelėmis Elena, Frieda, Anna* (Natkiškės); Ch. Kawol *ir jo duktikė Lina* (Launiai); it still happens more often that it is not troubled to name buried infants, e.g. Dawid Barsties *su savo milimais kudikeis* (Šakininkai); Marie Ragaischus geb. Jokeit *mit ihren zwei Kinder* (Šventvakariai), etc.
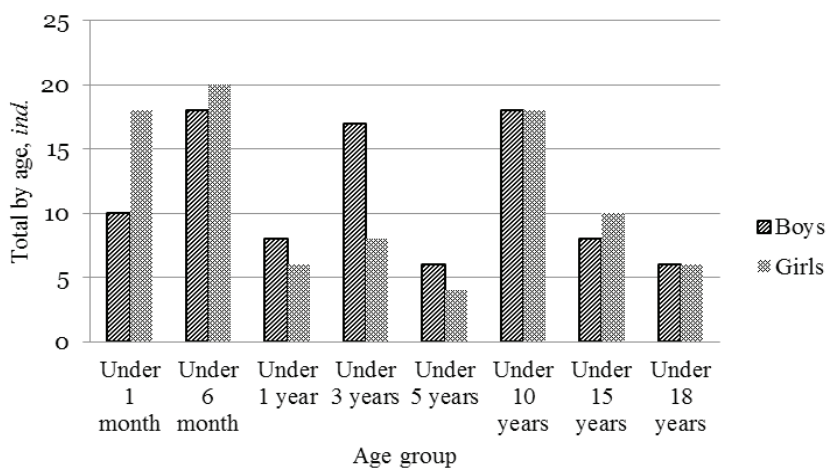

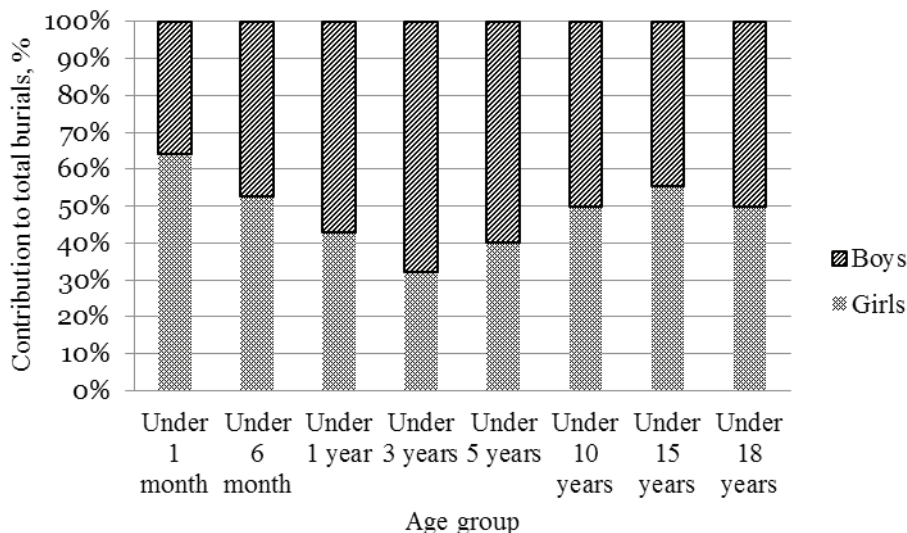*Figure 11.* Burials of infants and children according to the age groups

Figure 12. Distribution according to gender in total number of burials of infants and children in the age groups

During inventory of children's graves, attention is paid into their age and mortality in the age groups. It is known from sources of statistics and social history that mortality of infants is/was the highest during their first life years. Our calculations show also the same: only every fourth child survives a for few days and sometimes for one-two weeks during his first life month; over one third of born alive infants does not survive until 6 months of their age. The number of deaths of the early period is higher among girls than among boys. However, in all other age groups mortality of boys quickly reaches mortality level of girls and overpass it (Fig. 11, 12).

According to the survey data (Fig. 13), 83 percent of dead children did not survive until 10 years. Of course, we cannot get to know the death reason from the gravestone record; however, it is not worth to look for them far away. We can find answers looking more attentively into other gravestones in the same cemetery: young mother is living in the rhythm "was born-died-was born-died, etc." for 5−10 years, until she lies herself next to her children. The best example of this statement may be one burial in the cemetery Petreliai. Next to the grave of Katryne Pillibeit (1843−1903) and her husband Jons Pillibeit (1844−1931), there are two burials: Else Pillibeit (of three weeks), Jons (of 18 years), Mare (of three months), Mikkel (of two months) are in the first grave, and Wilhelm Pillibeit (of three days), Jakob (of twenty days), Ertme (of three and a half months) ir Martin (of not full three months) are in the second one. We do not have data about living children of this family. During 13 reproductive years, this woman buried 8 infants. And she died herself not having reached 60 years. Hard work, poverty and hardship early exhaust the female body; there is no contraception and frequent pregnancies rebound the life quality of the woman-mother. Thus, infants were born weak and living just for a few days or months.
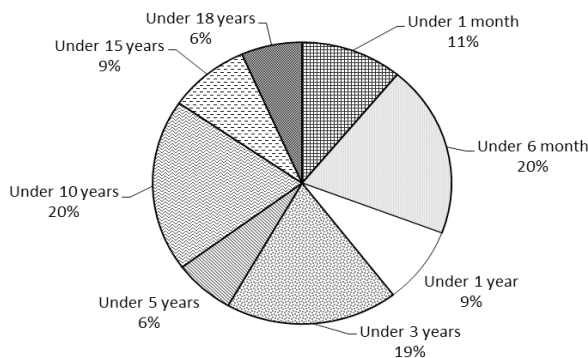

Figure 13. Distribution according to the age groups to total infants and children burials

Fig.13 clearly shows that more than a half of born infants do not survive until 3 years of their age. Received conclusions do not contradict at all to similar conclusions of many social researches of XVIII−XX century made in various European countries.

If we do not find sufficient historical material, we can just guess about reasons causing such mortality outbreaks in all society layers. In this aspect, the cemetery of Rudynai remains most mysterious. The cross of wonderful ornament found and dug out accidently evidences the death date of the infant − 1853. And that is all information found. Deaf cemetery drowned in the moss, wherein over 70 children's graves are scattered not separately, but in groups of 3−4−5. Such burial manner as if whisper that all these small graves appear at the same time and due to the same reason. What caused such massive deaths of children? So far we do not have the answers.

When analyzing metrics data, we also find some information about marital status of the buried. "Meine Mann" or "Meine Frau" being mentioned in records means "husband", "wife". Interesting message can be found in burials in couples. It can be two graves one next to other connected with one monument or double gravestone which has metrics about both persons buried. In 42 cemeteries surveyed by us, 82 such burials of couples were found. After having analyzed the birth and death dates, we estimated that in 70 percent of couples the husband is elder than his wife and in 23 percent of couples – the wife is elder than her husband. The percentage distribution of buried couples among age gap groups is provided in Fig. 14, 15.
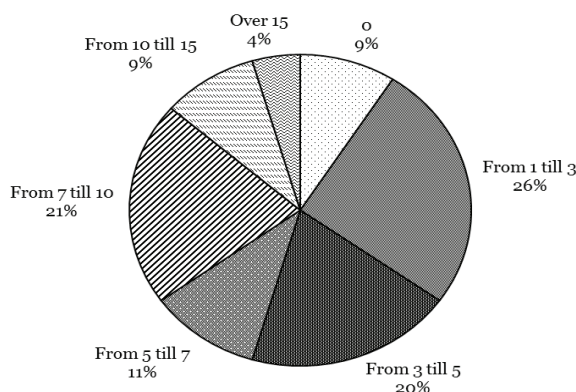

Figure 14. Burials of presumable married couples where male is elder than female according to the age gap groups
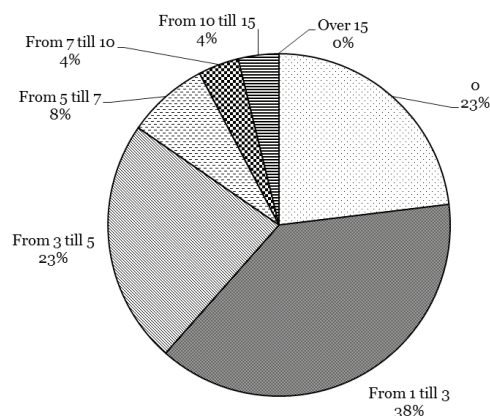

Figure 15. Burials of presumable married couples where female is elder than male according to the age gap groups

We do not have information about the marriage year; thus, we cannot decide on duration of marriage. However, we can indicate very clearly from the cemeteries' records how long widowhood is. Average duration of male widowhood of spouses is 7.67 years (from 1 year to 28 years); female widowhood is longer – in average 8.49 years (from 1 to 45 years). There were a few couples who died almost at the same time (difference of a month or a few days).

Conclusions

The carried out research showed that formal statistical methods may be also applied for data of gravestones' epigraphs of cemeteries. The essential specificity is in the fact that there is no general set in old and devastated cemeteries. Though social-demographic tendencies disclosed after application of statistical analysis for metrics data of the buried in the cemeteries, – correlation of males and females in the population, high mortality of infants / children, shorter lifetime of males – basically correspond to tendencies fixed in formal demographic and social statistics.

Relationship (dependence) of functioning of Evangelico-Lutheran cemeteries of Klaipėda region with historical events are evidently showed by the end of functioning of many cemeteries as well as dynamics of burial intensity.

Direct dependence between appearance, closure, functioning duration and epigraph survival rate was not found. This result negates widely spread opinion that disappearance of cemeteries directly depends on the end of their functioning.

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ANTKAPIŲ METRIKOS DUOMENŲ SOCIALINĖ-DEMOGRAFINĖ ANALIZĖ: SPECIFIKA IR REZULTATAI

Arūnė Liucija Arbušauskaitė, Natalija Juščenko
Klaipėdos universitetas (Lietuva)

Empirinę tyrimo bazę sudaro antkapių, paminklų ir kryžių užrašai / epigrafai, užfiksuoti Klaipėdos krašto evangelikų liuteronų kapinėse 2012–2013 metų ekspedicijose. Tyrimo metu statistinės ir socialinės-demografinės analizės būdu buvo siekiama suformuoti prielaidas apie populiacijos socialinę struktūrą.

Atliktas tyrimas parodė, kad formalius statistinės analizės metodus galima taikyti ir kapinių epigrafų duomenims. Esminis specifinis bruožas – senose, nuniokotose kapinaitėse neturime generalinės visumos.

Nors socialinės-demografinės tendencijos, atskleistos kapinėse palaidotųjų metrikos duomenims pritaikius statistinę analizę, – vyrų ir moterų tarpusavio santykis populiacijoje, trumpesnė vyrų gyvenimo trukmė, aukštas kūdikių / vaikų mirtingumas – iš esmės atitinka oficialioje demografinėje ir socialinėje statistikoje užfiksuotas tendencijas.

Antkapių epigrafų metrika teikia dvejopą informaciją – ne tik apie palaidotuosius, bet ir apie pačias kapines.

Kapinių funkcionavimo pradžios ir pabaigos metų bei palaidojimų intensyvumo duomenų tyrimo rezultatai leido formuluoti netikėtas išvadas apie epigrafų nykimo priežastis. Mat vyrauja nuomonė, kad ilgas kapinių neveikimo periodas dažnai lemia jų nunykimo ir suniokojimo lygį. Prielaidai patikrinti kapinių epigrafų išlikimo procento priklausomybės nuo kapinių ankstyviausio palaidojimo metų, nuo kapinių vėlyviausio palaidojimo metų ir nuo kapinių funkcionavimo trukmės akivaizdžiai parodė, kad epigrafų išlikimo procentas visiškai nepriklauso nei nuo kapinių „senumo", nei nuo laikotarpio po jų uždarymo, nei nuo jų funkcionavimo trukmės.

Klaipėdos krašto evangelikų liuteronų kapinių funkcionavimo sąryšius (priklausomybę) nuo istorinių įvykių akivaizdžiai rodo ir daugelio kapinių veiklos pabaiga bei palaidojimų intensyvumo dinamika.

PAGRINDINIAI ŽODŽIAI: *Klaipėdos kraštas, kapinės, antkapių epigrafai, socialinė-demografinė analizė.*

JEL KLASIFIKACIJA: Z12.