

Mortality and Causes of Death in Helsinki in 1750–1865 with a Comparison with Tallinn

OIVA TURPEINEN

Researcher

Abstract

Between 1750 and 1865 the population of Helsinki grew from around 1,500 inhabitants to 23,500 inhabitants. Part of this growth is explained by general population growth, typical of both Finland and the rest of Europe. The fact that Helsinki grew more rapidly compared to the other towns of Finland was due to two additional factors with underlying political causes: one was the building of the fortress of Viapori alongside the town at the end of the 1700s and the other Helsinki's becoming the capital of autonomous Finland in 1812. This latter decision moved the administrative and in part the economic focal point of Finland from Turku to Helsinki.

The population growth of Helsinki was not the result of an excess of births over deaths, instead it was caused by migration gain. High mortality, again, was linked to the impact of contagious diseases. Intestinal diseases which spread among children by means of food substances raised infant mortality, in particular, but there were also many other diseases (smallpox, measles, whooping cough, diphtheria, and scarlet fever) which carried many small children to their grave. Cholera, which spread to Helsinki repeatedly in the 1800s, killed many of Helsinki's inhabitants, but nevertheless cholera's significance has been greatly exaggerated. The most important single killer of the adult population was tuberculosis, but in addition many other diseases, such as typhoid, spotted fever and dysentery, and in part venereal diseases, markedly raised the mortality statistics of Helsinki.

When comparing the remarkably great rises and declines in the annual mortality figures of Helsinki and Tallinn, one notes how very much they coincide. This demonstrates the active contacts existing between the two towns. As a result of the diversity of economic and cultural relations, contagious diseases spread and evolved into epidemics, which rose to great heights in the capitals of both countries, from where they spread to the adjacent regions and other towns. The roads of contagion of Tallinn and Helsinki were partly connected to St. Petersburg, which especially in the 1800s grew into a metropolis even on a European scale. St. Petersburg had extensive international contacts, which facilitated the spread of diseases to rather remote Northern Europe.

Keywords: mortality, causes of death, diseases, population growth, migration gain, historical demography, Helsinki, Tallinn, Baltic Sea Area

Introduction

This study is a basic survey. It is interesting to study the changes in mortality and causes of death in Helsinki during the period 1750–1865. Although Finland was still in the preindustrial era, development in Helsinki was by no means at a standstill. Helsinki became the capital of Finland when Finland was incorporated into Russia in 1809. For Helsinki this meant monumental construction and growth in many respects. It is possible to make comparisons between Helsinki in the mid-18th century and in the 19th century. Did mortality and causes of death undergo any significant changes during this period and if they did, what factors were behind them? Did mortality in Helsinki differ from the surrounding areas and from that in Finland as a

whole? (Hornborg 1950, 471 ff.; Waris 1951, 9 ff; Turpeinen 1973a,b, 1977a, and 1982).

In addition to these chronological comparisons, the existing data allows us to make a limited regional analysis. In Helsinki the fortress island of Viapori (Suomenlinna) and its military contingents were registered separately. The data concerning mortality and causes of death in these units can be compared with corresponding data on the population of Helsinki proper (Turpeinen 1984a, 37–51)

Finally, a parallel comparison will be made of mortality and, as far as is possible, the causes of death in Helsinki and Tallinn. This comparison will rely mainly on the studies of Raimo Pullat (Pullat 1976a-d, 1977, 1985, and Pullat-Mereste 1982).

Population development

After the Great Northern War ended in the 1720s, the population of Helsinki was about 1,000. By mid-century the population had increased by about 50 percent and totaled nearly 1,500. One hundred years later there were over 15,000 inhabitants in Helsinki. From 1750 to 1850 the population had undergone a tenfold increase (see Appendix table 1). Rapid growth continued, for by 1865 the population of Helsinki was over 23,500.

These figures describe the development of a kind of "basic population". In addition, there were military contingents stationed in Helsinki already in the 18th century, when construction on the Island of Viapori was begun. Also in the 19th century there were many army units stationed in Helsinki. If only population changes were being studied these units could be disregarded. However, as this study also covers demographic changes and because the military contingents were included in the vital statistics registers at that time, these special groups must be included in the study.

This is no small matter. For example, in 1766 the basic population of Helsinki was slightly over 2,000, but because the military parishes had an additional population of more than 3,300 inhabitants, the total number of inhabitants in Helsinki exceeded 5,300 persons. The previous census in 1763 did not include these military units.

The inclusion of the military contingents in Helsinki's vital statistics also explains the sudden rise in births as well as deaths in Helsinki after 1764. In 1764 there were 94 births and 110 deaths in Helsinki, while the corresponding figures the following year were as high as 163 and 175 (Population and vital statistics tables, the archives of Statistics Finland, TKA; the archives of the Senate's Chamber Expedition, population tables II Dc 1 in the National Archives of Finland, KA).

At the end of the Swedish rule, the ratio of the main population to the military units remained about the same. For example, in 1805 the population of Helsinki was 3,227, but the population of the Island of Viapori including the inhabitants of the fortress totaled 4,606 persons (The population tables of 1805, the archives of Statistics Sweden, Stockholm, partially also from TKA).

During the Russian rule the situation changed, for two reasons. First, the number of military units on Viapori was reduced and, second, Helsinki's becoming the capital of Finland increased the size of the civilian population very rapidly.

However, a few Finnish military units were also formed in Helsinki, of which the Bodyguard and the Naval Contingent were the most important. The population of these units was registered separately. As Viapori also formed a parish of its own, it is feasible to carry out a comparative study.¹

¹ The population and population changes of the parishes of the Bodyguard and the Naval Contingent have been included in the Swedish-Finnish parish until 1840 as well as the German parish founded at the end of the period of study. The Greek-Orthodox congregation has not been included at all in the study.

The population structure

Because fertility and especially infant mortality were extremely high during the preindustrial period, the age structure of the population usually resembled a pyramid. The sides of the pyramid were gently sloped because there were only a few old age groups. The age structure of the population of Helsinki in 1750–1865 only partially resembles this common type. There were very few elderly people in Helsinki at the end of the 18th century. For example, in 1769 the number of persons over 60 years of age was 74, in other words 3.6 percent of the population.² No noticeable changes were registered in the beginning of the 19th century, for in 1855 the corresponding percentage was about four among the basic Helsinki population. If the military contingents are included, the proportion of “pensioners” grows even smaller (Population tables, TKA).

The remarkably large proportion of small children is consistent with the pyramid model, but these are the only similarities. Especially worth noting is the large proportion of 20–40-year-olds. This is natural in military parishes (see Appendix table 2), but this age group is clearly overrepresented also in the basic Helsinki population. This phenomenon is obviously caused by the high mortality in the cities. Urban population growth in the preindustrial era was mainly caused by positive net migration. The in-migrants were men and women in their prime working years, which had an impact on the age structure (Waris 1951, 157; Rosenberg 1966).

It is understandable that this favorable age structure in Helsinki, and cities in general, had many consequences (Turpeinen 1977a, 126–127). The proportion of the working-aged, the breadwinners, was relatively high compared to the children and the aged, the dependents. This should be emphasized especially in the preindustrial era, before the coming of the machine age, when the role of physical labor was essential.

Another question is the impact of the large proportion of fertile age groups on fertility. Wasn't fertility exceptionally high as a result? The answer is not that simple. In 1769 there were 978 persons aged 20–50 years in Helsinki proper, equaling 48% of the total population. With the military contingents included, these age groups totaled 3,100 or 62.8% of the total population.

Furthermore, the ratio of women to men should be taken into consideration. In Helsinki proper the difference was small: in 1769 there were slightly over one thousand persons of both sexes in Helsinki, but in the military parishes the number of men was just under 2,200 and the number of women about 700 (Senate's Chamber Expedition, population tables).

If we study another cross-sectional period, the year 1855 (see Table 1), the number of women in Helsinki proper slightly exceeded the number of men: in the entire population there were 107 women to every 100 men (Population tables, TKA). In the group under 15 years of age the difference was minimal, however. In the fertile-aged group of 15–49-year-olds, the ratio was 106 women to 100 men. For the group over 50 years of age the ratio was 121 women to 100 men.

The disproportion between the sexes was most striking in the military parishes. For each 100 men in the age group 15–49 years there were only 19 women. The overall ratio here between the sexes was 28 women to 100 men.

The considerable number of soldiers also had an impact on the total sex distribution of the population of Helsinki. The overall ratio between the sexes in the total population of Helsinki was 90 women to 100 men, whereas in the age group 15–49 years there were only 82 women to 100 men.

In answer to the question posed earlier, the high proportion of men did indeed cause higher fertility, but primarily outside marriage. Already at a very early stage Helsinki held a leading position in the number of children born outside marriage (Turpeinen 1981).

² In the mid-18th century the number of the oldest old people was estimated too high; their year of birth was not always exactly known.

Table 1. The population of Helsinki in 1855 according to sex and age.

Helsinki proper						
Age	Men N	%	Women N	%	Total N	Total %
0 - 14	2 206	30.0	2 271	28.9	4 477	29.4
15 - 49	4 401	59.8	4 669	59.5	9 070	59.6
50 -	753	10.2	912	11.6	1 665	11.0
Total	7 360	100.0	7 852	100.0	15 212	100.0
Military units						
Age	Men N	%	Women N	%	Total N	Total %
0 - 14	186	9.6	182	34.0	368	14.9
15 - 49	1 727	89.3	329	61.5	2 056	83.3
50 -	21	1.1	24	4.5	45	1.8
Total	1 934	100.0	535	100.0	2 469	100.0
The total population of Helsinki						
Age	Men N	%	Women N	%	Total N	Total %
0 - 14	2 392	25.7	2 453	29.2	4 845	27.4
15 - 49	6 128	65.9	4 998	59.6	11 126	62.9
50 -	774	8.4	936	11.2	1 710	9.7
Total	9 294	100.0	8 387	100.0	17 681	100.0

Fertility and mortality

In the following fertility as well as mortality in Helsinki will be studied using data from three different periods: 1750–1772, 1808–1809, and 1816–1865 (see Appendix tables 3–5). The time interval for the first period is one year, whereas the second period covering the war of 1808–1809 has been studied in more detail, month by month, because of its exceptionally high mortality. For the third period beginning in 1815 and extending over half a century a five-year interval seemed justified because Heikki Waris has already carried out a year-by-year study on mortality in Helsinki.

Between the years 1750–72 there were 2,558 registered births in Helsinki. The number of deaths during the same period was 2,866, resulting in a natural population loss of 308 persons. Among this excessive number of deaths, a total of 211 had been registered in 1750–64. When the total population of Helsinki increased from about 1,500 to 2,300 persons at the same time, the net migration rate was over 1,000 persons. This is remarkably high considering Helsinki's small population.

Examined yearly per 1,000 mean population, the following results were obtained for the period 1750–72: fertility 35.4 per thousand, mortality 39.7 per thousand, and the natural population decrease 4.3 per thousand. Dividing the period into two parts is justified for further analysis: the first one covering the years 1750–64 and the second one the years 1765–72. As already mentioned, Helsinki quartered quite an extensive number of military contingents during the second period. The results are shown in Table 2.

Table 2. Birth rate and mortality in Helsinki, 1750–1972.

Period	Birth rate		Mortality		Difference	
	N	per thousand	N	per thousand	N	per thousand
1750 - 64	1 263	41.6	1 474	48.6	- 211	- 7.0
1765 - 72	1 295	30.9	1 392	33.2	- 97	- 2.3
1750 - 72	2 558	35.4	2 866	39.7	- 308	- 4.3

The most interesting figures here are the numbers indicating a very marked decline both in fertility as well as in mortality after 1764. The main reason is quite simply that the fertility decline was caused by the rapid increase of soldiers in Helsinki. When simultaneously the number of women of the same age remained unchanged, the result was a reduction in fertility. This was also the main factor for the decline in mortality, although for somewhat different reasons. Because a major portion of mortality at that time was due to the high child and infant mortality, the growing number of soldiers also had a diminishing effect on this type of mortality and on total mortality (See the sources in the Appendix table 3; Turpeinen 1978).

The annual changes in mortality in 1750–72 were extensive – as they generally were in those times. A peak value of 73.1 per thousand was registered in 1762. Correspondingly, mortality remained below 30 per thousand in many years. In order to analyze the annual fluctuations, it is necessary to examine the causes of death more closely. This will be discussed later in more detail.

If mortality in Helsinki was remarkably high in 1762, high figures were occasionally registered later also. Already in the first year of the war in 1808 mortality was 50.0 and in the second year, 1809, as high as 81.7 per thousand. During these two years the natural population loss was 262 persons. This was a very large number in a community of less than 4,000 inhabitants.

Appendix table 4 shows the monthly development in mortality in 1808–1809 in Helsinki. Mortality was already remarkably high in the summer of 1808, but it began a sharp increase in December 1808.³ In January some signs of declining mortality were seen, but in February 1809 the mortality of Helsinki increased again considerably. In this respect the darkest period in Helsinki was May and June 1809. In late summer there were still great losses, but a declining tendency finally began before the end of the year (see the sources of Appendix table 4).

Mortality remained very high in Helsinki also during the third period being studied, 1816–65. During this entire period 27,088 persons were born and 29,803 persons died, so the natural population decrease was 2,715 persons.⁴ Thus the only reason Helsinki grew was positive net migration. Waris has examined the role of migration in the history of Helsinki. He has estimated that during 1816–65 a total of 51,851 persons migrated to Helsinki whereas 32,900 persons left the city, resulting in a positive net migration rate for this period of 18,951 persons (Waris 1951, 158). These figures show clearly the significance of in-migration for Helsinki as well as the remarkably high mobility of the city population. Annual in-migration during 1816–65 was as high as 67.1 per thousand and even out-migration was 42.6 per thousand, so the total migration or mobility is 109.7 per thousand. From this we can conclude that altogether 11 percent of the population of Helsinki migrated during this period.⁵

A closer study of fertility and mortality in different parishes of Helsinki shows that in Helsinki proper⁶ fertility and mortality were almost equal during 1816–65 (see Appendix table 5). The number of births was 24,041 and the number of deaths 24,064 persons. The statistics also show that during the second 25-year-period mortality had a declining tendency. Between 1841–65 – unlike during the period 1816–40 – fertility exceeded mortality. However, the mortality of the total population of Helsinki did not decline from 1816–40 to 1841–65. The reason was the extremely high mortality in the parishes of Viapori as well in the bodyguard and the naval contingents. The total natural population loss in these three parishes during 1841–65 was 2,203 persons. So although development concerning the basic population of Helsinki was positive – the excess of births compared to deaths during 1841–65 was 734 persons – the total natural

³ When the monthly mortality has been calculated for the year 1808 the coefficients 12.62 (February), 12.2 (30-day months), and 11.81 (31-day months) were used. The corresponding coefficients for the year 1809 were 13.04, 12.17, and 11.77.

⁴ According to the study of Waris (1951, 145) 28,403 persons were born and 31,143 died in 1816–65; the difference was 2,740 persons. The deviation is due to the fact that Waris had collected data also on Greek-Orthodox persons who are not included in this study.

⁵ After the Waris' study Rosenberg (1966) has pointed out the great mobility also elsewhere in Uusimaa province.

⁶ The concept "Helsinki proper" means almost the same as the Swedish-Finnish parish. In this study, however, the births and deaths of the parishes of the Bodyguard and the Naval Contingent of couple of years before 1841 have been included as well as the corresponding data of the German parish founded at the end of the era.

population decrease in Helsinki during the second 25-year-period was no less than 1,469 persons (See the sources of Appendix Table 5).

The annual fluctuations in mortality were still extensive. During three years – in 1831, 1853, and 1855 – mortality rose over 70 per thousand. Furthermore, it rose over 50 per thousand in 1819, 1833 and 1854. Low values in mortality – less than 30 per thousand – were registered many times in the 1820s (in 1821, 1823, 1824 and 1827), twice in the 1840s – in 1844, and 1845 – and three times at the end of the period (1860, 1863 and 1864) (Waris 1951, 145).

Mortality according to age group

Infant mortality

During the preindustrial era infant mortality was an exceptionally significant factor in age-specific mortality. First, infant mortality formed a substantial part of mortality as a whole. Second the short- and long-term fluctuations and changes in infant mortality were closely connected with other factors in the development of a community.

In Finland as a whole, infant mortality was already declining at the end of the 1700s and in the early 1800s. In 1751–1800 infant mortality was 218, in 1801–1850 it was 198, and in 1851–1900 it was down to 165 (Turpeinen 1973b, 1977b, 1979a, 1984b, and 1987b).

How then did infant mortality develop in Helsinki during the years 1750–1865? Was the trend in Helsinki similar to that in other parts of Finland or did it possibly have specific characteristics of its own? The table below indicates that the general development in Helsinki was very much the same as in other parts of Finland (Table 3). Whereas infant mortality in Helsinki during the period 1750–72 was 342, during 1816–65 the corresponding figure was 260 (the previous references, and original sources: vital statistics, TKA)

Table 3. Infant mortality in Helsinki, 1750–1752, 1808–1813, and 1816–1865.

Period	Number of deaths	Per thousand live births
1750 - 1764	467	370
1765 - 1772	407	314
1808 - 1813	212	253
1816 - 1820	218	205
1821 - 1825	331	243
1826 - 1830	425	246
1831 - 1835	626	273
1836 - 1840	689	246
1841 - 1845	820	259
1846 - 1850	934	282
1851 - 1855	1 114	313
1856 - 1860	837	234
1861 - 1865	1 086	248
1750 - 1772	874	342
1816 - 1840	2 289	248
1841 - 1865	4 791	266
1816 - 1865	7 080	260

In comparing infant mortality in Helsinki with other parts of Finland one can see that it was much higher in Helsinki. The trend in Helsinki's infant mortality was not a direct decline, either. Table 4 indicates that during 1841–65 it was higher than during the preceding 25-year period. To find out the reason for this change it is necessary to examine how infant mortality rates vary in different socioeconomic groups. This can be done by studying infant mortality rates among children born in marriage and those born outside marriage.

Infant mortality among children born outside marriage in Helsinki has been studied more closely for the period 1816–65. This was a rather significant phenomenon at the time, for during this 50-year period about 5,600 children, in other words every fifth child, on the average, was born outside marriage. Furthermore, the proportion of births outside marriage increased at the end of the period. While the proportion of births outside marriage during 1816–40 was 17.7 percent, the corresponding figure for the period 1841–65 was as high as 22.2 percent. A detailed discussion about the various factors underlying this phenomenon is not possible here, but in addition to the age and sex factors mentioned above, ideological factors, housing problems, and possibilities to build a family, etc. are certainly of importance (Waris 1951).

Table 4. The number of children born outside marriage and their mortality counted for every five years during 1816–1865.

1 = number of extramarital births

2 = proportion of extramarital births of all live births as a percentage

3 = number of extramarital children died under the age of one year

4 = number of extramarital children died under the age of one year, per 1,000 extramarital live births

Period	1	2	3	4
1816 - 20	137	12.9	62	453
1821 - 25	199	14.6	63	317
1826 - 30	317	18.4	115	363
1831 - 35	400	17.6	162	405
1836 - 40	568	20.3	207	364
1841 - 45	712	22.4	287	403
1846 - 50	689	20.8	304	441
1851 - 55	801	22.5	428	534
1856 - 60	859	24.0	279	325
1861 - 65	927	21.2	314	339
1816 - 40	1 621	17.5	609	376
1841 - 65	3 988	22.2	1 612	404
1816 - 65	5 609	20.6	2 221	396

Table 5. Infant mortality among marital children in Helsinki, 1816–1865.

1 = number of marital children

2 = number of marital children who died under the age of one year

3 = infant mortality of marital children

Period	1	2	3
1816 - 40	7 629	1 680	220
1841 - 65	14 014	3 179	227
1816 - 65	21 643	4 859	224

The difference between marital and extramarital children in regard to infant mortality is really marked. One can see that the infant mortality rate of marital children did not undergo much of an increase during the period 1841–65 compared to the preceding period of 1816–40. The infant mortality of extramarital children did increase, however, during this same period from 376 per thousand to 404 per thousand.

If some sort of a synthesis is to be made on the basis of all factors presented so far, in order to find the causes behind the population phenomena in Helsinki, many different factors, the problem of poverty, the age and sex structure of the population, the increasing number of woman servants, the growing number of extramarital children, and finally the increase in infant mortality can all be linked together.

Even though the importance of economic factors cannot be denied – differences in the standard of living in different groups, for example – it would still be wrong to see infant mortality as purely a consequence of economic factors. The figures presented above on infant mortality over five-year periods raise questions about what could have caused the fluctuations. When the annual fluctuations are examined on the basis of Appendix Tables 6 and 7, it is difficult to imagine that the economic situation could have changed that dramatically. One key background factor is infectious diseases, which are, of course, at least partly connected to economical circumstances. The subject of infectious diseases will be discussed later in relation to causes of death.

Other age groups

The advanced Finnish population statistics provide a chance to study age-specific mortality as early as in the middle of the 18th century (Turpeinen 1973b, 1977a, 1979b; Turpeinen and Kannisto 1997). In this context the subject will be examined only as part of the cause-of-death studies. Appendix tables 8 and 9 show the number of deaths in different age groups. They already show that mortality is concentrated in distinctly different age groups in different years.

For a view of age-specific mortality and its development in Helsinki, the number of deaths must be compared to the total number of persons in the corresponding age group. This comparison has been carried out for the periods 1750–72, 1808–13, and for eight different years during the period 1816–65, four of which were years of exceptionally low mortality (1824, 1827, 1844, and 1845) and the other four years of exceptionally high mortality. The age groups have then been combined to get age groups larger than five years. The results are the following:

Table 6. Age-specific mortality in Helsinki, 1750–1855.

Period	Age-specific mortality			
	0 - 9 years	10 - 39 years	40 - 59 years	60 and older
1750 - 72	125.2	14.4	32.7	98.3
1808 - 13	77.2	20.4	61.0	256.9
1824	47.6	9.6	18.0	76.7
1827	53.0	17.6	27.5	105.4
1831	87.5	30.9	87.8	191.4
1833	88.6	37.2	46.3	66.4
1844	55.2	12.8	21.6	56.9
1845	50.8	11.6	21.6	51.2
1854	108.7	34.9	66.7	123.1
1855	120.2	39.4	75.5	183.8

The above figures and Appendix tables 8 and 9 indicate both a remarkably extensive variation between the different age groups and a certain trend of development. The mortality of children ten years old and younger was declining, whereas in older age groups, especially among 10–39-year-olds, mortality was on the rise. Especially in years of exceptionally high mortality, the high mortality was found among persons over 10 years of age. In order to see what is behind this phenomenon, the causes of death must be examined.

Causes of death

In addition to examining age-specific mortality, the Finnish material makes it possible to outline the development of the causes of death. It is natural that in studying causes of death all available data sources must be used and that the compatibility of the sources then shows whether or not the statistics are valid.

Concerning Finland as a whole, studies have been made of the causes of annual fluctuations in mortality at the end of Swedish rule. It was found that economic factors such as crop variations cannot sufficiently explain the fluctuations in mortality. The examination must be extended to infectious diseases, which are significant determinants in the rise and decrease of mortality (Turpeinen 1980a).

What about Helsinki? By studying the annual development of mortality during 1750–72 as well as the causes of death (Appendix table 10), one notes that especially smallpox and measles registered at the time as one category – have had an essential impact on these swings. Whooping cough, spotted fever, and dysentery also affected the annual fluctuations. There was also a shadowy “burning disease”, probably at least part of which was not only the spotted fever and dysentery mentioned above, but also various kinds of typhoid.

Similar observations can be made for the years 1816–65 (see Appendix table 11). However, one has to remember that smallpox had lost much of its hold by the beginning of the 19th century because of vaccination. The effects of vaccination can be seen in all of Finland (Turpeinen 1980b; Jutikkala 1984) but especially in Helsinki, where the conditions for carrying out vaccinations were more favorable than in the sparsely populated rural areas. As smallpox waned, mortality among children under ten started to decline. An even stronger impact on the decrease in mortality in this age group was caused by the rather considerable decline in infant mortality at the end of the 1700s and the beginning of the 1800s. This phenomenon can partially be explained by campaigns for breastfeeding, for example (Turpeinen 1987b).

Appendix table 11 shows that in many years whooping-cough, scarlet fever, and measles – the last mentioned was registered separately in 1774 – caused raging epidemics which killed a great many children. At the end of this period diphtheria was also very disastrous. In addition to these diseases which mainly afflicted children, there were other diseases which took their toll especially on the adult population. Dysentery, the close companion of poverty, killed an especially high number of people in 1852. The puzzling “burning fever” and “nerve fever”, diseases which probably were typhoid, took many of Helsinki’s citizens to their grave during the years 1832–33 and 1855–56.

In the 1800s cholera was a very notorious disease, which intermittently in wide pandemics extended its tentacles to Finland, but mainly only to the largest towns. As already noted, mobility to and from Helsinki was extensive at that time. Thus, the possibilities for cholera and other infectious diseases to spread to Helsinki were excellent. The mortality of adults, especially, increased remarkably during the cholera years – in the beginning of 1830s, at the end of the 1840s, and in the 1850s.

Although cholera was a significant cause of death in certain years, its role should not be overestimated. The main “killer” of adults in Helsinki was tuberculosis. Closer study has been made of this disease with the results shown in Appendix table 12 (population tables, TKA; for whole of Finland, see Backman and Savonen 1934).

First of all, one notices that pulmonary tuberculosis killed much more people in Helsinki than in other parts of the country, on the average (Turpeinen 1973a). In Helsinki pulmonary tuberculosis hit its peak in the mid-1800s. The Appendix table 12 also shows how frighteningly pulmonary tuberculosis raged in Viapori and in the military contingents. Mortality due to pulmonary tuberculosis was even bigger than the entire mortality of the 1990s.

When explaining the great difference in tuberculosis mortality between the ordinary population and the military units, one must consider army housing conditions. Many of the civilians also lived poorly, however, so this fact alone is not enough to explain the difference. In interpreting the phenomenon as a whole, the age structure must also be taken into consideration. Pulmonary tuberculosis is especially dangerous to the population in its prime. This holds true

especially for the military contingents, where a great number fell prey to tuberculosis. This means that mortality due to tuberculosis must be kept in mind when estimating the development of age-specific mortality. As noted, a marked increase could be seen at the turn of the 18th and 19th centuries.

A comparison with Tallinn

In general town histories dealing with Tallinn there is much data concerning the development of the size of the population, population changes, diseases, epidemics, medical services, etc. Much has also been written about the general demographic approaches related to these features. More detailed information about long-term demographic phenomena can be obtained from the books and articles written by Raimo Pullat (Pullat 1976a-d, 1977, 1985, 1997; Pullat and Mereste 1982; Mereste and Pullat 1979; see also H. Gustavson 1972, 1976). However, very little comparative research exists concerning the demographic situation of Helsinki and Tallinn.⁷

When comparing mortality in Helsinki and Tallinn in the 1700s, certain similarities can be observed in the annual fluctuations. In 1710 an exceptionally high number of people were killed by the plague in both cities in just a few months. Although the plague never returned to the northern shore of the Gulf of Finland and Helsinki after that, there is evidence that other epidemics raged in both cities at about the same time. Thus mortality increased in both cities in the beginning of the 1740s. The same occurred in 1754–57, in the beginning of the 1770s, and at the end of the 1780s. In the 1750s one reason for the rise in mortality in Helsinki, at least, was smallpox. This might also have been the case in Tallinn: according to Pullat, “the citizens of Tallinn were continuously being afflicted by poxes” (Pullat 1985, 93).

An age-specific comparison of mortality between the two cities shows many similarities. According to Pullat about 54 percent of all persons who died between 1736–1800 in the Puhevaimu parish in Tallinn were under 20 years of age (Pullat 1985, 92). In Helsinki during the period 1750–72 a total of 2,866 persons died, of whom 1,545 were under 20, which yields the same percentage – 54 percent (Senate’s Chamber Expedition II Dc 1, KA).

Pullat also discusses seasonal fluctuations in mortality in Tallinn, mentioning that child mortality often rose during the summer months. In the summer illnesses of the digestive tract were a common cause of death in Tallinn (Pullat 1985, 92). What was the situation in Helsinki? It is interesting to note that during the period 1750–72 in Helsinki mortality among children younger than 10 years reached its peak in May but was almost as high in July. Monthly mortality was lowest in February (Turpeinen 1978, 530).

These preliminary observations also prove the necessity and usefulness of a comparative study. It would be useful to find more material for comparison about Tallinn in order to be able to answer the following questions, for example:

- the infant mortality rate among marital and extramarital children,
- the importance of pulmonary tuberculosis for mortality as well as for its long-term development in Tallinn,
- pulmonary tuberculosis as a cause of death in different social groups.

It would also be interesting to study the development of mortality due to smallpox: how rapidly did the new protection method spread – first inoculation and then vaccination – and how did it affect mortality from smallpox (in Tallinn and in Helsinki). Further questions would be the impact of other infectious diseases on mortality as well as the differences in living conditions between different social groups and their impact on mortality, etc.

The examples presented here have dealt only with mortality. Comparative data would also be needed on marriage and fertility as well as family history in general.

⁷ The paper presented by Raimo Pullat at the meeting of Estonian and Finnish historians in Tallinn on October 23, 1989 was in that sense very exceptional. See also Pullat 1997.

Conclusion

Finland's old medieval towns of Turku, Viipuri, and Porvoo were still clearly larger in the beginning of the 1700s than the latecomer, Helsinki, which was founded in 1550. Similarly, the medieval town of Tallinn was quite comparable to Turku, but remained distinctly smaller than Stockholm.

Behind the population growth of Helsinki is the change in major power politics configurations in Northern Europe and in the Baltic Sea area. When Sweden lost Ingria, Estonia, and Southeastern Finland, among other areas, in the Peace of Uusikaupunki in 1721, Tallinn and Viipuri fell under the sphere of Russia, the new rising power. The founding of St. Petersburg in 1704 and its rise as the capital of the Russian Empire forced Sweden to take countermeasures. The situation took a turn for the worse for Stockholm when, under the Peace of Turku in 1743, new territories had to be ceded to Russia from Finland up to the Kymi River.

In this new situation regarding major power politics, the building of Viapori at the end of the 1700s right alongside Helsinki was quite decisive in quickening the growth of the town's population. While Helsinki had only about 1,500 inhabitants in 1750, thus making it smaller than Porvoo, the situation had changed completely by 1800, when the population of Helsinki was 3,000 or about one thousand more than in Porvoo. In addition, Viapori's population was greater than Helsinki's.

The war in 1808–09 ended in the Peace of Hamina, when Finland, up to the Tornio River, was ceded to Russia. In 1812 Helsinki became the capital, to where the central administration and the university were transferred from Turku. The monumental center of Helsinki was built at this time. Workers and domestic servants streamed into the new capital. In 1865 Helsinki had about 23,500 inhabitants and was entirely different from the town of half a century earlier. The population of Helsinki had also exceeded that of Turku, making Helsinki definitely the largest city in Finland.

The development of the population and mortality of Helsinki between 1750 and 1865 coincides with the end of the preindustrial and premedical age. Doctors were almost at a loss in fighting contagious diseases, and the methods of care often led the patient more readily to a rapid death than to a cure. Almost the only field where success was achieved was the smallpox vaccination inaugurated using Jenner's method in the beginning of the 1800s. On the other hand, many other contagious diseases such as tuberculosis, typhoid, spotted fever, dysentery, scarlet fever, measles, cholera, diphtheria, and venereal diseases advanced at their own speed in the urban community and caused great loss. In the growing city the water supply and sewerage also faltered. Wells were polluted when they were infected by disease-spreading microbes, especially in the summertime, increasing infant mortality, in particular. On the other hand, tuberculosis, which raged unleashed and advanced at a constant pace, was particularly deadly for the population of prime working age.

As a whole, the mortality of Helsinki in 1750–1865 was greater than fertility. This means that the growth of Helsinki was entirely the result of migration gain. This situation was typical of cities in the preindustrial age, and the mortality rate was generally in direct proportion to population size. The population of Tallinn, which was about 6,700 in 1763 and about 20,700 in 1858, grew only as due to migration gain. Almost regularly during this period annual mortality in Tallinn was greater than fertility. In St. Petersburg this same phenomenon was even more pronounced. During the period 1765–1865 the population of St. Petersburg grew from about 150,000 to 540,000, although there were almost 150,000 more deaths than births at this time. The rapid population growth of St. Petersburg necessitated a migration gain of almost 540,000 persons over the 100-year period mentioned.

The growing city of Helsinki had diverse commercial and cultural contacts also with the other cities of the Baltic Sea area, especially with Tallinn, in addition to St. Petersburg. This can also be seen when comparing epidemics and disease statistics. There is close uniformity in the rises and declines of mortality, because, due to frequent contacts, epidemics often taxed the populations of both Helsinki and Tallinn at about the same time.

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Appendices

Appendix table 1. The population of Helsinki in 1727–1865.

Year	Population	Year	Population
1727	1 170	1785	2 879
1730	1 178	1790	2 733
1733	1 132	1795	3 103
1740	1 314	1800	3 022
1744	1 250	1805	3 227
1747	1 375	1810	3 554
1749	1 507	1815	4 276
1754	1 887	1820	7 021
1757	2 072	1825	7 925
1760	2 330	1830	10 432
1763	2 376	1835	11 300
1766	2 009	1840	13 313
1769	2 136	1845	15 271
1772	2 355	1850	15 489
1775	2 486	1855	15 212
1780	2 527	1860	18 980
		1865	23 438

Note: These numbers do not include the population of Viapori and the population of the military contingents.

Source: Turpeinen 1977b, 124-25; population tables, TKA (Tilastokeskuksen arkisto, The archives of the Statistics Finland).

Appendix table 2. The age structure of the population in Helsinki in 1750, 1769, 1815, and 1855.

	1750	1769	1815	1855
Age group	Helsinki proper			
0-4	160	307	582	2 518
5-9	94	117	157	1 046
10-19	332	451	521	2 188
20-29	314	404	991	3 252
30-39	275	354	923	2 897
40-49	166	220	672	1 646
50-59	82	109	301	1 050
60-69	56	57	102	415
70-79	29	10	24	195
80-	12	7	4	5
Total	1 520	2 036	4 277	15 212
Age group	Military contingents, etc.			
0-4		218	61	179
5-9		122	22	122
10-19		311	44	84
20-29		888	130	1 132
30-39		784	130	542
40-49		450	75	165
50-59		116	39	38
60-69		11	18	7
70-79		2	5	-
80-		1	1	-
Total		2 903	525	2 269
Age group	Total population of Helsinki			
0-4		525	643	2 697
5-9		239	179	1 168
10-19		762	565	2 272
20-29		1 292	1 121	4 384
30-39		1 138	1 053	3 439
40-49		670	747	1 811
50-59		225	340	1 088
60-69		68	120	422
70-79		12	29	195
80-		8	5	5
Total	1 520	4 939	4 802	17 481

Source: The archives of the Senate's Chamber Expedition (II Dc 1), KA (Kansallisarkisto, The National Archives of Finland); population tables, TKA.

Appendix table 3. Annual average population, fertility and mortality in Helsinki in 1750-1772.

- 1 = average population 2 = number of births
 3 = fertility (per thousand) 4 = number of deaths
 5 = mortality 6 = difference between number of births and deaths
 7 = difference between number of births and deaths (per thousand)

Year	1	2	3	4	5	6	7
1750	1 513	68	44.9	55	36.4	13	8.5
1751	1 566	63	40.2	46	29.4	17	10.8
1752	1 658	80	48.3	98	59.1	-18	-10.8
1753	1 750	65	37.1	77	44.0	-12	-6.9
1754	1 842	96	52.1	83	45.1	13	7.0
1755	1 918	92	48.0	86	44.8	6	3.2
1756	1 980	75	37.9	133	67.2	-58	-29.3
1757	2 042	90	44.1	113	55.3	-23	11.2
1758	2 116	92	43.5	67	31.7	25	11.8
1759	2 202	84	38.1	68	30.9	16	7.2
1760	2 288	95	41.5	101	44.1	-6	-2.6
1761	2 346	100	42.6	119	50.7	-19	-8.1
1762	2 353	80	34.0	172	73.1	-92	-39.1
1763	2 368	89	37.6	146	61.7	-57	-24.1
1764	2 383	94	39.4	110	46.2	-16	-6.8
1765	5 328	163	30.6	135	25.3	28	5.3
1766	5 311	130	24.5	192	36.2	-62	-11.7
1767	5 303	166	31.3	150	28.3	16	3.0
1768	5 157	140	27.1	149	28.9	-9	-1.8
1769	5 011	161	32.1	158	31.5	3	0.6
1770	5 053	183	36.2	172	34.0	11	2.2
1771	5 284	184	34.8	178	33.7	6	1.1
1772	5 515	168	30.5	258	46.8	-90	-16.3

Source: The collections of the Genealogical Society of Finland, KA; population and vital statistics tables at the archives of the Senate's Chamber Expedition, KA; microfilms of the archives of the Church, KA; Turpeinen 1977b, 124-25.

Appendix table 4. Monthly fertility and mortality in Helsinki in 1808-1809.

		1 = period	2 = average population			4 = fertility (per thousand)		
		3 = births			5 = deaths			6 = mortality
		7 = difference (between 3 and 5)				8 = difference (between 4 and 6)		
	1	2	3	4	5	6	7	8
Jan	1808	3 799	10	31.1	9	28.0	1	3.1
Feb	1808	3 800	10	33.2	9	29.9	1	3.3
Mar	1808	3 794	5	15.6	17	52.9	-12	-37.3
Apr	1808	3 787	7	22.6	9	29.0	-2	-6.4
May	1808	3 779	1	3.1	15	46.9	-14	-43.8
Jun	1808	3 766	7	22.7	19	61.6	-12	-38.9
Jul	1808	3 759	12	37.7	14	44.0	-2	-6.3
Aug	1808	3 754	10	31.5	19	59.8	-9	-28.3
Sep	1808	3 749	12	39.0	13	42.3	-1	-3.3
Oct	1808	3 748	11	34.7	12	37.8	-1	3.1
Nov	1808	3 744	9	29.3	16	52.1	-7	-22.8
Dec	1808	3 726	9	28.5	36	114.1	-27	-85.6
Jan	1809	3 710	11	34.9	19	60.3	-8	-25.4
Feb	1809	3 700	13	45.8	26	91.6	-13	-45.8
Mar	1809	3 682	8	25.6	30	95.9	-22	-70.3
Apr	1809	3 659	9	29.9	32	106.4	-23	-76.5
May	1809	3 633	12	38.9	41	132.8	-29	-93.9
Jun	1809	3 603	7	23.6	40	135.1	-33	-111.5
Jul	1809	3 584	7	23.0	24	78.8	-17	-55.8
Aug	1809	3 565	8	26.4	21	69.3	-13	-42.9
Sep	1809	3 553	7	24.0	16	54.8	-9	-30.8
Oct	1809	3 546	13	43.1	18	59.7	-5	-16.6
Nov	1809	3 541	11	37.8	15	51.6	-4	-13.8
Dec	1809	3 539	13	43.2	14	46.6	-1	-3.4
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Year	1808	3 756	103	27.4	188	50.0	-85	-22.6
Year	1809	3 625	119	32.8	296	81.7	-177	-48.9
1808-09		3 690	222	30.1	484	65.6	-262	-35.5

Source: Population and vital statistics tables, TKA; Turpeinen 1987a.

Source: The archives of the Senate's Chamber Expedition (II Dc I), KA (Kansalliskirjasto, The National Archives of Finland); population tables, TKA.

Appendix table 5. Fertility, mortality and the difference between them in Helsinki for five-year periods from 1816 to 1865.

	1	2	3	4	5	6	7
1 = average population							
2 = births							
3 = fertility (per thousand)							
4 = deaths							
5 = mortality							
6 = difference (between 2 and 4)							
7 = difference (between 3 and 5, per thousand)							
Period	1	2	3	4	5	6	7
	Helsinki proper						
1816-20	5 647	975	34.5	1 092	38.7	-117	-4.2
1821-25	7 709	1 384	35.9	1 106	28.7	278	7.2
1826-30	9 651	1 652	34.2	1 540	31.9	112	2.3
1831-35	11 867	2 043	34.4	3 100	52.2	-1057	-17.8
1836-40	14 708	2 524	34.3	2 497	34.0	27	0.3
1841-45	14 294	2 583	36.1	1 973	27.6	610	8.5
1846-50	15 380	2 651	34.5	2 927	38.1	-276	-3.6
1851-55	15 351	2 912	37.9	4 058	52.9	-1146	-15.0
1856-60	17 167	3 276	38.2	2 709	31.6	567	6.6
1861-65	21 270	4 041	38.0	3 062	28.8	979	9.2
	Viapori						
1816-20	667	91	27.3	238	71.4	-147	-44.1
1821-25	782	43	11.0	125	32.0	-82	-21.0
1826-30	689	52	15.1	205	59.5	-153	-44.4
1831-35	889	113	25.4	149	33.5	-36	-8.1
1836-40	1 545	187	24.2	258	33.4	-71	-9.2
1841-45	1 655	206	24.9	354	42.8	-148	-17.9
1846-50	1 385	248	35.8	464	67.0	-216	-31.2
1851-55	1 021	264	51.7	668	130.9	-404	-79.2
1856-60	775	98	25.3	190	49.0	-92	-23.7
1861-65	265	91	68.7	84	63.4	7	5.3
	Bodyguard						
1841-45	1 480	221	29.9	331	44.7	-110	-14.8
1846-50	1 550	209	27.0	473	61.0	-264	-34.0
1851-55	906	175	38.6	307	67.8	-132	-29.2
1856-60	790	52	13.2	327	82.8	-275	-69.6
1861-65	1 202	233	38.8	212	35.3	21	3.5
	Naval contingent						
1841-45	1 345	162	24.1	275	40.9	-113	-16.8
1846-50	1 448	200	27.6	334	46.1	-134	-18.5
1851-55	1 473	218	29.6	499	67.8	-281	-38.2
1856-60	1 092	157	28.8	219	40.1	-62	-11.3
1861-65	480	27	11.3	27	11.3	0	0.0
	The entire city of Helsinki						
1816-20	6 316	1 066	33.8	1 330	42.1	-264	-8.3
1821-25	8 491	1 427	33.6	1 231	29.0	196	4.6
1826-30	10 340	1 704	33.0	1 745	33.8	-41	-0.8
1831-35	12 756	2 156	33.8	3 249	50.9	-1 093	-17.1
1836-40	16 253	2 711	33.4	2 755	33.9	-44	-0.5
1841-45	18 774	3 172	33.8	2 933	31.2	239	2.6
1846-50	19 763	3 308	33.5	4 198	42.5	-890	-9.0
1851-55	18 751	3 569	38.1	5 532	59.0	-1 963	-20.9
1856-60	19 824	3 583	36.2	3 445	34.8	138	1.4
1861-65	23 217	4 392	37.8	3 385	29.2	1 007	8.6

Period	1	2	3	4	5	6	7
Helsinki proper							
1816-40	9 917	8 578	34.6	9 335	37.7	-757	-3.1
1841-65	16 692	15 463	37.1	14 729	35.3	734	1.8
1816-65	13 305	24 041	36.1	24 064	36.2	-23	-0.1
Viapori							
1816-40	914	486	21.3	975	42.7	-489	-21.4
1841-65	1 020	907	35.6	1 760	69.0	-853	-33.4
1816-65	967	1 393	28.8	2 735	56.6	-1 342	-27.8
Bodyguard							
1841-65	1 085	890	30.0	1 650	55.7	-760	-25.7
Naval contingent							
1841-65	1 168	764	26.2	1 354	46.4	-590	-20.2
The entire city of Helsinki							
1816-40	10 831	9 064	33.5	10 310	38.1	-1 246	-4.6
1841-65	20 066	18 024	35.9	19 493	38.9	-1 469	-3.0
1816-65	15 449	27 088	35.1	29 803	38.6	-2 715	-3.5

Source: Population and vital statistics tables, TKA.

Appendix table 6. Annual infant mortality in Helsinki in 1816 - 1865.

1 = number who died before the age of one year

2 = per thousand live births

Year	1	2	Year	1	2
1816	50	234.7	1841	141	255.4
1817	37	176.2	1842	210	326.1
1818	44	195.6	1843	182	270.8
1819	35	172.4	1844	153	233.9
1820	52	241.9	1845	134	206.2
1821	49	215.8	1846	201	296.0
1822	81	304.5	1847	191	307.6
1823	50	166.7	1848	164	260.3
1824	56	200.7	1849	154	228.5
1825	95	323.1	1850	224	318.2
1826	88	242.4	1851	215	300.7
1827	62	202.0	1852	234	309.5
1828	99	300.9	1853	200	283.3
1829	88	255.1	1854	204	283.3
1830	88	231.0	1855	261	395.5
1831	98	273.0	1856	163	247.3
1832	108	289.5	1857	158	214.1
1833	133	322.0	1858	177	246.9
1834	131	283.5	1859	164	214.7
1835	156	312.0	1860	175	248.2
1836	99	186.8	1861	211	272.6
1837	154	295.6	1862	171	201.7
1838	136	255.6	1863	187	196.0
1839	148	260.1	1864	223	248.1
1840	152	264.8	1865	294	324.1

Source: Vital statistics tables, TKA.

Appendix table 7. Annual infant mortality among extramarital children in Helsinki in 1816 - 1865.

1 = number of extramarital children

2 = number of children who died before the age of one year

3 = proportion extramarital children who died before the age of one year of all extramarital births, per thousand

Year	1	2	3	Year	1	2	3
1816	24	7	291.7	1841	126	56	444.4
1817	34	10	294.1	1842	145	76	524.1
1818	23	16	695.6	1843	151	56	370.9
1819	23	11	478.3	1844	143	47	328.7
1820	33	18	545.5	1845	147	52	353.7
1821	42	10	238.1	1846	151	68	450.3
1822	47	15	319.1	1847	119	54	453.8
1823	42	17	404.5	1848	133	48	360.9
1824	16	1	62.5	1849	126	54	428.6
1825	52	20	384.6	1850	160	80	500.0
1826	67	19	283.6	1851	174	77	442.5
1827	53	12	226.4	1852	165	69	418.2
1828	56	24	428.6	1853	168	95	565.5
1829	57	26	456.1	1854	146	86	589.0
1830	84	34	404.8	1855	148	101	682.4
1831	56	33	589.3	1856	197	51	258.9
1832	82	23	280.5	1857	180	66	366.7
1833	68	32	470.6	1858	154	56	363.6
1834	90	36	400.0	1859	164	44	268.3
1835	104	38	365.4	1860	164	62	378.0
1836	102	37	362.7	1861	159	52	327.0
1837	101	32	316.8	1862	160	36	225.0
1838	133	45	338.3	1863	225	72	320.0
1839	127	47	370.1	1864	199	68	341.7
1840	105	46	438.1	1865	184	86	467.4

Source: Vital statistics tables, TKA

Source: Vital statistics tables, TKA

Appendix table 8. Age-specific deaths in Helsinki in 1750-1772.

Year	0	1-2	3-4	5-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-
1750	12	11	5	-	1	8	8	1	-	2	5	2
1751	17	3	1	-	2	2	7	4	4	3	2	1
1752	41	11	3	1	2	9	8	10	4	3	5	3
1753	20	18	3	1	-	5	9	10	6	5	-	-
1754	43	6	3	-	-	5	6	3	6	5	3	3
1755	36	11	-	2	4	7	7	4	4	5	5	1
1756	32	34	14	5	3	11	14	8	4	4	3	1
1757	52	2	2	2	3	11	18	10	9	3	2	-
1758	17	9	-	-	2	7	9	8	7	4	2	2
1759	40	3	2	1	3	2	6	3	3	4	1	-
1760	32	13	12	7	-	5	16	7	-	4	4	1
1761	28	21	8	8	3	2	11	15	8	3	8	4
1762	30	30	30	18	3	5	12	18	10	10	4	2
1763	29	11	14	4	4	15	25	25	6	7	5	1
1764	38	13	5	1	2	7	14	12	5	10	2	1
1765	47	8	5	2	4	19	22	16	9	2	-	1
1766	63	50	9	6	8	10	16	10	8	5	4	3
1767	40	11	7	6	1	22	25	28	4	2	2	2
1768	53	7	2	3	4	15	23	17	11	12	1	1
1769	39	25	8	3	3	14	24	19	13	6	2	2
1770	55	20	13	5	3	12	10	15	15	10	2	2
1771	38	22	4	2	8	30	18	20	13	15	5	3
1772	72	24	13	3	2	27	53	35	13	8	4	3

Source: The archives of the Senate's Chamber Expedition (II Dc 1); the microfilms of the archives of the Church, KA.

1812	57	44	255	195.6	2081	2282	2282	2282	2282	2282	2282	2282
1813	80	35	291	172.4	2081	2282	2282	2282	2282	2282	2282	2282
1814	68	52	421	241.9	2281	2282	2282	2282	2282	2282	2282	2282
1815	49	49	215.8									
1816	81		304.5									
1817	30		166.7									
1818	56		200.7									
1819	95		323.1									
1820	88		242.4									
1821	62		202.0									
1822	99		300.9									
1823	28		255.1									
1824	88		231.0									
1825	98		273.0									
1826	108		289.3									
1827	133		322.0									
1828	151		285.5									
1829	156		312.0									
1830	99		186.8									
1831	154		295.6									
1832	136		255.6									
1833	148		260.1									
1834	152		264.8									

Source: Vital statistics tables, TKA.

Appendix table 9. Age-specific deaths in Helsinki in 1816-1865.

Year	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-
1816	78	20	3	4	5	15	8	14	11	6	10	11	7	4	5	5
1817	49	6	5	4	15	18	18	24	12	10	10	15	10	6	3	1
1818	75	15	5	11	11	10	11	20	21	15	14	8	11	5	14	1
1819	69	16	6	7	14	20	39	35	24	21	16	16	32	24	6	4
1820	78	10	9	7	12	25	24	22	26	21	17	17	16	6	15	11
1821	79	5	8	3	7	5	13	13	12	8	13	11	6	4	8	2
1822	117	16	3	5	16	8	9	19	17	6	20	11	7	7	4	6
1823	92	8	6	5	13	9	12	12	16	13	16	9	7	8	7	10
1824	93	4	4	5	4	12	16	11	12	12	10	4	8	9	4	3
1825	152	6	1	2	8	14	19	14	14	14	12	7	12	9	6	8
1826	118	4	1	7	18	21	26	8	9	19	14	14	9	8	8	5
1827	97	11	6	5	15	23	32	14	19	16	13	10	10	10	3	10
1828	147	15	1	4	15	24	34	19	17	10	19	9	15	6	8	10
1829	144	21	7	8	28	35	39	29	30	23	13	11	11	12	6	8
1830	136	12	6	12	22	35	27	31	19	15	22	11	10	8	10	11
1831	193	30	11	9	29	50	65	62	52	46	50	34	28	24	12	12
1832	243	45	1	15	63	69	76	60	46	20	20	22	18	8	5	9
1833	229	42	19	24	57	82	95	66	31	18	28	19	14	7	3	8
1834	212	37	14	19	51	52	75	41	31	25	13	11	11	8	10	9
1835	234	17	4	8	35	44	46	41	25	12	6	7	7	6	10	5
1836	179	24	7	15	41	45	55	41	22	12	8	3	7	4	9	7
1837	272	18	11	16	37	47	44	47	26	12	8	17	7	9	6	12
1838	234	13	12	5	56	48	62	33	41	11	11	11	9	10	4	10
1839	236	11	20	7	46	53	50	43	10	24	9	8	10	10	5	6
1840	271	24	5	12	35	60	49	44	28	16	12	14	16	6	4	9
1841	263	24	7	21	51	69	45	49	22	25	17	11	15	13	9	5
1842	349	17	7	22	45	72	58	50	30	30	18	7	12	8	2	10
1843	295	28	7	18	43	79	49	45	30	27	16	9	10	4	9	5
1844	217	12	5	10	14	57	42	25	30	23	13	10	10	7	12	11
1845	198	13	4	10	19	49	27	30	21	19	20	16	14	9	8	5
1846	360	20	7	19	26	49	63	27	20	29	23	20	13	11	10	7
1847	384	37	7	10	36	67	59	60	50	41	31	29	12	23	18	21
1848	272	38	10	11	63	105	86	105	68	57	56	44	13	27	10	13
1849	289	36	13	18	64	94	82	64	66	60	45	25	27	23	11	12
1850	348	32	10	25	56	49	55	57	51	43	31	19	21	18	13	13
1851	391	43	20	19	26	52	45	42	25	41	30	13	21	10	7	12
1852	480	59	30	27	37	67	83	58	42	33	38	28	33	24	25	21
1853	426	66	34	41	81	146	145	118	109	68	70	56	49	43	21	34
1854	403	32	18	33	59	92	88	81	69	49	37	49	28	15	16	20
1855	445	36	38	41	75	98	73	94	82	77	40	32	52	23	21	22
1856	316	31	9	29	93	94	83	62	49	41	32	35	25	11	12	11
1857	281	18	6	19	35	45	43	55	38	29	26	25	28	17	10	9
1858	298	14	4	18	49	42	34	34	31	18	18	27	14	16	10	19
1859	300	24	13	12	48	44	49	44	27	21	27	17	24	11	7	12
1860	302	14	2	16	28	46	17	24	28	26	17	20	19	9	8	10
1861	386	37	8	9	37	37	39	32	34	19	10	17	18	12	9	10
1862	336	51	6	7	29	32	39	31	22	18	21	16	17	14	6	14
1863	314	23	4	13	26	24	36	21	23	22	18	14	19	13	8	12
1864	389	22	7	10	43	41	33	32	24	24	19	17	24	17	7	11
1865	450	21	10	12	31	39	32	41	38	33	16	13	21	10	20	15

Source: Vital statistics tables, TKA.

Appendix table 10. Causes of death in Helsinki in 1750-1772.

1 = deaths due to smallpox and measles

2 = deaths due to whooping cough

3 = deaths due to tuberculosis

4 = deaths due to spotted fever, dysentery, and "burning fever"

5 = violent (accidental deaths)

6 = other causes of death

Year	1	2	3	4	5	6
1750	3	8	4	7	1	32
1751	7	-	6	21	-	12
1752	15	-	10	19	8	46
1753	15	-	6	23	6	27
1754	17	10	7	18	2	29
1755	6	9	11	29	1	30
1756	64	-	1	38	5	25
1757	11	-	8	49	1	44
1758	-	-	8	17	2	40
1759	7	7	5	6	1	42
1760	29	3	4	22	3	40
1761	5	14	3	34	6	57
1762	54	-	3	48	2	65
1763	19	-	20	53	1	53
1764	14	3	7	38	-	48
1765	-	-	13	39	5	78
1766	74	-	11	27	1	79
1767	10	1	16	41	5	77
1768	1	5	22	24	10	87
1769	29	10	11	32	8	68
1770	42	7	21	17	5	80
1771	7	-	35	46	16	74
1772	23	5	36	65	6	123

Source: The archives of the Senate's Chamber Expedition, KA; the collections of the Genealogical Society of Finland, KA.

Appendix table 11. Causes of death in Helsinki in 1816-1865. Helsinki proper

Year	1	2	3	4	5	6	7	8	9	10
1816	18	11	-	1	10	5	-	-	-	-
1817	28	3	5	1	-	3	-	-	-	-
1818	25	5	21	-	1	25	-	1	2	-
1819	40	15	3	-	-	8	3	-	1	-
1820	14	36	2	2	3	4	4	-	-	-
1821	24	21	1	-	1	3	3	2	1	1
1822	28	31	-	-	27	4	-	-	1	-
1823	27	40	1	23	5	4	-	-	-	-
1824	34	29	7	7	1	1	2	-	2	-
1825	43	10	57	3	-	1	-	-	-	-
1826	31	40	7	2	-	1	-	-	-	-
1827	46	28	7	1	-	1	2	1	-	-
1828	48	13	5	3	1	7	23	2	-	-
1829	44	32	5	-	22	12	17	-	1	-
1830	43	31	1	-	3	1	7	1	1	-
1831	44	55	2	-	-	2	3	-	3	171
1832	87	175	30	53	22	8	1	1	-	-
1833	86	171	11	20	8	53	1	2	-	-
1834	63	91	3	1	1	89	-	1	1	-
1835	66	27	28	4	8	16	4	2	-	-
1836	57	50	7	3	7	4	5	1	4	-
1837	98	36	5	71	15	29	3	3	2	-
1838	73	45	10	38	3	8	-	1	-	-
1839	90	56	8	4	21	17	-	1	2	1
1840	83	29	17	39	34	2	2	1	1	-
1841	66	54	15	23	5	3	1	-	-	-
1842	46	26	56	4	7	3	8	-	-	-
1843	87	41	1	2	47	9	23	3	1	-
1844	54	21	10	1	4	-	3	2	1	-
1845	46	20	1	-	2	-	3	8	2	-
1846	63	23	28	1	13	15	13	2	4	-
1847	79	38	23	42	40	5	27	-	3	-
1848	117	18	17	5	5	-	8	6	6	120
1849	113	21	45	1	28	1	6	3	3	157
1850	120	21	32	39	11	29	2	6	3	-
1851	119	20	46	41	14	21	6	10	6	-
1852	114	31	22	4	15	230	8	15	3	-
1853	80	40	20	2	1	29	17	27	5	585
1854	127	36	9	63	5	63	3	9	6	122
1855	157	118	11	61	3	59	1	7	11	13
1856	166	116	51	4	12	16	1	13	-	-
1857	85	26	3	9	-	69	-	6	2	12
1858	89	21	13	22	4	7	-	10	1	28
1859	95	17	8	13	4	9	-	37	-	34
1860	71	14	6	15	3	2	-	28	-	-
1861	80	22	18	1	39	3	13	36	-	-
1862	96	12	1	3	9	-	59	56	-	-
1863	93	57	26	1	-	16	10	24	-	-
1864	118	43	76	4	22	41	-	47	-	-
1865	104	92	53	55	31	26	-	46	1	-

Source: Vital statistics tables, TKA.

Appendix table 12. Mortality due to tuberculosis in Helsinki in 1816 - 1865.

- 1 = deaths due to tuberculosis in Helsinki proper
 2 = mortality due to tuberculosis in Helsinki proper
 3 = deaths due to tuberculosis in Viapori
 4 = mortality due to tuberculosis in Viapori
 5 = deaths due to tuberculosis in the Bodyguard
 6 = mortality due to tuberculosis in the Bodyguard
 7 = deaths due to tuberculosis in the Naval Contingent
 8 = mortality due to tuberculosis in the Naval Contingent
 9 = deaths due to tuberculosis in Helsinki as a whole
 10 = mortality due to tuberculosis in Helsinki as a whole

Mortality = per thousand mean population

Period	1	2	3	4	5	6
1816-20	125	4.4	34	10.2	-	-
1821-25	155	4.0	45	11.5	-	-
1826-30	212	4.4	63	18.3	-	-
1831-35	346	5.8	37	8.3	-	-
1836-40	401	5.5	65	8.4	-	-
1841-45	299	4.2	121	14.6	85	11.5
1846-50	492	6.4	123	17.8	94	12.1
1851-55	597	7.8	102	20.0	54	11.9
1856-60	506	5.9	32	5.9	53	13.4
1861-65	491	4.6	17	7.1	34	5.7
1816-40	1 239	5.0	244	10.7	-	-
1841-65	2 385	5.7	395	15.5	320	10.8
1816-65	3 624	5.4	639	13.2	-	-
Period	7	8	9	10		
1816-20	-	-	159	5.0		
1821-25	-	-	200	4.7		
1826-30	-	-	275	5.3		
1831-35	-	-	383	6.0		
1836-40	-	-	466	5.7		
1841-45	88	13.1	593	6.3		
1846-50	111	15.3	820	8.3		
1851-55	110	14.9	863	9.2		
1856-60	52	9.5	643	6.5		
1861-65	8	3.3	550	4.7		
1816-40	-	-	1 483	5.5		
1841-65	369	12.6	3 469	6.9		
1816-65	-	-	4 938	6.4		

Source: Population and vital statistics tables, TKA.