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SOCIAL DIFFERENCES IN MORTALITY IN THE EIGHTEENTH CENTURY

AN ANALYSIS OF BERLIN CHURCH REGISTERS

SUMMARY: This paper investigates social differences in mortality on the basis of information provided by the registers of two Berlin parishes. The life expectancy of the lower classes was half as long again as that of the upper classes. This gap is smaller than that documented by Perrenoud for Geneva in the seventeenth century, but larger than that documented for contemporary small towns and medium-size cities.

Particularly infants and small children were the victims of "social inequality before death", adults were only marginally affected. Nor did the major epidemics and diseases contribute much to this inequality. Although neither the use of animal milk for feeding nor leaving children with wetnurses in the country were common in Berlin at this time, conditions in this early-industrial city contributed to extremely high levels of infant mortality for specific sections of the population.

Alfred Perrenoud introduced the notion of "social inequality before death" into modern sociohistorical and demographic research. He found that in the Geneva of the seventeenth century the life expectancy of the upper classes (36 years) was virtually double that of the lower classes.[1] Remarkably, very similar figures were quoted for the English industrial cities of Manchester and Liverpool by Karl Marx.[2] And a similar discrepancy can be found in the two Berlin parishes of the eighteenth century whose church registers I have analyzed: the life expectancy of civil servants and academics averaged 35 years, while that of labourers averaged only 18 years.[3]

[1] Alfred Perrenoud, "Die soziale Ungleichheit vor dem Tod in Genf im 17. Jahrhundert", in Arthur E. Imhof (transl. and ed.), *Biologie des Menschen in der Geschichte. Beiträge zur Sozialgeschichte der Neuzeit aus Frankreich und Skandinavien* (Stuttgart – Bad Cannstadt, 1978), pp. 118–146.

[2] Karl Marx, *Capital*, vol. 1 (London, 1976). p. 795.

[3] The church registers of the parishes of Sankt Nikolai and Sankt Georgen in the industrial Königsvorstadt were analyzed with the help of computer technology. Wolffgang Reymann, Rainer Schwarz and Günter Kapelle created the database and carried out the mathematical and statistical analysis of the information. A description of the database can be found in "Anwendung der Rechentechnik in der Geschichtswissenschaft. Aufbau und Analyse der Datenbank 'Sozialgeschichte Berlins von 1650 bis 1789' ", *Ergebnisse gesellschaftswissenschaftlicher Forschungen* (published by the GDR Academy of Sciences, East Berlin, 1987). On the results, see also Helga Schultz, *Berlin 1650–1800. Sozialgeschichte einer Residenz* (East Berlin, 1987). Life expectancy here is interpreted as the arithmetic mean of the age of death. Insofar as the information is

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Three centuries, three different countries, three very different stages of development, and yet the inequality before death persists throughout. Do these differences indicate an underlying pattern in the reproduction of the population which obtained well into the first phase of the demographic transition? Although the inequality persists until this day in the developed capitalist countries, the mortality rates of the various classes and groups approximate each other much more closely, are on the whole at a much lower level, and no longer correspond to the general differences within society.[4] In short, the impact of social inequality on mortality has been reduced.

However, proof of "social inequality before death" in the earlier period is by no means so incontrovertible as to permit the deduction of generalized theses. The matter has not been widely researched, presumably because of the considerable effort this would have required. Where data are available, as for Rouen, Trier, Durlach, Neuruppin and Spandau, a higher mortality for the poor is evident. Table 1 also shows that in these towns the mortality gap was not as wide as in Geneva studied by Perrenoud or in Berlin. Perhaps it was generally narrower in smaller towns, just as the social structure there was more egalitarian and the mortality rate generally lower. Further detailed studies of this phenomenon in smaller cities and in the countryside are necessary, for the overwhelming majority of the people lived there. My research, meanwhile, centres on a special case of the old society, on the second-largest city and the largest manufacturing centre in Germany, on the capital city of a major European power. These special circumstances should be borne in mind in the evaluation of the following analysis of the phenomenon of "social inequality before death", which is based on information contained in two Berlin church registers of the seventeenth and eighteenth century.

The church registers of the capital of Brandenburg-Prussia yield valuable information indeed. For fiscal reasons the absolutist state was very keen on

entered in the burial registers, the calculations comprise all family members within the various social groups. Life expectancy only corresponds to the average age of death in a stationary population which is not affected by migratory movements. This model does not apply in the case of Berlin. Actual life expectancy was probably above the average age of death, since as a result of massive immigration birth rates were very high and therefore the age structure of the dead would have been shifted towards infants and small children. This shift is unlikely to have had implication for the social differences in mortality, since all social groups were more or less equally represented among the immigrants.

[4] Arthur E. Imhof, *Die gewonnenen Jahre. Von der Zunahme unserer Lebensspanne seit 300 Jahren oder von der Notwendigkeit einer neuen Einstellung zu Leben und Sterben. Ein historische Essay* (Munich, 1981), pp. 106–140.

TABLE 1
Life expectancy by social group

City	Period	Average age of death (in years)			
		Upper class	Middle class	Lower class	Ratio upper/lower (in %)
Berlin	1710–1799	29.8	24.3	20.3	147
Geneva	17th century	35.9	24.7	18.3	196
Rouen	18th century	32.5	33.0	24.5	133
Trier	1770–1800	41.0	n/a	36.5	112
Neuruppin	1732–1830	33.2	28.6	28.9	115
Durlach*	1751–1800	53.1	58.2	40.1	132
Spandau*	1720–1869	58.5	56.5	54.0	108

* Adults only.
Sources: for Berlin: burial registers of Sankt Nikolai and Sankt Georgen parishes; for Geneva; Alfred Perrenoud, "Die soziale Ungleichheit vor dem Tod in Genf im 17. Jahrhundert", in Arthur E. Imhof (transl. and ed.), *Biologie des Menschen in der Geschichte. Beiträge zur Sozialgeschichte der Neuzeit aus Frankreich und Skandinavien* (Stuttgart, 1978), p. 138; for Rouen: Jean-Pierre Bardet, *Rouen aux XVIIe et XVIIIe siècles. Les mutations d'un espace social*, 2 vols (Paris, 1983), 1, p. 192, Table 153; for Trier: Thomas Kohl, *Familie und Soziale Schichtung. Zur historischen Demographie Triers 1730–1860* (Stuttgart, 1985),pp. 130–133; for Neuruppin: Brigitte Meier, "Der Übergang vom Feudalismus zum Kapitalismus in der kurmärkischen Mittelstadt Neuruppin, 1700–1830" (Dissertation, published by the GDR Academy of Sciences, East Berlin, 1988), p. 185; for Durlach: Otto Konrad Roller, *Die Einwohnerschaft der Stadt Durlach im 18. Jahrhundert in ihren wirtschaftlichen und kulturgeschichtlichen Verhältnissen* (Karlsruhe, 1907), p. 127; for Spandau: "Eintausend Spandauer Famlien im 18. und 19. Jahrhundert. Historisch-demographische Grundzüge einer märkischen Stadt", in Wolfgang Ribbe (ed.), *Berlin-Forschungen II* (West Berlin, 1987), p. 83 (to calculate the social differences Gehrmann's occupational groups were collated, with groups 1 and 2 forming the upper class, groups 3 to 7 and 10 the middle class, and groups 8, 9 and 11 the lower class).

increasing its population – on the "peopling" *(Peuplierung)* of the country. It consequently was much concerned with the ordered registration of population movements, which was carried out by the clergy, and the state issued a number of precise regulation on the keeping of church registers.[5] It was no coincidence that the preacher at the Petrikirche in Berlin, Johann Peter Süßmilch, laid the foundations of population statistics in Germany.

Preachers were thus at the same time civil servants, and they kept reliable records on marriages, baptisms and burials. The close cooperation between

[5] As noted already by Johann Peter Süßmilch in *Die göttliche Ordnung in den Veränderungen des menschlichen Geschlechts, aus der Geburt, dem Tode und der Fortpflanzung desselben erwiesen*, vols 1–3 (Berlin, 1761, 1762, 1776).

parish and police made it very difficult to conceal paternity, let alone pregnancy. The name and occupation of the father were entered in the registers also in the case of illegitimate births. Stillbirths and the deaths of unbaptized children were also recorded in full. Secret births and infanticide were very rare in Berlin, not so much because of the draconian punishments they incurred, but more because of the generous medical care available also for unmarried pregnant women.

As the authorities' regulations became more comprehensive and exhaustive, the church registers became more useful as source material. Yet even despite Prussian meticulousness, discrepancies remained. For instance, the burial registers of the new suburban parish of Sankt Georgen recorded the deceased's occupations from the 1690s onwards, while in the inner-city parish of Sankt Nikolai this only began to happen with any regularity from the 1730s onwards. The age of deceased children was usually recorded only from the beginning of the eighteenth century onwards. Therefore nothing can be said about the social differences in the age of death in the earlier period. And causes of death were recorded with some regularity only after the dysentery epidemic of 1719. So it is only from this time onwards that the various causes of death can be linked to social background.

In the final analysis "social inequality before death" can only be accurately revealed by charting the lives of a sufficient number of individuals through the method of family reconstruction, as Perrenoud did for Geneva. This path was not taken here for Berlin because the excessive time and effort required and because, moreover, the high mobility of Berlin's people across parish boundaries did not hold out much hope of satisfactory results. For this reason the average age of death was chosen as the indicator of mortality.

Now the arithmetic mean of the age of death of a population or a social class or group only reflects life expectancy accurately if the age structure is not distorted by migration. But that was precisely the case in Berlin. Particularly in the first half of the eighteenth century, the huge influx of people into the city led to an abnormal "rejuvenation" of the population because of increased marriage and birth rates. The average age of death was correspondingly lower. Even though *all* social groups[6] were affected by migration – we are dealing, in other words, with a shift in the spectrum

[6] The categorization of groups is not uniform among the authors. For Berlin in Table 1 aristocrats, officers, merchants and entrepreneurs and all civil-servant and intellectual groups are included in the upper class; artisans, small traders, publicans and farmers in the middle class; and wage labourers, domestic servants and soldiers in the lower class. See Helga Schultz, "Probleme sozialökonomischer Klassifikation", in Manfred Thaller (ed.), *Datenbanken und Datenverwaltungssysteme als Werkzeuge historischer Forschung (= Historisch-sozialwissenschaftliche Forschungen*, vol. 20) (Sankt Katharinen, 1986), pp. 179–186.

which did not distort existing social differences – at this time, it will still be necessary, for the sake of a more detailed analysis, to try to minimize the variable of migration. That is why particular use was made of the burial registers from 1770 onwards, since by that time immigration to Berlin had leveled down to the average for cities of that period.[7]

The extent to which "social inequality before death" is uncovered or concealed may largely depend on the methodology. For in our Berlin material too the mortality gap is cut by half when the more diffuse groupings of upper, middle and lower class are used as comparative criteria instead of specific social classes like factory workers or civil servants. Differences also become blurred when classifications are made not according to social characteristics but according to industrial branches. The textile and clothing industry, for instance, included both weavers and the small factory owners; the military included both soldiers and officers. In our sample differences in mortality are only half as large between whole branches than between groups based on socioeconomic criteria, and they are on the whole not significant.

Social groups, which aggregate into class, thus provide the key reference point in a study of social differences in mortality.

Table 2 shows the average age of death for nineteen social groups in the two Berlin parishes of Sankt Nikolai and Sankt Georgen. The social structure of these two parishes – the one located in the medieval old town and the other developing from an almost rural suburb into a manufacturing centre – corresponded more or less to that of the city as a whole. Only aristocrats and domestic servants were considerably underrepresented, while factory workers were somewhat overrepresented. So although the social structures of both parishes had some specific features, nearly all social groups were represented in large enough numbers to allow us to draw conclusions about group-specific mortality rates. In this regard the weavers, artisans or teachers in Georgenstadt would have been no been different from their colleagues in Dorotheenstadt or Friedrichstadt.

The differences in mortality rates between the two parishes corresponded closely to the situation in the Huguenot community analyzed by Jürgen Wilke.[8] It should, however, be noted that the social differences within this French immigrant community were much wider, and that his study included the period of immigration itself, which would have affected the age structure in the manner described above. Among the Huguenots the average age of death ranged between 11 and 45 years, compared to between 19 and 39 years in the two Berlin parishes. Table 2 shows only two significant deviations between the two cases. French aristocrats and military officers lived

[7] Helga Schultz, *Berlin 1650–1800*, pp. 304–306.

[8] Jürgen Wilke, "Die Französische Kolonie in Berlin", in Helga Schultz, *Berlin 1650–1800*, pp. 416–420.

TABLE 2
Social differences in life expectancy in Berlin

	Life expectancy at birth				Life expectancy at age 20		Wealth and income (burial charges)
	Sankt Nikolai and Sankt Georgen 1770–1799		Huguenots 1695–1789		Sankt Nikolai and Sankt Georgen 1770–1799		Sankt Nikolai and Sankt Georgen 1770–1799
	Years	Rank	Years	Rank	Years	Rank	Rank
Senior civil servants	37.5	1	33.3	3	62.0	2	3
Teachers	34.8	2	27.6	5	60.4	3	9
Professionals	32.7	3	31.3	4	53.2	15	2
Junior civil servants	29.0	4	23.8	7	54.6	12	6
Noncommissioned officers	27.7	5	26.7	6	56.4	9	7
Middle-ranking civil servants	26.5	6	21.9	9	57.2	4	4
Day labourers	26.3	7	20.7	11	56.7	7	15
Artisans	26.0	8	19.7	12	57.0	5	10
Aristocrats	25.9	9	44.7	1	62.3	1	1
Farmers	24.6	10	19.1	13	57.0	6	14
Haulage contractors	24.3	11	18.4	15	55.1	10	8
Merchants	23.1	12	21.4	10	52.5	18	5
Shopkeepers	22.5	13	19.1	14	53.6	14	12
Small traders	22.5	13	19.1	14	53.6	14	12
Artists and technicians	22.4	14	23.1	8	52.9	16	11
Domestic servants	21.4	15	14.9	18	52.8	17	18
Officers	21.0	16	40.4	2	54.0	13	13
Factory workers	20.5	17	15.4	17	55.1	11	16
Journeymen	19.5	18	15.7	16	47.5	19	17
Soldiers	19.1	19	10.6	19	56.5	8	19

Correlation coefficient (Spearmans R): ratio life expectancy at birth/burial charges $R = 0.735$; ratio life expectancy at 20 years/burial charges $R = 0.341$; ratio life expectancy Sankt Nikolai and Sankt Georgen/Huguenots $R = 0.646$.
Sources: GDR Academy of Sciences, database on the social history of Berlin 1650–1799; Jürgen Wilke, "Die französische Kolonie in Berlin", in Helga Schultz (ed.), *Berlin 1650–1800. Sozialgeschichte einer Residenz* (East Berlin, 1987), p. 416.

much longer than their German counterparts. It was precisely these groups which were underrepresented in the parishes, and its representatives that lived there were often downwardly mobile.

Everywhere soldiers appeared to have had the worst deal. The offspring of senior civil servants at the top end of the scale had a life span twice as long as the offspring of soldiers. Thus two groups typical of Berlin marked the

extremes: the Prussian capital and its largest garrison offered these two groups very unequal opportunities.

It should not come as a surprise that the secure and no doubt often also unstressed civil service helped to extend life. But the high mortality among soldiers' families was unexpected. Did not Frederick William I, the Soldier King, call them his "dear blue children", and did not he and his successors provide them with a secure wage, free bread in times of famine and uniforms and accommodation?[9] Furthermore, they enjoyed medical care well above the Berlin average thanks to the well-trained army surgeons, and they had preferential access to the hospitals.[10]

All this was indeed reflected in a high life expectancy of adult soldiers, whose average of 57 years put them at the upper-middle end of the Berlin table. (Soldiers who died during the Silesian and other wars were not entered in the local church registers.) But royal solicitude hardly extended to the families of the soldiers, who were considered tiresome ballast. They suffered more often than others from the death of the breadwinner. Soldiers deserted their wives more frequently, and they abandoned extramarital relationships with even fewer scruples. The begging soldier's wife with three small children in town, as depicted by Daniel Chodowiecki at the end of the Seven Years' War, was a frequent sight on the streets of Berlin. Many of the whores arrested in the Tiergarten district were soldiers' daughters and widows.[11] The illegitimate soldiers' children and orphans were more likely to succumb to epidemics and malnutrition.

Table 2 brings out the social differences in mortality rates by calculating correlation coefficients. It tests the obvious hypothesis that material situation and income levels were directly reflected in life expectancy by linking this to the average burial charges paid. This charge, which was scaled to take account of standing and means, is the only general indicator of wealth and poverty available to us, since no direct taxes were levied in Prussia at this time. Of course these burial payments contained a subjective element, namely the need of the surviving family to confirm or indicate status. But this need would have been shared by all segments of feudal society, not only the aristocracy and the civil service but especially also master craftsmen and journeymen, who made arrangements for a decent

[9] The most informative studies on the situation of soldiers are still Curt Jany, *Geschichte der Königlich Preußischen Armee bis zum Jahre 1807*, vols 1–3 (Berlin, 1928/1929), and Otto Büsch, *Militärsystem und Sozialleben im alten Preußen, 1713–1807. Die Anfänge der sozialen Militärisierung der preußisch-deutschen Gesellschaft* (Frankfurt, West Berlin and Vienna, 1981).

[10] Georg Harig, "Ärzte und Patienten der Charité im 18. Jahrhundert", *Miniaturen zur Geschichte, Kultur und Denkmalpflege Berlins*, 18 (East Berlin, 1985), pp. 26–36.

[11] The seven women brought into the workhouse or poorhouse on 28 June 1783 after a such a hunt for beggars and whores included three soldiers' widows, two soldiers' daughters and one soldier's wife. See Berlin City Archive, *Armendirektorium*, no. 357.

burial through their guilds. So all this indicator can provide is a rough graduated measure of poverty and wealth.

In fact the correlation coefficient is quite high. There is strong supporting evidence for the observation, already confirmed, that poverty opened the door to early death. Both the vitamin- and protein-deficient diets of the factory workers – they often had to make do with bread, butter and sweetened coffee, as the doctor Ludwig Formey reported[12] – and the wretched living conditions – many families did not have a room of their own, and individuals rarely had a bed of their own[13] – will have contributed to both the frailty of adults and children. Rents in Berlin were the highest in Germany at this time.[14] Berliners drank far more coffee than the Viennese and consumed twice as much sugar, half as much meat and the same amount of alcohol as the notoriously intemperate Londoners. All this was characteristic above all of the lifestyle of the wage labourers in the factories and workshops.[15] It reveals the devastating modernity of conditions in Berlin, which certainly contributed to the "social inequality before death".

There were, however, remarkable variations in the ranking of poverty and mortality. For instance, in terms of life expectancy unskilled day labourers were placed eight ranks higher than might have been expected, while merchants and aristocrats were placed a significant seven and eight places lower than expected.

The relatively short life span of merchants and aristocrats suggests another hypothesis, namely that education as well as wealth reduced health problems and extended life. In Berlin most social groups engaged in mental activities (as opposed to manual labour), including as a rule civil servants, could be found at the top of the list. The reason behind this remarkable phenomenon might lie in the fact that educated people were receptive to new developments in hygiene and medicine, and were more willing to change unhealthy traditions and habits. If they had a medical complaint they were more likely to go to a doctor or surgeon than wealthy merchants or well-to-do master craftsmen, who often did not value their health very highly and would resort to household remedies. Only about a quarter of the patients of the famous Berlin doctor Ernst Ludwig Heim had a crafts or business background, the overwhelming majority were civil servants and their families.[16]

[12] Ludwig Formey, *Versuch einer medicinischen Topographie von Berlin* (Berlin, 1796), p. 86.
[13] Rudolf Skoda, "Wohnhäuser und Wohnverhältnisse der Stadtarmut (ca. 1750–1850). Erläutert anhand von Beispielen aus Quedlinburg, Halle, Hamburg und Berlin", *Jahrbuch für Volkskunde und Kulturgeschichte*, 17 (1975), pp. 139–170.
[14] Helga Schultz, *Berlin 1650–1800*, p. 309.
[15] *Ibid.*, pp. 236–247.
[16] Diaries of Ernst Ludwig Heim, Berlin State Library, manuscripts department, Ms.Bor. Qu. 449.

The Berlin city archive contains a collection of partly proven, partly superstitious and partly unappetizing household remedies which were collected by a master baker called Heyde.[17] A houseowner, respected master of his trade and senior churchwarden, this man was a member of an affluent social group, who could certainly have afforded medical care and expensive medicines. Why, then, did he use households remedies against dysentery, smallpox, fever and even "fatal wounds"?

It is unlikely that a judge or a preacher would have assembled a similar collection. But although Berlin's civil servants were on the whole relatively healthy, the extent of their enlightenment in medical matters should not be overestimated. As Heim wrote in his diary in 1794: "I had a long talk with von Heinitz, the minister, and his wife about della Lena, the charlatan from whom both take medicine. How can they be so blind and simple to be so comprehensively swindled by this rascal? Most of our people are very gullible, perhaps even more so than the rabble."[18] A contemporary observer thus contradicted the assumption that education would protect against superstition and an unhealthy lifestyle.

Table 2 also shows clearly that the social inequality before death on the basis of the unequal distribution of income and education hardly mattered in adult life. Life expectancy among twenty-year-olds of all groups was not closely correlated to the levels of burial-charge payments. Only a few groups deviated from the norm, at one end senior civil servants and aristocrats, who had a life expectancy of 62 years, and at the other end journeymen, who had a life expectancy of only 47.5 years. All other social groups had a life expectancy more or less clustered around the average of 54 years. Application of the Duncan test reveals only two significantly distinct range of life expectancy among adults, while overall there are five significant ranges among the nineteen social groups.[19] The average age of death of adults corresponded quite closely to the situation in smaller cities like

[17] Helga Schultz (ed.), *Der Roggenpreis und die Kriege des großen Königs. Chronik und Rezeptsammlung des Berliner Bäckermeisters Johann Friedrich Heyde 1740 bis 1786* (East Berlin, 1988).

[18] Diaries of Ernst Ludwig Heim, *op.cit.*, Ms.Bor. Qu. 444.

[19] The Duncan multiple-range test for the average age of death yielded the following results:

All ages		Aged 20 and over	
Senior civil servants	A	Aristocrats	A,B
Teachers	A	Senior civil servants	A,B
Professionals	A,B	Teachers	A,B
Junior civil servants	B,C	Middle-ranking civil servants	A,B
Non-commissioned officers	B,C,D	Artisans	B
Middle-ranking civil servants	C,D	Farmers	B
Day labourers	C,D	Day labourers	B

Trier, Durlach or Spandau. It was evidently only marginally influenced by infrastructure, medical care or social situation, and much more by the extent of medical knowledge and public hygiene prevalent at the time. Formey, incidentally, was mistaken about life expectancy in Berlin when he wrote that the "life span of our inhabitants mostly extends to between 60 and 75 years".[20]

Social differences in mortality were, in other words, overwhelmingly differences in child mortality. These emerged in two ways. For one, child mortality was higher in social groups with higher marriage and fertility rates. As Table 2 shows, the average age of death within a social group was not only determined by mortality or actual life expectancy, but also by fertility. That is why academics and civil servants, who practised birth control, and day labourers, who could only marry late and less frequently, recorded a disproportionately high average age of death. For another, social differences in circumstances hurt children far more: they suffered far more from misery, hunger, overcrowding, lack of hygiene and ignorance than adults, and among them infants under one year of age were the most adversely affected.

This becomes clear when applying a measure which is not dependent on the social differences in marriage and birth rates, namely the absolute numbers of baptisms and deaths within the first year of life of children of the various social groups. It is possible to compile this information from 1740 onwards, since when a full set of records is available for both parishes. As shown in Table 3, infant mortality measured in this way was once again inversely proportional to income as extrapolated from the levels of burial charges. Infant mortality varied far more between the social groups than mortality in general. It ranged from an extremely low rate among the aristocracy (10.7 per cent) to an almost inconceivably high rate among journeymen, more than five times higher! There was also a high correlation

Table cont'd

Artisans	D	Soldiers	B
Aristocrats	D,E	Non-commissioned officers	B
Farmers	D,E	Haulage contractors	B
Haulage contractors	D,E	Factory workers	B
Merchants	D,E	Junior civil servants	B
Shopkeepers	D,E	Officers	B
Artists and technicians	D,E	Shopkeepers	B
Domestic servants	D,E	Professionals	B
Officers	D,E	Artists and technicians	B
Factory workers	E	Domestic servants	B
Journeymen	E	Merchants	B
Soldiers	E	Journeymen	B

[20] Ludwig Formey, *Versuch einer medicinischen Topographie*, p. 125.

TABLE 3
Infant mortality in Sankt Nikolai and Sankt Georgen, 1740–1799

	Baptisms	Stillbirths	Mortality per 1000 births all births	Percentage of illegitimate live births
Aristocrats	56	0	107.1	14.3
Senior civil servants	263	12	203.6	76
Merchants	859	38	278.7	5.8
Professionals	185	7	286.5	5.9
Middle-ranking civil servants	500	19	287.1	9.0
Artisans	8044	367	291.4	2.2
Teachers	181	6	352.9	3.9
Farmers	1784	98	347.0	2.4
Officers	146	9	348.4	25.0
Haulage contractors	1922	72	330.0	2.8
Domestic servants	885	46	362.0	20.5
Shopkeepers	988	54	362.8	2.5
Junior civil servants	746	53	365.5	10.5
Factory workers	3612	246	374.5	3.9
Soldiers	1262	86	377.6	22.9
Day labourers	1881	132	422.8	5.9
Artists and technicians	308	25	456.5	12.3
Noncommissioned officers	198	14	476.4	18.7
Journeymen	2133	191	571.0	17.0
Total	25953	1475	356.9	6.6

Correlation coefficient (Spearman's R): ratio infant mortality/income (burial charges) $R = -0.688$; ratio infant mortality/illegitimate $R = +0.318$.
Source: GDR Academy of Sciences, database on the social history of Berlin 1650–1799.

between infant mortality and illegitimacy in the various social groups, even though the correlation coefficient is considerably below that measuring the significance of income (see Table 3). Among soldiers, domestic servants and journeymen, the social deprivation of unmarried mothers was as significant a risk factor to the children as material deprivation in general. Among factory workers, illegitimacy was far less important, and it was hunger, cold and overcrowding which killed the children.

In the two parishes under-one infant mortality was, at 36 per cent, considerably higher than the figures calculated by Süßmilch for Berlin as a whole,[21] by Bielke for Friedrichswerder and by Gehrmann for Spandau,[22]

[21] Johann Peter Süßmilch, *Die göttliche Ordnung*, 2 (1775), p. 38.
[22] Edgar Bielke, "Friedrichswerder 1720 bis 1799. Eine historisch-demographische Untersuchung als Beitrag zur Sozialgeschichte des 18. Jahrhunderts", in Wolfgang Ribbe (ed.), *Berlin-Forschungen*, vol. 1 (West Berlin, 1986), p. 193; Rolf Gehrmann, "Eintau-

around 24 per cent in each case. This still applies even if stillbirths are deducted in our parishes, which reduces infant mortality to 32 per cent. These horrifying figures typical of the capital's industrial Königsvorstadt reflected a horrifying reality. Contemporaries were all too aware of the social causes that accounted for the differences between city districts. A senior official of the welfare authorities *(Armenbehörde)* observed in 1769 that among the poor weavers of Friedrichstadt 75 of every 100 children borne died before they reached "adulthood" (presumably twelve years of age), while in the central parishes this figure stood at 44 and among the Jewish community at only 35! He rightly regarded the poverty or affluence of the parents as the decisive factor in determining whether the children thrived or died, and he demanded from the king effective help for the families of poor craftsmen, soldiers and workers and for poor unmarried mothers. This, he maintained, would undoubtedly make a greater contribution to increasing the population than foundling hospitals and orphanages. For as long as they themselves did not lack food and shelter, the poorest mothers would be much better able ensure the survival of the children than any institutions.[23]

On the basis of the considerable inequality before death one would expect a similarly unequal distribution of causes of death. This, however, was only partly the case. As Table 4 shows, only two of the 24 causes of death turn out to be group-specific, namely what was generically called "distress" *(Jammer)*, the cramps to which newborn infants succumbed, and "infirmity" *(Altersschwäche)*, the general decline of physical and mental faculties associated with old age. Since neither of these causes of death described specific diseases but rather the mortality in particular age groups, their distribution was quite specific: "distress" hit the families of wage labourers and soldiers disproportionately, while "infirmity" ended the lives of civil servants.

The monthly distribution of deaths from "distress" provided further information on the causes of infant mortality. A clear peak in the summer months would point to the eating of food which had been spoilt in the summer heat, that is, processed food.[24] In Berlin mothers usually breastfed their own children, as Formey reported.[25] They certainly did not give their children to wetnurses in the country as was common in catholic countries.[26]

send Spandauer Familien im 18. und 19. Jahrhundert. Historisch-demographische Grundzüge einer märkischen Stadt", in Wolfgang Ribbe (ed.), *Berlin-Forschungen*, vol. 2 (West Berlin, 1987), p. 77.

[23] Berlin City Archive, *Armendirektion*, no. 874, regarding the proposal for a foundling home 1717–1773, page 44 (memorandum by Hofrat Gregory, 1770).

[24] Karl Kisskalt, "Die Sterblichkeit im 18. Jahrhundert", in *Zeitschrift für Hygiene und Infektionskrankheiten*, 93 (1921), 1, pp. 467–469.

[25] Ludwig Formey, *Versuch einer medicinischen Topographie*, p. 123.

[26] Edward Shorter, Die Geburt der modernen Familie (Hamburg, 1977), pp. 203–219.

TABLE 4
Social inequality in the causes of death in Berlin, 1719–1799

Cause of death[a]	Inequality ranking[b]	Aristocrats[c]	Merchants[c]	Civil servants[c]	Artisans[c]	Wage labourers[c]	Soldiers[c]	Percentage share of all deaths
"Distress"	1					+	+	13.6
"Infirmity"	2			+	+			3.1
Cancer	3					+		3.1
Other fevers	4		+	+				1.4
Dropsy	5		+	+				1.8
"Stickfluß"	6		+					2.9
Emaciation	7			+				12.2
Breast disorders	8							10.1
Nervous disorders	9			+				0.4
Stomach cramps	10	+		+				1.4
Teeth	11		+				+	7.7
Consumption	12			+				2.9
Smallpox	13							8.5
Violent death	14					+		0.9
Apoplexy	15							7.8
Chest disorders	16							0.7
Gout and calculosis	17							1.3
Whooping cough	18							1.7
High fever	19							3.7
Injuries	20							1.1
Stillbirth	21							6.1
Dysentery and diarrhoea	22							2.5
Cot death	23							0.9
Other	24							0.3
Scarlet fever and measles	25							4.2

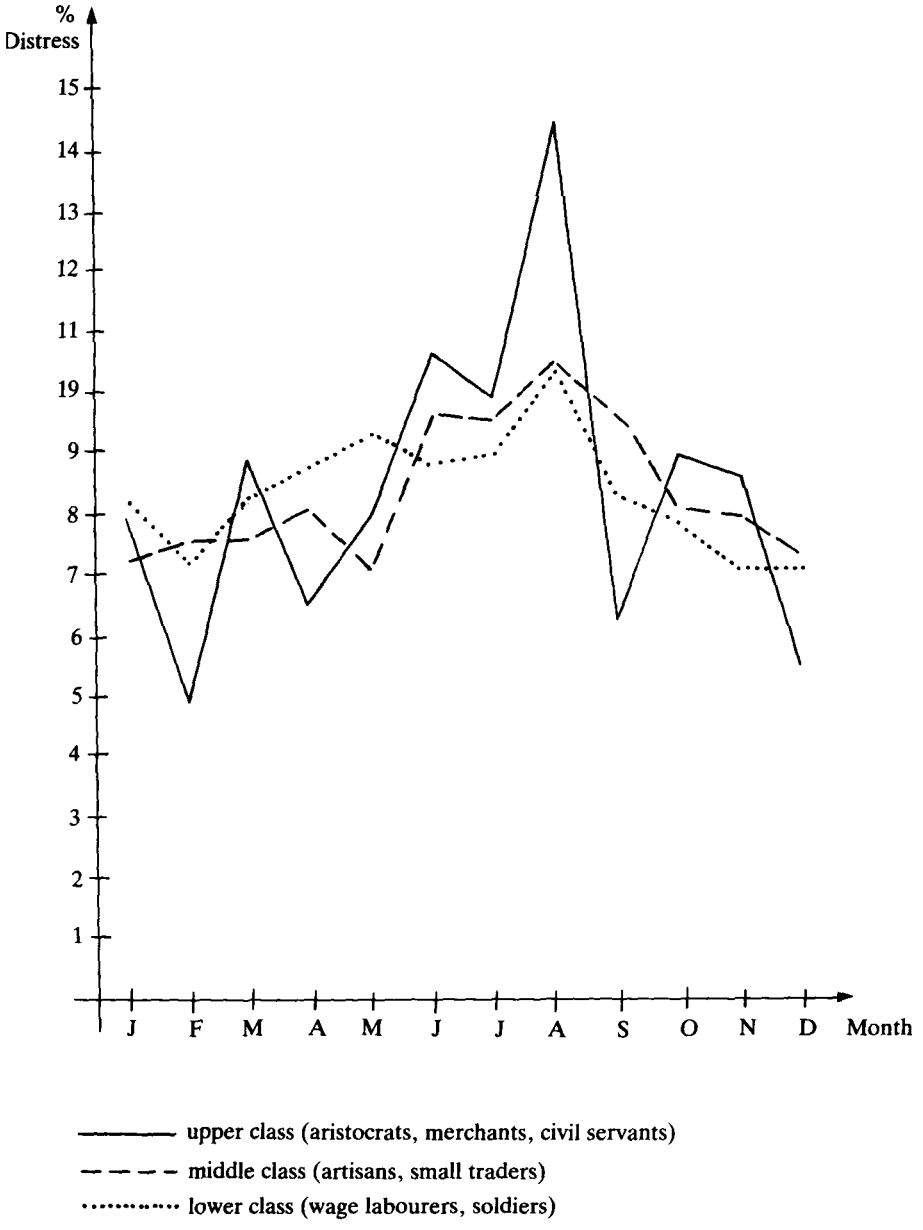
The main infectious diseases are italicized. [a] The categories are based on "Anwendung der Rechentechnik in der Geschichtswissenschaft. Aufbau und Analyse der Datenbank 'Sozialgeschichte Berlins von 1650 bis 1789'", *Ergebnisse gesellschaftswissenschaftlicher Forschungen* (published by the GDR Academy of Sciences, East Berlin, 1987), p. 41. [b] Ranks of chi-square value. [c] The chi-square value is larger than 5.0 for positive deviations.

Berlin mothers only employed wetnurses under their own supervision, the royal surgeon remarked.[27] Of course only the well-off with large homes could afford this. Breastfeeding by wetnurses should not, however, have led to increased mortality in the summertime.

As Figure 1 shows, there were indeed seasonal variations in deaths from "distress". In August child deaths from "distress", the general symptoms pointing to malnutrition, reached a peak among the upper classes, among whom infant mortality and cases of "distress" were generally low. This

[27] Ludwig Formey, *Versuch der medicinischen Topographie*, p. 123.

Figure 1. Infant deaths by month caused by "distress" (*Jammer*) among the main social groups, Berlin 1719-1799 (based on burial registers of Sankt Nikolai and Sankt Georgen parishes).



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suggests that feeding with animal milk was becoming more popular and that breastfeeding was becoming unfashionable among affluent women. There is little evidence of a summer peak among the other classes and groups. Among wage labourers and soldiers, deaths from "distress" peaked in May, when bread was particularly expensive and the long winter had exhausted the mothers' strengths. Breastfeeding was clearly still very much the rule among the wives of the wage labourers and craftsmen. Their behaviour left its mark on the city in this regard as well as in others, for there was no summer peak in infant mortality in Berlin as a whole.

It should be pointed out here that as a rule the wives of wage labourers and craftsmen nursed their infants next to the spinning or sewing work in their own homes. It is beyond doubt that this stressful situation led to lack of care and neglect.

In analysing the unequal distribution of causes of death it hardly comes as a surprise that aristocrats were more likely to die of stomach or chest cramps, that civil servants and professionals were more likely to succumb to nervous diseases, and that wage labourers were particularly afflicted by accidents at work. But it is surprising, at least to a historian with little medical training, that consumption and emaciation, symptoms usually linked to tuberculosis, was not a disease of the poor but affected civil servants in particular.

What is remarkable above all is that most of the major diseases reveal no social specificity. All the epidemic diseases – smallpox, dysentery, high fever, measles, rubella, scarlet fever – afflicted rich and poor alike. At times of epidemics death did indeed manifest itself as the "grim reaper" portrayed in the medieval danse macabre, the ultimate equalizer to whom pope, king, merchant, peasant and beggar all had to submit.

This finding points against expectations given the sharp differences in people's circumstances; it also contradicts the impressions and reports provided by contemporaries. In 1736–1737, for instance, a fever epidemic broke out during a sharp fall in demand accompanied by price rises in the important wool industry. The Berlin authorities located the source of the epidemic among the suffering immigrant workers of Friedrichstadt. Concerned that the epidemic might spread, they eventually managed to arrange supplies of foods and coffins and the allocation of medical personnel.[28] Other serious economic crises were similarly linked to the spread of epidemics, and drew the attention of public opinion to the suffering of the "common people", above all the factory workers, poor masters, journeymen, apprentices and day labourers. Süßmilch, a great humanitarian as well as a great scientist, time and again identified and denounced the inhuman and unhealthy conditions as the cause of high mortality rates

[28] "Wegen der kranken Colonisten auf der Friedrichstadt", Potsdam State Archive, Pr. Br. Rep. 2, Bln., p. 3202.

among Berlin's factory workers. In the context of a measles epidemic in 1747, he stressed to colleagues in a lecture that "it should be noted that in homes where doctors were called, fewer people died of the disease. [. . .] If people had gone to the appointed public-assistance doctor [*Armenarzt*], then not one, two or three [doctors] would have been able to help the thousands who were ill. The poor section of the people suffers terribly."[29]

Certainly the epidemics pushed the wage labourers of the capital from every-day need to extreme deprivation. Their acute suffering alarmed the educated public far more than the chronic catastrophically high infant-mortality rates, which were largely accepted and ignored. The fear of infection no doubt contributed to this sudden awareness, for the sources of the epidemics were always assumed to be in the overcrowded slum districts.

A quantitative analysis of the church registers irrefutably contradicts this linkage of poverty and epidemics. Nor does it find evidence for a linkage between price rises and epidemics as a general explanation. The correlation coefficient between annual variations in the price of bread during the whole of the eighteenth century and the variations in incidence of epidemic diseases is only 0.26, that is, these price fluctuations accounted for only around 7 per cent of the epidemics.[30]

The campaign to eradicate infectious diseases, launched in Berlin in the middle of the eighteenth century with the first vaccinations against smallpox,[31] was, therefore, unable to reduce the "social inequality before death". Because immunization and later the improvements in the drinking-water supply benefited only the upper classes and groups, the gap even grew wider. Compared to the previous thirty years, the number of deaths from smallpox fell by half among civil servants and professionals between 1770 and 1799, and their children were probably the first and the most widely to be vaccinated.[32] But the disease continued to rage unchecked among the children of wage labourers and craftsmen. It is possible that the relatively minimal effect of smallpox inoculation at this time had as much to do with its limited application as with the medical problems associated with it.[33]

[29] Johann Peter Süßmilch, *Der königlichen Residenz Berlin schneller Wachsthum und Erbauung in zweyen Abhandlungen erwiesen*, (Berlin, 1752).
[30] Helga Schultz, *Berlin 1650–1800*, pp. 334–336.
[31] Ludwig Formey, *Versuch einer medicinischen Topographie*, pp. 163–166; Walter Artelt, *Medizinische Wissenschaft udn ärztliche Praxis im alten Berlin in Selbstzeugnissen*, part 1 ("Von Elsholtz und Mentzel bis zum Ausgang des 18. Jahrhunderts") (West Berlin, 1948), p. 147f.
[32] Helga Schultz, *Berlin 1650–1800*, p. 272f.
[33] Oiva Turpeinen, "Die Sterblichkeit an Pocken, Masern und Keuchhusten in Finnland in den Jahren 1751–1865", in Arthur E. Imhof (ed.), *Mensch und Gesundheit in der Geschichte. Vorträge eines internationalen Colloquiums in Berlin vom 20. bis zum 23. September 1978* (Husum, 1980), pp. 136–139.

The "social inequality before death" appeared to have become even more glaring in the nineteenth century, largely as a result of the disastrous increase in child deaths among working-class families because mothers now had to work away from home and could not properly look after and breastfeed their children.[34] This was the case particularly in Berlin, where a peak infant mortality rate of 40 per cent was recorded in 1870–1871, and where the rate in 1880, at 31.3 per cent, was still considerably higher than in Vienna (18.8 per cent), Paris (18.4 per cent) and London (15.8 per cent). Sigrid Stöckel has analyzed the complex social causes of high infant mortality in the working-class districts of the capital.[35]

Against the background of this perspective one should ask whether the extraordinary social differences in mortality rates in Berlin in the eighteenth century were indeed typical of the old, more nature-dependent reproductive cycle of feudal society? Was the inequality before death in the medieval and early modern period as sharp and as common as the evidence from Berlin and Geneva suggests? It was perhaps more a phenomenon characteristic of the big cities and particularly affecting the wage labourers concentrated there. It should be remembered that the social inequality before death referred almost exclusively to infant and child mortality and therefore would only appear wherever wage-labourer *families* existed in socially relevant numbers.[36] It was inevitable that differences in mortality rates would widen with the expansion of industrial capitalism and become the general rule under early capitalism.

The material on Berlin presented here at least allows the conclusion that during the *ancien régime* the social inequality before death was neither the outcome of an unequal impact of the major infectious diseases, nor was it the outcome of unequal working and living conditions among adults. Rather, it resulted almost exclusively from the social difference in infant mortality. It was in the sphere of caring and feeding the smallest and the weakest that poverty had its most devastating impact. This conclusion should be tested in other case studies and might then be generalized.

[34] Reinhard Spree, *Soziale Ungleichheit vor Krankheit und Tod. Zur Sozialgeschichte des Gesundheitsbereiches im Deutschen Kaiserreich* (Göttingen, 1981).

[35] Sigrid Stöckel, "Säuglingssterblichkeit in Berlin von 1870 bis zum Vorabend des Ersten Weltkrieges – Eine Kurve mit hohem Maximum und starkem Gefälle", in Wolfgang Ribbe (ed.), *Berlin-Forschungen I*, pp. 222–264.

[36] Josef Ehmer, *Familienstruktur und Arbeitsorganisation im frühindustriellen Wien* (Vienna, 1980), p. 52f. He regards very high rates of infant mortality, between 50 and 70 per cent, as a characteristic of the demographic and economic system of the early industrial period.