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Long-term changes in social mortality differentials, Geneva, 1625–2004

Reto Schumacher [a,b], Michel Oris [a,b,*]

[a] Centre for Interdisciplinary Gerontology, University of Geneva, 7 route de Drize, Ch-1227, Carouge, Switzerland
[b] Institute for Demographic and Life Course Studies, University of Geneva, 40 boulevard du Pont d'Arve, Ch-1211 Geneva 4, Switzerland

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ABSTRACT

In this paper we argue that in order to test competing hypotheses on the emergence of social mortality differentials, one has to adopt a long-term perspective. Studying social inequality in mortality in Geneva from 1625 to 2005, we use historical mortality data published by different authors and contemporary data drawn from an ongoing research project. The comparison over four centuries gives evidence to both the constancy and convergence hypotheses. Mortality is systematically lower-than-average among elites on the one hand, but on the other hand the difference between the top and the bottom of the social ladder is decreasing over time.

1. Introduction

In their introduction to this issue, Tommy Bengtsson and Frans van Poppel discuss three competing hypotheses on the evolution of socioeconomic mortality differentials: the convergence hypothesis, the constancy hypothesis and the divergence hypothesis. While a careful analysis of the evolution of mortality differentials should be carried out in a long-term perspective, the data needed for such a research design are rarely available. In this paper, we take advantage of an exceptionally well documented case allowing us to look at changes in social mortality differentials over a period of four centuries. The case of Geneva does not only offer this unique possibility of a long-term comparison by its abundance of archival and published data, but represents at the same time a particularly interesting social setting. The social history of this city is shaped by the presence of an aristocratic inner circle wielding political, religious and economic power (Perroux, 2006). The continuing presence of this elite, well-known thanks to Louis Henry's pioneering work (Henry, 1956), is the reason why we give special attention to the constancy hypothesis in its formulation by Link and Phelan whose work specifically focuses on the social elites' advantages.

Indeed, among the ideas recently discussed in research on mortality differentials, Link and Phelan's (1995) theory (see also Phelan et al., 2004) of the fundamental causes of social inequality in mortality has been attracting growing interest since the mid 1990s. The theory states a permanent and continuing relationship between social position and capacity of survival. Focusing exclusively on social elites, Link and Phelan hypothesize that the upper classes benefit from a higher capacity to cope with risks thanks to their resources (in terms of material wealth, as well as in terms of human and social capital). Instrumentally rational,

* Corresponding author at: Centre for Interdisciplinary Gerontology, University of Geneva, 7 route de Drize, Ch-1227, Carouge, Switzerland. Fax: +41 223793787.
E-mail address: Michel.Oris@unige.ch (M. Oris).

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social elites anticipate and react if necessary. According to Link and Phelan, these resources have turned out to be highly adaptive. They have outlived the fundamental transitions from high to low mortality on the one hand, and from infectious to man-made diseases on the other hand. In order to test this hypothesis and to confront it with the convergence hypothesis and the divergence hypothesis, one is in need of long-term data on mortality differentials. Thanks to a series of historical studies, such data are available for the city of Geneva.

Independent city state since 1536, Geneva has come to be known as the protestant Rome since the 16th century. Jean Calvin himself initiated the registration of births, marriages and deaths in the middle of the 16th century. The vital records, appreciated by historians and demographers for their completeness and continuity, have been used by Alfred Perrenoud (1975, 1978, 1979) who was one of the pioneers of urban demography in the modern era. Following French demographer Louis Henry, whose family reconstitution technique was first tested in 1956 on the genealogy of Geneva's ruling families (Henry, 1956), Perrenoud was one of the first to reconstitute urban families. When Geneva became a French city in 1798, the vital registration system was renewed and completed by local and cantonal censuses. The civil registration system implemented according to the Napoleonic Code was maintained when Geneva entered the Swiss Confederation in 1815. The practice of cantonal censuses was further developed before the first federal census was carried out in 1850. A recent study has shown how these sources can be used to follow the evolution of mortality and fertility during the 19th century (Schumacher, 2010). Less material is available for the 20th century. From 1970 to 1992, epidemiologists Gubéran and Usel (2000) have carried out a follow-up study on more than 5000 men aged 45 to 64. Currently, researchers at the University of Geneva are studying social differentials in contemporary Swiss mortality within the larger project of the Swiss National Cohort. This research project funded by the Swiss National Science Foundation relies on the probabilistic linkage of the 1990 and 2000 censuses with the death records of the period 1991–2005. For the purpose of this paper, data on Geneva have been drawn from this database. Even if we lack data on the period between 1900 and 1970, we can rely on a unique documentation allowing us to study the evolution of social differentials in mortality over four centuries.

We have to bear in mind that a temporal comparison can detect changes in mortality differentials over time, but that it may not always help identify the reasons for such changes. Shifts in mortality differentials can either be related to 1) changes in mortality rates by age and sex, to 2) real changes in social differentials in mortality brought about by new social configurations of risk exposure and avoidance, and to 3) fundamental changes in social structure as for example the transition from the “poverty of the masses” in industrializing cities to the relative abundance in contemporary consumer societies. The full comprehension of the historic processes leading to changes in social mortality differentials is beyond the scope of this study. This paper presents nonetheless an exploratory analysis of unique data and allows us to empirically test the conflicting hypotheses on the long term evolution of social differentials in mortality.

2. Mortality differentials from the 17th to the 20th century

In his pioneering study on social mortality differentials in 17th century Geneva, Perrenoud (1975) has challenged the idea according to which in historical populations with limited medical treatment possibilities, differences in mortality were mainly due to environmental factors such as climate and disease. Based on family reconstitution data, his results have indeed shown surprisingly high mortality differentials between the top and the bottom of the social ladder. His classification distinguishes what can be called the upper class, including merchants and most of the liberal professions, from the middle class, including foremen, craftsmen and other skilled workers, and from the lower class of unskilled workers.

Table 1 shows that for both sexes life expectancy at birth e_0 for members of the upper class was nearly twice as high as for members of the lower class. Values were very low within the latter. Demographers have shown that a human population is condemned to disappear when its life expectancy falls below 20 years, the time for reproduction being simply too short. The case of Geneva is an example of what Allan Sharlin (1978) has called the urban graveyard phenomenon. According to him, lower urban classes were characterized by a negative natural balance. Within these social groups, therefore, population growth was exclusively due to immigration from rural areas with an important population surplus. In 17th century rural England, for example, two thirds of the natural surpluses were absorbed by London's graveyards (Johansson, 2000).

In Geneva, the middle class had a significantly higher life expectancy at birth than the lower class. Compared to the huge difference between the former and the upper class, however, the advantage over the lower class was relatively small. Though life expectancy was higher among the upper class at all ages, the difference was most pronounced at younger ages. Much of the differentials in e_0 can therefore be explained by social differences in infant and early childhood mortality. Mortality in infancy

Table 1
Life expectancy by age, social class and sex. Descendants of couples married in Geneva 1625–1684.
Source: Perrenoud (1975, p. 236).

	Males			Females		
	Upper class	Middle class	Lower class	Upper class	Middle class	Lower class
e_0	36.9	25.5	18.9	38.0	26.7	20.3
e_1	44.5	35.0	26.5	44.2	33.3	27.9
e_{20}	39.2	34.3	30.4	38.3	32.9	31.3
e_{50}	19.3	16.0	14.5	19.2	16.4	15.7