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**SOCIOECONOMIC DIFFERENCES
IN ADULT MORTALITY IN LITHUANIA:
A CENSUS-LINKED STUDY**

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A CENSUS-LINKED STUDY

Domantas JASILIONIS
Vlada STANKŪNIENĖ

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PREFACE

Despite notable improvements in health since 2007, mortality levels in Lithuania persist at relatively high levels. In the international context (European Union), the mortality level also remains high. Moreover, in some areas of public health, the situation is alarmingly deteriorating further. Male mortality is a matter of particular concern because male life expectancy in 2010 was still below the level of the mid 1960s. The unfavourable mortality situation is related to the distorted age- and cause-specific pattern of mortality inherited from the Soviet period. The key features of this pattern include elevated premature mortality due to cardiovascular diseases and external and alcohol-related causes of death. Previous research suggests that one of the most important determinants of this unfavourable situation in life expectancy concerns striking mortality differences by age, sex, education, marital status, and place of residence.

In order to perform a systematic assessment of the impact of socioeconomic determinants on adult mortality in Lithuania, a study on contradictory trends, determinants, and social differentials of cause-specific mortality in Lithuania was carried out in 2010–2011¹. The methodological approach of the study is based on the linkages between population census and death register records census-linked data. This methodology was adapted to the Lithuanian data by an international scientific team from the Institute for Demographic Research of the Lithuanian Social Research Centre (Vilnius, Lithuania), Statistics Lithuania (Vilnius, Lithuania), and the Max Planck Institute for Demographic Research (Rostock, Germany).

The census-linked data were obtained thanks to the rigorous work of highly qualified specialists from Statistics Lithuania. The successfully implemented linkage methodology produced high quality aggregated census-linked data that was further used for the calculations of indicators of mortality inequality for this study. The authors would like to thank Dr Vladimir M. Shkolnikov (Head of the Demographic Data Laboratory at the

¹ This project is sponsored by the Research Council of Lithuania (project - SIN-14/2010) and implemented in the network of the national programme *Social Challenges for National Security*.

Max Planck Institute for Demographic Research) for his continuous support and valuable input into the implementation of the census-linked database and methodology of this study. The authors also acknowledge the tremendous contributions of Dalia Ambrozaitienė and other specialists from Statistics Lithuania. This study would not have been possible without their positive attitude and creativity in solving various methodological challenges. The authors would like to thank Dr Dmitri Jdanov (Max Planck Institute for Demographic Research, Rostock, Germany), Dr France Meslé (INED, Paris, France), and Prof Jacques Vallin (INED, Paris, France) for their methodological contributions in the earlier stages of the project. The authors also extend their thanks to Prof Arvydas Virgilijus Matulionis and Prof Meilutė Taljūnaitė from the Lithuanian Social Research Centre for their useful comments and suggestions related to this publication.

This study presents the first comprehensive analysis of socioeconomic differences in adult mortality in Lithuania using high quality census-linked data for 2001–2005. For the first time ever in Lithuania, the study simultaneously uses three socioeconomic dimensions: education, economic activity status, and occupational group. Socioeconomic mortality inequalities are measured using widely used range-type and advanced Gini-type measures. Relative and absolute mortality differentials are analysed using 19 detailed groups of causes of death. Finally, the public health burden attributable to socioeconomic mortality differentials is discussed using the method of cause-specific population attributable fractions.

The authors hope that this comprehensive data on mortality differentials will be interesting to policy makers dealing with the implementation of health and social policies in Lithuania, specialists in population statistics, researchers, and students in different fields (demographers, epidemiologists, sociologists, economists and others).

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1. INTRODUCTION

The modern definition of health by the World Health Organization defines health as 'a state of complete physical, mental, and social wellbeing, and not merely the absence of disease or injury' (WHO, 1998). International health policy documents also stress that good health is a fundamental right of every individual and that the improvement of health should be seen as the main goal of socioeconomic development (WHO, 1998; Marmot, 2007). Societal development should therefore be monitored not only by using the average health status of people, but also by reflecting how fairly health is distributed across different social groups (Marmot, 2007). It has been suggested that at this very modern stage of societal development, indicators of health and mortality (as well as other dimensions such as social cohesion and education) are more important criteria than widely used economic indicators such as GDP per capita or income. At the country level, the latter indicators cannot objectively reflect the quality of life and living conditions of individuals. Health status and mortality indirectly measure wellbeing in a society and also point to the fairness of the distribution of wealth across socioeconomic groups and individuals.

That scientists and policy makers are paying increasing attention to health inequality issues is related to the ethical dimensions of inequality (e.g. increases in any inequality are unacceptable in the framework of the social welfare state) and the social and economic consequences of health inequalities. The importance of health inequality issues is therefore acknowledged even in the egalitarian Nordic countries (Vallgård, 2010). Furthermore, these countries are pioneers in research on health inequalities. A large amount of attention is paid to these issues even in countries with low mortality because increases in health inequality between different social groups may become important obstacles to further health progress at the country level.

According to the recent study by Mackenbach, Meerding and Kunst (2011), elimination of health inequalities would allow about 15–20% of health

and social security budgets to be saved. According to their estimates for the 'old' and some new (Central European) EU member countries, overall loss of GDP due to health inequalities may reach as much as about 1.4% (Mackenbach, Meerding and Kunst, 2011). It is obvious that in countries with higher mortality and health inequalities (such as Lithuania and the other two Baltic countries) the economic burden of inequality may be even higher.

Compared to other members of the European Union, Lithuania has a very unfavourable situation with male life expectancy at birth. Despite very recent significant improvements, the country is classified as the worst performing EU country according to this criterion. The life expectancy of Lithuanian males in 2010 was still about 10 years lower than the EU average, whereas the corresponding difference for females was about 4 years (WHO, 2011). The unfavourable male mortality situation is related to the distorted age- and cause-specific pattern of mortality that was inherited from the Soviet period (Jasilionis, 2003). The key features of this distorted Soviet mortality pattern include elevated premature mortality due to cardiovascular diseases and external and alcohol-related causes of death (Vallin, Meslé, 2004). This pattern emerged in the Soviet Union in the second half of the 1960s and is labeled as an exception to the health transition theory (Vallin and Meslé, 2004).

It is important to note that the effects of distortions in the mortality pattern in Lithuania have persisted until recently. The most illustrative example concerns unfavourable life expectancy trends in 2000–2007. The negative mortality changes affected mostly working ages and were related to the same causes of death as in the Soviet period (external causes of death and cardiovascular system diseases). In addition, the decrease in male life expectancy was reinforced by a striking increase in mortality due to alcohol-related diseases of the digestive system (Jasilionis et al., 2011a).

Previous research suggests that one of the most important determinants of this unfavourable situation in life expectancy concerns striking mortality differences by age, sex, education, marital status, and place of residence (Jasilionis, 2003; Jasilionis, Stankūnienė, and Shkolnikov, 2006; Stankūnienė and Jasilionis, 2011). Socioeconomic mortality inequalities in Lithuania have never been exhaustively studied, however. The majority of prior studies used only one socioeconomic dimension (education) and very

few causes of death (Kalediene and Petrauskiene, 2005; Jasilionis, Stankūnienė, and Shkolnikov, 2006; Jasilionis et al., 2007). In addition, many prior studies were based on cross-sectional census-unlinked data that are affected by numerator-denominator bias. It has been shown that due to misreporting of socio-economic and socio-demographic status in death records, this bias may provide wrong evidence for policy makers (Kunst et al., 1998, 2004; Jasilionis et al., 2011b). In Lithuania, numerator-denominator bias in information on the education of the deceased leads to notable overstatement of educational mortality inequality in the cross-sectional census-unlinked data (Shkolnikov et al., 2007).

This study presents the first comprehensive analysis of socioeconomic differences in adult mortality in Lithuania using high quality census-linked data for the period 2001–2005. For the first time ever in Lithuania, the study simultaneously uses three socioeconomic dimensions: education, economic activity status, and occupational group. Socioeconomic mortality inequalities are measured using widely used range-type and advanced Gini-type measures. The relative and absolute mortality differentials is analysed using 19 detailed groups of causes of death. Finally, the public health burden attributable to socioeconomic mortality differentials is discussed using the method of cause-specific population attributable fractions.

2. DATA AND METHODS

2.1. The census-linked mortality database

This study uses an aggregated census-linked dataset provided by Statistics Lithuania. The linkage procedures were implemented by Statistics Lithuania employees, who have permission to work with individual-level data. The dataset is based on all records from the 2001 Population and Housing Census and all death and emigration records for the period between April 6, 2001 and December 31, 2005. The data cover individuals 30–59 years of age and include 3.2 and 3.5 million person-years of population exposure and 28,500 deaths for males and 10,400 for females. The data were provided in an aggregated multi-dimensional frequency table format that combines deaths and population exposures and are split by socio-demographic and socioeconomic variables, including age, sex, education, economic activity status, and occupational group (Table 1). Detailed descriptions of the census and death record data can be found in prior publications (Jasilionis, Stankūnienė, and Shkolnikov, 2006; Jasilionis et al., 2007).

Table 1. *Distribution of person years of exposure and deaths according to education, economic activity status, and occupational group, 6 April 2001 – 31 December 2005.*

	Person years of exposure, in thous.		Deaths, in thous.	
	Males	Females	Males	Females
<i>Education</i>				
Higher	526.3 (16.7%)	753.1 (21.8%)	2.4 (8.3%)	1.4 (13.1%)
Secondary	2146.8 (68.2%)	2388.8 (69.1%)	18.0 (63.1%)	6.7 (64.7%)
Lower than secondary	476.9 (15.1%)	317.6 (9.2%)	8.2 (28.6%)	2.3 (22.2%)
<i>Economic activity status</i>				
Economically active, employed	2186.8 (69.4%)	2399.1 (69.3%)	4.0 (38.7%)	7.4 (41.4%)
Economically active, unemployed	560.0 (17.8%)	502.7 (14.5%)	2.1 (20.5%)	4.0 (22.5%)
Economically inactive	365.1 (11.6%)	538.6 (15.6%)	4.1 (39.9%)	6.3 (35.3%)
Unknown	38.1 (1.2%)	19.1 (0.6%)	0.1 (0.8%)	0.1 (0.7%)
<i>Occupational group</i>				
Upper non-manual employees	493.4 (15.7%)	1364.4 (24.2%)	1.1 (10.7%)	835.0 (24.1%)
Lower non-manual employees	63.9 (2.0%)	832.7 (14.7%)	0.6 (6.2%)	499.0 (14.4%)
Self-employed persons	149.2 (4.7%)	163.2 (2.9%)	0.2 (1.5%)	99.7 (2.9%)
Skilled manual workers	501.1 (15.9%)	378.1 (6.7%)	0.3 (3.0%)	225.7 (6.5%)
Unskilled manual workers	541.1 (17.2%)	719.4 (12.7%)	0.8 (7.7%)	442.0 (12.8%)
Farmers and farm labourers	248.7 (7.9%)	253.2 (4.5%)	0.6 (5.9%)	158.3 (4.6%)
Unknown	227.4 (7.2%)	261.9 (4.6%)	0.5 (4.6%)	158.5 (4.6%)
Unemployed and economically inactive	925.1 (29.4%)	1676.2 (29.7%)	6.3 (60.4%)	1041.3 (30.1%)
<i>Total</i>	3150.0 (100.0%)	3459.5 (100.0%)	28.5 (100.0%)	10.4 (100.0%)

2.2. Socioeconomic and sociodemographic variables and their categories

Available information from the population census allowed us to include the following three major dimensions of socioeconomic inequality: education, economic activity status, and occupational group.

Socioeconomic variables:

- 1) Education: in order to have comparable data with studies performed in other countries, eleven original educational levels defined in the population census were combined into three broad educational categories: higher education (at least 14 years of studying), secondary education (10–13 years of studies), and lower than secondary education (up to 9 years of studying). The category of higher education corresponds to the level of higher education provided in the population census. Several educational levels were included in the category of secondary education: completed general upper secondary or/and vocational/ technical school or college (confirmed by a certificate signifying completion of general upper secondary education maturity certificate or a vocational certificate of upper secondary education). Lower than secondary or unknown education refers to completed general or vocational basic education and to primary school. The latter category includes persons with incomplete primary education (without certificate), literate persons without schooling, illiterate persons, and persons of unknown educational status. The composition of the latter category was supported by the fact that deceased having unknown education (according to the population census) were classified as having primary or lower education according to the information provided in their death records.
- 2) Economic activity status: 1 – economically active employed people (abbreviation: employed), 2 – economically active unemployed people (abbreviation: unemployed), 3 – economically inactive people (abbreviation: inactive). Economically inactive people are unemployed and those not actively seeking a job (pensioners, students, pupils, disabled, housewives/homemakers, prisoners, etc.). People whose economic activity status was unknown were also considered in both calculations of Poisson regression mortality rate ratios and Gini-type measures (although the results for this group are not shown).

3) Occupational group: 1 – upper non-manual employees, 2 – lower non-manual employees, 3 – self-employed persons, 4 – skilled manual workers, 5 – unskilled manual workers, 6 – farmers and farm labourers. The classification was chosen on the basis of international recommendations and experience (Erikson-Goldthorpe-Portocarero classification scheme) (Erikson and Goldthorpe, 1992; Cavelaars et al., 1998). As for many other countries, it was possible to classify only economically active employed people. People with an unknown economic activity status and occupation were also considered in both calculations of Poisson regression mortality rate ratios and Gini-type measures (although the results for this group are not shown).

Sociodemographic variables:

Analyses were performed separately for males and females and focused only on the adult population (aged 30–59). Mortality differentials were estimated for all causes of death combined and 19 detailed causes of death (classified according to the ICD 10 codes): all cardiovascular system diseases combined (I00–I99), ischaemic heart diseases (I20–I25), cerebrovascular diseases (I60–I69), all other diseases of the cardiovascular system (I00–I19, I26–I59, I70–I99), all neoplasms combined (C00–D48), smoking-related cancers (C32–C34), breast cancer (C50), prostate cancer (C61), all other neoplasms (C00–C31, C35–C49, C51–C60, C62–D48), infectious diseases (A00–B99), diseases of the respiratory system (J00–J98), diseases of the digestive system (K00–K93), all external causes of death combined (V01–Y89), transport accidents (V01–V89, V98–V99), suicide (X60–X84), homicide (X85–Y09), all other external causes of death (V90–V97, W, X00–X59, Y10–Y89), alcohol-related causes of death (F10.0–F10.9, I42.6, K70, K74, X45), and all other (remaining) causes of death combined.

2.3. Methods

Following the recommendations of international studies, socioeconomic mortality differentials should be assessed using widely used range-type measures and advanced Gini-type measures (Anand et al., 2001). Methodological articles also suggest that relative and absolute mortality differences should be taken into account (Mackenbach and Kunst, 1997).

In this study, absolute inter-group mortality differences are measured using range-type measures. Standardised death rates (for males and females aged 30–59) are calculated using the WHO European standard. Relative mortality differentials are assessed using Poisson regression mortality rate ratios (MRRs).

To measure the full amount of mortality inequality in the population, it is however necessary to employ more advanced Gini-type measures. Thus, absolute mortality differences are measured using the *average inter-group difference in mortality* (AID):

$$AID = \frac{1}{2} \sum_{i=1}^N \sum_{j=1}^N |SDR_i - SDR_j| p_i p_j,$$

where p_i, p_j – population weights of socioeconomic groups (i, j) (where $i, j = 1, 2, 3, \dots, N$); SDR_i and SDR_j – standardised death rates in socioeconomic groups (i, j). AID is defined as the population-weighted average of mortality differences across all pairs of group-specific SDRs and measured as number of deaths per 100,000 person years of exposure (Shkolnikov et al., 2011). Relative mortality inequality is measured using the Gini coefficient:

$$G = \frac{AID}{\overline{SDR}} * 100,$$

where \overline{SDR} – weighted (using group-specific population weights) average of group-specific standardised death rates. Gini (G) refers to average inter-group mortality differences as reflected by a percentage of the SDR for the total population (Shkolnikov et al., 2011).

The public health burden due to socioeconomic mortality differentials was assessed using the method of population attributable fraction (PAF). This measure is a hypothetical estimate of a proportion of all deaths that can be avoided (or to what extent total mortality would be diminished) if all population groups had the same rate of mortality as the lowest mortality group:

$$PAF = \frac{\sum_i p_i (MRR_i - 1)}{\sum_i p_i MRR_i},$$

p_i – population weight of socioeconomic group (i) in the total population (where $i = 1, 2, 3, \dots, N$); MRR_i – Poisson regression mortality rate ratio for the socioeconomic group (i).

3. RELATIVE SOCIONOMIC MORTALITY DIFFERENCES BY CAUSE OF DEATH

This chapter provides data on relative mortality differentials for 19 groups of causes of death as reflected by group specific Poisson mortality rate ratios (MRRs). Mortality rate ratios (MRR) show how many times mortality rates in the population group under consideration differ from the mortality rates in the reference group. The following reference groups were used for each socioeconomic dimension: higher education group (education), group of employed economically active people (economic activity status), and group of upper non-manual employees. MRRs were estimated by means of Poisson regression, additionally controlling for age. Detailed data on MRRs and their 95% confidence intervals are given in Annex 3.

3.1. Mortality due to all causes of death combined

The study found statistically significant relative mortality differences for all causes of death. The relative differentials are pronounced for all three socioeconomic dimensions under study.

Findings on mortality differences by education are in line with patterns observed in other countries and correspond to the findings of prior studies on Lithuania (Kalėdienė and Petrauskienė, 2005; Huissman et al., 2005; Jasilionis, Stankūnienė and Shkolnikov, 2006). As expected, mortality risk increases with diminishing level of education (Fig. 1A). Male and female mortality in the lowest education group is about 3 times higher than in the higher education group.

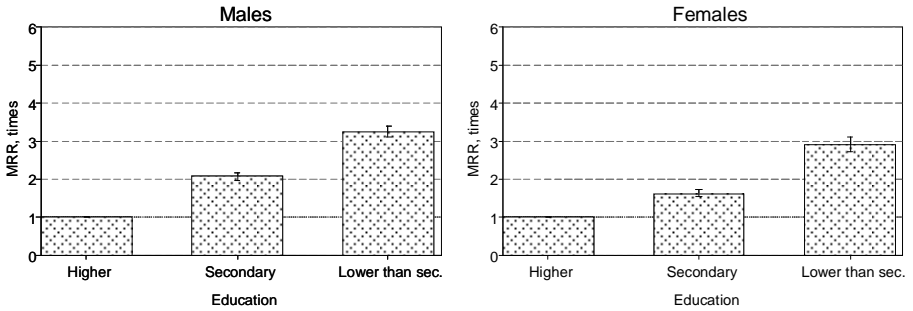
The most striking relative mortality differences were observed by economic activity status. Male and female mortality in the economically inactive group is 3.5 and 4 times higher than among employed males and females (Fig. 1B). About 2 times higher mortality than in the employed group was also found in the unemployed group.

A notable mortality gradient was also found for occupational status, especially among males (Fig. 1C). Farmers and farm labourers is the group with the highest mortality risk. Among males, mortality in the latter group is more than 3 times higher than in the group of upper non-manual employees, whereas excess mortality among skilled and unskilled workers is about 2 times. With the exception of the group of farmers and farm labourers, the occupational mortality gradient among females is less pronounced.

Figure 1. Mortality rate ratios for all causes of death combined, by education, economic activity status, and occupational group. Males and females (aged 30–59), 2001–2005.

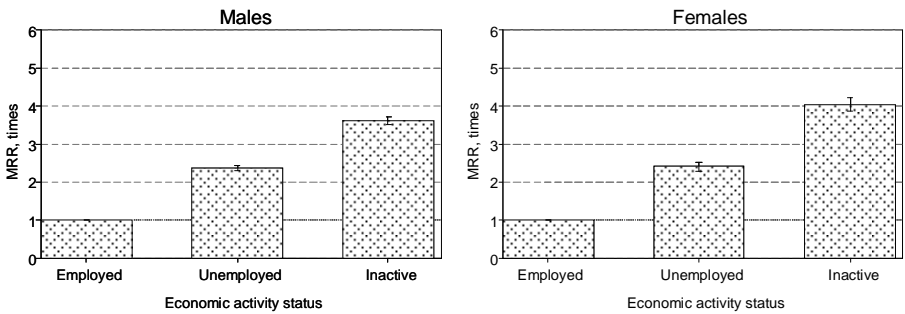
A. Education

Reference group (mortality rate ratio equals one): higher education.



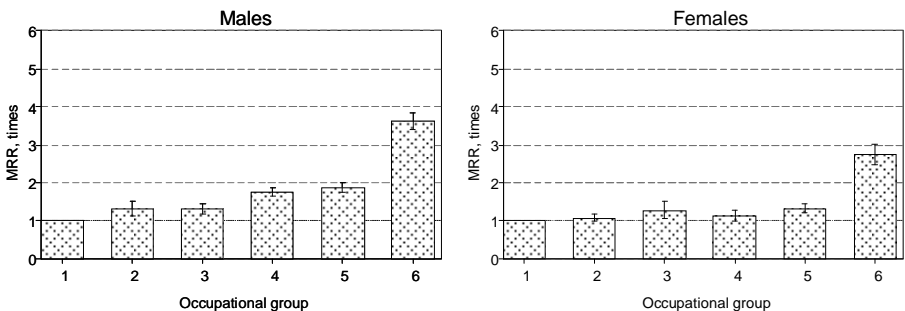
B. Economic activity status

Reference group (mortality rate ratio equals one): employed.



C. Occupational group

Reference group (mortality rate ratio equals one): upper non-manual employees.



Occupational groups: 1 – upper non-manual employees; 2 – lower non-manual employees; 3 – self-employed persons; 4 – skilled manual workers; 5 – unskilled manual workers; 6 – farmers and farm labourers.

3.2. Mortality due to diseases of the cardiovascular system

3.2.1. Mortality due to all diseases of the cardiovascular system

In the modern era of epidemiologic development in developed countries, cardiovascular diseases have the biggest share in cause-of-death structures (Omran, 1971; Vallin and Meslé 2004). These diseases have a major impact on changes in life expectancy.

This study found substantial socioeconomic differences in cardiovascular mortality according to the three socioeconomic dimensions under study. The differentials are pronounced for both sexes (Fig. 2). The relative disadvantage in cardiovascular mortality of low educated males against high educated males exceeds more than 3 times, whereas among females this differential is even more pronounced (4 times) (Fig. 2A).

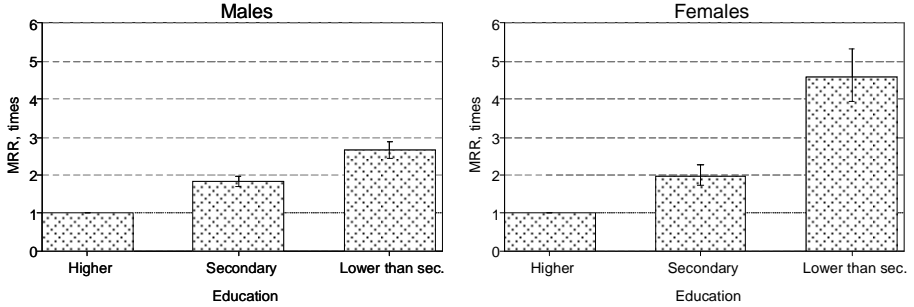
Mortality differences by economic activity status are even greater than for education (Fig. 2B). Economically inactive males and females have 4–5 times higher mortality risks than economically active employed females and males. Mortality differences in the unemployed group are 2 and 3 times among males and females.

With the exception of the group of farmers and farm labourers, mortality differences by occupational group are less important. The maximal difference (almost 4 times) was observed when comparing farmers and farm labourers to upper non-manual employees among females. The corresponding difference among males is about 2.5 times (Fig. 2C).

Figure 2. Mortality rate ratios for all diseases of the cardiovascular system, by education, economic activity status, and occupational group. Males and females (aged 30–59), 2001–2005.

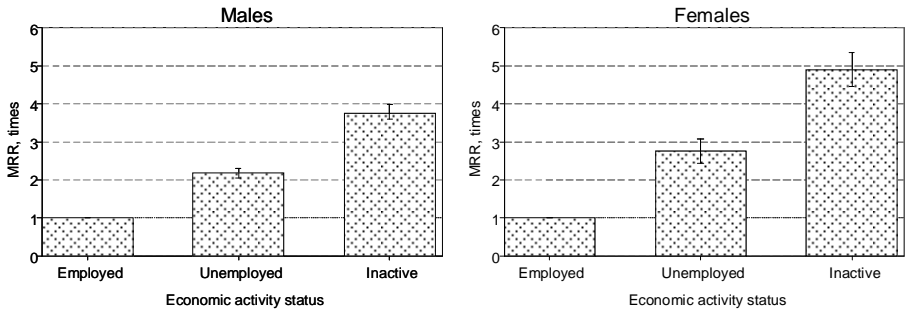
A. Education

Reference group (mortality rate ratio equals one): higher education.



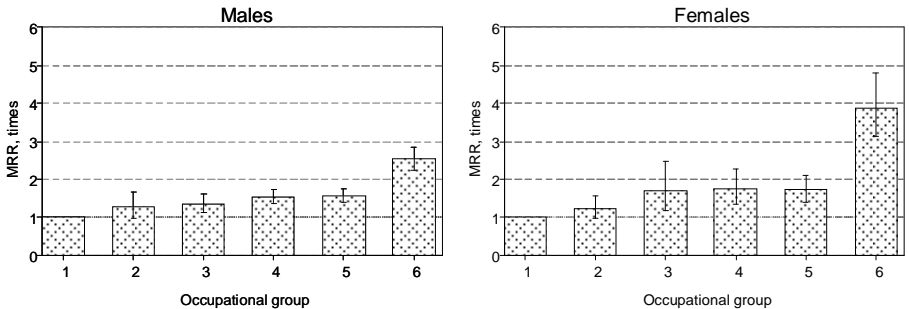
B. Economic activity status

Reference group (mortality rate ratio equals one): employed.



C. Occupational group

Reference group (mortality rate ratio equals one): upper non-manual employees.



Occupational groups: 1 – upper non-manual employees; 2 – lower non-manual employees; 3 – self-employed persons; 4 – skilled manual workers; 5 – unskilled manual workers; 6 – farmers and farm labourers.

3.2.2. Mortality due to ischaemic heart diseases

Ischaemic heart diseases are often considered one of the most important avoidable (through medical care or prevention) causes of death, and they indirectly reflect the effectiveness of a health care system and health-related policies (Nolte and McKee, 2004). In Lithuania, this cause of death is one of the most important causes of death even at working ages (16% males and 9% of females aged 30–59 died due to this cause in 2001–2005).

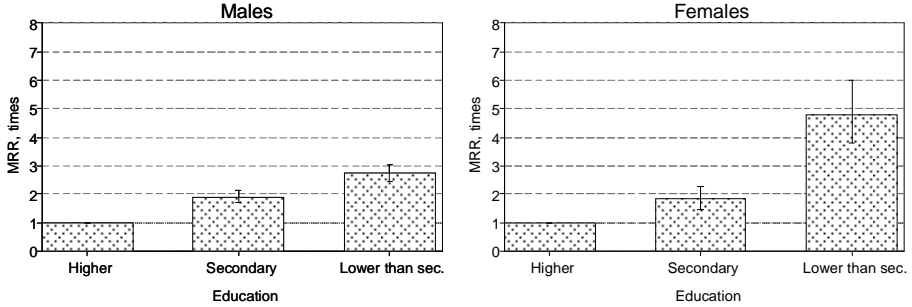
Because ischaemic heart diseases make up about 53% of all cardiovascular deaths, the major regularities of socioeconomic differentials are similar to those observed for all cardiovascular deaths (Fig. 3). First, the biggest differences in mortality due to ischaemic heart diseases were observed for economic activity status. Second, the size of differences is bigger among females than among males.

Mortality of males and females with lower than secondary education is correspondingly 3 and 5 times higher than the mortality of males and females with higher education (Fig. 3A). The maximal difference was observed comparing economically inactive and economically active employed females (about 6 times). The corresponding relative gap among males is almost twice as small (3.5 times) (Fig. 3B). The mortality gradient by occupational group is less important. Moderately higher mortality was observed among farmers and farm labourers (both sexes), skilled and unskilled manual workers (males), and unskilled manual workers (females) (Fig. 3C).

Figure 3. Mortality rate ratios for ischaemic heart diseases, by education, economic activity status, and occupational group. Males and females (aged 30–59), 2001–2005.

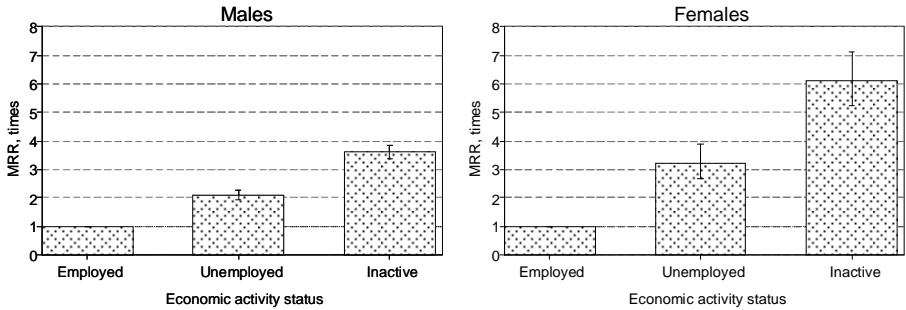
A. Education

Reference group (mortality rate ratio equals one): higher education.



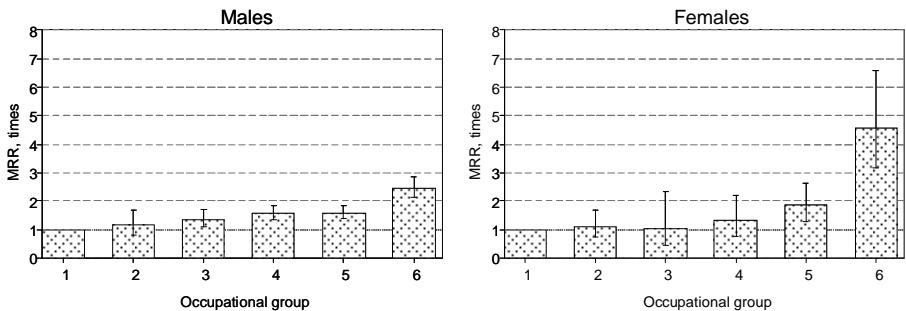
B. Economic activity status

Reference group (mortality rate ratio equals one): employed.



C. Occupational group

Reference group (mortality rate ratio equals one): upper non-manual employees.



Occupational groups: 1 – upper non-manual employees; 2 – lower non-manual employees; 3 – self-employed persons; 4 – skilled manual workers; 5 – unskilled manual workers; 6 – farmers and farm labourers.

3.2.3. Mortality due to cerebrovascular diseases

Cerebrovascular diseases are considered causes of death amenable to medical treatment (Nolte and McKee, 2004). Differences in mortality due to these causes of death therefore also reflect differences in accessibility to medical care services in Lithuania.

The study found that with the exception of differences by occupational status, the pattern of socioeconomic differentials in cerebrovascular mortality is similar to all cardiovascular diseases. Mortality differences by education are greater for females than for males. Lower educated females have about 4 times greater mortality risk than higher educated females, whereas among males this difference is only slightly above 2 times (Fig. 4A).

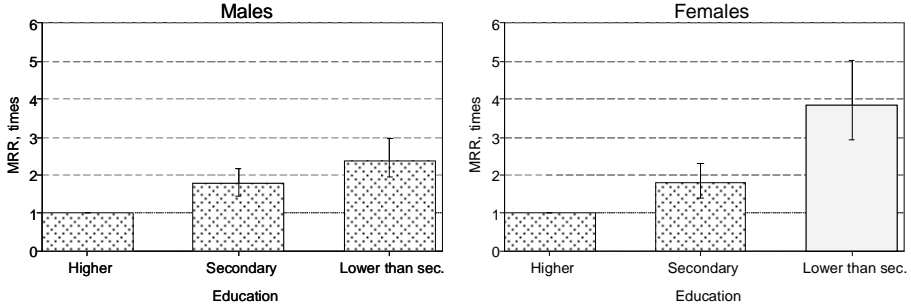
The magnitude of the male and female mortality gradient by economic activity status is similar: mortality rate ratios in the unemployed group are about 2 times, whereas these ratios for the economically inactive group are about 4 times (Fig. 4B).

Differently from all cardiovascular system and ischaemic heart diseases, mortality differences by occupational group are smaller. Once again, farm and farm labourers show the biggest mortality rate ratios (about 2 times) (Fig. 4C).

Figure 4. Mortality rate ratios for cerebrovascular system diseases, by education, economic activity status, and occupational group. Males and females (aged 30–59), 2001–2005.

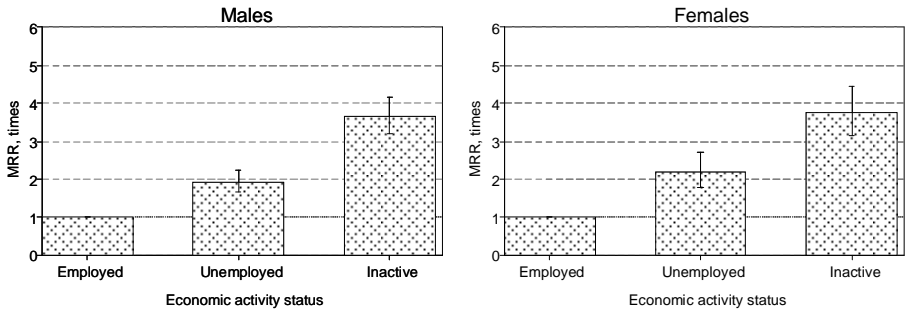
A. Education

Reference group (mortality rate ratio equals one): higher education.



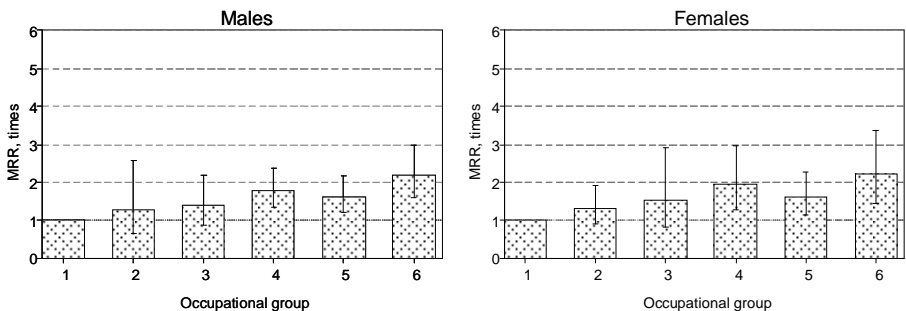
B. Economic activity status

Reference group (mortality rate ratio equals one): employed.



C. Occupational group

Reference group (mortality rate ratio equals one): upper non-manual employees.



Occupational groups: 1 – upper non-manual employees; 2 – lower non-manual employees; 3 – self-employed persons; 4 – skilled manual workers; 5 – unskilled manual workers; 6 – farmers and farm labourers.

3.2.4. Mortality due to all other diseases of the cardiovascular system

This group of causes includes other important cardiovascular diseases such as atherosclerosis, arterial embolism, and cardiomyopathy. As in the case of cerebrovascular diseases, the socioeconomic mortality gradient was more pronounced among females.

Females with lower than secondary education have about 5 times higher mortality than females with high education. The corresponding mortality gradient is about two times smaller among males (Fig. 5A).

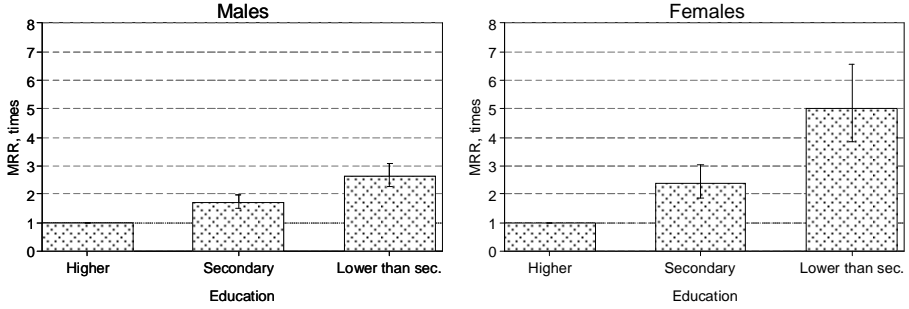
Differences in mortality by economic activity status are almost equally important for both males and females. The mortality risk of unemployed males and females is about 2.5–3.0 times higher than in the economically active employed group, whereas the corresponding mortality disadvantage of economically inactive males and females is about 4–5 times (Fig. 5B).

For males and females, notable differences (about 3 and 5 times) in mortality due to all other cardiovascular system diseases by occupational status were observed comparing farm and farm labourers to upper non-manual employees. In addition, among females, very pronounced mortality rate ratios are also attributable to self-employed, skilled and unskilled manual workers groups (Fig 5C).

Figure 5. Mortality rate ratios for all other cardiovascular system diseases, by education, economic activity status, and occupational group. Males and females (aged 30–59), 2001–2005.

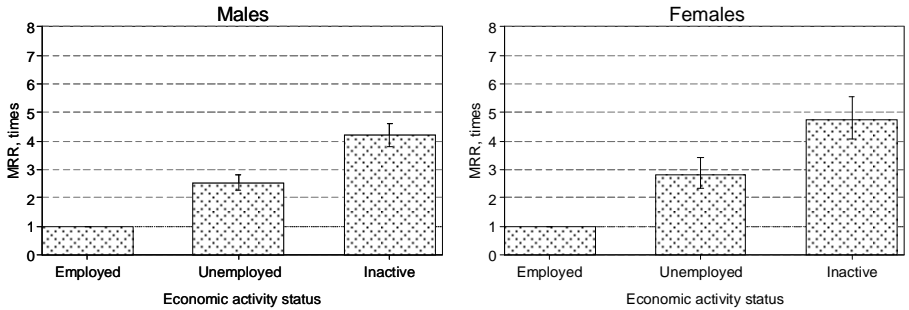
A. Education

Reference group (mortality rate ratio equals one): higher education.



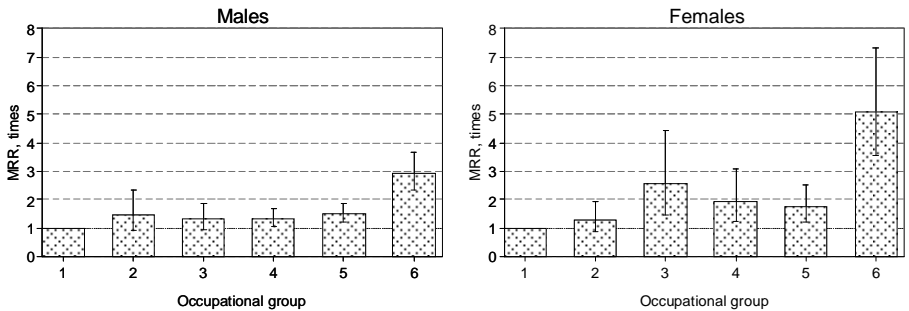
B. Economic activity status

Reference group (mortality rate ratio equals one): employed.



C. Occupational group

Reference group (mortality rate ratio equals one): upper non-manual employees.



Occupational groups: 1 – upper non-manual employees; 2 – lower non-manual employees; 3 – self-employed persons; 4 – skilled manual workers; 5 – unskilled manual workers; 6 – farmers and farm labourers.

3.3. Mortality due to neoplasms

3.3.1. Mortality due to all neoplasms

Evidence from other countries and Lithuania shows that if compared to other causes of death, socioeconomic differences in mortality due to neoplasms are much less pronounced (Huissman et al., 2005; Jasilionis, Stankūnienė, and Shkolnikov, 2006). There are a few exceptions, however, attributable to some specific sites of neoplasms such as smoking-related cancers (Jasilionis, Stankūnienė, and Shkolnikov, 2006).

This study found that visible educational differences in mortality due to all neoplasms are notable only for males (Fig. 6A). Among males with secondary education, mortality is almost two times higher than among highly educated males, whereas the corresponding gap between the lowest and highest education group is almost 3 times. For females, mortality differences by education are much less important (Fig. 6A).

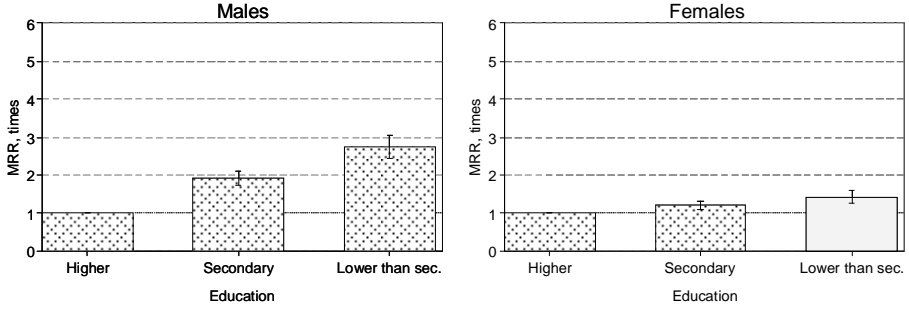
Substantial mortality differences by economic activity status can be observed for both sexes (Fig. 6B). The biggest gap (almost 3 times) is between economically inactive males and females and economically active employed males and females. The mortality disadvantage of the unemployed group is pronounced only for males (almost two times).

The biggest difference in mortality due to this group of causes is between male farmers and farm workers and upper non-manual employees (Fig. 6C). The MRRs for the remaining occupational groups are relatively small. Among females, mortality differences are either very small or statistically insignificant.

Figure 6. Mortality rate ratios for all neoplasms combined, by education, economic activity status, and occupational group. Males and females (aged 30–59), 2001–2005.

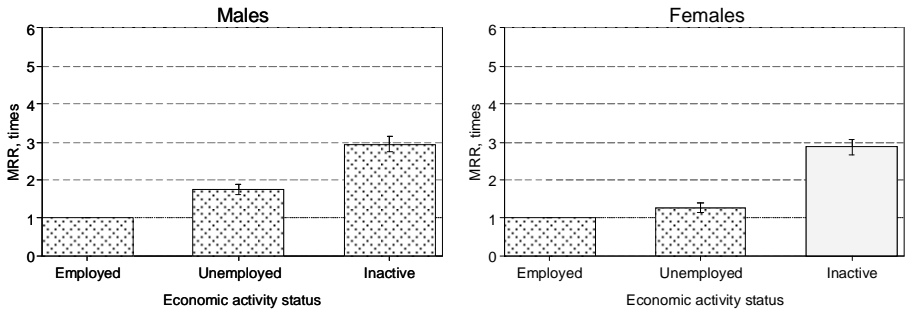
A. Education

Reference group (mortality rate ratio equals one): higher education.



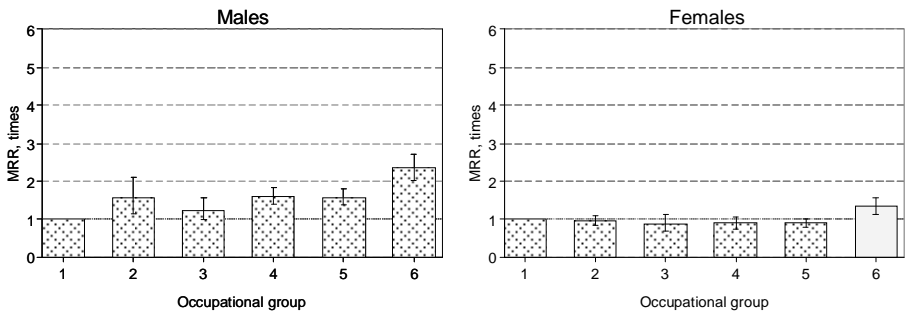
B. Economic activity status

Reference group (mortality rate ratio equals one): employed.



C. Occupational group

Reference group (mortality rate ratio equals one): upper non-manual employees.



Occupational groups: 1 – upper non-manual employees; 2 – lower non-manual employees; 3 – self-employed persons; 4 – skilled manual workers; 5 – unskilled manual workers; 6 – farmers and farm labourers.

3.3.2. Mortality due to smoking-related cancers

Epidemiological studies suggest that mortality due to smoking-related cancers is attributable to smoking at younger ages (Hegmann et al., 1993). Thus, prevalence of smoking in the past predetermines current mortality due to this cause. Smoking-related cancers are also included on the list of avoidable causes of death (Nolte and McKee, 2004).

This study found striking male mortality differences by education and occupational status (Figs. 7A and 7C). A substantial gradient in smoking-related cancer mortality can also be observed for economic activity status (for both sexes) (Fig. 7B).

Lower educated males show almost 5 times higher mortality than highly educated males, whereas among females this difference is only 2 times (Fig. 7A). It is also important to note that even males with secondary education have almost 3 times higher mortality risk than those in the high education group.

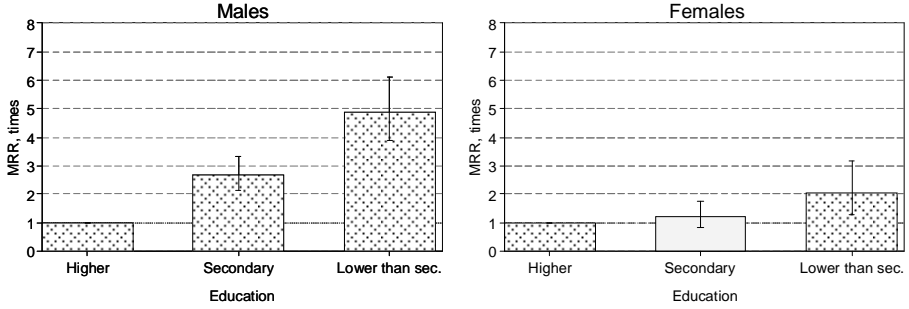
Economically inactive males and females show 3 times higher mortality than economically active employed males and females, whereas among the unemployed this mortality disadvantage was about 2 times (Fig. 7B).

Occupational mortality differences were important only for males. The maximal mortality disadvantage (about 5 times) is attributable to the group of farmers and farm labourers. Very notable mortality rate ratios can also be observed for skilled and unskilled manual workers (Fig. 7C). Among females, these differentials are either small or statistically insignificant.

Figure 7. Mortality rate ratios for smoking-related cancer, by education, economic activity status, and occupational group. Males and females (aged 30–59), 2001–2005.

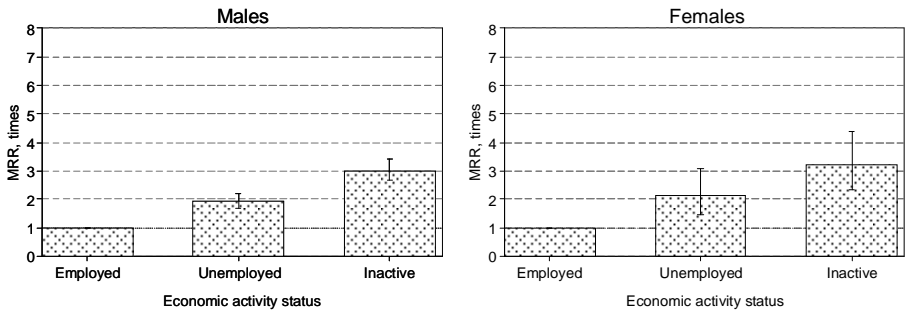
A. Education

Reference group (mortality rate ratio equals one): higher education.



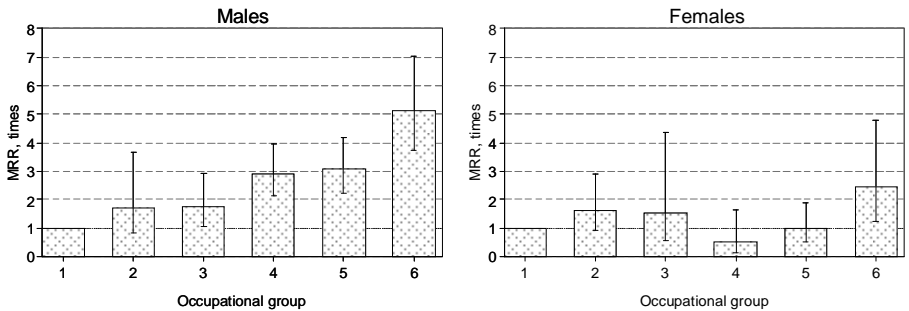
B. Economic activity status

Reference group (mortality rate ratio equals one): employed.



C. Occupational group

Reference group (mortality rate ratio equals one): upper non-manual employees.



Occupational groups: 1 – upper non-manual employees; 2 – lower non-manual employees; 3 – self-employed persons; 4 – skilled manual workers; 5 – unskilled manual workers; 6 – farmers and farm labourers.

3.3.3. Mortality due to breast cancer

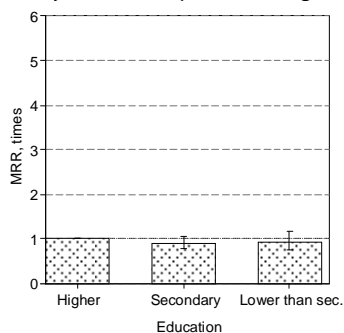
Breast cancer is one of the most important amenable (through prevention and medical care) causes of death among females (Nolte and McKee, 2004). Morbidity and mortality due to breast cancer depends on secondary prevention (screening). Over the past two decades in Lithuania, female mortality due to this cause was either decreasing or fluctuating around the same level (Smalytė, 2011a). International evidence suggests that breast cancer mortality often shows an opposite socioeconomic gradient (higher socioeconomic status is associated to higher mortality risk) (Ezendam et al., 2008).

With two exceptions, the current study found that female mortality differences by education, economic activity status, and occupational group were statistically insignificant (Fig. 8). The first exception concerns the statistically significant and strikingly high (more than 3 times) mortality rate ratio for economically inactive females (Fig. 8B). The second exception is unskilled manual workers showing lower mortality than in the upper non-manual employee group (Fig. 8C). The latter finding corresponds to evidence from other countries (Huisman et al., 2005).

Figure 8. Mortality rate ratios for breast cancer, by education, economic activity status, and occupational group. Females (aged 30–59), 2001–2005.

A. Education

Reference group (mortality rate ratio equals one): higher education.



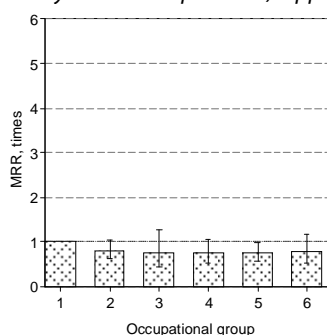
B. Economic activity status

Reference group (mortality rate ratio equals one): employed.



C. Occupational group

Reference group (mortality rate ratio equals one): upper non-manual employees.



Occupational groups: 1 – upper non-manual employees; 2 – lower non-manual employees; 3 – self-employed persons; 4 – skilled manual workers; 5 – unskilled manual workers; 6 – farmers and farm labourers.

3.3.4. Mortality due to prostate cancer

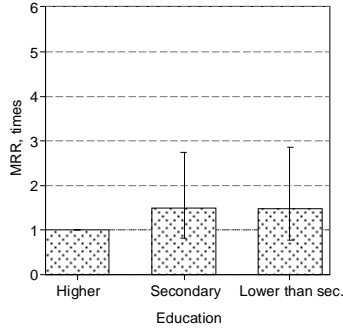
Prostate cancer is one the most frequently diagnosed cancers (according to both morbidity and mortality statistics) in Europe and Lithuania (Bray et al., 2010; Smailytė, 2011b). Cancer of the prostate is also one of the most important avoidable (amenable through medical care and prevention) causes of death among males (Nolte and McKee, 2004). Over the past decade, Lithuania saw dramatic increases in both mortality and morbidity due to this cause (Smailytė, 2011b). This unfavourable trend is responsible for a very high (if compared to other EU countries, one of the highest) level of mortality due to prostate cancer. This unfavourable situation can be explained by lower effectiveness of the implementation of diagnostic and treatment technologies (Smailytė, 2011b).

In most cases, mortality rate ratios by education and occupational group are statistically insignificant (Figs. 9A and 9C). The only exception concerns the economically inactive group showing more than 3 times higher mortality than the economically active employed group (Fig. 9B). Due to very low numbers of deaths, the estimation of mortality rate ratios for some occupational groups was unfortunately not possible or interpretation of estimated mortality rate ratios was hampered by very big standard errors.

Figure 9. Mortality rate ratios for prostate cancer, by education, economic activity status, and occupational group. Males (aged 30–59), 2001–2005.

A. Education

Reference group (mortality rate ratio equals one): higher education.



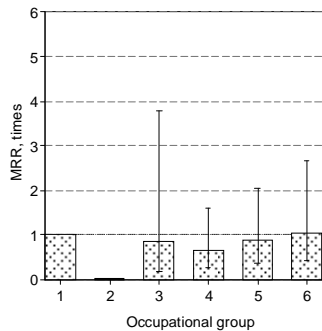
B. Economic activity status

Reference group (mortality rate ratio equals one): employed.



C. Occupational group

Reference group (mortality rate ratio equals one): upper non-manual employees.



Occupational groups: 1 – upper non-manual employees; 2 – lower non-manual employees; 3 – self-employed persons; 4 – skilled manual workers; 5 – unskilled manual workers; 6 – farmers and farm labourers.

3.3.5. Mortality due to all other neoplasms

The group of all other neoplasms includes other important cancer sites such as stomach, colon and cervix.

The study found that the mortality gradient is more pronounced among males than among females (Fig. 10). Males with the lowest education show 2 times higher mortality than males with the highest education, whereas among females this difference is negligible (Fig. 10A).

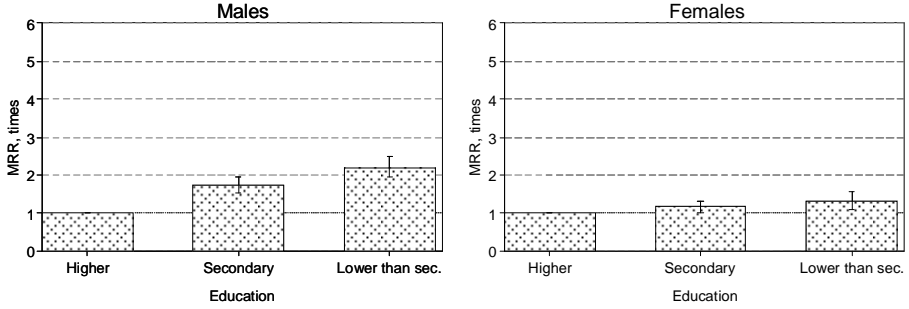
At the same time, mortality differences by economic activity status are more important. The mortality disadvantage of the economically inactive group against the economically active employed group is about 3 times (for both males and females) (Fig. 10B). The corresponding MRR for unemployed males is smaller (2 times), whereas the difference between unemployed and economically active employed females is statistically insignificant.

Only small male and female mortality differences can be observed by occupational group. Slightly more pronounced are mortality rate ratios for farmers and farm labourers (both sexes) and lower non-manual employees (males only) (Fig. 10C).

Figure 10. Mortality rate ratios for all other cancers, by education, economic activity status, and occupational group. Males and females (aged 30–59), 2001–2005.

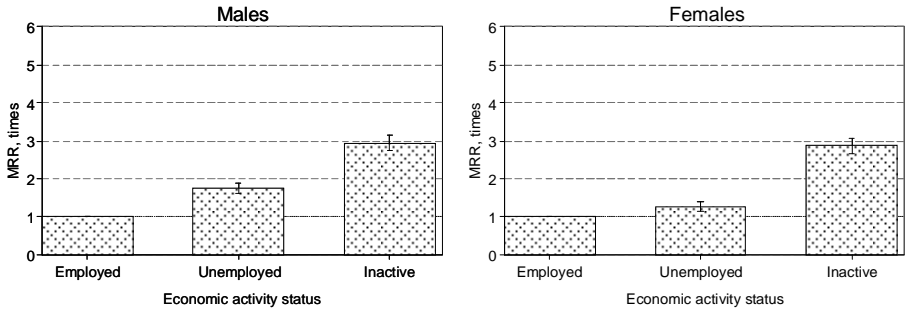
A. Education

Reference group (mortality rate ratio equals one): higher education.



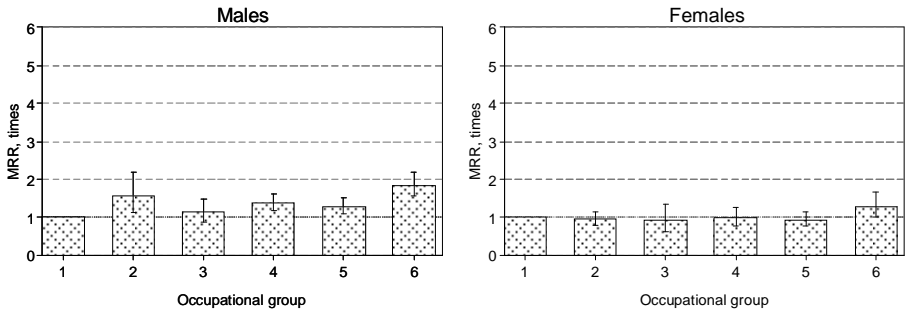
B. Economic activity status

Reference group (mortality rate ratio equals one): employed.



C. Occupational group

Reference group (mortality rate ratio equals one): upper non-manual employees.



Occupational groups: 1 – upper non-manual employees; 2 – lower non-manual employees; 3 – self-employed persons; 4 – skilled manual workers; 5 – unskilled manual workers; 6 – farmers and farm labourers.

3.4. Mortality due to diseases of the digestive system

Changes in mortality due to diseases of the digestive system, especially liver diseases related to alcohol consumption such as alcoholic liver diseases and cirrhosis of the liver, had an important impact on recent trends in life expectancy at birth in Lithuania (Jasilionis et al., 2011). Some other digestive system diseases (e.g. abdominal hernia) are included on the list of amenable (through medical care) causes of death (Nolte and McKee, 2004).

The study found striking mortality differences by each socioeconomic dimension (Fig. 11). Males and females with the lowest education have 4 times higher mortality risk than males and females with the highest education (Fig. 11A). Notable mortality rate ratios can also be observed for males and females with secondary education (about 2 times).

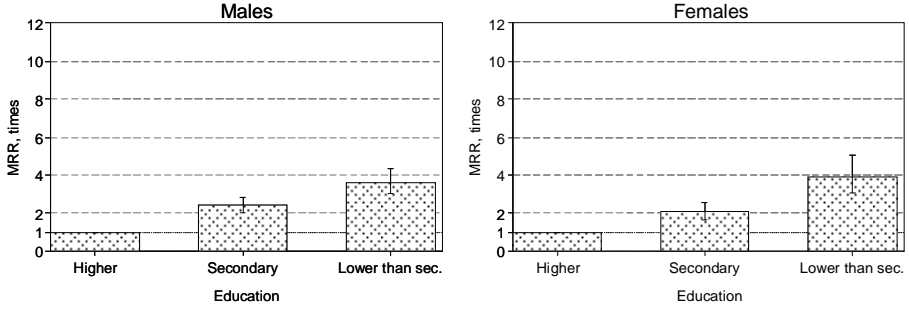
Mortality differences by economic activity status are even bigger than those by education (Fig. 11B). The mortality disadvantage of economically inactive males and females reaches 5–6 times. Slightly smaller mortality rate ratios are also attributable to unemployed males and females.

Male mortality rate ratios for virtually all occupational groups (with the exception of the reference group) exceeds 2 times (Fig. 11C). Among females, such differentials can be observed only for the self-employed, unskilled manual workers, and farmers and farm labourers. Record-level mortality rate ratios (almost 6 times for males and almost 8 times for females) are attributable to the group of farmers and farm labourers.

Figure 11. Mortality rate ratios for digestive system diseases, by education, economic activity status, and occupational group. Males and females (aged 30–59), 2001–2005.

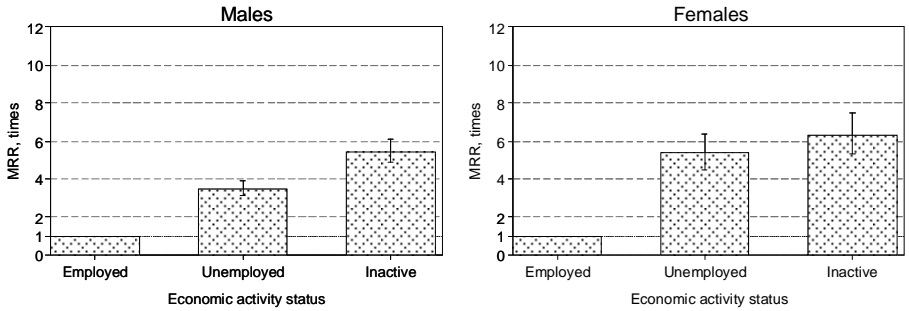
A. Education

Reference group (mortality rate ratio equals one): higher education.



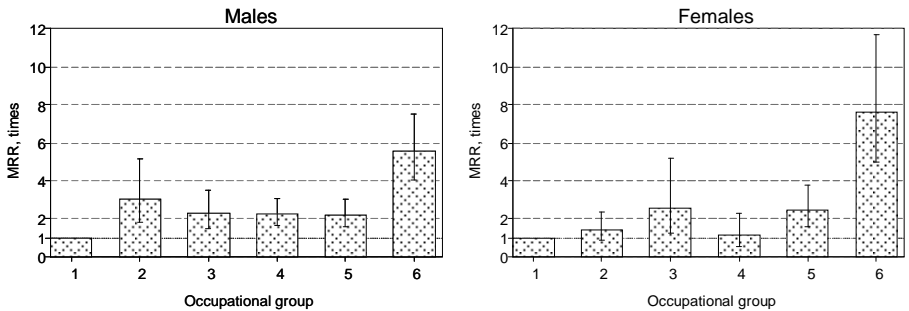
B. Economic activity status

Reference group (mortality rate ratio equals one): employed.



C. Occupational group

Reference group (mortality rate ratio equals one): upper non-manual employees.



Occupational groups: 1 – upper non-manual employees; 2 – lower non-manual employees; 3 – self-employed persons; 4 – skilled manual workers; 5 – unskilled manual workers; 6 – farmers and farm labourers.

3.5. Mortality due to external causes of death

3.5.1. Mortality due to all external causes of death

External causes of death remain one of the most important causes of death among males in Lithuania and other post-Soviet countries (Meslé, 2004; Jasilionis, 2009). In many developed low mortality countries, these causes of death are associated to elevated mortality in lower socioeconomic groups (Valkonen, 2001, 2006).

This study found very high mortality differences by education (Fig. 12A). Males and females with the lowest education have 4 times higher mortality risk than males and females with the highest education (Fig. 12A). The mortality disadvantage of males and females with secondary education is almost twice as small (about 2 times).

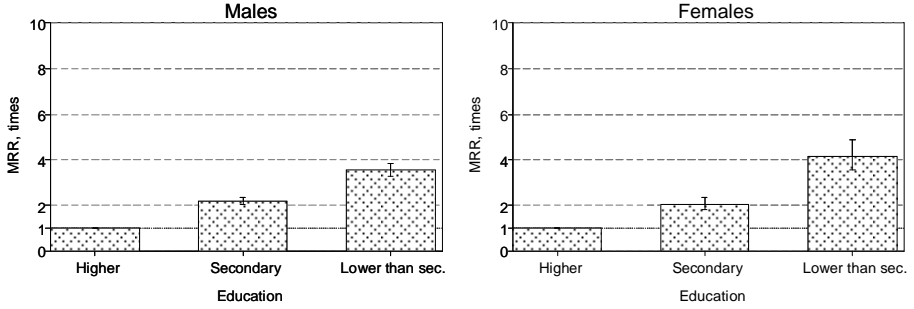
The biggest mortality differentials by economic activity status were observed among females: unemployed and economically inactive females show almost 4 times higher mortality than those in the economically active employed group (Fig. 12B). The corresponding mortality rate ratios for males are smaller (between 2 and 3 times).

The most striking mortality disadvantage by occupational group belongs to the group of farmers and farm labourers (Fig. 12C). Both males and females in this group show 5–6 times higher mortality risk than those in the upper non-manual employee group. A substantially higher (exceeding 2 times) mortality risk can also be observed among self-employed females, skilled manual workers (males), and unskilled manual workers (males and females).

Figure 12. Mortality rate ratios for all external causes of death combined, by education, economic activity status, and occupational group. Males and females (aged 30–59), 2001–2005.

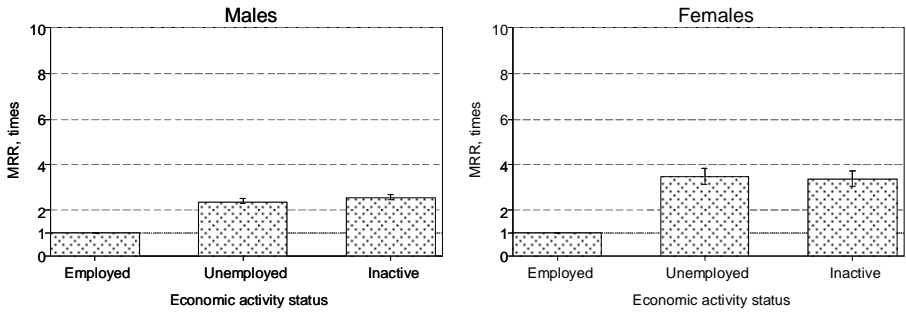
A. Education

Reference group (mortality rate ratio equals one): higher education.



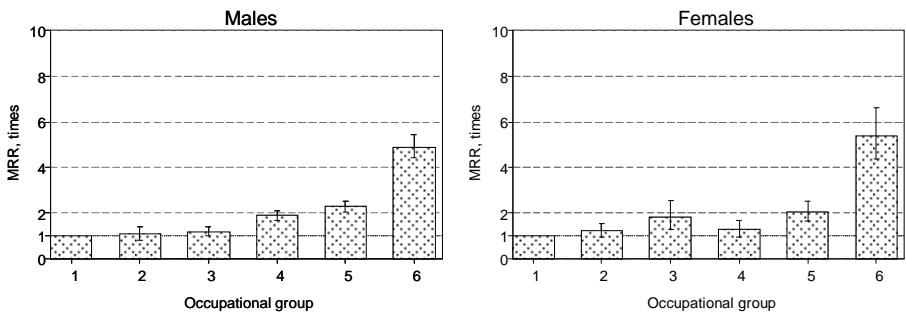
B. Economic activity status

Reference group (mortality rate ratio equals one): employed.



C. Occupational group

Reference group (mortality rate ratio equals one): upper non-manual employees.



Occupational groups: 1 – upper non-manual employees; 2 – lower non-manual employees; 3 – self-employed persons; 4 – skilled manual workers; 5 – unskilled manual workers; 6 – farmers and farm labourers.

3.5.2. Mortality due to traffic accidents

Transport accidents are also included on the list of avoidable (via health and intersectorial policies) causes of death (Nolte and McKee, 2004). Therefore, socioeconomic differences in mortality due to traffic accidents reflect possible differences in the access and effectiveness of special preventive programs.

The study found a similar magnitude of mortality differences by education for males and females (Fig. 13A). Males and females with lower than secondary education show 2 times higher mortality risk than males and females with higher education. The mortality disadvantage of males and females with secondary education is also notable (1.5–2 times).

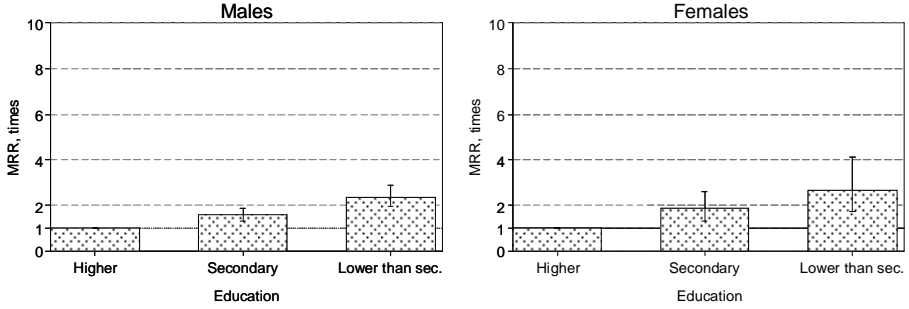
Strikingly high mortality was found among unemployed and economically inactive females (Fig. 13B). Mortality in these two groups exceeds the reference level by almost 4 times. Among males, these differences are almost twice as small.

Record-level (about 5 times) male and female mortality differences were found between the group of farmers and farm labourers and upper non-manual employees. MRRs of about 2 times can be observed for self-employed females, skilled manual workers (males), and unskilled manual workers (both sexes) (Fig. 13C).

Figure 13. Mortality rate ratios for traffic accidents, by education, economic activity status, and occupational group. Males and females (aged 30–59), 2001–2005.

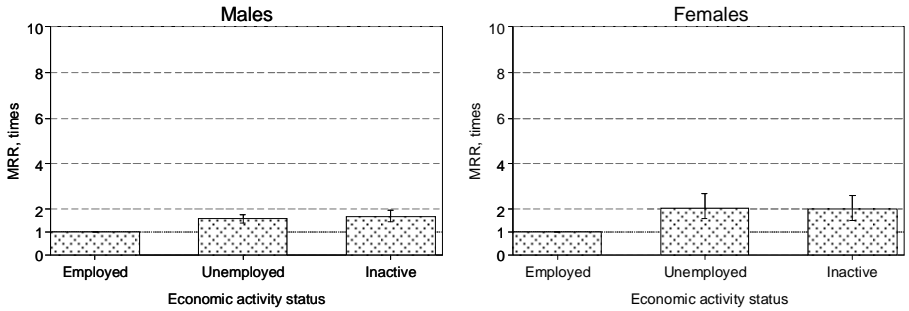
A. Education

Reference group (mortality rate ratio equals one): higher education.



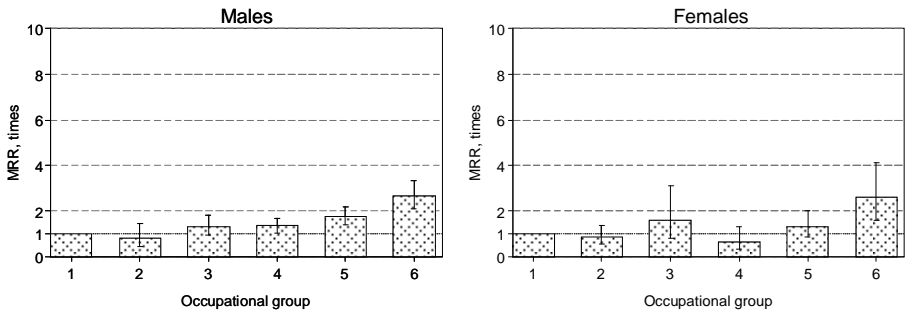
B. Economic activity status

Reference group (mortality rate ratio equals one): employed.



C. Occupational group

Reference group (mortality rate ratio equals one): upper non-manual employees.



Occupational groups: 1 – upper non-manual employees; 2 – lower non-manual employees; 3 – self-employed persons; 4 – skilled manual workers; 5 – unskilled manual workers; 6 – farmers and farm labourers.

3.5.3. Mortality due to suicide

Lithuania remains a firm leader in suicide mortality in Europe and the world (Gailienė, 2004; WHO, 2011). Prior studies suggest that this unfavourable ranking is attributable to extremely high suicide mortality in some sociodemographic groups (Jasilionis et al., 2006).

Educational differences in mortality due to suicide are greater among males than among females (Fig. 14A). Males with the lowest education show 4 times higher mortality than males with the highest education, whereas the corresponding gap among females is about 3 times. Males with secondary education have a slightly smaller mortality disadvantage (above 2 times).

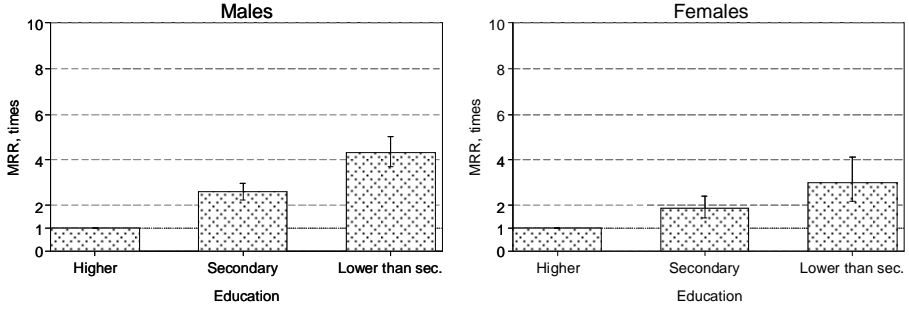
Interestingly, females show a greater gradient by economic activity status (Fig. 14B). The disadvantage in suicide mortality of economically inactive and unemployed females is about 3 times, whereas the corresponding gap among males is only about 2 times.

The study found extremely pronounced suicide mortality differences by occupational group. In particular, MRRs are high for the group of farmers and farm labourers (more than 5 times for males and almost 4 times for females). The mortality disadvantage exceeds 2 times for skilled manual workers (males) and unskilled manual workers (both sexes) (Fig. 14C).

Figure 14. Mortality rate ratios for suicides, by education, economic activity status, and occupational group. Males and females (aged 30–59), 2001–2005.

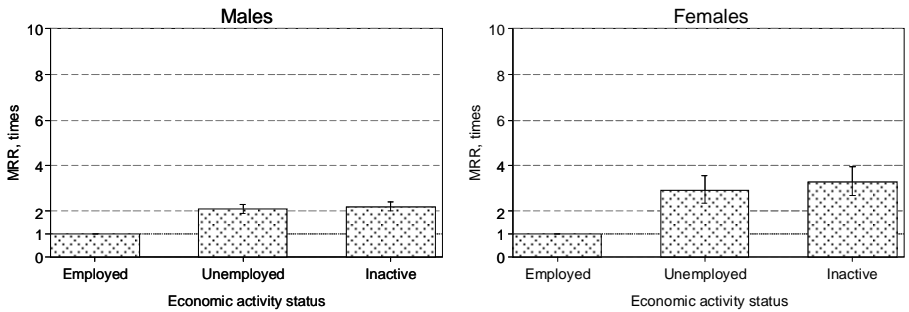
A. Education

Reference group (mortality rate ratio equals one): higher education.



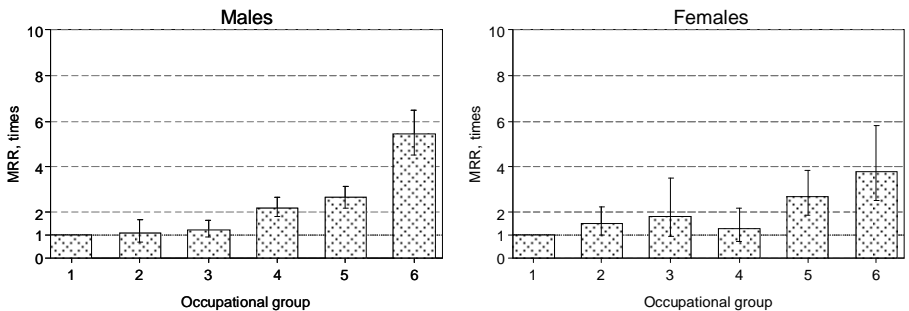
B. Economic activity status

Reference group (mortality rate ratio equals one): employed.



C. Occupational group

Reference group (mortality rate ratio equals one): upper non-manual employees.



Occupational groups: 1 – upper non-manual employees; 2 – lower non-manual employees; 3 – self-employed persons; 4 – skilled manual workers; 5 – unskilled manual workers; 6 – farmers and farm labourers.

3.5.4. Mortality due to homicide

The results revealed that socioeconomic differences in homicide mortality are greater among females than among males (Fig. 15). For example, females with the lowest education have a 6 times higher risk of dying from homicide than females with the highest education. At the same time, the corresponding MRR for males is about 4 times (Fig. 15A).

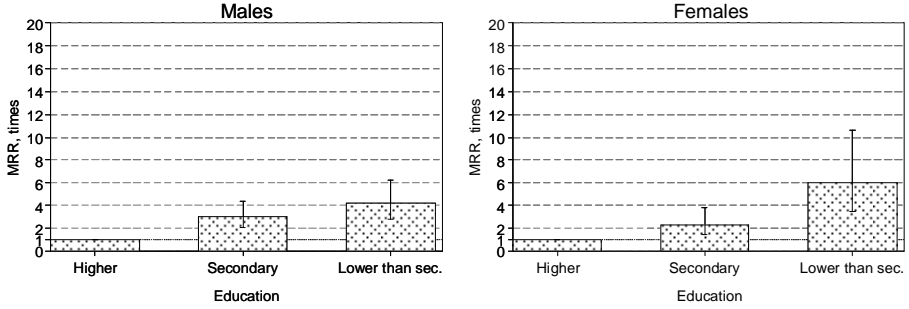
Very high homicide mortality risk is also attributable to unemployed females (the MRR of this group is about 5 times). The mortality disadvantage of economically inactive males and females are also very notable (about 4 times) (Fig. 15B).

As for occupational group, once again the group of farmers and farm labourers is in the worst position (Fig. 15C). Statistically higher homicide mortality than in the reference group can be observed for the unskilled manual workers group. MRRs for other occupational groups are statistically insignificant (also due to a very small number of deaths in some groups).

Figure 15. Mortality rate ratios for homicides, by education, economic activity status, and occupational group. Males and females (aged 30–59), 2001–2005.

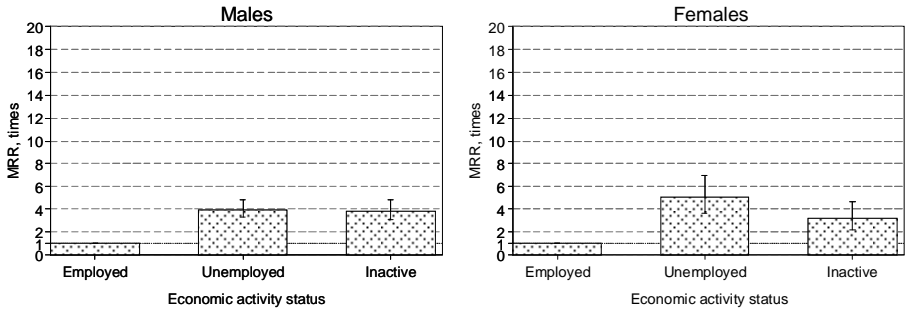
A. Education

Reference group (mortality rate ratio equals one): higher education.



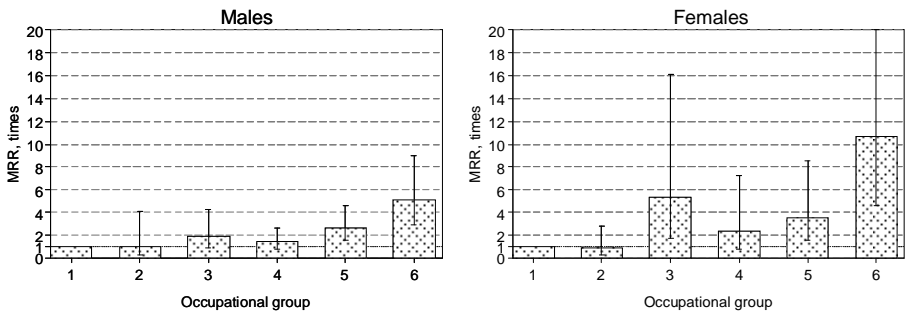
B. Economic activity status

Reference group (mortality rate ratio equals one): employed.



C. Occupational group

Reference group (mortality rate ratio equals one): upper non-manual employees.



Occupational groups: 1 – upper non-manual employees; 2 – lower non-manual employees; 3 – self-employed persons; 4 – skilled manual workers; 5 – unskilled manual workers; 6 – farmers and farm labourers.

3.5.5. Mortality due to all other external causes of death

This group includes some other important external causes of death such as exposure to cold, non-alcoholic accidental poisonings, drownings, accidental falls, and exposure to fire. Once again, the findings highlight very striking differences by each socioeconomic dimension and suggest that these differences are more pronounced among females (Fig. 16).

A very striking mortality difference can be observed between lower and higher educated females (about 5 times), whereas the corresponding gap among males is smaller (almost 4 times) (Fig. 16A).

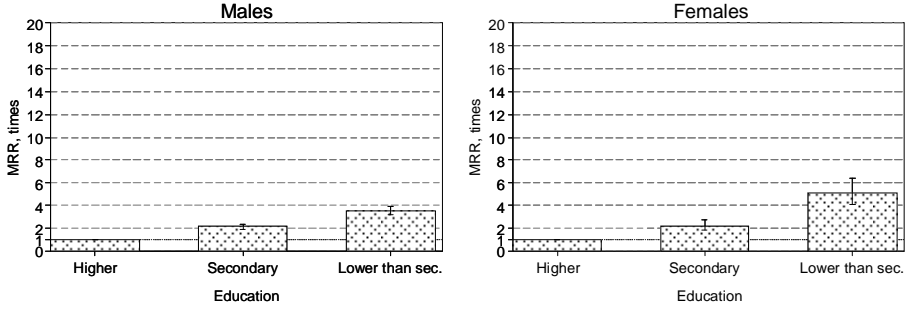
As for economic activity status, MRRs for unemployed and economically inactive females are also higher than they are for unemployed and economically inactive males (about 4 times and 2.5 times) (Fig. 16B).

Once again, a striking mortality disadvantage was observed for the group of farmers and farm labourers (8 times for females and 6 times for males) (Fig. 16C). Skilled manual workers (males) and unskilled manual workers (both sexes) also showed moderately higher (about 2 times) mortality than those in the group of upper non-manual employees.

Figure 16. Mortality rate ratios for all other external causes of death, by education, economic activity status, and occupational group. Males and females (aged 30–59), 2001–2005.

A. Education

Reference group (mortality rate ratio equals one): higher education.



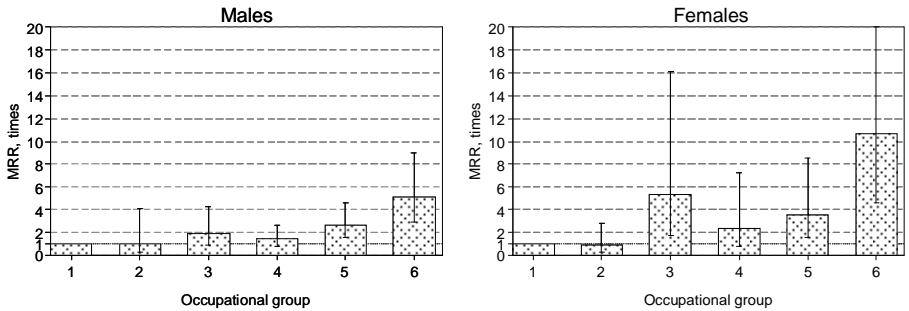
B. Economic activity status

Reference group (mortality rate ratio equals one): employed.



C. Occupational group

Reference group (mortality rate ratio equals one): upper non-manual employees.



Occupational groups: 1 – upper non-manual employees; 2 – lower non-manual employees; 3 – self-employed persons; 4 – skilled manual workers; 5 – unskilled manual workers; 6 – farmers and farm labourers.

3.6. Mortality due to alcohol-related causes of death

Binge drinking and excessive alcohol consumption remains one of the most important factors of excess mortality in Lithuania and other post-Soviet countries (Meslé, 2004; Jasilionis et al., 2011). Alcohol-related causes of death are also responsible for notable socioeconomic mortality differentials even in the low mortality Western countries (Mäkela et al., 1997; Mäki, Martikainen, 2008).

As in the case of external causes of death, greater differences in alcohol-related mortality can be observed for females (Fig. 17). Males and females with the lowest education have about 4 and 5 times higher mortality than males and females with the highest education (Fig. 17A).

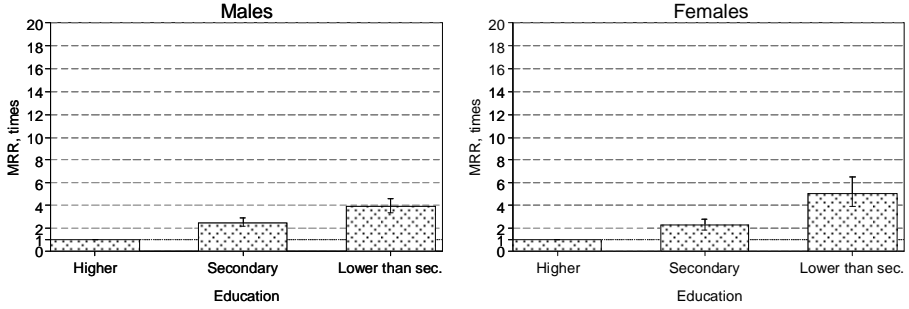
Unemployed and economically inactive females show 6 times higher mortality risks than economically active employed females (Fig. 17B). The corresponding MRRs for unemployed and economically inactive males are about 4 times.

The most striking differentials were found for occupational status. MRR for female farmers and farm labourers is 12 times, whereas the corresponding mortality disadvantage among males is about 7 times (Fig. 17C). For the remaining occupational groups, the MRRs are about 2 times (for both sexes).

Figure 17. Mortality rate ratios for alcohol-related causes of death, by education, economic activity status, and occupational group. Males and females (aged 30–59), 2001–2005.

A. Education

Reference group (mortality rate ratio equals one): higher education.



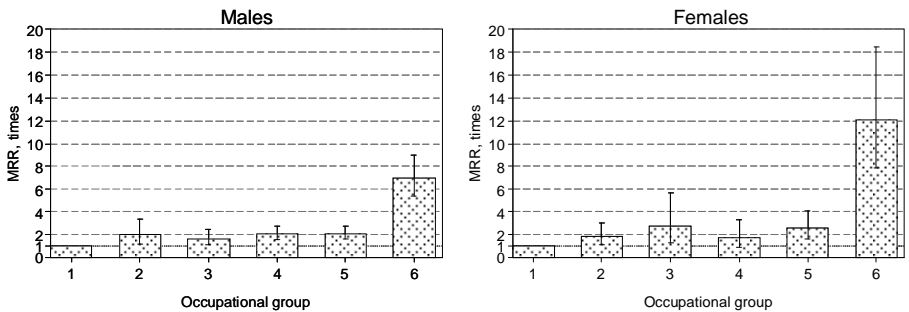
B. Economic activity status

Reference group (mortality rate ratio equals one): employed.



C. Occupational group

Reference group (mortality rate ratio equals one): upper non-manual employees.



Occupational groups: 1 – upper non-manual employees; 2 – lower non-manual employees; 3 – self-employed persons; 4 – skilled manual workers; 5 – unskilled manual workers; 6 – farmers and farm labourers.

3.7. Mortality due to infectious diseases and diseases of the respiratory system

3.7.1. Mortality due to infectious diseases

Previous studies pointed to striking differences in mortality due to infectious diseases by education and marital status (Jasilionis, Stankūnienė and Shkolnikov, 2006). Many important infectious diseases such as tuberculosis and septicaemia are included on the list of amenable causes of death (Nolte and McKee, 2004). Socioeconomic mortality differences reflect differences in access to basic medical services and prevention and large inequalities in basic living conditions such as hygienic conditions.

This study found very large male and female mortality differences by all three socioeconomic dimensions (Fig. 18). The small number of deaths in some socioeconomic groups makes interpretation of findings on female differentials very difficult, however.

Males with lower than secondary education show 8 times higher mortality risks than males with higher education, whereas the corresponding disadvantage of males with secondary education is about 3 times (Fig. 18A).

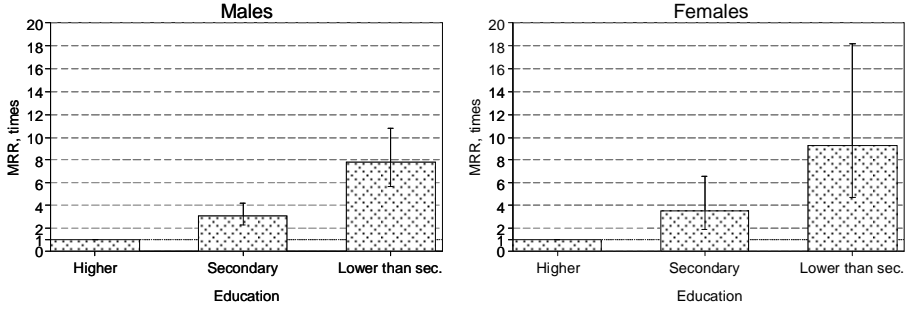
Male mortality differences by economic activity status are even higher (Fig. 18B). The mortality disadvantage of economically inactive and unemployed males reaches about 13 and 5 times.

Statistically higher MRRs by occupational group were found only for self-employed and skilled and unskilled manual workers (Fig. 18C). Due to the very small numbers of deaths, MRRs for the remaining occupational groups were not estimated.

Figure 18. Mortality rate ratios for infectious diseases, by education, economic activity status, and occupational group. Males and females (aged 30–59), 2001–2005.

A. Education

Reference group (mortality rate ratio equals one): higher education.



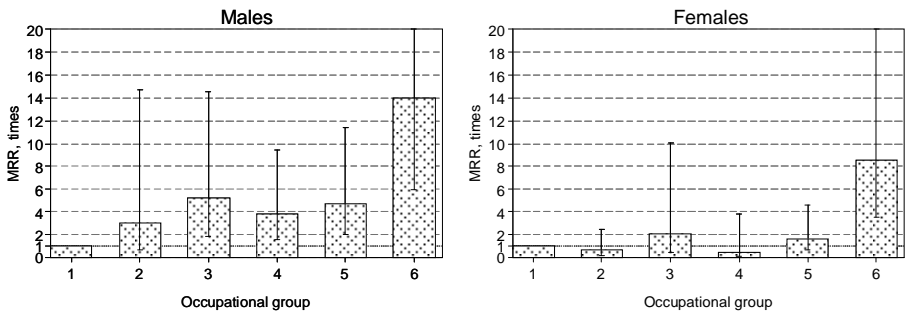
B. Economic activity status

Reference group (mortality rate ratio equals one): employed.



C. Occupational group

Reference group (mortality rate ratio equals one): upper non-manual employees.



Occupational groups: 1 – upper non-manual employees; 2 – lower non-manual employees; 3 – self-employed persons; 4 – skilled manual workers; 5 – unskilled manual workers; 6 – farmers and farm labourers.

3.7.2. Mortality due to diseases of the respiratory system

Mortality due to some respiratory diseases (especially flu and pneumonia) is considered an important indicator of the effectiveness of medical care (Nolte and McKee, 2004). Previous research on Lithuania highlighted substantial differences in mortality due to diseases of the respiratory system by education (Jasilionis, Stankūnienė and Shkolnikov, 2006).

Adult mortality differences by education are striking for both males and females (Fig. 19A). The mortality disadvantage of lower educated males and females reaches 10 and 8 times.

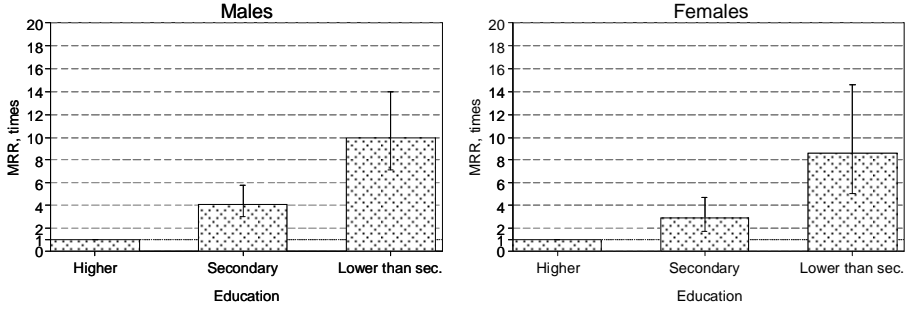
Economic activity status is also an important determinant of mortality due to this cause (Fig. 19B). The MRRs for economically inactive males and females are about 7 times, whereas unemployed males and females show a smaller disadvantage (3–4 times).

Once again results confirm the strikingly unfavourable situation of farmers and farm labourers (7–9 times higher mortality than those in the group of upper non-manual employees) (Fig. 19C). A mortality disadvantage of 2–3 times can be observed also for skilled and unskilled manual workers (males). Due to the small number of deaths, the interpretation of the occupation-specific MRRs for females is unfortunately difficult.

Figure 19. Mortality rate ratios for diseases of the respiratory system, by education, economic activity status, and occupational group. Males and females (aged 30–59), 2001–2005.

A. Education

Reference group (mortality rate ratio equals one): higher education.



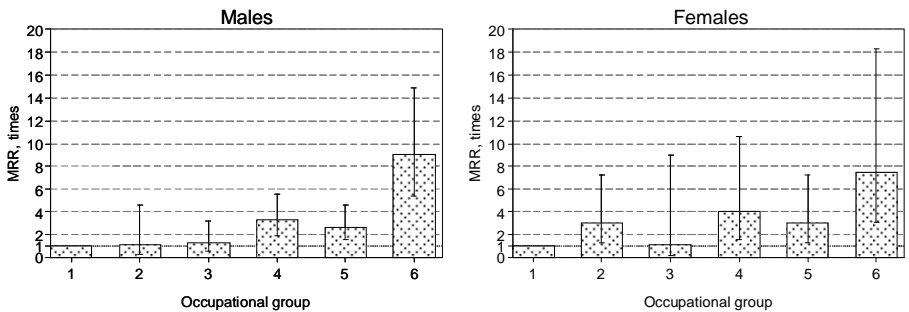
B. Economic activity status

Reference group (mortality rate ratio equals one): employed.



C. Occupational group

Reference group (mortality rate ratio equals one): upper non-manual employees.



Occupational groups: 1 – upper non-manual employees; 2 – lower non-manual employees; 3 – self-employed persons; 4 – skilled manual workers; 5 – unskilled manual workers; 6 – farmers and farm labourers.

3.8. Mortality due to all other causes of death

This remaining group of causes of death includes some very important causes of death such as nervous system diseases or ill-defined causes of death. Some of these causes of death (diabetes mellitus, epilepsy, nephrosis) are included on the list of amenable causes of death (Nolte and McKee, 2004).

Males and females show a rather similar pattern of mortality differences by education (Fig. 20A). Lower educated males and females show about 3 times higher mortality than higher educated males and females.

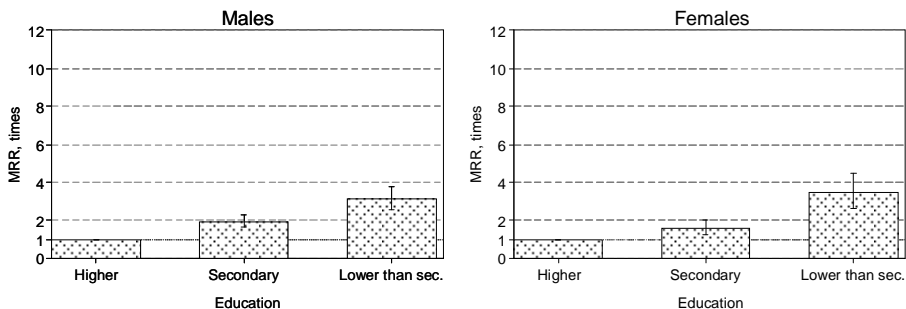
Mortality differences by economic activity status are much more pronounced (Fig. 20B). The mortality disadvantage of economically inactive females reaches a striking level of 10 times, whereas the corresponding gap for males is 7 times. The MRRs for unemployed males and females are much smaller (they are about 2.5 times).

As for occupational group, the only statistically significant differences can be observed by comparing the groups of farmers and farm labourers and upper non-manual employees (4 and 2 times for males and females) (Fig. 20C).

Figure 20. Mortality rate ratios for all other causes of death, by education, economic activity status, and occupational group. Males and females (aged 30–59), 2001–2005.

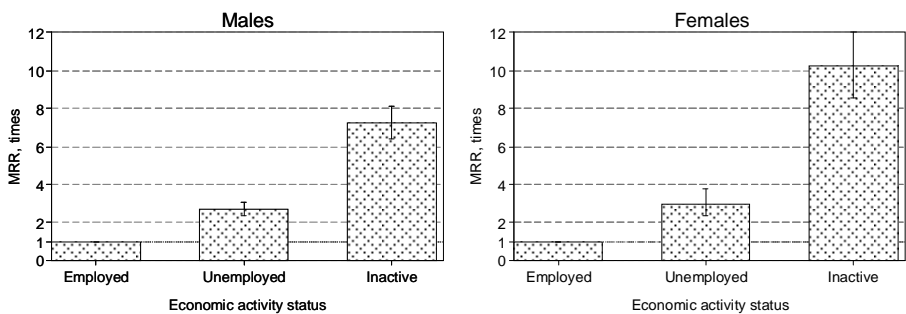
A. Education

Reference group (mortality rate ratio equals one): higher education.



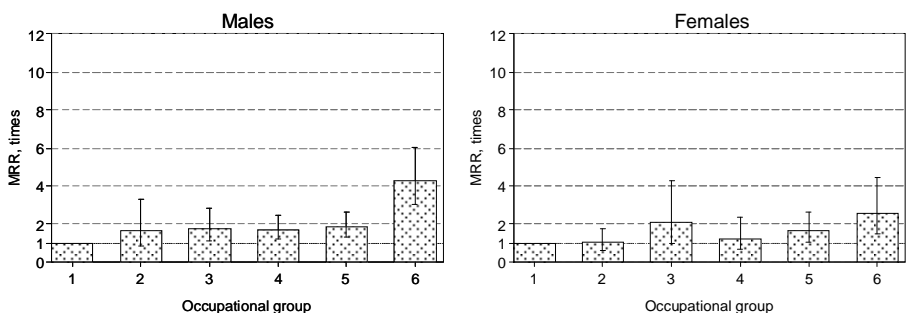
B. Economic activity status

Reference group (mortality rate ratio equals one): employed.



C. Occupational group

Reference group (mortality rate ratio equals one): upper non-manual employees.



Occupational groups: 1 – upper non-manual employees; 2 – lower non-manual employees; 3 – self-employed persons; 4 – skilled manual workers; 5 – unskilled manual workers; 6 – farmers and farm labourers.

4. RELATIVE AND ABSOLUTE MORTALITY DIFFERENTIALS AS REFLECTED BY *GINI*-TYPE INDICATORS

The previous chapter of this book provides widely used measures of relative mortality inequality, mortality rate ratios. Using the lowest mortality group as a reference, mortality rate ratios allow maximal differences between two extremes (groups with the lowest and highest mortality) to be identified. In this way, one can identify the most vulnerable socioeconomic groups. However, this widely used method does not allow the real magnitude of mortality differences to be fully assessed. This is because mortality rate ratios do not account for a substantial part of total mortality differences (Shkolnikov et al., 2011). For example, mortality rate ratios usually do not account for mortality differences between intermediate groups (e.g. between secondary and lower education groups). In addition, range-type measures ignore the importance (population weights) of socioeconomic groups (Anand et al., 2001; Moser et al., 2005).

This chapter presents a set of Gini-type indicators of inter-group mortality differentials (Gini coefficients and average inter-group difference). These indicators allow mortality rates in all socioeconomic groups and the weights of these groups in the total population to be accounted for.

Table 2 suggests that relative mortality differences (as reflected by Gini coefficients by education) for all causes of death are almost of the same size for both males and females. Absolute mortality differences are however almost 3 times bigger among males. The highest relative mortality differentials by education were found for infectious diseases and diseases of the respiratory system. Females show a higher educational gradient in the cases of relative mortality differences for diseases of the cardiovascular system, homicides, all other external causes of death, and alcohol-related causes of death. Among males, much bigger education-specific Gini coefficients were observed for mortality due smoking-related cancers.

The biggest absolute mortality inequalities (AIDs) by education are attributable to mortality due to external causes of death among males and due to diseases of the cardiovascular system among females. Among males,

notable absolute mortality differentials were also observed for alcohol-related causes of death, diseases of the cardiovascular system, and all neoplasms. As for other causes of death for females, substantial education-specific AIDs were found only for external and alcohol-related causes of death (Table 2). These findings suggest that high relative mortality differences do not necessarily correspond to equally high absolute mortality differentials. Very high relative mortality differences for some rare causes of death (e.g. infectious diseases) are often associated with a very low number of deaths. AIDs therefore allow the importance of mortality inequality (in terms of losses) for the entire population to be considered.

Table 2. *Inter-group mortality differentials by education as reflected by Gini coefficients (G) and average inter-group difference (AID). Males and females (aged 30–59), 2001–2005.*

	G		AID	
	Males	Females	Males	Females
<i>All causes of death</i>	14.7	14.4	142.8	44.4
All dis. of the cardiovascular sys.	12.5	20.4	35.6	14.5
Ischaemic heart dis.	12.6	21.1	20.9	5.5
Cerebrovascular dis.	10.8	17.8	4.4	3.6
All other cardiovascular dis.	13.0	21.7	10.3	5.4
All neoplasms	12.5	5.1	20.6	5.7
Smoking-related cancer	18.9	9.5	9.1	0.6
All other neoplasms	10.1	4.2	11.3	2.0
Infectious dis.	26.1	29.1	7.3	1.6
Dis. of the respiratory sys.	26.6	27.5	9.0	1.9
Dis. of the digestive sys.	15.0	17.7	10.1	4.5
All external causes of death	15.5	18.8	52.6	12.6
Transport accidents	11.2	14.6	5.0	1.4
Suicide	17.1	14.9	17.7	2.6
Homicide	15.6	23.0	2.8	1.3
All other external causes of death	15.7	21.2	27.2	7.3
Alcohol-related causes of death	16.0	20.9	14.8	5.8
All other causes of death	14.9	17.4	7.7	3.5

Inter-group mortality differences by economic activity status and occupational group show a similar cause-specific pattern as in the case of educational differences (Tables 3 and 4). However, both Gini (G) and average inter-group difference (AID) measures for both former socioeconomic dimensions are much higher than for education. Differently from education, female activity- and occupation-specific Gini coefficients for smoking-related cancers are as strikingly high as for males (Tables 3 and 4).

Table 3. *Inter-group mortality differentials by economic activity status as reflected by Gini coefficients (G) and average inter-group difference (AID). Males and females (aged 30–59), 2001–2005.*

	G		AID	
	Males	Females	Males	Females
<i>All causes of death</i>	26.5	30.8	248.8	94.1
All dis. of the cardiovascular sys.	26.6	35.1	53.9	24.6
Ischaemic heart dis.	25.6	40.6	30.1	10.6
Cerebrovascular dis.	25.3	28.4	7.5	5.6
All other cardiovascular dis.	29.5	34.6	16.1	8.5
All neoplasms	20.6	20.9	25.6	23.2
Smoking-related cancer	21.9	26.1	8.1	1.6
All other neoplasms	20.0	17.2	16.9	8.2
Infectious dis.	53.0	50.3	10.0	2.7
Dis. of the respiratory sys.	42.9	42.8	9.7	3.0
Dis. of the digestive sys.	36.3	42.6	16.2	10.7
All external causes of death	21.6	29.8	50.6	19.7
Transport accidents	11.2	17.1	3.8	1.6
Suicide	17.7	27.8	13.3	4.8
Homicide	32.7	36.0	3.3	2.0
All other external causes of death	25.6	34.0	29.6	11.5
Alcohol-related causes of death	34.2	42.0	19.7	11.4
All other causes of death	40.2	50.7	15.0	10.2

Table 4. *Inter-group mortality differentials by occupational group as reflected by Gini coefficients (G) and average inter-group difference (AID). Males and females (aged 30–59), 2001–2005.*

	G		AID	
	Males	Females	Males	Females
<i>All causes of death</i>	32.4	32.9	310.9	100.2
All dis. of the cardiovascular sys.	30.6	38.4	85.3	27.1
Ischaemic heart dis.	29.5	43.9	47.7	11.4
Cerebrovascular dis.	28.9	31.1	11.6	6.2
All other cardiovascular dis.	33.9	39.2	26.3	9.6
All neoplasms	24.6	19.8	40.2	21.8
Smoking-related cancer	29.8	29.8	14.7	1.8
All other neoplasms	22.5	16.0	24.8	7.6
Infectious dis.	54.7	53.2	14.9	2.8
Dis. of the respiratory sys.	48.5	47.1	16.4	3.3
Dis. of the digestive sys.	42.7	49.1	28.7	12.4
All external causes of death	31.0	38.0	105.0	25.2
Transport accidents	18.7	23.4	8.3	2.2
Suicide	28.3	34.4	29.6	5.9
Homicide	42.5	46.2	7.3	2.6
All other external causes of death	35.4	43.3	61.0	14.7
Alcohol-related causes of death	43.2	50.2	39.8	13.8
All other causes of death	43.9	48.4	21.9	9.7

5. ASSESMENT OF PUBLIC HEALTH BURDEN OF SOCIOECONOMIC MORTALITY DIFFERENCES: CAUSE-SPECIFIC POPULATION ATTRIBUTABLE FRACTIONS

One of the most important and widely used indicators of the public health burden of socioeconomic inequalities in health is population attributable fraction (PAF). This measure is a hypothetical estimate of the proportion of all deaths that can be avoided (or to what extent total mortality would be diminished) if all population groups had the same rate of mortality as the lowest mortality group. For example, how many deaths would be avoided if males with secondary and lower than secondary education had the same mortality rate as those in the highest education group?

Table 5 shows that hypothetical elimination of mortality inequality by education would allow at least 35% of adult male deaths to be avoided. The effect of the removal of mortality differentials by occupational group would be almost twice as large and allow 67% of deaths to be avoided. The latter figure corresponds to about 3,000 deaths during the period between 6 April 2001 and 31 December 2005. The corresponding shares for females range from 38% in case of elimination of educational differentials to 57% in case of removal of differences by occupational status.

In assessments of the public burden of inequality, it is also important to consider the importance of causes of death. It is obvious that avoiding 33% of male deaths due to cardiovascular system diseases (due to the removal of inequality by economic activity status) would be more beneficial (in terms of numbers of deaths) than avoiding as many as 68% of deaths due to infectious diseases.

Table 5 suggests that the biggest public health burden originates from mortality differences by occupational group, whereas the smallest effect is attributable to mortality differences by economic activity status (males) and education (females). The study found that the biggest public health burden (in absolute numbers of excess deaths) related to socioeconomic differences in cardiovascular mortality stem from inequality by occupational group (60%

for males and 68% for females). Substantially smaller population attributable fractions were found for mortality due to neoplasms (Table 5). The exceptions concern male mortality differences by education for all neoplasms and male mortality differences by education and occupational group for smoking-related cancers. At the same time, female PARs are much smaller. The only notable public health burden is attributable to female mortality differences by occupational group for smoking-related cancers.

The findings also suggest that removal of mortality differences would lead to almost complete disappearance of some very unfavourable causes of death in society (Table 5). For example, the elimination of educational differentials would allow 69% of deaths due to infectious diseases and 78% of deaths due to diseases of the respiratory system to be avoided. The effect due to removal of mortality differences by economic activity status and occupational group would be even greater. In this case, the total number of deaths due to alcohol-related and external causes of death, infectious diseases, and diseases of the respiratory system would decrease by 70–90%.

Table 5. Population attributable fractions (percentages) by socioeconomic variable and causes of death. Males and females (aged 30–59), 2001–2005.

	Education		Economic activity status		Occupational group	
	Males	Females	Males	Females	Males	Females
<i>All causes of death</i>	51.8	37.9	35.2	40.8	66.9	56.5
All dis. of the cardiovascular sys.	45.4	50.8	34.9	46.4	60.5	68.9
Ischaemic heart dis.	47.0	48.0	33.5	53.5	59.5	72.5
Cerebrovascular dis.	42.7	45.5	32.6	37.6	60.2	59.8
All other cardiovascular dis.	43.5	57.9	38.9	45.8	62.8	72.4
All neoplasms	47.4	15.1	26.6	25.7	54.4	24.4
Smoking-related cancers	63.3	18.8	28.8	34.8	74.4	45.1
All other neoplasms	41.2	13.1	25.7	20.9	46.2	20.4
Infectious dis.	69.4	72.7	67.6	65.8	95.0	83.1
Dis. of the respiratory sys.	78.3	66.2	56.3	55.7	88.6	87.5
Dis. of the digestive sys.	56.6	49.7	48.5	59.4	82.3	83.4
All external causes of death	54.5	51.4	30.3	42.6	69.1	70.7
Transport accidents	38.3	46.0	15.7	24.4	46.5	36.8
Suicide	61.0	45.2	24.9	39.1	68.7	67.2
Homicide	66.0	57.4	46.4	48.9	79.5	85.8
All other external causes of death	53.6	55.0	35.9	48.6	74.2	78.8
Alcohol-related causes of death	59.1	55.0	47.7	59.8	82.5	87.5
All other causes of death	49.6	40.9	50.4	63.8	78.8	77.2

6. CONCLUSION

This study presents the first comprehensive analysis of socioeconomic differentials in adult mortality in Lithuania. The main strength of the study is related to the use of high quality census-linked data covering the entire population. Socioeconomic mortality differentials were assessed using both traditional range-type and advanced Gini-type measures of inequality. This approach allowed the size of mortality differentials to be measured more precisely. To evaluate the consequences of mortality differences on public health, the concept of population attributable fraction was applied. It allowed estimating the share of deaths that could be avoided if socioeconomic mortality inequalities were eliminated. Such information can be further used by policy makers to estimate economic losses due to mortality inequality in the adult (working age) population in Lithuania. Finally, all analyses were performed by detailed cause of death, highlighting causes related to health behaviours (smoking and alcohol consumption) and causes of death amenable through medical care and prevention. The weakness of this study is related to the fact that information about occupation was available only for economically active, employed members of the population. It can therefore be assumed that estimates of mortality inequality by occupational group are conservative and the true magnitude of inequality is even higher.

The study found that the population groups with the highest mortality risk are similar to other countries. Lower than secondary education, unemployed, and economically inactive statuses and the manual worker occupation group were associated with a significantly higher mortality risk. Distinctive features of the Lithuanian pattern of socioeconomic mortality differentials concern a higher magnitude of mortality differentials and the strikingly unfavourable health situation of farmers and farm workers. Unlike the 'old' EU member states, this group in Lithuania showed the worst mortality indicators compared to other occupational groups.

For the majority of causes of death, both relative and absolute mortality inequalities were higher than they are in the 'old' EU member states. The highest absolute population losses related to socioeconomic differences in mortality are attributable to excess mortality due to diseases of the cardiovascular system, external causes of death, diseases of the digestive

system, and alcohol-related deaths. This suggests the striking prevalence of unhealthy life styles (smoking and alcohol consumption), poor psychosocial conditions, and lack of access to modern medical treatment and prevention among the lower socioeconomic groups in Lithuania.

The highest relative mortality differentials were observed for infectious diseases and diseases of the respiratory system. These causes of death seem to concentrate exclusively among the lower educated, unemployed, economically inactive, and those involved in manual or agriculture work. This suggests the extremely poor (economic and hygienic) living conditions of these groups in Lithuania.

The existence of such striking socioeconomic differences in adult mortality in Lithuania shows that social and economic development has not been sustainable. Extremely high levels of mortality inequalities (especially at working ages) produce substantial economic losses (in terms of health care and social budgets) (Mackenbach, Meerding, Kunst, 2011). It has been suggested that data on mortality and mortality differentials may serve as a powerful tool to provide reliable information about the direct consequences of economic development and reforms on the population (Sen, 1998). International studies recommend that continuous and reliable monitoring of socioeconomic mortality inequalities should be based on high quality census-linked data. Although such data often requires the investment of financial and human capital, such monitoring together with properly designed social and health policies would bring considerably higher socioeconomic benefits.

It is expected that the new and comprehensive findings presented in this book will allow more objective judgements about the effectiveness of the existing public health policies to be performed and create preconditions for designing and implementing more effective specific programs devoted to reducing the prevalence of health-damaging behaviours in Lithuania.

SUAUGUSIŲ LIETUVOS GYVENTOJŲ SOCIOEKONOMINIAI MIRTINGUMO SKIRTUMAI

Santrauka

Dideli gyventojų mirtingumo skirtumai bei jų demografinės ir ekonominės pasekmės tebėra vienas svarbiausių tarptautinių ir nacionalinių gyventojų sveikatos tyrimų objektų. Tokie tyrimai ypač aktualūs posovietinėms šalims, kurioms būdingas deformuotas gyventojų epidemiologinės ir sveikatos raidos modelis, įvardijamas sovietiniu mirtingumo modeliu, tarp jų ir Lietuvai.

Patikimiausi gyventojų mirtingumo skirtumų duomenys gaunami taikant mikroduomenų (gyventojų surašymo, mirtingumo ir migracijos) bazių jungimo metodą. Daugelyje šalių iki šiol mirtingumo skirtumų tyrimai vykdomi taikant riboto informatyvumo agreguotus, su surašymu nesujungtus statistikos duomenis. Tyrimai rodo, kad tokie duomenys dažnai iškraipo realią situaciją (Kunst ir kt., 2004; Jasilionis ir kt., 2011). Viena pirmųjų naujosiose Europos Sąjungos šalyse narėse mikroduomenų bazių jungimo metodą pradėjo taikyti Lietuva (Jasilionis, Stankūnienė, Shkolnikov, 2006). Tačiau iki šiol tokių tyrimų metu buvo vertinama tik viena iš socioekonominės mirtingumo diferenciacijos dimensijų – mirtingumo skirtumai pagal išsilavinimą.

Šis tyrimas praplėtė Lietuvos gyventojų mirtingumo socioekonominių skirtumų ištirtumą keliomis kryptis. Pirma, tyrimas pateikė patikimą naujos kartos informaciją apie socioekonominius gyventojų mirtingumo skirtumus kompleksškai įvertinęs tris dimensijas – išsilavinimą, ekonominio aktyvumo statusą ir profesijų grupes. Antra, gyventojų mirtingumo diferenciacija buvo įvertinta taikant tiek plačiai naudojamus ranginius, tiek ir inovacinius tarpgrupinius Džini tipo nelygybės rodiklius. Tokia metodologinė prieiga leido nustatyti bendrą mirtingumo skirtumų lygį, o ne remtis vien ribinių (didžiausio ir mažiausio mirtingumo) grupių palyginimu. Trečia, tyrimo metu buvo įvertintos gyventojų mirtingumo socioekonominių skirtumų pasekmės visuomenės sveikatai. Šie duomenys leidžia visuomenės sveikatos specialistams bei sveikatos politikos kūrėjams tiksliai identifikuoti išvengiamų mirčių skaičius ir dėl mirtingumo skirtumų kylančius ekonominius nuostolius. Ketvirta, šis tyrimas naujas ir tuo, kad mirtingumo skirtumai buvo vertinami pagal detalias mirties priežastis, didelį

dėmesį skiriant mirties priežastims, susijusioms su gyvensena, taip pat dėl medicinos ir prevencijos priemonių išvengiamos mirties priežastims.

Tyrimo metu nustatyta, kad, nors mirtingumo skirtumai pagal mirties priežastis yra nevienodi, didžiausios ir mažiausios mirtingumo rizikos yra tos pačios. Labai padidėjusi mirtingumo rizika siejama su žemesnio nei vidurinis išsilavinimo, bedarbių, ekonomiškai neaktyvių, rankinį darbą dirbančių kvalifikuotų ir nekvalifikuotų darbininkų grupėmis. Ypač aukštu mirtingumo lygiu išsiskiria savarankiškai dirbančių ūkininkų ir ūkio darbininkų grupė. Itin nepalanki mirtingumo situacija pastarojoje gyventojų grupėje yra išskirtinė ir tarptautiniu mastu. Daugumoje Vakarų šalių šios grupės mirtingumo lygis tik nedaug didesnis ar net mažesnis nei tarnautojų grupėse (Valkonen ir kt., 1993; Valkonen, 2001; Saurel-Cubizoles ir kt., 2009).

Tyrimo rezultatai rodo, kad Lietuvos suaugusiems gyventojams būdingi labai dideli socioekonominiai mirtingumo dėl kraujotakos sistemos ligų, su gyvensena (alkoholio vartojimu ir rūkymų) ir psichosocialiniais veiksniais (smurtinės mirties priežastys) susijusių mirties priežasčių skirtumai. Šie mirtingumo skirtumai susiję ir su didžiausiais išvengiamų mirčių skaičiais bei atitinkamai didžiausiais ekonominiais praradimais. Akivaizdu, kad tikslinės tarpsektorinės prevencinės programos bei sveikatos paslaugų prieinamumo užtikrinimas visoms gyventojų grupėms gerokai sumažintų neigiamą socioekonominių mirtingumo skirtumų poveikį visos populiacijos mastu ir leistų pasiekti esminį proveržį gyventojų mirtingumo raidoje. Labai dideli santykiniai skirtumai būdingi mirtingumui nuo infekcinių ir kvėpavimo sistemos ligų. Itin aukšti mirtingumo dėl šių mirties priežasčių rodikliai žemesnio nei vidurinis išsilavinimo, bedarbių, ekonomiškai neaktyvių, darbininkų bei ūkininkų ir ūkio darbininkų grupėse atskleidžia labai skurdžias šių grupių gyvenimo (taip pat ir higienos) sąlygas. Nors išvengiamų mirčių požiūriu mirtingumo nuo infekcinių ir kvėpavimo sistemos ligų socioekonominiai skirtumai turi gerokai mažesnę reikšmę, svarbu yra tai, kad eliminavus šiuos didelius skirtumus būtų apskritai išvengta tokių mirčių (daugeliu atveju susijusių su užkrėtimo pavojumi) visoje populiacijoje. Prieštaringi ir selektyvūs gyventojų mirtingumo pokyčiai, ypač didelė mirtingumo diferenciacija pagal socioekonominės grupes rodo, kad šalies socialinė ekonominė raida yra nesubalansuota. Išliekantys labai dideli (palyginti su kitomis Europos Sąjungos šalimis) gyventojų mirtingumo socioekonominiai skirtumai susiję su dideliais ekonominiais (visos šalies, ypač sveikatos ir socialinės apsaugos biudžetų) praradimais (Mackenbach, Meerding, Kunst, 2011).

References

- Anand, S., Diderichsen, F., Evans, T., Shkolnikov, V.M. Wirth, M. (2001). Measuring disparities in health: methods and indicators. T. Evans, M. Whitehead, F. Diderichsen, A. Bhuiya, M. Wirth (Red.), *Challenging inequities in health. From ethics to action*. New York: Oxford University Press, pp. 48–67.
- Bobadilla, J.L., Costello, Ch.A. (1997). Premature death in the independent states: overview. J.L. Bobadilla, Ch.A. Costello, F. Mitchell (Red.), *Premature Death in the New Independent States*. Washington: National Academy Press.
- Borgan, J.-K. (1996). Socioeconomic trends in differential mortality among middle-aged men in Norway 1960-1990. *Scandinavian Population Studies*, Vol.11, pp. 73–81.
- Bray, F., Lortet-Tieulent, J., Ferlay, J., Forman, D., Auvinen, A. (2010). Prostate cancer incidence and mortality trends in 37 European countries: an overview. *European Journal of Cancer*, Vol. 46(17), pp. 3040–52.
- Calot, G., Febvay, M. (1965). *La mortalité différentielle suivant le milieu social : présentation d'une méthode expérimentée en France sur la période 1955-1960: premiers résultats*. Paris: INSEE.
- Cavelaars, A.E., Kunst, A.E., Geurts, J.J., Helmer, U., Lundberg, O., Mielck, A., Matheson, J., Mizrahi, A., Mizrahi, A., Rasmussen, N., Spuhler, T., Mackenbach, J.P. (1998). Morbidity differences by occupational class among men in seven European countries: an application of the Erikson-Goldthorpe social class scheme. *International Journal of Epidemiology*, Vol. 27(2), pp. 222–230.
- Diderichsen, F., Hallqvist, J. (1997). Trends in occupational mortality among middle-aged men in Sweden 1961-1990. *International Journal of Epidemiology*, Vol.28(4), pp. 782–787.
- Doblhammer, G., Rau, R., Kytir, J. (2005). Trends in educational and occupational differentials in all-cause mortality in Austria between 1981/82 and 1991/92. *Wien. Klin. Wochenschr.*, Vol.117(13-14), pp. 468–479.
- Easterlin, R. A. 1999. *Growth Triumphant*. Chicago: The University of Michigan Press.
- Erikson, R., Goldthorpe, J.H. (1992). *The Constant Flux: A Study of Class Mobility in Industrial Societies*. Oxford: University of Oxford.
- Ezendam, N.P.M., Stirbu, I., Leinsalu, M., Lundberg, O., Kalediene, R., Wojtyniak, B., Martikainen, P., Mackenbach, J., Kunst, A., (2008). Educational inequalities in cancer mortality differ greatly between countries around the Baltic Sea. *European Journal of Cancer*, Vol. 44(3), pp. 454–464.
- Frenk, J.; Bobadilla, J. L.; Stren, C.; Frejka, T.; Lozano, R. 1991. Elements for a theory of the health transition. *Health transition Review*, Vol. 1(1), pp. 21–38.
- Gadeyne, S. (2006). *The ultimate inequality. Socio-economic differences in all-cause and cause-specific mortality in Belgium in the first half of the 1990s*. The Hague: NIDI/CBGs publications.
- Gailienė D. (2004). Suicide in Lithuania during the Years of 1990 to 2002. *Archives of Suicide Research*, Vol. 8, pp. 389-395.
- Goldblatt, P.O. (1990). *Longitudinal study. Mortality and social organisation 1971–1981*. London: Office of Population Censuses and Surveys.
- Hegmann, K.T., Fraser, A.M., Keaney, R.P., Moser, S.E., Nilasena, D.S., Sedlars, M., Higham-Gren, L., Lyon, J.L. (1993). The effect of age at smoking initiation on lung cancer risk. *Epidemiology*, Vol.4(5), pp. 444–448.
- Huisman, M., Kunst, A. E., Bopp, M., Borgan, J.-K., Borrell, C., Costa, G., Deboosere, P., Gadeyne, S., Glickman, M., Marinacci, Ch., Minder, Ch., Regidor, E., Valkonen, T., Mackenbach, J. P. (2005). Educational inequalities in causespecific mortality in middle-aged and older men and women in eight western European populations. *Lancet*, Vol. 365, pp. 493–500.
- Jasilionis, D. (2003). *Lietuvos gyventojų mirtingumo miesto-kaimo skirtumų sociodemografiniai veiksniai. Daktaro disertacija*. Vilnius: Socialinių tyrimų institutas.
- Jasilionis, D., Shkolnikov, V. M., Andreev, E. M., Jdanov, D. A., Ambrozaitiene, D., Stankuniene, V., Meslé, F., Vallin, J. (2007). Sociocultural mortality differentials in Lithuania: results obtained by matching vital records with the 2001 census data. *Population: English Edition*, Vol. 62 (4), pp. 597–646.
- Jasilionis, D., Stankuniene, V., Ambrozaitiene, D., Jdanov, D.A., Shkolnikov, V.M. (2011). Ethnic mortality differentials in Lithuania: contradictory evidence from census-linked and unlinked mortality estimates. *Journal of Epidemiology and Community Health*, (doi: 10.1136/jech.2011.133967).
- Jasilionis, D., Stankuniene, V., Shkolnikov, V.M. (2006). *Lietuvos gyventojų mirtingumo sociodemografiniai skirtumai 2001-2004*. Vilnius: Statistikos departamentas ir Socialinių tyrimų institutas.

- Kalediene, R., Petrauskiene, J. (2000). Inequalities in life expectancy in Lithuania by level of education. *Scandinavian Journal of Public Health*, Vol. 28 (1), pp. 4–9.
- Kalediene, R., Petrauskiene, J. (2005). Inequalities in mortality by education and socio-economic transition in Lithuania: equal opportunities? *Public Health*, Vol.119, pp. 808–815.
- Kirk, D. (1996). Demographic transition theory. *Population Studies* 50: 361–387.
- Kohler, I. (2001). *Adult and old-age mortality dynamics in Bulgaria and Russia (Dissertation)*. Odense: Faculty of Social Sciences, University of Southern Denmark.
- Kunst, A. E., Groenhouf, F., Borgan, J.-K., Costa, G., Desplanques, G., Faggiano, F., Hemström, Ö., Martikainen, P., Vågerö, D., Valkonen, T., Mackenbach, J.P. (1998). Socio-economic inequalities in mortality. Methodological problems illustrated with three examples from Europe. *Revue d'Épidémiologie et de Santé Publique*, Vol. 46, No. 6, pp. 467–479.
- Kunst, A.E. Bos, V., Santana, P., Valkonen, T., Mackenbach, J.P., Andersen, O., Cardano, M., Costa, G., Harding, S., Hemström, O., Layte, R., Regidor, E., Reid, A. (2004). Monitoring of trends in socioeconomic inequalities in mortality: experiences from a European project. *Demographic Research*, Special Collection 2, pp. 229–254.
- Landry, A. 1934. *La Révolution Démographique: Etudes et Essais sur les Problèmes de la Population*. Paris. (cit. iš *Dictionary of Demography Terms, Concepts, and Institutions*, 1986).
- Mackenbach, J. P. (2006). *Health inequalities: Europe in profile*. London: COI for the Department of Health.
- Mackenbach, J.P., Kunst, A.E. (1997). Measuring the magnitude of socio-economic Inequalities in health: an overview of available measures illustrated with two examples from Europe. *Social Science & Medicine*, Vol. 44, No. 6, pp. 757–771.
- Mackenbach, J.P., Meerding, W.J., Kunst A.E. (2011). Economic costs of health inequalities in the European Union. *Journal of Epidemiology and Community Health*, Vol. 65, pp. 412–419.
- Mäkelä, P., Valkonen, T., Martelin, T. (1997). Contribution of deaths related to alcohol use to socioeconomic variation in mortality: register based follow up study. *British Medical Journal*, Vol. 315(7102), pp. 211–216.
- Mäki, N., Martikainen, P. (2008). The effects of education, social class and income on non-alcohol- and alcohol-associated suicide mortality: A register-based study of Finnish men aged 25–64. *European Journal of Population*, Vol. 24, pp. 385–404.
- Marmot, M. (2007). Achieving health equity: from root causes to fair outcomes. *The Lancet*, Vol. 370 (9593), pp. 1153–1163.
- Menvielle, G., Kunst, A.E., Stirbu, I., Strand, B.H, Borrell, C., Regidor, E., Leclerc, Esnaola, S., Bopp, M., Lundberg, O., Artnik, B., Costa, G., Deboosere, P., Martikainen, P., Mackenbach, J.P. (2008). Educational differences in cancer mortality among women and men: a gender pattern that differs across Europe. *British Journal of Cancer*, Vol. 98, pp. 1012–1019.
- Meslé, F. (2004). Mortality in Central and Eastern Europe: Long-term trends and recent upturns. *Demographic Research*, Special Collection 2, pp. 45–70.
- Meslé, F., Hertrich, V. (1999). Sex mortality differences in the Baltic countries. *Revue Baltique*, Vol. 14, pp. 37–67.
- Meslé, F., Vallin, J. (1993). Développement économique et espérance de vie : la transition sanitaire au tournant des années soixante. In : *Congrès international de la population. Montréal 1993*. Liège: UIESP.
- Moser, K., Shkolnikov, V.M., Leon, D. (2005). World mortality 1950–2000: divergence replaces convergence from the late 1980s. *Bulletin of the World Health Organization*, Vol. 83(3), pp. 202–209.
- National Research Council (2000). *Beyond Six Billion: Forecasting the World's Population* (Red. J. Bongaards, A. Bulatao). The Committee on Population, Washington, D.C.: National Academy Press.
- Nolte, E., McKee, M. (2004). *Does health care save lives? Avoidable mortality revisited*. London: The Nuffield Trust.
- Notestein, F. W. (1945). Population - the long view. T.W. Schultz (Red.), *Food for the World*. Chicago: Chicago University Press (percit. iš Van de Kaa 1996), pp. 37–57.
- Olshansky J., Ault, B. (1986). The fourth stage of the epidemiologic transition: the age of delayed degenerative diseases. *The Milbank Quarterly*, Vol. 64(3), pp. 355–391.
- Oman, A. (1971). The epidemiologic transition. A Theory of the Epidemiology of Population Change. *The Milbank Memorial Fund Quarterly*. Vol.49, No.4, pp. 509–538.
- PSO (WHO) (1998). Health 21 - health for all in the 21st century. Copenhagen: World Health Organization Regional Office for Europe.
- PSO (WHO) (2011). WHO Health for All Database (<http://www.euro.who.int/hfadbd>).

- Saurel-Cubizolles, M.-J. Chastang, J-F, Menvielle, G., Leclerc, A., Luce, D. (2008). Social inequalities in mortality by cause among men and women in France. *Journal of Epidemiology and Community Health*, Vol.63, pp.197–202.
- Sen, A. (1998). Mortality as an indicator of economic success and failure. *The Economic Journal*, Vol. 108, pp. 1–25
- Shkolnikov, V.M., Andreev, E.M., Jdanov, D.A., Jasilionis, D., Kravdal, Ø., Vågerö, D., Valkonen, T. (2011). Increasing absolute mortality disparities by education in Finland, Norway and Sweden, 1971–2000. *Journal of Epidemiology and Community Health*, (doi:10.1136/jech.2009.104786).
- Shkolnikov, V.M., Jasilionis, D., Andreev, E.M., Jdanov, D.A., Stankuniene, V., Ambrozaitiene, D. (2007). Linked versus unlinked estimates of mortality and length of life by education and marital status: evidence from the first record linkage study in Lithuania. *Social Science and Medicine*, Vol. 64(7), pp. 1392–1406
- Smalytė, G. (2011a). Mirtingumas nuo vėžio ir jo mažinimo galimybės. *Demografija ir mes*, 2, pp. 5–7.
- Smalytė, G. (2011b). Apie prostatos vėžio epidemiją. *Demografija ir mes*, 3, pp. 4–5.
- Stankūnienė, V., Jasilionis, D. (2002). Lietuvos gyventojų mirtingumo sociodemografinės diferenciacijos vertinimas dinamiškai kintančių socialinių institutų ir demografinės elgsenos periodu. *Kompleksinio mokslo tyrimo darbo "Lietuvos gyventojų mirtingumo priežasčių ir sociodemografinės diferenciacijos sąveikos su kintančia pirminės sveikatos priežiūros sistema tyrimas" galutinė ataskaita*. Lietuvos filosofijos ir sociologijos institutas, Kauno medicinos universiteto Kardiologijos institutas, Lietuvos vėžio registras, Vilniaus universitetas, Vytauto Didžiojo universitetas, Vilnius-Kaunas, pp. 12–68.
- Stankūnienė, V., Jasilionis, D. (2011). Lietuvos gyventojų mirtingumo lygio ir mirties priežasčių struktūros prieštaringi pokyčiai. *Filosofija. Sociologija*. 4.
- Stankuniene, V., Jasilionis, D., J. Krumins (1999). Social differences in mortality, morbidity, and health-related behaviour: research findings in the three Baltic countries. *Revue Baltique*, Vol. 14, pp. 9–36.
- Vågerö, D., Lundberg, O. (1995). Socio-economic mortality differentials among adults in Sweden. A. Lopez, G. Caselli ir T. Valkonen (Red.), *Adult mortality in developed countries. From description to explanation*. Oxford: Clarendon press, pp. 223–242.
- Valkonen, T. (1989). Adult mortality and level of education: a comparison of six countries. J. Fox (Red.), *Health inequalities in European countries*. Gower: Aldershot, pp. 142–162.
- Valkonen, T. (1993). Problems in the measurement and international comparisons of socio-economic differences in mortality. *Social Science and Medicine*, Vol. 36(4), pp. 409–418.
- Valkonen, T. (2001). Trends in differential mortality in European countries. J. Vallin, F. Meslé, T. Valkonen (Red.), *Trends in mortality and differential mortality. Population Studies, No. 36*. Strasbourg: Council of Europe Publishing, pp. 185–332.
- Valkonen, T. (2006). Social inequalities in mortality. G. Caselli, J. Vallin, G. Wunsch (Red.), *Demography: analysis and synthesis. A treatise in population studies. Volume 2*. Burlington: Elsevier Inc. pp. 195–206.
- Vallgård, (2010). Tackling social inequalities in health in the Nordic countries: targeting a residuum or the whole population? *Journal of Epidemiology and Community Health*, Vol. 64, pp. 495–496.
- Vallin, J. (1979). Socioeconomic determinants of mortality in industrialized countries, *Readings in Population Research Methodology 2*, pp. 957-971.
- Vallin, J. (2006). Europe's Demographic Transition, 1740–1940. *Demography. Analysis and Synthesis. A Treatise in Population Studies*, 3, pp. 41–66.
- Vallin, J., Meslé, F. (2004). Convergences and divergences in mortality. A new approach to health transition. *Demographic Research*, Special Collection 2, pp. 11–44.
- White, Ch., Edgar, G., Siegler, V. (2008). Social inequalities in male mortality for selected causes of death by the National Statistics Socioeconomic Classification, England and Wales, 2001-03. *Health Statistics Quarterly*, Vol. 38, pp. 19–32.

Annexes

Annex 1

Table A1. Mortality rate ratios for all causes of death combined, by education, economic activity status, and occupational group. Males and females (aged 30–59), 2001–2005.

	Males		Females	
	MRR	95% conf. int.	MRR	95% pas. int.
Education				
Higher (<i>ref. gr.</i>)	1		1	
Secondary	2.07	1.98–2.16	1.62	1.52–1.71
Lower than secondary	3.24	3.10–3.40	2.90	2.70–3.10
Economic activity status				
Economically active, employed (<i>ref. gr.</i>)	1		1	
Economically active, unemployed	2.36	2.29–2.43	2.40	2.28–2.53
Economically inactive	3.61	3.51–3.71	4.03	3.86–4.22
Occupational group				
Upper non-manual employees (<i>ref. gr.</i>)	1		1	
Lower non-manual employees	1.31	1.13–1.52	1.08	0.98–1.19
Self-employed persons	1.31	1.19–1.45	1.26	1.07–1.49
Skilled manual workers	1.74	1.64–1.86	1.13	0.99–1.28
Unskilled manual workers	1.88	1.76–2.00	1.31	1.20–1.44
Farmers and farm labourers	3.61	3.39–3.85	2.73	2.48–3.02

Note: statistically significant MRRs are marked in bold.

Table A2. Mortality rate ratios for all diseases of the cardiovascular system, by education, economic activity status, and occupational group. Males and females (aged 30–59), 2001–2005.

	Males		Females	
	MRR	95% conf. int.	MRR	95% conf. int.
Education				
Higher (<i>ref. gr.</i>)	1		1	
Secondary	1.84	1.70–1.98	1.98	1.72–2.27
Lower than secondary	2.65	2.44–2.87	4.59	3.96–5.32
Economic activity status				
Economically active, employed (<i>ref. gr.</i>)	1		1	
Economically active, unemployed	2.19	2.07–2.31	2.73	2.44–3.06
Economically inactive	3.77	3.58–3.96	4.87	4.44–5.34
Occupational group				
Upper non-manual employees (<i>ref. gr.</i>)	1		1	
Lower non-manual employees	1.27	0.97–1.66	1.24	0.99–1.56
Self-employed persons	1.35	1.13–1.61	1.70	1.17–2.46
Skilled manual workers	1.53	1.37–1.72	1.74	1.34–2.27
Unskilled manual workers	1.56	1.40–1.75	1.72	1.40–2.12
Farmers and farm labourers	2.54	2.26–2.85	3.86	3.12–4.79

Note: statistically significant MRRs are marked in bold.

Table A3. Mortality rate ratios for ischaemic heart disease, by education, economic activity status, and occupational group. Males and females (aged 30–59), 2001–2005.

	Males		Females	
	MRR	95% conf. int.	MRR	95% conf. int.
Education				
Higher (<i>ref. gr.</i>)	1		1	
Secondary	1.91	1.73–2.12	1.81	1.45–2.26
Lower than secondary	2.73	2.44–3.04	4.80	3.79–6.01
Economic activity status				
Economically active, employed (<i>ref. gr.</i>)	1		1	
Economically active, unemployed	2.09	1.94–2.25	3.20	2.65–3.87
Economically inactive	3.60	3.37–3.86	6.12	5.23–7.15
Occupational group				
Upper non-manual employees (<i>ref. gr.</i>)	1		1	
Lower non-manual employees	1.18	0.82–1.70	1.10	0.72–1.69
Self-employed persons	1.36	1.08–1.71	1.01	0.43–2.34
Skilled manual workers	1.56	1.35–1.81	1.29	0.76–2.20
Unskilled manual workers	1.58	1.37–1.84	1.85	1.29–2.64
Farmers and farm labourers	2.45	2.10–2.86	4.58	3.18–6.60

Note: statistically significant MRRs are marked in bold.

Table A4. Mortality rate ratios for cerebrovascular diseases, by education, economic activity status, and occupational group. Males and females (aged 30–59), 2001–2005.

	Males		Females	
	MRR	95% conf. int.	MRR	95% conf. int.
Education				
Higher (<i>ref. gr.</i>)	1		1	
Secondary	1.78	1.46–2.17	1.80	1.41–2.30
Lower than secondary	2.40	1.94–2.97	3.84	2.93–5.03
Economic activity status				
Economically active, employed (<i>ref. gr.</i>)	1		1	
Economically active, unemployed	1.93	1.66–2.24	2.20	1.79–2.72
Economically inactive	3.66	3.20–4.18	3.75	3.16–4.46
Occupational group				
Upper non-manual employees (<i>ref. gr.</i>)	1		1	
Lower non-manual employees	1.29	0.64–2.57	1.32	0.91–1.92
Self-employed persons	1.39	0.88–2.19	1.54	0.81–2.91
Skilled manual workers	1.79	1.34–2.39	1.95	1.28–2.96
Unskilled manual workers	1.62	1.21–2.17	1.61	1.14–2.27
Farmers and farm labourers	2.18	1.59–2.99	2.22	1.46–3.37

Note: statistically significant MRRs are marked in bold.

Table A5. Mortality rate ratios for all other cardiovascular system diseases, by education, economic activity status, and occupational group. Males and females (aged 30–59), 2001–2005.

	Males		Females	
	MRR	95% conf. int.	MRR	95% conf. int.
Education				
Higher (<i>ref. gr.</i>)	1		1	
Secondary	1.73	1.50–1.99	2.36	1.85–3.01
Lower than secondary	2.63	2.26–3.07	5.01	3.84–6.55
Economic activity status				
Economically active, employed (<i>ref. gr.</i>)	1		1	
Economically active, unemployed	2.53	2.28–2.81	2.81	2.33–3.38
Economically inactive	4.19	3.80–4.62	4.76	4.06–5.57
Occupational group				
Upper non-manual employees (<i>ref. gr.</i>)	1		1	
Lower non-manual employees	1.47	0.91–2.35	1.28	0.86–1.92
Self-employed persons	1.32	0.94–1.85	2.54	1.46–4.41
Skilled manual workers	1.32	1.06–1.66	1.95	1.24–3.06
Unskilled manual workers	1.49	1.20–1.86	1.73	1.20–2.50
Farmers and farm labourers	2.92	2.34–3.65	5.10	3.56–7.30

Note: statistically significant MRRs are marked in bold.

Table A6. Mortality rate ratios for all neoplasms combined, by education, economic activity status, and occupational group. Males and females (aged 30–59), 2001–2005.

	Males		Females	
	MRR	95% conf. int.	MRR	95% conf. int.
Education				
Higher (<i>ref. gr.</i>)	1		1	
Secondary	1.92	1.73–2.12	1.20	1.10–1.31
Lower than secondary	2.73	2.45–3.04	1.42	1.27–1.59
Economic activity status				
Economically active, employed (<i>ref. gr.</i>)	1		1	
Economically active, unemployed	1.75	1.63–1.89	1.25	1.14–1.38
Economically inactive	2.94	2.75–3.15	2.87	2.67–3.08
Occupational group				
Upper non-manual employees (<i>ref. gr.</i>)	1		1	
Lower non-manual employees	1.56	1.15–2.12	0.96	0.85–1.10
Self-employed persons	1.23	0.98–1.55	0.87	0.67–1.13
Skilled manual workers	1.59	1.39–1.83	0.89	0.74–1.07
Unskilled manual workers	1.57	1.36–1.80	0.90	0.78–1.02
Farmers and farm labourers	2.36	2.04–2.73	1.33	1.13–1.57

Note: statistically significant MRRs are marked in bold.

Table A7. Mortality rate ratios for smoking-related cancers, by education, economic activity status, and occupational group. Males and females (aged 30–59), 2001–2005.

	Males		Females	
	MRR	95% conf. int.	MRR	95% conf. int.
Education				
Higher (<i>ref. gr.</i>)	1		1	
Secondary	2.65	2.12–3.31	1.20	0.82–1.75
Lower than secondary	4.85	3.86–6.09	2.03	1.29–3.18
Economic activity status				
Economically active, employed (<i>ref. gr.</i>)	1		1	
Economically active, unemployed	1.93	1.68–2.21	2.11	1.45–3.06
Economically inactive	3.01	2.66–3.40	3.21	2.34–4.40
Occupational group				
Upper non-manual employees (<i>ref. gr.</i>)	1		1	
Lower non-manual employees	1.73	0.82–3.65	1.61	0.90–2.87
Self-employed persons	1.75	1.06–2.92	1.52	0.53–4.36
Skilled manual workers	2.88	2.10–3.94	0.49	0.15–1.64
Unskilled manual workers	3.05	2.23–4.18	0.99	0.51–1.90
Farmers and farm labourers	5.12	3.73–7.03	2.46	1.26–4.80

Note: statistically significant MRRs are marked in bold.

Table A8. Mortality rate ratios for breast cancer, by education, economic activity status, and occupational group. Females (aged 30–59), 2001–2005.

	Females	
	MRR	95% conf. int.
Education		
Higher (<i>ref. gr.</i>)	1	
Secondary	0.90	0.77–1.05
Lower than secondary	0.93	0.74–1.17
Economic activity status		
Economically active, employed (<i>ref. gr.</i>)	1	
Economically active, unemployed	0.96	0.77–1.21
Economically inactive	3.33	2.89–3.85
Occupational group		
Upper non-manual employees (<i>ref. gr.</i>)	1	
Lower non-manual employees	0.80	0.61–1.04
Self-employed persons	0.75	0.45–1.28
Skilled manual workers	0.74	0.51–1.07
Unskilled manual workers	0.75	0.57–0.98
Farmers and farm labourers	0.78	0.53–1.15

Note: statistically significant MRRs are marked in bold.

Table A9. Mortality rate ratios for prostate cancer, by education, economic activity status, and occupational group. Males (aged 30–59), 2001–2005.

	Males	
	MRR	95% conf. int.
Education		
Higher (<i>ref. gr.</i>)	1	
Secondary	1.51	0.83–2.75
Lower than secondary	1.47	0.77–2.84
Economic activity status		
Economically active, employed (<i>ref. gr.</i>)	1	
Economically active, unemployed	1.60	0.93–2.73
Economically inactive	3.38	2.20–5.21
Occupational group		
Upper non-manual employees (<i>ref. gr.</i>)	1	
Lower non-manual employees	–	–
Self-employed persons	0.84	0.19–3.79
Skilled manual workers	0.64	0.26–1.60
Unskilled manual workers	0.86	0.37–2.04
Farmers and farm labourers	1.03	0.40–2.66

Note: statistically significant MRRs are marked in bold.

Table A10. Mortality rate ratios for all other neoplasms, by education, economic activity status, and occupational group. Males and females (aged 30–59), 2001–2005.

	Males		Females	
	MRR	95% conf. int.	MRR	95% conf. int.
Education				
Higher (<i>ref. gr.</i>)	1		1	
Secondary	1.73	1.54–1.95	1.16	1.02–1.32
Lower than secondary	2.20	1.94–2.51	1.31	1.11–1.56
Economic activity status				
Economically active, employed (<i>ref. gr.</i>)	1		1	
Economically active, unemployed	1.69	1.54–1.85	1.12	0.96–1.31
Economically inactive	2.90	2.68–3.15	2.48	2.22–2.77
Occupational group				
Upper non-manual employees (<i>ref. gr.</i>)	1		1	
Lower non-manual employees	1.57	1.12–2.20	0.95	0.78–1.16
Self-employed persons	1.14	0.88–1.48	0.92	0.63–1.34
Skilled manual workers	1.37	1.17–1.61	0.98	0.76–1.27
Unskilled manual workers	1.29	1.09–1.51	0.94	0.77–1.14
Farmers and farm labourers	1.84	1.55–2.19	1.30	1.01–1.66

Note: statistically significant MRRs are marked in bold.

Table A11. Mortality rate ratios for diseases of the digestive system, by education, economic activity status, and occupational group. Males and females (aged 30–59), 2001–2005.

	Males		Females	
	MRR	95% conf. int.	MRR	95% conf. int.
Education				
Higher (<i>ref. gr.</i>)	1		1	
Secondary	2.40	2.03–2.85	2.07	1.66–2.59
Lower than secondary	3.60	3.00–4.32	3.92	3.04–5.05
Economic activity status				
Economically active, employed (<i>ref. gr.</i>)	1		1	
Economically active, unemployed	3.47	3.11–3.87	5.35	4.48–6.39
Economically inactive	5.45	4.90–6.07	6.30	5.31–7.46
Occupational group				
Upper non-manual employees (<i>ref. gr.</i>)	1		1	
Lower non-manual employees	3.03	1.78–5.16	1.42	0.86–2.35
Self-employed persons	2.27	1.49–3.48	2.57	1.27–5.20
Skilled manual workers	2.25	1.63–3.09	1.14	0.57–2.31
Unskilled manual workers	2.20	1.60–3.02	2.45	1.58–3.79
Farmers and farm labourers	5.51	4.05–7.51	7.63	4.99–11.67

Note: statistically significant MRRs are marked in bold.

Table A12. Mortality rate ratios for all external causes of death combined, by education, economic activity status, and occupational group. Males and females (aged 30–59), 2001–2005.

	Males		Females	
	MRR	95% conf. int.	MRR	95% conf. int.
Education				
Higher (<i>ref. gr.</i>)	1		1	
Secondary	2.20	2.04–2.36	2.07	1.81–2.37
Lower than secondary	3.55	3.28–3.85	4.17	3.56–4.89
Economic activity status				
Economically active, employed (<i>ref. gr.</i>)	1		1	
Economically active, unemployed	2.38	2.28–2.49	3.48	3.15–3.85
Economically inactive	2.57	2.44–2.70	3.37	3.05–3.73
Occupational group				
Upper non-manual employees (<i>ref. gr.</i>)	1		1	
Lower non-manual employees	1.08	0.84–1.39	1.23	0.97–1.54
Self-employed persons	1.20	1.01–1.42	1.80	1.26–2.57
Skilled manual workers	1.90	1.70–2.11	1.27	0.94–1.70
Unskilled manual workers	2.27	2.05–2.51	2.04	1.66–2.50
Farmers and farm labourers	4.90	4.42–5.42	5.41	4.40–6.64

Note: statistically significant MRRs are marked in bold.

Table A13. Mortality rate ratios for transport accidents, by education, economic activity status, and occupational group. Males and females (aged 30–59), 2001–2005.

	Males		Females	
	MRR	95% conf. int.	MRR	95% conf. int.
Education				
Higher (<i>ref. gr.</i>)	1		1	
Secondary	1.59	1.33–1.89	1.86	1.33–2.59
Lower than secondary	2.37	1.94–2.88	2.66	1.73–4.09
Economic activity status				
Economically active, employed (<i>ref. gr.</i>)	1		1	
Economically active, unemployed	1.58	1.39–1.79	2.07	1.58–2.71
Economically inactive	1.68	1.45–1.94	1.99	1.52–2.62
Occupational group				
Upper non-manual employees (<i>ref. gr.</i>)	1		1	
Lower non-manual employees	0.83	0.47–1.48	0.84	0.53–1.34
Self-employed persons	1.31	0.94–1.83	1.59	0.81–3.12
Skilled manual workers	1.34	1.06–1.70	0.64	0.32–1.30
Unskilled manual workers	1.77	1.42–2.21	1.32	0.87–2.01
Farmers and farm labourers	2.63	2.08–3.33	2.58	1.61–4.13

Note: statistically significant MRRs are marked in bold.

Table A14. Mortality rate ratios for suicides, by education, economic activity status, and occupational group. Males and females (aged 30–59), 2001–2005.

	Males		Females	
	MRR	95% conf. int.	MRR	95% conf. int.
Education				
Higher (<i>ref. gr.</i>)	1		1	
Secondary	2.58	2.24–2.97	1.89	1.47–2.42
Lower than secondary	4.33	3.72–5.03	3.01	2.20–4.12
Economic activity status				
Economically active, employed (<i>ref. gr.</i>)	1		1	
Economically active, unemployed	2.08	1.92–2.26	2.93	2.39–3.58
Economically inactive	2.20	2.01–2.41	3.27	2.69–3.98
Occupational group				
Upper non-manual employees (<i>ref. gr.</i>)	1		1	
Lower non-manual employees	1.07	0.68–1.69	1.49	0.99–2.23
Self-employed persons	1.23	0.91–1.66	1.82	0.95–3.50
Skilled manual workers	2.19	1.82–2.64	1.26	0.73–2.19
Unskilled manual workers	2.65	2.21–3.17	2.67	1.87–3.82
Farmers and farm labourers	5.43	4.53–6.50	3.80	2.49–5.81

Note: statistically significant MRRs are marked in bold.

Table A15. Mortality rate ratios for homicides, by education, economic activity status, and occupational group. Males and females (aged 30–59), 2001–2005.

	Males		Females	
	MRR	95% conf. int.	MRR	95% conf. int.
Education				
Higher (<i>ref. gr.</i>)	1		1	
Secondary	3.04	2.12–4.37	2.32	1.42–3.79
Lower than secondary	4.19	2.83–6.21	6.06	3.45–10.64
Economic activity status				
Economically active, employed (<i>ref. gr.</i>)	1		1	
Economically active, unemployed	3.95	3.23–4.83	5.02	3.61–6.98
Economically inactive	3.84	3.05–4.83	3.20	2.19–4.67
Occupational group				
Upper non-manual employees (<i>ref. gr.</i>)	1		1	
Lower non-manual employees	0.95	0.22–4.11	0.86	0.26–2.86
Self-employed persons	1.95	0.89–4.25	5.26	1.72–16.07
Skilled manual workers	1.45	0.78–2.68	2.37	0.77–7.24
Unskilled manual workers	2.64	1.52–4.58	3.60	1.52–8.48
Farmers and farm labourers	5.13	2.93–8.98	10.67	4.57–20.08

Note: statistically significant MRRs are marked in bold.

Table A16. Mortality rate ratios for all other external causes of death, by education, economic activity status, and occupational group. Males and females (aged 30–59), 2001–2005.

	Males		Females	
	MRR	95% conf. int.	MRR	95% conf. int.
Education				
Higher (<i>ref. gr.</i>)	1		1	
Secondary	2.15	1.94–2.38	2.22	1.82–2.71
Lower than secondary	3.53	3.16–3.94	5.10	4.08–6.38
Economic activity status				
Economically active, employed (<i>ref. gr.</i>)	1		1	
Economically active, unemployed	2.76	2.59–2.94	4.17	3.61–4.81
Economically inactive	3.04	2.83–3.26	4.04	3.50–4.66
Occupational group				
Upper non-manual employees (<i>ref. gr.</i>)	1		1	
Lower non-manual employees	1.23	0.84–1.79	1.36	0.94–1.97
Self-employed persons	1.04	0.79–1.37	1.49	0.79–2.82
Skilled manual workers	2.03	1.72–2.39	1.64	1.04–2.56
Unskilled manual workers	2.23	1.90–2.62	1.96	1.39–2.75
Farmers and farm labourers	5.77	4.94–6.73	8.29	6.09–11.29

Note: statistically significant MRRs are marked in bold.

Table A17. Mortality rate ratios for alcohol-related causes of death, by education, economic activity status, and occupational group. Males and females (aged 30–59), 2001–2005.

	Males		Females	
	MRR	95% conf. int.	MRR	95% conf. int.
Education				
Higher (<i>ref. gr.</i>)	1		1	
Secondary	2.49	2.15–2.89	2.27	1.82–2.85
Lower than secondary	3.92	3.34–4.60	5.04	3.92–6.46
Economic activity status				
Economically active, employed (<i>ref. gr.</i>)	1		1	
Economically active, unemployed	3.85	3.52–4.21	5.82	4.93–6.89
Economically inactive	4.49	4.08–4.94	5.93	5.02–6.99
Occupational group				
Upper non-manual employees (<i>ref. gr.</i>)	1		1	
Lower non-manual employees	1.98	1.17–3.36	1.78	1.07–2.97
Self-employed persons	1.64	1.10–2.44	2.70	1.28–5.69
Skilled manual workers	2.04	1.55–2.69	1.73	0.90–3.33
Unskilled manual workers	2.12	1.61–2.78	2.55	1.60–4.08
Farmers and farm labourers	6.91	5.35–8.93	12.04	7.87–18.43

Note: statistically significant MRRs are marked in bold.

Table A18. Mortality rate ratios for infectious diseases, by education, economic activity status, and occupational group. Males and females (aged 30–59), 2001–2005.

	Males		Females	
	MRR	95% conf. int.	MRR	95% conf. int.
Education				
Higher (<i>ref. gr.</i>)	1		1	
Secondary	3.06	2.23–4.19	3.56	1.92–6.60
Lower than secondary	7.81	5.64–10.80	9.27	4.73–18.15
Economic activity status				
Economically active, employed (<i>ref. gr.</i>)	1		1	
Economically active, unemployed	4.85	3.98–5.92	4.58	2.98–7.05
Economically inactive	13.11	10.97–15.68	10.23	7.07–14.82
Occupational group				
Upper non-manual employees (<i>ref. gr.</i>)	1		1	
Lower non-manual employees	2.98	0.60–14.75	0.66	0.18–2.49
Self-employed persons	5.16	1.84–14.49	2.13	0.45–10.03
Skilled manual workers	3.86	1.58–9.43	0.48	0.06–3.85
Unskilled manual workers	4.77	1.99–11.42	1.65	0.60–4.56
Farmers and farm labourers	13.98	5.96–20.00	8.49	3.52–20.00

Note: statistically significant MRRs are marked in bold.

Table A19. Mortality rate ratios for diseases of the respiratory system, by education, economic activity status, and occupational group. Males and females (aged 30–59), 2001–2005.

	Males		Females	
	MRR	95% conf. int.	MRR	95% conf. int.
Education				
Higher (<i>ref. gr.</i>)	1		1	
Secondary	4.12	2.96–5.72	2.88	1.74–4.75
Lower than secondary	10.00	7.16–13.96	8.56	5.01–14.61
Economic activity status				
Economically active, employed (<i>ref. gr.</i>)	1		1	
Economically active, unemployed	3.93	3.33–4.64	3.10	2.15–4.47
Economically inactive	7.61	6.54–8.86	6.92	5.13–9.35
Occupational group				
Upper non-manual employees (<i>ref. gr.</i>)	1		1	
Lower non-manual employees	1.06	0.25–4.56	2.98	1.24–7.19
Self-employed persons	1.25	0.50–3.14	1.12	0.14–8.96
Skilled manual workers	3.30	1.95–5.57	3.99	1.50–10.64
Unskilled manual workers	2.65	1.55–4.53	2.99	1.24–7.21
Farmers and farm labourers	9.00	5.42–14.94	7.49	3.06–18.32

Note: statistically significant MRRs are marked in bold.

Table A20. Mortality rate ratios for all other causes of death combined, by education, economic activity status, and occupational group. Males and females (aged 30–59), 2001–2005.

	Males		Females	
	MRR	95% conf. int.	MRR	95% conf. int.
Education				
Higher (<i>ref. gr.</i>)	1		1	
Secondary	1.93	1.61–2.32	1.59	1.27–2.00
Lower than secondary	3.12	2.56–3.80	3.43	2.63–4.48
Economic activity status				
Economically active, employed (<i>ref. gr.</i>)	1		1	
Economically active, unemployed	2.68	2.34–3.07	2.97	2.33–3.78
Economically inactive	7.24	6.43–8.14	10.25	8.54–12.66
Occupational group				
Upper non-manual employees (<i>ref. gr.</i>)	1		1	
Lower non-manual employees	1.62	0.79–3.30	1.02	0.61–1.73
Self-employed persons	1.74	1.06–2.84	2.07	1.00–4.27
Skilled manual workers	1.71	1.20–2.45	1.22	0.64–2.34
Unskilled manual workers	1.84	1.30–2.61	1.66	1.04–2.64
Farmers and farm labourers	4.27	3.03–6.03	2.54	1.47–4.41

Note: statistically significant MRRs are marked in bold.

Annex 2

Table A21. Age-standardised death rates and their 95% confidence limits by groups of causes of death and education. Males (aged 30–59), 2001–2005.

Cause of death	Higher	Secondary	Lower than secondary
All causes of death	467.7 (448.8–486.6)	966.4 (951.8–981.1)	1538.0 (1502.7–1573.4)
All dis. of the cardiovascular sys.	155.7 (144.7–166.8)	286.8 (278.5–295.1)	422.0 (404.0–440.0)
Ischaemic heart dis.	87.5 (79.2–95.9)	166.9 (160.5–173.3)	243.4 (230.0–256.9)
Cerebrovascular dis.	23.3 (19.0–27.5)	41.5 (38.3–44.7)	55.9 (49.5–62.3)
All other cardiovascular dis.	44.9 (39.1–50.8)	78.4 (74.1–82.6)	122.7 (112.6–132.7)
All neoplasms	86.9 (78.6–95.2)	167.5 (161.0–174.0)	240.7 (227.6–253.8)
Smoking-related cancers	17.8 (14.0–21.6)	47.5 (43.9–51.0)	86.4 (78.8–94.0)
Prostate cancer	2.8 (1.3–4.4)	4.2 (3.1–5.2)	3.8 (2.4–5.2)
All other neoplasms	66.1 (58.8–73.3)	115.4 (110.0–120.8)	149.9 (139.4–160.5)
Infectious dis.	29.3 (24.5–34.0)	68.5 (64.7–72.3)	104.7 (95.2–114.3)
Dis. of the respiratory sys.	154.1 (143.4–164.8)	337.6 (329.3–345.8)	548.0 (526.0–570.0)
Dis. of the digestive sys.	27.3 (22.9–31.8)	43.9 (41.0–46.8)	64.5 (57.0–72.1)
All external causes of death	40.3 (34.8–45.8)	103.4 (98.9–108.0)	172.8 (160.5–185.1)
Transport accidents	6.0 (3.9–8.1)	18.5 (16.6–20.5)	26.4 (21.4–31.4)
Suicide	80.4 (72.7–88.2)	171.7 (165.7–177.6)	284.3 (268.4–300.2)
Homicide	37.8 (32.4–43.1)	93.3 (88.9–97.7)	148.1 (136.7–159.6)
All other external causes of death	8.5 (5.9–11.1)	24.6 (22.3–26.8)	63.7 (56.2–71.3)
Alcohol-related causes of death	7.3 (5.0–9.7)	31.1 (28.4–33.8)	75.4 (67.7–83.2)
All other causes of death	25.8 (21.4–30.3)	50.4 (47.1–53.7)	83.4 (74.7–92.1)

Table A22. Age-standardised death rates and their 95% confidence limits by groups of causes of death and education.
Females (aged 30–59), 2001–2005.

Cause of death	Higher	Secondary	Lower than secondary
All causes of death`	191.8 (181.5–202.1)	306.8 (299.4–314.2)	604.6 (575.4–633.8)
All dis. of the cardiovascular sys.	35.0 (30.5–39.5)	68.9 (65.3–72.5)	173.7 (159.0–188.5)
Ischaemic heart dis.	13.5 (10.7–16.3)	24.3 (22.2–26.5)	68.2 (59.4–77.0)
Cerebrovascular dis.	10.9 (8.5–13.4)	19.7 (17.8–21.6)	44.8 (37.4–52.2)
All other cardiovascular dis.	10.5 (8.1–13.0)	24.9 (22.7–27.0)	60.7 (51.5–70.0)
All neoplasms	95.3 (88.0–102.6)	113.2 (108.7–117.7)	144.6 (130.9–158.4)
Smoking-related cancers	5.0 (3.3–6.7)	5.9 (4.8–6.9)	11.2 (7.6–14.8)
Prostate cancer	29.5 (25.4–33.5)	26.3 (24.1–28.5)	28.0 (22.1–33.9)
All other neoplasms	42.1 (37.3–47.0)	49.1 (46.0–52.1)	59.2 (50.6–67.9)
Infectious dis.	12.9 (10.2–15.6)	25.9 (23.8–28.1)	53.6 (44.9–62.3)
Dis. of the respiratory sys.	32.7 (28.5–36.9)	67.4 (64.0–70.7)	147.8 (132.4–163.3)
Dis. of the digestive sys.	5.3 (3.6–6.9)	10.2 (8.9–11.5)	17.3 (11.7–22.8)
All external causes of death	9.6 (7.4–11.9)	18.1 (16.4–19.8)	32.2 (24.7–39.7)
Transport accidents	2.4 (1.3–3.5)	5.5 (4.5–6.4)	14.9 (9.8–19.9)
Suicide	15.4 (12.5–18.3)	33.6 (31.2–36.0)	83.5 (72.2–94.8)
Homicide	12.5 (9.8–15.1)	27.4 (25.2–29.7)	66.3 (56.6–76.1)
All other external causes of death	1.5 (0.6–2.4)	5.3 (4.3–6.2)	16.8 (11.2–22.3)
Alcohol-related causes of death	2.4 (1.2–3.5)	6.7 (5.6–7.8)	21.3 (15.6–26.9)
All other causes of death	12.0 (9.5–14.6)	19.5 (17.6–21.3)	46.8 (38.3–55.3)

Table A23. Age-standardised death rates and their 95% confidence limits by groups of causes of death and economic activity status. Males (aged 30–59), 2001–2005.

Cause of death	Employed	Unemployed	Inactive
All causes of death`	609.1 (598.0–620.1)	1420.7 (1388.3–1453.1)	2187.1 (2140.9–2233.4)
All dis. of the cardiovascular sys.	176.9 (170.8–183.0)	385.4 (368.1–402.8)	663.7 (638.6–688.8)
Ischaemic heart dis.	104.5 (99.8–109.3)	219.8 (206.6–233.0)	376.5 (357.7–395.3)
Cerebrovascular dis.	26.3 (23.9–28.6)	51.2 (44.8–57.6)	96.1 (86.6–105.6)
All other cardiovascular dis.	46.1 (43.0–49.2)	114.4 (105.2–123.7)	191.1 (177.4–204.8)
All neoplasms	118.7 (113.6–123.7)	206.5 (193.6–219.4)	351.1 (332.9–369.3)
Smoking-related cancers	34.9 (32.1–37.7)	67.1 (59.6–74.5)	105.8 (95.9–115.7)
Prostate cancer	2.6 (1.8–3.4)	4.2 (2.3–6.1)	8.7 (6.0–11.5)
All other neoplasms	80.7 (76.6–84.9)	134.8 (124.5–145.2)	235.8 (220.7–250.8)
Infectious dis.	33.5 (30.9–36.1)	113.4 (104.2–122.5)	180.1 (166.5–193.7)
Dis. of the respiratory sys.	233.2 (226.57–239.8)	555.8 (535.8–575.7)	602.1 (576.8–627.3)
Dis. of the digestive sys.	37.5 (34.9–40.1)	59.7 (53.2–66.2)	63.0 (54.8–71.3)
All external causes of death	78.1 (74.2–81.9)	160.4 (149.7–171.1)	172.4 (158.8–186.0)
Transport accidents	8.7 (7.4–9.9)	34.3 (29.4–39.2)	33.4 (27.4–39.4)
Suicide	108.9 (104.4–113.5)	301.4 (286.6–316.2)	333.2 (314.5–351.9)
Homicide	46.8 (43.8–49.8)	178.5 (167.1–189.9)	208.9 (194.1–223.6)
All other external causes of death	8.5 (7.2–9.7)	40.6 (35.2–46.1)	109.3 (98.7–120.0)
Alcohol-related causes of death	14.3 (12.6–16.0)	55.6 (49.0–62.1)	107.6 (97.4–117.9)
All other causes of death	24.1 (22.0–26.3)	63.5 (56.7–70.2)	173.2 (159.7–186.7)

Table A24. Age-standardised death rates and their 95% confidence limits by groups of causes of death and economic activity status.
Females (aged 30–59), 2001–2005.

Cause of death	Employed	Unemployed	Inactive
All causes of death	180.8 (175.2–186.5)	429.5 (411.2–447.8)	744.0 (720.1–767.9)
All dis. of the cardiovascular sys.	37.6 35.0–40.3	101.7 (92.7–110.7)	185.7 (174.1–197.3)
Ischaemic heart dis.	12.2 (10.6–13.7)	38.8 (33.2–44.4)	76.5 (69.2–83.9)
Cerebrovascular dis.	12.2 (10.7–13.7)	26.9 (22.3–31.5)	45.5 (39.8–51.2)
All other cardiovascular dis.	13.3 (11.7–14.8)	36.0 (30.7–41.3)	63.7 (56.7–70.6)
All neoplasms	82.7 (78.9–86.6)	103.2 (94.2–112.2)	246.1 (232.3–259.9)
Smoking-related cancers	4.0 (3.2–4.9)	8.5 (5.9–11.1)	13.5 (10.3–16.7)
Breast cancer	19.6 (17.7–21.4)	19.0 (15.1–22.8)	67.6 (60.2–74.9)
All other neoplasms	37.7 (35.1–40.3)	42.5 (36.7–48.4)	97.0 (88.5–105.5)
Infectious dis.	10.2 (8.9–11.6)	53.4 (47.0–59.8)	65.6 (58.4–72.7)
Dis. of the respiratory sys.	38.1 (35.5–40.6)	132.2 (122.1–142.2)	130.8 (120.6–141.0)
Dis. of the digestive sys.	7.3 (6.2–8.4)	14.9 (11.5–18.3)	15.2 (11.7–18.7)
All external causes of death	10.6 (9.2–11.9)	30.7 (25.8–35.5)	35.0 (29.7–40.4)
Transport accidents	2.9 (2.2–3.5)	14.4 (11.1–17.7)	9.5 (6.7–12.4)
Suicide	17.4 (15.6–19.1)	72.2 (64.7–79.7)	71.0 (63.6–78.5)
Homicide	11.0 (9.6–12.4)	63.1 (56.1–70.1)	66.4 (59.2–73.6)
All other external causes of death	1.8 (1.3–2.4)	8.0 (5.6–10.5)	18.3 (14.5–22.2)
Alcohol-related causes of death	3.1 (2.3–3.8)	9.5 (6.8–12.2)	21.6 (17.5–25.7)
All other causes of death	7.3 (6.2–8.4)	21.5 (17.4–25.6)	76.0 (68.2–83.8)

Table A25. Age-standardised death rates and their 95% confidence limits by groups of causes of death and occupational group. Males (aged 30–59), 2001–2005.

Cause of death	Occupational group					
	1	2	3	4	5	6
All causes of death`	317.36 (300.7–334.0)	430.6 (367.3–494.0)	426.3 (386.2–466.3)	552.5 (531.3–573.6)	595.2 (573.1–617.3)	1136.4 (1094.4–1178.4)
All dis. of the cardiovascular sys.	110.3 (100.3–120.4)	138.7 (101.8–175.6)	152.2 (127.2–177.1)	170.1 (158.2–182.0)	172.6 (160.4–184.8)	279.6 (258.6–300.6)
Ischaemic heart dis.	65.4 (57.7–73.2)	71.3 (45.1–97.6)	93.2 (73.3–113.2)	103.1 (93.8–112.5)	103.6 (94.1–113.1)	161.5 (145.5–177.5)
Cerebrovascular dis.	16.0 (12.2–19.8)	21.7 (6.7–36.6)	22.5 (13.0–32.1)	28.9 (24.0–33.8)	26.0 (21.2–30.7)	34.9 (27.5–42.3)
All other cardiovascular dis.	28.9 (23.8–34.0)	45.7 (24.5–67.0)	36.4 (24.8–48.0)	38.0 (32.4–43.6)	43.1 (37.0–49.1)	83.1 (71.7–94.6)
All neoplasms	74.7 (66.3–83.0)	115.7 (80.5–151.0)	96.8 (76.1–117.6)	120.9 (110.7–131.0)	121.4 (110.9–131.9)	179.1 (162.1–196.0)
Smoking-related cancers	12.7 (9.1–16.2)	21.7 (6.1–37.4)	24.3 (13.5–35.1)	36.0 (30.4–41.5)	38.8 (32.8–44.8)	64.3 (54.1–74.5)
Prostate cancer	2.7 (1.1–4.3)	0.0 (0.0–0.0)	1.7 (0.1–4.0)	1.8 (0.6–3.1)	2.5 (0.9–4.1)	2.9 (0.8–5.1)
All other neoplasms	59.3 (51.9–66.7)	94.0 (62.4–125.6)	70.9 (53.3–88.4)	83.1 (74.7–91.5)	79.2 (70.7–87.6)	111.1 (97.7–124.4)
Infectious dis.	11.9 (8.7–15.1)	39.3 (19.7–59.0)	26.4 (17.1–35.7)	26.3 (21.7–30.9)	25.8 (21.2–30.4)	64.2 (54.2–74.3)
Dis. of the respiratory sys.	104.6 (95.4–113.9)	112.6 (83.4–141.8)	122.1 (102.8–141.4)	199.8 (187.3–212.3)	239.8 (226.3–253.3)	517.0 (488.7–545.4)
Dis. of the digestive sys.	23.8 (19.5–28.1)	22.2 (8.6–35.9)	28.6 (20.3–36.9)	33.4 (28.3–38.5)	43.1 (37.5–48.7)	64.1 (54.1–74.0)
All external causes of death	32.7 (27.6–37.9)	37.8 (20.6–55.0)	42.5 (30.6–54.4)	71.9 (64.4–79.4)	88.1 (79.8–96.3)	178.1 (161.5–194.7)
Transport accidents	3.5 (1.8–5.2)	2.1 (–0.8–5.1)	6.4 (2.0–10.8)	4.8 (2.9–6.7)	8.9 (6.4–11.5)	17.5 (12.3–22.6)
Suicide	44.5 (38.5–50.6)	50.4 (31.4–69.5)	44.6 (32.6–56.6)	89.7 (81.3–98.1)	99.7 (90.9–108.5)	257.4 (237.3–277.5)
Homicide	16.1 (12.4–19.8)	35.0 (17.2–52.8)	26.1 (16.9–35.3)	32.5 (27.4–37.6)	34.3 (29.1–39.6)	109.0 (95.9–122.0)
All other external causes of death	1.4 (0.3–2.5)	4.2 (0.9–10.2)	6.1 (1.9–10.4)	5.1 (3.1–7.2)	6.3 (4.0–8.6)	17.7 (12.4–22.9)
Alcohol-related causes of death	3.9 (2.1–5.7)	3.2 (0.3–7.7)	6.2 (0.7–11.6)	13.2 (9.9–16.5)	11.1 (8.0–14.1)	36.9 (29.2–44.6)
All other causes of death	10.6 (7.5–13.7)	16.9 (5.1–28.7)	16.5 (9.3–23.6)	17.0 (13.3–20.7)	18.2 (14.4–22.0)	42.0 (33.9–50.0)

Occupational groups: 1 – upper non-manual employees; 2 – lower non-manual employees; 3 – self-employed persons; 4 – skilled manual workers; 5 – unskilled manual workers; 6 – farmers and farm labourers.

Table A26. Age-standardised death rates and their 95% confidence limits by groups of causes of death and occupational group. Males (aged 30–59), 2001–2005.

Cause of death	Occupational group					
	1	2	3	4	5	6
All causes of death	138.7 (130.4–147.0)	149.1 (137.2–160.9)	182.1 (151.8–212.4)	155.3 (137.6–173.0)	181.2 (168.6–193.7)	374.0 (344.5–403.5)
All dis. of the cardiovascular sys.	23.4 (20.0–26.8)	29.0 (23.6–34.3)	44.1 (28.4–59.8)	40.3 (31.1–49.4)	41.1 (35.1–47.1)	91.6 (77.0–106.2)
Ischaemic heart dis.	7.5 (5.5–9.5)	8.1 (5.2–10.9)	8.3 (1.4–15.2)	8.8 (4.6–12.9)	14.3 (10.7–17.8)	34.9 (25.9–43.8)
Cerebrovascular dis.	8.5 (6.5–10.6)	11.0 (7.7–14.3)	14.5 (5.6–23.4)	17.2 (11.1–23.2)	14.0 (10.5–17.5)	19.4 (12.7–26.1)
All other cardiovascular dis.	7.4 (5.5–9.3)	9.9 (6.7–13.0)	21.3 (10.4–32.3)	14.3 (8.9–19.8)	12.8 (9.4–16.1)	37.4 (28.0–46.7)
All neoplasms	83.0 (76.6–89.5)	80.1 (71.3–88.9)	73.5 (54.2–92.8)	71.0 (59.1–82.9)	73.6 (65.6–81.6)	109.5 (93.5–125.5)
Smoking-related cancers	3.2 (1.9–4.5)	5.2 (2.9–7.5)	5.2 (0.1–10.6)	2.1 (0.3–4.5)	3.1 (1.5–4.8)	7.9 (3.6–12.1)
Breast cancer	22.7 (19.3–26.0)	18.2 (14.0–22.3)	18.4 (8.5–28.2)	14.9 (9.7–20.1)	17.0 (13.1–20.8)	17.8 (11.3–24.3)
All other neoplasms	37.7 (33.4–42.1)	35.7 (29.8–41.6)	33.8 (20.8–46.8)	36.0 (27.4–44.6)	35.0 (29.5–40.6)	48.4 (37.8–59.1)
Infectious dis.	4.5 (3.0–6.0)	5.9 (3.6–8.2)	13.2 (4.7–21.7)	5.3 (1.9–8.7)	10.5 (7.5–13.5)	32.6 (23.9–41.4)
Dis. of the respiratory sys.	21.1 (17.9–24.2)	26.0 (21.2–30.7)	37.0 (24.5–49.4)	28.2 (20.7–35.7)	43.7 (37.5–49.8)	113.2 (96.9–129.5)
Dis. of the digestive sys.	6.3 (4.6–8.0)	5.7 (3.4–7.9)	10.1 (3.5–16.6)	4.3 (1.4–7.1)	8.5 (5.7–11.2)	16.1 (9.9–22.3)
All external causes of death	6.0 (4.3–7.6)	9.1 (6.3–11.8)	9.3 (3.7–14.9)	8.1 (4.1–12.1)	16.4 (12.6–20.2)	22.6 (15.3–29.9)
Transport accidents	0.9 (0.3–1.6)	0.8 (0.0–1.6)	4.8 (0.5–9.0)	2.3 (0.3–4.4)	3.3 (1.6–5.0)	9.9 (5.0–14.8)
Suicide	7.9 (6.0–9.9)	10.4 (7.4–13.4)	12.8 (4.9–20.8)	13.5 (8.2–18.8)	15.5 (11.8–19.1)	64.5 (52.3–76.8)
Homicide	3.7 (2.4–5.1)	6.4 (4.0–8.8)	11.4 (3.6–19.1)	6.5 (2.9–10.1)	9.4 (6.6–12.3)	44.0 (33.9–54.0)
All other external causes of death	0.9 (0.3–1.6)	0.7 (0.0–1.5)	2.5 (0.0–5.9)	0.5 (0.0–1.6)	1.6 (0.4–2.7)	7.8 (3.6–12.1)
Alcohol-related causes of death	1.0 (0.3–1.6)	2.8 (1.2–4.3)	1.1 (0.1–3.2)	4.5 (1.3–7.7)	2.8 (1.3–4.4)	7.2 (3.1–11.4)
All other causes of death	4.8 (3.3–6.4)	4.6 (2.6–6.6)	10.7 (3.2–18.2)	5.5 (2.3–8.6)	7.8 (5.2–10.5)	12.0 (6.6–17.4)

Occupational groups: 1 – upper non-manual employees; 2 – lower non-manual employees; 3 – self-employed persons; 4 – skilled manual workers; 5 – unskilled manual workers; 6 – farmers and farm labourers.

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A CENSUS-LINKED STUDY**

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