Recent life expectancy divergence in Baltic countries

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Introduction

Since the end of the 1980s, there has been a growing divergence in life expectancy trends between the countries of Central Europe and countries of the former USSR (Meslé, 2004). Latest data also suggest an increasing variation in the trends between the latter countries.

During the most recent years, the three Baltic countries experienced similar socio-economic and political developments such as very strong economic growth and joining the European Union in 2004. However, for the first time since the beginning of the 1960s, Estonia, Latvia, and Lithuania started diverging in terms of *direction* of life expectancy trends. It seems that after 2004, Lithuania faces more difficulties on the way to further mortality reduction than Latvia and especially Estonia. This is despite the fact that, for several decades, the three countries showed very similar patterns of age and cause-specific mortality. The emerging health disadvantage of Lithuania against two other countries is also striking taking into account that at the end of the 1990s, this country was showing more optimistic trends than Estonia and Latvia

Our study aims at exploring potential determinants of such unexpected divergence in the most recent life expectancy trends in Estonia, Latvia, and Lithuania. First, we will discuss the validity of life expectancy estimates in the three countries, taking in account recent increases in the amounts of international migration. In a second part, the possible impact of recent changes in health systems will be explored, focusing on trends in amenable mortality and man-made diseases. Finally a precise analysis of trends in causes of death will highlight the important role played by three of them (digestive diseases, external causes and circulatory diseases).

I. Assessing life expectancy trends in Baltic countries

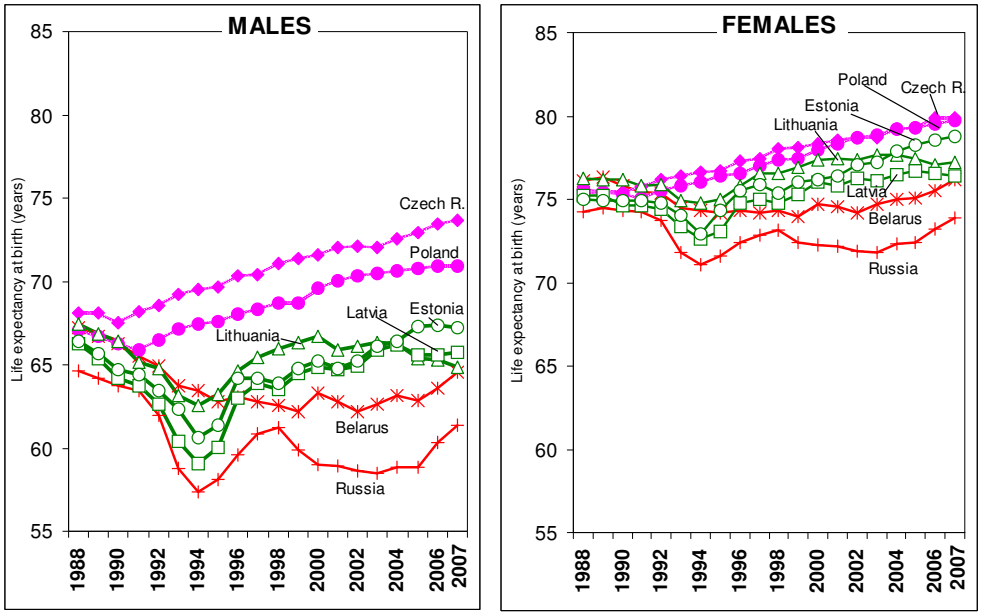
A. Observed trends

After the deep mortality crisis in the early and mid-1990s, Estonia, Latvia, and Lithuania showed remarkable improvements in life expectancy in the second half of the 1990s (Fig. 1). Taking into account positive socio-economic changes in the three countries since the end of the 1990s, it was expected that the three Baltic countries may follow the path of Central Europe and start converging towards the lower levels of mortality achieved in western countries. However, the turn of the new century was marked by a slowing down in the recovery of higher life expectancy and signs of stagnation or even reversal in trends. The most striking trend can be observed for Lithuania which was long-standing longevity leader among the three Baltic countries.

Probably the first worrying signs of possible slow down in recovery were the drops in male life expectancy in 1997-98 (in Latvia and Estonia) and in 2001 (all three countries). The latter year was particularly bad for Lithuania: in only one year life expectancy fell by 0.8 years! There was some signs of recovery in the following years 2002-2003, but the scale of improvements in Lithuania was much less significant than in Latvia and Estonia. As a result, the two latter countries with initially lower levels of life expectancy caught up with Lithuania in 2004 (Fig. 1). In Lithuania, the situation was worsening further as life expectancy dropped by 1.5 years from 2003 to 2007. Less significant deterioration was observed in Latvia in 2004-2006. By contrast, notable achievements are observed in Estonia, where male life expectancy reached a record level of 67.4 years in 2006. In 2007, male life expectancy difference between Estonia and Latvia were 1.4 years, whereas between Estonia and Lithuania it reached as high as 2.4 years.

Changes in female life expectancy in Lithuania and Latvia have been unfavourable but less dramatic (Fig. 1). In Lithuania, life expectancy at birth was stagnating in 2000-2004 and slightly decreasing in 2005-2006. Similar stagnation was observed in Latvia in 2000-2003, but it was followed by substantial improvements during the two subsequent years 2004-2005. Again, Estonia showed a notable progress as the growth of female life expectancy between 2000 and 2007 constituted 2.6 years. In 2007, Estonian female life expectancy was 78.8 years which was by 1.6 and 2 years higher than in Lithuania and Latvia, respectively.

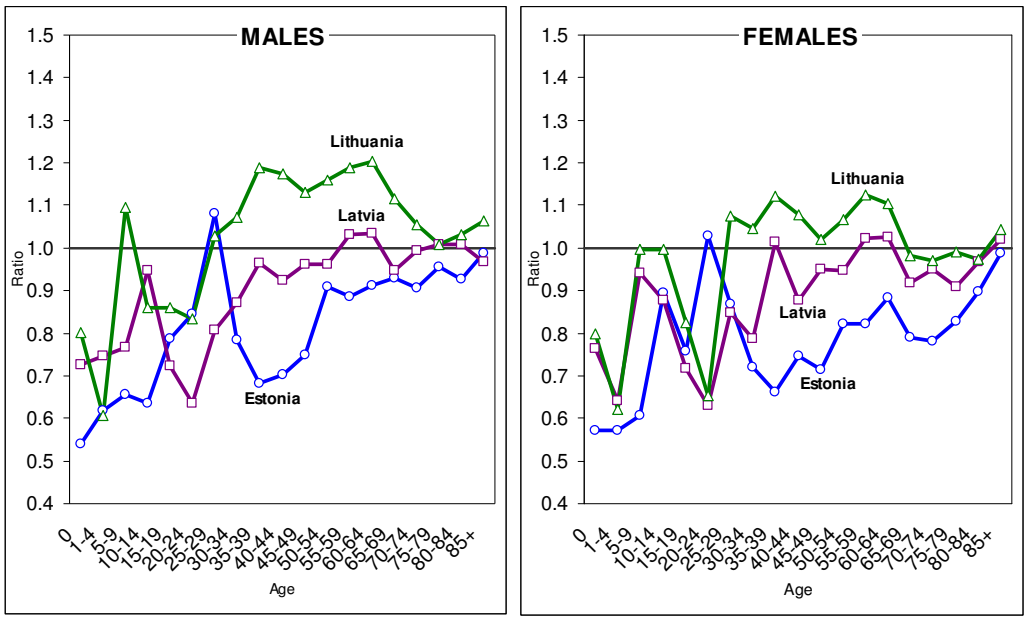
Fig 1. *Trends in life expectancy at birth in three Baltic countries and Czech Republic, 1988-2007.*



Data source: Human Mortality Database, 2009.

More striking differences between the three countries emerge from analyses of directions of changes in age-specific mortality. Figure 2 shows that the major divergence concerns mortality trends at adult ages. During the period 1999-2001 – 2005-2007, Estonia made important advances in reducing premature male and female mortality, in particular within the age range 35-49 years. Mortality rates at these ages decreased by 25-30% and 25-34% among males and females, respectively. Latvia also made important achievements in reducing burden of premature deaths, but only at younger adult ages (within age range 15-34 years) (Fig. 2). At ages over 35, decreases in mortality were less pronounced or mortality remained at the same level. By contrast, both Lithuanian males and females experienced a growth in adult mortality (Fig. 2). Estonia also demonstrates a clear advantage against Latvia and Lithuania in reducing mortality at older ages (above 65 years) (Fig. 2). This is particularly evident for Estonian females showing 12-21% mortality reductions between ages 65 and 80. There were only small improvements in Latvia and almost no change in old age mortality in Lithuania. Finally, the decrease in infant mortality was about 1.5 times higher in Estonia than in Latvia and Lithuania. These findings suggest that Lithuania maintained the same "soviet" pattern of age-specific mortality changes. At the same time, important advances in reducing mortality at adult and old ages can be a sign that Estonia started converging towards successful Central European countries. The only negative point for Estonia is a rise in mortality at age 20-24, for both sexes, sharply contrasting with important reductions observed at all other ages.

Fig. 2. *Changes in age-specific mortality in Estonia, Latvia, and Lithuania over 2000/2001 – 2005/2007 (1999/2001 = 1)*



Data source: Human Mortality Database, 2009.

B. Data quality

Both data on deaths and population exposures were provided by statistical offices of the three countries (Statistics Estonia, Central Statistical Bureau of Latvia, and Statistics Lithuania). Official data on deaths in Estonia, Latvia, and Lithuania have been considered as reliable and covering entire populations in the three countries (Mathers et al., 2005). Data on causes of death (by three digit codes of ICD10) have been obtained via WHO Mortality Database (WHO, 2009). There are some potential deficiencies related to cause of death data. For example, earlier studies found some over-reporting of cardiovascular diseases and under-reporting of cancers, external causes, and alcohol-related deaths in Lithuania (Petrauskiene et al., 1996; Stalioraityte, Pangonyte, & Kazlauskaite, 2005). However, the same studies concluded that these inaccuracies did not distort the general cause of death pattern in a significant way. In addition, we consider that the use of a few broad groups of causes of death should make negligible potential discrepancies due to changes in coding practices through time and/or between countries.

More serious data quality problems concern population exposures. The official population counts since the last round of censuses (2000 in Estonia and Latvia, 2001 in Lithuania) are based on registered births and deaths and on migration estimates. In Lithuania and Estonia it seems that the official migration figures tend to underestimate true emigration levels (Statistics Lithuania, 2008; Anniste, 2009), because many people in these countries emigrate without declaration to the authorities. Conversely, an undercount of immigrants who work and live illegally is also possible. Official migration figures have been used to produce population estimates in Latvia and Lithuania, whereas Statistics Estonia excluded migration from its calculation (Tammaru et al., 2009). If net out-migration is not negligible, population exposures could be overestimated (especially in Estonia) and true mortality levels could be underestimated.

In fact, according to the most recent official migration data, Lithuania and Latvia are the countries showing the highest negative net-migration in European Union (Statistics Lithuania, 2008; Eurostat, 2009)[1]. At the same time, the Eurostat's net-migration figures for Estonia suggest about a small positive net-migration in 2007. In that case, neglecting migration when computing population estimates, should lead to a tiny overestimation of mortality. Underestimation should then concern Lithuania and Latvia only.

Statistics Lithuania conducted a study on international migration attempting to improve official migration statistics by including additional data on undeclared emigrations. The amount of undeclared emigrations in Lithuania in 2001-2007 was estimated indirectly according to the reported information on household members (who emigrated) from household surveys conducted in 2006-2008 (Statistics Lithuania, 2008). It has been estimated that about 195 thousands people (including those who not declared their emigration) emigrated from Lithuania during the period 2001-2007. The estimated share of the undeclared emigrations (among the total emigrants) was very substantial and varied in time between 48% and 68% with the maximum in 2005 (Statistics Lithuania, 2008).

[1] Statistical offices in Lithuania and Estonia took several steps for improvement of migration data and produced adjusted net-migration figures (partly) accounting for unregistered migration flows. Unfortunately, we are not aware about such adjusted data for Latvia.

Until very recently, the situation with migration data in Estonia was even more complicated than in Lithuania and Latvia. During the period 2000-2008, Statistics Estonia stopped using migration data for estimating population exposures. This was despite the notable improvements in the registration of migrants due to the introduction of special laws for mandatory registration for immigrants (since May 2004) and all residents (since May 2005) (Anniste, 2009). In addition, since 2005, Finland (one of the most important destination countries for Estonia) provides weekly data on Estonian citizens registering their residence in the country (Anniste, 2009). Recently, Statistics Estonia took several important steps to improve migration statistics. In 2009, they released adjusted international migration estimates for all years after the census (Statistics Estonia, 2009). The adjusted statistics are based on population register data supplemented by additional data from the Citizenship and Migration Board (the institution responsible for issuing residence and work permits). However, Anniste (2009) suggests that even such adjustments are too conservative and they still do not account for migrants working and residing in foreign countries (emigrants) or Estonia (immigrants) illegally.

Using adjusted migration figures for Estonia and Lithuania, we were able to assess possible impact of unregistered migration on mortality estimates. For Estonia, the adjusted data on emigrants and immigrants were available by five year age groups for the period 2004-2007 (Statistics Estonia, 2009). For Lithuania, we used the published data for total number of emigrants above age 15 (including estimated undeclared emigrations) for 2003-2007 which were redistributed by age group using the officially registered migration counts. Corrected population exposures were applied for calculations of life tables for both countries. The effects of such adjustments are quite small for both countries (Table 1). The maximal difference between the unadjusted and adjusted life expectancies at birth was observed for Lithuanian males in 2005 (65.31 and 65.21 years, respectively). Therefore, using official population exposures would not lead to a significant underestimation of true mortality levels in the three countries.

Table 1. *Unadjusted and adjusted life expectancy at birth in Lithuania and Estonia, 2003 (2004)-2007.*

Year	Males			Females		
	Lithuania					
	Unadjusted	**Adjusted***	**Difference**	**Unadjusted**	**Adjusted***	**Difference**
2003	66.35	66.31	*0.04*	77.57	77.56	*0.01*
2004	66.27	66.22	*0.05*	77.58	77.56	*0.02*
2005	65.31	65.21	*0.10*	77.32	77.29	*0.03*
2006	65.27	65.22	*0.05*	77.01	77.00	*0.01*
2007	64.83	64.79	*0.04*	77.20	77.18	*0.02*
	Estonia					
2004	66.40	66.38	*0.01*	77.88	77.88	*0.01*
2005	67.23	67.21	*0.02*	78.14	78.13	*0.01*
2006	67.35	67.33	*0.02*	78.53	78.52	*0.01*
2007	67.23	67.23	*0.00*	78.81	78.81	*0.00*

* Adjusted for total net-migration (Estonia) and for undeclared emigration at ages 15 years and older (Lithuania).
Source: Statistics Lithuania, 2008, 2009A; Statistics Estonia, 2009A; Human Mortality Database, 2009.

II. Are there differences in recent health system reforms that could explain diverging trends in life expectancy?

A. Implementing health system reforms: different ways and different paces

A1. The structural reforms in health care

The main goals of structural reforms in health care in Estonia, Latvia, and Lithuania were set in the early 1990s. The purpose was to establish modern primary health care systems, reducing the role of hospitals, and introducing more effective health financing (Bankauskaite & O'Connor, 2008; Tragakes et al., 2008; Koppel et al., 2008). The core reforms were directed towards a greater role of general practitioners (GPs).

The pace and success of such structural changes have been varying across the countries (Bankauskaite & O'Connor, 2008). Clear legal frameworks of the reforms in Estonia and Lithuania were put in place in the mid of the 1990s, whereas Latvia experienced a lack of conceptual planning of health care changes (Birmontiene, 2004). The structural reforms in Latvia were regulated by numerous laws and regulations (including many temporary documents) by both parliament and government (Tragakes et al., 2008).

One of the most important challenges of the reforms in all three countries has been decentralization of the health care by clearly distinguishing primary and specialized health care levels. In particular, great efforts were needed to reform primary health care by creating effective networks of family doctor institutions. Probably the only common success in this area was the establishment of modern family medicine programmes in the educational institutions in all three countries in the early 1990s (Bankauskaite & O'Connor, 2008). However, health care analyses have shown that there were notable differences across the three countries in terms of implementing network of general practitioners.

In Estonia, the GP-based primary care system was fully launched in 1998 (Koppel et al., 2008). Laws and regulations adopted in 1997-1998 foresaw substantial changes in the payment system and legal status of GPs. Most of them became private providers working under independent contracts with the Estonian Health Insurance Fund (EHIF) (Koppel et al., 2003). Additional financial benefits from the state also stipulated the spread of primary care centres across Estonia. In 2000, the network of primary health centres with GPs covered almost the entire country. By 2006, the share of private providers of family doctor services was close to 100% (Ministry of Social Affairs, 2008).

The shift to modern primary health care in Latvia was slower and less successful than in Estonia (Tragakes et al., 2008). Changes began in 1997, following the adoption of the law on physicians' practice. In 2000, State Compulsory Health Insurance Agency started signing contracts for providing the primary health care services only with GPs (with an exception of internal disease doctors and pediatricians close to the retirement age) (Tragakes, 2009). However, the establishment of independent GPs in Latvia was slowed down by a number of difficulties such as lack of resources and state support, inadequate legal basis, poor health insurance system, and complicated payment system for medical services (Tragakes, 2009). The uniform payment system (per patient) for all GPs was

introduced only in December 2004 (and modified further in 2006). Due to numerous inconsistencies in the laws regulating health care, the primary health care services have been provided by various institutions such as independent GP, health centers (former polyclinics), "doctorates" (formerly practices of local internists), and feldsher-midwife points in rural areas, and even in some hospitals (Tragakes et al., 2008).

The transition to the family-medicine-based primary health care in Lithuania has been also quite slow. In 1996, the general practitioner's role was legally defined and first primary health care centers were established under experimental basis (Černiauskas, Murauskienė, Petkevičius, 2000). According to the decentralization plan adopted in the early 1990s, the development and administration of primary health care fell under responsibility of municipalities (Jakušovaitė, Darulis, Žekas, 2005). Due to lack of financial resources and poor administrative capacities, the establishment of new GPs was slow, whereas existing primary health care institutions were suffering from poor infrastructure (SAM, 2003; Jakušovaitė, Darulis, Žekas, 2005). In 2004, 66% of the patients were receiving primary health services from GPs, whereas 34% of patients still received these services from internal disease doctors, pediatricians, etc. (Jankauskienė, 2007). Jakušovaitė, Darulis & Žekas (2005) also suggest that an important obstacle to spreading private practices in municipalities was strong lobbying of state institutions (such as former polyclinics).

The health care reforms at the secondary and tertiary levels in Estonia, Latvia, and Lithuania accelerated only in the 2000s. Once again, the most radical and consistent reforms were implemented in Estonia. They mostly concerned introducing commercial code in the management of public hospitals and changing their legal status into joint stock companies or foundations (Koppel et al., 2008). The major achievements of such change was the transfer of administrative decisions from publicly elected officials to corporate management which led to substantial gains in efficiency and independence from local political influences (Koppel et al., 2008; Fidler et al., 2007). Another goal of optimizing the secondary care sector was to increase importance of the specialized outpatient care (especially, day care) institutions. As a result, there was a notable shift from inpatient to outpatient care in the 2000s (the proportion of the total assignations for specialized care spent for outpatient care increased from 27% in 2001 to 35% in 2007). The private sector has been playing an important role in providing the hospital services (one third of the hospitals were private in 2006) (Ministry of Social Affairs, 2008).

The reforms in the secondary and tertiary health care in Latvia were slow and inconsistent. One of the main achievements of the reform in the specialized health care in Latvia was an expansion of outpatient services and institutions (Tragakes et al., 2008). Although numbers of hospitals and hospital beds were decreasing in time, they remained at much higher levels than EU average (WHO Health for all, 2009). Due to bad coordination between different health care levels and inconsistencies in legislation, many hospitals continued providing primary health care and social care services (Tragakes et al., 2008). Poor management and underdeveloped health insurance system resulted in the high prevalence of long waiting lists to get specific treatments (due to rationing and quotas of the majority of services) (Müller et al., 2005). Further problems included widespread formal and informal payment systems, which have led to large financial inequality in the access to tertiary health care services in Latvia (Müller et al., 2005).

In Lithuania, reforms in the secondary and tertiary health care levels began in the early 1990s and mainly concerned small and medium hospitals which fell

under administration of municipalities (Černiauskas, Murauskienė, Petkevičius, 2000). The transformations were slow and ineffective because municipalities were struggling in allocating adequate resources for health care and had inadequate authorities and administrative capacities (Jakušovaitė, Darulis, Žekas, 2005). As result, Lithuania continued maintaining ineffective and expensive network of hospitals suffering from overcapacity, lack of funds, and poor infrastructure (Černiauskas, Murauskienė, Petkevičius, 2000). Due to inconsistencies in reforms and poor coordination, many hospitals were providing specialist consultations in specialized polyclinics or outpatient departments of teaching and university hospitals. Until recently, the share of private hospitals in Lithuania remained negligible (WHO Health for all, 2009). The majority of private institutions provided outpatient health care services which (in most cases) were not covered by the statutory health insurance (had to be paid out-of-pocket).

Table 2. *Trends in health care resources in Estonia, Latvia, and Lithuania, 2002-2007*

Year	General practitioners and family doctors (per 10000 pop.)			Hospital beds (per 10000 pop.)			Private in-patient hospital beds as % of all beds		
	EST	LVA	LTU	EST	LVA	LTU	EST	LVA	LTU
2002	5.2	4.4	3.3	60.7	77.5	89.5	10.6	1.7	0.2
2003	5.9	4.5	4.4	59.2	78.1	86.8	10.6	3.5	0.3
2004	6.1	5.3	4.9	58.2	77.4	84.3	10.1	5.0	0.3
2005	6.3	5.5	5.1	54.8	76.8	81.2	10.0	5.2	0.4
2006	6.4	5.6	5.3	56.5	76.1	79.9	9.9	5.3	0.4
2007	-	5.5	5.5	55.7	75.7	81.4	9.8	6.3	0.3

Source: NIHDE, HSMTSA, LHIC, 2002-2008; WHO Health for All Database, 2009.

The reforms in the three countries produced notable divergences in the trends in health care resources. Estonia has been a firm leader among the Baltic countries in both creating the network of family doctors and reducing hospital beds (Table 2). On the other hand, Lithuania was a laggard in both areas. However, if the situation was improving in the area of general practitioners, the number of hospital beds in 2007 was as much as 1.5 times higher than in Estonia. In addition, Lithuania showed notable disadvantage against other two countries in development of private hospital network (Table 2). Efficiency of hospital sector management was also better in Estonia, whereas Latvia and Lithuania showed much longer average lengths of stay almost in all specialities (Table 3).

Table 3. *Average length of stay (in days) in hospitals by specialty in Estonia, Latvia, and Lithuania, 2007.*

	Estonia	Latvia	Lithuania
Total	8.0	9.6	9.9
Internal medicine	7.0	8.5	8.0
Rehabilitation	12.1	15.9	24.4
Surgery (incl. orthopedics)	5.5	7.2	6.3
Psychiatry	17.2	56.7	30.1
General and nursing	27.6	10.7	47.8

Source: NIHDE, HSMTSA, LHIC, 2008.

Estonia successfully modernized its primary health care by implementing modern e-health solutions (Table 4). According to the data for 2007, virtually all GPs were computerized and had access to internet; 92% of the GPs had decision support software for diagnosing illnesses (Dobrev et al., 2007). These spectacular achievements contrast with much less favourable situations in Latvia and Lithuania, which showed the worst results among the EU countries. In terms of use of computers and internet Lithuanian general practitioners were lagging behind Latvia (Table 4).

Table 4. *Computer and software equipment usage among general practitioners in Estonia, Latvia, and Lithuania, 2007.*

	Estonia	Latvia	Lithuania
Use of computers	100.0	88.1	57.4
Use of internet	100.0	85.3	51.7
Electronic recording and storage of patient data	98.0	26.0	38.4
Availability of decision support software (DSS)	94.0	13.0	2.0
Availability of DSS for diagnosis	92.0	1.1	6.5
Availability of DSS for prescription	53.3	1.7	9.1
Utilisation of DSS routinely	59.0	3.0	0.0

Source: Pilot on eHealth Indicators" survey carried out by empirica in association with IPSOS on behalf of the European Commission (Dobrev et al, 2008).

Table 5 summarizes the data about the most common unmet needs for medical examination in the three countries. It appears that the biggest proportion of people with unmet needs was in Latvia (25-30%), whereas Estonia and Lithuania showed similar levels of 10-13%. Such high proportion of unmet needs in Latvia was related to high expenses of health care, whereas such problem was less important for Estonia and Lithuania (Table 5). In 2007, most frequently mentioned problems in Lithuania and Estonia included long waiting lists and other reasons.

Table 5. *Proportion of people with unmet needs for medical examination by reason, 2004-2007.*

Year	Total proportion of people with unmet needs			Reasons for unmet needs (% from total respondents)											
				Too expensive			Long waiting list			Wanted to wait and see if problem got better on its own			Other reasons		
	EST	*LVA*	*LTU*	*EST*	*LVA*	*LTU*	*EST*	*LVA*	*LTU*	*EST*	*LVA*	*LTU*	*EST*	*LVA*	*LTU*
2004	9.6	30.3	10.2	3.5	16.9	4.2	2.4	1.8	2.5	0.6	4.5	0.8	3.1	7.1	2.7
2005	9.6	30.3	10.2	3.5	16.9	4.2	2.4	1.8	2.5	0.6	4.5	0.8	3.1	7.1	2.7
2006	10.8	26.9	13.1	2.7	11.6	4.8	3.7	2.6	2.8	1	5.9	2	3.4	6.8	3.5
2007	12.8	24.7	10.2	1.4	8.5	1.9	6.7	3.1	4.8	0.8	6.5	1.3	3.9	6.6	2.2

Source: European Commission (2009). The European Statistics of Income and Living Condition (EU-SILC) survey.

A2. The reforms in health care financing

Estonia was the leader among Baltic countries by introducing effective financing system of health care which is mainly based on mandatory and universal health insurance system (Bankauskaite & O'Connor, 2008). Following the health insurance act (adopted in 1991), regional sickness funds were introduced already in 1992. In 1994, the Central Sickness Fund responsible for planning and controlling financial resources was established. In 2001, the functions of the Central Sickness Fund were granted to a new public agency: the Estonian Health Insurance Fund (EHIF). The EHIF has been obtaining finances through earmarked social payroll tax which contributed 63-66% of the total health expenditures. Other important sources of public funding are the state budget (covering the costs of preventive programs, ambulance services, and care for uninsured persons) and the municipalities (the contribution of these two sources were about 9% and 2% in 2006) (Koppel et al., 2008). The role of out-of pocket (private) payments for the financing of health care increased dramatically in the second half of the 1990s (from 7.5% in 1995 to 19.7% in 2000). The further growth in the share of private payments was less significant (reaching the level of 24% in 2006) (Ministry of Social Affairs of Estonia, 2008). Most private payments have been going for dental care and pharmaceuticals. The first official co-payments for outpatient services were introduced in 1995. Until the year 2001, private institutions were able to set such co-payments without any regulations. Following the Health Insurance Act (2002), upper maximum limits were set for all health care services. The public health insurance fund has been reimbursing (fully or partially) all costs to the patients using state or private health care services (for institutions having contracts with EHIF). All costs (with exception of small fee for home visits) have been reimbursed in the case of primary care services. It is important to note that an increasing share of health care expenditures has been spent for prevention programs (11% in 2006) (Ministry of Social Affairs of Estonia, 2008).

Since the beginning of the 1990s, Latvia underwent several radical and very contradictory changes in the financing of health care. Particular feature of the reforms was the introduction of obligatory out-of-pocket contributions of each patient to the health care services (Müller et al., 2005). As a consequence, Latvia has become one

of the leaders among European countries according to the private share of the total health care expenditures (WHO, 2009). From 1993 to 1997, the health care system was directly financed by the state and local government budgets (Tragakes et al., 2008). In addition, special fees for services (to be paid by patients themselves) and complicated reimbursement points system were introduced in 1993. According to the rule adopted in July 1995, it became possible to charge patients for up to 25% (out of pocket) of the total costs of medical services (Tragakes et al., 2008). This maximal share was reduced to 20% in 1997. The health insurance system (Central Account Fund, later renamed as Health Compulsory Insurance State Agency (HCISA)) was established only in 1998 with a goal to redistribute financial resources to regional sickness funds. Thus, from 1997 to 2004, the resources for health care system were collected by joint contributions of health insurance payments (which were collected as allocations from about 28% of total income taxes), subsidies from budget, and direct payments by patients (Tragakes et al., 2008). In 2005, the contributions from income taxes were abolished and the state budget became the only source (besides direct private out-of-pocket payments for service fees) for financing health services in Latvia. The HCISA became responsible for redistributions of the budget allocations. Until recently, unofficial out-of-pocket payments were also common in the secondary and tertiary health care levels (Müller et al., 2005; Tragakes et al., 2008).

Throughout the 1990s and 2000s, Lithuania has been attempting to maintain the system of publicly funded health care based on statutory health insurance (Černiauskas, Murauskienė, Petkevičius, 2000). First elements of the health insurance scheme were implemented in Lithuania in 1991. However, between 1991 and 1995, the scope of health insurance system was very limited (covering only pharmaceuticals and spa care). Until 1997, the health care was funded through the municipal and state budgets (Černiauskas, Murauskienė, Petkevičius, 2000). Due to great socio-economic inequalities across municipalities and great divergence in territorial resource allocations for health, this funding system was ineffective (Jakušovaitė, Darulis, Žekas, 2005). Lithuania implemented the Law on Health Insurance only in 1996. Following this law, the State Patients Fund (SPF) (under the Ministry of Health) became responsible for maintaining the compulsory health insurance in Lithuania (Černiauskas, Murauskienė, Petkevičius, 2000). The SPF has been financed by joint contributions of the statutory health insurance contributions by private persons and employers (collected as a part of the social tax by State Social Insurance Agency), contributions for the insured from the state budget, and direct subsidies from the budget. Until recently, the SPF fully covered the majority of health services (with exception of some specific services such as dentistry (in private institutions), therapeutic abortions, cosmetic surgery, and etc.). Most official out-of-pocket payments concerned full or partial payments for pharmaceuticals (Jakušovaitė, Darulis, Žekas, 2005). In addition, patients had to pay for most private health services since the SPF was very slow in signing contracts with private providers (Jakušovaitė, Darulis, Žekas, 2005). The generous system covering almost all health care services led to substantial increases in debts of the SPF to health care institutions and pharmaceutical companies (Chawla, 2007). There were some attempts to solve such situation by introducing rationing and quotas for services and reimbursements of pharmaceuticals. This created further problems such as long waiting lists and increase in unofficial out-of-pocket payments in order to avoid waiting time for the services (Jakušovaitė, Darulis, Žekas, 2005).

Table 6 gives some data on trends in health care expenditures in the three countries. It should be noted, however, that such figures sometimes differ from source

to sources and therefore, these data should be treated with caution. It can be seen that countries show quite similar proportions (5-6%) of the total shares of GDP for health. The biggest differences concern the shares of total public and private out-of-pocket payments (Table 6). The share of public health expenditures were 74-77% in Estonia and 68-73% in Lithuania, whereas the corresponding figures for Latvia fell within the range of 51-61%. Consequently, the proportion of out-of-pocket payments was highest in Latvia and the smallest in Estonia (Table 6).

Table 6. *Trends in health care expenditures in Estonia, Latvia, and Lithuania, 2000-2007*

	Total share (in percent) of GDP for health			% of total health care expenditures											
				Total public expenditures on health			State and municipal budgets			Social health insurance			Private out-of-pocket payments		
	EST	*LVA*	*LTU*	*EST*	*LVA*	*LTU*	*EST*	*LVA*	*LTU*	*EST*	*LVA*	*LTU*	*EST*	*LVA*	*LTU*
2000	5.4 [a]	4.8 [b]	6.0 [c]	76.4 [a]	54.7	72.4 [c]	10.4 [a]	-	6.8	66.0 [a]	-	65.7 [c]	19.7 [d]	43.9 [e]	27.6 [c]
2001	5.1	4.8 [b]	5.7 [c]	77.7	51.2	71.8 [c]	*10.8*	-	6.6	*66.9*	-	65.1 [c]	18.9	46.5 [e]	28.3 [c]
2002	4.9 [a]	4.9 [b]	5.9 [c]	76.2 [a]	51.8	68.3 [c]	10.6 [a]	-	6.5	65.6 [a]	-	61.8 [c]	19.9 [d]	45.5 [e]	31.7 [c]
2003	5.0 [a]	5.0 [b]	5.3 [c]	77.0 [a]	52.4	69.0 [c]	11.6 [a]	-	8.4	65.4 [a]	-	60.6 [c]	20.7 [d]	46.1 [e]	31.0 [c]
2004	5.1 [a]	6.0 [b]	5.7 [a]	75.5 [a]	58.6	67.5 [a]	9.8 [a]	-	8.6 [a]	65.7 [a]	-	58.9 [a]	21.3 [d]	40.6 [e]	31.9 [a]
2005	5.0 [a]	5.3 [b]	5.9 [a]	76.7 [a]	60.5	67.8 [a]	10.5 [a]	-	9.4 [a]	66.2 [a]	-	58.4 [a]	20.4 [d]	38.6 [e]	31.7 [a]
2006	5.1 [a]	4.0 [b]	6.3 [a]	73.7 [a]	-	69.5 [a]	11.2 [a]	-	10.7 [a]	62.5 [a]	-	58.7 [a]	23.8 [d]	-	30.0[a]
2007	-	-	6.3 [a]	-	-	73.0 [a]	-	-	13.7 [a]	-	-	59.3 [a]	-	-	26.6[a]

[a] Estimated using OECD methodology; [b] Health Statistics and Medical Technology Agency of Latvia; [c] Estimates by Lithuanian Health Information Centre, [d] Estimates by Ministry of Social Affairs of Estonia; [e] WHO Health for All Database, 2009.
Note: data on % of total health care expenditures by state and municipal budgets and social health care insurance for Latvia were not available for us.

B. Is impact visible through amenable or man-made diseases?

The impact of changes in health care and health-related policies on the health of a population could be perceived trough changes in amenable/avoidable mortality trends. The *amenable* mortality approach suggests that a substantial share of deaths can be avoided if timely and effective health care is present (Nolte & McKee, 2004). Some causes of death such as ischaemic heart diseases are considered as both *amenable to medical care* and *avoidable through inter-sectorial health policies or prevention* (Simonato et al., 1998; Nolte et al., 2002). The effectiveness of specific health policies and prevention programmes can be also measured by mortality due to so called *man-made diseases* which are mostly attributable to consequences of societal changes due to industrialization and hardly affected by the advances in medicine like alcohol- and smoking related causes of death, traffic accidents, suicides, and homicides (Omran, 1971; Meslé & Vallin, 1993).

Our findings confirm the conclusions about divergent health care trends discussed in the previous subchapter. Fig. 3A demonstrates that successful health care reforms in Estonia led to notable contributions of amenable causes of death to progress inmale and female life expectancy at birth. It can be seen that improvements in health care contributed to about 1/3 of the total gains for both sexes. Moreover,

together with ischaemic heart diseases, these causes of death were responsible for 76% and 84% of the total health improvement among males and females, respectively. At the same time, the contributions of amenable causes to the changes in male life expectancy were either very small (in Latvia) or negative (in Lithuania) (Fig. 3A). Much smaller than in Estonia but still positive impacts of amenable causes on overall health can be observed for Latvian and Lithuanian females. In both countries, these improvements counter-balanced negative impacts of other causes of death (and ischaemic heart diseases in Lithuania). As for ischaemic heart diseases, worsening mortality due to these causes was significant factor behind adverse life expectancy trends in Lithuania, especially among females (Fig. 3A). Latvia showing small but positive contributions of these causes took an intermediate position between Estonia and Lithuania. It can be assumed that Estonian experience in reducing amenable mortality is somewhat similar to that observed in successful Central European countries. It has been proposed that such progress in health should be more attributed to "technical progress in medical treatment" than to positive changes in health-related behaviours (Rychtarikova, 2004).

Figure 3B suggests that Latvia was a clear leader among the Baltic countries in reducing the harm of "man-made" diseases. This success can be at least partly attributable in successfully implemented strict policies against traffic accidents or anti-alcohol policies. Almost entire progress in male life expectancy came from reductions in mortality due to "man-made" diseases (Fig. 3B). The importance of these causes of death was less significant among females (23% of the total gain). In Estonia, there were moderate positive contributions of "man-made" diseases among males (about 21% of the total gain) and only small progress among females. Once again, Lithuania shows the opposite trends, in particular among females (Fig. 3B). In fact, "man-made" diseases were the most important causes of death responsible for unfavourable female life expectancy trends. Less important but also negative contributions of these causes of death can be observed for Lithuanian males.

Fig 3. *Contributions of causes amenable to medical care and man-made diseases to the total change in life expectancy at birth in Estonia, Latvia, and Lithuania from 2000 to 2007.*

A) Causes amenable to medical care

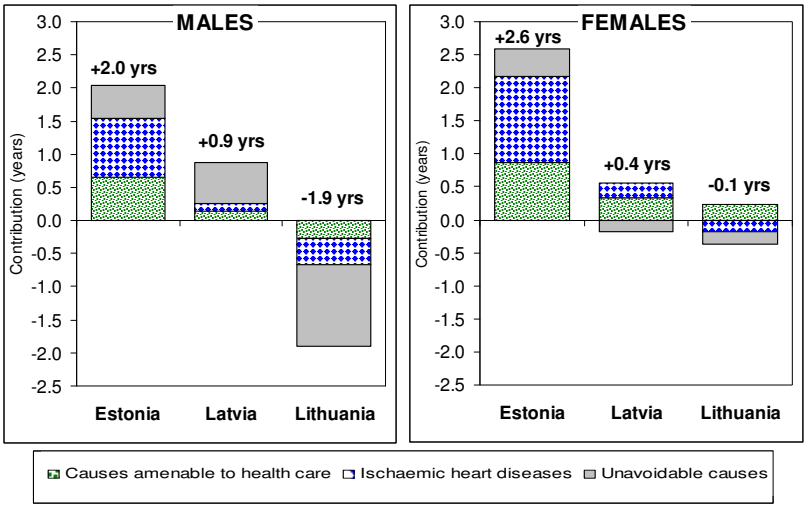
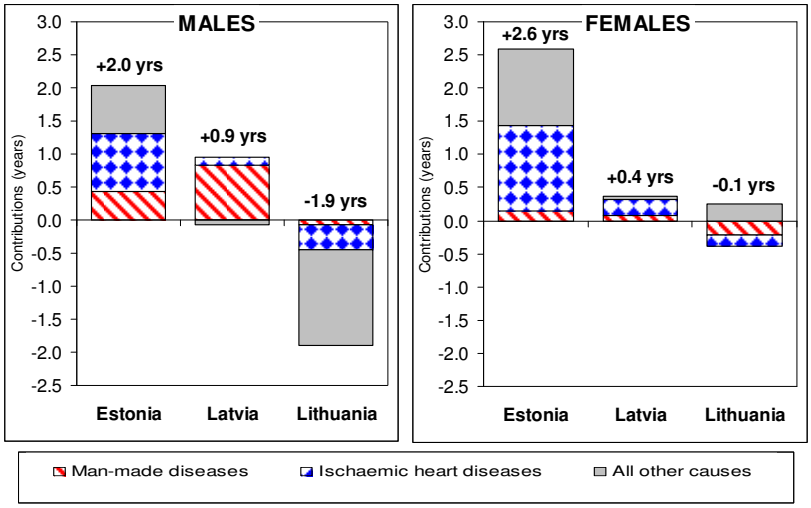


Fig 3 (cont.). *Contributions of causes amenable to medical care and man-made diseases to the total change in life expectancy at birth in Estonia, Latvia, and Lithuania from 2000 to 2007.*

B) Man-made diseases



Note: the list of causes amenable to health care is compiled according to Nolte & McKee, 2004;
The list of man-made diseases is compiled according to Meslé & Vallin, 1993.
Data source: Human Mortality Database, 2009; WHO Mortality Database, 2009.

III. The role played by specific causes of death

A. Contribution of causes of death to the trends

Figures 4 and 5 depict cause-specific contributions to overall changes in life expectancy at birth in Lithuania, Latvia and Estonia between 2000 and 2007. The results of decomposition analysis suggest that the contradictory changes in life expectancy in the three countries seem to be mainly explained by the differences in mortality dynamics of three specific causes of death: cardiovascular diseases, digestive diseases, and external causes.

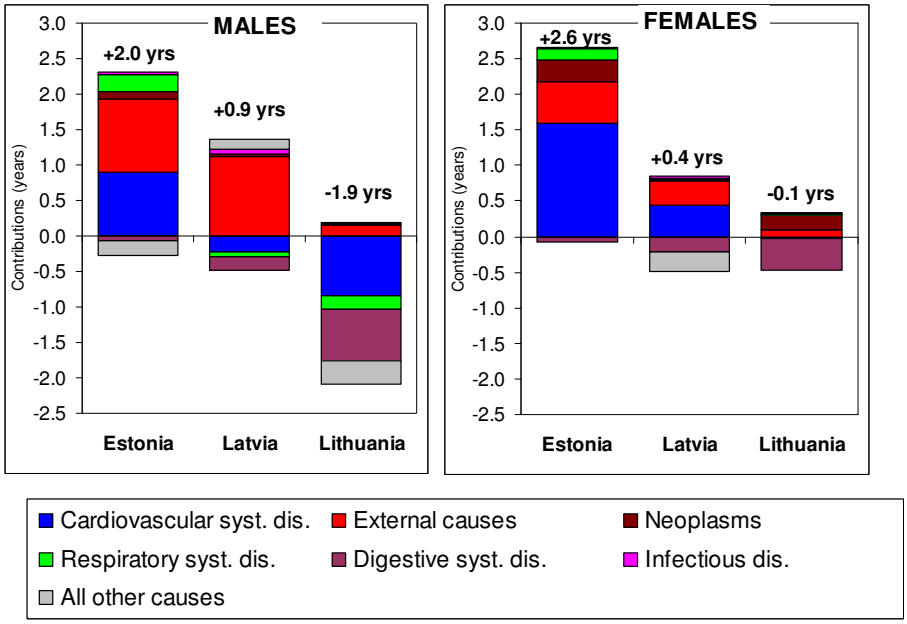
The impressive improvement in male life expectancy in Estonia between 2000 and 2007 was mainly due to the reduction of external causes of death and of cardiovascular mortality (Fig. 4). These two causes alone account for almost all the net growth in male life expectancy at birth (+2.0 years). The contributions of both groups of causes of death were the largest at adult working ages between 20 and 65 years (Fig. 5). There are also important gains in life expectancy due to improvements in mortality due to respiratory diseases (+0.2 years) but "other diseases" are responsible for comparable losses, whereas the impact of remaining causes of death is negligible.

Cardiovascular diseases also played the most important (but exactly opposite) role in Lithuania where the deterioration in male mortality due to these causes at adult ages explain almost a half of the net decline in life expectancy. Differently from Estonia and Latvia, the second more important group of causes of death in Lithuania is digestive diseases. Very striking negative contributions (mainly related to alcohol-related digestive diseases) are almost as large as those by cardiovascular diseases (-0.7

and -0.9 years respectively). By contrast, in Lithuania, the role of external causes is surprisingly small (+0.2 years) and fully counterbalanced by negative impacts of respiratory diseases (-0.2 years) and "other causes" (-0.3 years).

In Latvia, while the impact of cardiovascular diseases on male life expectancy is slightly negative, that of external causes is largely positive, even more than in Estonia. Contrasted roles of cardiovascular diseases and external causes are particularly marked at adult ages. On the contrary, at older ages, cardiovascular mortality change has positive effect while external causes are neutral (Fig. 5).

Fig 4. *Contributions of the major groups of causes of death to the total change in life expectancy at birth in Estonia, Latvia, and Lithuania from 2000 to 2007.*



Data source: Human Mortality Database, 2009; WHO Mortality Database, 2009.

Fig 5. *Age and cause components of the total change in life expectancy at birth in Estonia, Latvia, and Lithuania from 2000 to 2007.*

A) Males

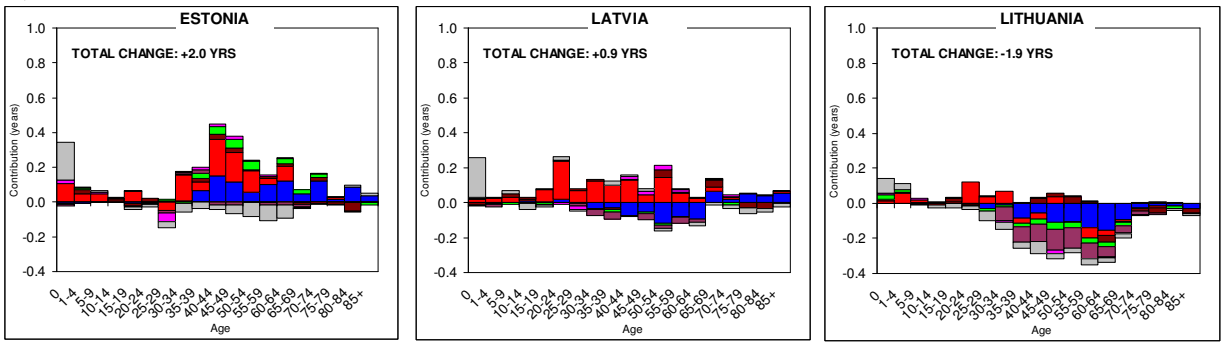
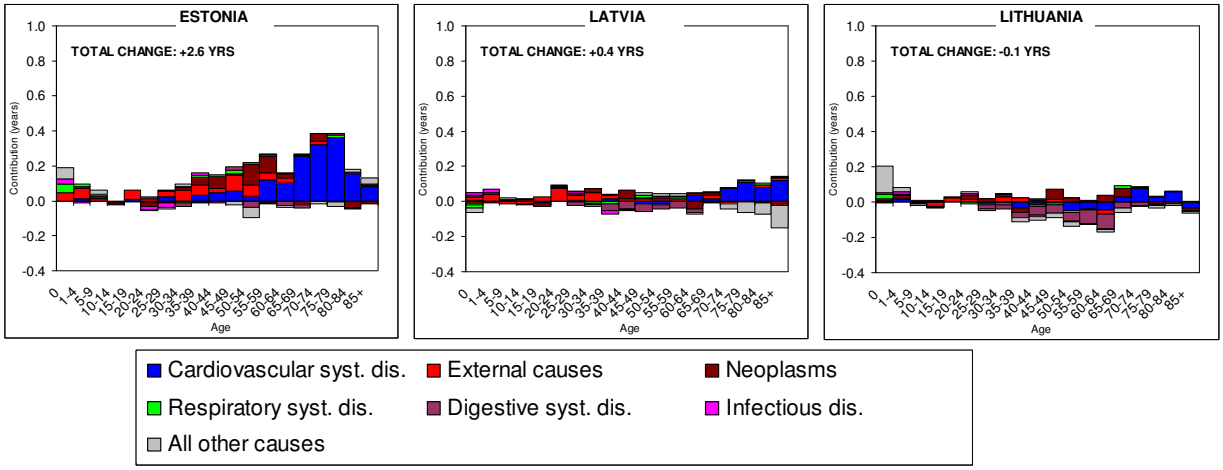


Fig 5 (cont.). *Age and cause components of the total change in life expectancy at birth in Estonia, Latvia, and Lithuania from 2000 to 2007.*

B) Females



Data source: Human Mortality Database, 2009; WHO Mortality Database, 2009.

The pattern of cause-specific contributions for females is quite different from that for males. The remarkable growth of life expectancy (+2.6 years) in Estonia was primarily driven by the very significant reduction of cardiovascular mortality (especially at ages above 65) but also caused by the decrease of external causes and neoplasms (especially at younger adult ages) (Figs. 4 and 5).

Lithuanian females at ages 65+ also show some gains from cardiovascular mortality but entirely cancelled by losses at younger adult ages. Neoplasms and, for few, external causes are the only source of net gains (whatever age) but losses due to digestive diseases are much larger, which explains the negative net total effect.

Finally, in Latvia both cardiovascular diseases (especially at older ages) and external causes (mostly at adult ages) reductions produce significant gains, but much less than in Estonia, and largely contradicted by digestive diseases and "other causes".

More generally, it can be said that three major groups of causes explain the largest part of the diverging trends in life expectancy within Baltic countries: digestive diseases, external causes and cardiovascular diseases. Let us see them more in detail.

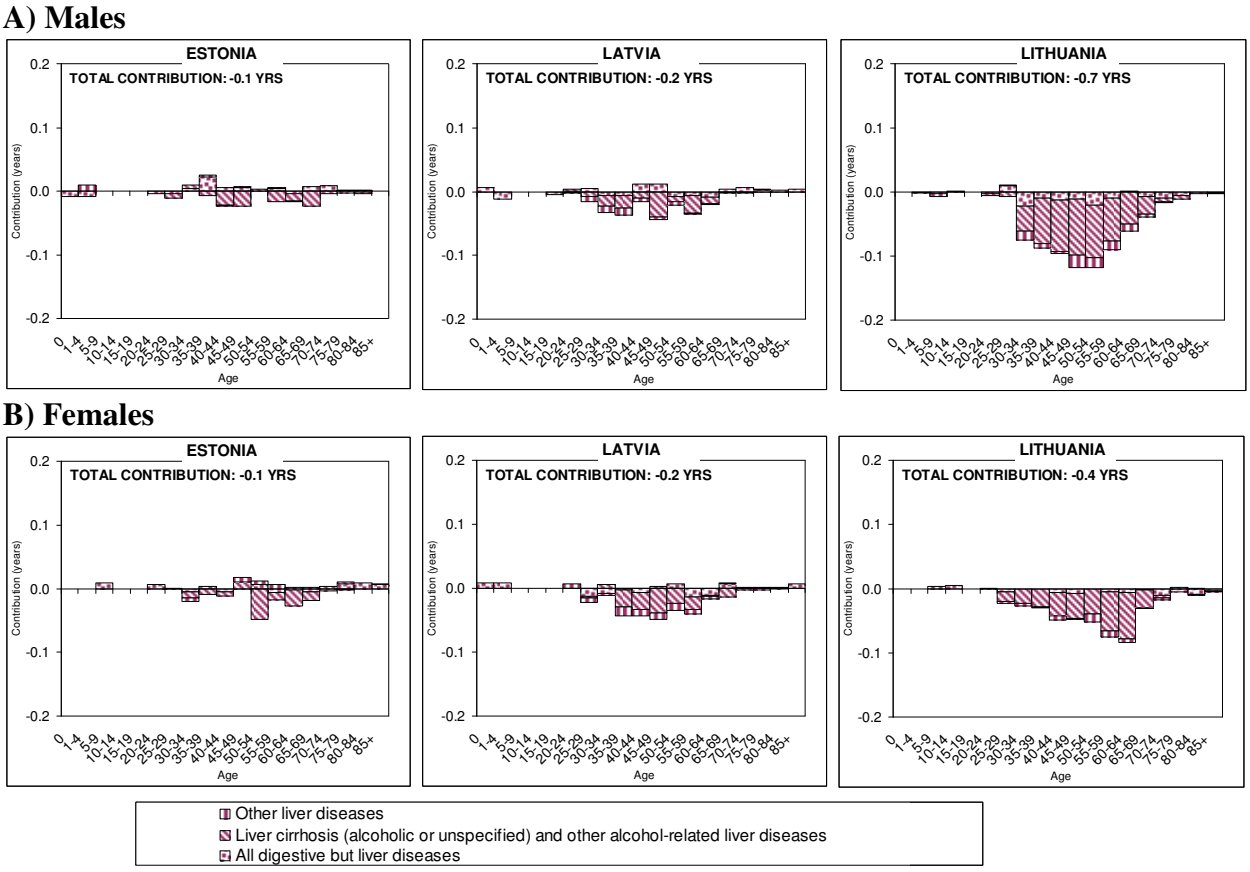
B. Digestive diseases

Figure 6 and Appendix 3 show that the negative impact of digestive diseases, quite significant in Latvia and Lithuania for both sexes (much less in Estonia) is massively attributable to liver cirrhoses [2]. In all three countries, these causes made losses in life expectancy (Fig. 6). The impact is particularly high in Lithuania (-0.5 years for males and -0.3 years for females) and still significant in Latvia (about -0.2) and even in Estonia (about -0.1). It is concentrated in adult ages (mostly between ages

[2] To make simple, we call here liver cirrhoses the group including ICD-10 items K70 (Alcoholic liver disease) and K74 '(Fibrosis and cirrhosis of liver), which includes mainly alcohol related cirrhoses even if they are not specified as such.

30 and 65). Other digestive diseases also produced small life expectancy losses in Latvia and Lithuania, whereas they have positive effect in Estonia.

Figure 6. *Age-specific contributions of the selected digestive system diseases to the total change in life expectancy at birth in Estonia, Latvia, and Lithuania from 2000 to 2007.*



Data source: Human Mortality Database, 2009; WHO Mortality Database, 2009.

Appendix 3 suggests that a notable divergence in mortality due to liver cirrhoses may explain a substantial part of variation in overall health between the three countries. Mortality due to these causes in Lithuania was increasing during the whole period 2000-2007. The speed of mortality increase accelerated after 2003, as SDRs jumped by about two times in three years (Appendix 3). For most of the period, in Estonia and Latvia mortality due to liver cirrhoses was stagnating with some fluctuations. The sudden worsening in mortality in these countries during the last years was also less significant than in Lithuania (Appendix 3). In 2007, mortality due to liver cirrhoses in Lithuania was by about 1.5-2 times higher than in Latvia and Estonia. Recet mortality increases due to that cause in Lithuania and Latvia were also reinforced by notable worsening in mortality due to other liver diseases (Appendix 3).

C. External causes

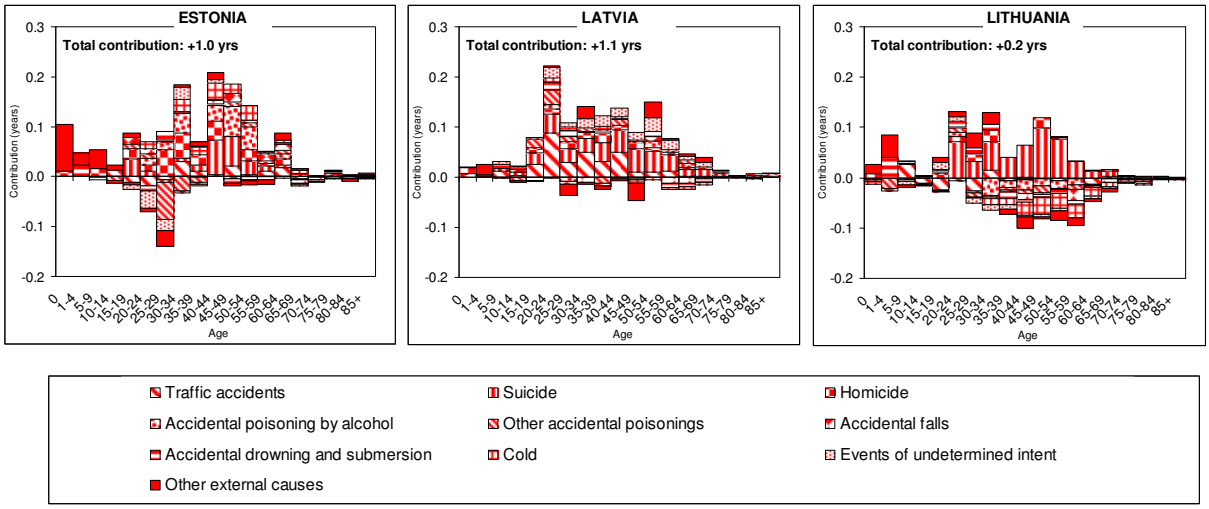
Since these causes are more important for male mortality; we restrict our analyses to males. To look at more details, the group of causes has been split into the following ten smaller sub-groups of causes for the decomposition analyses: traffic accident, suicide, homicide, accidental poisoning by alcohol, other accidental poisoning, accidental fall, accidental drowning and submersion, cold, event of undetermined intent, and all other (remaining) external causes of death. Age-standardized death rates (SDRs) were calculated for two broad age ranges: 0-34 years and 35 years and older.

Figure 7 shows that almost all external causes of death contributed to the improvements in male life expectancy in Estonia and Latvia. The most significant gains in Estonia were produced by decreases in homicide (+0.3 years), suicide (+0.2 years), and accidental poisoning by alcohol (+0.2 years). Still positive, impacts of the remaining external causes of death were much smaller (Fig. 7). The largest contributions in Latvia came from reductions in suicide (+0.4 years), traffic accidents (+0.3 years), and events of undetermined intent (+0.2 years). In Latvia, the progress (in particular due to the decrease in traffic accidents and suicides) mostly concerned young adult ages (between 20 and 59 years) with a notable peak at ages 20-24. In Estonia, the positive contributions mostly concerned ages 30-34 and 40-54 (Fig. 7). At younger adult ages, gains were counterbalanced by negative impacts of mortality due to other accidental poisonings, events of undetermined intent, and traffic accidents.

In the same time, Lithuanian males showed only very small overall impact of external causes of death (+0.1 years). The only significant positive contribution came from improvements in suicide mortality (+0.5 years) and mostly concerned the ages 20-24, 30-34, and 40-54. This gain was counterbalanced by increasing mortality due to accidental poisoning by alcohol at ages 30-59 years and a striking increase in mortality due to cold among older adult males (the joint contribution of these causes was -0.4 years) (Fig. 7). Differently from Latvia, Lithuanian males did not achieve any progress in reducing mortality due to traffic accidents.

Appendix 4 points to divergences in mortality due to all external causes of death combined between Estonia and Latvia on one hand, and Lithuania on another hand. At ages 0-34, Lithuania had the highest initial mortality level and the slowest rate of improvement throughout the period (Appendix 4). At the same time, Latvia achieved a notable progress, as SDRs for external causes of death decreased by 1.5 times. Estonia, having slightly better situation than in Latvia at the beginning, showed a slow down in the recovery and even reversal in trends after 2003 (Appendix 4). At ages 35+, the leader in mortality reductions was Estonia, whereas Latvia saw short term worsening during 2004-2005. Once again, Lithuania experienced mortality stagnation throughout the whole period covered.

Figure 7. *Age-specific contributions of the selected external causes of death to the total change in male life expectancy at birth in Estonia, Latvia, and Lithuania from 2000 to 2007.*



Data source: Human Mortality Database, 2009; WHO Mortality Database, 2009.

Turning to more specific external causes of death, which may help explaining variation in overall health trends, a very illustrative example concerns traffic accidents (Appendix 4). It can be seen that despite the worst starting position, Latvia became a clear vanguard among the Baltic countries in reducing burden of traffic accidents among children and young adults (SDRs decreased by 1.6 times between 2000 and 2007). At the same time, Estonian children and young adults experienced less favourable trends due to the worsening of the most recent years (Appendix 4). On the contrary, at ages 35+, Estonia still keeps its the initial leadership since mortality reductions were as fast and almost as regular as in Latvia. The favourable trends in both countries contrast with stagnating or even increasingtrends in Lithuania (Appendix 4).

Trends in homicide may have also contributed to the divergence across countries. Particularly fast progress in reducing mortality was observed in Estonia allowing this country to catch up with the other two countries (Appendix 4). Very similar convergence of Estonia towards Latvian and Lithuanian lower initial levels of mortality can also be observed for accidental poisonings by alcohol and cold among adults (Appendix 4). Again such progress contrats with the unfavourable trends in mortality due to these causes in Lithuania (having the best situation in 2000).

Another important divergence can be observed for mortality due to accidental falls (Appendix 4). Once again, Lithuania experienced slower improvements, stagnation or even worsening situation. Despite some fluctuations, Estonian and Latvian males showed notable mortality reductions (1.2-1.5 times if compared to the year 2000). Finally, there was a variation in mortality due to other accidental poisonings (e.g. accidental poisoning by narcotics or by gases or vapours) (Appendix 4). This is particularly visible at ages 35+, where notable mortality increases in Lithuania are opposed to radical improvements in the Estonian situation.

D. Cardiovascular diseases

Cardiovascular diseases are responsible for large numbers of deaths, but it is difficult to divide that broad group of causes in many specific items, since the distinctions in use are often subject to miscounting due to the uncertainty of definitions and/or diagnoses. For that reason, it seemed reasonable to split the group into three sub-groups only: ischaemic heart diseases, other heart diseases, and other cardiovascular diseases (including other diseases of the circulatory system and cerebrovascular diseases). Figure 8 displays the impacts of these three components on Baltic life expectancies.

In Estonia, the decline of ischaemic heart diseases contributed by 0.9 and 1.3 years to the total gain in male and female life expectancy at birth, respectively. On the contrary, in Lithuania, increases in male and female mortality due to this cause produced significant losses of life expectancy (-0.4 and -0.2 years, respectively). These causes were mainly responsible for worsening male health at ages 55-69 (Fig. 8). In between, Latvia shows small progresses due to decreasing ischaemic heart diseases (+0.1 and +0.2 years for males and females, respectively), with small but systematically positive contributions among older females (Fig. 8).

In Estonia, the health progress driven by ischaemic heart diseases was reinforced by notable positive contributions of other cardiovascular diseases (0.5 years for males and 0.8 years for females) (Fig. 8). In Latvia, the gains due to these causes were even much more important than those due to ischaemic heart diseases (0.4 and 0.6 years for males and females, respectively). It can be seen that total gains due to cardiovascular system diseases among females were dominated by contributions of other cardiovascular diseases at older ages. At the same time, Lithuania experienced life expectancy losses from these causes for males and only negligible gains for females (Fig. 8).

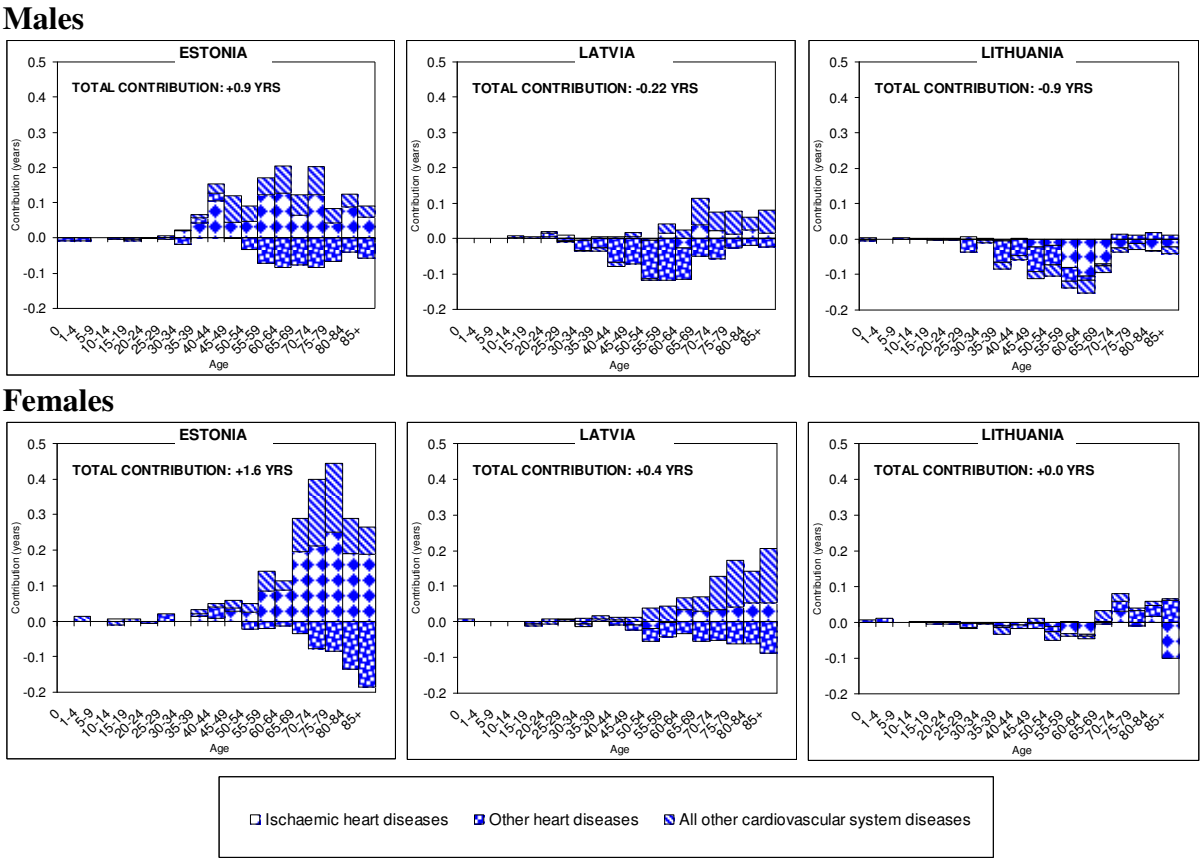
In Estonia, remarkable contributions of ischaemic heart diseases and other cardiovascular diseases were partially counterbalanced by worsening mortality by other heart diseases (Fig. 8). It should be noted, however, that a very significant part, increasing with age, of these negative contributions probably refer to changing coding practices, which may have affected cause of death statistics at the oldest ages. Other heart diseases also played a negative role in Latvia, especially for male life expectancy (-0.7 years) (Fig. 8). In Lithuania, these causes of death produced negative contributions only for adult males at ages 35-59, whereas females benefited from small gains at old age.

Appendix 5 points out a systematic progress in reducing cardiovascular mortality in Estonia, especially among females. Between 2000 and 2007, male and female SDRs dropped by 1.2 and 1.3 times, respectively. In particular, the declines in mortality due to ischaemic heart disease and other cardiovascular diseases were very impressive (1.3-1.5 times). The only exception from these positive trends concerned mortality due to other heart diseases, which increased notably over the 2000s (Appendix 5).

Notable progress in Estonia contrasts with smaller scale improvements in Latvia and stagnation or even worsening in cardiovascular mortality in Lithuania. The growing disadvantage of Lithuania against the other two countries is especially prominent for female ischaemic heart disease (Appendix 5). In 2007, Lithuanian female mortality due to this cause was 1.5 times higher than in Estonia. Similar divergence can be observed for other cardiovascular diseases (Appendix 5). Having the highest initial ischaemic heart disease mortality levels, Latvian males managed to

achieve notable progress and catch up with other two countries. The situation looks quite different for other heart diseases, since the fastest mortality increases and highest mortality levels are observed in Estonia (Appendix 5).

Figure 8. *Age-specific contributions of the selected cardiovascular system diseases to the total change in life expectancy at birth in Estonia, Latvia, and Lithuania from 2000 to 2007.*



Data source: Human Mortality Database, 2009; WHO Mortality Database, 2009.

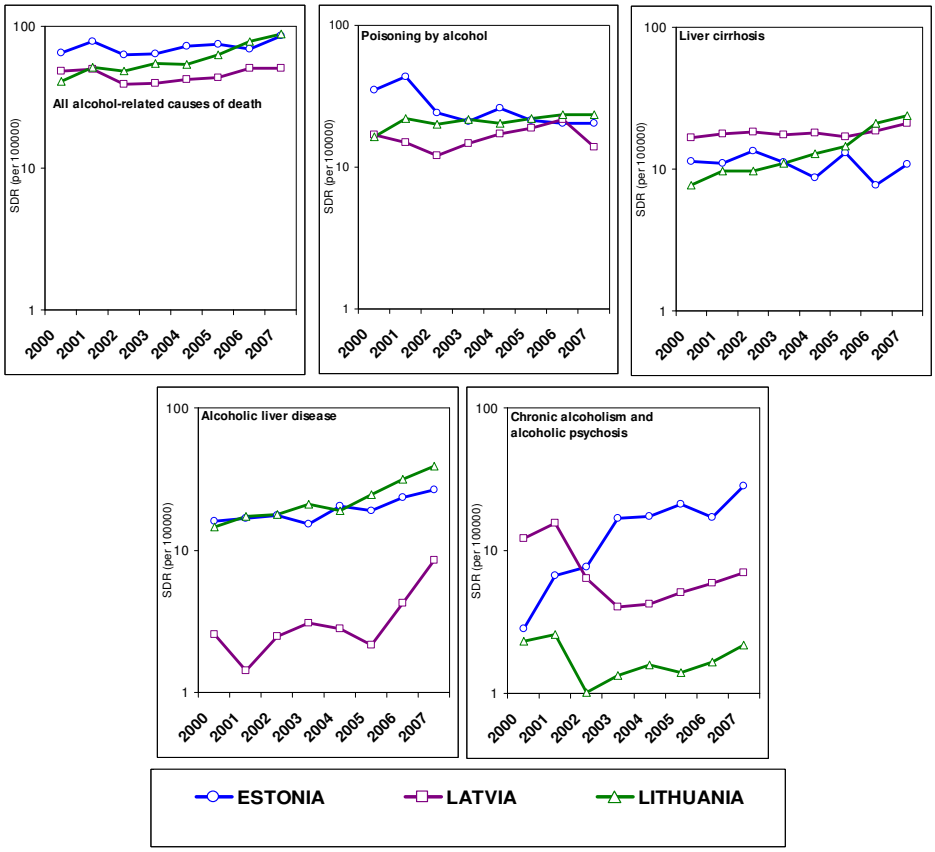
E. The decisive role of alcohol?

Previous sections on digestive system diseases and external causes of death suggested that there is a notable divergence in alcohol-related mortality trends across the three countries. This section systematically explores trends in both all alcohol-related causes combined and each specific cause of death such as accidental poisoning by alcohol, liver cirrhosis, alcoholic liver disease, and chronic alcoholism and alcohol psychosis. Once again, we focus here only on males, since alcohol has been considered as significant determinant behind male mortality in all three countries (McKee et al., 2000).

Figure 9 shows that alcohol-related mortality was either stagnating or increasing in all three countries. If compared to the reference year 2000, the most systematic and significant increase can be observed in Lithuania (2.2 times), whereas the corresponding growth in Estonia was only 1.3 times. After some progress in the beginning of the 2000s, Latvian males experienced stagnation then some increase

during the 2005-2006. However, Latvia managed to maintain alcohol-related mortality at the initial level of 2000.

Fig. 9. *Annual trends in male standardized mortality rate from selected alcohol-related causes of death in Estonia, Latvia, and Lithuania, 2000-2007.*



Data source: Human Mortality Database, 2009; WHO Mortality Database, 2009

During the 2000s, Lithuania experienced a moderate (1.4 times) growth in alcohol poisoning mortality. This contrasts with a notable progress in Estonia, where SDRs for this cause of death decreased by almost two times. Trends in Latvia were fluctuating (Fig. 9). First, a short-living but substantial progress reduced mortality in the beginning of the 2000s, but, from 2002 to 2006 the situation deteriorated gradually, and. finally, trends reversed again in 2007.

The biggest contributors to worsening overall alcohol mortality in Lithuania were liver cirrhosis and alcoholic liver diseases (Fig. 9). If compared to 2000, mortality due to these causes in 2007 was 3.1 and 2.1 times higher, respectively. It can be also seen that worsening situation in both causes of death accelerated after 2004 (Fig. 9).

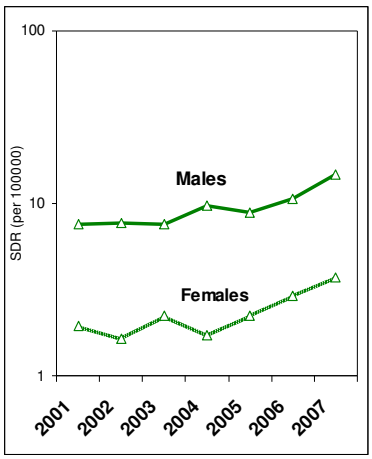
In Latvia, liver cirrhosis mortality stagnated throughout the whole period (with an exception of a jump in 2007). Despite a notable jump in 2005, Estonia maintained mortality due to this cause of death at lower (initial) levels than in other two countries (Fig. 9). As for alcoholic liver diseases, Estonia showed a significant worsening (1.7 times increase since 2000).

It is hard to interpret the very low level of mortality due to alcoholic liver diseases in Latvia compared with the other two countries (-11 times lower) (Fig. 9).

Possibly, this is related to specific coding practices in this country. Similar situation can also be observed for mortality due to chronic alcoholism and alcohol psychosis in Lithuania (Fig. 9). Therefore, our findings on alcoholic liver diseases in Latvia and on chronic alcoholism and alcohol psychosis in Lithuania and Latvia should be treated with caution.

The final figure of this chapter confirms a significant negative role of alcohol for reversal of health trends in Lithuania (Fig. 10). It shows that mortality due to alcohol cardiomyopathies also increased among both males and females in Lithuania (by almost 2 times for both sexes). More importantly, the increase in this cause accelerated after 2004 as in the case of alcoholic liver diseases. Unfortunately, no specific data for this cause was available to us for Estonia and Latvia.

Fig. 10. *Annual trends in standardized mortality rate from alcohol cardiomyopathies in Lithuania, 2001-2007.*



Data source: Human Mortality Database, 2009; WHO Mortality Database, 2009.

Conclusions / discussion

The contradictory changes in life expectancy at birth in the three Baltic countries over 2000s are mainly explained by the differences in dynamics of cardiovascular diseases, external causes of death, and digestive diseases. Whereas systematic reductions in cardiovascular and external mortality occurred in Estonia and (to less extent) in Latvia, worsening or stagnation were observed in Lithuania. In addition, such negative changes in Lithuania were reinforced by a striking growth in mortality due to alcohol-related digestive diseases.

The recent health divergence between countries could be attributable to notable variation in the success of implementing structural health care reforms and effectiveness of specific health policies. Due to fast and systematic reforms, Estonia became a vanguard among the Baltic countries in building effective health insurance based health care financing system. In addition, Estonia successfully built modern family-doctor-based primary care covering the whole population. Structural reforms were less systematic and much slower in Latvia and Lithuania. Divergence in the reforms seems to have impacted trends of amenable mortality. However, in the same time, Latvia shows a clear advantage against other two countries in reduction of burden of “man-made” diseases”. There is obvious lack of effective health policies

directed towards excessive alcohol consumption and traffic accidents in Lithuania. Finally, Lithuania showing a striking growth in alcohol-related digestive diseases seems to be particularly affected by new epidemic of alcoholism. This suggest about an urgent need for adequate anti-alcohol policies in this country.

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Appendix 1. *Groups of causes used for the decomposition of life expectancy changes and calculations of standardized death rates*

Nr.	Main groups and subgroups	Corresponding ICD-10 items
1.	**Infectious diseases**	**A00-B99**
2.	**Neoplasms**	**C00–D48**
3.	**Cardiovascular system diseases**	**I00–I99**
3.1.	Ischaemic heart diseases	I20-I25
3.2.	Other heart diseases	I00-I19, I26-I52
3.3.	Other cardiovascular system diseases	I53-I99
4.	**Respiratory system diseases**	**J00–J98**
5.	**Digestive system diseases**	**K00–K92**
5.1.	Digestive but liver diseases	K00-K69, K78-K92
5.2.	Liver cirrhoses (alcoholic or unspecified) and other alcohol related liver diseases	K70, K74
5.3.	Other liver diseases	K71-K73, K75-K77
6.	**External causes of death**	**V01–Y89**
6.1.	Traffic accidents	V01-V89, V98-V99
6.2.	Suicide	X60-X84
6.3.	Homicide	X85-Y09
6.4.	Poisoning by alcohol	X45
6.5.	Other accidental poisonings	X40-X44, X46-X49
6.6.	Accidental falls	W00-W19
6.7.	Accidental drawning and submersion	W65-W74
6.8.	Cold (exposure to excessive natural cold)	X31
6.9.	Event of undetermined intent	Y10-Y34
6.10.	All other external causes of death	V90-V97, W20-X64, W75-W99, X00-X30, X32-X39, X50-X59, Y35-Y89
7.	**Alcohol-related causes of death**	**F10, K70, K74, X45**
7.1.	Liver cirrhosis	K74
7.2.	Alcoholic liver disease	K70
7.3.	Chronic alcoholism and alcoholic psychosis	F10
7.4.	Poisoning by alcohol	X45
7.5.	Alcoholic cardiomyopathy [a]	I42.6
8.	**All other (remaining) causes of death**	-

[a] Data on this cause of death are available for Lithuania only.

Appendix 2. *Age and cause-of-death components of changes in male and female life expectancy at birth in Estonia, Latvia, and Lithuania, from 2000 to 2007*

Estonia, males

Nr.	Main groups and subgroups	Age																			
		0	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+	Total
1.	**Infectious diseases**	**0.02**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**-0.05**	**0.01**	**0.02**	**0.01**	**0.02**	**0.00**	**0.01**	**0.01**	**-0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.04**
2.	**Neoplasms**	**0.00**	**0.02**	**0.00**	**0.01**	**-0.01**	**0.02**	**0.00**	**0.00**	**0.02**	**0.03**	**0.03**	**0.00**	**0.01**	**0.02**	**-0.01**	**0.02**	**-0.01**	**-0.05**	**0.00**	**0.09**
3.	**Cardiovascular system diseases**	**-0.01**	**-0.01**	**0.00**	**0.00**	**-0.01**	**0.00**	**0.00**	**0.01**	**0.07**	**0.15**	**0.12**	**0.06**	**0.10**	**0.12**	**0.05**	**0.12**	**0.02**	**0.09**	**0.04**	**0.90**
3.1.	Ischaemic heart diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.04	0.11	0.04	0.05	0.12	0.13	0.06	0.12	0.04	0.09	0.06	0.88
3.2.	Other heart diseases	-0.01	-0.01	0.00	0.00	0.00	0.00	0.01	-0.02	0.02	0.02	0.00	-0.03	-0.07	-0.08	-0.08	-0.08	-0.07	-0.04	-0.06	-0.51
3.3.	Other cardiovascular system diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.03	0.08	0.04	0.05	0.08	0.06	0.08	0.04	0.04	0.03	0.53
4.	**Respiratory system diseases**	**-0.01**	**0.01**	**0.00**	**0.00**	**0.00**	**-0.01**	**0.01**	**-0.01**	**0.03**	**0.05**	**0.05**	**0.05**	**0.00**	**0.03**	**0.03**	**0.02**	**0.01**	**0.00**	**-0.01**	**0.24**
5.	**Digestive system diseases**	**-0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**-0.01**	**0.01**	**0.02**	**-0.02**	**-0.02**	**0.00**	**-0.01**	**-0.02**	**-0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**-0.07**
5.1.	Digestive but liver diseases	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.01	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.02
5.2.	Liver cirrhoses (alcoholic or unspecified) and other alcohol related liver diseases	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	0.01	-0.01	-0.02	-0.02	0.00	-0.02	-0.01	-0.02	0.00	0.00	0.00	0.00	-0.11
5.3.	Other liver diseases	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
6.	**External causes of death**	**0.10**	**0.05**	**0.05**	**0.01**	**0.06**	**0.00**	**-0.05**	**0.15**	**0.05**	**0.21**	**0.17**	**0.13**	**0.04**	**0.09**	**0.00**	**-0.01**	**0.01**	**-0.01**	**0.00**	**1.04**
6.1.	Traffic accidents	0.00	0.00	0.00	0.01	-0.01	-0.02	-0.01	0.03	0.01	0.00	0.02	0.00	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.07
6.2.	Suicide	0.00	0.00	0.00	0.00	0.04	0.01	-0.01	0.01	0.01	0.07	0.06	0.03	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.23
6.3.	Homicide	0.01	0.00	0.02	0.00	0.02	0.01	0.05	0.05	0.02	0.04	0.00	0.02	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.26
6.4.	Poisoning by alcohol	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.04	0.00	0.03	0.06	0.05	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.22
6.5.	Other accidental poisonings	0.00	0.00	0.00	-0.01	0.01	0.01	-0.07	-0.03	-0.01	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.04
6.6.	Accidental falls	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.01	0.02	0.01	0.01	0.01	-0.01	-0.01	0.00	0.00	0.00	0.07
6.7.	Accidental drawning and submersion	0.00	0.02	0.00	-0.01	0.00	-0.01	0.02	0.00	0.00	0.00	-0.01	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
6.8.	Cold	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.02	0.03	0.02	0.03	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.15
6.9.	Event of undetermined intent	0.00	0.00	0.00	0.00	-0.01	-0.03	-0.02	0.02	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.05
6.10.	Other external causes of death	0.09	0.03	0.04	0.01	0.01	-0.01	-0.03	0.01	0.01	0.01	0.00	-0.01	-0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.06
7.	**Alcohol-related causes of death**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.01**	**0.00**	**0.01**	**-0.04**	**-0.02**	**-0.03**	**-0.03**	**-0.07**	**-0.03**	**-0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**-0.23**
8.	**All other causes of death**	**0.22**	**0.00**	**0.01**	**0.01**	**-0.01**	**-0.01**	**-0.03**	**-0.05**	**-0.04**	**-0.02**	**-0.05**	**-0.08**	**-0.09**	**-0.07**	**-0.01**	**0.00**	**0.00**	**0.01**	**0.01**	**-0.20**
9.	**TOTAL**	**0.32**	**0.08**	**0.06**	**0.02**	**0.02**	**0.00**	**-0.13**	**0.12**	**0.16**	**0.41**	**0.31**	**0.16**	**0.05**	**0.17**	**0.04**	**0.16**	**0.01**	**0.04**	**0.03**	**2.03**

Notes: *due to rounding, age- and cause-specific figures do not always sum to give the stated totals. The stated totals for all causes of death do not include alcohol-related causes already counted as digestive system diseases and external causes of death (for more details see Appendix 1).*

Appendix 2 (cont.). *Age and cause-of-death components of changes in male and female life expectancy at birth in Estonia, Latvia, and Lithuania, from 2000 to 2007*

Latvia, males

Nr.	Main groups and subgroups	Age																			
		0	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+	Total
1.	**Infectious diseases**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**-0.01**	**-0.02**	**0.00**	**0.00**	**0.02**	**0.02**	**0.02**	**0.02**	**0.01**	**0.01**	**0.01**	**0.00**	**0.00**	**0.00**	**0.06**
2.	**Neoplasms**	**-0.02**	**0.00**	**0.02**	**0.01**	**0.00**	**0.00**	**0.01**	**0.01**	**-0.01**	**0.00**	**0.00**	**0.04**	**0.00**	**0.00**	**0.04**	**0.00**	**-0.03**	**-0.03**	**0.00**	**0.04**
3.	**Cardiovascular system diseases**	**0.00**	**0.00**	**0.00**	**0.01**	**0.00**	**0.02**	**0.00**	**-0.04**	**-0.03**	**-0.07**	**-0.05**	**-0.12**	**-0.08**	**-0.09**	**0.06**	**0.02**	**0.05**	**0.04**	**0.06**	**-0.22**
3.1.	Ischaemic heart diseases	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.00	-0.01	0.01	-0.03	0.04	0.02	0.01	0.02	0.02	0.12
3.2.	Other heart diseases	0.00	0.00	0.00	0.00	0.00	0.01	-0.01	-0.03	-0.03	-0.07	-0.07	-0.11	-0.12	-0.09	-0.05	-0.06	-0.03	-0.02	-0.02	-0.68
3.3.	Other cardiovascular system diseases	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00	-0.01	-0.01	0.01	0.00	0.03	0.03	0.07	0.05	0.07	0.04	0.06	0.35
4.	**Respiratory system diseases**	**0.00**	**-0.01**	**-0.01**	**-0.01**	**-0.01**	**0.00**	**0.00**	**0.00**	**-0.01**	**0.00**	**-0.01**	**-0.01**	**0.00**	**0.00**	**0.00**	**-0.01**	**0.00**	**0.00**	**0.00**	**-0.07**
5.	**Digestive system diseases**	**0.01**	**-0.01**	**0.00**	**0.00**	**-0.01**	**0.00**	**-0.01**	**-0.03**	**-0.04**	**0.00**	**-0.03**	**-0.02**	**-0.04**	**-0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**-0.19**
5.1.	Digestive but liver diseases	0.01	-0.01	0.00	0.00	-0.01	0.00	0.00	-0.01	-0.01	0.01	0.01	-0.01	-0.01	-0.01	0.00	0.01	0.00	0.00	0.00	0.00
5.2.	Liver cirrhoses (alcoholic or unspecified) and other alcohol related liver diseases	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	-0.02	-0.02	-0.01	-0.04	-0.01	-0.03	-0.01	0.00	0.00	0.00	0.00	0.00	-0.14
5.3.	Other liver diseases	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	-0.01	-0.01	-0.01	0.00	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.05
6.	**External causes of death**	**0.02**	**0.03**	**0.03**	**0.01**	**0.07**	**0.22**	**0.07**	**0.13**	**0.10**	**0.13**	**0.04**	**0.15**	**0.05**	**0.02**	**0.02**	**0.01**	**0.00**	**0.00**	**0.01**	**1.12**
6.1.	Traffic accidents	0.01	0.00	0.01	0.00	0.03	0.09	0.03	0.05	0.03	0.05	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.33
6.2.	Suicide	0.00	0.00	0.00	0.01	0.02	0.04	0.03	0.03	0.04	0.05	0.05	0.04	0.03	0.01	0.01	0.00	0.00	0.00	0.00	0.37
6.3.	Homicide	0.01	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.12
6.4.	Poisoning by alcohol	0.00	0.00	0.00	0.00	0.00	0.01	-0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.03
6.5.	Other accidental poisonings	0.00	0.00	0.00	-0.01	0.02	0.03	0.01	0.01	-0.01	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.06
6.6.	Accidental falls	0.00	0.00	0.00	0.01	0.00	0.00	0.00	-0.01	0.00	0.00	0.00	0.01	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	-0.02
6.7.	Accidental drawning and submersion	0.00	0.00	0.01	0.00	-0.01	0.02	0.01	0.00	0.01	0.00	0.00	0.01	-0.01	-0.01	-0.01	0.00	0.00	0.00	0.00	0.03
6.8.	Cold	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.00	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.9.	Event of undetermined intent	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.02	0.02	0.02	0.02	0.03	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.18
6.10.	Other external causes of death	0.00	0.02	0.00	0.00	0.00	0.00	-0.02	0.02	-0.01	0.00	-0.03	0.03	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.03
7.	**Alcohol-related causes of death**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.01**	**-0.01**	**-0.01**	**-0.01**	**0.00**	**-0.02**	**0.01**	**-0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**-0.04**
8.	**All other causes of death**	**0.23**	**0.00**	**0.02**	**-0.03**	**-0.01**	**0.02**	**-0.01**	**0.00**	**0.02**	**0.01**	**0.02**	**-0.01**	**0.01**	**-0.02**	**-0.01**	**-0.02**	**-0.04**	**-0.02**	**-0.02**	**0.13**
9.	**TOTAL**	**0.24**	**0.01**	**0.06**	**-0.01**	**0.06**	**0.25**	**0.03**	**0.06**	**0.03**	**0.08**	**-0.02**	**0.05**	**-0.04**	**-0.10**	**0.13**	**0.01**	**-0.01**	**-0.01**	**0.05**	**0.87**

Notes: *due to rounding, age- and cause-specific figures do not always sum to give the stated totals. The stated totals for all causes of death do not include alcohol-related causes already counted as digestive system diseases and external causes of death (for more details see Appendix 1).*

Appendix 2 (cont.). *Age and cause-of-death components of changes in male and female life expectancy at birth in Estonia, Latvia, and Lithuania, from 2000 to 2007*

Lithuania, males

Nr.	Main groups and subgroups	Age																			
		0	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+	Total
1.	**Infectious diseases**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**-0.01**	**0.00**	**0.01**	**-0.02**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.01**
2.	**Neoplasms**	**0.01**	**0.01**	**0.00**	**0.00**	**0.02**	**-0.01**	**0.00**	**0.00**	**0.00**	**0.03**	**0.02**	**0.04**	**0.01**	**-0.04**	**0.00**	**-0.02**	**-0.03**	**0.00**	**-0.02**	**0.02**
3.	**Cardiovascular system diseases**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**-0.03**	**-0.01**	**-0.08**	**-0.05**	**-0.11**	**-0.10**	**-0.14**	**-0.15**	**-0.09**	**-0.02**	**-0.02**	**-0.02**	**-0.03**	**-0.85**
3.1.	Ischaemic heart diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	-0.01	0.00	-0.02	-0.02	-0.08	-0.10	-0.07	-0.02	-0.01	-0.03	-0.02	-0.38
3.2.	Other heart diseases	0.00	0.00	0.00	0.00	0.00	0.00	-0.04	0.00	-0.06	-0.05	-0.07	-0.05	-0.04	-0.01	-0.01	0.01	0.01	0.02	0.01	-0.26
3.3.	Other cardiovascular system diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	-0.02	-0.01	-0.02	-0.03	-0.02	-0.03	-0.02	-0.01	-0.02	0.00	-0.02	-0.21
4.	**Respiratory system diseases**	**0.02**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**-0.01**	**-0.01**	**-0.02**	**-0.03**	**-0.04**	**-0.03**	**-0.03**	**-0.03**	**-0.02**	**0.00**	**0.01**	**-0.01**	**0.00**	**-0.19**
5.	**Digestive system diseases**	**0.00**	**0.00**	**-0.01**	**0.00**	**0.00**	**-0.01**	**0.00**	**-0.08**	**-0.09**	**-0.10**	**-0.12**	**-0.12**	**-0.09**	**-0.06**	**-0.04**	**-0.02**	**-0.01**	**0.00**	**0.00**	**-0.73**
5.1.	Digestive but liver diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.01	-0.02	-0.01	-0.01	-0.01	-0.02	-0.01	0.00	-0.01	-0.01	-0.01	0.00	0.00	-0.11
5.2.	Liver cirrhoses (alcoholic or unspecified) and other alcohol related liver diseases	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	-0.04	-0.07	-0.08	-0.09	-0.08	-0.07	-0.05	-0.03	-0.01	-0.01	0.00	0.00	-0.52
5.3.	Other liver diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.02	-0.01	0.00	-0.02	-0.02	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	-0.09
6.	**External causes of death**	**0.01**	**0.06**	**0.01**	**-0.01**	**0.01**	**0.12**	**0.04**	**0.07**	**-0.03**	**-0.04**	**0.04**	**0.00**	**-0.06**	**-0.03**	**-0.01**	**-0.01**	**-0.01**	**0.00**	**0.00**	**0.16**
6.1.	Traffic accidents	0.00	0.00	0.03	-0.01	-0.03	-0.01	-0.03	0.02	0.00	0.00	0.00	-0.01	0.00	-0.01	0.00	0.00	0.00	0.00	0.00	-0.05
6.2.	Suicide	0.00	0.00	0.00	0.00	0.00	0.07	0.03	0.06	0.04	0.06	0.10	0.08	0.03	0.01	0.01	0.00	0.00	0.00	0.00	0.50
6.3.	Homicide	0.01	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08
6.4.	Poisoning by alcohol	0.00	0.00	0.00	0.00	0.00	0.01	0.00	-0.04	-0.01	-0.02	-0.01	-0.02	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	-0.11
6.5.	Other accidental poisonings	0.00	-0.02	0.00	0.00	0.00	0.01	-0.01	0.00	0.00	-0.01	-0.01	0.00	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	-0.07
6.6.	Accidental falls	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	0.00	0.00	-0.02	0.00	-0.01	0.00	0.00	0.00	0.00	-0.07
6.7.	Accidental drawning and submersion	0.00	0.04	0.00	0.00	0.00	0.01	0.01	0.01	-0.01	-0.01	0.00	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.04
6.8.	Cold	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	-0.01	-0.03	-0.03	-0.03	-0.03	-0.02	-0.01	-0.01	0.00	0.00	0.00	-0.18
6.9.	Event of undetermined intent	0.00	0.00	-0.01	0.00	0.01	0.01	-0.01	-0.01	-0.01	0.00	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
6.10.	Other external causes of death	0.02	0.05	0.00	0.00	0.01	0.01	0.03	0.02	-0.01	-0.02	0.00	-0.02	-0.02	-0.01	-0.01	0.00	0.00	0.00	0.00	0.05
7.	**Alcohol-related causes of death**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.01**	**-0.01**	**-0.07**	**-0.09**	**-0.10**	**-0.10**	**-0.10**	**-0.07**	**-0.05**	**-0.03**	**-0.01**	**-0.01**	**0.00**	**0.00**	**-0.63**
8.	**All other causes of death**	**0.09**	**0.03**	**-0.01**	**-0.01**	**-0.03**	**-0.02**	**-0.05**	**-0.04**	**-0.03**	**-0.07**	**-0.03**	**-0.02**	**-0.03**	**-0.02**	**-0.03**	**-0.01**	**0.00**	**-0.01**	**-0.01**	**-0.32**
9.	**TOTAL**	**0.14**	**0.11**	**0.02**	**-0.02**	**0.01**	**0.09**	**-0.05**	**-0.08**	**-0.25**	**-0.25**	**-0.26**	**-0.24**	**-0.34**	**-0.33**	**-0.20**	**-0.07**	**-0.06**	**-0.04**	**-0.07**	**-1.89**

Notes: *due to rounding, age- and cause-specific figures do not always sum to give the stated totals. The stated totals for all causes of death do not include alcohol-related causes already counted as digestive system diseases and external causes of death (for more details see Appendix 1).*

Appendix 2 (cont.). *Age and cause-of-death components of changes in male and female life expectancy at birth in Estonia, Latvia, and Lithuania, from 2000 to 2007*

Estonia, females

Nr.	Main groups and subgroups	Age																			
		0	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+	Total
1.	**Infectious diseases**	**0.03**	**-0.01**	**0.00**	**0.00**	**0.00**	**-0.02**	**-0.03**	**0.01**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**-0.01**
2.	**Neoplasms**	**0.00**	**0.01**	**0.01**	**-0.01**	**-0.01**	**-0.03**	**-0.01**	**0.02**	**0.05**	**0.07**	**0.01**	**0.12**	**0.09**	**0.03**	**-0.02**	**0.04**	**0.00**	**-0.04**	**-0.02**	**0.32**
3.	**Cardiovascular system diseases**	**0.00**	**0.01**	**0.00**	**0.00**	**0.01**	**-0.01**	**0.02**	**0.00**	**0.03**	**0.05**	**0.06**	**0.03**	**0.12**	**0.10**	**0.25**	**0.32**	**0.36**	**0.15**	**0.08**	**1.59**
3.1.	Ischaemic heart diseases	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.03	0.09	0.09	0.20	0.21	0.25	0.19	0.19	1.29
3.2.	Other heart diseases	0.00	0.00	0.00	0.00	0.00	-0.01	0.02	0.00	0.01	0.03	0.01	-0.02	-0.02	-0.01	-0.04	-0.08	-0.08	-0.14	-0.19	-0.51
3.3.	Other cardiovascular system diseases	0.00	0.01	0.00	-0.01	0.01	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.05	0.03	0.09	0.19	0.20	0.10	0.08	0.81
4.	**Respiratory system diseases**	**0.05**	**0.01**	**0.01**	**0.00**	**0.00**	**0.00**	**0.01**	**-0.01**	**0.01**	**0.01**	**0.02**	**0.01**	**0.01**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.01**	**0.17**
5.	**Digestive system diseases**	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.01**	**0.00**	**-0.02**	**-0.01**	**-0.01**	**0.02**	**-0.04**	**-0.01**	**-0.03**	**-0.02**	**0.00**	**0.01**	**0.01**	**0.01**	**-0.07**
5.1.	Digestive but liver diseases	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	-0.01	0.00	0.01	-0.01	0.00	0.00	0.00	0.01	0.01	0.01	0.02
5.2.	Liver cirrhoses (alcoholic or unspecified) and other alcohol related liver diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	-0.01	-0.01	0.01	-0.05	-0.01	-0.03	-0.01	0.00	0.00	0.00	0.00	-0.11
5.3.	Other liver diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01
6.	**External causes of death**	**0.05**	**0.06**	**0.01**	**-0.01**	**0.05**	**0.01**	**0.04**	**0.06**	**0.06**	**0.02**	**0.09**	**0.06**	**0.04**	**0.03**	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**	**0.58**
6.1.	Traffic accidents	0.00	0.00	0.00	-0.02	0.01	0.02	0.00	0.03	0.00	0.00	0.01	0.00	0.01	0.01	-0.01	0.00	0.00	0.00	0.00	0.05
6.2.	Suicide	0.00	0.00	0.00	0.01	0.02	0.00	0.04	0.01	0.00	0.02	0.01	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.14
6.3.	Homicide	0.00	0.00	-0.02	0.00	0.01	0.02	0.01	0.00	0.00	0.00	0.02	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.04
6.4.	Poisoning by alcohol	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.03	0.01	0.02	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.11
6.5.	Other accidental poisonings	0.00	-0.01	0.00	0.00	-0.01	-0.02	-0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.07
6.6.	Accidental falls	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
6.7.	Accidental drawning and submersion	0.00	0.00	0.01	0.00	0.00	-0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
6.8.	Cold	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	-0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
6.9.	Event of undetermined intent	0.00	0.00	0.00	0.01	0.01	0.00	-0.01	0.01	0.00	0.00	-0.02	0.00	0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.01
6.10.	Other external causes of death	0.04	0.06	0.02	0.00	0.01	0.02	0.00	0.03	0.00	0.00	0.02	0.02	0.00	0.01	-0.01	0.00	0.00	0.00	0.01	0.22
7.	**Alcohol-related causes of death**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**-0.01**	**0.01**	**0.00**	**0.01**	**-0.05**	**-0.02**	**-0.03**	**-0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**-0.10**
8.	**All other causes of death**	**0.06**	**0.00**	**0.03**	**0.00**	**0.00**	**0.00**	**-0.01**	**0.02**	**-0.01**	**0.00**	**-0.02**	**-0.06**	**-0.01**	**-0.01**	**0.01**	**-0.02**	**-0.02**	**0.02**	**0.04**	**0.02**
9.	**TOTAL**	**0.19**	**0.08**	**0.06**	**-0.02**	**0.06**	**-0.03**	**0.02**	**0.07**	**0.15**	**0.14**	**0.18**	**0.13**	**0.25**	**0.12**	**0.23**	**0.37**	**0.36**	**0.13**	**0.12**	**2.59**

Notes: *due to rounding, age- and cause-specific figures do not always sum to give the stated totals. The stated totals for all causes of death do not include alcohol-related causes already counted as digestive system diseases and external causes of death (for more details see Appendix 1).*

Appendix 2 (cont.). *Age and cause-of-death components of changes in male and female life expectancy at birth in Estonia, Latvia, and Lithuania, from 2000 to 2007*

Latvia, females

Nr.	Main groups and subgroups	Age																			
		0	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+	Total
1.	**Infectious diseases**	**0.02**	**0.02**	**0.01**	**0.00**	**0.00**	**0.00**	**0.01**	**0.00**	**-0.02**	**-0.01**	**0.00**	**0.01**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.04**
2.	**Neoplasms**	**-0.02**	**-0.01**	**0.01**	**0.01**	**-0.02**	**0.00**	**0.01**	**0.02**	**0.00**	**0.05**	**0.00**	**0.02**	**0.00**	**-0.04**	**0.02**	**-0.01**	**0.00**	**-0.01**	**-0.02**	**0.02**
3.	**Cardiovascular system diseases**	**0.01**	**0.00**	**0.00**	**0.00**	**-0.01**	**0.00**	**0.01**	**0.00**	**0.02**	**0.00**	**-0.01**	**-0.02**	**0.00**	**0.03**	**0.02**	**0.07**	**0.11**	**0.08**	**0.12**	**0.43**
3.1.	Ischaemic heart diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.01	-0.01	0.01	0.01	-0.01	-0.02	0.00	0.03	0.03	0.03	0.04	0.05	0.05	0.23
3.2.	Other heart diseases	0.01	0.00	0.00	0.00	-0.01	0.01	0.00	0.01	0.00	-0.01	-0.01	-0.04	-0.04	-0.03	-0.05	-0.05	-0.06	-0.06	-0.09	-0.43
3.3.	Other cardiovascular system diseases	0.00	0.00	0.00	0.00	0.00	-0.01	0.00	-0.01	0.01	0.01	0.01	0.04	0.04	0.03	0.04	0.09	0.13	0.09	0.15	0.63
4.	**Respiratory system diseases**	**-0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**-0.01**	**-0.01**	**0.00**	**0.02**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.01**	**0.01**	**0.00**	**0.01**
5.	**Digestive system diseases**	**0.01**	**0.01**	**0.00**	**0.00**	**0.00**	**0.01**	**-0.02**	**-0.01**	**-0.04**	**-0.04**	**-0.05**	**-0.03**	**-0.04**	**-0.02**	**-0.01**	**0.00**	**0.00**	**0.00**	**0.01**	**-0.22**
5.1.	Digestive but liver diseases	0.01	0.01	0.00	0.00	0.00	0.00	-0.01	-0.01	0.00	-0.01	0.00	0.01	-0.01	-0.01	0.01	0.00	0.00	0.00	0.01	-0.02
5.2.	Liver cirrhoses (alcoholic or unspecified) and other alcohol related liver diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	-0.03	-0.03	-0.04	-0.02	-0.02	0.00	-0.01	0.00	0.00	0.00	0.00	-0.15
5.3.	Other liver diseases	0.00	0.00	0.00	0.00	0.00	0.01	-0.01	0.00	-0.01	-0.01	-0.01	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	-0.06
6.	**External causes of death**	**0.02**	**0.04**	**-0.01**	**-0.02**	**0.03**	**0.07**	**0.03**	**0.05**	**0.02**	**0.01**	**0.02**	**0.00**	**0.01**	**0.01**	**0.02**	**0.01**	**0.01**	**0.01**	**0.02**	**0.35**
6.1.	Traffic accidents	0.00	-0.01	0.00	0.00	0.01	0.05	0.00	0.01	0.01	0.01	0.00	-0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.08
6.2.	Suicide	0.00	0.00	0.00	-0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.08
6.3.	Homicide	0.01	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.02	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07
6.4.	Poisoning by alcohol	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
6.5.	Other accidental poisonings	0.00	0.00	-0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	0.00	0.00	0.00	0.00	0.00	0.00
6.6.	Accidental falls	-0.01	0.00	-0.01	0.00	0.00	-0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.01	0.02	0.04
6.7.	Accidental drawning and submersion	0.01	0.03	0.01	-0.01	0.00	0.00	0.00	0.01	-0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
6.8.	Cold	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	-0.01	0.01	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
6.9.	Event of undetermined intent	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.09
6.10.	Other external causes of death	0.01	0.02	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	-0.02	0.00	-0.01	0.00	0.00	0.00	0.00	0.00	0.01
7.	**Alcohol-related causes of death**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.01**	**-0.04**	**-0.02**	**-0.02**	**-0.01**	**-0.01**	**0.01**	**-0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**-0.10**
8.	**All other causes of death**	**-0.02**	**0.00**	**0.01**	**0.00**	**0.00**	**0.01**	**0.00**	**-0.01**	**0.00**	**0.00**	**0.01**	**0.01**	**0.02**	**-0.01**	**0.00**	**-0.03**	**-0.06**	**-0.06**	**-0.13**	**-0.26**
9.	**TOTAL**	**-0.01**	**0.06**	**0.01**	**0.00**	**0.00**	**0.10**	**0.04**	**0.05**	**-0.04**	**0.01**	**-0.01**	**0.00**	**0.01**	**-0.02**	**0.05**	**0.04**	**0.06**	**0.03**	**-0.01**	**0.37**

Notes: *due to rounding, age- and cause-specific figures do not always sum to give the stated totals. The stated totals for all causes of death do not include alcohol-related causes already counted as digestive system diseases and external causes of death (for more details see Appendix 1).*

Appendix 2 (cont.). *Age and cause-of-death components of changes in male and female life expectancy at birth in Estonia, Latvia, and Lithuania, from 2000 to 2007*

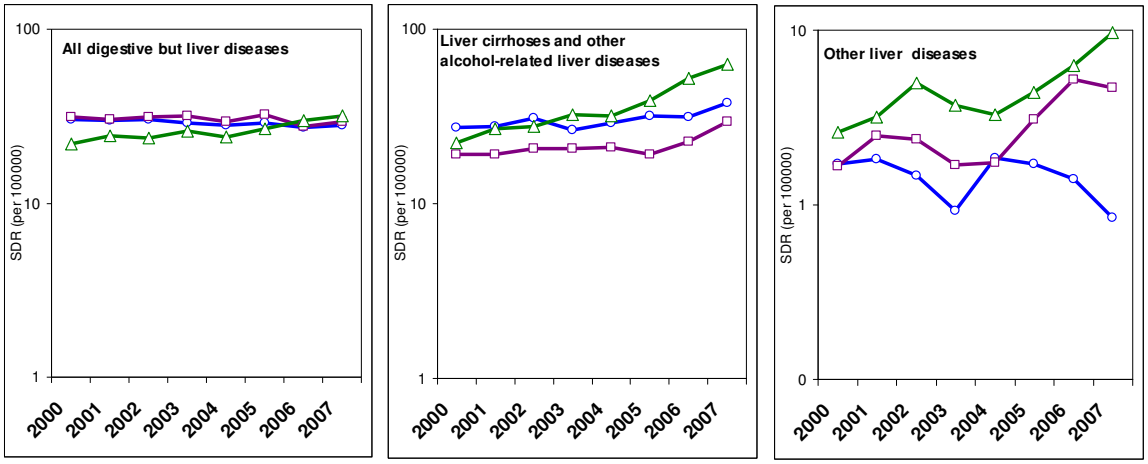
Lithuania, females

Nr.	Main groups and subgroups	Age																			
		0	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+	Total
1.	**Infectious diseases**	**0.01**	**0.02**	**0.00**	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**-0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.02**
2.	**Neoplasms**	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**	**0.02**	**0.02**	**0.01**	**-0.02**	**0.01**	**0.06**	**0.02**	**0.01**	**0.04**	**0.05**	**0.00**	**-0.01**	**0.00**	**-0.01**	**0.21**
3.	**Cardiovascular system diseases**	**0.01**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**-0.02**	**0.00**	**-0.03**	**-0.02**	**0.00**	**-0.05**	**-0.04**	**-0.04**	**0.03**	**0.08**	**0.03**	**0.06**	**-0.03**	**-0.02**
3.1.	Ischaemic heart diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	-0.01	0.00	-0.01	-0.03	-0.03	-0.01	0.03	-0.01	0.02	-0.10	-0.17
3.2.	Other heart diseases	0.01	0.01	0.00	0.00	0.00	0.00	-0.01	0.00	-0.01	-0.01	-0.01	-0.01	0.00	-0.01	0.00	0.03	0.03	0.03	0.06	0.13
3.3.	Other cardiovascular system diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.02	0.00	0.01	-0.02	-0.01	-0.01	0.03	0.02	0.01	0.01	0.00	0.03
4.	**Respiratory system diseases**	**0.03**	**0.01**	**0.00**	**0.00**	**0.00**	**-0.01**	**0.00**	**-0.01**	**0.00**	**-0.01**	**-0.01**	**-0.01**	**0.00**	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**0.01**
5.	**Digestive system diseases**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**-0.02**	**-0.03**	**-0.03**	**-0.05**	**-0.05**	**-0.05**	**-0.07**	**-0.08**	**-0.03**	**-0.02**	**0.00**	**-0.01**	**0.00**	**-0.44**
5.1.	Digestive but liver diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	-0.01	0.00	0.00	-0.01	0.00	-0.01	0.00	-0.01	0.00	-0.06
5.2.	Liver cirrhoses (alcoholic or unspecified) and other alcohol related liver diseases	0.00	0.00	0.00	0.00	0.00	0.00	-0.02	-0.02	-0.03	-0.04	-0.04	-0.04	-0.06	-0.07	-0.03	0.00	0.00	0.00	0.00	-0.34
5.3.	Other liver diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	0.00	-0.01	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	-0.05
6.	**External causes of death**	**0.01**	**0.01**	**0.01**	**-0.02**	**0.03**	**0.02**	**0.00**	**0.03**	**0.03**	**0.01**	**0.02**	**0.00**	**0.00**	**-0.02**	**0.00**	**0.00**	**-0.01**	**0.00**	**0.00**	**0.10**
6.1.	Traffic accidents	0.00	-0.02	0.00	-0.01	-0.01	0.00	-0.01	0.00	0.00	0.00	0.00	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.07
6.2.	Suicide	0.00	0.00	0.00	-0.01	0.04	0.00	0.01	0.01	0.03	0.02	0.03	0.01	0.02	0.01	0.00	0.01	0.00	0.00	0.00	0.18
6.3.	Homicide	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
6.4.	Poisoning by alcohol	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
6.5.	Other accidental poisonings	0.00	-0.01	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
6.6.	Accidental falls	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
6.7.	Accidental drawning and submersion	0.00	0.02	0.00	0.00	-0.01	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.8.	Cold	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	-0.01	-0.02	0.00	-0.01	-0.02	0.00	0.00	0.00	0.00	0.00	-0.07
6.9.	Event of undetermined intent	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	-0.01	0.00	0.00	0.00	-0.01	-0.01	-0.01	0.00	0.00	0.00	0.00	-0.01
6.10.	Other external causes of death	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	0.00	0.00	0.00	0.00	0.00	0.02
7.	**Alcohol-related causes of death**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**-0.02**	**-0.02**	**-0.02**	**-0.05**	**-0.05**	**-0.04**	**-0.06**	**-0.07**	**-0.03**	**-0.01**	**0.00**	**0.00**	**0.00**	**-0.37**
8.	**All other causes of death**	**0.15**	**0.02**	**-0.01**	**-0.01**	**0.00**	**0.01**	**-0.01**	**0.00**	**-0.02**	**-0.02**	**-0.02**	**-0.02**	**-0.01**	**-0.01**	**-0.02**	**-0.01**	**-0.01**	**-0.01**	**-0.01**	**-0.01**
9.	**TOTAL**	**0.20**	**0.08**	**-0.01**	**-0.02**	**0.03**	**0.05**	**-0.03**	**0.01**	**-0.09**	**-0.08**	**-0.02**	**-0.11**	**-0.11**	**-0.13**	**0.04**	**0.06**	**0.00**	**0.04**	**-0.06**	**-0.14**

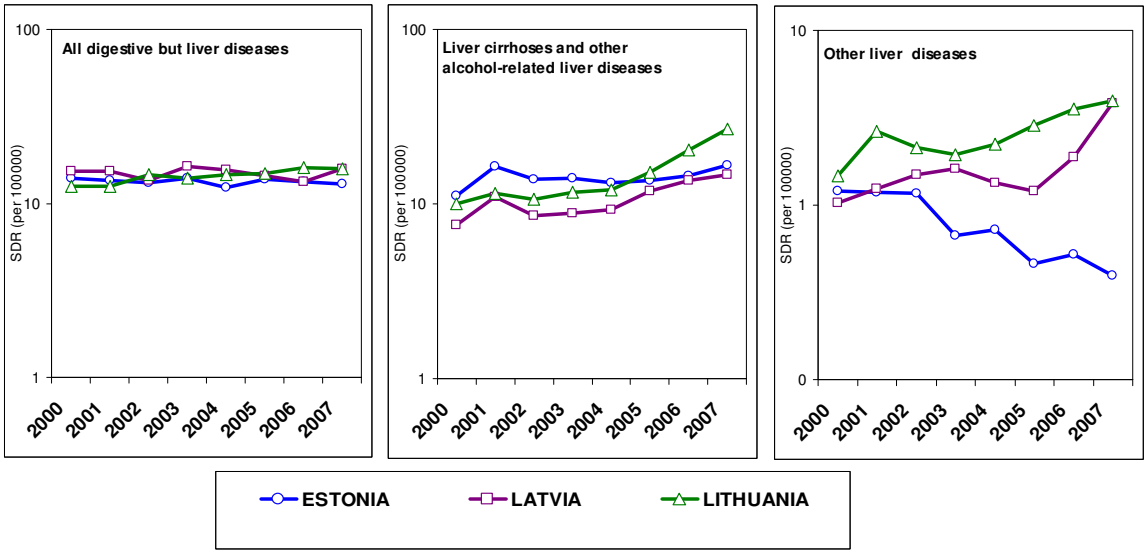
Notes: *due to rounding, age- and cause-specific figures do not always sum to give the stated totals. The stated totals for all causes of death do not include alcohol-related causes already counted as digestive system diseases and external causes of death (for more details see Appendix 1).*

Appendix 3. *Annual trends in standardized mortality rate from selected digestive system diseases in Estonia, Latvia, and Lithuania, 2000-2007.*

A) Males



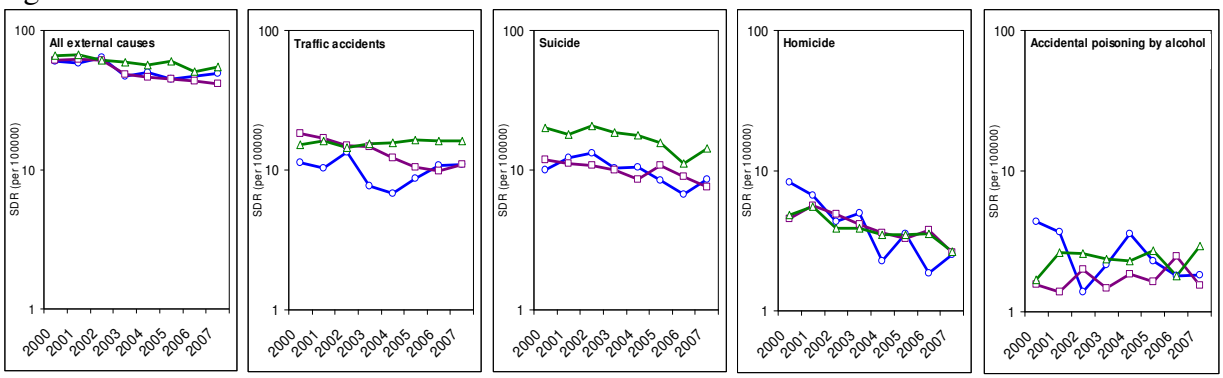
B) Females



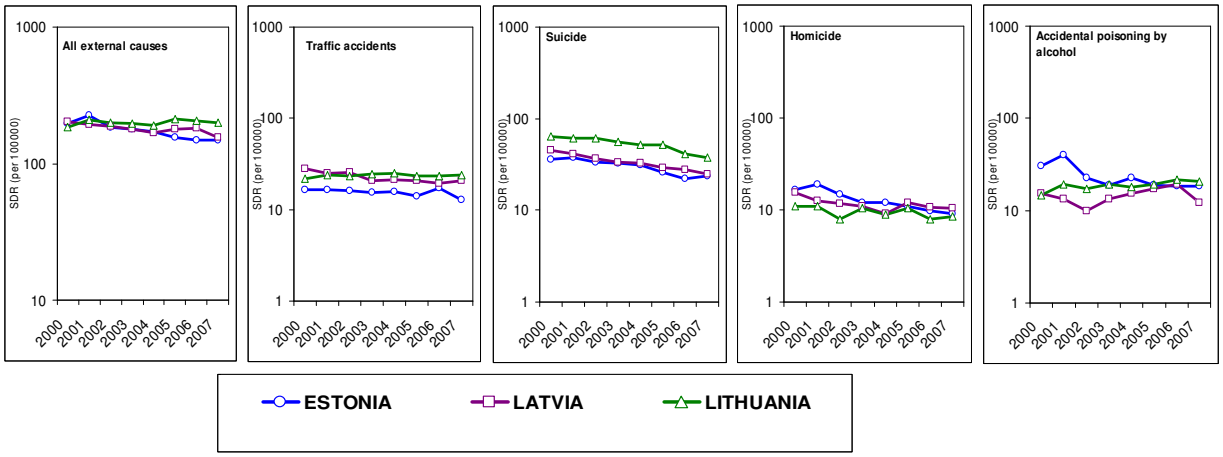
Data source: Human Mortality Database, 2009; WHO Mortality Database, 2009.

Appendix 4A. *Annual trends in standardized mortality rate from selected external causes of death in Estonia, Latvia, and Lithuania, 2000-2007.*

Ages 0-34



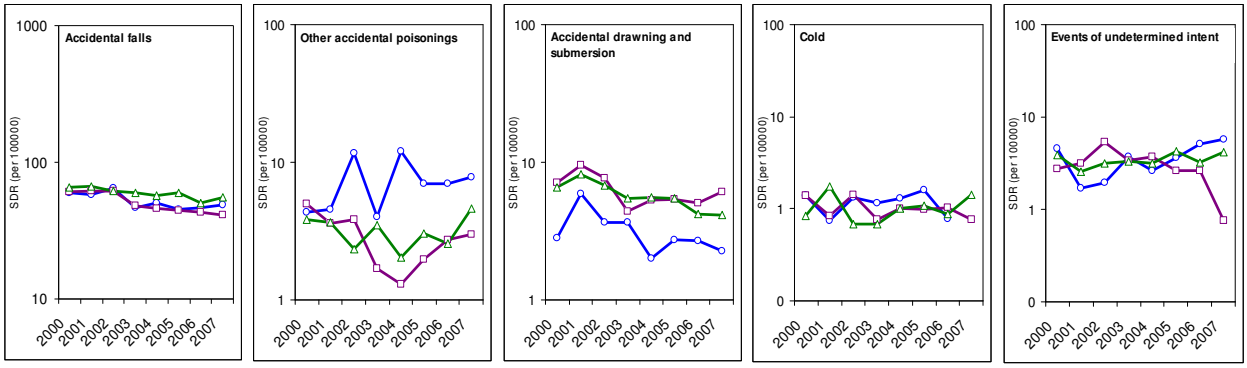
Ages 35 and over



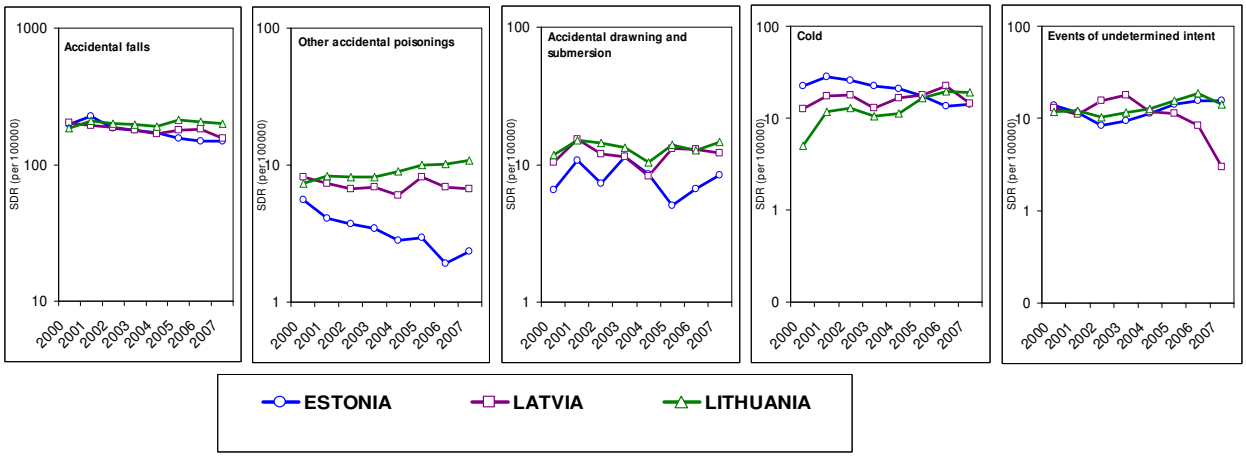
Data source: Human Mortality Database, 2009; WHO Mortality Database, 2009.

Appendix 4B. *Annual trends in standardized mortality rate from selected external causes of death in Estonia, Latvia, and Lithuania, 2000-2007.*

Ages 0-34



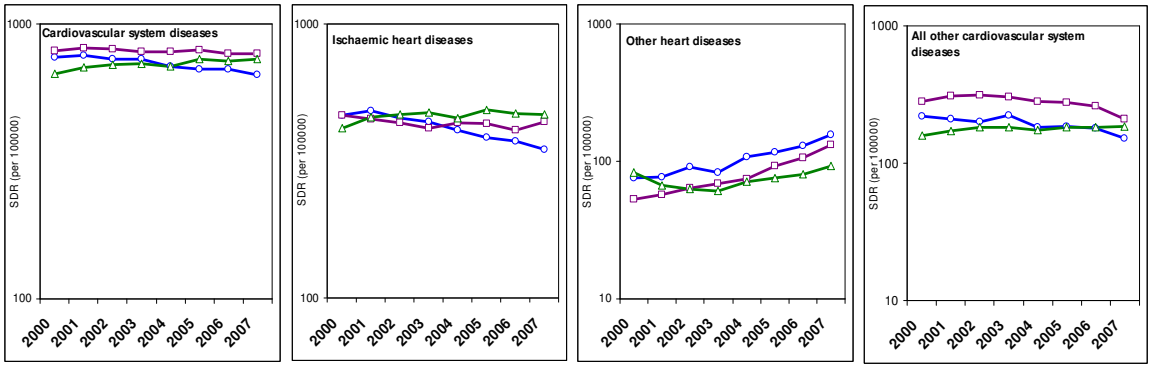
Ages 35 and over



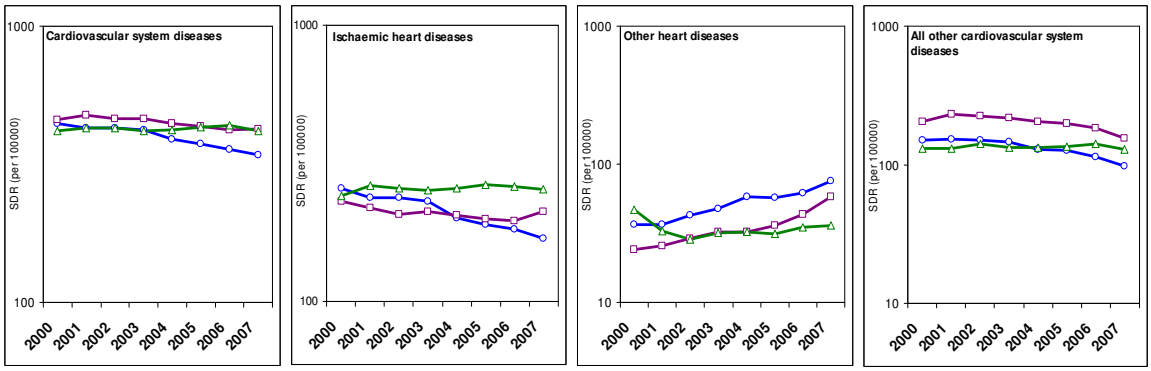
Data source: Human Mortality Database, 2009; WHO Mortality Database, 2009.

Appendix 5. *Annual trends in male standardized mortality rate from selected cardiovascular system diseases in Estonia, Latvia, and Lithuania, 2000-2007.*

Males



Females



Data source: Human Mortality Database, 2009; WHO Mortality Database, 2009.