About Latvia Data on Causes of Death

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Last updated: 16/01/2017

General

The Republic of Latvia first declared independence in 1918, after which the State Statistical Office (*Centrālās statistikas pārvalde*, Central Statistical Bureau of Latvia, or CSB) was established in 1919 (CSB of Latvia, 2004). The latter date also marks the beginning of a continuous demographic data series for the Latvian territory that is comparable to the boundaries of the present state. During the period between the First and Second World Wars, three population censuses took place (1925, 1930 and 1935). In the 1920s, the Central Statistical Bureau of Latvia began publishing statistical data on vital events and population on a regular basis. The published data were classified following international standards (e.g., the International Classification of Disease for the purpose of coding cause-of-death statistics) (Katus, 1999).

Like its neighbours, Estonia and Lithuania, Latvia was incorporated into the USSR as the Latvian Soviet Socialist Republic in 1940. Immediately after the Second World War, the statistical office of the Latvian SSR was established as part of the Central Statistical Office of the USSR (GOSKOMSTAT) under the name Statistical State Bureau, which was renamed the State Committee on Statistics in 1987. During the period of Soviet rule (1940-1989), very little detailed data were published on population and vital events. Furthermore, following the instructions from GOSKOMSTAT, all the data that were regularly published in population yearbooks by the Statistical Office of Latvia were restricted "to internal use" only.

After the restoration of independence in 1990, the Central Statistical Bureau of Latvia was re-established and became the main body responsible for population statistics in Latvia (CSB of Latvia, 2004). Beginning in the 1990s, the CSB of Latvia took several steps to meet international standards for classifying demographic data. First, data on population and vital events became freely available to researchers and the public. Together with annual population yearbooks, the CSB of Latvia publishes special reports or statistical abstracts devoted to specific demographic processes (e.g., mortality by cause of death, detailed data from the population census, etc.) (CSB of Latvia, 2004). Next, the World Health Organization (WHO) definition of live births was introduced in 1991.

During the Soviet period, Latvian cause-of-death data were processed and tabulated according to the Soviet classifications (in total, four soviet classifications were used: SC-1965, SC-1970, SC-1981 and SC-1988). Adoption of the 10th revision of the WHO International Classification of Diseases (ICD-10) in 1996 was another important step towards improving the international comparability of Latvian demographic data.

Population and birth count data come from the Human Mortality Database (HMD). They, however, differ from HMD for infant deaths and births, where we applied our own corrections for infant death under-registration. The cause-specific data for the reconstructed series were obtained from Latvian or Russian state archives for the years before 1990. For the period after 1991, data on the Latvian cause-of-death statistics were provided through personal communication with Juris Krumins or were downloaded from the WHO Mortality Database.

Territorial coverage

There were no territorial changes in Latvia during the period 1956-2012.

Part I – Vital statistics and populations censuses

1. Death count data

Coverage and completeness

Registration of deaths has been complete and has covered the whole territory of Latvia since the end of the 1950s. Most concerns about the reliability of the Latvian data on deaths relate to the period of Soviet rule (from the Second World War to 1989). There is, however, some evidence that Latvian data on deaths for the 1950s are more reliable in comparison to the death statistics of neighbouring Lithuania (Stukonis, 1958). As in the case of other former Soviet states, the registration system of deaths as well as other vital events has been very centralized. Although several new laws on the registration of death have been passed since the restoration of Latvian independence (in 1990), the basic principles remained more or less the same as during the Soviet period. Data quality is discussed on the HMD website, see: http://www.mortality.org/hmd/LVA/InputDB/LVAcom.pdf

Specific details: infant mortality

As in other ex-USSR countries, infant mortality in Latvia was underestimated due to a more restrictive definition of live births (which was in force until 1990). According to the Soviet definition, early neonatal deaths (i.e., those within the first seven days of life) were not registered if the body weight was less than 1,000 grams, the period of gestation was shorter than 28 weeks or the body length was shorter than 35 centimetres. Since 1991, the WHO definition of live birth has been used in Latvia.

Due to this non-negligible underestimation of infant mortality, we decided to make the appropriate corrections for all years before 1991. The first correction was applied to the years before 1974 in order to take into account the 1974 reform of the neonatal death certificate. The second correction was applied to the years before 1991 to take into account the 1991 adoption of the WHO definition of live birth. For more details see Katus Kalev, Jasilionis Domantas, Meslé France and Vallin Jacques in the forthcoming "Data collection and mortality estimates after World War 2", in Meslé France, Vallin Jacques, *et al. Mortality and causes of death in the Baltic countries. Trends, patterns and differentials*.

2. Population count data

Coverage and completeness

Four population censuses (1959, 1970, 1979 and 1989) were conducted in Latvia during the period of the Soviet rule (1940-1989). The first population census after the restoration of Latvia's independence took place in 2000 (on March 31st), and the most recent census was conducted in 2011 (March 1st). For the period 1960-1969, intercensal population estimates were calculated using the standard HMD methodology. The Statistical Office of the Latvian SSR and the Central Statistical Office of the USSR (GOSKOMSTAT) produced official population intercensal estimates for years 1971-1979 and 1980-1989. The newest intercensal population estimates for the period 1990-2011 were produced by the Central Statistical Bureau of Latvia. These official population estimates replaced the previously published postcensal estimates for 1990-2000 and 2001-2011. The new series of intercensal population estimates take into account large unregistered emigration in the 1990s and 2000s, which was not accounted for in the previously published postcensal population estimates.

Several problems should be considered when using the Latvian data on population. First, there was a change in population coverage from a definition using the "actually present population" to one using the "permanently resident population". The census counts for 1959 and 1970 represent the "actually present population", whereas the official population estimates since 1971 have corresponded to the "permanently resident population". This change in definition may have been partly responsible for the

apparently slight increase in mortality between 1970 and 1971. Data quality is further discussed on the HMD website, see: http://www.mortality.org/hmd/LVA/InputDB/LVAcom.pdf

3. Birth count data
Coverage and completeness
The registration of births is considered complete and covers the entire territory of Latvia. Since 2000, the number of live births also includes those occurring abroad to women who have been residing outside of Latvia for less than a year. Just as for deaths, the birth registration system has always been very centralized. Data quality is further discussed on the HMD website, see: http://www.mortality.org/hmd/LVA/InputDB/LVAcom.pdf

In order to account for a change in the definition of a live birth from 1991, we increased total birth counts before 1991 by the number of infant deaths added for under-registration.

Part II – Information on CoD collection

4. Death certificate
The systems for cause-of-death collection were different during Soviet times and after independence in 1991.

A) During the Soviet period

When a death occurred, the relatives of the deceased had to obtain a medical death certificate from the appropriate medical institution (hospital, polyclinic, or medical expert from the *Sudebno-Meditzinskaia Expertiza* (Forensic Bureau)) and bring it to the civil registration office of the district (ZAGS). In that office, they were then given a death certificate that allowed them to bury the corpse and settle the inheritance. On its end, the ZAGS sent the medical death certificate to the central statistical bureau, which was in charge of coding causes and producing death statistics.

Until the end of the 1950s, cause-of-death registration remained somewhat problematic: only medical doctors were allowed to put the cause of death on the death certificates, yet there were few of them in some regions. In rural Latvia, in 1956-57, 20 % of death certificates were not established by medical doctors. Consequently, cause of death in the mid-1950s was not specified for a non-negligible proportion of deaths in Latvia. In 1957, the cause was still unknown or ill-defined for 20 % of deaths. The situation improved after 1958, when the Health Ministry and the GOSKOMSTAT decided to allow sanitary auxiliaries, the so-called *feldshers*[1], to establish cause-of-death certificates when no medical doctor was available.

As in most countries, the medical death certificate distinguished three levels of causes of death: initial cause, direct cause and associated cause. Tabulations relied only on the initial (underlying) cause. Each year a standardized table (*forma* n° 5) gave the number of deaths by sex, age group and cause for at least the urban, rural and total population. The national tables were then centralized and totalized with those coming from other Soviet republics at the level of the whole Union by the USSR's GOSKOMSTAT. *Forma* n° 5 is the main source of information on mortality used in our study.

B) After independence

A new registration system was implemented in 1993[2], which affected both the death certificate and the

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[1] Professionals of the Soviet health care system with intermediate medical qualification (between midwives and medical doctors).

[2] Law on civil certificates of October 28, 1993

cause of death. Deaths must be declared by the family of the deceased or, failing that, any person or institution informed about the death (the owner of housing, any person present at the moment of death, municipal authorities, etc.). The declaration must be made within 6 days after the death and be based on a medical certificate delivered by a physician. It is made either in the local self-government's Civil Statement Registration Department (CSRD) where the death occurred, in the deceased's place of residence or in the place where the court made a verdict about the death. The CSRD records the death in its Death Register and delivers the burial certificate, which is compulsory for burying or cremating the corpse. Each month, it sends copies of death certificates together with the corresponding medical death certificates to the Statistics Department of the district. After routine checks, this department sends the documents to the Population Statistics Department of the Central Statistical Bureau.

According to the 1993 Law on State Statistics, confirmed by the 2000 Law on Personal Data protection, the information about causes of death is confidential. However, the confidentiality does not really apply to the family, which in many cases delivers the medical certificate to the local authority and can access the information.

5. Cause-of-death coding

During the Soviet period, the codification of causes of death was centralized at the republic level by the Latvian statistical office. In the current system, employees of the district's Statistics Department encode and ensure the accuracy of all other recorded items (sex, date of birth, date of death, etc.), but the coding of causes of death is still centralized at the state level. The Population Statistics Department of the Central Statistical Bureau, which receives the medical death certificates, subcontracts the cause-of-death coding to the Health Statistics and Medical Technology Agency of the Ministry of Welfare. Sometimes the physician who filled in the medical death certificate has already indicated the codes, but the codes are nevertheless verified independently by the agency's staff.

6. Classifications in use and collected data
6.1 Classification changes

The Soviet Union never used the *International Classification of Diseases, Injuries and Causes of Death* (ICD) of the World Health Organization (WHO), but instead relied on its own classification. This consisted of about 100 groups of causes until 1964 and was then expanded to about 200 items. Since the foundation of the USSR, seven different versions of the Soviet classification were successively in use, five of which were after WW2. The USSR health ministry and the GOSKOMSTAT were jointly responsible for any changes in the medical death certificate and in the rules for registration and codification[3], as well as for adopting successive revisions of the classification.

During the period studied here, which begins in 1956, four successive versions of the Soviet classification were used in the Baltic countries: those adopted in 1952, 1965, 1970, and 1981. Furthermore two less important changes were made in the meantime: in 1957, the 1952 version was slightly changed in regard to maternal deaths; and in 1988, the 1981 version was shortened by cancelling the distinction between work accidents and other accidents. After independence, the Soviet classification of causes of death remained in use for 6 years until a 1997 order from the Ministry of Welfare decided to use the 10th revision of the International Classification of Diseases (ICD-10).

Two peculiarities characterized the Soviet system of registering and classifying causes of death, and they deserve additional comments:

1. In spite of some tendencies toward growing closer to each other, the Soviet classification always maintained important differences from the ICD. In particular, the number of items increasingly became much less than that of the ICD. While the number of items in the Soviet classification evolved from 100

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[3] As far as we know, for the post-WW2 Soviet period, new rules were edicted at least in 1954, 1964, 1966, 1974, 1980, 1984, 1986, 1989.

to about 200 during the period of interest, that of the ICD grew from more than 2000 (ICD-7) to more than 5000 (ICD-9).

2. From 1964 to 1987, some items in the Soviet classification were excluded from the regular statistical tables (*forma 5*): corresponding causes (cholera, plague, suicide, homicide and work accidents) were kept secret for political reasons. To make sure the sum of deaths by cause fit with the total registered deaths, deaths attributed to these "hidden" causes were mixed with deaths of ill-defined or unknown causes. However, hidden causes were computed separately in a special top secret table (*forma 5b*). The reason why Soviet authorities decided to keep these causes of death secret is not a mystery: in 1970, for example, the age-standardized male mortality rate by homicide in the Soviet Union was eight times higher than the European average. The Soviet power preferred to prevent any internal or external observers from accessing such information, as it was considered too politically dangerous.

6.2 Collected data

Table 1 summarizes information about the data collected for the reconstruction.

Table 1. Overview of the collected data for Latvia

Period	Classification	Acronym	Number of items	Number of age groups	Age group format	Data type
1956-1964	4th Soviet Classification	1952-SC	116	18	0 year, 0-27 days, 1-2 year, 3-4, 5-6, 7, 8-9, 10-14, 15, 16-17, 18-19, 20-24, 25-29, 30-39, 40-49, 50-59, 60-69, 70+ (and unknown)	Paper
1965-1969	5th Soviet Classification	1965-SC	210	23	0 year, 0-27 days, 1 year, 2, 3, 4, 5-9, 10-14, …, 80-84, 85+ (and unknown)	Paper
1970-1980	6th Soviet Classification	1970-SC	185	23	0 year, 0-27 days, 1 year, 2, 3, 4, 5-9, 10-14, …, 80-84, 85+ (and unknown)	Paper, but electronic in 1971, 1976 and 1980
1981-1987	7th Soviet Classification	1981-SC	185	23	0 year, 0-27 days, 1 year, 2, 3, 4, 5-9, 10-14, …, 80-84, 85+ (and unknown)	Electronic
1988-1995	7th Soviet Classification, revised	1988-SC	175	23	0 year, 0-27 days, 1 year, 2, 3, 4, 5-9, 10-14, …, 80-84, 85+ (and unknown)	Electronic
1996	10th International Classification of Diseases	ICD-10	>10,000	27	0 year, 0 day, 1-6 days, 7-27 days, 28-365 days, 1 year, 2, 3, 4, 5-9, 10-14,…, 80-84, 85+ (and unknown)	Electronic
1997-2000	10th International Classification of Diseases	ICD-10	>10,000	19	0 year, 1-4, 5-9, 10-14,…, 80-84, 85+ (and unknown)	Electronic
2001-2007	10th International	ICD-10	>10,000	27	0 year, 0 day, 1-6 days, 7-27 days, 28-365 days, 1	Electronic

	Classification of Diseases				year, 2, 3, 4, 5-9, 10-14,…, 80-84, 85+ (and unknown)	
2008-2014	10th International Classification of Diseases	ICD-10	>10,000	29	0 year, 0 day, 1-6 days, 7-27 days, 28-365 days, 1 year, 2, 3, 4, 5-9, 10-14,…, 90-94, 95+ (and unknown)	Electronic

6.3 Data sources

The data for period 1956-1958 were obtained from the State Archives of Latvia[4]. Data for years 1959-1990 were gathered from the Russian State Economical Archives (RGPE).[5] Data on the Latvian cause-of-death statistics for periods 1991-1995 and 1997-2000 were provided through personal communication with Juris Krumins . For the year 1996 and the years since 2001, the data were extracted from the WHO Mortality Database.[6]

6.4 Specific treatment of the raw data

For the years covered by ICD-10 (since 1996), data were available at the 4-digit level; but taking into account the small number of deaths, the reconstruction between the last Soviet Classification and ICD was performed on the basis of an abridged list of 211 groups of ICD-10 items.

Deaths of unknown age were redistributed among each cause of death proportionally to deaths of known age.

Estimated non-registered infant deaths were redistributed proportionally within perinatal causes and congenital anomalies (items P00-Q99 in ICD-10).

7. Specific transition documents

No documents related to the transition were produced by the statistical office. No double coding was used in the years of transition.

Part III – Reconstruction information

8. Reconstruction of coherent time series

A total of five transitions were carried out, while the available death statistics by cause were regulated successively by six classifications. The overview of the transitions is given in Table 2. Elementary associations and transition coefficients are available upon request.

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[4] Forma 5: 1955 (urban only), arch. 277-14-82; 1956, arch. 277-14-90; 1957, arch. 277-14-96; 1958, arch. 277-14-100.

[5] Fund n° 1562 : opus 27 (ed. 833, 1023, 1187, 1328, 1464, 2632, 2638, 2655-2658, 5873, 5874, 5881, 9742, 9743, 9752, 9753), opus 33 (ed. 980, 1361, 1700, 6627, 6984, 7320, 7652, 7933), opus 34C (ed. 174, 356, 529, 701, 882), opus 44 (ed. 2625, 2655-2658), opus 45 (ed. 2368, 2369, 5873, 5874, 5881, 9742, 9743, 9752, 9753), opus 46 (ed. 1587, 1588, 1595, 1596), opus 47 (ed. 1430, 1431, 1438, 1439), opus 48 (ed. 1289, 1290, 1299, 1300), opus 49 (ed. 1859-1860, 1869-1871), opus 50 (ed. 1758, 1759, 1768-1770), opus 55 (ed. 1908, 1909), opus 56 (ed. 1936, 1937, 1947, 1948). State Archives of Latvia. Forma 5: 1965, arch. 287-17-75. Forma 5b: 1965 arch. 287-17-75; 1973, arch. 287-17-339; 1974, arch. 287-17-372; 1975, arch. 287-17-406; 1976, arch. 287-17-437; 1977, arch. 287-17-471; 1978, arch. 287-17-507; 1979, arch. 287-17-544; 1980, arch. 287-17-589; 1981, arch. 287-17-622; 1982, arch. 287-17-653; 1983, arch. 287-17-684; 1984, arch. 287-17-712; 1985, arch. 287-17-741

[6] http://www.who.int/healthinfo/mortality_data/en/

Table 2. Elementary associations by type and transition

Transition	Type of associations				
	1:1	1:N	N:1	N:N	Total
From 1952-SC to 1965-SC	25	7	0	28	61
From 1965-SC to 1970-SC	86	4	11	26	122
From 1970-SC to 1981-SC	125	4	4	14	147
From 1981-SC to 1988-SC	165	0	7	2	174
From 1988-SC to ICD-10	106	14	5	19	144

Specific problems

For transitions between 1952-SC and 1965-SC, four specific problems were encountered:

1) The period covered by 1965-SC (5 years 1965-1969) was too short, which made checking the results more difficult. The solution was to base the work on Russian data.

2) The number of items was much lower in 1952-SC (116) than in 1965-SC (210). It was found to be advantageous if we reconstructed the total death series first in the reverse direction (redistributing 1965-SC deaths into 1952-SC items) and then in the correct direction (redistributing 1952-SC deaths into 1965-SC items) automatically by age and sex.

3) The 1965-SC was not applied fully in 1965, but in 1966. These 1965 anomalies were treated by *a posteriori* corrections.

4) The 1952-SC was modified slightly in 1957 (item 110 was suppressed and items 108 and 109 were slightly reshaped). The solution here was not to treat it as the set of a new classification, but to instead just adjust 108 and 109 for the previous years and drop 110.

For the transition between 1965-SC and 1970-SC, no major specific problem occurred. The period covered by 1965-SC is short (5 years), but the Soviet classification grew increasingly closer to the ICD while the number of Soviet items was diminishing (from 211 to 185). This, however, did not represent any great difficulty, as the number of complex associations was low.

For the transition between 1970-SC and 1981-SC again, no particular difficulty was encountered.

Between 1981-SC and 1988-SC, the classification changes were limited to external causes. Most of them were just merged (the number of items dropped from 185 to 175), but some were more complex and required applying the regular process of reconstruction.

Latvia never adopted the 9th revision of the ICD and moved directly from 1988-SC to ICD-10, which results in one specific issue: moving from 175 items (1988-SC) to more than 10,000 items (ICD-10) while dealing with very small numbers of deaths. As a solution, we worked with a list of ICD-10 items aggregated into 211 groups. These groups were built on the basis of 3-digit ICD-10 items, except in one case concerning heart diseases, which required the 4-digit detail in order to fit with the "intermediate" list of 107 causes that are common to all countries in the MODICOD project.

A posteriori corrections
A posteriori corrections were applied for year 1965, when an incorrect transition to a new revision took place. At the end of the reconstruction process, total deaths by age groups were adjusted to fit with HMD data (from 1959), except at age 0 before 1991 (to take into account the correction of infant deaths for under-registration).

9. Redistribution of ill-defined causes of death

Ill-defined causes of death were redistributed proportionally among other causes of death and accidents for the whole period.

References

Central Statistical Bureau of Latvia (CSB of Latvia). (2004). Statistics in Latvia: History in Brief. Retrieved 20 April 2004 (http:// www.csb.lv).

Hertrich Véronique, Meslé France, 1997, « Mortality by cause in the Baltic countries since 1970 : a method for reconstructing time series », *Revue baltique,* (10), p. 145-164.

Katus, K. (1999). Long-term mortality trend in the Baltic countries. Paper presented to the European Population Conference. The Hague, Netherlands: 28p.

Meslé France, Vallin Jacques, 1984, « The problem of studying mortality patterns by cause over a long period of time : an example from France, 1925 to 1978 », in Vallin Jacques, Pollard John*, et al.* (éds.), *Methodologies for collection and analysis of mortality data*, Liège, UIESP / Ordina Éditions, p. 449-492.

Meslé France, Vallin Jacques, 1996, « Reconstructing long-term series of causes of death », *Historical methods,* 29(2), p. 72-87.

Meslé France, Vallin Jacques, forthcoming, « Causes of death: the challenge of comparison across time and space », in Shkolnikov Vladimir M., Jasilionis Domantas*, et al. Demographic Studies on Survival and Health.* Berlin, Springer.

Meslé France, Vallin Jacques, Hertrich Véronique, forthcoming, « Reconstruction of cause-of-death series according to a constant medical definition since the mid 50s », in Meslé France, Vallin Jacques*, et al. Mortality and causes of death in the Baltic countries. Trends, patterns and differentials*, Dordrecht, Springer (coll. INED Population Studies).

Stukonis, M., 1958. « On the registration of causes of death in the Lithuanian SSR » . Vilnius, Lithuania: Scientific-methodical bureau of sanitary statistics of the Lithuanian SSR, 12p.

List of acronyms

CSRD - Civil Statement Registration Department

GOSKOMSTAT - Central Statistical Office of the USSR

MODICOD - Mortality Divergence and Causes of Death

RGPE - Russian State Economical Archives

SSR - Soviet Socialist Republic

ZAGS - *Zapis' aktov grazhdanskogo sostoiania*, Registry of Acts of Civil Status