ABOUT MORTALITY DATA FOR LATVIA

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GENERAL

For some parts of Latvia (for example, for the capital city of Riga), the earliest historical data on the population is based on the parish registry and dates back to the end of the 17th century (Katus, 1999). For a long time the country was divided between the different powers (e.g. The Teutonic Order, Sweden, Polish-Lithuanian Commonwealth, Russia), thus only very fragmentary data are available for the Latvian territory as such until the end of the 19th century. During the 18th century, Latvian territories (one by one) were incorporated into the Russian Empire (Kiaupa et al., 2000). During the period of the Russian rule (until 1918), the two northern parts of Latvia (Livonia and Courlandia) together with the northern neighbour, Estonia, were unified into the special territorial unit called the Baltic Gubernia (Kiaupa et al., 2000). Among important developments in population statistics of this period, it is necessary to mention the first publications on population at the level of province, which began being published on a regular basis in the second half of the 19th century (Gozulov, 1972). More reliable data on population of Latvia (Livonia and Courlandia) come from the first population census of the Baltic gubernia in 1881. Data on all the three "Latvian" gubernias (Livonia, Courlandia and Latgalia) became available with the first Census of the Russian Empire in 1897 (Gozulov, 1972; Kiaupa et al., 2000).

The Republic of Latvia first declared independence in 1918, after which the State Statistical Office (Central Statistical Bureau of Latvia) 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 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 the international standards (e.g. ICD) (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 a part of the Central Statistical Office of the USSR (GOSKOMSTAT). During the period of the Soviet rule (1940-1989), only some detailed data on population or vital events were published. Furthermore, following the instructions from GOSKOMSTAT, all the data that were regularly published in population yearbooks by the Statistical Office of Latvia were restricted "for internal use" only. Four population censuses (1959, 1970, 1979 and 1989) took place in Latvia during the period from 1940 to 1989. Data on population at the aggregate level are available from the special publications published during the years subsequent to the censuses.

More detailed data (e.g. by single year of age) on population and vital events were available in the format of manuscripts or unpublished tables, which were usually kept in the special "secret" reports on the population of Latvia.

After the restoration of independence in 1990, the Central Statistical Bureau (CSB) 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 of all, the WHO definition of births and infant deaths was introduced in 1991. Among other major steps for improving comparability of the demographic data was replacement of the old Soviet classification of causes of death by the International Classification of Diseases in 1993. The first population census after the restoration of independence took place in 2000. Following the census, new inter-censal population estimates (for the period 1990-2000) were calculated by the CSB of Latvia. They replaced the previously used post-censal population estimates, which were affected by under-estimation of unregistered emigration during the 1990s. From the beginning of the 1990s, data on population and vital events have become freely available to researchers and the public. Together with annual population yearbooks, the CSB of Latvia publishes special reports or statistical abstracts devoted to the specific demographic processes (e.g. mortality by causes of death, detailed data from the population census, etc.) (CSB of Latvia, 2004).

Source of data

Official data on births, deaths, and population have been provided by the Central Statistical Bureau of Latvia (in computerized datafiles). These data also include computerized datasets containing unpublished demographic data for the period of the Soviet rule (1959-1989).
All the original data for HMD were collected and prepared by the Central Statistical Bureau of Latvia under the supervision of Mr. Uldis Usackis (head of Demographic statistics division of the CSB).

TERRITORIAL COVERAGE

There were no territorial changes in Latvia during the period covered by available data (1959-2003).

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. There is some evidence that Latvian data on deaths are more reliable compared to the death statistics of neighbouring Lithuania for the 1950s (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 centralised. Although several new laws on 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. First, a medical death certificate is issued for the deceased by a medical or judicial institution. Second, on the basis of the medical certificate, a death record is compiled by the Registry Offices under the Ministry of Justice. Every month, the Registry Offices send copies of these records to the Central Statistical Bureau of Latvia in Riga (Aspinall et al., 2003).

Specific details

Most concerns about the reliability of the Latvian data on deaths relate to the period of the Soviet rule (from WW2 to 1989). Problems related to the under-estimation of infant mortality due to a more restrictive definition of live birth (which was in force until 1990) have been widely discussed (see Anderson & Silver, 1997). According to the "Soviet" definition, early neonatal deaths (i.e., within the first 7 days of life) were not registered if the body weight was less than 1000 g, the period of gestation was shorter than 28 weeks or the body length was shorter than 35 cm. This definition was different from that proposed by the WHO and led to substantial under-estimation of infant deaths in Latvia as well as in other post-Soviet countries (Anderson & Silver, 1997). Since 1991, the WHO definition of live birth has been used in Latvia.

Evidence from the post-Soviet countries show that estimations of mortality at older ages (especially for the 1960s) should be treated with caution due to age heaping problems (Anderson & Silver, 1997). Nonetheless, Kannisto suggested that although the Latvian mortality data are likely to be affected by age exaggeration, they are of "conditionally acceptable quality" (Kannisto, 1994). Stukonis (1958) also pointed out that during the end of the 1950s, registration of deaths was significantly better in Latvia than in Lithuania (Stukonis, 1958). Our results support these statements: it seems that age heaping problems are less evident in the case of Latvia compared with Russia and Lithuania. For more details, see the section "DATA QUALITY ISSUES". All the data on deaths were provided by the Central Statistical Bureau of Latvia in the format of Excel files.

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 on March 31, 2000. The Statistical Office of the Latvian SSR and the Central Statistical Office of the USSR (GOSKOMSTAT) produced official population estimates (as of January 1st) for the inter-census years 1971-1979 and 1980-1989. The official January 1st estimates for the period 1960-1969 were not available to us. The newest inter-censal and post-censal population estimates for the period 1990-2004 were produced by the Central Statistical Bureau of Latvia. These official population estimates replaced the previously published post-census estimates for 1990-1999. All the data on population were provided (in the format of Excel files) by the Central Statistical Bureau of Latvia.

Specific details

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

The second problem relates to the smoothing procedures used by the Statistical Office during the period of the Soviet rule. As in the case of Lithuania, some peaks in population numbers at certain ages found in the population censuses (1959, 1970 and 1979) are absent from the population estimates. We do not know what procedures were applied by the Statistical Office of the Latvian SSR in performing such calculations. Because smoothing of the population numbers at certain ages for the years 1971-1989 is less evident for Latvia than for Lithuania (see *Background and Documentation* for Lithuania), for those years we use the official population estimates in our subsequent calculations of the mortality surface. For the period 1960-1969, we calculated our own inter-censal population estimates using HMD methods (see Methods Protocol for details).

The third issue to be considered relates to the newly calculated official population estimates for the period 1990-2004. A significant peak in population numbers among adults born in 1972 seems to be present in the data for 1990-1999, but it is absent from the data for the subsequent years 2000-2004 (including the data from the population census of 2000). It is difficult to determine whether it is due to a very strange migration pattern (affecting only one cohort) or whether it is due to an error in calculations. For more details see the section "DATA QUALITY ISSUES".

BIRTH COUNT DATA

Coverage and completeness

The registration of births is considered complete and covers the entire territory of Latvia. Like in the case of deaths, the birth registration system has always been very centralised. First, a birth document is issued for each newborn by the medical institution. Second, on the basis of the latter document a birth certificate is issued by the Registry Offices under the Ministry of Justice. Every month, the Registry Offices send copies of these documents to the Central Statistical Bureau of Latvia in Riga (Aspinall et al., 2003).

Specific details

The Soviet definition of live birth (which differs from that of the WHO) was used in Latvia from 1940 to 1991. Live birth was defined on the following criteria: evidence of life (respiration after separation from mother's body); birth weight at least 1000 g; gestational period of 28 weeks or longer; and body length 35 cm or longer. Newborns who did not meet all of these criteria and died within the first week of life were not registered as live births nor as infant deaths but rather as stillbirths. These newborns were registered as live births only if they survived more than seven days. This stricter definition of live births has lead to underestimation of births (and infant deaths). Like the other two Baltic States (Lithuania and Estonia), Latvia began using the WHO definition of live birth in 1991.

DATA QUALITY ISSUES

Although population counts for 1959 and 1970-2004 were available, it is unclear whether population estimates have ever been calculated for the 1960s. In the case of neighbouring Lithuania, such population estimates exist, but they are greatly distorted by smoothing procedures (all peaks after age 20 have been smoothed) (see *Background and Documentation* for Lithuania). Given that local Statistical Offices were very centralised (they were local branches of the Central Statistical Office of the USSR), we might expect that similar data (with similar inconsistencies) exist for Latvia. Nonetheless, as noted earlier, we calculated our own population estimates for the period 1960-1969.

Although we found some small inconsistencies (described below) between the data from the censuses 1970 and 1979 and the corresponding population estimates, the official population estimates were used for the period from 1970 to 2004.

Problems related to the quality of data on population

We found serious problems with age heaping in the first post-war population census of 1959. There are significant peaks in population counts at ages ending with "0. These peaks are much less apparent in the subsequent census of 1970 (Figure 1). Therefore, taking into account the data quality problems with the 1959 census, even newly calculated population estimates for the period 1960-1969 should be used with caution. Comparisons with the Swedish data have shown that the Latvian old age mortality seems to be underestimated for this period.

Checking the consistency of the population estimates for the 1970s and 1980s, we found that whereas the 1970, 1979 and 1989 censuses show some evidence of age heaping, the inter-censal estimates do not (Appendix 2, Figures 2A and 2B). In addition, when comparing the official estimates for 1974 and 1975, we find an unexplainable drop in number of males in the 1956 birth cohort (data not shown). It is possible that in these particular years, the recruitment into the Soviet Army was counted as migration. Alternatively, this strange drop in number of males in this cohort may be due to an error made in calculations.

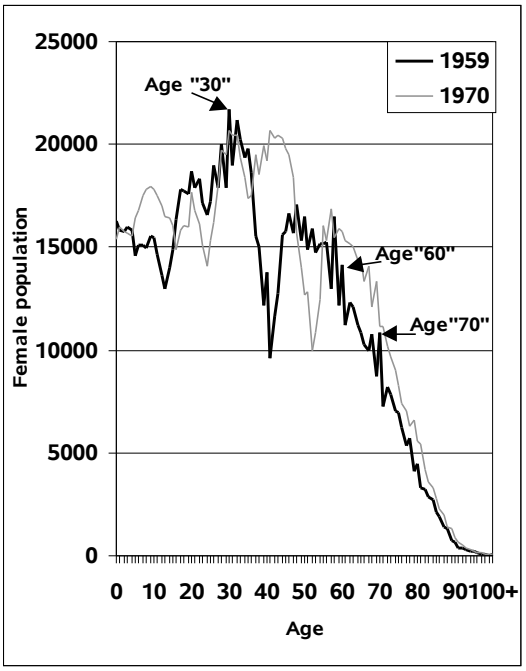
Another inconsistency between population estimates is evident in the data for the 1990s: there is a peak in number of males and females born in 1972 in the data for 1990-1999, but not in the population estimates for the subsequent years 2000, 2001 and 2002 (including the population census 2000) (Appendix 2, Figure 2C and 2D).

Checking the quality of data on deaths

Age heaping at older ages (and age overstatement) is a concern in dealing with mortality statistics in the former USSR (Anderson & Silver, 1997). In the case of Russia and Lithuania, there is evidence of age heaping in deaths at ages 70, 80 and 90 in the data for the period before 1970 (see the HMD *Background and Documentation* for Russia and Lithuania). Furthermore, significant peaks in deaths at age 99 were found in the both aforementioned countries in the beginning of the 1960s.

Taking into the account that similar death registration procedures were in force, one might also expect similar data reliability problems for Latvia. Therefore, we performed data checks (using the same procedures as for Russia and Lithuania) for Latvia. Our findings, however, do not support the latter hypothesis: there is no clear evidence of age heaping for deaths at ages 70, 80 and 90 in the 1960s (Appendix 3, Figure 3) nor do we find any peak in deaths at age 99.

Figure 1. Fluctuations in the numbers of the Latvian female population by age: differences between the census 1959 and the subsequent census of 1970.



Comment. There are significant peaks in female population numbers at ages 30, 60 and 70 in the census 1959 data. In contrast, there is much less evidence of such peaks at the corresponding ages 41, 71 and 81 in the subsequent population census of 1970.

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APPENDIX 1:

DESCRIPTION OF DATA USED FOR LEXIS DATABASE

DEATHS

Period	Type of Data	Age grouping	Comments	RefCode(s)
1959	Number of death to *de facto* population by sex and 5-year age groups (5x1 rectangle) except first and last age intervals.	0, 1-4, …, 65-69, 70+, unknown	No adjustment for underestimation has been made	LVAR02
1960-1961	Number of death to *de facto* population by sex and 5-year age groups (5x1 rectangle) except first and last age intervals	0, 1-4, …, 80-84, 85+, unknown	No adjustment for underestimation has been made	LVAR02
1962-2003	Annual number of death to *de facto* population by sex and single year of age(1x1 rectangle).	0, 1, …, 99, 100+, unknown	No adjustment for underestimation has been made	LVAR02

POPULATION

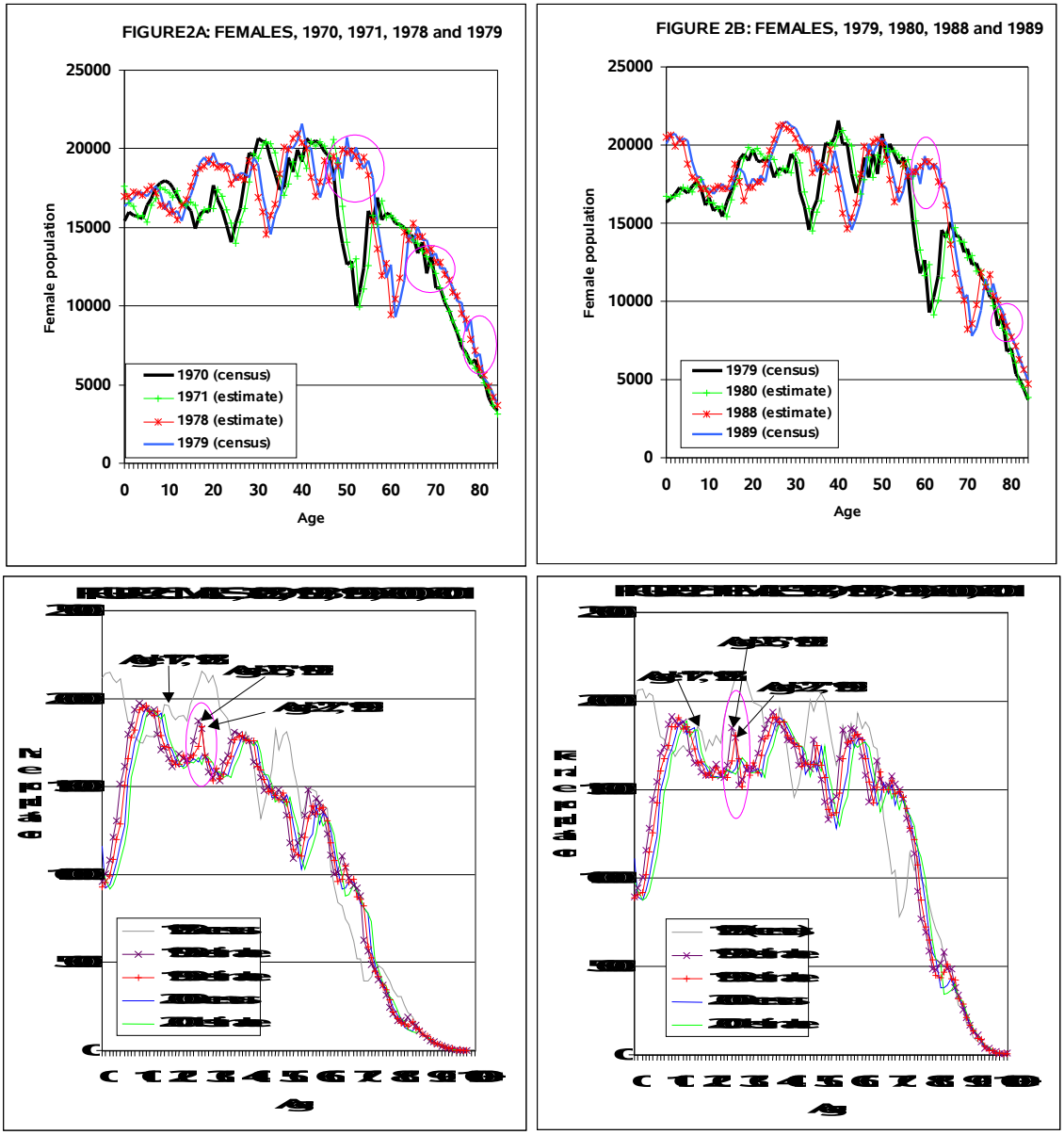
Period	Type of Data	Age grouping	Comments	RefCode(s)
1959, 1970	Census counts of population by sex and single year of age as of January 15. Actually present (*de facto*) population.	0, 1, …, 99, 100+, unknown		LVAR03
1971-1989	Annual population estimates by sex and single year of age. Permanently resident (*de jure*) population.	0, 1, …, 84, 85+		LVAR04
1990-2004	Annual population estimates by sex and single year of age. Permanently resident (*de jure*) population.	0, 1, …, 99, 100+		LVAR04

BIRTHS

Period	Type of Data	Comments	RefCode(s)
1959-2003	Annual counts of births by sex. Actually present (*de facto*) population.	No adjustment for underestimation has been made	LVAR01

APPENDIX 2: DATA QUALITY ISSUES (1)

Figure 2 (A, B, C, D). Inconsistencies between the data from population censuses and official population estimates



Comment. There are peaks at ages 67 and 69 in the census of 1970, but not in the corresponding ages of 68 and 70 in the population estimates for the subsequent year of 1971. Similar inconsistencies can be identified between the census of 1979 and the official inter-censal estimates for 1978 and 1980 as well as between the census of 1989 and the estimate for 1988 (Figures 2A and 2B). In the case of the official population estimates for the 1990s, peaks due to a larger number of males and females in the 1972 birth cohort are present in the census of 1989 and population estimates for the period 1990-1999, but not in the population estimate and the census of 2000 as well as the estimate 2001 (Figures 2C and 2D).

APPENDIX 3: DATA QUALITY ISSUES (2)

Figure 3. Mortality rates for selected ages. Latvia, both sexes, 1962-2001.