

ABOUT MORTALITY DATA FOR EAST GERMANY

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GENERAL

Since 1946, the statistical system in the eastern part of Germany has produced annual statistics on death and population. The demographic information is based on census counts and vital statistics registration.

The first census after the Second World War occurred in 1946 in the "soviet occupied zone" in Germany. The census years in the German Democratic Republic (GDR), also known as East Germany, were 1950, 1964, 1971, and 1981.

Since 1956, the annual tables showing death counts by sex, single year of age, and year of birth, and the population counts by single year at the end of the year are published in the Statistical yearbook of the GDR. For the years 1946–1955, no data were published. In the beginning of the 1970s, a population register was introduced (central resident register), like in the Nordic countries. The register includes migration statistics since 1982, birth statistics since 1983, and death counts since 1989. On October 3, 1990, the population register was updated, which provided the starting point for the population statistics in subsequent years.

The population statistics in Germany are based on a similar set of laws since 1849 and on the same standard law for the registration of population changes in all parts (Laender) of Germany since 1876 (Personenstandsgesetz) [1]. This law was slightly changed in subsequent years and during GDR times (i.e., 1946-1989) [2, 3]. On October 3, 1990, the legal situation changed and from this point on the population statistics in both parts of Germany follow the same laws as in the Federal Republic of Germany (i.e., West Germany).

The differences in the collection of population statistics between the two parts of Germany before 1990 can be explained by the different definitions of live birth and resident population. In the GDR, the term "live birth" is used when two signs of life occur (see details in the section on Birth Count Data) and the "resident population" does not include foreigners who reside in the GDR less than six months.

DATA SOURCES

All of the data included in the Human Mortality Database (HMD) come from the Federal Statistical Office in Wiesbaden [4,5]. The Input Database (InputDB) includes death and population counts for all years since 1956. The data for the period 1956-1981 were published in the Statistical Yearbooks for the GDR. For the years 1982-89, a scientific project was established at the Federal Statistical Office in Wiesbaden for recalculation of the population statistics [6]. All birth counts come from the Statistical Yearbooks of the GDR [7]. Data after 1990 come from the population count Table B15 (the population counts by single year at the end of the year) and death count Table N40 (deaths by sex, single year of age, and year of birth) supplied by the Federal Statistical Office Wiesbaden in electronic format [8, 9].

TERRITORIAL COVERAGE

There have been no territorial changes in the time period covered by the HMD.

DEATH COUNT DATA

Coverage and Completeness

The registration of deaths in the GDR was highly centralised. The annual statistics include all registered deaths of permanent residents of the GDR (Source: laws for the registration of births, marriages and deaths [10]). Misreporting and incompleteness of the data are unknown. The quality of **age** reporting is relatively high because since 1876, birth and death registration has been conducted by the registry office in all Laender of Germany, and death registration has required a birth certificate from the registry office. Death registration typically proceeded as follows:

The registration of the deaths in East Germany was highly centralised. These annual statistics include all deaths registered in the GDR of permanent residents of the GDR (Source: laws for the registration of births, marriages and deaths). Misreporting and incompleteness of the data are unknown. The quality of age reporting is relatively high because the rules for the registration of birth with Birth certificate from the registry office started in Germany in 1876.

A physician compiled the physician's report and coded the cause of death. Only an authorised physician was allowed to compile this report. Normally, the report was sent to the registry office in the local authority (town) where the legal (official) death certificate was registered and documented. The information from the death certificate was coded, the registration card was completed, and the information was sent to the Central Statistical Office (SZS). The original death certificate was also sent to the SZS and archived there for 20 years. A copy of the death certificate was sent to the district physician or physician in charge of controlling all documents. Until 1965, the coding and the checking of the coding was organised in regions, the information was sent to the regional statistical office, and then finally, to the SZS. Since 1965, the death certificates have been sent directly to the SZS where the cause of death was recorded and that information was sent back to regional statistical offices.

Annual statistics were calculated from these data.

Infant Mortality

International comparability of infant mortality in the former GDR is problematic because the definitions of live birth and stillbirth differed from the WHO definitions. In the GDR, a live birth was defined by two indications of life: heartbeat and respiration. Therefore, a newborn with a heartbeat but no respiration even after applying neonatal measures, was counted as a stillbirth, whereas according to WHO definition, it would have been considered a live birth that subsequently died. This difference explains the apparent lower infant mortality in the GDR as compared to the FRG.

Even before the introduction of the 9th revision of the ICD, this topic was widely discussed by GDR physicians. However, due to health-politics (rising of infant mortality) and to the concerns of some gynaecologists and obstetricians in connection with the laws on abortion at that time—which allowed abortion after the 12th week of pregnancy—the WHO definitions were not adopted. Thus, prior to 1991, many live births (based on the WHO definition) were misclassified as a stillbirth or abortion. Since 1991 (after the reunification of Germany), the definition of live birth has conformed to the WHO definition in both parts of Germany.

The definition of live birth changed somewhat over time:

- Period 1962–1978: Child, whose breathing and heartbeat started after complete separation from the mother [11].
- Period 1979–1990: Child, whose breathing *and* heartbeat started after complete separation from the mother independent of cutting the umbilical cord and delivery of the placenta [12].
- Period since 1991: Child, whose breathing *or* heartbeat started after complete separation from the mother independent of cutting the umbilical cord and delivery of the placenta.

The definition of stillbirth also changed somewhat across time:

- Period until 1978: Child, whose breathing and heartbeat did not start after complete separation from the mother, and who had a minimal body length of 35 cm [11].
- Period 1979-1990: Child, whose breathing *and* heartbeat did not start after complete separation from the mother independent of cutting the umbilical cord and delivery of the placenta, and who had a minimal body weight of 1000g [12].
- Period 1991-1993: Child, whose breathing *or* heartbeat did not start after complete separation from the mother independent of cutting the umbilical cord and delivery of the placenta, and who had a minimal body weight of 1000g [12].
- Period since 1994: Child, whose breathing *or* heartbeat did not start after complete separation from the mother independent of cutting the umbilical cord and delivery of the placenta, and who had a minimal body weight of 500g [13].

POPULATION COUNT DATA

Coverage and completeness

Population estimates are based on census counts. Between census years, the birth, death, and migration counts are used to calculate the population on the last day of each year (December 31st). After a census, the population count was corrected, but not recalculated for the years prior to the census. In the territories of the former GDR, the census took place on:

October 29, 1946,
August 31, 1950,
December 31, 1964,
January 1, 1971,
December 31, 1981, and

October 3, 1990.

As a result, the end-of-the-year population estimates for 1964, 1970, and 1981 are, in fact, census results.

The census in 1990 was a register census. The population register was closed in 1992 because it was not compatible with the rules on data protection in the FRG. In 1985, a discrepancy between the register and the traditional statistical system became apparent, with the traditional system underestimating the population by approximately 55,000 people (0.3%). For 1985-1989, the SZS made stepwise annual corrections to the data in the traditional statistical system for some regions of the GDR. For this reason, a scientific project was conducted to recalculate the population statistics for 1982-1989, and these data were published by the Federal Statistical Office in Wiesbaden in 1996 [5, p. 9]. The main problem with the population statistics can be attributed to the migration statistics because people did not notify the authorities when they moved. This problem was particularly severe in 1989 when an estimated 297,000 people emigrated from the GDR and 360,000 immigrated into the FRG.

Because of the strict East-German boundary (German wall), there was hardly any migration from 1961 until 1988. Thus, errors in population statistics as a result of migration were relatively small. The extent of age heaping and over-registration of centenarians is unknown.

A publication by the Federal Statistical Office in Wiesbaden [5] included data for 1950-1955. Age heaping was identified at ages 55, 60, 65, 70, 75, 80, 90 in the original data for East-German females for the years 1950, 1953, and 1954. Consequently, these data were excluded from the Human Mortality Database.

The following describes the different periods in the population registration in East Germany [10]:

1. Period until 1965: Decentralised data collection and analysis at the district level.
2. Period 1965-1975: Decentralised data collection, but centralised data analyses and publication of results. During this time, modifications of the structure and a reorganisation of the official statistics took place. Much of the work was done centrally (e.g., data acquisition, preparation, and validation). The implementation of electronic data processing led to yet another modification in the organisational structure.
3. Period 1975-1985: Centralised electronic data acquisition.
 - a) Collection of population data via traditional methods
 - b) Creation of a database (i.e., central resident register), which includes all registered information for residents, under the responsibility of the Ministry of the Interior (police).
4. Period 1985–October 2, 1990: Population statistics were created using the information from the register described under 3b.
5. Period from 1991 (starting in October 1990): Decentralised data collection and analyses at the district level (Laender). Centralised data collection at the Federal Statistical Office in Wiesbaden for East Germany.

BIRTH COUNT DATA

Coverage and completeness

There was under-registration of live births during the period 1956-1990 because the definitions of "live-birth" and "stillbirth" differed from internationally accepted WHO definitions. As already noted, in the GDR "live-birth" was defined by two indications of life: heartbeat and lung-breathing. For years prior to 1994, there was under-estimation of stillbirths because the minimal birthweight for classification as a stillbirth rather than a spontaneous abortion (i.e., miscarriage) changed on March 31, 1994 from 1000g to 500g [7].

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APPENDIX 1:

DESCRIPTION OF DATA USED FOR LEXIS DATABASE

DEATHS

Period	Type of Data	Age Grouping	Comments	RefCode(s) [†]
1956-1989	Annual death counts among permanent residents by age and birth cohort (Lexis triangles)	0, 1, 2, 3,100+		0001
1990-2000	Annual death counts among permanent residents by age and birth cohort (Lexis triangles)	0, 1, 2, 3, ...maximum age attained		0002, 0003, 0004
2001-2002	Annual death counts among permanent residents by age and birth cohort (Lexis triangles)	0, 1, 2, 3, ...maximum age attained	For the period 2001/2002, the data were reconstructed based on the data by Laender (East / West) and splitting Berlin in the two parts, East and West.	0015, 0016, 0017

† The reference code is used in the raw data files (Input Database) to link data with sources.

POPULATION

Period	Type of Data	Age Grouping	Comments	RefCode(s) [†]
1956-1983	Annual population estimates (as of December 31st) by age	0, 1, 2, 3, ...99+	1964, 1971, 1981 last age 100+	0005, 0006, 0007, 0008
1984-1989	Annual population estimates (as of December 31st) by age	0, 1, 2, 3, ...100+		0009
1990-2002	Annual population estimates (as of December 31st) by age	0, 1, 2, 3, ...95+	For the period 2001/2002, the data were reconstructed based on the data by Laender (East / West) and splitting Berlin in the two parts, East and West.	0010, 0011, 0012, 0015, 0018

BIRTHS

Type of data: Annual live birth counts by sex

Period covered: 1946-2002

RefCode(s): 0013, 0021, 0020, 0022

Comments: For the period 2001/2002, the data were reconstructed based on the data by Laender (East / West) and splitting Berlin in the two parts, East and West.

APPENDIX 2

RECONSTRUCTION OF POPULATION AND DEATH COUNTS DATA FOR EAST- AND WEST-BERLIN

After the unification of East- and West-Germany in 1990, both parts of Berlin were also unified. Between 1949 and 1990, Berlin consisted of two parts: West Berlin with 12 districts and East Berlin with 11 districts. After the “district reform” on January 1, 2001, Berlin was divided into 12 new districts, and a separation into West and East districts was no longer possible (see Table 1 to compare the old and the new districts of Berlin).

To extend the time series for East and West Germany in the Human Mortality Database, we must have separate datasets for the two parts of Germany and consequently, for East and West Berlin. The MPIDR created separated datasets for East and West Berlin with the help of official data from the statistical office and the registry office (*Melderegister*) in Berlin.

The data from the *Melderegister* are still broken down according to the old district structure, which was in use before the change in 2001, as well as by sex, age, and Lexis-triangle. For that reason, the population, death, and birth counts could be separated into eastern and western counts by sex, age, and Lexis-triangle. Although the total counts by year from the *Melderegister* and the statistical office should be identical, we found some differences between the two sources. Therefore, in order to be consistent with the counts from the statistical office, for each year, sex and age combination, we multiplied the relative distribution (East versus West) based on the *Melderegister* by the counts from official statistics of Berlin.

In cases where there was an odd number of deaths (births, or population) for a given sex and age, the extra count leftover after dividing evenly was alternately assigned to the East and to the West of Berlin.

In cases where the regional statistical office reported at least one death, but the *Melderegister* showed no death for a given sex and age, we disaggregated the former data into eastern districts, western districts and mixed districts death counts. In most cases, we could then identify the region (east or west) to which the death should be allocated.

Table 1: Old and new districts of Berlin

	<i>Berlin districts (new) Since 1. 01. 2001</i>		<i>Berlin districts (old) Until 31.12. 2000</i>
Nr.	Name	Region	Name
1.	Mitte	East West West	Mitte (01) Tiergarten (02) Wedding (03)
2.	Friedrichshain-Kreuzberg	East West	Friedrichshain (05) Kreuzberg (06)
3.	Pankow	East East East	Prenzlauer Berg (04) Weißensee (18) Pankow (19)
4.	Charlottenburg-Wilmersdorf	West West	Charlottenburg (07) Wilmersdorf (09)
5.	Spandau	West	Spandau (08)
6.	Steglitz-Zehlendorf	West West	Zehlendorf (10) Steglitz (12)
7.	Tempelhof-Schoeneberg	West West	Schoeneberg (11) Tempelhof (13)
8.	Neukoelln	West	Neukoelln (14)
9.	Treptow-Koepenick	East East	Treptow (15) Koepenick (16)
10.	Marzahn-Hellersdorf	East East	Marzahn (21) Hellersdorf (23)
11.	Lichtenberg-Hohenschonhausen	East East	Lichtenberg (17) Hohenschonhausen (22)
12.	Reinickendorf	West	Reinickendorf (20)

Source: Regional statistical office, Berlin