# Construction and Problems with Cohort Life Tables in Czech Republic

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# Cohort life tables

- Started being more frequently during last decades (before just period life tables)

- Data for more than 100 years needed

- Cohort effect impact

- Better information for institutions (pension system etc.)

# Constructed cohort life tables available in Human Mortality Database

| Country | Notes |
|---|---|
| Denmark | Generations 1835–1917 |
| Finland | Generations 1878–1918 |
| France | Generations 1816–1916 |
| Iceland | Generations 1838–1917 |
| Italy | Generations 1872–1916 |
| Netherlands | Generations 1850–1917 |
| Norway | Generations 1846–1917 |
| Sweden | Generations 1751–1917 |
| Switzerland | Generations 1876–1916 |

# Countries with constructed and published cohort life tables (out of HMD)

| Country | Notes | Citation of a publication or source |
|---|---|---|
| Canada | Generations 1801–1991 | Bourbeau, R. – Légaré, J. – Émond, V. (2004) |
| New Zealand | Generations 1876–1935 | Statistics New Zeland (2006) |
| United Kingdom | Based on historical mortality rates from 1981 to 2008 and on projections | |
| Poland | 10-year periods from 1801 to 1950 | Piasecki E. (1984) |
| USA | For births in decennial years 1900 through 2000 | Bell, F. C. – Miller, M. L. |
| Germany | Generations 1903–1993 | Bomsdorf, E. (1993) |
| England and Wales | Generations 1841–1960 | Case, R. A. M., et al. (1962) |
| Australia | | Lancaster, H. O. (1959), Young, C. M. (1969) |
| Belgium | | Veys, D. (1981) |
| United States | Generations since 1840 | Jacobson, P. H. (1964) |
| Bulgaria, Russia | Life tables for various life course events, constructed for four real cohorts, 1940-44, 1950-54, 1960-64 and 1970-74 | Philipov, D. – Jasilioniene, A. (2008) |

# Data about Czech Republic available in HMD

- Period data from 1950

- Cohort data from 1871 (full data from 1950)

*Czech Republic*

Background and documentation
Data sources

## Complete Data Series [ Explanatory notes]

| | Available dates | Age interval × Year interval | | | | | |
|---|---|---|---|---|---|---|---|
| | | **1x1** | **1x5** | **1x10** | **5x1** | **5x5** | **5x10** |
| **Period data** | | | | | | | |
| Births | 1947 - 2011 | 1-year | | | | | |
| Deaths | 1950 - 2011 | 1x1 | 1x5 | 1x10 | 5x1 | 5x5 | 5x10 |
| Deaths by Lexis triangles | 1950 - 2011 | Lexis | | | | | |
| Population size | 1950 - 2012 | 1-year | | | 5-year | | |
| Exposure-to-risk | 1950 - 2011 | 1x1 | 1x5 | 1x10 | 5x1 | 5x5 | 5x10 |
| Death rates | 1950 - 2011 | 1x1 | 1x5 | 1x10 | 5x1 | 5x5 | 5x10 |
| Life tables | 1950 - 2011 | | | | | | |
| Females | | 1x1 | 1x5 | 1x10 | 5x1 | 5x5 | 5x10 |
| Males | | 1x1 | 1x5 | 1x10 | 5x1 | 5x5 | 5x10 |
| Total (both sexes) | | 1x1 | 1x5 | 1x10 | 5x1 | 5x5 | 5x10 |
| Life expectancy at birth | 1950 - 2011 | 1-year | 5-year | 10-year | | | |
| **Cohort data** | | | | | | | |
| Exposure-to-risk | 1871 - 1981 | 1x1 | 1x5 | 1x10 | 5x1 | 5x5 | 5x10 |
| Death rates | 1871 - 1981 | 1x1 | 1x5 | 1x10 | 5x1 | 5x5 | 5x10 |

## Input Data [ Explanatory notes]

| | Available dates | Data | Lexis map |
|---|---|---|---|
| Births | 1947 - 2011 | txt | |
| Deaths | 1947 - 2011 | txt | html |
| Population size | 1947 - 2011 | txt | html |
| Notes | | pdf | |
| Reference file | | pdf | |

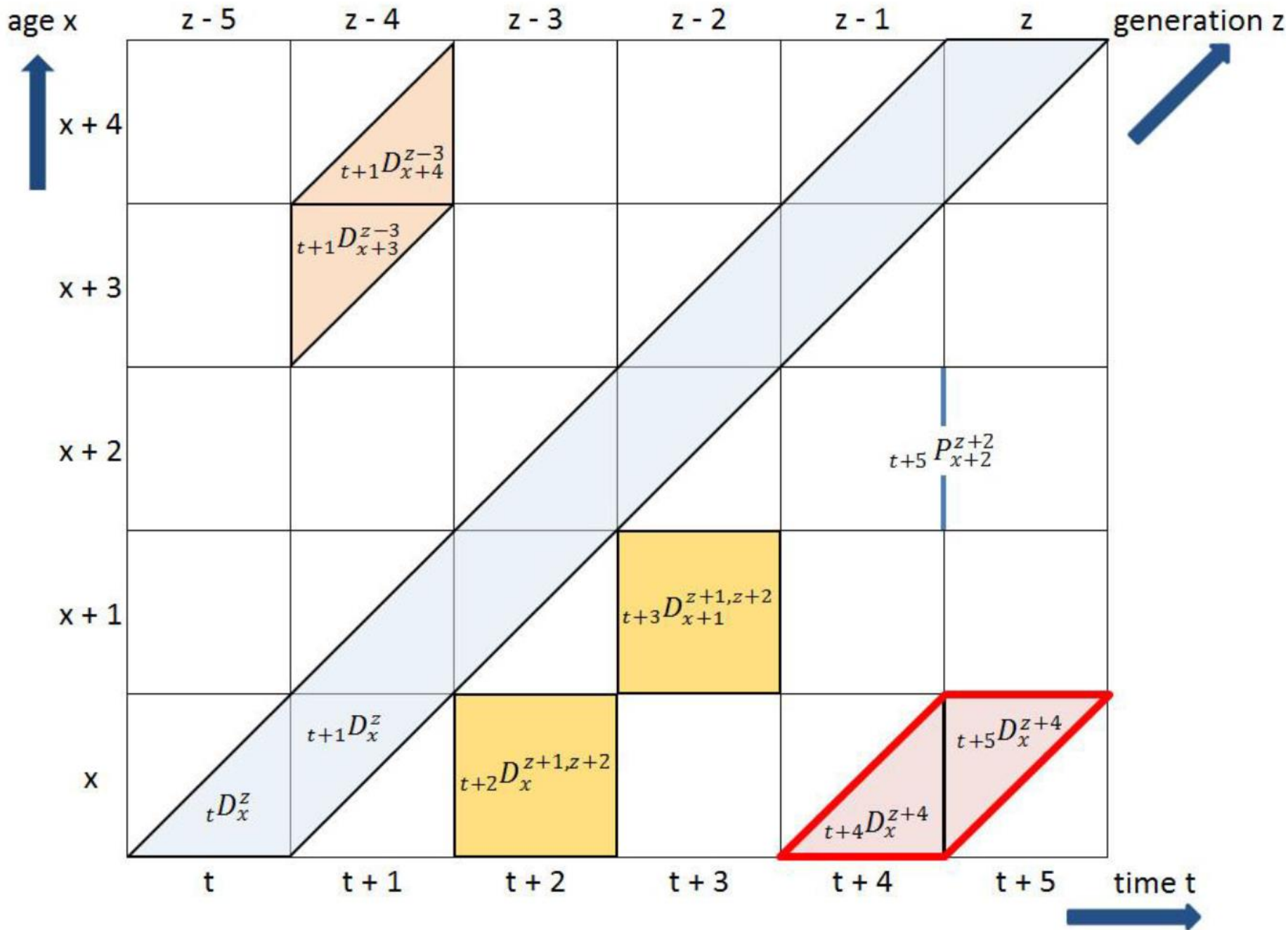# Data available before 1950

- Why data from that period?
  - We need complete cohort
- Data starts in 1870 (40 complete cohorts)
- Split data to
  - Number of deaths (D)
  - Number of population (P)

$$q_x^z = \frac{D_x^z}{P_x^z}$$

where $q_x^z$ is the probability of dying for a person aged *x* from a generation *z*.

# Data about Deaths (D) before 1950

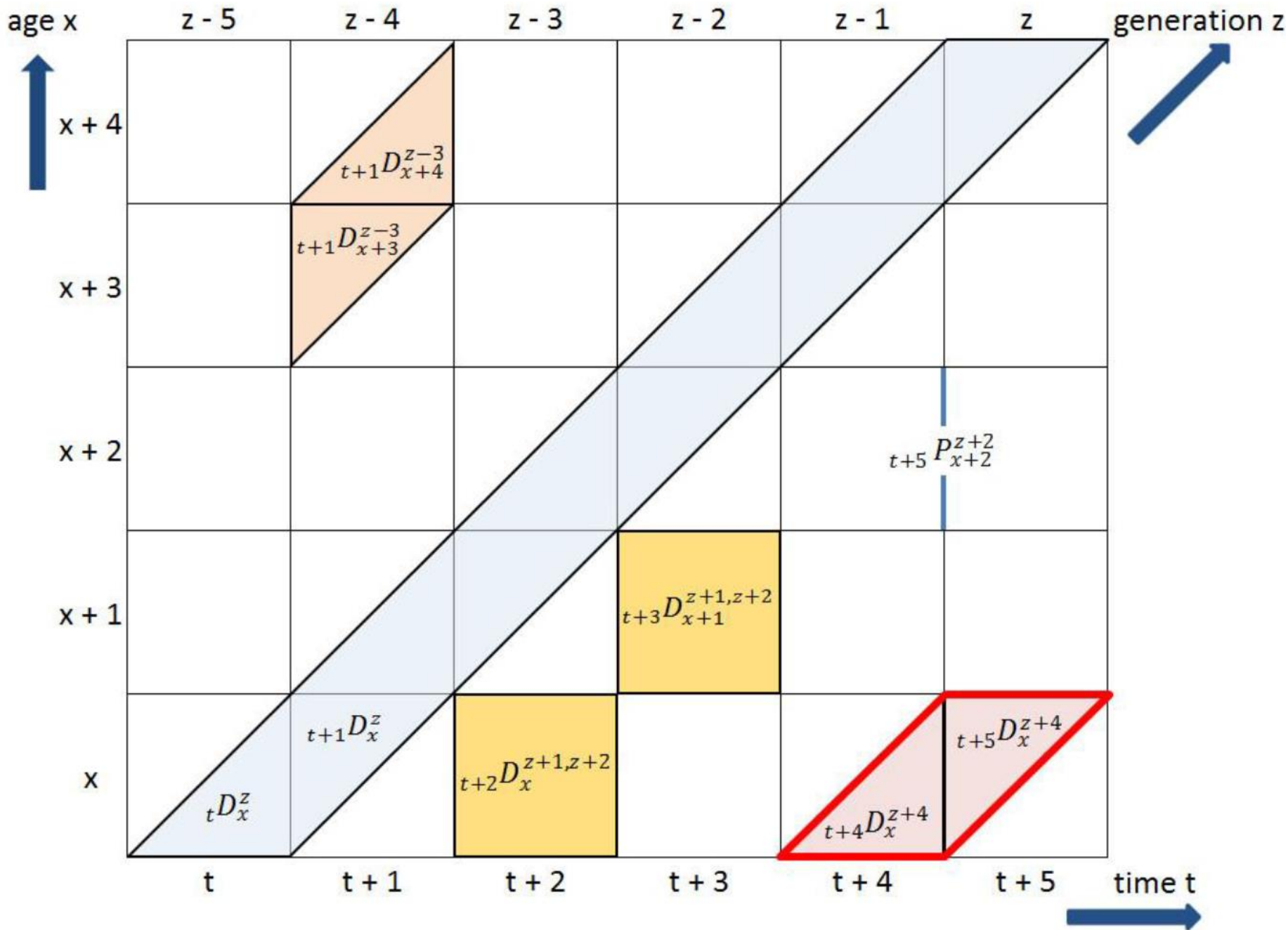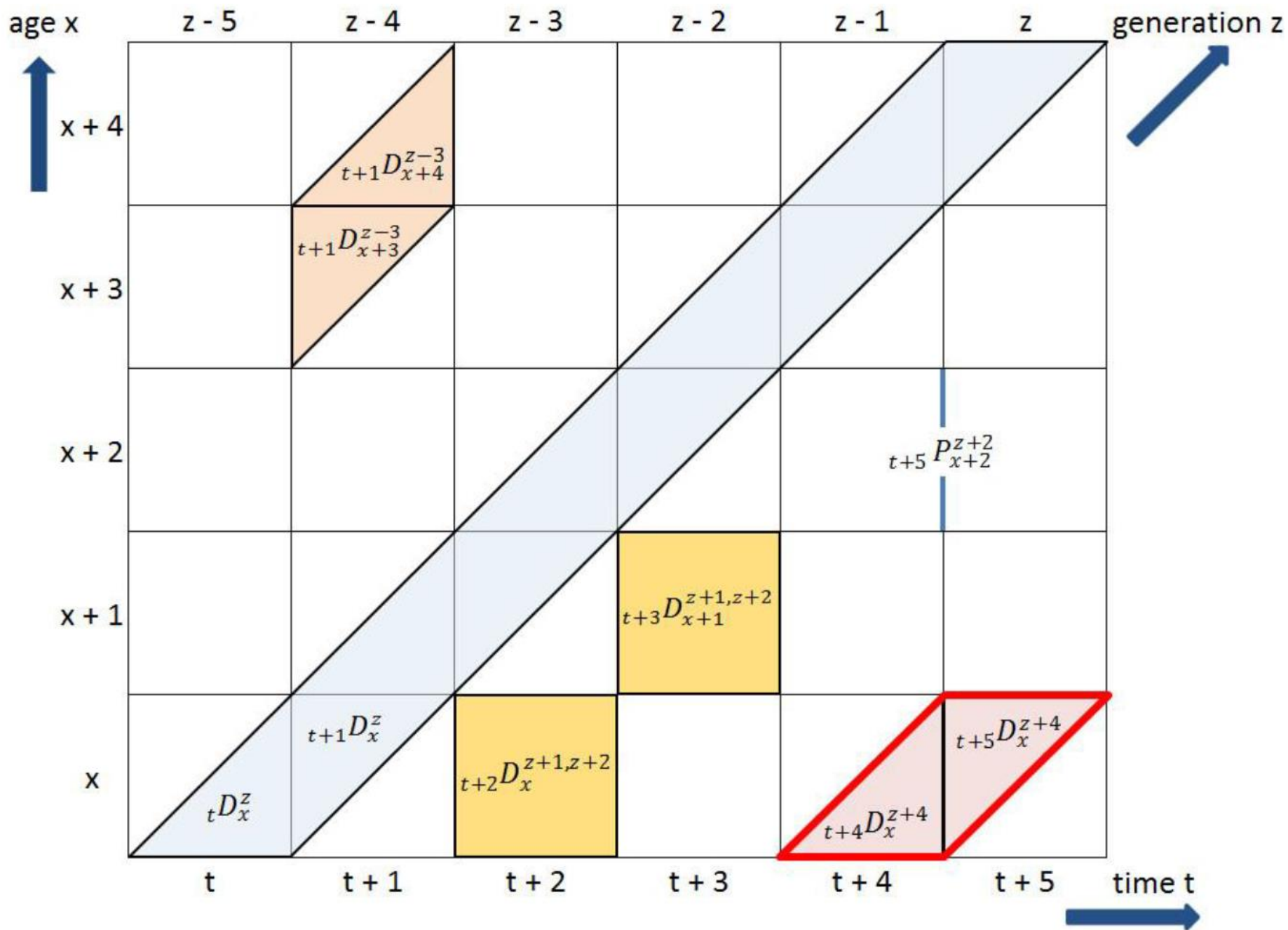- From 1945 to 1950 complete data in triangles of Lexis diagram

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- From 1945 to 1950 complete data in triangles of Lexis diagram
- From 1939 to 1945 also but only for part of region (and for Czech citizens only)
- From 1920 to 1938 complete data in triangles of Lexis diagram
- From 1914 to 1919 complete data but for civil population only
- From 1890 to 1913 complete data in triangles of Lexis diagram
- From 1870 to 1890 complete data in squares (3. groups) of Lexis diagram

# Data about Population (P) before 1950

- From 1945 to 1950 complete data about final number of population for each year

- From 1939 to 1944 no information about population

- From 1920 to 1938 mean number of population for each year

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- Before 1920 only data from census we have (1869, 1880, 1890, 1900, 1910)

# What to do? (Deaths)

- Assumption about the same „mortality behaviour" for all sub groups during WW II

- Focusing to civil population during WW I only

- Split squares from Lexis diagram before 1890 to trianguals

# What to do? (Population)

- Backward estimation for WW II (difference in population before WW II and after)
- Estimate of final population in 1920-1938
- Estimation of population in 1914-1920 (backward estimation from 1920)
- Estimation of population in 1910-1914 (forward estimation)
- Estimation in intercensal intervals (combination of forward and backward estimates)

# Any inspiration?

- We are not the only country with this type of history

- France, Netherlands solved the same problems

- Focusing to probability or intensity of mortality, not to exact numbers

# Thank you for you attention!

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