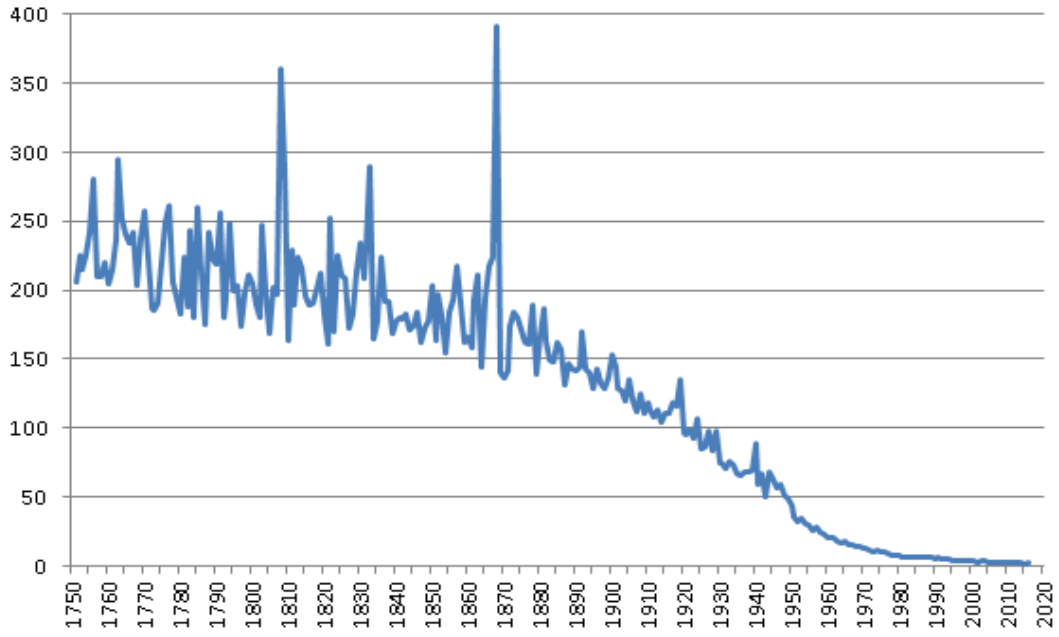
LESSON 3: DEMOGRAPHIC INDICATORS

Activity 1: Infant Mortality Indicator – Small Group 1

Read the text. **How would you describe the text? What could be the reason why the infant mortality rate decreased so dramatically? Why did it used to be so high?**

The high infant mortality rate in some countries is a societal problem that was already discovered, measured and analysed centuries ago. Politicians and societal actors (for example, doctors) are heavily engaged in finding a solution to this problem.

The infant mortality rate refers to the number of deaths of small children within the first year of life per 100,000 live births. To better understand this indicator, take a look at this historical data about Finland:



Infant Mortality Rate, Finland, 1751-2016
Source: Statistics Finland-Tilastokeskus (http://www.stat.fi/)

As the graphic shows, in the mid-18th century, more than 200 infants for every 1,000 live births died within their first life year (and this likely applies to the period before). This is equal to a rate of over 20%.

Politicians in Finland and Europe therefore became increasingly aware of the social problem of high infant mortality. At the beginning of the 19th century, they implemented a series of measures that were aimed at improving the survival chances of infants. Up until then, infant mortality had greatly fluctuated and was dependent on external factors such as climate change, disease, hunger, epidemics, war, etc. Within the following decade, it began to decline.

An external reason for this was the general decrease in the 19th century of the so-called “subsistence crisis”,

which had led to an increase in mortality due to the problematic shortages in food supplies. Additional measures against child mortality were also taken. The improvements in the nutritional situation, medical progress, such as the discovery of various bacteria and possible immunisations against them (vaccinations), improvements in the conditions during pregnancy, longer lactation periods and other improvements, like the pasteurisation of milk and the processing of drinking water, prevented many fatal infections in infants. As a result of these advances and improvements, we can see a significant reduction in infant mortality by almost half at the beginning of the 20th century (about 120 deaths per 1,000 live births). As the 20th century progressed, the rate continued to fall: In the 1950s, fewer than 50 out of 1,000 children died before their first birthday. In the 1970s, this figure was only 10, and by the beginning of the 21st century, the rate was already so low that it can hardly be reduced any further (less than three deaths under one year of age per 1,000 live births).

LESSON 3: DEMOGRAPHIC INDICATORS

Activity 1 – Birth Rate Indicator – Small Group 2

Read the text. **Explain the difference between "crude birth rate", "general fertility rate" and "age-specific birth rate".**

The infant mortality rate is one of the most important indicators in demography. Demographers have also developed other important indicators. The most well-known is likely birth rate and mortality rate. The birth rate refers to the number of live births per 1,000 residents within a population and in a certain year. In a similar fashion, the mortality rate refers to the number of deaths per 1,000 residents in a year. These are also called the crude birth rate and the crude mortality rate because these figures are based on the total population in a region and – like the birth rate – they are not just based on the number of women of childbearing age. Any rate for any demographic event always refers to the entire population (per 1,000 inhabitants).

$$\text{Crude birth rate} = \frac{\text{Births}}{\text{Total population}} \times 1{,}000$$

Example: Germany 2015

$$\text{Birth rate for women age 15-19} = \frac{12{,}263}{4{,}189{,}964} \times 1{,}000$$

If a somewhat more precise indicator should be calculated when determining the birth rate, then we can limit ourselves to women of reproductive age, which is usually women between the ages of 15 and 49. This results in the so-called **general fertility rate**. For this indicator, the number of live births within a year is divided by the number of women between the ages of 15 and 49, per 1,000 inhabitants.

If the focus is on which women have more, or rather fewer children, then the so-called **age-specific birth rate** can be calculated. For example, one can calculate the birth rate of very young women (between the ages of 15 and 19) or of women who are reaching the end of their reproductive years, between the ages of 35 and 40 and older. Let's say we want to know more about the fertility rate of youth in Germany in 2015 in order to create a targeted family policy to reduce teen pregnancies. Then, we would take the number of births of women aged 15-19 and divide that by the number of female inhabitants in the same age group, for every 1,000 inhabitants. This indicator can provide more specific information about whether teen pregnancies actually present a problem that the government should focus on.

$$\text{Birth rate for women age 15-19} = \frac{12{,}263}{4{,}189{,}964} \times 1{,}000$$

$$\text{Birth rate} = 3 \text{ births per } 1{,}000 \text{ female adolescents (15-19)}$$

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Activity 1 – Answer Sheet: Infant Mortality Indicator and Birth Rate Indicator

Answers from Group 1:
How would you describe the graph? What could be the reason why the infant mortality rate decreased so dramatically? Why did it used to be so high?

Answers from Group 2:
What is the difference between:

Crude birth rate ---

General fertility rate ---

Age-specific birth rate ---
