

LESSON 2: THE POPULATION PYRAMID

Activity 1 – Small Group 1



Read the text carefully. Explain the following terms: “Population ageing”, “median”, “ageing index” and “dependency ratio”.

The two main determining factors of a population’s age structure are **fertility** and **mortality**. A decrease in births would lead to a smaller proportion of young people in the population, while an increase in life expectancy would lead to an increase of the older population (usually calculated as those 65+). In addition to these two factors, **migration** also plays a role, but its impact on the population structure is less than changes in the birth or mortality rates. Migration decisions usually affect younger adults, so that immigration tends to lead to an increase in the proportion of the younger population and especially the working age population.

One of the most well-known terms related to a population’s age structure is **population ageing**. It refers to a process in which the proportion of children and younger people in the population decreases, while at the same time the proportion of adults and the older people is growing. This process results, on the one hand, from the decline in birth rates and, on the other hand, from a reduction in mortality, especially in old age where life expectancy is increasing (Definition: Population Reference Bureau, Washington, D.C.). These changes result in an increase of the so-called **median age** of a population. This means that at a certain age, 50% of the population is younger and 50% is older. This was, for example, in 2015 in Germany 44.3 years for men and thus higher than the average age worldwide (42.8 years). An ageing population occurs when the birth rate (fertility) decreases, while the life expectancy remains constant or continues to increase among people of older age.

The ageing of the population can be traced back to essential achievements of mankind: The large majority of people today can have as many children as they want, for example due to the possibility of birth control. They could also have fewer children since children are not as essential for the care of their parents in old age. People can live longer due to the improved living conditions and better medical care, for example, which (at least in the modern industrial countries) applies to a growing portion of the population. Therefore, it is important to keep in mind the very positive causes of an ageing population when we talk about this issue.

Demographers use various indicators to measure population ageing. The two most used indicators are the **ageing index** and the **dependency ratio**. The ageing index highlights the ratio of young to old (per 100 inhabitants). The dependency ratio represents the ratio of economically-dependent population to those of working age. More specifically, this refers to the ratio of people of an age below or above the statutory working age (usually under 15 years and over 65 years) to those in the population who are still working (usually between 16 and 64 years. In some countries, one is already counted as part of the working population at the age of 15). If we only want to observe the proportion of the population that is young and still economically dependent, then we can calculate the **young-age dependency ratio** (population aged 0 to 14 divided by the population aged 15 to 64). The same goes for the older population by using the **old-age dependency ratio** (population over the age of 64 divided by the population aged 15 to 64). The dependency ratio is the sum of the old-age dependency ratio and the young-age dependency ratio.

$$\text{Dependency ratio} = \frac{\text{Age group (0-14)} + (65+)}{\text{Age group (15-64)}} \times 100$$

$$\text{Young-age Dependency Ratio} = \frac{\text{Age group (0-14)}}{\text{Age group (15-64)}} \times 100$$

$$\text{Old-age Dependency Ratio} = \frac{\text{Age group (65+)}}{\text{Age group (15-64)}} \times 100$$

LESSON 2: THE POPULATION PYRAMID

Activity 1 – Small Group 2



Read the text carefully. **Describe what the population pyramid shows and what conclusions one can draw from it. Name three differences between the population pyramid of Sweden for 1860 and 2016.**

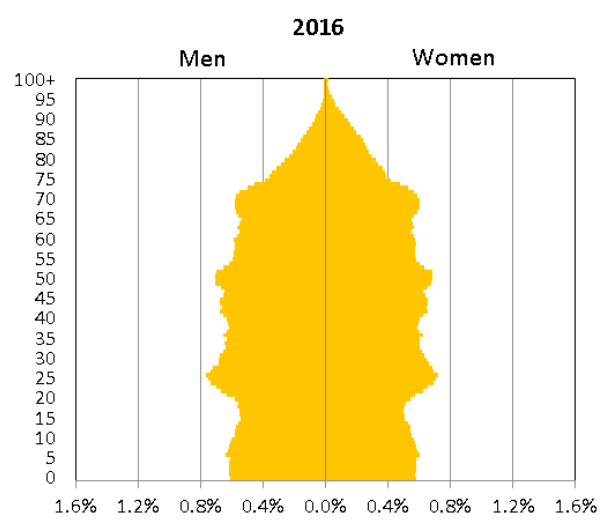
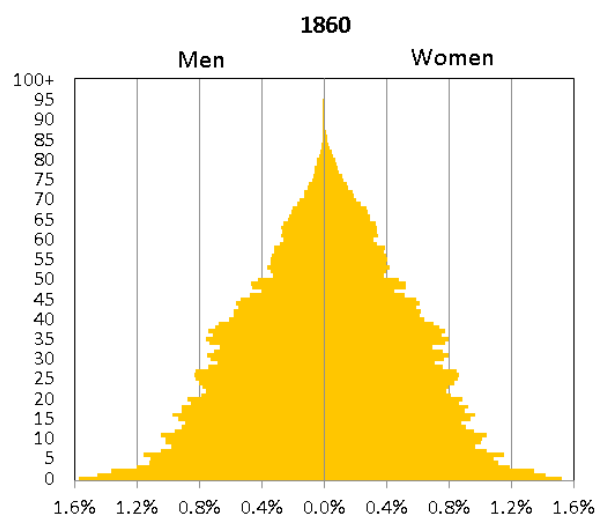
The **population pyramid** is a very meaningful method that demographers use to depict the age structure of a population and its development. A population pyramid is a graph that shows the distribution within a population by age and gender.

In addition to a population's size, its composition based on age and gender, i.e. the proportion of men and women in each age group, is one of its most important components. The population structure based on age and gender can predict the future growth of people in specific age groups. For example, it can forecast the number of older people aged 85 years and higher or the number of children aged 5 and below, and the overall growth of the population.

The population's age structure is very important for the work of governments and in political decisions: A younger population will develop new needs with increasing age in the very foreseeable future, including a sufficient number of places in schools and, in the medium and longer term, jobs and one's own four walls. Countries with an ageing population structure, meaning a higher proportion of older people in the population, however, will need more facilities and personnel in the health care system and a strong economy with a secure pension system.

The two components of the population pyramid are **age** and **gender**. The bars along the horizontal and vertical axes correspond to the value (in per cent) for each individual gender and age. These can be a specific age or, typically, groups of five years. Age is represented on the vertical y-axis and gender on the horizontal x-axis. These values always have to be above zero since there can be no negative values regarding the number of inhabitants. Women are usually depicted on the right side of the vertical y-axis and men on the left side. New-borns are represented at the base of the pyramid, along the x-axis, and the rest of the population is represented with increasing age, so that the oldest age group is at the top of the population pyramid.

A population pyramid typically shows the distribution within the population, which means the proportion of every group or age group within the entire population, and not absolute values. This is usual because it makes it possible to observe trends over time by looking at the same population structure at different times, for example Sweden in 1860 and 2016. One can also compare the different populations and countries at the same point in time. The population pyramid makes it possible to forecast the development of the population in the future.



Source: Statistics Sweden

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Activity 1 – Answer Sheet for Small Group Work

Answers for Group 1:

Define the following terms:

Population ageing:

Median:

Ageing index:

Dependency ratio:

Answers for Group 2:

Describe what the population pyramid shows and what conclusions one can draw from it.

Name three differences between the population pyramid of Sweden for 1860 and 2016.
