

# Population by age and sex

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CHAPTER 2

# Introduction

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The study of the sex and age structure takes an important place in demographic statistics.



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Population by sex and age  
is one of the main  
characteristics population  
of any territory and the  
globe as a whole.

## The composition of the population by sex and age is affected by the following factors:

- the ratio between the number of boys and girls among the born;
- higher mortality of male population in comparison with women in all age groups;
- the life expectancy, which is greater in all ages for women, than for men;
- migration processes, especially internal migration, the level the intensity of which in men is higher than that of women;
- loss of population in wars, direct and indirect.

# primary objects

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- *Ascriptive characteristics (recorded at the time of birth).*
- *Social characteristics:*
  - *Economic characteristics:*
  - *Migration characteristics:*
  - *Characteristics of vital (demographic) events,*
  - *Characteristics of the family (household): type of household, its size, etc.*
- *Data on listed and other characteristics are recorded in the course of censuses and the current recording of demographic events.*

# Sex as a scientific category

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- In general terms, sex is a combination of genetic, morphological and physiological characteristics of the organism that ensure sexual reproduction.
- For a person, sex is considered as a complex of bodily (genetic, morphological and physiological), reproductive, behavioral, social, socio-psychological and psychological signs that determine the person's biological and social status as men or women.

# Sexual structure of the population

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**The first** is a simple definition of the absolute numbers and proportions of men and women in the entire population and in certain age groups.

**The second** way to represent the sexual structure is to calculate the so-called sex ratio.

# Characterization of the sexual structure

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Characterization of the sexual structure of the population is one of the main places in the management of the demographic situation in society.

This is due to two reasons:

- ❑ gender distribution is important for estimating the parameters of population reproduction and, to a greater extent, for forecasting the birth rate;
- ❑ The distribution of society to men and women plays an exceptional role in ensuring the production of labor, in analyzing the characteristics of the labor market and the consumer market.

# The sex structure of the population is formed under the influence of three main factors:

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- 1) the sex ratio among newborns (biological constant);
- 2) sex differences in mortality;
- 3) sex differences in the intensity of migration of the population.

# Population age

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Age is the period from the birth of a person to this or that moment of his life.

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The term "age structure of the population" was introduced in German statistics in the second half of the XIX century.

# Pythagoras age groups

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up to 20 years - spring (childhood),

to 40 years - summer (youth),

to 60 years - autumn (maturity),

after 60 years - winter (old age).

# Russian demographer

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Roslavsky-Petrovsky (1816-1872) proposed to distinguish:

"the younger generation" - up to 15 years, the "blooming generation" - up to 60 years and the "withering generation" - after 60 years.

# In China

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In China, age groups are classified as follows:

youth - up to 20 years old

married - up to 30 years old,

performing public duties - up to 40 years,

knowing their own misconceptions - up to 50 years,

experiencing the last creative period of life - up to 60 years,

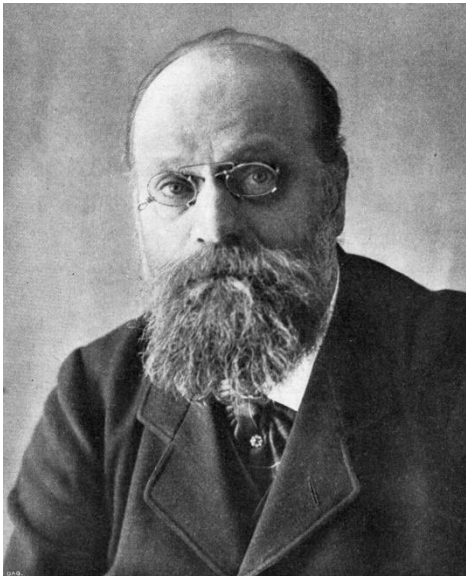
living the coveted age - up to 70 years,

old - over 70 years.

# Three main age groups

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- group to reproductive age (from 0 to 14 years);
- a group of reproductive age (women - from 15 to 55 years, men - from 15 to 60 years);
- The group after the reproductive age (women - over 55, men - over 60 years).



Types of age structure of the population (by Sundberg classification).

Age groups, age	Age stcture (%)		
	respectively	stationary	regressive
0 – 14	40	27	20
15 – 49	50	50	50
50 and more	10	23	30
Жами:	100	100	100

Axel-Gustav Sundberg (1857-1914)

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In demographic studies, were established the following regularities:

- Where have a higher birth rate, means they have the younger population structure;

- Where have younger population structure, means the higher rate of birth.

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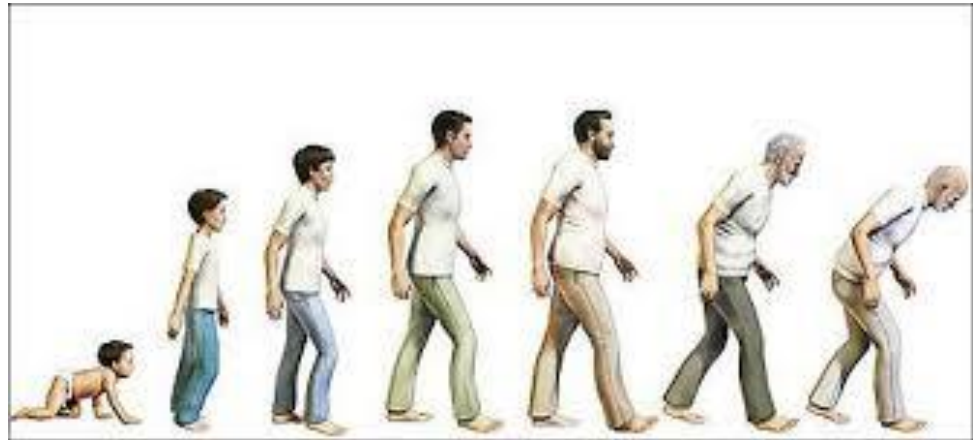
According to the All-Russia Population Census of 2010, the age group of the population is under 17.4% of the working age, 60.6% of the able-bodied age, and 21.3% over the working age.

The lowest proportion of children is observed in Moscow (13.2% of the population) and St. Petersburg (13.7%).

# Elderly People

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- the elderly are people aged 60 to 74 old
- from 75 to 89 years old, long-livers
- over 90 years old



# Factors of aging population

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The main factors of the aging population are the **processes of reducing fertility and increasing life expectancy.**

# One-Year Age Groups

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A one-year age structure is the distribution of the population in the following age groups: 0 years, 1, 2, ..., 34, 35, .. ,89... $\omega$  years.  $\Omega$  - is a certain age limit , which ends the distribution of the population by one-year age groups.

# Five-Year Age Groups

The five-year age structure is constructed according to the following age groups: 0 years, 1-4 years, 5-9 years, 10-14 years, ..., 35-39 years, ..., 80-84 years, ..., 100 years and older

## Indicators of population

### Sex ratio by age groups

(at the beginning of year; the number of females per 1000 males of the respective age group)

	2007	2008	2009	2010	2011*	2012	2013	2014	2015	2016	2017
<b>Total</b>	1001	1000	999	998	999	998	997	996	995	994	992
<i>of which, aged:</i>											
under 5	942	943	944	942	941	938	935	931	929	926	925
5-9	951	950	947	946	947	945	945	946	944	942	939
10-14	956	954	953	952	953	954	953	951	949	947	946
15-19	969	966	964	962	964	959	957	956	955	954	955
20-24	987	986	981	977	973	972	969	966	965	964	958
25-29	988	989	989	988	982	989	987	983	980	973	973
30-34	988	993	997	995	996	994	995	995	993	995	992
35-39	1034	1021	1006	1005	1000	996	1001	1004	1002	1000	998
40-44	1061	1060	1062	1053	1050	1041	1029	1015	1013	1005	1001
45-49	1039	1043	1051	1055	1063	1070	1069	1070	1062	1058	1049
50-54	1054	1051	1048	1050	1054	1055	1059	1065	1069	1077	1084
55-59	1078	1080	1079	1079	1075	1074	1072	1070	1071	1075	1076
60-64	1027	1054	1087	1101	1108	1109	1112	1111	1113	1108	1108
65-69	1136	1109	1086	1070	1071	1086	1113	1141	1153	1159	1159
70-74	1213	1199	1199	1207	1211	1209	1184	1158	1142	1138	1151
75-79	1367	1401	1416	1426	1384	1334	1318	1310	1313	1314	1306
80 and over	1987	1869	1806	1703	1718	1712	1712	1714	1692	1678	1642

\*According to a sample survey of population conducted in accordance to Secree of the Cabinet of Ministers of Republic of Uzbekistan No. 71 dated as of March 14, 2011 "On Measures on Preparation and Carrying Out a Sample Survey of the Population"

# 10-year Age Groups

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The 10-year age structure is constructed according to the following, age groups: 0 years, 1-9 years, 10-19 years, 20-29 years "..., 60-69 years, ..., 100 years and older

# Age contingent

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**Age contingent** is a group of persons united by their common age, as well as by some socio-economic or other sign.

Among such age groups are:

nursery (children aged 0-2 years),

preschool (children aged 3-6 years),

school (children and adolescents aged 7-15 years),

able-bodied (men aged 16-59 years and women aged 16-54 years),

reproductive (childbearing) (women aged 15-49 pet), etc.

# Cohort

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Generation is the totality of people born in certain period;

Birth Cohort is offspring of a married couple or couples according to the degree of kinship.

# Demographic aging

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***Demographic aging*** and population aging is a term that is used to describe shifts in the age distribution (age structure) of a population toward people of older ages.



# Types of population aging

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There are two types of population aging:

- Aging from below, which is the result of a decline in fertility.
- Aging from the top, which is the result of an increase in the average life expectancy, a decrease in mortality in the elderly under conditions of low fertility.

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(A.Ya. Boyarsky, Russia,

J. Bourgeois-Pisch and A.Sovi, France,

E. Cole, USA, and others)

# Indicator of demographic aging J. Boje-Garnier - E. Rosset

Stage	Percentage of persons aged 60 years and older,%	The stage of aging and the level of old age of the population
1	< 8	Demographic youth
2	8-10	The first threshold of old age
3	10-12	Actually the threshold of old age
4	12 & more	Demographic aging
	12-14	Initial level of demographic aging
	14-16	The average level of demographic aging
	16-18	High level of demographic aging
	18 and more	Very high level of demographic old age