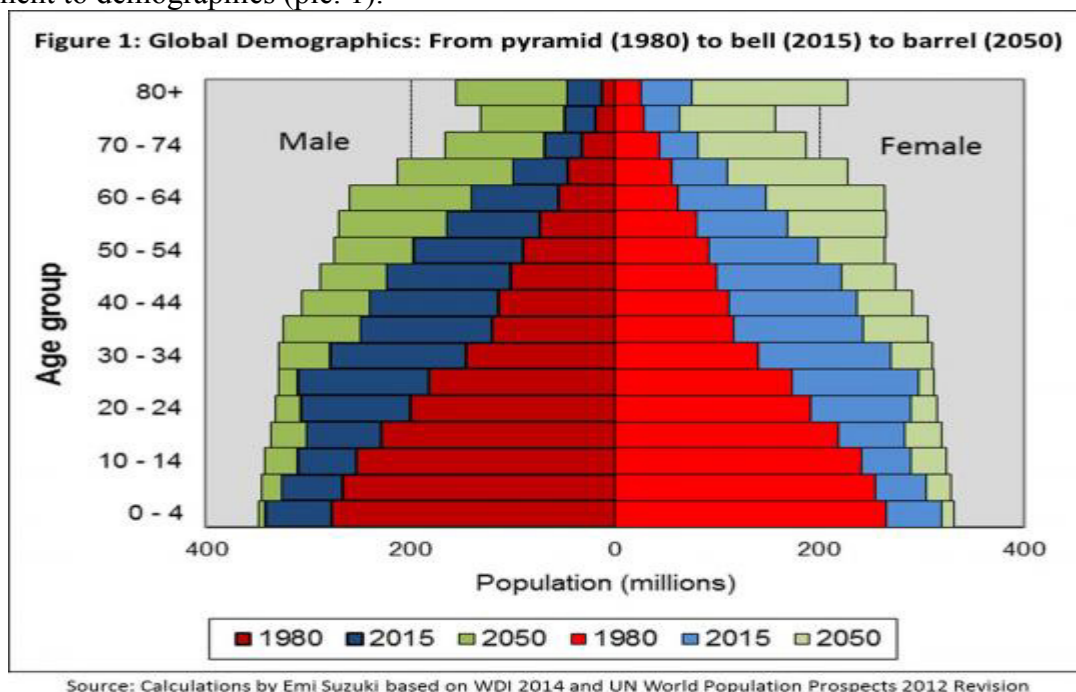УДК: 314.8

DEMOGRAPHY ANALYSIS

М. Омельченко[1]

Demography is the statistical and mathematical study of the size, composition, and spatial distribution of human populations and how these features change over time. Data are obtained from a census of the population and from registries: records of events like birth, deaths, migrations, marriages, divorces, diseases, and employment. To do this, there needs to be an understanding of how they are calculated and the questions they answer which are included in these four concepts: population change, standardization of population numbers, the demographic bookkeeping equation, and population composition.

Population change is analyzed by measuring the change between one population size to another. Global population continues to rise, which makes population change an essential component to demographics (pic. 1).

Pic. 1. Population Change

This is calculated by taking one population size minus the population size in an earlier census. The best way of measuring population change is using the intercensal percentage change. The intercensal percentage change is the absolute change in population between the censuses divided by the population size in the earlier census. Next, multiply this a hundredfold to receive a percentage. When this statistic is achieved, the population growth between two or more nations that differ in size, can be accurately measured and examined.

For there to be a significant comparison, numbers must be altered for the size of the population that is under study. For example, the fertility rate is calculated as the ratio of the number of births to women of childbearing age to the total number of women in this age range.

Within the category of standardization, there are two major approaches: direct standardization and indirect standardization (pic. 2).

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[1] *студ. Кіровоградський національний технічний університет*

Науковий керівник: Рябоволик Т.Ф., канд. екон. наук, доц. Кіровоградський національний технічний університет

Pic. 2. Standardization (of population numbers)

Direct standardization is able to be used when the population being studied is large enough for age-specific rate is stable.

Indirect standardization is used when a population is small enough that the number of events (births, deaths, etc.) are also small. In this case, methods must be used to produce a standardized mortality rate (SMR) or standardized incidence rate (SIR).

Demographic bookkeeping is used in the identification of four main components of population growth during any given time interval.
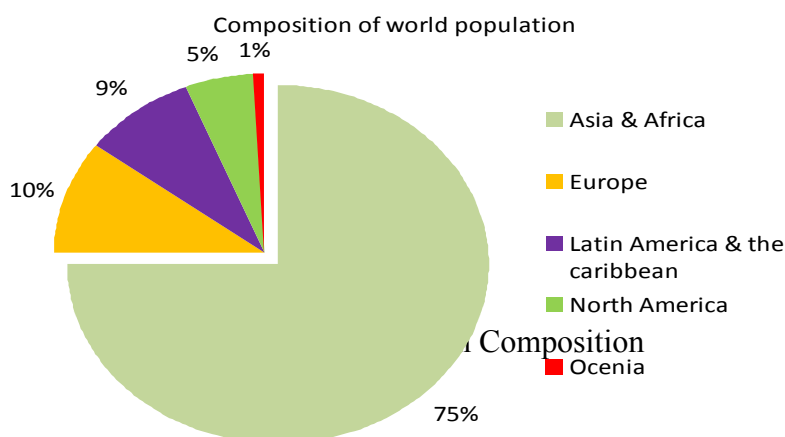
The demographic bookkeeping equation is as follows:

$P_2 = P_1 + (B - D) + (M_i - M_o)$

The four components being studied by this equation are Population Growth (P_1, P_2), Births (B), Deaths (D), and In (M_i) and Out (M_o) Migration.

Meaning, the population at any time is equal to the earlier population plus the excess of births over deaths in the time, plus the amount of in-migration minus the amount of out-migration.

Population composition is the description of population defined by characteristics such as age, race, sex or marital status (pic. 3).

These descriptions can be necessary for understanding the social dynamics from historical and comparative research. This data is often compared using a population pyramid.

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