

Demography Summary

Demography: is the scientific study of a human population (their size, composition, and distribution) as well as the causes and consequences of changes in these characteristics.

-Demographers,

1- seek to know trends and patterns in population size and its components.

2- search for explanations of demographic changes and their implications on society (planning for future).

-**Political leaders,** A- in industrialized countries whose populations are “aging” are concerned with the need of health care. B- in rapidly growing countries are concerned with the need for classrooms, employment opportunities, and housing.

-**Census:** a scientific mathematical way of determining what a population looks like in terms of numbers and characteristics. Data is collected (birth and death records, surveys, visa records, motor vehicle and school registration). It considers every member of a population, regardless of his settings>>> in medicine, we need it to take good health care based on population features.

The Tools of demography :

Count: The absolute number of a population or any demographic event occurring in a specified area in a specified time/ No comparison between anything	Example: 2,027,000 live births occurred in Egypt in 2010.
Rate: The frequency of demographic events in a population during a specified time period divided by the population “at risk” of the event occurring during that period of time (Expressed per one thousand) -How “common” it is for a given event to occur. Two types: A- Crude rates: for an entire population. Specific rates: for a subgroup	Example: in 2008 in Zambia the death rate was 16 per 1,000 (period of time is usually 1 year). -Specific rates: (age specific, sex specific, race specific, occupation specific...)
Ratio: The relation of one population subgroup to another subgroup Ratio = number of one subgroup / another subgroup.	Example: The sex ratio in France in 2010 was 94 males per 100 females.
Proportion: The relation of population subgroup to the entire population. Proportion = a population subgroup / entire population.	Example: the proportion of Vietnam’s population in 2008 classified as urban was 29%.

Highest population in the world: China, **highest population among Arab countries:** Egypt

There are three major factors that determine the dynamics of a population, and these are: 1- Births (fertility). 2- Deaths (mortality). 3- Migration.

NOTE: don’t memorize any numbers, those are just examples for clarification.

-**Fertility** is the number of live births women have.

-**Total fertility rate** is the average number of children that would be born to a woman by the time she ends childbearing. *Best indicator* because it tells how many children women are currently having. (TFR in Jordan= 2.7) in 2017.

-**Fecundity** the physiological ability of women to reproduce. (it may decrease due to a disease, genetic dysfunction or breastfeeding” temporarily”). Fecundity ranges between 0-30 children per one woman.

Factors Affecting Fertility:

General Factors : Distant factors	Specific Factors (Proximate determinants “direct”) :
<ul style="list-style-type: none"> -Cultural values: the society loves large or small families -Social roles. (The role that is expected from the woman in the society). -Economic. -Health. (Diseases in the specific area). (Relative importance of these factors vary between different societies). 	<ul style="list-style-type: none"> 1- Proportion of women in sexual union. 2- Percentage of women using contraception. 3- Proportion of women not currently fecund (primarily because of breast feeding). 4- Level of induced abortion. <p>So more the more abortion & contraceptives (they are the most important proximate determinants) are used the less the fertility. When contraceptive and abortion prevalence rates are low, postnatal infecundity and marriage are more important. These are the most affecting factors in most developed countries.</p>

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Note:

The LOWEST fertility rate recorded was in Spain, 1.15 births per woman of reproductive age. 72% use contraceptives (notice the relationship).

In African countries women marry at a young age but they breast feed for 2-3 years (long infecundity period).

Fertility Measurements

Birth Rate (Crude Birth Rate):	The number of live births per 1,000 population in a given year. (So here it is per both women & men). Most easily and most common reported fertility measure	$=(\text{Number of births}/\text{Total mid-year population}) * K$. K=1,000.
General Fertility Rate(Fertility Rate) :	the number of live births per 1,000 women (specific sex) with ages between 15-49 in a given year.	$=(\text{Number of births}/\text{Number of women ages 15-49}) * K$. K=1,000.
Replacement Fertility Rate:	Level of fertility at which a couple has only enough children to replace themselves (about 2 per couple).	-It's not EXACTLY 2. Affected by death rates. so It is slightly different. High death rate -> it would be much greater than 2. Not so high -> slightly more than 2.

#Distinguish between GFR (general fertility rate) & TFR (total fertility rate)

Mortality

Death Rate (Crude death rate): 1- Age specific death rates 2- cause specific death rate 3- sex specific death rate	the number of death rates per 1,000 population in a given year. **Cause specific death rate K=100000	$=(\text{Number of death rates}/\text{Total population}) * K$. K=1,000. OR (number of deaths of specific age or gender)/(number of population age or gender)
Infant Mortality Rate: (Good indicator of health status in a population).	the number of deaths of Infants under age 1 per 1,000 live births in a given year.	$=(\text{Number of deaths of infants under age 1} / \text{Total live births In that year}) * K$. K=1,000.
Maternal Mortality <u>Ratio</u> : Some times referred as maternal mortality rate ratio because the denominate is different from the nominate>> the definition of ratio	the number of women who die as a result of complications of pregnancy or childbearing in a given year per 100,000 live births during that year.	$=(\text{Number of maternal deaths(MOTHERS)} / \text{Total live births (BABIES)}) * K$. K=100,000.

Note : Maternal morality rate include deaths that occur due to complications of spontaneous or Induced abortion.

A maternal death is defined as the death of a woman while pregnant or within 42 days of termination of pregnancy or its management but not from accidental or incidental causes.

Morbidity refers to disease and illness, Injury and disability in a population.

Here we have data about the frequency and distribution of the disease which help in controlling it.

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A-Incidence Rate: (Number of new cases) the number of people contracting a disease during a given time period per 1,000 population at risk. (Any constant may be used here from “per 100” or “percent” to “per 100,000”)

Incidence = (Number of people developing a certain disease during a given period of time / Population at risk) * K.

(K= 100,000)

B-Prevalence rate: the number of people who have a particular disease at a given point in time per 1,000 population. (New + Old cases) (All known cases that haven't resulted in death, cure, or remission ++ new cases developing).

(K= 1,000)

Case Fatality Rate : is the proportion of people contracting a disease who die of that disease during a specified time period.

CFR = (Number of persons dying from the disease / Number of people contracting the disease) * K.

(K=100,000).

- **Life Expectancy** is a hypothetical measure that estimates the avg number of additional years a person could expect to live if the age-specific death rates for a given year prevailed for the rest of his/her life. But in reality they do change so Life expectancy changes as the person grows older and mortality trends change.

Population composition or **the demographic structure of that population** refers to its **age and sex composition.** (doesn't only refer to the crude number).

This structure affects social and economic situation and they're a key to successful planning for the health sector and other development sectors. Also, it has an impact on both present and future. In developing countries we have more young people, but in developed countries we have more old people.

Developed countries have high living standards, advanced care, high income, while developing countries still struggling.

Median Age is the age at which exactly half the population is older and half is younger. This is one of the ways used to describe age composition of a population.

Median age in developing countries is small when compared to developed countries.

Sex Ratio is the ratio of MALES to FEMALES in a given population. Usually expressed as the number of males for every 100 females. NOTE : Life expectancy for FEMALES is usually higher. But in the sex ratio, MALES are usually slightly more. (except in wars). Sex ratio in most countries = 105 or 106.

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Population Pyramid

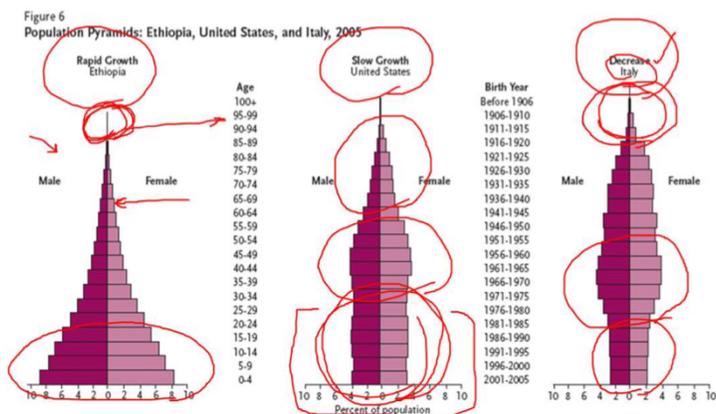
A method used to display a population's age and sex composition. Consists of horizontal bars which represent the numbers and proportions of females and males in each age group. (immigrants are taken into consideration here).

Developing countries usually have wide base indicating huge economic problems. So they have younger, unproductive citizens and that's the challenge.

Best population pyramid is that presenting slow growth (middle pyramid below)

Types of population growth (population profile) :

- 1-Rapid growth: Large percentage of people in younger ages.
- 2-Zero growth or decreasing : smaller proportion of the population in the younger ages. (Negatively growing).
- 3-Slow growth : roughly equal numbers of people in all age ranges, narrowing gradually at older ages.



Sources: UN, World Population Prospects: The 2004 Revision, Online Data (www.un.org/esa/population/unpop.htm, accessed Jan. 29, 2007); and U.S. Census Bureau, National Population Estimates for the 2000s (www.census.com, accessed Jan. 29, 2007).

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Growth Rate: describes to what extent does a specific population grow in every year, we're basically calculating people who are born, people who die, and immigrants.

Populations change over time, In order to calculate population change over time we use this equation: Net migration+ natural increase

P_1 (for population at the earlier date) + (B (for births) - D (for deaths)) + (I (for immigrants) - E (for emigrants)) = P_2 (for population at the later date).

$P_1 + (B - D) + (I - E) = P_2$.

Note: in developing countries, number of births is high when compared to developed countries in general

Growth Rate

growth rate = Population change * 100%.

= $\frac{((B - D) + (I - E))}{\text{Total population}} * 100\%$.

Natural Increase is the change in population size due to more births in the population than deaths. (migration not considered). (births-deaths)

And the rate of natural increase is the rate at which a population is increasing (or decreasing in the case of rate of natural decrease) due to change in birth rate and death rate expressed as a percentage.

Natural decrease is the decline in a population's size resulting from more deaths than births. (Migration not considered).

Net migration: immigration (move to the country)- emigrants (move from the country)

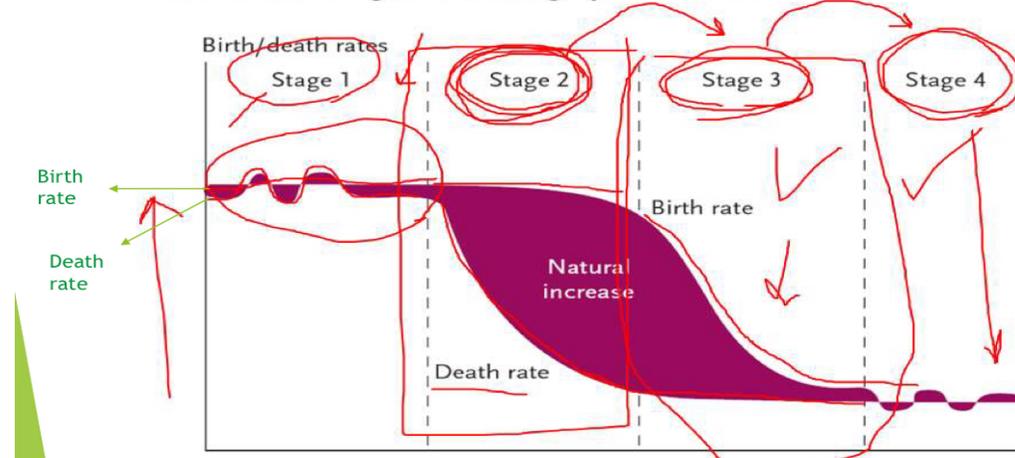
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The Demographic Transition:

-> refers to change that populations undergo from **high** rates of *births and deaths* to **low** rates of *birth and death*. (decline in mortality usually precedes the decline in fertility).

The Classic Stages of Demographic Transition.

Figure 11
The Classic Stages of Demographic Transitions



Stage One:

High birth and death rates. (almost equal). This is usually due to bad healthcare system. Balanced but high number of deaths. This is how it was before the invention of vaccines, surgery, anesthesia.. -Little or no growth. *Currently, some very poor rural populations are still in this stage.*

Stage Two:

High birth rate and fertility rate but falling death rate. This is due to improvement of health care but not of family planning. -Rapid growth here. *Many developing countries are in this stage.*

Stage Three:

Decreasing fertility rate, family size and number of births due to family planning (contraceptives). Relatively low deaths. -Slowed growth. *Most developed countries and some middle eastern countries are in this stage.*

Stage Four:

Significant decrease in death and birth rate. - Zero or negative growth (very low). Exists in some very few countries such as Germany.

Population Policies

National population commissions were formed formulating national policies and action plans majorly regarding problems that has to do with the reproductive health. Including: reproductive rights, sexuality, family planning, reproductive morbidity, violence against women, gender based differences, male involvement in reproductive health.

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