

# Demography-II

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### 3. Distribution of the population

✓ In describing the distribution of any population the following questions have to be answered:

1. What is the percentage of **inhabitant land** in relation to available land within the national borders of a given country?
2. What is the **population density /km<sup>2</sup>** for the inhabited area?
3. What is the population density **/km<sup>2</sup>** for the available land?

# Distribution of the population

- ✓ What are the occurring population movements between different areas of the country (rural- urban)?
- ✓ Data on distribution are notable politically, economically as well as socially.
- ✓ Changes in distribution are caused by the Cumulative Effects Of Fertility, Mortality, External And Internal Migration

# **MAJOR DEMOGRAPHIC PROCESSES**

# Major demographic processes

## Components Of Population Dynamics

- I. Fertility
- II. Mortality
- III. Migration

# I. Fertility (Natality)

- **Fertility** is the actual **Reproductive Performance** of a woman or a group of women.
- Statistically a woman's reproductive period is from **15 – 49 years**.

# Measures of Fertility



- 1. Crude Birth Rate**
- 2. General Fertility Rate**
- 3. Age Specific Fertility Rates**
- 4. Total Fertility Rate**
- 5. Gross Reproduction Rate**
- 6. Net Reproduction Rate**

# Measures of fertility

Year	Birth Rate	Growth Rate
<b>2022</b>	<b>20.955</b>	<b>-1.290%</b>
2021	21.228	-1.270%
2020	21.502	-1.250%

❑ **Crude birth rate (CBR):** it is the number of live births per 1000 mid year population in a given year and locality

CBR = معدل المواليد الخام

**Total no. of live births in a certain year and locality**

**x 1000**

**Estimated midyear population (same year and loc.)**

CBR in Jordan = 30.1 births/1,000 population 2010

CBR: (per 1,000 people) in Jordan was reported at **26.47 in 2016**

# Measures of fertility

2022	20.955	-1.290%
2021	21.228	-1.270%
2020	21.502	-1.250%

- ❑ CBR is a crude index of fertility as it relates births to total population (males, females outside the reproductive period as well as unmarried)
- ❑ CBR is useful in:
  - A. Making annual comparisons
  - B. Detect trends in fertility in a given country  
(30.1  $\longrightarrow$  26.47)/1000
  - C. Comparing different population
    - $\longrightarrow$  Gaza Strip Birth rate. Birth rate: 31.4 births/1,000 population (2017 est.)

# Measures of fertility

## Factors affecting the crude birth rate:

### A. Factors affecting the Numerator:

1. Number of females in the community specifically those 15 -49 years
2. The age of marriage
3. The level of infant and preschool mortality rates
4. The rate of having children

# Measures of fertility

## Factors affecting the crude birth rate:

### B. Factors affecting the Denominator:

1. Epidemics
2. Wars
3. Famines
4. Migration

# Measures of fertility

□ **General Fertility Rate (GFR)**: the number of live births a given year and locality per 1000 females in the child bearing period (15-49 years)

□ It is equal to:

**Total no. of live births in a certain year and locality**

**x 1000**

***Reproductive Female Population In The Same***

***Year And Locality: عدد النساء في سن الانجاب***

# Measures of fertility

- ❑ GFR is refinement of the CBR as it relates births to those who will carry them in the future.
- ❑ It eliminates the influence of the difference in the proportion of males in the community
  
- ❑ **The weakness of GFR is that it does not take into account:**
  1. The marital status
  2. The differences in fertility levels in various age groups of reproductive period.

# Measures of fertility

## Age specific fertility rate (ASFR):

- ❑ Major refinement in measuring fertility allowing for the age differences among women
- ❑ The whole reproductive life of women is divided into 7 age groups, each of 5 years duration (15 – up to 45 – 49)
- ❑ There are **seven (7)** age specific fertility rates.

# Measures of fertility

**ASFR =**

**Total no. of live births born by females in a specific age group in a certain year and locality**

**Female population in the same age group**

**x 1000**

# Measures of fertility

Year	Fertility Rate	Growth Rate
2022	2.614	-1.510%
2021	2.654	-1.450%
2020	2.693	-1.460%

## Total Fertility Rate (TFR)

- The Total Fertility Rate (TFR) is a standard demographic indicator used internationally to estimate the Average Number Of Children that a woman would have over her childbearing years (i.e. age 15-49), based on current birth trends.
- **In Jordan TFR = 3.8 children born/woman in 2010**
- It is an **estimate** of the **average number** of children born to a **woman or a cohort of 1000** women throughout her or their child bearing period subjected to prevailing age specific fertility rates.

# Measures of fertility

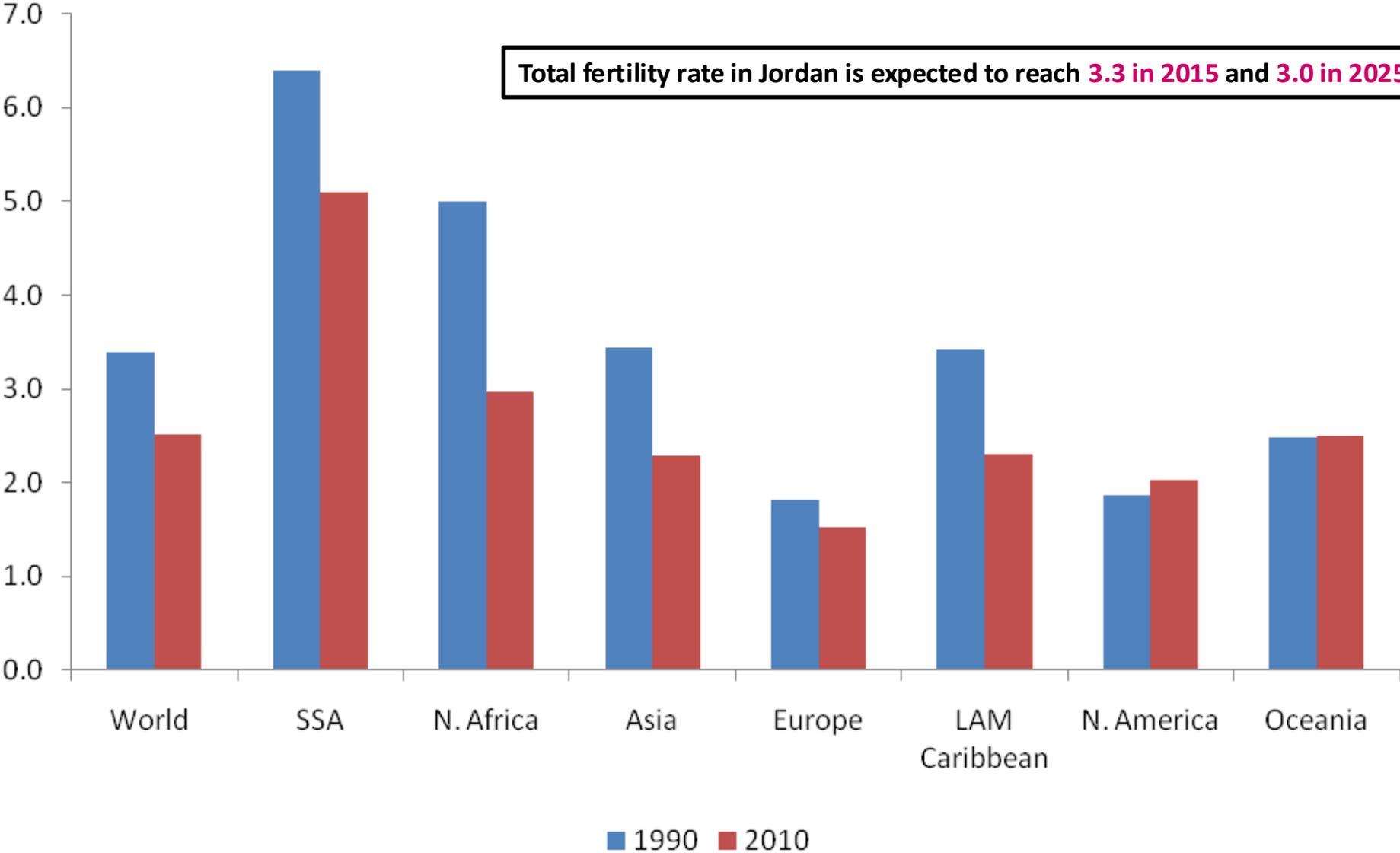
**Total fertility rate entails two assumptions:**

- 1) The ASFRs remain constant for this cohort of females till the end of their reproductive life.**
- 2) Non of the women beginning their reproductive life will die before reaching their menopause**

# Measures of fertility

- In most developed countries the TFR is **below 2.0**
- In a number of developing countries it is **over 6.0** (very high rate)
- **In Jordan TFR = 3.8 children born/woman in 2010**  
**2.614 births per woman/2022**

# Total fertility rates in 1990 and 2010 for the world and its major regions



# Measures of fertility

- Even if this target is achieved the population will grow for another period by the effect of **Demographic Momentum** (large % of women will reach reproductive age **الزخم الديموغرافي**). So, Total number of births can increase even if TFR falls.

# Measures of fertility

## Gross Reproduction Rate (GRR):

- ❑ It shows only the number of Female Births who are expected to be future mothers
- ❑ It is defined as the number of female births / 1000 women or /woman throughout her or their child bearing period subjected to prevailing age specific fertility rates.
- ❑ In calculation it is similar to that of TFR but except that it refers only to female births only vs.

$$\text{TFR} = \frac{\sum (\text{average number of children (males + females)})}{\text{Female population in the same age group}}$$

## Measures of fertility

- ❑ GRR is calculated by multiplying the TFR to the **percentage of females to the total births.**
- ❑  $GRR = TFR \times \% \text{ of female births.}$ 
  - e.g.  $3.8 * 0.55 = 2.09 / \underline{2010}$
  - $2.6 * 0.55 = 1.43 / \underline{2022}$
- ❑ **The drawback** of the rate is that the deaths of women during their reproductive period are not taken into consideration

# Measures of fertility

## Net reproduction rate (NRR):

- ❑ It is derived from and is less than the GRR
- ❑ It **corrects the drawback** of the GRR where deaths of women during their reproductive period are taken into account using **life tables of females**.
- ❑ NRR measures the **actual number** of female children born to a woman during her child bearing life, **subject to prevailing age specific fertility and specific mortality rates**.

# Measures of fertility

- Drawback of NRR is that it Assumes that the ASFR and the death rates in a certain year will remain constant through a generation.

## N.B:

- TFR, GRR, and NRR are **hypothetical** measures of fertility.

## II. Mortality

❑ Mortality data are relatively easy to obtain and reasonably accurate.

### Measures of mortality:

1. Crude death rate
2. Age specific mortality rates
3. Sex specific death rates
4. Cause specific death rate
5. Proportionate mortality rate

# Mortality

## Crude Death Rate: CDR

Number of deaths in a certain year and locality

X 1000

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Estimated mid year population in the same  
year and locality

**The Jordanian figure for CDR 2010 = 7  
deaths/1000 population**

# Mortality

- ❑ The main advantage of CDR is its **Summarizing Power** (its ability to portray a general impression by a single value).
- ❑ However it **lacks comparability** between different communities that have different structures as regard factors governing the probability of death e.g. **age, sex and race composition**

# Mortality

## Age Specific Death Rate:

Total deaths in a certain  
age and a certain year and area

X 1000

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Total number of the same age group  
in the same year and same area

# Mortality

## Sex Specific Death Rate

Number of deaths in a certain sex  
during a year in a certain locality

X 1000

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Total number of the same sex  
during the same year and locality

# Mortality

## Cause Specific Mortality Rate;

Total number of deaths due to a certain cause during a year and a given locality

X 1000

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*Estimated midyear population during the same year and locality*

# Mortality

## Proportionate Mortality Rates

Total number of *Deaths Due To A Certain Cause* during a year and a given locality

**X 100**

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Total number of *Deaths From All Causes* during the same year and locality

# III. Migration

## Definition:

- ❑ It is the **movement** of populations **across a specific boundaries** for the purpose of residing.
- ❑ It is the **change of residence** of a person or a group of persons for better life and higher standard of living.

# Migration

- ❑ The terms **Immigration** and **Emigration** are used for **international migration** (movement between countries); also called **external migration**. It can be **temporary or permanent**.
- ❑ The parallel terms **in-migration** and **out-migration** are used for **internal migration** (internal movement between different areas within a country)

# Migration

- Although migration affects the characteristics of the population, its **role is minimal** when compared to fertility and mortality, in most of the countries