

# 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

Year	Birth Rate	Growth Rate
2022	20.955	-1.290%
2021	21.228	-1.270%
2020	21.502	-1.250%

# Measures of fertility

❑ **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      26.47)/1000
  - C. Comparing  different population  
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  $\times 1000$

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*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

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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

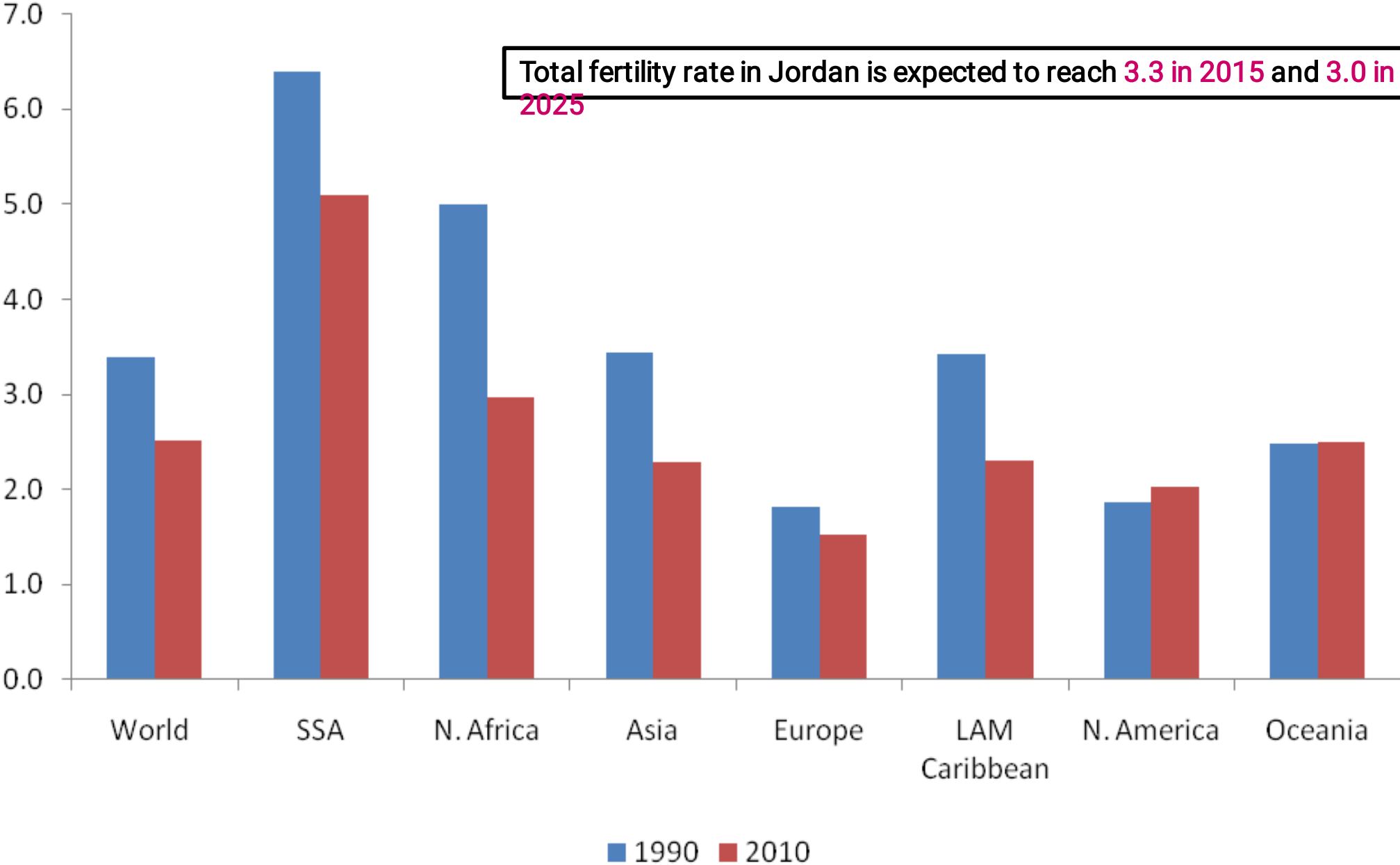
**Total fertility rate entails two assumptions:**

- 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  

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X 1000

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