



Virtual University of Pakistan
FEDERAL GOVERNMENT UNIVERSITY

COURSE HANDOUTS

Population Economics

ECO612

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Lesson 01**Population Economics**

Dear students, these handouts are designed to help you understand some basic concepts and develop your analytical and computational. However, to fully understand your course contents please watch video lectures and study from book. For most of the reading material you will find from your book "Population Reference Bureau's Population Handbook (Sixth edition)" which is available online at: <https://www.prb.org/population-handbook/> or you can easily search through Google.

Topic 001: An introduction to Population Economics**Population Economics**

Population Economics is a study of Application of Economic Analysis to demography

In other words, it is an application of economics laws and theories to analyze population and its issues. As the name suggests, to fully understand the concepts of Population Economics we need to have knowledge of two subjects, Population/demography and Economics

So students, before, we start studying population economics, we will try to understand subjects of demography and economics first.

If we define demography then it is a scientific study of human population, its characteristics and trends

According to one of the pioneer demographers, Guillard (1855) "Demography is the mathematical knowledge of populations, their general movements, and their physical, civil, intellectual and moral state"

Topic 002: What is the subject of Economics?

Economics is a study which is based upon two main assumptions or philosophies

1. Resources are scarce and Limited
2. Desires are unlimited

So limited resources and unlimited desires of human create a problem which is known as Economic problem, to solve that problem we study the subject of economics

As there exists an *imbalance* between desires and resource so we need to make a choice. Economics teaches us how to make a rational choice, how to generate resources, how to

spend resource, or how to become Rich are necessary questions of economics. In nutshell, maintaining a balance between desires and resources, is one of the fundamental objectives of economics

Topic 003: Integration of Demography and Economics

As we have defined economics and demography separately now, we will define subject of population economics and explain what type of questions or issues it try to solve

Population economics is the application of economic theories to population analysis.

In Population Economics we try to find answers of some very important questions related to social and economic aspects of individual and collective life

1. What is the relationship between population and resources?
2. Why some nations are rich and some are poor and how population affects economic and social development of a country?
3. Is population a reason of poverty?
4. Why there is unemployment among people?
5. How family size affects life style of people?
6. What are problems or issues we are facing in our society?
7. Why Pakistan is having highest dropout ratio in the world?
8. Who are ageing societies and what will be their future?
9. What is the future of world population?
10. What are the social evils we are facing in our society?

Practice question

Can you write scope or importance of population of Economics with the help of above questions? How this course can help you and your country?

Topic 004: Objectives of the course

- ✓ Understand basic concepts and theories of Population Economics.
- ✓ Analyze past, current and future trends of population change
- ✓ To analyze demographic profile of Pakistan, its comparative position in terms of population and resources
- ✓ To teach about the factors that affects population change
- ✓ Use census and other population data sources to calculate, analyze and interpret different demographic and socio-economic characteristics of a population.

- ✓ To Understand basic concepts of fertility, its determinants, calculations and analyze different case studies
- ✓ To draw and interpret different graphs through online tools
- ✓ Critically analyze population policies of different countries.

Learning Outcomes

By the end of this course students should be able

- ✓ Calculate and interpret different demographic indicators
- ✓ Use demographic data sources to analyze past current and future trends of population data
- ✓ Understand debate of population and economic development
- ✓ Use of interactive graph, charts and tables
- ✓ Calculate different measures of demography like mortality, fertility, migration etc.
- ✓ To understand and analyze pessimists and optimists' views of population and economic development.

BASIC TEXT BOOKS

1. PRB's Population Handbook (2011, 6th edition), by Arthur Haupt, Thomas T. Kane, and Carl Haub
2. Population: An Introduction to Concepts and Issue by John R. Week, 9th edition, Thomson Publishers

Online Links

Useful links for reading materials and data sources

United Nations Population Division's website:
<http://www.un.org/en/development/desa/population/>
 World Population Prospect 2017: <https://esa.un.org/unpd/wpp/>
 Website of United Nations Population Division, Policy Section:
https://esa.un.org/poppolicy/wpp_datasets.aspx
 Our world in data: <https://ourworldindata.org/>

Topic 005: Learning techniques

Students, during this course we will learn through

- Lectures and handouts
- Books
- Online resources
- Software
- The art of questioning (*The beauty of question is one- half of knowledge*)
- Ability to differentiate myths from reality

Lesson 02**History of Population Growth****Topic 006: History of population growth**

Dear students, we study history to get our lessons for current and future planning. One thing you should keep in mind that purpose of this lecture is not to memorize facts and figures but to understand the trends and to find answers of some important questions like.

When and why population grow? How population of the world is distributed in the world? Which countries are mostly densely populated? How long did it take world population to double?

Dear students, to fully understand history of population growth I will recommend you to visit the website of Our World in Data, and read the article of “ World Population Growth” by Max Roser and others. Following is the link of the article <https://ourworldindata.org/world-population-growth>. This site helps you to understand and analyze history of population growth in visual manner. This site regularly updates its data so one can access latest information easily.

In this lesson we will try to analyze some facts and figures about population under following headings

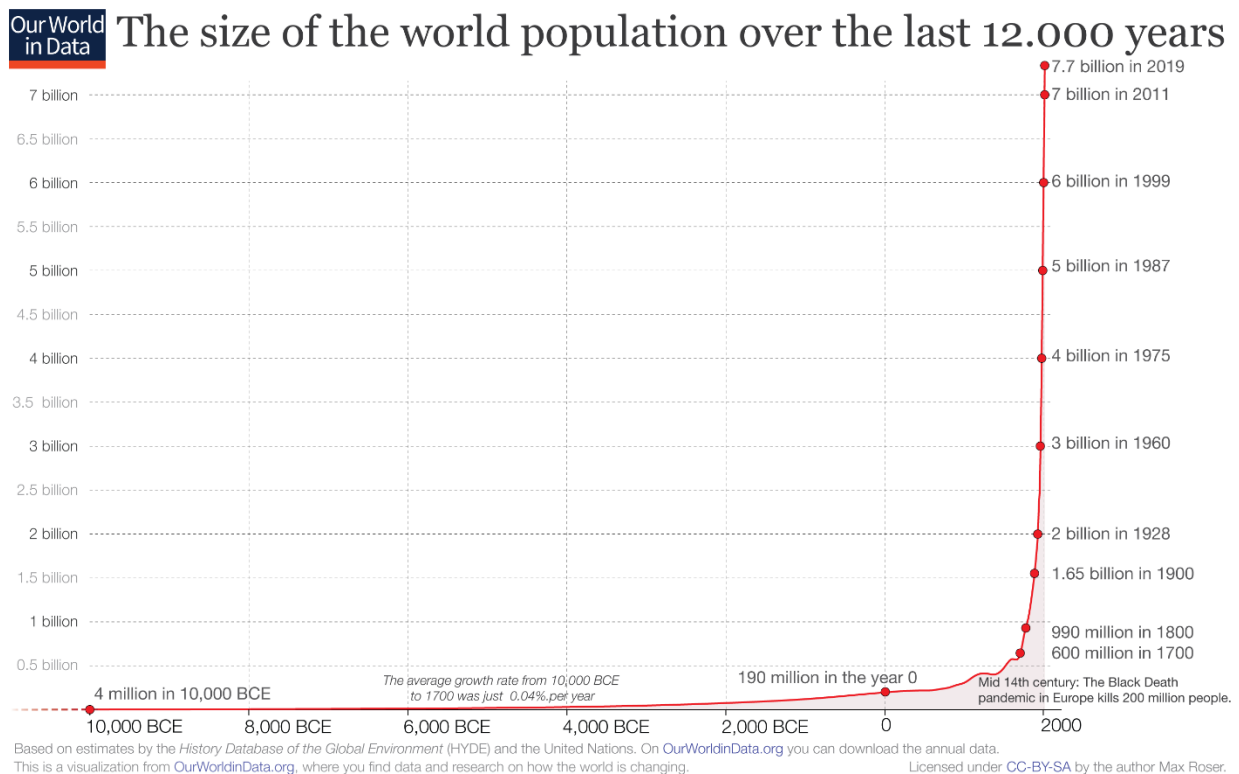
- Speed of demographic change in the world
- Current trends in population
- Population of the world, some facts and figures
- Future of population

Speed of demographic change in the world

Table below also gives a summary of speed of change in total population. It is very clear that it took 1600 years of world's population to double from 300 million people to 600 million people. First time in human history it reached to 1 billion people in year 1800, then it took 130 years to add another 1 billion people, then just 30 years, then it took a great momentum and reach to 6 billion from 5 billion in just 12 years. This huge increase in population in last century lead to many debates about population and resource balance. Many people start believing that if this trend continues we will soon run out of our resources and we will not be able to feed such a huge population. However, despite the unprecedented increase in population in last century, our resources not only grew but grew faster than increase in population. Last century is also a century of unprecedented development in human history. Life is in much better state in terms of choices we have, resources we use, advancement in

technology, innovation, knowledge and means of transportation and communication etc. it seems that along with increase in population, resources have also grown. How this happened, we will discuss in coming lectures

Year	Total population	Speed of change
1 AD	300 million	Million of years
1600	600 million	1600 years
1800	1 billion	200 years
1930	2 billion	130 years
1960	3 billion	30 years
1974	4 billion	14 years
1987	5 billion	13 years
1999	6 billion	12 years
2012	7 billion	13 years



Source: Our World in Data

In his article Max Roser mentioned that “

.. the increasing number of people living on our planet over the last 12,000 years. A mind-boggling change: The world population today that is 1,860-times the size of what it was 12 millennia ago when the world population was around 4 million – half of the current population of London.

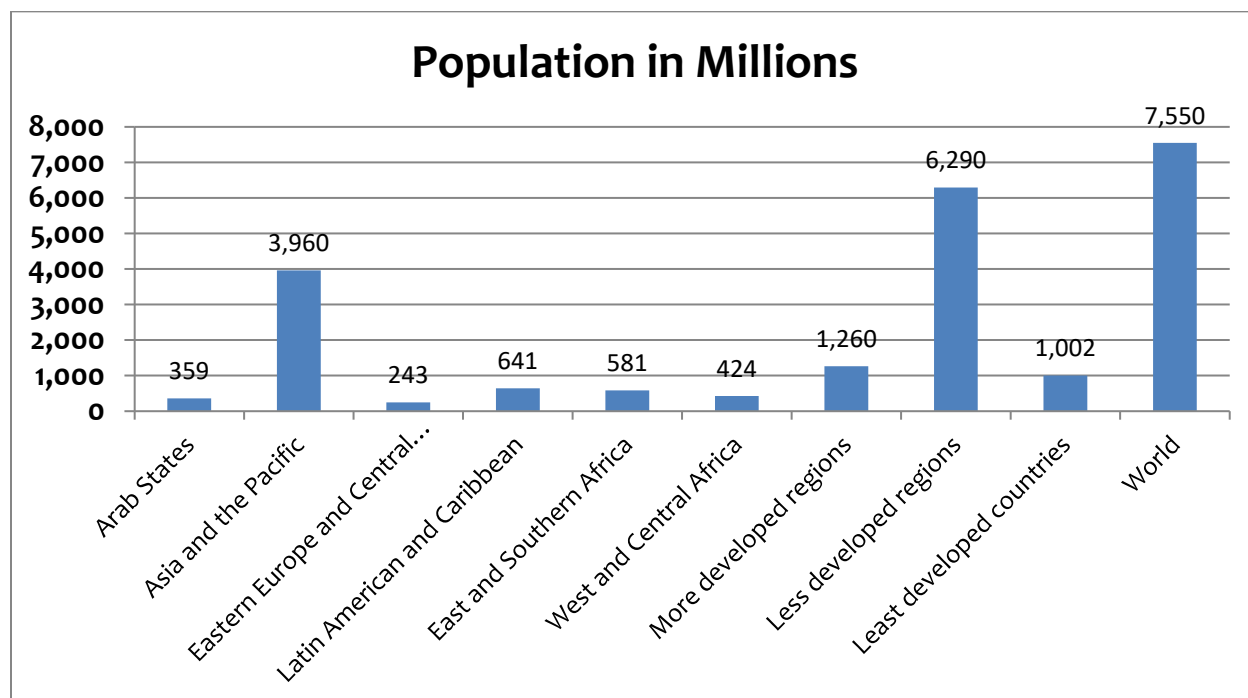
What is striking about this chart is of course that almost all of this growth happened just very recently. Historical demographers estimate that around the year 1800 the world population was only around 1 billion people. This implies that on average the population grew very slowly over this long time from 10,000 BCE to 1700 (by 0.04% annually). After 1800 this changed fundamentally: The world population was around 1 billion in the year 1800 and increased 7-fold since then.

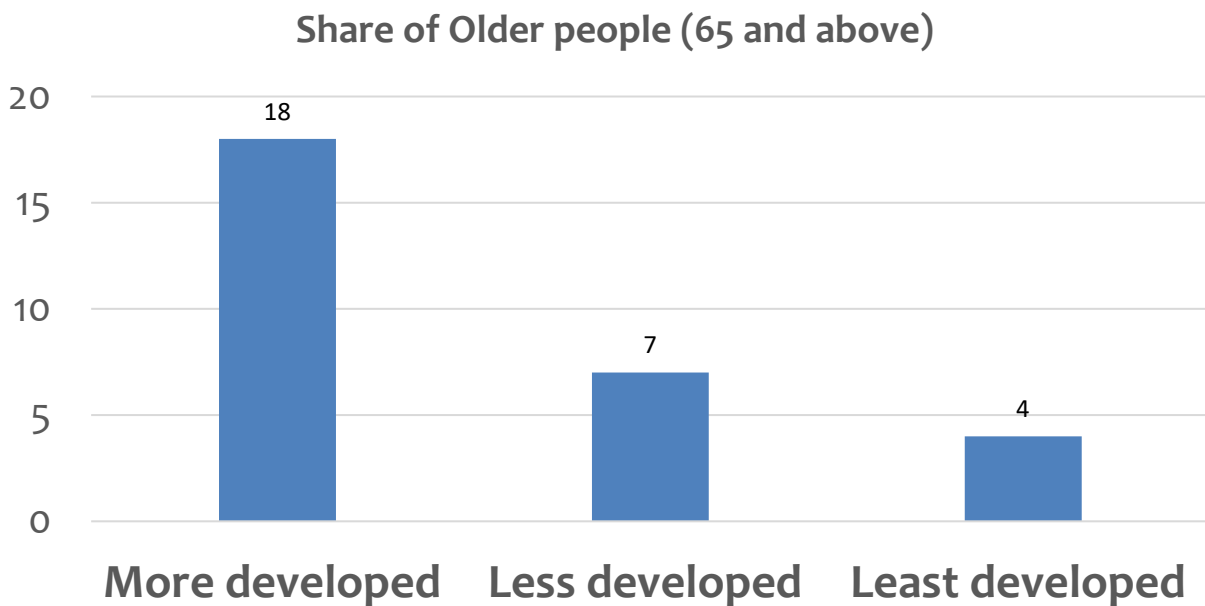
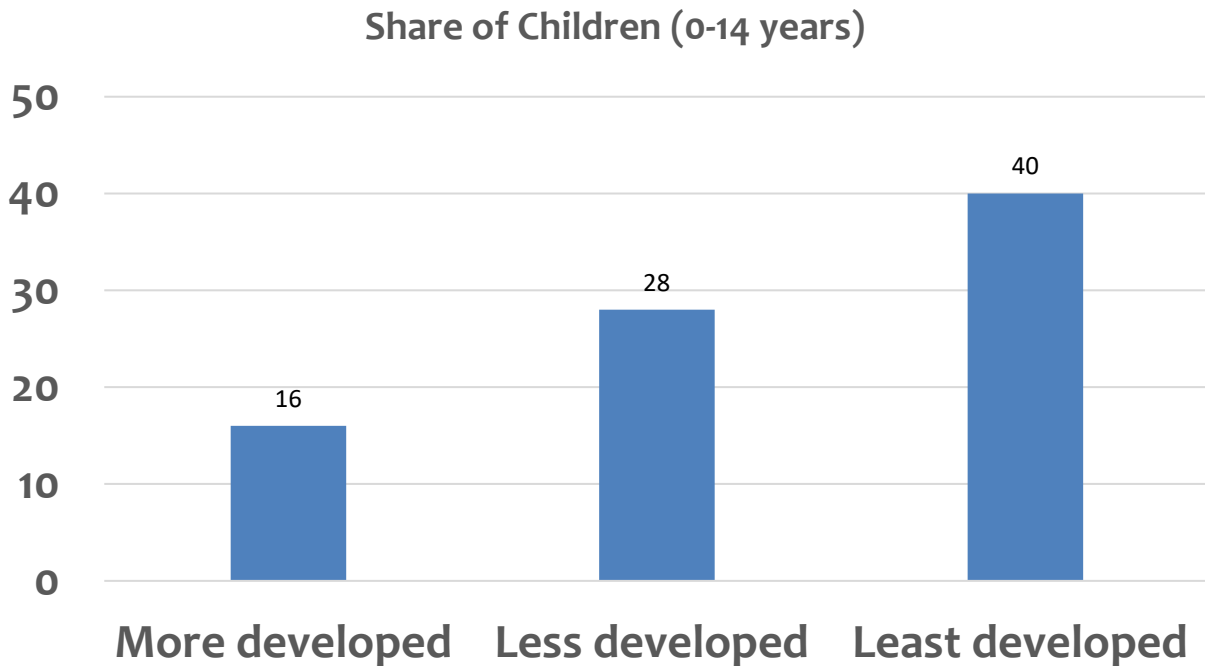
Around 108 billion people have ever lived on our planet. This means that today's population size makes up 6.5% of the total number of people ever born.

For the long period from the appearance of modern Homo sapiens up to the starting point of this chart in 10,000 BCE it is estimated that the total world population was often well under one million."

Topic 007

Current facts of population





Above figures shows that most of the population in the world live in less developed world and in Asia

More developed world has larger share of ageing population while less developed countries have larger share of young population

Topic 008: Future of population

Dear students, according to United Nations projections of world population, rapid population growth in last two centuries will come to an end. According to many researchers and demographer population explosion was a temporary phenomenon and many countries have already facing the issue of declining population growth and rising share of ageing population. Following figure shows annual average growth rate and total population of the world from year 1700 to 2100.

Below is an excerpt taken from an article of Max Roser (2019) which will help you to understand what will happen to future population of the world. You can study complete article at: <https://ourworldindata.org/future-population-growth#global-population-growth>

“Two centuries of rapid global population growth will come to an end

One of the big lessons from the demographic history of countries is that population explosions are temporary. For many countries the [demographic transition](#) has already ended, and as the [global fertility rate has now halved](#) we know that the world as a whole is approaching the end of rapid population growth.....

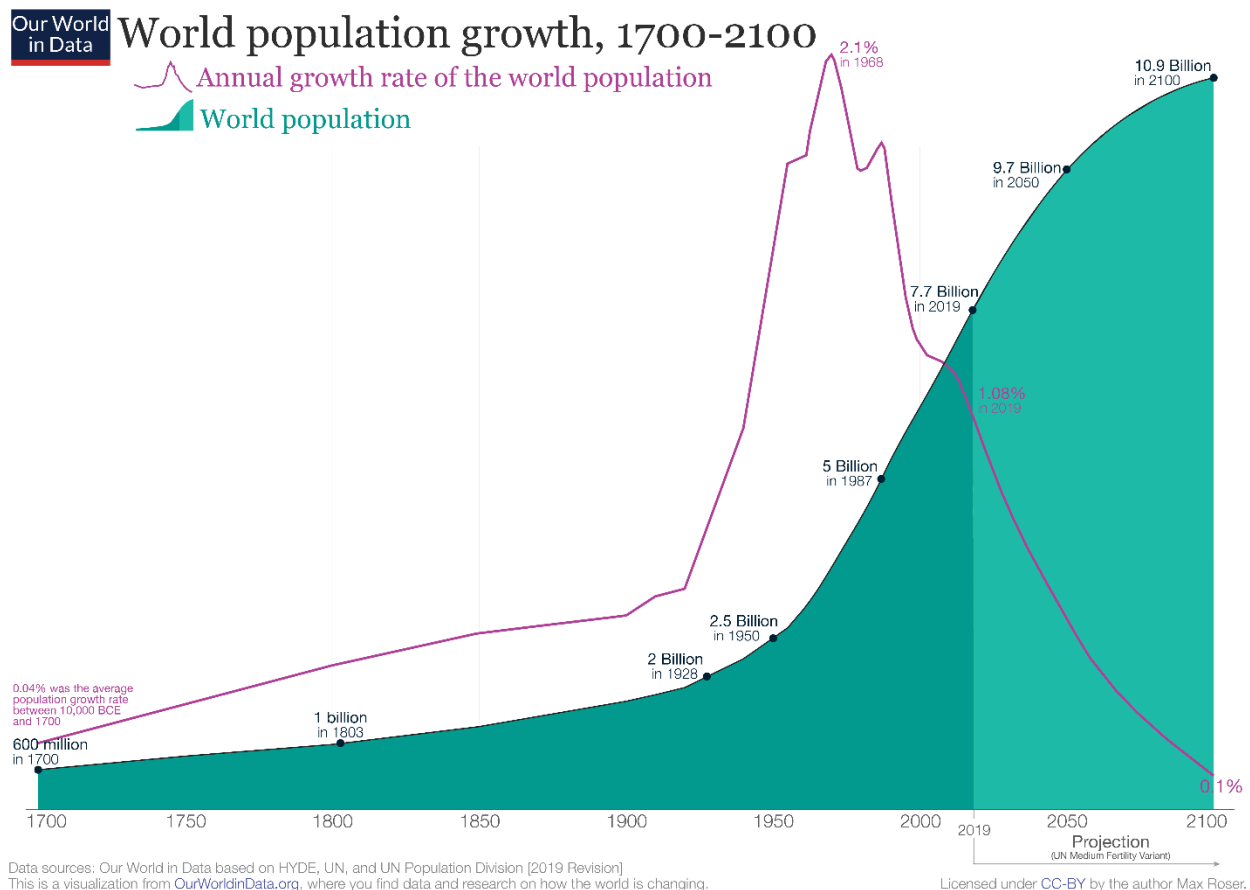
As we explore at the beginning of the [entry on population growth](#), the global population grew only very slowly up to 1700 – only 0.04% per year. In the many millennia up to that point in history [very high mortality of children](#) counteracted high fertility. The world was in the first stage of the demographic transition.

Once [health improved and mortality declined](#) things changed quickly. Particularly over the course of the 20th century: Over the last 100 years global population more than quadrupled.

Where do we go from here?

In red you see the annual population growth rate (that is, the percentage change in population per year) of the global population. It peaked around half a century ago. Peak population growth was reached in 1968 with an annual growth of 2.1%. Since then the increase of the world population has slowed and today grows by just over 1% per year. This slowdown of population growth was not only predictable, but [predicted](#). Just as expected by demographers ([here](#)), the world as a whole is experiencing the closing of a massive demographic transition.

This chart also shows how the United Nations envision the slow ending of the global demographic transition. As population growth continues to decline, the curve representing the world population is getting less and less steep. By the end of the century – when global population growth will have fallen to 0.1% according to the UN's projection – the world will be very close to the end of the demographic transition"



Source: Our World in Data

Lesson 03

Pakistan, its Population, and Resources 1**Topic 009: Demographics of Pakistan**

Dear students, when we say demographics of a country it means some facts and figures regarding population of a country. It may include total population, share of urban and rural population, population growth rate, fertility rate etc.

Following table shows some important demographic figures of Pakistan. In my video lectures I have explained those figures in detail along with their interpretation and significance for policy formation. For details kindly watch your lectures. These figures change over time, so you can check latest figures from google. The purpose is not memorizing these figures but to have an idea where Pakistan stands. For example, if you want to keep in mind figure of Population growth rate you should remember that it is around 2% per annum in case of Pakistan, and less than 2 in many countries. Things you need to remember is that Pakistan is 6th largest populated country, with larger proportion of young population.

Demographics of any country gives an idea of country's population facts and figures. We can design our economic and social policies if we know age structure and composition of a population. Pakistan as one of the largest country in the world has total population of over 200 million people. Male to female population ratio is about same. About 64 percent of population lives in rural areas. Life expectancy of Pakistani people has increased over time but still less than many advanced countries. Median age of Pakistan is about 22 years which shows Pakistan's 50 percent population is less than this age which makes Pakistan quite a young country compare to developed countries where median age is above 40 years. Similarly, Pakistan right now is not facing any issue of ageing which many countries in the world are facing these days.

Total population	207.7 million
Male population	106.45 million (51 %)
Female population	101.32 million (49%)
Rural population	132.19 million (64%)
Urban population	75.58 million
Population growth rate (PGR)	1.86 % per annum
Total Fertility rate (TFR)	3 Children per women
Crude Birth rate (CBR)	25.2 per thousand people
Crude Death rate (CDR)	6.6 per thousand people

Source: Economic Survey of Pakistan, 2016, 17-18

Life expectancy at birth	
---------------------------------	--

Female	68.2 years
Male	65.8 years
Age structure of Pakistan	
Children (0-14)	34.78%
Working age (15-64)	59.82%
Aged (65 or above)	4.46%
Median age	22.5 years

Topic 010: Resources of Pakistan

If we look at some of the international ranking, we will find Pakistan at top of the list, for example following table gives ranking of Pakistan in food production. This ranking may vary over the years but it gives a general picture of relative position of Pakistan in the world.

Food Items	Ranking
Cauliflower and broccoli production	9 th
Chickpeas	6 th
Rice	11 th
Pulses	5 th
Okra	5 th
Apricot	6 th
Sugarcane	5 th
Milk	2 nd
Onion	8 th
Wheat	8 th
Dates	6 th
Mango	5 th
Oranges etc.	8 th
Meat (goat)	3 rd
Fish	32 nd

Source: Food and Agricultural Organization, FAO, Wikipedia

- a) The country is Asia's largest camel market, second-largest apricot and ghee market and third-largest cotton, onion and milk market.
- b) Pakistan ranks fifth in the Muslim world and twentieth worldwide in farm output.
- c) Similarly, Pakistan is one of the largest producers of Salt, coals, copper and many other important minerals.
- d) Pakistan is 25th largest economy on the basis of GDP (on the basis of purchasing power parity)
- e) Two operational sea ports, second highest peak K2 in the world, Pakistan has 42 mountains peak which are over 7200 meters above sea level
- f) Pakistan is also 9th largest labor force and 3rd largest English-Speaking population in the world
- g) Pakistan has one of the largest irrigation systems in the world and it can irrigate 3 times more acres than Russia.

All these facts show that Pakistan is very much blessed country and is not a poor country rather our problems are related to poor management.

Topic 011: Natural resources of Pakistan

Pakistan is also one of the rich countries in terms of natural resources. Table below show some of the figures about its natural resources' ranking

Natural Resources	Ranking	Year
Total area	33/ 196	2018
42 mountains over 7200 meters above sea level with 2nd heights peak, K2.	2/241	2018
Natural gas reserves	29 /211	2017
Uranium production	15 /19	2016

Sources: CIA World Fact book, Wikipedia

According to table Pakistan is 33 largest country in terms of areas, its land is fertile and have all kinds of geographical features like mountains, deserts, plan land, rivers, sea etc. We have two operational seaports, largest irrigation system in the world, second largest glacier, a range of highest peaks in the world. Other than that, we have lot of precious minerals and resources in our country which makes Pakistan a rich county in terms of natural resources. But we should **remember that having natural resources is not a necessary condition for development.** Just take an example of Japan which have very little natural resources but one of the most advance and developed country due to its human resources, while on the other hand, all Arab countries are very rich in natural resources but still their total combined GDP is less than many other countries in the world. So most important resource for a country is its productive and knowledgeable people which make all other resource useful.

Lesson 04

Pakistan, its Population and Resources 2

Topic 012: Demographic Ranking of Pakistan

Demographic ranking of Pakistan will tell you relative position of Pakistan in rapidly ageing world

Population and Human Resource	Ranking	Year
Population	5 th /238	2017
Labor force	10 th / 233	2017
Fertility rate	71/233	2016
English speaking population	3 rd /133	2017
Human Development Index	147 th /188	2016
Quality of life index	93/ 111	2016
Life expectancy	130 th /183	2015
Literacy rate	135 th /150	2017
Population density	50 th / 217	2016
Sources: CIA World Fact book, UNDP, UNESCO		

Above table shows ranking of Pakistan in demographic and related indicators. Figures in numerator show position of Pakistan while figure in denominator show total number of countries compared in the world. These are very important figures as it is clear that Pakistan is the 5th largest country in the world on the basis of population which can be a huge asset in rapidly ageing world.

Moreover, we are also 10th largest labor force in the world despite the fact a huge proportion of our population is not part of labor force. If we provide education and necessary skills to this labor force it can boost our economy many a times in future. Table also shows that Pakistan lacks in the field of education and human development which are the areas we need to improve to take full advantage of our huge and young population. For further explanation of these indicators kindly watch lecture video.

Topic 013: Economic Ranking of Pakistan

Many people believe that Pakistan is a poor country, however reality is that despite many unfavorable conditions, Pakistan is 26th largest economy in the world on the basis of GDP (PPP). However, in other figures like exports, GDP per capita, ease of doing business etc. we are much behind from many other countries in the world. If we improve in certain areas, we have a potential to become one of the top ten economy in the world. Table below explains some of the ranking of Pakistan in economic indicators

Economy	Ranking	Year
Exports	61/196	2016
Imports	49/197	2016
GDP (PPP)	26 th /179	2016
GDP (PPP) per capita	127/179	2016
Global competitiveness index	91/125	2017-18
Ease of doing business	76/178	2016
Source: Wikipedia, CIA World Fact book		

Topic 014: Resources of Pakistan: Conclusion

All figures related to resources of Pakistan shows that **Pakistan is by no means a poor country**, rather Pakistan is one of largest producer of food items and have abundant of very important natural resources. Pakistan's geographical locations, its climate, its land and water resources, two functional seaports and many such factors make it resource rich country full

of potential to grow economically. However, Pakistan lacks in the field of education and human development. Our management is poor, even though we are largest producer of food items in the world, we often face its shortage and rising prices of food items. Despite the fact that we can produce electricity with wind, water, solar, atomic resources we are facing a huge energy crisis for past many years. All this show that Allah has blessed us with abundant of natural resources, but we are not properly utilizing and managing them. The greatest resource we have is a huge number of young population which if properly trained and equipped with necessary skills and education can change our future.

Lesson 05

Topic 015: Population Change 1

There are three components of population change. Population of a region changes due to these factors

- Births
- Deaths
- Migration

There are different methods of measure population change in a country. Most common method is known as balancing equation.

Balancing equation can be written as follows

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

Following example taken from PRBs handbook explains a real life example of population change in Sweden from year 2009 to 2010.

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

Where P_2 is the population at the later date and P_1 is the population at the earlier date; B is births and D is deaths between the two dates; and I is immigration (or in-migration) and E is emigration (or out-migration) between the two dates.

Jan. 2009		Jan. 2010
population	+ (2009 Births-Deaths) + (2009 Immigration-Emigration)	population of Sweden
9,256,000	+ (111,800 – 90,080) + (102,280 – 39,000)	= 9,341,000

During 2009, the population of Sweden increased by 85,000.

Topic 016: Population Change 2

Some measures to calculate population change are as follows

- Natural Increase
- Rate of Natural Increase
- Population Growth rate
- Doubling Time

Practice questions

Read definitions of above measures from your book and calculate following questions

Q. 1 Following is the data of Sweden Calculate

- a) Natural increase
- b) Rate of natural increase

No. of Births in 2009 = 111,800

No. of Deaths in 2009 = 90,080

Total population in 2009 = 92,99,000

Q.2

- a) How long would it take the population of Poland to double if its Population growth rate = 0.08%**
- b) After How long Pakistan's population would double if its Population growth rate = 2. %**

Lesson 06

Demographic Transitions & Population Projections

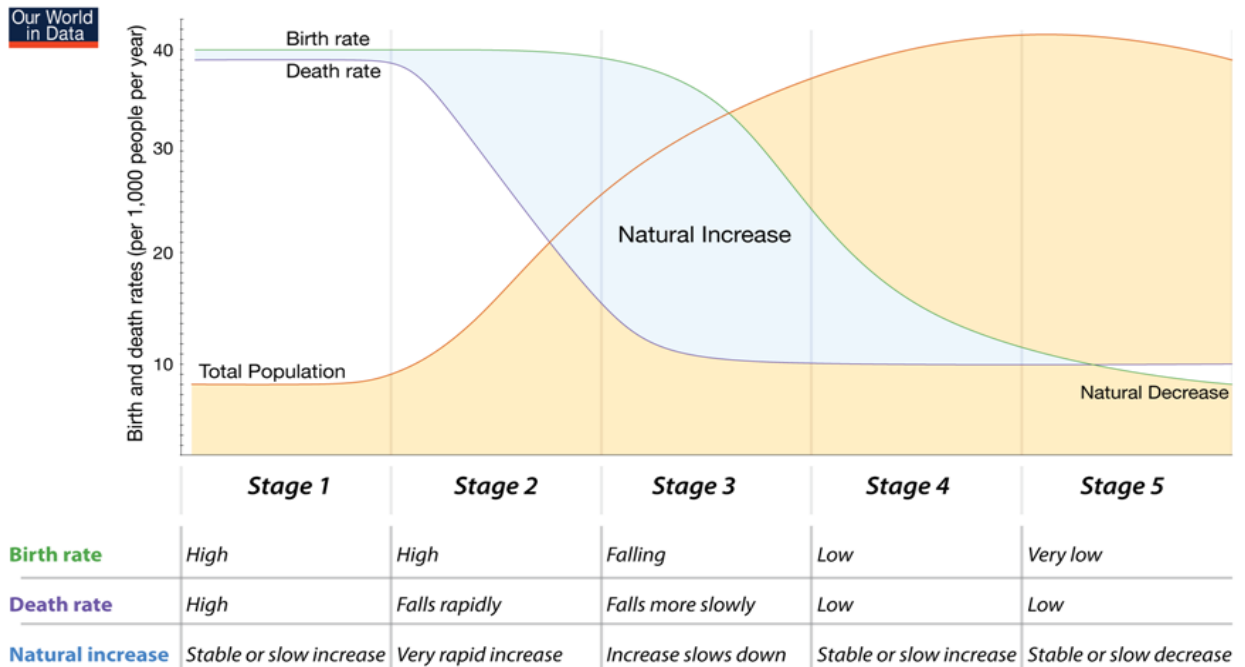
Topic 017: Demographic Transition

Dear Students, A Demographic transition is the change that population undergo from high birth and death rates to low birth and death rates. To explain this very important theory of demography I will recommend to visit the website of Our world in Data and read the stages of demographic transition from article by Mark Roser et al. (2013) available at: <https://ourworldindata.org/world-population-growth>

“The demographic transition is a sequence of five stages:

- **Stage 1: high mortality and high birth rates.** In the long time before rapid population growth the birth rate in a population is high, but since the death rate is also high, we observe no or only very small population growth. This describes the reality through most of our history. Societies around the world remained in stage 1 for many millennia as the long-run perspective on extremely slow population growth highlighted. At this stage the population pyramid is broad at the base but since the mortality rate is high across all ages – and the risk of death is particularly high for children – the pyramid gets much narrower towards the top.
- **Stage 2: mortality falls but birth rates still high.** In the second phase the health of the population slowly starts to improve and the death rate starts to fall. Since the health of the population has already improved, but fertility still remains as high as before, this is the stage of the transition at which the size of the population starts to grow rapidly. Historically it is the exceptional time at which the extended family with many (surviving) children is common.
- **Stage 3: mortality low and birth rates fall.** Later the birth rate starts to fall and consequentially the rate at which the population grows begins to decline as well. Why the fertility rate falls is a question that we answer [here](#). But to summarize the main points: When the mortality of children is not as high as it once was parents adapt to the healthier environment and choose to have fewer children; the economy is undergoing structural changes that makes children less economically valuable; and women are empowered socially and within partnerships and have fewer children than before.
- **Stage 4: mortality low and birth rates low.** Rapid population growth comes to an end in stage 4 as the birth rate falls to a similar level as the already low mortality rate. The population pyramid is now box shaped; as the mortality rate at young ages is now very low the younger cohorts are now very similar in size and only at an old age the cohorts get smaller very rapidly.
- **Stage 5: mortality low and some evidence of rising fertility.** The demographic transition describes changes over the course of socio-economic modernization. What happens at a very high level of development is not a question we can answer with certainty since only few societies have reached this stage. But we do have some good

evidence – which we review [here](#) – that at very high levels of development fertility is rising again. Not to the very high levels of pre-modern times, but to a fertility rate that gets close to 2 children per woman. What level exactly the fertility rate will reach is crucial for the question of what happens to population growth in the long run. If the fertility rate stays below 2 children per woman then we will see a decline of the population size in the long run. If indeed the fertility rate will rise above 2 children per woman we will see a slow long-run increase of the population size.”



The author Max Roser licensed this visualisation under a CC BY-SA license. You are welcome to share but please refer to its source where you find more information: <http://www.OurWorldInData.org/data/population-growth-vital-statistics/world-population-growth>

Source: Our World in Data

Source: Max Roser, Hannah Ritchie and Esteban Ortiz-Ospina (2013) - "World Population Growth". Published online at OurWorldInData.org. Retrieved from: 'https://ourworldindata.org/world-population-growth' [Online Resource]

Topic 018: Population Projections

Population projections are made to estimate future population of a region. Generally, there Three Variants of population projections (possible Scenarios)

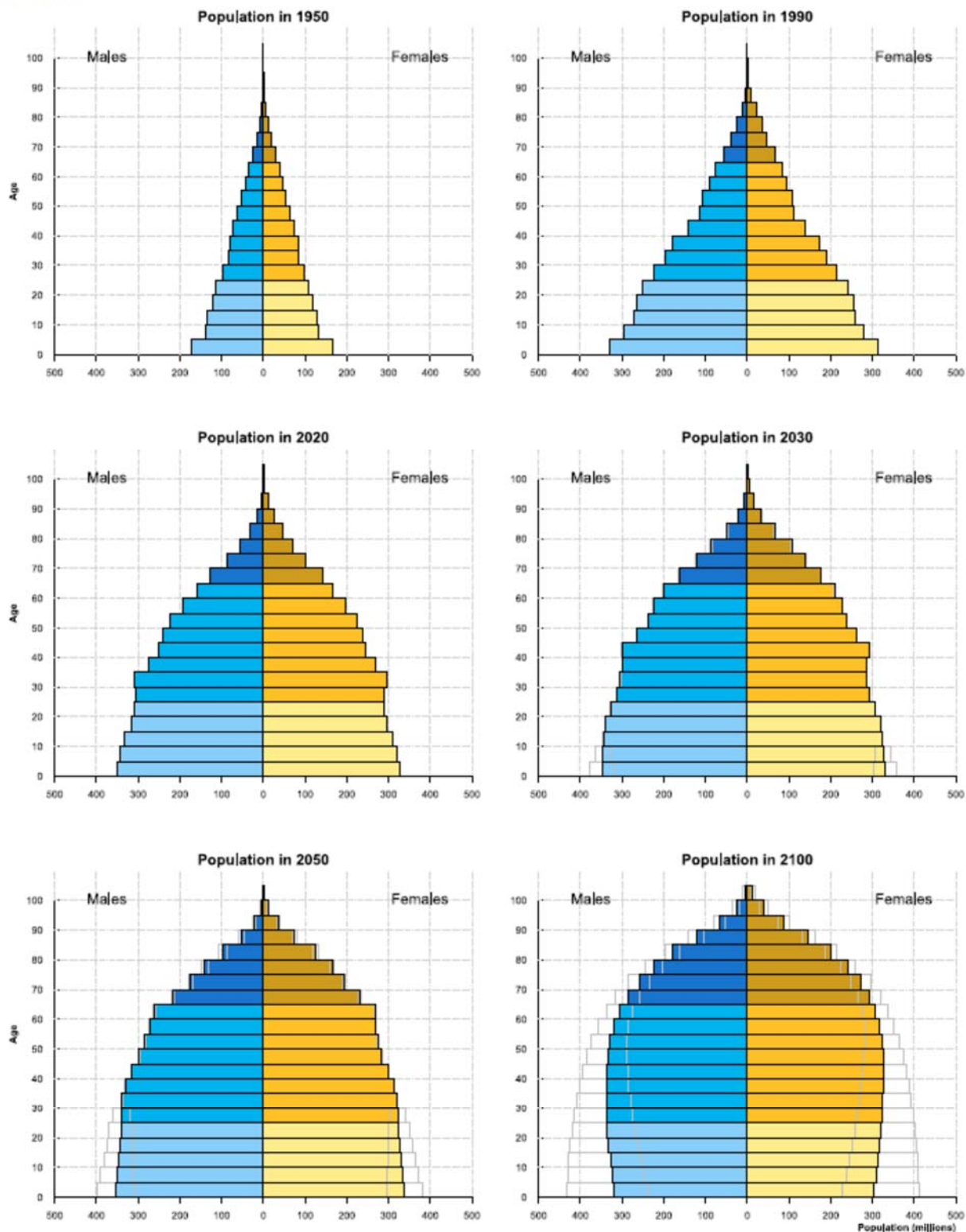
- Population projections made on the assumption of High fertility
- Population projections made on the assumption of Medium fertility
- Population projections made on the assumption of Low fertility

To view population projections of different regions and countries you can visit the website of World Population Prospects 2017 <https://population.un.org/wpp/>

Practice question

Dear students watch the video lecture no. 19, visit above website and draw population pyramids of Pakistan and Japan for the year 1950, 2000 and 2050

World



Medium-variant projections for 2020-2100 are shown as thin coloured lines, and uncertainty is shown in lighter shades for 95 per cent prediction intervals.

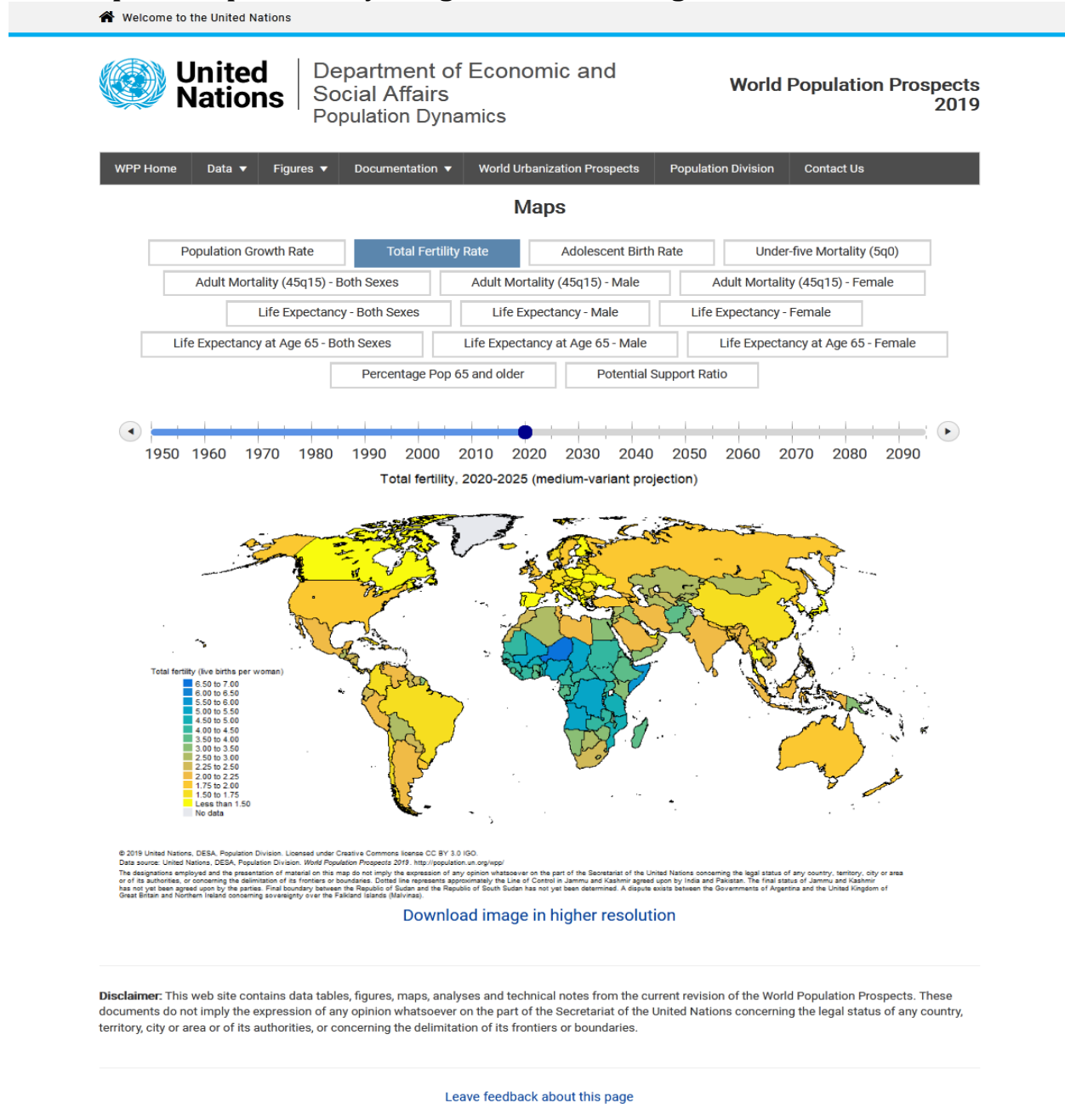
United Nations, Department of Economic and Social Affairs, Population Division
World Population Prospects 2019, Volume II: Demographic Profiles

Topic 019: Graphical Presentation of Population

To present population data through different charts, tables etc. we can use online tools available at the United Nations' website of world population prospects

<https://population.un.org/wpp/>

An example of maps drawn by using above website is given below



Practice Question

Dear students this module was taught online so kindly watch video lecture and draw following charts online for your practice

- a) A world map showing Life expectancy at birth in year 1950, 2020 and 2050
- b) A world map showing total fertility rate in 1950, 2000 and 2050
- c) How would you interpret changes in above indicators over the period of 100 years?

Lesson 07

Fertility and its determinants**Topic 020: Fertility & its measures**

Fertility means number of live births women have. Following are some important measure of fertility.

General fertility rate: The general fertility rate (also called the fertility rate) is the number of live births per 1,000 women ages 15 to 49 in a given year.

Age-specific fertility rate: fertility rate of a particular age groups of women

Total fertility rate: It is the average number of children that would be born to a woman by the time she ended childbearing if she were to pass through all her childbearing years conforming to the age specific fertility rates of a given year.

Replacement level fertility: The rate at which the women in the same cohort have exactly enough daughters to replace themselves in the population. The net reproductive rate (NRR) of 1.0 is equal to replacement level.

TFR can also be used to show replacement level fertility. It is the average number of children sufficient to replace both parents. (2.1 children per women) Gross reproduction rate

Example of calculation of General fertility rate

following data of Ecuador in 1995, calculate general fertility rate

- Number of births = 181,268
- Number of women (15-49 years) = 29,23,344

Formula for fertility rate =

$$\frac{\text{Number of births}}{\text{Number of women ages 15 – 49}} \times 1000$$

$$\frac{181,268}{29,23,344} \times 1000$$

Fertility rate = 62 births per 1000 women ages 15-49 in Ecuador in 1995

Some other measures of fertility can be analyzed by using website of World Population Prospects as depicted in figure below



United Nations

Department of Economic and
Social Affairs
Population Dynamics

**World Population Prospects
2019**

WPP Home

Data ▾

Figures ▾

Documentation ▾

World Urbanization Prospects

Population Division

Contact Us

Data Query

Please select the desired indicator:

Sex ratio of the total population (males per 100 females)

Fertility

Crude birth rate (births per 1,000 population)

Total fertility (children per woman)

Age-specific fertility rates (births per 1,000 women)

Mean age of childbearing (years)

Net reproduction rate (surviving daughters per woman)

Number of births, both sexes combined (thousands)

Number of births by age of mother (thousands)

Sex ratio at birth (male births per female births)

Topic 021: Determinants of fertility

Fertility is affected by cultural, social, economic, and health factors.

1. Proportion of married women: greater the number of married women ratios in total population greater will be the chance of having more children
2. Percentage of women using contraception.
3. Proportion of women who are not currently fecund (primarily because of breastfeeding).
4. Age at first marriage
5. Rates of divorce, separation, and remarriage;
6. Male mortality levels.
7. Religious believes

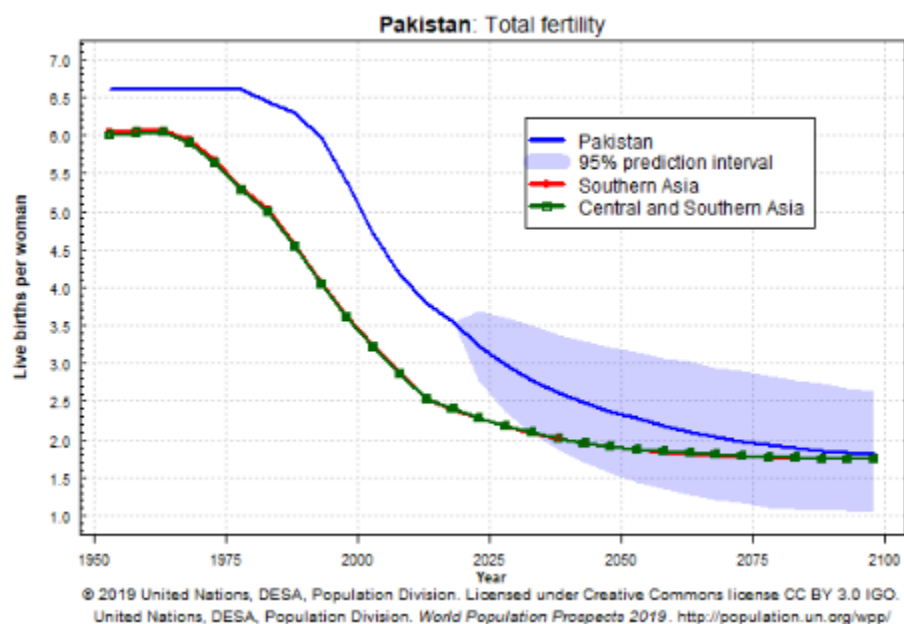
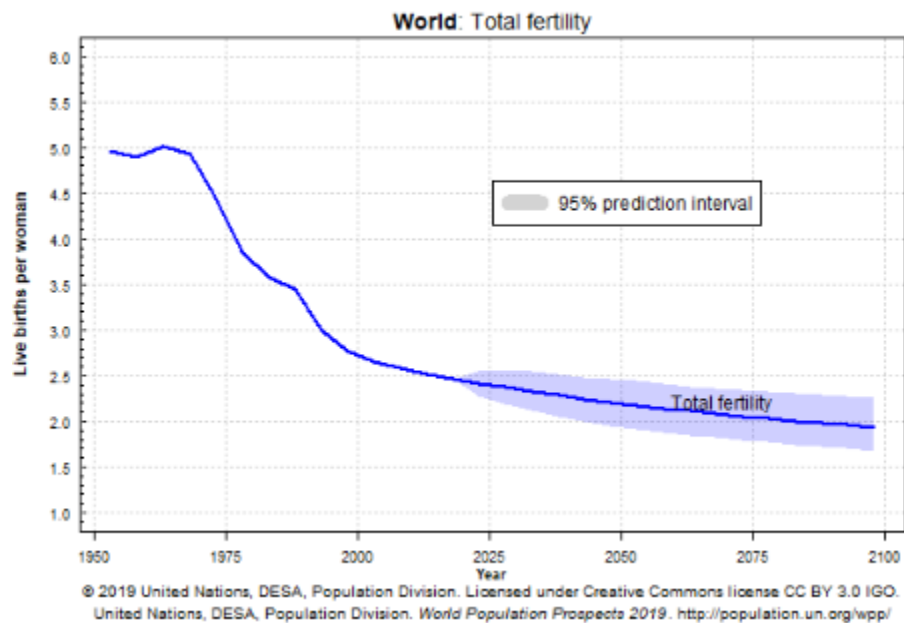
Source: PRB's Population Handbook, 2011

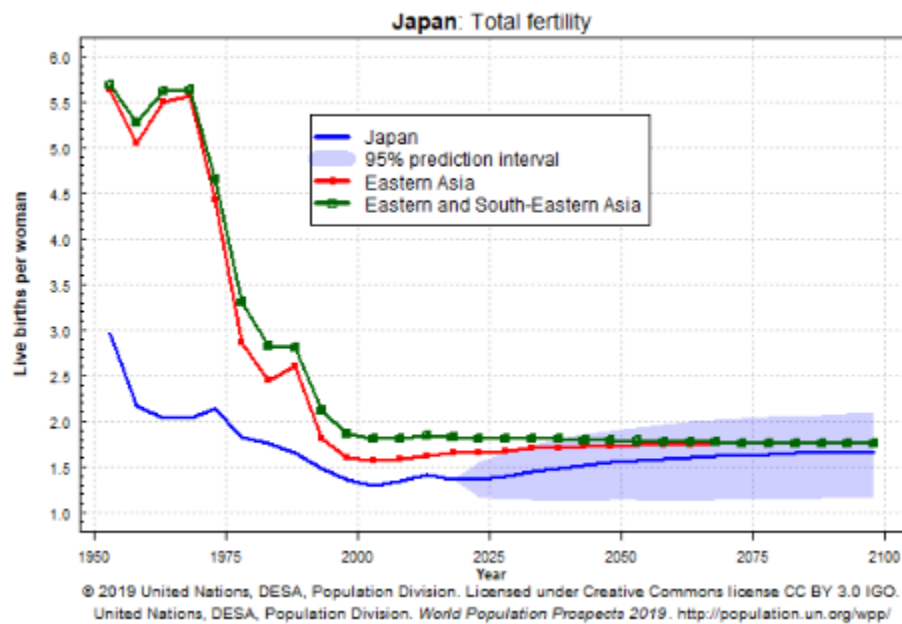
Topic 021: Fertility Transition: Case studies

We can see the fertility transitions of different countries by using the United Nations' website of World Population Prospects. Following three figures show total fertility (average number of children per women) in World, Pakistan and Japan respectively. It is clear from first figure that average number of children born to women in world in 1950 was about 5 children per women which has dropped to 2.4 children per women in year 2020.

In case of Pakistan, average number of children born to a woman has declined from 6.5 children to 3.5 from 1950 to 2020. If this trend continues, Pakistan will also face ageing population in future.

In case of Japan, situation is quite alarming as their fertility rate has already fall below replacement level of 2.1 children per women which means its population will shrink in future. That is why Japan's government give lot of incentives to their people to increase number of children in their families. Very low fertility has become a major issue of many advanced countries in the world creating lot of economic and social problems in their societies.





Practice Question

Compare age structure of Pakistan and Italy by using website of World Population Prospect.

Lesson 08

Mortality, concepts and measurement**Topic 021: Mortality and its measures**

Mortality refers to the death that occurs within a population. It shows the standard of living and health care in a population. These are very important measure and thy try to answer questions like:

- How many people or what percentage of people die every year?
- Which segment of population has the highest death rate?
- What is the rate of infant and maternal mortality?
- What proportion of people die from a specific disease?

An important to calculate mortality is crude death rate which shows number of deaths per 1000 people in a given year. It is obtained by dividing number of deaths to total population multiplied by 1000

Example of death rate calculation

Suppose in a country in year 2018, total number of deaths were = 5000 while total population was = 10,00,000, calculate death rate and interpret your answer

- $\text{Death Rate} = \frac{5000}{10,00,000} \times 1000 = 5$
- Interpretation = 5 people die per year per thousand population

Practice question

Suppose Country A's mortality rate = 7 per 1000, Country B's mortality rate = 14 per 1000. Can we say only on the basis of difference in mortality rates that country with higher mortality rate has poor living standard and health facilities compared to country with low mortality rate?

Topic 022 to 025: Measures of Mortality

- Death Rate or Crude death rate
- Age specific death rate
- Cause specific death rate

- Proportion dying from a specific cause
- Infant mortality rate
- Maternal mortality rate

Practice Question

In 2016, total deaths in the world= 56.9 million while Deaths from heart related diseases = 15.2 million. Calculate proportion of people died from heart related diseased



- a) Can we expect same mortality rate between different age groups?**
- b) How calculating mortality rates for different age groups can be helpful for formulation of health policy?**

Topic 26: Life Expectancy and Life Tables

Life expectancy

Most commonly use measure to judge the current health conditions of a country. Life expectancy is the average number of additional year a person could expect to live if the age-specific death rates for a given year prevails for the rest of his/her life

Japan, Italy, Hong Kong etc. has the life expectancies of almost 84 years

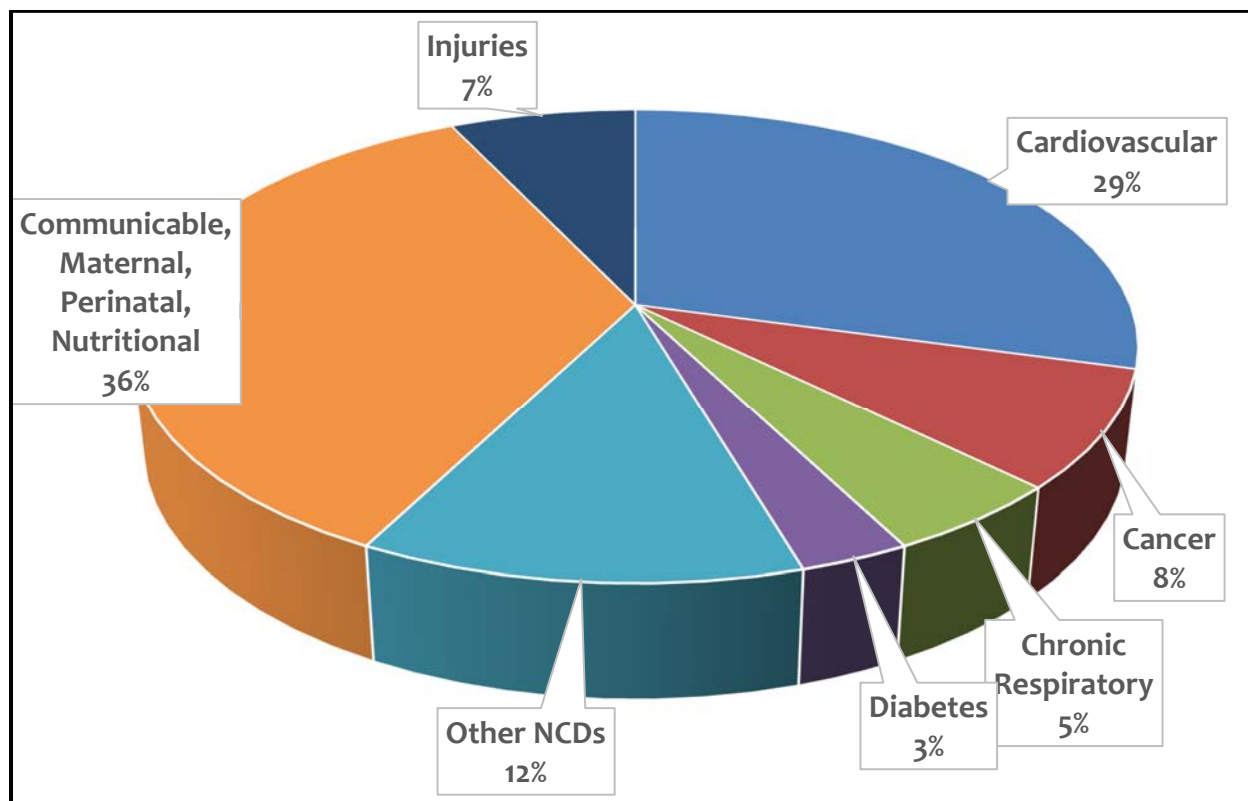
Life Tables

Life tables are used to simulate a population life time mortality experience. In other words, life tables are used to show for each age the probability of the person to reach a certain age

Sources: PRB's Population Handbook, 2011

Topic 027: Causes of Deaths

To know the major causes of deaths in a population helps us to formulate policy for effective health system. It also helps to identify vulnerable population and need to intervene. Following figure shows the major causes of deaths in Pakistan.



Source: World Health Organization

Topic 028: Coping the Consequences of Death

Dear students, Death is one of the Reality of life and No one can escape death. Death of a close one or family member is considered as one of the greatest sources of sorrow and grief. So how can we overcome its grief?

- Dear students, do you think that death is the end of life? Remember, Death is not the end of life. We all are created for eternal and never-ending life.

- Have you ever thought that Where do people go? Are they wasted? Can we see our love ones again? How long it would take to see them again?
- Is there someone to whom we can consult? The answer of all these questions lies in the believe in your Lord, Allah. Remember, we all belong to Allah and to Him we will return. We may die but The One who has created everyone will not die. So, relax, things do not get wasted with Him as He says in Quran
- وتوكل على الحي الذي لا يموت

Put your trust on the One who will not die. Al-Furqan, 53

- If we have connection with Allah, nothing is lost. All we need to know is that our Allah is well aware of all our apprehensions, desires and worries. The one who has put love and mercy for our love ones in our hearths is more merciful, generous and loving to His creation.

Lesson 09

Morbidity and its measures**Topic 029: Morbidity and its Measures**

- **Morbidity refers to disease and illness, injury and disability in a population.**
- **Data about frequency and distribution of disease helps in controlling its spread and identification of causes**

Measures of Morbidity

- **Prevalence Rate**
- **What percentage of population is suffering from a specific disease? For example, what percentage of population is suffering from Hepatitis C virus?**
- **Incidence Rate**
- **How many new cases of hepatitis C are diagnosed every year?**
- **Case Fatality Rate**
- **How many people die from this disease every year?**

Example of Prevalence rate

Source: PRBs Population Handbook, 2011

Topic 030: Determinants of Health

Following are the factors that can affect health of a person

- Economic
- Social
- Environmental
- Personal characteristics

Dear students, health is known as the first liberty of a humans. Without health one is not free, Free to eat, to move and enjoy one's life. So in short a healthy body and mind is one of the greatest blessing of Allah which people often don't recognize. What makes people Healthy and Beautiful is our point of discussion in the topic of determinants of health.

Economic Determinants of Health

1. Having Employment (paid or self) makes people healthy
 2. Job satisfaction also affects health positively
- Income and wealth are also major factor to live a happy and prosperous life

Employment status can affect mental health of a person

5. Environment at workplace: peaceful environment can make a person happy and healthy

Social Determinants of Health

1. Relationship with family, friends can affect health of a person
2. Socially active persons are more likely to be healthy
3. Social norms like supporting environment can affect physical and mental health of a person positively

Topic 031: Determinants of Health (Environmental factors)

- **Environmental factors such as Quality of air and water,**
- **Sanitary conditions and living conditions all play an important role in the health of a population**

Some questions to THINK!

1. What do you expect about the level of happiness of a person who lives in dark place spends his life inside the walls on the bed sleeping till noon and working in artificial lights?
2. On the other hand, there is a person who walks in sunlight, lives in fresh air and natural environment. Keeping his body busy and sweats in summer, keeps himself warm in winter by doing work. Works hard to maintain his or her house and body, looks sharp and beautiful?

What kind of person do you want to be, first or second? Your habits would make you a person you want to be, so develop the habits of a healthy person.

Topic 32: Determinants of Health (Personal & Household Characteristics)

- Personal and household characteristics are the most important factors in most of the cases
- Personal characteristics include habits of eating, sleeping and activity patterns, emotional and mental attitude, cleanliness, relationships within household family members, friends and people around
- **Habits of eating**
- The people who cannot control themselves while eating may get ill, it means they are indulged in overeating and put so many different types of things in their stomach, hot and cold, spicy and sweetish and so on actually put themselves in great danger for their future and current health.
- One should learn the ability to stop before one is full, it will help your digestive system to digest food properly and you will become healthy

- Eat all types of fruits, vegetable, meats and all other things which Allah has produces for us and keep walking in the paths of Allah
- Eat when you are healthy, your healthy food which serves as a diet and medicine both, otherwise you have to eat your medicine like your food when you become ill.

Topic 33: Determinants of Health (Personal & Household Characteristics)

Sleeping and working pattern

- Sleeping in time and wakening early in the morning keep your biological clock according to nature and your systems work properly. When we disturb our biological clock by spending our nights in useless activities like watching TV, using mobiles etc. we actually spoil our health and life both.
- One should realize that this life is very precious gift of Allah and has a purpose, each and every day is a gift and precious and will not come again, a day in your life. Just imagine, when Allah will ask, how you spend your life, your days and nights? would you like to say that I spend my nights awakening and bright days sleeping....

Emotional and mental attitude

- Your positive thinking keeps you healthy, when think negatively about your situations, about the stuff you have about the people around you, you become mentally sick and pessimist person. The one who always blame others, circumstances and all else for his or her current situation till this attitude becomes his or her second nature.
- Would you like to be like a person to whom whenever you meet, he just blames and keep crying, abusing people and things.
- Would you like to become a sympathy seeker, lazy and oppressed person?
- Do you like such person and or want to be in the company of such person? Of course not.
- **Remember, People like the people who are cheerful, energetic, smiling, and active.**

Topic 034: Health statistics of Pakistan 1

- Facts and figures of health sector in Pakistan**

Health expenditures as % of GDP = 0.49	Less than the benchmark of at least 6% set by WHO
Per capita health expenditures are US\$ = 36.2	Less than the benchmark of \$ 86 set by WHO for low-income countries
40 % of the burden of diseases is in the form of communicable diseases like TB, Malaria etc.	Pakistan has the 6th highest burden of Tuberculosis worldwide Among high multidrug resistant countries for TB. A national emergency.

Facts	2017-18
Registered doctors	208,007
Registered dentists	20463
Population per doctor	957
Population per dentists	9730
Population per bed	1580

Source: Economic Survey of Pakistan, 2017-18

Topic 035: Health statistics of Pakistan 2 (Malnutrition)

Malnutrition is a situation results from eating a diet in which nutrients are neither not enough or too much causing health problem. it includes calories, proteins, carbohydrates and minerals.

Half of population of Pakistan is suffering from malnutrition, especially, mothers and children.	
44% children are stunted	Mostly irreversible. These children fall sick more often. Miss many opportunities, perform less in school and grow up economically disadvantaged. (WHO)
Over 15 is wasting rate and 31.5 % are underweight (Reported in Economic Survey of Pakistan)	Wasting, or low weight for height, is a strong predictor of mortality among children under five.

Topic 036: Economic Consequences of Ill Health

Poor health due to disease or injury can result in followings

1. Loss in Market production
2. People with poor health cannot perform routine work of their businesses and jobs which results in loss in business or labor income.
3. People generally prefer to spend on non-health items so when they become ill, they have to spend their income on doctors' fees, medicines etc.
4. It also affects the capacity to perform household activities and other members of household have to spare time in taking care of ill people
5. Ill people cannot take part in social activities as healthy people do.

Lesson 10**Topic 037: Education and Economic Growth 1**

- Education builds human capital
- It creates opportunities
- Basic human right
- Religious duty
- Key to open many economic, political and social doors for people
- The main difference between humans and rest of creations is knowledge and abilities to use and create knowledge
- Education makes it possible for all revolutionary changes in the world makes the life on this earth easier?
- Education and knowledge are the biggest wealth we have and all kinds of education can lead us to recognize our Lord through His signs in Heavens and in our body.

Topic 038: Education and Economic Growth 1

Many studies have found that education is the main reasons of economic growth in USA, Japan and many developed countries. Countries like Japan have developed due to its advancement in education, innovation and technology despite the fact Japan lacks in natural resources.

Topic 039: Education Statistics in Pakistan

Dear students, as educational statistics changes over time you should see education statistics of any country by visiting different sites like UNESCO (<http://uis.unesco.org/country/PK>) where you can find latest statistics of any country. You should visit and see facts about literacy rate, expenditures on education, enrollment rates in school etc. main purpose of this is get an idea where Pakistan stands in the field of education.

Topics 40 to 42: Issues of Education sector in Pakistan**Major issues of education sector in Pakistan**

1. Demand side constraints: it means there is less demand of educating the children in Pakistan as people believe that even after getting education people are not able to get job. So many parents prefer to send their children to work instead of school.
2. Supply side constraints: It means there is less supply of educational services in Pakistan, we don't have enough schools, colleges and universities to meet the requirements of our population.
3. Social constraints: In our society sometime people don't like to send their children to school, especially female children which is a social constraint

Low budget: Our budget on education is very low as compared to most of the countries in the world.

5. Multiple system of education: In Pakistan there are multiple system of education like English medium, Urdu medium, Madrassah system which are creating class differences in our society.
6. Outdated syllabus: In many classes still, outdated syllabus is being taught
7. Inadequate practical: Not enough practical education is provided
8. Cramming and lack of creativity is another issue
9. There is a Lack of link between industry and universities
10. Purpose of knowledge and desire of knowledge: Often students get education to get a degree or jobs etc. desire of knowledge or real purpose of knowledge is missing

Lesson 11

Policies to make Population productive**Topic 043:**

Dear Students

Once my teacher told me that forget about your books and sayings of economists, anchor persons, or political leaders when you are formulating a strategy for people of a country.

- Always keep in mind that people living here are like your brother or sister or mother or your friend. Your brother needs job, your sister has a great desire to get admission in college, your mother is ill and you and your friend need a playground to forget the worries of life.
- Now first judge the cost of your brother's unemployment and its consequences on your sister's education and your mother's illness and dreams of life
- Then estimate the cost of shattered dreams of your sister if she could not get admission in college
- Then estimate how much you are willing to pay to save the life of your mother
- Remember!! There are many brothers, sisters, mothers and your friends who are being deprived of their basic rights because those are in a position to take decisions often don't consider people as their family members.
- Insha Allah many of you will be in a position when you would be able to take decision, the decision about your brother's career, your sister's dreams and your mother's health, take right decision at that time
- Because your brother may get job in near or far future but once the time to get education is gone it will not return, and if mother die, will never return again, the Mother, without substitute!
- So the lesson is there is nothing like spending on education and health... and are these not the most deprived and neglected sectors in Pakistan? you know why?

Lesson 12

Nuptiality and its measures**Topic 044: Nuptiality and its measures**

- Nuptiality refers to marriage as a population phenomenon, including the rate at which it occurs, the characteristics of people united in marriage and issues related to marriage. Under this topic we can calculate Marriage rate, divorce rate and time at first marriage to analyze matters related to Nuptiality.

Topic 045 & 046: Issues of marriage market in Pakistan?

Following are some of the issues

- Delay in finding match, it has become difficult to find especially in cities these days. There are many young and middle age people who are Single, unable to find match. The reasons of delay in finding suitable match include
 1. People are Status conscious
 2. Late marriages due to Higher Education/career preferences
 3. Cast and sect preferences
- Dowry: One of the major issues for many families, creating psychological and social issues. People spend a huge amount on celebrations and dowry expenses.
- Spending on food, Clothing, Decoration, Beauty parlor, Jewelry, Household items takes a huge share of parent's life time earning

The main purpose or motive behind too much spending is

- Pleasing people
- Show off

Think, when you will be able to please people? Never

Solution to solve the issue of marriage market

- Plan your life early
- Set your preferences right, the people who are looking for perfect things, perfect moments, and perfect situation often lose joys of life and keep on waiting, life is all about gratefulness and enjoying little moments of life
- We should remember that Life is often the result of our false preferences, hidden motives, double standards etc. So be careful, any of these things will bring hardships in life.

- We should also look around people and learn from the examples of others
- There must be law regarding spending on dowry and celebrations expenses, a limit must be set for these expenses.

Lesson 13

Relationship between Economic Variables**Topic 047: Relationships between Economic Variables 1**

Dear student, this lesson will help us to understand the basic relationship between economic variables which will help us to develop relationship between demographic and economic variables. Basic purpose to understand this relationship is to know how change in one variable like increase in population may affect different economic variables like GDP, Consumption, Investment etc. (to see the diagram of relationship watch video lecture 47-56)

Relationship between**1. Quantity Demand and Price**

There exists a negative relationship between price and quantity demand of a good keeping all other things constant. It means if price of a good rises, its demand will fall and vice versa

2. Quantity Supply and Price

There exists a positive relationship between price and quantity demand of a good keeping all other things constant. It means if price of a good rises, its quantity supplied will also rise.

Topic 048: Relationships between Economic Variables 2**How increase in population will affect market equilibrium?**

It will increase demand first which may lead to increase in price and production later on to meet increasing demand due to larger population.

How increase in income will affect market equilibrium?

- It will increase demand as income has a positive relationship with demand.

How improvement in technology will affect market equilibrium?

It will increase in supply of goods and services as with the help of better technology we can produce more.

Topic 049: Relationships between Economic Variables 3

Following are some important relationships between macroeconomic variables which may help to design and formulate right kind of policies.

$$Y = f(I)$$

We read above equation as “Income (Y) as a function of investment (I)”: it means income depends upon investment, greater the investment greater will be income of a country.

$$I = f(Y)$$

Investment (I) as a function of income (Y): it means income also affects investment positively, greater is the level of income greater will be the level of investment. Less income leads to small investment

$$I = f(i)$$

Investment (I) as a function of rate of interest (i): it means investment depends upon rate of interest, when charge higher rate of interest on loan we take less loan to invest, so when rate of interest increases it generally discourages investment and people prefer to save their money

Topic 050: Relationship between Economic Variables 4

$$C = f(Y)$$

Consumption as a function of income, it means Consumption depends upon Income

- Greater the income greater will be consumption

$$S = f(Y, i)$$

Savings depends upon Income and rate of interest, greater the level of income greater will be the level of saving, less income leads to less savings.

Saving also depends upon rate of interest (i), whenever rate of interest is high, it induces people to save their money in banks and earn rate of interest.

Lesson 14

Population and Economic Variables**Topic 051: Population and Economic Variables 1**

A very important question is to understand that How increase in population affects economic variables? To answer this question first we need to understand some basic relationship between economic variables of national income equation.

As we know national income equation in a closed economy is $Y = C + I + G$

Here

$Y = \text{GDP}$

$C = \text{Consumption expenditures}$

$I = \text{Investment}$

$G = \text{Government expenditures}$

Now we will analyze effects of right-hand side variables on national income one by one by asking some questions.

How increase in C will affect Y?

Increase in C, Consumption expenditures will increase Y, National Income

How increase in I will affect Y?

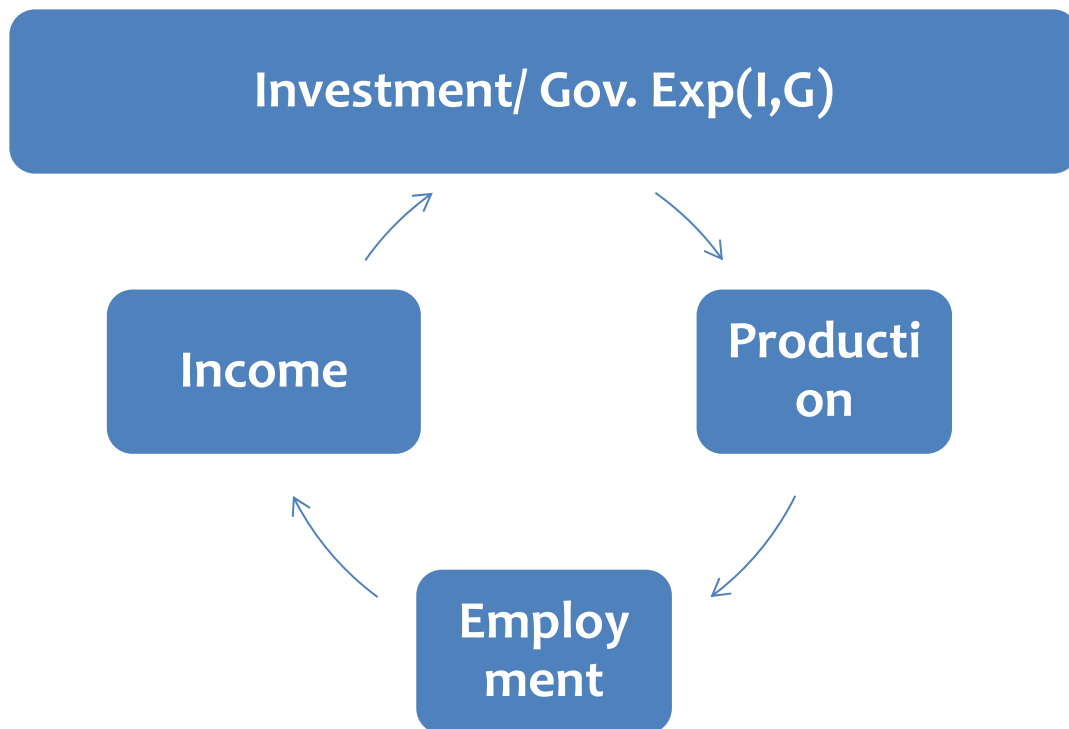
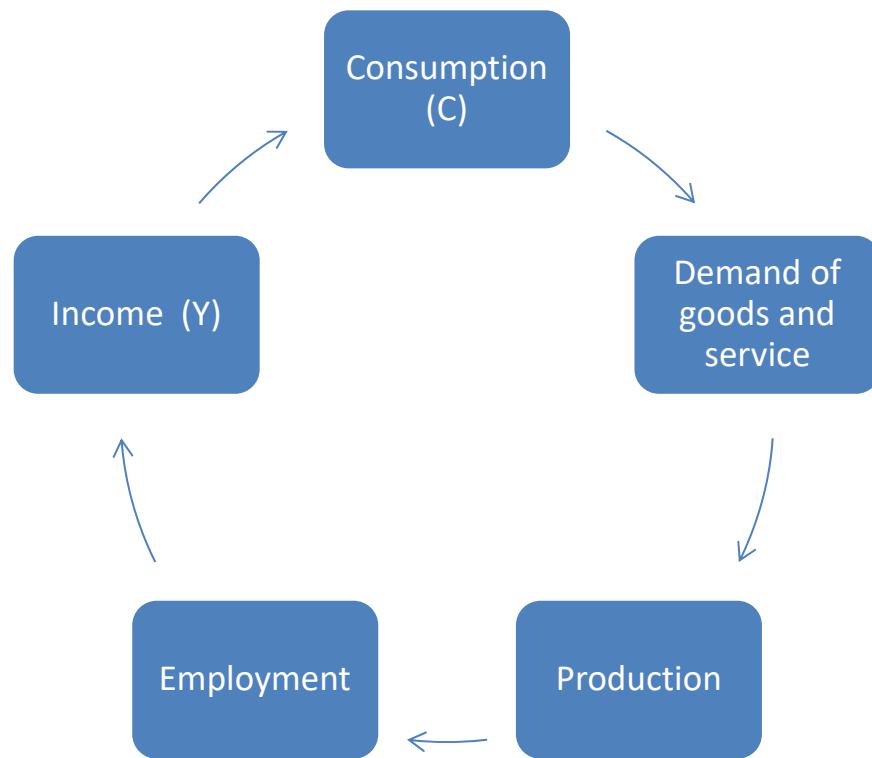
Increase in I, Investment will increase Y, National Income

How increase in G will affect Y?

Increase in G, Government expenditures will increase Y, National Income

- **So there is a positive relationship between**
- **C & Y**
- **I & Y**
- **G & Y**

All this can be explained through following diagrams. We can see for example, increase in consumption expenditures by people will increase demand of goods and services which in turn will leads to increase in production of goods and services, which requires to hire more labor, means increase in employment resulting into increase in income of people. When income increases, people also increase their consumption and demand for goods and services and this circle continues and economy progresses.



Similarly, in second figure we can see increase in Investment by investors or government spending will lead to increase in production, employment and income which will ultimately leads to more investment.

Topic 052: Population and Economic Variables 2

After discussing relationships between national income equation, we will see how increase in population will affect variables in national income equation ($Y = C + I + G$)

So, our question of interest is:

Other things remaining the same, what will happen to all variables if population increases?

It means

How increase in Population will affect

- Consumption expenditures by people?
- Investment by investors?
- Govt. expenditures by Government?

And

- **How increase in Population will affect Y, national Income?**

The answer or every question is Positive, how? Just think about what will happen to C, I, G and Y if population of a region increases, keeping all other factors constant.

Topic 053: Population and Economic Variables 3

Another important variable of economics is rate of interest, we will see now that:

- How increase in interest rate will affect national income and through which channels? How it will affect overall welfare of population?
- How increase in rate of interest affects employment, poverty, investment, savings, etc.
- What should be the policy regarding rate of interest?

To fully understand above question kindly see lecture video no. 53

As we know that national income (Y) depends upon C, I & G, all three variables negatively associated with rate of interest, means whenever rate of interest is high people & government find it difficult to borrow money for investment, consumption and government expenditures. Hence, they all tend to decrease due to increase in rate of interest. So, when C, I & G falls national income will fall

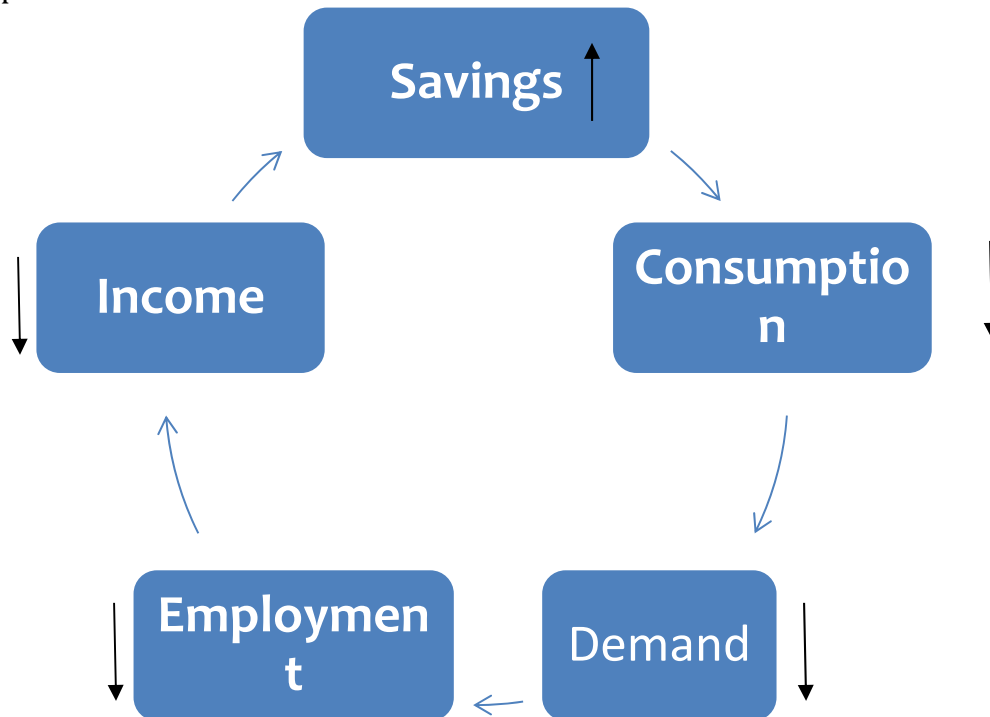
So, the best policy to increase national income of a country is to reduce rate of interest

Topic 054: Population & propensity to save 1

To discuss role of savings in economic development and overall welfare of population we need to answer following questions.

- What happens when society as a whole try to save more?
- Which one is more important for society, savings or consumption?
- Savings or investment?

To answer first question, look at figure below, we can see when society as a whole try to save more, they tend to consume less, which results in decrease in demand which leads to decrease in employment and income and when income falls savings also falls as savings depends upon income. Hence



**When society as a Whole try to save MORE
Eventually
They save
LESS**

Topic 055: Population and Propensity to Save 2

Dear students, which one is more important for economic development?

- Savings or consumption?
- Savings or investment?

Think about national income equation, you will get answer

Topic 056: Population and Propensity to Save 3

Another important question of our life is “How would savings affects the life of individual person?”

- Dear students, A balanced approach is required to spend a life, one should spend in order to fulfill his or her desire. Two quotes below beautifully summarize the life of a miser or generous person

- **Do you like to spend a poor life in order to die rich?** (means what is the purpose of your wealth if you live like a poor person and accumulating your wealth, you will die as a rich person but after spending a poor life)
- So it is rightly said that **Spend, God will send**

Allah says in Quran that “And whoever withholds, only withholds from himself (Surah Muhammad, 39)

Dear students, this is applicable to everything in life, to see application of this in your real-life kindly watch lecture video no. 56

Lesson 15**Migration and its measures****Topic 057: Migration**

It is one of the components of population change. It is a geographic movement of a people across a specified boundary for the purpose of establishing a new permanent or semi-permanent residence.

Following are some important terms related to migration

- Emigration
- Immigration
- In-migration
- Out-migration

Following examples from PRBs Handbook of Population Economics explains how to calculate different measures related to migration.

Immigration Rate

The immigration rate is the number of immigrants arriving at a destination per 1,000 population at that destination in a given year.

$$\frac{\text{Number of immigrants}}{\text{Total mid-year population at destination}} \times K = \frac{65,210}{4,825,552} \times 1,000 = 13.5$$

In 2009, the Norwegian immigration rate was 13.5 per 1,000 residents.

In some countries, immigration plays a significant role in population growth. In Sweden in 2009, 66 percent of all population growth was a result of immigration.

Emigration Rate

The emigration rate is the number of emigrants departing an area of origin per 1,000 population at that area of origin in a given year.

$$\frac{\text{Number of emigrants}}{\text{Total mid-year population at origin}} \times K = \frac{26,576}{4,825,552} \times 1,000 = 5.5$$

In 2009, the Norwegian emigration rate was 5.5 emigrants per 1,000 residents.

Net Migration Rate

The net migration rate shows the net effect of immigration and emigration on an area's population, expressed as an increase or decrease per 1,000 population of the area in a given year.

$$\frac{\text{Number of immigrants} - \text{Number of emigrants}}{\text{Total mid-year population}} \times K = \frac{65,210 - 26,576}{4,825,552} \times 1,000 = +8.0$$

In 2009, Norway experienced a net increase of 8.0 persons per 1,000 population through migration.

In 2010, Australia had a net migration rate of 11.0 per 1,000 population; the United States' rate was 2.8; while Bulgaria had a net migration rate of -2.1 per 1,000 in 2009 (the net result was a loss of 2.1 persons per 1,000 population due to migration).

Topic 058: Causes of Migration

- According to Push-pull theory
- Some people move because they are pushed out of their former location.
- Some people move because they are pulled or attracted to some place.
- Environmental reasons (in search of better place, free from calamities etc.)
- Economic reasons (better job or economic opportunities)
- Cultural or religious reasons (for freedom of religion etc.)
- Political or civil reasons (due to unrest or civil war)
- Social reasons (for better social life or going close to a family member or friend)

Topic 059: Impact of Migration

World distribution of opportunities are highly unequal so migration provides more opportunities to people of destination and origin.

Impact at place of origin

1. Migration not only improves the prospect of family but also for extended family
2. Migration can bring positive social and cultural change
3. Migration is a source of foreign remittances and political influence

Impact at the place of destination

1. Can bring positive social change
2. Mobility brings great potential for human development and Innovation
3. Can create unrest among people at destination place
4. Can put burdens on local services
5. Local people can feel fear of losing social and cultural cohesions.

Topic 060: Case of Mobility

An important question about relationship between population and economic opportunities can be answered by critically thinking about following questions.

- **Where do people move?**
- People generally move from low populated areas to highly populated areas!
- **WHY?**

People move from low populated (villages) areas to high populated areas (Cities) in search of”

- Better jobs and economic opportunities
- Better educational facilities

- Better health facilities
- **You know Why?**

Larger Population makes all these facilities feasible to provide. No government is willing to build a huge road where very few vehicles will pass. Big projects like universities, large hospitals cannot be built in less populated areas because it will waste huge amount of resources because of lack of population. Large the populations in area to use a particular facility better will be the facilities available.

Lesson 16

Malthus theory of population**Topic 061 & 062: Malthus theory of Population or Pessimistic Theory of population**

- Thomas Malthus was an English scholar who published his theory “An essay on the principle of population” in 1798

Main points of Malthusian Theory

- Population grows in geometric progression like 2, 4, 8, 16, 32, 64, ...
- While food and other resources increase with arithmetic progression like 1, 2, 3, 4, 5,
- He thought that if population is not controlled, then population would ultimately outstrip food supply and there will be starvation and hunger
- Malthus proposed that humans should control increase in population otherwise nature would come into play and diseases, wars, famines etc. will control the population.
- As a result, population would reduce to the level which can be sustained by the available quantity of food supply.

Topic 063: Critical Analysis of Malthus Theory of population

- Malthus believed that:
 - a) Population increases faster than food and other resources
 - b) Human breeds like other animals
 - c) Population always increases when means of subsistence increases unless check by nature
 - d) Size of population is determined by the means of subsistence
 - e) Malthus proposed that humans should control increase in population otherwise nature would come into play and diseases, wars, famines etc. will control the population.
 - f) As a result, population would reduce to the level which can be sustained by the available quantity of food supply.

Was Malthus right in his predictions and assumptions? We need to see historical facts and figures to judge his prediction. If we look at the data since he presented his theory we come to the following conclusions.

- a) Production of goods and services increases much rapidly contrary to his believe
- b) Despite unprecedented increase in population, living standard of people has risen
- c) He believed that law of diminishing return would prevent the food supply to rise after a limit, but he ignored the role of technology, new advancement in better seeds, use of fertilizers, pesticides etc. which greatly enhanced the production level
- d) In almost all the countries, the rate of food production is much greater than the rate of increase in population due to green revolution

So we conclude that most of the assumptions of his theory proved wrong as he did not realize the role of technology, green revolution and ability of humans to solve the issue of scarcity.

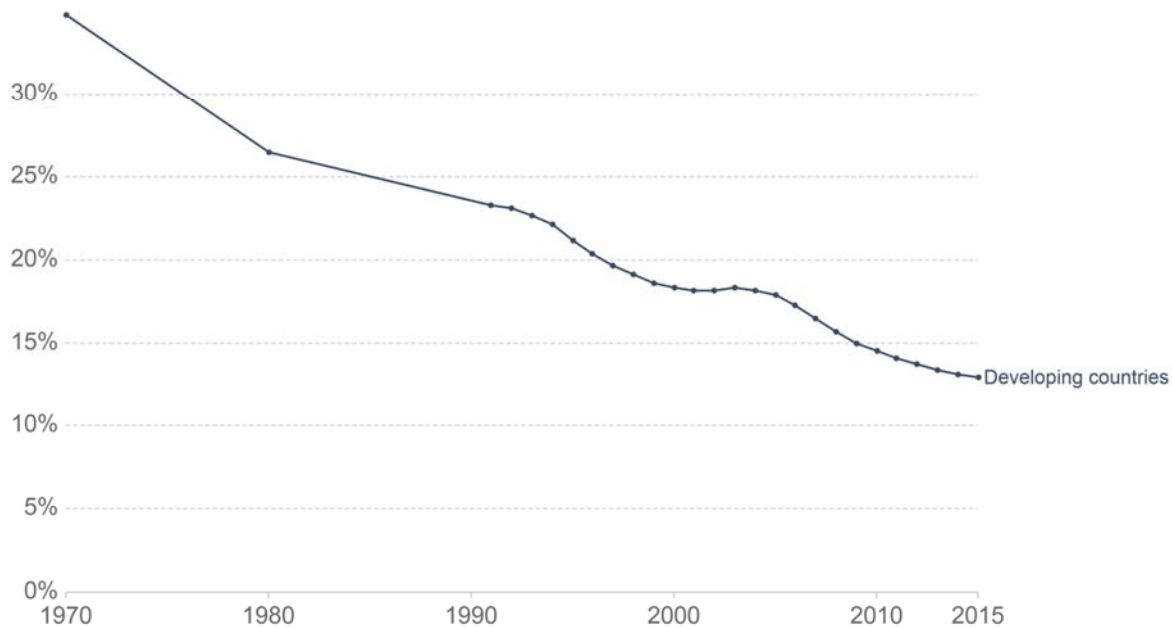
Topic 064: Critical Analysis of Malthus Theory: Historical Proof

- Malthus believed that there will be huge shortage of food and hunger due to rising population. However, his assumptions proved wrong when we look at the data from different sources. For past many decades world food production has increased many a times than increase in population. Following two figures show prevalence of undernourishment in developing countries and people who died of famines in different decades. We can see both his assumption are wrong. World is getting better despite the increase in population but people are generally ungrateful and do not see positive side of their living conditions.

Prevalence of undernourishment (%) in developing countries since 1970, 1970 to 2015

Our World
in Data

This is the main FAO hunger indicator. It measures the share of the population that consumes an amount of calories that is insufficient to cover the energy requirement for an active and healthy life (as defined by the minimum dietary energy requirement). Data from 1990 onwards is well-established within FAO estimates. Earlier estimates extending the period 1970-1989 are significantly more uncertain.

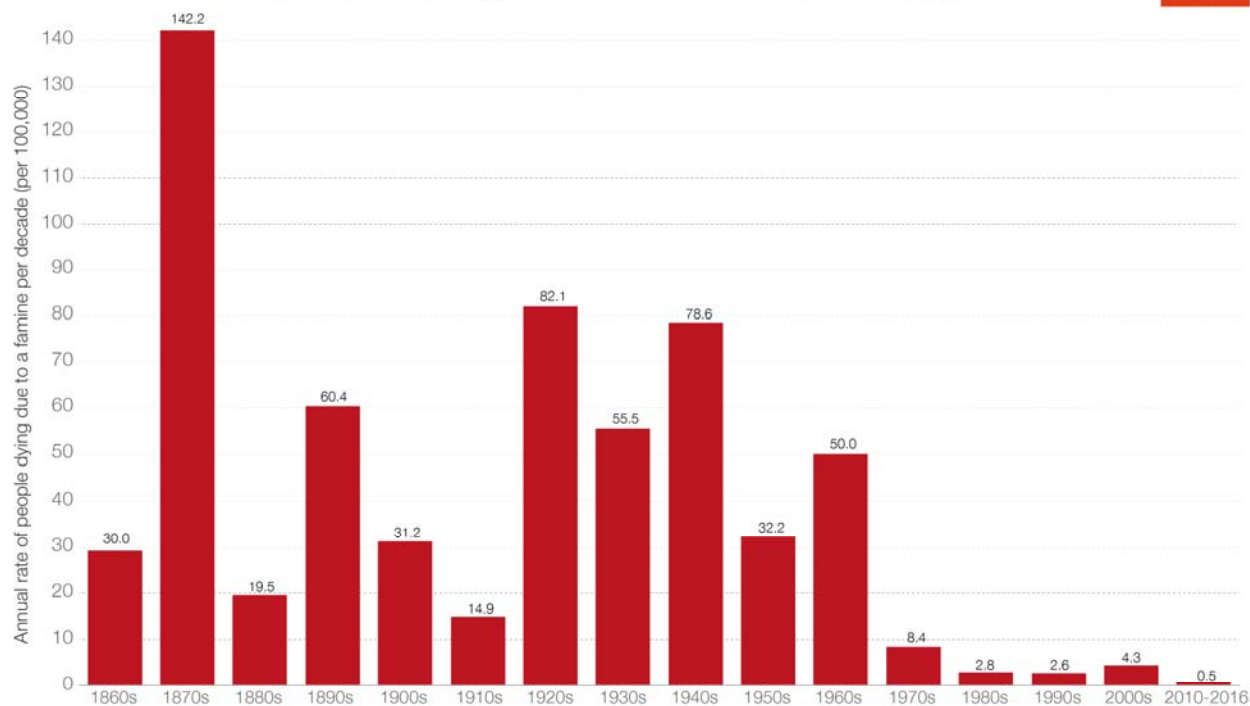


Source: FAO and ESS Indicators

OurWorldInData.org/hunger-and-undernourishment/ • CC BY

Annual rate of people dying due to a famine globally, per decade

Our World
in Data



Data source: The rate of the excess mortality due to famines shown here is presented in detail on OurWorldinData.org/famines [The dataset was constructed by Joe Hasell and Max Roser].
 How the rate is calculated: The annual rate is calculated for each decade by dividing the total number of famine victims in each decade by the average size of the world population in that decade and dividing the resulting ratio by 10 (and for the data from 2010 to 2016 it is divided by 7) to arrive at a yearly rate. To express it as the rate per 100,000 people, this annual rate is then multiplied by 100,000.
 For famines that happened at the end of a decade and the beginning of the next decade the famine victims are split by decade on a year by year basis.
 For famines for which different excess mortality estimates are published the midpoint between these estimates was chosen here.
 This visualization is available at OurWorldinData.org. There you find the full dataset and more research and visualizations on famines and global development.

Licensed under CC-BY-SA

Source: Our World in Data

Lesson 17

Impact of Pessimism

Topic 65: Impact of Pessimism

- After Malthus, lot of population theories warned about the impact of rapidly increasing population.
- People started believing that larger population generally has following consequences
- Depletion of resources
- Increase in poverty, hunger etc.
- Inadequate provision of facilities
- Environmental degradation etc.

In 1968, a Stanford University Professor, Paul Ehrlich wrote a book “The Population Bomb” and warned of mass starvation of humans in 1970 and 1980 due to overpopulation

- The first sentence of the book was
- “The battle to feed all of humanity is over.” and humanity had lost.
- In 1970, the book promised that
- “hundreds and millions of people are going to starve to death” no matter what people do, “nothing can prevent a substantial increase in world death rate.”
- And the cause is single
- Too many people, packed into too tight space, taking too much from the earth.
- Unless humanity cut down its numbers, soon... all of us would face “mass starvation” on a dying planet.”
- (As described by [Charles C. Mann](#), Smithsonian Magazine, January 2018)

Topic 066: Looking through the lens of Pessimism 1

- Looking through the lens of Pessimism, so many economists, environmentalists, biologists made predictions about population and future of world.
- Mark J. Perry, a professor of Economics and Finance at the University of Michigan made a list of wrong predictions about the future of population and earth. The work was originally published in Reason Magazine 2000 by Ronald Bailey

Let's have a look at them and enjoy 😊

- “Population will inevitably and completely outstrip whatever small increases in food supplies we make,”
- “The death rate will increase until at least 100-200 million people per year will be starving to death during the next ten years.” (Paul Ehrlich, 1970)
- “Most of the people who are going to die in the greatest cataclysm in the history of man have already been born,”
- between 1980 and 1989, some 4 billion people, including 65 million Americans, would perish in the “Great Die-Off.”
- “It is already too late to avoid mass starvation,” declared Denis Hayes, the chief organizer for Earth Day, in the Spring 1970 issue of The Living Wilderness.”
- Peter Gunter, a North Texas State University professor, wrote in 1970, “Demographers agree almost unanimously on the following grim timetable:

- by 1975 widespread famines will begin in India; these will spread by 1990 to include all of India, Pakistan, China and the Near East, Africa... By the year 2000, or conceivably sooner, South and Central America will exist under famine conditions.... By the year 2000, thirty years from now, the entire world, with the exception of Western Europe, North America, and Australia, will be in famine.”

Topic 067: Looking through the lens of Pessimism 2

- In January 1970, Life reported, “Scientists have solid experimental and theoretical evidence to support...the following predictions: In a decade, urban dwellers will have to wear gas masks to survive air pollution...by 1985 air pollution will have reduced the amount of sunlight reaching earth by one half....”
- Ecologist Kenneth Watt told Time that, “At the present rate of nitrogen buildup, it’s only a matter of time before light will be filtered out of the atmosphere and none of our land will be usable.”
- Barry Commoner predicted that decaying organic pollutants would use up all of the oxygen in America’s rivers, causing freshwater fish to suffocate.
- Paul Ehrlich AGAIN predicting in 1970 that “air pollution...is certainly going to take hundreds of thousands of lives in the next few years alone.” Ehrlich sketched a scenario in which 200,000 Americans would die in 1973 during “smog disasters” in New York and Los Angeles
- “Paul Ehrlich warned in the May 1970 issue of Audubon that DDT and other chlorinated hydrocarbons “may have substantially reduced the life expectancy of people born since 1945.” Ehrlich warned that Americans born since 1946...now had a life expectancy of only 49 years, and he predicted that if current patterns continued this expectancy would reach 42 years by 1980, when it might level out”

Topic 068: Looking through the lens of Pessimism 3

- Ecologist Kenneth Watt declared, “By the year 2000, if present trends continue, we will be using up crude oil at such a rate...that there won’t be any more crude oil. You’ll drive up to the pump and say, ‘Fill ‘er up, buddy,’ and he’ll say, ‘I am very sorry, there isn’t any.’”
- Harrison Brown, a scientist at the National Academy of Sciences, published a chart in Scientific American that looked at metal reserves and estimated the humanity would totally run out of copper shortly after 2000. Lead, zinc, tin, gold, and silver would be gone before 1990.

Dear students, All above predictions and write up are taken from the following website
<http://www.aei.org/publication/18-spectacularly-wrong-apocalyptic-predictions-made-around-the-time-of-the-first-earth-day-in-1970-expect-more-this-year-2/>

It is to give an idea that since long people and many demographers are pessimist about population and its negative consequences on our lives. You are not require to memorize above predictions but get an idea that people often blindly follow a myth but do not willing to change

In the end Professor Mark J. Perry asked a question.

- How accurate were the predictions since 1970? And his answer was
 - **“The prophets of doom were not simply wrong, but *spectacularly* wrong,”**

Topic 069: Marxian Perspective of Population

- He rejected Malthus’s idea that resources could not grow as rapidly as population.
- He believed that science and technology can increase the production of food much more than the increase in population
- He believed that consequences of population growth should be a significant increase in production
- After all, each worker is producing more than he or she required or else how would all the dependents survive?
- Karl Marx believed that poverty and hunger is the result of unequal distribution of wealth in capitalist society
- He dismissed the Malthusian idea that population is the reason of poverty and hunger, rather he believed that if society is well ordered, increase in population would increase overall wealth.

Lesson 18

Optimistic Theory & Julian Simon's Contribution**Topic 070: Optimistic Theory of Population**

Optimist is a person who sees positive side of a phenomena, optimists' theory of population and economic development is based on following points

1. For past many years, population growth is much less than the per capita income growth
2. Recent history has seen great progress in
 - a) Education
 - b) Health
 - c) Per capita income
 - d) Agriculture and industry
 - e) Innovations and institutions etc.
3. Despite fixed resource most of the things are showing following trends
 - a) Decreasing real prices
 - b) Increase in production and consumption of resource
 - c) Increase in availability and efficiency of resources
4. Therefore, optimists believe that population increase is not the reason of poverty and resource depletion according to the optimistic theory of population and economic development

Topic 071: Julian Simon Challenge to Paul Ehrlich

As we have earlier discussed that in 1968, a Stanford University Professor, Paul Ehrlich wrote a book "The Population Bomb" and warned of mass starvation of humans in 1970 and 1980 due to overpopulation. The first sentence of the book was "The battle to feed all of humanity is over." and humanity had lost. Later on, he kept on predicting that hundreds and millions of people are going to starve to death due to overpopulation and pressure on resources. He was a pessimist who believed that due to overpopulation resources of the world will soon run out. However, in 1980, an Economist Julian Simon challenged Paul Ehrlich to put his money where his mouth was. He argued that If Paul is right as he believed that non-renewable resources are finite and due to ever increasing demand, their prices should increase in future.

Paul Ehrlich accepted the challenge along with his collaborators and it was decided that few metals of Paul's choice will be selected and they will see if after 10 years the prices of those metals have increased or not? The idea was if a resource is getting scarce, its price should increase, so Copper, chromium, Nickel, tin and tungsten were selected by Paul Ehrlich

After 10 years, everyone observed that Population grew by 800 million people in the world with improved living standard, While Real Prices of all metals fell, some of them more than half as predicted by Julian Simon, it was a clear proof of Julian Simon's claim that over the time, resources become cheaper because people always find substitutes of them, moreover, latest use of technology also improves their use and efficiency.

As Paul's prediction about resource scarcity and their prices proved wrong so Paul paid the check of \$ 10,000 as a token of defeat.

Topic 072 to 079: Julian Simon Contributions in the field of economics and demography

He was a great demographer and economist who wrote the book of "The Ultimate Resource". He believed that population is an asset for the development of countries, he always believed that humans in general are builders of resources and not the destroyers of resources. He was an optimist and a beautiful mind in the field of economics and demography. Following points can show his contribution.

- a) He believed that in the long run, the most important economic effect of population size and growth is the contribution of additional people to our stock of useful knowledge. And this contribution is large enough in the long run to overcome all the costs of population growth.
- b) He also believed that the material conditions of life will continue to get better for most people, in most countries, most of the time, indefinitely. Within a century or two, all nations and most of humanity will be at or above today's Western living standards.

Quotes of Julian Simon

Dear Students, Julian Simon Wrote many books, his words are priceless and have great wisdom for people who think out of the box

Following extracts/quotes are taken from following website which may give you an insight of his wisdom and optimistic attitude toward humans.
https://www.azquotes.com/author/43863-Julian_Simon

"Our supplies of natural resources are not finite in any economic sense. Nor does past experience give reason to expect natural resources to become more scarce. Rather, if history is any guide, natural resources will progressively become less costly, hence less scarce, and will constitute a smaller proportion of our expenses in future years."
~ Julian Simon

"Adding more people causes problems. But people are also the means to solve these problems. The main fuel to speed the world's progress is our stock of knowledge; the brakes are our lack of imagination and unsound social regulations of these activities. The ultimate resource is people—especially skilled, spirited, and hopeful young people endowed with liberty—who will exert their wills and imaginations for their own benefits, and so inevitably they will benefit the rest of us as well." ~ Julian Simon

"It is your mind that matters economically, as much or more than your mouth or hands. In the long run, the most important economic effect of population size and growth is the contribution of additional people to our stock of useful knowledge. And this contribution is large enough in the long run to overcome all the costs of population growth." ~ Julian Simon

"The world's problem is not too many people, but lack of political and economic freedom." ~ Julian Simon

"The main fuel to speed the world's progress is our stock of knowledge, and the brake is our lack of imagination." ~ Julian Simon

"The most important benefit of population size and growth is the increase it brings to the stock of useful knowledge. Minds matter economically as much as, or more than, hands or mouths." ~ Julian Simon

"Because we can expect future generations to be richer than we are, no matter what we do about resources, asking us to refrain from using resources now so that future generations can have them later is like asking the poor to make gifts to the rich." ~ Julian Simon

"The standard of living has risen along with the size of the world's population since the beginning of recorded time. There is no convincing economic reason why these trends toward a better life should not continue indefinitely." ~ Julian Simon

"Based on first-hand evidence of your own senses - the improved health and later ages at which acquaintances die nowadays as compared with the past; the material goods that we now possess; the speed at which information, entertainment, and we

ourselves move freely throughout the world - it seems to me that a person must be literally deaf and blind not to perceive that humanity is in a much better state than ever before." ~ Julian Simon

Julian Simon's point of view about value of Human Resource and its economic price

According to Julian Simon, "There is only one important resource which has shown a trend of increasing scarcity rather than increasing abundance. That resource is the most important of all—human beings. ... [An] increase in the price of peoples' services is a clear indication that people are becoming more scarce even though there are more of us."

Julian Simon's point of view regarding relationship between population increase in standard of living

He believed that standard of living has risen along with the size of the world's population since the beginning of recorded time. There is no convincing economic reason why these trends toward a better life should not continue indefinitely.

He further explained his point of view regarding the rising standard of living and wrote that "Based on first-hand evidence of your own senses – the improved health and later ages at which acquaintances die nowadays as compared with the past; the material goods that we now possess; the speed at which information, entertainment, and we ourselves move freely throughout the world - it seems to me that a person must be literally deaf and blind not to perceive that humanity is in a much better state than ever before."

Julian Simon's forecast about future

- ""This is my long-run forecast in brief: The material conditions of life will continue to get better for most people, in most countries, most of the time, indefinitely. Within a century or two, all nations and most of humanity will be at or above today's Western living standards. I also speculate, however, that many people will continue to think and say that the conditions of life are getting worse." ~ Julian Simon
- when a person does not understand the creation of resources and wealth, the only intellectual alternative is to believe that increasing wealth must be at the cost of someone else. This belief that our good fortune must be an exploitation of others may be the taproot of false prophecy about doom that our evil ways must bring upon us." ~ Julian Simon

Julian Simon's contribution in theory of Population and Resource's scarcity

In his book "The Ultimate Resource", he Challenged old theory of resource scarcity and gave Economic explanation of theory of scarcity, he concluded that Resources may be physically

limited but Economically unlimited Scarcity is only a short run phenomenon and in long run people come up with a solution which ultimately solve the problem. For example, Recycling and new alternates, Innovative people and markets always improve the resource availability and efficiency in its use.

Lesson 19

Religious Perspective of Population**Topic 080: Religious Perspective of Population**

As in our previous lectures we have seen that there are different views regarding impact of population on economic development. Pessimists believe that population is a hurdle in the way of economic development while optimists believe that along with increase population, living standard and resources have risen, so population is a stimulating factor of advancement in technology and innovation. Now we will see What Quran and Ahadith say about Population? Its effect on poverty and resource balance.

Before we start, we need to think about our Allah, He claims that He is the Rabbul Aalameen, The Sustainer of All the creations. So one thing we need to clear in our mind that there is No one who creates a living being but Allah and no one can take the responsibility of livelihood of any living being but Allah. So if we think that resources will run out due to overpopulation then we might not have true understandings of the attributes of our Allah. Allah is the only creator of every human being and He himself has taken the responsibility of Rizq of every child. This knowledge of Allah and His attributes is one of the greatest objectives of humans' life. We need to Know our Lord in true sense.

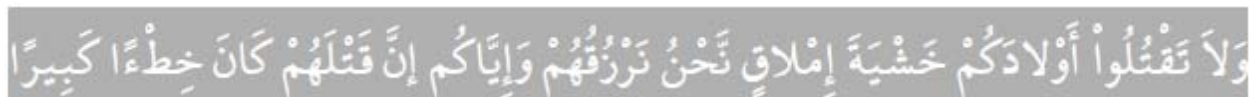
Topic 081: Quranic Teachings about Population and Children

- Allah Says in Quran

• 

- And Do not kill your children because of poverty, We provide sustenance for you and for them (Al-Anaam 151)

Another place in Quran Allah says that



- And kill not your children for fear of poverty. We shall provide for them as well as for you. Surely the killing of them is a great sin (Al-Isra 31)

Topic 082: Ahadith and examples from Lives of Prophet (PBUT)

Various Ahadith and examples from the prayers of Prophets (PBUT) also emphasize on the importance of having children.

- Abu Dawood (2050) narrated that Allah's Prophet (PBUH) said "Marry those who are loving and fertile, for I will be proud of your great numbers before the other nations." Various places in the Quran Allah describes the Prayers of the Prophets (PBUT) and righteous people regarding having children.
- Ibraaheem (peace be upon him) prayed to his Lord, saying "My Lord! Grant me (offspring) from the righteous" [al-Saafaat 37:100]
- "And those who say: 'Our Lord! Bestow on us from our wives and our offspring the comfort of our eyes, and make us leaders of the Muttaqoon (the pious)'" [al-Furqaan 25:74]

Lesson 20

Age structure transition & Demographic Dividend**Topic 083: Age Structure Transition 1****Age structure**

It is the classification of population on the basis of age groups. For example,

Children (under 15 years)

Working age (15-64)

Older people (65 or above)

What determines age structure transitions?

Countries move from high fertility and mortality to low fertility and mortality rates; this transition produces a Boom Generations that gradually increases share of working age population

Economic and Social Importance of Age Structure

Age structure of population have important economic, political and social consequences

Different age groups behave differently, their current and future requirements are different. For example, young people require investment in health and education while adult people increase labor supply and savings in society and they require pension and health facilities

Economic behaviors intensity changes in society due to change in relative share of each group. Therefore, knowledge of behaviors, likes and dislikes of different generation can be very useful for designing policies for different age groups

The Center of Generational Kinetics is a good website to get an idea of generations difference in economic social and other behaviors

Generally, population of the world can be classified into following five generations

- Generation Z, or iGen, Born 1996 – TBD
- Millennials or Gen Y: Born 1977 – 1995
- Generation X: Born 1965 – 1976
- Baby Boomers: Born 1946 – 1964
- Traditionalists or Silent Generation: Born 1945 and before

Topic 084 to 086: Measurement and analysis of Age Structure

Dear students, to measure and analyze age structures of different countries kindly watch video lectures as these topics are practical questions based upon online tools.

Topic 087: Demographic Dividend

Demographic Dividend means increase in economic growth that is due to change in age structure. It occurs when a country has larger share of working age population and declining dependency ratios due to falling birth rate.

Mechanism of Demographic Dividend

Other things remaining the same when a country has larger share of working age population it usually results in following phenomenon:

1. Increase in Savings
 2. Increase in human capital
 3. Increase in labor supply
1. Increase in Savings
 - i. People in working age produce more than they consume
 2. Human capital
 - i. Demographic dividend starts when death rate falls, life expectancy increases and health of people improves
 - ii. Attitude towards education changes
 - iii. People become assets of social change
 3. Labor supply increases due to two reasons
 - i. Baby boomers enter labor force
 - ii. Decline in birth results in increase in female labor force participation

Topic 088: Demographic Dividend: A Policy Perspective

To reap the benefits of demographic dividend we need to provide Education and train our young population keeping in mind the future goals of social, economic and population policies. We need to equip them with necessary skills and leadership qualities. More job opportunities should be created to take advantage of huge labor force.

Lesson 21

Population & Labor Market

Topic 089: Labor Market: Important Terms & Calculations

1. Employed: A person who is working and either in the category of 'paid employed' or 'self-employed'
2. Unemployed: A person who is currently available and looking for work but unable to find work
3. Labor force: No of employed+ No. of unemployed
4. Out of labor force: All the people who are not part of labor force are considered as out of labor force

Calculation of Unemployment and Labor force participation rates

$$\text{Unemployment rate} = \frac{\text{No. of Unemployed}}{\text{Total Labor Force}} \times 100$$

$$\text{Labor Force Participation Rate LFPR} = \frac{\text{Total Labor force}}{\text{Total Population}} \times 100$$

Example of calculation of Labor force participation and unemployment rates and their interpretation

Suppose

Total population = 500

No. of employed people = 200

No. of unemployed = 50

Labor Force Participation Rate?

$$= \frac{\text{Total Labor force}}{\text{Total Population}} \times 100$$

Total labor force = no. of employed+ no. of unemployed

$$= 200+50 = 250$$

$$= \frac{250}{500} \times 100 = 50\%$$

Interpretation: Labor force participation rate = 50 %, which means 50 % of population is part of labor force. Either they are employed or unemployed

$$\text{Unemployment rate} = \frac{\text{No. of Unemployed}}{\text{Total Labor Force}} \times 100$$

$$\text{Total labor force} = \text{no. of employed} + \text{no. of unemployed} = 200+50 = 250$$

$$\text{Unemployment rate} = \frac{50}{250} \times 100 = 20\%$$

Interpretation: It means 20 % of labor force is unemployed.

Topic 090: Pakistan's Employment Statistics

Dear students, to know the current employment statistics of Pakistan, you may visit website of Pakistan Bureau of Statistics. (<http://www.pbs.gov.pk/content/labour-force-statistics>)

As this data keeps changing one should get latest figures from annual reports available about Pakistan's Employment Statistics.

Topic 091-093: Key Indicators of Labor Market

International Labor Organization ILO has defined key indicators of labor market which are known as KILM

Key Indicators of Labor market (KILM) provide a good understanding and base to analyze labor market of a country. details of all these indicators can be seen on ILO website. These indicators are numbered like KILM 1, KILM 2 etc. some of Important indicators include

KILM 1: Labor force participation rate

KILM 2: Employment to population ratio

KILM 3: Status in employment

KILM 4: Employment by sector

KILM 5: Employment by occupation

KILM 7: Hours of Work

KILM 14: Educational attainment and Literacy

KILM 16: Labor Productivity

KILM 17: Working Poor

Topic 094: Causes of Low Labor force participation in Pakistan

1. Family structure and practices: generally, in Pakistan only one person is earning members, rest of them are dependent and do not participate in economic activities.
2. Social attitude & wrong believes: people generally don't like to do ordinary work and search for better jobs. Female labor force participation rate is also low due to various reasons and believes in society. Other reasons include Lack of opportunities and capital, Slow economic growth and lack of practical education

Topic 095: Causes of unemployment in Pakistan

1. Slow economic growth
2. Lack of growth in industrial sector
3. Lack of practical education and experience

However, the mother reason of unemployment is lack of initiative, people believe that employment means getting job and they do not consider to start their own work.

5. High expectations about jobs and Social status of people also force people to avoid low paying jobs and starting a small-scale business.

Topic 096-097: Strategies for creating work opportunities

1. We need to provide Practical and Business oriented education
2. Change of attitude of society and need to teach that there is no stigma attached to hard work and no work is inferior.
3. Need to develop Link between industry and education
4. Need to provide Career guidance
5. Individually, we should need to Take baby steps and need to Overcome fear of failure. We need to Improve skills and education to get better jobs and Keep ourselves mobile and grateful
6. Be generous and helpful as its reward is granted by Allah
7. Remember Nothing is useless and impractical, and every type of subject have its own importance

Lesson 22

Population Debate 1 & 2**Topic 098: A debate about population and Economic Development****Population Debate 1**

Dear Students, to understand the debates related to population and its impact on economic development we will follow a debating style of teaching/learning. Under this method, we will present the ideas of optimists and pessimists in forms of arguments and counter arguments. In this unique method, you will learn how to critically analyze a claim with the help of logical reasoning based on facts and figures. For complete understanding of these debates, you should watch lecture videos. I have purposefully spread these debates over your course to develop your skills of understanding and analysis in a gradual and systematic manner.

To start our debate, suppose there are two people, one is pessimist and other is optimist they are debating about the impact of population on poverty, hunger and depletion of resources

Pessimist: Population is the reason of increase in poverty, hunger and depletion of resources.

Optimist: If population is the reason of poverty then along with increase in population, poverty should have risen. While in reality despite increase in population, poverty is decreasing throughout the world

Pessimist: Larger population also creates hurdle in the way of economic development

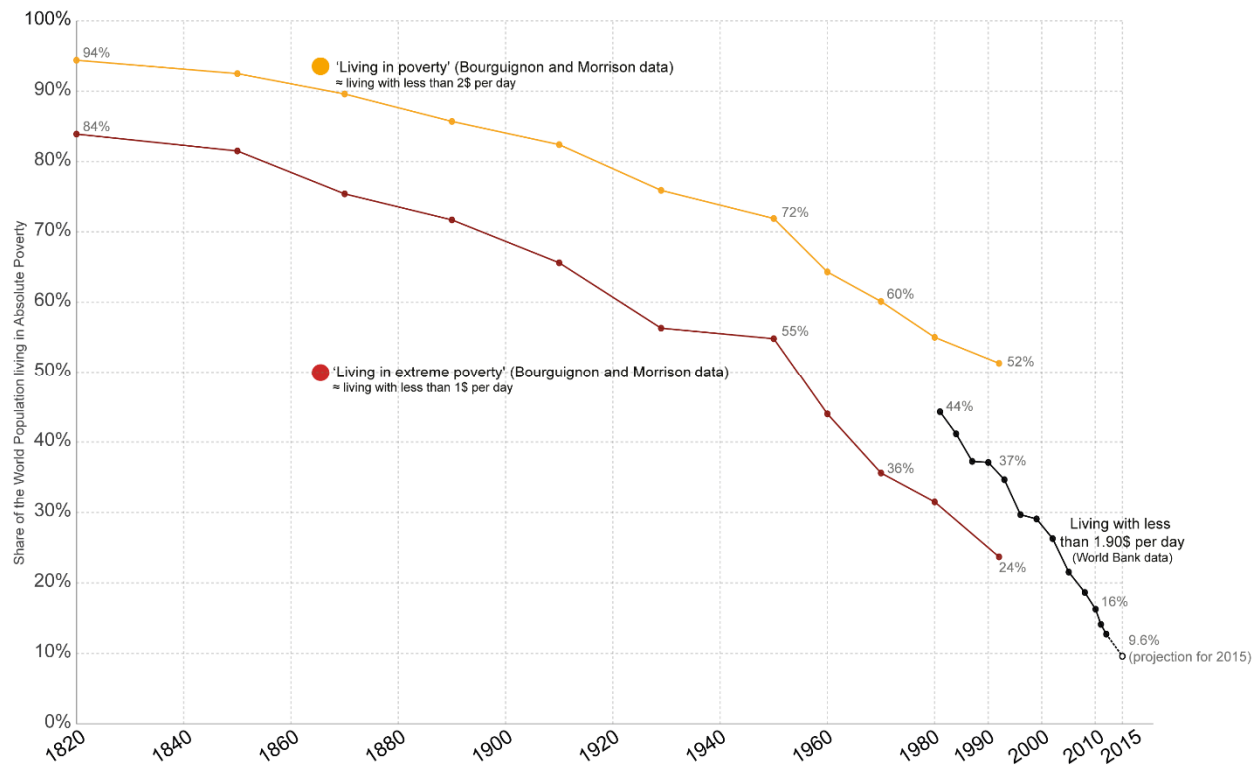
Optimist: If larger population is bad thing then why most populated countries in the world are also generally most powerful or developed countries? For example, look at the list of most populated countries which include China, India, USA, Russia, Japan, Pakistan etc. If population is the reason of poverty, then these countries should be the least developed

Let's check the data of population and poverty. Is there a positive or negative relationship?



Share of the World Population living in Absolute Poverty, 1820-2015

All data are adjusted for inflation over time and for price differences between countries (PPP adjustment).



Data sources: 1820-1992 Bourguignon and Morrison (2002) - Inequality among World Citizens, In The American Economic Review; 1981-2015 World Bank (PovcalNet)

The interactive data visualisation is available at OurWorldinData.org. There you find the raw data and more visualisations on this topic.

Licensed under CC-BY-SA by the author Max Roser.

My dear fellow, we can analyze relationship between population and poverty by asking simple questions.

What is the trend of population?

Increasing

What is the trend of poverty?

Decreasing

What is the relationship?

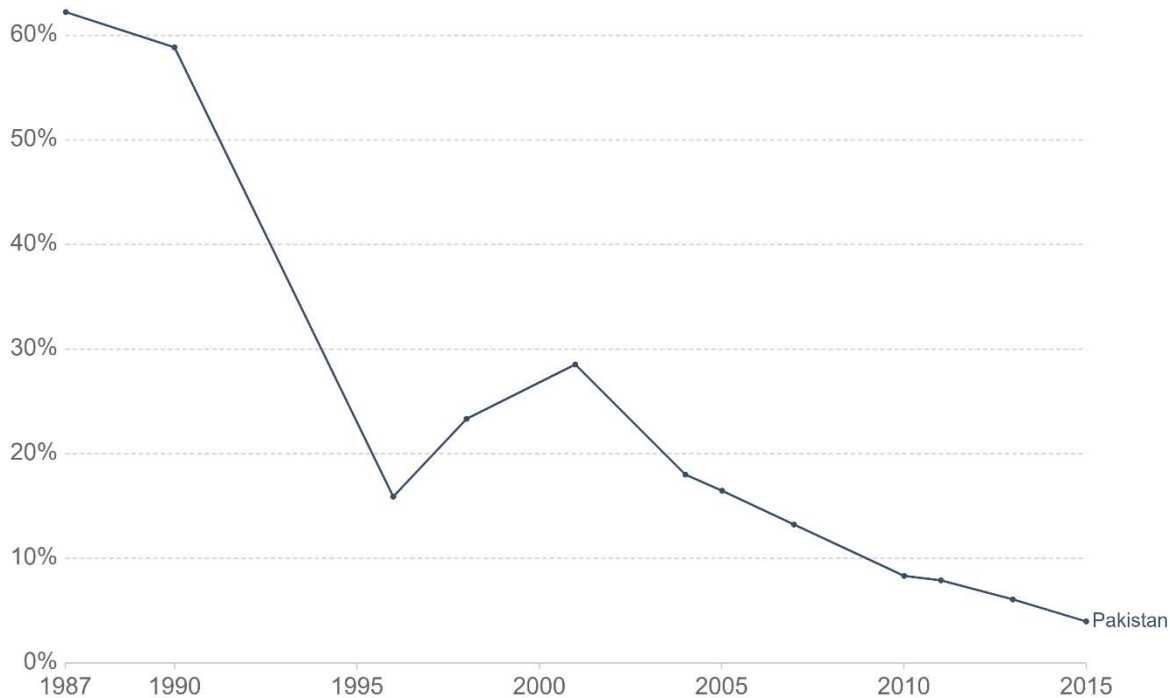
Inverse

Pessimist: But this relationship is not true for the country like as Pakistan ...poverty is increasing day by day

Optimist: let's check the data about poverty trends in Pakistan

Share of population living in extreme poverty by world region

Extreme poverty is defined as living with less than 1.90\$ per day (in 2011 International Dollar). International dollars are adjusted for price differences across countries and across time.



Source: World Bank

OurWorldInData.org/extreme-poverty/ • CC BY

Dear friend, you can see from above figures that Increase in Population is not a reason of poverty which is generally believed rather that exists an inverse relationship on the basis of historical trends.

Topic 099: Population Debate 2 (Population and resources)

Pessimist: If we fail to control population, overpopulation will consume all resources

Optimist: why you believe so?

Pessimist: because we have limited resources

Optimist: history says something else, resources are increasing with every coming generations, why this trend will not continue in future?

Pessimist: Because now we have too many people and limited resources cannot sustain all of us

Optimist: let me ask some questions to make my point clear

Pessimist: ok

Optimist: who have more resources, we or our past generations?

Pessimist: we have more resources but Past generations were rich, had lot of land, pure diet, clean environment etc.

Optimist: if they were richer than this current generation, would you like to go and live in past with same facilities they enjoyed, take lot of money as well and go back to the life style of 1920s, live without mobile, electricity, indoor toilet, with same communication, transport facilities with same food choices etc. would you?

Pessimist: No. but you know...things are worsening now

Optimist: let me take another example, do you have right now as a student in young age, your personal car, a personal house a huge bank balance, a great job of your desire?

Pessimist: not all but I hope I will in future.

Optimist: you think you would be richer in future and lot of your dreams will come true?

Pessimist: Of course, why not?

Optimist: My dear, you will be richer and better off in future Insha Allah, that will be the case with most young people like you, so when most people like you think that I will be better off in future, how can we collectively will be worse off ?

Despite increase in population we all are better off in terms of choices we have, the quantity of food we use, the ways of communication, transportation, the facilities we are enjoying, there is no comparison with past.

Pessimist It is right we are enjoying much more facilities but you know there are so many factors we need to consider like health of women, provision of job, education and health facilities.

Which are Very difficult to provide! You know

Optimist: will talk about it in near future

Wait for the next episode of debate 😊

Lesson 23

Data Sources and techniques of analysis**Topic 100: Data Sources**

Two main sources of data

Primary

Secondary

In Primary data source we collect data through Interviews, Questionnaires and Observations etc.

While Secondary data source include

Publications by government, NGOs, Research organizations etc.

Economic Survey of Pakistan

State Bank Report

Population Census.

Labor force survey etc.

Topic 101: Secondary Data Sources

Major source of demographic data

1. Population Census
2. Labor force survey
3. Demographic and health survey
4. Population Census

Topic 102 to 104: Calculation of Indices and Ratios

We can calculate various ratios and indices to analyze our demographic data. Some of them are described below

1. Young dependency ratio

It is the share of young people (< 15 years) as percentage of working age population (15-64)

2. Old dependency ratio

Share of older people (> 55 years) as percentage of working age population (15-64)

3. Total dependency ratio

Share of total dependents (< 15 years+ > 65 years) as percentage of working age population (15-64)

Practice Question

From following data calculate total, young and old dependency ratios

Population in 000, Pakistan in 2050

< 15	15 to 64	65 or above
81923	237452	29325

4. Ageing Index

Ageing index shows the ratio of people aged over 65 years per hundred children having age less than 15 years.

It shows the change in allocation of resources in a society, because a young society needs more schools rather than an ageing society needs more long-term health care institutions.

5. Parent Support Ratio

Number of people aged over 65 relatives to per hundred in working ages (15-64).

it measures the support that is demanded by older members of a family in order to spend the last period of their lives.

6. Ratio of Working age to dependents

The ratio of working age population to total dependents shows how much working age people are available per hundred dependents (young or old).

7. Potential Support Ratio

The potential support ratio (PSR) is the number of people age 15–64 per one older person aged 65 or older. This ratio describes the burden placed on the working population by the non-working elderly population. For example, in the world,
It was 12 in 1950,
Will be 4 in 2050

In 2015, Japan has the lowest in the world, 2.1 working people per one older person

Examples of calculations

Calculate total dependency ratio from following data

Children under 15 years of age = 81923

Working age population (15-64 years) = 237452

Population 65 or above = 29325

Total Dependency ratio =

$$\bullet = \frac{\text{number of children under 15 years} + \text{number of older people 65 or above}}{\text{Total population 15 – 64 year}} \times 100$$

$$\bullet = \frac{81923+29325}{237452} \times 100$$

=46%

Calculate young dependency ratio from following data

Children under 15 years of age = 500

Working age population (15-64 years) = 5000

Population 65 or above = 200

Young Dependency ratio =

$$\bullet = \frac{\text{number of children under 15 years}}{\text{Total population 15 – 64 year}} \times 100$$

$$\bullet = \frac{500}{5000} \times 100$$

= 10%

Calculate potential support ratio from following data and interpret your result

Working age population (15-64 years) = 237452

Population 65 or above = 29325

=

$$\frac{\text{Total population of age 15 – 64 years}}{\text{Total population 65 years or above}}$$

$$= \frac{237452}{29325}$$

= 8 people in their working age population to support one older person

Uses of Data and Graphs 1

Topic 105 & 106: Drawing graphs

We can draw different types of graphs to present population data. To learn how to draw graphs through Ms. Excel and through online tools please watch video lectures of topics 105, 106 and 110

Common charts used to present population and economic data are given below

1. Simple Bar Chart
2. Multiple Bar Chart
3. Component Bar Chart
4. Line Graphs
5. Population Pyramids
6. Pie Chart etc.

Lesson 25

Contingency Tables and Interpretation of Data**Topic 107 to 113: Contingency Tables and interpretation of data****Contingency table**

A table shows the distribution of one variable in rows and other in columns. It is a powerful tool to study the correlation or association between variables.

Analysis and interpretation of tables

Example. Table below is known as contingency table or cross tabulation. This table summarizes data of males and females in two categories, i.e., employed and unemployed. It shows data of total 47 respondents. It has two rows and two columns. To read it properly, we can start from row 1 which shows the number of employed male and females which are 20 and 10 respectively. Total column shows total of each category. For example, first row total shows total number of employed which are 30

Category	Male	Female	Total
Employed	20	10	30
Unemployed	5	12	17
Total	25	22	47

We can analyze above table to answer various questions, for example

How many males are there who are employed? (Look at the data point in first column and first row, answer is 20)

How many males are there in total data? Answer is 25

What percentage of males are unemployed? (as you can see there are total 25 males, out of which 5 are unemployed, look in column 1) so $5/25 \times 100 = 20\%$ males are unemployed

Practice question

1. How many people (males and females) are unemployed?
2. From all unemployed people, what percentage of them are male?
From all females, calculate what percentage of them are employed

Lesson 26

Population Debate 3: Population and Provision of Facilities**Topic 114: Population and provision of facilities**

Dear students, it is generally believed that it is difficult to provide basic facilities like health and education facilities, job opportunities etc. to larger population. Whether this believe is true or false we will learn through a dialogue between a pessimist and an optimist person. Here pessimist is a person who believe that it is difficult to provide facilities to larger population while optimist believes that it is easier to provide basic facilities to larger population. Let us see how they argue

Pessimist: Had we been lesser in number we could have provided education, health and job opportunities easily!

Optimist: you mean that providing basic facilities to larger population is difficult?

Pessimist: of course, look at my example, I am a graduate and looking for job but still unable to find because of so much competition among young people like me. That is the cost of larger population, we all are bearing

Optimist: Where you are searching for job?

Pessimist: in these days I am searching in Lahore, after getting my education from Punjab University

Optimist: by the way from where you belong to?

Pessimist: I belong to Pakpattan

Optimist: Oh, that is a great place. Why did not you get your education from Pakpattan and search your job there?

Pessimist: Oh, that is not a big city, total population is just 176,000 people and there is no such big university like GCU and Punjab University

Optimist: oh, I pray for your success

Lesson?

There are more chances of getting job, a better job in populated areas instead of small towns. You know why?

Larger population makes it possible to establish large business and industries in big cities. That is why, we always move from small towns and cities to big cities in search of better facilities and better jobs.

Lesson 27

Youth of Pakistan**Topic 115: Youth of Pakistan**

According to the National Human Development report, Pakistan currently has largest generation of young people ever in the history.

64 % of population is under 30 years

29 % is between 15-29 years (known as youth)

By 2050, there will be 51 million youth in Pakistan and Future of Pakistan would be in the hands of youth. Having young population presents both risk and opportunities. For example, Young people are generally more energetic, Mobile and flexible and play important role in bringing change in society. They are more receptive to new ideas and cultural change so can be a source of future economic and social development in a country.

Topic 116 to 119: Issues of youth

Dear students, young people like you are very important segment of society (in Pakistan, people from 15-29 years of age are considered as youth) they are future leaders and agents to change in society. We need to carefully understand their issues and requirements for coming life. Following are some of the issues young people generally face in their lives

1. Lack of educational facilities
2. Social barriers in getting education and doing job (especially for females in our society)
3. They are more concerned about their future jobs and life and feel financial pressure to meet their educational needs and to help their families
4. They often start their career early which may hamper their future growth in life. Poor level of education and skills keep them in low paying jobs for the rest of their careers.
5. They face higher unemployment rate as compared to experienced people
6. They are more likely to work for low paid jobs
7. In early stage, youth may involve in informal activity which may result in low productivity and wages in future
8. A substantial percentage of youth is neither enrolled nor in labor market

Topic 120: How to spend productive life

Dear students, I am writing here some of the habits of highly defective teens as described by Sean Covey in one of his bestselling books "The 7 habits of highly effective teens"

You may wonder, why habits of highly defective teens instead of Effective Teens? Because to highlight the importance of something we can present the other side of picture, it is a useful tool of learning.

Remember the purpose is to develop good habits and not the bad ones.

In the words of Sean Covey with little modifications

Habit 1: React

“Blame all your problems on your parents, your stupid teachers, .. Your lousy neighborhood, your friends, your government, or something or somebody else.

Be a victim. Take no responsibility of your life. Act like an animal, if you are hungry, eat.... If you feel like doing something you know is wrong, just do it.”

Habit 2: Begin with no end in mind

“don’t have a plan. Avoid goals at all costs. Why worry about the consequences of your actions? Live for the moment. Sleep around, get wasted, and enjoy, tomorrow we are going to die”

Habit 3: put first things last

“whatever is most important in your life, don’t do it until you have spent sufficient time watching reruns, talking endlessly on the phone, surfing the net. Always put off your homework until tomorrow.”

Habit 4: Think Win-Lose

“See life as a vicious competition. Do not let anyone succeed at anything because, remember if they win, you lose. If it looks like you are going to lose, however, make sure that others also lose”

Habit 5: Seek First to Talk, then pretend to listen

“You are born with a mouth, so use it. Make sure you talk a lot. Always express your side of the story first. Once you are sure everyone understands your views, then pretend to listen by nodding and saying “uh-huh.” Or if you really want their opinion, give it to them.”

Habit 6: Don’t cooperate

“be your own island. ... you are different from others so never cooperate. ...”

Habit 7: Wear yourself out

“Never think to improve yourself. Never study. Don’t learn anything new. Avoid exercise, and from heaven’s sake stay away from good books, nature or anything else that may inspire you”

Dear students “As you have seen the habits above are recipes for disaster. Yet many of us indulge in them.”

Then no wonder life would become according to your habits. Change your habits opposite to what is described above

It means

Be proactive: take responsibility of your life

- Begin with the end in mind: define your mission and goals in life
3. Put first thing first: do the most important thing first
 4. Think win-win
 5. Seek first to understand, then to be understood listen people sincerely
 6. Synergize: work together to achieve more
 7. Sharpen the saw: renew yourself regularly

Lesson 28**Population Policies****Topic 121 to 125: Population Policy**

Population policy is a set of measures taken by a government to modify the way its population is changing. It may be to promote large families or immigration to increase the size of population or To encourage small families to stabilize population growth. It may also include policies to promote women and child health and other related measures

Formulation of Population Policy

Population policy is formed first by setting the objectives, priorities about population's main variables. Then bey setting short- and long-term targets followed by strategies to achieve those targets

For example, goal may be to reduce population growth up to 1.2 percent or achieve replacement level fertility by 2020. Another goal may be to provide access to basic health facilities to pregnant women etc.

Main variables of population policy

Main policy variables include Population size and growth, Population age structure, Fertility and Health of children and women etc.

These variables are defined on the basis of government's view about a specific variable and formulation of population policy accordingly. For example, population growth rate Indicates how the Government perceives the rate of population growth in the country. A country may consider it too low, too high or satisfactory. On the basis of government view about population growth, a country may form a policy to raise, maintain or lower population growth.

World Population Policies Database and Reports

World population policies is a series of reports published by United Nations Population Division every year. It provides a comprehensive information about population policy situation and trends for all member countries of United Nations.

Topic 126 & 128: China's Population Policy and its Consequences

China adopted a One child policy in 1979, it was World's most extreme example of population policy. It set a limit to have only one child for all people, except few exceptions.

Provincial governments and local bodies were required to ensure implementation of policy through contraception, sterilization and abortion

According to different studies about 400 to 500 million births were prevented from 1970 to 2015 due to this policy

How it was imposed?

It was enforced through several mechanisms including

Financial Penalty: a huge fine was collected from the people who violated the policy. From 3 to 6 times of the last year annual income

Mandatory contraception and sterilization

According to New York Times, January 7, 2017, Women in China were required to have a contraceptive (IUD) surgically installed device after the birth of first child

Consequences of one child policy

This policy may result in following consequences according to various studies.

1. It will create an imbalance in sex ratio as most people prefer to have male child
2. China will face a problem of ageing future
3. One child obsession: many parents are obsessed of their one child as they have no other options in their life.
4. Violation of human rights, every human has a right to decide about such a vital decision of his or her life.

It was highly unnatural and against the freedom of choice which Allah has given to people.

Topic 129 & 130: Japan's population Policy

Japan's population Policy

Contrary to China's one child policy, Japan's policy is to increase population as it is facing very low fertility and issue of declining and ageing population.

Different policy measures like Angel Plan and One Plus Policy are adopted by Japan to increase its population. both policies aimed to have children an easier and attractive option Measures taken by Japan to promote fertility rate among women include:

- a) More Daycare Centers

- b) A payment of 280\$ per month per child
- c) Encouraging men to spend more time at home
- d) To encourage workers to use 100 percent of their paid annual leave as opposed to the current 47 percent.
- e) To halve the proportion of employees who work 60 hours per week or more from the current 11 percent

Lessons learned from China and Japan's Population Policies

We can learn that having less children may have very serious consequences in a society. When nations try to interfere in natural balance of anything, they create an imbalance which takes very long time to remove.

Lesson 29

Population Policy of Pakistan**Topic 131: Population Policy of Pakistan**

Main points of population policy according to official documents are given below:

“While Population Growth Rate (PGR) has declined from over 3 percent in previous decades to its current level of 2.1 percent per annum, Pakistan still has an unacceptably high rate of growth compared to other developing countries. Therefore, the Government of Pakistan is attaching the highest priority to the lowering of the population growth rate (PGR) from its current level to 1.9 percent per annum by the year 2004 and to reaching replacement level of fertility by the year 2020”.

Main goals of population Policy of Pakistan

- Attain a reduction in fertility through improvement in access and quality of reproductive health services.
- Reduce population momentum through a delay in the first birth, changing spacing patterns and reduction in family size desires. “
- Reduce population growth rate from 1.9 per cent per annum in 2004 to 1.3 percent per annum by the year 2020.

Topic 132 & 133: Critical Analysis of Population Policy

According to Planning Commission, Annual Plan 2017-18

There is a strong negative relationship between population growth and economic development ...

Policy makers also believe that

Larger population is the reason of poverty

It creates pressure of resources

All developed countries have controlled their population and attain replacement level fertility, (we also need to follow them as population stabilization is the key factor for development)

Dear students, we need to see which of the assumptions is true?

We can analyze them one by one with the help of historical facts and figures as we have discussed in video lectures that generally, it is believe that along with increase in

population, poverty increases while resources decline. However, data on all leading websites of the world shows that along with increase in population, poverty has reduced, and we have much more resources as compared to past generations. Moreover, most of the countries who in the past tried to control their population are now trapped in low fertility and ageing population. So being a young country, we should not blindly follow wrong assumptions and footsteps of ageing societies, otherwise we will also face the declining labor force and increase share of ageing population in future. To see the data about poverty, population and resources you can visit the website of Our World in Data which is very authentic source of data and being used by world leading universities like Harvard, Oxford etc. to teach their students.

Lesson 30

Ageing and its Economic Consequences**Topic 134 to 138: Ageing and its Socio-economic Consequences.**

Ageing is a process of increase in the median age of a country due to declining fertility and rising life expectancy. It is one of the major demographic change that is taking place in most of the countries. It means that population of a country is getting older and share of ageing population is increasing

According to United Nations, “Our world is ageing and almost every country is experiencing the growth in the proportion of older population. This process of ageing is inevitable and almost irreversible. Ageing is considered as one of the most significant social transformation of 21st century”.

Drivers of ageing

Following are factors that are contributing the process of ageing in many countries

1. Depressed fertility in many countries
2. Population control policies
3. Improved life expectancy and health facilities

Social and Economic Consequences of Ageing

1. Loneliness is increasing: “In Afghanistan, Tajikistan and Pakistan, more than 90 per cent of persons aged 60 or over co-resided with their children, but such arrangements were comparatively rare in Germany and the Netherlands, where less than 10 per cent of older persons co-resided with a child.”
2. Hopelessness will prevail in ageing societies without young children in their families.
3. Aged people’s behaviors are different from young, their obligations and expectations are changed.
4. Aged people are more stereotype, they are politically or socially more conservative than young people
5. It will affect the demand for housing, transportation and social protection systems like there will be a huge requirements for pension funds etc.

- It will affect family structure and intergenerational relationships between families, as childless societies have weak family bonding
7. Labor and financial markets will be affected as less labor will be available due to ageing population.

Lesson 31

Population Debate 4

Fear of sharing the resources is a base of population control policies

Dear students, having more and more resources is the desire of humans, A man by its nature afraid of sharing the resources he processes. This thinking is the base of population control policies

But if we look at nature which offers us so many signs to ponder. But how many of signs we ignore. These signs are the Aayat of Allah. A poet, Bruce Barton has described two types of people beautifully in a poem 'There are Two Seas in Palestine' that we can relate to our topic of resource depletion and fear of losing the resources by sharing with other people. For explanation and lessons learned from the poem you can watch video lecture.

There are Two Seas in Palestine

here are two seas in Palestine. One is fresh, and fish are in it. Splashes of green adorn its banks. Trees spread their branches over it and stretch out their thirsty roots to sip of its healing waters.

...The River Jordan makes this sea with sparkling water from the hills. So it laughs in the sunshine. And men build their houses near to it, and birds their nests; and every kind of life is happier because it is there.

The River Jordan flows on south into another sea.

Here is no splash of fish, no fluttering leaf, no song of birds, no children's laughter. Travellers choose another route, unless on urgent business. The air hangs heavy above its water, and neither man nor beast nor fowl will drink.

What makes this mighty difference in these neighbour seas? Not the River Jordan.

It empties the same good water into both. Not the soil in which they lie; nor the country round about.

This is the difference. The Sea of Galilee receives but does not keep the Jordan. For every drop that flows into it, another drop flows out. The giving and receiving go on in equal measure.

The other sea is shrewder, hoarding its income jealously. It will not be tempted into any generous impulse. Every drop it gets, it keeps.

The Sea of Galilee gives and lives. This other sea gives nothing. It is named the Dead.

There are two kinds of people in this world. There are two seas in Palestine.

Lesson 32

Poverty and Its Causes**Topic 140-146: Poverty**

Poverty can be defined as Lack of income or resources. It may also include social and political elements which are important in human's lives.

Poverty is generally said to exist when people lack resources to fulfill their minimum basic needs.

Measurement of Poverty

Poverty is measured through different methods, most important of them include Poverty line: A minimum amount of income below which a person is considered poor. It is 1.25\$ per person per day in Pakistan and in some countries, it is 1.5 to 1.9 \$ per day per person

Caloric based Poverty Line

In Pakistan, 2350 calories per day per adult is the minimum standard set by government as a measure of caloric based poverty line.

Head Count Ratio

It is the proportion of population which is below poverty line

According to World Bank, almost 29 percent of people of Pakistan are living below poverty line, this rate has reduced from 64% in 2002

Topic 142: Dimensions of Poverty**Dimensions of Poverty**

Dimensions of poverty include lot of things which are important in one's life.

Generally following things are considered necessary in household's status and lack of these facilities represents different dimensions of poverty.

1. Access to health facilities
2. Child school attendance
3. Type of Cooking fuel
4. Assets
5. Sanitation conditions
6. Land and livestock
7. Educational quality

Full immunization

9. Ante natal care

10. Improved walls in the house

Causes of Poverty.

There are economic and social causes of poverty, however, many people are poor because of their personal attitude towards life.

Economic causes include

- Slow economic growth
- Inflation
- Unemployment
- Debt and interest based system of economy

Social causes include

- Corruption & Bribery
- Lack of social security system
- Lack of education
- Limited access to credit
- Health issues
- Social exclusion of minorities, certain groups
- Poor judicial system
- Caste system
- Social spending
- War and violence

Solution of Poverty

Topic 147 to 152: Poverty Solutions

To reduce poverty there are few things we need to do

1. Increase resources/income
2. Reduce cost of living
3. Ensure justice in society
4. Collaboration of society
5. Encourage Small businesses
6. Grow vegetables
7. Develop a culture of domestic animals

Case studies of Poverty Reduction Organizations.

Dear students, two very famous organizations which are working to help poor people are Akhuwat Foundation in Pakistan and Grameen Bank in Bangladesh. We can learn great lessons from those organizations working principles and success stories.

A Case Study of Akhuwat Foundation

An amazing example of collaboration, commitment and Barakh. Akhuwat Foundation was founded by Dr. Amjad Saqib in 2001. It is the Largest interest free microfinance institute in the world

Basic philosophy of Akhuwat Foundation

Akhuwat is based on the philosophy of Muwakhat e Madina. A pact between Privileged and Unprivileged

Core Principles of Akhuwat foundation are as follows

Interest free loans

Akhuwat provides loans without interest and without any collateral guarantee and considers interest as the mean of injustice in society

Use of religious places

Instead of advancing loans through traditional ways, Akhuwat Foundation use religious places like mosque, temples and churches, as centers for loan disbursements and

avenues for community participation. It creates a sense of accountability, responsibility and goodwill among the community.

Borrowers into donors

Akhuwat helps its borrowers to become donors and help other people once they start earning money through their business.

No Discrimination

Akhuwat provides loan to people irrespective of their caste, color, gender, or religion.

A Case Study of Grameen Bank

Grameen Bank in Bangladesh was established by Dr. Muhammad Yunis, A professor of Economics. Grameen Bank provides loans to poor people in Bangladesh without any guarantee.

Principles of Grameen Bank

Dear students, Grameen Bank teach and follow sixteen principles while advancing loans to poor people. These principles are designed to teach borrowers to come out of poverty. Some of their principles are given below

1. We shall follow and advance the four principles of Discipline, Unity, Courage, and Hard work in all walks of our lives.
2. We shall bring prosperity to our families.
3. We shall repair our homes and work towards constructing new houses.
4. We shall grow vegetables all year round. We shall eat plenty of them and sell the surplus.
5. We shall educate our children and ensure that they can earn to pay for their education.
6. We shall keep our children and our environment clean.
7. We shall not take any dowry at our sons' weddings, nor shall we give any dowry at our daughter's wedding. We shall not practice child marriage.
8. We shall not inflict any injustice on anyone, nor shall we allow anyone to do so.
9. We shall collectively undertake bigger investments for higher incomes.
10. We shall always be ready to help each other. If anyone is experiencing difficulty, we shall all help him or her.
11. If we come to know of any breach of discipline in any center, we shall all go there and help restore discipline.
12. We shall take part in all social activities collectively.

Lesson 34

Population and Macroeconomic Management**Topic 153 to 156: Rising Population Demand and Inflation**

We know that along with increase in population, demand for goods and services rises, so what is the best way to control inflation?

As we know there are two types of inflation, one is demand pull inflation and other is cost push inflation.

In demand pull inflation, prices rise due to increase in demand of goods and services, to control this we should increase supply of goods and services and encourage new investment and competition in the market. It will improve supply and excess demand will be removed. It will also increase employment and income of people.

To reduce cost push inflation we need to control prices of inputs, for example, to reduce the price of food items like wheat, sugar we should give subsidies on seeds, diesel, electricity, fertilizers etc. it will reduce the cost of production and price of outputs will reduce eventually. For detail discussions, kindly watch video lectures.

Similarly, increase in price of fuel and electricity/gas can affect the price of almost everything as energy is the basic input and transportation is always required for almost all the commodities. Decrease in the price of petrol and electricity will affect economic activities, employment positively and overall price level negatively.

Dear students remember that Increase in production is the ultimate solution of inflation, unemployment, poverty, growth in economic activities, government revenue generation and decrease in production and demand is the root cause of all above issues.

Lesson 35**Money supply and Needs of Population****Topics 157 to 162**

Generally, it is believed that increase in money supply can create inflation, however, money can be printed to develop infrastructure like educational and health facilities and to promote business activities. It may increase inflation in short run but in long run, this increase in inflation will be compensated by increase in the production of goods and services. Moreover, more educated and healthy people on whom printed money was used will improve overall productivity and use of technology in the economy which will result in decrease in prices. Idea is money should not be printed by keeping gold and other similar reserves only, it should be printed keeping in mind the need of population and industry. Dear students remember that humans in general are more precious resource than gold or silver which many people do not understand.

Policy makers need to come out this bookish notion of controlling inflation through tight monetary policy. The ultimate solution of inflation is always increase in supply and competition

Remember, Prices of electricity, education, health care etc. in Pakistan are increasing due to shortage or demand supply gap and not due to excess supply of money.

People of Pakistan not using things like education and health care excessively, these are the things they have been deprived of. Provide them even if you need to print money, it will not increase the prices of food items like wheat or most of the basic necessities in Consumer Price Index which are generally less elastic.

In short, we should remove shortage of goods and services to control inflation instead of depriving people and this can be achieved by easy monetary policy.

Lesson 36

Urbanization and Housing**Topic 163 and 164: Urbanization****Urbanization**

A process of increase in the proportion of population living in urban areas or the process of people moving to cities or densely populated areas. People generally move from rural to urban areas in search of better facilities.

Issues of Urbanization**Urbanization may result in following.**

- Overcrowded cities
- Mismanagement
- Concentration of power
- Burden on existing facilities

Topic 165 to 167: Housing in Pakistan**Facts and Figures**

Annual demand of new housing = 70,000 per year

Supply is about half of the demand

Shortage = about 350,000

Overall housing deficits = 10 million units

House financing in Pakistan is just 0.5 percent of GDP which is very low as compared to up to 20 % in some countries and 3 % in Bangladesh

Main issues of house financing

Rising prices

Lack of financing products

Unavailability of formal financial services

Urban land monopolies

High registration cost

Land record not maintained properly

Uncertainty of title deeds

Solution of overcrowding and housing in Pakistan

Construction of new cities instead of expanding an old one is the best possible solution of overcrowding of cities.

We can provide housing to the people of Pakistan with the help of Diminishing Musharakah in which bank and client who needs house buy house jointly, client lives in house and pay the rent according to the share of bank, periodically, client also buys the portion of house on installments and eventually becomes the sole owner of the house.

Lesson 37

Race and Ethnicity**Topics: 168 to 170**

Data about Race, ethnicity, religious group and language group are often used for analyses of population groups and administration of government programs. Definitions of race and ethnicity vary from country to country and over time.

Race

According to PRB's handbook, "race basically depends upon physical characteristics like color of skin, features etc.

- Black
- White
- Mongolian etc.

Ethnicity

"Ethnicity usually is defined by cultural practices, language, and traditions—not by biological or physical differences."

Source: PRB

Ethnicity examples

- Sindhis
- Balochi
- Chitrali
- Pashtoon
- Punjabi etc.

Cost of Racial and Ethnic Inequalities

Dear students, racism or conflicts on the basis of ethnicity affect population welfare.

A poem "The Cold Within" by James Patrick Kinney can explain the cost well.

Six humans trapped by happenstance

In bleak and bitter cold.

Each one possessed a stick of wood

Or so the story's told

*Their dying fire in need of logs
The first man held his back
For of the faces round the fire
He noticed one was black
The next man looking 'cross the way
Saw one not of his church
And couldn't bring himself to give
The fire his stick of birch.
The third one sat in tattered clothes.
He gave his coat a hitch.
Why should his log be put to use
To warm the idle rich?
The rich man just sat back and thought
Of the wealth he had in store
And how to keep what he had earned
From the lazy shiftless poor
The black man's face bespoke revenge
As the fire passed from his sight.
For all he saw in his stick of wood
Was a chance to spite the white.
The last man of this forlorn group
Did nought except for gain.
Giving only to those who gave
Was how he played the game.
Their logs held tight in death's still hands
Was proof of human sin.
They didn't die from the cold without
They died from the cold within.*

Measures to Solve the conflicts on the basis of racism and ethnicity

Racial and ethnic conflicts create lot of trouble and division in a society, feeling of superiority by one group on the basis of color, cast or religion often creates haters and restlessness in a society. Islam clearly guides us in this regard and consider every human being child of Adam (AS) and honorable on the basis of good deeds and not on the basis of color or casts. Some of the references from Quran and Ahadith are given below

O mankind! We have created you from a single male and female and made you into nations and tribes so that you may know each other. The most honorable of you in the sight of Allah are surely the righteous." (Al-Hujurat: 13)

Verily we have honored the Children of Adam. We carry them on the land and the sea, and have made provision of good things for them, and have preferred them above many of those whom We created with a marked preferment." (Al-Isra': 70)

Ahadith of the Prophet Muhammad (PBUH) teach us in the following ways.

"There is no superiority for an Arab over a non-Arab, nor for a non-Arab over an Arab. Neither is the white superior over the black, nor is the black superior over the white -- except by piety."

"O people! You are all to Adam and Adam was made of dust. No Arab is to be preferred over a non-Arab except by virtue of his piety."

Abu Huraira reported: The Messenger of Allah, peace and blessings be upon him, said, "Whoever rejects lawful obedience to the leader and divides the community and dies in this state will have died upon ignorance."

"Whoever fights under the banner of one who is blind, raging for the sake of tribalism, or calling to tribalism, or supporting tribalism, and is killed in this state will have died upon ignorance. Whoever rebels against my nation, striking the righteous and wicked alike and sparing not even the believers and does not fulfill the pledge of security, then he has nothing to do with me and I have nothing to do with him."

Source: Şaḥīḥ Muslim 1848

Lesson 38**Population and Society****Topic 171 to 174**

Dear student societies grow by practicing good social values like honesty, unity and cooperating instead of competing with each other. No society ever grow and developed in the history of world without acquiring latest knowledge and techniques. When people in a society practice good deeds, it creates trickle down impact and others also follow them. Same is the case with bad deeds so we should avoid practicing bad deeds like backbiting, unfair dealings etc.

Social issues in Pakistan

Unfortunately, people in our society have some social issues which we need to be addressed as these bad things have spoiled the social fabric of our society and we often waste our energies in useless talks and activities. Some of the social issues we face in our society are as follows.

- Nepotism
- Extravagant spending
- Dowry
- Legg pulling
- Judging of people
- Discrimination
- Wastage of time
- Jealousy
- Backbiting

Role of Ethical Values in Social Development

Ethical values play important role in social development

These ethical values may not be enforceable by law but create a sense of brotherhood and affection in society. Some of ethical values are given below which can play a positive role in the welfare of people in a society.

- Like for your brother what you like for yourself and dislike for your brother what dislike for yourself

- Double standards are the root cause of many evils in society
- Treat everyone with dignity, as you like to be treated your selves.
- If two persons are bargaining with each other, third person should not interfere until they come to a decision.
- He who earns his livelihood with honest labor is the friend of Allah
- *Whoever takes a false oath in order to grab the property of others, then Allah will be angry with him when he will meet him.*
- *The swearing (by the seller) may persuade the buyer to purchase the goods but that will be deprived of Allah's blessing.*
- *May Allah mercy be on him who is lenient in his buying, selling, and in demanding back his money*

Social Values and Human Development: A Case of Japan

Japanese nation is considered very disciplined and socially developed. They are very hardworking people and try their best in every aspect of life. It is often said that if you spend a month in Japan, you will not be a same person again

Some of Key values of Japanese people

1. Respect of others
2. Minimalist approach: They believe in minimalist approach which means they value meaningful experiences over meaningless stuff. They keep only useful and necessary things in their house instead of consuming and maintaining useless things
3. Take pleasure in simple things
4. Never waste time, money or even waste
5. Always in time
6. No one get late in Japan; average departure delay of trains is less than 20 second
7. Eat well and walk often. One of the healthiest nations in the world

Lesson 39

Human Development and Its Determinants**Topic: 175 to 180**

According to the website of UNDP

“Human development is about expanding the richness of human life, rather than simply the richness of the economy in which human beings live.”

According to Human Development approach

Welfare of society increases when our Focus is on People and we provide them more opportunities and choices. In this way development of people will lead to economic growth

Measuring Human Development

Human development is measured through different indices, some important human development indices are given below.

Human Development Index (HDI)

Gender Development Index (GDI)

Gender Inequality Index

Multidimensional Poverty Index (MPI)

Human Development Index and its Dimensions

Human Development Index has three dimensions, i.e, long and healthy life, knowledge and decent standard of living. Each dimension has its indicators which are described in following table.

(HDI)	Dimensions	Long and Health Life	Knowledge	A decent standard of living
	Indicators	Life expectancy at birth	Expected years of schooling Mean years of schooling	GNI Per capita (PPP\$)

	Dimension Index	Life expectancy index	Education index	GNI Index
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Gender Development Index (GDI)

Dimensions include long and health life for male and female, knowledge, and decent standard of living for both male and female.

Lesson 40

Debate About Population & Resources**Topics: 181 to 187**

Dear students, Since the time immemorial humans have concerned about the limited resources. They believe that resources are limited and soon they will run out. This means scarcity of resources due to population pressure is the main cause of concern for many economists and demographers. Generally, it is believed that resources are scarce and increase in population means, its scarcity will increase over the time. In this debate we will see the view point of Julian Simon who presented his own version of theory of scarcity

Theory of Scarcity of Resources

According to Julian Simon “Resources may be physically limited but Economically unlimited, Scarcity is only a short-run phenomenon and in long run people come up with a solution which ultimately solve the problem. He believed that whenever, humans face a problem of scarcity, many people try to solve the issue, some of them fail, but ultimately, they succeed and they attain an even better position than if the problem would not have arrived. They always invent new techniques like recycling and find new alternates.

Population and Energy Resources: A Case Study of Oil

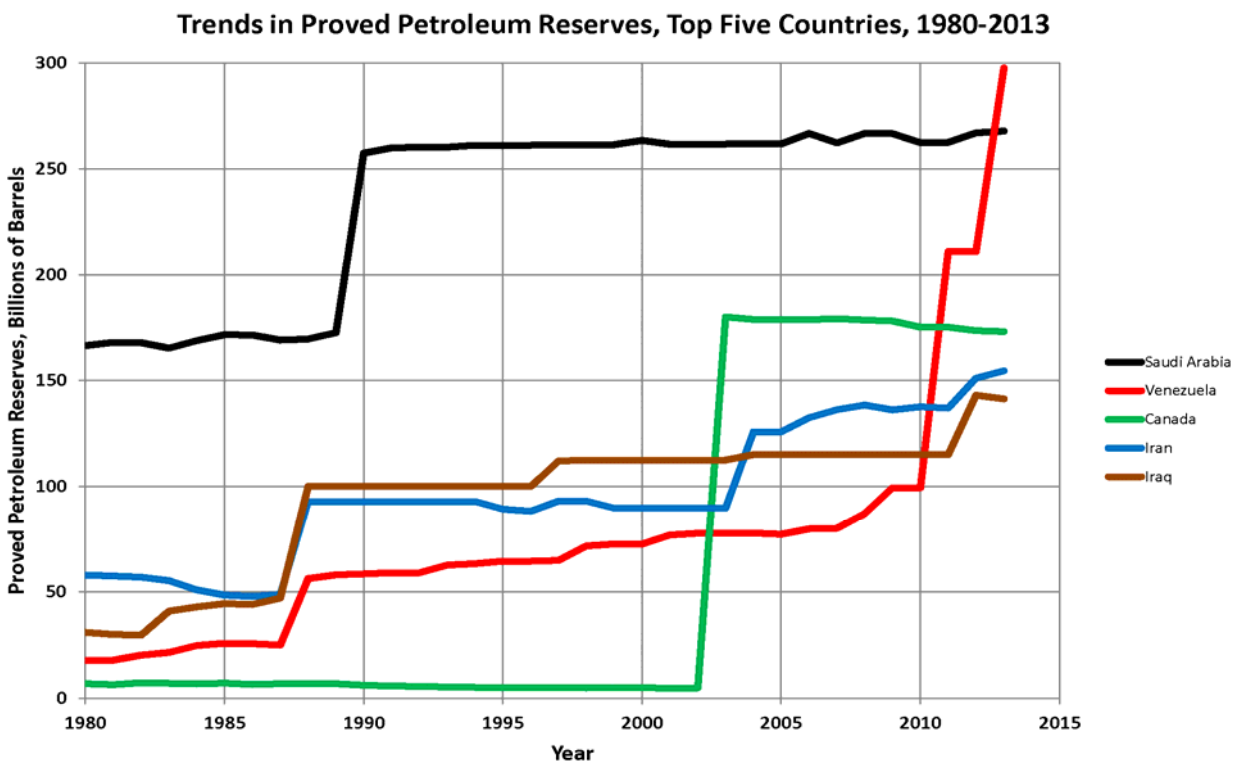
Oil is still one of the precious commodities. Since its discovery humans are concerned about it What will happen when the oil of the world will run out?

Below is a history of wrong predictions (mentioned by Julian Simon in his book) and pessimist mind set which believe that resources of oil will soon run out, however, their predictions always went wrong.

- *In 1885, U.S, Geological survey concluded: “little or no chance for oil in California”*
- *In 1891, U.S Geological survey once again concluded that there is no chance of oil in Texas and Kansas.*
- *1914, U.S bureau of mines: Total future production limit of 5.7 billion barrels, perhaps ten-year supply*

- In 1920, the director of U.S Geological Survey claimed that peaked oil production had almost been reached.
- 1939, department of Interior; Reserve to last only thirteen years.
- In 1949, the U.S secretary of the Interior claimed that the end of the U.S. oil supply was almost in sight.
- 1951, Department of Interior, oil and gas division: Reserve to last thirteen years.”

Despite all of these estimates of proven reserves, at the mid of year 2019, there is still oil available in the United States and estimates of the quantity remaining are larger than ever. Following figure shows that despite ever increasing use of oil, trends in proven petroleum reserves are increasing.



Source: Wikipedia

Population & its effects on Resources & Living Standard

Julian Simon has explained the impact of population on resources and living standard of people. He believed that the standard of living has risen along with the size of the world's population since the beginning of recorded time. There is no convincing economic reason why these trends toward a better life should not continue indefinitely.

He further explained his point of view regarding the rising standard of living and wrote that "Based on first-hand evidence of your own senses – the improved health and later ages at which acquaintances die nowadays as compared with the past; the material goods that we now possess; the speed at which information, entertainment, and we ourselves move freely throughout the world - it seems to me that a person must be literally deaf and blind not to perceive that humanity is in a much better state than ever before."

Standing Room Only: The Demographic Facts

We are taught that earth will soon be filled with too many people and there will be no room left on earth. However, reality is world is so vast that less than 15 people live per square kilometer of the area in the world. In most of the country's population density is very low compare to densely populated cities. Overcrowding is the issue of urban planning and mismanagement and not the lack of land.

Lesson 41**Population and its Effects****Topics: 188 to 195**

Size of Population can affect many things in our life, but we will discuss following factors which are explained by Julian Simon in his book the Ultimate Resource to break the myths about population increase and its impact on environment and our living standard.

1. Environmental conditions
2. Stock of capita
3. Technology and productivity
4. Knowledge creation
5. Resources for future generation

Relationship between population growth and environment

Generally, it is believed that large population pollutes environment. However, reality is different, poor environment or pollution does not depend upon the number of people, rather on the attitude of people and how they live and maintain their environment. We have seen that in many villages with little population we often find filthy water, poor sanitary conditions etc. while in big cities where management is effective, despite large population we find very clean environment. To see the data about air pollution, ozone depletion and other environmental factor please visit the website of Our World in Data (<https://ourworldindata.org/air-pollution>). You will see that despite increase in population, number of deaths due to pollution is decreasing, similar will be the indicators which deny the myths about population and its impact on environment.

Population and Stock of Capital

According to the book of The Ultimate Resource 2 “Population growth has resulted in the social infrastructure. Development of transportation and communication system. Population density, system of transporting goods, people and information influence each other’s.

Dense population make transportation more necessary and more economical. Having twice as many people in village implies that twice as many people will use a wagon path if it is built. And twice as many hands can contribute to building the path”

Larger population and higher income level increase the demand for new capital goods to be invented.... “and developed. Larger population also increases the supply of new inventors, both of which lead to more efficient equipment.

Population and Stock of Knowledge

According to the Julian Simon “The most important economic effect of population size and growth is the contribution of additional people to our stock of useful knowledge.... And this contribution is great enough in the long run to overcome all the cost of population growth. We now have in our hands the knowledge to provide energy at constant or declining costs forever, ...and know-how to produce food in almost inexhaustible quantities...”

Population and its effects on productivity

Greater the population, greater will be the competition and greater will the impact on productivity

Population and Knowledge Creation

According to Julian Simon “Larger population influences the production of knowledge through demand and supply mechanism

On the supply side,

Larger population means larger amount of knowledge and more new ideas. Many scientific theories bear this proposition

On the demand side, more people and higher income cause problems of increased demand consumption of resources in short run which leads to increase in prices...

higher prices present opportunities for business to make money for inventors to gain satisfaction and glory with new inventions. Both try to search for solutions

many fails, at the cost of themselves. But in free society, solutions are eventually found,

In long run new developments leave us better off than if the problem had not arisen...prices end up lower than before the increase scarcity occurred. This applies to metals, energy, physical infrastructure and all other goods.”

Population and future generations

Dear students, how increasing population affects future generations?

Popular believe is Resources will run out Nothing will be left, living standard may fall.

What will happen to you and me will happen to future generations

you may not have in this young age, your personal car

A good job

Personal house and all other stuff you desire to have

But we all hope that in near or far future we will have most of things eventually

Individually we think that we will be better off in terms of education, life facilities, bank balance

Collectively we believe that we will be worst off in future! Is this not a clear contradiction?

Reality is every coming generation is having more resources as compared to past generation and there in no convincing evidence that this trend will not continue in future.

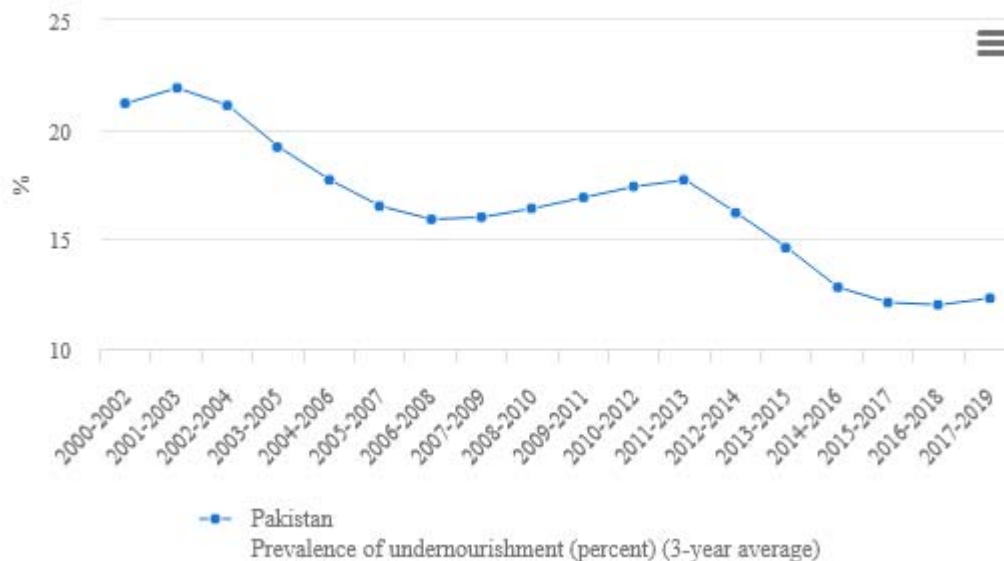
Lecture 42

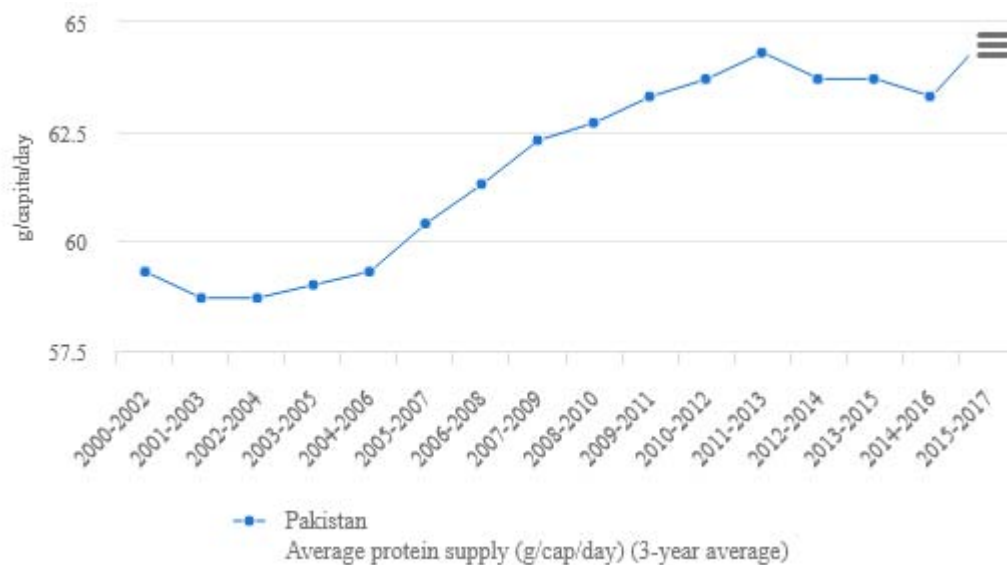
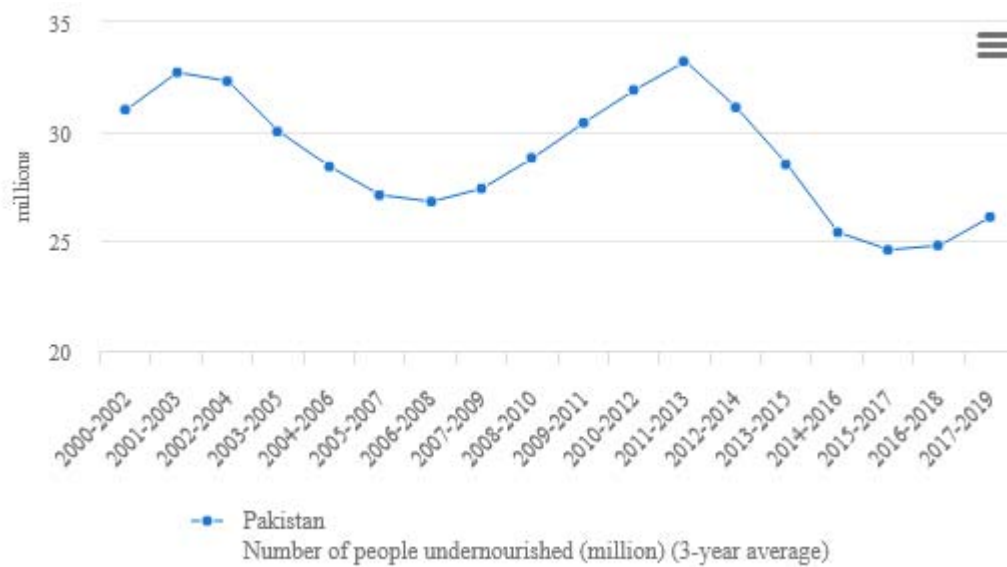
Population and Food Resources

Topic 196 to 202

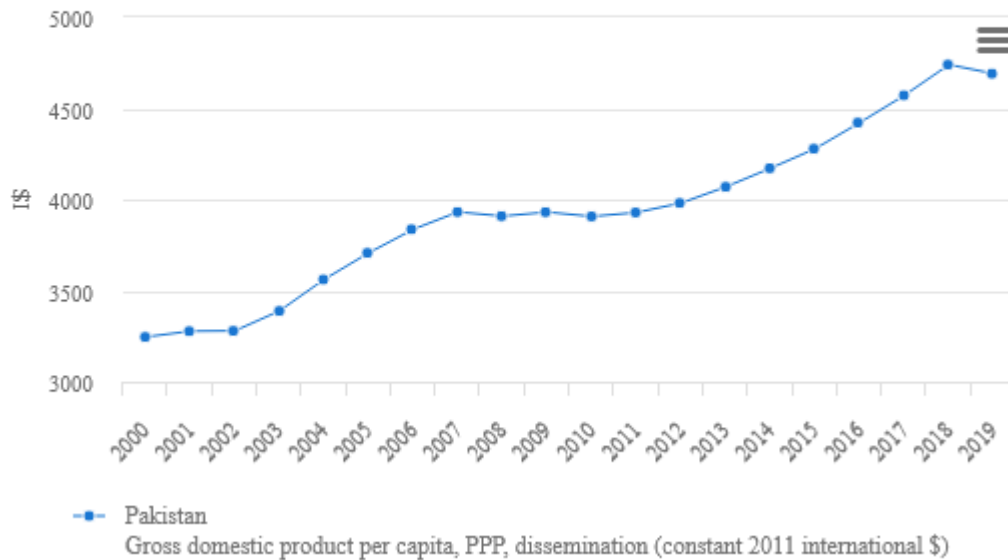
Population & Food Availability

To analyze the situation of food availability, we need to analyze data of food production and consumption. For that purpose, we can use the website of Food and Agriculture Organization of United Nations. You can visualize data about production, Food balance, food security, food supply, food prices and many other indicators. Following are some indicators related to food situation in Pakistan.



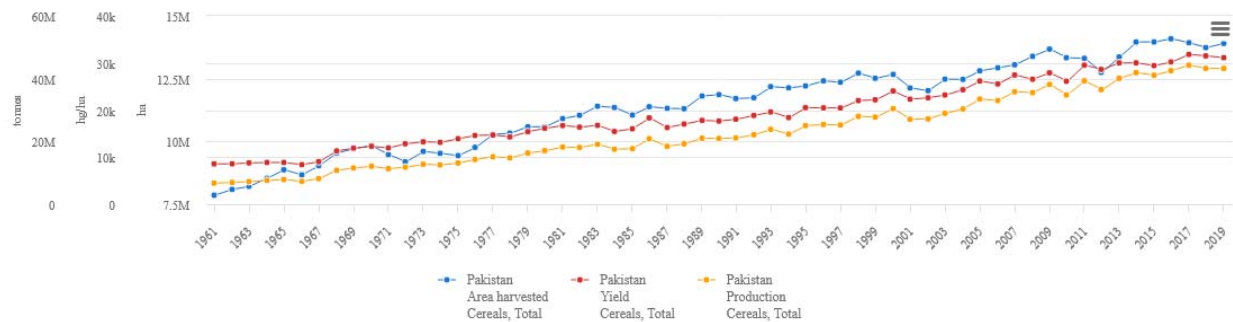


Gross domestic product per capita, PPP (constant 2011 international \$)



Cereals, total production

1961 - 2019



You can see that in most of the indicators, situation of food production and per capita availability is improving in Pakistan.

Do People Die of Famines?

Generally, people believe that the cause of famines are the lack of food availability. However, according to Amartya Sen, there has never been a famine in functional democracy whatever population growth is. According to the proposed theory, famines are due to an inability of a person to exchange his entitlements rather than to food unavailability

Or in other words, people don't die due to lack of food but they die due to their inability to get their rights.

Lecture 43

Beyond the Data**Topics: 203 to 207**

Dear students, being students of economics, we need to develop higher order thinking and ready to accept the truth even if it is against popular believe. We will study and refresh some of the concepts of population economics with the help of certain questions.

For example

What is the subject of economics? What does it teach to consumers, producers and government policy makers?

After studying this course, are you people able to solve the problems faced by people of Pakistan? Are you able to solve your economic and social problems?

So let start by asking some fundamental questions

why we study population economics?

We study population economics to

1. understand the relationship between population and economics.
2. solve the economic problems of population.
3. maximize the welfare of population.
4. optimally use the resources of country for the welfare of people
5. make population productive and efficient.

What is the ultimate purpose of Economics?

According to many economists, Ultimate Purpose of Economics is to

Increase our resources, especially money so we can fulfil our desires.

Dear students, from here we need to ask more questions to improve our skills of higher order thinking. Our next question should be

Why we need money?

We need money for most of the things like food, clothing, shelter, transportation etc.

Can you generate some other questions like above?

Why we need food?

- To satisfy our hunger
- To enjoy and getting satisfaction

Which one is more important? Money or Food?

Make a choice!

Of course, Food, we cannot live without food

It means getting food is higher objective than money as we cannot eat money

Money is a mean to achieve something but not the actual goal

But we have made it an actual goal

Our next question can be

Why we need clothing?

It is a necessity of life

It covers us, protects us and make us beautiful and attractive

Again ask, which one is more important?

Money or Clothes?

Clothes, as we cannot wear currency notes with some coins hanging on our dress of currency notes

It means to have clothes is higher objective than having money

How many dresses we need to cover ourselves, to make us look beautiful or attractive?

For some people, Many, as many as we could avoid to wear the same dress in front of same audience twice

If this is the situation, then economics have no solution

Dear students, have you noticed or figured out the highest purpose of all

Of course, it is not Money, nor Goods and services, rather highest purpose is to increase in satisfaction/utility and peace of mind. However, we often run after lower objective (money) that we forget all other things in life

Humanizing the Economics

What we need to do is to humanize economics, by humanizing, we mean that we should maximize our profit but not at the cost of others. We should pay labors little more than what they deserve so they could also enjoy benefits which overall business gains. In this way, they will be more loyal and satisfy.

How believes are made?

Dear students, there are two types of visions

- Negative or pessimists
- Positive or optimists

It all depends how you develop your first impression and how you perceive things

Same thing looks ugly to someone and is beautiful for someone else

A bicycle may be inferior to one and superior to another

When you take things positively, everything starts changing in a positive direction

When you take things negatively you will find no value in them

Similar is the case with believes.

If you believe the people around, you are precious you will start enjoying their company.

If you see them annoying, you will get what you are looking for

Someone rightly said.

“People are as much happy as they want to be.”

Lesson 44**Some Values Relevant to Population Policy****Topics: 208-216**

Julian Simon in his book highlights some of the values related to population policy

According to him there are two approaches

“Should we address ourselves only to the demographic welfare of our particular countries or ethnic or religious groups or should we take the cosmopolitan view That all human beings welfare matters to us?

Those who have a strong value for the strength and persistence of their own group often believe that is relative strength that matters, and therefore,, they prefer that other groups not grow or even decline in size, along with the increase in their own group.”

What we should value?

We should believe that “the lives of people of other countries, ethnicities, and religions matter to us,. We should take pride and pleasure in human race as a whole as well as in own group.”

The value of a poor person's life

Simon mentioned in his book that “Some have written that lives of the very poor are so miserable that better economic policy should be to decrease their births”

It means that very poor people's lives are not worth living...

Simon criticized Paul Ehrlich in following words. “He could not see people laughing, loving or being tender to their children, caring to their families and so many other good things in poor people..”

The born and the Unborn's value of life

No body denies the value of born 's life. Value of any of their child, good or bad. All are valuable in terms of joy, happiness, satisfaction, and love we feel for each other....

Is this not strange that when we don't have someone in life, among our children or siblings, we may think that " buchy do he achay" and every time our next baby (third, fourth or any) generally becomes the source of highest pleasure and coolness of eyes...

The Value of Per Capita Income in Short run

According to simple arithmetic, other things remaining the same, decrease in the size of total population will lead to increase in per capita income. However, one cannot sure that it will not lead to overall decrease in total GDP

We know that national income equation $Y = C + I + G = \text{GDP}$

While Per capita Income = $\text{GDP} / \text{Total Population}$

How Decrease in total population will affect C, I and G? and how it will affect overall GDP and eventually Per Capital Income? Of course, decrease in population will decrease C, I and G which will leads to decrease in overall demand and income of country, less the GDP less will be the per capita income.

On the other hand, increase in population will lead to increase in C, I and G which may eventually lead to increase in per capital income in long run

History also proofs that; we can check the data of per capita income for all countries on website of Our World in Data to see that it is increasing despite increase in population.

Value of Truth & The Ultimate Resource

Dear students, after going through different indicators and analyzing current and past trends in population and resources we need to see that

- Raw material and energy are getting less or more scarce?
- The world food supply is improving or deteriorating?
- pollution in developed countries is decreasing or increasing?

- Fewer or more people are dying in young age in these days compare to past?

What all these trends show?

All trends show that raw material and energy resources real prices are decreasing, world food supply is increasing, population in developed countries is getting aged and decreasing in many countries, very few children die in early ages as compared to past. This all shows that we are in much better position now compared to past despite increase in population.

We also need to see Which of the catastrophes in food supply and famine that were forecast by the doomsayers have occurred? None

Are people of the world eating better or more or less? Better and more

How the quantities of knowledge people obtain all over the world are increasing these days? Increasing at a very high rate

Is not the case that every child parent have and every sibling in your house is the most precious things you can have? Of course, one of the most precious things in life.

Is it not true that economic activities are greater in largely populated areas? Of course

Have we not seen that world in generally is a sparsely populated? Yes, it is

Is it not true that most populated countries are also more powerful in economic or political terms? Yes, they are

Have you not seen the women in villages are generally having more children and are healthier than women in cities? Yes, they are

Where it is easier to find job, in big city like Lahore or Karachi or in a small town or city with few thousand people? In big cities it is easier to find job

Is it not true that Allah has asked to increase the numbers in major books and growing in numbers Is considered as blessing, yes, we have learned that?

Is it not true that killing of children due to fear of poverty is mentioned along with shirk in Quran? Yes, it is

Have we ever thought about the teachings of Prophet (PBUT) about the number of children and people around us? He Prophet (PBUH) encouraged us to increase our numbers

Is Allah, the Lord of the world not The Owner and Creator of All Resources, with unlimited powers. No doubt He is

Is Allah not the Rabb ul Aalameen? And the Ultimate Resource? Of course, He is

Lessons from History

What lessons we can learn from history about population growth and economic development?

Throughout the history, population growth was very slow till mid of 18th century.

Human population faced lots of challenges to survive.

Life expectancy was low, birth and death rate were very high.

Many children die at an early age before the invent of vaccine.

As we progressed new methods of cultivation, industrial revolution and advancement in medical field helped human race to grow rapidly.

It was the period when both economic and demographic progress started to happen in the world.

In fact, it was the victory of humans over long epidemics and very high death rate.

In last two centuries, both populations increase, and economic development happens simultaneously.

However, speed in economic development is much faster than the speed of demographic change which resulted in unprecedented standard of living.

Throughout the recent history, almost every coming generation is having more resources as compared to past generations ...eventually the problem we faced vanished and humanity attains a much better state of life which otherwise would not have possible if we don't face problem.

Throughout the history, humans are afraid of depletion of resources.

Other than death and process of ageing, humans almost always succeeded to overcome almost every disease they faced.

There never remain the issue of scarcity of any resource in long run, scarcity is only a problem of short run.

Whenever, humans face an economic issue of due to scarcity of any resource, it puts pressure of prices, creating incentive for people to either invent or find a substitute or improve the efficiency of use of resources in such a way that ...

Eventually the problem we faced vanished and humanity attains a much better state of life which otherwise would not have possible if we don't face problem.

Lesson 45**Application and Conclusion of Population Economics****Topics: 217 to 226**

Dear students, as now we have completed all the lectures of our course, we need to know how can apply this subject of Population Economic to solve our social, economic and personal issues.

What we have learned so far?

We have learned a lot, following are some of the topics we covered in this course.

1. History of population growth
 2. Speed of demographic change
 3. Current and future trends of population change
 4. We know what will be future of population in developed and developing countries
 5. We know about the Demographic profile and Resources of Pakistan
 6. We know that Pakistan is not a poor country but a poorly managed country
 7. we have learned about Population change, theory of demographic transitions and Population projections
 8. We learned how draw charts, use websites and calculations of demographic indices.
 9. We discussed about Fertility, mortality their determinants, measures and case studies. We also discussed Issues of marriage market and migration
 10. We discussed about health, Causes of poor health and its economic consequences
 11. We discussed how Important education is for Pakistan and what are its issues in Pakistan
 12. We discussed in details points of view of Optimists and Pessimists schools of thoughts.
 13. We critically analyzed Malthus and Julian Simon's point of view about population and economic development. At the end we also studied about Religious point of view about population control
- We discussed about ageing and its economic and social consequences in the world.

Other than that, we learned through debates, we study through poems, we explored websites, we discussed how to spend a happy, prosperous, free and fruitful life. We discussed, what qualities being a young person we need to have and what habits we need to avoid.

Dear students, I hope you all will be greatly benefited from this course, my prayers and good wishes are for you. Purpose of this course is far greater than covering of bookish topics in traditional way. I believe main topic of this course are you people, we as humans make our population. I also believe that all of you are blessed with unique qualities by Allah and Allah has created all of us with a purpose, all we need to do is to identify that purpose, in between the lectures you will learn how to find purpose of life, how to solve problems at individual, social and national level. May Allah bless us all, accept our efforts and guide us to the path which is the path of Most successful people and not of those who got astray and of those who arose His anger.