



Population Issues

Course Foundations



Demography and Demographics

- Our focus today is on the **characteristics of human populations**
 - Overview of helpful ways of understanding population characteristics and associated problems
 - If we can understand a population, we have a head start on solving some of its key problems
 - Terms often associated with population studies include demography and demographics

Demography and Demographics

- **Demographics** is a word people often use, but what does it actually mean?
 - For our purposes, **demographics** can be defined as “the measurable characteristics of a human population”
 - **Demography** might be defined as the systematic study of human populations

Demography and Demographics

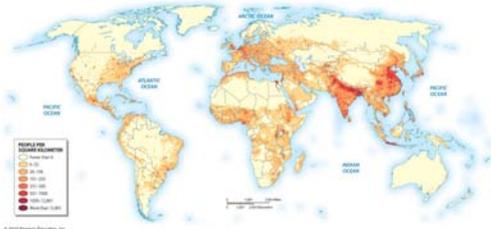
- Our discussion today will focus on **aspects of human population that we can measure** in some way
 - By **counting**
 - By **calculating**
 - By using a **map**

Population

- **The first population question we'll address:**
 - **Where do people live?**

Population

- Here's a map of the world showing **major population concentrations** (darker colours = higher pop. densities)



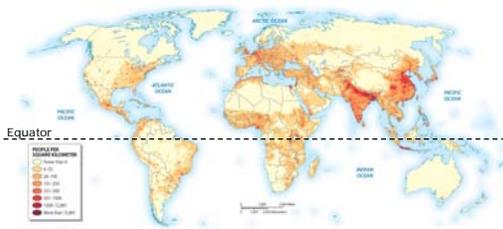
Population

- Q:** Is there a pattern? What words can we use to describe the patterns we see? (Small groups for 4 minutes)



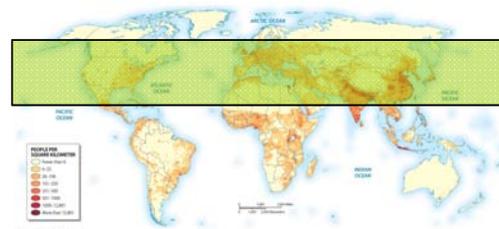
Population

- A few general conclusions:**
 - 1. Almost 90% of all people live north of the equator



Population

- A few general conclusions:**
 - 2. Approximately 65% of people live between 20° and 60° North



Population

- A few general conclusions:**
 - 3. Most people live on a small fraction of the earth (50% live on 5% of land)



Population

- A few general conclusions:**
 - 4. Most people live in lowland areas (55% live below 200m elevation)



Population

- **A few general conclusions:**
 - 5. The most densely populated areas are coastal (65% live within 500km of ocean)



Population

- **Q:** What is it about low-lying sea coast areas that attract people?



Population

- **Q:** Do our "general conclusions" work in describing pop. distribution in the US?



Population Growth

- **The second population question we'll address:**
 - How is our planet's population changing?

Population Growth

- It's widely known that our planet's population is increasing
- Our goal here is to understand **why** this is happening

Measuring Population Growth

- In 2012, the world population passed the **7 billion mark**
- It took from the beginning of history to
 - 1804 to reach **1 billion**
 - 1927 to reach **2 billion** (123 years from 1-2B)
 - 1960 to reach **3 billion** (33 years from 2-3B)
 - 1974 to reach **4 billion** (14 years from 3-4B)
 - 1985 to reach **5 billion** (11 years from 4-5B)
 - 1998 to reach **6 billion** (13 years from 5-6B)

Measuring Population Growth

- A common (and important) question: What's next?



Measuring Population Growth

- This is an important question because many people wonder **what might happen if populations continue to grow**
- Would we have the resources to provide for **8 billion people**?

Measuring Population Growth

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Measuring Population Growth

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Measuring Population Growth

- This is an important question because many people wonder **what might happen if populations continue to grow**
- Would we have the resources to provide for **8 billion people? 12 billion?** What's the **critical number**? Is there a **critical number**?

Measuring Population Growth

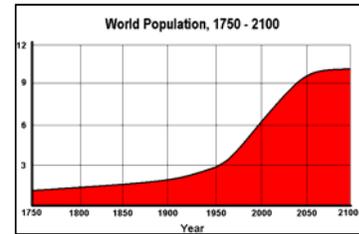
- We know that most population growth is occurring in **less developed regions**
 - Africa
 - parts of Asia
 - Latin America
 - Middle East

Measuring Population Growth

- **Developed regions** are also growing (in general), but **not nearly as rapidly**
 - North America
 - Europe
 - Japan

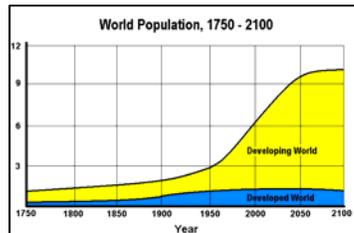
Measuring Population Growth

- **World Population Growth 1750-2100**



Measuring Population Growth

- **World Population Growth 1750-2100**

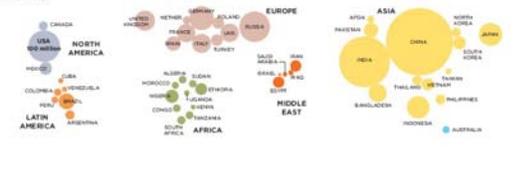


Perspectives on the Geography of the Changing Global Population

1915-2050

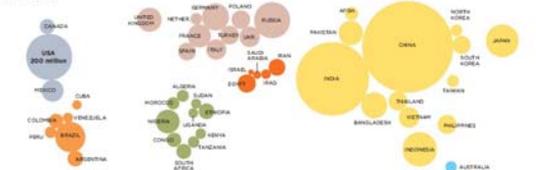
Circles are proportional to country population size

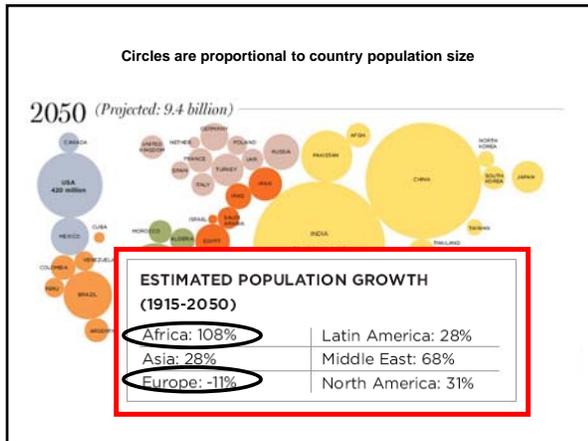
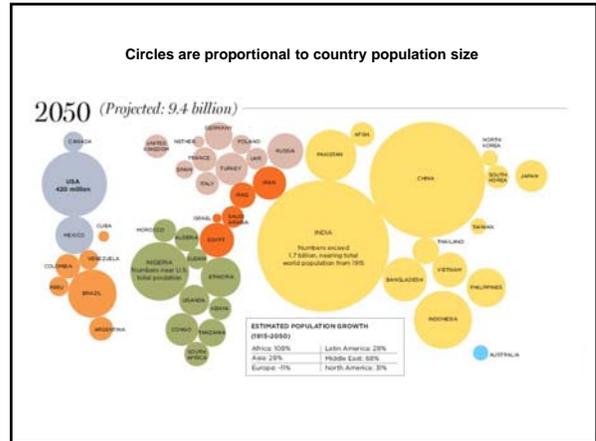
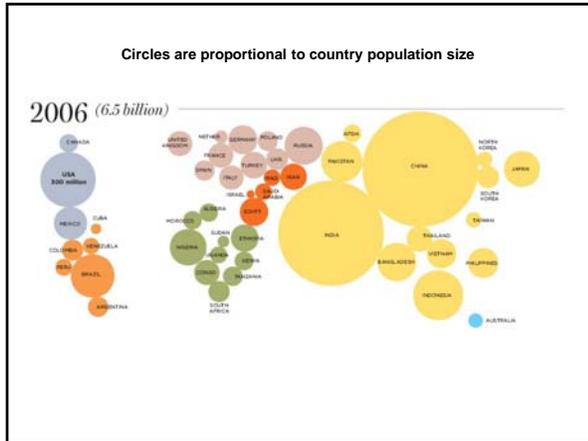
1915 (Estimated world population: 1.8 billion)



Circles are proportional to country population size

1967 (3.5 billion)





Measuring Population Growth

- Based on this background, the **key issues** for us to address in this section are
 - how **population growth has slowed** in the developed world, and
 - how this **might happen** in less developed nations

Some Definitions

- Before we talk more about growth issues, we need some definitions
- Q:**
 - What's a **"rate"**? Can you define the term in your own words?
 - "A quantity measured with respect to another measured quantity"** (American Heritage Dictionary)

Some Definitions

- A few rates**
 - "Crude birth rate" (CBR)**

Some Definitions

- **A few rates**
 - “Crude birth rate” (CBR)

$$\text{CBR} = \left(\frac{\# \text{ Births}}{\text{Total Population}} \right) \times 1000$$

Some Definitions

- **A few rates**
 - “Total fertility rate” (TFR)

Some Definitions

- **A few rates**
 - “Total fertility rate” (TFR)
 - **TFR concept:** average number of children born to each woman through the woman’s lifetime

Some Definitions

- **Q:**
 - Why might **TFR** be a better measure of a society’s reproductive rate than **CBR**?

Some Definitions

- **Q:**
 - Why might **TFR** be a better measure of a society’s reproductive rate than **CBR**?
 - **TFR minimizes** the effect of variation in gender and age group structure between the populations we’re comparing

Some Definitions

- **Another rate**
 - “Crude death rate” (CDR)

$$\text{CDR} = \left(\frac{\# \text{ Deaths}}{\text{Total Population}} \right) \times 1000$$

Some Definitions

- **Example of the importance of correctly understanding statistics**
 - According to the OECD, in 2011
 - **Country A:** had a crude death rate of **5.6** per 1000 people
 - **Country B:** had a crude death rate of **10.4** per 1000 people
 - Which country would you consider to be **“more highly developed”**?
 - **Country A:** Bangladesh
 - **Country B:** Germany

Some Definitions

- **A better statistic**
 - **“Age Specific Death Rates”** (ASDRs) are superior to the **“crude death rates”** we’ve defined
 - **ASDR:** death rate for a **specific age group**

Some Definitions

- **A better statistic**
 - **“Infant mortality rate”** is one example of an ASDR (death rate for those in the age group 0 to 1)

Some Definitions

- **A better statistic**
 - **“Infant mortality rate”** is one example of an ASDR (death rate for those in the age group 0 to 1)
 - We can calculate other **ASDRs** (such as by 5 year age group: 0-4, 5-9, 10-14, etc.)

Some Definitions

- Using ASDR’s means we can make **valid comparisons** between societies
 - compare **“apples to apples”**, not **“apples and oranges”** as in the Germany/Syria example

Population Trends

- **Back to some basic questions:**
 - What has happened to slow down population growth in the developed world?
 - Could the same thing happen in less developed nations?
 - What does this kind of change mean for the societies where it has happened?

Population Trends

- A theory called the “**Demographic Transition**” helps to answer these basic questions

Demographic Transition

- Demographic transition theory (DT) says that **population growth** and **social/economic development** are linked
- DT tracks **two key indicators**:
 - Birth rate
 - Death rate

Demographic Transition

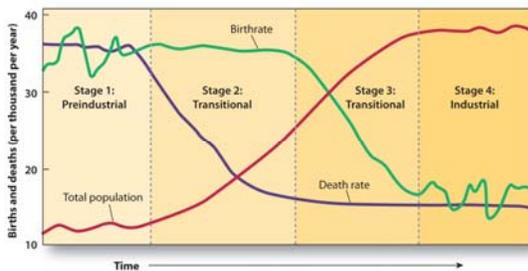
- What does DT have to do with population trends?
 - the difference between **birth rate** and **death rate** is **population growth**

Demographic Transition

- DT is based on the population experience of **Europe** and **North America**
- DT might also be thought of as a possible path for **other world regions** to follow at a later time (as they develop)

Demographic Transition

- DT consists of four stages (see fig 1.25):



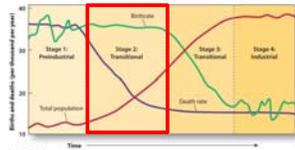
Demographic Transition

- **Stage 1**: high death rate, high birth rate



Demographic Transition

- ▣ **Stage 1:** high death rate, high birth rate
- ▣ **Stage 2:** falling death rate, high birth rate



Demographic Transition

- ▣ **Stage 3:** low death rate, falling birth rate



Demographic Transition

- ▣ **Stage 3:** low death rate, falling birth rate
- ▣ **Stage 4:** low death rate, low birth rate



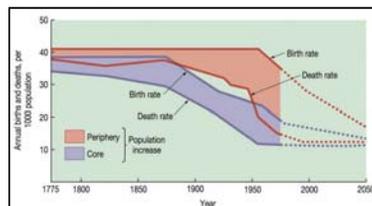
Demographic Transition

- ▣ **Q:**
 - What stage of the demographic transition would you say the US is in?
 - Why?



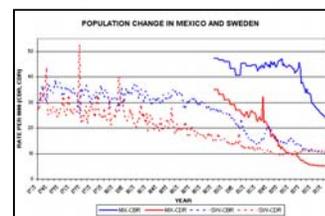
Demographic Transition

- ▣ **So what has actually happened?**
 - The evidence indicates that developed (core) and developing (periphery) countries are following different DT tracks



Demographic Transition

- ▣ **So what has actually happened?**
 - The figure below (for Mexico and Sweden) gives a couple of **real-world examples** of the demographic transition by country



Demographic Transition

- **So what has actually happened?**
 - However, overall the DT sequence is occurring in Europe and North America (some countries advancing before others)
 - We've also seen many less developed countries make the transition from stage 1 to stage 2 (CDR dropping, CBR stays high)
 - Problem: **huge increases in population**

Demographic Transition

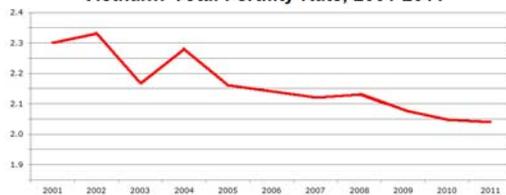
- **So what has actually happened?**
 - Some less developed countries appear to be entering stage 3 (lower birth rates and lower population growth rates)



Demographic Transition

- **Example: Vietnam**
 - Vietnam experienced a big drop in reproductive rates in recent years

Vietnam: Total Fertility Rate, 2001-2011



Demographic Transition

- **Example: Vietnam**
 - Even with this rapid reduction, the country faces some **real challenges**
 - **Legacy of past growth:** working age population increased by 33% from 2000 to 2010 (source: Viet Nam News)

Demographic Transition

- **Bottom Line on DT:**
 - Changes in birth/death rates have an impact on **"quality of life"** in each country

Population Age Structure

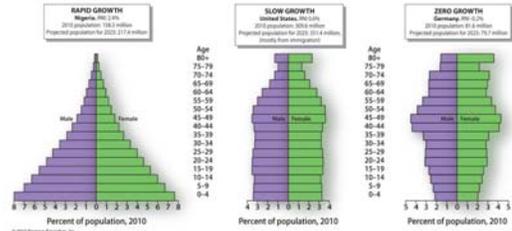
- Demographic changes in the population are big and important for society
 - **Q:** What would be like to live in a "stage 1" society? What about in a "stage 4" society?
- Because the population status of a society says something important about the society, it is helpful if we can represent this status in a single, easy-to-interpret chart

Population Age Structure

- ▣ This is where the “population pyramid” concept comes from
- ▣ A chart representing the age groups present in a society, giving insight into past and present demographic trends

Population Age Structure

- ▣ Examples:



The shapes of the charts tell us something important about each society

Population Age Structure

- ▣ **Q:** What do you think it means for a country to have a “pyramid-shaped” population pyramid? Issues? Challenges?
 - What about a “column-shaped” population pyramid? Issues? Challenges?
 - We’re going to come back to practical issues related to the population pyramid concept a little later in this course

Migration

- ▣ Last, brief theme for today
 - Migration is important because it is a big part of why cities are growing (particularly cities in the developing world)
 - **Migration, defined:** a permanent relocation of residential, recreational, and work space
 - **Q:** How many of us have migrated? From where, to where? Why did you do this?

Migration

- ▣ Why people migrate is important to understand
 - We can identify two distinct kinds of factors
 - ▣ **Push factors:** things that drive people from where they previously lived
 - ▣ **Pull factors:** things that attract people to a new location
 - **Q:** What push factors can you think of? What about pull factors?

Migration

- ▣ Societies with powerful factors impelling people to move have big issues to deal with
 - When people move, they often move from rural areas to the city
 - ▣ **Q:** Why? Have you done this?
 - This urban migration is manageable in a wealthy place like North America, but difficult to deal with in poorer regions of the world