

# Lesson/week 3 (Main topics):

- ➔ **US Population projections**
- ➔ **Three positions (views) on future population numbers**
- ➔ **A brief look at businesses' reliance on population data**
- ➔ **A brief look at the impacts of changing population numbers on educational institutions (US)**
- ➔ **Sources of population data:**
  - **Censuses**
  - **Vital registrations**
  - **Sample surveys**
- ➔ **Quality and completeness of population data**

# Key Terms:

- **De jure**
- **De facto**
- **Urban**
- **Census**
- **Vital registration**
- **Sample surveys**

# Population Projection: USA

Projection of the total population or a subset of it, would serve as the basis for many other projections, including projections of the demand for :

- **Housing**
- **Educational facilities**
- **Hospitals**
- **Retirement homes**
- **The budget for food stamps (and the actual number of food stamps that need to be printed), etc.**

The results of all of the above sub-projections, and the implied public policy recommendations would be different depending which of the following estimates (of the overall US population sizes) they take into consideration:

Year	Middle series	Lowest series	Highest series	Zero international migration
2010	299,716,000	291,413,000	310,910,000	287,710,000
2025	337,815,000	308,229,000	380,397,000	307,923,000
2050	No <b>serious</b> planning should be made at this stage for a year that is this far out			

## Actual vs. Projected numbers US 2000

The projected numbers for the US (text page 19) were made **before the 2000 census**, which gave a population size about 6 million larger than what was projected for that year.

As a result the projections are “...assuredly on the low side”

## You just become a County Planning Commissioner !!!

### Note:

- **Sensible assumptions are vital (projections are only as good as the assumptions upon which they are based).**
- **Appropriate growth rates must be used**
- **Look not only to past trends and current patterns but also likely future changes**
- **Studying projections forces us to confront different scenarios about the consequences of different growth patterns and the possibility of designing policies to affect those patterns.**

## **Small Area Projections**

**National population projections are very important but so are local ones.**

**“...counties and cities need to know something about their demographic future, as do local school districts, highway planners, and urban and regional planning departments”**

**“In addition, numerous private corporations are interested in the changing demographics of local areas, so that they can better gauge local and regional changes in demand, marketing strategies, and even changing tastes and preferences”**

**Did anyone predict that bell-bottom pants from the 70s would back in 2000, and project customer numbers !!**

**However, local area projections are much more difficult to make due to rapid changes in population events locally (these are averaged out on a national scale) and variations in fertility, mortality, migration, and other characteristics of the population.**

**“Especially difficult to project are migration rates for local areas, because changes in the area’s socioeconomic characteristics may quickly alter current migration patterns”**

## Projections can also be broken down to separately focus on:

- Age groups (example, Colorado. text p. 22)
- The two sexes
- Natives vs. foreign born
- Single / Married/ Divorced
- College graduates
- Internet use
- Home ownership
- Electric car ownership
- e.t.c.

# Positions on future population numbers

**“At least three different positions on the population problem can be identified.”**

- 1. Population growth has reached a tipping-point; dramatic actions need to be taken to reduce the growth.**
- 2. Although population growth is a problem it is not the only important problem**
- 3. Population is a nonproblem, or even a false problem, pushed by those who do not want to tackle the issues of the concentration of income and power.**

# Who should control population growth?

## Answer 1: Society/ government.

**“...individual fertility decisions do not add up to what is socially optimal, or even desirable, hence such decisions cannot be left to individual families”**

## Answer 2: Laissez-fair solution.

**“...it is a question of individual choice, because it is the individual who bears the cost and receives the benefits of his own action.....those best able to determine the costs and benefits of children are those who are contemplating having them”**

## Accusations of cultural genocide

**Somewhat similar to the laissez-faire point of view is the thought that “...population control is a device proposed by more economically developed countries to control the less economically developed countries...since the former group of countries are mainly the white non-poor nations and the latter group are non-white poor nations....population control is a form of genocide”**

**“In summary, the ethical considerations associated with population control are complex”**

**But, the history of past demographic changes should allay the fears of both schools of thought (population should / shouldn't be controlled), and validate the saying “development is the best contraceptive” .**

# Population Dynamics and the World of Business

**Business executives need to “...understand population changes and their impact on basic corporate decisions such as labor supply, location of facilities, the changing nature of markets, and the age makeup of consumer groups”**

*American demographics* (a monthly magazine)  
**“...presents succinct looks at the relationships between demographic trends and everything from where to market products to where to retire”**

## **Additional facts:**

- **Marketing relies heavily on demographic statistics**
- **Market segmentation and differentiation (e.g. where do Latinos/Asians live) now play a key role in marketing strategies**
- **Business forecasting is impossible without the full understanding of ongoing demographic changes such as those brought about by baby boomers (1950's – present)**
- **Utility companies need to keep track of the formation/dissolution (e.g. divorce, gay marriage) of households**
- **Enforcement of equal opportunity employment requires demographic data and changes in numbers of population groups over time**

**“However, economic theorists have found it difficult to find a direct correlation between a population growth and economic wellbeing in highly industrialized countries “**

**Japan and the European Union have a low growth rate but growing GDPs. The US has a high (for a developed nation) population growth, and also a growing GDP.**

**“Labor migration in the future promises to be at least as important as population growth, and it will affect the populations of numerous sending and receiving nations.”**

**There is a rise in real rate of migration including **illegal migration** “... in part because of the extensive collusion of employers....”**

**“In 2007 there were an estimated 12 – 14 million illegal immigrants living in the United States”**

# The education rollercoaster

## Example: the Baby boom generation

**“In the late 1950s and 1960s school enrollment soared. The elementary school age population (5 to 13 years) grew from 23 million in 1950 to 37 million in 1970...The high school population doubled in size between 1950 and 1975....High school enrollment rose 14 percent in 1957 alone, and a critical shortage in classroom was evident. ...Administrators projected a need for an additional 750,000 teachers in three years....The mid 1960’s saw enrollment in colleges and universities skyrocket”**

## **Additional examples:**

➤ **“Between 1957 and 1975 college enrollments increased from 3 million to 11 million.**

### **Recent trends**

➤ **A major increase in nursery and elementary school attendance in the last 20 years.**

➤ **An overall school-age population increase of 8 percent in the 1990s, a result of “...the baby boom’s children filling the elementary and secondary schools across the country...”**

# Spatial differences

- Rural regions and urban centers losing populations have seen dramatic declines in school-age population and enrollment
- Newly developing suburbs have seen enrollment increases, as have some inner cities
- The highest increase in nursing school attendance in the North East
- Migration has had a significant impact; increases in the Sunbelt and West declines in the Mid-West and North-East

# Population Data

**“We need numbers and rates in order to better understand both population changes and the ways in which those changes are related to socioeconomic and environmental variables”**

## Why else?

- **Planning and policy guidelines**
- **Monitoring trends**
- **Scientific study (micro and macro levels)**

# Problems:

## Definition of terms.

### Can you define:

- Age
- Total population
- Urban
- Live birth
- Death
- Household
- Marriage

Even the concept of a “**total population**” has its problems. Do you count people as belonging to the place where they customarily live (**de jure** approach), or do you assign them to the place where they happen to be (physically present) at the time of census regardless of their home location (**de facto** approach)?

**Britain – De facto**

**US – De jure**

## **De facto disadvantage**

**“...certain population figures may be increased or decreased because of tourists, travelling sales persons, or other transients”**

## **De jure disadvantage**

- 1) Time-consuming and costly calculations to reassign people to their usual place of residence**
- 2) It is often difficult to know where a persons “usual” place of residence is**

**Age:** is the interval of time between the date of birth and the date of the census, expressed in completed solar years.

**\*\*\*Age the central variable in demographic analysis.**

### **Age Data Problems:**

- **Genuine lack of knowledge of one's age (lack of records)**
- **Digit preference (heaping)**
- **Recall problems**
- **Lying about age**

**Urban:** Because of national differences in the characteristics that distinguish urban from rural areas, the distinction between the urban and the rural population is not yet amenable to a single definition that would be applicable to all countries or, for the most part, even to the countries within a region.

## The UN's standard definitions

**LIVE BIRTH** is the complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of pregnancy, which after such separation, breathes or shows any other evidence of life, such as beating of the heart, pulsation of the umbilical cord or definite movement of voluntary muscles, whether or not the umbilical cord has been cut or the placenta is attached; each product of such a birth is considered liveborn (all live-born infants should be registered and counted as such, irrespective of gestational age or whether alive or dead at the time of registration, and if they die at any time following birth they should also be registered and counted as deaths).

**Source:** Principles and Recommendations for, Population and Housing Censuses. Revision 1, Department of Economic and Social Affairs, Statistics Division, Statistical. Papers Series M No. 67/Rev.1 United Nations, New York, 1997

➤ **DEATH** is the permanent disappearance of all evidence of life at any time after live birth has taken place (postnatal cessation of vital functions without capability of resuscitation) (This definition excludes foetal deaths, which are defined separately below).

**FOETAL DEATH [DEADBORN FOETUS]** is death prior to the complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of pregnancy; the death is indicated by the fact that after such separation the foetus does not breathe or show any other evidence of life, such as beating of the heart, pulsation of the umbilical cord or definite movement of voluntary muscles<sup>25</sup> (note that this definition broadly includes all terminations of pregnancy other than live births, as defined above)

➤ **MARRIAGE** is the act, ceremony or process by which the legal relationship of husband and wife is constituted. The legality of the union may be established by civil, religious or other means as recognized by the laws of each country.

➤ **DIVORCE** is a final legal dissolution of a marriage, that is, that separation of husband and wife which confers on the parties the right to remarriage under civil, religious and/or other provisions, according to the laws of each country.

More definition problems, **Migrant:**

## **Who is a migrant?**

**“We know whether a person has been born or died, but who shall say whether a person has migrated?”**

- How far does one have to move?**
- How long must one stay at the place of destination?**
- Do borders need to be crossed?**
- Is intent important?**

# Population Censuses

**“By authority of the constitution of the United States, the population of the United States must be enumerated every ten years”**

**The UN defines the census as “...the simultaneous recording of demographic data by the government, at a particular time, pertaining to all the persons who live in a particular territory”**

## Brief history of censuses

The idea of counting the number of people in an area is old - e.g. Incas (today's Peru) who are said to have organized society according to decimal systems.

- Sumeria and Babylonia (Mesopotamia),
- Ancient Egypt and China
- Rome (6<sup>th</sup> century B.C)

**Myths:** Opponents of the England census (1750's) feared "...public misfortune or an epidemical distemper would follow if enumeration were attempted"

## **A census should:**

- **Be of a population of a strictly defined territory**
- **Include every one**
- **Be a personal enumeration**
- **Be conducted at one time, preferably on a single day**
- **Be conducted at regular intervals**

**“A census is a total count of the population of a specific area, generally a nation, and ...a sort of social photograph of certain conditions of a population at a given moment which are expressible in numbers”**

**Minimum information collected:**

- **Age and sex**
- **Births and deaths**
- **Place of residence**
- **Place of birth**
- **Income, occupation, education**
- **religion**

# Modern census taking started in Scandinavia

➤ Sweden 1749

➤ Norway and Denmark 1769

➤ First US census 1790

**\*\* The US was the first country to legislate time-specific censuses**

**\*\* “The greatest recent gains in census taking have been made in Sub-Saharan Africa”**

# The Census of the United States

**\*\*\* The US Bureau of the Census is the record keeper of the nation**

**“The Census Bureau publishes more statistics, encompasses a larger range of topics, and serves a greater variety of statistical needs than any other federal agency”**

<b>US Census</b>	<b>Periodicity</b>
	<b>Every _ years)</b>
<b>Population</b>	<b>10</b>
<b>Housing</b>	<b>10</b>
<b>Agriculture</b>	<b>5</b>
<b>Business</b>	<b>5</b>
<b>Construction industries</b>	<b>5</b>
<b>Government</b>	<b>5</b>
<b>Manufacturers</b>	<b>5</b>
<b>Mineral Industries</b>	<b>5</b>
<b>Transportation</b>	<b>5</b>

# First US census

- **Strictly a head count**
- **Only five questions (one dropped in 1870: how many slaves do you own?)**
- **Conducted by 650 US marshals and their deputies**
- **Results issued in a single volume (56 pages long)**
- **Cost - \$44,000**

Census Year	Total Population	Census Cost	Cost Per Person
1790	3,929,214	\$44,377	1.13 cents
1800	5,308,483	\$66,109	1.24 cents
1830	12,866,020	\$378,545	2.94 cents
1850	23,191,876	\$1,423,351	6.14 cents
1870	38,558,371	\$3,421,198	8.87 cents
1900	76,303,387	\$11,854,000	15.54 cents
1920	105,710,620	\$25,117,000	23.76 cents
1940	131,669,275	\$67,527,000	51.29 cents
1960	179,323,175	\$127,934,000	71.34 cents
1980	226,542,199	\$1,078,488,000	\$4.76
2000	281,421,906	\$4.5 Billion	\$15.99

# The 2000 US Census

- Was full of surprises
- Nearly 7 million more people than was projected
- Showed the 1990s to be the decade with the highest population growth ever (33 mill. more people)
- Population growth in all 50 states
- Twelve congressional seats went from one state to another (New York & Pennsylvania each lost two)
- Nearly 7 million people belonged to more than one race
- The Hispanic population grew from 22 to 35 million in a decade
- The white population in California slipped below 50%

## Vital Registration/Statistics

**Def.** Registration statistics of demographic events such as births, deaths, marriages, divorces, and abortions (does not include migration statistics).

<http://db.jhuccp.org/ics-wpd/popweb/Thesaurus/tr617.htm>

**“Unlike the census, which is static, cross-sectional view of a population at a specific moment in time, a registration system is a dynamic recording of events that can change rapidly.”**

**Censuses: Photographs**

**Registration: Motion pictures**

**“The major responsibility for reporting vital events to civil registration authorities, depending upon the country, is given to local registrar, parents or relatives, or to physicians, midwives, undertakers, religious officials, persons with special duties relative to births and deaths.”**

# Vital reg. in the US

- One of the last countries to initiate v.r.
- 1844 Massachusetts (death reg.)
- 1880 Death Reg. Area (US) created by the Census Office
- 31% Coverage (death reg.) by 1890
- Birth registration area created in 1915 (33% coverage)
- With the addition of Texas, 100% coverage of both birth and death coverage in 1933.
- 1957 Marriage reg. area created (not completed yet)
- 1958 Divorce reg. area created (not completed yet)

## Vital Registration (the global picture)

- Too costly for most Less Developed Countries (LDC) to undertake
- E.g. Only 40% completeness (births) in India, Indonesia, Pakistan, Republic of Korea
- Africa lagging way, way behind

### Also

- Considerable number of births and deaths are never reported
- Whole sections or areas of countries are not part of the data collection system

# Sample Surveys

## Relationship of population and housing censuses to intercensal sample surveys

**“The rapidity of current changes in the size and other characteristics of populations, and the **demand for additional detailed data** on social and economic characteristics of population and housing characteristics that are not appropriate for collection in a full-scale census, have brought about the need for continuing programmes of intercensal household sampling surveys to collect **current and detailed information** on many topics.”**

Source: UN (citation given above)

# The Advantages of Sampling

- Can be Taken much **faster** than censuses
- Much **cheaper** (the only option in some countries)
- **Quality** and **accuracy** of data can be much greater than in complete enumerations
- Less paperwork, **data handling** and **processing** less cumbersome

## Summary:

The quality and quantity of data are generally related to level of socioeconomic development

- Many people still view censuses with suspicion and resentment
- Another problem (in LDCs) is lack of geographical detail
- Occasionally, censuses are intentionally falsified
- (e.g. Nigeria, the 1962 census was officially disavowed)
- Mortality reports for those who were living alone or with non-relatives are incomplete/unreliable
- The poor often undercounted, e.g. African Americans, year 2000 (1.84 percent or about 600,000). The average for all US groups was 0.1 percent.