Overview of the Course
Population Size

Ayman Zohry

CDC 103 – Lecture 1 – February 5, 2012

Course Description:

- This course focuses on the basic measures of population size, distribution, and composition and the measures of population change and their associated literature in the field of demography.
- The course covers an array of topics and methods and aims at familiarizing students with the demographic concepts related to these basic topics.
- The course is composed of two main parts as follows:
  - **(a) Population Size, Distribution and Composition**
  - **(b) Population Change**
  - **(c) Economically Active Population**

(a) Population Size, Distribution and Composition

- This part covers the following topics:
  - Population size: concept of total population, time reference and completeness of coverage;
  - Population Distribution: demographic areas, administrative and statistical area, population density, the urban-rural classification, other classifications; Measures of population distribution;
  - Population composition: sex composition, age composition, marital status, family groups, educational characteristics ...etc; and Techniques of analysis.

(b) Population Change

- This part covers the following topics:
  - Definition and types of population change, population direction, absolute and percentage change;
  - Measures of population change;
  - Description of trends;
  - Accuracy of measures; and
  - Components of population change.

Objectives and Learning Outcomes

- By the end of this course, you will be able to:

  1. Acknowledge the importance of the analysis of population size and change and recognize the importance of such analysis in their own research in the future,
  2. Calculate measures related to population size, distribution and composition using real data,
  3. Calculate measures related to population change using different methods and approaches, and
  4. Read, understand, and utilize demographic literature related to population size and change.

Teaching Method

- The topics in this course will be covered through a variety of methods.
- Although I will cover some course material through a standard lecture format, my goal is to lecture as little as possible.
- Research has shown that the lecture format is not a particularly effective way of learning.
- Rather than simply sitting and listening, I expect you to become actively involved in the course.
- Typically, student involvement comes from asking questions and engaging in class discussion.

Teaching Method

- In addition to class discussions, we will engage in a number of activities such as case studies, and in-class exercises, which are designed to provide "hands-on" learning of key course concepts.
- Basically, my teaching philosophy is to get you as actively involved in the course as possible by having you do things and to think about what you are doing.
- This type of approach is an effective way to learn course material. However, it is not easy.
- Active learning requires students to come prepared and ready for class, remain open-minded, and exert considerable mental energy.

Student Evaluation/Grading

- This is an interactive class and it is critical that you participate fully from the beginning in readings and discussions.
- Final grades for the course will be calculated as follows:
  - Attendance   10%
  - Classroom discussions, participation, and presentations   20%
  - Mid-term exam   30%
  - Final exam   40%

Student Evaluation/Grading

- **Classroom discussions, participation, and presentations**:
- Participation will consist of your contributions to class discussion, your effort and attitude in any in-class exercise, and your performance on any quizzes, reaction/discussion papers, and/or homework assignments.   This is an interactive class and it is critical that you participate fully from the beginning in readings and discussions.
- **Mid-term exam:**
- Mid-term exam will take place on April 1st, 2012 and will cover topics discussed until March 18th, 2012. The mid-term exam counts for 30% of the overall evaluation of the course.

- **Final exam:** The final exam will take place in July 2012 – specific date will be announced later. It will cover all topics discussed through out the course. The mid-term exam counts for 40% of the overall evaluation of the course.

Course Text and Readings:

- The mains textbook is,
- **Siegel, J. & Swanson, D. (Eds.). (2004) *The Methods and Materials of Demography* (2nd edition). Elsevier Academic Press, London.**

- We will use specific chapters of the book

THE METHODS AND MATERIALS OF DEMOGRAPHY

Second Edition

Edited by
JACOB S. SIEGEL / DAVID A. SWANSON
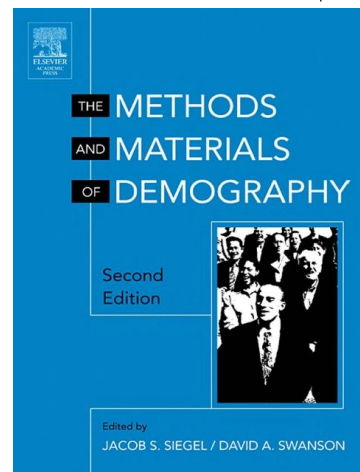
Course Text and Readings:

- There are many other good textbooks and references in demographic methods. Here a list of some that may be useful,
- **Barcley, George. 1958.** *Techniques of Population Analysis.* **New York: Wiley.**
- **Hind, Andrew. 1998.** *Demographic Methods.* **London. Arnold.**
- **Namboodiri, Krishnan. 1991. Demographic Analysis: A Stochastic Approach. San Diego: Academic.**
- **Palmore, James A., and Robert W. Gardner. 1994.** *Measuring Mortality, Fertility and Natural Increase: A Self-Teaching Guide to Elementary Measures.* **Fifth Edition. Honolulu: East West Center.**
- **Pressat, Roland. 1972.** *Demographic Analysis.* **Chicago: Aldine.**
- **Weeks, John. 2002** *Population: An Introduction to Concepts and Issues.* **Belmont, CA: Wadsworth.**

Course Text and Readings:

- We will also read some research articles related to the topics covered by the course.
- One set of the assigned readings will be available for you to copy or borrow in the library.
- Most of the articles are also available online for downloading.

Library, Use of Computer, and Online Resources

- Within the term, we will use real data available in the census returns and the Demographic Yearbook available in the CDC library.
- In addition we will use computer software packages such as Population Pyramids software package and other related programs.
- Students are highly encouraged to use the available online resources related to the topics of this course.

Course Schedule and Reading Assignments

See Distributed Document

Break

Population Size

Population Size

- In this lecture, we are going to discuss the following topics:
  - Importance of Population Size
  - Concepts of Total Population,
  - Time Reference, and
  - Completeness of Coverage,

Importance of Population Size

- Why Population Size is Important?

Concepts of Total Population

- Generally, modern censuses are designed to include the total population of an area.
- But this concept is not so simple as may first appear.
- There are two ideal types of total population counts:
- The *de facto*, and
- The *de jure*.
- The *de facto* comprises all the people actually present in a given area at a given time.
- The *de jure* is more ambiguous; it comprises all the people who *belong* to a given area at a given time by virtue of legal residence or usual residence.

Methods of Enumeration

- The size of the total population can be determined through the use of several different methods.
- The three main methods are described below:
- The first method is the canvasser method, which involves the use of trained enumerators who visit each housing unit to conduct an interview.
- During this interview, information is obtained about the housing structure and the characteristics of its occupants.
- The enumerator records this information on the appropriate census forms and then turns the forms in to his or her field supervisor.

Methods of Enumeration

- The main advantage of this enumeration method is that the enumerators can be thoroughly trained in census procedures and instructions.
- This can increase the quality and consistency of the data, particularly in countries where a large proportion of the population is illiterate.
- The main disadvantages are that in practice not all of the household members can usually be directly interviewed and a misapplication of the rules by one enumerator can lead to misreporting in an entire enumeration area, i.e., enumerator-induced bias.

Methods of Enumeration

- Another common method is the householder (or self-enumeration) method in which instructions and questionnaires are distributed to each housing unit before the census day.
- The census form is then completed by one member of the household, preferably the household head or another responsible household member.
- This method can improve accuracy by allowing the householder to consult with other members of the household at their convenience.
- It can also considerably lower costs
- This involves using the postal service to deliver and return the census forms, instead of an enumerator.

Methods of Enumeration

- The householder method is most effective in countries in which a high percentage of the population is literate and which have an efficient and universal postal system.
- The census-station method involves developing a list of all housing units in an area and then establishing a centrally located census station.
- The population in that area is asked to report to the census station, where the enumerator records the relevant information on the appropriate forms.
- To ensure complete coverage, the enumerator is required to visit non-responding housing units.
- An alternative method involves assembling all of the residents of a given area in one place where the enumeration is conducted.

Methods of Enumeration

- In this situation, the head of the group often provides general information about the number of people living in the area.
- This method is particularly effective in enumerating individuals living in isolated areas and among particular groups.
- In practice, a combination of methods is often used to ensure that the size of the total population is being accurately assessed.
- Furthermore, over time the balance of reliance on these methods can shift as the society changes.
- Changes in a population's literacy level, geographic location, and composition, as well as developments in the postal system, can call for a reassessment of the most appropriate enumeration method for a given census.

Time Reference

- Ideally, individuals should be enumerated on a given day – the census day/night – and the information they provide should refer to a set time period.
- If a census has a specific official hour, it is usually midnight, a time when most persons are at home.
- However, the census day varies across countries as a result of seasonal fluctuations in weather, economic activity, and public observances.
- Once a day and time have been established that are favorable for conducting a census, subsequent censuses should also be conducted at the same time.

Time Reference

- For example, the census night of the last Egyptian census of 2006 was November 21st. Also, the census night of the Abu Dhabi census 2011 was October 3rd.
- With respect to time, the time reference frequently used is what's called the "zero hour" or midnight.
- However, the best day and time for taking a census may change over time because of shifts in a country's economics, social, and demographic characteristics.
- The subsequent censuses should have a defined periodicity, generally 10 year-interval. Even though, some countries are able to conduct census every five years.
- But it's commonly acknowledged that the census intercensal period should not be longer than 10 years.

Completeness of Coverage

- Some persons are omitted from the population as defined, while others are incorrectly counted.
- So that, censuses may suffer from under-enumeration (or over-enumeration) that tends to occurs to some extent, in counting a sizable population, as a result of oversight on the part of respondents or enumerators.
- Two general types of methods are used to evaluate census coverage:
  - Micro-level method, and
  - Macro-level method.

Completeness of Coverage

- The first method (the micro-level method) through which individual cases enumerated in the census are matched to independent records or samples.
- The second method (the macro-level method) through which aggregate census data are compared to other aggregate estimates of the population based on public records, such as vital statistics and immigration data.
- It also involves evaluating the census data for internal consistency and consistency with previous census results.

Completeness of Coverage

- **Micro-level methods**: Post enumeration survey
- The design of a post-enumeration survey (PES) is to gather two different samples that can be used to estimate net coverage error.
- **Macro-level analysis**: Demographic analysis
- Another method that is useful for assessing coverage at the national level is demographic analysis (DA). DA, developed by Coale (1955), is based on demography's fundamental population component estimating equation:

$$P_{t2} = P_{t1} + (B_{t1-t2} - D_{t1-t2}) + (I_{t1-t2} - E_{t1-t2})$$

Next Week

- **Readings:**
- Siegel, J. & Swanson, D. Chapter 5 ; pp :81-104.

- **Assignments**:
- Describe in one-page and in bullets the latest census conducted in your country, or a country of your choice (Egyptians only).
- Try your best to answer the following questions:
  - What was the size of the population captured by the census
  - What was the type of the census (de faco or de jure)
  - What was the reference date of the census and the reason behind the selection of this specific date.
  - Did the Statistical Bureau carry out a post enumeration Survey? If yes, what were the main findings of the survey?