Critical Issues in Population Geography

- More people are alive today than at any other time in human history.
- The world’s population increased at a faster rate during the second half of the twentieth century than every before.
- Virtually all population growth today occurs in less developed countries (LDCs).

YEARS TO GAIN ONE BILLION PEOPLE!

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Where Is the World’s Population Distributed?

- Population concentrations
  - Two-thirds of the world’s population are in four regions:
    - East Asia
    - South Asia
    - Europe
    - Southeast Asia
Population Distribution

Figure 2-2
Where Is the World’s Population Distributed?

- Sparsely populated regions
  - The ecumene
  - People generally avoid:
    - Dry lands
    - Wet lands
    - Cold lands
    - High lands

Can mean either the Christian World Anciently or World Civilizations.
Where Is the World’s Population Distributed?

• Population density
  – Arithmetic density
  – Physiological density
  – Agricultural density

The arithmetic density of a population is the total number of people in proportion to the area of land.

The physiological density of a population is the total population in proportion to the area of arable land.

Agricultural density is found by dividing the total rural population, or more specifically, the number of farmers in a given area, by the amount of agricultural land within the same area.
# Measures of Density

**Table 2-1 MEASURES OF DENSITY IN SELECTED COUNTRIES**

<table>
<thead>
<tr>
<th>Country</th>
<th>Arithmetic Density*</th>
<th>Physiological Density*</th>
<th>Agricultural Density*</th>
<th>Percent Farmers</th>
<th>Percent Arable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada</td>
<td>3</td>
<td>65</td>
<td>1</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>United States</td>
<td>32</td>
<td>175</td>
<td>2</td>
<td>2</td>
<td>18</td>
</tr>
<tr>
<td>Egypt</td>
<td>79</td>
<td>2,296</td>
<td>251</td>
<td>31</td>
<td>3</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>255</td>
<td>1,083</td>
<td>9</td>
<td>2</td>
<td>23</td>
</tr>
<tr>
<td>Japan</td>
<td>338</td>
<td>2,695</td>
<td>46</td>
<td>3</td>
<td>13</td>
</tr>
<tr>
<td>India</td>
<td>356</td>
<td>690</td>
<td>163</td>
<td>58</td>
<td>52</td>
</tr>
<tr>
<td>Netherlands</td>
<td>398</td>
<td>1,748</td>
<td>23</td>
<td>3</td>
<td>23</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>1,127</td>
<td>1,927</td>
<td>472</td>
<td>52</td>
<td>58</td>
</tr>
</tbody>
</table>

*Population per square kilometer

Do any of these surprise you?

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Where Has the World’s Population Increased?

• Natural increase rate
  – The percentage by which a population grows in a year

• Crude birth rate (CBR)
  – The number of births per 1,000 population

• Crude death rate (CDR)
  – The number of deaths per 1,000 population

• Doubling time
  – The number of years needed to double a population

We leave out migration in this model!
World Population Growth

Figure 2-8

World population (billions)

Annual increase (millions)

Natural increase rate (%)

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Where Has the World’s Population Increased?

- **Fertility**
  - Total fertility rate (TFR)

- **Mortality**
  - Infant mortality rate (IMR)
  - Life expectancy
• Notice that places with high TFRs tend to have high IMRs and that places with low TFRs have low IMRs.
Why Is Population Increasing at Different Rates?

• Demographic transition
  – Four stages
    • Stage 1: Low growth
      – Agricultural revolution
    • Stage 2: High growth
      – Industrial Revolution
    • Stage 3: Moderate growth
    • Stage 4: Low growth
      – Zero population growth (ZPG)

Zero population growth, sometimes abbreviated ZPG, is a condition of demographic balance where the number of people in a specified population neither grows nor declines, considered as a social aim. According to some, zero population growth is the ideal towards which countries and the whole world should aspire in the interests of accomplishing long-term environmental sustainability.
Demographic Transition

Figure 2-15
Why Is Population Increasing at Different Rates?

- Population pyramids
  - A bar graph showing a place’s age and sex composition
  - Shape of the pyramid is determined mainly by the CBR
- Age distribution
  - Dependency ratio
- Sex distribution
  - Sex ratio
Why Is Population Increasing at Different Rates?

- Countries are in different stages of the demographic transition
  - Three examples:
    - Cape Verde = High growth
      - Stage 2 since the 1950s
    - Chile = Moderate growth
      - Stage 3 since the 1960s
    - Denmark = Low growth
      - Stage 4 since the 1970s
Why Is Population Increasing at Different Rates?

• Demographic transition & world population growth
  – Most countries = stage 2 or stage 3 of the Demographic Transition
    • Stages 2 and 3 are characterized by significant population growth
  – No country is in stage 1 of the demographic transition
  – It is easier to cause a drop in the CDR than in the CBR
Why Might Overpopulation be a Concern?

• Malthus on overpopulation
  – An Essay on the Principle of Population (1798): Population grows geometrically while food supply grows arithmetically
  – Criticism of Malthus includes the following:
    • Pessimistic viewpoint
    • Failure to consider technological innovation
    • Marxist critique
As you can see, supply has increased beyond the rate at which the population has expanded. Technological innovation seems to keep pace, so far. As with any theory or projection, there is lots of room for change and mistakes.
Why Might Overpopulation be a Concern?

• Declining birth rates
  – Reasons for declining birth rates
    • Reliance on economic development
    • Distribution of contraceptives
      – Reducing birth rates with contraception
Family Planning

Figure 2-30
Why Might Overpopulation be a Concern?

• World health threats
  – The epidemiologic transition
    • Stage 1: Pestilence and famine
      – The Black Plague
      – Pandemics

This theory was originally posited by Abdel Omran in 1971.
Why Might Overpopulation be a Concern?

- World health threats
  - The epidemiologic transition
    - Stage 2: Receding pandemics
      - Cholera and Dr. John Snow

This is one of the first maps used to track the source of disease. Dr. John Snow used it to track a Cholera outbreak and subsequently save hundreds of lives.

He is considered the father of modern day epidemiology, i.e. the study of disease in human populations.
Why Might Overpopulation be a Concern?

• World health threats
  – The epidemiologic transition
    • Stage 3: Degenerative diseases
      – Most significant: Heart disease and cancer
    • Stage 4: Delayed degenerative diseases
      – Medical advances prolong life

As people age, they endure Degenerative diseases, i.e. when the body starts to break down based on age.

Medical science then creates innovations, which prolong life for those whose bodies have begun to age. Gerontology is the study of the social, psychological and biological aspects of aging.

Artificial Heart

An Artificial Pacemaker

Artificial Joints of many different kinds are common today.
Why Might Overpopulation be a Concern?

• World health threats
  – The epidemiologic transition
    • A possible stage 5: Reemergence of infectious diseases?
      – Three reasons why it might be happening:
        » Evolution
        » Poverty
        » Improved travel

There has been much speculation on whether there might be another spread of an infectious disease, either one that was man-made or a mutated strain of a natural one. Because of increased travel ease, it is likely that a highly contagious disease would spread. The recent Bird Flu scare comes to mind or the recent Swine Flu both of which could affect humans. Newsweek, Time, and other reputable sources report that these types of diseases could happen.
The Most Lethal Infectious Disease: AIDS

Figure 2-33
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30 Million Deaths (as of 2009)
34 Million people infected with HIV virus approximately.
OUTBREAK
Deadliest Pandemics in History

What is a Pandemic?
Derived from the Greek word pandemos meaning "pertaining to all people," a pandemic is a widespread disease that affects humans over a wide geographic area.

Because a virus doesn’t care about state lines or national borders, it can wipe out millions and span multiple continents rapidly. Here is a look at the infectious diseases the world has battled throughout history.

MEASLES
7th Century BC - 1963
200 million

HIV/AIDS
1981 - TODAY
25+ million

PLAGUE OF JUSTINIAN
541 - 750
25 million

SMALLPOX
10,000 BC - 1979
300+ million

BLACK DEATH
1346 - 1371
75 million

SPANISH FLU
1918 - 1919
50-100 million

TYPHUS
1330 BC - TODAY
4 million

CHOLERA
1850 - TODAY
3 million

HONG KONG FLU
1968 - 1969
1 million

Key:
- **PANDEMIC**
- **DEATH TOLL**

HONORABLE MENTIONS

Although the following viruses do not have a figure for total amount of lives claimed, they continue to terrorize various areas around the world.

- **MALARIA**
  - Common Symptoms: Chills, Headache, Fever, Jaundice, Muscle Pain, Nausea, Vomiting, Seizures
  - Death Toll: According to the World Health Organization’s 2015 “World Malaria Report,” an estimated 780,000 people are killed by the virus every year

- **TUBERCULOSIS**
  - Common Symptoms: Chest Pain, Cough, Fever, Chills, Fatigue
  - Death Toll: There are almost 2 million tuberculosis-related deaths worldwide every year

- **YELLOW FEVER**
  - Common Symptoms: Bleeding, Fever, Nausea, Vomiting, Delirium, Seizures, Jaundice
  - Death Toll: Worldwide, 30,000 deaths are caused by the infection every year

***A Collaboration Between Good and Column Five***

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The End.

Up next: Migration

Figure 3-1