Population Geography Class 4.1

Last Time

• Urbanization
Population Geography Class 21

Today’s Objectives

• Population-Resources-Environment Theories

• Historical and Current Population-Food Patterns
Human Billions

- 1900 ~ 1 billion 100k years
- 1930 ~ 2 billion 30 years
- 1960 ~ 3 billion 30 years
- 1974 ~ 4 billion 14 years
- 1987 ~ 5 billion 13 years
- 1999 ~ 6 billion 12 years
Current and Projected Human Population Growth

<table>
<thead>
<tr>
<th>Region</th>
<th>2004</th>
<th>2050</th>
</tr>
</thead>
<tbody>
<tr>
<td>World</td>
<td>6,396</td>
<td>9,276</td>
</tr>
<tr>
<td>Africa</td>
<td>885</td>
<td>1,941</td>
</tr>
<tr>
<td>Sub-Saharan Africa</td>
<td>733</td>
<td>1,701</td>
</tr>
<tr>
<td>Asia</td>
<td>3,875</td>
<td>5,385</td>
</tr>
<tr>
<td>China</td>
<td>1,300</td>
<td>1,476</td>
</tr>
<tr>
<td>India</td>
<td>1,087</td>
<td>1,628</td>
</tr>
<tr>
<td>Latin America/Caribbean</td>
<td>549</td>
<td>778</td>
</tr>
<tr>
<td>North America</td>
<td>326</td>
<td>457</td>
</tr>
<tr>
<td>Europe</td>
<td>728</td>
<td>668</td>
</tr>
<tr>
<td>Oceania</td>
<td>33</td>
<td>47</td>
</tr>
</tbody>
</table>

World Population Projections

Carrying Capacity

• The upper limit beyond which resources that support a given population are exceeded

• Classic View - Population growth limited by resources necessary for survival

• Current View - some populations grow to OR over shoot limit and fail beyond recovery

• To what degree are humans dependent on natural resources?
Food Requirements

• Food needs are a function of population size, age structure and income
• Food demand is projected to grow 2.7%/year partly as a consequence of ↑ income

• Regionally – potential problems with food supply
  – Asia demand increasing at > 2.3%/year
  – N. Africa + Mideast (↑ population + wealth) → 3.8%/year demand growth
  – S. Saharan Africa → 3.6%/year demand growth
Resource Impacts
(Renewables)

• 200 million hectares of forests lost in LDCs (> the size of Mexico) from 1980-1995
• 1.5 billion hectares of the world’s cropland abandoned over last 40 years due to erosion.
• 1970 – 2003
  – 15% decline in terrestrial wildlife populations
  – 35% decline in marine wildlife populations
  – 54% decline in freshwater wildlife populations
• Projected declines from 1995 - 2010
  – fish catches decline 10% per capita
  – irrigation lands decline 12% per capita
  – forests decline 30% per capita
## Total food production 1991-1998

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>World</td>
<td>0.1</td>
<td>2.8</td>
<td>0.8</td>
<td>3.1</td>
<td>1.9</td>
<td>4.1</td>
<td>1.8</td>
<td>0.5</td>
<td>2.3</td>
</tr>
<tr>
<td>Developed countries</td>
<td>-2.9</td>
<td>1.5</td>
<td>-4.1</td>
<td>1.2</td>
<td>-1.7</td>
<td>3.2</td>
<td>1.1</td>
<td>-1.0</td>
<td>0.5</td>
</tr>
<tr>
<td>North America</td>
<td>-0.9</td>
<td>8.6</td>
<td>-8.1</td>
<td>14.9</td>
<td>-4.2</td>
<td>3.7</td>
<td>2.9</td>
<td>1.6</td>
<td>3.8</td>
</tr>
<tr>
<td>Western Europe</td>
<td>0.7</td>
<td>1.1</td>
<td>-3.1</td>
<td>-1.1</td>
<td>-0.2</td>
<td>4.3</td>
<td>0.1</td>
<td>-0.4</td>
<td>0.5</td>
</tr>
<tr>
<td>Eastern Europe 1/</td>
<td>-1.7</td>
<td>-13.0</td>
<td>1.4</td>
<td>-8.6</td>
<td>4.7</td>
<td>0.3</td>
<td>-0.2</td>
<td>-0.2</td>
<td>-0.8</td>
</tr>
<tr>
<td>CIS</td>
<td>...</td>
<td>...</td>
<td>-4.2</td>
<td>-13.6</td>
<td>-5.6</td>
<td>-1.1</td>
<td>0.8</td>
<td>-12.1</td>
<td>-6.3</td>
</tr>
<tr>
<td>Developing countries</td>
<td>2.6</td>
<td>3.8</td>
<td>4.8</td>
<td>4.5</td>
<td>4.7</td>
<td>4.4</td>
<td>2.5</td>
<td>1.8</td>
<td>3.6</td>
</tr>
<tr>
<td>Africa South of Sahara</td>
<td>5.8</td>
<td>1.3</td>
<td>3.4</td>
<td>3.5</td>
<td>2.9</td>
<td>4.9</td>
<td>-1.7</td>
<td>1.3</td>
<td>2.2</td>
</tr>
<tr>
<td>Far East and Oceania</td>
<td>2.2</td>
<td>5.1</td>
<td>6.6</td>
<td>4.9</td>
<td>5.5</td>
<td>4.3</td>
<td>3.9</td>
<td>1.4</td>
<td>4.0</td>
</tr>
<tr>
<td>Latin America &amp; the Caribbean</td>
<td>3.0</td>
<td>1.7</td>
<td>1.1</td>
<td>5.1</td>
<td>5.0</td>
<td>2.1</td>
<td>2.8</td>
<td>1.6</td>
<td>3.3</td>
</tr>
<tr>
<td>Low-income food deficit countries</td>
<td>2.5</td>
<td>4.0</td>
<td>5.8</td>
<td>4.8</td>
<td>4.9</td>
<td>4.7</td>
<td>3.2</td>
<td>0.7</td>
<td>3.6</td>
</tr>
</tbody>
</table>

1/ From 1993 including Estonia, Latvia and Lithuania.

Source: FAOSTAT.
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>World</td>
<td>-1.4</td>
<td>1.2</td>
<td>-0.6</td>
<td>1.6</td>
<td>0.5</td>
<td>2.6</td>
<td>0.4</td>
<td>-0.9</td>
<td>0.9</td>
</tr>
<tr>
<td>Developed countries</td>
<td>-3.5</td>
<td>1.0</td>
<td>-4.6</td>
<td>0.6</td>
<td>-2.1</td>
<td>2.9</td>
<td>0.7</td>
<td>-1.5</td>
<td>0.1</td>
</tr>
<tr>
<td>Developing countries</td>
<td>0.7</td>
<td>2.0</td>
<td>3.0</td>
<td>2.6</td>
<td>2.9</td>
<td>2.7</td>
<td>0.8</td>
<td>0.1</td>
<td>1.8</td>
</tr>
<tr>
<td>Africa South of Sahara</td>
<td>2.9</td>
<td>-1.5</td>
<td>0.7</td>
<td>0.8</td>
<td>0.3</td>
<td>2.3</td>
<td>-4.1</td>
<td>-1.2</td>
<td>-0.4</td>
</tr>
<tr>
<td>Far East and Oceania</td>
<td>0.6</td>
<td>3.5</td>
<td>5.0</td>
<td>3.4</td>
<td>4.0</td>
<td>2.8</td>
<td>2.4</td>
<td>0.0</td>
<td>2.5</td>
</tr>
<tr>
<td>Latin America &amp; the Caribbean</td>
<td>1.1</td>
<td>0.0</td>
<td>-0.7</td>
<td>3.3</td>
<td>3.3</td>
<td>0.5</td>
<td>1.2</td>
<td>0.0</td>
<td>1.7</td>
</tr>
<tr>
<td>Near East &amp; North Africa</td>
<td>-0.1</td>
<td>-0.1</td>
<td>-0.9</td>
<td>-0.9</td>
<td>-2.2</td>
<td>8.1</td>
<td>-7.2</td>
<td>3.1</td>
<td>0.2</td>
</tr>
<tr>
<td>Low-income food deficit countries</td>
<td>0.6</td>
<td>0.4</td>
<td>4.0</td>
<td>3.0</td>
<td>3.2</td>
<td>2.9</td>
<td>1.5</td>
<td>-0.9</td>
<td>1.9</td>
</tr>
</tbody>
</table>

Source: FAOSTAT.
In 1798 he argued:

- Food is necessary
- Passion between the sexes is necessary and constant
- Population if unchecked grows geometrically
- Food production can only grow arithmetically

Two forms of population regulation

- “Positive Checks” mortality
- “Preventative Checks” reduced human fertility
Karl Marx 1818-1833

- Malthus’ Law only applies to capitalist economies
- Marx argues capitalist systems engender business cycles:
  - as demand increases, wages increase and this encourages population growth
  - But as demand declines wages are depressed and population declines
- Resource limitations (food, land) do not produce subsistence crises as argued by Malthus
- Rather, the character of variable demand for labor inherent in capitalist economies produces them
Population pressure in agricultural societies does not create Malthusian crunch but rather gives rise to increased agricultural output via intensification.

- **Intensification** – concept of increased output per unit area of agricultural land per unit time
  - inputs (fertilizer, insecticide, irrigation ..)
  - changing crops
  - adding labor inputs
  - cropping more frequently
Food vs. Population: From Theory to Reality

• Population growth has been matched by food output growth

• Using 1961-65 as baseline:
  – LDCs had increased food production 160% by early 1980s

• Problems over last 20-30 years
  – ¾ of world’s population in LDCs – but they produce only ~ ½ the world’s food
Hunger: Problem of Production or Distribution?

- Presence of food in a community no guarantee that people have access to it
- Most famines are a failure of access more than an absolute shortage of food
- For subsistence: availability of enough land to produce food for the family
- For non-farmers: opportunity to get food via exchange
Food Access Problems

- **Population growth**
  - increase in population may push people to environmentally marginal land

- **Environmental problems**
  - regional drought
  - environmental degradation/marginal areas

- **Political economy aspects**
  - poor land distribution (rich have most)
  - high fees/taxes/bribes
  - best lands in cash export crops not food
Consequences of Hunger

• Regional scale (e.g. SS Africa)
  – food shortage “classic” view of famine
  – social conflict
  – regional population movements
  – changing demographics: ↑ mortality & ↓ fertility
  – disease synergy in refugee camps

• Household scale
  – not all suffering shared equally
  – women and children
  – family fragmentation
MAPPPING NUTRITION AND MALNUTRITION

*DES is an estimate of the average daily per person energy available for human consumption in the total food supply during a given period. DES figures are produced by FAO based on Food Balance Sheets (FBS), which track the supply and utilization of food within countries.

While DES does not indicate food consumption, it does identify: those countries in which people are more likely to have enough to eat (represented by shades of green ); those in which the daily DES is marginal (beige ); those in which hunger and malnutrition are likely to be widespread (orange ). Those countries that face the most severe food supply shortages, with average daily DES below 2 000 kilocalories per person per day, are coloured in red ( ).
Global-Scale Food Production

- Currently, there is enough food for a basic vegetarian diet to support ~ 6 billion
  - If the available food was distributed according to need, it would be sufficient to feed everyone in the world
  - Animal foods are inefficient: <10% of vegetable food
- If 15% calories from animal sources: enough to feed ~ 3.9b
- If~25% calories from animals: enough for ~ 2.6b
Food Poverty & Deprivation 2002

- 780 million suffer from chronic hunger
- 156 million children under five in developing countries suffer from protein energy malnutrition
- 16% infants worldwide born underweight
- 35% of kids < 5 years old were underweight for age
Figure 1. Proportion of Undernourished in Developing Regions. Actual and FAO Baseline Projections

Strategies to Prevent Food Shortages

- Alter conditions of food availability
  - Social disruption/war/revolution
    - Subsistence farmers displaced from Ag lands
  - Agricultural land distribution
    - The best land is often controlled by few in LDCs
    - Remaining population without sufficient land
    - Provide sufficient non-agricultural employment
    - Shortage of jobs → shortage of ability to buy food
Strategies to Prevent Food Shortages (Increase Ag. Output)

- Institutional problems
  - “Cheap” urban food policies
  - Export-oriented government policies
  - Policy on tenure/title also a problem
  - Little direct government investment in appropriate infrastructure for small farmers
  - Internationalization of grain and agriculture generally
  - Shortage of labor in some rural areas