Unit 2: Population

Population PowerPoint
Objective: Explain patterns of human population, problems of overpopulation, theories on population, etc.
Unit 2: Population + Migration

Over the course of our study of population, we’ve been learning:

• (1) where world’s population is distributed + why.
• (2) how pops grow + decline over time/ space.
• (3) where pops have increased + decreased.
• (4) how governments respond to population patterns.
• (5) whether or not the world faces an overpopulation problem.
Why is the study of population important?

- More people alive at this time (7+ billion) than at any time in human history

- World’s population increased at a faster rate during 2nd half of the 20th century than ever before in history.
  - Rate is slowing (peak NIR in early 1960s ≈ 2.15%)
  - Now NIR ≈ 1.2%
    - Demographic momentum

- Virtually all global pop. growth is concentrated in LDCs.
  - Areas (low carrying capacity) least able to handle it
  - Inhibits development (demographic trap)
Demographic trap

- Situation many LDCs are in since reaching Stage 2 in the mid-20\textsuperscript{th} century:

- **Population growth** $\Rightarrow$ lack of investment, overspending on social services $\Rightarrow$ low living standards $\Rightarrow$ reinforces high fertility $\Rightarrow$ population growth!

$\therefore$ country is **unable to advance to stage 3 of declining birth rates.**
Stage 2 **Demographic Trap** (circular)

**High CBR**
(Low CDR)

**Children** = economic assets

**STRAIN ON ECONOMIC RESOURCES**
$ on schools, daycare, hospitals
No $$$ for infrastructure

**Primary Jobs** (Periphery)
High agricultural density
No female empowerment

No economic development
World Pop. Growth

- 1st rise = Neolithic Rev.
  - agricultural rev (10,000-8,000 BC)
- Reached 1b by early 1800s
  - European pop. explodes - 1st Industrial Rev.
    - adv. in sanitation/medicine lowers CDR

*Fastest doubling time
  - 1930 – 1975: Why?
    - Diffusion of med. adv. to LDCs
    - Mostly after WWII

- Today: 7 billion +
- Growth is slowing
  - But still adding huge raw #s
    - *demographic momentum:*
tendency for growing populations to continue growing after a fertility decline bc of their young age distribution (Stage 3)
Population Statistics

• **Crude birth rate (CBR)**
  - # of births per 1,000 people in pop./ 1 yr

• **Crude death rate (CDR)**
  - # of deaths per 1,000 people in pop./ 1 yr

• **Natural increase rate (NIR or RNI)**
  - % by which a native population grows in a year
  - CBR – CDR (then convert to %, divide by ten, move decimal point to left one position)
  - *Excludes migration

• **Doubling time**
  - # of years needed to *double* a population
  - Rapid growth of the world’s human population during the *past century* → ever-shorter doubling times *(1930-1975)*
    • 2 billion in 1930 → 4 billion in 1975 (45 years)
    • 4 billion in 1975 → 6 billion in 2000 (54 years)
**Distribution + Density**: *understanding what high + low measures imply about a population is important!*

- **Arithmetic density**
  (total pop./total area)
  - aka “population density”

- **Physiological density**
  (total pop./arable land)
  - High may mean resources are stretched (related to carrying capacity)
    - Must feed more people on less land
    - Lots of land unsuitable for farming or unproductive

- **Agricultural Density**
  (total # of farmers/arable land)
  - Helps account for economic differences
  - MDCs lower bc of technology/finance.
Where is the World’s Population Distributed?

- The **ecumene**
  - portion of the earth’s surface occupied by permanent settlement.
  - Has increased/expanded.
- **Growth of the ecumene:**
  - could be viewed as “possibilism”
    - humans make previously hostile environments productive and attractive for human settlement.
Where Is the World’s Population Distributed?

• Population concentrations:
  • **East Asia** (Eastern China – Japan) = \( \frac{1}{4} \) of world pop.
    – Chinese Eastern Seaboard, along major rivers inland
  • **South Asia** (India – Pakistan – Bangladesh) = \( \frac{1}{4} \) world pop.
    – Ganges and Indus River Valleys, Coastal India
  • **Europe** (incl. European Russia)
    – highly urban
    – linked to industrial resources (coal, etc.)
  • **Eastern North America** (US and Canada)
    – Megalopolis (Boston to Washington DC)
  • **Others?**
    – **Southeast Asia** (mainland and major islands)
    – the rim of **South America**
    – **Sub-Saharan West Africa** – Niger River, “The Sahel”
    – **Sub-Saharan East Africa** – “Great Rift Valley”
Where is the World’s Population NOT Distributed?

• Sparsely populated regions
  – 4 areas people generally avoid?
    • Dry lands (example: Sahara desert)
    • Wet lands (Florida everglades, Amazon rainforest)
    • Cold lands (Antarctica, Greenland, etc.)
    • High lands (Himalayas)
There are more people living inside this circle than outside of it.
More Population Statistics

• **Total fertility rate (TFR)**
  – avg. # of children each women will have
  – * 2.1 = replacement rate (level of fertility @ which a population exactly replaces itself from 1 generation to the next. Replacement level fertility = 2.1 children per woman)

• **Infant mortality rate (IMR)**
  – children who die under 1 yr old
    • per 1,000 live births

• **Life expectancy**
  – Avg. # of yrs. a newborn will live
• Notice that places with high TFRs tend to have high IMRs + that places with low TFRs have low IMRs.
• Malthus on overpopulation
  – What is overpopulation?
    • Too many people for available resources. (Overpop is not a #. It’s rel. between ppl + resources)
      – Related to *carrying capacity: max # of ppl an env of a particular area can sustainably/comfortably support, given the food, habitat, water, etc. Related to physiological density.
  – Malthus predicted population will outpace food supply - *An Essay on the Principle of Population (1798):
    • Food supply grows arithmetically (2, 4, 6, 8, 10, 12)
      – Linear/ constant (a line); 2x
    • Population grows geometrically (2, 4, 8, 16, 32, 64)
      – Exponential/ geometric (a J curve); X^2
    • Population growth → pressure on resources (food). Disease, famine, war could potentially produce higher CDRs … or?
    • OR CORRECTIVE ACTION!!
      – Upper classes must lower CBRs though moral restraint
      – Kind of a **Social Darwinist**. Model for **Scrooge** from A Christmas Carol (pessimist; Ba Humbug on the poor)
Malthus:
REALITY:

--- MALTHUS

--- IN REALITY

Food supplies grow much faster than Malthus predicted. Population growth not as fast as Malthus predicted.

Food supply (linear, algebraic growth)

Raining, war, disease will make conflict.
Neo-Malthusians (more supportive)

- Supporters who have **updated** Malthus’ theory. (Frightened by NIR during second ½ of 20th century)
  - There is a pop. problem!!
  - Competition will be for other resources not just food:
    - Search for clean air, fuel, water could lead to violence
  - **Growth in LDCs** (stuck in demographic trap – modern medicine)
  - We are just **temporarily** staying above the curve.
    - Ex.) India – wheat + rice production down (losing water table)
Critics of Malthus (Anti-Malthusians)

- **Wrong on Resources**
  - Based on principles of **possibilism**, Malthus was **too pessimistic on resource growth**:  
    - Failure to consider **technological innovation**  
    - *Green Revolution* greatly **increased food production**  
      (GMOs & Norman Borlaug’s high yielding disease-resistant dwarf wheat)
  - **Marxist critique**  
    - Not pop. growth but **unequal dist. of resources**  
    - Malthus did blame overpopulation on the poor!!!

- **Wrong on Population**
  - **Large population = economic growth**  
    - Esther Boserup, Simon Kuznets, Julian Simon:  
      More babies – more workers, more innovation!
  - **African leaders**: high pop. growth is good bc **more ppl = larger military = more power.**
  - Population growth has moderated (stage three)
• Each group will turn in group handout before class discussion:

• Assign roles/responsibilities

• 1.) make argument IN SUPPORT of Malthus’ theory of population. (pessimist argument)

• 2.) make argument AGAINST (or disproving) Malthus’ theory (optimist argument)

• 3.) make 3rd argument (example: Marxist critique)

• 4.) Develop a level 2-3 question to challenge a population pessimist.

• 5.) Develop a level 2-3 question to challenge a population optimist.
India (example of govt pop. policy)

- 1960s: population planning program
- 1970s: country began forced sterilization program for men with 3 or more children.
  - 22.5 million men were sterilized.
- 2004: state of Uttar Pradesh began guns for sterilization program (attempt to incentivize policy).
- Today, most states use advertising and persuasion to lower birth rates.
  - Must know example:
    - China’s One-child policy (1978 – 2015)
    - Expansionary or pro-natalist
“Restrictive” or “anti-natalist” policy

  - “must know” example
- Why has China loosened policy to allow 2 children per family?
  - Aging population, needs young workers to continue economic growth
  - Doesn’t want to slip into stage 5.
  - Cultural reasons = sex ratio, not enough female babies for males
  - Missing girl problem = maladaptive behavior

- Anti-natalist policies are not the same as Eugenics!

- Eugenics = targeted population control
  - Like selective breeding it is intended to “improve” population by weeding out “undesirables”
    - targets are usually minorities or the disabled
    - US, Nazi Germany, India
Epidemiological Transition

Epidemiological Transition tries to match typical diseases/causes of death with demographic profile (stage) of a country

– **Stage 1: Pestilence and famine**
  - Infectious & Parasitic diseases
  - Pandemics
    - The Black Plague
  - Vectored diseases
    - Malaria
    - African sleeping sickness
    - West Nile Virus
Epidemiological Transition

– **Stage 2: Receding pandemics** (overall)
  
  • declining CDR
    – Economic development in MDCs
    – Diff. of medical knowledge in LDCs
      » Guinea Worm
  
  • certain overcrowding diseases may spike
    – Example: Cholera
    – Why: rapid urbanization
Epidemiological Transition

• Stage 3: Degenerative & Manmade diseases
  – More people now middle-aged
  – Most significant: Heart disease and cancer
  – Diseases related to lifestyle excess
    » Obesity, diabetes

• Stage 4: Delayed degenerative diseases
  – More people now elderly in population
  – Medical advances prolong life
    » Alzheimer’s
Longer Life Expectancies typically mean higher rates of chronic diseases.

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<th>Cause</th>
<th>Total</th>
<th>Percent</th>
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<tr>
<td>Heart Disease</td>
<td>696,947</td>
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<tr>
<td>Cancer</td>
<td>557,271</td>
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<td>Stroke</td>
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<td>Influenza and Pneumonia</td>
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<tr>
<td>Septicemia</td>
<td>33,865</td>
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Epidemiological Transition

• Stage 5: Age of Reemergence of Infectious Disease and Parasitic Diseases
  – Causes of death:
    » Evolving bacteria, developing world poverty
    » AIDS
    » GLOBALIZATION and time-space compression
The End.

Up next: Migration