Hunter College - CUNY
Dept. of Geography & Environmental Science
GEOG 101 Lecture Presentation Summary
Spring 2021

NOTE: In the absence of face-to-face lecturing and explanation of the material presented in the lecture slides, I will summarize the content of each lecture presentation stressing the concepts and interrelationships that are essential to an introductory geography course.
If, after viewing the lecture presentation, the imbedded short videos and hot links to articles, and after reading this summary, you have any questions, would like to contribute a comment or two, need clarification by other examples or would like additional information on the topic, please do not hesitate to email me at agrande@hunter.cuny.edu.

LECTURE 21: Life on Earth: Population Geography 2

- **This lecture continues to look at the geographic issues of studying a population with the focus on health and nutrient. It ends with an overview of ways to deal with population growth around the world.** At the end, there is a brief introduction to biogeography and ecology.

- **Slide 4: Medical Geography.** <u>Medical Geography</u> is the study of the well-being of people as an aspect of habitat. We look at their spatial characteristics (location/movement), we relate them to quality of habitat (site and situation) and we track and map routes of dispersal (diffusion). **Epidemiology** is the study of the cause, patterns and control of disease. People who have geographic disease specialties work in these fields along with the medical professionals.

- **Slide 5: Epidemiology Diagram.** This is a diagram from an epidemiology journal discussing mosquitoes, their habitat, their range and their relationship to public health. *Notice all the geography contained in the diagram!*

- **Slide 6: Health and Nutrition.** Any population analysis needs to be aware of and concerned about the health and well-being of the constituents. Numbers of people, BRs and DRs are directly related to quality of habitat. Good or healthy areas tend to be a PULL factor while areas experiencing food shortages and sickness PUSH people to leave. Unfortunately, most people in these areas are relegated to STAY because they cannot move elsewhere.

- **Slides 7-10. Causes of Death Worldwide.**
    - **Slide 7** is a generalized world map of leading causes of death. *The link leads to a web site where you can find detailed information by area and by illness.*
    - **Slide 8** graphs the <u>10 major causes of death</u> worldwide then separates the causes in high-income countries from the causes in low-income countries.
    - **Slides 9-10** show just eight of the major categories causing death. Note the different patterns. Some areas area susceptible to one or more types of illness because of environmental and/or cultural reasons: as smoking/AIDS/malaria/high-salt diet/diarrhea. *Use the link in **Slide 7** to get the details about these and other causes of death, including road accidents and drowning.*

- **Slides 11-17. Food Supplies.** *Pay attention to the patterns more than the statistics.*

- ▪ **Slide 11: Hunger vs. Poor Nutrition.** Know the difference between hunger and poor nutrition. **Hunger** is a feeling, usually temporary, that can lead to malnutrition. **Malnutrition** is any disorder of ingesting food that does not provide the body with adequate supply of calories and nutrients (vitamins and minerals) contained in foodstuffs. Know the difference between undernutrition, overnutrition and chronic malnutrition.

  - ▪ **Slide 12: Malnutrition.** Here is a diagram of the spatial aspects of malnutrition. Read the diagram from the bottom (basic causes) to the top (manifestation). The links bring you to World Hunger Organization's web sites for some detailed information. *It is interesting to see that Africa has the greatest geographic spread of hunger but Asia has the most people suffering from hunger's manifestations.*

  - ▪ **Slide 13: World Hunger Map.** This is the UN Food and Agriculture Organization (FAO) most recent map of world hunger. The link brings you to its web site.

  - ▪ **Slide 14: The World Food Programme Hunger Map for 2019.** The link brings you to its web site.

  - ▪ **Slide 15: World Undernourished Areas.** This is a world map of **malnutrition.** Malnutrition is different from hunger (but related, of course) in that it negatively affects people over the long term. The link gets you to 2019 data on all the countries of the world. *Notice that Africa, Asia and South America have the highest percentage of their population experiencing malnutrition.*

  - ▪ **Slides 16: Future Food Supplies and Well-being.** This slide addresses **food insecurity** focused on global warming and how changes will affect the well-being of people. *Note the KEY at the lower right of the map.* **View the 5 min video** by clicking the *"See the Possibilities"* button.

  - ▪ **Slide 17: Geographical Issues Facing Food Supplies.** *This slide summaries the major geographical points made in the video.*

- **Slides 18-30 return to the geographical aspects of disease.**

- **Slide 18: Medical Definition of Disease.** A disease is an impairment to the normal state of living things and is manifested by signs and symptoms. Diseases may be related to environmental factors, including conditions needed for bacteria and viruses to survive (habitat).

- **Slide 19: Spatial Labeling of Diseases.** Diseases may be grouped into categories based on their **geographic extent.** You should be able to differentiate between an endemic disease, an epidemic and a pandemic.

- **Slide 20: Examples of Disease Types.** Here are some examples of these categories. Be cognizant that an endemic disease's area can be enlarged or reduced by changes to the regional environment, as global warming or the spread of desertification (removing water from the equation).

- **Slide 21: Types of Diffusion.** I brought this slide back from Part I of the course to refresh your understanding of **diffusion** and added the COVID-19 circumstances.

- **Slide 22 contains two COVID-19 tracking sites whose maps are constantly being updated by GIS technology.** Click on the links to access the sites. The US map has a sliding bar that allows you to see the progression of the COVID-19 virus on a county scale since the beginning of 2020.The animated map shows changes both spatially and temporally.

- **Slide 23: The classic Dr. John Snow Cholera Map.** In 1842 the cholera pandemic reached London. No one really knew the cause of transmission of the disease but Snow from reports of other outbreaks believed it was related to people ingesting water polluted by sewage. *(Cholera is an infectious and often fatal bacterial disease, typically contracted from infected water supplies and causing severe vomiting and diarrhea).* Dr. Snow mapped the cases he treated and saw a correlation to neighborhood wells. Convinced that "bad" water was the cause, he asked that the wells be shut down. When officials refused, he removed the pump handles, preventing the extraction of water. New cases decreased immediately. This is deemed by many to be the first medical geography study and he is called the "father of epidemiology."

- **Slides 24-25. Climate Change and the Spread of Disease.** Here are two examples of the relationship between **global climate change and the spread of diseases.** *The link on Slide 25 is to a NYTimes article on Dengue Fever.*

- **Slides 26-28 Mapping Disease in the US.** All reporting is on the county level. Be careful when viewing the maps. Some counties are large in area but have people concentrated in one area as Las Vegas and Clark County, NV. *Most of Clark County is desert with few people living outside the Las Vegas metropolitan area, so when the entire county is color-coded, it may give the wrong impression as to the extent of an illness.*
    - **Slide 26: Heart Disease**
    - **Slide 27: Lung Cancer.**
    - **Slide 28: COPD**

- **Slides 29-30: Risk Maps.** These are **"risk maps"** issued by the US Centers from Disease Control and Prevention (CDC) to alert travelers to what is happening around the world. The links bring you to detailed information. **View the 5-minute video in Slide 30** which focuses on <u>schistosomiasis</u>, a water-borne tropical disease.

- **Slides 31-39 look specifically at dealing with Population Growth.**

- **Slides 31-32: Health, Nutrition and Numbers of People.** Once we get a handle on the health and nutrition issues that have been killing people: healthy people are less likely to die young, leaving more people to be supported, we can investigate if the earth can support more people. *Question: Are we dropping the DR even further without addressing birth rates, global food supplies and Earth's carrying capacity?* We need to either <u>increase</u> the carrying capacity of an area (habitat quality) or <u>reduce</u> the stress of a population on the habitat. **How?**

- **Slide 33: Population Growth.** This slide shows the J-curve again but this time with *population doubling time* statistics. The earth has gone from about 250,000,000 people at the time of the great Roman and Chinese censuses (which coincidentally oc-

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curred around the same time period) to 7,790,000,000 people today. The scary aspect is the time span needed to double world population and also to add a billion people. It took from the <u>beginning of human existence to the year 1830 to grow to 1 billion people</u>. Then it took **95 yrs.** to add a billion; then **35 yrs.** to add a 3rd billion; then **15 yrs.** to add a 4th billion; then **11 yrs.** to add a 5th billion. The 6th billion took 14 years before it went back to **11 years** again to reach the 7th billion milestone. At the current rate of increase, it may take **12 years** to reach 8 billion people world-wide. From the chart you can do the math to determine the reduced doubling times during the same period.

- **Slides 34: Dealing with Population Growth.** The five scenarios for dealing with population growth are listed here and explained in slides 35-39. Be sure to under-stand them in relationship to the context presented.
    - **Slide 35:** Scenario 1 looks to expand the resource base to be able to support more people.
    - **Slide 36:** Scenario 2 moves people around (high concentration to low concentration/ pull-push factors).
    - **Slide 37:** Scenario 3 looks to economic development to lower popula-tion growth rates since family size eventually gets smaller in an ur-ban-industrialized society (remember the <u>Demographic Transition Model</u> and its relationship to BR and DR).
    - **Slide 38:** Scenario 4 addresses cultural issues surrounding this issue. Changing society is much more difficult than implementing technolo-gy.
    - **Slide 39:** Scenario 5 suggests natural population controls of famine, disease, war and poverty that historically kept populations in check, but are the least desirable of all scenarios.

- **Slides 40-47: We rap up "Life on Earth" by introducing Biogeography and Ecology.**

- **Slides 40-41: Biogeography.** Biogeographers study the spatial distribution of plant and animal life and relate it to environmental factors.

- **Slides 42-47: Ecology**. Ecologists study how living things affect each other. They look at components of habitat as living space. Ecological studies also take human interaction into account.
    - **Slide 43** looks at global warming and its effect on biodiversity.
    - **Slide 44** focuses on human impact on the natural world. The hot links are to two articles on human disruption of natural settings.
    - **Slides 45-47** highlight the plight of migratory shorebirds that fly from Siberia to Australia and back each year. The link opens the article which has data from the Yellow Sea region. Climate change also affects the appearance of insects which are the birds' main food source. Too early or too late insect-hatching deprives the birds of their food supply along the migratory route.

- **Slide 48: Next - Geography of Economics**