



## **United Nations Sustainable Development Goals Open Pedagogy Fellowship**

### **Mapping Dimensions of Deprivation and Excess in Health by Nation-State**

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#### **Introduction:**

You are a part of a collegewide effort to increase access to education and empower students through "open pedagogy." Open pedagogy is a "free access" educational practice that places you - the student - at the center of your own learning process in a more engaging, collaborative learning environment. The ultimate purpose of this effort is to achieve greater social justice in our community in which the work can be freely shared with the broader community. This is a renewable assignment that is designed to enable you to become an agent of change in your community through the framework of the United Nations Sustainable Development Goals (SDGs). For this work, you will integrate the disciplines of Geography; Anthropology to achieve SDG #3: Good Health and Well-Being 3.2 End preventable death of newborns and children under five; 3.4 Reduce by one third mortality from non-communicable diseases 3.2 End preventable death of newborns and children under five; 3.4 Reduce by one third mortality from non-communicable diseases

#### **Learning Objectives:**

To apply key human geography concepts of place, space, scale, relationships, region, and patterns.

To identify health as a social and cultural phenomenon that varies over space, and makes specific places.

To demonstrate the concept sustainable development by identifying implicit upper and lower limits of production and consumption, associated with health problems of both deprivation, and high consumption.

To test how social realities can be revealed or masked by how we choose and map data

To link rising diabetes rates to the context of cultural change and the industrial food system.

## **Purpose/Rationale:**

This assignment reinforces your understanding of key human geography concepts such as scale, pattern, and region in order to identify and illustrate community and social dimensions of healthy lives. It examines two indicators capturing material well-being, and social/communal well-being: 1) infant mortality, one of the strongest indicators of overall access to basic health care, and the status of women, and 2) prevalence of diabetes, an emerging indicator of destructive consumption and lifestyle patterns associated with rising incomes, and social change. Indicators are mapped at one scale, the world map of nation-states. The comparison demonstrates that there is no easy division between health and “development” status (development being assumed through national income.) Rising income can be associated with deteriorating health. In addition to demonstrating the complex relationships between development and health, the assignment teaches skills in reading and using data, and shows how processes can be displayed or hidden.

## **Instructions:**

To complete this assignment, students have already studied 1) basic geography concepts of space, place, scale and region; 2) basics map-making, including thematic map types, map projections, and how data and visual choices affect how a map is read, 3) common measures used in population geography and development geography to evaluate well-being, including infant mortality and chronic diseases, 4) colonial history and political geography, which helps explain the origin and structure of the world’s nation states, and their consequent limited ability to illustrate complex social, ethnic and economic relationships in a single area.

### **Part 1: Comparing the World’s Nation-States on an Indicators of Deprivation**

Create a world map of infant mortality using the World Bank’s open data application at <https://data.worldbank.org/indicator>. The World Bank is a sister agency of the United Nations system, and tracks SDG indicators when possible. However, there are hundreds of indicators in this database, so stay focussed. You can always go back and play later.

Scroll down to Health indicators (categories are alphabetical). Indicators are linked to a data analysis tool, and can be mapped, graphed, or downloaded in a table. Data are usually available in time-series, or in other words, for different time periods. We will be using the mapping tool, for the most recent year, 2019. Find “Mortality rate, infant (per 1,000 live births)” in the alphabetical listing. Follow the steps below to generate and alter a map of infant mortality per 1000 answering the questions as you take each step.

- 1) Click on the indicator to bring up an interactive screen. The default view is a time-series graph of the world average from 1990 (64.5 deaths per 1000) to 2019 (28.2 deaths per 1000).
- 2) Select the “map” mode from the menu at the top left corner of the graph. This brings up a world map of the indicator broken down into five categories. You can zoom in and out to view details, and hold the cursor over any nation-state to see its value. You can also alter the year of the data, but stick with 2019 for now.

- a) What map projection is being used? What are some problems with this projection for reading world patterns?
- b) This is a thematic map. What kind of thematic map is this?
- c) The map allows you to shift between two types of thematic map through a menu directly under the Line/Bar/Map menu. Shift to the second option. What kind of map is this?
- d) The data categories are fixed for both colour and values. Do the shades of blue selected allow easy reading of the data categories?

Note that there are some errors in this map display which make it difficult to compare the map types – we will move to a better display for further questions.

3) To the right of the map are three menu selections: Download, Databank, and WDI Tables. Select Databank to bring up a new data tool. This opens a new window and also leaves the previous page open. The new tool shows the indicator in a table with countries as rows and years as columns. To the left is a menu altering the data view, which we will use later. If this menu disappears when you open the map, move the vertical slider on the right to the top of the screen, and click on the blue and white gear-shaped icon.

On the right, above the data table is the menu for altering the data view between Table, Chart, Map, and Metadata (which provides country detail). Select Map. This opens a default map for 1990 in pre-selected colours and data categories. This map tool allows you to change the year and, to a limited degree, the colour scheme and data categories. Adjust the zoom and position of the continents to your preferred view. Change the year to 2019 with the pop up menu at the top left.

- a) The default data visualisation is similar to the previous tool: five groups in shades of blue. What change has been made in the shading scheme? (You can check the previous map by going back to the original window.)
- b) Select the gear icon to alter map choices. It brings up a menu with: Variables, Layout, Styles, and three other choices. Select Layout and try styles 1, 2, and 3 to test alternative colour schemes (the default is 4). Comment on they affect how you read the map. Which countries stand out on each map? Most people from Western cultures use the colour logic of styles 1, 2, and 3, but cultures vary. Select the scheme which works best for you. (You can create a custom scheme, but don't waste time. Map-making is addictive.))

4." Layout" allows data groups to be altered between two choices. Equal Countries creates groups of equal numbers of countries (about 53). Equal Values creates of equal data ranges; in this case groups increase by a range of 16 deaths/1000. All data categories are simplifications, by necessity, but these choices are especially limiting. There is an exponential difference in infant mortality over income groups, so it is very difficult to capture subtle differences at high and low values. This reinforces simplistic stereotypes of “developed” and “underdeveloped” countries. Such simplifications can be overcome with more complex groups. For example, exponential differences can be captured by categories based on exponential values, eg. 0-2, 2-4, 4-8, 8-16, 16-

32, 32-64. Having more or fewer categories can also help, though it is difficult to read more than seven. Despite these limitations, compare the two choices for data groups, and comment on the following:

- a) For Equal countries, briefly describe the general world pattern. Where are the highest and lowest values?
- b) United States is in a lower category than most high income countries. (Note that this is even more pronounced for Maternal Mortality) Scroll over the countries in the same category as the US (5.1 to 12.2 deaths/1000) for a more data detail. Comment on which countries have very similar values to the US, but which you wouldn't normally group with it, based on common clichés about high and low income countries. For example, many people from high income countries might be surprised that Malaysia and the US have similar infant mortality rates.
- c) Canada and the US are in different categories. Compare their values to Northern and Western Europe. Would you place Canada with the US or with Northern and Western Europe? Why?
- d) Equal countries separates the high income countries into several categories, but combines a large high mortality range into one group. Examine how detail is lost in high mortality countries when shifting between "equal countries" and "equal groups." Identify and list which countries have the highest infant mortality under the "equal countries" grouping (36.6 to 81) . You can create this list quickly by shifting to the "Table" view, and sorting the data by value by clicking on the year. You can return to the alphabetical listing by clicking on the country name.
- e) Shift to Equal values and identify which countries shift by one category and by two categories. Note how each data grouping therefore has its value and limitations in revealing diversity for a measure which varies exponentially.
- f) You can limit the data and countries mapped by selecting an upper and lower boundary under Custom Data Intervals. Narrowing the data to a range of 0 to 4 deaths per 1000 brings up that subset of countries, and defines five new categories providing much greater detail. Return to question 4c. Does this new view change where you would place Canada, relative to the United States?

## Part 2: Comparing the World's Nation-States on an Indicator of High Consumption

Type 2 diabetes has become a health concern, associated with changing diet and lifestyle. Unlike infant mortality, which is generally falling everywhere, diabetes is rising in a mix of countries. There are fewer years of data, however, the International Diabetes Federation has generated maps for 2010 and 2019 from the same data used by the World Bank. Map diabetes rates for 2019 at <https://diabetesatlas.org/data/en/>. Select Diabetes estimates, (20-79 y) from the menu on the left, then Age-adjusted comparative prevalence of diabetes. This produces the data table, a choropleth map for 2019 data, and a tool for changing the year. Only the year can be changed, but the data groups are fairly well chosen, and remain constant, allowing easy comparisons between years.

- 1) Examine the colour scheme, which follows a different logic than previous examples. How easy is this to read? Is it easy to see that Canada has a higher diabetes rate than Russia, and Russia has a higher rate than Mongolia?
- 2) Where are the lowest and highest diabetes rates? Do they reflect patterns of high and low income?
- 3) There are few indicators for high consumption health problems. Given the epidemiological transition, why would a measure for “Cause of death, by non-communicable diseases” be a poor indicator of over-consumption?
- 4) Compare the data and maps for 2010 and 2019. It is easy to see that there is a general rise in diabetes. Which countries are seeing a decline? (Hint: use the data table and zoom function to see better.)
- 5) The world average rose from 7.0 to 8.4% between 2010 and 2019. Examine the data for the Americas and identify countries exceeding the average of 1.4% as follows: exceeds the 2010 value by 1.5 to 2.7% (above the average increase); exceeds the 2010 value by 2.8 to 4.1% (2x times to 3x the average increase); exceeds the 2010 value by 4.2% or more (3x the average increase).

### Part 3 Qualitative Exploration of Weight Gain and Diabetes through Documentary Journalism

Concern about weight and health increased in the 1990s, but goes back to the mid 20th century. There is much analysis of the roles of the food industry, advertising industry, individual responsibility, and social pressure in driving both concern and health changes. British journalist Jacques Peretti’s two documentary series, *The Men Who Made Us Fat* (2012), and *The Men Who Made Us Thin* (2013) question both the social pressure to eat irresponsibly, and the social pressure to worry about appearance. Watch episode 4 of *The Men Who Made Us Thin*, <https://www.dailymotion.com/video/x2cuvfq>, from minute 12:10 to 21:30 and answer the questions below. Sorry about the segment on fat removal surgery. You can close your eyes. It helps capture social change.

- a) Who was the initial focus of the weight loss industry? Where can money be made now that focus has shifted?
- b) What is BMI (this is explained at the beginning of the documentary, but is easy to find in other resources) and how does it define to the concepts of overweight and obesity?
- c) How many people per year were becoming obese in São Paulo, Brazil? What is the rate of increase in number of fat removal surgeries? What is the cost per surgery?
- d) What is the main difference in how Brazilian and North American women identify the cause of their weight gain?
- e) What difference in the perception of fast food in “developing countries” both encourages its consumption, and allows it to have a higher price?
- f) How is Western food reaching the remote parts of the country? Which corporation is identified?

- g) What argument does Carlos Montero, use to counter the argument that modern food increases choice?
- h) What does Boyd Swindon argue is most needed to address weight gain and health problems? What does Peretti identify as the main element to address to effect change?

**Format Requirements:**

Answers to questions requiring explanations are to be provided in written format, in full sentences (not point form) and submitted in paper, or on the online submission site. Answers and explanations should not exceed 100 words. Tables should be neat and readable, and can be completed in a word processing or spreadsheet format. All answers, including tables, can be done by hand if that is preferred.

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