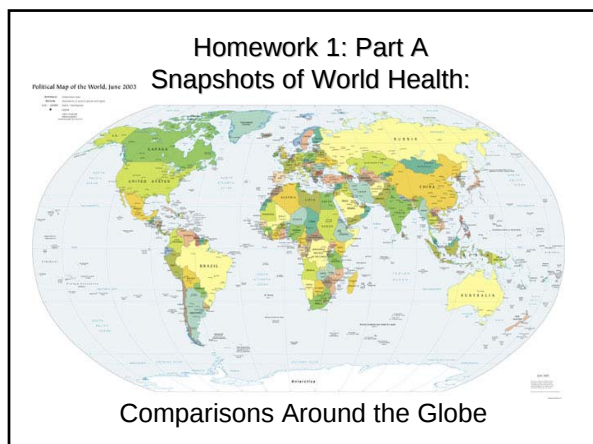




- Welcome to Homework 1 Part A. This site contains the instructions and reference information you will need for the activity. Answers may not be submitted electronically. Answer the questions on paper and turn in the assignment in class on the due date.
- In this activity you will be asked to create graphs. Use the graphing software of your choice (Microsoft Excel, for example).

Instructions: The following pages list health information and statistics for twelve countries. Select “Go to countries” to view the data. Select “Go to assignment page” when you are ready to proceed. You will be able to return to the data pages while answering the assigned questions.

[Go to countries](#) [Go to assignment page](#)
[View sources and links](#)

Click on a flag to view information on each country














[Back to instructions](#) [View sources and links](#) [Go to assignment page](#)

Angola

[Back to countries...](#) ➔

CIA FACTBOOK (2003)

Population: 10,766,471 (July 2003 est.)

GDP per capita: \$1,600 (2002 est.)

Life expectancy at birth: 36.96 years

Infant mortality rate: 193.82 deaths / 1000 live births

Fertility rate: 6.38 children born / woman (2003 est.)

People living with HIV/AIDS: 350,000 (2001 est.)

WHO STATISTICS (2000)

Total health expenditure per capita: \$52

Health expenditure as percentage of GDP: 3.6 %

Out-of-pocket percentage of health expenditure: 44.1 %



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2004 Activity Report: <http://www.doctorswithoutborders.org/publications/ar/2004/angola.htm>

Australia

[Back to countries...](#) ➔

CIA FACTBOOK (2003)

Population: 19,731,934 (July 2003 est.)

GDP per capita: \$27,000 (2002 est.)

Life expectancy at birth: 80.13 years

Infant mortality rate: 4.83 deaths / 1000 live births

Fertility rate: 1.76 children born / woman (2003 est.)

People living with HIV/AIDS: 12,000 (2001 est.)

WHO STATISTICS (2000)

Total health expenditure per capita: \$2,213

Health expenditure as percentage of GDP: 8.3 %

Out-of-pocket percentage of health expenditure: 16.8 %

Report by the US Office of Technology Assessment (1996)

“The health care system in Australia is pluralistic, complex, and only loosely organized. It involves all levels of government as well as public and private providers ... The government contribution is funded from general taxation revenues and a Medicare levy on taxable incomes ... For each health care technology included on the Medical Benefits Schedule, Medicare reimburses a proportion of the cost. If a technology is not included on the schedule, costs are typically paid by the patient; private insurance coverage is relatively limited.”

For the complete report: <http://www.was.princeton.edu/cgi-bin/byteserv.cgi/~otat/disk/1/995/956/956204.PDF>



Botswana

[Back to countries...](#)

CIA FACTBOOK (2003)

Population: 1,573,267 (July 2003 est.)
GDP per capita: \$9,500 (2002 est.)
Life expectancy at birth: 32.26 years
Infant mortality rate: 67.34 deaths / 1000 live births
Fertility rate: 3.27 children born / woman (2003 est.)
People living with HIV/AIDS: 330,000 (2001 est.)

WHO STATISTICS (2000)

Total health expenditure per capita: \$358
Health expenditure as percentage of GDP: 6.0 %
Out-of-pocket percentage of health expenditure: 11.0 %



Brazil

[Back to countries...](#)

CIA FACTBOOK (2003)

Population: 182,032,604 (July 2003 est.)
GDP per capita: \$7,600 (2002 est.)
Life expectancy at birth: 71.13 years
Infant mortality rate: 31.74 deaths / 1000 live births
Fertility rate: 2.01 children born / woman (2003 est.)
People living with HIV/AIDS: 610,000 (2001 est.)

WHO STATISTICS (2000)

Total health expenditure per capita: \$631
Health expenditure as percentage of GDP: 8.3 %
Out-of-pocket percentage of health expenditure: 38.5 %



2004 Activity Report: <http://www.doctorswithoutborders.org/publications/ar/2004/brazil.cfm>

[Back to countries...](#)

Cameroon



CIA FACTBOOK (2003)

Population: 15,746,179 (July 2003 est.)
GDP per capita: \$1,700 (2002 est.)
Life expectancy at birth: 48.05 years
Infant mortality rate: 70.12 deaths / 1000 live births
Fertility rate: 4.63 children born / woman (2003 est.)
People living with HIV/AIDS: 920,000 (2001 est.)

WHO STATISTICS (2000)

Total health expenditure per capita: \$55
Health expenditure as percentage of GDP: 4.3 %
Out-of-pocket percentage of health expenditure: 66.3 %



2004 Activity Report: <http://www.doctorswithoutborders.org/publications/ar/2004/cameroon.cfm>



Canada

[Back to countries...](#)

CIA FACTBOOK (2003)

Population: 32,207,113 (July 2003 est.)
GDP per capita: \$29,400 (2002 est.)
Life expectancy at birth: 79.83 years
Infant mortality rate: 4.88 deaths / 1000 live births
Fertility rate: 1.61 children born / woman (2003 est.)
People living with HIV/AIDS: 55,000 (2001 est.)

WHO STATISTICS (2000)

Total health expenditure per capita: \$2,534
Health expenditure as percentage of GDP: 9.1 %
Out-of-pocket percentage of health expenditure: 15.5 %

Report by the US Office of Technology Assessment (1995)

"Under the Canadian constitution, health care is a provincial responsibility; the federal role is limited to health care financing, health protection, and environmental health ... Universal health insurance, administered by provincial governments on a shared-cost basis with the federal government, covers inpatient and outpatient care in hospitals, ambulatory care and, in some provinces, prescribed medication and appliances."

For the complete report: <http://www.was.princeton.edu/cgi-bin/bvteserv.cgi?ota/disk1/1995/9562/956205.PDF>

China

[Back to countries...](#)

CIA FACTBOOK (2003)

Population: 1,286,975,468 (July 2003 est.)
GDP per capita: \$4,400 (2002 est.)
Life expectancy at birth: 72.22 years
Infant mortality rate: 25.26 deaths / 1000 live births
Fertility rate: 1.7 children born / woman (2003 est.)
People living with HIV/AIDS: 850,000 (2001 est.)

WHO STATISTICS (2000)

Total health expenditure per capita: \$205
Health expenditure as percentage of GDP: 5.3 %
Out-of-pocket percentage of health expenditure: 60.4 %



2004 Activity Report: <http://www.doctorswithoutborders.org/publications/ar/2004/china.cfm>

Germany

[Back to countries...](#)

CIA FACTBOOK (2003)

Population: 82,398,326 (July 2003 est.)
GDP per capita: \$26,600 (2002 est.)
Life expectancy at birth: 78.42 years
Infant mortality rate: 4.23 deaths / 1000 live births
Fertility rate: 1.37 children born / woman (2003 est.)
People living with HIV/AIDS: 41,000 (2001 est.)

WHO STATISTICS (2000)

Total health expenditure per capita: \$2,754
Health expenditure as percentage of GDP: 10.6 %
Out-of-pocket percentage of health expenditure: 10.6 %



Report by the US Office of Technology Assessment (1995)

"The most important institutions in the German health care system are the approximately 1,100 mandatory sickness funds ... About 90 percent of the population are obligatory or voluntary members (or coinsured family members) of mandatory sickness funds, which operate as nonprofit statutory corporations. In addition, 45 private insurance companies offer health insurance ... The services to be reimbursed by mandatory sickness funds are defined by law."

For the complete report: <http://www.was.princeton.edu/cgi-bin/bvteserv.cgi?ota/disk1/1995/9562/956207.PDF>

India

[Back to countries...](#)



CIA FACTBOOK (2003)

Population: 1,049,700,118 (July 2003 est.)
 GDP per capita: \$2,540 (2002 est.)
 Life expectancy at birth: 63.62 years
 Infant mortality rate: 59.59 deaths / 1000 live births
 Fertility rate: 2.91 children born / woman (2003 est.)
 People living with HIV/AIDS: 3,970,000 (2001 est.)

WHO STATISTICS (2000)

Total health expenditure per capita: \$71
 Health expenditure as percentage of GDP: 4.9 %
 Out-of-pocket percentage of health expenditure: 82.2 %

DOCTORS SANS FRONTIERES
 DOCTORS WITHOUT BORDERS
 2004 Activity Report : <http://www.doctorswithoutborders.org/publications/ari/2004/india.cfm>

Japan

[Back to countries...](#)



CIA FACTBOOK (2003)

Population: 127,214,499 (July 2003 est.)
 GDP per capita: \$28,000 (2002 est.)
 Life expectancy at birth: 80.93 years
 Infant mortality rate: 3.3 deaths / 1000 live births
 Fertility rate: 1.38 children born / woman (2003 est.)
 People living with HIV/AIDS: 12,000 (2001 est.)

WHO STATISTICS (2000)

Total health expenditure per capita: \$2,009
 Health expenditure as percentage of GDP: 7.8 %
 Out-of-pocket percentage of health expenditure: 19.3 %

Sweden

[Back to countries...](#)



CIA FACTBOOK (2003)

Population: 8,878,085 (July 2003 est.)
 GDP per capita: \$25,400 (2002 est.)
 Life expectancy at birth: 79.97 years
 Infant mortality rate: 3.42 deaths / 1000 live births
 Fertility rate: 1.54 children born / woman (2003 est.)
 People living with HIV/AIDS: 3,300 (2001 est.)

WHO STATISTICS (2000)

Total health expenditure per capita: \$2,097
 Health expenditure as percentage of GDP: 8.4 %
 Out-of-pocket percentage of health expenditure: 22.7 %

Report by the US Office of Technology Assessment (1995)

"The high tax rate pays for extensive health and welfare benefits. All Swedes have compulsory health insurance that covers all health care, including outpatient and hospital services (except for some copayments for physician visits), home care, long-term and nursing care, and all equipment and aids for the disabled and handicapped. The Swedish health care system is decentralized... the Federation of County Councils plays a key role in health policy and structural and manpower issues."

For the complete report: <http://www.wss.princeton.edu/cgi-bin/byteserv.cgi/~ota/disk1/1995/9562/956209.PDF>

United States

[Back to countries...](#)



CIA FACTBOOK (2003)

Population: 290,342,554 (July 2003 est.)
 GDP per capita: \$37,600 (2002 est.)
 Life expectancy at birth: 77.14 years
 Infant mortality rate: 6.75 deaths / 1000 live births
 Fertility rate: 2.07 children born / woman (2003 est.)
 People living with HIV/AIDS: 900,000 (2001 est.)

WHO STATISTICS (2000)

Total health expenditure per capita: \$4,499
 Health expenditure as percentage of GDP: 13.0 %
 Out-of-pocket percentage of health expenditure: 15.3 %

Report by the US Office of Technology Assessment (1995)

"The organization and delivery of health care in the United States is a good reflection of the free market system... The delivery system is loosely structured... The government is the major purchaser of health care for older people and, along with the states, for some poor people. By and large, however, payments for health insurance and health care are private sector transactions. Access to health care is not universal, and even among those with health insurance, coverage is uneven... One of the most significant recent changes in the U.S. health care system is the growth in the number and variety of managed care plans... In the United States, substantial investment in health care R&D in the public and private sector has ensured a steady flow of technological innovations. These advances, many of which provide at least some benefit to some population of patients, are introduced into an environment in which explicit fiscal limits are unusual."

For the complete report: <http://www.wss.princeton.edu/cgi-bin/byteserv.cgi/~ota/disk1/1995/9562/956211.PDF>

Answer the following questions. You will turn in your answers on paper at the beginning of class on the day the assignment is due.

- Calculate the point prevalence of HIV/AIDS in the following countries: United States, Canada, India, Angola, Botswana.
- Using data from all twelve countries, make a graph of life expectancy vs. health expenditure per capita. Include a title and labels.
- Using data from all twelve countries, make a graph of infant mortality rate vs. health expenditure per capita. Include a title and labels.
- Discuss any relationships or trends you observe in your graphs for #2 and #3. Do you observe any other trends in the data listed for the twelve countries?
- What are some differences in the way the health care system is structured in the United States, Canada, and Sweden? What might be some advantages and disadvantages of each system from the perspective of a patient? A doctor? A college student?

[Back to countries...](#)

Sources



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[Back to countries...](#)

Homework 1: Part 2

Health Problems in Developed and Developing World: Ages 0-4

Question 1

Regardless of geographic location or economic situation, diarrheal diseases occur far less frequently in neonates than in toddlers and older children. In one or two sentences describe some factors that may cause neonates to be less susceptible to diarrheal diseases.

Question 2

- There are 8 UN Millennium Development Goals (MDGs)
- <http://www.un.org/millenniumgoals/>
- Lecture Two focused on goal 4: Reduce Child Mortality. However, many of the MDGs are closely linked. Please select three other MDGs and provide a sentence or two for each explaining how achievement of those goals will also help reduce child mortality.



Question 3

Read the provided excerpts from the CDC news bulletins regarding the recent E. coli outbreaks.

Then answer the questions that follow.

Question 3

Multistate Outbreak of E. coli O157 Infections, November-December 2006

Updated December 14, 2006

NOTE: This is the last planned daily web update on this outbreak.

This outbreak was clearly linked to Taco Bell restaurants in the northeastern United States. As of 12 PM (ET) December 14, 2006, Thursday, 71 persons with illness associated with the Taco Bell restaurant outbreak have been reported to CDC from 5 states: New Jersey (33), New York (22), Pennsylvania (13), Delaware (2), and South Carolina (1). States with Taco Bell restaurants where persons confirmed to have the outbreak strain have eaten are New Jersey, New York, Pennsylvania, and Delaware. (The patient from South Carolina ate at a Taco Bell restaurant in Pennsylvania). Other cases of illness are under investigation by state public health officials. Among these 71 ill persons, 53 were hospitalized and 8 developed a type of kidney failure called hemolytic-uremic syndrome (HUS). Illness onset dates have ranged from November 20 to December 6. The peak time when persons became ill was in the last week of November. There have been no illnesses with onset within the past 5 days among identified cases, including suspects; therefore, the outbreak has ended.

Question 3

Update on Multi-State Outbreak of E. coli O157:H7 Infections From Fresh Spinach, October 6, 2006

NOTE: This document is provided for historical purposes. The content of this document has not been revised since its original release and therefore may no longer be up to date.

As of 1 PM (ET) October 6, 2006, Friday, 199 persons infected with the outbreak strain of E. coli O157:H7 have been reported to CDC from 26 states.

Among the ill persons, 102 were hospitalized and 31 developed a type of kidney failure called hemolytic-uremic syndrome (HUS). One hundred forty-one were female and 22 were children under 5 years old. The proportion of persons who developed HUS was 29% in children (<18 years old), 8% in persons 18 to 59 years old, and 14% in persons 60 years old or older.

Among ill persons who provided the date when their illnesses began, 80% became ill between August 19 and September 5. The peak time when illnesses began was August 30 to September 1 -- 31% of persons with the outbreak strain became ill on one of those 3 days.

Three deaths in confirmed cases have been associated with the outbreak. One was in an elderly woman from Wisconsin. Yesterday, Idaho confirmed that stool samples from a 2-year-old child with HUS who died on September 20 contained E. coli O157 with a "DNA fingerprint" pattern that matches the outbreak strain. Today, Nebraska reported the death of an elderly woman with an illness compatible with E. coli O157 infection who consumed raw spinach; E. coli O157 with the outbreak strain "DNA fingerprint" was detected in the remaining spinach.

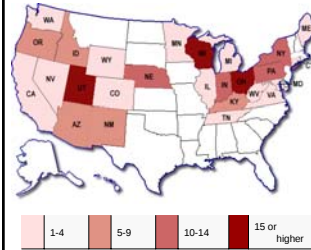
Maryland is investigating a suspect case in an elderly woman who died on September 13 and had recently consumed fresh spinach. E. coli O157 was cultured from her stool, but "DNA fingerprinting" has not been possible.

E. coli O157 was isolated from 13 packages of spinach supplied by patients living in 10 states. Eleven of the packages had lot codes consistent with a single manufacturing facility on a particular day. Two packages did not have lot codes available but had the same brand name as the other packages. The "DNA fingerprints" of all 13 of these E. coli match that of the outbreak strain. Read the provided excerpts from the CDC news bulletins regarding the recent E. coli outbreaks.

Question 3

- a. Using the what you have learned about quantitative health measures and the data provided please calculate:
 - i. The incidence rate of hospitalization, hemolytic-uremic syndrome (HUS), and the fatality rate based on the population of persons who were infected in each of the two outbreaks (Spinach and Taco Bell).
 - ii. Compare the rates between the two outbreaks. Identify any differences between the two outbreaks and provide an explanation.

Question 3: *E. coli* O157:H7 Spinach Outbreak Case Counts by State (As of October 6, 2006)



State	Number of Persons With Outbreak Strain	State Population (US census 2000)
Arizona (AZ)	8	5130632
Idaho (ID)	7	1293953
Indiana (IN)	10	6080485
Nebraska (NE)	11	1711263
New Mexico (NM)	5	1819046
New York (NY)	11	18976457
Ohio (OH)	25	11353140
Oregon (OR)	6	3421399
Pennsylvania (PA)	10	12281054
Utah (UT)	19	2233169
Wisconsin (WI)	49	5363675

Question 3

- b. Using the state specific data provided for the fresh spinach outbreak:
 - i. Calculate and plot the incidence rate for each of the eleven states in the table (those with five or more reported cases) based on the total population in each state. Please remember to title your plot and use appropriate scales and axis labels.
 - ii. Does your plot suggest any trends or disparities when compared to the color coded US map, which highlights states based solely on the number of reported cases?
 - iii. If contaminated spinach was being sold in a developing country (perhaps in Sub-Saharan Africa) as opposed to a developed country, do you think the regional pattern and number of cases in an *E. coli* outbreak would be different? How and Why?