

UNFAIR RACE

introduction

Affluence of a country is often a good gauge of how healthy its residents are. Wealthier countries tend to invest more in the health care system, train more doctors, disperse more vaccines, and provide better sanitation. This is the reason that many diseases that pose only minor threats in developed countries can become major, deadly epidemics in **developing countries**.

For instance, the United States used its extensive infrastructure to all but eradicate malaria within the country after World War II. The government sprayed insecticides to kill the mosquitoes that harbor the disease and drained areas where mosquitoes bred. Other countries have not been able to launch such widespread efforts and, as a result, Sub-Saharan Africa bears 91 percent malaria deaths each year.¹ Water-borne illnesses such as diarrhea are spread through poor sanitation, so in countries without modern systems, children often fall sick and die. Cumulatively, such health disparities lead to a drastic difference in **life expectancy**. In North America, men live an average of 77 years and women live 81. In Sub-Saharan Africa, however, men's life expectancy is only 58 years; women's is 62.² Looking at social, economic, and health **indicators** of a country can help determine the overall well-being of a country's residents.

Vocabulary: developing countries, indicators, life expectancy

materials

- Country Cards (provided)
- Race Instructions (provided)
- Large room, gym, or outdoor space

procedure

1. Distribute a Country Card to each student. Each card lists nine social and economic indicators that impact health within a country. If there are more people than cards, give out multiple copies of some of the cards. Ask that they not share their information with others.
2. Identify a "start" line and have the group stand shoulder-to-shoulder, forming a line. It works best to be in a large room, gym, or even outside so all students can stand next to each other and have roughly 20 paces of space in front of them.



Studies For Our Global Future

concept

Wealth has a big impact on a country's public health system, and public health circumstances within a country significantly impact quality of life.

objectives

Students will be able to:

- Explain how a country's economic and social conditions can impact public health.
- Identify indicators associated with both positive and negative health outcomes for a country's residents.

subjects

AP Human Geography, Geography, Economics, Health

skills

Analyzing data, comparing and evaluating, critical thinking, understanding cause and effect

method

Representing different countries, students step forward or backward based on social and economic conditions in their borders, then consider which countries have an advantage in a final "race for health."

Read the following aloud:

“Each of you represents the country named on your card. We will consider nine indicators that impact health and I will read two different situations for each indicator. Depending on how your country measures up, I will tell you to move forward either one or two steps. If neither situation applies to you, stay in place for that round. The color on your card represents the wealth category your country falls within based on the World Bank classifications.”

3. Display the following chart so students can see it during the activity.

Canada	Brazil	India
Japan	China	Kenya
Saudi Arabia	Costa Rica	Morocco
Sweden	Mexico	Syria
United Kingdom	South Africa	Vietnam
United States	Thailand	Madagascar
Albania	Bangladesh	Mali
Botswana	Bolivia	Rwanda

	High-income
	Upper-middle-income
	Lower-middle-income
	Low-income

Source: World Bank

4. For each indicator, use the following steps:

- a. Read the bolded topic from the Race Instructions. (E.g. Average median household income.)
- b. Ask students to brainstorm how this topic relates to health. (E.g. People with low income are more likely to live in unsafe, unsanitary conditions with greater exposure to environmental/industrial toxins. They might not be able to afford fresh produce so rely on fast foods, and are less likely to see a doctor when they are ill or be able to afford expensive medical treatments.)
- c. Read the full statement and instructions for that indicator from the Instructions.
- d. Students move according to their country.

5. Once or twice during the activity, have students take a moment to look around the room and notice where each country is located. It can be helpful to quickly have students say their country aloud so it's clear which countries have moved significantly and which countries have not. Do this again after you have read all nine statements. Students should pay specific attention to patterns they see in the income levels (colors) of countries and their position.

6. Challenge the group to a running race. Choose a “finish line” a few paces in front of the students who have stepped forward the most. Point out this finish line and that it represents a high level of public health. Call out a countdown and have students run to the finish line. Those holding cards from countries with high quality public health will already be very close to the finish line and will win easily.

discussion questions

1. What did you notice about the relationship between the countries’ wealth classifications and their standings in the race?

Countries that are in the higher wealth categories took more steps forward and won the “race” much easier than those in lower wealth categories.

2. Why do you think there is relationship between countries’ wealth and health?

Wealthier countries have more money to invest in a public health care system. They train more doctors, disperse more vaccines, are able to provide better sanitation, and are more equipped to fight disease.

3. What are some specific social and economic indicators that influence a country’s public health situation?

The quality of public health relates to the quality of a country’s economy, financial investment in health care, infrastructure, population density, education systems, and preventive health programs.

4. What are some of the major impediments to good health or good healthcare?

Low per-capita income, lack of clean water, malnutrition, low vaccine rates, etc.

5. What kinds of changes would improve the quality of health in the countries that remained near the base line in this activity?

The quality of health would improve with improved economies, increased healthcare spending, better access to clean drinking water, improved nutrition, and expanded educational programs.

6. How might some of these indicators impact, or predict, other indicators?

Answers will vary. Students might mention that average income might influence health care spending, number of physicians might impact the rate of immunizations, and adult literacy may impact the percentage of children who reach their fifth birthday. Students may also note that all of the indicators in the lesson have the potential to impact life expectancy.

7. What does this activity tell you about the health of the people in other countries?

Answers will vary. There are large disparities in public health between countries and in general, a country’s wealth has a big impact on their public health system.

8. How could countries in the higher income categories improve the health of residents in the lower income countries?

Answers may include: by providing aid, helping to disperse vaccines, medications, and mosquito nets, training doctors to work in low income countries, etc.

9. How do people feel about the fairness of the race?

Answers will vary.

assessment

For their own country and then a country of their choosing (this country must be in a different wealth category than the first), students identify at least two indicators that either help or hurt residents' health.

Adapted with permission from *Rx for Survival—A Global Health Challenge*,™ a Co-Production of the WGBH/NOVA Science Unit and Vulcan Productions, Inc. *Rx for Child Survival—A Global Health Challenge*™ is a project of WGBH Educational Foundation and Vulcan Productions, Inc. in collaboration with CARE and Save the Children, and in association with the Global Health Council and UNICEF. ©/™ 2005 WGBH Educational Foundation and Vulcan Productions, Inc. All Rights Reserved. All third party trademarks are owned by their respective owners and used with permission. Major funding for *Rx For Survival—A Global Health Challenge* is provided by the Bill & Melinda Gates Foundation and The Merck Company Foundation.

¹World Health Organization. (2017, November). *Malaria Fact Sheet*. Retrieved from <http://www.who.int/mediacentre/factsheets/fs094/en/>

²Population Reference Bureau. (2017). *Life expectancy at birth (years)*. [data sheet].

UNFAIR RACE | race instructions

- 1. Average median household income (in PPP*):** *If the average annual income in your country is:*
 - more than \$30,000, take two steps forward.
 - between \$6,000 and \$29,999, take one step forward.
- 2. Average annual healthcare spending (in PPP):** *This amount includes both public and private healthcare expenditures. If this amount is:*
 - more than \$3,000 per person, take two steps forward.
 - between \$1,000 and \$2,999 per person, take one step forward.
- 3. Immunization against measles:** *If the percentage of people immunized against measles is:*
 - between 90% and 100%, take two steps forward.
 - between 65% and 89%, take one step forward.
- 4. Number of physicians per 100,000 people:** *If your country has:*
 - more than 200 physicians per 100,000 people, take two steps forward.
 - between 50 and 199 per 100,000 people, take one step forward.
- 5. Average life expectancy:** *If the average life expectancy in your country is:*
 - greater than 70 years, take two steps forward.
 - between 60 and 69 years, take one step forward.
- 6. Access to clean drinking water:** *If the percentage of people with access to clean drinking water is:*
 - between 90% and 100%, take two steps forward.
 - between 70% and 89%, take one step forward.
- 7. Chance of reaching fifth birthday:** *If the percentage of children in your country who reach their fifth birthday is:*
 - between 95% and 100%, take two steps forward.
 - between 85% and 94%, take one step forward.
- 8. Malaria threat:** *If the malaria threat in your country is:*
 - low, take one step forward.
 - high, take one step back.
- 9. Adult literacy rate (% ages 15 and older):** *This is the percentage of people ages 15 and above who can both read and write. In your country, if:*
 - 90–100% of adults are literate, take two steps forward.
 - 80–89% are literate, take one step forward.

*PPP refers to Purchasing Power Parity, which converts amounts to the U.S. dollar equivalent and takes into account different price levels and cost of living.

Sources: 2016 WHO Global Health Observatory, 2013 Gallup Median Household Income Report, 2016 World Bank Data, 2016 CIA World Factbook Data, OECD Skills Outlook 2013.

UNFAIR RACE | country cards

Before class, print and cut out the Country Cards (enough for each student to have a country). If you're not able to print the Country Cards in color, outline each card in either red, orange, blue, or green.

Albania

1. Median household income: \$7,314
2. Average annual healthcare spending: \$615/person
3. Immunized against measles: 98%
4. Physicians: 115 per 100,000 people
5. Average life expectancy: 78 years
6. Access to clean drinking water: 95%
7. Infant's chance of reaching 5th birthday: 99%
8. Malaria threat: low
9. Adult literacy: 97%

Bangladesh

1. Median household income: \$2,819
2. Average annual healthcare spending: \$88/person
3. Immunized against measles: 88%
4. Physicians: 36 per 100,000 people
5. Average life expectancy: 71 years
6. Access to clean drinking water: 87%
7. Infant's chance of reaching 5th birthday: 96%
8. Malaria threat: high
9. Adult literacy: 73%

Bolivia

1. Median household income: \$6,399
2. Average annual healthcare spending: \$427/person
3. Immunized against measles: 99%
4. Physicians: 47 per 100,000 people
5. Average life expectancy: 70 years
6. Access to clean drinking water: 90%
7. Infant's chance of reaching 5th birthday: 96%
8. Malaria threat: high
9. Adult literacy: 92%

Botswana

1. Median household income: \$3,603
2. Average annual healthcare spending: \$871/person
3. Immunized against measles: 97%
4. Physicians: 40 per 100,000 people
5. Average life expectancy: 66 years
6. Access to clean drinking water: 96%
7. Infant's chance of reaching 5th birthday: 96%
8. Malaria threat: high
9. Adult literacy: 81%

Brazil

1. Median household income: \$7,522
2. Average annual healthcare spending: \$1,318/person
3. Immunized against measles: 99%
4. Physicians: 189 per 100,000 people
5. Average life expectancy: 75 years
6. Access to clean drinking water: 98%
7. Infant's chance of reaching 5th birthday: 98%
8. Malaria threat: high
9. Adult literacy: 92%

Canada

1. Median household income: \$41,280
2. Average annual healthcare spending: \$4,461/person
3. Immunized against measles: 90%
4. Physicians: 207 per 100,000 people
5. Average life expectancy: 82 years
6. Access to clean drinking water: 100%
7. Infant's chance of reaching 5th birthday: 99+%
8. Malaria threat: low
9. Adult literacy: 99%

China

1. Median household income: \$6,180
2. Average annual healthcare spending: \$731/person
3. Immunized against measles: 99%
4. Physicians: 149 per 100,000 people
5. Average life expectancy: 76 years
6. Access to clean drinking water: 96%
7. Infant's chance of reaching 5th birthday: 99%
8. Malaria threat: low
9. Adult literacy: 95%

Costa Rica

1. Median household income: \$8,923
2. Average annual healthcare spending: \$1,389/person
3. Immunized against measles: 93%
4. Physicians: 111 per 100,000 people
5. Average life expectancy: 80 years
6. Access to clean drinking water: 98%
7. Infant's chance of reaching 5th birthday: 99%
8. Malaria threat: low
9. Adult literacy: 97%

<p>India</p> <ol style="list-style-type: none"> 1. Median household income: \$3,168 2. Average annual healthcare spending: \$267/person 3. Immunized against measles: 87% 4. Physicians: 70 per 100,000 people 5. Average life expectancy: 68 years 6. Access to clean drinking water: 94% 7. Infant's chance of reaching 5th birthday: 95% 8. Malaria threat: high 9. Adult literacy: 69% 	<p>Japan</p> <ol style="list-style-type: none"> 1. Median household income: \$33,822 2. Average annual healthcare spending: \$3,727/person 3. Immunized against measles: 96% 4. Physicians: 230 per 100,000 people 5. Average life expectancy: 84 years 6. Access to clean drinking water: 100% 7. Infant's chance of reaching 5th birthday: 99+% 8. Malaria threat: low 9. Adult literacy: 99%
<p>Kenya</p> <ol style="list-style-type: none"> 1. Median household income: \$1,870 2. Average annual healthcare spending: \$169/person 3. Immunized against measles: 75% 4. Physicians: 20 per 100,000 people 5. Average life expectancy: 63 years 6. Access to clean drinking water: 63% 7. Infant's chance of reaching 5th birthday: 95% 8. Malaria threat: high 9. Adult literacy: 79% 	<p>Madagascar</p> <ol style="list-style-type: none"> 1. Median household income: \$1,013 2. Average annual healthcare spending: \$44/person 3. Immunized against measles: 58% 4. Physicians: 16 per 100,000 people 5. Average life expectancy: 66 years 6. Access to clean drinking water: 52% 7. Infant's chance of reaching 5th birthday: 95% 8. Malaria threat: high 9. Adult literacy: 72%
<p>Mali</p> <ol style="list-style-type: none"> 1. Median household income: \$1,983 2. Average annual healthcare spending: \$108/person 3. Immunized against measles: 76% 4. Physicians: 8 per 100,000 people 5. Average life expectancy: 58 years 6. Access to clean drinking water: 77% 7. Infant's chance of reaching 5th birthday: 88% 8. Malaria threat: high 9. Adult literacy: 33% 	<p>Mexico</p> <ol style="list-style-type: none"> 1. Median household income: \$11,680 2. Average annual healthcare spending: \$1,122/person 3. Immunized against measles: 97% 4. Physicians: 210 per 100,000 people 5. Average life expectancy: 77 years 6. Access to clean drinking water: 96% 7. Infant's chance of reaching 5th birthday: 99% 8. Malaria threat: high 9. Adult literacy: 95%
<p>Morocco</p> <ol style="list-style-type: none"> 1. Median household income: \$6,634 2. Average annual healthcare spending: \$447/person 3. Immunized against measles: 99% 4. Physicians: 62 per 100,000 people 5. Average life expectancy: 74 years 6. Access to clean drinking water: 85% 7. Infant's chance of reaching 5th birthday: 97% 8. Malaria threat: low 9. Adult literacy: 69% 	<p>Rwanda</p> <ol style="list-style-type: none"> 1. Median household income: \$1,101 2. Average annual healthcare spending: \$125/person 3. Immunized against measles: 97% 4. Physicians: 6 per 100,000 people 5. Average life expectancy: 66 years 6. Access to clean drinking water: 76% 7. Infant's chance of reaching 5th birthday: 96% 8. Malaria threat: high 9. Adult literacy: 68%

Saudi Arabia

1. Median household income: \$24,980
2. Average annual healthcare spending: \$2,466/person
3. Immunized against measles: 98%
4. Physicians: 249 per 100,000 people
5. Average life expectancy: 74 years
6. Access to clean drinking water: 97%
7. Infant's chance of reaching 5th birthday: 99%
8. Malaria threat: low
9. Adult literacy: 95%

South Africa

1. Median household income: \$5,217
2. Average annual healthcare spending: \$1,148/person
3. Immunized against measles: 76%
4. Physicians: 78 per 100,000 people
5. Average life expectancy: 63 years
6. Access to clean drinking water: 93%
7. Infant's chance of reaching 5th birthday: 96%
8. Malaria threat: low
9. Adult literacy: 94%

Sweden

1. Median household income: \$50,514
2. Average annual healthcare spending: \$5,219/person
3. Immunized against measles: 98%
4. Physicians: 393 per 100,000 people
5. Average life expectancy: 82 years
6. Access to clean drinking water: 100%
7. Infant's chance of reaching 5th birthday: 99+%
8. Malaria threat: low
9. Adult literacy: 99%

Syria

1. Median household income: \$8,193
2. Average annual healthcare spending: \$376/person
3. Immunized against measles: 53%
4. Physicians: 146 per 100,000 people
5. Average life expectancy: 65 years
6. Access to clean drinking water: 90%
7. Infant's chance of reaching 5th birthday: 99%
8. Malaria threat: low
9. Adult literacy: 81%

Thailand

1. Median household income: \$7,029
2. Average annual healthcare spending: \$950/person
3. Immunized against measles: 99%
4. Physicians: 39 per 100,000 people
5. Average life expectancy: 75 years
6. Access to clean drinking water: 98%
7. Infant's chance of reaching 5th birthday: 99%
8. Malaria threat: high
9. Adult literacy: 93%

United Kingdom

1. Median household income: \$31,617
2. Average annual healthcare spending: \$3,377/person
3. Immunized against measles: 95%
4. Physicians: 281 per 100,000 people
5. Average life expectancy: 81 years
6. Access to clean drinking water: 100%
7. Infant's chance of reaching 5th birthday: 99+%
8. Malaria threat: low
9. Adult literacy: 99%

United States

1. Median household income: \$43,585
2. Average annual healthcare spending: \$9,403/person
3. Immunized against measles: 92%
4. Physicians: 245 per 100,000 people
5. Average life expectancy: 79 years
6. Access to clean drinking water: 100%
7. Infant's chance of reaching 5th birthday: 99%
8. Malaria threat: low
9. Adult literacy: 96%

Vietnam

1. Median household income: \$4,783
2. Average annual healthcare spending: \$390/person
3. Immunized against measles: 97%
4. Physicians: 119 per 100,000 people
5. Average life expectancy: 76 years
6. Access to clean drinking water: 98%
7. Infant's chance of reaching 5th birthday: 98%
8. Malaria threat: high
9. Adult literacy: 94%