

---

**TITLE:**

Linking Social Studies History and Geography with Mathematics

**DIVISION:**

Intermediate

**STRAND:**

Geography

---

**GRADE 8: POPULATION BAR GRAPH**

These activities link Geography with data management expectations in math.

**BIG IDEA**

A detailed comparison of population statistics from different nations can identify nations where people are impoverished, do not have access to adequate medical care, and thus, have high infant mortality rates.

**Guiding Question(s)**

- How does poverty relate to health care and infant mortality?

**Framing Question(s)**

- By constructing bar graphs for global population statistics related to infant mortality, access to health care, and poverty, what conclusions can be drawn about the relationships between poverty, health care and infant mortality?
- What can and should be done to reduce the number of infant deaths around the world each year?

**Learning Goals**

- I can investigate a global issue of political, social, economic, and / or environmental importance and explain the global impact
- I can use the factors that led to a development event, or issue to create a response to a global issue of political, social, economic, and / or environmental importance
- I can use my understanding of a global issue to recognize consequences and determine possible solutions

---

**CONCEPTS OF DISCIPLINARY THINKING**

**Cause and Consequence:**

This concept requires students to determine the factors that affected or led to something (e.g., an event, situation, action, interaction) as well as its impact/effects. Students develop an understanding of the complexity of causes and consequences, learning that something may be caused by more than one factor and may have many consequences, both intended and unintended.

**Social Studies Inquiry Process (Revised [2013] SSHG Curriculum page 23)**

**Inquiry Process:**

The students will collect population data from the CIA World Factbook through the link posted below. They will then compare and contrast the graphs they build and the trends they discover. They will use the information they graph to help guide them in the development of an action plan they would promote to drastically reduce infant mortality rates around the world.

The Social Studies Inquiry Process Model can be viewed on page 23 of the 2013 Social Studies Curriculum that can be viewed through the link below.

<http://www.edu.gov.on.ca/eng/curriculum/elementary/sshg18curr2013.pdf>

**The Spatial Skills: Using Maps, Globes, and Graphs (Ontario Curriculum pages 24-25)**

**Spatial Skill:**

Students will develop bar graphs by hand or by using computer applications, and then they will analyse their graphs to determine trends in the data and develop an action plan to address the issue at hand.

---

## PRIMARY ACTIVITY

Students will collect population statistics data from the CIA World Factbook, build a series of graphs to display this data, determine trends in the data and use the data and other inquires to determine the cause and effect relationships that exist between poverty, health care and infant mortality. The students will use their new knowledge of these relationships to develop an action plan that they would implement to reduce global infant mortality rates.

The students will complete the following in this activity:

- Review the Millennium Development Goal #1 statistics to help the teacher determine the students' background knowledge of global poverty and hunger, and their ability to analyze and interpret graphs
- Collect population statistics data from the CIA World Factbook
- Construct a bar graph of the top 10 infant mortality rates by nation by hand or by using computer applications like Microsoft Excel  
<https://www.cia.gov/library/publications/the-world-factbook/rankorder/2091rank.html>
- Construct a bar graph of the ten countries with the lowest GDPs by hand or by using computer applications like Microsoft Excel  
<https://www.cia.gov/library/publications/the-world-factbook/rankorder/2004rank.html>
- Construct a bar graph of the ten countries with the lowest Hospital Beds Density rates by hand or by using computer applications like Microsoft Excel  
<https://www.cia.gov/library/publications/the-world-factbook/fields/2227.html#cd>
- Construct a bar graph of the ten countries with the lowest Physicians Density rates by hand or by using computer applications like Microsoft Excel  
<https://www.cia.gov/library/publications/the-world-factbook/fields/2226.html#cd>
- Draw conclusions about the trends they see in the data, the graphs they construct and the causes of these trends
- Create an action plan to reduce global infant mortality rates that they could theoretically present to the United Nations
- Include a summary of the data from the charts, tables and graphs that were examined, a review of the trends and conclusions from the data and the action plan for the reduction of infant mortality rates
- Submit electronically or by hand and present orally to the class

---

## DIFFERENTIATION SUGGESTIONS

Word prediction software could be provided to those students who need support with their writing when they answer the main questions of the activity. This could also be a group assignment.

EduGains outlines many effective ways to differentiate lessons, links to these resources are provided below.

<http://www.edugains.ca/newsite/index.html>

EduGains – Differentiated Instruction - DI educators package – DI scrapbook:  
<http://www.edugains.ca/newsite/di2/edupackages/2010educatorspackage.html>

---

## TECHNOLOGY INTEGRATION OPPORTUNITIES

Bar graphs and line graphs can be easily generated through Microsoft Excel, Mac Numbers, or a variety of iPad applications. Students will also be using the Internet to collect the required information to graph from Statistics Canada and they will also use it to conduct further inquiries based upon the data they graph to help them answer the three main guiding questions of the activity.

## ASSESSMENT

### A FOR L

To start the lesson, bring up the Millennium Development Goals Report from 2013 and review the graphs provided in the first section (pg 6) on poverty and hunger around the world. Provide the students with time to review the data presented in the charts and graphs and then ask the following questions:

1. What costs \$1.25 in your daily life?
2. Could your family survive on \$1.25 a day?
3. Where is poverty the most prevalent in the world?
4. Why do you think poverty is so rampant in these areas?
5. What could be done to help people break the cycle of poverty?

This exercise will help determine the background knowledge the students have on global poverty trends and their impact, their ability to read and interpret graphs and their thought processes as to the action plan they would implement to eradicate poverty and hunger.

<http://www.un.org/millenniumgoals/pdf/report-2013/mdg-report-2013-english.pdf>

### A AS L

This activity could be evaluated using anecdotal notes that track student progress. Teachers could also develop anchor charts with their students that outline how to read and construct graphs, analyze trends and use the data to answer the inquiry questions.

Descriptive feedback is another assessment strategy teachers could use to provide students with the constructive criticism they need to improve their work.

Students will review the information posted on the anchor charts to track their own progress in relation to the assignment and determine their own next steps. They will also be expected to act upon any descriptive feedback that they have been given by their teacher to improve their work, work habits, or to help facilitate their completion of the activity.

### A OF L

The ability to create the required graphs, determining trends in the data, and developing a plausible and reasonable action plan to reduce global infant mortality rates could be assessed using a rubric that could be teacher generated or teacher and student generated. A checklist would also be effective.

---

## OVERALL EXPECTATIONS

Grade 8 Geography Strand B:

**B1. Application:** analyse some interrelationships among factors that contribute to global inequalities, with a focus on inequalities in quality of life, and assess various responses to these inequalities

**B2. Inquiry:** use the geographic inquiry process to investigate issues related to global development and quality of life from a geographic perspective

Grade 8 Math- Data Management:

- collect and organize categorical, discrete, or continuous primary data and secondary data and display the data using charts and graphs, including frequency tables with intervals, histograms, and scatter plots;
- apply a variety of data management tools and strategies to make convincing arguments about data

## SPECIFIC EXPECTATIONS

Grade 8 Geography:

**B3.4** demonstrate the ability to analyse and construct population pyramids, both on paper and using a graphing program, when studying demographic patterns and trends in developed and developing countries (*e.g., use data from population pyramids to compare the life expectancy of men and women within a developing country or of populations in developed and developing countries; construct a population pyramid to predict future population trends for a country*)

Grade 8 Math – Data Management  
Collection and Organization:

#1 - read, interpret, and draw conclusions from primary data (e.g., survey results, measurements, observations) and from secondary data (e.g., election data or temperature data from the newspaper, data from the Internet about lifestyles), presented in charts, tables, and graphs (including frequency tables with intervals, histograms, and scatter plots)

#3 - collect and organize categorical, discrete, or continuous primary data and secondary data (e.g., electronic data from websites such as E-Stat or Census At Schools), and display the data in charts, tables, and graphs (including histograms



and scatter plots) that have appropriate titles, labels (e.g., appropriate units marked on the axes), and scales (e.g., with appropriate increments) that suit the range and distribution of the data, using a variety of tools (e.g., graph paper, spreadsheets, dynamic statistical software)

Data Relationships:

#5 - identify and describe trends, based on the rate of change of data from tables and graphs, using informal language (e.g., “The steep line going upward on this graph represents rapid growth. The steep line going downward on this other graph represents rapid decline.”)

# 6 - make inferences and convincing arguments that are based on the analysis of charts, tables, and graphs (Sample problem: Use data to make a convincing argument that the environment is becoming increasingly polluted)

## **CITIZENSHIP EDUCATION FRAMEWORK**

Structures:

- Develop an understanding of the dynamic and complex relationships within and between systems
- Develop an understanding of how political, economic, and social institutions affect their lives

---

## **RESOURCES**

Use the search engine at the <https://www.cia.gov/library/publications/the-world-factbook/> to find the data mentioned below.

- Infant Mortality Rate:

<https://www.cia.gov/library/publications/the-world-factbook/rankorder/2091rank.html>

- GDP Per Capita:

<https://www.cia.gov/library/publications/the-world-factbook/rankorder/2004rank.html>

- Hospital Beds Density Per Nation:

<https://www.cia.gov/library/publications/the-world-factbook/fields/2227.html#cd>

- Physicians Density Per Nation:

<https://www.cia.gov/library/publications/the-world-factbook/fields/2226.html#cd>