

# Quick Trip to 7.6 Billion: Exploring the Timeline



## Introduction

Global population hit 7 billion in 2011 and continues to grow, expected to surpass 10 billion by the middle of the 21<sup>st</sup> century. This population growth has been the result of many events throughout history that impacted global fertility and mortality trends, from huge technological advances to changes in women's rights and empowerment.

Some advances have led to longer and healthier lives, such as better ways of growing and storing our food. As a result, we currently have an imbalance in birth and death rates, with births exceeding deaths roughly 2.5 to 1, and we now have more people on the planet using resources at an unsustainable rate. In addition to growing consumer demands, we've also seen that some technological and social advances have had long-reaching consequences that would have been unexpected at the time of their development – such as the advent of the assembly line and the production of the first Ford Model-Ts in 1908, which ultimately set us on a path to anthropogenic climate change today. Recognizing trends in major events throughout history helps us consider the human impacts of today's global family, as well as how all 7.6 billion of us can live more sustainable lives.

## Materials

### Part 1

- *A Quick Trip to 7.6 Billion* poster or e-poster
- Student Worksheet

### Part 2

- Student tablets or computers with Internet access
- Graphic Organizer (provided)

## Part 1: Exploring the Timeline

### Procedure

1. Distribute a copy of the Student Worksheet to each student.
2. Direct students to the *A Quick Trip to 7.6 Billion* poster found at [www.worldof7billion.org/high-res-wall-chart](http://www.worldof7billion.org/high-res-wall-chart) and allow them time to read the timeline found on side 1

## Concept

Many events throughout history have directly and indirectly influenced our population size, quality of life, and environmental impact over the past 200 years.

## Objectives

Students will be able to:

- Explain how key events from the past have influenced population size.
- Discuss factors that contribute to population growth and unsustainable resource consumption.
- Complete a graphic organizer exploring two thematic topics and their impact on global population.
- Respond to a short essay prompt analyzing how events and trends within two population related topics influence each other.

## Subjects

AP Human Geography, Geography, Environmental Science (General and AP), Health, World History (General and AP), US History, English Language Arts

## Skills

Critical thinking, writing, researching, analyzing and evaluating data, collaborating, identifying trends, reading comprehension

## Method

Through written analysis of the timeline on the *A Quick Trip to 7.6 Billion* poster, students explore how past events have contributed to our current population size and resource use.



(displayed at the top of the screen) and answer the Worksheet questions on notebook paper.

3. Briefly review the answers to the Student Worksheet as a class.

### Answers to Student Worksheet

*See Answer Key*

## Part 2: A Thematic History

### Procedure

1. Each event on the timeline is labeled with a topic symbol (Communications, Environment, Food and Agriculture, Health, Industry/Transportation, Population, Social Justice, or Women's Roles). Ask students to choose two topics (excluding Population) from the Topic Key. Students should read through each event labeled with the topics they choose.
2. Distribute a copy of the Graphic Organizer to each student and go over the short essay assignment. Then provide them with class time to complete the essay or assign it as homework. For guidance and suggested answers when assessing students' completed essays, see the Teacher Notes.

**Note:** Students will need to conduct research to complete the Graphic Organizer. Possible resources include: [www.fao.org](http://www.fao.org), [www.who.int](http://www.who.int), and <http://ngm.nationalgeographic.com/7-billion>.

### Assessment

Collect student essays and assess for thoroughness of their analysis.

### Follow-up Activity

Students create their own timelines focusing only on one topic, a particular region of the world, or a specific period of human history. They may include some events from the poster timeline but the majority must come from further research.



Name: \_\_\_\_\_

Date: \_\_\_\_\_

## Student Worksheet

Look at the timeline side of the *A Quick Trip to 7.6 Billion* poster. First, read through each event and consider how it might have impacted population size. Then, use the timeline to answer the following questions.

### Comprehension Questions

1. How might the transcontinental railroad have changed the lives of people living at the time of its completion? What other events on the timeline may have had a similar impact?
2. Which events on the timeline directly led to an increase in death rates?
3. In 1834, the mechanical reaper was invented, tripling farmers' outputs. What other events in our history have increased crop yields?
4. The Comstock Laws created in 1873 (which made contraception illegal in the U.S.) were overturned by the U.S. Supreme Court in 1965. What do you think was different about a woman's life after 1965?
5. Why do you think the Great Depression led to the "baby bust?" What factors do you think contributed to the post WWII "baby boom?"
6. How do you think the Public Health Movement in Britain in the 1840s impacted population? What other events on the timeline have improved our overall health and allowed people to live longer lives?

### Analysis Questions

7. What impact could improved health and nutrition have on birth rates?
8. Do you think that we are currently at our maximum food output, or are we capable of growing more food than we do today?
9. What impact do you think global communication has on our population and resource use?
10. The timeline highlights advances in medicine, industry, nutrition, and women's roles that have helped improve lives, eradicate disease and bring down birth rates. Do you think that we've made equal progress with these advances around the world?
11. Which event at the end of the timeline will have the largest impact on our population size and our quality of life in the future? Explain your thinking.
12. Are there any events that don't seem like they are related to population growth? Why do you think they were included in the timeline? Explain.



Name: \_\_\_\_\_

Date: \_\_\_\_\_

## Graphic Organizer

Take a look at the Topic Key in the lower left corner of the poster. Every timeline event has just one topic assigned to it (Communications, Environment, etc.).

### TASK 1:

Select one *event* from the timeline and complete the organizer.

Event:	Explain your reasoning.
Listed topic:	
To what other topic could this event have been assigned?	

### TASK 2:

Choose two *topics* from the timeline's Topic Key (except Population) and complete the organizer. The completed organizer will help you answer the short essay prompt found at the end.

Topic #1	Topic #2
How do events in this topic impact population? Include at least two specific events as examples.	How do events in this topic impact population? Include at least two specific events as examples.



What trends do you notice within this topic's events?

What trends do you notice within this topic's events?

Conduct research and find two other events (not listed on the timeline) that fit into this topic.

Event 1:

Event 2:

Conduct research and find two other events (not listed on the timeline) that fit into this topic.

Event 1:

Event 2:

Are there any events on the timeline that fit into both of these topics?

- 1.
- 2.
- 3.

**ESSAY:**

On separate paper, respond to the following prompt:

How have events and trends within these two topics influenced each other?



## Student Worksheet Answer Key

### Comprehension Questions

1. How might the transcontinental railroad have changed the lives of people living at the time of its completion? What other events on the timeline may have had a similar impact?

*Because of the transcontinental railroad, goods could be transported from coast to coast, increasing trade and causing a spike in industry and production in the growing cities of the East Coast. With transportation being faster, cheaper, and safer, more people began to go west, settling in new territories along the route of the railroad. Similar events include the invention of the first air conditioning unit, enabling populations to migrate to Southern cities, the Ford Model-T, the dawn of air travel, and the rise of the Internet, email, and social media.*

2. Which events on the timeline directly led to an increase in death rates?

*Death rates increased as a direct result of the following events: Potato Famine, WWI, WWII, Spanish Flu, HIV/AIDS crisis, historic high of world hunger.*

3. In 1834, the mechanical reaper was invented, tripling farmers' outputs. What other events in our history have increased crop yields?

*The invention of the combustion engine allowed farmers to use machinery which increased their efficiency; nitrogen fertilizer (the result of Fritz Haber's discovery in 1908) supplies plants with essential nutrients that they need to grow, increasing crop output; the use of DDT (beginning in 1939) marks the beginning of pesticide use, preventing insects from destroying crops and increasing output; the Green Revolution introduced high-yield seeds, allowing for drastic increases in food production around the world.*

4. The Comstock Laws created in 1873 (which made contraception illegal in the U.S.) were overturned by the U.S. Supreme Court in 1965. What do you think was different about a woman's life after 1965?

*Women had the ability to plan the timing and number of children they wanted to have; women could now focus on their education or a career; women had more of a say over their role in the family and in the workplace.*

5. Why do you think the Great Depression led to the "baby bust?" What factors do you think contributed to the post WWII "baby boom?"

*During the Great Depression, people feared they would not be able to financially support large families, leading to a decline in the fertility rate. In the years following WWII, the U.S. economy soared and jobs were plentiful. Men and women who were reunited after years of war were eager to start families, had the financial means to support large families, and thus had more children than in previous years.*

6. How do you think the Public Health Movement in Britain in the 1840s impacted population? What other events on the timeline have improved our overall health and allowed people to live longer lives?



*Improving sanitation helped to combat water-borne diseases, such as typhoid and cholera, allowing people to live longer and healthier lives, eventually leading to a decline in death rates. Advances in nutrition (pasteurization, preservation, and canning) and medicine (sterilization and antiseptic in medical treatment, antibiotics, vaccines) all brought down death rates.*

## Analysis Questions

7. What impact could improved health and nutrition have on birth rates?

*Medical and nutritional advances lead to longer life expectancy and lower death rates. This means better health for everyone, especially infants and children. When infants are healthier, women are more confident that their children will live to adulthood and therefore tend to have smaller families. As a result, improvements in health and nutrition lead to lower birth rates.*

8. Do you think that we are currently at our maximum food output, or are we capable of growing more food than we do today?

*Answers will vary. Students may point out that while we've increased food output, much is still wasted or lost in transit. Some students may note that our demand for meat is increasing, which will decrease the output per acre of agricultural land.*

9. What impact do you think global communication has on our population and resource use?

*With advances in communication, people across the globe can more readily exchange ideas and knowledge about medical and health practices, impacts of consumption, the state of the global environment – ideas that can now easily be exchanged through social media.*

10. The timeline highlights advances in medicine, industry, nutrition, and women's roles that have helped improve lives, eradicate disease and bring down birth rates. Do you think that we've made equal progress with these advances around the world?

*Overall, our global family has made great strides, but there is still much progress to be made, especially in developing countries. Among the least developed countries, only 36 percent of the population has access to improved sanitation, the infant mortality rate is 66/1,000 births (about 1 in 15), and fertility rates remain high at 4.4 children per woman. Women in the least developed countries lack equal access to education and employment opportunities, as well as family planning services.*

11. Which event at the end of the timeline will have the largest impact on our population size and our quality of life in the future? Explain your thinking.

*Answers will vary.*

12. Are there any events that don't seem like they are related to population growth? Why do you think they were included in the timeline? Explain.

*Answers will vary.*



## A Thematic History - Teacher Notes

### **Communications**

Population Influences – With the dawn of rapid global communication in the 20<sup>th</sup> century, it has become easier to share ideas and concepts about culture, lifestyle, and global trends. The accessibility and speed of the Internet, email, and cell phones have given people access to far corners of the world, spanning great distances and creating opportunities to learn. People in less developed regions have more knowledge of the advances in medicine, education, and economics available in more developed areas. Those living in more developed nations can access information about challenges we face as a global society, and are more aware of their disproportionate resource consumption. Global communication can help spread information on social and environmental issues, such as the impacts of investing in education and medicine or the importance of sustainable resource use.

Trends – Global communication has become easier, more accessible, and more electronic through the years. Today, more people can readily exchange knowledge about medical and health practices, impacts of consumption, and the state of the global environment.

### **Environment**

Population Influences – As our numbers grow, so does our impact on the environment and the natural resources that support us. This means that the bigger our population, the more quickly we exceed the Earth's biocapacity, or ability to support us at its rate of resource regeneration. The collapse of cod fish stock, deforestation, coral bleaching, and climate change all threaten our ability to rely on the resources that we need for survival.

Trends – The majority of environmental issues are seen later in the timeline, and their intensity increases as we get closer to the present day. Many of these are results of advances in technology, food production, and industry from earlier stages of the timeline, such as the impacts of climate change and the Great Pacific Garbage Patch.

### **Food and Agriculture**

Population Influences – Advances in food and agriculture allow more people to be fed and have better nutrition. Better nutrition (from pasteurization, preservation, canning, and faster transportation of food) improves overall health and contributes to longer life expectancy for both children and adults, bringing down death rates. As families become confident that their babies will survive to adulthood, they tend to have fewer children overall. Food scarcity can cause population decline, as did the Irish Potato Famine of 1845.

Trends – Developments in agriculture have allowed us to produce more food more efficiently to feed more people. However, many of these developments (such as the use of fertilizers and pesticides) have had unintended environmental consequences.

### **Health**

Population Influences – Advances in public health allow both adults and children to live longer and healthier lives, leading to an eventual decline in fertility rates as parents are more confident their children





will survive. Reproductive rights and family planning give women the ability to decide when and how many children they want to have. Women who have control over their childbearing tend to have smaller families.

Trends – We are a healthier global society today than in the past. Life expectancy has increased, death rate has decreased, and some diseases have been eradicated. However, these advances are uneven around the world.

### **Industry/Transportation**

Population Influences – With the availability of transportation, people can settle in new areas (as with the building of the transcontinental railroad). Transportation also enables the fast transport of food, giving people access to a varied and more nutritious diet. Industry can allow people to have access to goods that make their lives more convenient or allow them to thrive in new places.

Trends – Travel has become faster and easier through the years. Industry has become more efficient and streamlined, allowing for growth in production of goods to meet the needs of a growing population. However, both can have negative unintended environmental consequences.

### **Social Justice**

Population Influences – With the development of the United Nations and more recently, the Sustainable Development Goals, improving the standard of living for people in the poorest countries has become a global priority. This could have profound positive effects for slowing population growth in the years ahead.

Trends – The development of the UN and more awareness of social justice is seen especially after WWII, when it became clear that we are an interconnected global society and need to work together to solve the social and economic issues within our global community.

### **Women's Roles**

Population Influences – When women have access to education, have more opportunity in the workforce, and are empowered within a society, birth rates fall and populations stabilize.

Trends – Women's ability to enter the workforce and have control over childbearing has fluctuated over the years but have trended upward. Advances in technology, such as the first washing machine in 1937, have automated some of the household tasks that disproportionately burden women and provided them with more time for opportunities outside the home.