

Quick Trip to 8 Billion: Exploring the Timeline



INTRODUCTION

Global population hit 6 billion in 1998, 7 billion in 2010, and 8 billion in 2022. This population growth was the result of innumerable events throughout history that impacted global fertility and mortality trends, from huge technological advances to changes in women's rights and empowerment.

There is currently an imbalance in birth and death rates, with births exceeding deaths roughly 2 to 1. This has put a strain on the planet and, in some ways, our human systems. But these outcomes haven't always been expected. Consider that the advent of the assembly line and production of the first Ford Model-Ts in 1908 paved the way for today's transportation system, and ultimately set us on a path to anthropogenic climate change. Recognizing trends in major events throughout history helps us consider the human impacts of today's global family, as well as how all 8 billion of us can live more sustainable lives.

MATERIALS

Part 1

- A *Quick Trip to 8 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 *Quick Trip to 8 Billion* poster or [e-poster](#). Allow them time to read through the events on the timeline side of the poster and answer the Worksheet questions on notebook paper.
3. Go over the answers to the Student Worksheet as a class.

CONCEPT

Many events over the past two centuries have directly and indirectly influenced population size, quality of life, and the environment.

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.
- Analyze two thematic topics and their impact on global population growth.
- Write a short essay relating two population-related topics and how they've influenced population.

SUBJECTS

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

SKILLS

Reading chronologically, critical thinking, analyzing historic events, collaborating, identifying trends, researching, writing

METHOD

Through written analysis of the timeline on the *Quick Trip to 8 Billion* poster, students explore how past events have contributed to our current population size and resource use.

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4. Ask and discuss with students: "Which event toward the end of the timeline do you think will have the greatest impact on our population size and our quality of life in the future? Explain your thinking."

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 (Food and Agriculture, Health and Wellness, People and Society, Environment, Science and Technology). Ask students to choose two topics from the Topic Key and read through each event labeled with their topics.
2. Distribute a copy of the Graphic Organizer to each student and go over the essay prompt: How have events and trends within these two topics influenced each other, and ultimately the size of the global population? By completing the Organizer, students will have a framework to refer to, and events to include as evidence, when writing their essay. You may provide further specification for the essay if you'd like.
3. Provide students with class time to complete the Organizer and write the essay or assign it as homework.

NOTE: Students will need to conduct research to complete the Graphic Organizer.

ASSESSMENT

Collect student essays and assess for thoroughness of their analysis. For guidance and suggested answers when assessing students' completed essays, see the Teacher Notes.

FOLLOW-UP ACTIVITY

Have students explore the more comprehensive time line at [WorldPopulationHistory.org](https://www.worldpopulationhistory.org). It covers the same topic areas as the poster but over a longer time frame (1 CE - Present). Ask them to choose one of the five topic areas and find five timeline milestones from 1000 - 1750 CE. Can they relate these earlier events/inventions from the website's timeline to some on the milestones from the poster for the past 200 years? Their exploration could be followed by a class discussion on their findings.

Student Worksheet

Name: _____

Date: _____

Look at the timeline side of the *Quick Trip to 8 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.

Look and Find

1. In what year was global population growing the fastest?
2. What was the average number of children per woman at the peak of the Baby Boom?
3. In what year was the Internet created?
4. What invention in the 1800s allowed for quick transport of food and goods in the U.S.?
5. During which time period do you notice key milestones in medicine that reduced mortality?

Make Connections

6. Which events on the timeline directly led to an increase in death rates?
7. In 1834, the mechanical reaper was invented, tripling farmers' outputs. What other events in our history have increased crop yields?
8. Which milestones on the timeline relate to food safety?
9. Which events on the timeline relate to changing roles of women in society?

Think Further

10. How do you think the Public Health Movement in Britain in the 1840s impacted population?
11. 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?
12. What impact do you think global communication has on our population and resource use?
13. Why do you think the Great Depression led to the "baby bust?" What factors do you think contributed to the post-WWII "baby boom?" Is there a connection between economics and population? Explain.
14. The concentration of atmospheric CO₂ is listed first in the 1850s (280 ppm) and again in 2016 (400 ppm). What milestones on the timeline have affected the amount of atmospheric CO₂? How might the population growth over that time period also have impacted atmospheric CO₂?

Graphic Organizer

Name: _____

Date: _____

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 (Health and Wellness, 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 and complete the organizer. The completed organizer will help you answer the essay prompt.

| | |
|--|--|
| 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, and ultimately the size of the global population?



Student Worksheet Answer Key

Look and Find

1. In what year was global population growing the fastest?
1963
2. What was the average number of children per woman at the peak of the Baby Boom?
3.8 children per woman
3. In what year was the Internet created?
1989
4. What invention in the 1800s allowed for quick transport of food and goods in the U.S.?
The transcontinental railroad
5. During which time period do you notice key milestones in medicine that reduced mortality?
The middle of the 20th century saw the development of antibiotics (1940s), and vaccines for polio (1955) and measles (1964). The first birth control pills became available in 1960. The ability to plan the timing and spacing of children reduced both maternal and child mortality.

Make Connections

6. 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, American Civil War, WWI, WWII, Spanish Flu, HIV/AIDS crisis, and the COVID pandemic.
7. 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) supplied plants with essential nutrients that they need to grow, increasing crop output; the use of DDT (beginning in 1939) marked 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.
8. Which milestones on the timeline relate to food safety?
Canning, pasteurization, flash-freezing, and the hermetically-sealed refrigerator
9. Which events on the timeline relate to changing roles of women in society?
Women's Rights Convention, women's suffrage, first female prime minister, birth control pills, striking down of Comstock Laws



Think Further

10. How do you think the Public Health Movement in Britain in the 1840s impacted population?

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.

11. 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.

12. 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.

13. 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 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.

14. The concentration of atmospheric CO₂ is listed first in the 1850s (280 ppm) and again in 2016 (400 ppm). What milestones on the timeline have affected the amount of atmospheric CO₂? How might the population growth over that time period also have impacted atmospheric CO₂?

Emissions of CO₂ increased as a result of industrialization, advances in transportation (transcontinental railroad, air travel, automobiles), electricity (starting with Thomas Edison’s lightbulb), home appliances (air conditioning, refrigerators), and computer/Internet use. Growth in agriculture (Green Revolution, use of synthetic fertilizer) is another major source of CO₂ emissions due to fossil-fuel powered farm equipment. Agricultural growth can also lead to deforestation, destroying areas that naturally absorb carbon.

The growth in fossil fuel use from the 1850s to today for all of these sectors (industry, transportation, agriculture) is directly related to increased demand for goods and services as our global population has grown from 1.2 billion in the mid-19th century to 8 billion today.