Population in China

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Overview: Students will compare the geography of China to the United States and determine factors influencing the distribution of population. The consequences of high density population will be discussed.

Essential Questions:
- How does China compare to the United States in geography and climate?
- What are two major differences between the geography of the US and that of China?
- Why do high density populations occur where they do?
- What are some advantages and disadvantages of high populations?

Objectives:
- Compare China and the United States in size, latitude, geography and population
- Explain climatic reasons for patterns of population
- List and explain some consequences of large, dense populations

Subject/Grade Level: World Geography, Grade 6-12

Population PPT

Michigan Grade Level Content Expectations

Middle School:
6 – G1.2.3 Use, interpret and create maps and graphs representing population characteristics, natural features, and land use of the region under study

High School: Population
CGI: Explain the causes and consequences of population changes since 1945 by analyzing the distributions of population.

National Geography Standards:
Standard 4: The physical and human characteristics of places.
Standard 9: The characteristics, distribution, and migration of human populations on Earth's surface.

Student Materials: Pretest; Blank China Map; worksheets; extension activities (Population Pyramids from Different Regions in China, Population Density and Urban "Footprints"; Comparing US and China population

Teacher Materials: Teacher Background Information; Pre/Posttest

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This lesson is based on the **Population in China** unit on the Big Ideas CD, which contains much more material. The lesson plan (and other Big Idea units) are available on the Michigan Geographic Alliance website: cst.cmich.edu/mga/ (Teacher Resources). Here, under the Big Idea Unit, you will find the clickable atlas of China, allowing you to make maps of China with optional layers. Also, many more activities are available here.

Procedure:

1. Slides 12: I Can statements. Before beginning lesson, an optional Pretest is provided (Slide 3)

2. Slide 4 shows an overlay of US on China to compare size, latitude, and position on continent

3. Discuss Analogous Climates (Slides5-7). Give students Worksheet #1 (Slide 8) and explain activity. Show slide 11 to identify locations of US Cities. Slides 10-13 are answers and discussions of worksheet.

4. Ask students to think of two major differences in the geography of US and China (Slide 14). After some predictions and guesses, show slides 15-18 to discuss these differences (no west coast, no Great Lakes). Slide 19 shows the river systems of China, all sourced in the highlands in the West.

5. Topography and precipitation patterns are shown on slides 20-21.
   a. Comparison Questions:
      i. Does China have more or less land over a mile high than the US?
      ii. How does China's pattern of precipitation compare to that of the US?
   b. Transition question: Describe the topography of China from west to east
   c. Region or Pattern question: How can you explain the pattern of precipitation in southwest China?

   Slide 22 shows both precipitation and topography. Pose the question about where China's population might be (Slide 23)

6. OPTIONAL: Scaffolding Population Vocabulary: Slides 24-33 are a review of the definitions of population, population density, and population distribution

7. Where do you think China's population is, and why? (Slide 34)
   a. Give students the blank map of China and the directions to shade areas where they think the population might be heaviest. (Slide 35). Students should write geographic reasons for their predictions. (Slide 36 might be shown to help review the geography of China).
   b. Slides 37-41 can be used to discuss answers. Where do most people live?
   c. Students then should be able to write a paragraph which describes the population distribution of China.(Slide 42)
   d. Some optional population activities are provided from the Big Ideas Unit (see extensions)

8. Remind students that China has 4 times as many people as the United States. In groups, discuss some consequences of large population. (Slide 43)
    a. Assign T Chart and have students write advantages and disadvantages (Slide 44)
    b. Discuss answers, and share some additional information (Slide 45 and Teacher Notes)

9. Optional: administer posttest.

Extensions:
- Have students research the questions on Slide 48
    o What are some limits on population?
    o How has China dealt with large dense populations?
- Use population activities available in the Population in China Unit from the Big Ideas resources on the website. Three are included here (Slides 47-49)

Assessment Options:
- Descriptions of China's Population Distribution
- Consequences of High Population (T Chart)
- Results of the Posttest
- Essay: Choose one of the consequences and explain how it applies to China with examples. The last paragraph should include a comparison of that consequence as it is evident in the United States.
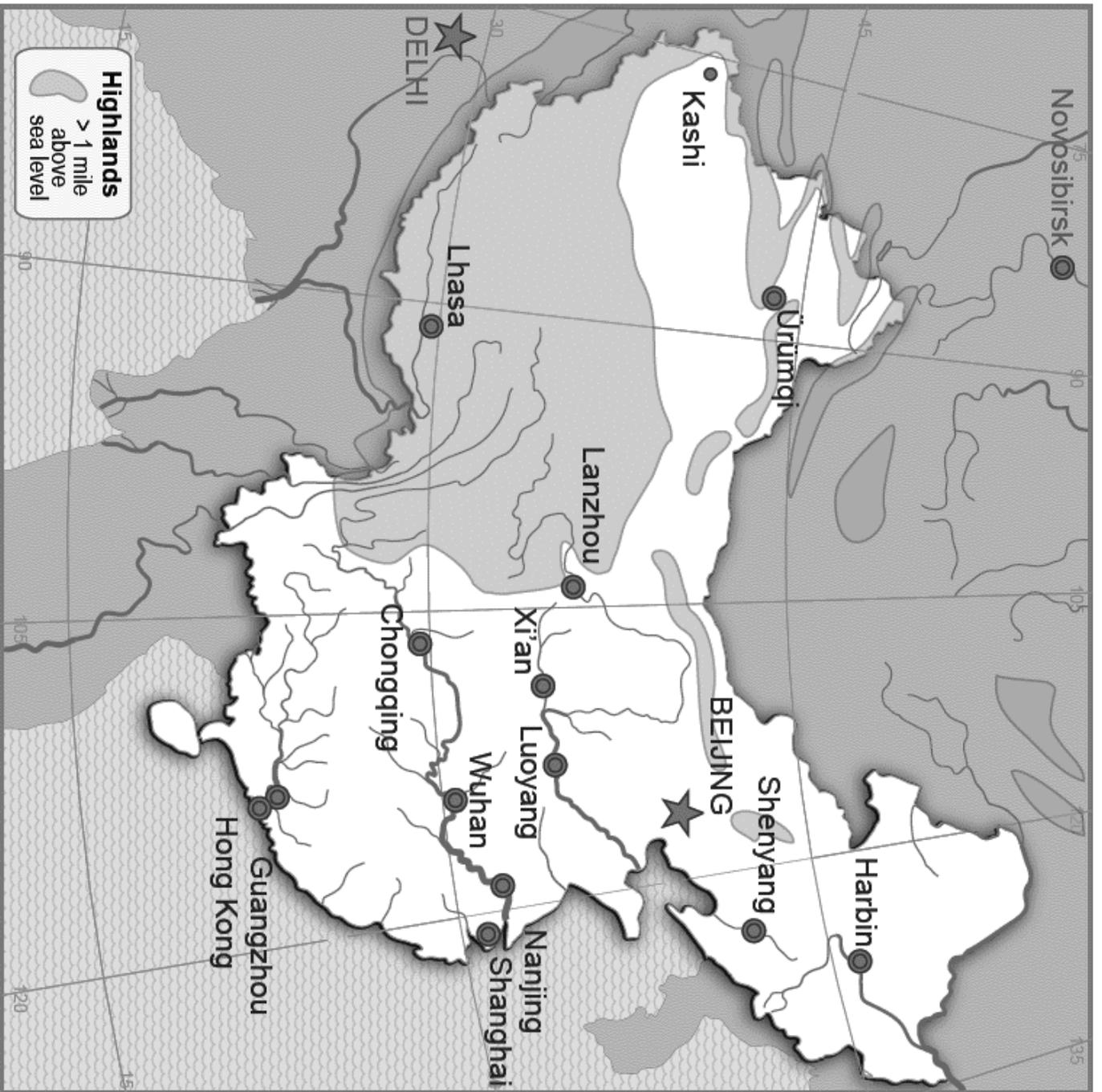
Pretest

"Using Big Ideas to teach Population in China"

1. China has ___ times as many people as the US
   a. 2 times
   b. 4 times
   c. 6 times
   d. 10 times

2. Land area of China compared to the US is:
   a. Much less
   b. About the same
   c. Much more

3. Manchuria, China's northlands, is _____ than Michigan or Ontario
   a. Wetter and colder
   b. Wetter and warmer
   c. Drier and colder
   d. Drier and warmer

4. The capital cities (Washington DC and Beijing) have climates that are
   a. Very similar
   b. Very different

5. The land area of China extends
   a. Farther south than the US
   b. Farther south and west than the US
   c. Farther south, west, and north than the US

6. One positive consequence of a large population:

7. One negative consequence of a large population:

Posttest

"Using Big Ideas to teach Population in China"

1. China has ___ times as many people as the US
   a. 2 times
   b. 4 times
   c. 6 times
   d. 10 times

2. Land area of China compared to the US is:
   a. Much less
   b. About the same
   c. Much more

3. Manchuria, China's northlands, is _____ than Michigan or Ontario
   a. Wetter and colder
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   a. Farther south than the US
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   c. Farther south, west, and north than the US

6. One positive consequence of a large population:

7. One negative consequence of a large population:

Highlands
> 1 mile
above
sea level

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DELHI

Kashi

Lhasa

Urumqi

Novosibirsk

Lanzhou

Chongqing

Xi'an

Luoyang

Wuhan

BEIJING

Shenyang

Harbin

Guangzhou
Hong Kong

Nanjing
Shanghai

**Which city
in China is
*analogous to:***

Washington DC
39° N, 77° W

Pittsburgh
40° N, 80° W

Reno
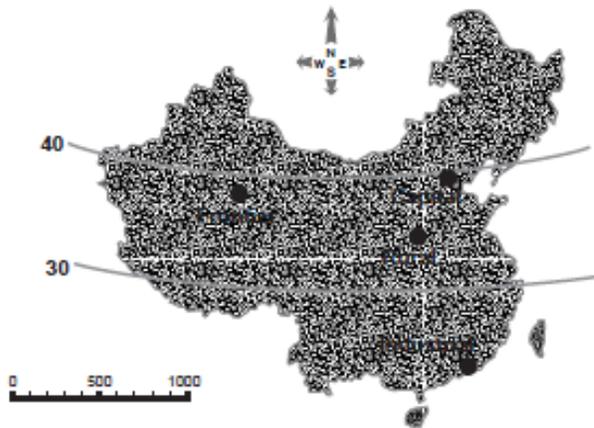40° N, 120° W

Savannah
32° N, 81° W

Consequences
of a large, dense population

ADVANTAGES | DISADVANTAGES

Population Pyramids from Different Regions in China

These four graphs are very simple representations of the population in four places.

The bars going out to the right of the center line show females; The bars going to the left of the center line show males.

The top bars show people aged 65+. The middle bars show the people between 15 and 64 years old. The bottom bars show the number of children up to age 15.

1. Graph _____ shows a farming area in the flat plain of central China. In this area, some people live to an old age but there are also a lot of children.
   What else do you notice when you compare this graph to the graphs of other places?

2. Graph _____ shows a factory area near Hong Kong in southern China. In this area, there are more women than men in every age group, because many women move there to work in the factories.
   What else do you notice when you compare this graph to the graphs of other places?

3. Graph _____ shows a part of the dry mountains in western China. This area does not have a lot of people, but families may have several children. There are about equal numbers of girls and boys.
   What else do you notice when you compare this graph to the graphs of other places?

4. Graph _____ shows Beijing, the capital of China. Many people of working age have moved here in order to work in government or business. People in cities tend to have few children.
   What else do you notice when you compare this graph to the graphs of other places?
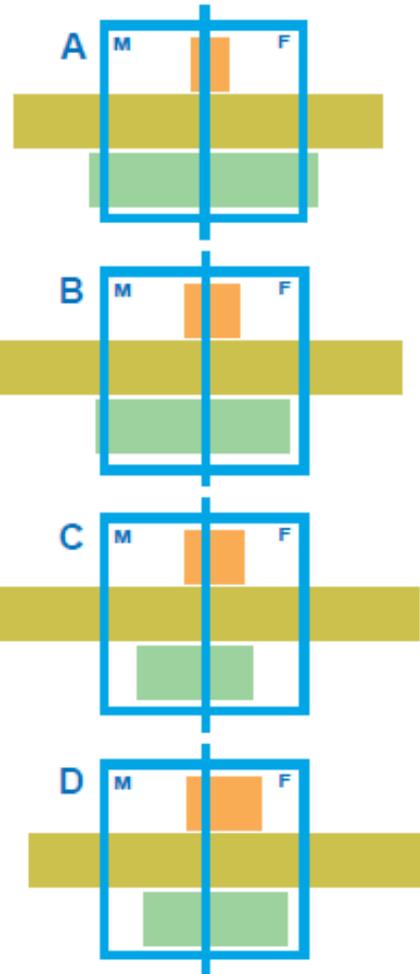
Thought question: which place would need the most doctors? lawyers? teachers? car dealers? apartment or house builders? tractor repairers?
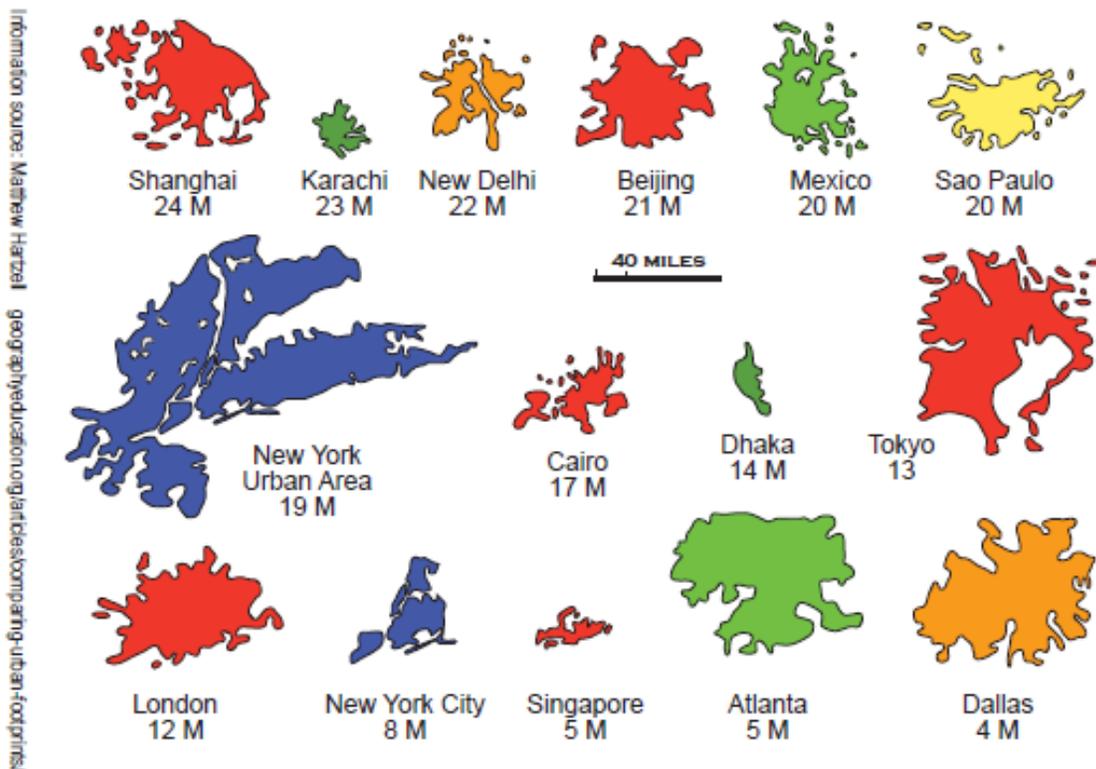
Population Density and Urban "Footprints"

> Defintion: **Population density** is the number of people in a unit of area (e.g., square mile).

Population density is a measure of how crowded a place is. Crowding, in turn, has many effects on quality of life. Some effects are positive - shows, sports teams, job opportunities, variety. Other effects can be negative - high property values, traffic, pollution, disease.

To calculate population density, you just divide the total population by the size of the area. Unfortunately, it can be hard to find information about the total area of cities. Fortunately, there is a way to get an impression of population density without having to calculate anything.

Start by making a map of the area from a satellite image. Here are maps of 15 world cities:

Shanghai 24 M   Karachi 23 M   New Delhi 22 M   Beijing 21 M   Mexico 20 M   Sao Paulo 20 M

40 MILES

New York Urban Area 19 M   Cairo 17 M   Dhaka 14 M   Tokyo 13

London 12 M   New York City 8 M   Singapore 5 M   Atlanta 5 M   Dallas 4 M

Underneath each city name is a number that tells you its population in millions.

Make a dot map of population in each city. Make dots about the size of the 0 in 40 MILES. Each dot represents one million people. Scatter the dots throughout the area of the city. Remember, though, that most cities are more crowded near the old center.

You can get an idea about population density by noting how close your dots are to each other.

1. Which urban area is more crowded? Circle: Beijing, China   London, England   Dallas, Texas

2. Which two urban areas are the most crowded? _____ _____

3. Which urban areas are the least crowded? _____

4. Which urban area would feel about as crowded as New York City?

　　　　　Circle: Shanghai, China   New Delhi, India   Dhaka, Bangladesh

5. Write a 4-sentence paragraph to compare population densities in different countries.

Comparing Populations: China and the United States
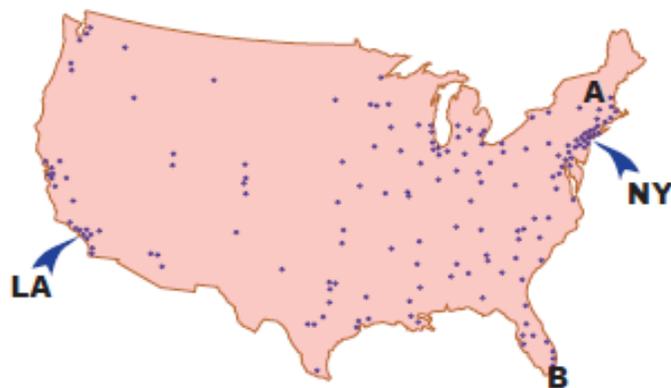
China and the United States are two of the largest countries in the world. These two countries are similar in many ways.
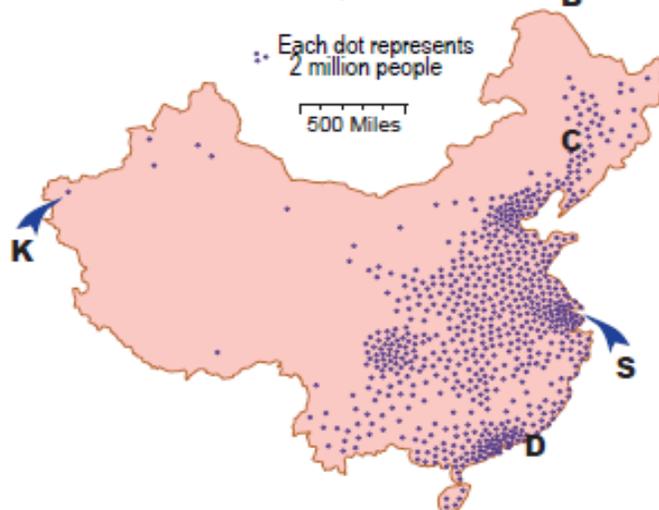
1. They are about the same size.

Use the map scale to estimate the distance from Los Angeles (LA) to New York City (NY).

Circle the best estimate:

1500 miles   2500 miles

2. Circle the best estimate of the distance in miles from Kashgar (K) to Shanghai (S):

1500   2000   2500   3000

China and the United States are also about the same latitude (distance north of the equator).

As a result, many places in the two countries have similar weather.

The letters A, B, C, and D mark the places in the weather stories.

Each dot represents 2 million people

500 Miles

3. China and the United States, however, have different populations. Each dot on the maps represents 2 million people. Put an X by the most accurate statement:
____ China has twice as many people as the United States.
____ China has four times as many people as the United States.
____ China has twenty times as many people as the United States.

4. Put an X by the generalization that best describes how the populations are <u>similar</u>:
____ Most of the people in both countries live in the northern half of the country.
____ Most of the people in both countries live in the eastern half of the country.

5. There are several bunches of people living near the west edge of the United States. Write two sentences to explain why few people live near the west edge of China. Your first sentence should identify an important way in which the two countries are <u>different</u>. Your second sentence should explain how that difference might cause fewer people to want to live near the western edge of China.

Teacher Notes

Consequence: *Large populations can produce more than small populations.*

"Two people can produce twice as much as one." Actually, two people working together can usually produce <u>more</u> than twice as much as one.

This extra production is possible for (at least) three reasons:

1. Some parts of a job might require more strength than one person has. For example, two people can carry a box that one person might not be able to lift.

2. Some jobs require several different skills or tools. When two people work together, each one can do the part of the job they do best. One can make pizza while the other waits on the customers.

3. Some jobs require people to be in different places at the same time. For example, one person can hold one end of a long board in place while the other person nails the other end into place. One person can fix a wire that was broken in a storm, while another person waits in an office ten miles away to push a button and test the connection.

These three reasons become even more important with a really big project, like making a movie, giving a concert, or building a pyramid. These projects might require hundreds or thousands of people doing dozens of different jobs with different tools in different places. Examples in China include the building of the Grand Canal, the Great Wall, and a system of interstate highways to cover the country.

Consequence: *A large population, well organized, is usually able to defend against attack.*

The nomads often formed raiding groups that attacked the towns near the edge of the Chinese homeland. At first, the Chinese people tried to defend their towns. Then, they tried sending armies across the border to attack the nomads. Neither strategy was very successful. Individual towns did not have enough soldiers to defend against a large attack. When farmers got together to form an army to attack the nomads, they were too slow to catch the enemy warriors on horseback.

In time, Chinese leaders decided to build a wall along the northern border. The wall was 15-30 feet high, with a road on top. As part of the wall, they built small forts where soldiers could be lookouts. These forts were close enough to each other that they could signal for help during an attack.

Building the Great Wall was a huge job. It also cost a lot to pay soldiers to defend it. Chinese rulers thought it was worth doing, because the wall was less costly than letting the nomads steal things and kill people. The Wall is also proof that millions of people can build things that are impossible in an area with fewer people.

Consequence: *Large populations are likely to have plenty of smart people to invent things.*

If you shuffle a deck of cards and draw one card out, there is only a small probability that you will be lucky enough to get an ace. If you take twenty cards out, however, you have a much

better chance of getting an ace. In fact, you should be surprised if you <u>didn't</u> get at least one ace.

A large population has a greater probability of having many creative people who are able to invent new things. But that is not the whole story. A large and well-organized population can also have many ways to help creative people. For example, it may have people who specialize in technical education. These teachers can help creative people get the skills needed to develop their inventions.

It is not surprising, therefore, to see that many of the important inventions in history came from China.

> **Consequence**: *A large population is likely to trade with other people who want their products.*

Chinese people started long-distance trading many thousands of years ago. By the time of the Han Dynasty, 2000 years ago, Chinese people had trading networks that stretched all the way to Europe and Africa. Part of this long-distance trade route is called the Silk Road, because silk from China was one of the products that people in Rome and Egypt wanted to buy.

Conditions are different in different parts of this long road.

- Some places are really dry, with sandstorms rather than rain. Food and water are hard to find.

- Some places have forests, with tall trees that shade the ground.

- In other places, the road goes over high mountains. The trails went through low passes between the peaks. In Central Asia, however, the passes are more than 12,000 feet above sea level. In other words, the gaps <u>between</u> the mountains in Asia are higher than most of the mountain peaks in the United States. As a result, this part of the Silk Road was really cold.

These conditions require different clothing and travel equipment. A single trader rarely went very far along the Silk Road. It was just too hard to carry all of the clothing and other supplies that you needed to survive in many different kinds of environments. Traders would go a short distance, then trade with people who did the next part of the road, and so on.

> **Consequence:** *A large population is more likely to develop diseases that spread rapidly.*

Most human diseases are caused by tiny bacteria or viruses that get into a body and cause damage.

> Question: What is the geography part of this story?
> Answer: Places with many people can develop more new kinds of bacteria and viruses.

This is just another example of the same principle that we described earlier. (Remember? – if you take one card out of a deck, you have little chance of getting an ace; take 20 cards, and you are almost certain to get one.) In a small population, a new disease might appear only once in a hundred years or so. In a large population, a new disease might occur every few months. And in a high density population, disease can spread more easily and have disastrous consequences.

Consequence: *Population density has a complex influence on things like freedom, crime, and human rights.*

If I am all alone in the middle of a square mile, I am free to do just about anything I want. I can play my trombone at midnight. I can run around naked, or cook a garlic-and-curry pizza over an open fire.

None of that is allowed in the part of New York City where I am writing this chapter. The city has many rules about things like noise, clothing, or air quality. In short, the simple fact that New York has a high population density also has a strong effect on the meaning of the word "freedom."

At one level, it is simple: more people automatically mean less freedom for each individual.

1. How crowded should an area be before people pass a law making it illegal to play a radio as loud as you want to?

2. How many people have to be walking on a sidewalk before it makes sense to ban skateboards?

China has four times as many people as the United States, but it has only half as much good land for growing food or building houses. As a result, the livable part of China, on average, is about eight times as crowded as the United States. This is certain to have an influence on the amount of personal freedom individual people have.

Consequence: *A large population has more impacts on the environment.*

There are many things that are OK if only a few people do it, but they become a problem if many people do it:

A few billboards next to a highway can attract attention and get their message across – but hundreds of billboards can create such a visual mess that none of them gets noticed.

A few cabins on a lake can dump sewage directly into the water without much harm – but hundreds of cabins can add enough pollution to kill fish and promote a green scum of algae on the water.

Because China has so many people, air pollution has been called "an abuse of the commons." It causes thousands of deaths every year. Many more people have lung diseases caused by pollution. Like disease, pollution is more likely to start in crowded places and then spread all around the world.