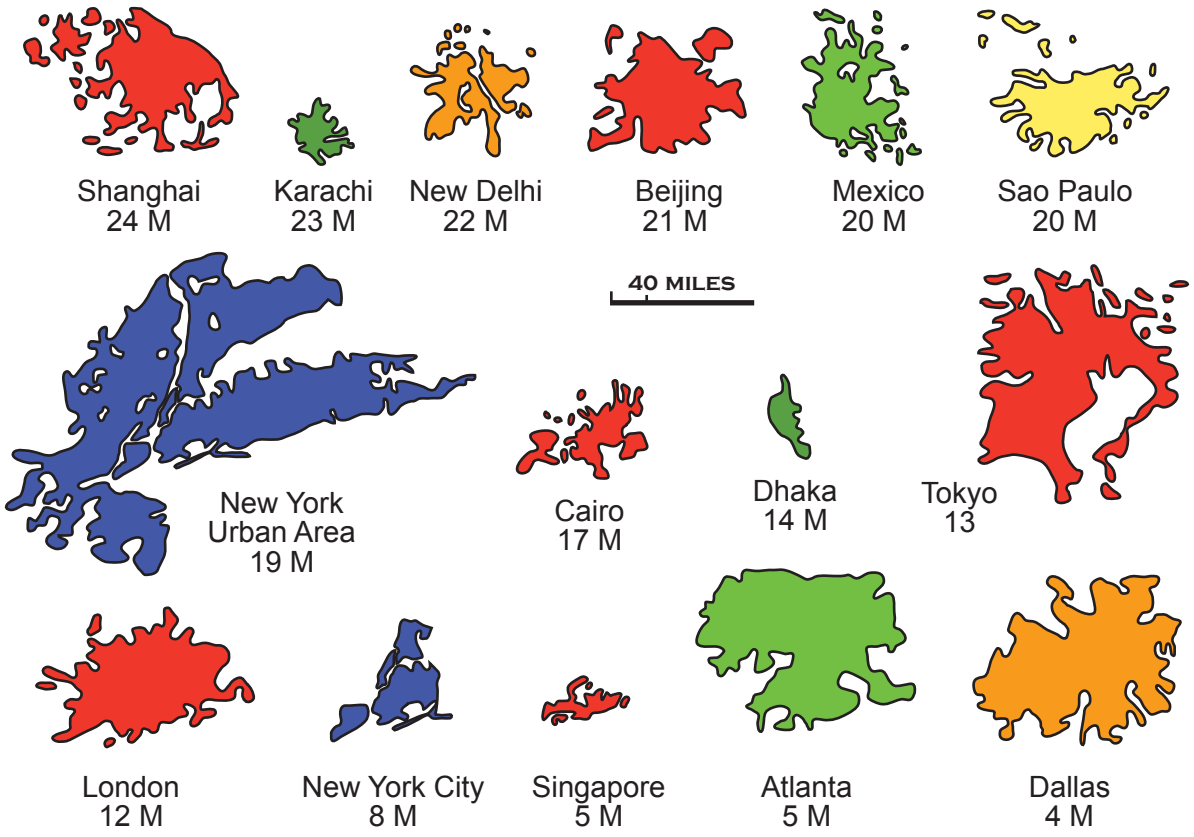
# Population Density and Urban "Footprints"

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, divide 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 estimate population density without any calculations.

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




Information source: Matthew Hartzell geographyeducation.org/articles/comparing-urban-footprints/

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 o 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 seems 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 Atlanta, Georgia

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

Teacher's Guide: **Urban Population Density**

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| Overview: Students add dots to small maps of world cities to provide a rough visual impression of population density. In doing so, they see that urban areas around the world differ greatly in population density. On this measure, New York City is more like some cities in Europe or China than like other cities in the United States. | GLCEs: 6G126, 6G132 |
| | Related Discipline: History |
| | CC Standard: math, writing |
| | Time: ½ to 1 class period |

**Setup:** One setup option is to run a brainstorming session about the advantages and disadvantages of population density. Crowded cities can have more job options, recreation opportunities, restaurant choices, and so forth. They can also have more crime, pollution, and disease.

**Procedure:** The activity is self-explanatory. Students add dots to the map sketches to get a quick visual impression of population density. Then they make some international comparisons.

**Answers:** 1. Beijing is much more crowded – about twice as many people in an area slightly smaller than London, five times as many people in half the area of Dallas. Encourage students to try to make verbal generalizations like these.

2. Karachi and Dhaka are the most crowded cities in this set

3. Atlanta and Dallas have the lowest population densities in this set

4. Shanghai and New York City have roughly the same population density (note – make sure students are reading carefully and looking at the right map - the New York metro area (city plus suburbs) has a much lower density than New York City!) New Delhi and Dhaka have higher densities, Atlanta much lower.

**Debrief:** Cities are different! Students should also realize, however, that cities are not uniform – each city on this page has areas of much greater population density as well as more sparsely populated neighborhoods. These internal differences can be seen on satellite images.

**Vocabulary:** population density crowding sparse sprawl

**Extension:** As a visual teaser, do an image search to get photos of the downtown areas of different cities. For a more in-depth look, use a satellite image program like Google Earth or Yahoo Maps to compare cities and to look at internal differences within cities. CAUTION: urban geography is a huge and complex field of study – gently warn students about forming generalizations after just a short exploration of a city. Continued exploration, however, is one of the best antidotes to the tendency to make sweeping generalizations! Students could "adopt" different cities and try to create a photo-based presentation that illustrates the variety of scenes within the city.