The Geography of the Fed

Lesson Description

In this lesson, students visit the FED101 web site to learn about the structure of the Federal Reserve. They recognize that there are 12 Federal Reserve districts. The students use the GeoFRED™ web tool to identify those districts and use a map from *Purposes and Functions of the Federal Reserve* to identify the states or parts of states included in each district. Students rank the districts according to population size and geographic size. Students compute range, mode, median and mean for the population data.

Grade Level

7-10

Concepts

Mean
Median
Mode
Range
Regions and characteristics
Structure of the Federal Reserve System

Objectives

Students will:

- Explain that regions can be determined by various characteristics.
- Identify the location and other characteristics of 12 cities that have Federal Reserve banks.
- Define and calculate range, mode, median, mean.
- Identify the 12 Federal Reserve districts.

Content Standards

National Standards in Economics

- **Standard 20:** Federal government budgetary policy and the Federal Reserve System's monetary policy influence the overall levels of employment, output and prices.

National Standards in Geography

- **Standard 1:** How to use maps and other geographic representations, tools and technologies to acquire, process and report information.
- **Standard 5:** People create regions to interpret the world's complexity.
- **Standard 9:** The characteristics, distribution and migration of human populations on Earth's surface.

National Council for the Social Studies Strands

- People, places and environment
- Production, distribution and consumption

Time Required

90 minutes

Materials

- Visual 1
- A copy of Handout 1 for each student (optional)
- A copy of Handouts 2, 3, 4, 5, 6, 7, 8 and 9 for each student
- A copy of Handouts 5, 6, 7 and 8—Answer Keys for the teacher
- Internet access
- Calculator for each student
- Highlight marker for each student

Procedures

1. Ask the students the following:
   - Have you heard of the Federal Reserve System? *(Answers will vary.)*
   - What do you think the Federal Reserve System is? *(Answers will vary.)*

2. Explain that the Federal Reserve was established in 1913 as the central bank of the United States. Ask the students if they have ever visited a commercial bank with parents or family members. *(Answers will vary.)* Ask the students what banks do. *(Answers will vary; students may say that banks keep/hold people's money, make loans.)*

3. Point out that banks are businesses that accept deposits from people and businesses and make loans to people and businesses. Banks are safe places to keep money. Banks use the money people and businesses deposit to make loans.

4. Explain the Federal Reserve, sometimes referred to as the Fed, is often called the bankers' bank because the Fed accepts deposits from banks and makes loans to banks.

5. Open an internet connection and enter the following address: www.federalreserveeducation.org/fed101/structure. FED101 is part of the Federal Reserve Education site. It provides information about the structure of the Fed. Click on each section of the pyramid diagram for a brief oral description of the components that make up the Federal Reserve System or choose only to listen to the segment about Federal Reserve banks. Refer to *Handout 1: Text about Fed Structure from FED 101* to read a text version of the descriptions.

6. Tell students that **regions** are areas defined by certain unifying characteristics. Distribute a copy of *Handout 2: How Many Banks and Where?* and a highlight marker to each student. Tell the students to read the handout and highlight characteristics or features used to determine in what cities to locate Federal Reserve banks.

7. Allow time for students to work. When they have finished, discuss the following.

   - Who made up the Reserve Bank Organization Committee? *(the Secretary of the Treasury, William McAdoo; the Secretary of Agriculture, David Houston; and the Comptroller of the Currency, John Williams)*
   - How many Federal Reserve districts were established? *(12)*
   - What characteristics were used to decide which cities qualified as Federal Reserve bank cities? *(the ability of member banks within the district to meet the minimum capital of $4 million, required by law for each Federal Reserve bank; the mercantile, industrial and financial connections existing within each district; geographical factors and the existing network of transportation and communications; population, area and prevalent business activities in the district.)*

8. Point out that the Reserve Bank Organization Committee identified criteria and used the criteria to establish the Federal Reserve districts. Federal Reserve districts are regions—areas defined by certain unifying characteristics. Ask the students if they can name any cities in which there is a Federal Reserve bank. *(Answers will vary.)* Go to http://geofred.stlouisfed.org to display GeoFRED™. Click on Edit Data/Layers. From the drop-down box, select the tab labeled "Data" and select Area: State, Data: Unemployment Rate (Not Seasonally Adjusted), Frequency: Annual, Date: 2000. Next, choose the tab labeled "Layers." From this section, check Federal Reserve Districts Boundary and Label. Clear States, Lakes and Rivers or any other boxes that may be checked. (Use the scroll bar to see all selection boxes.) Click "Update Map." (This map should look like the map on Handout 3.)

9. Distribute a copy of *Handout 3: Federal Reserve Districts—2000 Unemployment Rate by State* to each student. Remind students that although the Federal Reserve System includes the Board of Governors, which is located in Washington, D.C., and the 12 Federal Reserve banks and their branches, only the 12 districts are designated on the map. *(Note: This information can be found on Handout 1.)*

10. Tell students that the map displayed on GeoFRED and the map on Handout 3 show the 12 Federal Reserve districts. The Federal Reserve officially identifies districts by number and Reserve

bank city, as well as by letter of the alphabet. Point out each district on the screen. Read the list below and ask students to label the districts on their maps with both the number and the letter as follows.

a. Boston – 1A

b. New York – 2B

c. Philadelphia – 3C

d. Cleveland – 4D

e. Richmond– 5E

f. Atlanta – 6F

g. Chicago – 7G

h. St. Louis – 8H

i. Minneapolis – 9I

j. Kansas City – 10J

k. Dallas – 11K

l. San Francisco – 12L

11. Display *Visual 1: Largest 20 Cities in 1913 Ranked by Population*. Discuss the following:

- How many of the 12 Federal Reserve bank cities were among the 20 largest cities in the United States in 1913? *(nine)*
- Which of these cities do you think still ranked among the 20 largest cities in the United States in 2000? *(Answers will vary.)*

12. Explain that in 1913, Atlanta and Richmond were ranked 31 and 39, and Dallas was ranked 58. Display *Visual 2: Largest 20 Cities in 2000 Ranked by Population*. Point out that the rankings have changed for many cities. New York still ranks at the top of the list, and Chicago is among the top five, but Dallas, San Francisco and Atlanta rank much higher than they did in 1913. Other cities, such as St. Louis and Cleveland, no longer rank as high.

13. Distribute a copy of *Handout 4: The States that Make Up Each Fed District* to each student. Explain that this handout shows which states or parts of states make up each Federal Reserve district.

14. Distribute a copy of *Handout 5: Which States Make Up Each Fed District?* to each student. Divide the class into pairs. Point out that each district is made up of the district city and states and parts of states. Tell the students to use Handout 4 to list the states or parts of states that make up each Federal Reserve district. Use *Handout 5: Which States Make Up Each Fed District?—Answer Key* to check student work.

15. Point out that students have looked at the population figures for each Federal Reserve city, and that they have identified which states or parts of states make up each Federal Reserve district. Explain that now students are going to consider two characteristics that can be used to categorize or describe Federal Reserve districts or regions—data on population and on geographic size. Distribute a copy of *Handout 6: District Statistics from the 2000 Census* to each student. Explain that this handout contains population data and the geographic size of each district in square miles.

16. Divide the class into pairs. Tell each pair of students to complete Table 1 by writing the name associated with the number of each district; for example, write in "Boston" for District 1. Instruct students to order the districts according to population size—highest to lowest. Tell each pair of students to order the districts according to geographic size in square miles—from largest to smallest. Allow time for students to work. Check student answers by referring to *Handout 6: District Statistics from the 2000 Census—Answer Key*. Discuss the following:

- Which district is the largest, based on population? *(District 12—San Francisco)*
- Which district is the largest, based on area in square miles? *(District 12—San Francisco)*
- Which district is the smallest, based on population? *(District 9—Minneapolis)*
- Which district is the smallest, based on area in square miles? *(District 3—Philadelphia)*

17. Explain that sets of data, such as the set of Federal Reserve district population data, have characteristics, too. These include range, mode, median and mean. The **range** for a set of data or a group of numbers is the difference between the highest number and the lowest number. The **mode** for a set of data or group of numbers is the number that appears most often. The **median** for a set data or a group of numbers is the middle value or number of the group. It is the value that divides the group into to equal parts. The **mean** for a set of data or a group of numbers is the arithmetic average of the data; that is, the sum of the data points divided by the number of data points.

18. Distribute a copy of *Handout 7: Range, Mode, Median and Mean for Classroom Population at Hamilton Middle School* and a calculator to each student. Work through the problems as a class. Use *Handout 7: Range, Mode, Median and Mean for Classroom Population at Hamilton Middle School—Answer Key* as needed.

19. Distribute a copy of *Handout 8: Range, Mode, Median and Mean for Federal Reserve Population Data* to each student. Tell students to use the population data for each of the 12 districts and find the range, mode, median and mean for the set of district population data (12 numbers) found on Handout 6. Use *Handout 8: Range, Mode, Median and Mean for Federal Reserve Population Data—Answer Key* to review student answers.

Closure

20. Discuss the important points of the lesson by asking the following questions.

- Which president signed the Federal Reserve Act? *(Woodrow Wilson)*
- What is the Federal Reserve System? *(the central bank of the United States)*
- When was the Federal Reserve established? *(1913)*
- When were the Federal Reserve Bank cities chosen and districts established? *(1914)*
- How many districts make up the Federal Reserve? *(12)*
- Which Federal Reserve district is largest in geographic size? *(San Francisco—District 12)*
- Which Federal Reserve district is largest by population size? *(San Francisco—District 12)*
- What are regions? *(areas classified according to common characteristics)*
- What is the range of a set of numbers? *(the difference between the highest and lowest numbers in the data set)*
- What is the mode of a set of numbers? *(the number that occurs most frequently in the data set)*
- What is the median of a set of numbers? *(the middle value in a range of numbers)*
- What is the mean of a set of numbers? *(the arithmetic average; the sum of the data points divided by the number of points)*

Assessment

21. Refer students to Handout 6. Tell them to determine the range, mode, median and mean for the area in square miles data for the 12 Federal Reserve districts.

Answers:

Range is 1,301,299 – 37,214 = 1,264,085

Mode—there is no mode for this data

Median—(182,777 + 188,814)/2 = 185,795.5

Mean—sum of the 12 divided by 12

3,593,040/12 = 299,420

Ordered Data Set:

37,214

52,264

65,557

74,299

153,362

182,777

188,814

252,637

356,918

419,559

508,341

1,301,299

22. Go back to http://geofred.stlouisfed.org to display GeoFRED. Click on Edit Data/Layers. From the drop-down box select the tab labeled "Data" and select Area: State, Data: Unemployment Rate (Not Seasonally Adjusted), Frequency: Annual, Date: 2000. Next, choose the tab labeled "Layers." From this section, under Boundary and Label, select Census Regions Boundary and Labels. Clear States, Lakes, Rivers or any other boxes that may be checked. (Use the scroll bar to see all selection boxes.) Update the map. Refer to *Handout 9: 2000 Unemployment Rate by Census Region* for a print copy of the Census Regions map and distribute a copy to students if needed. Tell the students that this map shows another set of regions for the United States—South, Northeast, West and Midwest. Explain that these regions were established by the U.S. Census Bureau. These four regions, established for the presentation of census data, represent areas that were relatively homogeneous when they were established in 1920 and revised in 1950. Tell students to write four complete sentences comparing and contrasting the Census Bureau regions with the regions/districts of the Federal Reserve.

Answers might include:

There are 12 regions or districts of the Federal Reserve and only four Census Bureau regions.

The Census Bureau regions are larger in geographic size than the Federal Reserve districts.

In both maps, the West region for Census Bureau regions and the San Francisco district for the Federal Reserve appear to be very large.

According to the legend, the unemployment data is the same for each state in both maps.

Visual 1: Largest 20 Cities in 1913 Ranked by Population

Rank	City	Population
1	New York, N.Y.	4,766,883
2	Chicago, Ill.	2,185,283
3	Philadelphia, Pa.	1,549,008
4	St. Louis, Mo.	687,029
5	Boston, Mass.	670,585
6	Cleveland, Ohio.	560,663
7	Baltimore, Md.	558,485
8	Pittsburgh, Pa.	533,905
9	Detroit, Mich.	465,766
10	Buffalo, N.Y.	423,715
11	San Francisco, Calif.	416,912
12	Milwaukee, Wis.	373,857
13	Cincinnati, Ohio	363,591
14	Newark, N.J.	347,469
15	New Orleans, La.	339,075
16	Washington, D.C.	331,069
17	Los Angeles, Calif.	319,198
18	Minneapolis, Minn.	301,408
19	Jersey City, N.J.	267,779
20	Kansas City, Mo.	248,381

SOURCE: U.S. Census Bureau web site: www.census.gov

Visual 2: Largest 20 Cities in 2000 Ranked by Population

Rank	City	Population
1	New York, N.Y.	8,008,278
2	Los Angeles, Calif.	3,694,820
3	Chicago, Ill.	2,896,016
4	Houston, Texas	1,953,631
5	Philadelphia, Pa.	1,517,550
6	Phoenix, Ariz.	1,321,045
7	San Diego, Calif.	1,223,400
8	Dallas, Texas	1,188,580
9	San Antonio, Texas	1,144,646
10	Detroit, Mich.	951,270
11	San Jose, Calif.	894,943
12	Indianapolis, Ind.	784,118
13	San Francisco, Calif.	776,733
14	Jacksonville, Fla.	735,617
15	Columbus, Ohio	711,470
16	Austin, Texas	656,562
17	Baltimore, Md.	651,154
18	Memphis, Tenn.	650,100
19	Milwaukee, Wis.	596,974
20	Boston, Mass.	589,141

SOURCE: U.S. Census Bureau web site: www.census.gov

Handout 1: Text about Fed Structure from FED 101

The Federal Reserve System was created by the Federal Reserve Act in 1913 and began operating in 1914. The Fed is an unusual mixture of public and private elements.

Board of Governors

The Board of Governors, located in Washington, D.C., provides the leadership for the System.

The Board of Governors, also known as the Federal Reserve Board, is the national component of the Federal Reserve System. The Board consists of the seven governors, appointed by the president and confirmed by the Senate. Governors serve 14-year, staggered terms to ensure stability and continuity over time. The chairman and vice-chairman are appointed to four-year terms and may be reappointed subject to term limitations.

Among the responsibilities of the Board of Governors are to guide monetary policy action, to analyze domestic and international economic and financial conditions, and to lead committees that study current issues, such as consumer banking laws and electronic commerce.

The Board also exercises broad supervisory control over the financial services industry, administers certain consumer protection regulations and oversees the nation's payments system. The Board oversees the activities of Reserve banks, approving the appointments of their presidents and some members of their boards of directors. The Board sets reserve requirements for depository institutions and approves changes in discount rates recommended by Reserve banks.

The Board's most important responsibility is participating in the Federal Open Market Committee (FOMC) which conducts our nation's monetary policy; the seven governors comprise the voting majority of the FOMC, with the other five votes coming from Reserve bank presidents.

Board members are called to testify before Congress, and they maintain regular contact with other government organizations as well. The chairman reports twice a year to Congress on the Fed's monetary policy objectives, testifies on numerous other issues and meets periodically with the Secretary of the Treasury.

The Board funds its operations by assessing the Federal Reserve banks rather than through Congressional appropriation. Its financial accounts are audited annually by a public accounting firm, and these accounts are also subject to audit by the General Accounting Office.

Federal Reserve Banks

A network of 12 Federal Reserve banks and 25 branches make up the Federal Reserve System under the general oversight of the Board of Governors. Reserve banks are the operating arms of the central bank.

Each of the 12 Reserve banks serves its region of the country, and all but one have other offices within their districts to help provide services to depository institutions and the public. The banks are named after the locations of their headquarters—Boston, New York, Philadelphia, Cleveland, Richmond, Atlanta, Chicago, St. Louis, Minneapolis, Kansas City, Dallas and San Francisco.

The Reserve banks serve banks, the U.S. Treasury, and, indirectly, the public. A Reserve bank is often called a "banker's bank," storing currency and coin, and processing checks and electronic payments.

Reserve banks also supervise commercial banks in their regions. As the bank for the U.S. government, Reserve banks handle the Treasury's payments, sell government securities and assist with the Treasury's cash management and investment activities. Reserve banks conduct research on regional, national and international economic issues. Research plays a critical role in bringing broad economic perspectives to the national policymaking arena, and supports Reserve bank presidents, who all attend meetings of the Federal Open Market Committee (FOMC).

Each Reserve bank's board of directors oversees the management and activities of the district bank. Reflecting the diverse interests of each district, these directors contribute local business experience, community involvement and leadership. The board imparts a private-sector perspective to the Reserve bank. Each board appoints the president and first vice president of the Reserve bank, subject to the approval of the Board of Governors.

All member banks hold stock in Reserve banks and receive dividends. Unlike stockholders in a public company, banks cannot sell or trade their Fed stock. Reserve banks interact directly with banks in their districts through examinations and financial services and bring important regional perspectives that help the entire Federal Reserve System do its job more effectively.

Member Banks

Approximately 38 percent of the 8,039 commercial banks in the United States are members of the Federal Reserve System. National banks must be members; state-chartered banks may join if they meet certain requirements. The member banks are stockholders of the Reserve bank in their district and as such, are required to hold 3 percent of their capital as stock in their Reserve banks.

Other Depository Institutions / American People

In addition to the approximately 3,000 member banks, about 17,000 other depository institutions provide the American people checkable deposits and other banking services. These depository institutions include nonmember commercial banks, savings banks, savings and loan associations, and credit unions. Although not formally part of the Federal Reserve System, these institutions are subject to System regulations, including reserve requirements, and have access to System payments services.

Federal Open Market Committee

The Federal Open Market Committee, or FOMC, is the Fed's monetary policymaking body. It is responsible for formulation of a policy designed to promote stable prices and economic growth. Simply put, the FOMC manages the nation's money supply.

The voting members of the FOMC are the Board of Governors, the president of the Federal Reserve Bank of New York and presidents of four other Reserve banks, who serve on a rotating basis. All Reserve bank presidents participate in FOMC policy discussions. The chairman of the Board of Governors chairs the FOMC.

The FOMC typically meets eight times a year in Washington, D.C. At each meeting, the committee discusses the outlook for the U.S. economy and monetary policy options.

The FOMC is an example of the interdependence built into the Fed's structure. It combines the expertise of the Board of Governors and the 12 Reserve banks. Regional input from Reserve bank directors and advisory groups brings the private sector perspective to the FOMC and provides grassroots input for monetary policy decisions.

Advisory Councils

Three statutory advisory councils—the Federal Advisory Council, the Consumer Advisory Council and the Thrift Institutions Advisory Council—advise the Board on matters of current interest. These councils whose members are drawn from each of the 12 Federal Reserve districts, meet two to four times a year. The individual Reserve banks have advisory committees as well, including thrift institutions advisory committees, small business and agricultural advisory committees. Moreover, officials from all Reserve banks meet periodically in various communities.

Handout 2: How Many Banks and Where?

Read the paragraphs below. Use a marker to highlight the answers to the questions that follow the reading.

The Federal Reserve Act was passed in 1913. Once the bill became a law, the Federal Reserve had to be made a functioning institution. The Federal Reserve Act designated that the Secretary of the Treasury, William McAdoo; the Secretary of Agriculture, David Houston; and the Comptroller of the Currency, John Williams, serve as the Reserve Bank Organization Committee. The committee was to select not less than eight but not more than 12 cities to be the Federal Reserve cities, and to divide the nation into districts with one Federal Reserve city in each district. The committee was told to consider convenience and customary course of business. The committee was also told that a district did not have to correspond to any particular state or states' boundaries.

Because Williams' appointment wasn't confirmed for several weeks, much of the work fell to McAdoo and Houston. The two traveled across the country meeting with business people, bankers and community leaders, each of whom were lobbying to have a Federal Reserve bank in his or her city. The committee members were also concerned about the opinions of national banks regarding the location of Federal Reserve banks. Early in 1914, the committee polled all of the national banks about their preferences for Federal Reserve cities with which they would be affiliated, giving the banks a chance to identify their first, second and third choices. Many think that the results of the poll of national banks was the most important factor in determining the cities that received Federal Reserve banks.

On April 2, 1914, the Reserve Bank Organization Committee announced its decision. There would be 12 Federal Reserve cities. Eleven of the 12 cities selected received the greatest support in the national poll. When the announcement was made, the committee received a lot of criticism about the cities not selected, as well as about the cities selected. The announcement identified criteria the committee considered. These included:

- the ability of member banks within the district to meet the minimum capital of $4 million, required by law for each Federal Reserve bank;
- the mercantile, industrial and financial connections existing within each district;
- geographical factors, and the existing network of transportation and communications; and
- population, area and prevalent business activities in the district.

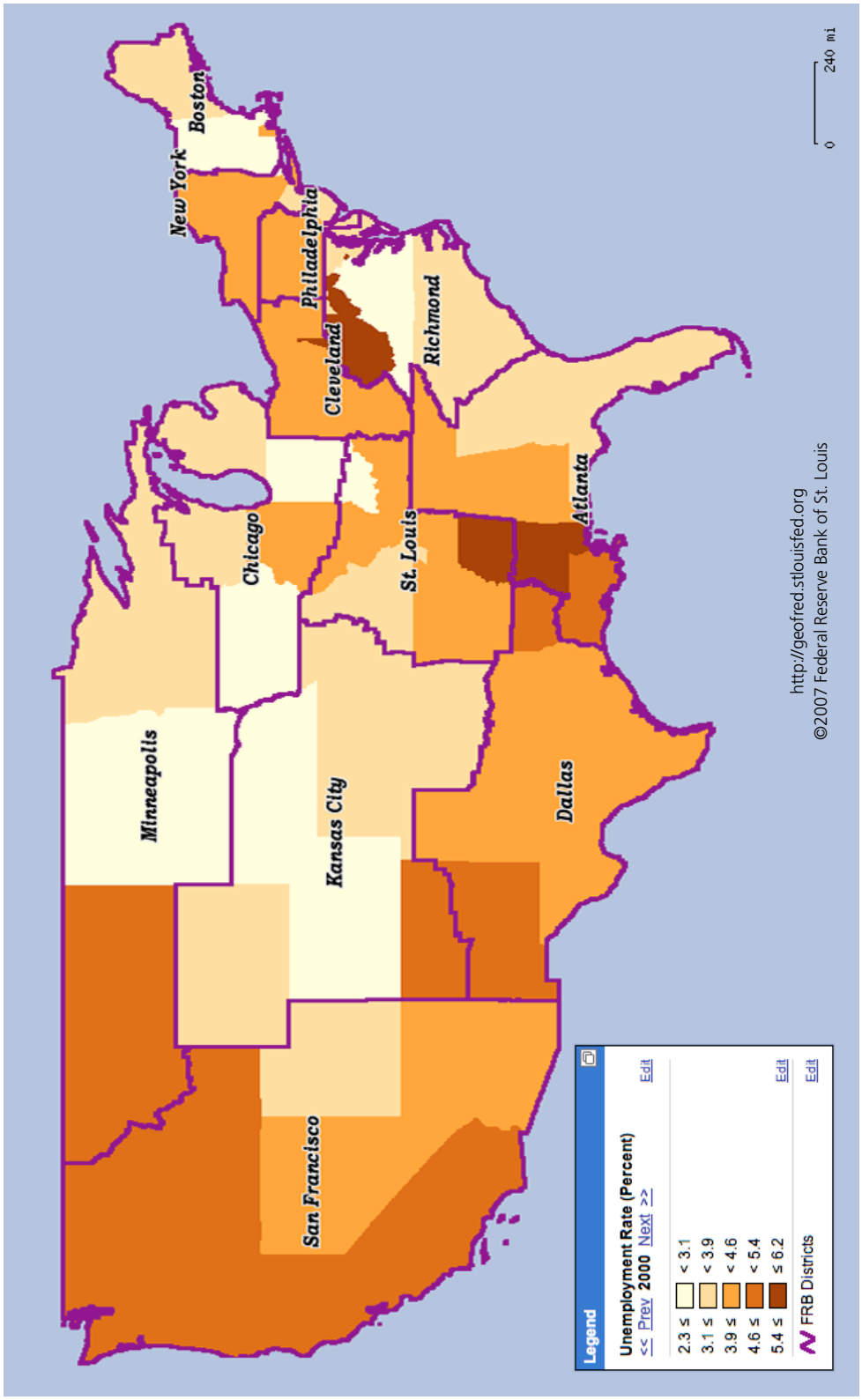
SOURCE: *Historical Beginnings. . .The Federal Reserve*, Federal Reserve Bank of Boston, www.bos.frb.org/about/pubs/begin.pdf.

1. Who made up the Reserve Bank Organization Committee?

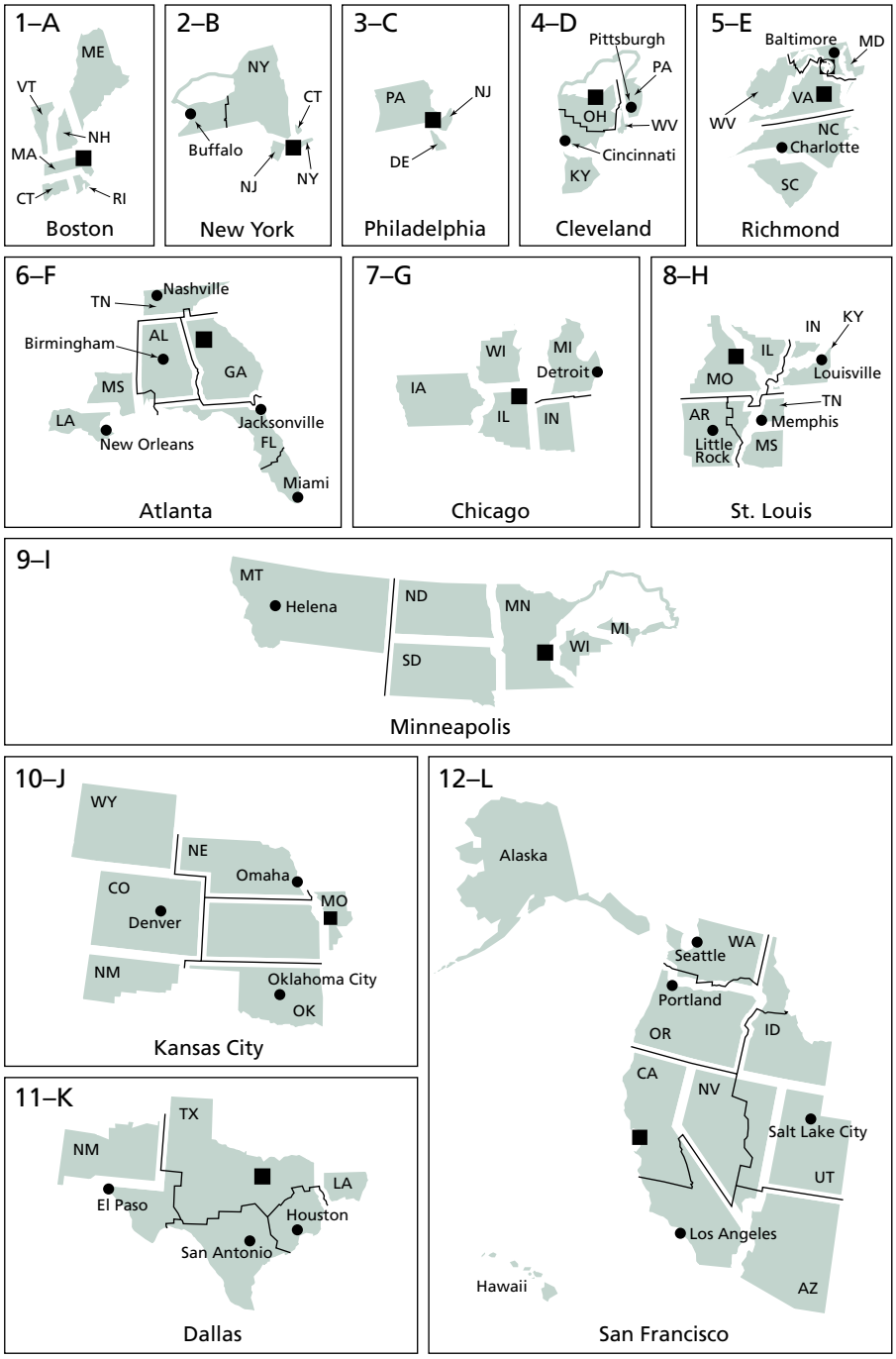
2. How many Federal Reserve districts were established?

3. What characteristics were used to decide which cities qualified as Federal Reserve bank cities?

Handout 3: Federal Reserve Districts—Unemployment Rate by State



Handout 4: The States that Make Up Each Fed District



Handout 5: Which States Make Up Each Fed District?

Use the map and information on Handout 4 to enter the states that make up each Fed district in the table below. Remember, some states are shared by Fed districts. For example, part of Missouri is in the Kansas City Fed district and part of Missouri is in the St. Louis Fed district. So Missouri would be listed as part of both the Kansas City Fed and the St. Louis Fed.

Fed Districts		
Boston-1A	**Richmond – 5E**	**Minneapolis – 9I**
New York – 2B	**Atlanta – 6F**	**Kansas City – 10J**
Philadelphia – 3C	**Chicago – 7G**	**Dallas – 11K**
Cleveland – 4D	**St. Louis – 8H**	**San Francisco – 12L**

Handout 5: Which States Make Up Each Fed District?—Answer Key

Use the map and information on Handout 4 to enter the states that make up each Fed district in the table below. Remember, some states are shared by Fed districts. For example, part of Missouri is in the Kansas City Fed district and part of Missouri is in the St. Louis Fed district. So Missouri would be listed as part of both the Kansas City Fed and the St. Louis Fed.

Fed Districts		
Boston-1A Connecticut Maine Massachusetts New Hampshire Rhode Island Vermont	**Richmond – 5E** Maryland North Carolina South Carolina West Virginia Virginia	**Minneapolis – 9I** Michigan Minnesota Montana North Dakota South Dakota Wisconsin
New York – 2B Connecticut New Jersey New York	**Atlanta – 6F** Alabama Florida Georgia Louisiana Mississippi Tennessee	**Kansas City – 10J** Colorado Missouri Nebraska New Mexico Oklahoma Wyoming
Philadelphia – 3C Delaware Pennsylvania New Jersey	**Chicago – 7G** Illinois Indiana Iowa Michigan Wisconsin	**Dallas – 11K** Louisiana New Mexico Texas
Cleveland – 4D Kentucky Ohio Pennsylvania West Virginia	**St. Louis – 8H** Arkansas Illinois Indiana Kentucky Missouri Mississippi Tennessee	**San Francisco – 12L** Alaska Arizona California Hawaii Idaho Oregon Utah Washington

Handout 6: District Statistics from the 2000 Census

Complete Table 1 by writing the name of each of the 12 districts in the first column next to the correct number for the district. The first district is entered for you.

Table 1

District	Population in Millions	Area in Square Miles
Boston 1	13,922,517	65,557
2	24,776,530	52,264
3	12,257,328	37,214
4	16,736,694	74,299
5	26,648,384	153,362
6	38,057,965	252,637
7	33,061,845	188,814
8	13,720,816	182,777
9	8,349,261	419,559
10	15,780,801	508,341
11	22,428,117	356,918
12	55,681,648	1,301,299

Use the data from Table 1 to complete the first column in Table 2 below by ordering the districts according to population from *largest* population to *smallest* population. Use the data from Table 1 to complete the second column in Table 2 below by ordering the districts according to geographic size from *largest* in square miles to *smallest* in square miles. Write the name and number of each district, as shown below.

Table 2

Districts by Population in Millions	Districts by Geographic Size in Square Miles
San Francisco - 12	San Francisco - 12

Handout 6: District Statistics from the 2000 Census—Answer Key

Complete Table 1 by writing the name of each of the 12 districts in the first column next to the correct number for the district.

Table 1

District		Population in Millions	Area in Square Miles
Boston	1	13,922,517	65,557
New York	2	24,776,530	52,264
Philadelphia	3	12,257,328	37,214
Cleveland	4	16,736,694	74,299
Richmond	5	26,648,384	153,362
Atlanta	6	38,057,965	252,637
Chicago	7	33,061,845	188,814
St. Louis	8	13,720,816	182,777
Minneapolis	9	8,349,261	419,559
Kansas City	10	15,780,801	508,341
Dallas	11	22,428,117	356,918
San Francisco	12	55,681,648	1,301,299

Use the data from Table 1 to complete the first column in Table 2 below by ordering the districts according to population from *largest* population to *smallest* population. Use the data from Table 1 to complete the second column in Table 2 below by ordering the districts according to geographic size from *largest* in square miles to *smallest* in square miles. Write the name and number of each district, as shown below.

Table 2

Districts by Population in Millions	Districts by Geographic Size in Square Miles
San Francisco – 12	San Francisco – 12
Atlanta – 6	Kansas City – 10
Chicago – 7	Minneapolis – 9
Richmond – 5	Dallas – 11
New York – 2	Atlanta – 6
Dallas – 11	Chicago – 7
Cleveland – 4	St. Louis – 8
Kansas City – 10	Richmond – 5
Boston – 1	Cleveland – 4
St. Louis – 8	Boston – 1
Philadelphia – 3	New York – 2
Minneapolis – 9	Philadelphia – 3

Handout 7: Range, Mode, Median and Mean for Classroom Population at Hamilton Middle School

The **range** for a set of data or a group of numbers is the difference between the highest number and the lowest number.

The **mode** for a set of data or group of numbers is the number that appears most often.

The **median** for a set data or a group of numbers is the middle value or number of the group. It is the value that divides the group into to equal parts.

The **mean** for a set of data or a group of numbers is the arithmetic average of the data; that is the sum of the data points divided by the number of data points.

Working with your partner, use the data in the second column in the table below to answer the questions that follow the table. Show your work.

Room Number	Number of Students
202	25
203	22
204	24
205	22
301	21
302	23
303	22
304	21
305	25
401	22
402	23
403	25
404	22
405	24

1. What is the range for this set of data?

2. What is the mode for this set of data?

3. What is the median for this set of data?

4. What is the mean for this set of data?

5. If the set of data were as follows, what would the mode be? What would the median be?

19, 20, 21, 22, 23, 24, 25, 26, 27, 28

Handout 7: Range, Mode, Median and Mean for Classroom Population at Hamilton Middle School—Answer Key

The **range** for a set of data or a group of numbers is the difference between the highest number and the lowest number.

The **mode** for a set of data or group of numbers is the number that appears most often.

The **median** for a set data or a group of numbers is the middle value or number of the group. It is the value that divides the group into to equal parts.

The **mean** for a set of data or a group of numbers is the arithmetic average of the data; that is the sum of the data points divided by the number of data points.

Working with your partner, use the data in the second column in the table below to answer the questions that follow the table. Show your work.

Room Number	Number of Students
202	25
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204	24
205	22
301	21
302	23
303	22
304	21
305	25
401	22
402	23
403	25
404	22
405	24

1. What is the range for this set of data?

21, 21, 22, 22, 22, 22, 22, 23, 23, 24, 24, 25, 25, 25

25-21 = 4

2. What is the mode for this set of data?

The number that occurs most often is the mode. In this case, the mode is 22.

3. What is the median for this set of data?

The median is the mid-point in the data. In this case, the median is 22.5. (There are seven data points before this number and seven data points after it.)

4. What is the mean for this set of data?

The mean is the sum of the data points divided by the number of data points.

321/14 = 22.93

5. If the set of data were as follows, what would the mode be? What would the median be?

19, 20, 21, 22, 23, 24, 25, 26, 27, 28

There isn't a mode because no number occurs more often than the other numbers. The median would be (23 + 24)/2 = 23.5

Handout 8: Range, Mode, Median and Mean for Federal Reserve Population Data

Use the information from Handout 6 to answer the questions below. Show your work.

1. What is the range for this set of population data?

2. What is the mode for this set of data?

3. What is the median for this set of data?

4. What is the mean for this set of data?

Handout 8: Range, Mode, Median and Mean for Federal Reserve Population Data—Answer Key

Use the information from Handout 6 to answer the questions below. Show your work.

1. What is the range for this set of population data?

   Range = highest value minus lowest value

   55,681,648 – 8,349,261 = 47,332,387

   Data ordered lowest to highest:
   8,349,261
   12,257,328
   13,720,816
   13,922,517
   15,780,801
   16,736,694
   22,428,117
   24,776,530
   26,648,384
   33,061,845
   38,057,965
   55,681,648

2. What is the mode for this set of data?

   There is no mode for this set of data because there is no frequently occurring number.

3. What is the median for this set of data?

   (16,736,694 + 22,428,117)/2 = 19,582,405.5

   To determine the midpoint for this set of data, take the average of the two numbers counting from lowest up six and then counting from the highest down six.

4. What is the mean for this set of data?

   281,421,906/12 = 23,451,825.5

   The sum of the 12 numbers divided by 12.

Handout 9: 2000 Unemployment Rate by Census Region