



TRENDS IN CONGRESSIONAL APPORTIONMENT

Activity Item

The following item is part of this activity and appears at the end of this student version.

- Item 1: 2010 Census Brief — Congressional Apportionment

Student Learning Objectives

- I will be able to understand how to calculate a state's numbers of seats in the U.S. House of Representatives.
- I will be able to identify trends in congressional apportionment.
- I will be able to analyze the relationship between population and apportionment to understand the distribution of congressional power in the United States.

NAME: _____ DATE: _____

1. Read **Item 1: 2010 Census Brief — Congressional Apportionment**. Then summarize the congressional apportionment method used in 2010.

2. Use the choropleth map, Figure 1 in **Item 1**, to summarize the apportionment changes seen across the United States between 2000 and 2010.

3. Use Figure 2 in **Item 1** to answer the following questions.
 - a. Which region had the smallest percentage distribution of seats in the U.S. House of Representatives in 2010? Write the percentage, and describe what factors you think contributed to this apportionment.

 - b. Which region had the largest percentage distribution of seats in the U.S. House of Representatives in 2010? Write the percentage, and describe what factors you think contributed to this apportionment.

4. Use the formula from Page 6 of **Item 1** (copied below) and the total population data from Table 1 on Page 2 to calculate the first five priority values (PVs) for your state in 2010, using $n = 2$ through $n = 6$, since each state’s first seat assignment is automatic. Show your work and write your answers in the following table, rounding to the nearest whole number.

$$PV(n) = \frac{\text{State Apportionment Population}}{\sqrt{n*(n-1)}}$$

n = the next potential seat number

n	Population / $\sqrt{n * (n - 1)}$	PV
2		
3		
4		
5		
6		

Congressional Apportionment

2010 Census Briefs

Issued November 2011

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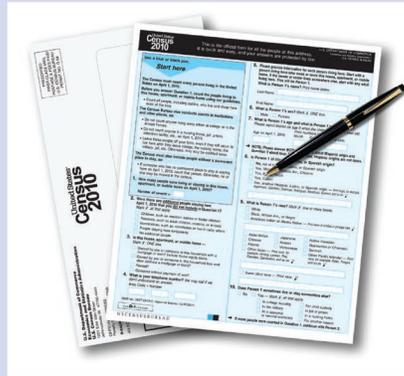
By
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The Constitutional basis for conducting the decennial census of population is to reapportion the U.S. House of Representatives. Apportionment is the process of dividing the 435 memberships, or seats, in the U.S. House of Representatives among the 50 states. With the exception of the 1920 Census, an apportionment has been made by the Congress on the basis of each decennial census from 1790 to 2010.

The apportionment population for 2010 consists of the resident population of the 50 states plus overseas federal employees (military and civilian) and their dependents living with them, who were included in their home states. The population of the District of Columbia is excluded from the apportionment population because it does not have any voting seats in the U.S. House of Representatives. The 2010 Census apportionment population was 309,183,463, as shown in Table 1.¹

This report examines trends in congressional apportionment and discusses the apportionment population—what it is, who is included, and what method is used to calculate it. The report is part of a series that analyzes population and housing data collected by the 2010 Census.

¹ The 2010 Census resident population of the United States, including the District of Columbia, was 308,745,538.



The average size of a congressional district will rise.

The number of representatives or seats in the U.S. House of Representatives has remained constant at 435 since 1911, except for a temporary increase to 437 at the time of admission of Alaska and Hawaii as states in 1959 (see Table 1). However, the apportionment based on the 1960 Census, which took effect for the election in 1962, reverted to 435 seats.

The average size of a congressional district based on the 2010 Census apportionment population will be 710,767, more than triple the average district size of 210,328 based on the 1910 Census apportionment, and 63,815 more than the average size based on Census 2000 (646,952). Based on the 2010 Census apportionment, the state with the largest average district size will be Montana (994,416), and the state with the smallest average district size will be Rhode Island (527,624).



U.S. Department of Commerce
Economics and Statistics Administration
U.S. CENSUS BUREAU

Item 1: 2010 Census Brief – Congressional Apportionment (Continued)

Table 1.
Apportionment Population Based on the 2010 Census and Apportionment of the U.S. House of Representatives: 1910 to 2010

(For information on confidentiality protection, nonsampling error, and definitions, see www.census.gov/prod/cen2010/pl94-171.pdf)

State	2010 apportionment population ¹			Number of representatives										
	Total	Resident population	U.S. population overseas	2010	2000	1990	1980	1970	1960	1950	1940	1930	1920 ²	1910
Total	309,183,463	308,143,815	1,039,648	435	435	435	435	435	435	437	435	435	435	435
Alabama	4,802,982	4,779,736	23,246	7	7	7	7	7	8	9	9	9	10	10
Alaska	721,523	710,231	11,292	1	1	1	1	1	1	1	(X)	(X)	(X)	(X)
Arizona	6,412,700	6,392,017	20,683	9	8	6	5	4	3	2	2	1	1	1
Arkansas	2,926,229	2,915,918	10,311	4	4	4	4	4	4	6	7	7	7	7
California	37,341,989	37,253,956	88,033	53	53	52	45	43	38	30	23	20	11	11
Colorado	5,044,930	5,029,196	15,734	7	7	6	6	5	4	4	4	4	4	4
Connecticut	3,581,628	3,574,097	7,531	5	5	6	6	6	6	6	6	6	5	5
Delaware	900,877	897,934	2,943	1	1	1	1	1	1	1	1	1	1	1
Florida	18,900,773	18,801,310	99,463	27	25	23	19	15	12	8	6	5	4	4
Georgia	9,727,566	9,687,653	39,913	14	13	11	10	10	10	10	10	10	12	12
Hawaii	1,366,862	1,360,301	6,561	2	2	2	2	2	2	1	(X)	(X)	(X)	(X)
Idaho	1,573,499	1,567,582	5,917	2	2	2	2	2	2	2	2	2	2	2
Illinois	12,864,380	12,830,632	33,748	18	19	20	22	24	24	25	26	27	27	27
Indiana	6,501,582	6,483,802	17,780	9	9	10	10	11	11	11	11	12	13	13
Iowa	3,053,787	3,046,355	7,432	4	5	5	6	6	7	8	8	9	11	11
Kansas	2,863,813	2,853,118	10,695	4	4	4	5	5	5	6	6	7	8	8
Kentucky	4,350,606	4,339,367	11,239	6	6	6	7	7	7	8	9	9	11	11
Louisiana	4,553,962	4,533,372	20,590	6	7	7	8	8	8	8	8	8	8	8
Maine	1,333,074	1,328,361	4,713	2	2	2	2	2	2	3	3	3	4	4
Maryland	5,789,929	5,773,552	16,377	8	8	8	8	8	8	7	6	6	6	6
Massachusetts	6,559,644	6,547,629	12,015	9	10	10	11	12	12	14	14	15	16	16
Michigan	9,911,626	9,883,640	27,986	14	15	16	18	19	19	18	17	17	13	13
Minnesota	5,314,879	5,303,925	10,954	8	8	8	8	8	8	9	9	9	10	10
Mississippi	2,978,240	2,967,297	10,943	4	4	5	5	5	5	6	7	7	8	8
Missouri	6,011,478	5,988,927	22,551	8	9	9	9	10	10	11	13	13	16	16
Montana	994,416	989,415	5,001	1	1	1	2	2	2	2	2	2	2	2
Nebraska	1,831,825	1,826,341	5,484	3	3	3	3	3	3	4	4	5	6	6
Nevada	2,709,432	2,700,551	8,881	4	3	2	2	2	1	1	1	1	1	1
New Hampshire	1,321,445	1,316,470	4,975	2	2	2	2	2	2	2	2	2	2	2
New Jersey	8,807,501	8,791,894	15,607	12	13	13	14	15	15	14	14	14	12	12
New Mexico	2,067,273	2,059,179	8,094	3	3	3	3	2	2	2	2	1	1	1
New York	19,421,055	19,378,102	42,953	27	29	31	34	39	41	43	45	45	43	43
North Carolina	9,565,781	9,535,483	30,298	13	13	12	11	11	11	12	12	11	10	10
North Dakota	675,905	672,591	3,314	1	1	1	1	1	2	2	2	2	3	3
Ohio	11,568,495	11,536,504	31,991	16	18	19	21	23	24	23	23	24	22	22
Oklahoma	3,764,882	3,751,351	13,531	5	5	6	6	6	6	6	8	9	8	8
Oregon	3,848,606	3,831,074	17,532	5	5	5	5	4	4	4	4	3	3	3
Pennsylvania	12,734,905	12,702,379	32,526	18	19	21	23	25	27	30	33	34	36	36
Rhode Island	1,055,247	1,052,567	2,680	2	2	2	2	2	2	2	2	2	3	3
South Carolina	4,645,975	4,625,364	20,611	7	6	6	6	6	6	6	6	6	7	7
South Dakota	819,761	814,180	5,581	1	1	1	1	2	2	2	2	2	3	3
Tennessee	6,375,431	6,346,105	29,326	9	9	9	9	8	9	9	10	9	10	10
Texas	25,268,418	25,145,561	122,857	36	32	30	27	24	23	22	21	21	18	18
Utah	2,770,765	2,763,885	6,880	4	3	3	3	2	2	2	2	2	2	2
Vermont	630,337	625,741	4,596	1	1	1	1	1	1	1	1	1	2	2
Virginia	8,037,736	8,001,024	36,712	11	11	11	10	10	10	10	9	9	10	10
Washington	6,753,369	6,724,540	28,829	10	9	9	8	7	7	7	6	6	5	5
West Virginia	1,859,815	1,852,994	6,821	3	3	3	4	4	5	6	6	6	6	6
Wisconsin	5,698,230	5,686,986	11,244	8	8	9	9	9	10	10	10	10	11	11
Wyoming	568,300	563,626	4,674	1	1	1	1	1	1	1	1	1	1	1

(X) Not applicable.

¹ Includes the resident population for the 50 states, as ascertained by the 2010 Census under Title 13, U.S. Code, and counts of overseas U.S. military and federal civilian employees (and their dependents living with them) allocated to their home state, as reported by the employing federal agencies. The apportionment population does not include the resident or the overseas population of the District of Columbia.

² No reapportionment was made based on the 1920 Census.

³ The 1950 apportionment originally resulted in the previously fixed House size of 435 representatives; but in 1959, Alaska and Hawaii were both newly admitted to the United States, and each was granted one representative—temporarily increasing the size of the House to 437. Then the 1960 apportionment reverted back to the fixed size of 435.

⁴ The apportionment act following the 1910 Census was passed on August 8, 1911. This congressional act (U.S. Statutes at Large, Pub.L. 62-5, 37 Stat. 13) fixed the size of the House at 433 representatives, with a provision for the addition of one seat each for Arizona and New Mexico when they would become states the following year. The resulting House size, 435 members, has been unchanged since, except for a temporary increase to 437 at the time of admission of Alaska and Hawaii as states (see footnote 3).

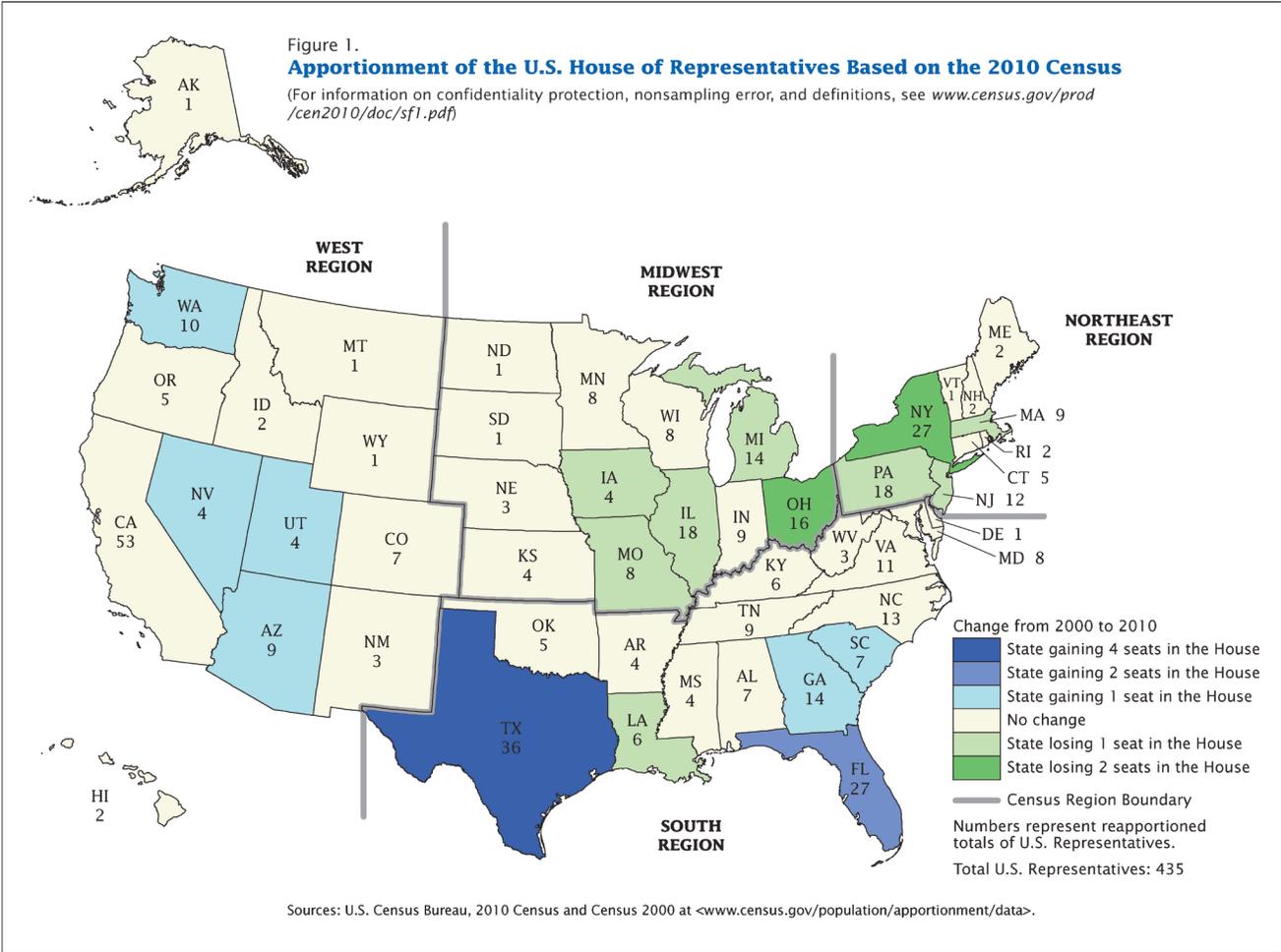
Sources: U.S. Census Bureau, 2010 Census at <www.census.gov/population/apportionment/data>; and 2000 Census of Population and Housing, Population and Housing Unit Counts, United States Summary: 2000 (PHC-3-1, Part 1), Table 3.

Item 1: 2010 Census Brief – Congressional Apportionment (Continued)

U.S. Census Bureau

Figure 1.
Apportionment of the U.S. House of Representatives Based on the 2010 Census

(For information on confidentiality protection, nonsampling error, and definitions, see www.census.gov/prod/cen2010/doc/sf1.pdf)



3

Item 1: 2010 Census Brief – Congressional Apportionment (Continued)

Twelve seats in the U.S. House of Representatives will shift from one state to another.

As a result of the apportionment based on the 2010 Census, 12 seats in the U.S. House of Representatives will shift among 18 states. Eight states will have more representatives in the 113th Congress, which convenes in January 2013, and ten states will have fewer representatives (see Figure 1 and Table 2).

Among the eight states gaining seats, Texas will gain four seats and Florida will gain two seats. The other six states (Arizona, Georgia, Nevada, South Carolina, Utah, and Washington) will each gain one seat.

Of the ten states losing seats, two states, New York and Ohio, will each lose two seats. The other eight states (Illinois, Iowa, Louisiana, Massachusetts, Michigan, Missouri, New Jersey, and Pennsylvania) will each lose one seat.

The Census 2000 apportionment also shifted 12 seats.

The seat changes that will occur based on the 2010 Census show many parallels to the seat changes that occurred after Census 2000. For example, the 2000-based reapportionment also led to a shift of 12 seats among 18 states (see Table 2).

Five of the eight states that will gain seats following the 2010 Census also gained seats following Census 2000: Arizona, Florida, Georgia, Nevada, and Texas. Similarly, five of the ten states that will lose seats following the 2010 Census also lost seats following Census 2000: Illinois, Michigan, New York, Ohio, and Pennsylvania.

Table 2.

Change in the Number of U.S. Representatives by State: 2000 and 2010

(For information on confidentiality protection, nonsampling error, and definitions, see www.census.gov/prod/cen2010/pl94-171.pdf)

State	Gain	State	Loss
BASED ON 2010 CENSUS		BASED ON 2010 CENSUS	
Total gain in 8 states	12	Total loss in 10 states	12
Texas	4	New York	2
Florida	2	Ohio	2
Arizona	1	Illinois	1
Georgia	1	Iowa	1
Nevada	1	Louisiana	1
South Carolina	1	Massachusetts	1
Utah	1	Michigan	1
Washington	1	Missouri	1
		New Jersey	1
		Pennsylvania	1
BASED ON CENSUS 2000		BASED ON CENSUS 2000	
Total gain in 8 states	12	Total loss in 10 states	12
Arizona	2	New York	2
Florida	2	Pennsylvania	2
Georgia	2	Connecticut	1
Texas	2	Illinois	1
California	1	Indiana	1
Colorado	1	Michigan	1
Nevada	1	Mississippi	1
North Carolina	1	Ohio	1
		Oklahoma	1
		Wisconsin	1

Sources: U.S. Census Bureau, 2010 Census and Census 2000 at <www.census.gov/population/apportionment/data>.

Shifts in congressional representation reflect regional trends in population.

The regional patterns of change in congressional representation between 2000 and 2010 reflect the nation's continuing shift in population from the Northeast and Midwest to the South and West.

Based on the 2010 Census apportionment, the net increase of seven seats in the South reflected a gain of eight seats across four states and a loss of one seat (see Figure 1 and Table 3). The West gained four seats and lost none. The Northeast lost five seats and gained none. The Midwest lost six seats and gained none.

Similar regional shifts occurred after Census 2000. At that time, the net increase of five seats in the South reflected a gain of seven seats in four states and a loss of two seats. The West gained five seats across four states and lost none. The Northeast and Midwest each lost five seats and gained none.

Figure 2 shows the percentage distribution of House seats or memberships by region for each census since 1910. In 1910, the West held the smallest share of House seats out of the four regions (33 seats, or 7.6 percent), but it steadily increased each decade, more than tripling in seats by 2010 (102 seats, or 23.4 percent). After the 1990 apportionment, the West

Item 1: 2010 Census Brief – Congressional Apportionment (Continued)

Table 3.

Change in the Number of U.S. Representatives by Region: 2000 and 2010

(For information on confidentiality protection, nonsampling error, and definitions, see www.census.gov/prod/cen2010/pl94-171.pdf)

Region	Gain	Loss	Net
BASED ON 2010 CENSUS			
Northeast.....	–	5	–5
Midwest.....	–	6	–6
South.....	8	1	7
West.....	4	–	4
BASED ON CENSUS 2000			
Northeast.....	–	5	–5
Midwest.....	–	5	–5
South.....	7	2	5
West.....	5	–	5

– Represents zero.

Sources: U.S. Census Bureau, 2010 Census and Census 2000 at www.census.gov/population/apportionment/data.

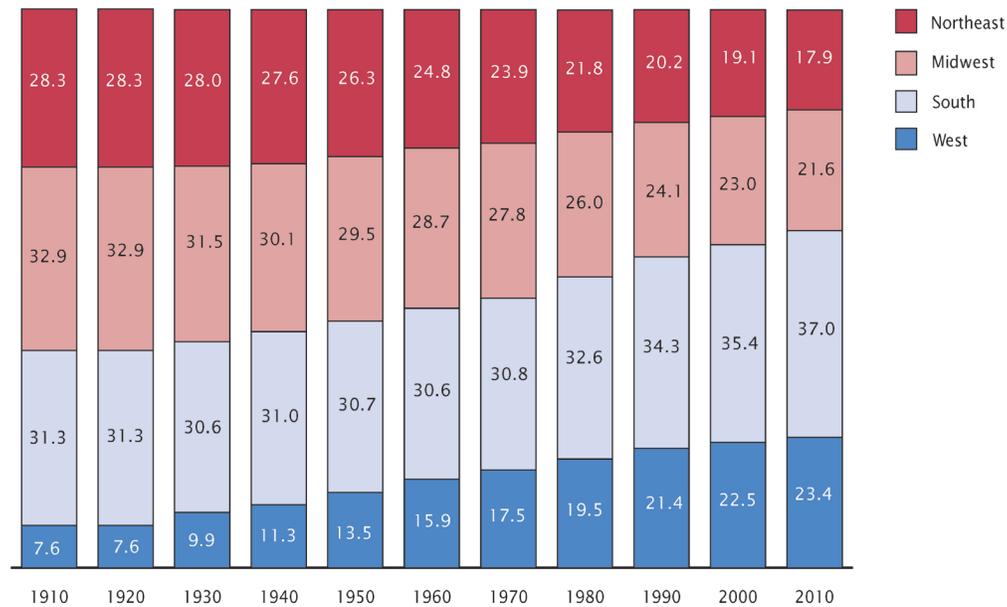
(93 seats, or 21.4 percent) surpassed the Northeast (88 seats, or 20.2 percent) in share of seats for the first time; and after the 2010 apportionment, the West (102 seats, or 23.4 percent) will surpass the Midwest (94 seats; 21.6 percent) for the first time.

The South's share of House seats held relatively firm from 1910 to 1970 at about 31 percent (between 133 and 136 seats), and then it increased to 37.0 percent (161 seats) by 2010. After the 2010 apportionment, the South will maintain the largest share of House seats among all four regions, as it has since 1940.

Figure 2.

Percentage Distribution of Seats in the U.S. House of Representatives by Region: 1910 to 2010

(For information on confidentiality protection, nonsampling error, and definitions, see www.census.gov/prod/cen2010/pl94-171.pdf)



Sources: U.S. Census Bureau, 2010 Census at www.census.gov/population/apportionment; and *2000 Census of Population and Housing, Population and Housing Unit Counts, United States Summary (PHC-3-1, Part 1)*, Table 3.

Item 1: 2010 Census Brief – Congressional Apportionment (Continued)

Meanwhile, the Midwest, which accounted for the largest regional share of House seats in 1910 through 1930 (between 137 and 143 seats, or between 31.5 and 32.9 percent), showed a steady decline to 21.6 percent (94 seats) by 2010.

After holding relatively stable at about 28 percent (between 120 and 123 seats) from 1910 to 1940, the Northeast's share of House seats gradually decreased to only 17.9 percent (78 seats) by 2010. Therefore, after the 2010 apportionment, the Northeast will hold the smallest share of House seats among all four regions, as it has since 1990.

CALCULATING APPOINTMENT

Congress decides the method to calculate apportionment.

The process of apportionment determines the distribution of congressional seats among the states. Several apportionment methods have been used since the first census in 1790. The apportionment for the 2010 Census was calculated using the method of equal proportions, in accordance with the provisions of Title 2, U.S. Code. The method of equal proportions has been used for apportionment after every census since 1940.

Step 1: Automatically assign the first 50 seats.

First, each state is assigned one congressional seat, as provided by the Constitution. Then, in the following steps, the method of equal proportions allocates the remaining 385 congressional seats among the 50 states, according to their apportionment populations.

Step 2: Calculate a list of priority values.

A "priority value" is based on a state's apportionment population and the number of its next potential seat. More specifically, the formula for a priority value (PV) equals the state's apportionment population divided by the geometric mean of its current (n-1) and next (n) potential seat number.

$$PV(n) = \frac{\text{State Apportionment Population}}{\sqrt{n * (n - 1)}}$$

Because every state automatically receives its first seat, priority values start with each state's second seat. The maximum number of priority values ever needed for each state would account for the hypothetical situation in which one state is so large that it receives all of the final 385 seats that remain after the first 50 are automatically assigned. This means one could potentially calculate a total list of 19,250 priority values (385 PVs multiplied by 50 states). In general, however, it is more efficient to only calculate enough priority values to account for the largest number of seats any particular state might currently be assigned (or proportionate to each state's actual population). For example, one may choose to calculate approximately 60 priority values for each state because the most populous state in Census 2000 received 53 seats.

In practice, the priority values for a specific state's second and third seats in the 2010 Census are computed as follows. Using Alabama as the example state:

$$PV(\text{2nd Seat for Alabama}) = \frac{4,802,982}{\sqrt{2 * 1}} = 3,396,221$$

$$PV(\text{3rd Seat for Alabama}) = \frac{4,802,982}{\sqrt{3 * 2}} = 1,960,809$$

The rest of the priority values for all of Alabama's potential seats

are calculated in a similar fashion. Then the same process is repeated for each of the other states.

Step 3: Assign the remaining seats in ranked order.

After all of the states' priority values have been calculated, a combined list of priority values from every state is ranked in descending order. The state with the largest priority value in the list is given the 51st seat (because the first 50 seats are automatically assigned); then the state with second largest priority value is given the 52nd seat. This process is continued for each consecutively descending priority value until the last (435th) seat has been filled. The state composition of the reapportioned House of Representatives is then complete.

ADDITIONAL TOPICS ON CONGRESSIONAL APPOINTMENT

When are the apportionment population counts given to the President? To the Congress? To the states?

To the President. Title 13, U.S. Code requires that the apportionment population counts for each state be delivered to the President within 9 months of Census Day, which was April 1, 2010. The 2010 Census counts were delivered to the President on December 21, 2010.

To the Congress. According to Title 2, U.S. Code, within 1 week of the opening of the next session of the Congress in the new year, the President must report to the Clerk of the U.S. House of Representatives the apportionment population counts for each state and the number of representatives to which each state is entitled. The President sent the 2010 apportionment results to the House on January 5, 2011.

Item 1: 2010 Census Brief – Congressional Apportionment (Continued)

To the States. Also according to Title 2, U.S. Code, within 15 days of receiving the apportionment population counts from the President, the Clerk of the House must inform each state governor of the number of representatives to which each state is entitled. The 2010 apportionment results were transmitted to all the states by January 18, 2011.

Were children under 18 years old included in the 2010 Census apportionment population counts even though they cannot vote?

Yes. Being old enough to vote, being registered to vote, or actually voting are not requirements for inclusion in the apportionment counts.

Did the 2010 Census apportionment population counts include all Americans overseas?

The overseas portion of the 2010 apportionment counts only included overseas federal employees (military and civilian) and their dependents living with them. Private U.S. citizens living abroad who were not employees of the federal government (or their dependents) were not included in the overseas counts.

Were undocumented residents in the 50 states included in the 2010 Census apportionment population counts?

All people (citizens and noncitizens) with a usual residence in one of the 50 states were included in the 2010 Census and thus in the apportionment counts. This has been true since the first census in 1790.

What is the difference between apportionment and redistricting?

Population data from the decennial census provide the basis for both apportioning House seats among the states and for redistricting the legislative bodies within each state. Apportionment is the process of determining the number of representatives to which each state is entitled in the U.S. House of Representatives based on the decennial census. Whereas, redistricting is the process of revising the geographic boundaries of areas from which people elect representatives to the U.S. House of Representatives, a state legislature, a county or city council, a school board, and so forth. By law (PL 94-171), redistricting data must be submitted to the states within one year of the census date (so, for this decade, redistricting data had to be submitted to states by no later than April 1, 2011). The Census Bureau

released the redistricting population data at the census block level on a state-by-state basis during February and March 2011.

FOR MORE INFORMATION

For more information on apportionment for both the 2010 and 2000 censuses, visit the U.S. Census Bureau's Internet site at <www.census.gov/population/apportionment>. Data from the 2010 Census are available on the Internet at <<http://factfinder2.census.gov>> and on DVD. Information on confidentiality protection, nonsampling error, and definitions is available at <www.census.gov/prod/cen2010/doc/pl94-171.pdf>.

Information on other population and housing topics is presented in the 2010 Census Briefs series, located on the Census Bureau's Web site at <www.census.gov/prod/cen2010>. This series will present information about race, Hispanic origin, age, sex, household type, housing tenure, and people who reside in group quarters.

For more information about the 2010 Census, including data products, call our Customer Services Center at 301-763-INFO or at 1-800-923-8282. You can also visit our Question and Answer Center at <ask.census.gov> to submit your questions online.