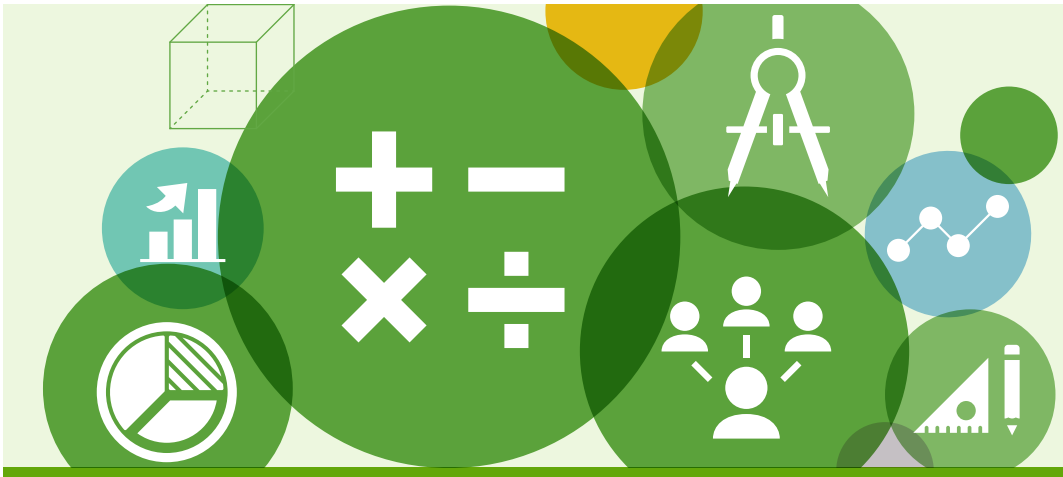


STUDENT VERSION

INTERPRETING DOT AND BOX PLOTS – HOW HAS THE U.S. HOUSE OF REPRESENTATIVES CHANGED OVER TIME?

Activity Items

The following items are part of this activity and appear at the end of this student version.

- Item 1: Apportionment of the U.S. House of Representatives Based on the 2020 Census
- Item 2: Number of Seats in the U.S. House of Representatives for Each State in 1940 and 2020

Student Learning Objectives

- I will be able to create frequency tables, dot plots, and box plots from data.
- I will be able to compare, interpret, and analyze dot and box plots by focusing on the center, shape, and spread of the distributions.
- I will be able to summarize changes in the number of seats in the U.S. House of Representatives allocated to each state between 1940 and 2020.

NAME:_____ DATE:_____

In this activity, you will create and analyze tables and graphs to figure out how different states' numbers of seats in the U.S. House of Representatives have changed over time.

Answer the following questions by examining **Item 1: Apportionment of the U.S. House of Representatives Based on the 2020 Census**, which labels each state with the number of representatives it had in 2020 and which uses different colors to show how this number changed from 2010.

1. How many representatives did your state have in 2020?

2. Which state had the most representatives in 2020, and how many did it have?

3. How many states had only one representative? Which states were they?

Now let's go further back in time, to 1940, before World War II. Look at **Item 2: Number of Seats in the U.S. House of Representatives for Each State in 1940 and 2020** to answer the following questions and prompts:

1. Why do you think there are no numbers for Alaska and Hawaii in 1940?

2. Complete the frequency tables for 2020 and 1940.

2020 Frequency Table	
Number of Representatives	**Frequency (Number of States)**
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	

1940 Frequency Table	
Number of Representatives	**Frequency (Number of States)**
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	

2020 Frequency Table	
Number of Representatives	**Frequency (Number of States)**
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	
25	
26	
27	
28	
29	
30	
31	
32	

1940 Frequency Table	
Number of Representatives	**Frequency (Number of States)**
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	
25	
26	
27	
28	
29	
30	
31	
32	

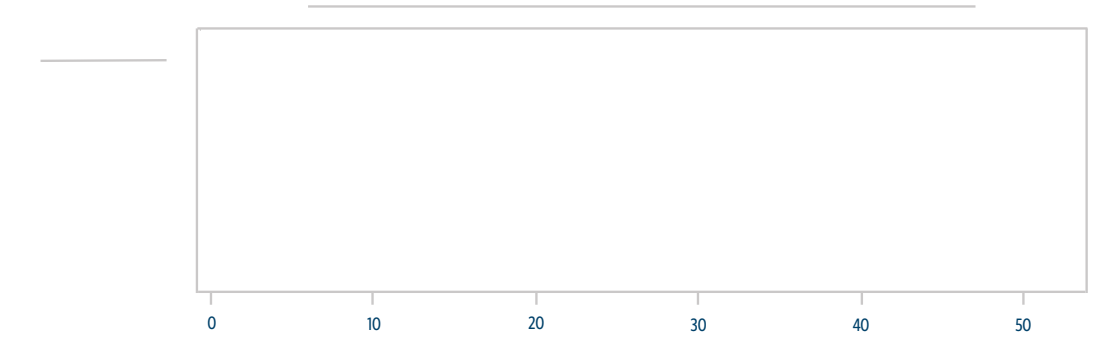
2020 Frequency Table	
Number of Representatives	**Frequency (Number of States)**
33	
34	
35	
36	
37	
38	
39	
40	
41	
42	
43	
44	
45	
46	
47	
48	
49	
50	
51	

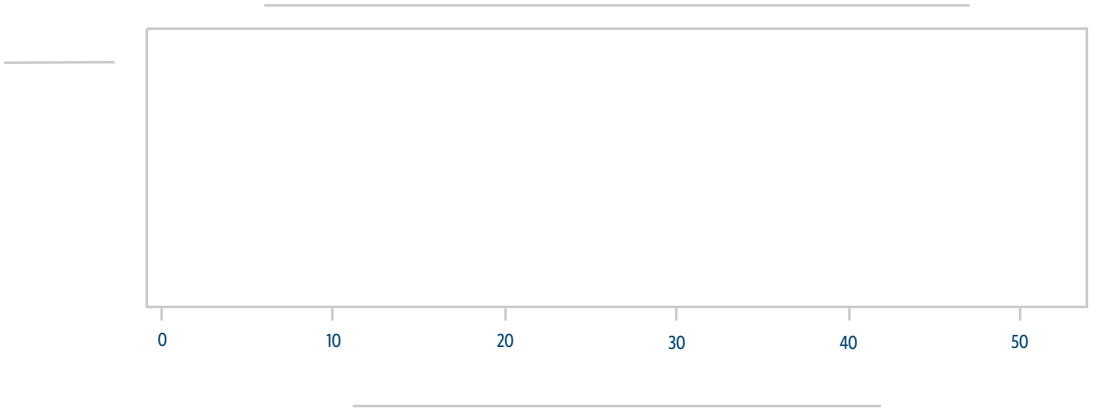
1940 Frequency Table	
Number of Representatives	**Frequency (Number of States)**
33	
34	
35	
36	
37	
38	
39	
40	
41	
42	
43	
44	
45	
46	
47	
48	
49	
50	
51	

2020 Frequency Table	
Number of Representatives	**Frequency (Number of States)**
52	
Total	

1940 Frequency Table	
Number of Representatives	**Frequency (Number of States)**
52	
Total	

3. Refer to your frequency tables to create one dot plot for the 2020 data and another for the 1940 data. Use one dot for every state, add a title to each graph, and label your horizontal axes.



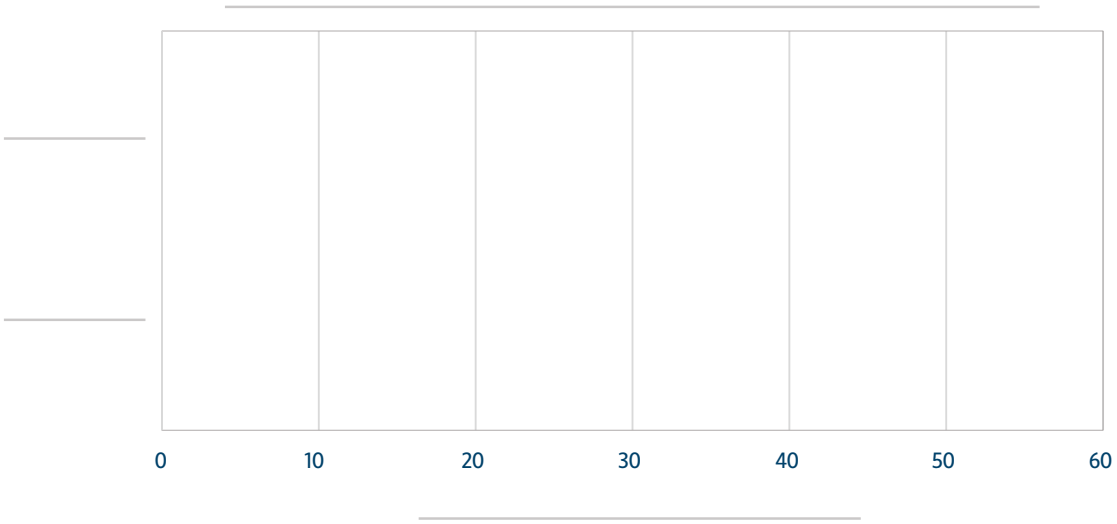


4. Look at your dot plots. What similarities and differences do you notice?

5. Use your frequency tables from question 2 to calculate the 5-number summary, range, and interquartile range (IQR) for each data set.

	2020	1940
Minimum		
Q_1		
Median		
Q_3		
Maximum		
Range		
IQR		

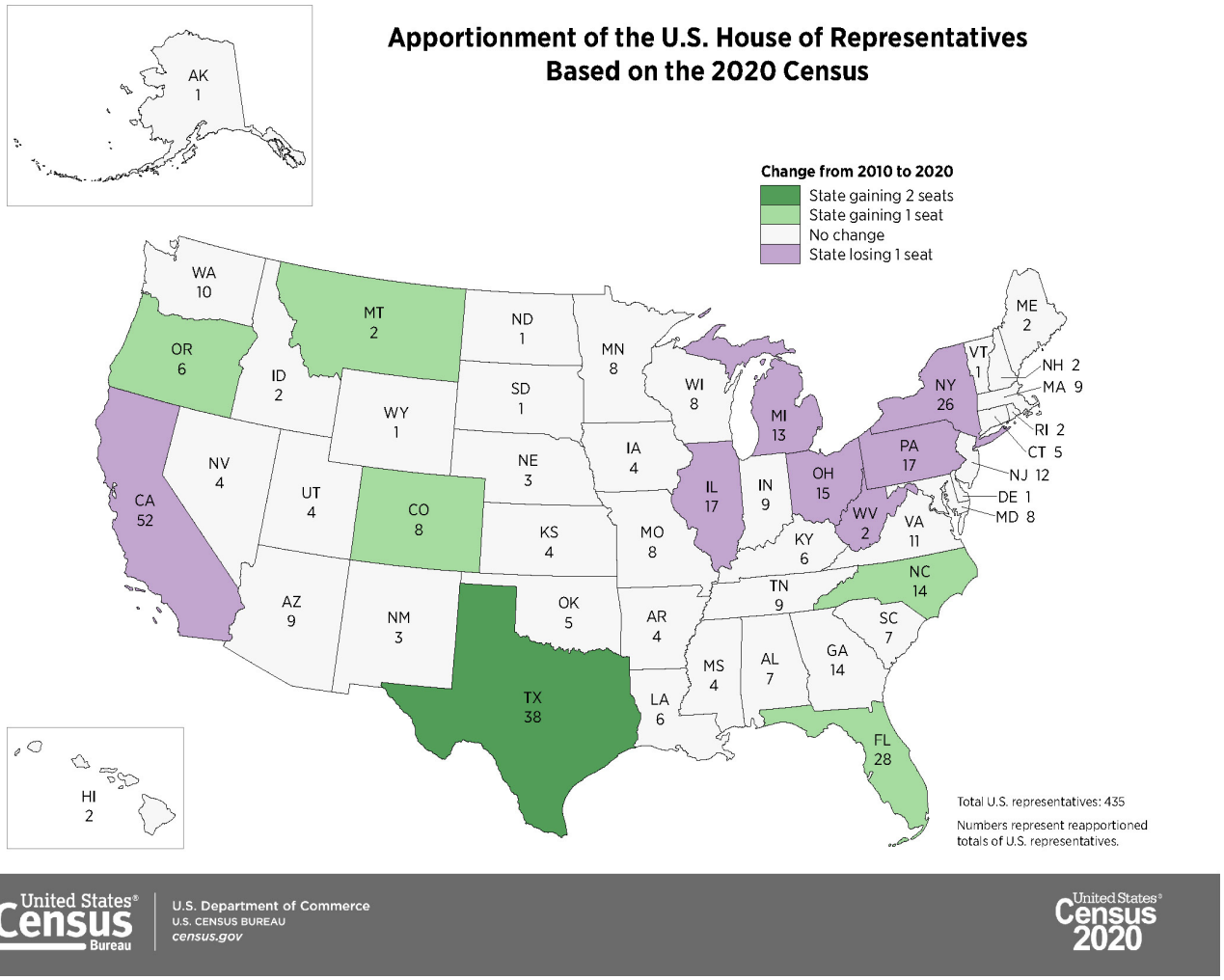
6. Use your five-number summaries to create a box plot for each year of data on the template below, one above the other. Be sure to title the graph and use a ruler to make each box plot neat.



7. What do you notice when you compare your box plots?

8. Using what you know about U.S. history and referring to your dot and box plots, write a headline and three-paragraph news article: Use your first paragraph to discuss 1940 apportionment, your second paragraph to discuss 2020 apportionment, and your third paragraph to discuss any changes in apportionment that occurred between 1940 and 2020 and why you think they happened.

Item 1: Apportionment of the U.S. House of Representatives Based on the 2020 Census



www2.census.gov/programs-surveys/decennial/2020/data/apportionment/apportionment-2020-map01.pdf

Item 2: Number of Seats in the U.S. House of Representatives for Each State in 1940 and 2020

	1940	Pop. 1940	2020	Pop. 2020
Alabama	9	2,832,961	7	5,030,0536
Alaska	N/A	72,524	1	736,0811
Arizona	2	499,261	9	7,158,923
Arkansas	7	1,949,387	4	3,013,756
California	23	6,907,387	52	39,576,757
Colorado	4	1,123,296	8	5,782,171
Connecticut	6	1,709,242	5	3,608,298
Delaware	1	266,505	1	990,837
Florida	6	1,897,414	28	21,570,527
Georgia	10	3,123,723	14	10,725,274
Hawaii	N/A	423,330	2	1,460,137
Idaho	2	524,873	2	1,841,377
Illinois	26	7,897,241	17	12,822,739
Indiana	11	3,427,796	9	6,790,280
Iowa	8	2,538,268	4	3,192,406
Kansas	6	1,801,028	4	2,940,865
Kentucky	9	2,845,627	6	4,509,342
Louisiana	8	2,363,880	6	4,661,468
Maine	3	847,226	2	1,363,582
Maryland	6	1,821,244	8	6,185,278
Massachusetts	14	4,316,721	9	7,033,469
Michigan	17	5,256,106	13	10,084,442
Minnesota	9	2,792,300	8	5,709,752
Mississippi	7	2,183,796	4	2,963,914
Missouri	13	3,784,664	8	6,160,281

	1940	Pop. 1940	2020	Pop. 2020
Montana	2	559,456	2	1,085,407
Nebraska	4	1,315,834	3	1,963,333
Nevada	1	110,247	4	3,108,462
New Hampshire	2	491,524	2	1,379,089
New Jersey	14	4,160,165	12	9,294,493
New Mexico	2	531,818	3	2,120,220
New York	45	13,479,142	26	20,215,751
North Carolina	12	3,571,623	14	10,453,948
North Dakota	2	641,935	1	779,702
Ohio	23	6,907,612	15	11,808,848
Oklahoma	8	2,336,434	5	3,963,516
Oregon	4	1,089,684	6	4,241,500
Pennsylvania	33	9,900,180	17	13,011,844
Rhode Island	2	713,346	2	1,098,163
South Carolina	6	1,899,804	7	5,124,712
South Dakota	2	642,961	1	887,770
Tennessee	10	2,915,841	9	6,916,897
Texas	21	6,414,824	38	29,183,290
Utah	2	550,310	4	3,275,252
Vermont	1	359,231	1	643,503
Virginia	9	2,677,773	11	8,654,542
Washington	6	1,736,191	10	7,715,946
West Virginia	6	1,901,974	2	1,795,946
Wisconsin	10	3,137,587	8	5,897,473
Wyoming	1	250,742	1	577,719

www2.census.gov/programs-surveys/decennial/2020/data/apportionment/apportionment-2020-table01.pdf