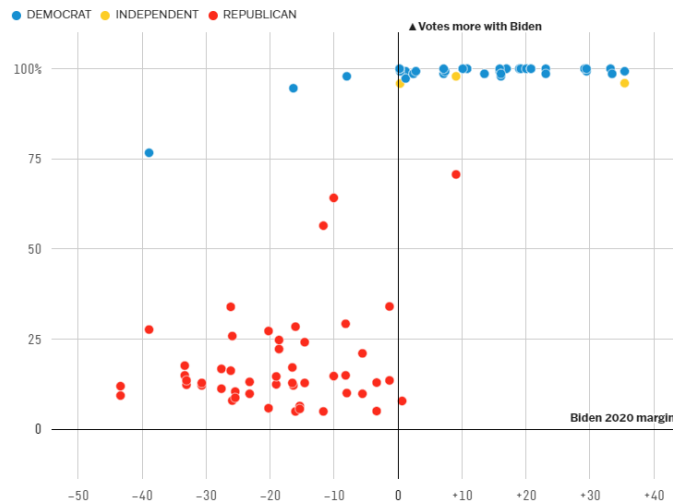


“How often every member of Congress voted with Biden in 2023”, By Tia Yang and Cooper Burton, 30 January 2024, <https://abcnews.go.com/538/member-congress-voted-biden-2023/story?id=106718543>

These three visualizations are a scatterplot of how much each member of Congress has voted in line of President Biden’s wishes in the year 2023. On the y – axis shows what percentage that they voted for legislation that Biden approved of while the x-axis is by how much did Biden win or lose that politician’s seat in the 2020 presidential election.

Democratic senators agreed with Biden on almost every vote

How often each U.S. senator voted with President Joe Biden in 2023 and Biden’s 2020 margin in their state



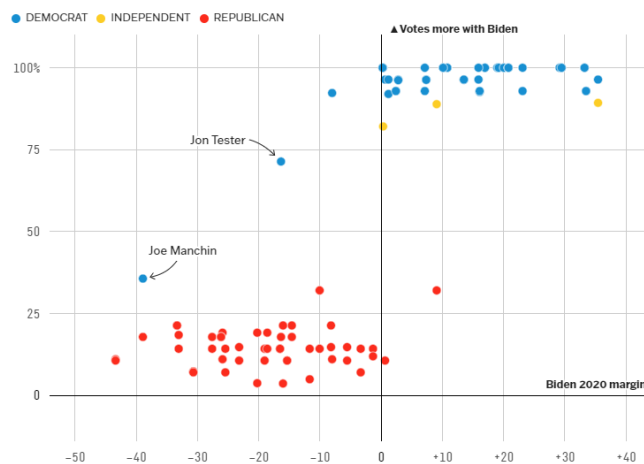
Includes all final votes on nominations and bills on which Biden took a clear stance. Sens. Angus King, Bernie Sanders and Kyrsten Sinema are independents who align with the Democrats. Excludes Sens. Laphonza Butler and Dianne Feinstein, who were in office for only part of 2023 and therefore had incomplete vote data.

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SOURCES: U.S. SENATE, WHITE HOUSE OFFICE OF MANAGEMENT AND BUDGET, NEWS REPORTS, VOTEVIEW, DAVE LEIP'S ATLAS OF U.S. PRESIDENTIAL ELECTIONS

Agreement with Biden was lower on non-nomination votes

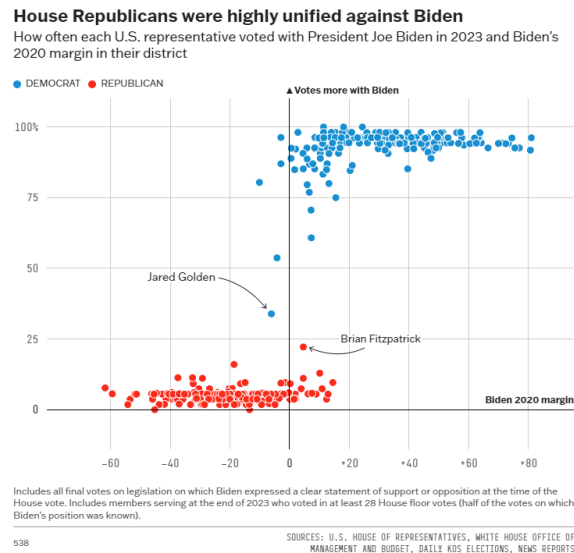
How often each senator voted with President Joe Biden in 2023, excluding all nomination votes, and Biden's 2020 margin in their state



Includes all final votes on bills on which Biden took a clear stance. Sens. Angus King, Bernie Sanders and Kyrsten Sinema are independents who align with the Democrats. Excludes Sens. Laphonza Butler and Dianne Feinstein, who were in office for only part of 2023 and therefore had incomplete vote data.

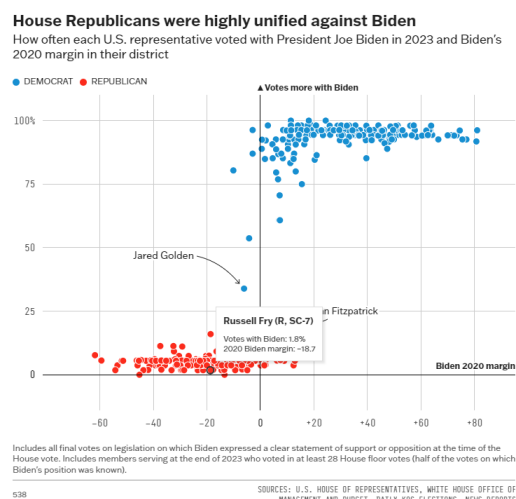
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SOURCES: U.S. SENATE, WHITE HOUSE OFFICE OF MANAGEMENT AND BUDGET, NEWS REPORTS, VOTEVIEW, DAVE LEIP'S ATLAS OF U.S. PRESIDENTIAL ELECTIONS



The point of this visualization is to show the polarization between the Democratic Party and the Republican Party and that those who seats Biden lost in the 2020 election were more likely to vote against the president's wishes. This can be seen by the distance between the red and the blue dots on the graphs above. In the Senate, outside of nominations there is more division within the Democratic party. The vertical line is shown as the major division between the two halves as those on the left are seats that did not want Biden to be President in 2020. Joe Manchin and Jon Tester in the Senate and Jared Golden and Brian Fitzpatrick in the House are highlighted as those whose seats were won by the opposite side in the 2020 presidential election and thus were more willing to cooperate with the other side.

The use of the scatterplot is quite useful to use in plot if there are two measured data you want to analyze. Its use is particularly effective since they are usually horizontal lines for each party on opposite end to show the polarization. For more easier observation you can highlight a particular point to discover who that politician and other relevant data.



The use of colour is quite important as the red and blue colour has been used in American politics since the 2000s with the white background with black and gray grid lines making it quite easy to see. The use of the white background with gray and black gridlines helps gives the graph a more pleasing look.

These visualizations are more author driven since the author shows each of the three graphs one by one with text as well as the use of highlighted dot points to give attention to particular plot points.

There are some improvements including:

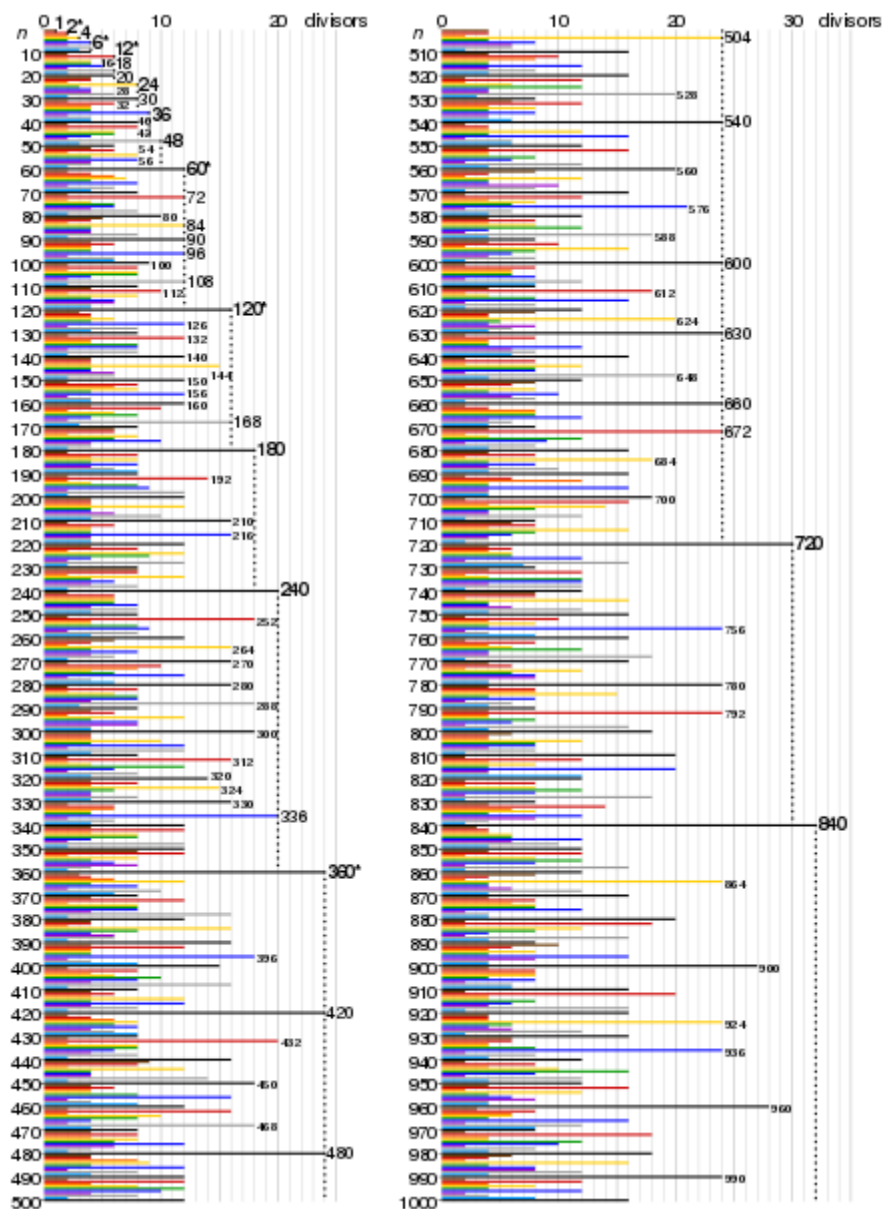
There should be a breakdown of regions of the United States or by state. Instead of all the members of one chamber of Congress at once, maybe do a chart for the Midwest, or the Deep South and just California.

There should also be different data analyzed instead of just Biden's 2020 Presidential results. That could be percentage of minorities in that politician's seat, the median wealth of that seat, or election data in previous elections.

Another improvement would be to view a breakdown on the which legislation Biden and the member of Congress disagree and agree with. Like for example its possible that a senator may agree with Biden on gun issues but not on national security issues.

"Highly composite numbers" By Cmglee, Wikimedia Commons, 22 May 2017,
https://commons.wikimedia.org/wiki/File:Highly_composite_numbers.svg

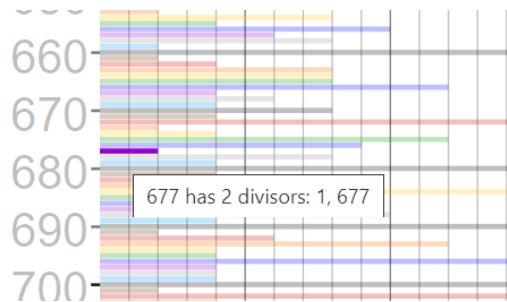
The second visualization is the first 1000 natural numbers by number of divisors by use of annotated chart. This visualization is done using a horizontal bar plot. The author is Cmglee and was published on Wikimedia Commons.



The intent of this visualization is to highlight the number of divisors of the first one thousand natural numbers, especially to highlight the highly composite numbers. The independent axis has all the numbers from one to one thousand and the dependent axis has the amount of divisor that number has. The intended action was to show the highly composite numbers. To do this, the highly composite numbers are labelled in bold, and a dotted line runs from the peak of one highly composite number to the next highly composite numbers to show by how much the new highly composite number is larger than the previous one. These highly composite numbers stand out because they have more divisors than anyone previous to them, so they are quite easy to spot. Asterisks are used to highlight the superior highly composite numbers.

Since this data is about the highest number of divisors, plotting the data horizontally is quite useful since our eyes usually read from side to side and the highly composite numbers are always the most right-sided bar plot, thus using the bar plot was useful to show off the data. This visualization is very author driven as it has a very clear start and finish point; you start at one and end in one thousand.

To make the data easier to read each bar plot is given one of ten colors, for example, each number ending with a zero is colored black, each number ending with a one is colored brown and so forth. Also, if the cursor is placed over the bar plot it shows how many divisors that number has as well as what those divisors are.



Despite already being a well made visualization, they could be improvements:

The bars of the graph should be fatter since while they might make the whole bar chart longer, the current proposal is quite hard to read or visualize due to the very thin bars. This will help to improve the visibility of the chart.

A second improvement would be to increase the width of the graph and connect the 501-1000 section on the 1-500 graph. This will make it easier for the prime numbers (those with only two divisors) to be seen and will make it easier to compare from all 1 to 1000 since a cut-off at the five hundred mark is quite unnatural.

A third improvement would be to place a colour legend next to the graph to locate which colour is which, with numbers ending in 0 being black and so forth since its hard to remember which colour is assigned to which number.