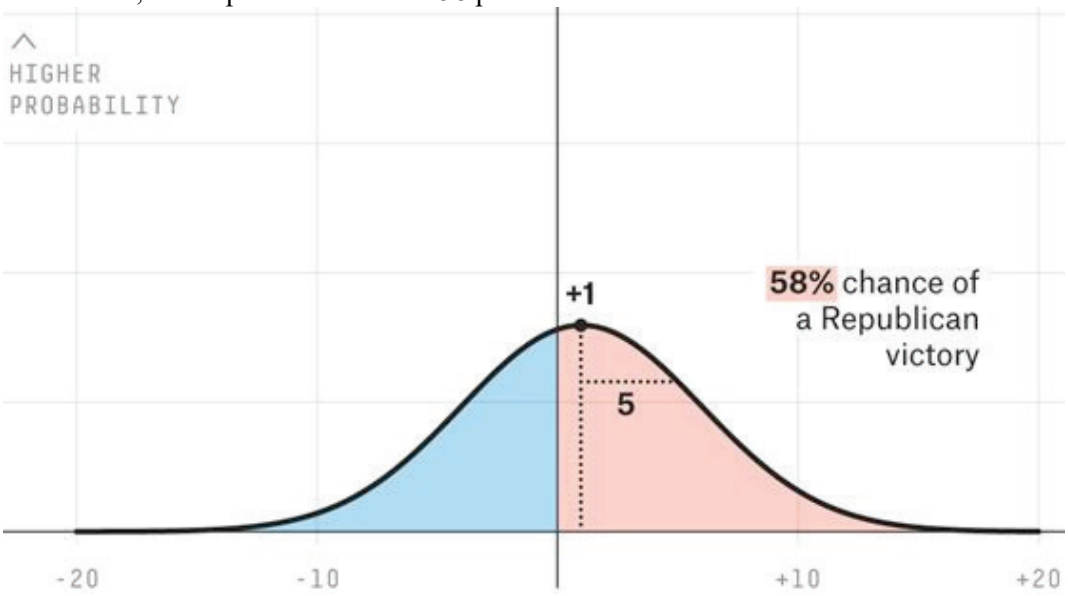
Election Polls: Chance of Winning

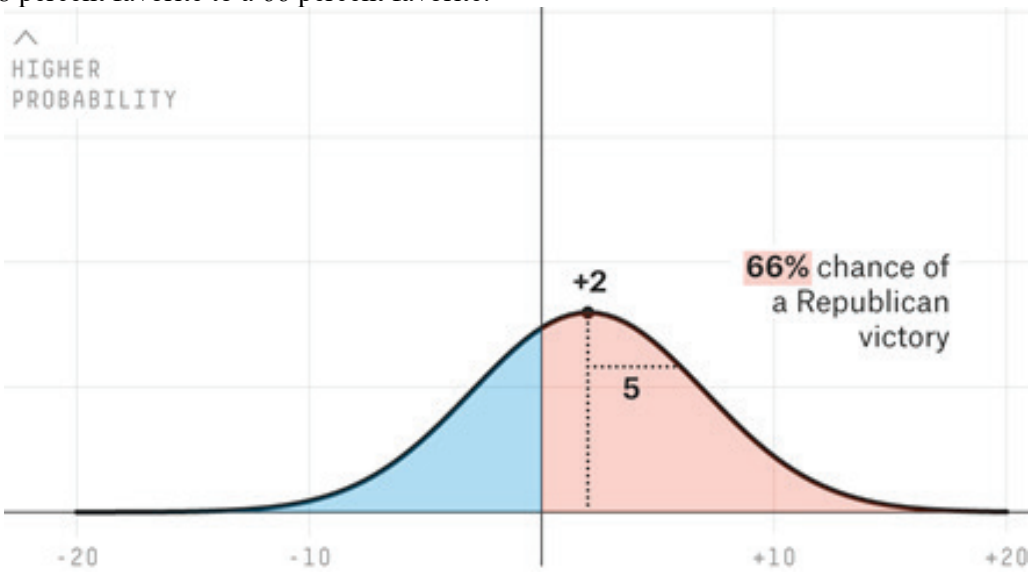
Nate Silver

Most election models (including ours) work in something like the following way: First, they calculate the most likely outcome in a particular state ("The Republican wins by 1 point") and then they determine the degree of uncertainty around that estimate. Most models do this by means of a normal distribution or something similar to it. In this type of statistical distribution, all outcomes within the margin of error are *not* equally likely; instead, those closer to the mean of the distribution are more probable.

The graphic below, for example, illustrates a normal distribution with a mean of +1 (as in, a candidate is ahead by 1 point in the polls) and a standard deviation of 5. In this example, we'll take positive values to mean the Republican wins the race and negative values to mean the Democrat does. According to the normal distribution, the Republican will win 58 percent of the time.

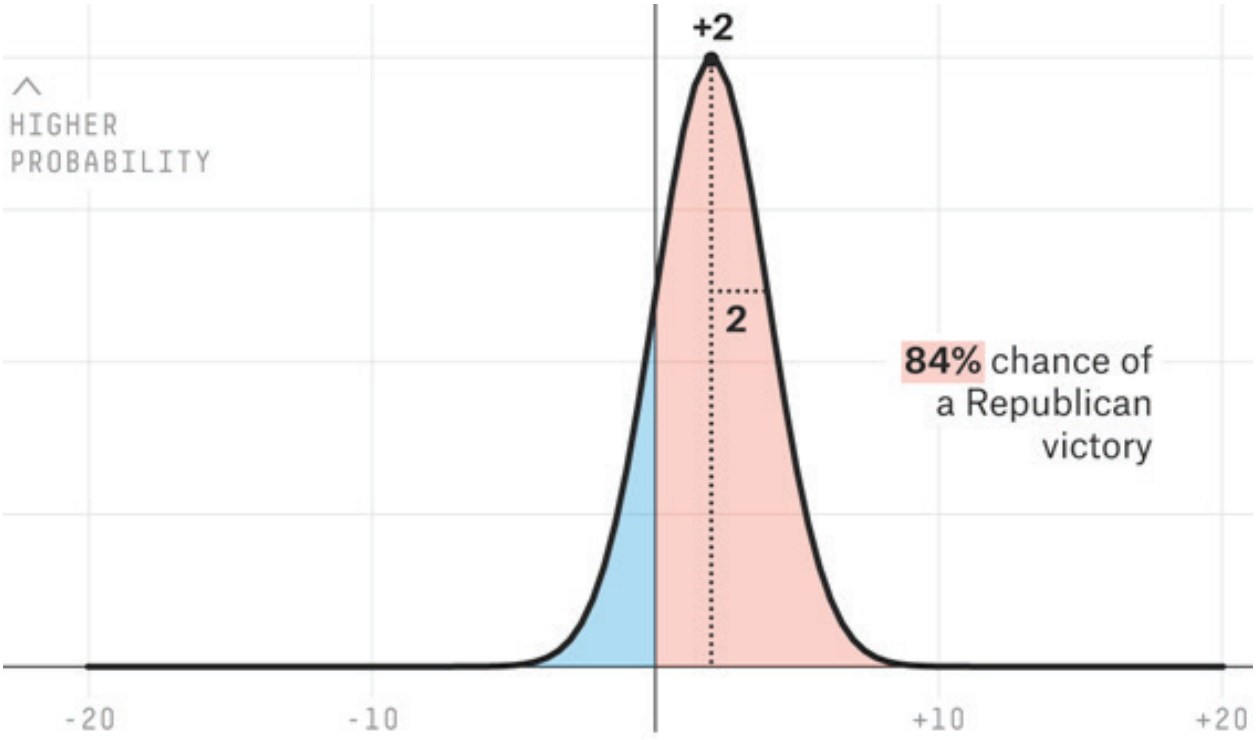


But if we shift the center of the distribution by just 1 point toward the Republican — say, our model averages the polls together a little differently than someone else's, and it projects her to win by 2 points instead of 1 — it has a noticeable effect on the probabilities. Not huge, but noticeable: She's gone from being a 58 percent favorite to a 66 percent favorite.



By contrast, if we'd given the Republican an additional point when she was already well ahead, it wouldn't make much difference. If she were up by 10 points in the polls, for instance, she'd already be a 97.7 percent favorite according to the normal distribution; putting her up by 11 points instead would only increase that chance to 98.6 percent.

However, there's another way we can affect the candidate's win probability: by changing the standard deviation. In the example below, I've kept the Republican's lead at 2 points. But I've reduced the standard deviation to 2 points instead of 5. Now, with that mere 2-point lead she's suddenly an 84 percent favorite to win.



In my view, far too little attention is paid to those questions. What is the uncertainty in the forecast, as opposed to the most likely result?

Source: https://fivethirtyeight.com/features/how-the-fivethirtyeight-senate-forecast-model-works/

Nate Silver is the founder and editor in chief of FiveThirtyEight

Figure 1: 0.57926 =1-NORM.DIST(-1/5, 1)

Figure 2: 0.655422 =1 - NORM.DIST(-2/5, 1)

Figure 3: 0.841345 =1 - NORM.DIST(-2/2, 1)