

Republican and Democratic National Convention Speech Sentiment Analysis

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01 August 2016

Sentiment analysis is a method for quantifying the “feeling” of a text, specifically how positive or negative the sentiments are. For example, sentiment analysis has been used to evaluate the emotions in [Jane Austen’s novels](#) as well as the [lyrics from hip hop albums](#). The text in question can be any set of words, including political speeches. Typically, speeches are analyzed for the general public by being filtered through political pundits across various forms of media. While these opinions and perspectives can certainly be informative, they are rarely quantitative.

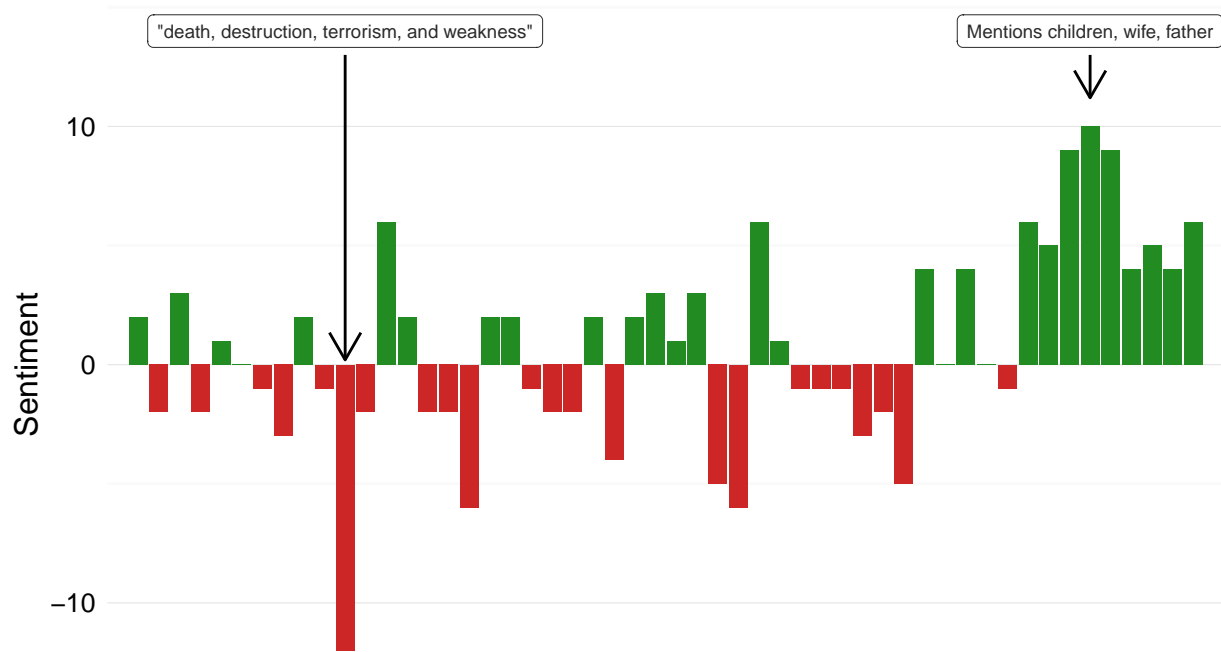
Here, we evaluate Republican and Democratic National Convention speeches using formal sentiment analysis methods, focusing on the recent speeches by Donald Trump and Hillary Clinton at the 2016 RNC and DNC.

Sentiment of the Trump and Clinton Convention Speeches

To begin, we first collected the RNC and DNC speeches from this year’s presidential nominees from an archive curated by [The American Presidency Project](#). After obtaining the speeches, we then divided them into 100 word segments and conducted a sentiment analysis to quantify the tone of those segments. Positive sentiment scores represent positive emotions; negative sentiment scores represent negative emotions. One way to visualize this sort of analysis is to graph the sentiment scores for each chunk of speech over time. The resulting plot shows the ebb and flow of emotional content throughout the speech’s duration, each bar representing the sentiment for a 100 word chunk of the speech.

Here’s that graph for Donald Trump’s 2016 RNC speech:

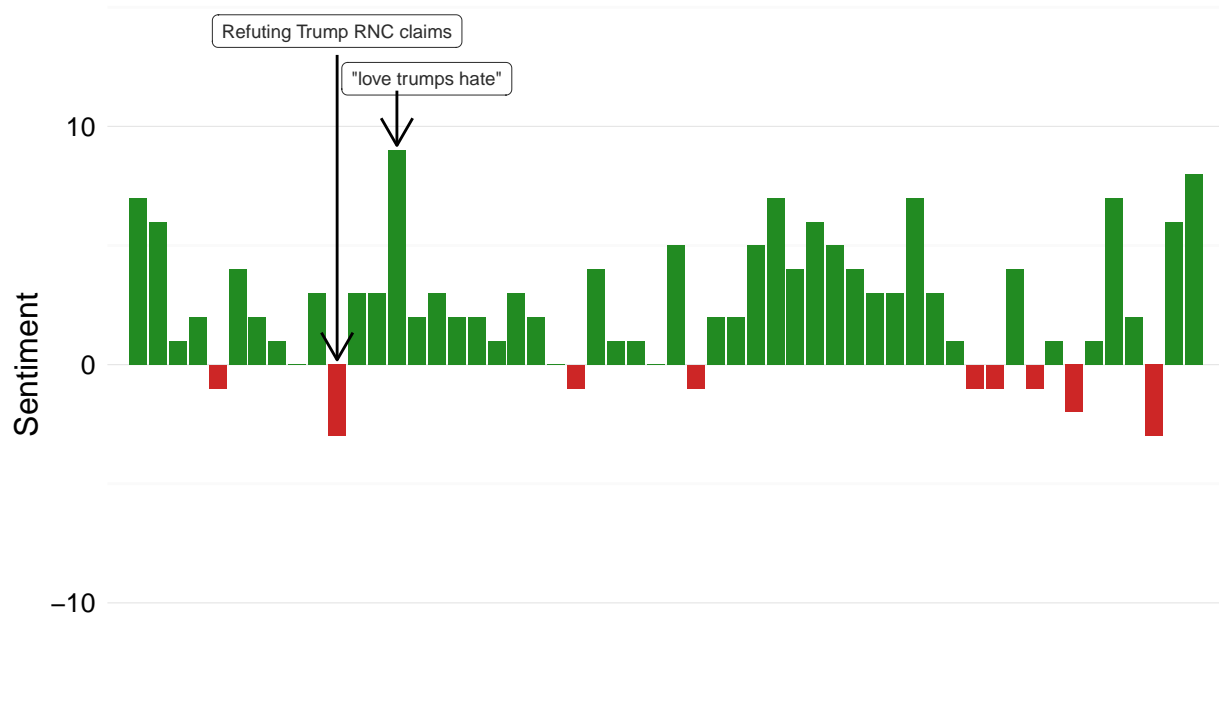
Sentiment in Trump's 2016 RNC Speech ('bing' Method)



Note that we've highlighted the context for the lowest and highest observed sentiment in Trump's speech. The most negative portion of Trump's speech came as he described Hillary Clinton's legacy in the State Department as one of "death, destruction, terrorism, and weakness." Moments later he claimed America faces "poverty and violence at home, war and destruction abroad." In contrast, his most positively scoring section occurred when he boasted of his children, his "greatest source of pride and joy" as well as his father, the "smartest and hardest working man." So, at least in broad strokes, it seems the sentiment analysis is indeed highlighting portions of the speech that a listener would identify as positive or negative.

For contrast, here's the same analysis for Hillary Clinton's 2016 DNC speech:

Sentiment in Clinton's 2016 DNC Speech ('bing' Method)



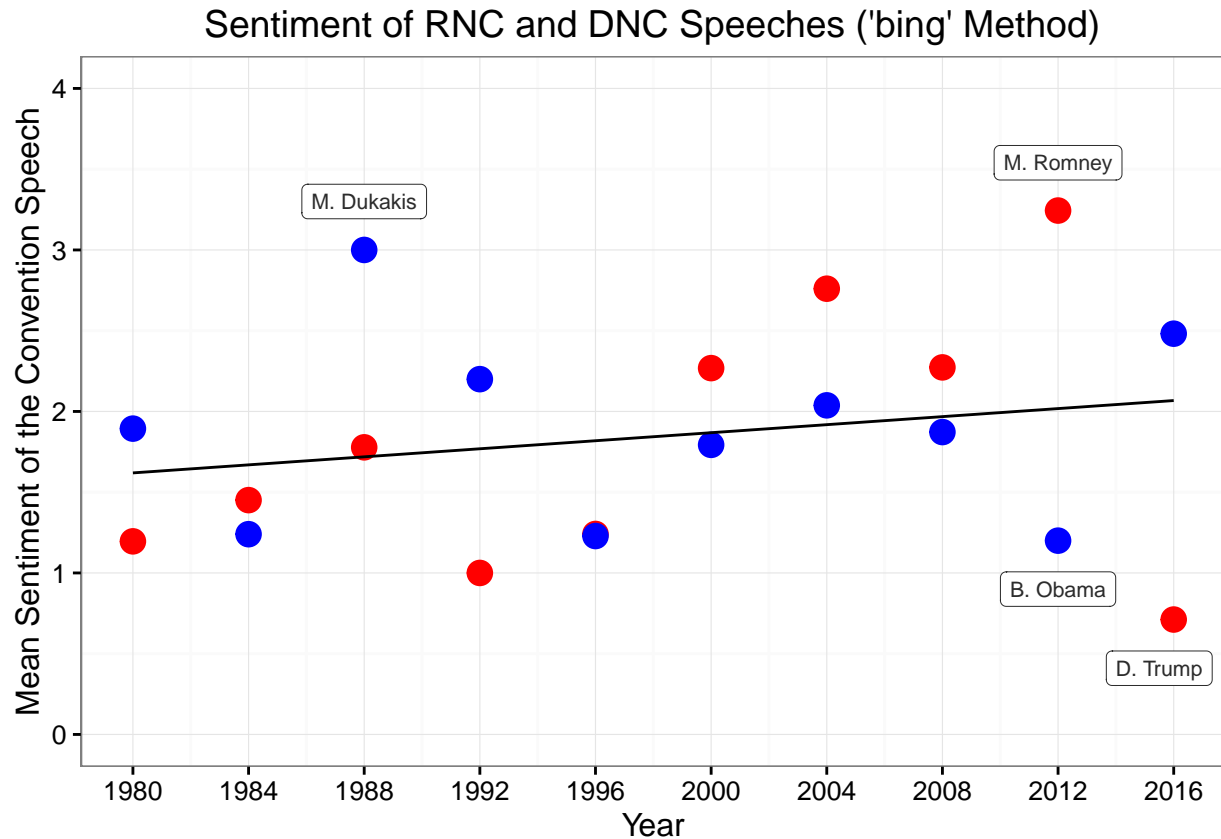
As you can see, the sentiment analysis indicates that Clinton struck a more consistent positive tone in her convention address. In this case, the quantitative analysis supports many of the [observations made by political commentators about the general atmosphere of the DNC](#). Indeed, Clinton's speech seems notably optimistic in comparison to Trump's, and in fact, one of the most negative portions of Hillary's speech was in the context of arguing *against* Trump's previous claims of a broken America that he "alone can fix."

The 2016 Convention Speeches in a Historical Context

In addition to doing a one to one comparison of convention speeches from the 2016 election year, we can also put this year's speeches in a historical context. The American Presidency Project provides some texts of presidential nominee speeches stretching back to the 19th century. For our purposes, however, we decided to limit our search to more recent elections: those from 1980 on. If you need a reminder, here are all the presidential nominees from the two major parties since 1980, with the eventual winners **in bold**:

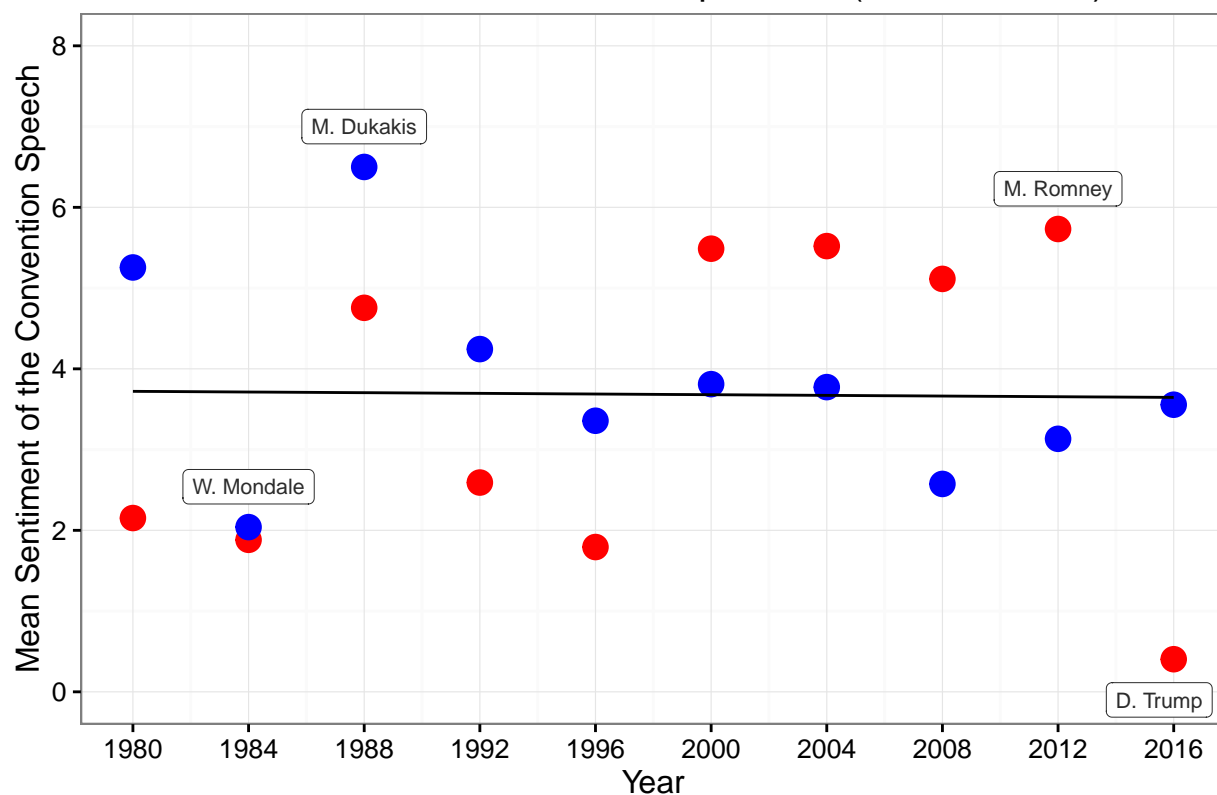
Year	Republican Nominee	Democratic Nominee
1980	R. Reagan	J. Carter
1984	R. Reagan	W. Mondale
1988	G. H. W. Bush	M. Dukakis
1992	G. H. W. Bush	B. Clinton
1996	B. Dole	B. Clinton
2000	G. W. Bush	A. Gore
2004	G. W. Bush	J. Kerry
2008	J. McCain	B. Obama
2012	M. Romney	B. Obama
2016	D. Trump	H. Clinton

We collected the convention speeches for all of these candidates and analyzed them in the same way we did Trump and Clinton's. In order to get one overall sentiment score for a given speech, we simply looked at the sentiment scores for all the text chunks within a speech and took the average score. This data can be plotted over time to show the historical trends in the sentiment of presidential nominee speeches at national conventions. The following graph shows precisely that information. Red dots represent speeches of Republican candidates, blue dots represent Democratic candidates, and we've also labeled the highest and lowest observed sentiment scores for each political party:

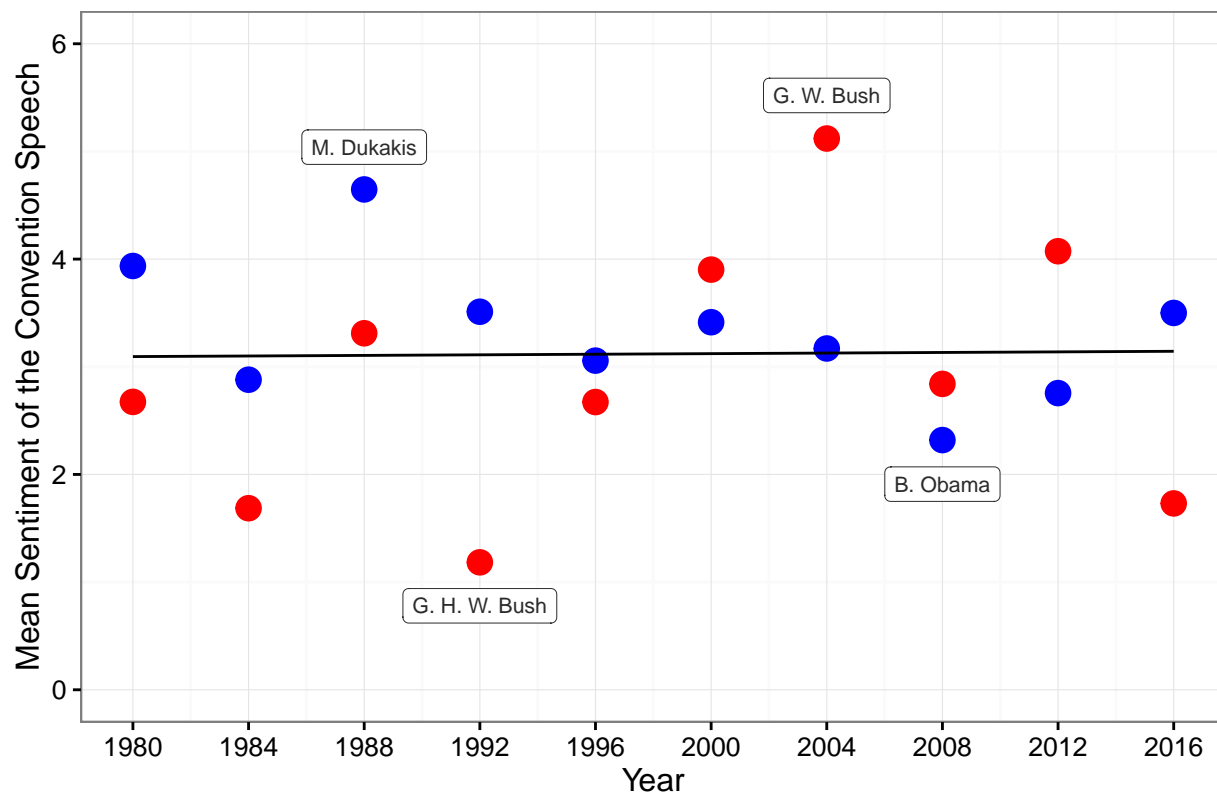


Just to double (and triple) check ourselves, we also repeated this analysis using two other methods to quantify the sentiment of the speeches (we've been using the 'bing' method throughout this article, but that's not too important). Essentially, using these two other methods (that have the names 'afinn' and 'nrc') provide us with a way to check for consistency: are the more negative speeches consistently ranked on the low end and vice versa? Recreating the same plot with these two other sentiment ranking methods, you get:

Sentiment of RNC and DNC Speeches ('afinn' Method)



Sentiment of RNC and DNC Speeches ('nrc' Method)

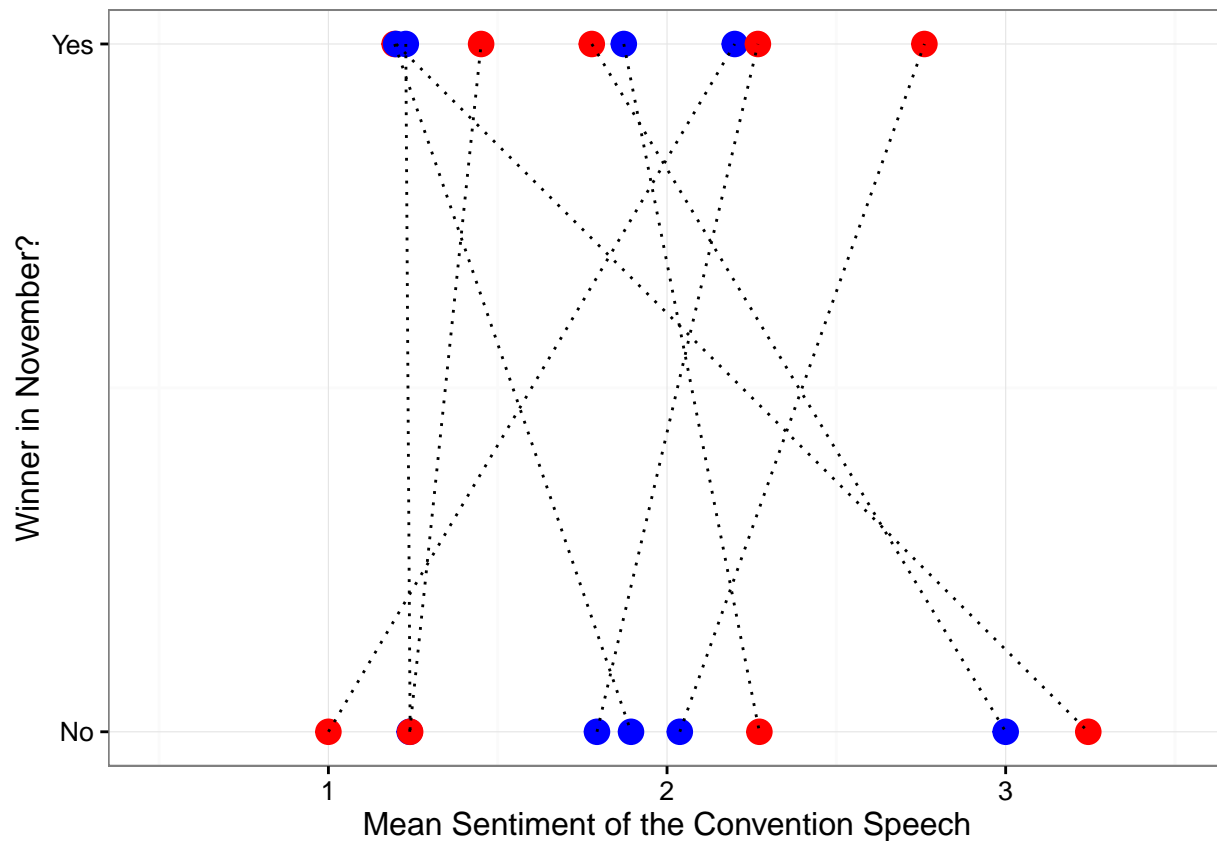


Overall, our main takeaways from this historical analysis are:

- **Trump’s 2016 convention speech appears to be historically negative.** Two of the three sentiment methods rank Donald Trump’s speech as the most negative convention speech given by either party’s presidential candidate since 1980.
- Despite his association with American exceptionalism, **these sentiment metrics rank Ronald Reagan’s convention speeches in 1980 and 1984 as relatively negative.** All three metrics show his 1980 RNC speech as more negative than Jimmy Carter’s offering at the 1980 DNC, and the sentiment rankings for the 1984 convention speeches (Reagan vs. Walter Mondale) are a wash across the different metric methods.
- All three sentiment metrics indicate that **Michael Dukakis gave the most positive DNC speech of any Democratic presidential nominee from 1980-2016.** And then he lost the election in a landslide.
- Based on these numbers, **from 2004-2012 the Republican presidential nominee gave a more positive national convention address than his Democratic counterpart.** Those elections were split: two wins for Bush, then two wins for Obama. Romney’s 2012 RNC speech in particular was a historically positive Republican effort.

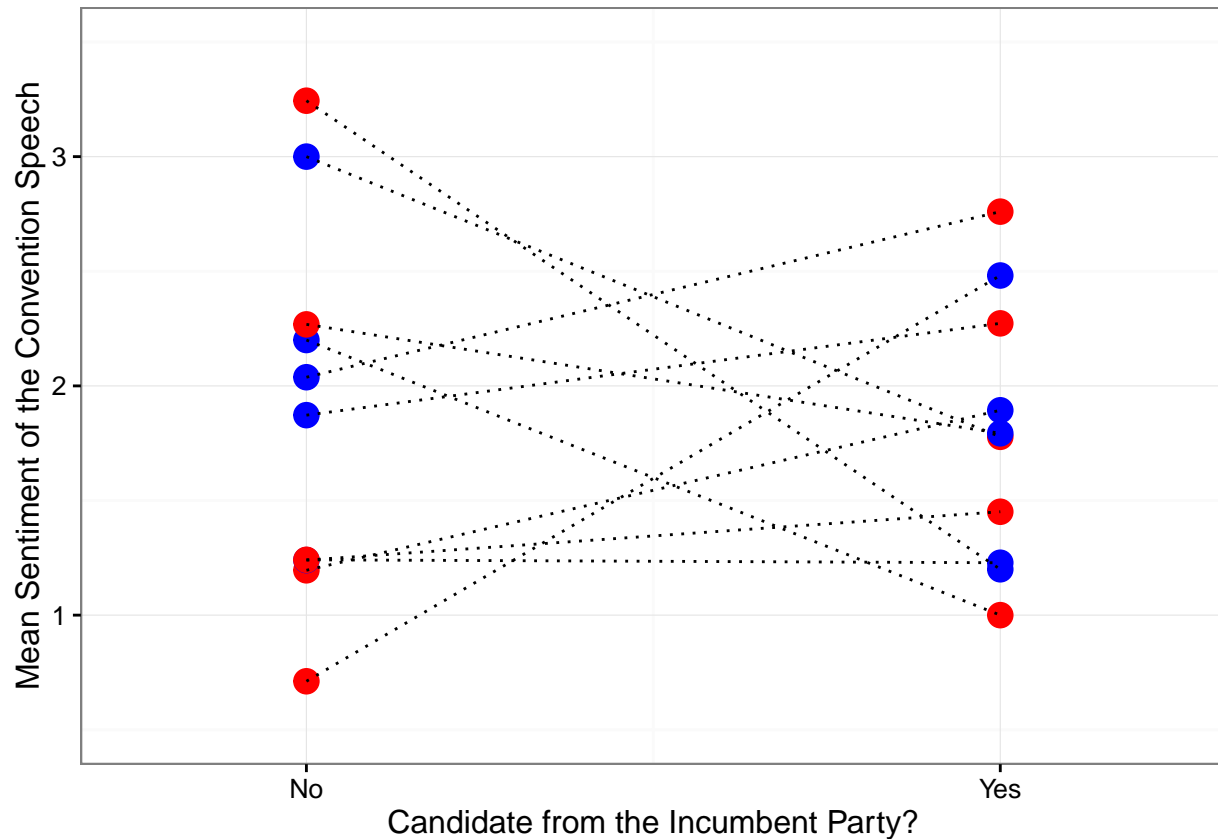
Does It Matter?

Given this data and the fact that we’re in the midst of election season, one natural question to ask might be: does the sentiment of a candidate’s convention speech affect their chances of winning the presidency? Obviously, a tremendous number of other factors influence a presidential election, but maybe the convention speech is a reliable indicator of the general tone, and hence success, of a presidential campaign? Depending on your political leanings, this will be good or bad news, but the answer seems to be “no.” The following plot shows the relationship between winning the presidency and the mean sentiment of a candidate’s convention speech (dotted lines connect the two candidates who ran against each other in a given year):



There seems to be no real relationship here. Winning candidates have given some relatively negative and relatively positive speeches, as have losing candidates.

Instead of looking to see whether the convention speech is predictive of success in November, one might also wonder whether certain factors affect the tone of the convention speech itself. For example, maybe those candidates who are not incumbents find it more profitable to strike a negative tone in their convention speech as they attack the opposing party who has been in power for four (or more) years. According to the data, again the answer seems to be “no”:



There's no trend here: incumbent status does not cleanly separate out convention speech sentiment scores. In fact, according to the 'bing' sentiment method (the one used here), both the most negative (Trump 2016) and most positive (Romney 2012) national convention speeches observed in the data set both came from the challenging party.

Summary

While the sentiment of the convention speech seems far from a make or break issue for presidential hopefuls, this analysis does support many people's intuitions about the relative tones of the 2016 RNC and DNC. It also adds another layer to the wild and crazy ride that has been the Trump candidacy. Throughout his campaign, he has [famously flummoxed](#) [considered, well-informed expectations](#) about what a presidential candidate does and does not do. And by most of the sentiment measures used here, **Donald Trump just gave the most negative convention speech by a major party presidential nominee since 1980.** Whether that will hurt or help him is anyone's guess...