Thought: Optimizing Presidential Debates

8/6/15
By Kevin DeLuca and Boyd Garriott
ThoughtBurner

Opportunity Cost *of Reading this ThoughtBurner post:* ***$1.54*** *– about* **6.99 minutes**

Today is the day of the first GOP presidential debate. Reminiscent of this time in the last presidential election cycle, there are a large number of potential candidates all looking to secure the Republican nomination. Naturally, all of them want a place in the nationally televised debates. But with limited time and space, the networks are not sending invitations to everyone.

If we assume that news networks are indeed trying to maximize the quality of the televised debates, FOX and CNN are facing a difficult optimization problem. Picking the optimal combination of candidates is no easy task; candidates don't come with a measure of debate-inclusion quality. There are many different aspects that news stations must consider – the number of candidates, their popularity, their "true" chance of winning the nomination, the scope of their power and influence, and many more – while it tries to optimize its debate. All of these factors are determined when the combination of candidates is decided.

Here at ThoughtBurner, we spent a lot of time thinking about the problem of how to optimize a presidential debate. We (Kevin DeLuca and Boyd Garriott) each independently came up with our own optimizing processes, inspired by a FiveThirtyEight contest. After sharing our ideas with each other, we realized that our methods were designed to optimize different aspects of debate quality. Namely, Boyd devised a formal, more objective way to measure candidate (and future president) quality, while Kevin created a method focused on optimizing the representation of different viewpoints.

These two aspects of presidential debates – candidate quality and the variety of viewpoints represented – break down the measure of 'debate quality' into more manageable parts. We decided to combine our methods into a single super-proposal that simultaneously maximizes candidate quality and ideological representativeness. Using this method, we came up with our own list of who should be invited to the GOP debates. We also created a personalized debate optimization calculator, which lets you customize our process based on your own personal opinion of how much certain candidate factors matter.

Here's how it works: enter how important you personally think each of the 6 factors below are in order to have good debate. That's it – ThoughtBurner's optimization calculator will tell you which five candidates would be in the 'best' debate according to your preferences.

The Method

First, we focused our attention on designing a better measure of candidate quality. We wanted to create a measure of candidate quality that would be better than simple poll results. The five main

factors we included in our analysis of candidate quality were: Endorsements, Net Favorability Ratings, Polling Averages, Fundraising Numbers, and Political Experience.

Using a variety of sources as well as our own formulations (see appendix at bottom), we turned each criterion into a percentile measure to capture how the candidates compare to each other. The average percentile ranking of all five measures (weighed equally) is the overall final score ranking of the candidate, expressed as 0%-100%.

The top 10 highest quality candidates, using this design, are:

Candidate	Overall Ranking Score
Jeb Bush	69%
Mike Huckabee	43%
Rick Perry	42%
Marco Rubio	41%
Ted Cruz	41%
Scott Walker	41%
Chris Christie	37%
Rand Paul	35%
John Kasich	31%
Donald Trump	30%

If we were to only invite the top five highest quality candidates to the debate, it looks like Donald Trump wouldn't make the cut, even though his polling numbers are the highest.

Next, we focused our attention on optimizing the debate by ensuring that a variety of opinions were included in the debate. If the candidates selected for the debate do not have different viewpoints, then we'll end up watching a debate with very little *debating*. To ensure that issues are actually discussed, we need to ensure that a variety of viewpoints are represented by the candidates.

To do this, we collected ideological scores on four issues (Individual Rights, Domestic Issues, Economic Issues, and International/Defense Issues) from Inside.gov[i] in order to understand the positions that each contender holds. We then calculated the average 'ideological distance' of each candidate to all of the other candidates. A distance of 0 means the candidate is exactly in the middle of the pack; a negative score means they are less conservative while a positive score means they are more conservative.

We then decided to include a range of five different viewpoints: Least Conservative, Less Conservative, Moderately Conservative, More Conservative, and Most Conservative. Using the range of previously calculated distance scores, we then created five 'Ideal Position Scores' that would perfectly represent the five different desired viewpoints. Last, we compared each candidate's distance to the ideal position to which they were closest to get their Opinion Diversity Score, which is a measure of how close they are to representing one of the desired viewpoints.

For each of the five viewpoints, the candidate who was closest was selected to be in the debate:

Candidate	Representing	Opinion Diversity
Rick Santorum	Most Conservative	-0.3393
Marco Rubio	More Conservative	-0.0464
Mike Huckabee	Moderately Conservative	-0.0714
John Kasich	Less Conservative	0.1714
Chris Christie	Least Conservative	-0.3393

Notice that, compared to the quality measure, these results would select only two of the same top-five candidates. Chris Christie gains a spot because he's the least conservative of all the candidates; Rick Santorum gains a spot because he's the most conservative; Marco Rubio beats out Rick Perry and Scott Walker for the more conservative spot; Josh Kasich takes the less conservative spot from Rand Paul; Mike Huckabee is closest to the middle, stealing the spot from Jeb Bush and Donald Trump.

By itself, the quality measure doesn't ensure diversity of opinions – Jeb Bush and Mike Huckabee are not very different in terms of their ideological position scores, yet they would both get a spot in the debate. On the other hand, the diversity method doesn't account for candidate quality in any way – Donald Trump is much less qualified than Jeb Bush, but his opinion diversity score is better so he would take the spot from Bush (if they both hadn't lost it to Mike Huckabee, who is also less qualified than Bush).

Our final results, however, combine the methods above to ensure both candidate quality and opinion diversity. It provides a way to select a group of candidate that is both diverse and highly qualified. In theory, this group of candidates will lead to an optimized debate because the most qualified candidate able to do so will defend each of the desired viewpoints.

To do this, we simply gave an equal weighting to candidate quality and diversity of opinion. The opinion diversity score of each candidate was changed to a percentile, and this new percentile score was averaged with the candidate's quality percentile ranking (this would be the equivalent of rating each of the first 5 factors as "1" and the last as "5" if you want to double check our work).

Using the combined method, the five candidates that should be invited to the debate are:

Rank	Candidate
1	Marco Rubio
2	Mike Huckabee
3	John Kasich
4	Rick Perry
5	Scott Walker

This is ThoughtBurner's solution to the debate optimization problem.

Of course, you may feel differently. We weighed all of our measures equally when deciding whom to invite to the presidential debates. But if you don't think all of our factors matter equally, then *your* solution to the debate optimization question is different. You might not think that diversity of opinion matter 'makes' half of the debate. Or maybe you think that Fundraising Numbers isn't a good factor to include in candidate quality, so you would never consider it when designing your optimal debate.

To account for this, and to help you find your own personal solution to the debate optimization problem, we've created a *personalized debate optimization calculator.* Using our calculator (featured above), you can assign different weights of importance to each of the 6 factors we used that influence debate quality (5 candidate quality factors plus 1 measure of opinion diversity). We assign relative weights to each of the factors according to your personal 1-10 ratings of importance. After we perform the same calculations to measure candidate quality and opinion diversity, we then weigh each factor by your personalized weights and re-rank all of the candidates.

Rather than having to think about, research, and design an optimal debate all by yourself, ThoughtBurner's optimization calculator takes your preferences and gives you a personalized solution. If FOX and CNN really want to have the *best* debate, they could allow a large number of people to enter in their personal ratings of each factors importance, average each one, then enter in the average preferences into our debate calculator.

Technical Appendix

This is for all of you who are more interesting in learning how we calculated our custom measures for determining candidate quality and optimal ideological positioning. Below, we both explain our measures in more detail. You can also download our spreadsheets below if you'd like.

A. Measuring Candidate Quality – Boyd Garriott

There are 5 criteria I used to measure candidate quality: Endorsements[ii], Net Favorability Ratings[iii], Polling Averages[iv], Fundraising Numbers[v], and Political Experience.

Political experience was calculated by assigning 1 'point' for each year a candidate served in a local political position, 2 for each year in a state legislature, 3 for each year in a state-wide office [elected or appointed] as well as for federal appointments and House of Representatives, and 4 for each year spent as a governor or senator.

Further, each criterion is then converted into a percentile, and each criterion's percentile is weighted based on your desired importance.

The thought process behind including each of these criteria is as follows:

Endorsements are a proven predictor of a candidate that can rally the support of their respective party - a necessity to win a party's nomination.

Net Favorability ratings show what polling doesn't - the support beyond a candidates 'first-choice' supporters. This indicates the staying power of a particular candidate since, in a field this big, candidates are going to need to steal support from beyond their die-hard loyalists.

Polling averages, while limited in scope, show which candidates the party's voters really want to see on that stage and should rightfully be included.

Fundraising numbers show that a candidate is receiving adequate monetary support - an indicator of broader electoral support and long-term viability.

Lastly, political experience shows that a candidate has governing credentials and should be better able to withstand the intense scrutiny that comes with running for (or serving in) political office. Basically, Trump polling higher than, say Rick Perry, shouldn't completely discount Perry's 15 years as governor.

B. Measuring Diversity of Opinion – Kevin DeLuca

First, I recorded each of the candidates' viewpoints and positions based on their 'issues' score from [this website](http://presidential-candidates.insidegov.com/)[vi]. Then, I calculated a 'distance' score for each candidate by averaging each pairwise difference between the candidate and all other candidate. This is their position score, which measures how conservative a candidate is compared to all of the other candidates. Again, a score of 0 means the candidate is exactly 'average' in terms of their conservative-ness; positive numbers are more conservative and negative numbers are less conservative.

The scores ranged between -4.09 (Christie) and 3.41 (Santorum). I took the range (7.40) and divided it by 4 (1.85) to get the idea distances between viewpoints (assuming 5 candidates). I then constructed the ideal viewpoints to include 0, the average viewpoint, and spaced the remaining positions 1.85 points apart in both directions – these are the 'ideal' position scores (to maximize representativeness).

Next, I matched up each candidate to the ideal viewpoint to which they were closest, and subtracted their position score from the ideal position score. This number tells us how close the candidate is to representing one of the ideal viewpoints for the debate. The lower the number, the closer they are.

Last, for each of the 5 viewpoints I selected the candidate that was closest to that viewpoint (the candidate who had the lowest 'distance' from the ideal position). This method ensures that the candidate whose views most agree with the ideal positions are invited to the debate, which allows for the whole conservative spectrum to be represented at the debate.

[i] http://presidential-candidates.insidegov.com/
[ii] http://projects.fivethirtyeight.com/2016-endorsement-primary/
[iii] http://www.gallup.com/poll/184337/among-republicans-gop-candidates-better-known-liked.aspx?utm_source=position1&utm_medium=related&utm_campaign=tiles

iv http://www.realclearpolitics.com/epolls/2016/president/us/2016_republican_presidential_nomination-3823.html
v http://www.nytimes.com/interactive/2016/us/elections/election-2016-campaign-money-race.html
vi http://presidential-candidates.insidegov.com/