# Case: Winning an Election

**Background**

*"Assumptions tend to be wrong."*  -- Dan Siroker, CEO and co-founder of Optimizely.

Dan Siroker's quote a highlights his strategy as head of the Director of Analytics for President Obama's 2008 US presidential campaign.  A former product manager from Google, Siroker believed in using data to test hypotheses and pushed heavily for A/B testing throughout the campaign.  Perhaps most famously, Siroker claims to have earned the Obama campaign an additional $60 million dollars in a single experiment.[1]

The experiment was simple:  the campaign needed to decide whether the "Sign-up" button on the Obama website should read: "Sign Up", "Sign Up Now", "Join Us Now", or "Learn More" and which of 6 possible media (three images and three videos) should accompany the button.  (See figure)  Political consultants strongly believed a video of Obama speaking at a rally would be the most effective media choice – because he is a charismatic and inspirational speaker – and did not believe what the button said made a material difference.



Siroker, however, thought it is best to test these assumptions.  Following a classical A/B testing approach Siroker configured the Obama website to randomly show new users one of the 4 x 6 = 24 possible combinations of button and media, and then tracked what percentage of users signed up under each variation.  By comparing the sign-up rates, he

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[1] See: https://blog.optimizely.com/2010/11/29/how-obama-raised-60-million-by-running-a-simple-experiment/  for details on the experiment.

was able to learn from the data that users responded best to the "Learn More" button and a black and white image of Obama's family. (See below.) Meanwhile, all the videos proposed by political consultants actually performed *worse* than the original page design.



Perhaps most importantly, Siroker could also quantify the size of the difference, and it was astounding. Siroker's configuration is estimated to have a 40.6% improvement in sign-up rate over the original photo. Rough calculations suggest that these increased sign-ups ultimately lead to an additional 288,000 volunteers and $60 million dollars in donation.

After that initial experiment, the Obama campaign A/B tested dozens of other questions:

- Do voters respond better to a robo-call from Bill Clinton or a conversation with a chatty, but anonymous volunteer?
- Do voters turn out more for polls if you tell them that turnout is expected to be strong this year, or weak?
- What should the order of the fields (Name, Donation Amount, Credit Card number, etc.) be on the donation page? Should they be displayed as one page or several?

Overall, most political pundits agree that one of the key competitive advantages of the Democrats in 2008 was their analytics capability.

After the election, Siroker moved on to cofound the internet startup "Optimizely" which produces software to implement A/B testing on websites, and the face of politics has been forever changed. Gone are the days of paying a market analyst thousands of dollars to advise on whether a red or blue tie makes a candidate appear more presidential. Siroker's team and Obama have proven it's simply faster, cheaper and more effective to A/B test and let the data speak.

## Your Candidate

In the present day, you represent a candidate running for Congressional office in the state of CA as a Democrat. The election is a mere one-month away, and the campaign budget is running low. The campaign office is splitting its time between fundraising, and spending those funds on advertising to ensure that key voters actually go out and vote on election day.

Your publicity team has put together an inspirational email from the candidate. They plan to send the email out to the large email list of supporters they've amalgamated over the course of the campaign. There are three possible subject lines the publicity team is considering:
- Variant 1: "Remember to Vote." This is the conventional subject line, and will be used if there are no better alternatives.
- Variant 2: "If you believe in what we're doing…"
- Variant 3: "Last chance for change…"

Inspired by the success of the Obama presidential campaign, you'd like to A/B test these possible variants, to pick the most effective subject line. You ask your publicist team to randomly send out the variants to only a small portion of their email lists and record response rates. They agree, and return to you a dataset with 16000 entries and the following variables:

- Gender – as reported by the supporter when they signed up for the email list. Either "M" or "F."
- Age – as reported by the supporter when they signed up for the email list. One of "18-24", "25-34", "35-44", "45-54", "55-64", "65+".
- Variant –which subject line was used when the publicity team sent the email. One of "1", "2", or "3"
- Party – the party of the supporter. One of "Democrat", "Independent", or "Other"
- Donate – whether or not the supporter clicked a link in the email to donate to the campaign. Either 0 (no) or 1 (yes).
- Donation amount – the amount they donated. Only available IF they donated. 0 otherwise.

- Newsletter – whether or not they clicked a link to sign-up for the campaign newsletter.  Either "Y" (yes) or "N" (no)
- Share – Whether they clicked a link to share their support for the candidate on social media.  Either "Y" (yes) or "N" (no)
- ShareType- How they shared on social media.  Only available IF they shared.  One of "Twitter", "Facebook" or "Email."

Your task is to use this data to decide what is the "best" subject line to use.