galvanize

CASE STUDY | A DATA-DRIVEN ELECTION CAMPAIGN

How the Obama Campaign Used Data to Drive Votes at Scale

How can you raise money if no one has heard of you and all you have is a website? Back in 2007, Obama was running for the nomination and trailing by double digits in the polls. (Optimizely).

The Obama For America (OFA) campaign had one goal: the election of President Barack Obama. To achieve their goal, they required the coordination of hundreds of thousands of staffers and volunteers, donations from supporters to enable their efforts, and a Get Out The Vote campaign.

"We knew we were going to go big, and we knew we were going to be resource-constrained," says Harper Reed, chief technology officer for the Obama campaign. "Whether it was money or people, we knew we weren't going to have everything we wanted." (AWS)

Initial Digital Wins

One simple experiment back in 2007 had taught the campaign that every visitor to the website was an opportunity and that taking advantage of that opportunity through website optimization and A/B testing could help us raise tens of millions of dollars.

This experiment tested two parts of our splash page: the "Media" section at the top and the call-to-action "Button".

Four buttons and six different media were tested (three images and three videos). Using Google Website Optimizer and running a full-factorial multivariate test, all combinations of buttons and media were tested against each other at the same time. With four buttons and six different media, there were 24 (4 x 6) total combinations to
test. Every visitor to the splash page was randomly shown one of these combinations and we tracked whether they signed up or not.

Pause here: Which Button and Media do you think had the highest sign-up rate?

Results

The metric used to measure success was sign-up rate: the number of people who signed up divided by the number of people who saw that particular variation. Since there were a total of 310,382 visitors to the splash page during the experiment that meant each variation was seen by roughly 13,000 people.

The Winner

The best-performing combination of button and media was "Combination 11" which was the "Learn More" button and the "Family" image:

Before we ran the experiment, the campaign staff heavily favored a video called "Sam's Video" . Without this experiment, we would have very likely used that video on the splash page. That would have been a huge mistake since it turns out that all of the videos did worse than all of the images.

The winning variation had a sign-up rate of 11.6%. The original page had a sign-up rate of 8.26%. That's an improvement of 40.6% in sign-up rate.

Well, if you assume this improvement stayed roughly consistent through the rest of the campaign, then we can look at the total numbers at the end of the campaign and determine the difference this one experiment had. Roughly 10 million people signed up on the splash page during the campaign. If we hadn't run this experiment and just stuck with the original page that number would be closer to 7,120,000 signups. That's a difference of 2,880,000 email addresses.

Sending email to people who signed up on our splash page and asking them to volunteer typically converted 10% of them into volunteers. That means an additional 2,880,000 email addresses translated into 288,000 more volunteers.

Each email address that was submitted through our splash page ended up donating an average of $21 during the length of the campaign. The additional 2,880,000 email addresses on our email list translated into an additional $60 million in donations.

Who Will Vote for Obama?

The 2008 Obama campaign used an entirely data-driven approach. A team lead by economics forecasters assigned every voter in the country a pair of scores based on the probability that the individual would perform two distinct actions that mattered to the campaign: casting a ballot and supporting Obama. These scores were derived from an unprecedented volume of ongoing survey work. For each battleground state every week, the campaign's call centers conducted 5,000 to 10,000 so-called short-form interviews that quickly gauged a voter's preferences, and 1,000 interviews in a long-form version that was more like a traditional poll. To derive individual-level predictions, algorithms trawled for patterns between these opinions and the data points the campaign had assembled for every voter—as many as one thousand variables each, drawn from voter registration records, consumer data warehouses, census data, and past campaign contacts.

In the field, microtargeting models directed volunteers to scripted conversations with specific voters at the door or over the phone. Each of those interactions produced data that streamed back into Obama's servers to refine the models pointing volunteers toward the next door worth a knock. The efficiency and scale of that process put the Democrats well ahead when it came to profiling voters. John McCain's campaign had, in most states, run its statistical model just once, assigning each voter to one of its microtargeting segments in the summer. McCain's advisors were unable to recalculate the probability that those voters would support their candidate as the dynamics of the race changed.

Later that year, after growing the department from 2 persons to 15, the team developed the prototype for a newly robust and reliable "persuasion score" that identified how easily individual undecided voters could be persuaded to vote for or against the Democrat in a race, based on how likely they were to show shifts in their preferences in telephone interviews conducted over time. (NYTimes)

Direct Mail Experimentation

In 2012, party officials knew that adding new Democratic voters to the registration rolls would likely be a requirement for electoral success. Thus, the Obama campaign began experimenting with direct mail, sending different messages to different groups.

Experimenters would randomly assign voters to receive varied sequences of direct mail—four pieces on the same policy theme, each making a slightly different case for Obama—and then use ongoing survey calls to isolate the attributes of those whose opinions changed as a result.

In March, the campaign used this technique to test various ways of promoting the administration's health-care policies. One series of mailers described Obama's regulatory reforms; another advised voters that they were now entitled to free regular check-ups and ought to schedule one. The experiment revealed how much voter response differed by age, especially among women. Older women thought more highly of the policies when they received reminders about preventive care; younger women liked them more when they were told about contraceptive coverage and new rules that prohibited insurance companies from charging women more.

When Paul Ryan was named to the Republican ticket in August, Obama's advisors rushed out an EIP that compared different lines of attack about Medicare. The results were surprising. "The electorate [had seemed] very inelastic," says Terry Walsh, who coördinated the campaign's polling and paid-media spending. "In fact, when we did the Medicare EIPs, we got positive movement that was very heartening, because it was at a time when we were not seeing a lot of movement in the electorate." But that movement came from quarters where a traditional campaign would never have gone hunting for minds it could change. The Obama team found that voters between 45 and 65 were more likely to change their views about the candidates after hearing Obama's Medicare arguments than those over 65, who were currently eligible for the program.

A similar strategy of targeting an unexpected population emerged from a July EIP testing Obama's messages aimed at women. The voters most responsive to the campaign's arguments about equal-pay measures and women's health, it found, were those whose likelihood of supporting the president was scored at merely 20 and 40 percent. Those scores suggested that they probably shared Republican attitudes; but here was one thing that could pull them to Obama. As a result, when Obama unveiled a direct-mail track addressing only women's issues, it wasn't to shore up interest among core parts of the Democratic

coalition, but to reach over for conservatives who were at odds with their party on gender concerns. “The whole goal of the women’s track was to pick off votes for Romney,” says Walsh. “We were able to persuade people who fell low on candidate support scores if we gave them a specific message.”

At the same time, Obama’s campaign was pursuing a second, even more audacious adventure in persuasion: one-on-one interaction. Traditionally, campaigns have restricted their persuasion efforts to channels like mass media or direct mail, where they can control presentation, language, and targeting. Sending volunteers to persuade voters would mean forcing them to interact with opponents, or with voters who were undecided because they were alienated from politics on delicate issues like abortion. Campaigns have typically resisted relinquishing control of ground-level interactions with voters to risk such potentially combustible situations; they felt they didn’t know enough about their supporters or volunteers.

In February, however, Obama volunteers attempted 500,000 conversations with the goal of winning new supporters. Voters who’d been randomly selected from a group identified as persuadable were polled after a phone conversation that began with a volunteer reading from a script. “We definitely find certain people moved more than other people,” says Bird. Analysts identified their attributes and made them the core of a persuasion model that predicted, on a scale of 0 to 10, the likelihood that a voter could be pulled in Obama’s direction after a single volunteer interaction. The experiment also taught Obama’s field department about its volunteers. Those in California, which had always had an exceptionally mature volunteer organization for a non-battleground state, turned out to be especially persuasive: voters called by Californians, no matter what state they were in themselves, were more likely to become Obama supporters.

With these findings in hand, Obama’s strategists grew confident that they were no longer restricted to advertising as a channel for persuasion. They began sending trained volunteers to knock on doors or make phone calls with the objective of changing minds.

That dramatic shift in the culture of electioneering was felt on the streets, but it was possible only because of advances in analytics. Chris Wegrzyn, a database applications developer, developed a program code-named Airwolf that matched county and state lists of people who had requested mail ballots with the campaign’s list of e-mail addresses. Likely Obama supporters would get regular reminders from their local field organizers, asking them to return their ballots, and, once they had, a message thanking them and proposing other ways to be involved in the campaign. The local organizer would receive daily

lists of the voters on his or her turf who had outstanding ballots so that the campaign could follow up with personal contact by phone or at the doorstep. “It is a fundamental way of tying together the online and offline worlds,” says Wagner.

The Software Platform Backing The Win

The Obama campaign team built a variety of internal applications for their campaign, which all ran atop the AWS (Amazon Web Services) Cloud:

Dashboard, a virtual field office app that enabled volunteers to join the campaign effort without having to go to a central office. Dashboard also handled metrics, tracking canvassing, voter registration and the campaign’s phone calls to voters.

Dreamcatcher, an application that micro-targeted voters based on sentiments expressed on social networking sites.

CallTool, a remote calling tool that allowed volunteers to do phone canvassing from their homes and matched volunteers with voters who had similar life experiences.

A voter incident tracking tool that was used to collect data on incidents of voter fraud and abuse, illegal electioneering, and other polling-place issues. The tool would alert local attorneys who volunteered for the campaign, who would then be deployed to assess the situation and collect information.

One decision that served the OFA campaign well was an early focus on loose coupling in their design. The organization adopted a pragmatic, deep redundancy approach across dozens of distinct but interrelated systems. OFA took an aggressive risk management approach and supported automatic partial availability for each of their applications, in addition to standard practices for high availability. For example, an application that created a map for delivering leaflets used an external system to prioritize each volunteer’s route. If that system was offline, rather than having the application show an error, it simply displayed an un-optimized map.

With constraints on time and the need for agility, the OFA organization knew that developer volunteers might want to build their own apps. This would have hindered the campaign’s efforts to coordinate its volunteers and make sure its data was as current and accurate as possible. Therefore, OFA built a series of APIs that exposed internal campaign data in a way that new applications could easily consume. Doing so allowed the campaign to present a diverse, distributed set of data resources as if they were centralized. These APIs supported dozens of applications, all of which operated in a coordinated

fashion—and as a result, user-facing applications could be built in almost any language, in any framework, leveraging whatever production experience the volunteer developers brought to the effort.

A number of third-party components were also integrated into Obama for America's solution, including:

- New Relic and Chartbeat to monitor performance
- Cloudability to monitor costs
- CloudOpt to optimize the critical cross-regional transfer and replication operations
- Mashery to provide API delivery tools
- GitHub and Campfire to coordinate developer efforts
- Puppet and Netflix Asgard to automate infrastructure
- OpenVPN to provide network access

The Human Side of Analytics

In many respects, analytics had made it possible for the Obama campaign to recapture that style of politics. Though the old guard may have viewed such techniques as a disruptive force in campaigns, they enabled a presidential candidate to view the electorate the way local candidates do: as a collection of people who make up a more perfect union, each of them approachable on his or her terms, their changing levels of support and enthusiasm open to measurement and, thus, to respect. "What that gave us was the ability to run a national presidential campaign the way you'd do a local ward campaign," Simas says. "You know the people on your block. People have relationships with one another, and you leverage them so you know the way they talk about issues, what they're discussing at the coffee shop."

Few events in American life other than a presidential election touch 126 million adults, or even a significant fraction that many, on a single day. Certainly no corporation, no civic institution, and very few government agencies ever do. Obama did so by reducing every American to a series of numbers. Yet those numbers somehow captured the individuality of each voter, and they were not demographic classifications. The scores measured the ability of people to change politics. (MIT Tech Review) •

CITATIONS

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