



GYMNASIUM

INFORMATION DESIGN AND VISUALIZATION FUNDAMENTALS

Lesson 6 Transcript

In-Depth Example: 512 Paths To The White House

ABOUT THIS HANDOUT

This handout includes the following:

- A list of the core concepts covered in this lesson.
- The assignment(s) for this lesson.
- A list of readings and resources for this lesson including books, articles and websites mentioned in the videos by the instructor, plus bonus readings and resources hand-picked by the instructor.
- A transcript of the lecture videos for this lesson

CORE CONCEPTS

1. This lesson focuses on the approach for making interactive visualizations, what makes for a good interactive visualization, and how to build something that allows for exploration, but also has an opinionated story to tell.
2. Don't be afraid to try new ideas, even if they've been done the same way for hundreds of years. Just make sure there is a specific problem you're trying to solve, and you're not just trying to do something for the sake of novelty.
3. At the same time, with all these new interaction possibilities available to us today, it's often easy to dismiss the concepts of the past, but often there are valuable lessons there. For example, ask yourself, if you could show the core information without interactive capabilities, how would you do it?
4. In summary here are some of the tactics used when making a successful interactive visualization: Build something real as soon as possible. Get honest feedback. Sometimes, you need to throw it all away and start over from scratch, and repeat, repeat, repeat.

ASSIGNMENTS

1. Quiz
2. Come up with an alternate plan for how you would make an electoral calculator for the next presidential elections.

Are you satisfied with this visualization form? Is there some other form you think would be better? Are there ways you could make it less confusing, or more useful?

3. When completed, post your plan on the form and be sure to comment on one of your classmates forum posts as well.

INTRODUCTION

This is lesson six of Information Design and Visualization Fundamentals, an online course developed by Aquent. In the previous lesson, we saw how a large data set could be analyzed and interpreted to explain why Mariano Rivera was such an effective pitcher, ultimately sitting on a narrative presentation.

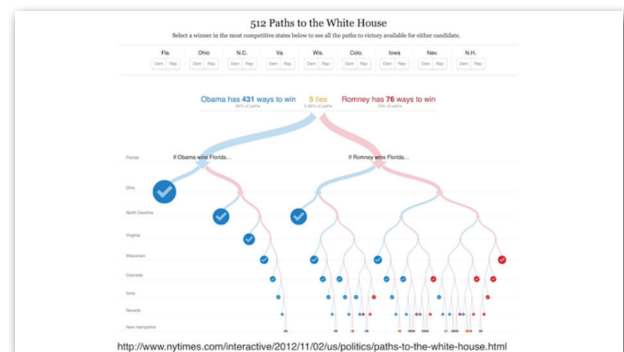
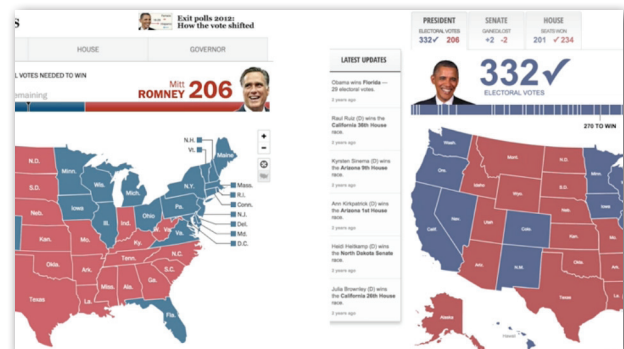
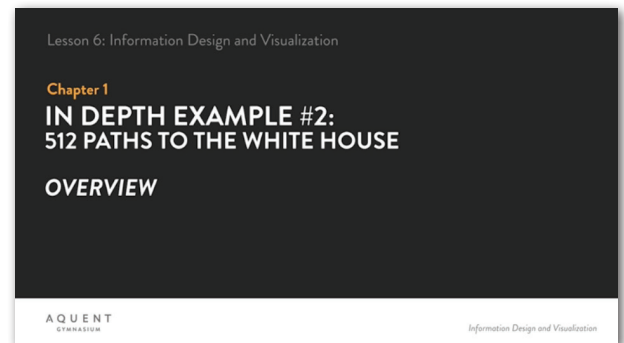
In this chapter, we'll take a look at the development process for one of the Times' most popular interactive graphics from the last few years, "512 Paths to the White House". This lesson was developed in collaboration with my award winning colleague, Shan Carter, who has been instrumental in developing our election visuals, among many other great visual journalism projects.

Every few years, The New York Times publishes tools to help readers navigate the ins and outs of the complicated US federal elections. This is something every major news outlet, from The Washington Post to The Huffington Post, must tackle every election cycle. One of our most popular tools during these political seasons is our electoral college calculator. It allows people to explore all the different ways each state could vote, automatically tallying up the correct electoral votes, so you don't have to do any math.

Our most recent version of the electoral calculator, published during the Obama-Romney campaign, was our most popular to date. I would recommend pausing now, and following the link to this project on the class website. You can also google 512 Paths NYT. This project enabled the user to interactively explore the 512 most likely paths to the White House for the two candidates, during the weeks immediately preceding election day. This isn't the first time we've built a tool that tackles this problem, however. Over the past dozen years, we've built several of them.

From that persistent iteration, we've learned a lot about what makes an effective journalistic tool for the masses, how information visualizations can be used within interactive applications, and also a lot about the best ways to approach, and develop an idea for the web. So, in this lesson, you'll learn by example how we approach making visualizations like this at The New York Times, what makes for good interactive visualizations, and how to build something that allows for exploration, but also has an opinionated story to tell.

In the next chapter, we'll look back for some context on how a visualization like this comes about, and get started learning how we built it.



A LITTLE HISTORY

So now, let's understand this piece better through some context, rewind a little bit, and take a trip through history.

Our first interactive calculator was built over a decade ago. The concept was pretty simple. You would click on states, and recolor them for either candidate. Electoral totals would automatically update. No math required. You can find the link for this one on the classroom site, as well.

It was so successful, in fact, that four years later, we built pretty much the same thing. It was given a face lift, and a few helpful new features were added, like the ability to share a map you've colored. But ultimately, it's the same idea.

We were pretty proud of this when we built it in 2008. But, after using it for several months, we became frustrated with it for three reasons, and I'm not including the fact that it didn't work on the newly introduced iPhone.

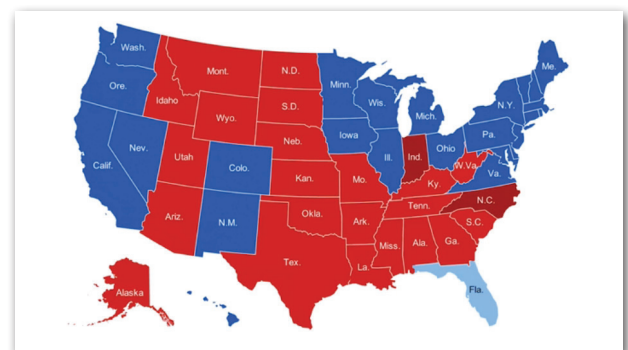
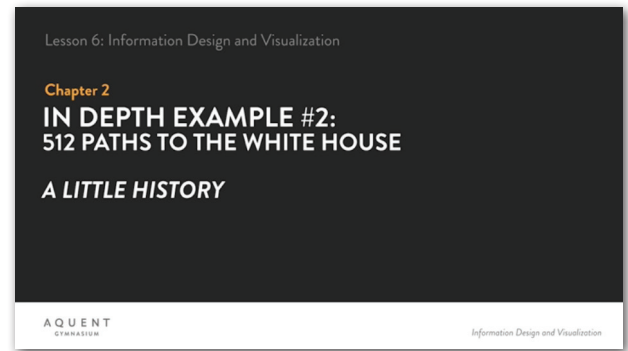
The first frustration was with the core visualization, the US choropleth map. This data visualization form dates back quite a long time. We even found an example of it in use for this very scenario over 100 years ago.

Shown here is The New York Times front page from Wednesday, November 4, 1896, the day after Election Day. The map shows which states were won by William McKinley, Republican, shaded white, and which were won by William Jennings Bryan, Democrat, shaded black.

It's actually quite remarkable for the time, especially considering it still came out the day after Election Day. But, there are a number of things wrong with this map, most visibly the lack of a key, and the fact that several of the other states were shaded incorrectly. But, there's a more fundamental problem, which we'll get to in a little bit.

Here's another choropleth map from 1932, effectively the same as the one 36 years, previous. And, here's one from a recent election. We've added color, but it's basically still the same.

So, if we've been using this for over 100 years, what's so wrong with all these maps? Well, the biggest problem with this map, or with any of them, is that I have to tell you who won in each case. When building that interactive version in 2008, it felt devastating that you couldn't infer the most important piece of information from the visualization itself. Incidentally, this is the results from the 2012 Presidential election in which Obama, in blue, beat out Romney, in red.



It's actually worse than not being able to tell. In this case, the amount of red implies that Romney won. In the previous map, about 36 percent of the map is shaded blue, for Obama. But Obama won a whopping 62 percent of the electoral votes. Unlike the previous maps, the bar chart on the bottom clearly shows you who won, without me having to tell you.

It's made even worse when you try to compare elections. Here are very different Presidential elections. But, when you see the maps altogether, you can barely tell the difference. Can you tell which one was so close it had to be decided by the Supreme Court, and which ones were blowout wins? Probably not. Here are some labels to help you out.

This specific problem has a specific solution and that solution is what's called a cartogram. Instead of just drawing the states normally, you can distort them so they are sized by how many electoral votes each state is allotted.

Here's another take on the same idea from Mark Newman, a professor at the University of Michigan. Here, the outlines of the shapes are preserved, but they're distorted as if they were on a sheet of rubber. A link to this is on the classroom site, as well.

With these cartograms, while it might still be a little difficult to figure out who won in a tight race, at least the amount of blue color on the screen is proportional to the number of votes won by the Democrats. They are called visualizations.

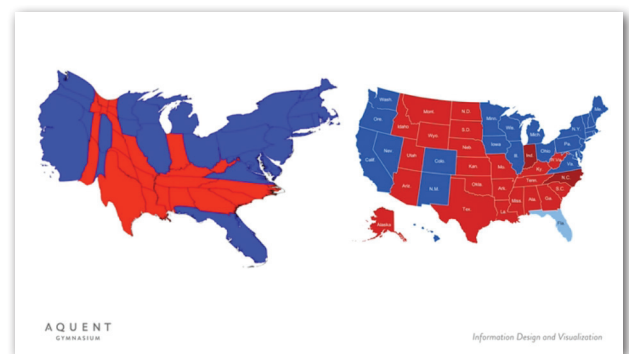
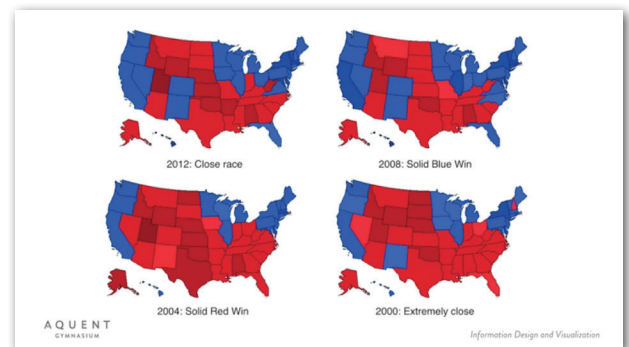
To recap, if the thing you're trying to show is not visible to users, there's something amiss. Try to identify what your key take-away should be, and make sure that it is the main point of the visualization. Words are definitely a vital aspect of visualizations, but if they're carrying too much weight that is a sign that maybe the visualization is not as effective as it could be.

Don't be afraid to try new ideas, even if they've been done the same way for hundreds of years. Just make sure there is a specific problem you're trying to solve, and you're not just trying to do something for the sake of novelty.

In the next chapter, we'll show how we tackled one of the biggest problems with the cartogram approach.

INTERACTION

So, we figured out an okay solution to the first problem. But remember, we said there were three problems with that 2008 interactive map. The next one was harder to fix. The second problem is with the interaction. With these electoral calculators, our first idea was to allow people to figuratively paint



Lesson 6: Information Design and Visualization

Chapter 3

IN DEPTH EXAMPLE #2:
512 PATHS TO THE WHITE HOUSE

INTERACTION

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Information Design and Visualization

the map with their mouse. It felt like the most intuitive way of allowing people to choose different outcomes, but the more we used it, the more the flaws with this approach became apparent.

It's very intuitive, but the main problem is that as you use the map, it actually loses information. Each time you fill in a battleground state with your color, it loses the original color that showed you it was an important state. Also, if you changed a Republican-leaning state to blue, it was hard to keep track of which states were decisions that you had made, and which were the original colors, which were based on recent polling. It was frustrating because the map became less useful the more time you spent with it.

The problem was we were using color to do two things. One, it showed the original projections based on polling. Two, it was used to show the user's choices. Secondly, it just wasn't fun to do. The whole thing felt like work.

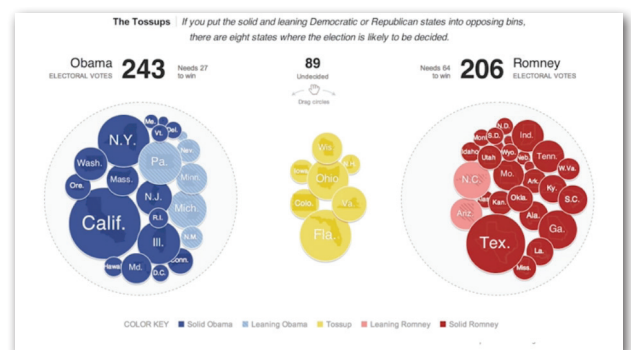
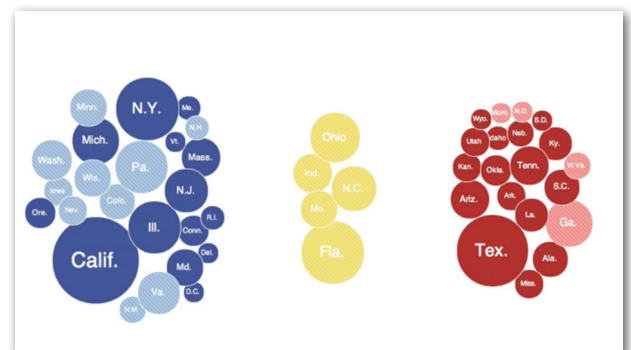
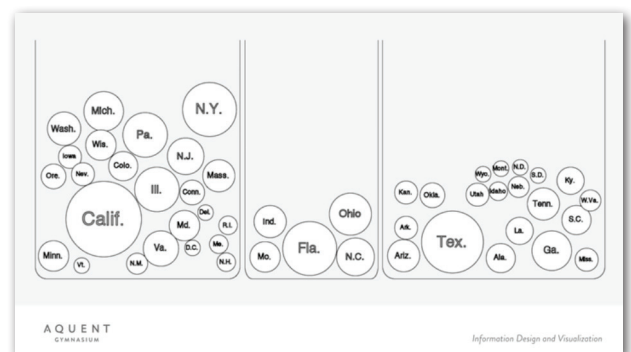
At the end of 2008 we had a new idea for the interaction. Instead of painting, we thought of a new metaphor, one of putting balls into different bins. Mostly, we just thought it would be fun and nothing more, and sort of shelved the idea.

But then, in 2012, when we began redesigning the calculator we realized that this could solve both of these two problems we'd been having. If we used position to show your choices, we could retain color to show the original ratings. Also, since they were balls, we could size them according to the number of electoral votes, solving our first problem, too.

Here's a calculator we built for 2012. Again, the link is on the classroom site. We start with the cartogram map to give you the geography, then move into the balls. You can make your choices by dragging the balls into different sides. Incidentally, this one's a lot more fun than the previous one, too.

The calculator starts with position and color the same. As you make your choices by moving the balls, the original ratings are kept. You can see your choices, and easily undo them, making exploration a lot less destructive.

Also, now the different scenarios actually looked different. Here's the 2008 presidential results. You can clearly see Obama's large electoral lead over McCain. Here's the 2004 presidential results. You can clearly see that Bush captured many more states than did McCain. The calculator was so fun even Glenn Beck liked it, and used it on his show, despite his general disdain for our newspaper.



So, to recap, allowing users to paint results onto the map themselves was ultimately problematic because it was destructive of the results data. One solution we found was to allow users to move scaled circles representing states into different bins.

In the next chapter, we'll demonstrate how we arrived at the 512 Paths graphics solution, and the many iterations it took to get there.

SEEING THE FOREST FOR THE TREES

As successful as this new calculator was, after playing with it for a few months, we started to become frustrated with it again. This brings us to our third problem, and it was the hardest to fix.

The problem was this, even though the newest idea was more fun, and easier than previous iterations, it still felt like too much work. We still felt a little lost using it exploring a world of possibilities, mining it for information or interesting scenarios.

We kind of just wanted the thing to tell us the answers without doing the work. It felt like we were hiking through a forest of trees trying to find something when all we really wanted was a map of the area. With a map, we can explore with our eyes, rather than having to walk each trail ourselves.

With all these new interaction possibilities available to us today, it's often easy to dismiss the concepts of the past, but often there are valuable lessons there. With this, it was sort of a back to print philosophy. Without interaction available, how would you show all the scenarios? As fun as the interaction was, if you could show the core information without it, isn't that preferable?

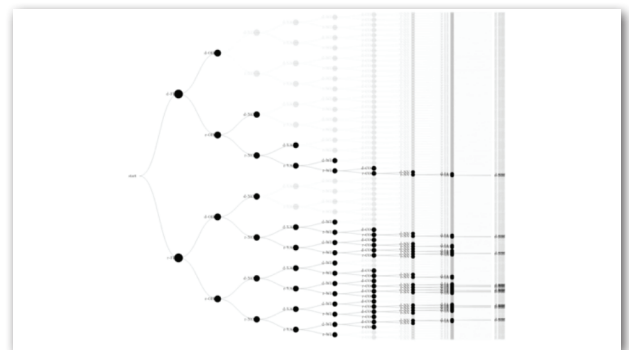
So, we started experimenting with laying all the options out. What follows is an edited look at each savepoint for this project from our version control system. It's a chronological snapshot of the project in progress.

So, here is the first working prototype. It basically just does the simple math for you. And, here's the first visual showing all the relevant decisions you can make with the calculator.

Each branch is a decision, whether a state goes to Democrats or Republicans. With each state, it doubles the number of outcomes available. Even for only 20 states that's over a million possibilities.

So, we restricted it to the nine battleground states. This left only 512 possibilities. This is slightly more useful.

We've grayed out the paths for which a victor was already decided. And, here we've removed those gray paths altogether. The buttons up top allow you to set a specific winner for that state, thus pruning the tree even further.



Here, we've rotated 90 degrees for shallow monitors. It allowed us to make it a little bigger. And, it was more important that someone sees the entire horizontal slice, rather than the other way around.

We've also added color to show the winner of each decision branch. Here, we were experimenting with fewer states, which made the visualization easier to see but ultimately was dropping one important state. Here, we experimented with drawing thicker lines for the more probable outcomes, according to Nate Silver's projections. Because while these states were battlegrounds, some were closer than others.

Here, we added little state icons to try to emphasize that each branch represented a decision in a specific state. They ended up getting pretty small, pretty fast though. This one was interesting looking, but a failed attempt to simplify the display. It's ultimately inaccurate.

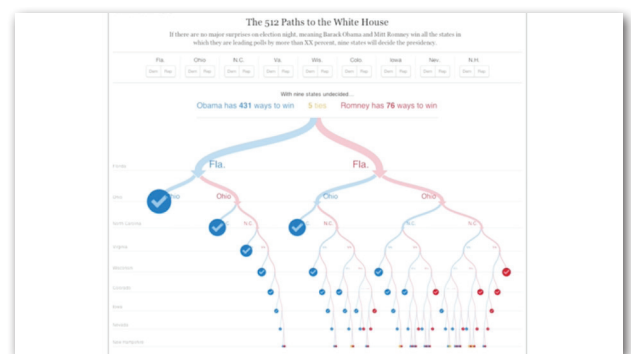
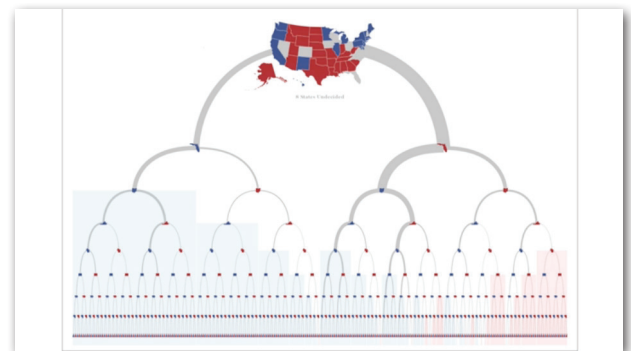
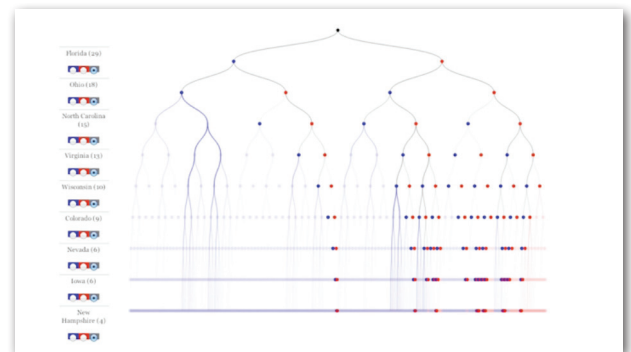
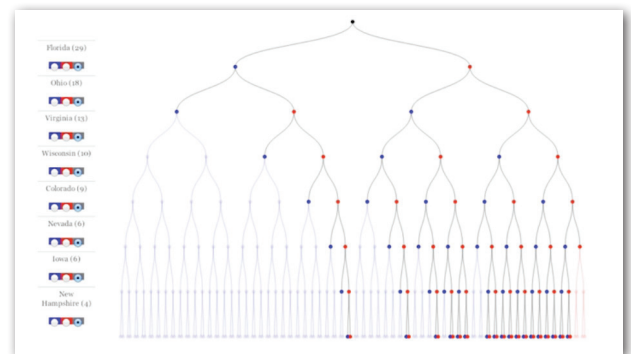
Here, we were trying to reinforce the concept of which states we were talking about. By showing the map with the gray states, you could then follow down, and see what would happen if each were colored differently. We began exploring different styles of lines.

This one we dubbed the wedding cake. This one was called rainbow bright, for some reason. Ultimately, we settled on these sort of natural, snake-like winding paths.

Also, we were trying to show when a winner was decided along a path, almost like areas of a map. The blue areas show Obama territory, and the red show Romney territory. And, removing those paths simplified the presentation. At this point, we were just trying to simplify, and clarify.

Here, we collapsed some of the white space to give more room for labels. Here, we added a stepper to guide you through some interesting scenarios. But, we dropped that feature quickly.

In the end, we decided to leave out showing Nate Silver's projections as the thickness of the lines. Projecting a winner was worthwhile. But, projecting the likelihood of any specific scenario was implying more confidence than the statistical model justified.



Here was the final graphic. To give people a little bit more background, and to guide them through some of the interesting and likely scenarios, we added some annotations at the bottom that included buttons to set the graphic to that state, so you could see it live. On election night, we added live results, so you could follow along as the results came in.

While preparing this lesson, we were also struck by how early on we'd arrived at the core form of the final graphic. Of the 257 revisions, on the 15th, the core ideas were visible. The remaining 200 revisions were just sculpting, and polishing.

So, to sum up what you should take away from this exploration of how we developed “512 Paths to the White House”, some thoughts on how we make graphics. Build something real as soon as possible. Get honest feedback. Sometimes, you need to throw it all away, and start over from scratch, and repeat, repeat, repeat.

Homework. The first assignment is a quiz. Each lesson in the course has one, and it's designed to help you reinforce the concepts covered in the lesson. Quizzes are available on the classroom site after this video is done.

For assignment two, come up with an alternate plan for how you would make an electoral calculator for the next presidential elections. Are you satisfied with this visualization form? Is there some other form you think would be better? Are there ways you could make it less confusing, or more useful?

After you finished your assignment, post a link to it in the classroom. And then, find one of your classmates assignments, and take some time to look it over, and offer feedback. That concludes information design and visualization fundamentals. I hope you enjoyed it.

