

AVOIDING MISLEADING MAPS: ENCODING AND DECODING
2018 MIDTERM ELECTION RESULTS IN GRAPHICS

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by
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Chapter 1 Introduction

What do journalists and graphics designers have in common? To me, they are all information architects. This term was coined by architect and graphics designer Richard Saul Wurman, the founder of TED, to refer to those building “information structures that allow others to understand” (Wurman, 1997, p.15). Journalists and graphic designers layer building blocks of information with factual reporting and graphic design to display data patterns. Information architects often need to understand the information first, in order to have an effective conversation with readers to facilitate insights and wisdom.

I very much enjoy both processes of learning and communicating what I have learned to the greater audience and aspire to learn the craft of being an information architect. I started out my journalism path in radio at the Communication University of China, and tried my hands with different media at the Missouri School of Journalism, before I started to devote most of my time and effort in data journalism in my second year. I kept learning more about how information is organized in class at school and online, through self-teaching and from the data journalists’ community that I found through the National Institute for Computer-Assisted Reporting. I spent a semester working as a research assistant in the NICAR data library writing code to import, parse and clean data. I felt exhilarated when I was able to solve problems and find patterns with data.

On the audience-facing front-end of data journalism, I have designed several static graphics for my convergence reporting class and understood the amount of effort that went into editing, with rounds of iteration of graphics and rewriting of captions time after

time. Elections give journalists a myriad of data to work with, and many design graphics to convey election results. I care about how people react to certain election graphics and draw insights from these forms of visualization.

My research employs the method of semi-structured interviews to address two research questions: How do journalists represent electoral vote results with maps and other forms of visualization? How do journalists take into account readers' reception of graphics to inform their design of election results visualizations? Often election graphics need to portray the overall control of power and give readers some ways to find out about a certain district. However, the mismatch between population and area often means that journalists make a compromise between geographical fidelity and the weight of votes, though exceptions exist. Since no graphic checks all the boxes of all the information without conflict, a combination of graphics can help avoid misleading or overwhelming readers. In the future, journalists can tap into user testing to inform their design for election graphics and familiarize readers with newer forms of visualization by exposing them to the audience. More findings are detailed in the analysis section.

My digital fellowship through the Donald W. Reynolds Journalism Institute in Washington, D.C. placed me on PolitiFact's national team. I explored storytelling with data, making graphics for some data stories, and built a newsroom tool to automate fact-checking. I brushed up my writing, and developed a style for fact-checks. The work at PolitiFact also instills in me a sense of accomplishment that I am holding the powerful accountable and maintaining journalism's role as the fourth estate, the independent voice in an opinionated and polarizing environment.

Chapter 2 Literature Review

Several different disciplines, including mass communication, cognitive psychology and cartography can help us understand how journalists design maps and how readers use maps. In the context of editorial decision about visualization of election results, three branches of literature are relevant to this study: Maps and cartography, interactive graphics, and elections reporting.

Studies of Maps and Cartography

Maps have been an integral part of U.S. news reporting for centuries (Monmonier, 1989), and there has been a “rise in the number of maps in the popular media” in recent decades (Churchill, 2006, p.55). Monmonier (1989) regards maps as an effective means of showing geographical relationships.

Studies related to cartography are often conducted by traditional cartographers who sometimes overlook the maps in the news as they describe the nature of news maps as “popular cartography” or “graphic cartography” (Green, 2000, p.141), suggesting that such maps mainly serve to attract readers, being “often interesting, innovative, unique and geographically attractive examples of cartography”, and not always “accurate”. The ground-breaking work in journalistic cartography, *Maps with the News*, was written by a cartographer (Monmoiner, 1989). The cartographic researchers are typically more concerned with the typology of maps (Allen & Queen, 2015). Journalists, on the other hand, have mainly shown how news maps were produced (Herzog, 2003).

Despite a trend of map-design toward more readability, it is questionable whether the maps are being read (Britten, 2004). In the study examining how readers read maps in news publications, Britten (2004) categorized maps as “locator” maps, which show

geographical locations; and other statistical data maps, which highlight political or demographic boundaries. Britten's (2004) research studied the audience readings of locator maps only in the news. Essentially, the subjects in Britten's (2004) study only contain a certain type (locator map) of printed maps, but does not take into consideration other printed data maps, nor interactive maps, which is a more complex form of data map with interactive features. Data maps, the other category of common news maps, are useful for presenting the visual connection between areas and the certain geographic attributes (Bogost, Ferrari & Schweizer, 2012).

With the spread of digital devices and the rise of the internet, interactive news maps become more popular in many forms of media (Wallace, 2016). Wallace (2016) conducted interviews with cartographic journalists and concluded that "there are very few examples of stories that absolutely require the implementation of interactivity." two outstanding examples are maps reliant on personalization or localization, as is often the case made for using interactive infographics (Bogost et al., 2012).

In the context of election reporting, this raises the question of how interactive maps are used for readers to localize election results. One prominent such example is what *The New York Times* produced, a detailed map published two years after the 2016 presidential election, in which votes are captured in the choropleth map "at a much finer unit of geography — in precincts" (Bloch et. al, 2018), in line with how actual votes are cast. Days before the 2016 presidential election, *The New York Times* also published a detailed map showing ZIP-Code-level votes in the 2012 presidential election. Such maps reflect that journalists are invested in making maps to display fine details for election results.

Yet the fine detailed maps are only made possible with an extra amount of work requesting data from local governments.

Central to map making and map reading is the concept of literacy, which emphasizes the “effectiveness and impact of its agreed upon (or obvious) meaning as well as its contested (or nuanced) connotations” (Allen and Queen, 2015) Allen and Queen (2015) see map making as a cognitive and reflective encoding process for map designers, and regard the reading of the maps a decoding process of translating the abstract relationship. Harley proposed that “maps are text in the same senses that other nonverbal sign systems —paintings, prints, theater, films, television, music —are text” (Harley, 2002, p. 36). The idea of seeing maps as texts makes it reasonable to subject audience reception of maps to the examination of reception theory.

Although cartograms have enjoyed a burst of popularity in recent years in journalism, maps have been around for thousands of years and such tradition of making maps could be barely changed (Gamio, 2016). The *Times* editors said the design is largely driven by data (2018). Parlapiano of *The New York Times* (2016) noted the advantages and pitfalls of such forms of visualization: a shaded choropleth is common, but falls short of displaying who wins the election because each state’s weight in Electoral College votes varies.

Besides a choropleth map, other map forms exist, with different symbology used on a boundary map. Such special maps include maps overlaid with arrows to show the shifts in political inclination, bubbles whose sizes correspond to population and shades of color to show vote density and vote share.

Studies of Graphics and Interactivity

Previous studies involving map production suggest that the maps are usually regarded as part of graphics, and are created by graphics teams in the newsroom (Britten, 2004; Dick, 2014; Wu, 2016). The graphics teams are sometimes also responsible for making interactive infographics, including maps. News practitioners see interactive infographics as digital products that “facilitate explanation through interaction” (Dick, 2014), and they are used to aid cognition for the audience (Card, Mackinglay & Scheiderman, 1999). In this sense, interactive maps can be categorized as a visual aid with interactive features. The U.S. news organizations publish some of the most sophisticated and viewed interactive visual images (Usher, 2009).

The comprehension of graphics is closely related to graphical literacy, and scholars have applied cognitive models of graphics comprehension to study how to develop graphical literacy (Canham & Hegarty). Scholars have understood the “understanding digitized visual information is difficult” (Deuze, 2004, p. 147). Canham and Hegarty (2010) noted that for simple graphical display, the audience may attend to all the information, but not for complex graphics. For the audience interpretation of complex maps, it is suggested that two factors help to improve the audience’s comprehension: knowledge in task-related instruction and effective display design. Thus, minimal instruction is one possible approach to increase the audience attention and comprehension.

Graphics editors at *The New York Times* explained (2018) that they consider election maps as interactive “because you hover over the maps to see more information”. Moreover, the editors (2018) also noted that they design with readers in mind, “Whenever possible, we’ve tried to pare away interactions that readers may not

understand by just looking at a map. Simplicity is one of our guiding principles.” For example, in the aforementioned “An Extremely Detailed Map of the 2016 Election”, readers can key in a ZIP Code and hover around surrounding areas to explore how their neighborhoods and communities voted on a census block level.

Election Coverage in Journalism

Situated at the nexus of American politics, voting and elections is valued as the bedrock of democracy and receives significant coverage from news organizations. Former graphics editor Lazaro Gamio (2016) at *The Washington Post* wrote, “Nov. 8 is the Super Bowl for election maps, when red-and-blue geographical representations of the United States fill the front pages of news websites by night and are stamped into newspapers the next morning.” Notably, the shaded area map by state became a popular choice for mapping election results because the “winner takes all” Electoral College system in the United States counts votes by states (Ondrejka, 2016). Researchers (Gamio 2016, Newman 2012) have proposed to substitute the two-way color scheme with a gradient to show the margin of victory. Coloring the state blue or red gives the impression that voters in the same state, county or precinct voted uniformly.

Data visualization professionals have written about the characteristics of choropleth maps in portraying regional data (Rost, 2018). For example, different levels of detail result in different patterns. With a higher level of details, more outliers could be shown. However, Rost (2018) also noted that the U.S. presidential elections is an exception because “a state map is more informative in the winner-takes-it-all-system.” However, even at the same level of detail or unit (sometimes called granularity), Rost (2018) points

out the nuance in the maps is effected by different encodings of data. Rost made three maps showing the election district ("Wahlbezirke") in Berlin colored by votes of two parties, but the three maps were colored by different data — vote share, percentage difference and ratio of votes.

Rost argued that just using vote shares, the absolute number of votes, will increase the apparent political divisions, because a lead with one vote will result in the flip of color; percentage difference of votes between two parties will be of greater contrast than that of ratio of vote percentage. Rost's choice of encoding was the ratio of vote percentage. Rost (2018) chose the ratio map because it "tries to take both into account the difference and the absolute values."

Although there is a consensus that no one map or graphic fits all needs for election results mapping (Schleuss 2018; Field 2018; Parlapiano 2016), reporters and graphics designers do not always agree on the best practices of presenting choropleth showing finer-detail votes. For instance, the aforementioned precinct-level "An Extremely Detailed Map of the 2016 Election" (Bloch et al., 2018) draws criticism from reporters like Schleuss at *The Los Angeles Times*. Schleuss comments (2018) on Twitter that "But I think @nytimes did a disservice by not factoring in voter density" and "areas with very few people LOOK LIKE THEY ARE VERY IMPORTANT BECAUSE THEY ARE A DARK RED OR BLUE" [all caps in original]. It remains to be seen how readers react to deeper colors and whether they will associate them (and often less populated areas) with greater importance.

Wallace (2016), a *New York Times* graphics editor, also took a look at map designs, especially what information was displayed for election results maps. According

to Wallace (2016), cartograms have been used to show election results at least as long ago as the 1890s.

A 2017 study (Alieva, 2017) examined different forms of data visualization in *The New York Times* and *The Washington Post* before and after the election. The results show that both newsrooms exhibited trends towards increasing use of interactive trees and cartograms, though *The Washington Post* had more experimental forms while *The New York Times* stuck to more traditional forms of reporting.

Wallace also mentions key practices of the election results mapping in the interactive context: 1) Mobile design may simplify the maps: the mobile site doesn't show the map when it goes small enough. *The Guardian* stripped maps from its mobile version while giving the desktop version 21 maps. 2) News applications featuring higher intensity of customized data exploration have added different levels of details to the data. Wallace noted that some newsrooms including *The New York Times* and *The Los Angeles Times*, built news applications.

Chapter 3 Analysis

Online news media nowadays has the capacity to communicate election results to readers in real-time, a feature once enjoyed exclusively by their broadcast counterparts. People do not need to wait till the next day to see the results in print but can follow races closely on election night. Many news organizations provide graphical representation of election results, incorporating tables, maps and charts on their websites.

From the print age, online newsrooms have adopted the shaded area, or choropleth map to display the big picture of the country's political landscape while enabling the audience to find results for a certain state. On election night, the area of the United States became gradually colored by the winner's party in each state or district. Some interactive maps also provided context for races in each state, district and county.

Alicia Parlapiano, a *New York Times'* graphics editor, once conceptualized the two main qualities of accuracy and accessibility of election graphics (Global Editors Network, 2017). While the choropleth maps are accessible for the general audience, they often overrepresent loosely-populated districts and underrepresent many urban districts.

For this project, I interviewed nine data visualization designers and developers who've studied or produced election graphics for different newsrooms to examine their approach to optimizing accuracy and accessibility for readers. They represent a variety of news organizations, mostly with an emphasis on the online presentation of election graphics (see biographies).

I have three main findings: First, many newsrooms are increasingly compensating for the disproportionality of choropleth maps between votes and areas. Second, newsrooms design their visualizations according to their resources and target audience.

Finally, few newsrooms have formal avenues for readers' feedback but increase readers' literacy by exposing them to new forms of visualizations.

Unlike other types of web pages, an election map live results page usually needs to handle a large volume of traffic in a relatively short period of time on election night. The graphics used for analysis afterwards will usually have more variations of graphics to illustrate the trend of vote change, and especially the "shift of power" aspect of the election. On the night, however, the results page is usually dedicated to answering the specific question of "who wins where." The interviewees in this study spoke about the readers' curiosity to find out if there was a "blue wave" favoring Democrats in the U.S. House of Representatives.

Redesigning Election Graphics

Interactive features added to the election graphics usually allow a reader to click through or hover over each district. Tooltips, or pop-ups, will appear with information about candidates as well as their party affiliation, vote counts, vote share, incumbents, the progress of reporting, and the winner.

Notably, [*The New York Times*](#), [*The Washington Post*](#), [Bloomberg](#) and [Axios](#) had tabs for different views of the election results, breaking down categories of races including the House, Senate and gubernatorial races, and some still featured key races. Many offered a cartogram (an abstract form of visualization that maps the location of each geographical area according to the weight of each unit of area) and a map view, at least for the House race.

The Guardian interactive editor, Josh Holder, said it's appropriate to use a cartogram for a webpage with interactive functionality because readers are able to access more in-

depth information. In contrast, they almost “overwhelmingly will use a geographic map” in print papers because of the inability for readers to drill down to smaller units by hovering and searching.

Striking a balance between accuracy and accessibility

“Political representation is about people, and not land,” Bloomberg graphics designer Mira Rojanasakul said. The Bloomberg graphics team designed an election results page that defaults to a cartogram view of House results.

Parlapiano said a choropleth map is not wrong or inaccurate, but it sticks to the geographical representation of where voters live, so more visualizations are usually included to paint a full picture. Hurt echoed this point, saying that the choropleth alone lacks nuance.

Hurt also said that a candidate doesn't necessarily win all the delegates of a single state, for example, in Maine and Nebraska. Each candidate may share the number of delegates' votes with other candidates based on their vote shares and to color a state will fail to represent the results in the most truthful way.

Besides the disproportionality of votes and areas, Axios graphics editor, Lazaro Gamio, also pointed out that some districts are too small for readers to separate them from other districts and click through to view results properly, especially on mobile devices.

In a cartogram, each area is equal in weight. It is not only more accurate but helps to solve the problem of clustering small districts.

No newsroom whose election graphics were examined in the page displayed a choropleth only as the main visual in the 2018 midterms. Most included cartogram views and some scrapped choropleth maps altogether.

However, cartograms fall short in accessibility. In some renderings, readers can find it hard to understand what they are looking at quickly. For a cartogram, the shape of each state isn't fully retained by the graphical representation of tiles or blocks. Therefore, readers rely on an important visual encoding — geographical location of each state — to make sense of what the tiles or blocks correspond to. Looking at the cartograms, readers interested in each state's results will normally need to have some knowledge of where the state of interest is located in the country, or use labels to find each state. Holder also mentioned that building a cartogram to match the number of votes will distort the northern U.S. boundary because sparsely-populated states like Maine and Wyoming will shrink, and northeastern states will appear larger in size.

Squares (Bloomberg, *The New York Times*) and hexagons ([The Guardian](#)) are common units to form a grid to represent each state. Sometimes each state is represented by individual boxes sized to their electoral weights ([NPR, 2016](#)). Visualization designers arrange the elements on a canvas. There is no uniform way to present each state in cartograms, and the audience would need more visual cues to discern each state. Most recently, refinement of election maps revolved around increasing the legibility of each state. Usually, annotations of states abbreviations are added, and the tiles are often used to approximate the shape of the states.

For the 2018 election, Bloomberg toned down the color scheme of the cartogram and made it easier to label the states accordingly, Rojanasakul said. They also labeled the seats gained by a certain party with dots.

For the governors' races, *The Guardian's* visuals team first considered mapping governors' power according to the number of constituents but finally decided to go with a regular map layered with each hexagon for a governor's seat, so the states are easier to locate, but each visual cue and hexagon carries the same weight.

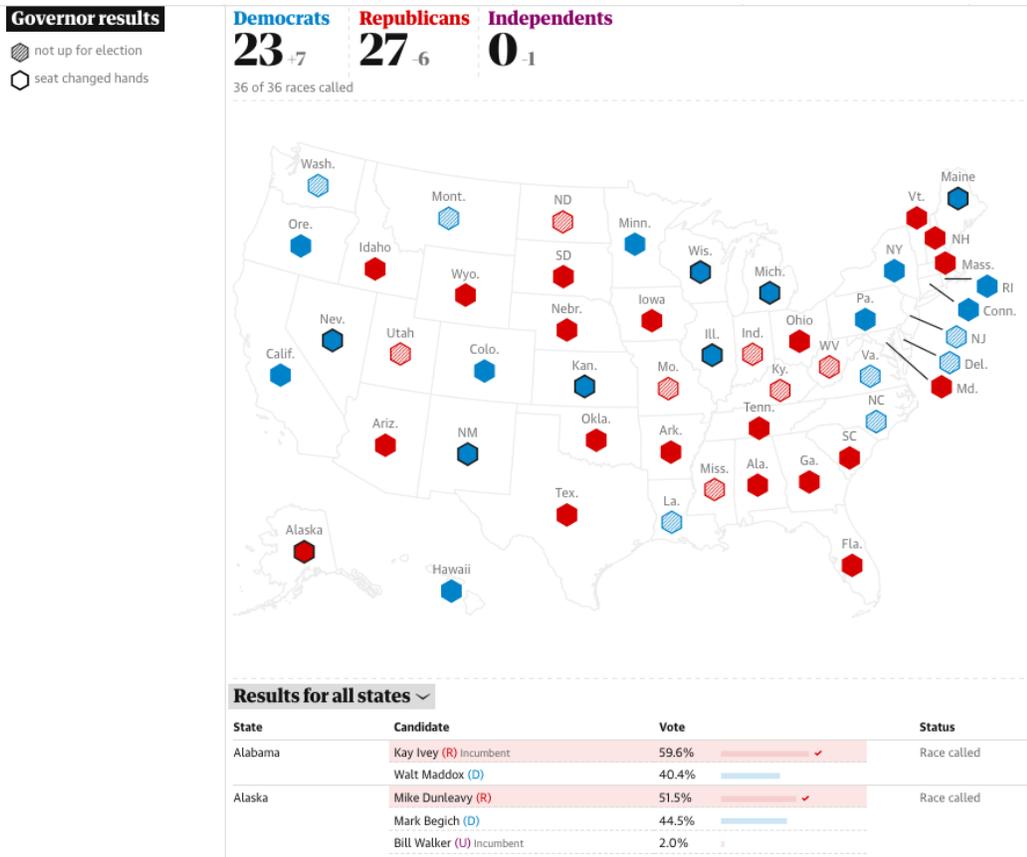


Figure 2 Governors' race in US Midterms 2018 Live Results
 In The Guardian, November 7, 2018, Retrieved April 14, 2019, from
<https://www.theguardian.com/us-news/ng-interactive/2018/nov/06/midterm-elections-2018-live-results-latest-winners-and-seats>

[FiveThirtyEight](#), though, took another approach to emphasize the populations of states and visualized gubernatorial races in a variant of a tree map (they also have a traditional choropleth below), where rectangles representing each state were sized to match its relative population.

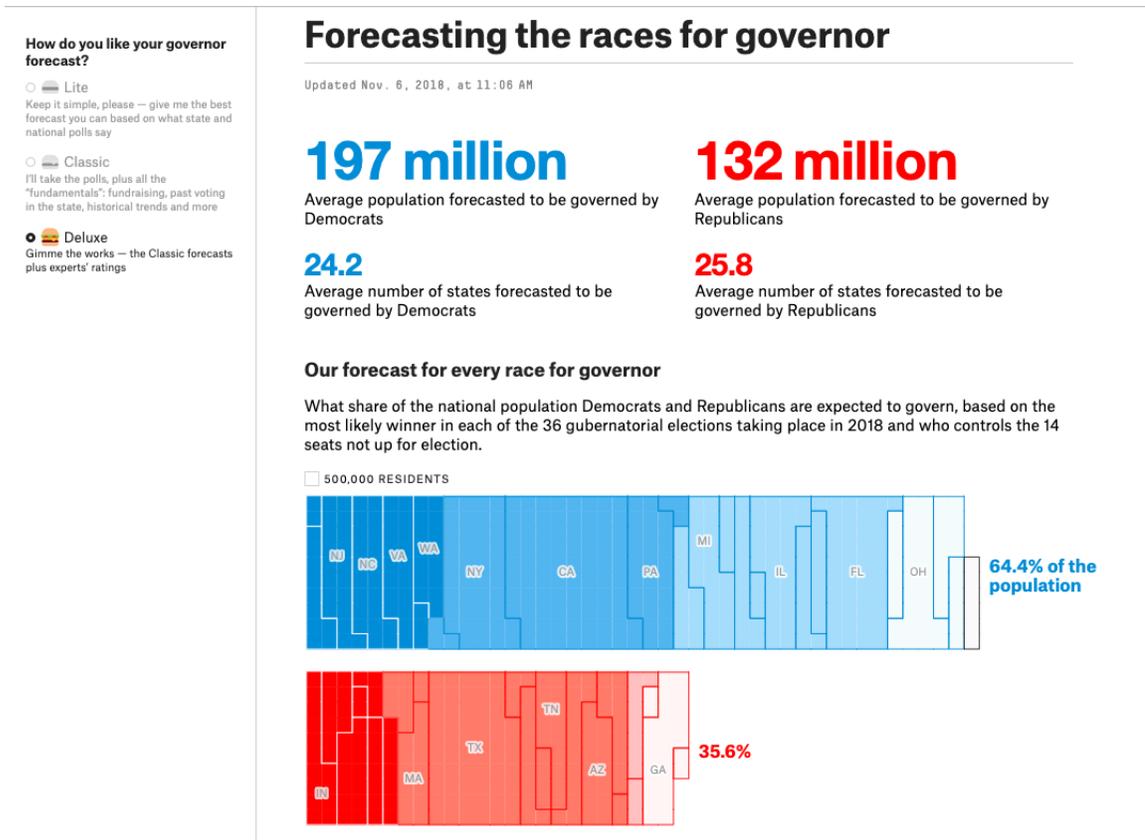


Figure 3. Top chart in *Forecasting the races for governor* In *FiveThirtyEight*, November 6, 2018, Retrieved April 14, 2019, from <https://projects.fivethirtyeight.com/2018-midterm-election-forecast/governor/#deluxe>

Interestingly, while Bloomberg and Axios had a map view and cartogram view for all three races, *The New York Times* and *The Washington Post* only had a cartogram view for the House race, emphasizing the comparison of total House seats held by both parties but leaving geographical areas as is for other races. Reuters embraced a different approach: they used a grid map for the [Senate](#) and [governor](#) races where the number of seats are fixed, emphasizing the equal weight of senators and governors but falling back on a map view for the [House race](#), making it easier for readers to find a specific House district on a map.

Revising the choropleth

For the choropleth maps in the 2018 election results coverage examined in this study, many news organizations made modifications to the traditional state-by-state choropleth maps they produced. Many defaulted to the House view in which the choropleth is broken down into districts. No newsroom examined in this study used shades of red or blue to represent a party's level of dominance, measured by vote share in each district or state, which was commonly seen in the 2016 presidential coverage, especially in county view. For live coverage on election night, though, some used color opacity to show the progress of reporting, with darker red or blue representing more complete vote counts, and lighter colors representing relatively small portions of reported votes. Many do have county-level results view through zoom. Quite a few newsrooms also added borders or dashed lines to represent flipping seats.

In a winner-takes-all system, designer Lisa Charlotte Rost points out that both choropleths and cartograms only tell the story of the winning party and do not capture popular votes. Rost, a German native, suggested having graphics portraying the share of [popular votes](#) alongside maps or cartograms, so that journalists do not reinforce the stereotype that people vote for a certain party if they are from a certain state.

To convey the nuances of each state, an option is to map results by county level. Nonetheless, a more detailed map is likely to even give Republicans more weight because of the strong lead in large rural areas. Parlapiano said it also makes it more difficult for people to add up the votes and see the statewide winner and results.

It doesn't have to be interactive

Some newsrooms, including *The Wall Street Journal* and NPR, scaled back from their visualizations of a national map in 2018 and published a big board of all races. Hurt

said these table presentations still conveyed the key information throughout the night for people to see how toss-up states are colored.

Smaller graphics teams show a tendency to use static graphics with simple circles representing seats and bar charts to show vote counts and avoid maps to represent the results in a straightforward way. [Vox](#) made a semi-circle chart representing the House chamber colored by each representative's party affiliation. [BuzzFeed](#) designer Zachary Ares said that their graphic was to imitate "magnets on whiteboard" with stacked circles colored differently.

Although BuzzFeed News and Vox built graphics to represent the House seats populated with real election data in the back end, neither of the graphics was interactive. Developer Ryan Mark at Vox said interactive design for mobile devices usually requires a fundamental redesign of the desktop experience, so he finds himself dropping interactivity in a crunch.

Customizing design for a specific audience

Another finding from this research is that newsrooms usually tailor their approach to designing election graphics for their specific audience. Smaller newsrooms usually don't reinvent the wheel by duplicating what the national newsrooms are doing but invest in producing their niche graphics products. Vox for example, incorporated analysis and explanation of the race in the election graphics page. Mark said he considered maps to be overused since the encoding of shapes of states doesn't really give readers much new information while taking up a considerable portion of screen space, and that the core audience of Vox will mostly care about the direction into which the 2018 midterms will lead the country.

[FiveThirtyEight](#) prioritized its forecast generated by modeling and led their forecast with a histogram showing a 7 in 8 probability of the Democrats winning the House. Aaron Bycoffe said that they considered the overall trend to be the primary focus of the graphic, and readers can click through the cartogram to view states' forecasts. They also eliminated the fields of key states they highlighted in [2016](#) but streamlined state coverage in the click-through view.

The Guardian's Josh Holder said that while the 2016 presidential election graphics were created by the U.S. team for a U.S. audience, the 2018 Midterms results graphics page was completed by the U.K. team and sought to face an audience from around the globe who would care more about the overall trend instead of their own districts.

One map doesn't answer all the questions

Rost said that a mix of different forms of visualization helps to portray different facets of information in elections.

Unlike most other news organizations I interviewed for this project, *The Guardian* had different views for House, Senate and governors' races results. For the House results, they used hexagons, which they also used for Brexit, and other voting events to approximate the shapes of each state. They left white spaces between state boundaries. Holder said they considered using a cartogram, but found that going that route added too many complexities for the readers to unpack.

The Guardian also did not use a cartogram throughout the page. They led with the chart representing battlegrounds seats in Congress.

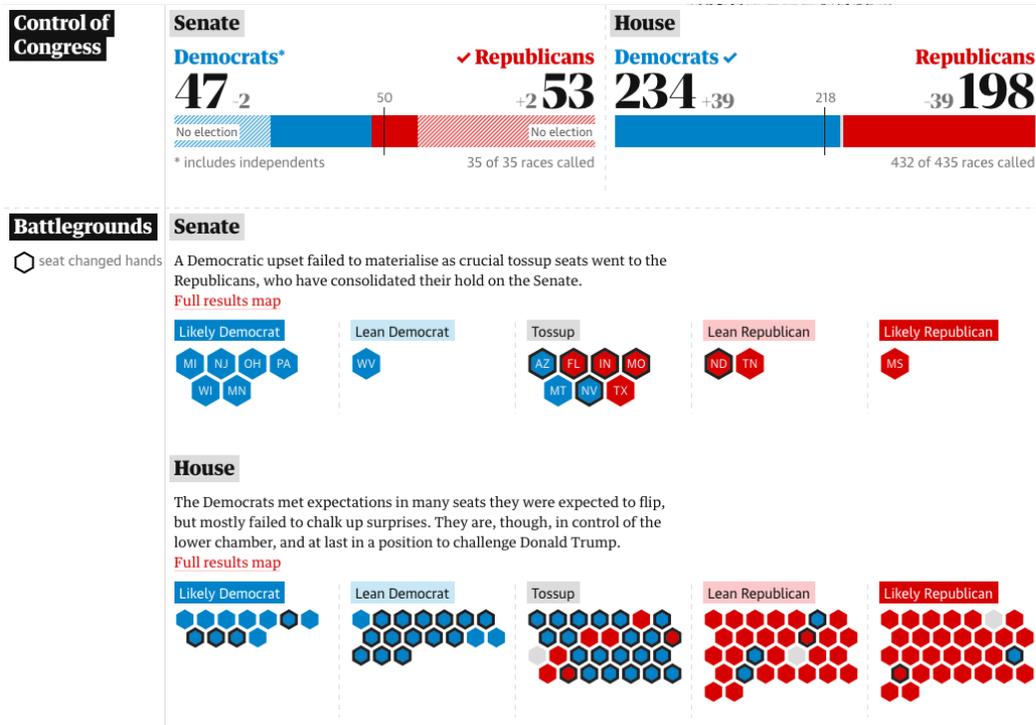


Figure 4 Top chart in US Midterms 2018 Live Results
 In The Guardian, November 7, 2018, Retrieved April 14, 2019, from
<https://www.theguardian.com/us-news/ng-interactive/2018/nov/06/midterm-elections-2018-live-results-latest-winners-and-seats>

For election night results, Holder pointed out that because Northeastern states results are called first, and that the states mostly turn blue, it might mislead the readers to believe that Democrats are gaining sweeping grounds at the beginning of the election night. As a result, the team pinned the battlegrounds chart at the top. Holder said that the 2018 election results were built by the U.K. team to focus on a global user experience for readers around the world to come in and quickly tell the winners.

FiveThirtyEight showcased a histogram of the probability of the Democrats controlling the House. The website also displayed many trend line charts and probability graphs that demonstrated results from its statistical analysis. On election night, they utilized live forecasts to predict winners of each district and compared the actual results

of each seat to the likelihood of winning predicted by the website in a waffle chart. These key races show an emphasis on the polling.

Different designs for different mediums

Graphics for one particular medium often requires redesign for another because of different screen/page size, and aspect ratios. Legacy newsrooms like *The New York Times* and *The Guardian* preferred choropleth maps on paper for the second day's print edition. Alicia Parlapiano mentioned in a [talk](#) previously with Seoul Editors Lab (Global Editors Network, 2017) that with more space on the spread, print graphics prevail in displaying more detailed view and juxtapose different graphics because of a larger page size.

BuzzFeed's website did not display a cartogram, or a map for their Midterms live results web page. Zachary Ares, BuzzFeed graphics designer said they focused more on the mobile experience and prioritized the speed of displaying results for the live show that BuzzFeed streamed. They produced shaded area county maps for their show Election Night Live and prioritized reporting on certain key races in states like Florida and Georgia. Ares said that with a county-by-county view to see which countries' results were in, the audience would be better informed of each candidate's chances of winning considering votes in what counties had already been counted.

Despite the difference between graphics used in different mediums, certain elements of design can be retained. For example, BuzzFeed [election night show](#) hosts colored the “magnets” accordingly when election nights came in, updating results with the website graphic concurrently. *The Guardian* reused some graphics built by the JavaScript library D3 on the web for its print edition.

Readers' Perceptions

Parlapiano said that *The New York Times* produced a cartogram after Twitter users requested one. Editors expected the viewers of the cartogram to already have a good understanding of the cartograms, an indication of a relatively high level of graphic literacy.

Nowadays, as readers are increasingly consuming results on a mobile device, they are spending less time diving in and interacting with election graphics but quickly scrolling.

Holder said that although *The Guardian* election graphics were general-facing, analytics showed that 15% to 20% of readers clicked to expand the results tables, demonstrating readers' interests in more details of the election.

Instructions are rare

Newsrooms sometimes give readers instructions about what interaction with each navigation tab will entail. For example, the editors at Axios noted on the webpage that “The ‘cartogram’ view makes it easier to compare areas of different size but equal electoral importance.” FiveThirtyEight also had three different views from basic to deep analysis for readers of different levels of curiosity.

In terms of interacting, most news organizations in this study offered different views to click through, except *The Washington Post* offered explicit instructions about gestures of interaction, for example, hover and click to expand.

Bycoffe of FiveThirtyEight said that the now-cast tab under the 2016 election that predicted results if the election had been held that day was confusing for some readers, and they eliminated that view in the 2018 coverage.

Holder said the design of election graphics went through iterations and user testing in the newsroom, including tech-savvy and less tech-savvy people, and asked what they read from the screen and the time it took for them to draw insights from different forms of visualization.

Parlapiano said that the designers tried to get away with not giving many instructions on the page but focused on intuitive design. Moreover, data visualization designers often encode redundant information in different forms of visualizations. If readers want more state level or more granular view of election results, they can access the information from the tables, or in the tooltips, or with a search box that sometimes redirect them to a different page.

Most interviewees said that their newsrooms could do more user testing, but few actually did. *The New York Times*, in particular, created the cartogram to cater to readers' comments on Twitter that requested the paper to make a cartogram.

Future of election graphics

Rost characterized the production of a new form of graphic as a compromise between how much the users get out of a different design and how much more complicated it is to read the graphic.

The study found that although information designers have different approaches to the primary visual for the midterm election results, they agree that cramming all the information in one graphic will likely fail to capture certain nuances in the political landscape due to area-population disproportionality. It can also be overwhelming to present all the information for average readers whose graphic literacy are usually not on par with designers themselves.

Different forms of visualization have their own merits and shortcomings. For example, choropleth maps are good at making geographical boundaries stand out, while cartograms do better at portraying electoral votes. Retaining geographical boundaries while encoding electoral weights normally require a meshing of two types of graphics, a geographical base layer map, and a graphical layer portraying sizes of electoral votes of each state. For each form of visualization, design choices about color scheme, shapes, white spaces, text labels and tooltips can affect the effectiveness of graphics, and there is always room for improvement.

Many newsrooms made modifications to the plain choropleth maps and cartograms in the 2018 election coverage, to emphasize individual U.S. House seats. Sometimes, just because a map or cartogram shows geographical trends, it does not mean they are indispensable, and journalists can communicate their most important messages to readers in other forms and utilize their resources to prioritize their special coverage.

Besides graphics themselves, page layout and text elements can also affect understanding. Leading a results page with a certain type of visualization to show the balance of power is recommended to establish the direction after the election.

What comes next for 2020 and beyond? As of this writing, many newsrooms have already been planning the coverage for the next year of a presidential election. Holder said that every election is different with different stories, and the key features in the graphics will likely need to keep pace with the elections. The primary graphics of 2020 will likely be the presidential election results. Newsrooms will likely find themselves carefully crafting graphics that seek to paint a more nuanced picture of geographically diverse, and arguably more polarizing America.

Now that cartograms have become more prevalent, especially after 2018, and could remedy the area-population disproportionality, will we see more of them in the coming election? Some would say that the wide use of cartograms for House results in 2018 can be attributed to the fact that every unit or tile can be used to represent individual seats, but the cartogram view may not fit the presidential election well for the latter's emphasis on the state-level results. However, some do not see it as a problem to continue using more cartograms for presidential years, saying that electoral college system lends itself nicely to the representation of cartograms, which can accurately portray the overall votes gained by each presidential candidate.

Parlapiano said that *The New York Times* normally doesn't make dramatic changes to the election graphics but stays consistent in informing the readers about the most important information of the night in a straightforward way. Parlapiano said that though cartograms will likely be more prevalent, she does not see an industry trend of using more cartograms because the accessibility of these cartograms will be likely restrained.

Gamio, on the other hand, sees it as a positive trend for newsrooms to transition to cartograms as graphic designers continue to educate readers and familiarize them with new forms of visualization. Gamio also said that ultimately visualization designers can divorce the votes from geography and don't have to use maps as the primary visualization at all. Localized election results could be delivered and accessed with search tools.

Whatever the chosen form of visualization, instructions, and text labels should be aids to demonstrate the methods of encoding, such as what cartograms are designed for, and help inform readers how to decode the information by instructing them how to use the visuals. They should also consider design conventions in the past, to avoid giving

readers false impressions. For example, sometimes opacity indicates vote ratio, and sometimes it represents population density, and sometimes shows progress of voting on election night. Therefore, journalists should be clear about the encodings.

The author of this analysis suggests including a combination of different graphics and different views of the graphics. Such combination of graphics is not only a compromise for audience of different preferences and graphic literacy, but an effort to represent the results more fully. Readers can also cross-reference different views to avoid drawing incorrect conclusions from a single graphic. Holder said that editors at *The Guardian* are interested in building other forms of visualization alongside a choropleth for upcoming elections, especially in print. Ares also said they will continue to explore innovative ways of presenting data and design with a visual hierarchy to inform people of the important information of the night.

Finally, user testing and the use of analytics is recommended. Analytics can inform journalists about what the readers would need to know. Although each election is different, results from user testing can help inform journalists of the principles of design and how innovative graphics perform. The communication between readers and journalists are dynamic, journalists may take the opportunity of covering elections in graphics to facilitate greater understanding\ of not only old and new forms of graphics, but also what the graphics portray and why.

Biographies

Zachary Ares is a graphics artist at BuzzFeed on the news graphics and motion graphics department. He has been with Buzzfeed since 2017 with a primary focus on

election live shows. Ares has a Master of Fine Arts in visual narration from the School of Visual Arts.

Aaron Bycoffe is a computational journalist at FiveThirtyEight. He was first involved in making graphics in 2008 for *The Virginian Pilot*, helped built the election results pages for 2012 and 2014 elections for The Huffington Post, and worked on the 2016 presidential election and 2018 midterm election, ensuring the functionality of back-end data structure and web performance.

Lazaro Gamio is a graphics editor at Axios. He has a decade of experience with graphics. He was involved in analysis graphics at *The Washington Post* for the 2016 election. Gamio came to Axios and ran the team of interactive journalists to work on the 2018 election results page.

Josh Holder started at *The Guardian* as a software engineer and later as a project editor on the Visuals team, which include developers and graphic artists. Holder mostly works on long-term projects, including multiple election and referendum results trackers.

Alyson Hurt is the graphics editor of NPR Visuals team. She has been involved in making things on the web since college. Hurt started her election coverage in 2010 at NPR and is mainly responsible for laying out the main visuals of election nights.

Ryan Mark is a data editor and engineer at Vox.com and was responsible for the back end of the 2018 election graphics. Previously, he worked as a developer at the Chicago Tribune for about five years. He's been a programmer in journalism for about 10 years and has a MA in journalism from Northwestern University.

Alicia Parlapiano is a graphics editor at *The New York Times*. She is based at *The Times'* Washington D.C. Bureau, designing for print and online. She contributed to the

analytical graphics of election results in 2016, and written about election maps for *The Times*.

Mira Rojanasakul is a UI and information designer at Bloomberg. She has made dozens of visualizations for politics, many of them being maps in different forms. Rojanaasakul holds an MFA in communications design from Pratt Institute. Rojanaasakul participated in the design of Bloomberg's 2018 Midterm Elections results, which foregrounds the cartogram and gives the readers an option of viewing the map for the House, Senate and Governor races respectively.

Lisa Charlotte Rost is a data visualization designer at DataWrapper, a charting tool company based in Berlin, Germany. She writes the Weekly Chart blog and helps users understand graphic design principles and applications. Rost was a Mozilla Open News fellow at the NPR Visuals team in 2016, where she worked on some graphics during the 2016 election cycle.

Appendix A Transcripts

Interview with Josh Holder, *The Guardian*¹

Yanqi Xu

Why don't you tell me a little bit about yourself, like how long you've been making like graphics, and what's your main job responsibilities?

Josh Holder

I'm a visual projects editor on the Guardian Visuals team. I've been at The Guardian there for five years. But not all of that, as I said... I spent my first twelve month at The Guardian, as a software engineer, so I was building platform on theguardian.com, and apply kind of transition toward the interactive side of things from Digital development team and the newly born Guardian visuals team.

I joined initially as a developer, since then I've been project editor, but mostly I work on the kind of people longer-term projects. So things like live election trackers, anything that takes more than a week, I would say, fit into the project side at The Guardian we roughly put into kind of reactive data graphics. And that's a bunch of us on the graphic artists to create graphics for the paper, and for the web. And then you got kind of like much more multi-disciplined side of the people who are designers and developers and backgrounds, and people who are more on the data side, and we will work on the kind of long term project.

Yanqi Xu

Did you happen to work on the 2016 election maps?

Josh Holder

Which election map?

Yanqi Xu

The 2016 US election?

Josh Holder

I was kind of added to the US elections live tracker. And then I also made most of the master be what we call the analysis piece the day after. So the choropleth that you saw and the kind of arrow map that you can also see, it must be.

So it was quite an interesting workflow of how we built the election tracker. So

Yanqi Xu

You can feel free to just walk me through it and also differences between or different strategies to designing election maps for 2016 and 2018 elections?

Josh Holder

The 2016 live page was made by the US team and the 2018 election page was built by the UK team. So there are some differences in style...the way I different offices work.

And that team no longer exists, so it's all for the UK team to build the US election stuff.

But I'm gonna have to talk through the differences between the 2016 election tracker. They just went predominantly, for a choropleth. Is that the main thing you want to talk about it, the difference between a choropleth?

Yanqi Xu

Yes, for sure. That's, that's something that I noticed. And then because my project is looking at you know, how people read these maps.

Josh Holder

I think fundamentally, the big difference in approach between these two projects was the 2016 Election Results page was being built in the US, or what they considered a predominantly US audience. And then when we approached the midterm elections, which of Trump is president, but it's more like global interest with where things are going, we wanted to make something that was very approachable to a wider worldwide audience, who might not understand the kind of interest groups and the difference between the Senate and the House. And that was kind of like, guiding factor there that we really wanted to give them a cartogram. And let people understood that one hexagon on the cartogram was kind of one seat in the Senate, or one Congressman or woman. When we use choropleth generally at The Guardian, it is all about and kind of prioritizing geographic accuracy, and letting people quickly find a certain county or state on a map without them having to hover a or interact with the map anyway. But we didn't find that as important for a global, worldwide election tracker.

Yanqi Xu

And so would you say that the main form of visualization was just Karpplus in the 2016 election, but for the purpose of general understanding of the map, and transitioned to a cartogram for the 2018 election results as the main form.

Josh Holder

The 2016 election page was very much built to be a second screen experience.

They wanted to build the page, which is to leave open the laptop alongside the traditional cable news channels that people would generally be watching an election. And so the whole page is structured very differently. And they wanted to really focus on geography much more, for that US election tracker,

So it is a very different way of thinking about the page. We did much for explaining with the page about which seats were important to watch. And with the kind of like battleground seat at the top. So it was much more geared towards a typical reader who is to figure out what happened on election night.

Yanqi Xu

How did you come up with three different designs for the Senate, House and Governors' races?

Josh Holder

We literally spent many hours going back and forth with different mockups in different kinds of charts. And we would share it with different people in the newsroom, people who would take the savvy some people who weren't, and then ask them questions about what they were seeing, and what kinds of results they were interpreting from that. We did have a version of the Senate cartogram, without geographic layer beneath it. That was much more squished and had much bigger hexagons. And people were really struggling to understand which state was which. It kind of lost a lot of flexibility. People need to spend more time with it. And so the kind of icons that you see on the live tracker now is basically just the one that people found the most readable. And we did try many different ones.

Yeah, generally, if we're going to have some kind of interactive on the page, such as a search box, or two, we think it's appropriate to use a consequence, because people looking for a specific state, or a specific seat can find that information through the tooltip or the search box.

And when we often do maps for the print paper, we almost overwhelmingly will use a geographic map. That's because you lose that ability to drill down through hovering what they searching by a specific thing. And so in that case, we will always be there for a geographic map. And I will usually pair that with some kind of bar, just like a typical bar chart of Democrats versus Republicans. overall picture of who won the race.

Really, when you get into any kind of geographic representation, it's about showing individual results, individual geographies. So I think that's really what we prioritize and the contrast between them.

Yanqi Xu

how you modify the traditional form of choropleth maps, like having hexagons and separating the borders?

Josh Holder

We approach it completely fresh. None of us worked on the 2016 US election page. We couldn't use any code or any design from that page

But I would say that we made a very early decision that we weren't going to include county-level results on the US Senate map. And so we only wanted to show kind of final results that meant to read it. And so we didn't, for instance, let people zoom in on the Nevada map and look at an individual voting pattern, like Churchill county. we decided that We really just wanted to convey kind of top-level results

And I think that's because unless you're from a very specific county, in Nevada, you don't actually get much from the added level of detail. So we kind of prioritized our time and effort to best overall representation of what's happened that night.

Our guiding practice was much more about trying to explain to people whether the Democrats were having a good night, fundamentally, what's been the kind of blue wave that was being talked about in the media before the election, rather than really exposing very more level of changes, or anything like that. So I think that's whour fundamentals, thinking behind the scene between 2016 and 2018. We didn't feel the need to expose that low-level results.

Yanqi Xu

Yeah, that's, that's super interesting. From version one to the final product. Can you tell me some alternative forms of election results display? What works? What doesn't work?

Josh Holder

I think one of the maps went through the most iterations with the most debate internally, it's because of the math on this page.

So what it is right to the bottom of the page, but if you really think about it, there is an argument that the governor race could have been a choropleth. So the might only be one go over to the States, but really that each governor has the control over that entire state.

But there's also an argument that the governor's power is proportional to the population.

So one of the things we experiment with early on with this kind of population-weighted hexagons. So states with a large population had a larger hexagon, like multiple small, hexagons. So that's something that we try, but fundamentally, just added a lot of complexities to the map and didn't actually help with that top-level understanding of who's winning in New Mexico, what state flipped from the Republicans to Democrats,

But we, we kind of constantly stripped back thing, which would really benefit in that top-level overview. That was one thing, we try it on there. So we went initially from a choropleth to the one hexagon per state. And then we went and tried a few different things for population-weighted cartograms. And then we came back to the simple one-hexagon-per-state...

We went back and forth on it after showing it to a couple of people in the newsroom and, you know, people outside of newsrooms as well. And that's that was one I think, actually, the House map is probably the most controversial choice. People, aren't particularly used to seeing cartograms with so much white space between hexagons, or between the states. And so again, we kind of settled early on the idea of hexagons on cartograms, which is something we've done for UK general election, the UK EU referendum a couple of years ago and it's become established design pattern for elections.

Yanqi Xu

Does it perform better or?

Josh Holder

Well, really it's about give your cartogram flexibility. you have a little bit more precision, when you can choose your geographical shapes. And when you go to a blocky, I don't recognize, probably a design decision, but it will help with the geographic accuracy of a cartogram.

Josh Holder

Well, really it's about give your cartogram flexibility. you have a little bit more precision, when you can choose your geographical shapes. And when you go to a blocky, I don't recognize, probably a design decision, but it will help with the geographic accuracy of a cartogram.

Yanqi Xu

Okay, yeah. Sorry, for interrupting. Yeah, you were talking about? Yeah, you were talking about, I'm kind of trying to have a more precise representation of a size. Yeah, that's the

Josh Holder

The very north of the US get completely distorted if you try and collapse all of that all of the hexagons and all of the state boundaries, places like Wyoming, South Dakota are loosely populated, and so those areas completely collapse.

I think we saw a few cartograms that are the US newsrooms did in the US elections, but so we, we saw those before actually designing and decided that we would preserve...

we want to preserve the shape of the US as much as possible. But we still wanted it to have a rough outline of the US. And that's how we ended up going with this approach, which separates the states and adds white space between them. I think that works really well, actually. I think, yeah, you instinctively know that. You know, you're looking at the North, you are going to find Wyoming and you are going to find Washington state.

Yanqi Xu

Did you give readers instructions and that you seek feedback from them?

Josh Holder

We do have separate results with readers. We do have a UX testing lab at The Guardian.

When we conduct this session, we will often give them different scenarios. For our UK election page, they will come to the page and scroll naturally for two to three minutes.

And then we will ask them a series of questions afterward. Like who do you think won the election, how many seats this the Labour Party get? Can you try to find the results? More?

We'll see how they use the page? What kinds of areas of the page they go to when they're trying to search? Do they see the search box quite naturally? What did they try and do a command F, for instance.

We get different results for different kinds of readers.

we didn't do it with US election, having done quite a few things before. But I still think we by showing such a wide range of people in both our US office and UK office,

I think we have people who are complete data junkies, and people who don't want to touch a spreadsheet.

Yanqi Xu

Do you want to talk a little bit about on like, instructions for the readers on the page? I really like it that you link to each map through the top of the chart.

Josh Holder

Yeah, I mean, the actual linking through the map...it's kind of a compromise, that we really want the structure of the page so that it was in descending order of the most important information at the top, that we get this control of Congress, where we just put the Senate and the House results with simple bar chart right at the top. And we really wanted to go into the battlegrounds that this was a big push for people who might not be familiar with the individual voting patterns to understand the magnitude, for instance. So they could get an idea of what's expected results, but what's different from the expected results. And then we really wanted to prioritize the battleground above the geographic map to avoid people get into kind of misleading representation of how the night was going when they were following it live.

Josh Holder

We really prioritize live results from this page. We built and designed it very specifically for the reader who would stay with us for hours on election night, or even like that. So a lot of the design decisions that we made, were to avoid a tendency early on in the night for the Democrats to look like they come and sweep the House, because results come in for the east to west across America generally. A lot of states like Delaware, New Jersey are Democrats held. So we wanted to put the battleground there very high up as early as early results came in, you got a very clear understanding of whether the expected results or they were kind of indicating a certain trend to the night.

Yanqi Xu

Did it also include forecasts as well for the election night?

Josh Holder

So we didn't do any kind of live forecasting. Similar to the dial, we let readers make their own decisions by showing them the battleground seat. So obviously, every day your case, the patient, sort of the Democrats, and flip, you know, a number of seats in the House. And it also reflects the number of seats lean Republican would give them a good indication as to the direction of travel on election night.

So early on in the night, you see quite a few gray hexagons. And we wouldn't color it in until the races called. But it's but if you did hover over that hexagon, you would get the kind of early count — We had a little sections, "with 20% of ballot counted" we did expose, these are the indicators of things as they were going on, and the available data in the table and the map, but we didn't want to confuse things like half coloring different

states. on the senate map, because we'd already got deal with seats that weren't up for election , I think that would have we have the kind of hashing.

Yanqi Xu

Did you seek any feedback from readers like, their comment for their difficulty of understanding the graphics? And also, is there anything they particularly liked, or what you may use more in the future,

Josh Holder

The best indication of how we did with the page is from the analytics that we got from the page. We had this suspicions going in that...we didn't expect many readers to choose an individual states result... and we expect the readers to spend a lot of time expanding the full table...we thought that would be very much a power user feature. But in the end, we found between 15 and 20% of readers choose and individual state results while on the page, which is much higher than we expected...I do have analytics on the number of times for people to tooltip over hexagons. But I haven't got them right now. So I can't tell you that. But I think we were pleasantly surprised by the amount that people interacted with the map.

Yanqi Xu

For election news maps done by others, do you think there are some good examples that you want to talk about, like things that work and things that don't work?

Josh Holder

Yeah, I mean, for me every map expires, in a sense. Everyone only shows one point of view, like the election results. A cartogram is really good at showing the kind of balance of power after the election. But it's very bad at showing geographic trend, whereas with a choropleth, you've got the geographic trends there, but you often overstate the influence of parties that do well in rural areas.

In print. I would personally like something not just using a choropleth but maybe that combines population density.

Interview with Mira Rojanasakul, Bloomberg

Yanqi Xu

So why don't you let me know something about yourself, like how long you've been making like graphics? And like, were you also involved in the 2016? election coverage?

Mira Rojanasakul

Sure, yeah. I've been in graphics for about five years or so and got hired on as a designer.

So at that time, the team is like, sort of started out more as a design, like focused group. Definitely data viz, but operated like a design agency. And like, you know, now we like to pitch our own graphics projects respond to needs of graphics all the time. But we still have these really big, big products. page that we prepare for a month in advance.

I wasn't really in the 2016 graphic., but yeah, definitely got pulled in a few months before the 2018. One, just to sort of plan things out. I think, like, especially around 2016 certain things would come up like, you know, Donald Trump sort of holding up the geographic map, being like, you know, look how strong my showing was. So that's why that helped inform some changes and updates that we made in midterm election graphics, which is tricky, because it's definitely more focused on the House.

Last year, the governors' races too...the House can be really difficult to map out too like, nitty gritty details little more later.

Yanqi Xu

Can you tell me a little bit about your role on the team? And how's the team organized in terms of producing this 2018? midterm graphics?

Mira Rojanasakul

Sure. The team overall in New York, DC, London and Hong Kong? I think, overall, we have around 20 or more people. So the team is, medium sized, not the biggest graphic team, definitely not the smallest either. We have four people for fully developers, like front end back end to maintain, you know, servers for us, and also help out on more complex graphics. I think like, we have some people who are like, better at design, and better programming and better reporting, are better at data. But everyone does a little bit of everything, to some degree. So yeah, we have an art directors and people who lead, you know, data efforts, standards checking and stuff like that.

With this, there's actually only like three people working on this graphic full time, we had, you know, maybe a few people help debug or something. But I think it's super exciting, because it was all women, like, people who like designed to build this. And so I was part of it design process so much earlier on, our manager pulled me aside, and I just sort of sketched out a few ideas, geographic problem was, was going to be something that we could tackle, I started working on the cartogram.

And we also sort of knew that the number of like, female candidates and minority candidates was essentially high this year and sort of had other you know, ongoing graphics research projects that we're about gathering data for that we knew we would have this data that was like pretty granular, all the candidates, I thought it would be a good opportunity to pull that in as well. About how we ended up with a filter that like, lets you, yeah, just like toggle various uses of the results for the women. Yeah, and then

Allison sort of took charge of doing a lot of the building of it, but also like, sort of he ins and outs You know, the election data. Brittany Harris was the developer. She's from the back end to help to put together a built in something called Solr, which is a JavaScript library. We had a couple meetings, big stakeholders at Bloomberg.

They cared a lot about how well this is going to perform that night. But yeah, they were pretty supportive. We got a cartogram on the homepage. I think a lot of people don't understand them.

Yanqi Xu

What would you describe as the main form of visualization for the 2016 presidential election live results?

Mira Rojanasakul

I guess it was like, zoomable choropleth. We definitely experimented with geomap as well. So experimented with, like, how do men and you know how to help people navigate all the information. I think ultimately, we kind of liked having the click through, get you into the details. So like, if you click a state that takes you to a page, and has like, a lot more detail about who's running everything in there, We moved away from like, this click-to-zoom interaction that was in the 2016 version. But I don't know like it could have gone either way. We tried a few different things.

Yanqi Xu

Right. And so then how would you describe the midterm term, election live results visualizations, and I do call it cartogram, because it seems that this is on the first. Like, this is the first thing that they saw is that if the maps like the leaders would see.

Mira Rojanasakul

For 2016?

Yanqi Xu

I am wondering what kind of adjustment news organizations made in terms of improving the performance of shaded area maps?

Mira Rojanasakul

Part of the effort was Sort of, like tone down the colors a little bit more of the other information visible. So, because these are slightly lighter, you know, you can like, actually label states, and we've added sorts of flipped seats instead of a shading.

I've always found, like, a darker shade kind of confusing to me, or not confusing for like, it doesn't necessarily convey a flipped seat. that well. I think we really thought about the hierarchy of information that like a reader would want to get from something like this on election night.

We had a couple meetings with, you know, the politics editors and writers to help refine what that might be. So the idea for the sort of net gain chart on the top right, from a politics editor, like, look like that night, all people want to know, because Senate wasn't really, you know, it's up for grabs. Like, we just want to know, if the ducks are going to win the house, and by how much and sort of wanted to watch that progress over time. The map itself is not, you know, maybe the best place or form, I guess, to sort of track that kind of information. So one thing was like, we added the timeline at the top right, to sort of help you...A lot of time went into just like, finessing the colors a little bit. Yeah, making sure they're read well, making sure they were, you know, acceptable. So colorblind friendly.

Yanqi

What problems did you find with the traditional shaded choropleth? You said that color sometimes can be confusing. Do you have any other critique?

Mira Rojanasakul

I mean, it's pretty personal. Like, I don't want to trash talk the older map because I didn't totally design it. But I think like, political representation is about people and not meant. And I think like, that was really a driver for a lot of design decisions here. So like, yeah, like, obviously, a geographic map is a lot more immediately readable and understandable to people. Like, I can find out exactly, you know, where my district is, because I didn't like how, you know, on the shape of New York, like I live right here whereas the cartogram took forever, because there's just like, no good way to lay out that kind of information, really.

And it was a tricky balance, I guess, like, maintaining some, some of this, like, semi geographic look. You could sort of find like, your district might be but at the same time, like, yeah, just like you some of the choices like having each district number show up when you hover over state like that was kind of helping the reader to pursue that. And yeah, like also just giving you the option if you want to see a regular map. Yeah,

a lot of it wasn't too much like a response to previous graphics, but this is what we think a good way to like, move forward with election mapping.... Pro Publica has a House District cartogram, and maybe a handful of other people in 2018. Like that night, or for that election there a lot more cartograms. It wasn't like a super popular form. I suspect a lot of different graphics teams were thinking of similar things.

Yanqi Xu

How is this idea of cartogram formed and how you developed it and how you made modifications?

Mira Rojanasakul

I mean, a choropleth is still quite good if you have data with a lot of gradations. This was pretty binary...you have a little bit of data. So it's a very light, red or blue, in my mind, I guess it's all a categorical permission to me rather have like, a few results. Are you have the official, you know, AP called results.

So I think like having the option to, yeah, like show a symbol versus another shade of something, I think was something we tried pretty hard to keep, even though it's kind of tricky to add the circles in places where, where their labels that was sort of overlap. Yeah, that's something that we just like, made adjustments to keep this part of the design. Yeah, I mean, otherwise. Like, it's pretty standard. We do a lot of, you know, state cartograms, for other graphics to that requires, you know, just showing data and evening out the states in a way when you just want a state by state and not have to wrangle with difficult geographies, like Delaware be smaller. It's just a better form when you need to compare.

Yanqi Xu

OK, cool. So would you give me some more examples of alternative forms of election results display other than just like traditional mapping, say, if there's any, anything like any other form that probably Bloomberg didn't use in 2018, but are out there that you were considering?

Mira Rojanasakul

Generally 538, and they do a lot of really nice creative graphics, especially around the election, they just have so much data to work with. And I can't remember exactly what they did for election night. But I always find they're polling pages to really beautiful and experimental, to remember those the sort of like snaky graphics that they did, where it was based on pulling, but instead of like 2016, mostly, but it was sort of like, Who's gonna win, Trump or Clinton based on the pulling of each, each state was sort of like laid out sized by the electoral vote. And then there was a middle point at which, you know, the tipping point between Trump or Clinton. You could watch that tug of war. And yeah,

I've seen bad approaches...And I think, you know, that can be fine. I don't know, if you feel like, especially for something like this. People just want to know what they want to know. And familiarity goes a long way for you. So sort of like hearkening to something that people can understand quickly, can be pretty helpful. I think, like, we have like a big people on here to like, although use our table that she used. Yeah, like, which states or

districts are aware at any point in the night? If you think like, the Political Report ratings are a little bit wonky. But for people who, who liked that stuff, it's helpful. So if you're watching on election night, the table below like the house map, you know, solid Democrat or Republican leaning Republican side, there are a couple of districts that went to Dems, and the tossups are, the majority with the Democrats.

The Times will do like a needle, I think, like anything else, you need a model really creative? Maybe not. I think it helps to add more details. 538, and *The Times* both had election models, show you a few like probability chart throughout the night, as the results sort of have come in, you know, can be nice. It's really nerve wracking. Like I like watching those things, but more out of anxiety instead of a deep love for their design. Also actually post graphics for really solid that night as well. It's pretty tricky to get data by precinct, pretty sure they can grab that to put the time in the pursuit and the form in the past, like very detailed maps of a given state. But you can see like, how votes come in and the margin for like a Democrat or Republican, but also how many folks are still remaining? I guess you sort of need to model that, like, you have to give each precinct an expected number, which is a leap of faith. But I think that can be really helpful. Because some states, you'll just get, you know, the rural counties come in, and it looks like, it's going to be Trump, but then all of a sudden, like, the city's finally report their voting. Immediately, you know, it goes to the democrat within maybe half an hour where it's like, two hours before all looked like it was leaning more Republican. That kind of modeling is really smart and useful. Just a lot more work than we have the people for.

Yanqi Xu

what will be hard for the readers to understand or fail to read from, like, your maps, cartograms or other forms of visualization? Would there be any kind of difficulty for them?

Mira Rojanasakul

And there's a reason everyone uses a pretty basic map form and we keep our eyes in there, for sure. And part of that is, the readability. There was a study that I saw years ago, and I've never really been able to find it. Like the speed, it took for readers to decode a bunch of state cartogram designs, which is like very helpful, and I can't, I can't find it anymore. But there were a couple, you know, everyone has a slightly different approach to state cartograms, which is more popular. And I think someone figured out how long it took for like people to identify each state. We don't do, you know, we probably should do more of this. But we don't do a ton of a ton of back kind of like UX UI style, like testing, like AB testing, or eye tracking.

Although we could. Yeah, but as you think like, we try to keep that in mind as best as possible. I don't know, I am a really, really lazy, reader and like, viewer of the internet. I think like a lot of the graphics, that we do start out like, too hard for me to understand. You know, you're constantly showing it to people, the team is big enough that like,

there's a process early on where you do sketches, you may be show to one other person or one other editor, but like, eventually, more and more people get a chance.

Especially if it's something a bit more complex and new. And each time, like if something is hard to understand. We feel free to sort of tell each other about it. It's a more holistic approach to making graphics reader friendly. And it's probably pretty imperfect, because we're a bunch of people who like work in graphics are biased to different in certain ways.

We could all be better. I know for a fact that most of newsrooms don't do that scientific of testing too. I think in news is easier because the turnout is like so constant that you get chances to test a few things almost live and get feedback on social media or from other people in the newsroom. And I think that can be really valuable for someone doing this kind of thing for I don't know, like Netflix, and they have to build a really complex board, that will need more design testing.

Yanqi Xu

I was gonna ask about that. Since you mentioned that you got feedback from readers? Did you learn from their comment about like, how well they understood those electoral graphics, or there's something that they particularly like, or you will use more in the future or anything that they can't read as well?

Mira Rojanasakul

I feel like our colors are a bit lighter. I actually think like, the colors and the sort of dots or successful and, like positive comments that I think like less from the comments, but more from seeing what other newsrooms are doing.

The Guardian did it first, I remember seeing it smart, but the New York times did a version of it as well, we're all the states, instead of being all together, we're separated, like whole California off to the side, like North Dakota, you know, all these western states could be sort of like located more where they would be naturally. And then the labels were sort of outside of the state. So, it's sort of like had the shape of the state. But like, also, you can maintain the shape of the whole United States.

I thought that was really successful. And I'm, like, go for it. To make the change to try. So that could be something that, you know, we try next year, down the line. I also kind of like having everything in one place too, maybe it's compromise to make. But yeah, I do tend to think that like, innovation becomes a little bit more from seeing other people's experiments and finding what's successful there.

Yanqi Xu

Anything that other news organizations you think don't work?

Mira Rojanasakul

It's all pretty standard, but I can't think right now so far out there, in a way. Better, you know, more experiments in good ways. Yeah, I think like, generally, if you don't have the resources to put together a big interactive election night data viz, they tend not to do it at all.

Yanqi Xu

Do you give any instructions for the readers?

Mira Rojanasakul

I mean, election graphic, again, are standard enough, I think we did have some instruction that like clicking the take you to stay one version of this. And I think just like, on mobile, we probably took it out. It's also like users can learn very rarely quickly, I feel like the button or, or you know, a lot of it is like copywriting. Like, in the drop down, it says select state... linguistics about what that drop down, it's really for something like midterms or how they voted.

the instruction, there's really like, we sometimes have an icon that lets you know, this is an active something we started you semantics, because other people started using it, not to say like, all graphics should be the same. But I think like as things become part of a visual vocabulary that gets us more and more often, I think it becomes more useful as people start to incorporate, particularly, when we're designing things, we try to stick to just like fairly standard pattern, design pattern as much as possible.

And anything that's like, very brand new, we would try to sort of explain it to people The idea is to. Know that when you hover over either, you know, or election a graphic, it takes up so much screen space, like if you're on a desktop or laptop, your mouse is probably going to hover over it anyways. And they also have something called a for noise. So like if you're even near an object, like it's going to give you a tooltip.

And also, like we try not to hide, like really relevant information behind an interaction, like it's important to really know that we will spell it out on the page itself. Stuff like hovering or clicking for people who want to like, dig a little bit deeper

Yanqi Xu

In the future, what would be the ideal, like practice of election graphics? Would it be different for like, midterms elections and presidential elections? would you have like different approaches to both races?

Mira Rojanasakul

I think the experiment of sort of layering in a little bit more data on the candidate running themselves are quite interesting. And we might, you know, sort of build on that a little bit more.

The only major difference between midterm in presidential years is lead with the presidential map. And design a credit, or, you know, whatever form it might be the electoral sort of makeup. Yeah,

Politics change to like, you know, two years ago, we, we weren't doing the, you know, how many women are running. And we didn't really bother with the house cartogram, but I think as like, the politics of elections and new opportunities come up a new point of interest, sort of highlight and always be adjusting for whatever's going on at the time.

Yanqi Xu

Okay, cool. Is there anything that you wanted to add, besides what we talked about?

Mira Rojanasakul

I think that's a really good topic. Not just the graphics, I guess, but like, you know, Americans are a lot more polarizing, they have been cities are much more blue and rural areas are more red, you know, some of the issues around just using a regular, choropleth geography map. They weren't as big issues before. But now, when, like, cities, rural areas are not only like, so different density wise, but also very different politically, there's more need to even out the population aspect as opposed to land masses.

Interview with Lisa Charlotte Rost, DataWrapper

Yanqi Xu

Why don't you tell me a little bit about yourself, like how long you've been making graphics? And were you involved in any, previous coverage for or election graphics?

Lisa Charlotte Rost

I am a designer. I graduated four years ago, or five years, four years ago, in graphic design, and I've looked in the newsrooms since then, I started working at this chart tool DataWrapper last year, or 2017. Yes. So, one and a half years ago, and then newsrooms I was involved with graphics graphics...two times mainly. I worked a little bit at the US election 2016. Because I was an open use Fellow at NPR, the NPR visuals team back then, and I worked on the German election 2017. And I worked on a few minutes. They're basically designing mosquito designing the interface of the election dashboard of the election platform basically.

Yanqi Xu

I'm actually talking to Alyson Hurt this afternoon.

Lisa Charlotte Rost

Nice! Send her my regards. Say hi!

Yanqi Xu

Will do! I believe NPR actually did something that was pretty innovative back in 2012, when they did this, like, huge board dashboard of election results, you know, not using maps, or like they had something that also had white spaces. I was just wondering if you have an idea of like, when innovative alternative forms of visualization started to take off.

Lisa Charlotte Rost

It's tough for me to say, because I guess most people, like, I haven't been in the field for that long. I've been at it for five years. So, it's, I mean, okay, they've had so much map so far and election maps, I think that started in 2002. I think being put like this The New York Times. I remember the clue. It was like what for Republicans and Democrats but only decided in 2002 or so I think I'm not sure.

But yeah, I want I think it was definitely not so much talking. So, the conversations about it was not so much in 2018, but more 2016.

And I haven't been involved in the previous elections in 2012 or 2014 so much, so I can't really say. So, it was basically the first US election that I experienced was also the first and only one that people talked about, basically. People talked about, okay, how do we want to we present these numbers best, and what's wrong with US election maps, etc. And that's also, why I was involved... I didn't understand how the US election system worked before, it was in 2016 because I didn't need to, and not from the US. But I then really got into the topic in order to understand that because of the attention and then I was super confused by these maps, because they, they showed a show just what color for state which confused me a lot. So, this was made the topic and this course that is the topic of the two links I sent you about how these maps show stereotypes, how these maps make us believe that everybody on in Texas, so it's just a Republican, everyone in California is just the Democrat but and I wanted to work against that.

But I think I mean, it wasn't like a point of view discussion. But it was interesting to see how newsrooms tackled the problem? And the big the big elections?

Yanqi Xu

What do you think makes a choropleth map more readable and easily understandable? For example, the shades and the unit of coloring?

Lisa Charlotte Rost

I wasn't even happy with the shades. I didn't understand the shades when I looked at it. Basically, when I came, I had this perspective of somebody who maybe just immigrated to the US or something like basically, I didn't have any idea how elections works. And then I was confronted with the snaps and I didn't understand it. I was like, okay, there's like shades of red in there, and shades of blue. But what does it mean?

And I think it's I mean that makes total sense in the US elections system. Because at the end like the winner takes it all because of the system that on election voting man, I forgot the name for these for these people who get the left. And then again, like it's been a while since I thought about it, but I was just confused that each state had one color in general. And that's what I propose that we color states in different colors.

That's the that's ultimately the link I sent you. I did exactly that showed, like, just how many people voted it for each party, in each state. But it would be it would be a more complex view. it would be a more truthful, view of the votes, I think because especially in the US there's always this saying of like each vote counts. And each one matters. I was super surprised when I was in the US and everybody wanted me to vote so hard, like pizza boxes, said like "Lisa please vote". Basically, it was like everybody was like go vote was like oh, okay, do you want me to vote it but then you have the snaps there? When you're in? I don't know, Utah or so and to vote for an independent party and the whole map is just blue or red, but it's, it's not. It doesn't represent you. That's what bothered me in these in these maps the most. I thought yeah, I really wanted to see more complexity in snaps and I mean, we have to there's a space where like the states like this, the only 52 states on such a map. There's not this you have enough space to show some complexity. I wish I still wish that would be done more showing complexity and in action maps.

Yanqi Xu

Some critique revolving choropleths say that we're making some areas that seem like more important than they actually are. Do you see like a way out for choropleth like cartograms to show results or there's simply no good way?

Lisa Charlotte Rost

I mean cartograms as illusion but if you have like catacombs on a county level this is crazy. This is madness like you can't you don't know anymore where you are located and this is one of the main functionalities of a map to show you where you are they your city disobey your neighborhood others can help your neighborhood voted and yet you can only see on a Oh thanks and then you can only see on an actual map like The New York Times did with the extremely detailed map.

but then it's interesting I mean there is no there's basically no way out there's like, I don't think maybe I don't I see a way yet out except the cartograms...

Yanqi Xu

What do you make of the New York Times' extremely detailed results map?

Lisa Charlotte Rost

I understand the point of this map, I understand by the New York Times did it because they wanted to show the most publican areas and they made they made sure that this is like dark red, instead of showing Okay, there are not many people in Kansas, so we don't show red very bright.

But, yeah, I think it should be one of many, many views. Basically, I want to see the same map, just that the brightness showing the population density.

Yanqi Xu

What's your take on like, cartograms, what's it good at and not so good at.

Lisa Charlotte Rost

I really like the Bloomberg one actually, because it shows me like the two tips are amazing with the New York City.

I like cartograms. I think. I do like them. I'm getting really bad at making me find my state. But it's okay. Looking for states is still okay.

I would love to see a county cartogram. I haven't seen a county cartogram yet. But for all the how many counties order 1000, 3000, counties in the US. I would love to see a county confident. Right. I haven't. I haven't yet. It doesn't mean it doesn't exist. I just want to see it done properly.

Yanqi

When you design election graphics, how did you take into readers' perception of it?

Lisa Charlotte Rost

And I'm afraid I can't say so much about the perception of the reader. Because I'm not a reader who's never seen such a map.... Yes, for the first time, these maps make me curious, as somebody who's interested data visualization. They overwhelm me. And I'm afraid that many people do feel overwhelmed by these maps and then I don't know what they mean. So, they're not interested in results anymore like this Let's only look for intrinsically curious people, and not so much for the normal person who just wants to

quickly see the election results and doesn't want to be confronted with a new form of visualization they've never seen before.

so, I'm a big fan of us to have a good mix of graphical dashboard to we have a platform to have several kinds of visualizations and similar kinds of maps to I think 538 did that very well the 2016 election letterhead does the snake graphic, which was fun, which was also an interesting view on the data and showed me something new. But if this would have been the only kind of data visualization on the page, I would overwhelmed to someone super line chart with a very clear...this is the winner, this is the loser kind of information right there. And I think that's what most also did, like, I mean, the Bloomberg graphic is too when they had a cartogram view and a map view. I think The New York Times does this too...and it was also the Financial Times what they did they do because I remember the Financial Times that is amazing visualization in 2016 data just the dots on the northern states and I thought that was a really nice components that was just basically a cartogram on top of the geographical map that's at least how it felt for me I thought it was it was genius. They didn't have a toggle between a cartogram and the map because their map tries to achieve both basically. And it kind of failed too. I will send you a link to this.

Yanqi Xu

yeah, I thought that the Guardian had multiple views.

Lisa Charlotte Rost

I remember this map that it does really nice thing where they had like, the white space between the states... that's what the set them apart. I think Twitter really like that. I really have to read it. They went like... "Oh my god, this is genius." I think John Burn-Murdoch from the Financial Times tweeted about it. I was super happy to see this.

Yanqi Xu

What do you think about their House cartogram and The New York Times cartogram that separated states?

Lisa Charlotte Rost

again, I mean it's also it feels a little bit more cluttered to have the labels outside of the states because but the catacombs did the floor like The New York Times cartogram in third in the in the top hello this one labels the state's directly like inside and then John Burn-Murdoch in his tweets was making the point that a big advantage is that you can label all the states directly.

I think the two cartogram tiles in the top right overview didn't have any hover effects. And so, the difference really is that now we have the hover effects, you want to label the states outside or not inside anymore. And that's why I put white space in between.

This is the difference. I don't think it's more readable. I actually really do not think it's more readable, but it does achieve is divided space between these sparsely populated states. Like I feel like what Wyoming and Montana and, you know, if you see them on the New York Times map, then this cartogram actually has more the shape of the US than these other maps... that is at a because they always had a problem that like is super tiny states, but nobody lives like Montana, etc. But just like, pushed, like Washington and California, more to the east. Because of it now you can just like put the state where they were. But you have to white space in between, which is because you have to light space in between. Yeah, I think that's a good solution. It's a little bit clutter with all these labels outside. But I think that's a design problem and not a shape problem. Like I don't think it's a shot at a problem with the chart type and more the problem of how do you design it?

Yanqi Xu

As a designer, what's your approach to giving readers instructions and how to use them?

Lisa Charlotte Rost

I think a few points first, I think the interactivity actually helps to understand a map, because intuitive so you can always tell the people what this map is about. And I mean that The New York Times' super extremely detailed map. They show you not just how many people voted and how much percentage voted for which party. But also, they make clear that these are votes. and these votes are for and I think all these tool tips always have a pop ups will he help understanding better idea, for example, if you go to the Bloomberg map and you have overstayed our district, you see candidate names on us. And now you like okay, these are candidates, that's good to know. So, the two trips are created to explain what a map is about. Then I think it's almost like a compromise between how much does the us get our have a different design versus how much more complicated is it to read? How much less accessible is it. And you want to create something that's worth you want to create something that's worth puzzlement like the puzzled first impression of the reader and I keep on to reward them with this like this like new insights that other visualization wouldn't be able to show you that well.

and if that's okay then I think curious readers will be happy to be puzzled if and some way that it makes it makes the time before

I think I would like to see in election maps that people actually tell me more about that map is about and what's interesting in there, but this is also because I'm a big fan of data visualization that makes a clear statement and also because I'm somebody who's not from the US, so I don't know what's important and my first motivation and going on these websites not to find out how my local district did, because I don't have an in the US but my only motivation is to see the overall although you were to see how the country do like who won basically.

I still think I would love to see that all the more for German election the next steps and any action that that I go in such a dashboard like what now is when a conditional so

here's the data be presented in a way that hopefully is useful to you go and figure that out yourself. And I would love to see more like storytelling directly in such a dashboard.

Yanqi Xu

Thanks for your time I think that's basically it. So, do you have anything to add or like ideal practices and the future

Lisa Charlotte Rost

Hey, I don't have now but this conversation definitely made me like get feedback some good person to think global election, I think like I was a little bit so I had this election in 2016 then I came back in 2017 and I'd like the next election like in Germany and I just spent I don't know a year for year thinking about election that was a little bit too much. So, I got a little bit bored and not so not so enthusiastic about it actually mapping anymore but yeah, definitely let me know what you got to find out.

Yanqi Xu

And so just a quick note. From what I understand DataWrapper is actually a tool that helps you know a lot of news organizations to or like other platforms to visualize things. What are their design choices to make?

Lisa Charlotte Rost

we try to make very to set smart defaults in the tool itself like we try to not make people to mess up who've never met before. But so, my job is also to why this article second one you pointed out earlier about core class mapping and what to consider when doing so. And I want another one about colors like what are considering using kind of the database and of course is also very important what actually happened I haven't done any publicity blog specific how to map elections. I think I should do this... It is actually a good idea. I did write one about political parties and colors.

So, my job is just to help people create better maps and charts, especially these data was picking us who haven't done that so much, and I feel like elections are mostly because DataWrapper was a tool that is for people with less experience and also for newsrooms that do have a graphics team but don't want to make it simple bar charts and science, etc. And so I feel like election projects always tackled by these big graphics teams.

Yanqi Xu

All right. Thank you so much for your time today.

Interview with Lazaro Gamio, Axios

Yanqi Xu

How long have you been making graphics? Were you involved in the 2016 election coverage?

Lazaro Gamio

Sure. I've been making graphics, I don't know, for like, maybe 10 years now.

Yanqi Xu

Wow.

Lazaro Gamio

Which isn't really that long. Some people have been doing it for like 30, 40 years. But

I was involved in 2016 election at The Post, I wasn't involved in the election results maps. I was involved in some of the analysis stuff that happened afterwards. For 2018, I was already at Axios, and I did run the team, I was running the team that had to deal with all the election stuff. So we were doing a lot of things thinking into, like, how to display election results and stuff like that.

Yanqi Xu

Okay, cool. Yeah. So for 2018? Like, what role did you play? Like in the election coverage? And how's the team organized?

Lazaro Gamio

so so we were very, very small shop. So like, I'm not sure if you saw what we did for life results on the on midterm night. But we had like a cartogram sort of combo for essentially the House and Senate.

The people essentially, only three people worked on it. So it was myself doing all design. And so the front end stuff interactive stuff, Chris Canipe doing a lot of the same work. And then Gerald Rich, doing a lot of the data stuff. So essentially three person team to build that interactive.

Yanqi Xu

Uh huh. Cool. Yeah. So, um, for The Post? Yeah, I'm wondering, what's the main form of visualization chosen for that night?

Lazaro Gamio

all kinds of things, everybody takes a different approach, I think, like, all of these things end up be feeling kind of dashboard-y. Anyway. I mean, if you had to judge them by like, the main visual element, usually going to be a map, right?

For example, like we had, we had an interactive that had like a balance of power bar, a top essentially showing you like, where the house was at this current moment, right? Like how many, you know, but my, my editor, for example, like I told him, okay, we got this, we got this really great AP data, we're going to make it interactive. He's like, all I want to know is who is winning right now? So that's, I mean, I think, a primary need for a lot of readers like who is what right now.

So we ended up with that, essentially, right? Like the balance of power bar at the top. And then like a map below that you can explore and click into and zoom in.

And then switch to a cartogram view for both like a congressional district cartogram view or a Senate and Governors carbon, you. So one interesting thing that we did, it's like, I think the air on guard choice, this teenage would be to default to the cartogram view. But I think people are still not super custom to them. So we began with the map view and not the cartogram view.

Yanqi Xu

Cool. Yeah. So um,

Lazaro Gamio

yeah, yeah.

Yanqi Xu

So you said that you were you weren't, like directly involved in the post, you know, 2016 coverage for election night? And so yeah, just in case, I'm wondering, like, what's their chosen form of visualization?

Lazaro Gamio

I guess you can just type in Washington Post 2016 Election Night, you'll be able to see exactly what they did. Right. You know,

they did I think what most people do, which is like, big balance of power thing, like who was winning, and then a big map, so you can click in the round? Right, right. I think a lot of people are sort of doing the same thing in slightly different ways, right. Like, the details that set them apart? Not the not the sort of like big, big elements. I guess,

Yanqi Xu

Because people will have different like design choices. And it so seems that in 2016, the posted, the main form of visualization is definitely the shaded choropleth map by state instead of other things. Trump was basically saying that he was showing other reporters, I think, Reuters reporters, this map, saying that he did really great in some places and won by a landslide. And so I thought that was pretty interesting. And then I was wondering, like, if any of you, like, if there's been talk in the newsroom to try to, you know, modify the shaded area maps, like state maps and try to make it more nuanced?

Lazaro Gamio

I mean, so if the reason that people still the reason, the reason that those maps still get made is that most people understand them, right? Like, I think, anytime when you're making data visualization, you're always go run into the problem of the fact that, like, your audience probably does not have as much graphic literacy as you do, right? Well, probably not as much graphic literac needed. And, you know, as needed to, like, understand extremely complex forms, right. So like, you know, like a quote, you know, I'll throw that back at you like, maybe, maybe that Trump something isn't, isn't about isn't a problem with the forum, there's a problem with like, the reader writing, like, I think some of that falls with, like, people who consume these visualizations to understand the drawbacks and benefits of one form versus another. Like, I think, I mean, I understand the whole the hand wringing, right. You know, maybe we should talk about more equal area stuff, because land isn't vote, but no form is perfect, right? Like, if you want to throw out a card where I'm out there, people would have been confused, and like, nobody would understand what you were doing. Right. So I don't know, I think it goes both ways. I think, you know, I think we have to get rid of the option of an equal area thing, which is like what Axios did in 2018, at least. But I think we also have to cater to the fact that like, people are not really accustomed to them.

Yanqi Xu

Cool. So, so since you mentioned that, you know no form of visualization is perfect. So what do you think? What problems Did you find with like, traditional shaded core plus maps? Besides, you know, like, the, the area versus population? Was there any other drawbacks?

Lazaro Gamio

yeah, I think occlusion is a big problem, because like, for example, you have in at least around New York City, you've got districts that are like the size of like, a couple of, you know, a couple dozen city blocks, right. And then Wyoming, the entire state is one congressional district. If I'm correct. So there's a huge size mismatch, which is like my visual point of view, like it is impossible to compare or is impossible to see the entire... It's impossible to see that separation?

I think it's especially true in mobile, right, like, good luck, right? Like, I think I would, I would, I would, I would dare to say that, like, more than half of everybody as audience now just comes from mobile devices. And it's impossible to make any meaningful comparison on a geographical map as to like, who is winning by looking at a map. So they are a very poor form, but it's just like, it's like, it's a very known for, which is why people still do it. So I think like, like chart-based ways of displaying election results are probably better to be completely honest, as you know, like, like, I'm pretty sure that we could get away with like, just making like a chart-based results module, right. We're like, you don't even have to care about the map. Like maybe, maybe there's a map view, but like the default on mobile will be to show you like a chart instead of a map.

Yanqi Xu

That makes me kind of wonder what kind of modifications you made to those traditional career path maps to like, in Axios, you know, election night coverage, it seems that there's like small district. And so and then there are shades. Can you explain a little bit like, shades? So like, there's this dashes, I think...

Lazaro Gamio

They are flipped.

Yanqi Xu

Yeah. So. would you like go over what modifications you made, like compared to like, traditional state by state corpus maps, just in case I'm missing something?

Lazaro Gamio

No, I think we didn't really do... as far as like the mapping techniques, we honestly did not do anything completely new, like, like people have done the dashing thing to the note of flipped district before people have done the zooming in thing before. Right? Like, I think our House view, at least on the geographic view. If you click on a state of your district, little zoom into that state. Again, we did and we did it trying to solve the problems I mentioned before — right — you can't really see small district or areas. Like, you know, maybe we had like city labels and zoomed-in views, sort of like, you know, or yourself as to where things were, like, you know, we honestly did not innovate on anything, we mean, we made a pretty good election results module. But this is extremely well-tilled soil, right? Like, everybody has made one of these we made one in our way. I think our main conceit was what we wanted to make it as concise as possible. So like, if you look at a lot of other newsrooms, offerings, like they really they were like standalone pages, and they were very long, and they had lots of tables and lots of charts and lots of analysis, we essentially constrained ourselves to like a very small module that will depend on how the website and that's it because that's, that's, that's, that's what was most important for us.

Yanqi Xu

So do you have any, like reasoning not to use those kind of, you know, long tables? And is it just because there's enough for them to see, like from the map view, or the cartogram view?

Lazaro Gamio

The map is interactive. So we needed to know the exact results for the geographical area, you could, like, you know, interact with it, and you'll get what you need.

But apart from that, like, I think one of our main conceit of Axios is that we're very much into, you know, that the whole smart concepts (ph) for like, Why give readers more than when they actually need, right. So like when they can just get it from The New York Times. So it was just, it's just, it was just a design objective to like, not overload people with stuff just because we had it.

Yanqi Xu

Okay, yeah, that's really interesting, because I was speaking with Ryan Mark at Vox, and they basically just laid it out like, and they did not use a map, and then they just laid out all these tables, and then try to present it in the most concise way that this their idea, but 10, another end of the spectrum, you can also have one map, and then still have that kind of the same amount of information just presented in another way that it's also concise or, you know, like it's a you can argue both ways.

Lazaro Gamio

guess. Yeah, exactly. Everybody has a slightly different thing.

Yanqi Xu

what do you think are the advantages of your chosen form of visualization, compared to the traditional choropleth maps?

Lazaro Gamio

I mean, I think that would mean the cartogram view, like, obviously, you have equal area, right. You know, equal area is a cool representation (sic) land isn't vote people do, but that's honestly. I think one thing that was kind of exciting about 2018 is a lot of different organizations had cartograms like, I think, a lot are flaunting their cartograms, some of them even defaulting to the cartogram new to begin with, which I think is a great first step, to sort of like educate the public to like, exactly what this form is. And the only way that people are going to get used to uncommon charts that are actually better, is by seeing them everywhere.

So I mean, I'm hoping that in 2020, like, you know, I think the industry...the craft, you know, can continue to, be bold and sort of like bringing cartograms into the public consciousness.

Yanqi Xu

Yeah, for sure. And so I'm wondering, would you give me some more examples of alternative forms of election results display other than, like, cartograms is there seems to be like, you know, a bubble maps and other say, like, the Financial Times they had this kind of tiles on top of a map?

Lazaro Gamio

I think they're all some variation of a quarter gram. They're trying to solve the same, you know, area weight problem. I mean, I don't have an encyclopedic knowledge of every type of map. I mean, I think, if you look at like major news outlets and their offerings, you'll probably find a pretty good corpus of stuff to look at

Yanqi Xu

Mm hmm. Right? Yeah. So can you give me an overview of, what works and what doesn't, for these kind of visualizations, and what they're good at whether or not so good at?

Lazaro Gamio

Um, I mentioned before, I think the biggest drawback is that it's not a familiar form. So it's not immediately apparent to us when they're looking at which is best first, for something that's meant to be read this information. Right. Think the strongest benefit is obviously it's an equal area. It's like cartograms, you know, cartograms solve the whole small area, huge population, large area, small population problem.

Yanqi Xu

What would be hard for readers to understand or fail to read from, you know, cartograms, or like, your form of visualization?

Lazaro Gamio

Um, I think, like, it's a good question, I think...would be hard. So I think a lot of times we try to design them to, to, to look like the United States, right. So at least you have that initial connection, and trying to maintain some sort of like conspicuousness in the maps. So like, you know, the right states, you know, border of the right states. One thing that I think the New York Times did, for 2018 was that it completely gave up on kind of make this stage line up. And I just like floated, you know, state like shapes next to each other, a little bit, but with white space around.

A great way forward to increase legibility. Right. So like a kind of gave you a sense of United States, you let you see each state in relation to other states. And also,

and also, like, had that equal area, or equal weight? You know that's difficult job, I think they have they probably did the best job of all the caravans.

Yeah, 2018 cartogram, it was very successful. And I think, I think they probably, they probably solved the problems that we had, that it was that we were talking about right now. And it's like, well, how do we make this more legible? or meters? Right. Like,

not worrying about making the shapes line up? And like labeling each clump, they became more apparent when we're looking at. Right,

Yanqi Xu

yeah. So has there been anything you've seen in the past election, that doesn't really work.

Lazaro Gamio

I'm not me, I've seen a lot of like, ways to show... To me that one of the biggest problems, where it's in a very sort of a binary definition, like things are either red or the blue. Were like in the truth, like everything is like a shade of purple. And there's this guy who does like an election cartogram, every single election. And I think he's a, you know, he's at the University of Michigan. And he publishes his other map, like, instead of just doing like red and blue, he does like, like, essentially shades of purple, right? And then what he'll do, you know, his maps just look like make they make the United States look like very, very purple. And then you've got like, some very isolated, like, really red areas, and then like, the cities are all very deep blue. Right? So it's a good way to like show that, you know, even though there are two parties, and like, we're essentially trying to track power between two parties, most of the country is sort of like a wash. Right, like, it's more there, there's a lot more 55-45 than there is like, 70-30.

That's a that's a good example of something. What else? things that don't work? I don't know. I haven't seen. I don't recall anything, like being the egregiously bad.

I mean, I think we're all kind of solve the same problems, you know, so I think the only way to do it is like by, you know, showing up every two years and trying your best. Right?

Yanqi Xu

Yeah. Because I'm yeah, just picking up on that, because you said that, like, the University of Michigan cartographer like, they built something that is like shades of purple. But and in, you know, like other newsrooms, I feel like I've seen more, you know, say, like shades of red or blue, instead of like, shades of purple, you know, what I mean? Like, a lot of times, it's more like how deep red or, or light this. So I think,

Lazaro Gamio

what they do is like, they'll go shade by the margin instead of the winner, which is, which is extremely common practice.

But even still, with that technique, could still bucket in, right, it's still bucket and right. So like, if you win by like five or 10 points, you're still going to have the same shade of color, essentially. So it's not... you lose a lot of nuance in the middle, because I think that's what that's what that purple shade map was trying to get at is how much nuance there is in the results? Right?

Yanqi Xu

I think, Lisa Charlotte Rost, I just talked to her today...she mentioned that there's some practice having different, you know, like,

sort of different, you know, like measurements so that we can map like, vote share or ratio of, sometimes we map like margins, and sort of like, you know, like that. And then so like, it's not an absolute, you know, margin, but kind of like the ratio, and then it appeared less polarized. You know, if we map, just a winner, so I thought that was pretty interesting, too.

Lazaro Gamio

Yeah. But then the limit, then you run into the same problem where like, if you're, if the point is showing who won which areas right, then showing that much nuance is not necessarily a good thing, right? So like, ultimately, it's like, how much do you actually want to do in one map is a real question, right? Like you can, you can have nuance and clarity at the same time, almost. It's like, I think, at least in the digital space to it's like, you've only got so many pixels to work with. And like, this is a difficult life.

Yanqi Xu

Do you see, like, any possibility that we're going to have, like, more purple maps in the future? Is that going to be easy for readers to understand? Or is that going to be clear for them who the winner is?

Lazaro Gamio

I mean, I think probably not... I mean, do you have a map of the United States by congressional district or by county, and it's just all one color, like, as a reader, you know, and I'm a graphics professional? I'll look at that. And I'll just be like, What is this? Right? Like, it doesn't tell me anything? It's like, you know, it's like, yeah, maybe you're trying to make a statement that like, you know, the country is, like, more together than we think. But like, I still don't know who won which area? You know?

I think honestly, like, the way forward, at least for me is like...we have to start divorcing these election results from like, the geography, right? Because that's essentially what the cartogram is doing with the Carver and was trying to keep keep some semblance of like, geography, and I think as much as we can get away from the geography, the better we'll be.

Yanqi Xu

seriously, but what about like, readers, you know, like, you know, desire to know, what their home district, how their home districts are voting? And then is it possible for us to kind of divorce them?

Lazaro Gamio

I mean, you live in a world where you have like, an extremely detailed Atlas in your pocket, right?

We're not exactly like educating people have, like, on the geography of New York State anymore, right? We're delivering election results. So I mean, you could do that a bunch of different ways. Like you could you could geo tag, or you could you could ask for the readers location, and then like, get a server and spit back up a district. Right? That is the reason you have to show it in the map.

You do you like a little mini map, right? Or, like, if you have all the results, you know, show like show a little pin in the state where the where the district is, that's enough, you know, we don't have to sort of show it. I think, like, I think like the you're still gonna the make maps, but I think being the primary, the primary experience of getting the results does not necessarily have to be map.

Yanqi Xu

Did you give it give readers any instructions as to how to read it? Or have you sought feedback from them about like, Is it easy to read? Or how well they understood it.

Lazaro Gamio

So gauging how well people understood a chart is difficult to do in an automated way that a couple you have to focus group it, which is much more expensive. We did focus group, our cartogram vs. map, right before we published and hands down, everybody understood the Matthew more like, like, it was like a five out of five, everybody understood it better, which is why we defaulted to it.

I mean, I'd be curious to read study about what people understand better. I think this is sort of like every design professional, asking the world to eat vegetables, and then they're not wanting to but you know, that's fine.

Yanqi Xu

Yeah. And I was also curious to, to ask you...this 2018 midterm elections is different from, you know, the presidential election where we have all these seats and district that we can be mapping, but for the presidential election, probably all that people care about is like the state. So can we learn from this midterm elections apply, you know, techniques, to, you know, like the presidential election or like, if the presidential election would necessarily be more polarized, you know, because of the nature of just two candidates in one state?

Lazaro Gamio

Yeah, I mean, I think like some of the some of the things that we did, at least Axios that we did for 2018, we're probably going to employ again, in 2020, for example, like in Senate, and in Governor's races. If you click on a state, you'll get results for your county level results, right. So I think it's a good challenge. A specific it's like, when you zoom out? Yeah, you want to see how the country is doing at a glance, it's much more effective to do that at a state level. When you click on something. It's a measure, I guess, like a sign of intent. So it's like, I'll show you more detailed information.

Yanqi Xu

Yeah. It seems like for some places, like Montana, big like, it's one district. And then, um, so I guess we can't go into much, much more detailed and,

Lazaro Gamio

yeah, I mean, I think we, I think we may have like prevented you from taking on Montana.

Yanqi Xu

And then because sometimes people would argue that, oh, maybe like, precinct level data is good.

Lazaro Gamio

But precinct data is like impossible to collect in real time. It's like, it's extraordinarily difficult. Right?

Yanqi Xu

Yeah. And so, so yeah, voting district, I guess is normally how it goes. Where a county level? Haha, yeah. Because that's about as detail as it could get, like, on election nights,

Lazaro Gamio

I guess. Yeah, I guess so at the mercy of like, what your data providers gonna be able to give you

know, people use a P. Right?

Yanqi Xu

Yes. So, have you actually have, you know, like, have you ever seen any, like readers feedback about like things that you would like to repeat or repurpose in the future?

Lazaro Gamio

I mean, the thing that people like the most about our, our format this year was it was really concise. told them what they need to know up front. And then let them explore if they wanted to.

So that's kind of that's kind of what we're going to repeat again, we're just going to try to be very, like, very sort of, like, let's tell you what's happening right now.

And then try to like, put that data exploration stuff as a second.

Yanqi Xu

So sort of still like presenting the results as the primary goal. And then interactivity and, you know, detail level view is kind of secondary goal. Oh, okay. Great. Cool. Let me see if I've, so in the future, like, what would be the ideal practice of, you know, the collection graphics that in your mind?

Lazaro Gamio

I mean, everybody's gonna do it differently. And I think that's kind of like, that's a good thing. Like, nobody, everybody should do the same thing. That would be very boring world. We all learn and get better.

So I don't know, I'm going to try to be better in 2020, that I wasn't when he does, and then, you know, you know, the public will benefit because everybody's trying harder to do.

We do this every two years. Pretty good.

Yanqi Xu

Yeah. Will you working? You know, what were the things that you want to like improve? Maybe, you know, like, what you think could be done better?

Lazaro Gamio

I think it's personalization, right. Like, I think at a top level. Everybody wants to know, like, Where is the country headed? Right? Like, are we going to have democrats ruling the House or Republicans in the House? But after that, it's like, what's happening in my area?

I think as much as you figure out how to personalize things, it's good. Right?

Yanqi Xu

okay, great. Yeah, yeah, I think we've gone through most of the questions. Thank you for your help.

Lazaro Gamio

Yeah. Yeah. I'm glad I was able to help. Good luck on your project. work.

Interview with Ryan Mark, Vox

Yanqi Xu

Before we start, can you let me know a little bit about yourself, like, how long you've been making like graphics or, you know, like, kind of like news apps? And were you involved in the 2018, you know, midterm election coverage.

Ryan Mark

I've been working as a programmer developer journalism for over 10 years. Now, I started back in 2008, I was at, I got a scholarship from the Knight Foundation to go to Northwestern to study journalism as a programmer. So after that, I worked for the Chicago Tribune for about five years, and then came to Vox media. And then we'll throw the Vox media and ended up at Vox.com, about two years ago. So I've done a bunch of elections starting back in Chicago to be a week election results and election coverage for both local Chicago Illinois elections, as well as midterms and presidential elections as well. So, you know, I had some experience going back to that about, like, how to do them and how not to do them. You know, I've got a lot of learn a lot from how we first did them, you know, 10 years ago, in terms of like, you know, engineering, like the data sourcing and stuff like that, and how to, you know, build something that can deliver election results. So, yeah, so as part of Vox.com, there's really only there's only me at the current time as an engineer, developer, you know, journalist person who was attached to it somehow.

So we started talking about this stuff, you know, the year before the election, and we had talked about, like, different projects, different African immigrant infographics, this is the first year at Vox.com has had done actual election results. Okay. Until this year, we decided not to do them, because we thought that it would be better for the brand for Vox the voice of Vox to like, focus on like, you know, analysis and explanatory journalism

around the elections instead of just election results. Results are difficult, because so many news organizations do them. And it's just so difficult to like, differentiate your live election coverage, others, because you're just basically getting people, you know, vote counts, who won this selection. So, you know, with that in mind, and also with the fact that we really only had, at that time, we had two developers work on this stuff, we decided to focus, narrow the focus to try to make it as simple as possible, and just stick to the, you know, the core of what we're trying to deliver, which was just a list of elections, a list of seats, with the candidates, and try to get people you know, as live in the slide (sic), keep the information as live as possible. And give them that information.

Yanqi Xu

Yeah, sure.

Okay, yeah. So how would you describe them in the form of visualization? Would you describe it as, you know, like a list or just kind of a graph of, you know, like, of seats, you know, they can't and filled in the election or, because it seems that you have to Congress have historic races, tabs, and but mainly, I was looking at the Congress have, so instead of using a traditional, say, like shaded area map, so you, you were opting for different type of Master, how would you describe what it is, and kind of your kind of the process of opting for this kind of, you know, graph format.

Ryan Mark

Also, you know,

in addition to kind of

what I was playing for not trying to keep things simple,

for a few different reasons. You know, the other thing we did was, you know, asked ourselves, like, what are the big questions this election?

And also, like, what it is, what, what is it about Vox? The voice of Vox that we can, closer to election results? You know, like I said before, you know, if we're just getting people list of results, how can we differentiate it, to make it useful to people? So, you know, the big question we thought would be on everyone's mind, or for, you know, the readers of Vox would be, you know, is this going to be a couple of days? Is that is the control of Congress going to change hands from Republican to Democrat? Democrat. So that was like, that was the big question that we thought we would address first. So that was the idea behind those control Congress charts, was to show you real time throughout the night, what, you know, what the current state was, you know, in other other organizations like 538, New York Times, they'll try to do a forecast.

Yanqi Xu

Right?

Ryan Mark

Yeah, we were, we were, we don't, we didn't really have a resource does it time to go to that length to try to do forecasts. So we just stuck to real data, you know, and even with the forecast the forecast springs for, like, weeks before, but the night of, you know, it would seem to me that like, you know, you wait an hour, you know, forecast is going to tell you what's going to happen in a few hours. So not so bad to wait, you know, to get the real information. So that was the kind of like the idea behind the control Congress.

Design wise, we went back and forth with... I work with a team called Vox viz, which is a part of Vox.com. So most of my colleagues on our team, our graphics editors, and

they said social graphics editors, so those folks work with me to kind do the design for the site.

We discussed a lot like what the control of Congress charged with,

that's kind of my opinion, and has been for a while that like, Max are overused.

And in a lot of places, people use maps

in a way, especially when especially in like situations, or you have like the state map of the United States and the color red or blue or the state. You know,

my feeling was that, like, the actual shapes and stay to themselves don't give you any extra information and take a whole lot of space on the screen.

And what people are most interested in is the core question of who is winning? What is that going to be for Congress for the country? And not necessarily, you might be interested in like, what state you are a living at? And then the end those elections? By for our national audience? You know, we thought that it would, what's more interesting is like the page of this election, what is this election mean as opposed to like, what parts of the country might [indistinguishable]? And we will go back, you know, and like, you know, do, I don't know, if we have done any analysis of like, different regions of the country and how they voted.

I know some organizations with those kinds of things. But, you know, in our opinion, like, you're going to want to know what the overall, you know, results of the race or what it means for the country. And then you're going to want to know, like a specific state or specific races that you're interested in. And to that extent, we just basically have you pick state, you know, and you have a list of all of the elections there. So if there's a specific election that you're interested in, in this state level, you can just going look at the results, that that's kind of our thinking behind not doing any maps. Think mass would be interesting, if you were like trying to do trying to tell a story about like, the like this socio

economic makeup of the country, and the impacts that those have on voting behavior, sunlight, taking in all the results from 2016, National 2018 and layering some other demographic data over it. So you could say, like, you know, for for whatever reason, these parts of the country go blue, these parts of the country go red, here's why, this kind of feel. But just for just straight election results, we decided that's probably not necessary.

Yanqi Xu

To me, it's pretty intuitive in terms of how to use it. So I'm wondering, how would you design with the weather readers mind? So? Do you give them any instructions? on how to use it? How to look at it or like, you know,

in terms of, you know, just this charges, programs and stuff like that, because I felt that, that the tabs are pretty interesting? Would you let me know more about how he kind of design with, you know,

the readers in mind? Yeah.

Ryan Mark

Yeah, so I know, we did it with this, sometimes in some more complex design pieces, we will try to grab people for other things around it like that would have been, we have been working with it just like doing it

formal user testing.

It only have like, enough people to like real formal user testing, but we do kind of informal, you know, grab somebody have looked at something, see what they say about it.

Here this project was interesting, because it you know, it crossed so many different parts of the newsroom that there were lots of people involved. So there were lots of opinions and stuff like that, I think for this really what we wanted to do was just to keep things as simple as possible. So use as many like, you know, common design patterns, it's possible, like the nav bar tabs, that's just a very common, you know, design element and approach. You know, we figured that that would be something that people would understand intuitively, you know, the best design, in my opinion, is this design that you don't, you don't need instructions for you don't need to explain that it's just on its face is, is fairly obvious, you know, so long as you are, you know, familiar with other websites and stuff, like, if you're, if you're, if you're comfortable with using just websites, then you know, the website you're going to see is going to have some certain parts of that. So we try to keep things simple.

Projects get much more complex, we might provide, like, you know, like some sort of intro and explanation as to how to interact or something like that, generally be trying to design such that that's not necessary.

Yanqi Xu

Yeah. Yeah. So because I was looking at it seems that the main page, So this one seems like a static graph to me. And I was expecting something like more interactive, like, Who the red dots and blue dots represent? I cannot, was referring to this, I could send it to you. This right here. So the main page is sort of like a just a static graphic, does it didn't look the same that night of the election? You know, or like it was it? Was it like modified afterwards.

Ryan Mark

So this is a this is an SDK is 3d graphics. Okay. So when these pages are updating, you know, we actually the software that generates the pages will change the SVG. I mean, that's, which is a really, I think they're kind of under appreciated, because you can do so much. Because SVG is just very similar to XML. So there's a lot you can just do with SVG directly. So you know,

the other thing that we keep in mind here, especially when it comes to the interactivity, is how it's going to work in mobile. So, you know, when we are building these things, we're constantly, you know, whenever there's like, a discussion of a like, you know, mouse over, or hover over or click, you know, we asked ourselves like, Okay, what was will that be like, for somebody using their phone. So, you know, this case, we talked about adding that kind of activity to this. And I think we probably would have, if you have the time and the resources to like, build that and test it out.

What is one of the things that we set aside because of the difficulty of making it like the same experience for any screen size, interaction, and so, you know, we I found myself especially in the last five years, increasingly, dropping lots of interactive things, because making them work on mobile, like requires fundamentally different design. One thing that you that kind of epitomizes, this is the sexual misconduct database that we made. So if you, if you open this in desktop vs mobile, you get kind of a pretty different experience. And a lot of it was because of the way that like, you know, stuff fits on the desktop, and you can show a lot of information and a lot of interactivity. But then when you try to squeeze it down, it doesn't work and requires kind of a fundamental rethinking of design works.

So we often will kind of come to those things to the end, especially if we don't, if we're like, if they're less important than other things that we need to achieve. So that's kind of why that graphic doesn't really have any activity. I think if we had more time, you know, in the lead up, we would have added some of those things to it.

Yanqi Xu

yeah. Great. So I'm wondering if you have read or are looked at other news organizations, you know, like, election results, like, say mapping or results display? Have you found

anything that strikes you is good, or like, what, what would you see, as the, you know, good practices were best practices in this election results mapping,

Ryan Mark

We we looked at everybody's, you know, the ones that we always have to tend to be New York Times, Washington Post, Politico, do pretty good job of keeping things simple, as much as best as they can, I mean, a lot of those folks will, you know, try to it's included lots and lots of information. And to the extent to which, you know, sometimes it's a little bit of a, you know, you have to sit with it for a little bit, to really kind of absorb all the information they're gonna be. So those are, those are, you know, what we usually typically look at, you know, election results is, is one of those things that's kind of hard to do, and takes a lot of resources from a news organization. So I think there's fewer, these organizations actually doing it, especially when you look at like a local, like, you know, LA Times still certainly doesn't look like, you know, much smaller local places. So, yeah.

Yanqi Xu

Right, yeah, he sees such that, that, that takes a lot of resources. Can you elaborate a little bit on that? Like, do you use the API from AP?

Ryan Mark

AP has been, like almost the only game in town for a while, we did not use AP, but a company called Decision Desk, which is a new player. That's part of the resource needs he Newswire or the AP elections fee is very, very expensive. You know, so the company has to outlay, you know, hundreds of thousands of dollars, to get access to the data. I've never actually looked at how much these things cost, but I know that they're probably six digits, at least.

So so that's always been a big hurdle, decision desk gets better pricing. The fundamental problem, especially with American elections, is that they're just so just to disjointed and like disconnected. Like you effectively have to, you know, when we have a nation national election, there's actively thousands of lectures happening, because each local, state, federal election authority, runs elections, differently, collects data different, you know, you know, does different things, you know, an organization like at like, sends reporters to like elections, Shapiro's election night like thousands and thousands of reporters, they send out in like, collect data and, you know, corporate coordinate with the local election authorities. Decision Desk has come along, and, you know, because of the improvements, and, you know, the way that, you know, these theories handle their data, publish their data in the last 10 years, it's become easier to automate things better. So, that's a big part of the cost. The other part of the costs are, you know, it's these are weird, like, software applications to build, because they typically dross an incredible amount of traffic. And they only need to run for a day or two, really. So you know, you're building an application that needs to, you know, like, work at the scale of a very large high traffic website. But it's only going to work, it's only been around for a day or two. So it's hard to

like, say, like, you know, you can put your money into your actual website that's going to do actual traffic and continue to publish every day, or you're going to put your money into, like one night of really intensive traffic. So that's another challenge. Something that a lot of these organizations have struggled with over the years is, you know, keeping their election results site up, under a torrent of traffic.

So that's another thing that makes it really expensive. You know, and if you miss it, if it's something brace, you know, doesn't work on that night, like, it's effectively off for not right, because you, you miss, you miss the window, and all that traffic, and you're thinking work. So like, so they're risky, and they're expensive? Do you know, so it's?

So that's kind of why I think, you know, what, why not stayed away from that for a while. And, you know, we've really only started do them, as, you know, the popularity and, you know, recognition of the Vox increase to the point where, you know, it's a much bigger thing than it was a couple years ago. So

Yanqi Xu

yeah, sure. So, I'm wondering, so when you were building this application, and so the idea was to automate a lot of things. Right. And so what was kind of your role in this coverage? How, how are things done? And so just give me like a bird's eye view of what you did. And so and how it shows like in, in the final results?

Ryan Mark

Yeah. So I mean, the work that I did was, you know, all the HTML, CSS, all the stuff that would you see, with help from our other developer, just recently left Vox. So that front end part and then it was actually, this is the simplest one that we've ever done, mainly because of decision desk, providing us the data in a relatively easy to use way. So we had a scraped piece of software, and that's on the server somewhere that runs every minute or two, down the download your data for Decision Desk, and then update the pages. So, you know, we don't we didn't have like a running web application somewhere on the server, it was just simply updating this site as it exists every two minutes, quickly as a candidate. And so, you know, we can avoid a lot of the the engineering, like high traffic problems by, you know, nobody, nobody can nobody like, directly connected to any software that we wrote for this. This was just simply software that would run update pages on a different place. And that place where the pages were updated, could handle lots of traffic. So we kind of didn't have to worry about a whole part of the problem with the way that we did it. And, you know,

a lot of it was mostly stuff that I built.

Yanqi Xu

Okay, yeah. So I'm wondering what what's kind of the lessons you've learned through, you know, this time, you know, election coverage, anything new, compared to previous

elections you've done? Or what's kind of the future direction for, for Vox's election results, coverage and results display? And, yeah, so sort of, like, you know, was kind of the takeaway.

Ryan Mark

One big takeaway from this one was understanding the expectations of not just the audience, I'm also other reporters that are these organizations. So like, one thing that kind of came up during the election night, or people were like, you know, all this race has been called this race has been called, why is it? Why is the website saying it's not called? And often the answer would be well, you know, the website is updating. And it will say, in a few minutes, when the result was so like, making sure that everyone is on the same page, as far as like, how quickly is this thing and it gets results? How quickly, you know, is the needs of a reporter was actually reporting events, right? It's going to tweet about all, you know, experts in one is going to have a little bit different expectation that somebody a reader who's not reporting on it was just interested in what's going on, you know, for them, if the data is like three minutes or four minutes old, you know, okay, that's probably not a big deal. But for a reporter, you know, they might think, Oh, well, there's something wrong with our scientists not updated yet. So that was kind of one thing that are, you know, that we need to be that are about, like, you know, who is this for, and like, what is going to be our own company, or own newsrooms expectations of what's it gonna do. The othe other thing is, I think it works pretty well, true in a lot of traffic. So I think, you know, the kind of approach the simple approach that we took did pay off. And I think there was another thing we tried too, which was that we had lots of pages for individual state residents to try to, like, get into the SEO. So we truly, really tried to like, juicy the SEO is thing by creating individual pages for states, you know, which serve two purposes of, you know, for helping us with SEO, but also giving people the, you know, the specific answers about their specific location. I think, you know, one thing we learned from that was that, like, an SEO plays like that, we really need to think more about like, lead time, you know, like, you need to get the pages up online earlier than Election Day, in order for them to get really crawled and really start to, to go out onto the web for people to find on election day. So one thing that I might do get different in the future is going way to, you know, basic, like publish the election results sites, like a week before the election. So let it sit to let it kind of permeate on the web, so that on election day, when people start looking for it, Google will know where to send that, you know, they'll kind of be there already waiting for people to come and use it.

Yanqi Xu

Okay, yeah. So, um, have you ever sought any, you know, readers feedback, or learn from their comments about, you know, how they use, you know, electoral graphics? And is there something that they like, or about what you did, or something that you would like to do more, since they like it

Ryan Mark

We didn't really, we haven't interviewed anybody, or really kind of looked into that on the direct feedback that we've gotten, you know, some people found it really useful. We had a couple mistakes, which people like noticed, right away, which, you know, we like, it was one election that was called, until, like, really late. And there was another election, that was called in correctly for short period of time before we switched. So like, you knew about those things right away, because, you know, our readers told us. So, you know, like, it's incredibly difficult and incredibly important to get everything as accurate as possible. And other than that, it seemed like it did pretty well. You know, traffic wise, engagement wise as in like, you know, how many how much time people spend, looking at it, how much time people interacted with it. We really didn't get or haven't really, like, asked for specific feedback from our readers on it. And if we had people here, we could probably do a better job of that.

Yanqi Xu

yeah, OK. Cool. So do you have anything to add about election results, graphics that we haven't really touched upon?

Ryan Mark

No, not really. I think all stuff you need to try to answer specific questions that people have. And even if the data if something is interesting to you, doesn't mean it's going to be interesting to everybody. And yeah, just trying to keep it simple.

Interview with Aaron Bycoffe, FiveThirtyEight

Yanqi Xu

Tell me a little bit about yourself. Like, how long have you been, you know, involved in, you know? So kind of election graphics? And were you involved in the 2016 election coverage?

Aaron Bycoffe

Sure. So the first election i did graphics for was, I think 2008. When Obama was first elected, I was working at a newspaper in Norfolk, Virginia called The Virginian pilot. And I built some live updating graphics.

But the results from that election, I think it was just The Virginian results for that, and then in 2012, I was at the Huffington Post, and did a lot of work on election results there for that presidential election, as well as the senate elections that were happening that year, not only the results, but also working on graphics related to forecasts for those elections that we did. And then, let's see, I came to 538 in 2015. So there was the 2014 midterms, and I did some graphics for health post, the House and Senate election, and Governor's elections. And then in 2015, I came to 538, and started working on the 2016. election, and did some work, not just on results, but also other things related to the campaigns and

forecasts, things like that. And then the same for 2018 midterms. And now we're working on the 2020 elections.

Yanqi Xu

Sounds like a lot of, you know, great pass stops. And so someone wondering, so it's so just to clarify, and because I didn't seem to have seen the specific Election Results page for, you know, from 538. I wonder if there was one?

Aaron Bycoffe

2016. There's a there was a page that had our live forecast, based on results that came in based on states that were called. So it wasn't actually we didn't show results at all on that. We just showed our forecast and as it was updating throughout the night. And then I believe we did the same thing and 2018 and 2018. It was not a separate page. It was just part of our live blog that we did. It was like embedded on that.

Yanqi Xu

Right. Yeah. So kind of like a sidebar type of thing. And then and I believe I've seen forecasting the race for the house. And then that is like a kind of like a full page.

Aaron Bycoffe

Oh, right. Yeah, that was in the months leading up to the election. We had that we had forecast for how senate and Governor. And yeah, I was involved in building those pages and setting up the infrastructure for that.

I didn't I don't do the modeling itself, for the forecast. But I work on the graphics, backend parts of that.

Yanqi Xu

Right. Yeah. So one thing that I found pretty interesting is that of in 2016, it seems that it was largely a state by state choropleth map. And in 2018, the

forecasting the race for the house page had a Carter Graham, and the sidebar for the 2018 election, use a more detailed, you know, choropleth. I am wondering how did all these you know, design choices come about? And can you walk me through what kind of, you know, modifications you made to the to the 2016 state by state court plus us things like kind of having a more granular view of the, the votes or, you know, like transitioning to a quarter gram?

Aaron Bycoffe

Sure. So the tricky part with election maps a lot of times is that a regular map or a traditional map, does a good job of showing the state and the area of the country, but not necessarily a good job of showing how much power that state has how much you know how much that state matters to the election outcome. So Montana is a big state geographically, but it only has three electoral votes in a presidential election. So there was a decision made to use a geographic map for the presidential forecast in 2016. I think because one reason was just that people are familiar with that style of a map. And if they're looking for a certain state, they can find it pretty easily. Even though it does distort the influence of each state, you know, It's still a little in some ways it's more usable, than a cartogram is we did also have a cartogram in 2016. But it wasn't as high up on the page.

Right. But there was a way to see. That was done by my colleague, Ella, Ella Koeze.

And so in 2018, we so for the House, we thought it was even more important that we not show things just geographically, because if you had a if we had a map, a geographic map that was that had the outlines of each district, it would be close to impossible to see many of them. And most of the country would be red even in a year like this, like last year were Democrats picked up a lot of seats and did very well. So we came up with a way to have a cartogram that, you know, kept some of the geographic, some sense of geography, but gave one of these shapes to each district so that we could cover each one differently, and they would all be visible and you can get a sense that... the coasts are or blue and the middle of the country is more red. But you don't need to know. It's not as important that each district displaces exactly where it is geographically.

Yanqi Xu

Right. So can we say that the main form of visualization for the 2016 election results was the choropleth maps versus the main form of visualization for the 2018 midterm election as a cartogram?

Aaron Bycoffe

Yeah, I would say that. I mean, actually, for 2018, the main, you know, for the, for showing the individual seats, it was the cartogram. But we also wanted to emphasize, you know, the graphic at the top histogram, you know, putting a little more emphasis on the probabilities of control. But yeah, for looking at an overall view of what we thought might happen, or what we thought was likely to happen. Yeah, I would say the cartogram. And also the graphic underneath that, that showed each category of District how far each party was from getting past the majority arrow.

Yanqi Xu

Right. Yeah. And so what do you think are the advantages of presenting the information that way? Because it seems that you have a top down approach, and then you're emphasizing the, the kind of probability and forecasting at the top and then kind of

arranging things, you know, with more details in the middle, and then, but overall, seems to be focusing on the kind of the Grand picture, you know, sort of like a blue wave, as they call it.

Aaron Bycoffe

Right? Yeah. So on these landing pages, we tried to look at the bigger picture and start from a kind of a zoomed out approach of what is most likely to happen overall, not in individual districts, but in the House as a whole. And because the main value that we add for something like this is our forecast, we wanted to come up with a way to show that in a way that would be understandable to people. So that's why we started with that rather than starting with the cartogram, you know, if you, if we put the quarter gram at the top, not been immediately apparent that we thought there was a 7 in 8 chance that Democrats have been control, you know, unless you unless you're going to go through and count up the shapes, which is pretty tough to do. And even then you can't really get that sense, because you don't know the probabilities, you know, without looking unless you're looking at each one, you don't know the probabilities of all the red and blue shapes. So we wanted to kind of emphasize the one the probabilities that we thought each party had a wedding and two the uncertainty around that, by showing that there are different ranges of outcomes within, you know, that we said there was an 80% chance that Democrats were gain between 21 and 59 seats, rather than just pointing out the most likely scenario, or the average scenario, which are both things that we've tried in the past. We wanted to try certainty and the range of actual outcomes.

Yanqi Xu

Right. Yeah. And so I was thinking, so can you kind of walk me through what the page looks like, leading up to the, to the election, because here, what I'm seeing is kind of like, the tunnel vision of things. So 530, I had, you know, like a statistical model to predict, into, like, Who's winning like, which district and, and is trying to kind of present that, you know, right off the bat. And I was wondering, before, all the election results came in, what was kind of the approach of designing the page, and also what it just looked like, on election night.

Aaron Bycoffe

So this page, the forecast page, was before any results came in this, this page went up a few months before the election. And it didn't really, I mean, the numbers and the data changed. The layout and design of the page didn't change much. We added some things, especially to the if you click through to each district, we added some features to those to explain things a little more, a little more detail and added some other features based on that. But as far as the data itself, it was just really reflecting the changes in the forecast. Has that changed? So there were you know, as new polls and other data came in? we would update it, and it would show the results, or show the forecast.

Yanqi Xu

Right? Yeah. And so like nothing in particular was done for the little tonight itself, right?

Aaron Bycoffe

We did have live forecasts are real time forecasts. And that was if you search Google, like 538 2018 live blog, or something like that, you should be able to find it, and it was just it was on the site of the body that we did. And that updated in real time. And that was mostly focused on the forecast. So as results came in, our model updated to show the chances of each part of winning.

And we also had a breakdown of which way different seats we're going. So the seats that we categorize as toss ups, whether democrats are winning, most of them, whether Republicans are winning most of them. Things like that. And we also had a graphic with the little box rectangle for each seat for the Senate and the House. And that was another way we kind of displayed forecast and the results as races were called. We didn't have a separate page.

Yanqi Xu

Yeah, I just thought that and then was it important for, you know, 538, to conduct compare the results to the forecast, or is just like, kind of giving people an idea of what the results might look like?

Aaron Bycoffe

It wasn't important, like for individual seats, necessarily. But it was we thought it was important and interesting to look at, you know, how these different categories of race where we're going. So for example, if Democrats had started winning a lot of being republican seats, that would be good, very good for for Democrats. And, you know, if Republicans the started winning a lot of the democratic states, that would be very good Republicans. I mean, it could have also been an indication that our forecast was not very good. But we were confident that these were good categorization of each scene. So we also did some tables of results throughout the night. If you scroll down, I don't know the best way to find them. But if you scroll down through the live blog, you'll see some of that we did, like, how tossup districts are voting, how romney Clinton districts are voting, where we listed each of those districts and the previous outcomes and past elections as well as the margins.

Yanqi Xu

And the kind of the visual representation, is that just a table? Or you also had kind of a graphics?

Aaron Bycoffe

For those, It was just tables?

Yanqi Xu

Right? Yeah. Because it seems that sometimes, like people would break them down a little bit and try to present them and I do notice that there's a, you know, like, we have the rectangles squares down below for each kind of race. And so it was wondering, was kind of the approach to all these different results, or forecast. Is there something that you want to emphasize in particular?

Aaron Bycoffe

For the rectangles and the squares, I think we wanted to so they were ordered, they were they were on the page in order of likelihood of a democrat or republican winning in our forecast, right. And the idea was that if, for example, there were a lot of red squares on the left side, that would mean that Republicans were doing a lot better than expected. The fact that it was... it ended up basically, you know, split down the middle was a result of, you know, the model, the forecast being very good this year, and the results kind of matching the expected outcomes. Right. And it does show the outliers. Like if you look at that blue square, that's all right, most blue square where we didn't give Democrats a very good, very high chance of winning they did with or South Carolina 1, so kind of able to show those outliers. And the likelihood was drawn from past elections, and not like, not like polls, and forecast

Aaron Bycoffe

before the election,

Yanqi Xu

before the election, and yeah, because it was trying to see how, you know, you kind of have the likelihood, but, but I mean, like, if it's all based on likelihood, or like fork forecast, and everything should be just, you know, like, kind of switch the camp together. And then the red would be, you know, like, the right hand side would be all read the left hand side would be all kind of blue. And then so what, what was kind of the different, you know,

Aaron Bycoffe

The idea was that you if you lined the seats up in order from most likely Democrat to most likely Republican. And you see that there's a race that's on the most likely Republican side, that ends up being called for Democrats. That is a race that's worth looking at finding out more about or, you know, figuring out whether democrats are winning a lot of those seats, or republicans are running a lot of the ones on their side. So that right most one Oklahoma fifth, before the election, or the day before the election, we had given the Democratic 1 in 7 chance of winning.

So that's an upset for, you know, it's not outside the realm of possibility for a Democrat to win that seat, but we thought it was or unlikely, unlikely to happen. So by presenting it this way, it allowed us to kind of highlight those outliers.

Yanqi Xu

Okay. And, and so were they colored according to the actual votes are just still the result. Is the forecast.

Aaron Bycoffe

They are colored based on the winner? Yeah, like,

Yanqi Xu

Oh, so those are real votes against forecasts. That makes sense. Okay, thanks. So for election coverage, can you give me some examples of alternative forms of election results display other than the traditional maps and kind of what works and what doesn't work?

Aaron Bycoffe

Sure. So you know, there's the, the ones we have here, where we're, you know, just showing, showing them in another in a way other than an map like these blocks, rectangles. I've done, we've done things like that. In the past. You know, There, you could have tables that highlight certain kinds of races or show a tracing in more detail.

I think in a house, and the House of Representatives race, you know, seeing a map of the district as can be important. Yeah. I'm not sure what else off the top of my head.

Yanqi Xu

I realized that there are three different views that like the light view, classic view and Deluxe view for readers. And so wonder if you give readers any instructions and sought their feedback, or see what they failed to read from those graphics. Did you have any insights into readers' reception of it?

Aaron Bycoffe

So in 2016, we had three options that were polls plus, polls only and now cast. And there was a lot of confusion about particular the now cast, which was kind of a view of what would happen if if the election were held that that day. And we did not do that in 2016, or 2018. Sorry. So we had this, like classic and deluxe. And I think our presentation of this worked well, in that day, they kind of went in order light was the the forecast that had the...it was the most basic it used only polls.

And then classic added some other things like fundraising, past results was historical trends. And then the logs also used expert ratings. So I think this was that we didn't have any, there wasn't as much confusion in 2018, I think people understood it pretty well. And people did a good job of being able to compare the different types of forecast and seeing what was different in them, and seeing why that was useful.

Yanqi Xu

Right? Yeah. So have you got any of their feedback or learn from their comments about

Aaron Bycoffe

I mean, we get email from people. We have an email link on our pages, and people, people do send us feedback. You know, if we find that a lot of people are saying that something is not working correctly or not intuitive or suggestions for things, we we certainly take that into account. In 2016, for example, a lot of people said they wanted an easy way to see what polls were being added, like as they were, as they were coming in, and how that affected the forecast. So we added a page, there's a link on the left side of the 2016 page that says updates. So we added that kind of midway through the year, and that that showed each set of updates to the polls that we did and what the forecast was after, after those polls were out.

Yanqi Xu

Right. And then one thing that I was wondering to us is that so for 2016, there's this kind of national view, and then there are also different states to watch. And then 2018, it seems that by clicking through the quarter gram, it brings us to a page. So I'm wondering is, you know, like states results, are also big part of it. And then what do you expect, and readers to interact with it and kind of read from it.

Aaron Bycoffe

So the states to watch in 2016. We, like we're picking those by hand, which we thought were the most interesting, which we're getting the most coverage or most likely to have an effect on the overall outcome in 2018. We decided to just use the... people use the cartogram to see districts and also they could search for for races or candidates rather than us making a list of on our own because we I think we wanted to emphasize the individual seats a little less. You know, one, one state in a presidential election can be extremely important. The one seat in a house selection is not very important. So I think that's probably the destination.

We discussed it, I don't remember what the discussion was about whether we should you know, list, list some seats individually to draw attention to others.

Yanqi Xu

Yeah, because I have seen different approaches to it. And then people have different, you know, kind of their way of handling it. Some people said, Oh, It's important for people in their district to find out who they're voting for, but I guess there could be some differences in kind of designing...

Aaron Bycoffe

Yeah, I think our audience. We're focused more on a national audience who are not necessarily, you know, people are interested in what's happening in their district, but a lot of most people don't live in a district that is very interesting electorally. So we wanted to show more the overall, you know, potential outcomes. We want people to be able to find their, their district if they wanted to, but that wasn't main focus.

Yanqi Xu

Yeah, that that makes a lot of sense. And that way, I think it lends Well, it lends itself well to all these other forms of visualization other than a map, I guess, because, because I feel that 538 actually uses a lot of other, you know, visualization form. So like, Look, trend lines and histograms sometimes even, and it was not very common for other you know, like, news outlets to just do it to report the results.

Aaron Bycoffe

Right. Yeah, we we, I mean, we definitely try to experiment, experiment with different graphic forms. And, you know, I think we're one of the few is ours that has forecasts like these. So we we focus a lot on how we can best show those to, to the audience that we think be helpful.

Yanqi Xu

Right? Is there any of election graphics forms that you would like to continue to use more? And then kind of best practices, you could kind of draw from this.

Aaron Bycoffe

I mean, I think the histogram that we did in 2018 works pretty well, people, we were we weren't sure if that would be understandable. But it was an people, it wasn't the like it, it helped emphasize the uncertainty in the election. Also in our Governor's forecast, we have a different kind of graphic that kind of lined up all the states sized by their populations. And I thought that was an interesting way to show it. And that could be something we could build on and do again. And I think different, I think there's always room to improve on cartograms. And while they are not exactly, geographically correct, making them a little more closer to geographic reality.

Yanqi Xu

Right? Othing that I heard a lot is that a lot of the interviewees I talked to said that every election has its own story, and then every election is different. So I'm wondering, so for Do you see the kind of midterms different from presidential elections in terms of you know, what are the highlights? And kind of the million dollar question? And so what was kind of your take on the past elections and the just the 2010? election?

Aaron Bycoffe

Yeah. And I think in 2018, the big, the biggest question was, whether it would be a wave election for Democrats, and whether they would take over the House, by how much. And so we chose to lead with the histogram, because we thought that's what people would be most interested in, and then they can see the chances of different outcomes for the whole house happening, you know, and another, another midterms, the Senate might be more important that we might have a lot more emphasis on the Senate. And what the what the outcomes, potential outcomes are there? Or, you know, if, for whatever reason, there was, you know, some other issue that was a big deal in a midterm. You know, we would adapt accordingly, I think, I think for, for the presidency, for presidential forecast, people are, you know, are definitely interested in the overall outcome. And that's the most important thing to people are looking at these kinds of pages, but they do...they do still want to know about individual states, and they want to be able to see pretty quickly whether some states are likely to be Democratic or Republican voters.

Interview with Alyson Hurt, NPR

Yanqi Xu

How long have you been making graphics and were involved in the 2016 election coverage too.

Alyson Hurt

Yeah I've been making graphics, designing for the web since college. Um...and uh here at NPR I've been involved in the design of our election coverage since I started, so that would...I started right after the 2008 election, so probably started in the 2010 election

Oh wow. So what's it like when the team is trying to figure out what to do in terms of the main coverage, say like the live coverage.

Alyson Hurt

So if we're talking specifically, there's all of the election coverage and all the projects kind of leading up to election night and then there's like election night itself, which is a

tremendous amount of work for really like 12-24 hours of use at best. But um that will typically...we've started conversations already about what we, for 2020, conversations like for staffing and budget for what we want to do and how we're going to staff for that but that conversation will...for 2018 let's say, we had some sort of like a little bit of a recap of what we did for 2016 and then some sort of like blue-sky, like, if technology and staff and all of that were just like, you know, were no object, what are the kind of things we would want to do, what are the things we have seen in other places, where do we think we're falling behind, what are things that are different, and then from there, um, start to sort of, um, uh, and also thinking about kind of what are the audiences, where are we gonna be, how are we gonna want to talk to them, um, and then start to, based on all of those, what are we gonna want to do, start to pare that down, pare that list down. What are actionable things we can do that both sort of fit our goals and like we can do. Start that conversations about prioritizing. We can have this fancy interactive map, or you can have like stuff that other places will have. Or like, we might do...a slightly different presentation, or have more data. And there's sort of like, there's conversations of what are the core commodities that as a responsible news station would have, and what are the things that are extras.

Yanqi Xu

I remember the 2012 kind of news app was kind of different from a lot of other news organizations so I was thinking like...how did this idea come about and then how you execute it and then how you kind of change over the years. Is there going to be a different strategy when Trump is boasting that he's got these shaded areas map and are totally red.

Alyson Hurt

Right and all the downsides of a particular style of representing election results.

Yanqi

Right. Kind of wondering what your thought process on this?

Alyson Hurt

With 2012, or in general?

Yanqi Xu

Yeah with 2012 and maybe can go over elections...

Alyson Hurt

2012 was sort of a rejection of election maps. Um, like, it's kind of more accurate to kind of show like the sort of weights of states. Kind of getting at sort of the same things that a cartogram tries to show and that like yeah Montana is giant but it doesn't have the

electoral weight of Massachusetts. So, and then I think Brian Boyar suggested turning it into Tetris, and that's how that came about.

Yanqi Xu

oh Wow. Yeah that is what it is...but then I realized that there's this...NPR did something like a cartogram, right?

Alyson Hurt

Yeah, so in 2016 I did cartograms for the US map because, um, there are people who do want to see the results by state. And that also came from, like our folks, like our staff, did, um, sometimes, there was a resistance to doing alternate forms of maps because they're not necessarily what you're used to seeing, but I think it was decently well-received internally, so we had to go ahead to take that risk and present it as our dominant visual. Um and then that came, was also an extension of work I had done for the delegates race...because the weird thing about delegates – I'm gonna go off on a delegate rant.

Yanqi Xu

delegates for the presidential election?

Alyson Hurt

Yeah. Delegates for our presidential races, uh, it's not winner take all. The rules vary by state. You can win but you might get only a certain proportion of the delegates. It may be that other folks get...they will also get delegates according to their share of votes. Which means if you're showing a map showing someone won five states, doesn't mean they won all the delegates, so it's a little bit like untruthful to show a map showing this is where these people won because like that's not ultimately, that's not like the result of – these wins are not gonna result in this tally of delegates.

Yanqi Xu

Oh right, there are several states that have a system that, um, yeah. And then, one thing Lisa also pointed out this morning. When there's this winner-take-all system and then like the other party, or the losing party, will have no representation on the map, so it's like, it really increases polarization.

Alyson Hurt

Let me see if I can find something else that has this. Well I can't find all of them...but here's one with just Trump, and you can see you know the states that he won but also the

states where he only won like partials, and so it's a little more truthful than something than just a US map, and also the states are sized according to how many US delegates they have. Um, uh, so it's a bit abstract, but hopefully a little more, I don't know, it's a weird bridge between like abstraction plus trying to be more truthful.

Yanqi Xu

um definitely. I think that's what everyone is trying to figure out too. And um so, so what are the modifications you made to the traditional sheeted choropleth maps just in case I didn't spot those modifications.

Alyson Hurt

Uh I didn't use the traditional choropleth maps...

Yanqi Xu

yeah, I mean like modifications, meaning how you made different choices or decisions, like compared to that approach.

Alyson Hurt

I rendered a bunch of boxes sized according to the electoral weight of the state and then tried to arrange them on the page according to uh sort of geographic like you know in that way try to convey the sort of importance a state v other states. A win in Florida is more significant than a win in Wyoming, or something like that. and also convey the weirdness that is Maine and Nebraska, you could win partial votes, or electoral votes.

Yanqi Xu

So what are the advantages of your chosen form of visualization than, I mean like there's been different forms of visualization.

Alyson Hurt

The benefits of this kind is that you can...the sort of...uh...the actual importance of the state is fair, you're not swayed by this visual, geographic size, and it's a little bit better able to convey some of the nuances of what the vote for president actually means and the significance of that.

Yanqi Xu

I'm wondering if you have any opinions of more watered-down versions. You know sometimes they have these seats and they won't show you the geographical locations at all, and sometimes they'll just show you a table, and then, so what about those.

Alyson Hurt

A cartogram you can still see a little of this regional trend. You won't get like complete geographic fidelity because they're all squares, to pick out a particular state, but you should be able to pick out a geographical trend, if geography is relevant. Or if there's a geographic trend.

Yanqi Xu

So when you're designing all these visualizations, what are the alternative forms to the traditional mapping, say, there's bubble, tiles, charts, and so like they have like...it's hard to describe. I was just looking at it. And so for these they have like bubble charts, cartograms. These...these are pretty popular or we talk about it a lot. This is Financial Times rendering of it.

Alyson Hurt

This and this and this start to get at where people live. I don't...what's interesting sort of as a curiosity to make a point. I don't know that I would use it as my general elections results display, but it definitely makes the point of...you know, when you look at a typical election results map where it's shaded by district or state it feels like all the republican votes should way outweigh the democratic votes, but that kind of underscores the premise. Kind of getting at these heat-mappy kind of things. You know this is where people live. This gets at it, but at the same time it's so skewed it's hard to approach.

Yanqi Xu

Also, I feel that this one is pretty basic. It's just like squares, but sometimes people try to you know kind of approach the actual shape of the state and then they'll have something like this or this. So, how would you describe the good and bad of these approaches?

Alyson Hurt

I mean I think this is sort of an attempt to bridge the weirdness of that cartogram approach but it still feels like...you're getting a little more geographic fidelity, but it still feels kind of alien, especially with this kind of weird gap. The Daily Post, they have a map of congressional districts, but it's similar to this where you have this sort of giant gap: Montana and Wyoming, like geographical representation...it's not.

Yanqi Xu

I guess that's why they offer two options to view it, so is that also an approach that was considered.

Alyson Hurt

That was an approach that was considered, but kind of for time we didn't [background noise]. This is a form that is familiar, but this a form that is more true to the data.

Yanqi Xu

So how would you, cause there's like a reader's ability to understand or fail to understand from your chosen form of visualization. Is there gonna be things that are challenging for them to read: Like the tetris approach. How do you take into account their perceptions of the maps because sometimes I know there are user tests.

Alyson Hurt

yeah, we didn't for this. We reached out around the newsroom and saw how it was received internally.

Yanqi Xu

You mean the 2012 approach?

Alyson Hurt

Uh any of the approaches.

Yanqi Xu

Was there anything that strikes you that is necessary for them to grasp? Is there a point that you need to make, like say, sometimes, you know like, people say it's like for these definitely it's crucial that you try to make the borders clear and then make them realize what it is, so like, is there anything that is essential for the...visualization.

Alyson Hurt

State labeling and like units of states from each other . Any, not necessarily within the map itself, but pretty directly adjacent to it some sort of other representation of the results. The numbers at the top, the top numbers of the current count. Another thing that is useful to represent is um like sort of where things are in the process. Where is data coming in. Where do we not have anything coming in. what is incomplete and what is called, and how to symbolize that.

Yanqi Xu

That's a problem for me because I was always out reporting on election night, so I didn't really see anything. It was live, and so because when I see it, it's almost filled, so what's your approach, what's the process like. Can you describe it to me, how it performs on election night?

Alyson Hurt

So for 2016 what we did was for the map was: states that had no data were grey, states that had some reporting have... whoever was leading was hashed. And then it was with a much more saturated color and there was no hashing anymore. And it was a pattern I've seen other sites do well.

Yanqi Xu

So for those kind of shades, I believe the NYTimes were doing like a shaded area. And then I must have gone back to a super-detailed map. But there's been discussion about this. Jon Schleuss of the LA Times was criticizing this.

Alyson Hurt

The saturation question with where people live?

Yanqi Xu

Yeah, do you have any insights into how what to consider when making detailed election results maps.

Alyson Hurt

Be clear what question you're asking because I think that...trying to get into both the share of the vote and the share of the people...the number of people living there. These are different things...different factors that play into your design and it's a lot to ask of your cartographers(sic). So just kind of...I can understand why the Times when they did the original map why they did what they did. But I can also understand the arguments is this misleading by like making it seem like these places are super-heavily supportive when it's somewhat blue there (sic).

Yanqi Xu

because I think that's why I thought that, say like users' readings, users' perceptions of the map matters. That's why this is important because there's been a lot of studies that show that readers don't read the map the way designers want them to read. A lot of times, like, instructions say, I thought that disaster mapping a lot of people did give them instructions. But there's even hidden features that I didn't know is there. So have you sought readers' feedback or learned from their comments about their difficulty in understanding electoral graphics. Is there something that they like.

Alyson Hurt

Not as well as I should. I think there are a lot of common conventions that get used and iterated on. Where we can, we'll sometimes like look at little instrument things...graphics

should be [indistinguishable]. That's kind of when we're able to consult that and do a good analysis. That is a little bit of a proxy for like use and feedback for it. But I think in terms of getting actual user-feedback we're not as good as perhaps we should be.

I had some screenshots I was looking for...

Yanqi Xu

so in the future what would be the ideal practice in election graphics, because I feel like every year people will modify the previous way. They'll kind of have a different idea as to how to approach these. And there's been reflection in the newsrooms in terms of how to avoid misleading maps. And people are talking about it. What do you think would be the ideal practice? Because you mention you know kind of what they bicker about.

Alyson Hurt

the minimum things you have to convey is like who won with the overall electoral total. Who won all the electoral votes and how you represent that as, in terms of...and you try to represent that as honestly and truthfully as you can, but to the level of detail as to, you know, a lot of that is down to resources, a lot of that is down to what data you have available to you. I mean I, I can't say the folks who use light standards, like US based map are wrong. It's still an accurate representation of like, um, it's accurate in that, yes, somebody won these states, but it lacks nuance. And so I think everytime around we're trying to find better ways to convey that nuance and help people understand the how and the why without like, without telling it in such a way that is super alien...like in a way they can interpret it.

Yanqi Xu

So you mention better ways to convey nuances. Can you give me some examples of that?

Alyson Hurt

well things like showing how things are in progress, looking at different ways of rendering like cartograms or, using alternative non-metric. Other ways of that get at showing what happened, how it happened. There's a different way, a non-map way that we do election results that is kind of big board. It's not really that great, like, after the fact because how are you supposed to find that thing you're looking for. The idea is...It's good for like watching things live and I have, and kind of see like as poll closings happen like what's going on, and if something has not been called. If it's hours on and like we have a saturation and nothing has been called there, something is going on And so there are some like other ways to get at it. There are...NY Times and the Post have done table presentations showing where things were expected to go and then once you start to see things that are like more toward the middle like start to shift or, you know, go exactly how they were supposed to go, you'll have a sense of how the night is going. So those are

sort of like alternatives to maps to kind of still sort of truthfully convey what's going on and also...a more nuanced way of reporting it.

Yanqi Xu

Right, I remember when I was out reporting because I was in Missouri, and I was in this watch party and then they had like some TV news and they had this big screen that Beto had more votes than Cruz back then, and I was like, that's crazy, but I realized that it's not like the results come in full so there just like showing these like weird bar graphs...but it's not true. It's very...it's too early to call. It's pretty much not a great way to present it.

Alyson Hurt

It's so weird often how things are presented on television as if it's like people are voting right now and it's being tallied immediately and somehow like a horse race. At that point numbers are coming in. Everybody has already voted. The outcome is going to be what the outcome is. It's just a matter of when we know what it is. So this weird "He's up, he's down!" in the night is kind of silly.

Interview with Alicia Parlapiano, *The New York Times*

Yanqi Xu

And then I have some questions in that to. So I'll add to that too...So you said you've worked at the Times for 7 years. How long have you been making graphics, or were you involved in the 2016 election coverage?

Alicia Parlapiano

Yeah, um, so I um...yeah, so I guess I started in college at UNC in 2007...2006, 2007, 2008. It was kind of a string of internships after I graduated, including one at the NY Times. And then I went to work for the Pew research center and then went to the Washington Post where I also did something [indistinguishable] I did now. And then moved to the Times, and I guess that was in 2011? Um, but yes I've been doing it since school and I graduated in 2008.

Yanqi Xu

Ah. Ok. Yeah that sounds like a lot of experience in this, and you were in different newsrooms, so I presume you had some considerable amount of election coverage experience?

Alicia Parlapiano

Yeah, so um, well I was in the newsroom, well I was interning Newsweek when Barack Obama was elected in 2008, but I wasn't...I did a couple graphics for election stuff, but I wasn't highly involved. I was just an intern. But I guess I did do a couple things, and then in 2010 for the midterms I was at the Washington Post at that point. And then...and then in 2012, 2014, 2016 elections would have been at the NY Times. And then this past election 2018, I was here at school, so I wasn't involved with anything that they were doing.

Yanqi Xu

Cool, so you did cover the 2016 election, right?

Alicia Parlapiano

yes.

Yanqi Xu

for the live results

Alicia Parlapiano

yes.

Yanqi Xu

and the other graphics that come after that?

Alicia Parlapiano

Yes, I was part of a big team. I'm not. I don't do...Let me grab my headphones...

Yanqi Xu

Please go ahead.

Alicia Parlapiano

So...yeah...I'm not super-involved in the live results because there's a whole team of people who are way more skilled than I am at, uh, you know, the backend stuff, and um, the making sure that everything works and nothing breaks and the design of our results, so I'm not really involved in that. I was more involved in, um, graphics leading up to it – the election. And then some of the analysis after the fact, but it's still a lot of people involved because very late at night and there's a lot of things you want to say, and so the stuff we put out in the night that was like an analysis of where Trump won and exit polls. Yeah, I was part of a very large group of people who worked on that.

Yanqi Xu

So in terms of graphics itself, I'm wondering how is the team organized in terms of who designs what and then how many...manpower was on it.

Alicia Parlapiano

For the results pages?

Yanqi Xu

right.

Alicia Parlapiano

good question. Like I said, I'm um...Let me look it up. I was in New York that night, but I was in Washington most of the time, so a lot of the leading-up, like the designing and prepping of results pages happen in New York, and I'm not really there.

Yanqi Xu

you can let just let me know a little about what you did that night, too. I can always look for things and links.

Alicia Parlapiano

I'm trying to see if we had a page of like, like...I don't know for sure, but my best guess is that there are a few people working on a few different designs, and someone, Wilson Andrews who's like one of our editors probably either did a lot it himself or oversaw it. And then like someone like (again, I don't know) but someone like Matt Bloch. He's one of our...he's like a really fantastic developer and cartographer, and he probably kind of um built the map themselves, and like their functionality, and uh probably helped connect them to the results. And then we have like the whole team of people who work with getting the AP data and feeding it into what we have and monitoring it for the night. I mean like a whole team...a couple graphic people, but also people in what we call our interactive news teams, which do a lot more backend programming. Um...I'm just looking at stuff right now. And there's people who kinda just jump in and out. For something like the results. They're worked on in advance. And I can even give you like Wilson or another editor Tom Giratikanon... They can probably help explain a little better how that whole process works because I'm not, like, I haven't necessarily been part of that planning or even been involved in the results at all, heh heh. Um. So the night of...let me look because it's been a long time...figure out what I actually did do. Um...

Yanqi Xu

My focus is kind of to look at election maps, live results or, like, analysis, but a lot of newsrooms don't have analysis. I was trying to focus on live results a little bit.

Alicia Parlapiano

Let me...I'm just gonna send you a link. This is more of the analysis...this is one of many, but this is the analysis piece we did overnight that is actually related to the map. So if you look at (I sent you a link to it in the email), but there's 1, 2, 3, 4, 5, 6, 7, 8 people listed, and like, it was, you know, pretty much. So we...we all played different roles, and kind of get the results display (sic) up as quickly as possible. It had...Let me know when you've opened it.

Yanqi Xu

Let me open it real quick.

Alicia Parlapiano

So if you see, um, that very first map where it's like basically shows the shift from 2012. That same map is included in our results. If you go to the results page, it's like the fourth map down page of 2012. It really styles differently, but so, we probably had that planned out in advance or we had a few versions of it. We knew that we wanted to do that, and we kind of could use the same data that we use for results. Just hook it into this slightly different design. Um. And then obviously writing the little captions to help walk people through and doing different filters, so, um, I think we had also set up those filters ahead of time where like when you get to this kind of, I call it a second slide, and it says "His most significant support came from county in the industrial Midwest where whites without a college education are a majority" – that is basically a filter on, um, counties [of] less than 75% of people who are white with no college degree. So we would have had that, probably set up as an option beforehand, knowing that that would be a key demographic, and then we would have tested a bunch of them and seen what looks right, and how it explains what happened because you don't really know what's going to happen beforehand, but you kind of have that. And then again, the next one. These are all just filtered where we have these data sets linked to the maps, so it was really easy to filter by large county, filter by [indistinguishable]. So there are a lot of people worked on this one, but probably like, you know, people had different sized roles. Some people wrote the text, some people worked on the design, some people sat there and made sure it worked on every kind of device, every kind of phone, um, you know, uh...so this is one of the ones we would have done the night of as the results were coming in or almost all in.

Yanqi Xu

So, I was just looking at the main live results page. So that one seems to be attached to this other one, so the analysis and the results are all planned out, and ready to present at the same time. Or like just slightly after the results came, and I was really curious what to

show the night of because it seems that in 2016 the main form on the landing page there was this map, this traditional shaded area map, state by state, in 2018 it's like slightly modified with kind of like district-by-district view. So I was really curious about how, like, you know, how the Times editors and graphic editors make changes to those traditional shaded-area map. And then, um, so yeah, why don't you tell me a little bit about that. What problems did you find with traditional shaded choropleth maps, and what modifications did, you know, the Times journalists make to those maps. I know there are a couple of different visualization forms, but kind of, why those forms...formats were chosen, and how it kind of remedied the shortcomings of the choropleth maps

Alicia Parlapiano

sure. Um...so. Let me pull up.... Well so for 2018 there was not a presidential election, right, so you're gonna allocate it at the House district. If you look at the Senate results, it's a shaded map of the whole state but because, you know.[indistinguishable] and House districts in 2018 [indistinguishable] was what the election was, and we did have House maps in 2016, but that wasn't the primary map...um, but we always...in most cases we used a choropleth map as the main map on the homepage, on the main results page, you know, on the front of the mobile app because it's the one that people are most familiar with, and when you're trying to convey this information that everyone wants to know. They want to, like immediately, know the latest thing happening, and actually, as the night goes on, it looks a little bit different, right because it's shaded when it's leaning a certain way. It's only dark red or blue when it's called, when it goes to a certain candidate, but we keep this one because even though people have...will criticize it for being misleading and not representing where the population lived fairly, it's still what people recognize, um, the most, and kind of a form where they can look at a state and see who won the fastest. It conveys what you want to know. It's not popular. The main results page, you can scan a lot. You can click in. If you click on counties, again it's still a choropleth map, so you're still getting a whole lot of red, but you're seeing which part of the states voted which way as opposed to the entire state. So like a state like Illinois: on the state map it's blue, but on the county map it's mostly red. That's because most of the state geographically is mostly Republican, but Chicago...they're bigger. That gives you that level of detail where "I don't want to look at the county where I live, or where I grew up." And can see how it voted in that state. And then, besides the leadup to all the changes overnight...over the night...as it goes on but that, um, you know, show that because that gives you a different view that's like a reflection the size of the population, and it's not very good at showing you who won a state necessarily, especially in a state like Florida where there is a lot of red and blue dots, and you can't really add them. If you look at them, you can't really add them...visually see which candidate won. You need to see the shaded one... you can see it's red, um, but it's really good for showing where a population lives, and how big the leads were. Was the absolute vote count really close in some counties or was it a blowout? And then, the last one, the change map – again, this is a totally different view, and it doesn't show you who won each county, but it shows you where counties changed, and so It shows you that in like some of those key areas in the Midwest in particular they voted way more Republican than they did when it was Barack Obama versus Mitt Romney. But some lived in California that were maybe

like wealthier, more Republican area voted – or maybe they were Democratic – but they...they...or I guess in both cases, they voted more Democratic, as well as a lot of Utah, Idaho. And so this kind of gives you a different story than the county map. On the county map, you'll see how things went, but you don't know if that's normal and if it always goes that way. And when you look at the change map, and you can...it helps you identify what's different about this election than previous ones. And so we have all those to help paint a more complete picture of what happened. And for readers who are trying to find out different things, whether it's a quick, "who won this state," or "who won this county." Or, you know, "How did my county change from '12". That's why we provide multiple maps, but we still try to keep it pretty simple. None of these are very complicated. We didn't use a cartogram, which a lot of people use because I think oftentimes they can be hard to read and hard to locate a certain state, and maybe they get the point across that, you know, uh, more proportional representation of red and blue areas in the country, but we think, besides that, the lead and other charts that we have can tell that story just as well.

Yanqi Xu

Right because for the 2016 election coverage I don't see a cartogram. Is that only used in 2018 or is it somewhere I didn't find?

Alicia Parlapiano

So...yeah we didn't use it in 2016. We used it in 2018. In this case it's kind of like...it...I think it was a decent solution how we have it split up, all the states broken apart and they tried to maintain their actual shape. You can kind of find what you're looking for...so like, if we had done this...yeah, I don't know. In this case it makes a little more sense: how these are each House districts and it's all about adding them up, and I guess...in a presidential election. they could do this for electoral votes as well, but...yeah, I guess I'm not sure why they decided not to do it 2018 and...2016, but for some reason, and I can think about it more, like it, perhaps results it seems...like a little more...meaningful? I don't know.

Yanqi Xu

Thanks for that because I was just going to ask you about that. One thing I found interesting was that after kind of Trump was showing Reuters' correspondence – the traditional shaded area maps just kind of claiming a landslide victory. A lot people wrote about it and said, "oh that's not accurate." And then I felt...just my personal observation – I could be wrong, but um. So it seems a lot of news organizations in 2018 and the midterm elections, they kind of shifted away from the traditional shaded-area maps. Like Bloomberg, they had a cartogram just on the landing page instead of the shaded-area maps. They provided this view, but it was sort of secondary because they wanted to have a fair representation of the electoral votes instead of the geographical areas. So I was curious to find out if the cartograms are a remedy for the, you know, area and population problem or if it's just a better solution for midterm elections because basically votes

can...or votes are divided differently than just states. I was trying to figure out if it's um, if it's the nature of the election or if it's a solution to the old, age-old problems of choropleth maps vs electoral vote...votes. Am I making it too complicated to follow?

Alicia Parlapiano

I think I got your question. You'll have to ask someone else because I don't know exactly why we decided to do it. We've done a lot of cartograms in the past if you look at our past election results. So...but I don't...my personal view is that that wasn't any kind of reaction to people saying it was unfair or to Trump saying it was a landslide. You know that article that I wrote in 2016 before the election that was about the ZIP Code-level cartogram that we did. We got a lot of flak about it looking really read, and um, I guess like my view, and I think a lot of people in our department's view is that it's...this is why we do a lot of different kinds of maps and a lot charts...that there are maps that are good at showing different kinds of things, and you can't necessarily tell the entire story in one map, and the choropleth is not wrong...the majority of like, the area is Republican even though not many people live there. Um, and so it's like a geographic representation of where people live who leans left or leans right. Yeah it actually doesn't bother me and...I don't know in this case why we decided to add it. We've done cartograms in the past, but I think a lot of them are kind of (sic) hard to read and kind of, I don't know, not really that helpful in conveying what you're trying to convey, which is "who won where?" They might help when conveying "Oh, half the population voted for Clinton", but you could do that in a million other ways, like a chart [...] like at the very top of the page.

Yanqi XU

So I thought it was pretty interesting, and so...it seems that in 2018 it's kind of the other types of maps – size of lead, change – was not included, and um, wondering if it's going to show up sometime in the future presidential elections. Or it was not included because like it's not needed or it contains redundant information. Kind of what works and what doesn't Alicia Parlapiano

Yeah I think the views that we show. They are across years, and. There's a difference here. Again, It's not a presidential election. So it's kind of a different story. There is a use for showing the change in how a district voted for their congress person, but in this case it wouldn't really be relevant. Well, it...it would be relevant, but it's a little more complicated because districts change shape a lot because, you know, it could be someone else running. It's not the same people involved – well, I guess that's the same case for the president. Yeah, so I guess I don't know why we do a shift map in time. I guess it's always just a different calculation depending on what election it is. And yeah it just gets complicated and you're gonna have outliers, and maybe you're not gonna see a lot of trends that are easily explained like the presidential election. It's possible that we tried it and looked at it and it...and again, this is just a guess. I can't speak for more people than me (sic) but my guess would be like maybe they did try it and saw what it looked like and it was muddy and would make things more confusing instead of clarifying or explaining

what happened. And I think that's like...as much as we plan ahead, sometimes when you get the real data and things don't work, and...you know, it's not that we're like trying to not tell a certain story. It's just sometimes the data is too complicated, or you'd need so many caveats or you'd need so many footnotes. Yeah, it doesn't show...it doesn't tell a story about [indistinguishable].

Yanqi Xu

I'm wondering if for like election maps both years, in 2016 and 2018, if you have it handy. So what are the things that readers fail to read from the maps? I don't know. So...because it seems to me some of the interaction...I didn't even know that if I click on the states, I can view the county-by-county results in red and blue in the presidential election, so I'm wondering...so in terms of readers' reception or their reading of the maps, what would be hard for them to read? And, um...

Alicia Parlapiano

Do you mean like...you mean things that people don't know they can do?

Yanqi Xu

or also things that they may not realize or, meaningful to see, or cartograms – they don't know how to use it or they don't know it's a representation of um...so kind of what, what the visual elements represent and what we can do about it. So both content and interactivity?

Alicia Parlapiano

um...yeah I guess I don't know...we don't really have data on how many people click on the interactives, so we don't know if people knew that they could click on a state to go further. I mean, kind of like, the people who...who...your hand turns into a little mouse, or like a pointer finger, so there's intuitive things that you see and there's always ways to improve. I think we're trying to get away from a lot of instruction. Everywhere it's like "click here or do this" because it can get kind of messy. Yeah, I think...uh...I don't know...um...I think we just try to leave the most simple things, and I think they're there for the people who really want more information. And there are a lot of ways to get to the county-level results. Like you can click on the county map, and you can click on the table below and click on a state and that will show the whole county map, so there are a lot of ways to get into the information. But I guess I just don't know...um, and you know stuff that operates on the phone too. It's just a whole other thing. As far as the cartogram, you mean like how people may not know what a cartogram is or...?

Yanqi Xu

yeah, and also if they know what it's good at, why it's presented. And also kind of like, yeah how to use it. Why is it presented and stuff like that.

Alicia Parlapiano

Again, this is just my guess because I can't speak for the people who made it. The map that exists on the main view is the one that most people recognize, where it shows all the districts and you can see which ones are red or blue and you can scroll over that and see exact numbers. I think something like the cartogram....to me that is for the people who are on Twitter complaining that we don't have a cartogram. That's not for them. It's for the people who already know a lot about this stuff and have read cartograms before. And know what kind of...I don't know. In that case maybe there should be a little note that says "each box represents a district" but I think as you roll over them it kinda becomes clear that each box is a district. And you can tell that these are shaped like a state. Yeah, I don't know I guess we try to let the map speak for itself, but there's always ways to improve and to do that better.

Yanqi Xu

This is actually a perfect segue to my next question. Have you ever learned seen readers' feedback or learned from their comments about their difficulty understanding electoral graphics or is there something they particularly like which you may use more in the future because you mentioned Twitter and also, kind of, their comments about cartograms. I'm wondering if they also comment about other types of visualizations, say like the bubble map, or arrow map, or just cartograms. Or how detailed the map should be. Anything you would like to share?

Alicia Parlapiano

I'm not really sure. We don't really have any formal ways to get feedback from readers. We'll get stuff on Twitter or someone sends an email or we'll get feedback from people in the building not from our graphics department and they're looking at it from the perspective of our reader, but, yeah, I don't think we get a lot of those big comments. Especially if you offer a few different map options, you know...yeah I don't...I can't think of any example where, you know, we thought of doing it one way and changed it, but there are other people you could definitely talk to because I wouldn't necessarily know. Again if you look back over the years, most of what we do is fairly consistent, and the reason for that, because it is such an important even and we want it to be as clear, and straight-forward as possible, and so we don't make a lot of dramatic changes. That big board, we call it the "big board", the thing at the bottom – the table of all the states – we've had that for several elections. We don't try to reinvent it every time to try to do something, like, you know, fun or different. It's very much what is the clearest way to represent election results, and this is what we think that is.

Yanqi Xu

That makes a lot of sense, too. Because I was asking this because I read some studies about the readers' reception of maps. A lot of times, you know, readers definitely don't read maps the way designers want them to read it. Or they'll discover something, or they

thought it would be read this way, but it actually isn't. I'm interested in finding out if...designers actually listen to readers or take into account their perception of it to kind of modify a chart or map types, because I thought that it's kind of a heated debate or topic that is discussed in election seasons. And then this topic of disproportionalities ever existing as long as you're making a map. So I talked to some other information designers and also...a journalist. I heard pretty different perspectives. Some said they wanted to be more detailed than just a state-by-state choropleth map because that would account for more nuances, but a lot of people would also say it's overwhelming and so people don't really need geographical information, so someone even said we should probably get rid of the map all at once and just do a cartogram or something like that. That intrigued me because I thought these seemingly opposite perspectives comes from the fact that they prioritize different types of encodings: like what kind of information to include in the map. I was wondering...what's your take on it. Like moving forward, what would be the ideal practices?

Alicia Parlapiano

I don't know...I think...like I said, I think our priority on election night is to get the information across as clearly as possible. It's not to...the analysis comes a little bit later. That map we did with the analysis...we didn't do any choropleths. We just did those shift maps because we thought that was what people should take away from the meaning of the entire election, but I think we continue to do those choropleth maps, state-by-state because when you're out and about on election night and you're looking for an update and see what's going on, that's the most familiar way people can read election results and figure out what's happening. And like you said, we provide other views of details, so if you really want that detail, you should click that one time and you'll get it. Yeah, so I don't see us making any major changes. I think it will...again, I can't speak for the department. But personally, I wouldn't make any major changes. I think that what we have serves its purpose and that we do it in a really straight-forward way. And then with our analysis we try to be very thoughtful in how we're using maps to convey the story of the election. Um...yeah. I understand the argument you should never use a choropleth map because it keeps giving a wrong impression of America, but again, just my personal view, people are smart, and they know that Hilary Clinton won the popular vote. She had 65 million votes and Trump had 63 or whatever. So, yes that map gives the impression that the country is way more Republican, but I don't think it's that hard to make a mental leap to understand that the country is very big and not very populated and that's why it's red. It doesn't personally bother me, but I totally understand the argument and I understand why people think it's problematic. I think we can just solve that by having a lot of different maps and different views. Kind of like what I wrote in the article, Not like one perfect map. I just feel like someone should just make a few different ones.

X it sounds good to me too. Also, I'd love to see all these kinds of maps because clearly it conveys different ideas and also it seems to point readers to different directions when they actually see those, so I certainly feel that we definitely can't say everything in just one map and then...so um, so yeah, there...go ahead

Alicia Parlapiano

I think people have a lot more views on their phone. They just lack time or patience or...they're just scrolling through our stuff really quickly. They're not necessarily spending a lot of time, so...we don't...I think we want to lean toward simplicity for that reason. Some people will dive into a new complicated chart or map form and will really try to understand it and it can be really exciting and innovative and maybe teach them something they didn't know before, but most people don't take the time to do that and so our job at the NY Times is to tell the news and communicate information, and politically, we try to think about – besides accuracy and objectivity – we want it to be clear. And oftentimes the simplest approach is the clearest.

Yanqi Xu

That makes a lot of sense. Do you suggest any kind of modifications to it, say like more detail, or the shades... or color it with vote shares or vote ratios or margin instead of, you know, the absolute vote share. So would you suggest any sort of modifications to that one map to make it more nuanced or...

Alicia Parlapiano

No I think we do that with, you know, well, throughout the night before somebody wins we do shades. You know, it's like, leaning red or leaning blue or, you know, whatever. Um, but as far as like...I think if we do a few different maps that show that nuance and that, again, our primary job on election night is like, "who won that state?" And, um, people can take a look at it and 'okay fine" (sic), but even, like...locate and understand...um...you know, a specific state by finding out on the US map, so maybe that'll change, but I still think for now, like, um...yeah, I don't...I think we can try a lot of different ways, like...adding more advance, or whatever, but, um...our main map is still, like, we need to do our job like really quickly, and that's probably like who won that state.

Yanqi Xu

So in terms of the mobile design, and uh, it seems it has a lot of interactivity as well. And I'm wondering so f or...like...you also mentioned in the talk...so when it gets into that kind of detail, say, like county detail or people are just scrolling and they can click on it. They can see like more results. Would it be, like, overwhelming for readers, or it's still kind of considered necessary to present those results to...on the phone and uh...

Alicia Parlapiano

oh sorry...what would be overwhelming [interrupted]

Yanqi Xu

um, so like, because

Alicia Parlapiano

adding...

Yanqi Xu

a lot of like details, because, sometimes, you mentioned that, um, you can have zip code data. I don't remember if it's viable, um, over, um, you know on the election night. Or you know when there is so much, like, interactivity designed into that kind of webpage. Would it be overwhelming for mobile readers...or...you think it's good enough just to have...um...

Alicia Parlapiano

Yeah, I think we try to keep...we do try to keep the mobile version, like really simple and readable. Um, but. We do a lot with helping our [indistinguishable] as much as we can feel like we can add...um...where, you know, it still works, I guess...um, but especially because like, you need it more in some ways because you...um...like...you have to kind of like zoom in on a map to be able to click on a county and see who won, but if it were on your desktop, you might not have to zoom in. Um...yeah, I don't know. I think, I think we do, we do sort to simplify. We do try to like...We do definitely have to cut things from...you know...either shorten labels or, like, they do not have a certain hue or a certain...but, you know, we try to adjust everything for mobile, but it's definitely harder. Um...yeah...

Yanqi Xu

Yeah, thanks. Do you have anything to add? I'm pretty much am done with my questions. I...yeah, yeah. You've been so helpful and shared a lot of your insights, and yeah, that's all I have, actually.

Alicia Parlapiano

I appreciate that. Well yeah, like I said. I feel bad because I don't actually work on the results stuff, like, actively, so a lot of it is like a guess and personal opinion, so there...people...people might feel totally differently. Definitely...I can email...people as well. I sent you an article...that a couple people contributed to about our election map. And they might have more insight, and you know, it's a big department, so we all have different opinions. Um...but...yeah, I think like it's good...I think...I don't know, I think it the debate is good and interesting and, like, important for us to be thinking about all these different things, and, like, weighing priorities. It's like what...it's what we do, and journalism often is, you're...you sure they want angle or take you're choosing (sic), what to write about, and what to read about. And you're hoping you get across the stories most accurately, and, and in the most engaging. And try to do that with graphics and maps.

We... You have to prioritize it too, to figure out what's the most important thing we need to show or want to show right here, and like, "how do we do that?" And... you know... find ways to add those secondary things as well. But that, you know, will always change and evolve and be open to different possibilities. I mean, honestly, our priority on election night isn't the design. It's just that everything works because we have so many people coming to the site, and... um... so, we want it to be functioning really well, and, and, and quickly, and uh... you know... so people can get the information they want, like, right away. I also think that, like... we get so many new readers, like... people who come to The New York Times who don't normally read the news there at the NY Times. They may be even less familiar with, like, different kinds of chart forms, like the cartogram... Um, and so... keeping it simple also helps people who maybe don't have that kind of, like, visual vocabulary, who don't spend a lot of time looking at weird charts, and, um... but I think that's another argument for simplicity, but... I definitely... I definitely think it's important to rethink why certain things have been difficult (sic) and kind of weigh whether the positives they create outweigh... um... you know... the... what they're good for.

Yanqi Xu

Right right...

Interview with Zachary Ares, BuzzFeed

Yanqi Xu How to reduce the kind of, the misleading effects of the maps. So that's been what I've been working on.

Zachary Ares

That sounds very, very cool.

Yanqi Xu

Thanks so much. And so I'm wondering if I can record this so I can have a later reference when I do an analysis. I'm just going to pull up my questions from my research proposal. While I'm doing that, why don't you tell me a little about yourself. Confirm your name, title, what you do, and what's your experience with graphics or election map graphics and stuff like that.

Zachary Ares

So my name is Zachary Ares, and I've been with BuzzFeed now for two years. I work on the news design department as a motion graphic artist, primarily focusing on our live production so everything from our morning show to our Netflix show, our Facebook show as well as the election coverage that we do live. So we have done... since I've been here... I think our first foray into the 2016 election, during the by results show. Since then, BuzzFeed news hit its stride doing coverage of the period between the 2016

presidential election and the 2018 midterm. So we would cover from uh the West Virginia primary or special election or the Georgia six or the Alabama special election for the senator race or we covered the Wisconsin judicial election, so we find our stride hitting those...covering those elections that your average CNN, NBC...they weren't focusing on the smaller elections relegated to a smaller state for, you know, an off-year. We've covered a lot of those, and then of course we covered the 2018 midterm election itself, which was the 2nd time we did a nationwide election.

Yanqi Xu

Right yeah, I remember seeing some of the live election pages. And that one...the links you sent me – I didn't find those pages under that main page. Is that because different pages exist or because I didn't find it, or did I have the right page?

Zachary Ares

No no no. What you saw was correct. There's still a little difference between what we do for our verticals on the website and then what I sent you was the interactive maps that we had during the live tv show. So you can watch that show that night, or even probably you can view it online now. But if you watch the election show, you'll see all those different kinds of maps. But we did not embed those in the website because that website was different, a different sort of tech requirement. They wanted to...they had a different direction. They had the data that they needed to show versus, the show wasn't focusing on every single state. The show was focusing on heat races, but on the website we wanted to show, "here is all 4 or 500 seats up for re-election."

Yanqi Xu

Right so were you also involved in the website's design, or were you primarily...

Zachary Ares

Not as much, but yes. A little bit and especially as we were doing more data integration. Hooking up results we were getting and hooking those into the graphic solution that you saw on the website.

Yanqi Xu

Right right. So you said that 2018 is the year that BuzzFeed started making live national results graphics. Is that correct?

Zachary Ares

Not necessarily 2018. 2018 is definitely when we hit a huge stride, but 2016 general election, to my knowledge on this, was one of the first instances where we would do live election results with data. But then it was the period in late 2017 as well as 2018 when we

had more design and integrated data that you would see on the shows. Before, we would share screenshots of how the data looked for us. Now we are able to take our API from the data from the team (sic) that we are partnered with and then feed that into our graphic solution, so that it's a little easier for use for us

Yanqi Xu

Sounds great. I was wondering what the main form of visualization for the 2016 presidential election live results and what was in it. Was it like a map? Or was it some sort of...yeah.

Zachary Ares

Well uh... This was before my time, but I think when I watched back. I think you might be able to find it online. I think it was uh... We were just starting out. It was magnets on a white board. Each state with the electoral worth. So we would...as certain states would go toward either candidate, one of our hosts would add a magnet. And it looks really, really nice. It was really...it was interesting because people so often use strictly high-tech breaking news method, but we had a little bit more tactile, and it's more like a chart (sic) in my opinion. And at the time in 2016 election it was uh

Yanqi Xu

Oh ok.

Zachary Ares

It was very that we had a whole US map of each of the states listed using those magnets (sic). It was pretty fun.

Yanqi Xu

Right yeah. How would you describe the main form of visualization of the 2018 election results. So it seems to me on the website it's kind of this graphics with different seats.

Zachary Ares

The main form [sigh]. It's difficult because with the website it is...both the website and the tv show are very data driven. The differences between us and some of the other newsroom that cover these elections. BuzzFeed really honed in on content for data appearance. Like our [indistinguishable] with um Decision Desk HQ. It is super data focused, and they have people on the ground that each of these secretaries of state, and parsing through each of these websites to get a little bit more accurate of a data count than some other sources. So basically we are able to see the data a little bit first or like before some of the other companies. And what we do with that data is...all of the numbers will be streaming through through our API, and we have their CEO, Brendan

Finnegan on our live shows who then will be making calls as where seats will flip or change as the data comes in because they will be able to look at the data, see which...at the end of the day...if let's choose an example in...what's a really, really good one: Georgia. So looking at the Georgia senatorial election. It got to a point where Stacy and the other gentleman, the Republican where Abrams and he were very close, but looking at where votes were coming from. All of the districts that will vote for Abrams are almost 100% in. So we're able to make those calls based on hypothesizing, "these are where counties went in previous elections. This what the demographic is. This is what the exit polls are saying, so we can look a little further ahead, where other companies who will wait for a 95% or 98% all in before they will make calls, and so far, we haven't been that wrong.

Yanqi Xu

that's pretty interesting, and so it kind of caught me that in 2018 there's no such maps that are commonly seen, so I'm wondering if that's an editorial decision, and how the team kind of came to that decision, and like for states you have apparently you have heat races, and then that...for those ones a map or something was used for the show, so I'm kind of wondering what's the reasoning behind that, and yeah.

Zachary Ares

It's a little bit difficult because the show as well as the website, uh, just two different aspect ratios, two different...you'd be redesigning everything for the website. Where it would take a long lift labor-wise, and so we made decision to just focus on the editorial content, and then feed of the show, which the website that night as well as the day...after, well, drew traffic to the show. So you would see right on the page here's our live election results, which are out here. And I think that, you know, there's some user innovations. We really nail that and knocked them out of the park. And that is a huge lift. So sometimes when, you know, I don't mean to [indistinguishable], but when you're allocating where you want to spend your time and allocate your people to, um, it would take so many of us to create a map how we want to for the website, we would have to start cutting other areas just based on how much time I have in the day.

Yanqi Xu

So you said that there's like some, say, uh, you know like labor constraints. Man power constraints. So I'm wondering if that's also [a] decision driven by, um...say deficiencies of the traditional shaded choropleth maps, or what modifications you made to them to avoid those disadvantages of the traditional shaded areas maps. And what's the advantage of your chosen form of visualization.

Zachary Ares

Well. Since you know, since our team. When there is just me working on these things. Rather than us making, you know, maps and dropdown menus for all 400 plus races, 500

plus races that were occurring that day during the midterm show. We were like ok, even if we do make them all. Looking at the show, we are not gonna talk about every single race because we want to focus on certain races that are either going to be big surprises or that people should be looking at or elections that will be bellweathers for what we think is going to be the tide come 2020. Step back from making a map for every single state and instead focus on, I believe it was 20...28 races, I think – ones that we really focused on. So you'll see that there's like uh 20 different states (some states have multiple races). In that dropdown menu for the state elections. So we focused on what we thought was, um, was important. What we thought the user wanted to see, but also what we felt was going to be the direction of the next election. Now...what is different from the maps that you're seeing is that the sidebar, which if you watch the election show online – I think it should still be somewhere... - the sidebar that would have constant results flipping through. If there was a race a viewer wanted to see, they could just tweet us or um, use the hashtag: "Hey, tell me about West Virginia 4." So even if we weren't focusing on that one with a custom-designed map, you'd still have a sidebar that would still show the election sults, and you could do that in realtime and show people what they wanted to see. Of course, too they could go to the website and try and just (see) the data there too.

Yanqi Xu

You said that there...are there other people who worked on the website too?

Zachary Ares

Sure yeah, there's um, there's a couple of us. Especially on that project for the election show. There were about 3 people. 3 or 4. I primarily focused on the show and the API between the data and the graphics, and I also focused on updating some of the website graphics details of the House? graphic that we had. But in terms of [indistinguishable] was mostly done by our tech team internally here.

Yanqi Xu

So just so I understand...right now. From this midterm election, 2018 results page. I can see there's a static graphic, so it's basically just, uh. It's hard to describe...and a flip tracker. Is that static or was it interactive before? Did you add it later on or was it there?

Zachary Ares

It wasn't. It had always been static in a way, but as we were going through we were updating it...the graphics department would be updating it, and then refreshing the image. In terms of that graphic. Some of the results with the percentages – that was specifically, you know, API tech-focused piece. But there were a few graphics that, you know, we just had to do graphically by hand.

Yanqi Xu

Right yeah because right now I'm not...some of these, I don't know, say, like some of these are not showing up in the, in this page right now. It was fine before. Maybe...maybe it broke eventually. And um, but this static graphic is the way...You know, like you present the full picture before getting into the key races, right?

Zachary Ares

Right.

Yanqi Xu

And that was constantly updated?

Zachary Ares

mmhmm.

Yanqi Xu

ok, yeah, great. So...wondering why you chose to do it that way, to have this...graphic at first and then have it later, instead of saying...to have some interactivity.

Zachary Ares

So...one of the issues there was just that we are still sort of...primarily we are focused on a mobile experience. And so we...while it would be really nice for us to make something that's a little more interactive and is a better desktop experience, we had to allocate as much as we could into the shows. Um...well, as well as the tech team, you know, labor, man-power wise, we were also launching our website. That was a rebrand at the time...over the summer. So a little bit difficult because not only completely redesign our website, but also build all of these designs and hook everything up API-wise. So it just came down to "where are we allocating where we spend our day?"

Yanqi Xu

...And I guess that way, you know, with the tv graphics that is also a static, like it would be easier to work on them both times, like at the same time. That's also a consideration issue.

Zachary Ares

Well the TV graphics...those...I, I know it's not a good example because those were recored after the show. But the tv graphics were all live, all animated, and they were hooked up to the API, so as the data and the calls were coming through, they would animate and update live.

Yanqi Xu

Oh cool. That's very cool. Yeah I didn't really focus on that very much, but um. Yeah that's very interesting because the TV graphics seem to use the um...let me see...well it does have a map but a kind of a state, county-by-county map, I guess. So did you have a national map, too, or was it just...

Zachary Ares

Not necessarily a national map only because we weren't doing a nationwide election. So for this one, because it was all state-driven, we just focused on that. And of course for 2020 leading up to that as well as the Democratic primary, we will have a full state-wide top-down view. But for this one specifically, all we needed to focus on was the states.

Yanqi Xu

But you still show county-by-county breakdown, though, right? I thought that one was pretty interesting because, um, so yeah. Would you let me know why you still have a more granular view of the votes.

Zachary Ares

Yeah definitely. Part of the reason we did a county view was because we didn't want to just show, you know, I'll use the example again of Georgia. You know I feel terrible, but I actually forgot the statesman abrams was running against. Let me bring up the result map we had. Bryan Kemp Looking at the countis election some news companies would, because they are covering hundreds of elections that night, they would only have a map that says "Georgia, so and so percentage. Abrams. So and so percentage." Whereas we, because our shows are focused for data nerds... is that, looking at the county-based results, we're able to go, "Ok, well all these a counties are in that aren't going to be voting for Abrams. We know that, you know, XYZ counties aren't fully in, but we know that they're only going to be voting X percentage Abrams, and a majority to Kemp, so we know that Kemp is going to win. So rather than hold off...The problem with some of these elections when you're watching other news organizations. You see Florida: 50...49.8%...um diSantes...And it looks like they're tied, and it's going to go either way. But if you break it down by county and you see that DiSantes already has all his counties in. Gillum didn't win his counties, so Gillem will not win. They'll call it. You know it's called, essentially. We don't have to wait for an extra 5, 10% of the vote before BuzzFeed makes its call. Still, that's not to say that, um, obviously that's not to say reality...the final...

Yanqi Xu because right now I'm not seeing any...

Zachary Ares

Yeah yeah. The website is very top-down, but the show is focused on granular data.

Yanqi Xu

Great. Yeah. That's very interesting. Top-down, meaning that um, to have like uh say like a birds-eye view of things and then we can scroll to sections. Is that what you mean top-down?

Zachary Ares

Top-down is like: We would have "Maine, Vermont, New Hampshire, Massachusetts, etc, etc." Whereas in the show, it's like "Maine, here's all 50 counties of Maine. Vermont: Here's all x number of counties in Vermont. Let's look at a county from when they voted in 2014 and when they voted in 2010.

Yanqi Xu

Right right. Yeah. I'm wondering if it would be hard for readers to understand or fail to read from your chosen form of visualization because there is a show audience. Is that on tv or is that somewhere else...and also like the website?

Zachary Ares

So the audience for our show are...for the election has been broadcast on Facebook and Youtube, primarily Twitter, so our Twitter users are able to...they'll see the results as we bring them up. so we'll bring up the map as the host talks about it. We'll bring up the other graphics we use to represent the balance in power in the Congress. Um...uh...and then the benefit with Twitter, even though these maps aren't interactive for a user to click through individually, because they are on Twitter, they can tweet us and say, "Hey, what about this election," and we can bring it up live.

Yanqi Xu

Because I'm not very familiar with the show, is that like...does the show...do we always have shows and the election night is a special program. Or is it designed specifically for the election-night coverage and people know to tune in?

Zachary Ares

Sure. Um...well, the...the series between 2016 and 2018 was so packed with special elections, runoffs, primaries, that um from 2016 to 2018 that we tried to cover as many as we could. I think we ended up covering, um, let me think just one second...I don't have the number off the top of my head, which I probably should. It would be: Georgia 6, both runoff and primary, Virginia, Ohio, West Virginia, Alabama...

x So then people knew to

Zachary Ares

So we covered, show-wise, like maybe 15 shows between the General Election in 2016 and the 2018 midterms, so we covered 16, about.

Yanqi Xu

Right and then would people watch the shows and then hop on the website every once in a while, and so then it'd be in sync. Because I don't know just like...people tune in to Twitter or Facebook just to watch the shows there. What's the philosophy behind that.

Zachary Ares

In terms of driving people to participate the show?

Yanqi Xu

Would they always stay tuned...Do they have a way of knowing that BuzzFeed is doing such a show and we'll just tune in on Facebook and Twitter. Or is it for people to also to hop on the website to see stuff too. Just wondering how do the two platforms work together to bring the results.

Zachary Ares

So you know it's an interesting...an interesting process and, and something that you have to navigate. But what we do on our website, the lead up to the election as well as while the election show is going on, the front home page banner will have video feed that when you click into it, it will take you to watch the show, and on our other shows: Our morning Twitter show, and our Facebook interview show called Profile.....You know, the CTA at the end: "Hey go check out our election show tomorrow night at this time." As well as, you know, we're super active on social media, so we'll drive people to the show that way.

Yanqi Xu

Right right, yeah. So is the goal to get them to watch the shows or have them on the website on election night?

Zachary Ares

I think either-or is wonderful. Neither takes precedence because both are very important to BuzzFeed. The traffic to the website is always a goal, as well as traffic to the show. On the show we talk about what you can see on the website, and vice-versa on the website we'll talk about what you can see on the show. So really we want to have a full-circle experience where you can watch our show and listen to the talking heads, and while you're doing that, you can flip through a still article that's written about the [indistinguishable] race.

Yanqi Xu

So do you give readers instructions as to how to read or use the visualizations both online and in the shows. Do you tell them, say, like “scroll down for more results, or you can go to the shows to get more details.”

Zachary Ares

well, definitely we’re looking at where this site would send people, um. Of course as people are reading the article – if it’s a top-down “here’s all the states voting in a senator race”, then if there are specific articles that are coming up about the individual candidates or something that occurs and is relevant, of course they are going to be recommended links and articles that people can watch or read, and then, you know, the banner at the top of the website shows that we are live with the show. We’re also driving people that way. The goal is that once you’re in there, you have the opportunity find the means of information that works best for you as a reader or viewer.

Yanqi Xu

So since you mentioned a lot of Twitter comments, have you sought readers’ feedback or learned from their comments about the difficulty of understanding the graphics or their need or like what they want. Is there something that they particularly like that you will use in the future.

Zachary Ares

Sure. I mean... Absolutely. Anytime there is feedback. The benefit of us doing these live shows, and the benefit of BuzzFeed news being so limber in terms of catch and our design is that if there is something that isn’t working for people, we’re able to adjust it live on air. And...you know that’s not necessarily something that other companies dare to engage with because you know some of them...they have produced their show. This is it. This is how it looks, and they don’t really engage with the audience...and so sometimes...listen, you know, if your viewers says that they’re having a hard time visually parsing a graphic element, then that could be a feeling that many users have. So it’s good to listen, adapt, understand, and not ever take this holier than...I’m not gonna say “holier-than-thou”...not disregard what your viewership is saying.

Yanqi Xu

did they say anything about it. Did they say there was something they didn’t understand? Did they say there were some elements were really neat. Did you hear anything from them?

Zachary Ares

Um...I would assume that perhaps, maybe early on as we were doing some of these smaller election shows. Maybe...when we were using screenshots of our just...sort of from the data end. Those were difficult to parse especially because we are dealing with so many candidates for a primary. You know this was 2 years ago. Dealing with four candidates for primary, they're not in the traditional blue vs red, and if you're looking at a map and it doesn't have everything explicitly laid out, it's difficult to understand. So in design, not only do we have to listen to, obviously, what our feedback is from our user-base, but we have to anticipate what...where are the pitfalls for understanding these graphics. So we have to be mindful of what the color-palette. What happens to the color when things are a tie? What happens when there's no data coming through? So we have to stay ahead of these decisions so that way we don't appear live on there and people have difficulty understanding.

Yanqi Xu

So what are the solutions to the problems you were talking about? So you said that...what if those situations happen? Does the design team make a plan beforehand?

Zachary Ares

Yeah, so what I would do is, like, when we would be heading into these, like Wisconsin judicial elections, or one of the primaries, I would make sure to select a color palette easily understandable to users, for people who are color-blind, for people with low-res, for non-calibrated monitors. And selecting a color story that is effective and understandable by everyone and usable by everyone. So we would try to stay ahead of each of those things. We would anticipate some of these difficulties as designers using that [indistinguishable]design thinking. We would try to anticipate that problem before it would actually become a problem and really try to look at it with fresh eyes.

Yanqi Xu

From this past election visualizations do you see something that was done really well for people or something that doesn't work?

Zachary Ares

When I was going through the Twitter comments in terms of the graphical elements and the election results and maps, I didn't really see any negative or difficult feedback on social media, but I did see a lot of...surprisingly, for some reason (and it wasn't me with a fake account) people really like them. And, you know, a lot of people commented that they enjoyed the graphics, and on the shadier side, some people commented that ours looked better than so-and-so, and so-and-so's looked like crap compared to Buzzfeeds. I don't want to...every media company starts out somewhere, and if you compared us to another media company of the same age...um we've been doing this biw for two years, so we've fixed a lot of things. But if someone else just started, and they're on a whiteboard. You know, we all started on a whiteboard. So, everyone starts somewhere.

And I think these media companies are finding their own voice and how they want to approach elections differently from each other. And they're finding out what is their method of unique storytelling for these elections and their way of showing the data because at the end of the day New York Times is going to do a map incredibly. They've put decades of work into it, and it's incredible. You know. I think it's something that every media company kind of looks to, but it doesn't mean that everyone has to be there right in the beginning. So I'll never tell them this: You have to have a 700, uh, point election map illustrating it down to the street level.

Yanqi Xu

That's pretty interesting, and uh, yeah, definitely, a lot of different people are seeing that they are trying to find their own voice in election coverage. Do you have anything to say about good practices, ideal practices, and anything you wanted to add?

Zachary Ares

A good practice: Obviously, anticipate how your viewership or readership is going to look at this information and look at this data...um, just because something seems right to you, doesn't mean that it's going to work on the phone, on a mobile experience versus a desktop experience. In art and design one of the most important things is while you're working on something take a step back for a while and come back to it with fresh eyes because when you anticipate and identify some of those problems beforehand and the ergonomics of how the eye and the brain work, I guess, then it really saves you a headache during a live show, and don't be [indistinguishable] with some of these things. Your content and your framework of your data and graphics will change, and it should change, and it should always be adapting so don't think that just because we did x-way during 2017 so-and-so's elections so we should just do it that way. Well, why not try to make a difference?. Change is a good thing. It's just difficult and requires time and money. But change is good.

Appendix B Field Notes

Weekly Report 1: Jan 21 – Jan 25

The D.C. cohorts exchanged ideas about career objectives for their D.C. experience and some topics we might cover in D.C. at our first project seminar on January 25. I found the discussion on journalism's role in the age of social media fascinating. On the one hand, for some user-generated content like the controversy involving a Catholic high school student and a Native American man during a Lincoln Memorial march, journalists may not be present but needed to "crowdsource" facts online and often strived to break a story. On the other hand, we discussed "journalism of opinion" in covering stories in the Trump era and the effect it had on social media followers. How could we be fair and retain trust? For example, when anonymous sources were used in a BuzzFeed report to implicate Trump in Cohen's lying in his testimony, is it responsible for other media to adopt an "if true" narrative when they were unable to verify the claim independently?

This discussion sheds light on my internship at PolitiFact as well, given that PolitiFact is a fact-checker with over 630,000 followers on Twitter. I am interested in finding out what speeches, tweets or remarks journalists choose to fact-check and what segment they pick out to fact-check, and if such editorial decisions are conducive to the public goods? I would side with the principle described by authors of *The Elements of Journalism* that we could strive for greater transparency rather than objectivity, since objectivity is hardly attainable and journalists are all humans with perspectives.

Washington D.C. program alumna Molly Olmstead joined us and shared her experience interning at *Slate* in spring 2017 and how she stayed on the team and covered politics. I learned the importance of pitching our own stories and getting involved in shoe-leather reporting at Congressional hearings and beyond. I plan to take this internship opportunity to pitch data stories to PolitiFact and explore how fact-checking could integrate data journalism in its coverage.

I haven't started my professional internship yet in week 1 and will start on Jan 28. I will spend the first few days familiarizing with fact-checking methods.

For the research component of my project, I have started to draft the emails to be sent out and collect contact information for potential interviewees.

Weekly Report 2: Jan 28 – Feb 1

This week I started my professional internship at PolitiFact. I had a discussion with my supervisor, editor at the Washington D.C. bureau Angie Holan about my role on the team, and was introduced to the reporters. I am expected to do research, especially regarding source materials to fact-check, including speeches, tweets and user-flagged Facebook content that may seek to spread falsehoods. On the other hand, I was told that they were hoping that I could explore to develop scraping tools for automated fact-checking. I learned that there is a machine fact-checking tool Claim Buster that can quickly scan through the texts and highlight the facts worth checking for reporters. A Duke student Asa Royal developed a similar tool that automatically injects scraped transcripts into Claim Buster and organizes the output results in a database.

The biggest challenge of my job responsibility is to stay informed as well as to locate the exact transcripts of events, which requires familiarity of Congress procedures and television news programs. For instance, I assisted a reporter in [finding and selecting quotes from the hearing of national intelligence chiefs](#) and Trump's tweets defying some of their assessments. I am inspired and impressed by Louis' way of work to have a clear game plan to execute the story beforehand and comb through all the previous coverage prior to writing the story. In such a way we managed to add to the existent literature by incorporating new findings from the report submitted to the Senate Committee. Previous PolitiFact fact-checking of a Pence statement was also linked in the story. I feel that in the age of information overload, it is all the more important for fact-checkers to avoid the "he said, she said" coverage. As such, we were able to provide more context and details beyond the compare and contrast of opinions of intelligence chiefs and the president, which is how CNN executed the story.

The tour at Newseum gave me a holistic view of the development of different types of mediums and remind me of the drastic changes of news media, and how journalists should adapt to the age of digital news. President of the Freedom Forum Institute Gene Policinski educated us on the development of a free press and how the First Amendment was an integral part of American journalism all along. I was very sad to see the struggles of local newspapers and the public's dwindling interests in investing in reading local news as social media disrupts the reading habits. I also see it as my personal challenge to get the readers back on board with journalists.

For my graduate project, I wasn't able to do much other than finalizing the email to be sent to the interviewees based in Washington D.C. I will speed up reaching out to them in the following week.

Weekly Report 3: February 4 – February 8

This week I participated in the live coverage of fact-checking President Trump's State of the Union address. This endeavor involved a lot of planning. Journalists in our newsroom predicted what Trump and Stacey Abrams might cover in the speech and response and prepared our ruling and reporting accordingly so that we are able to publish a story by the end of that night.

I was mainly responsible for CQ-ing the quotes from the transcripts. I was impressed by some journalists' ability to scout an embargoed version of the transcript online in real time to help us organize the statements to fact-check. I also learned to use services like TV Eyes to search for and get the exact quotes and cross-reference with real-time tools like Opened Captions.

I also started to explore scraping with Python, though this is largely a side project as no one else in our newsroom knows how to code. This is a slow process for me because I could barely set aside time for it. I am hoping to crawl Sunday shows websites to pull the transcripts and organize them in a way that helps fact-checkers go through each statement.

As I started my first-ever fact-check story, I found it pretty challenging to work on a fact-check under a deadline. The most challenging part has been to seek responses from politicians and follow up. Previously, I was not particularly good at speaking with

public information officers and sometimes became frustrated when I hit roadblocks. This week's tour at the Capitol sheds light on the behind-the-scenes workings in the Senator's press office. I learned the importance of effective communication with public information officers. The existence of press and radio/TV galleries in the Capitol reflects the interdependent relationship between politicians and the press since the early days of the U.S. history and affirms the role of journalism in our democracy. I am hoping to gain more experience in dealing with politicians and their staff members to acquire information effectively down the road.

As for my research project, I have reached out to some of the interviewees and waiting to hear back.

Weekly Report 4: February 11 – February 15

I finished and published my first fact-check this week about [Congressman Nadler's claim about gun deaths in the U.S. in comparison to other countries](#). It was a rather long but rather rewarding process, since we are striving for accuracy backed by evidence rather than claims. I worked with our managing editor Katie Sanders and sought help from other reporters. They all gave me constructive feedback and I learned to evaluate my work from their perspectives. I needed to use plainer language to help readers understand what they are reading. I was assigned another story and working on it right now. I also had a chance to listen in to the Fact & Check forum with researchers from the University of Texas – Arlington, the team that used natural language processing to find checkable claims. There are many new concepts for me to digest, and I feel that I

do not have enough time and resources to dive deep into the data side since the editorial side takes up a considerable portion of my daily routines.

At the seminar, we discussed campaign coverage in today's media landscape. Tessa, Annika, Noah, Wally and I were trying to find out a way to avoid the horserace frame, and up the game for policy stories. Sometimes the public discourse around candidates are not necessarily centered around the issues around policies, and there's yet to be any consensus on this issue. However, I do see the value of in-depth watch-dog reporting as a way to win back the audience in the age when candidates themselves have more voices in determining themes of the public discourse. At PolitiFact's 2020 campaign coverage planning meeting, we also agreed on more rigorous scrutiny over the candidates' remarks on different occasions. We are speeding up efforts to focus more on topics and what candidates have done instead of what they said and campaign platforms.

For my professional project, I have scheduled an interview with Ryan Mark, a data editor and engineer at Vox in the following week. I feel it would be an opportunity to learn more about election results display and news application development and how newsrooms plan and execute a big data project from start to finish.

Weekly Report 5: February 17 – February 22

I spent the whole week working on a story about criminal defamation laws in different states. I did well in researching the topic and presented the findings, but I lacked a more direct, assertive ruling statement. I was working with editor Katie Sanders, and she gave me some feedback on the validity of my fact-check. She encouraged me to find

more sources who have the first-hand experience and expertise in order to address the claim more directly and solidify our ruling. I was also advised to have more reporters look over my work, which also helped me bulletproof my story. This week, I was a little frustrated with the experts' and sources' low rate of response to my media inquiry. I need to be more proactive and follow up with them.

Another challenge I had was to keep myself constantly informed of the news in D.C. and beyond. I found that myself in a state of information overload but still miss out on some stories. I feel that it might have to do with my largely sporadic reading habits. I will look to set aside more time in reading newsletters and newspapers. I hope to get better at pitching my own ideas for fact-checking.

The seminar taught by James Grimaldi of The Wall Street Journal was very inspiring. The biggest takeaway was the concept of campaign finance stories spectrum, from feature and profile stories to potential conflicts of interests, to overt corruption. We also learned about the importance of whistleblower tipoffs. This is earned by journalists who did their due diligence previously. I very much admire what Grimaldi has done and hope to hear from him again.

For my professional project, I have done an online video interview with Vox data editor and engineer Ryan Mark as well as a phone interview with Bloomberg visualization designer Mira Rojanasakul. From our interviews, I found that for live election results graphics, they made the editorial decision to present the results in the most straightforward way and listed the results in tables. Their main forms of visualization on the landing page were different from the traditional shaded-area maps to avoid disproportionally presenting votes with geographical areas. Michelle Minkoff, a

veteran Associated Press data editor needed to cancel because of her health condition and we agreed to reschedule. I have scheduled another interview with Lazaro Gamio at Axios next week.

Weekly Report 6: February 25 – March 1

This week, my piece for the ACLU's claim about defamation laws in different states was run, after rounds of editing. My editors helped me in streamlining the structure and got rid of some supporting materials that might distract readers from the central storyline. I do find the process of going back to primary sources a good practice for investigative reporting, and it's always good to question the sources and fact-check sources. We rated the claim mostly false because of its misleading nature, and while I did not receive any backlash from the ACLU, they did question some of the wording of the piece. I talked with my editor for a way to resolve this, and I felt that the best policy is always transparency. After exchanging opinions with a communications officer at the ACLU, they also told me that they would modify their social post so avoid confusing its followers. I found it rewarding to see facts being straightened in an environment saturated with opinions on social media. I also worked on a Facebook check of a viral image, utilizing a reverse image search tool.

The trip to NPR provoked me to think more about how the platform, now much more fragmented than before, would adapt and continue to serve the audience. I started journalism in radio, and have always admired the NPR way of storytelling, but I for sure don't follow it every day and but tune in to shows sporadically. Working at the local station KBIA gave me the impression that while many loyal NPR listeners stick to news

programs on the radio, young listeners usually go online for podcasts. It makes the conversation about diversity necessary, as shows could be facing a wide spectrum of people. Ken Woods, the vice president of diversity in training at NPR showed us some of their efforts in promoting diversity, and I am very eager to find out more about their new strategies in integrating people of different backgrounds in terms of content and formats.

For my professional project, I have done an in-person interview with Alyson Hurt of NPR Visuals team, as well as a phone interview with Lazaro Gamio of Axios, and Lisa Charlotte Rost of DataWrapper, a visualization development platform. Hurt and Gamio were involved in covering multiple elections and constantly innovated new ways to present election results, while Rost, a German native, came to cover the 2016 election on the NPR Visuals team with fresh perspectives as a designer. My conversations with them pointed me to explore how election maps were finessing the balance between nuances and clarity, as well as accuracy (in terms of portraying areas according to electoral votes) and accessibility (showing locations). I have scheduled another interview with Alicia Parlapiano, a graphics editor on leave at The New York Times who has written thoroughly about this topic before.

Weekly Report 7: March 4 – March 9

This week I spent a good amount of time on scraping and project building. I spoke with Asa Royal, a student at Duke University who developed the tool Tech & Check, a project that flags potential claims from CNN transcripts and Twitter feed for fact-checking with scraping and machine-learning algorithm. I will likely work on this project for the rest of March and toward developing a fully functioning scraper for a database.

Royal told me he would be happy to sit down and go through the code of his project with me, and I plan to examine his code more closely.

My biggest frustration with this project is the unfamiliarity with different Python packages and the lack of understanding of package documentation. I am essentially learning new tools at a relatively fast pace without getting to know much about the infrastructure of the programming language. My knowledge in Python mostly originated from the advanced data journalism class in my second year, where we used an older version of Python. However, this version will likely be phased out and it would be more ideal if I could utilize the newer version.

I also met a few reporters at NICAR and exposed myself to a wide range of data reporting sessions and hands-on classes. I was most impressed by large-scale collaboration projects including the Star Tribune's Denied Justice series about unsolved rape cases, ICIJ's project Implant Files that tracks medical devices worldwide, where journalists built databases themselves. However, it is crucial that editorial planning beforehand will significantly reduce chaos at a later stage, and the data editors need to have a keen judgment of possible roadblocks, and what it takes to turn out a story of impact.

For my professional project, I had a chance to speak to Alicia Parlapiano, a graphics reporter at The New York Times currently on sabbatical leave. Unlike many other journalists, she still considered shaded area maps as the primary means of election results visualization. She also said that it's important to consider that the live results were coming in as the election night unfolded, so that having a map would be more accessible for readers nationwide to go online and check the results in areas of their interests.

Parlapiano seemed to be the first interviewee to note that they catered to readers' suggestion on Twitter to use cartograms in 2018. BuzzFeed data editor Jeremy Singer-Vine referred me to a Zach Ares, who was involved in the election graphics project. I am going to have a meeting with Ares next week. I also met with Jon Schleuss of Los Angeles Times and scheduled to talk in the following week with him.

Weekly Report 8: March 11 – March 15

I kept working on my scraping project this week and set up a session with Asa Royal to go through the code of his Tech&Check project. He encouraged me to take this opportunity to hone my scraping skills with Python and regular expressions (patterns written by programmers for matching strings of a particular format) and introduced to me the tool Regex101.com to test the regular expressions I wrote. I learned how to separate speaker names and statements through Royal's code. However, I do need to clean up some extraneous texts to have a structured database. I'm looking to finish up my Sunday shows scraper by the end of this coming week or early next week. Meanwhile, I am also hoping to catch up with the editorial side in the newsroom to see what they are up to.

Besides work at PolitiFact, NPR visuals team also invited me to an interview on Friday, March 22 for their internship. I talked with Alyson Hurt of the visuals team for my research project about two weeks ago, and she advised me to show more work samples of interactive visualizations. Interactive data visualization is not something I particularly did before, and I have quite a few frustrating experiences with it. I wanted to do more traditional computer-assisted-reporting, which still focuses more on the production side, compared to visualization and web development, which is more related to post-production. However, I found myself jumping at any opportunity related to data

journalism for fear of missing out on any entry-level gigs that may become a springboard for my future career, because I know I will learn a lot and have mentors at any of these positions. That way, I often feel that I stretched myself too thin and felt inadequate somehow for positions that I've applied for.

The takeaway from the seminar with Donna Leinwand Leger, besides the useful field tips, is definitely note-taking skills. She told us to edit in our head and only write down really good quotes.

For my research project, I talked to Zach Ares, the motion graphics designer at BuzzFeed this week. I was intrigued by their ability to bind static graphics to data on the back end, so that the static graphic was fed the election results data and constantly updating on election night. It turns out that BuzzFeed also had a show that was geared toward elections, and provided more detailed county-by-county results in graphics of those shows. By comparison, such a detailed view did not exist on the online live result web page. Besides my scheduled interview with Jon Schleuss of the *Los Angeles Times*, I will need to contact more reporters this coming week.

Weekly Report 9, March 18 — March 22

I have seen this week as an opportunity to reflect on how I have been doing, and what could be accomplished in the rest of this semester. At PolitiFact, my job responsibilities revolve around three foci: a) writing b) research and monitoring c) scraping. I have had three stories published and an ongoing story that I am looking to wrap up. I was monitoring the congressional leaders on and off and haven't turned up statements that went on to become stories. My scraping project was stalled after I started

to write a story this week. I reached a conclusion that I was not accomplishing enough, at least not with a high level of completion, but rather overwhelmed by what I was tasked with due to a lack of an organized system to stay on track. On the bright side, two checkable Amy Klobuchar's statements were identified and benefited from the scraper I wrote. At the next stage after this story, I would try to invest more time in the scraper. The takeaway from this week's work was that we need to be more judicious when using data sources: sometimes it means vigilance to readily available data, and sometimes it means attuning to seeking out data sources that are not readily available yet and finding the right person to speak to. Our analysis of flawed data led us to reach a not fully sound conclusion.

The visit to the American Council on Education changed my perception of lobbyists. They turned out to be good ports of sources, when journalists want the most recent updates of a beat, or seek stakeholders on both sides of an issue. Sarah and John gave us some deep dives of how they develop and manage relationships, and find a clear line of authority. We, as journalist, could borrow lessons from it, to understand everyone's position and their background. The history of Sunday shows is also illuminating, and explains the far-reaching impact of these shows.

My professional project didn't see much progress this past week as an interview fell through and there was a lack of further responses. I will follow up with some interviewees next week and start transcribing and analyzing my materials at hand.

Apart from my internship and the seminar, I also learned through an interview with the NPR visuals team about the state of online design for news. Nowadays, emerging forms of platforms (including small screens like smart appliances) have made the media

more fragmented and the newsroom staff somewhat more distracted because they will need to attend to all these platforms. I see these changes as inevitable. Although I do not intend to go into the engineering track of news design, I will be interested in exploring what the future holds for the editorial side to embrace the technologies that may change people's habits of consuming news.

Weekly Report 10: March 25 – March 29

This week, I developed a working scraper of several main Sunday shows, which can grab all the texts from the latest installment of the Sunday show and save them into text files. After running this script in the command line, I can have all the transcripts in one place without the need to go to all the individual networks' website to find the transcripts. However, I am still figuring out how to organize them into a database containing air dates, speaker and their statements to submit to the API of ClaimBuster, which would rate the potential checkability. My editors have been very encouraging and supportive of the work that I am doing. They wished to preserve my data project and apply it in the future. I would also love to see a higher level of completion and have something that the newsroom can use and repurpose.

On the story side, my check on Amy Klobuchar's claim about rising hate crimes was put on hold to wait on the response of a source, and the editor insists that hold off before we hear back. This is in part due to my negligence, for I have discounted this data source at first because it's slightly dated, and I did not ask the questions that I need to be asking as a journalist in the first place. After discussing this topic, we decided to turn this fact-

check into a regular story, because the statement is vague enough to arbitrate. My editors were very prudent on this matter, and I appreciate the editorial transparency.

The seminar this week taught me a lot about influence. Journalism is a lot about impact — how we can change the minds and lives of people. However, impact bears different meanings today as people’s media exposure has far expanded, and there are pockets of communities that simply don’t consume news. Many grassroots organizations are knocking on doors and making a huge impact by mobilizing people. The fragmented media drove us to compete for attention, and maybe in this context, the media professionals as a whole to make people care. These days, the entertainment industry may have taken up too much of people’s screen time, especially when they are using smartphones. Before the 2020 election, media professionals bear more responsibilities nowadays to adjust our digital strategies to engage and represent communities we serve.

For my professional project, I have already spoken with seven interviewees (Alyson Hurt of NPR, Mira Rojanasakul of Bloomberg, Lisa Charlotte Rost of DataWrapper, Ryan Mark of Vox, Alicia Parlapiano of *The New York Times*, Zach Ares of BuzzFeed, as well as Lazaro Gamio of Axios), and two others (Jon Schleuss of Los Angeles Times, Michelle Minkoff of AP) have agreed to speak but pushed off on our conversations. I will follow up with them once again in the coming week but I have almost exhausted my list of sources for the interview. I plan to conclude all my interviews this coming week and also hope to have a working first draft of my project report that I’ll submit next week.

Weekly Report 11: April 1 to April 5

This week I developed a prototype of Sunday shows scraper, which can separate all the speakers and their statements in the shows and submit them to the new Claim Buster API. This exercise deepened my understanding of data types and how to use programming languages to organize, store and retrieve data. I do not know whether the newsroom will need more functionality, to expand the sources of information they will keep monitoring. That way, I will need to enhance my knowledge of SQL, and how to build databases. I plan to run the script and use the results to guide me in finding claims to check this coming week.

However, we do need to be very cautious of the ratings generated by Claim Buster, and the disclaimer we need to make down the road. Right now, the Sunday shows scraper only cover the bracket of Sunday shows, and we do not need to account for what sources of information we have included to submit to ClaimBuster, whose code and back-end we have no access to. Machine learning to me is very much like a black box, powerful on the one hand, but entails discretionary choices we need to make in terms of disclosing the methodology and communicate the meaning of the results of the algorithm on the other hand. As journalists, we bear the responsibilities of explaining to the general readership and audience, as well as non-data-journalists who are not entirely familiar with the capabilities of machine learning, what we are doing with as much transparency as possible.

One of my frustrations this week came from an email from an activist criticizing my story explaining hate crime statistics of being logically unsound with “unreliable claims”. I did not find the comment constructive as it did not specify the reasons. I find different opinions informative, but sometimes it’s hard to come to terms with comments about

stories that opine without reasoning. To hear from readers is rewarding, but I do think I need to learn more about how to have conversations with readers.

For my research project, I have talked with Josh Holder, an interactive journalist at The Guardian, who gave me his insights into the design of cartograms for a legacy media, to focus on the online experience and utilize interactivity. I have also scheduled to talk with Aaron Bycoffe at FiveThirtyEight Tuesday. I have started drafting my analysis and will refine the analysis once I have all the interviews done.

This coming week, I am also looking to assist PolitiFact health reporter Jon Greenberg in finding and analyzing data for prescription drugs.

Weekly Report 12: April 8 to April 12

This week I spent most of my time at work doing research and finalizing the scraper. My supervisor is inclined to incorporate my input into Duke Reporters' Lab workflow, and essentially add more sources to what they have already done. I am also exploring the option of organizing a database for internal use that could be realized by automating scraping and results of fact-checks and inputting them in Cloud-based tools such as Google Sheets. My editor suggests that I work on more fact-checks before I leave for me to develop a portfolio of investigative works, so I will likely pick up some writing assignments in the remaining weeks with a focus on statistics and data reporting. I will work most closely with reporter Jon Greenberg on health-related topics. I also wish to finish my fact-checks in a more timely fashion.

This week's seminar was very educating. The achieved journalists at The Washington Post and Major Garrett were surprisingly very open about sharing their early days in journalism and how they got to where they work right now. They told us about how they

always take the extra step to do better, find the extra bit of information that is helpful, go to the court for files, and always be prepared when a story comes. A lot of great journalists have said that there is no small story, and I will also try to tell each story well to be more meticulous with details and stay inquisitive.

I have finished editing my analysis and start compiling the master project report along with other files. I have most of the files ready, but I need to edit my rough transcripts to incorporate them in the project appendix. I also will need to ask my editor for a written evaluation. I am looking to schedule my defense on the morning of Tuesday, April 30, will submit the first draft to my committee chair by tomorrow.

Weekly Report 13: April 15 to April 19

This past week I spent most of my time working on a [fact-check](#) to determine the accuracy of John Delaney's statement that "most of home care is paid by government programs". I got a response from his campaign team, and it is the first time that a campaign spokesperson provided supporting materials to me, quoting a statement from a fact sheet provided by the Centers for Medicare & Medicaid that "Medicare and Medicaid together made up 76 percent of home health spending in 2017 ."

At first, I thought the statement is straightforward in that it calculated the home health care spending. However, as I dove more into it, I found out that two industries were at play: home health care (medical) and home and community-based care (non-medical and long-term), and the statistics referenced by the team only calculates the first category. The data for the second category is not very well-documented, and I could only

have an estimate. Health reporter Jon Greenberg told me about the key of fact-check is to anchor our reporting to the statement itself, and to get as close as possible. As I was trying to get the numbers for the second category and explain the difference, Jon told me to resist the temptation to report on everything. It reminds me of a lesson I learned during my time in Missouri from Prof. Mark Horvit, that we sometimes need to get rid of the "good stuff", so we are left with "the best stuff". I often found myself burying the nutgraph and sometimes lose sight of the information gap between readers and myself. I often see it as desirable to report on something exhaustively, but I become increasingly appreciative of the virtue of deadline reporting, to build a focused narrative under time constraints. Although I have been trying to tell stories for years, I still find it challenging to be clear-sighted and edit myself. It makes me all the more grateful for my editors' feedback to help me organize and tell a better story. I also will try to write faster for the rest of my assignments at PolitiFact to internalize these lessons by practice.

On Thursday, I also was involved in our team's coverage of the Mueller Report, monitoring social media to help our reporter John Kruzel stay on top of what grounds we need to cover. I also found an OCR-ed version of the Mueller Report on Twitter so that some reporters could search for keywords in the report in certain sections.

On the other hand, I also edited my project based on David's feedback. I found that while I do a decent job researching, reporting, and analyzing, I need a clearer conclusion to list all of my findings. I completed the edits over the weekend.

The seminar has finally come to an end with our farewell lunch with alum Jennifer LaFleur, whose work I have admired. Jennifer left many words of wisdom for us regarding how to fight for records, including building personal relationships with records

keepers, learn more about how a government agency is organized to use checks and balance in the system to our advantage. and know the laws well and use them.

I will focus on the Hurley Symposium, the White House Correspondents' Dinner and my project defense in the next two weeks.

Appendix C Evaluation

Self-Evaluation

This semester, I have been working at PolitiFact as a national team reporter. I work for 34 hours a week, Monday through Thursday at the newsroom. We are a relatively small team actively seeking assignments for fact-checks when they are warranted, to spell out facts for readers and hold politicians accountable. We have three reporters in the office, editor, Angie Holan, managing editor Katie Sanders, executive editor Aaron Sharockman and other reporters who work remotely.

My job responsibilities mainly fall into two brackets: reporting and data journalism.

The majority of my time was spent researching and reporting, pitching ideas of fact-checks, researching, interviewing and reporting, as well as assisting other reporters with their research. Besides day-to-day reporting, I have drawn many lessons from higher-level thinking including what niche of reporting we bring to the readers, how we follow the news cycle without being passive in following politicians' agenda and how to craft our platform based on the audience's habits. We have weekly meetings to discuss the aforementioned strategies and set up goals regarding content and format. We use widgets to improve our search engine optimization and fact-check Facebook content. I think working in a non-breaking-news, smaller newsroom helped me realize these aspects of journalism that I did not really put much thought into before. I have reported with accountability, and learned through trial and error. I have made the mistake of not fully understanding how to evaluate sources and the data that they were quoting, and I think this could be remedied by more close attention to examining the stances of sources, reading more extensively about what others, and we have done.

The other part of my job involves building a scraper to assist automated fact-checks. This is a relatively new field that could help lessen the pressure on fact-checkers to monitor an influx of information distributed across all platforms. Many newsrooms are excited about this tool and set foot in the realm. I built this tool successfully with the help of developer Asa Royal at the Duke Reporters' Lab led by Bill Adair, a founding member of PolitiFact. I am pleased with the outcome, but I could have done better at documenting the workflow and expanding the use of it in the newsroom.

The project seminars gave me a good understanding of how different newsrooms operate. We visited different newsrooms and saw their flagship products and best practices. Not only did we have conversations with journalists, but also lobbyists, spokespersons, and consultants. At first, I did not know how people in other professions can tell us helpful things that we can tap into as journalists, but I think it comes naturally as I start to understand how information is originated, collected and passed along and how we could crack open some information otherwise hidden.

For my research component, I have had the opportunity to speak to data visualization designers in an array of newsrooms, which is beneficial for the scope of the project. Yet I do think that I could have followed up with some journalists more closely, especially when are not so responsive to get more diverse, and sometimes more contrasting opinions related to designing election maps. I wished I had done better at planning.

On-Site Supervisor Evaluation

Yanqi Xu is an intern with the national reporting staff at PolitiFact this spring. She has been studying our methods for fact-checking and the writing style we use for writing our reports. Over the course of the semester, she's helped us identify facts to check; she's conducted research and data analysis for senior reporters; and she's reported and written her own [fact-checks](#).

Yanqi has also assisted us in developing automated fact-checking tools. Specifically, she's worked with reporter and developer Asa Royal at Duke Reporters' Lab to refine and expand automated methods for detecting statements that need to be fact-checked. Yanqi and Asa have developed methods using Python scripting to language to scrape transcripts and then input the text into the ClaimBuster automated claim detection tool developed by computer scientists at the University of Texas at Arlington.

Yanqi has also contributed to our traditional newsroom coverage. Topics this spring included President Donald Trump's State of the Union Address, the release of the Mueller report and the Democratic presidential primary for 2020.

Yanqi quickly grasped PolitiFact's methodology and was able to translate our journalistic outlook for use in automated online tools. Yanqi's skill set in scraping and coding is considerably more advanced than PolitiFact currently has in the staff of its small newsroom. Yanqi has been a unique and powerful addition to our newsroom this spring.

I would encourage Yanqi to continue to work on her writing, especially in thinking about structure and sequence in writing more complex pieces. This is the type of high-level skill that will come with more practice and experience.

Please do not hesitate to contact me with any questions.

Sincerely,
Angie Drobnic Holan
Editor, PolitiFact
holan@politifact.com
727-410-1770

Appendix D Project Proposal

Introduction

I spent hours staring at the world map as a child imagining different natural and cultural landscapes beyond the boundaries. The opening up of China has given me chances to encounter people from all kinds of background and places, and led me to pursue an undergraduate education in international journalism at the Communication University of China. I dealt with international data sources, like the United Nations and the World Bank, which often had shaded area maps of the world. I found myself tirelessly fixating on country data and speculated on why the numbers looked that way.

However, I took for granted the way the world looks until I enrolled in a global studies class during my exchange semester at the State University of New York at Oswego. Dr. Lisa Glidden showed the class the Mercator map and several other maps of different projections — the size of Africa changed drastically between the maps. Any type of flat map would not be an accurate representation of the spheroid-shaped earth (which is also not a spheroid, but a pear-shaped planet). It dawned on me that maps could be manipulated to deliver certain points of view.

As an international journalist, I couldn't possibly forget the quirks of the maps. After learning that many journalists also use maps as a form of visualization to display data, I paid extra attention to how they made the maps. For example, when I interned at Al Jazeera, I was translating stories into Chinese and using the maps of the ISIS-controlled territory as a tool for understanding the Syrian conflict. Seeing the color-coded areas was much faster than interpreting words describing all the names of the places and

their locations. After college, I came to the University of Missouri for more experience telling in-depth stories and studied data journalism.

Working in the Al Jazeera newsroom covering the U.S. presidential election in 2016 and covering the 2018 local midterm election in Missouri for the local radio station KBIA, I realized that results are what people care about the most. I noticed that several news organizations used other forms of visualization to complement or replace mapping to display results, amid discussions that the maps can misrepresent display of the popular and electoral votes. The various design choices have kindled my interests in finding out how news professionals approached visualizing election results.

To answer the question, I will develop professional skills and research the topic of mapping as well as its alternatives for data display. For the professional skills component, I plan to be a data/editorial intern and develop more data visualization skills in the spring of 2019. For the research component, I will explore how news organizations design their election results graphics, especially how they create alternatives to traditional shaded area maps. I will interview professionals in information design and cartography to study the best practices.

After extensive involvement with multimedia forms including photos, text, videos and data, I have decided to pursue a career in data journalism. I have set a career goal to become a professional data journalist on a multimedia or investigative team after graduation. The endeavors of explanatory journalism and investigative reporting both have their values in informing the public.

Professional Skills Component

In the spring of 2019, I plan to be a data or editorial intern producer at a media agency in Washington, D.C. My main job responsibilities will include analyzing and/or visualizing data and producing news content. The internship will give me real-world experience publishing my work under deadlines and receiving mentorship from my supervisors. I will also expand my knowledge of political news coverage in Washington, D.C. I am currently applying for internships.

I have honed my data and mapping skills through coursework and other online training resources. In the spring of 2018, I learned some data analysis and visualization skills from an introductory course in data journalism. I built several maps when I was in convergence reporting, showing county-level and state-level data of Missouri. I enjoyed joining attributes tables and using QGIS to visualize spatial data. I have also taken and obtained certificates in Introduction to R and Introduction to Mapping and GIS, two massive open online courses offered by professional data journalists through the Knight Center. In the fall of 2018, a class in Geographical Information Systems deepened my understanding of problem-solving in the geographical information context. Meanwhile, as a graduate research assistant in the Investigative Reporters and Editors data library, I familiarized myself with data sources and exposed myself to many sharp minds in the field of data journalism. I am also picking up skills in programming to enhance the reproducibility of my work through documentation.

Analysis Component

Introduction

After winning the election, U.S. President Donald Trump gave journalists copies of election results maps — the maps with red areas representing his winning areas looked mostly red, *The Washington Post* (Bump, 2018) reported. This type of map is called a shaded choropleth map, in which “color hue depicts categorical data: the political affiliation of voters, whether Democrats (blue) or Republicans (red)” (Meirelles, 2013). However, the geographical area is not an accurate representation of the proportion of electoral votes, much less a sound representation of the popular votes.

Such mismatch of area and population reflects a known problem in the journalism community, with news organizations including *The New York Times* (Parlapiano, 2016), *The Washington Post* (Gamio, 2016) and Vox (Scott, 2018) writing articles to inform readers about the mismatch. “Misleading” was a common term used by the media to explain the pitfalls of the disproportionality between geographical area and population on a map. Such articles by journalists accentuate the need to show results in a less misleading and more informative manner for the readers.

This research will address how journalists design maps, cartograms and other forms of visualization for election results display; it will also examine how journalists consider the readers’ role in shaping the forms of visualizations.

When it comes to informing readers, the nature of maps to showcase locations lends itself nicely to the display of election results. The use of maps can demonstrate the “where”, along with the “who”, “what”, “where”, “why” of journalism (Britten, 2004). The best way to relay spatial relations is through maps (Wallace, 2016). Despite the limitations of the choropleth map, graphics editor Alicia Parlapiano (2016) at *The New York Times*, noted that a detailed view of the election map of 2012 published online and

in print just before the 2016 presidential election was still relevant because it helped show the political geography of the United States. The information about location was important, but the editors chose a more detailed level of data presentation on top of the traditional state-by-state choropleth. The detailed map displays ZIP-Code-level voting data, because it was easy for readers to locate their hometowns or find their areas of interest. Parlapiano (2016) argued that the purpose of the map was not to show results — results can be represented by a simple bar chart — but to reveal the intricacy of geographical patterns.

Parlapiano's explanation (2016) points to the encodings in different forms of visualizations. Journalists have come up with new ways to represent the electoral results. However, Parlapiano (2016) also suggested that different maps and charts come with their advantages and disadvantages, "There is no perfect form for showing results in a nuanced way that is at once fair, accessible and revealing."

Among the alternatives to traditional shaded choropleth mapping, cartograms, "also called value-by-area maps" emerged as an option by distorting the land sizes in proportion to the number of electoral votes. Cartograms retain certain geographical traits but distort the shapes of states "in proportion to data values" (Börner, 2015). Study of cartograms has suggested that cartograms and mapping could produce a starkly different perception of which party wins the election (Dorling, 1996). For the 2018 midterm election coverage, several cartograms were produced. One tweet acclaiming a cartogram made by *The New York Times* (Figure 1) gained over 25,000 retweets. Compared to traditional color-shaded maps, this cartogram uses squares to represent each electoral vote, and it also has white space between the states. The author of the tweet, Ben Green,

an applied math Ph.D. candidate at Harvard, touted the cartogram as “the best cartogram of the US I’ve seen”, explaining that “more than ever we need to depict the US in units of population rather than land” (2018). The discussion around cartograms suggests that journalists are constantly seeking other ways of visualization to remedy the shortcomings of traditional mapping in election results display.

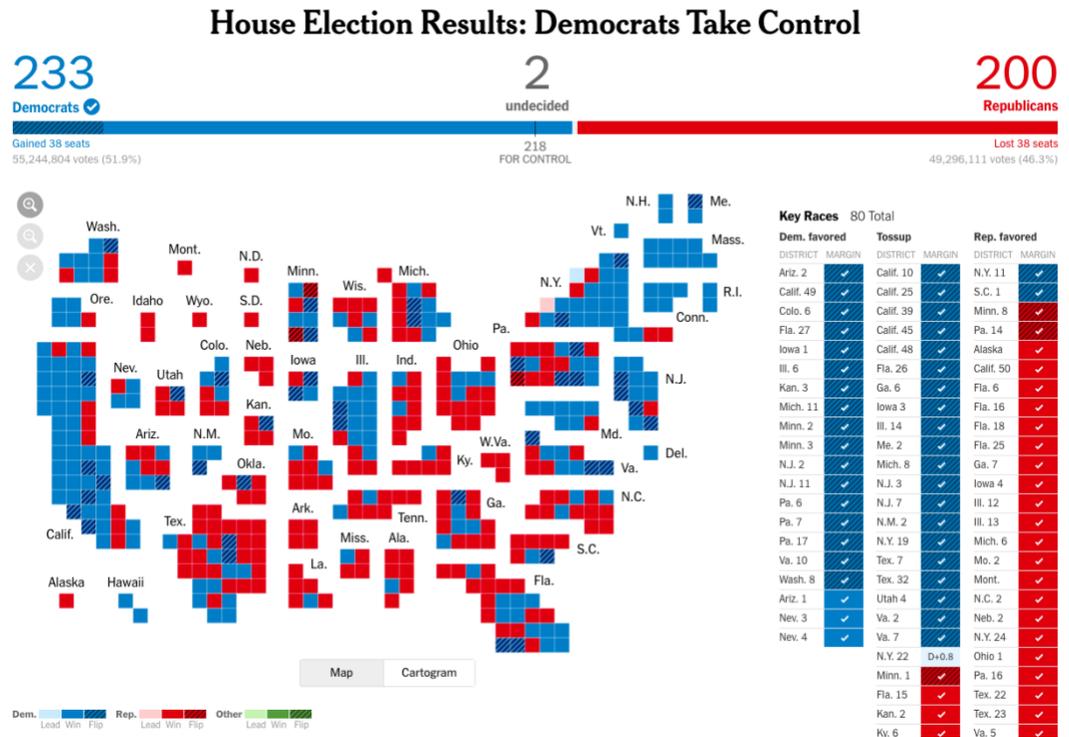


Figure 1. House Election Results: Democrats Take Control
 In *The New York Times*, n.d., Retrieved November 23, 2018, from
<https://www.nytimes.com/interactive/2018/11/06/us/elections/results-house-elections.html>

A cartogram is a customized map that adjusts area or distance to reveal patterns not apparent on a conventional base map (Gregory, Johnston, Pratt, Watts, & Whatmore, 2011, as cited in Ondrejka, 2016). On the election night of 2018, the Bloomberg graphics team put a cartogram on a cake and filled the state grid with blue and red frosting as results came in. News organizations, including *The New York Times* and Bloomberg,

often used cartograms in tandem with interactivity to allow readers to view data more closely. In that way, readers were able to hover or click over the squares to see the popup tooltip of local results. More shades of colors were used to represent the level of support for a certain party. Deeper colors corresponded to stronger support, while brighter colors and higher transparency to a lower level.

Studies have underscored the importance of maps for readers. Readers generally also like maps (Dick, 2014). However, are the readers interpreting maps the way journalists imagine them to be? Previous literature has established that, while journalists are concerned with the audience reception, they seek feedback mainly from the “known” audience, specifically the editors, friends or family and colleagues, but not so often the real audience (Gans, 1980). The theoretical framework of reception theory unpacks the making and reading of maps and helps researchers and journalists make more informed choices about visualization design. As Stuart Hall (1973) indicates in the encoding/decoding model of audience reception, in meaning-making, there are two processes involved, which may not be symmetrical and may lead to the misunderstanding and misinterpretation.

This proposed research adopts a qualitative approach to investigate encoding and decoding through semi-structured interviews with journalistic and cartographic professionals. The decoding process is studied indirectly through the lens of the journalists as decoders of visualization created by other journalists. This study will serve as an empirical application of the reception theory in maps. Given the recurring nature of elections, finding alternatives for graphics to represent electoral votes will pave the way for future coverage, especially national elections. The maps of different elections are also

great assets for journalists who want to compare results. The findings of this project will be fit for publication within the journalism community and the information design community, such as Poynter, the *Columbia Journalism Review*, and the *Design Journal*. This research will contribute to the greater knowledge of how data journalists can utilize mapping as a tool for displaying information without misleading readers and also leveraging other forms of charts, graphs and cartograms.

Two research questions are formulated:

RQ1: How do journalists represent electoral vote results with maps and other forms of visualization?

RQ2: How do journalists take into account readers' reception of graphics to inform their design of election results visualizations?

Theoretical Framework

One theoretical basis of audience analysis is reception theory, which emphasizes readers' interpretation of news (Madianou, 2009). Reception theory advances the idea that the audience is active and "capable of producing their own meanings" (Madianou, 2009, p.326), a departure from communication studies that traditionally regard the audience as weak and passive.

An important contribution to reception theory is the encoding/decoding model proposed by Stuart Hall. Hall (1973) said that journalists encode messages in media texts, and the audience decodes such texts during their media use. The processes of encoding and decoding may not be symmetrical, resulting in the misunderstanding and

misinterpretation of messages (as cited in Shaw, 2017). Hall (1973) recognized that the encoding and decoding are interdependent, containing some degree of reciprocity.

In order to examine the construction of the text, which is essentially how journalists encode, Deacon et al. (1997) conducted interviews with journalists and audiences in a case study of *The Guardian's* coverage of recovered memories. My research will explore encoding and decoding. To understand decoding, I will interview information designers about how they read other designers' maps and design to take into account readers' perception.

Hall (1973) developed the encoding/decoding model for television's communicative process. However, Livingstone (2008) observed increasing momentum of reframing audience engagement with digital media in terms of media literacy analysis. Instead of considering reception studies obsolete, Livingstone (2008) pointed out some parallels between the two concepts of media literacy and audience reception: Both draw on the interpretative paradigm, focusing on the interaction between texts and readers, and through exploration of these parallels. In particular, both resist dismissing the public as incompetent when there are limitations to some digitally-excluded audiences.

Britten (2004) applied the reception theory to the study of how readers read maps in a U.S. news publication, employing the qualitative method of interviews. Britten (2004) focused on the decoding process of map-reading only, and borrowed the two levels of cognitive processing used in cartographic studies (Wood, 2002): perceptual reading, which involves "pre-attentive reactions to display of maps; and cognitive reading, which operates on a deeper, more user-specific level" (Britten, 2004, p.42).

Journalists take into consideration the nature of maps for their design. Jon Schleuss (2018), a graphics editor at the *Los Angeles Times*, acknowledged that “Now, when we make maps we all lie. We're trying to flatten out the world (which aint flat).” Schleuss (2018) pointed out the importance of the right message to show readers in designing election data maps. Thus, it’s imperative that this research study journalists’ design of visualization with a reader’s state of mind.

Given the multi-faceted nature of the election results display, there are a lot of questions that could be answered. One study could not possibly answer them all as new challenges and solutions will arise, along with the development of data collection and visualization technology. However, this research seeks to answer the fundamental questions about how journalists in the field utilize the resources to design the “fittest” maps, cartograms and graphs for their election coverage and build graphics to avoid misleading readers. It will explore best practices in election results coverage graphics and shed light on the broader picture of news maps, cartograms and graphics.

Literature Review

Several different disciplines, including mass communication, cognitive psychology and cartography can help us understand how journalists design maps and how readers use maps. In the context of editorial decision about visualization of election results, three branches of literature are relevant to this study: Maps and cartography, interactive graphics, and elections reporting.

Studies of Maps and Cartography

Maps have been an integral part of U.S. news reporting for centuries (Monmonier, 1989), and there has been a “rise in the number of maps in the popular media” in recent decades (Churchill, 2006, p.55). Monmonier (1989) regards maps as an effective means of showing geographical relationships.

Studies related to cartography are often conducted by traditional cartographers who sometimes overlook the maps in the news as they describe the nature of news maps as “popular cartography” or “graphic cartography” (Green, 2000, p.141), suggesting that such maps mainly serve to attract readers, being “often interesting, innovative, unique and geographically attractive examples of cartography”, and not always “accurate”. The ground-breaking work in journalistic cartography, *Maps with the News*, was written by a cartographer (Monmoiner, 1989). The cartographic researchers are typically more concerned with the typology of maps (Allen & Queen, 2015). Journalists, on the other hand, have mainly shown how news maps were produced (Herzog, 2003).

Despite a trend of map-design toward more readability, it is questionable whether the maps are being read (Britten, 2004). In the study examining how readers read maps in news publications, Britten (2004) categorized maps as “locator” maps, which show geographical locations; and other statistical data maps, which highlight political or demographic boundaries. Britten’s (2004) research studied the audience readings of locator maps only in the news. Essentially, the subjects in Britten’s (2004) study only contain a certain type (locator map) of printed maps, but does not take into consideration other printed data maps, nor interactive maps, which is a more complex form of data map with interactive features. Data maps, the other category of common news maps, are

useful for presenting the visual connection between areas and the certain geographic attributes (Bogost, Ferrari & Schweizer, 2012).

With the spread of digital devices and the rise of the internet, interactive news maps become more popular in many forms of media (Wallace, 2016). Wallace (2016) conducted interviews with cartographic journalists and concluded that “there are very few examples of stories that absolutely require the implementation of interactivity.” two outstanding examples are maps reliant on personalization or localization, as is often the case made for using interactive infographics (Bogost et al., 2012).

In the context of election reporting, this raises the question of how interactive maps are used for readers to localize election results. One prominent such example is what *The New York Times* produced, a detailed map published two years after the 2016 presidential election, in which votes are captured in the choropleth map “at a much finer unit of geography — in precincts” (Bloch et. al, 2018), in line with how actual votes are cast. Days before the 2016 presidential election, *The New York Times* also published a detailed map showing ZIP-Code-level votes in the 2012 presidential election. Such maps reflect that journalists are invested in making maps to display fine details for election results. Yet the fine detailed maps are only made possible with an extra amount of work requesting data from local governments.

Central to map making and map reading is the concept of literacy, which emphasizes the “effectiveness and impact of its agreed upon (or obvious) meaning as well as its contested (or nuanced) connotations” (Allen and Queen, 2015) Allen and Queen (2015) see map making as a cognitive and reflective encoding process for map designers, and regard the reading of the maps a decoding process of translating the abstract relationship.

Harley proposed that “maps are text in the same senses that other nonverbal sign systems —paintings, prints, theater, films, television, music —are text” (Harley, 2002, p. 36). The idea of seeing maps as texts makes it reasonable to subject audience reception of maps to the examination of reception theory.

Although cartograms have enjoyed a burst of popularity in recent years in journalism, maps have been around for thousands of years and such tradition of making maps could be barely changed (Gamio, 2016). The *Times* editors said the design is largely driven by data (2018). Parlapiano of *The New York Times* (2016) noted the advantages and pitfalls of such forms of visualization: a shaded choropleth is common, but falls short of displaying who wins the election because each state’s weight in Electoral College votes varies.

Besides a choropleth map, other map forms exist, with different symbology used on a boundary map. Such special maps include maps overlaid with arrows to show the shifts in political inclination, bubbles whose sizes correspond to population and shades of color to show vote density and vote share.

Studies of Graphics and Interactivity

Previous studies involving map production suggest that the maps are usually regarded as part of graphics, and are created by graphics teams in the newsroom (Britten, 2004; Dick, 2014; Wu, 2016). The graphics teams are sometimes also responsible for making interactive infographics, including maps. News practitioners see interactive infographics as digital products that “facilitate explanation through interaction” (Dick, 2014), and they are used to aid cognition for the audience (Card, Mackinglay & Scheiderman, 1999). In this sense, interactive maps can be categorized as a visual aid

with interactive features. The U.S. news organizations publish some of the most sophisticated and viewed interactive visual images (Usher, 2009).

The comprehension of graphics is closely related to graphical literacy, and scholars have applied cognitive models of graphics comprehension to study how to develop graphical literacy (Canham & Hegarty). Scholars have understood the “understanding digitized visual information is difficult” (Deuze, 2004, p. 147). Canham and Hegarty (2010) noted that for simple graphical display, the audience may attend to all the information, but not for complex graphics. For the audience interpretation of complex maps, it is suggested that two factors help to improve the audience’s comprehension: knowledge in task-related instruction and effective display design. Thus, minimal instruction is one possible approach to increase the audience attention and comprehension.

Graphics editors at *The New York Times* explained (2018) that they consider election maps as interactive “because you hover over the maps to see more information”. Moreover, the editors (2018) also noted that they design with readers in mind, “Whenever possible, we’ve tried to pare away interactions that readers may not understand by just looking at a map. Simplicity is one of our guiding principles.” For example, in the aforementioned “An Extremely Detailed Map of the 2016 Election”, readers can key in a ZIP Code and hover around surrounding areas to explore how their neighborhoods and communities voted on a census block level.

Election Coverage in Journalism

Situated at the nexus of American politics, voting and elections is valued as the bedrock of democracy and receives significant coverage from news organizations. Former graphics editor Lazaro Gamio (2016) at *The Washington Post* wrote, “Nov. 8 is the Super Bowl for election maps, when red-and-blue geographical representations of the United States fill the front pages of news websites by night and are stamped into newspapers the next morning.” Notably, the shaded area map by state became a popular choice for mapping election results because the “winner takes all” Electoral College system in the United States counts votes by states (Ondrejka, 2016). Researchers (Gamio 2016, Newman 2012) have proposed to substitute the two-way color scheme with a gradient to show the margin of victory. Coloring the state blue or red gives the impression that voters in the same state, county or precinct voted uniformly.

Data visualization professionals have written about the characteristics of choropleth maps in portraying regional data (Rost, 2018). For example, different levels of detail result in different patterns. With a higher level of details, more outliers could be shown. However, Rost (2018) also noted that the U.S. presidential elections is an exception because “a state map is more informative in the winner-takes-it-all-system.” However, even at the same level of detail or unit (sometimes called granularity), Rost (2018) points out the nuance in the maps is effected by different encodings of data. Rost made three maps showing the election district ("Wahlbezirke") in Berlin colored by votes of two parties, but the three maps were colored by different data — vote share, percentage difference and ratio of votes.

Rost argued that just using vote shares, the absolute number of votes, will increase the apparent political divisions, because a lead with one vote will result in the flip of color;

percentage difference of votes between two parties will be of greater contrast than that of ratio of vote percentage. Rost's choice of encoding was the ratio of vote percentage. Rost (2018) chose the ratio map because it "tries to take both into account the difference and the absolute values."

Although there is a consensus that no one map or graphic fits all needs for election results mapping (Schleuss 2018; Field 2018; Parlapiano 2016), reporters and graphics designers do not always agree on the best practices of presenting choropleth showing finer-detail votes. For instance, the aforementioned precinct-level "An Extremely Detailed Map of the 2016 Election" (Bloch et al., 2018) draws criticism from reporters like Schleuss at *The Los Angeles Times*. Schleuss comments (2018) on Twitter that "But I think @nytimes did a disservice by not factoring in voter density" and "areas with very few people LOOK LIKE THEY ARE VERY IMPORTANT BECAUSE THEY ARE A DARK RED OR BLUE" [all caps in original]. It remains to be seen how readers react to deeper colors and whether they will associate them (and often less populated areas) with greater importance.

Wallace (2016), a *New York Times* graphics editor, also took a look at map designs, especially what information was displayed for election results maps. According to Wallace (2016), cartograms have been used to show election results at least as long ago as the 1890s.

A 2017 study (Alieva, 2017) examined different forms of data visualization in *The New York Times* and *The Washington Post* before and after the election. The results show that both newsrooms exhibited trends towards increasing use of interactive trees

and cartograms, though *The Washington Post* had more experimental forms while *The New York Times* stuck to more traditional forms of reporting.

Wallace also mentions key practices of the election results mapping in the interactive context: 1) Mobile design may simplify the maps: the mobile site doesn't show the map when it goes small enough. *The Guardian* stripped maps from its mobile version while giving the desktop version 21 maps. 2) News applications featuring higher intensity of customized data exploration have added different levels of details to the data. Wallace noted that some newsrooms including *The New York Times* and *The Los Angeles Times*, built news applications.

Methodology

This study will employ the research method of semi-structured interviews. This qualitative research method fits well for a constantly-changing topic and lends itself to more in-depth exploration of map making. Scholars have concluded that “depth is achieved by going after context: dealing with the complexity of multiple, overlapping, and sometimes conflicting themes; and paying attention to the specifics of meanings, situations and histories” (Rubin & Rubin, 2011, p.35).

Interviewers in semi-structured interviews follow a guide featuring both standard and open-ended questions. They can also decide to stick with the guide or choose to stray from it to follow up if necessary. Scholars adopt the semi-structured methods because “they are well suited for the exploration of the perceptions and opinions of respondents regarding complex and sometimes sensitive issues and enable probing for more information and clarification of answers” (Barriball & White, 1991, p. 330). For my

research, the semi-structured interview method excels in its flexibility of elaboration on certain topics compared to structured questionnaires. The guide of questions will give me more control over the interview topic and enable me to draw comparisons between answers from interviewees, compared to unstructured interviews.

Several journalistic studies in mapping and data journalism have been conducted with the qualitative method of interviews with journalistic graphics practitioners. (Dick 2014, Wallace 2016, Zhan 2018). Moreover, most journalists have experience with interviewing others. I plan to interview each interviewee once because of time constraints. The semi-structured interview is best used for situations in which one in-depth interview is done with the interviewee (Barnard, 1988).

Interview questions are drawn to answer the research questions.

My subjects will be primarily journalists at major news organizations who played a role in creating online data visualizations of U.S. election results in the 2018 midterms or previous elections, as well as cartographers and information designers. I have compiled a list of 17 potential interviewees whose names and biographies are included in the appendix. The work of the interviewees covers a wide range of visualization forms and their expertise will foster a greater understanding of election map design. Besides their career path, I have also included in the appendix how their area of expertise is relevant to this study of election mapping and visualization.

I will use email or Twitter as the primary initial means of contact with individual interviewees and then schedule interviews. The list will be subject to change depending on how successful I am at acquiring interviews. If the journalists are based in Washington, D.C., I will seek to interview them in person. Otherwise, interviews will be

conducted via telecommunication applications like Skype or on the phone. The interviews will last for 30 to 45 minutes and will be recorded. The author will also take notes of the interaction and analyze the responses for the purpose of this study.

I plan to ask questions:

Background questions:

1. How long have you been making graphics? Were you involved in the 2016 election coverage?
2. What role did you play in the election coverage and how was the team organized?

Mapping and graphics:

3. What was the main form of visualization for the 2016 presidential election live results and what was in it?
4. What was the main form of visualization for the 2018 midterm election live results and what was in it?
5. What problems did you find with the traditional shaded choropleth map?
6. What modifications did you make to the traditional shaded choropleth?
7. Describe the difference between your map and the traditional choropleth map?
What are the advantages of your chosen form of visualization?
8. Could you give me some examples of alternative forms of election results display other than the traditional mapping? What works and what doesn't?

Questions about designing for readers:

9. What would be hard for the readers to understand or fail to read from your map?
10. How do you give readers instructions as to how to read or use the maps, charts and cartograms?

11. For election news maps done by others, what works and what doesn't work?
12. Have you sought readers' feedback or learned from their comment about their difficulty of understanding electoral graphics? Are there something that they particularly like, which you may use more in the future?

Questions about best practices and future goals:

13. In the future, what would be the ideal practice of election graphics?
14. Do you have anything to add about election results graphics that we haven't touched upon?

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Proposed list of interviewees

Name	Affiliation	Work	Biography
Jeremy Singer-Vine	Data Editor, BuzzFeed	Midterm Elections 2018 Results: Live Updates, News, And Race Results On Election Day	<p>Before joining BuzzFeed, Singer-Vine worked at the Wall Street Journal and previously Slate magazine. His work has earned him a nomination for Pulitzer Prize for National Reporting. He writes the newsletter, Data Is Plural, which includes sources of datasets. The main BuzzFeed election live results coverage page does not feature a map but uses multiple tables for key races and dot graphs for representation of the House and Senate in general.</p>
Alyson Hurt	Graphics Editor, NPR Visuals	Election Night 2018 Live	<p>Alyson Hurt is a veteran graphics editor. She's been part of the NPR Visuals team since 2008 and built acclaimed news applications for the presidential elections in 2012 and 2012. She spent most of her career at NPR, <i>The Washington Post</i>, and <i>The Arizona Republic</i>. Hurt designed the 2012 election results live display featuring vertical layout of electoral votes without a map. In 2016, she designed the battleground map with a cartogram before the election and the "scoreboard" live election results display.</p>
Chase Davis	Senior Digital Editor, Star Tribune	2018 Minnesota midterm election results	<p>Chase Davis ran the interactive desk at <i>The New York Times</i> before joining the Star Tribune. He teaches the advanced data journalism course at the Missouri School of Journalism. At <i>The New York Times</i>, Davis coordinated the team's work around the 2016 elections. The team's presidential election coverage feature four maps: a state-level election results choropleth, a finer-detailed county-level results map, a colored-bubble map overlaid on state boundaries to show population and a map with arrows corresponding to counties showing the shift of votes between parties.</p>
Kevin Quealy	Graphics Editor and Reporter at Upshot, The New York Times	An Extremely Detailed Map of the 2016 Election	<p>Kevin Quealy is a graphics editor and reporter at The New York Times, where he writes and makes charts for The Upshot, the Times site about politics, economics and everyday life. He writes about a range of topics, including sports, politics, health care and income inequality. He worked at the Philadelphia Inquirer and the St. Louis Post-Dispatch before joining <i>The Times</i> in 2008. He has a master's in journalism from the Missouri School of Journalism. Quealy worked on “An Extremely Detailed Map of the 2016 Election”, published in July of 2018 allowing readers to input ZIP Code and compare how they voted to their neighbors.</p>

Lisa Charlotte Rost	Dataviz Designer, Datawrapper	Different units, different patterns	Lisa Charlotte Rost is a designer based in Berlin. She is responsible for the design and the blog at Datawrapper, a website c-founded by former <i>The New York Times</i> graphics editor Gregor Aisch. Rost's been writing and talking about data vis for a few years now. She also authors The Weekly Chart, a column at Datawrapper discussing data visualization. Rost was a Knight-Mozilla OpenNews Fellow at NPR from 2016 to 2017. She has a MFA in visual communication from Bauhaus University Weimar.
Mira Rojanasakul	Designer, Bloomberg Visual Data	2018 Midterm Elections: How America Voted	Mira Rojanaasakul spent her journalistic career mostly at Bloomberg as a designer. She has made a dozens of visualizations for politics, many of them being maps in different forms. Rojanaasakul holds an MFA in communications design from Pratt Institute. Rojanaasakul participated in the design of Bloomberg's 2018 Midterm Elections results, which foregrounds the cartogram and gives the readers an option of viewing the map for the House, Senate and Governor races respectively.
Josh Holder	Visual Projects Editor, <i>The Guardian</i>	US midterms 2018 live results	Josh Holder has worked at <i>The Guardian</i> in London since 2014, after positions like software engineer and interactive developer. During the period, he developed and worked on several votes results coverage, including elections in the U.K. in 2017, French presidential election in 2017, and Brexit. Holder graduated from University of Birmingham with a master's degree in electrical engineering and served as the editor-in-chief of the student newspaper RedBrick. <i>The Guardian's</i> midterm election coverage employs the use of hexagons widely both on maps (Senate race) and cartograms (House race).
Lazaro Gamio	Visuals Editor, Axios	Live map: 2018 midterm elections results	Lazaro Gamio is the Visuals Editor at Axios, where he oversees the production of charts, maps, interactive graphics and editorial illustrations. Before Axios, he worked at <i>The Washington Post</i> as an assignment editor, leading a group of visual journalists. Gamio has been at the frontline of live election results graphics, including the 2016 presidential election at <i>The Washington Post</i> and the 2018 midterms at Axios.
Aaron Bycoffe	Computational Journalist, FiveThirtyEight	Forecasting the race for the House	Aaron Bycoffe is a computational journalist for FiveThirtyEight. He previously worked at The Huffington Post and the Sunlight Foundation. At 538, Bycoffe has made several visualizations with maps and specializes in election coverage. Compared to other traditional news sites, 538 has a niche in election forecasts coverage. Their Senate forecast visualization included a special map with hexagon overlay, and the House forecast included both a cartogram and a shaded area map.

Ryan Mark	Data Editor, Vox	MIDTERMS LIVE RESULTS	Ryan Mark is a data editor and engineer on the Vox Viz team. He designs and codes interactive graphics and special features. Previously, he worked with all the Vox Media networks and product team. Mark worked for the Chicago Tribune after receiving a MA in Journalism from Northwestern University. His works from 2018 include races for each state and the national live coverage.
Lauren Tierney	Graphics Reporter and Cartographer, <i>The Washington Post</i>	Detailed results from 22 key House battleground districts	Lauren Tierney is a Graphics Reporter and cartographer at <i>The Washington Post</i> who specializes in mapping environment, climate, wildlife, and adventure topics. She was previously a Graphics Editor at National Geographic Magazine, and has a master's degree in geography from the University of Oregon.
Kenneth Field	Senior Cartographic Product Engineer, ESRI	Dotty election map	Kenneth Field is a product engineer at the mapping software company Esri, which designs ArcMap, and author of a guidebook for mapmakers called Cartography. For the 2012 and 2016 presidential elections Field made a gallery of maps that illustrated diverse styles of cartography along with some comments on the map types. "Each map can tell a different story of the election," Field writes.
John Burn-Murdoch	Senior Data-Visualization Journalist, <i>Financial Times</i>	US midterm elections 2018 — results	John Burn-Murdoch is a data journalist from the U.K. He has been working at <i>Financial Times</i> as a data editor since 2013. He has a bachelor's degree in geography, a master's in interactive journalism and data science. Burn-Murdoch has worked on the UK general election and the 2018 midterm election results for FT. He has also analyzed the results with charts.
Darla Cameron	Senior Designer/Developer, The Texas Tribune	Map out the ways Clinton or Trump could win	Darla Cameron joined the Tribune after five years at The Washington Post, where she used data to tell stories about politics, policy and the economy. Prior to the Post, Darla worked in Florida at the <i>Tampa Bay Times</i> and completed a fellowship at the Poynter Institute. Cameron obtained a degree in journalism from the University of Missouri and taught an online course Introduction to Mapping and GIS at the Knight Center. Cameron has built data visualizations for the 2012 Florida elections at <i>The Tampa Bay Times</i> and 2016 elections at the <i>Washington Post</i> .
Alicia Parlapiano	Graphics Editor, <i>The New York Times</i>	There are many ways to map election results. We've tried most of them.	Alicia Parlapiano is a graphics editor and reporter covering politics and policy from Washington. Parlapiano has written about different ways of election results mapping. She previously worked for The Washington Post and the Pew Research Center and studied journalism at The University of North Carolina.

Jon Schleuss	Reporter & Graphic Artist, <i>Los Angeles Times</i>	Did your neighborhood vote to elect Donald Trump	Jon Schleuss is a graphics and data journalist in the Visualization & Graphics Department at the <i>Los Angeles Times</i> . He specializes in interactive graphics and data reporting and also teaches journalism students how to code at the University of Southern California. Schleuss graduated from the University of Arkansas in 2013. He worked on the 2016 election results visualization at <i>The Los Angeles Times</i> , including "Did your neighborhood vote to elect Donald Trump", which the team calls "California's most detailed election result map EVER".
Denise Lu	Graphics Editor, <i>The New York Times</i>	Sizing up the 2018 blue wave	Denise Lu is a graphics editor at <i>The New York Times</i> , previously at <i>The Washington Post</i> . Lu graduated from Northwestern University with a bachelor's in journalism in 2014. Lu was involved in interactive analysis project after the election at both newspapers.