ELECTION CENTER

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Visual Storytelling: Election Night Results Dashboard

Denver Elections Division, CO

Submitted by:

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Executive Summary

The Denver Elections Division implemented an interactive dashboard on our website's Election Night Results Reporting page, creating an easier and more meaningful display of election results. This dashboard allows viewers to select any contest on the ballot and view Election Results simultaneously on a map of Denver's precincts, a bar chart ranking citywide vote totals and a table for viewers who prefer to view or download tabular data.

Moving from Static Maps and Data

Beginning in 2011, the Denver Elections Division began using GIS software to create and post static results maps in .pdf format of contested races during the Election Night Results posting process. These maps were very popular as viewers, especially the campaigns, appreciated the visual format that showed them the story of where a certain candidate was leading the contest within the city, and by what percentage range.

As static, .pdf maps, they could only display a limited amount of information. Color ramps assigned to candidates could only show who was leading in a given precinct on the map, and by what percentage range. It was very difficult to tell visually who was leading on a citywide scale and the display could potentially even be misleading if viewers weren't careful. For example, with no other data available, if a geographically larger but less populated precinct were shown in one color, it could skew the perception that a candidate was performing better on a citywide scale than they actually were.

Another limitation was that viewers would have to click on a different link for each map, requiring them to navigate back and forth on the website between the maps and tabular data to understand the full picture of how many votes were cast, and where the voters resided in the city. This would have to be repeated for each contest a viewer was interested in, with only maps for contested races available. Finally, due to the very short turn-around time between when results were pulled from the system and then released to the public, there was a limitation on how many maps could realistically be produced in that time frame. This caused us to only produce maps for contested races on the ballot, excluding all single candidate races and judge retention questions.

These limitations drove us to find a better and more modern solution that would provide an efficient, informative and interactive way to display our Election Night Results.

An Interactive Solution

Using a combination of Tableau Data Visualization software and an in-house designed "data compiler", we were able to create an interactive dashboard that overcame every limitation of the previously utilized .pdf maps. The dashboard consists of three individual frames, a dropdown menu that allows the selection of any contest on the ballot, a color-coded legend to easily identify each candidate or choice for a given contest, and a date/time tag so viewers know which reporting period is displayed. The three frames include a map of Denver precincts, a bar graph of all candidates for the selected contest, and a frame showing only text data for each of the candidates.

The precinct map is the most popular and visually interesting frame, as candidates and campaigns are always interested in where they're doing well (or not doing well). Compared to the old .pdf maps, this display is interactive and allows viewers to hover their mouse over each precinct to view additional data not available on the static maps. Each precinct is colored to match the map legend, based on the candidate/choice leading during that reporting period, with shading added to represent by how wide a margin they are leading. Now, when hovering over a precinct, a pop-out bubble appears with additional

information, including the Precinct name, the leading candidate's name, winning percentage range (in 25% range categories[1]) and a ranking of every other candidates' performance within that precinct.

The Bar Graph frame distinctly shows viewers the ranking of all candidates for the selected contest on a citywide scale, labeled with the name, number and percentage of citywide votes for each candidate. Within this frame, each bar is color-coded to match the related candidate colors shown on the map above, based on the legend. This frame also allows viewers to see how candidates who may not be leading within any precinct are competing on a citywide scale.

Finally, there is a table frame that is the textual equivalent of the bar graph, which again shows the results of all candidates in rank order on a citywide basis. This frame was developed for those who simply prefer to view data in a text format, as well as offering a way for the viewers to download the data in a meaningful tabular format.

This combination of frames immediately shows who is winning on a citywide scale as well as where these votes are coming from geographically. Creating this dashboard has allowed us to transform thousands of rows of raw data, combined with complex geographic spatial data, into a powerful tool that quickly and accurately tells the meaningful story of our voters' will.

Implementation
Initially, the Tableau software had limited mapping ability, which made it much more difficult to combine the results data with a "custom" shape file like city precincts. Also, it was difficult to reshape the raw results data into a meaningful format that Tableau could analyze, especially considering the need to respect the existing "anonymity" laws. Eventually, the Tableau software evolved to a point it could easily and reliably be used to generate the desired maps. At this time, we focused on reshaping the raw data. Our Data Architect, Paul Huntsberger, was able to develop a "data compiler" that was able to take the raw results data and transform it into the necessary format, while still protecting voter anonymity. Once these limitations were overcome, we were able to develop and implement the Election Night Results Dashboard as it exists now. In our recent 2019 Municipal General Election, this Results Dashboard immediately became the most viewed and popular Dashboard on our website.


Continuous Improvement
We always try to be responsive to viewer input, and constantly strive to improve our processes and products. With every Tableau update, we search to see if any new capabilities have been developed that may increase the effectiveness of our dashboards. For the upcoming General Municipal Run-Off Election, we have already upgraded the existing dashboard with the ability to expand each frame to a full-screen view to make the data more easily viewable on different sized devices. As we continue to receive viewer feedback, we will review these comments to see if we can implement any new features to create a more effective dashboard experience.

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[1] Colorado law states that voter anonymity must always be protected and specifies that precincts with too few votes must have their counts rolled into another precinct's results to ensure voter privacy. To comply with this law, our procedure is to not release vote totals at a precinct level prior to auditing and certification of the election, typically at least eight days after Election Day. Because of this, during the reporting periods on Election Night we only display percentage range categories, broken down into <25%, 25-50%, 50-75%, and 75%+.

Attachment 1: Interactive Election Night Results Dashboard

Turning 10,209 rows of raw data into an interactive visual story of voting results.
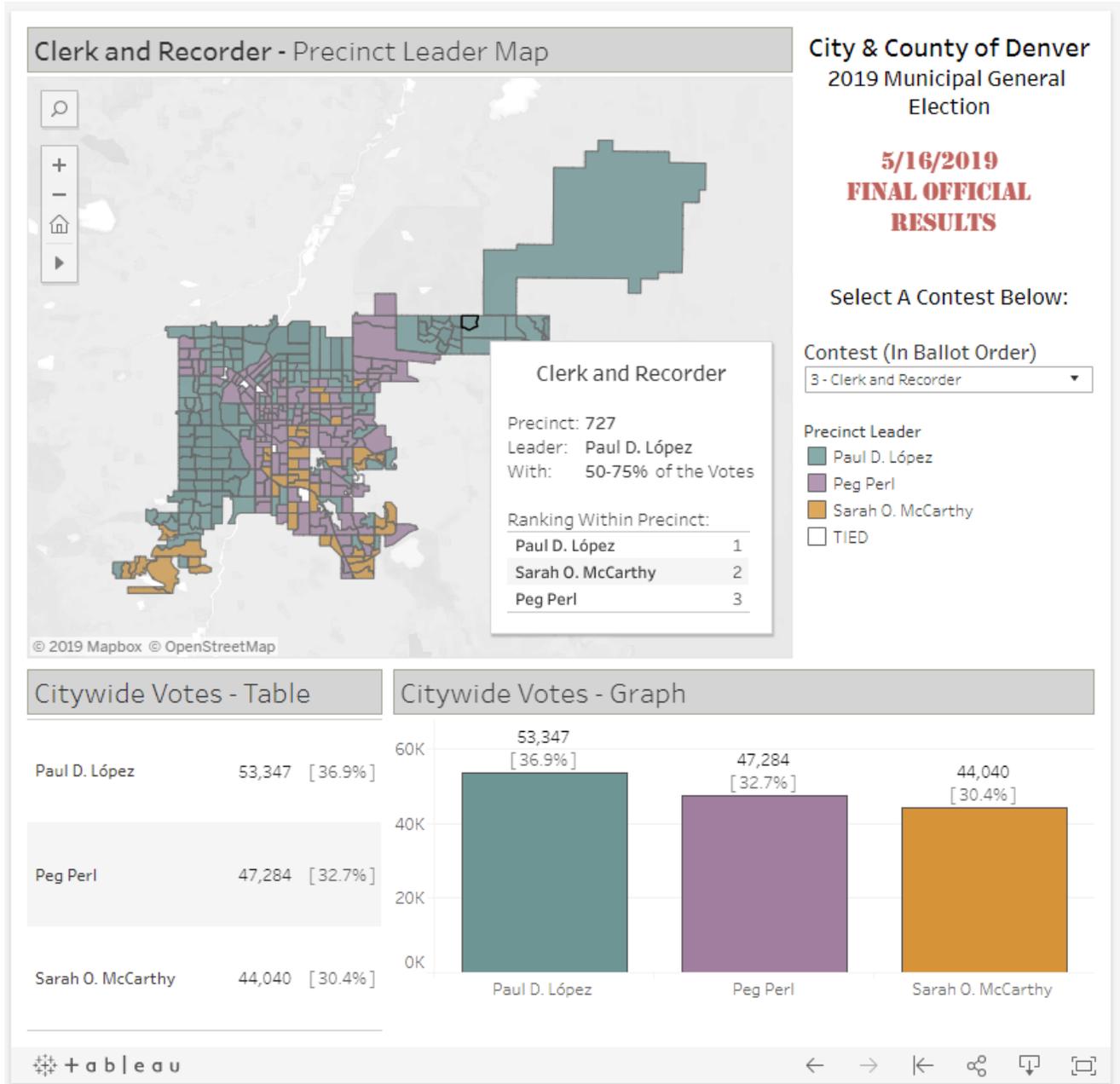
The dashboard allows viewers to select any contest to see results on an interactive precinct map, with pop-outs that detail specifics for each precinct, a bar chart showing city-wide results for each candidate, and a table with results shown as simple text, which can be easily downloaded. This combination of frames immediately shows the story of which candidate is leading city-wide, and where their voters' support exists geographically.

Attachment 2: Static PDF Results Map Example

Denver Elections Division

2019 Municipal General Election
City and County of Denver
May 7, 2019

Clerk and Recorder

Winning Vote Percentage In Precincts Won By PAUL D. LOPEZ
< 55% 55 - 60% 60 - 65% 65 - 70% > 70%

Winning Vote Percentage In Precincts Won By PEG PERL
< 55% 55 - 60% 60 - 65% 65 - 70% > 70%

Winning Vote Percentage In Precincts Won By SARAH O. MCCARTHY
< 55% 55 - 60% 60 - 65% 65 - 70% > 70%

718 = Precinct Number   = Unincorporated Area

Map Prepared by the Denver Elections Division
May - 2019