6 Ways Your Data Visualizations Can Influence Decisions

In the last few years, cities have invested in data visualization tools and strategies to help residents engage more effectively with open data sets. City leaders also depend on these tools in order to help them gain greater insights. The key goal for using data visualization is to reduce large amount of data sets into digestible chunks of visual information to support decision-making. However this goal can get lost in the aesthetics and complexity of charts. If the purpose of visualization is insight and decision, then visuals must serve a clear purpose by guiding the viewer to the key relevant data points. Here are six ways you can ensure your data visualizations influence users' decisions.

Influence Where Viewers Look

Research shows that where people look is tightly intertwined with what they decide. For example, before going to a grocery store you probably know in advance what you want. Once you get to the store you start looking for those items. But, you might see other items on display that attract your attention based on price, marketing, or other qualities that influence you to change your mind from what you originally wanted. Visualizations can be very similar. If you want to influence the decision of your viewers, you should direct their attention to the relevant parts of your visual. You don't just want to keep your audience interested, you actually want to guide their eyes so that they're looking where you want them to.

Still staying with our grocery shopping example, potential shoppers may start with some questions in mind that could persuade their choices even further. Their decision may also be influenced by discount information, store proximity, traffic information, membership rewards, etc. Similarly, your audience may have questions in mind before looking at your visualization for answers. They may want to know which departments in the city have the highest budget? How much certain services cost the city? Which neighborhoods have the highest crime rates? Directing their attention to departments with the lowest budget, neighborhoods with lowest crime rate, etc., could, in fact, positively influence their decision.

Design to Capture Attention

The eye plays a vital role in decision making and is constantly focusing on what's different in the environment while sending signals to the brain about the different attributes of what it sees. The brain then digs deeper to understand and record the difference while asking questions about why the difference? How different? Or what could be done about the difference. Usually, the best visualizations identify differences, patterns, distributions, etc., in data, and then act upon those differences. The objective is to have what is different either resemble closely the rest of the data points if the difference is undesirable, or enhance the difference so it is easily picked

out, if desirable. It's very important to be deliberate about graphical choices and also being deliberate about directing the attention of the eye to the differences in your graph.

Encourage the Eye to Compare Data

When you look at the bar charts below, which of the data points would most attract your attention? For chart 1, I'm going to guess that you had no idea, but maybe you guessed the tallest one (C). While the eye would be drawn to compare the heights of each data, the graph particularly does not direct you to the data point you should pay attention to. In Chart 2 some parts of the graph attract your attention. The changes in color immediately directs your eye to compare the differences in color groups. But even with the color changes, it's still difficult to direct your attention to one particular data point. In chart 3 it's obvious that data point F would capture your attention.

Chart 2 illustrated all of the information about the group of data I wanted you to compare and analyze into categories. It took advantage of the fact that our eyes are good at detecting differences in length and color. But it's still a poor chart for telling your data story because it didn't tell your audience what part of the data they needed to pay attention to. On chart 3 your attention might have been slightly divided between the red bar and the tallest bar because they both contrasted with the rest of the graph in some way. Keep an eye out for these similarities so you can be clear on where your audience should focus.

Chart 1   **Chart 2**   **Chart 3**

Change Default Settings as Needed

If you just use the default formatting on your graphs, you might not get your essential point across to your audience. Don't give up your power to direct your audience's attention and leave their decision process to chance. Be creative to change the default formatting to suit the needs of your viewers.

Use Visual Contrast Effectively

Visual contrast is effective for communicating what's important, to attract your viewers and affect decisions. Our eyes are drawn to things that stand out so the design and format of charts is key. Visual contrast can include shapes, color, size, orientation, patterns, etc. Creating visualizations that immediately draw the viewer to an attribute that's different from the surrounding attributes within the same category is a great way of getting your viewers attention.

## Highlight the Data that Matters to Draw Audience Attention

Visualizations for data analysis should show as much data as possible, focusing on data sets that can support decision-making. Our brains focus on important things in the environment and filter out everything else. Those important things are best identified through visual features like color, brightness, size, shape, and spatial orientation. Things that catch our attention most are those that have features that are significantly different from their background. In the images below it easy to identify the ripened tomato in picture 1 from among the rest compared to picture 2 where the sameness of the tomatoes make it difficult to filter anything out. In picture 3 your eyes are quickly drawn to the shape that is different among the others. But in picture 4 your eyes are not attracted to any of the shapes because they are all different and none stand out.
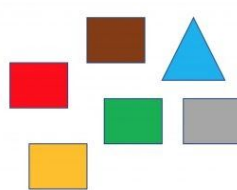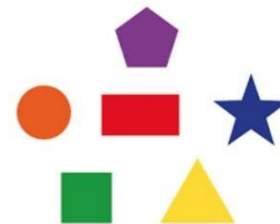

| Picture 1 | Picture 2 | Picture 3 | Picture 4 |

Visualizations are more than aesthetic designs. They can tell a data story and help the audience evaluate the data points clearly when they are done by keeping the above six points in mind.