Herrit Khandwala

CS 424 – Student Choice

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We will be looking at data visualization of multiple effects of the water crisis in the United States.

Map

Description automatically generated

**What is the purpose?**

The purpose of this visualization is to display the effect of growth and climate change to the water crisis. There are a total of 4 data visualizations included on the original website and the main goal of all the visuals are to showcase how the United States is going through the water crisis in different ways in different regions of the country. One of the main reasons to why the United States is facing this crisis is due to the major population growth and climate change occurring worldwide.

**What is the data and how was it collected?**

**Map

Description automatically generated**

The first data visualization is of the US Drought Severity. It maps the designations of the droughts in the United States weekly based on the data retrieved from the US Drought Monitor who is responsible in reporting conditions across the country. Both, the data and the map, are updated weekly and you can see in the image above that the most recent reports say that 64% of the land area in the US is dry or in a drought. The map classifies areas based on five levels of drought/dry categories. “Abnormally Dry - D0” is for an area that is borderline dry; that means that the area is either going into or coming out of a drought. “Moderate – D1”, “Severe – D2”, “Extreme – D3” and “Exceptional – D4” are the other four levels of drought levels, D4 being the worst. This data, as mentioned earlier, was collected by United Sates Drought Monitor, which is a joint production of United States Department of Agriculture, National Oceanic and Atmospheric Administration and National Drought Mitigation Center.

**Who are the users that this visualization was made for?**

The main users are people concerned with climate change, which should be everyone. As this water crisis effects the whole country in addition to the people who are living in the areas labelled as drought areas. This data visualization is very frequently used by the mainstream media and government policymakers who allocate relief to the areas affected by the drought. Hence the reason why this visualization is updated weekly.

**What can you do with this visualization?**

Graphical user interface

Description automatically generated with medium confidence

Graphical user interface, text, application

Description automatically generated

This data visualization allows you to look at the Drought Severity on a national level, by every state, numerous regions divided by plains and numerous river basins. It allows the users to look at the data starting from January 2000 up until April 2021. You can use the slider to look at a specific week within a specific year or you can indicate the year based on the available options of 10, 5 or the last 2 years. After you’ve selected a specific week, you can interact with “i” on the map which contains an informational panel regarding the area and the severity of the drought. For example, in the second image above, the information panel about the Midwest this week is about freezing temperatures in the area and normal precipitation outside of drought areas. Temperatures in the area were cooler than normal and decline in precipitation in the last 90 days in the upper Midwest region. The map consists of good normal features like zooming in and out, a minimizable legend at the bottom, consistent colors in the map and the legend, legible font on the map, etc. T

**What questions can be asked? How can they be answered?**

**Graphical user interface, text, application

Description automatically generated**

One of the first questions someone might ask is the numerical value behind the dryness of an area. “How dry is the land?” “How does it compare to X?” “What was it like during X?” You can answer some of this easily, and the rest require some work. To find out the exact numerical value, a percentage value in this case, all you have to do is navigate to the area at that time and you will find out the value. For example, if I wanted to know how dry the Midwest region was at the beginning of 2021, I would simply drag the timeline slider towards the beginning of 2021 and the panel at the top of the map tells me how dry that area was. Another question one might ask is what the history of dryness/drought in a specific area is or what are the climate patterns in that area. These questions are not easy to answer and require a bit of looking around within the visualization. The information panels mentioned earlier include all of the necessary and important information one needs to answer that question. From the picture about the information panel of the Midwest region during the week of April 6th, 2021, lots of precipitation patterns and likelihoods are mentioned. It notes significant changes in the weather patterns in comparison to the past and the soil moisturization difference to its previous weeks within the area. There’s an endless number of questions one can ask from this visualization. In the about tab, the creators included an email for the users that have any questions to reach out to them!

**What works?**

Map

Description automatically generated

Graphical user interface, text, application, email

Description automatically generated

There are a lot of great things in this data visualization above. All my life, I’ve always been a strong advocate of climate changes’ existence, and to have proper evidence like this map is a great plus in my books. A lot of the features mentioned above are part of what makes this a great visualization. From having over 60+ areas that can be used as a filter to the range of years divided by weeks in the timeline below the map, the default things are well taken care of. What struck me the most is the Help feature included in the visualization. The help feature brings you back to the visualization application and provides a simplified explanation of all of the features in the application. The share feature/tab is great as well. Normally, you would expect a share feature that only allows you to share the link of the project. However, the developers went an extra mile and implemented the ability to share a specific region at a specific time. You have to ability to just share the link to this application with your adjustments or you can embed this application on your own website. Developers providing HTML code to embed their application, especially a useful and significant one like this application, is a great work.

**What needs improvement?**

A feature that I would love to see added is a comparison feature similar to our Project 2. Being able to side-by-side compare two states during the same week, the same state at two different times or the United States at the beginning of 2000 compared to now in 2021 would be a great feature to have. Having the option to change the type of map to a satellite version or a version where you can somewhat visually see the “dryness” or the drought on the map itself would really help the audience understand the purpose behind the visualization more. Although it is not necessary, but I believe that if they reformat the whole website user interface to be more user friendly, it would be really nice. Right now, there’s a lot of wasted space and all of that can be fully optimized and potentially make this data visualization even better.