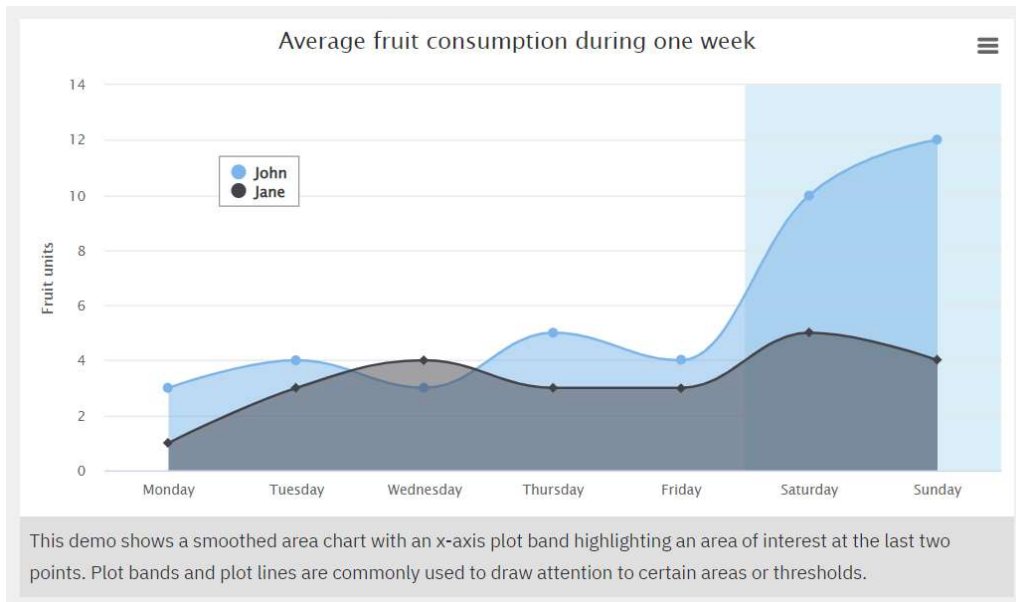


Oregon's Driving Dangers Around the Year

Driving is commonly understood to be a dangerous activity and common means of severe injury or death in the United States. With this understanding though, I was curious as to how much this danger was due to weather. To set down on this task, I made the scale much smaller than the entirety of the U.S. and decided to focus solely on Oregon. From there, data was found describing exactly what I was looking for, the amount of crashes that occurred throughout the months and how severe they proved to be. With this information I set about creating different models to further clarify what was happening and possible correlations. The primary example of this would be the visualization of the safest and deadliest months to drive in Oregon. This visualization is the culmination of the average amount of crashes, paired with injuries and deaths caused by them to reveal a rough percentage of how deadly, or safe, the two months are. It must be admitted though, that there is still a slight problem with the data and determining factual evidence on the most dangerous months due to weather conditions. The data provided to me is data from five different years, 2007 - 2011, which means that it is possible to be outdated and not properly correspond with the current road systems we have as well as weather variations across the years. The hope is though, that since this data is only a decade off, that weather patterns, and Oregon's traffic patterns have not drastically changed since then. This is all noted simply to ensure that the information I provide is taken with a grain of salt and not to be understood as fact.

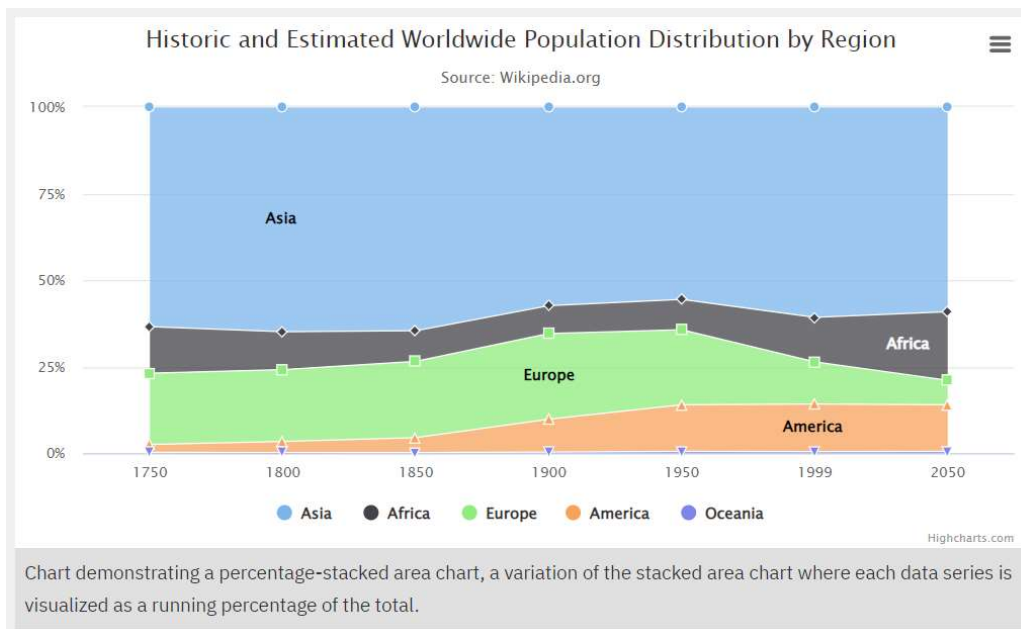
On that note, data was also provided for the location of these crashes, allowing further investigation into the weather's effect on each of the crashes to get as close to factual evidence as possible. This data provided is luckily data taken from the same exact years, 2007 - 2011, meaning that it is highly relevant to the data mentioned above and will not be causing any anomalies. The usefulness of this data in particular is to ensure that we understand not only which months are the most dangerous, but which areas in Oregon are the most dangerous to drive throughout the year. Additionally, commute times in each area of Oregon has been recorded to allow a rough estimation on the areas with the heaviest traffic to see how common the crashes are. Unfortunately, the data provided here does not mention which months the specific crashes happened, only where, which in itself will cause some problems for the conclusion, nonetheless, it is data that is still helpful to know and understand, perhaps allowing another person with a different set of data to derive a truer conclusion.

Lastly, there is some data provided to help understand the weather patterns around Oregon throughout the year. This information combined with the information of traffic and severe crashes around the year helps to create a fairly educated guess on which month is the most dangerous and why it is the most dangerous.



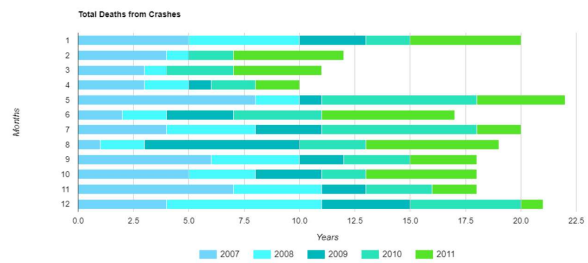
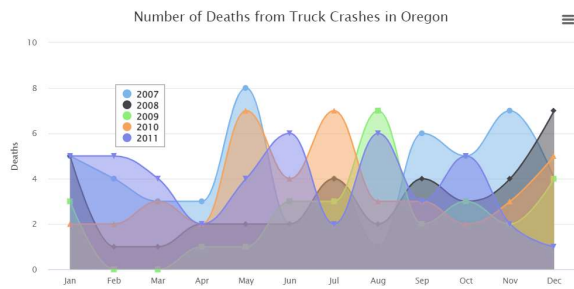
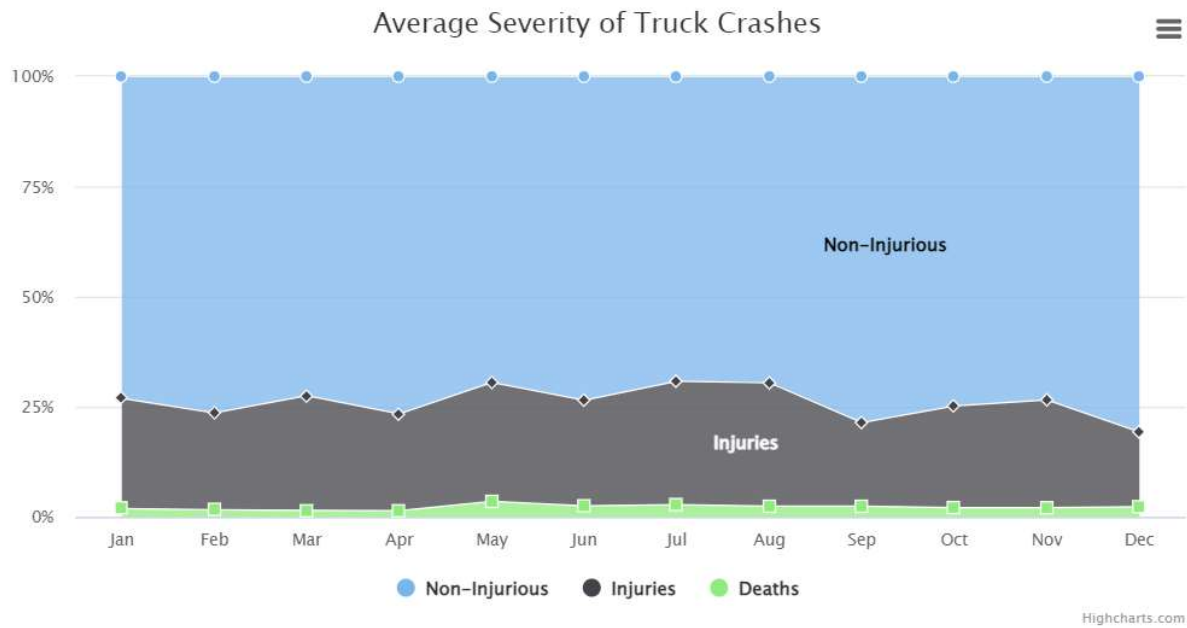
Area-Spline from Highcharts.

This tool is very similar to several other methods of visualization that I have used in the past (such as multiple bar line view), however I feel like this visualization may be able to display the direct difference a bit better

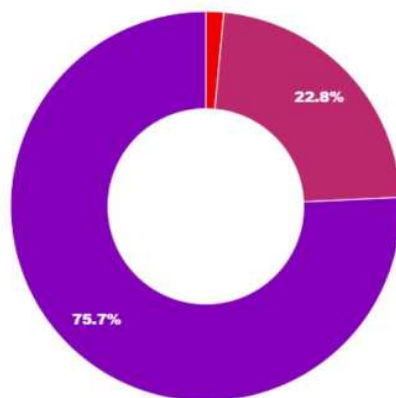


Percentage-stacked area from Highcharts

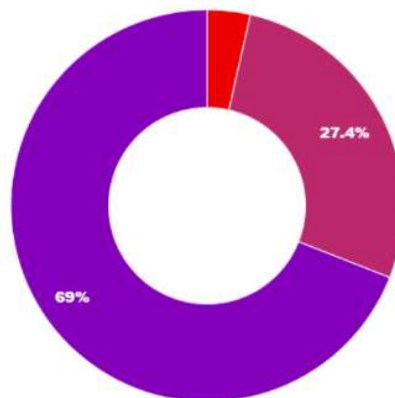
Again, similar to a multiple bar line view that I have used as well as even multiple pie / donut charts, this visualization may be a simpler way of visualizing what I have been trying to portray since the percentages are clearly shown throughout progression of the x-axis.



The Safest and Deadliest Months Rated by Death and Injury Percentages



April



May

● Death ● Injury ● Minor Accident

(Meant to be connected to the multi-view visualization)

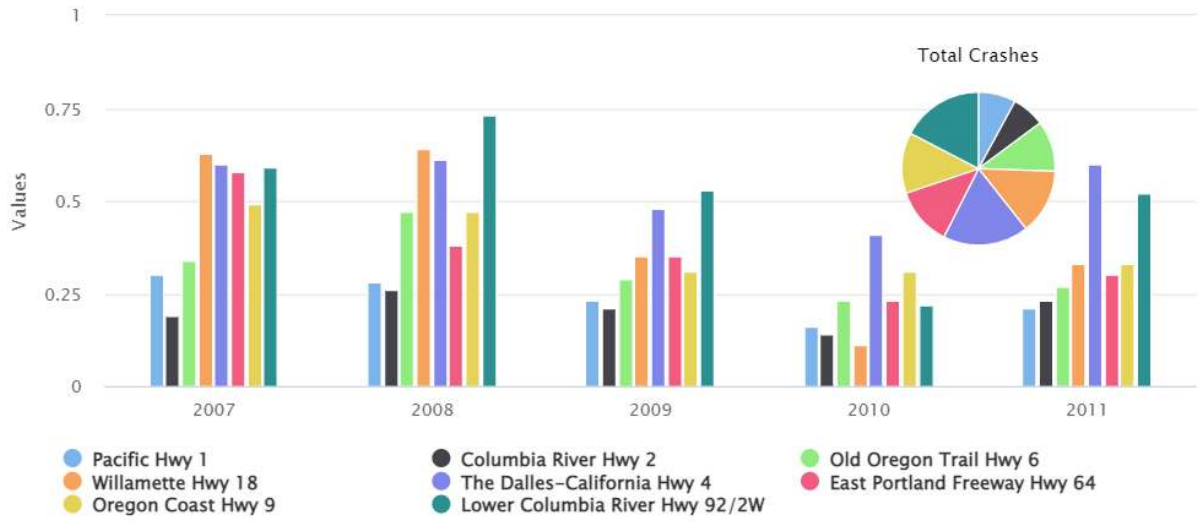
Throughout the five years that spanned across 2007 and 2011, the number of crashes caused by trucks was recorded along with the severity of the crashes, which would be recorded in one of three separate categories: non-injurious crashes, injurious crashes, and fatal crashes. Across the months of each year, a vast majority of crashes luckily resulted in non-injurious crashes at around 75%, while roughly 22% were injurious and 3% were fatal. Variation across the months does suggest trends of more lethal times of the year to crash, however this is not meant to show the likelihood of crashing throughout the year.

Referring to the Multi-View Visualization Above:

The multi-view visualization shown above is meant to portray the process of understanding which months are the safest and most dangerous months to drive, solely based on percentages, not whole numbers. This is done, by hopefully drawing the eye from the top of the page to the bottom of the page, ranking importance of figure by size as well. The first figure is highly relevant and essentially shows the same thing as the bottom visual, however, the method used for the top one makes it slightly harder to directly compare any two months, especially without being able to see the percent numbers and being required to make a slight guess. The next two figures down the page I made slightly smaller, as they only show a snapshot of what was being investigated, not the whole thing. The two figures show the same thing, which is something I questioned whether I should do or not, however in the end, I decided that while they both show the same data, they are able to show it in different ways that allow the viewer to understand different parts of the same data in different ways much easier (i.e. trends among the years vs. trends among months). Lastly I decided to use the donut visualization for the “conclusion” of this multi view visualization because I felt that it was still able to portray the purpose of the collected data the best, showing a direct comparison between the months with the lowest and highest likelihood of an injurious or fatal crash occurring

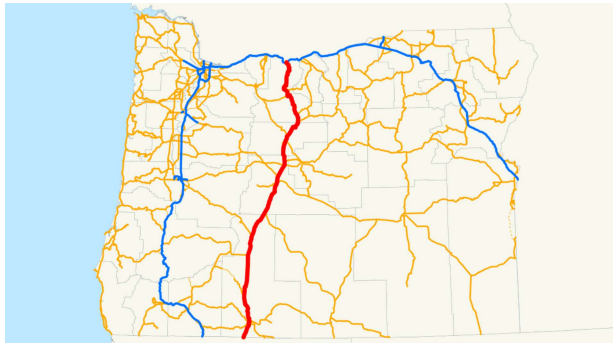
I would like to mention as well, that if I had access to more time to create a better visualization, I would allow each of the graphs to be clickable to expand them and allow the viewer to scroll across the images to access more data or simply visualize it better, much like the tools on Highcharts were able to do.

Highway Truck Crash Rate

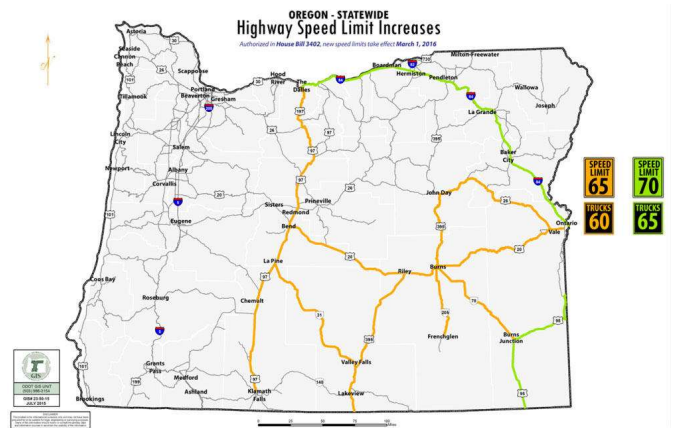
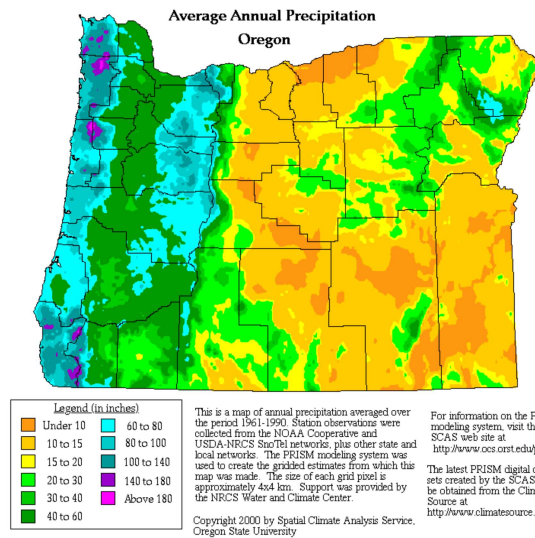
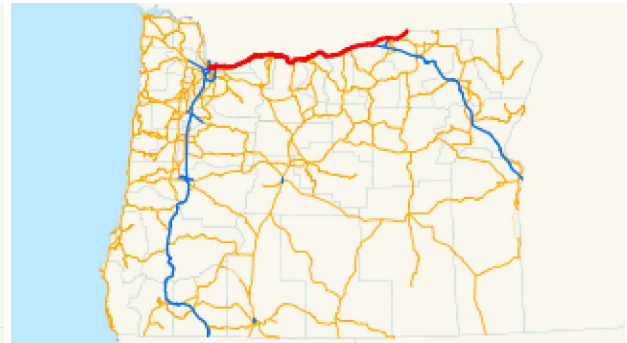


Highcharts.com

The Dalles-California Hwy 4



Columbia River Hwy 2

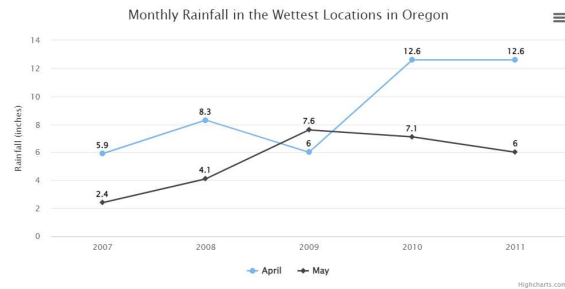
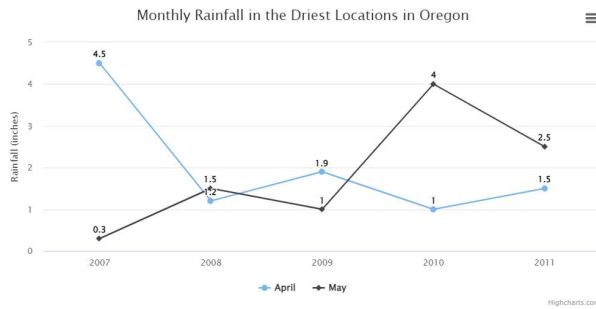


(Meant to be connected to the multi-view visualization)

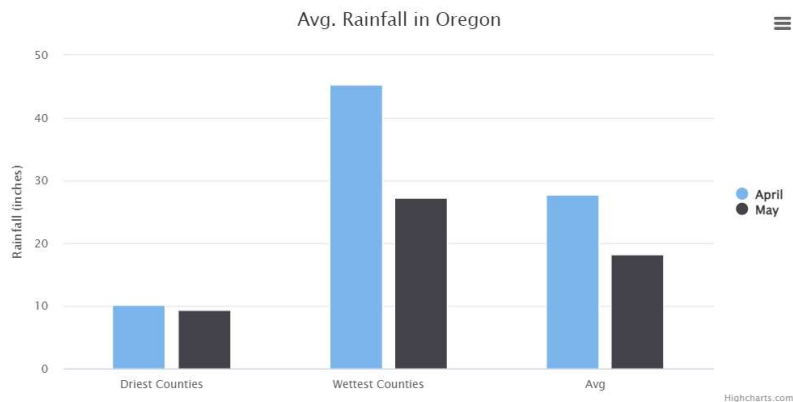
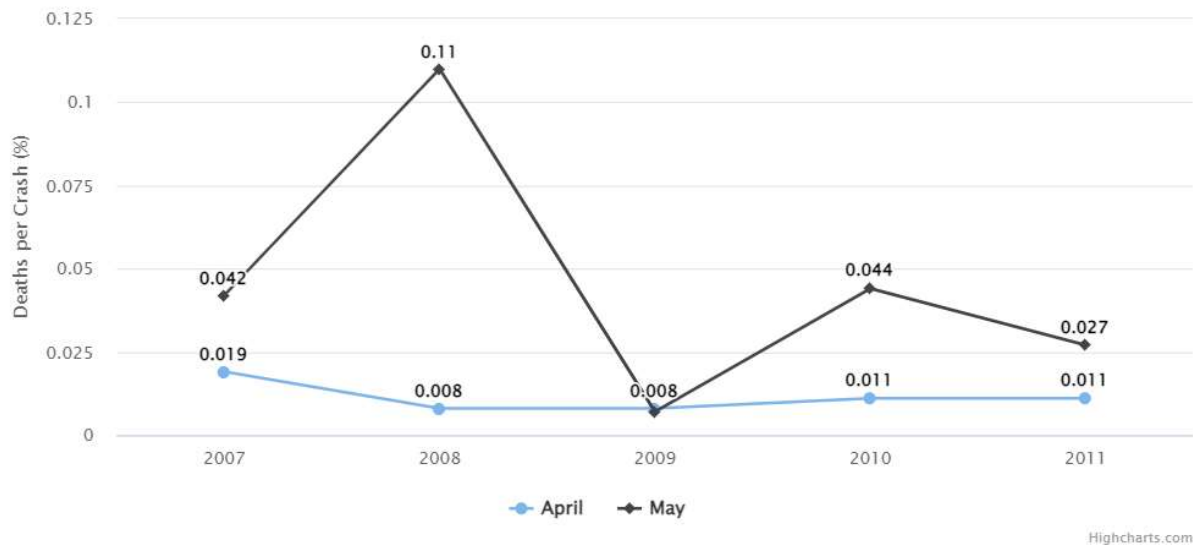
With the most dangerous months to drive determined, the most dangerous location is next. The truck crash rate recorded along the various Oregon highways provides some insight into this, showing that there are certainly more dangerous areas to drive in those terms. The following process however, is to determine whether or not the areas that prove to be the most dangerous or safe are affected by other conditions such as precipitation or speed control. Results proving contradictory to what is expected implies that there is yet another factor not being considered for the dangers of driving in those areas.

Referring to the Multi-View Visualization Above:

Again, the multi-view format is currently being limited to the PDF style that I am creating this document in, resulting in a similar multi-view method that I had used previously. The goal is the same as well, hoping that the user will initially be drawn to the larger objects as well as those near the top of the visualization. The top figure in this case should help the viewer to understand what the visualization is meant to describe, which is to determine the areas around Oregon that are the most prone to truck crashes. From there, there are some minor visuals supplied so that the viewer is able to quickly understand the locations of two separate highways, which they will find to be the “safest” and most “dangerous” highways upon a little inspection to the first visualization. Lastly, there was an attempt to find the “why” the specific highways proved to be the safest and most dangerous, however, what it shows instead is that two common ideas as to why the areas may be the most dangerous or safest (rain and speed) are not necessarily the true reason.



Truck Crash Death Rates for April and May



The average rainfall determined through the driest and wettest counties in Oregon throughout the five observed years, 2007 - 2011, to determine the possibility of aberrant rainfall patterns in the theoretically safest and most dangerous months to drive.

Referring to the Multi-View Visualization Above:

To finish off my research into what could be the reason for April having such low fatality rates in crashes compared to that of May, I decided a brief investigation into aberrant precipitation patterns may be the cause of it. However, the death rates in those months do not even correspond to a drastic difference of precipitation, so at least that can be displayed through the multi-view as well, allowing the viewer to come to these conclusions and realize that the “why” to the danger likely does not have much to do with the weather of these months.