CS-416 Data Visualization- Summer 2020
Email: - pks6@illinois.edu

Overview:

An interactive slide show was laid out to present the story of the suicides data around the world and to pinpoint the age groups which need more attention in terms of suicide. This would help to focus the treatment to the targeted set of people. The presentation is linearly ordered slideshow depicting a simple magazine style narration. It is built using the d3 JavaScript in combination with html and CSS to depict the visualization. D3 add on libraries created by the open source community are also used to provide a consistent feel and static annotations.

Messaging:

Suicide is a complex issue and over the years many people have died because of the suicides in the world. Every suicide is a tragedy. The World Health Organization (WHO) and the Global Burden of Disease study estimate that almost 800,000 people die from suicide every year. That's one person every 40 seconds. With timely intervention most of these suicides can be prevented. The presentation intends to narrate a story where we present a static information of the world for the dimensions which can be used to see the suicides and compare it to the developed county like USA. The dimensions which we are exploring are country, gender and age group. Viewers should be able to select the chart for the country specific suicides also by changing the drop down for the country thereby presenting the opportunity for the user to interact also.
Viewers can see that the suicides are most common in the developed countries and contrary to the belief that the developed countries do not have many problems. It also shows that the suicides are most common in the higher age groups from 35-54 years and 75+. The gender male has two times more suicides than female gender.

Narrative Structure:

The magazine style interactive slideshow layout was used to narrate the story based on the data published by the World Health Organization of the suicide count from 1979 to 2016 further cleaned and presented in Kaggle. The presentation is structured in following 4 pages as explained below:

1. Overview of the WHO Data: This section plots the total number of the suicides over the years of 141 countries. Some of the data for the big countries like India and china is missing in this dataset. The data is presented with different color shades and the numbers for each of the individual countries. The total count is also mentioned in the tooltip with the country name. The standard annotation in a consistent way is also used

to provide a narrative message. In this case Russia with the greatest number of suicides with the count is highlighted.

2. Scene1 Suicide Trend over Years: Country is important dimension. This scene shows the line chart of the suicides in the world over the years with y axis as total number of suicides and years in the X axis. This scene shows the that during the recession from 2000 to 2008 the suicides started increasing again showing it as one of the factors with the help of the annotation. This also compares the USA (a developed country) and the world plots to show the point that the suicides in the developed country are rising than the overall trend. So, we need to focus on why in the developed country despite all the resources people are taking this step. It provides one target which can be given importance. The viewers are also encouraged to select the specific country and see the trend for that country with respect to the world.

3. Scene 2 Suicide trends by Gender: This scene picks the gender (Male/Female) which contribute to most of the suicides. The static annotation shows that the suicides in the males are 2 times of the females in the world. This trend also continues in the developed country making it a second target for the analysis. The users can use the tool tip to see the suicide count for different years by hovering. Moreover, the parameter country can be changed in the drop down to help user to see the trend and compare it to world.

4. Scene 3 Suicide trends by Age group: In this section the story presents another dimension age group for the suicides over the years in first line chart for the world. The age group 35-54 years in the world are having the maximum number of suicides presented in annotation. The user can also see the comparison of the developing country trend like USA in the second chart. The user can also change the country for which it wants to see the trend with respect to the world.

Visual Structure:

1. Firstly, in the overview scene the whole world map is presented in the form of the choropleth chart with the data of the total number of suicides from the year 1979 to 2016. The annotation is presented to show the message. The legends present the hint of the color and shade for even the color blind user to see.
2. All the other scenes have the below:
    a. Two-line charts are used with the tool tip for dimensions in country, gender and age group.
    b. First chart provides the data for the world and have annotation for the message.
    c. The second line chart provides a drop down with highlighting developed country stats (USA) for the comparison w.r.t world.
    d. The legends even show the color which are consistent in the static chart as well as the parameterized charts.

e. The red color is used to show the problematic areas which this presentation tries to highlight.

3. The presentation also provides **Next and Previous** buttons to navigate across scenes in the author led direction. Viewers can also navigate using the Nav bar to scenes they want to, and the order of the scenes is also provided.

Scenes:

1. Overview: The landing page of the narrative virtualization is the overview page which shows the choropleth highlighting the total number of suicides from the 1979 to 2016 in the world map for each of the countries. The legends and the color of the map guides user that which countries have how many suicides over the period of the mentioned data. It sets the stage for the country trend analysis with respect to the world line chart. It just gives a hint that Russia is having the highest number of suicides.

2. Scene1- Suicide trends over years: Taking from overview page where we left, we enter scene 1 identifying a developed country as a dimension based on the color density. We pick USA and compare the trend of the year-on-year overall number of suicides of it with the static visualization of the trend in the world using a line chart. Viewers can drill down for the exact count using the tooltips in both line charts.

   Following fields are used to depict the line chart for the world and the country USA
   X axis-> Years which is a independent variable
   Y axis -> total number of the suicides in a particular year
   Drop down-> As a part of the second chart in Scene 1 we have a dropdown which is the country dropdown which is again a discreate and independent variable.

   Upon setting the basic tone by author viewers can look for the country of their choice in second line chart and compare its trends with the overall trend in the world for that dimension(country) in this case.

3. Scene2- Suicide trends by Gender: Now we identified the problem persist in developed country like USA for the suicides we try to search for another dimension age to look at the trend of suicides in that developed country (USA in this case) as compared to world. The format of the scene is quite simple and consistent with the same scene as Scene1.

   Following fields are used to depict the line chart for the world and the country USA
   X axis-> Years which is an independent variable
   Y axis -> total number of the suicides in a particular year
   Legends-> Red color for male and blue for female are used to plot the worldwide trend year on year on the 1st line chart while same depiction is for the USA country when user lands on the page
   Drop down-> As a part of the second chart in Scene 2 we have a dropdown which is the country dropdown which is again a discreate and independent variable.

Upon setting the basic tone by author viewers can look for the country of their choice in second line chart and compare its trends with the overall trend in the world for that dimension(country) in this case.

4. Scene3- Suicide trends by Age group: After understanding the gender dimension author is trying to help user to see from yet another perspective which is the different age groups to target the groups which needs attention in terms of suicide. Again we first plot the overall trends in world using a line chart for different age groups and we make a second line chart to show the trend in USA to draw the comparison. The format of the scene is quite simple and consistent with the same scene as Scene1.

   Following fields are used to depict the line chart for the world and the country USA
   X axis-> Years which is an independent variable
   Y axis -> total number of the suicides in a particular year
   Legends-> Red color for highest suicide group (35-54 years) and blue for lowest(5-14 years) are used to plot the worldwide trend year on year on the 1st line chart while same depiction is for the USA country when user lands on the page. All the age groups are represented using the lines with colors. The legends describe the age groups.
   Drop down-> As a part of the second chart in Scene 3 we have a dropdown which is the country dropdown which is again a discreate and independent variable.

   Upon setting the basic tone by author viewers can look for the country of their choice in second line chart and compare its trends with the overall trend in the world for that dimension(country) in this case.

Annotations:

Below is the type of annotations which are used:

1. Static annotation: These are the annotations which are embedded in the presentation which users cannot change. It is also used to convey the key thought, facts and analysis by the author and gives a direction to the overall presentation. These are used in all the scenes to provide a context of dimension to scenes on which the trend analysis in that scenes are based. A consistent annotation style, fill and text are employed across the scenes.
2. Dynamic annotation(tooltips). It changes as the viewers hover on the line charts in the presentation. It shows the drill down numbers of the total suicide counts for the different years in the consistent way for the different scenes. Tool tips are used to visualize the quantitative and categorical values at each point in the line chart. It creates

the dynamic annotations. All the scenes have the consistent tool tips in terms of the style, font and text.

3. Legends: Overview choropleth map have legends which shows the color shades based on the suicide counts. All the line charts also have legends in the consistent formats which are created using the d3-Legend JavaScript library. Without the legends it is very hard for the viewers to understand the meaning of the multiple lines in the chart.

The annotation, tooltips and legends are cleared on leaving each of the scenes.

Parameters:

Parameters are used to filter the subset of the data for the comparison in all the scenes. In this project the all the scenes Scene1 Suicide trend over the years, Scene2 suicide trends by gender and Scene 3 suicide trends by age group has a list of countries in the dropdown where users can filter the data and see the number of suicides based on that country. It provides a quick snapshot of the trend in the dimension of the country with respect to the world line chart above. Further information is provided as the tooltips and legends to make it simple and clutter free.

Triggers:

Parameters are passed to the line chart via triggers which are the user interface events. In the presentation all the Scenes 1 to 3 except the overview page has the on-change event of the drop down of the countries on the UI. The on-event handler in turn uses the data value (e.g., country which is the parameter) to filter the data visualized using the line charts.

There are other window events in the whole narrative presentation such as mouse hover and mouse out which are used to display the tooltips. The “X” and “Y” axis parameters are passed to signal system the point where to display the tooltip.

Viewers are provided with hits using a message on the top which guides the user to use these triggers at the page loading event of each page. The viewer after understanding will close the hints and till that time it will be displayed on the screen.